



Grilles, Registers and Diffusers

ENGINEERING DATA

June 2017 | Edition 13

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LIGHT COMMERCIAL

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Engineering Data

Using the Engineering Data

For most of the models & sizes we've done the calculations for you.

CFM = volume of air flow in cubic feet per minute

421

Face Velocity		300	400	500	600	700	800
Pressure Loss		.006	.010	.016	.022	.031	.040
4x10 Ak .170	CFM	50	70	85	100	120	135
	Spread	4.5	5.0	6.5	7.5	9.0	10.0
	Throw	4.0	6.0	8.0	10.0	11.0	12.5

Terminal velocity of 50 fpm

821-defl A

Face Velocity		400	500	600	700	800
Pressure Loss		.010	.016	.022	.031	.040
24 x 8 Ak 1.045	CFM	420	525	625	730	835
	Throw	17.0	21.0	25.0	29.0	33.0

Terminal velocity is 75 fpm

Face Velocity = speed of air at the face of diffuser in feet per minute (FPM)

Ak = net area in square feet. This is the lab measured area across the face when air is mechanically forced through the opening.

Free Area (if given) = daylight area (in²) of blade openings. Free area is typically only required on natural / gravity movement of air, non-mechanically forced, as in free area needed for combustion air requirements on heating equipment. Use the Ak value (*144 to get to in²) if the free area has not been calculated, but is needed for a given size/model grille requiring free area for combustion.

Equation of Airflow: CFM = Ak (ft²) x Face Velocity (fpm)

Example from 421 table above: 100 = .17 x 600 _ numbers are often rounded

Sizing a Supply

Determine the amount of CFM (air volume) needed for each supply outlet. This should be done by room heating and cooling load requirements from various design manuals (ACCA Man J, ASHRAE Fundamentals Hndbk) and then followed by the duct design and layout.

Face Velocity - H&C recommends sizing a supply outlet in the range of 500 to 800 fpm face velocity (700 being a common target). The upper end of this range will create better mixing of room air and longer throws, which is what the typical forced air system is intended to do. However, the Pressure resistance and Noise must be taken into consideration depending upon the application. In some instances, greater face velocity is allowed because the pressure and noise can be accommodated.

Pressure Loss (inches of w.c.) – the selection of the face velocity must consider the associated pressure loss that deals with each relative model. An increase in face velocity creates more pressure resistance against the blower's delivery of air volume. The velocity ranges given previously will, in most cases, have minor effect on the blower's overall performance given the entire duct system losses that it will encounter.

Noise – an increase in face velocity will create more noise. The tables below show NC design guidelines and also face velocity ranges if NC values have not been tabulated.

Application	Recommended Face Velocities
Broadcasting Studios	<500 FPM
Residences	500 to 750 FPM
Apartments	500 to 750 FPM
Churches	500 to 750 FPM
Hotel Guestrooms	500 to 750 FPM
Legitimate Theaters	500 to 1000 FPM
Private Offices, acoustically treated	500 to 1000 FPM
Private Offices, not treated	1000 to 1250 FPM
Motion Picture Theaters	1000 to 1250 FPM
General Offices	1250 to 1500 FPM
Stores, upper floors	1500 FPM
Stores, main floors	1500 FPM
Industrial Buildings	1500 to 2000 FPM

	Communication Environment	Typical Occupancy
< NC 25	Extremely quiet environment; suppressed speech is quite audible; suitable for acute pickup of all sounds.	Broadcasting studios, concert halls, music rooms.
NC 30	Very quiet office; suitable for large conferences; telephone use satisfactory.	Residences, theaters, libraries, executive offices, directors rooms.
NC 35	Quiet office; satisfactory for conference at a 15-foot table; normal voice 10 to 30 feet; telephone use satisfactory.	Private offices, schools, hotel guestrooms, courtrooms, churches, hospital rooms.
NC 40	Satisfactory for conferences at a 6-to 8-foot table; normal voice 6 to 12 feet; telephone use satisfactory.	General office, labs, dining rooms.
NC 45	Satisfactory for conferences at a 4- to 5-foot table; normal voice 3 to 6 feet; raised voice 6 to 12 feet; telephone use occasionally difficult.	Retail stores, cafeterias, lobby areas, large drafting and engineering offices, reception areas.
> NC 50	Unsatisfactory for conference of more than two or three persons; normal voice 1 to 2 feet; raised voice 3 to 6 feet; telephone use slightly difficult.	Computer rooms, stenographic pools, print machine rooms, process areas.

Sizing a Return

Air volume going back to the air handler (fan) must equal what is supplied from the air handler. Therefore the total CFM capacity of the return grilles must equal or exceed the total CFM capacity of all the supply diffusers.

Engineering Data

Keeping face velocity low

- Returns should be at 400-600 fpm maximum
- Filter Returns should be at 450 fpm maximum
- *ACCA recommends 300 max for filter grilles and 500 max for non-filter grilles.
- The rule of thumb is 2 cfm per square inch of filter size. See table below.
- Low velocity reduces noise, especially on stamped face grilles (672/673); fixed-bar grilles can handle more velocity without noise (94A/96AFB/RH45/RHF45/RCB).
- A single point return cannot be oversized like a supply. The system will not be affected adversely, only improved. *This does not apply to multiple return locations where balancing is more critical to pull in relevant amounts from each room.
- Static pressure is also reduced. Pressure works against & reduces blower delivery volume (cfm)
- Noise is not expected from a return.

Location

Filter Size		Area (in²)	Ton (cfm)	Filter Size		Area (in²)	Ton (cfm)
12	12	144	n/a	20	20	400	2 (800)
12	20	240	1 (400)	20	25	500	2.5 (1000)
12	24	288	1.5 (600)	20	30	600	3 (1200)
12	30	360	1.5 (600)	20	36	720	3 (1200)
14	14	196	1 (400)	24	24	576	3 (1200)
14	20	280	1.5 (600)	24	30	720	3 (1200)
14	24	336	1.5 (600)	24	36	864	4 (1600)
14	30	420	2 (800)	25	25	625	3 (1200)
16	20	320	1.5 (600)	30	30	900	4 (1600)
16	24	384	2 (800)	30	36	1080	5 (2000)

- Returns should be put in stagnant air locations that need to be reconditioned.
 - High for cooling mode (hot air rises)
 - Low for heating mode (cold air falls)
 - Both modes, choose a primary season
- Returns should not be near a supply register's throw range. If at all possible place the return at an opposite corner of the room.

Room Air Movement

- Returns do NOT have much effect on a room's air movement, regardless of face velocity. They only grab air about a duct diameter away from the face. Most of the room air movement is done by the supplies.

Unlisted Sizes—Engineering Data

When a size is not listed there are a couple ways to do an engineered estimate. Airflow principles permit you to utilize existing sizes to determine sizes not shown.

Method 1: Use nearest nominal size table entry. If a 14x14 is not given, but a 20x10 is, since these two sizes have an approximate equal core area (196 and 200) the table entry for a 20x10 can be used to approximate what the 14x14 grille would perform to.

Method 2: A more exact method would be to do interpolation process between two listed sizes. If 14x14 is not given, but 18x10 and 20x10 are, then this equation will get more exact 14x14 data. $Y = Y1$

Recommended Noise Criteria and Face Velocity Ranges are on page 6

+ $\{[(X - X1) * (Y2 - Y1)] / (X2 - X1)\}$ where:

Y = unknown CFM or throw that is being computed for 14x14

Y1 = CFM or throw of listed 18x10 (for ex 600 cfm)

Y2 = CFM or throw of listed 20x10 (for ex 640 cfm)

X = 196 in² (nominal area of 14x14)

X1 = 180 in² (nominal area of 18x10)

X2 = 200 in² (nominal area of 20x10)

Using equation above computes $Y = 600 + \{[(196 - 180) * (640 - 600)] / (200 - 180)\} =$

$600 + \{[16 * 40] / 20\} = 600 + 32 = 632 \text{ cfm for } Y$

Method 3: Sizes beyond the table (smaller or larger) can have their CFM or Throw determined by using listed sizes by the following:

CFM for larger sizes:

If **24**

12 x 6	12 x 6
12 x 6	12 x 6

12

looking for 24x6 or 24x12 cfm that is not listed, using the listed 12x6 cfm and doubling it or quadrupling it will give the answer for the 24x6 and 24x12, respectively.

CFM for smaller sizes:

If looking for a 6x6 cfm that is not listed, using the listed 12x6 cfm and halving it will give the answer for a 6x6.

Throw:

Double the size and CFM, multiply the throw by 1.5

Quadruple the size and CFM, multiply the throw by 2

Half the size and CFM, multiply the throw by .67

One quarter the size and CFM, multiply the throw by .5

*Pressure loss, face velocity and noise criteria will all remain the same relative to the listed size used to determine the larger or smaller sizes not shown.

Engineering Data

821, 831

Deflection A

Face Velocity	400	500	600	700	800	900	1000	1100	1200	1300	1400	1600	1800	2000
Pressure Loss	.010	.016	.022	.031	.040	.050	.062	.075	.090	.105	.122	.160	.202	.249
8 x 4	CFM	65	80	100	110	130	145	160	175	190	210	225	255	290
Ak .160	Throw	6.5	8.0	10.0	11.0	13.0	15.0	16.0	18.0	19.0	21.0	23.0	26.0	32.0
10 x 4	CFM	80	100	120	140	160	180	200	220	240	265	285	325	365
Ak .202	Throw	7.0	9.0	11.0	13.0	14.0	16.0	18.0	20.0	22.0	24.0	26.0	29.0	33.0
12 x 4	CFM	100	120	145	170	195	220	245	270	295	315	340	390	440
Ak .244	Throw	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	24.0	26.0	28.0	32.0	36.0
14 x 4	CFM	115	145	170	200	230	255	285	315	345	370	400	460	515
Ak .286	Throw	8.5	11.0	13.0	15.0	17.0	19.0	22.0	24.0	26.0	28.0	30.0	35.0	39.0
12 x 5	CFM	125	155	190	220	250	280	310	345	375	405	435	500	560
Ak .312	Throw	9.0	11.0	14.0	16.0	18.0	20.0	22.0	25.0	27.0	29.0	31.0	36.0	41.0
10 x 6	CFM	125	155	190	220	250	285	315	345	375	410	440	500	565
Ak .314	Throw	9.0	11.0	14.0	16.0	18.0	21.0	23.0	25.0	27.0	30.0	32.0	36.0	41.0
14 x 5	CFM	145	185	220	255	295	330	365	405	440	475	510	585	660
Ak .366	Throw	10.0	12.0	15.0	17.0	20.0	22.0	24.0	27.0	29.0	32.0	34.0	39.0	44.0
12 x 6	CFM	150	190	225	265	305	340	380	415	455	495	530	605	680
Ak .379	Throw	10.0	12.0	15.0	17.0	20.0	22.0	25.0	27.0	30.0	33.0	35.0	40.0	45.0
16 x 5	CFM	170	210	250	295	335	380	420	460	505	545	585	670	755
Ak .419	Throw	11.0	13.0	16.0	18.0	21.0	24.0	26.0	29.0	32.0	34.0	37.0	42.0	47.0
14 x 6	CFM	180	220	265	310	355	400	445	490	535	575	620	710	800
Ak .444	Throw	11.0	13.0	16.0	19.0	22.0	24.0	27.0	30.0	32.0	35.0	38.0	43.0	49.0
16 x 6	CFM	205	255	305	355	410	460	510	560	610	665	715	815	920
Ak .510	Throw	12.0	15.0	17.0	20.0	23.0	26.0	29.0	32.0	35.0	38.0	41.0	47.0	53.0
20 x 5	CFM	210	265	315	370	420	475	525	580	630	685	735	840	945
Ak .526	Throw	12.0	15.0	18.0	21.0	23.0	27.0	29.0	32.0	35.0	38.0	41.0	47.0	53.0
24 x 5	CFM	255	315	380	445	505	570	635	695	760	825	890	1015	1140
Ak .634	Throw	13.0	16.0	19.0	23.0	26.0	29.0	32.0	35.0	39.0	42.0	45.0	52.0	58.0
20 x 6	CFM	255	320	385	445	510	575	640	705	770	830	895	1015	1140
Ak .640	Throw	13.0	16.0	19.0	23.0	26.0	29.0	32.0	36.0	39.0	42.0	45.0	52.0	58.0
24 x 6	CFM	310	385	465	540	615	695	770	850	925	1000	1080	1235	1390
Ak .771	Throw	14.0	18.0	21.0	25.0	28.0	32.0	35.0	39.0	43.0	46.0	50.0	57.0	64.0
20 x 8	CFM	345	435	520	610	695	780	870	955	1040	1130	1215	1390	1560
Ak .868	Throw	15.0	19.0	23.0	26.0	30.0	34.0	38.0	41.0	45.0	49.0	53.0	60.0	68.0
30 x 6	CFM	385	485	580	675	775	870	965	1065	1160	1255	1355	1545	1740
Ak .967	Throw	16.0	20.0	24.0	28.0	32.0	36.0	40.0	44.0	48.0	51.0	56.0	63.0	71.0
24 x 8	CFM	420	525	625	730	835	940	1045	1150	1255	1360	1465	1670	1880
Ak 1.045	Throw	17.0	21.0	25.0	29.0	33.0	37.0	41.0	46.0	50.0	54.0	58.0	66.0	74.0
30 x 8	CFM	525	655	785	915	1050	1180	1310	1440	1570	1705	1835	2095	2360
Ak 1.310	Throw	19.0	23.0	28.0	32.0	37.0	42.0	46.0	51.0	56.0	60.0	65.0	74.0	84.0
24 x 10	CFM	530	660	790	925	1055	1185	1320	1450	1585	1715	1845	2110	2375
Ak 1.319	Throw	19.0	23.0	28.0	33.0	37.0	42.0	46.0	51.0	56.0	60.0	65.0	74.0	84.0
36 x 8	CFM	630	790	945	1105	1260	1420	1575	1735	1890	2050	2205	2520	2835
Ak 1.576	Throw	20.0	25.0	30.0	36.0	41.0	46.0	51.0	56.0	61.0	66.0	71.0	81.0	91.0
24 x 12	CFM	635	795	995	1115	1275	1435	1595	1750	1910	2070	2230	2550	2865
Ak 1.593	Throw	20.0	25.0	31.0	36.0	41.0	47.0	51.0	56.0	61.0	66.0	71.0	82.0	92.0
30 x 10	CFM	660	825	990	1160	1325	1490	1655	1820	1985	2150	2315	2645	2975
Ak 1.654	Throw	21.0	26.0	31.0	37.0	42.0	47.0	52.0	57.0	63.0	68.0	73.0	83.0	94.0
36 x 10	CFM	795	995	1195	1390	1590	1790	1990	2190	2385	2585	2785	3180	3580
Ak 1.989	Throw	23.0	29.0	34.0	40.0	46.0	51.0	57.0	63.0	68.0	74.0	80.0	91.0	103.0
30 x 12	CFM	800	1000	1200	1400	1600	1800	2000	2200	2395	2595	2795	3195	3595
Ak 1.997	Throw	23.0	29.0	34.0	40.0	45.0	51.0	57.0	63.0	68.0	74.0	80.0	91.0	103.0
36 x 12	CFM	960	1200	1440	1680	1920	2160	2400	2640	2880	3120	3365	3845	4325
Ak 2.402	Throw	25.0	31.0	38.0	44.0	50.0	56.0	63.0	69.0	75.0	81.0	88.0	100.0	113.0

Terminal Velocity of 75 FPM

Deflection C

Face Velocity	400	500	600	700	800	900	1000	1100	1200	1300	1400	1600	1800	2000
Pressure Loss	.010	.016	.022	.031	.040	.050	.062	.075	.090	.105	.122	.160	.202	.249
8 x 4	CFM	55	70	85	100	110	125	140	155	170	180	195	225	250
Ak .140	Throw	5.0	6.0	7.5	8.5	9.5	11.0	12.0	14.0	15.0	16.0	17.0	20.0	22.0
10 x 4	CFM	70	90	105	125	140	160	180	195	215	230	250	285	320
Ak .178	Throw	5.0	7.0	8.0	9.5	11.0	12.0	14.0	15.0	17.0	18.0	19.0	22.0	25.0
12 x 4	CFM	85	110	130	150	170	195	215	235	260	280	300	345	385
Ak .215	Throw	6.0	8.0	9.0	11.0	12.0	14.0	15.0	17.0	18.0	20.0	21.0	24.0	27.0
14 x 4	CFM	100	125	150	175	200	225	250	275	300	330	355	405	455
Ak .252	Throw	6.5	8.0	10.0	11.0	13.0	15.0	16.0	18.0	20.0	22.0	23.0	26.0	30.0
12 x 5	CFM	110	135	165	190	220	245	275	300	330	355	385	440	495
Ak .274	Throw	7.0	8.5	10.0	12.0	14.0	15.0	17.0	19.0	21.0	22.0	24.0	28.0	31.0
10 x 6	CFM	110	140	165	195	220	245	275	305	330	360	385	440	495
Ak .276	Throw	7.0	8.5	10.0	12.0	14.0	15.0	17.0	19.0	21.0	22.0	24.0	27.0	31.0
14 x 5	CFM	130	160	195	225	255	290	320	355	385	415	450	515	580
Ak .321	Throw	7.5	9.0	11.0	13.0	15.0	17.0	18.0	21.0	22.0	24.0	26.0	30.0	34.0
12 x 6	CFM	135	165	200	235	265	300	335	365	400	435	465	535	600
Ak .333	Throw	7.5	9.5	11.0	13.0	15.0	17.0	19.0	21.0	23.0	25.0	26.0	30.0	34.0
16 x 5	CFM	150	185	220	260	295	330	370	405	445	480	515	590	665
Ak .369	Throw	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	24.0	26.0	28.0	32.0	36.0
14 x 6	CFM	155	195	235	275	315	350	390	430	470	510	545	625	700
Ak .391	Throw	8.0	10.0	12.0	14.0	17.0	18.0	20.0	23.0	25.0	27.0	29.0	33.0	37.0
16 x 6	CFM	180	225	270	315	360	405	450	495	540	580	625	715	805
Ak .448	Throw	9.0	11.0	13.0	15.0	18.0	20.0	22.0	24.0	26.0	28.0	31.0	35.0	39.0
20 x 5	CFM	185	230	280	325	370	415	465	510	555	600	650	740	835
Ak .463	Throw	9.0	11.0	13.0	16.0	18.0	20.0	22.0	25.0	27.0	29.0	31.0	36.0	40.0
24 x 5	CFM	225	280	335	390	445	500	555	615	670	725	780	890	1005
Ak .557	Throw	10.0	12.0	15.0	17.0	19.0	22.0	24.0	27.0	29.0	32.0	34.0	40.0	44.0
20 x 6	CFM	225	280	340	395	450	505	565	620	675	730	790	900	1015
Ak .563	Throw	10.0	12.0	15.0	17.0	20.0	22.0	25.0	27.0	29.0	32.0	34.0	39.0	44.0
24 x 6	CFM	270	340	405	475	540	610	680	745	815	880	950	1085	1220
Ak .678	Throw	11.0	14.0	16.0	19.0	21.0	24.0	27.0	30.0	32.0	35.0	38.0	43.0	49.0
20 x 8	CFM	305	380	460	535	610	685	765	840	915	990	1070	1220	1375
Ak .763	Throw	11.0	14.0	17.0	20.0	23.0	26.0	29.0	32.0	34.0	37.0	40.0	46.0	52.0
30 x 6	CFM	340	425	510	595	680	765	850	935	1020	1105	1190	1360	1530
Ak .850	Throw	12.0	15.0	18.0	21.0	24.0	27.0	30.0	33.0	36.0	39.0	42.0	48.0	54.0
24 x 8	CFM	370	460	550	645	735	825	920	1010	1105	1195	1285	1470	1655
Ak .919	Throw	13.0	16.0	19.0	22.0	25.0	28.0	31.0	35.0	38.0	41.0	44.0	50.0	57.0
30 x 8	CFM	460	575	690	805	920	1035	1150	1265	1380	1500	1615	1845	2075
Ak 1.152	Throw	14.0	15.0	21.0	25.0	28.0	32.0	35.0	39.0	42.0	46.0	49.0	56.0	63.0
24 x 10	CFM	465	580	695	810	930	1045	1160	1275	1390	1510	1625	1855	2090
Ak 1.160	Throw	14.0	18.0	21.0	25.0	28.0	32.0	35.0	39.0	42.0	46.0	49.0	56.0	64.0
36 x 8	CFM	555	695	830	970	1110	1245	1385	1525	1665	1800	1940	2220	2495
Ak 1.386	Throw	15.0	19.0	19.0	27.0	31.0	35.0	39.0	42.0	46.0	50.0	54.0	62.0	69.0
24 x 12	CFM	560	700	840	980	1120	1260	1400	1540	1680	1820	1960	2240	2520
Ak 1.401	Throw	16.0	19.0	23.0	27.0	31.0	35.0	39.0	43.0	47.0	50.0	54.0	62.0	70.0
30 x 10	CFM	580	725	870	1020	1165	1310	1455	1600	1745	1890	2035	2325	2615
Ak 1.454	Throw	16.0	20.0	24.0	28.0	32.0	36.0	39.0	43.0	47.0	51.0	55.0	63.0	71.0
36 x 10	CFM	700	875	1050	1225	1400	1575	1750	1925	2100	2275	2450	2800	3150
Ak 1.749	Throw	17.0	22.0	26.0	30.0	35.0	39.0	43.0	48.0	52.0	56.0	61.0	69.0	78.0
30 x 12	CFM	700	880	1055	1230	1405	1580	1755	1930	2110	2285	2460	2810	3160
Ak 1.756	Throw	17.0	22.0	26.0	30.0	35.0	39.0	43.0	48.0	52.0	56.0	61.0	69.0	78.0
36 x 12	CFM	845	1055	1265	1480	1690	1900	2110	2325	2535	2745	2955	3380	3800
Ak 2.112	Throw	19.0	24.0	28.0	33.0	38.0	43.0	47.0	52.0	57.0	62.0	66.0	76.0	86.0

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Deflection E

Face Velocity	400	500	600	700	800	900	1000	1100	1200	1300	1400	1600	1800	2000
Pressure Loss	.010	.016	.022	.031	.040	.050	.062	.075	.090	.105	.122	.160	.202	.249
8 x 4 CFM	50	60	75	85	100	110	125	135	150	160	175	200	225	250
Ak .124 Throw	3.5	4.5	5.5	6.0	7.5	8.0	9.0	10.0	11.0	12.0	13.0	15.0	16.0	18.0
10 x 4 CFM	65	80	95	110	125	140	155	175	190	205	220	250	285	315
Ak .157 Throw	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	16.0	19.0	20.0
12 x 4 CFM	75	95	115	135	150	170	190	210	230	245	265	305	340	380
Ak .190 Throw	4.5	5.5	7.0	8.0	9.0	10.0	11.0	12.0	14.0	15.0	16.0	18.0	20.0	22.0
14 x 4 CFM	90	110	135	155	180	200	220	245	265	290	310	355	400	445
Ak .222 Throw	5.0	6.0	7.5	8.5	10.0	11.0	12.0	13.0	14.0	16.0	17.0	19.0	22.0	24.0
12 x 5 CFM	95	120	145	170	195	220	240	265	290	315	340	385	435	485
Ak .242 Throw	5.0	6.5	7.5	9.0	10.0	12.0	13.0	14.0	15.0	17.0	18.0	20.0	23.0	25.0
10 x 6 CFM	100	120	145	170	195	220	245	270	295	315	340	390	440	490
Ak .244 Throw	5.0	6.5	7.5	9.0	10.0	11.0	13.0	14.0	15.0	16.0	18.0	20.0	23.0	26.0
14 x 5 CFM	115	140	170	200	225	255	285	310	340	370	400	455	510	570
Ak .284 Throw	5.5	7.0	8.0	9.5	11.0	12.0	14.0	15.0	16.0	18.0	19.0	22.0	25.0	28.0
12 x 6 CFM	120	145	175	205	235	265	295	325	355	380	410	470	530	590
Ak .294 Throw	5.5	7.0	8.5	9.5	11.0	13.0	14.0	15.0	17.0	18.0	19.0	22.0	25.0	28.0
16 x 5 CFM	130	165	195	230	260	295	325	360	390	425	455	520	585	650
Ak .325 Throw	6.0	7.5	9.0	10.0	12.0	13.0	15.0	16.0	18.0	19.0	21.0	24.0	26.0	29.0
14 x 6 CFM	140	175	205	240	275	310	345	380	415	450	485	550	620	690
Ak .345 Throw	6.0	7.5	9.0	11.0	12.0	14.0	15.0	17.0	18.0	20.0	21.0	24.0	27.0	30.0
16 x 6 CFM	160	200	240	275	315	355	395	435	475	515	555	635	715	790
Ak .396 Throw	6.5	8.0	10.0	11.0	13.0	15.0	16.0	18.0	19.0	21.0	23.0	26.0	29.0	32.0
20 x 5 CFM	165	205	245	285	325	365	410	450	490	530	570	655	735	815
Ak .408 Throw	6.5	8.5	10.0	11.0	13.0	15.0	17.0	18.0	20.0	21.0	23.0	26.0	30.0	33.0
24 x 5 CFM	195	245	295	345	395	445	490	540	590	640	690	785	885	965
Ak .492 Throw	7.0	9.0	11.0	13.0	14.0	16.0	18.0	20.0	22.0	23.0	25.0	29.0	32.0	36.0
20 x 6 CFM	200	250	300	350	400	445	495	545	595	645	695	795	895	995
Ak .497 Throw	7.5	9.0	11.0	13.0	15.0	16.0	18.0	20.0	22.0	24.0	25.0	29.0	33.0	36.0
24 x 6 CFM	240	300	360	420	480	540	600	660	720	775	835	955	1075	1195
Ak .598 Throw	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	24.0	26.0	28.0	32.0	36.0	40.0
20 x 8 CFM	270	335	405	470	540	605	675	740	810	875	940	1075	1210	1345
Ak .673 Throw	8.5	11.0	13.0	15.0	17.0	19.0	21.0	23.0	25.0	27.0	30.0	34.0	38.0	42.0
30 x 6 CFM	300	375	450	525	600	675	750	825	900	975	1050	1200	1350	1500
Ak .750 Throw	9.0	11.0	13.0	16.0	18.0	20.0	22.0	25.0	27.0	29.0	31.0	36.0	40.0	45.0
24 x 8 CFM	325	405	485	570	650	730	810	890	975	1055	1135	1300	1460	1620
Ak .811 Throw	9.5	12.0	14.0	16.0	19.0	21.0	23.0	25.0	28.0	30.0	32.0	37.0	42.0	46.0
30 x 8 CFM	405	510	610	710	815	915	1015	1120	1220	1320	1425	1625	1830	2035
Ak 1.017 Throw	11.0	13.0	16.0	18.0	21.0	23.0	26.0	29.0	31.0	34.0	36.0	42.0	47.0	52.0
24 x 10 CFM	410	510	615	715	820	920	1025	1125	1230	1330	1430	1635	1840	2045
Ak 1.023 Throw	10.0	13.0	16.0	18.0	21.0	23.0	26.0	29.0	31.0	34.0	36.0	42.0	47.0	52.0
36 x 8 CFM	490	610	735	855	980	1100	1220	1345	1465	1590	1710	1955	2200	2445
Ak 1.222 Throw	11.0	14.0	17.0	20.0	23.0	26.0	28.0	31.0	34.0	37.0	40.0	46.0	51.0	57.0
24 x 12 CFM	495	620	740	865	990	1110	1235	1360	1485	1605	1730	1975	2225	2470
Ak 1.236 Throw	11.0	14.0	17.0	20.0	23.0	26.0	29.0	32.0	34.0	37.0	40.0	46.0	52.0	57.0
30 x 10 CFM	515	640	770	900	1025	1155	1285	1410	1540	1670	1795	2055	2310	2565
Ak 1.283 Throw	12.0	15.0	17.0	20.0	23.0	26.0	29.0	32.0	35.0	38.0	42.0	48.0	52.0	58.0
36 x 10 CFM	615	770	925	1080	1235	1390	1545	1700	1850	2005	2160	2470	2775	3085
Ak 1.543 Throw	13.0	16.0	19.0	22.0	25.0	29.0	32.0	35.0	38.0	42.0	45.0	51.0	57.0	64.0
30 x 12 CFM	620	775	930	1085	1240	1395	1550	1705	1860	2015	2170	2480	2790	3100
Ak 1.550 Throw	13.0	16.0	19.0	22.0	26.0	29.0	32.0	35.0	39.0	42.0	45.0	51.0	58.0	64.0
36 x 12 CFM	745	930	1120	1305	1490	1680	1865	2050	2235	2425	2610	2980	3355	3730
Ak 1.864 Throw	14.0	18.0	21.0	25.0	28.0	32.0	35.0	39.0	42.0	46.0	49.0	56.0	63.0	70.0

Terminal Velocity of 75 FPM

Deflection G

Face Velocity	400	500	600	700	800	900	1000	1100	1200	1300	1400	1600	1800	2000
Pressure Loss	.010	.016	.022	.031	.040	.050	.062	.075	.090	.105	.122	.160	.202	.249
8 x 4	CFM	50	60	75	95	105	120	130	145	155	165	190	215	240
Ak .119	Throw	2.5	3.0	4.0	4.5	5.0	5.5	6.5	7.0	8.0	8.5	9.0	10.0	12.0
10 x 4	CFM	55	70	85	100	115	130	145	155	170	185	200	230	255
Ak .143	Throw	2.5	3.5	4.0	5.0	5.5	6.5	7.0	7.5	8.0	9.0	9.5	11.0	12.0
12 x 4	CFM	70	85	105	120	140	155	175	190	210	225	240	275	310
Ak .173	Throw	3.0	3.5	4.5	5.5	6.0	7.0	7.5	8.5	9.0	10.0	11.0	12.0	14.0
14 x 4	CFM	80	100	120	140	160	180	200	220	240	265	285	325	365
Ak .202	Throw	3.0	4.0	5.0	5.5	6.5	7.5	8.0	9.0	9.5	11.0	12.0	13.0	15.0
12 x 5	CFM	90	110	130	155	175	200	220	240	265	285	310	350	395
Ak .220	Throw	3.5	4.5	5.0	6.0	7.0	8.0	8.5	9.5	10.0	11.0	12.0	14.0	15.0
10 x 6	CFM	90	110	135	155	180	200	220	245	265	290	310	355	400
Ak .222	Throw	3.5	4.5	5.0	6.0	7.0	7.5	8.5	9.5	10.0	11.0	12.0	14.0	15.0
14 x 5	CFM	105	130	155	180	205	230	260	285	310	335	360	415	465
Ak .258	Throw	4.0	4.5	5.5	6.5	7.5	8.5	9.5	10.0	11.0	12.0	13.0	15.0	17.0
12 x 6	CFM	105	135	160	190	215	240	270	295	320	350	375	430	480
Ak .268	Throw	4.0	5.0	5.5	6.5	7.5	8.5	9.5	10.0	11.0	12.0	13.0	15.0	17.0
16 x 5	CFM	120	150	180	205	235	265	295	325	355	385	415	475	535
Ak .296	Throw	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	16.0	18.0
14 x 6	CFM	125	155	190	220	250	285	315	345	375	410	440	500	565
Ak .314	Throw	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	16.0	18.0
16 x 6	CFM	145	180	215	250	290	325	360	395	430	470	505	575	650
Ak .360	Throw	4.5	5.5	6.5	7.5	9.0	10.0	11.0	12.0	13.0	14.0	15.0	17.0	20.0
20 x 5	CFM	150	185	225	260	300	335	370	410	445	485	520	595	670
Ak .372	Throw	4.5	5.5	6.5	7.5	9.0	10.0	11.0	12.0	13.0	14.0	15.0	18.0	20.0
24 x 5	CFM	180	225	270	315	360	405	450	495	540	580	625	715	805
Ak .448	Throw	5.0	7.5	7.5	8.5	10.0	11.0	12.0	13.0	15.0	16.0	17.0	19.0	22.0
20 x 6	CFM	180	225	270	315	360	410	455	500	545	590	635	725	815
Ak .453	Throw	5.0	6.0	7.5	8.5	10.0	11.0	12.0	14.0	15.0	16.0	17.0	20.0	22.0
24 x 6	CFM	220	275	325	380	435	490	545	600	655	710	765	870	980
Ak .545	Throw	5.5	7.0	8.0	9.5	11.0	12.0	13.0	15.0	16.0	18.0	19.0	21.0	24.0
20 x 8	CFM	245	305	370	430	490	555	615	675	735	800	860	980	1105
Ak .614	Throw	5.5	7.0	8.5	10.0	11.0	13.0	14.0	16.0	17.0	19.0	20.0	23.0	26.0
30 x 6	CFM	275	340	410	480	545	615	685	750	820	890	955	1095	1230
Ak .683	Throw	6.0	7.5	9.0	11.0	12.0	14.0	15.0	17.0	18.0	20.0	21.0	24.0	27.0
24 x 8	CFM	295	370	445	515	590	665	740	815	885	960	1035	1180	1330
Ak .739	Throw	6.5	8.0	9.5	11.0	13.0	14.0	16.0	17.0	19.0	20.0	22.0	25.0	28.0
30 x 8	CFM	370	465	555	650	740	835	925	1020	1110	1205	1295	1480	1665
Ak .926	Throw	7.0	9.0	10.0	12.0	14.0	16.0	17.0	19.0	21.0	23.0	24.0	28.0	31.0
24 x 10	CFM	375	465	560	650	745	840	930	1025	1120	1210	1305	1490	1675
Ak .932	Throw	7.0	9.0	11.0	12.0	14.0	16.0	18.0	19.0	21.0	23.0	25.0	32.0	35.0
36 x 8	CFM	445	555	670	780	890	1005	1115	1225	1335	1450	1560	1780	2005
Ak .1114	Throw	7.5	9.5	12.0	13.0	15.0	17.0	19.0	21.0	23.0	25.0	27.0	31.0	35.0
24 x 12	CFM	450	565	675	790	900	1015	1125	1240	1350	1465	1575	1800	2025
Ak .1126	Throw	7.5	9.5	12.0	14.0	15.0	17.0	19.0	21.0	23.0	25.0	27.0	31.0	35.0
30 x 10	CFM	470	585	700	820	935	1050	1170	1285	1405	1520	1635	1870	2105
Ak .1169	Throw	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	24.0	26.0	27.0	31.0	35.0
36 x 10	CFM	560	705	845	985	1125	1265	1405	1545	1685	1830	1970	2250	2530
Ak .1406	Throw	8.5	11.0	13.0	15.0	17.0	19.0	22.0	24.0	26.0	28.0	30.0	35.0	39.0
30 x 12	CFM	565	705	845	990	1130	1270	1410	1555	1695	1835	1975	2260	2540
Ak .1412	Throw	8.5	11.0	13.0	15.0	17.0	19.0	22.0	24.0	26.0	28.0	30.0	35.0	39.0
36 x 12	CFM	680	850	1020	1190	1360	1530	1700	1870	2040	2210	2375	2715	3055
Ak .1698	Throw	9.5	12.0	14.0	17.0	19.0	21.0	24.0	26.0	29.0	31.0	33.0	38.0	43.0
Terminal Velocity of 75 FPM														

Engineering Data

92HVO, 92HVV, 92VHO, 92VHV

Performance based on nominal sizes shown in bold

			NC-20				NC-30			NC-40		
Nom. Duct Size (in.)	Nom. Duct Area (ft ²)	Core Area (ft ²)	Core Vel.	300	400	500	600	700	800	1000	1200	1400
			Vel. Press.	0.006	0.010	0.016	0.022	0.031	0.040	0.062	0.090	0.122
			0°	0.016	0.029	0.046	0.066	0.090	0.117	0.183	0.263	0.358
			Total 22.5° Press. 45°	0.018	0.033	0.051	0.074	0.100	0.131	0.204	0.294	0.401
6x6	0.25	0.19	cfm	57	76	95	114	133	152	190	228	266
			NC	-	-	-	15	20	24	31	36	41
			0°	5-7-14	7-10-16	8-12-18	10-14-20	12-15-21	13-16-23	15-18-25	16-20-28	17-21-30
			Throw 22.5° (ft)	4-6-11	5-8-12	6-10-14	8-11-15	9-12-16	10-12-18	11-14-20	12-15-22	13-16-23
			45°	2-3-6	3-4-7	4-6-8	5-7-10	6-7-10	7-8-11	8-10-13	9-11-16	
8x6	0.33	0.26	cfm	78	104	130	156	182	208	260	312	364
			NC	-	-	11	17	21	25	32	38	42
			0°	5-9-16	8-12-19	10-15-21	12-16-23	14-18-25	15-19-27	17-21-30	19-23-32	20-25-35
			Throw 22.5° (ft)	4-7-13	6-9-15	8-11-16	9-13-18	11-14-19	12-15-21	13-16-23	15-18-25	16-19-27
			45°	2-4-7	3-5-8	4-7-9	5-7-10	6-8-11	7-8-12	8-9-13	9-10-15	
10x6	0.42	0.34	cfm	102	136	170	204	238	272	340	408	476
			NC	-	-	12	18	23	27	33	39	43
			0°	6-10-19	9-13-21	11-17-24	13-19-26	16-20-28	18-21-30	20-24-34	21-26-37	23-28-40
			Throw 22.5° (ft)	5-8-14	7-10-17	9-13-19	10-14-20	12-16-22	14-17-23	15-19-26	17-20-29	18-22-31
			45°	3-4-8	4-6-10	5-7-11	6-8-12	7-9-13	8-10-14	9-11-15	10-12-17	10-13-18
8x8	0.44	0.37	cfm	111	148	185	222	259	296	370	444	518
			NC	-	-	13	18	23	27	34	39	44
			0°	6-10-19	9-14-22	12-17-25	14-19-27	16-21-30	18-22-32	20-25-35	22-27-39	24-30-42
			Throw 22.5° (ft)	5-8-15	7-11-17	9-13-19	11-15-21	13-16-23	14-17-25	16-19-27	17-21-30	19-23-32
			45°	3-5-9	4-6-10	5-8-11	6-9-12	7-9-13	8-10-14	9-11-16	10-12-17	11-13-19
12x6	0.50	0.41	cfm	123	164	205	246	287	328	410	492	574
			NC	-	-	13	19	23	27	34	39	44
			0°	7-11-20	10-15-24	12-18-26	15-20-29	17-22-31	19-24-33	21-26-37	24-29-41	25-31-44
			Throw 22.5° (ft)	5-8-16	8-11-18	9-14-20	11-16-22	13-17-24	15-18-26	17-20-29	18-22-32	20-24-34
			45°	3-5-9	4-7-11	5-8-12	7-9-13	8-10-14	9-11-15	10-12-17	11-13-18	11-14-20
14x6	0.58	0.48	cfm	144	192	240	288	336	384	480	576	672
			NC	-	-	14	19	24	28	35	40	45
			0°	7-12-22	11-16-25	13-20-28	16-22-31	18-24-34	21-25-36	23-28-40	25-31-44	28-34-48
			Throw 22.5° (ft)	6-9-17	8-12-20	10-15-22	12-17-24	14-18-26	16-20-28	18-22-31	20-24-34	21-26-37
			45°	3-5-10	5-7-11	6-9-13	7-10-14	8-11-15	9-11-16	10-13-18	11-14-20	12-15-21
16x6 12x8	0.67	0.57	cfm	171	228	285	342	399	456	570	684	798
			NC	-	-	15	20	25	29	35	41	45
			0°	8-13-24	11-17-28	14-22-31	17-24-34	20-26-37	23-28-39	25-31-44	28-34-48	30-37-52
			Throw 22.5° (ft)	6-10-19	9-13-22	11-17-24	13-19-26	16-20-28	18-22-30	20-24-34	22-26-37	23-28-40
			45°	4-6-11	5-8-12	6-10-14	8-11-15	9-12-17	10-12-18	11-14-20	12-15-22	13-17-23
10x10	0.69	0.59	cfm	177	236	295	354	413	472	590	708	826
			NC	-	-	15	20	25	29	35	41	46
			0°	8-13-24	12-18-28	15-22-32	18-24-35	20-26-37	23-28-40	26-32-45	28-35-49	31-37-53
			Throw 22.5° (ft)	6-10-19	9-14-22	11-17-24	14-19-27	16-20-29	18-22-31	20-24-35	22-27-38	24-29-41
			45°	4-6-11	5-8-13	7-10-14	8-11-16	9-12-17	10-13-18	12-14-20	13-16-22	14-17-24
18x6	0.75	0.63	cfm	189	252	315	378	441	504	630	756	882
			NC	-	-	15	20	25	29	36	41	46
			0°	8-14-25	12-18-29	15-23-33	18-25-36	21-27-39	24-29-41	27-33-46	29-36-51	32-39-55
			Throw 22.5° (ft)	7-11-20	9-14-23	12-18-25	14-20-28	16-21-30	18-23-32	21-25-36	23-28-39	24-30-42
			45°	4-6-11	5-8-13	7-10-15	8-11-16	9-12-17	11-13-19	12-15-21	13-16-23	14-17-25
20x6 12x10	0.83	0.72	cfm	216	288	360	432	504	576	720	864	1008
			NC	-	-	16	21	26	30	36	42	46
			0°	9-15-27	13-19-31	16-24-35	19-27-38	23-29-41	25-31-44	28-35-49	31-38-54	34-41-58
			Throw 22.5° (ft)	7-11-21	10-15-24	12-19-27	15-21-30	17-23-32	20-24-34	22-27-38	24-30-42	26-32-45
			45°	4-7-12	6-9-14	7-11-16	9-12-17	10-13-19	11-14-20	13-16-22	14-17-24	15-19-26
22x6	0.92	0.77	cfm	231	308	385	462	539	616	770	924	1078
			NC	-	-	16	21	26	30	37	42	47
			0°	9-15-28	13-20-32	17-25-36	20-28-40	23-30-43	26-32-46	29-36-51	32-40-56	35-43-60
			Throw 22.5° (ft)	7-12-22	10-16-25	13-19-28	16-22-31	18-23-33	20-25-35	23-28-40	25-31-43	27-33-47
			45°	4-7-13	6-9-15	8-11-16	9-13-18	11-14-19	12-15-21	13-16-23	15-18-25	16-19-27
24x6 18x8 12x12	1.00	0.88	cfm	264	352	440	528	616	704	880	1056	1232
			NC	-	-	16	22	26	30	37	43	47
			0°	10-16-30	14-21-34	18-27-39	21-30-42	25-32-46	28-34-49	31-39-55	34-42-60	37-46-65
			Throw 22.5° (ft)	8-12-23	11-17-27	14-21-30	17-23-33	19-25-35	22-27-38	24-30-42	27-33-46	29-35-50
			45°	4-7-13	6-10-16	8-12-17	10-13-19	11-15-21	13-16-22	14-17-25	16-19-27	17-21-29
30x6 18x10	1.25	1.11	cfm	333	444	555	666	777	888	1110	1332	1554
			NC	-	11	17	23	27	31	38	44	48
			0°	11-18-34	16-24-39	20-30-43	24-34-47	28-36-51	32-39-55	35-43-61	39-47-67	42-51-72
			Throw 22.5° (ft)	9-14-26	12-19-30	16-23-34	19-26-37	22-28-40	25-30-42	27-34-47	30-37-52	32-40-56
			45°	5-8-15	7-11-17	9-14-19	11-15-21	13-16-23	14-17-25	16-19-28	17-21-30	19-23-33

Performance notes appear at end of table

92HVO, 92HVV, 92VHO, 92VHV

Performance based on nominal sizes shown in bold

			NC-20				NC-30		NC-40		NC-50		
Nom. Duct Size (in.)	Nom. Duct Area (ft²)	Core Area (ft²)	Core Vel.	300	400	500	600	700	800	1000	1200	1400	
			Vel. Press.	0.006	0.010	0.016	0.022	0.031	0.040	0.062	0.090	0.122	
			0°	0.016	0.029	0.046	0.066	0.090	0.117	0.183	0.263	0.358	
			Total 22.5° Press. 45°	0.018	0.033	0.051	0.074	0.100	0.131	0.204	0.294	0.401	
14x14	1.36	1.22	cfm	366	488	610	732	854	976	1220	1464	1708	
			NC	-	11	18	23	28	32	39	44	49	
			0°	12-19-35	17-25-41	21-31-45	25-35-50	29-38-54	33-41-57	37-45-64	41-50-70	44-54-76	
			Throw (ft) 22.5° 45°	9-15-27 5-8-16	13-20-31 8-11-18	16-24-35 9-14-20	20-27-39 11-16-22	23-29-42 13-17-24	26-31-45 15-18-26	29-35-50 17-20-29	31-39-55 18-22-32	34-42-59 20-24-34	
36x6 27x8 18x12	1.50	1.35	cfm	405	540	675	810	945	1080	1350	1620	1890	
			NC	-	12	18	24	28	32	39	44	49	
			0°	12-20-37	18-26-43	22-33-48	26-37-52	31-40-57	35-43-60	39-48-68	43-52-74	46-57-80	
			Throw (ft) 22.5° 45°	10-15-29 6-9-17	14-21-33 8-12-19	17-26-37 10-15-21	21-29-41 12-17-24	24-31-44 14-18-25	27-33-47 16-19-27	30-37-52 18-21-30	33-41-57 21-24-33	36-44-62 21-25-36	
22x10	1.53	1.37	cfm	411	548	685	822	959	1096	1370	1644	1918	
			NC	-	12	18	24	28	32	39	44	49	
			0°	12-20-37	18-27-43	22-33-48	27-37-53	31-40-57	35-43-61	39-48-68	43-53-75	46-57-81	
			Throw (ft) 22.5° 45°	10-16-29 6-9-17	14-21-33 8-12-19	17-26-37 10-15-22	21-29-41 12-17-24	24-31-44 14-18-26	27-33-47 16-19-27	30-37-53 18-22-31	33-41-58 19-24-34	36-44-62 21-26-36	
30x8 24x10	1.67	1.49	cfm	447	596	745	894	1043	1192	1490	1788	2086	
			NC	-	12	19	24	29	33	39	45	49	
			0°	13-21-39	19-28-45	23-35-50	28-39-55	32-42-59	37-45-63	41-50-71	45-55-78	48-59-84	
			Throw (ft) 22.5° 45°	10-16-30 6-9-17	14-22-35 8-13-20	18-27-39 10-16-23	22-30-43 13-17-25	25-33-46 15-19-27	28-35-49 16-20-29	32-39-55 18-23-32	35-43-60 20-25-35	38-46-65 22-27-38	
42x6 18x14	1.75	1.59	cfm	477	636	795	954	1113	1272	1590	1908	2226	
			NC	-	12	19	24	29	33	40	45	50	
			0°	13-22-40	19-29-46	24-36-52	29-40-57	34-43-61	38-46-66	42-52-73	46-57-80	50-61-87	
			Throw (ft) 22.5° 45°	10-17-31 6-10-18	15-22-36 9-13-21	19-28-40 11-16-23	22-31-44 13-18-26	26-34-48 15-20-28	29-36-51 17-21-30	33-40-57 19-23-33	36-44-62 21-26-36	39-48-67 23-28-39	
16x16	1.78	1.62	cfm	486	648	810	972	1134	1296	1620	1944	2268	
			NC	-	12	19	24	29	33	40	45	50	
			0°	14-22-41	19-29-47	24-36-52	29-41-57	34-44-62	38-47-66	43-52-74	47-57-81	51-62-88	
			Throw (ft) 22.5° 45°	11-17-31 6-10-18	15-22-36 9-13-21	19-28-41 11-16-24	22-31-44 13-18-26	26-34-48 15-20-28	30-36-51 17-21-30	33-41-57 19-24-33	36-44-63 21-26-36	39-48-68 23-28-39	
48x6 36x8 24x12 18x16	2.00	1.82	cfm	546	728	910	1092	1274	1456	1820	2184	2548	
			NC	-	13	19	25	30	34	40	46	50	
			0°	14-23-43	20-31-50	26-38-55	31-43-61	36-46-66	41-50-70	45-55-78	50-61-86	54-66-93	
			Throw (ft) 22.5° 45°	11-18-33 6-10-19	16-24-38 9-14-22	20-30-43 12-17-25	24-33-47 14-19-27	28-36-51 16-21-30	31-38-54 18-22-32	35-43-61 20-25-35	38-47-67 22-27-39	42-51-72 24-30-42	
18x18	2.25	2.07	cfm	621	828	1035	1242	1449	1656	2070	2484	2898	
			NC	-	13	20	25	30	34	41	46	51	
			0°	15-25-46	22-33-53	27-41-59	33-46-65	38-49-70	43-53-75	48-59-84	53-65-92	57-70-99	
			Throw (ft) 22.5° 45°	12-19-36 7-11-21	17-25-41 10-15-24	21-32-46 12-18-27	25-36-50 15-21-29	30-38-54 17-22-31	33-41-58 19-24-34	37-46-65 22-27-38	41-50-71 24-29-41	44-54-77 26-31-45	
42x8 24x14	2.33	2.14	cfm	642	856	1070	1284	1498	1712	2140	2568	2996	
			NC	-	13	20	26	30	34	41	46	51	
			0°	16-25-47	22-33-54	28-42-60	33-47-66	39-50-71	44-54-76	49-60-85	54-66-93	58-71-101	
			Throw (ft) 22.5° 45°	12-19-36 7-11-21	17-26-42 10-15-24	22-32-47 13-19-27	26-36-51 15-21-30	30-39-55 18-23-32	34-42-59 20-24-34	38-47-66 22-27-38	42-51-72 24-30-42	45-55-78 26-32-45	
36x10 30x12	2.50	2.29	cfm	687	916	1145	1374	1603	1832	2290	2748	3206	
			NC	-	14	20	26	30	34	41	47	51	
			0°	16-26-48	23-34-56	29-43-62	34-48-68	40-52-74	45-56-79	51-62-88	56-68-96	60-74-104	
			Throw (ft) 22.5° 45°	12-20-37 7-12-22	18-27-43 10-16-25	22-33-48 13-19-28	27-37-53 16-22-31	31-40-57 18-23-33	35-43-61 20-25-35	39-48-68 23-28-40	43-53-75 25-31-43	47-57-81 27-33-47	
48x8 24x16	2.67	2.46	cfm	738	984	1230	1476	1722	1968	2460	2952	3444	
			NC	-	14	21	26	31	35	41	47	51	
			0°	17-27-50	24-36-58	30-45-64	36-50-71	42-54-76	47-58-82	53-64-91	58-71-100	62-76-108	
			Throw (ft) 22.5° 45°	13-21-39 8-12-22	18-28-45 11-16-26	23-35-50 13-20-29	28-39-55 16-22-32	32-42-59 19-24-34	36-45-63 21-26-37	41-50-71 24-29-41	45-55-77 26-32-45	48-59-84 28-34-49	
20x20	2.78	2.57	cfm	771	1028	1285	1542	1799	2056	2570	3084	3598	
			NC	-	14	21	26	31	35	42	47	52	
			0°	17-27-51	24-37-59	30-46-66	37-51-72	43-55-78	48-59-83	54-66-93	59-72-102	64-78-110	
			Throw (ft) 22.5° 45°	13-21-40 8-12-23	19-28-46 11-16-27	24-35-51 14-21-30	28-40-56 16-23-32	33-43-60 19-25-35	37-46-65 22-27-38	42-51-72 24-30-42	46-56-79 27-32-46	49-60-85 29-35-50	
36x12 24x18	3.00	2.75	cfm	825	1100	1375	1650	1925	2200	2750	3300	3850	
			NC	-	15	21	27	31	35	42	47	52	
			0°	18-28-53	25-38-61	31-47-68	38-53-75	44-57-81	50-61-86	56-68-96	61-75-106	66-81-114	
			Throw (ft) 22.5° 45°	14-22-41 8-13-24	20-29-47 11-17-27	24-37-53 14-21-31	29-41-58 17-24-34	34-44-63 20-26-36	39-47-67 22-27-39	43-53-75 25-31-43	47-58-82 27-34-48	51-63-88 30-36-51	

Performance notes appear at end of table

Engineering Data

92HVO, 92HVV, 92VHO, 92VHV

Performance based on nominal sizes shown in bold

Nom. Duct Size (in.)	Nom. Duct Area (ft ²)	Core Area (ft ²)	NC-20		NC-30		NC-40		NC-50	
			Core Vel.	300	400	500	600	700	800	1000
			Vel. Press.	0.006	0.010	0.016	0.022	0.031	0.040	0.062
Total Press.	22.5°	45°	0°	0.016	0.029	0.046	0.066	0.090	0.117	0.183
			22.5°	0.018	0.033	0.051	0.074	0.100	0.131	0.204
			45°	0.028	0.049	0.077	0.111	0.152	0.198	0.309
48x10 30x16 24x20	3.33	3.11	cfm	933	1244	1555	1866	2177	2488	3110
			NC	-	15	22	27	32	36	42
			0°	19-30-56	27-40-65	33-50-72	40-56-79	47-61-86	53-65-92	59-72-103
			Throw 22.5°	15-23-44	21-31-50	26-39-56	31-44-62	36-47-66	41-50-71	46-56-79
			(ft) 45°	8-14-25	12-18-29	15-23-33	18-25-36	21-27-39	24-29-41	27-33-46
22x22	3.36	3.14	cfm	942	1256	1570	1884	2198	2512	3140
			NC	-	15	22	27	32	36	42
			0°	19-30-56	27-40-65	34-50-73	40-56-80	47-61-86	53-65-92	59-73-103
			Throw 22.5°	15-23-44	21-31-50	26-39-56	31-44-62	37-47-67	41-50-71	46-56-80
			(ft) 45°	8-14-25	12-18-29	15-23-33	18-25-36	21-27-39	24-29-41	27-33-46
42x12 36x14	3.50	3.22	cfm	966	1288	1610	1932	2254	2576	3220
			NC	-	15	22	27	32	36	43
			0°	19-31-57	27-41-66	34-51-74	41-57-81	48-62-87	54-66-93	60-74-104
			Throw 22.5°	15-24-44	21-32-51	26-40-57	32-44-63	37-48-68	42-51-72	47-57-81
			(ft) 45°	9-14-26	12-18-30	15-23-33	18-26-36	21-28-39	24-30-42	27-33-47
24x22	3.67	3.43	cfm	1029	1372	1715	2058	2401	2744	3430
			NC	-	15	22	28	32	36	43
			0°	20-32-59	28-42-68	35-53-76	42-59-83	49-64-90	56-68-96	62-76-108
			Throw 22.5°	15-25-46	22-33-53	27-41-59	33-46-65	38-49-70	43-53-75	48-59-83
			(ft) 45°	9-14-27	13-19-31	16-24-34	19-27-38	22-29-41	25-31-43	28-34-48
30x18	3.75	3.5	cfm	1050	1400	1750	2100	2450	2800	3500
			NC	-	16	22	28	32	36	43
			0°	20-32-60	28-43-69	36-53-77	43-60-84	50-64-91	56-69-97	63-77-109
			Throw 22.5°	15-25-46	22-33-53	28-41-60	33-46-65	39-50-71	44-53-75	49-60-84
			(ft) 45°	9-14-27	13-19-31	16-24-35	19-27-38	22-29-41	25-31-44	28-35-49
48x12 36x16 24x24	4.00	3.75	cfm	1125	1500	1875	2250	2625	3000	3750
			NC	-	16	22	28	33	37	43
			0°	21-33-62	29-44-71	37-55-80	44-62-87	51-67-94	58-71-101	65-80-113
			Throw 22.5°	16-26-48	23-34-55	29-43-62	34-48-68	40-52-73	45-55-78	50-62-87
			(ft) 45°	9-15-28	13-20-32	17-25-36	20-28-39	23-30-42	26-32-45	29-36-51
36x18	4.50	4.22	cfm	1266	1688	2110	2532	2954	3376	4220
			NC	-	16	23	28	33	37	44
			0°	22-35-65	31-47-76	39-59-84	47-65-93	55-71-100	62-76-107	69-84-119
			Throw 22.5°	17-27-51	24-36-59	30-45-65	36-51-72	42-55-77	48-59-83	53-65-93
			(ft) 45°	10-16-29	14-21-34	18-26-38	21-29-42	25-32-45	28-34-48	31-38-54
36x20 30x24	5.00	4.71	cfm	1413	1884	2355	2826	3297	3768	4710
			NC	-	17	23	29	33	37	44
			0°	23-37-69	33-49-80	41-62-89	49-69-98	58-75-106	65-80-113	73-89-126
			Throw 22.5°	18-29-54	26-38-62	32-48-69	38-54-76	45-58-82	50-62-87	56-69-98
			(ft) 45°	10-17-31	15-22-36	19-28-40	22-31-44	26-34-48	29-36-51	33-40-57
42x18	5.25	4.94	cfm	1482	1976	2470	2964	3458	3952	4940
			NC	-	17	24	29	34	38	44
			0°	24-38-71	34-51-82	42-63-91	51-71-100	59-76-108	67-82-116	75-91-129
			Throw 22.5°	18-29-55	26-39-63	33-49-71	39-55-78	46-59-84	52-63-90	58-71-100
			(ft) 45°	11-17-32	15-23-37	19-28-41	23-32-45	27-34-49	30-37-52	34-41-58
28x28	5.44	5.16	cfm	1548	2064	2580	3096	3612	4128	5160
			NC	-	17	24	29	34	38	45
			0°	24-39-72	35-52-84	43-65-93	52-72-102	60-78-110	68-84-118	76-93-132
			Throw 22.5°	19-30-56	27-40-65	33-50-72	40-56-79	47-61-86	53-65-92	59-72-102
			(ft) 45°	11-17-33	16-23-38	19-29-42	23-33-46	27-35-50	31-38-53	34-42-59
42x20 30x28	5.83	5.51	cfm	1653	2204	2755	3306	3857	4408	5510
			NC	-	17	24	30	34	38	45
			0°	25-40-75	36-54-86	45-67-96	54-75-106	62-81-114	70-86-122	79-96-136
			Throw 22.5°	19-31-58	28-41-67	35-52-75	41-58-82	48-63-88	55-67-95	61-75-106
			(ft) 45°	11-18-34	16-24-39	20-30-43	24-34-48	28-36-51	32-39-55	35-43-61
48x18 36x24	6.00	5.66	cfm	1698	2264	2830	3396	3962	4528	5660
			NC	-	18	24	30	34	38	45
			0°	25-41-76	36-54-87	45-68-98	54-76-107	63-82-116	71-87-124	80-98-138
			Throw 22.5°	20-32-59	28-42-68	35-53-76	42-59-83	49-63-90	55-68-96	62-76-107
			(ft) 45°	11-18-34	16-24-39	20-31-44	24-34-48	28-37-52	32-39-56	36-44-62
30x30	6.25	5.94	cfm	1782	2376	2970	3564	4158	4752	5940
			NC	-	18	24	30	34	38	45
			0°	26-42-78	37-56-90	46-69-100	56-78-110	65-84-119	73-90-127	82-100-142
			Throw 22.5°	20-32-60	29-43-69	36-54-78	43-60-85	50-65-92	57-69-98	63-78-110
			(ft) 45°	12-19-35	17-25-40	21-31-45	25-35-49	29-38-53	33-40-57	37-45-64

Performance notes appear at end of table

92HVO, 92HVV, 92VHO, 92VHV

Performance based on nominal sizes shown in bold

Nom. Duct Size (in.)	Nom. Duct Area (ft ²)	Core Area (ft ²)	NC-20		NC-30		NC-40		NC-50	
			Core Vel.	300	400	500	600	700	800	1000
			Vel. Press.	0.006	0.010	0.016	0.022	0.031	0.040	0.062
			0°	0.016	0.029	0.046	0.066	0.090	0.117	0.183
			22.5°	0.018	0.033	0.051	0.074	0.100	0.131	0.204
			45°	0.028	0.049	0.077	0.111	0.152	0.198	0.309
42x24 36x28	7.00	6.66	cfm	1998	2664	3330	3996	4662	5328	6660
			NC	-	18	25	30	35	39	46
			0°	28-44-82	39-59-95	49-74-106	59-82-116	69-89-126	77-95-134	87-106-150
			22.5°	21-34-64	30-46-74	38-57-82	46-64-90	53-69-97	60-74-104	67-82-116
			45°	12-20-37	18-26-43	22-33-48	26-37-52	31-40-56	35-43-60	39-48-68
46x22	7.03	6.68	cfm	2004	2672	3340	4008	4676	5344	6680
			NC	-	18	25	30	35	39	46
			0°	28-44-82	39-59-95	49-74-106	59-82-116	69-89-126	78-95-134	87-106-150
			22.5°	21-34-64	30-46-74	38-57-82	46-64-90	53-69-97	60-74-104	67-82-116
			45°	12-20-37	18-27-43	22-33-48	27-37-52	31-40-57	35-43-60	39-48-68
32x32	7.11	6.78	cfm	2034	2712	3390	4068	4746	5424	6780
			NC	-	18	25	30	35	39	46
			0°	28-45-83	40-59-96	49-74-107	59-83-117	69-90-127	78-96-135	87-107-151
			22.5°	22-34-64	31-46-74	38-57-83	46-64-91	54-69-98	61-74-105	68-83-117
			45°	12-20-37	18-27-43	22-33-48	27-37-53	31-40-57	35-43-61	39-48-68
36x30	7.50	7.16	cfm	2148	2864	3580	4296	5012	5728	7160
			NC	-	19	25	31	35	39	46
			0°	29-46-85	41-61-98	51-76-110	61-85-121	71-92-130	80-98-139	90-110-156
			22.5°	22-35-66	32-47-76	39-59-85	47-66-93	55-71-101	62-76-108	70-85-121
			45°	13-21-38	18-27-44	23-34-50	27-38-54	32-41-59	36-44-63	40-50-70
48x24 36x32	8.00	7.63	cfm	2289	3052	3815	4578	5341	6104	7630
			NC	-	19	25	31	35	39	46
			0°	29-47-88	42-63-102	52-79-114	63-88-124	73-95-134	83-102-144	93-114-161
			22.5°	23-37-68	33-49-79	41-61-88	49-68-96	57-74-104	64-79-111	72-88-124
			45°	13-21-40	19-28-46	24-35-51	28-40-56	33-43-60	37-46-65	42-51-72
34x34	8.03	7.68	cfm	2304	3072	3840	4608	5376	6144	7680
			NC	-	19	25	31	36	40	46
			0°	30-47-88	42-63-102	53-79-114	63-88-125	74-95-135	83-102-144	93-114-161
			22.5°	23-37-68	33-49-79	41-61-88	49-68-97	57-74-104	64-79-112	72-88-125
			45°	13-21-40	19-28-46	24-36-51	28-40-56	33-43-61	37-46-65	42-51-73
36x34	8.50	8.14	cfm	2442	3256	4070	4884	5698	6512	8140
			NC	-	19	26	31	36	40	46
			0°	30-49-91	43-65-105	54-81-117	65-91-128	76-98-139	86-105-148	96-117-166
			22.5°	24-38-70	34-50-81	42-63-91	50-70-100	59-76-108	66-81-115	74-91-129
			45°	14-22-41	20-29-47	24-37-53	29-41-58	34-44-62	39-47-67	43-53-75
42x30	8.75	8.38	cfm	2514	3352	4190	5028	5866	6704	8380
			NC	11	19	26	31	36	40	47
			0°	31-49-92	44-66-106	55-82-119	66-92-130	77-100-141	87-106-151	97-119-168
			22.5°	24-38-71	34-51-82	43-64-92	51-71-101	60-77-109	67-82-117	75-92-130
			45°	14-22-41	20-30-48	25-37-54	30-41-59	35-45-63	39-48-68	44-54-76
36x36	9.00	8.63	cfm	2589	3452	4315	5178	6041	6904	8630
			NC	11	19	26	31	36	40	47
			0°	31-50-94	45-67-108	56-84-121	67-94-132	78-101-143	88-108-153	99-121-171
			22.5°	24-39-72	35-52-84	43-65-94	52-72-103	61-78-111	68-84-118	76-94-132
			45°	14-23-42	20-30-49	25-38-54	30-42-60	35-45-64	40-49-69	44-54-77
42x34 48x30	10.00	9.6	cfm	2880	3840	4800	5760	6720	7680	9600
			NC	11	20	26	32	36	40	47
			0°	33-53-99	47-71-114	59-88-127	71-99-140	82-107-151	93-114-161	104-127-180
			22.5°	26-41-76	36-55-88	46-68-99	55-76-106	64-83-117	72-88-125	81-99-140
			45°	15-24-44	21-32-51	26-40-57	32-44-63	37-48-68	42-51-73	47-57-81
38x38	10.03	9.64	cfm	2892	3856	4820	5784	6748	7712	9640
			NC	11	20	26	32	36	40	47
			0°	33-53-99	47-71-114	59-88-128	71-99-140	83-107-151	93-114-161	104-128-181
			22.5°	26-41-77	37-55-88	46-69-99	55-77-108	64-83-117	72-88-125	81-99-140
			45°	15-24-44	21-32-51	27-40-57	32-44-63	37-48-68	42-51-73	47-57-81
42x36	10.50	10.1	cfm	3030	4040	5050	6060	7070	8080	10100
			NC	11	20	27	32	37	41	47
			0°	34-54-101	48-72-117	60-91-131	72-103-143	85-109-155	95-117-165	107-131-185
			22.5°	26-42-78	37-56-91	47-70-101	56-78-111	65-85-120	74-91-128	83-101-143
			45°	15-24-46	22-33-53	27-41-59	33-46-64	38-49-70	43-53-74	48-59-83
46x34	10.86	10.45	cfm	3135	4180	5225	6270	7315	8360	10450
			NC	11	20	27	32	37	41	47
			0°	34-55-103	49-74-119	61-92-133	74-103-146	86-111-157	97-119-168	109-133-188
			22.5°	27-43-80	38-57-92	48-71-103	57-80-113	67-86-122	75-92-130	84-103-146
			45°	16-25-46	22-33-53	28-41-60	33-46-66	39-50-71	44-53-76	49-60-85

Performance notes appear at end of table

Engineering Data

92HVO, 92HVV, 92VHO, 92VHV

Performance based on nominal sizes shown in bold

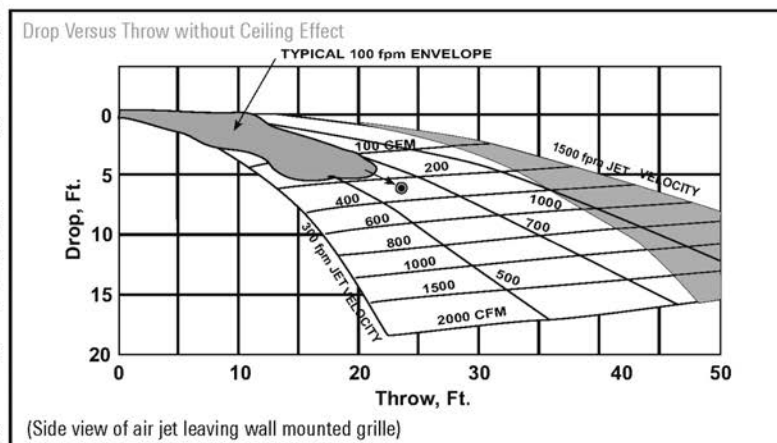
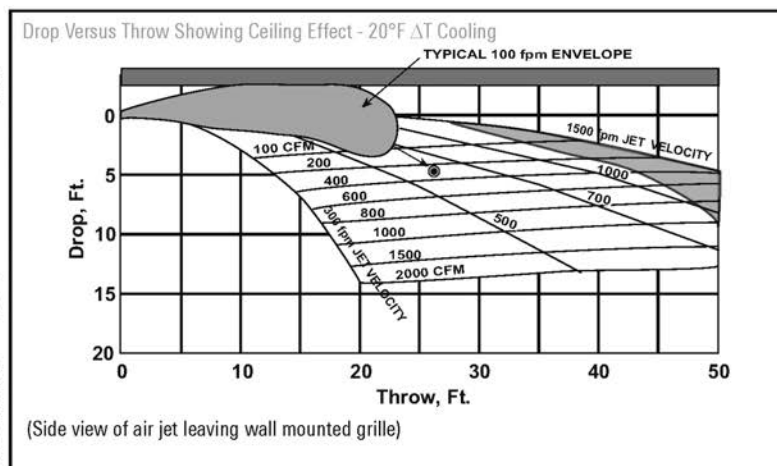
			NC-20		NC-30		NC-40		NC-50				
Nom. Duct Size (in.)	Nom. Duct Area (ft²)	Core Area (ft²)	Core Vel.	300	400	500	600	700	800	1000	1200	1400	
			Vel. Press.	0.006	0.010	0.016	0.022	0.031	0.040	0.062	0.090	0.122	
			0°	0.016	0.029	0.046	0.066	0.090	0.117	0.183	0.263	0.358	
			Total Press.	22.5° 45°	0.018 0.028	0.033 0.049	0.051 0.077	0.074 0.111	0.100 0.152	0.131 0.198	0.204 0.309	0.294 0.445	0.401 0.606
42x38	11.08	10.67	cfm	3201	4268	5335	6402	7469	8536	10670	12804	14938	
			NC	12	20	27	32	37	41	48	53	58	
			Throw (ft)	0°	35-56-104	50-74-120	62-93-134	74-104-147	87-112-159	98-120-170	110-134-190	120-147-208	130-159-225
				22.5°	27-43-81	38-58-93	48-72-104	58-81-114	67-87-123	76-93-132	85-104-147	93-114-161	101-123-174
				45°	16-25-47	22-34-54	28-42-60	34-47-66	39-51-71	44-54-76	49-60-85	54-66-94	58-71-101
			cfm	3210	4280	5350	6420	7490	8560	10700	12840	14980	
40x40	11.11	10.7	NC	12	20	27	32	37	41	48	53	58	
			Throw (ft)	0°	35-56-104	50-75-120	62-93-134	75-104-147	87-113-159	98-120-170	110-134-190	120-147-208	130-159-225
				22.5°	27-43-81	39-58-93	48-72-104	58-81-114	67-87-123	76-93-132	85-104-147	93-114-161	101-123-174
				45°	16-25-47	22-34-54	28-42-61	34-47-66	39-51-72	44-54-77	49-61-86	54-66-94	58-72-101
			cfm	3471	4628	5785	6942	8099	9256	11570	13884	16198	
			NC	12	21	27	33	37	41	48	53	58	
48x36	12.00	11.57	Throw (ft)	0°	36-58-108	52-78-125	65-97-140	78-108-153	90-117-165	102-125-177	114-140-198	125-153-217	135-165-234
				22.5°	28-45-84	40-60-97	50-75-108	60-84-119	70-91-128	79-97-137	88-108-153	97-119-168	105-128-181
				45°	16-26-49	23-35-56	29-44-63	35-49-69	41-53-74	46-56-80	51-63-89	56-69-97	61-74-105
			cfm	3546	4728	5910	7092	8274	9456	11820	14184	16548	
			NC	12	21	27	33	37	41	48	53	58	
			42x42	12.25	11.82	Throw (ft)	0°	37-59-109	52-78-126	65-98-141	78-109-155	91-118-167	103-126-179
22.5°	28-46-85	40-61-98					51-76-110	61-85-120	71-92-130	80-98-139	89-110-155	98-120-170	106-130-183
45°	16-26-49	24-35-57					29-44-64	35-49-70	41-53-75	46-57-80	52-64-90	57-70-99	61-75-106
cfm	3897	5196				6495	7794	9093	10392	12990	15588	18186	
NC	12	21				28	33	38	42	48	54	58	
44x44	13.44	12.99				Throw (ft)	0°	38-62-115	55-82-133	68-103-148	82-115-162	96-124-175	108-133-187
			22.5°	30-48-89	42-64-103		53-80-115	64-89-126	74-96-136	84-103-145	94-115-162	103-126-178	111-136-192
			45°	17-28-52	25-37-60		31-46-67	37-52-73	43-56-79	49-60-84	54-67-94	60-73-103	64-79-112
			cfm	4062	5416	6770	8124	9478	10832	13540	16248	18956	
			NC	13	21	28	33	38	42	49	54	59	
			48x42	14.00	13.54	Throw (ft)	0°	39-63-117	56-84-135	70-105-151	84-117-166	98-127-179	110-135-191
22.5°	30-49-91	43-65-105					54-81-117	65-91-128	76-98-139	86-105-148	96-117-166	105-128-182	113-139-196
45°	18-28-53	25-38-61					31-47-68	38-53-75	44-57-81	50-61-86	56-68-96	61-75-105	66-81-114
cfm	4266	5688				7110	8532	9954	11376	14220	17064	19908	
NC	13	21				28	33	38	42	49	54	59	
46x46	14.69	14.22				Throw (ft)	0°	40-64-120	57-86-139	72-107-155	86-120-170	100-130-183	113-139-196
			22.5°	31-50-93	44-67-107		56-83-120	67-93-132	78-101-142	88-107-152	98-120-170	107-132-186	116-142-201
			45°	18-29-54	26-39-62		32-48-70	39-54-76	45-58-83	51-62-88	57-70-99	62-76-108	67-83-117
			cfm	4455	5940	7425	8910	10395	11880	14850	17820	20790	
			NC	13	22	28	34	38	42	49	54	59	
			48x46	15.33	14.85	Throw (ft)	0°	41-66-123	59-88-142	73-110-158	88-123-174	102-133-187	116-142-200
22.5°	32-51-95	45-68-110					57-85-123	68-95-134	79-103-145	90-110-155	100-123-174	110-134-190	119-145-205
45°	18-30-55	26-40-64					33-49-71	40-55-78	46-60-84	52-64-90	58-71-101	64-78-110	69-84-119
cfm	4650	6200				7750	9300	10850	12400	15500	18600	21700	
NC	13	22				28	34	38	42	49	55	59	
48x48	16.00	15.50				Throw (ft)	0°	42-67-125	60-90-145	75-112-162	90-125-177	105-135-192	118-145-205
			22.5°	33-52-97	46-70-112		58-87-125	70-97-137	81-105-148	92-112-159	102-125-177	112-137-194	121-148-210
			45°	19-30-56	27-40-65		34-50-73	40-56-80	47-61-86	53-65-92	59-73-103	65-80-113	70-86-122

- 0°, 22.5° & 45° represent blade deflection angles
- Performance data is based on duct sizes in bold, the performance varies slightly for duct sizes not shown in bold
- See the section, Engineering Guidelines, for drop information when selecting larger supply grilles for cooling purposes
- See the "Performance Notes" portion in this section for notes and correction factors
- See the section, Engineering Guidelines, for catalog throw information
- Each NC value represents the noise criteria curve that will not be exceeded by the sound pressure in any of the octave bands, 2 through 7, with a room absorption of 10 dB, re 10⁻¹² watts

92HVO, 92HVV, 92VHO, 92VHV

PERFORMANCE NOTES

- Performance data includes damper
- Data obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-2006
- All pressures are in inches of water
- Core velocities are in feet per minute
- Throw values given are for isothermal terminal velocities of 150, 100 and 50 fpm
- Each NC value represents the noise criterion curve that will not be exceeded by the sound pressure in any of the octave bands, 2 through 7. Each NC value is based on a room absorption of 10 dB, re 10^{-12} watts. Each NC value is further based on grille operating at a 0° deflection. Settings of $22\frac{1}{2}^\circ$ or 45° , increase the stated sound levels by 1 or 7 NC, respectively.
- Bold dividing lines on H12-H16 denote ranges of NC values
- The stated deflection settings refer to the horizontal setting of the blade's deflection angle. For a 20° upward deflection, use the throw rating for the 0° setting and the total pressure for the $22\frac{1}{2}^\circ$ horizontal setting.
- Dash (—) in space indicates NC value less than 10
- For additional information concerning drop and throw, see the Engineering Guidelines section of this catalog



VARIABLE AIR VOLUME APPLICATIONS

All supply grilles can be applied to variable air volume systems with excellent results. For detailed selection methods, consult your Titus representative or the Engineering Guidelines section of this catalog.

Correction Factors for Supply Grilles

Damper	A_k / A_c	Throw	Total Pressure	NC
With	0.77	1.00	1.00	0
Without	0.82	0.98	0.88	-2

Note: Throw and total pressure corrections are multipliers. The NC correction is an addition. A_k is the flow factor. A_c is the core area from the main table.

Engineering Data

92HVO, 92HVV, 92VHO, 92VHV

HORIZONTAL DEFLECTION (SPREAD)

SUPPLY GRILLES

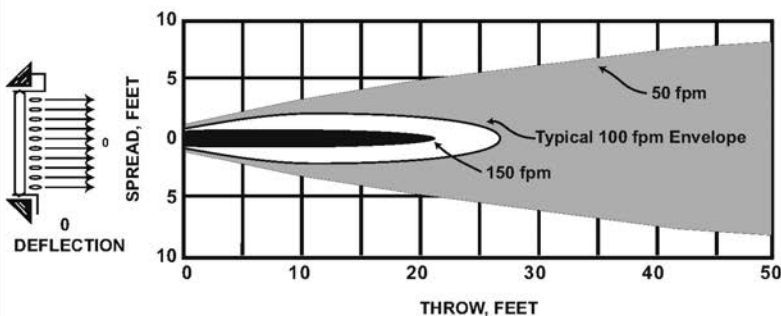
The figures depicting deflection, throw and drop are based on actual tests conducted by Titus. They show the relationship of spread to throw for a typical high side-wall supply outlet selection.

Notice the outer shaded area represents the 50 fpm isovel, the white area, the 100 fpm isovel, and the inner area, the 150 fpm isovel.

The spread angle also affects the airstream drop amount. Always consider for any given temperature, volume and core velocity; the wider spread results in a smaller drop. See section, Engineering Guidelines, for more drop, throw and spread relationship information.

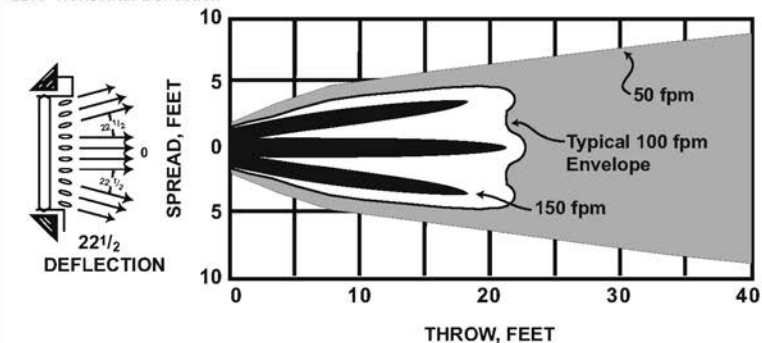
Grilles can be selected with a single set of blades for adjusting either horizontal or vertical deflection, or with two sets of blades for adjusting both horizontal and vertical deflections.

0° Horizontal Deflection



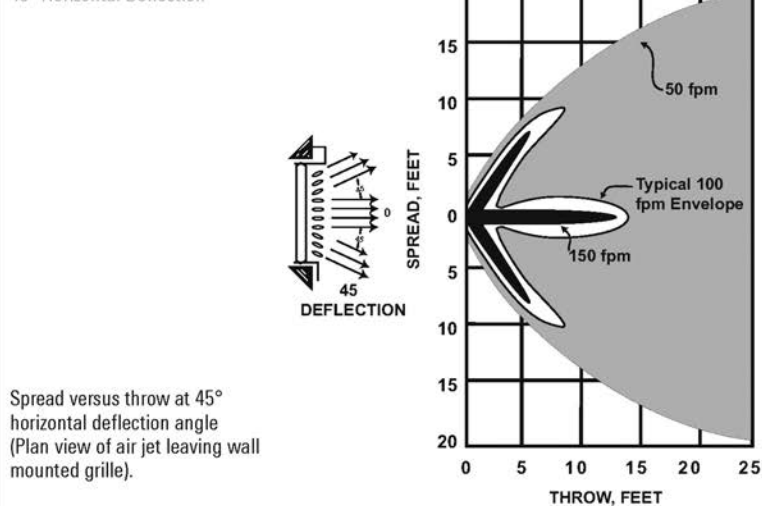
Spread versus throw at 0° horizontal deflection angle (Plan view of air jet leaving wall mounted grille).

22½° Horizontal Deflection



Spread versus throw at 22½° horizontal deflection angle (Plan view of air jet leaving wall mounted grille).

45° Horizontal Deflection



Spread versus throw at 45° horizontal deflection angle (Plan view of air jet leaving wall mounted grille).

94A Series: 94A, 94AHOV, 94AT, 94HOV Return Air Grilles & Registers

96AFB Steel Fixed-Bar Filter Grille

Performance based on nominal sizes shown in bold

Nominal Duct Size (in.)	Nominal Duct Area (ft ²)	Core Area (ft ²)	Core Velocity Velocity Pressure Neg. Static Pressure	NC-20									NC-30
				100 0.001 0.002	200 0.002 0.008	300 0.006 0.018	400 0.010 0.032	500 0.016 0.051	600 0.022 0.073	700 0.031 0.099	800 0.040 0.130	900 0.050 0.164	
6x6	0.25	0.19	Airflow, cfm NC	19 -	38 -	57 -	76 -	95 -	114 13	133 19	152 25	171 29	NC-30
8x6	0.33	0.26	Airflow, cfm NC	26 -	52 -	78 -	104 -	130 -	156 15	182 20	208 26	234 30	
10x6	0.42	0.34	Airflow, cfm NC	34 -	68 -	102 -	136 -	170 -	204 16	238 21	272 28	306 32	NC-30
8x8	0.44	0.37	Airflow, cfm NC	37 -	74 -	111 -	148 -	185 -	222 16	259 22	296 28	333 32	
12x6	0.5	0.41	Airflow, cfm NC	41 -	82 -	123 -	164 -	205 -	246 17	287 22	328 30	369 34	NC-30
14x6	0.58	0.48	Airflow, cfm NC	48 -	96 -	144 -	192 -	240 -	288 18	336 24	384 30	432 34	
16x6	0.67	0.57	Airflow, cfm NC	57 -	114 -	171 -	228 -	285 10	342 19	399 25	456 30	513 35	NC-30
12x8			Airflow, cfm NC	59 -	118 -	177 -	236 -	295 10	354 19	413 25	472 31	531 35	
10x10	0.69	0.59	Airflow, cfm NC	63 -	126 -	189 -	252 -	315 10	378 19	441 25	504 32	567 35	NC-30
18x6	0.75	0.63	Airflow, cfm NC	72 -	144 -	216 -	288 -	360 11	432 19	504 25	576 30	648 35	
20x6	0.83	0.72	Airflow, cfm NC	77 -	154 -	231 -	308 -	385 11	462 19	539 25	616 30	693 35	NC-30
22x6			Airflow, cfm NC	88 -	176 -	264 -	352 -	440 11	528 19	616 25	704 30	792 35	
24x6	1	0.88	Airflow, cfm NC	111 -	222 -	333 -	444 -	555 12	666 20	777 26	888 32	999 35	NC-30
30x6			Airflow, cfm NC	122 -	244 -	366 -	488 -	610 12	732 20	854 27	976 32	1098 35	
14x14	1.36	1.22	Airflow, cfm NC	135 -	270 -	405 -	540 -	675 13	810 20	945 27	1080 32	1215 35	NC-30
36x6	1.5	1.35	Airflow, cfm NC	137 -	274 -	411 -	548 -	685 13	822 20	959 27	1096 32	1233 36	
18x12			Airflow, cfm NC	149 -	298 -	447 -	596 -	745 14	894 21	1043 27	1192 33	1341 37	NC-30
22x10	1.53	1.37	Airflow, cfm NC	159 -	318 -	477 -	636 -	795 14	954 21	1113 27	1272 33	1431 37	
30x8	1.75	1.59	Airflow, cfm NC	162 -	324 -	486 -	648 -	810 14	972 21	1134 27	1296 33	1458 37	NC-30
16x16			Airflow, cfm NC	182 -	364 -	546 -	728 -	910 14	1092 21	1274 28	1456 33	1638 38	
24x12	2	1.82	Airflow, cfm NC	207 -	414 -	621 -	828 -	1035 14	1242 21	1449 28	1656 33	1863 38	NC-30
18x18			Airflow, cfm NC	214 -	428 -	642 -	856 -	1070 14	1284 22	1498 28	1712 33	1926 38	
24x14	2.33	2.14	Airflow, cfm NC	229 -	458 -	687 -	916 -	1145 15	1374 22	1603 28	1832 33	2061 38	NC-30
30x12	2.5	2.29	Airflow, cfm NC	246 -	492 -	738 -	984 -	1230 15	1476 22	1722 29	1968 34	2214 39	
24x16	2.67	2.46	Airflow, cfm NC	257 -	514 -	771 -	1028 -	1285 16	1542 23	1799 29	2056 34	2313 39	NC-30
20x20	2.78	2.57	Airflow, cfm NC	275 -	550 -	825 -	1100 -	1375 16	1650 23	1925 29	2200 34	2475 39	
36x12	3	2.75	Airflow, cfm NC	311 -	622 -	933 -	1244 -	1555 17	1866 24	2177 30	2488 35	2799 40	NC-40
30x16	3.33	3.11	Airflow, cfm NC	314 -	628 -	942 -	1256 -	1570 17	1884 24	2198 30	2512 35	2826 40	
22x22	3.36	3.14	Airflow, cfm NC	322 -	644 -	966 -	1288 -	1610 17	1932 24	2254 30	2576 36	2898 40	NC-40
42x12	3.5	3.22	Airflow, cfm NC	343 -	686 -	1029 -	1372 -	1715 17	2058 24	2401 30	2744 36	3087 40	
36x14			Airflow, cfm NC	350 -	700 -	1050 -	1400 -	1750 17	2100 24	2450 30	2800 36	3150 40	NC-40
24x22	3.67	3.43	Airflow, cfm NC										
30x18	3.75	3.5	Airflow, cfm NC										

- Static pressures are negative, in inches of water, measured per ANSI/ASHRAE Standard 70-2006

- NC based on room absorption of 10 dB, re 10⁻¹² watts, measured per ANSI/ASHRAE Standard 70-2006

Engineering Data

94A Series: 94A, 94AHOV, 94AT, 94HOV Return Air Grilles & Registers

96AFB Steel Fixed-Bar Filter Grille

Performance based on nominal sizes shown in bold

								NC-20	NC-30	NC-40		
Nominal Duct Size (in.)	Nominal Duct Area (ft²)	Core Area (ft²)	Core Velocity Velocity Pressure Neg. Static Pressure	100 0.001 0.002	200 0.002 0.008	300 0.006 0.018	400 0.010 0.032	500 0.016 0.051	600 0.022 0.073	700 0.031 0.099	800 0.040 0.130	900 0.050 0.164
48x12 24x24	4	3.75	Airflow, cfm NC	375 -	750 -	1125 -	1500 -	1875 18	2250 25	2625 37	3000 38	3375 41
36x18	4.5	4.22	Airflow, cfm NC	422 -	844 -	1266 -	1688 -	2110 18	2532 25	2954 31	3376 38	3798 41
36x20 30x24	5	4.71	Airflow, cfm NC	471 -	942 -	1413 -	1884 -	2355 18	2826 25	3297 31	3768 38	4239 41
42x18	5.25	4.94	Airflow, cfm NC	494 -	988 -	1482 -	1976 -	2470 18	2964 25	3458 31	3952 38	4446 41
28x28	5.44	5.16	Airflow, cfm NC	516 -	1032 -	1548 -	2064 -	2580 18	3096 25	3612 32	4128 38	4644 41
42x20 30x28	5.83	5.51	Airflow, cfm NC	551 -	1102 -	1653 -	2204 10	2755 18	3306 26	3857 32	4408 38	4959 41
48x18 36x24	6	5.66	Airflow, cfm NC	566 -	1132 -	1698 -	2264 10	2830 18	3396 26	3962 32	4528 38	5094 41
30x30	6.25	5.94	Airflow, cfm NC	594 -	1188 -	1782 -	2376 10	2970 18	3564 26	4158 32	4752 38	5346 41
42x24 36x28	7	6.66	Airflow, cfm NC	666 -	1332 -	1998 -	2664 10	3330 19	3996 26	4662 32	5328 38	5994 41
46x22	7.03	6.68	Airflow, cfm NC	668 -	1336 -	2004 -	2672 10	3340 19	4008 27	4676 32	5344 38	6012 42
32x32	7.11	6.78	Airflow, cfm NC	678 -	1356 -	2034 -	2712 10	3390 19	4068 27	4746 32	5424 38	6102 42
36x30	7.5	7.16	Airflow, cfm NC	716 -	1432 -	2148 -	2864 10	3580 19	4296 27	5012 32	5728 38	6444 42
48x24 36x32	8	7.63	Airflow, cfm NC	763 -	1526 -	2289 -	3052 10	3815 19	4578 27	5341 32	6104 38	6867 42
34x34	8.03	7.68	Airflow, cfm NC	768 -	1536 -	2304 -	3072 10	3840 19	4608 27	5376 32	6144 38	6912 42
36x34	8.5	8.14	Airflow, cfm NC	814 -	1628 -	2442 -	3256 11	4070 19	4884 27	5698 32	6512 38	7326 42
42x30	8.75	8.38	Airflow, cfm NC	838 -	1676 -	2514 -	3352 11	4190 20	5028 27	5866 32	6704 38	7542 42
36x36	9	8.63	Airflow, cfm NC	863 -	1726 -	2589 -	3452 11	4315 20	5178 27	6041 33	6904 38	7767 43
42x34 48x30	10	9.6	Airflow, cfm NC	960 -	1920 -	2880 -	3840 11	4800 20	5760 27	6720 33	7680 38	8640 43
38x38	10.03	9.64	Airflow, cfm NC	964 -	1928 -	2892 -	3856 11	4820 20	5784 27	6748 33	7712 38	8676 43
42x36	10.5	10.1	Airflow, cfm NC	1010 -	2020 -	3030 -	4040 11	5050 20	6060 27	7070 33	8080 38	9090 43
46x34	10.86	10.45	Airflow, cfm NC	1045 -	2090 -	3135 -	4180 11	5225 20	6270 27	7315 33	8360 38	9405 43
42x38	11.08	10.67	Airflow, cfm NC	1067 -	2134 -	3201 -	4268 11	5335 20	6402 27	7469 33	8536 38	9603 43
40x40	11.11	10.7	Airflow, cfm NC	1070 -	2140 -	3210 -	4280 11	5350 20	6420 27	7490 33	8560 38	9630 43
48x36	12	11.57	Airflow, cfm NC	1157 -	2314 -	3471 -	4628 11	5785 20	6942 27	8099 33	9256 39	10413 44
42x42	12.25	11.82	Airflow, cfm NC	1182 -	2364 -	3546 -	4728 11	5910 20	7092 27	8274 33	9456 39	10638 44
44x44	13.44	12.99	Airflow, cfm NC	1299 -	2598 -	3897 -	5196 12	6495 21	7794 28	9093 34	10392 39	11691 44
48x42	14	13.54	Airflow, cfm NC	1354 -	2708 -	4062 -	5416 12	6770 21	8124 28	9478 34	10832 40	12186 45
46x46	14.69	14.22	Airflow, cfm NC	1422 -	2844 -	4266 -	5688 12	7110 21	8532 28	9954 35	11376 40	12798 45
48x46	15.33	14.85	Airflow, cfm NC	1485 -	2970 -	4455 -	5940 12	7425 22	8910 28	10395 35	11880 40	13365 45
48x48	16	15.5	Airflow, cfm NC	1550 -	3100 -	4650 -	6200 13	7750 22	9300 29	10850 35	12400 40	13950 45

- Static pressures are negative, in inches of water, measured per ANSI/ASHRAE Standard 70-2006

- NC based on room absorption of 10 dB, re 10⁻¹² watts, measured per ANSI/ASHRAE Standard 70-2006

94A Series: 94A, 94AHOV, 94AT, 94HOV Return Air Grilles & Registers

96AFB Steel Fixed-Bar Filter Grille

Performance based on nominal sizes shown in bold

								NC-10		NC-20		NC-30		NC-40	
Nominal Duct Size (in.)	Nominal Duct Area (ft²)	Core Area (ft²)	Core Velocity Velocity Pressure Neg. Static Pressure	300 0.006 0.012	400 0.010 0.022	500 0.016 0.034	600 0.022 0.049	700 0.031 0.067	900 0.050 0.111	1100 0.075 0.165	1300 0.105 0.231	1500 0.140 0.307			
6x6	0.25	0.19	Airflow, cfm NC	57 -	76 -	95 -	114 -	133 13	171 20	209 26	247 31	285 35			
8x6	0.33	0.26	Airflow, cfm NC	78 -	104 -	130 -	156 -	182 14	234 22	286 27	338 32	390 36			
10x6	0.42	0.34	Airflow, cfm NC	102 -	136 -	170 -	204 11	238 16	306 23	374 28	442 33	510 37			
8x8	0.44	0.37	Airflow, cfm NC	111 -	148 -	185 -	222 12	259 16	333 23	407 29	481 34	555 38			
12x6	0.5	0.41	Airflow, cfm NC	123 -	164 -	205 -	246 12	287 16	369 24	451 29	533 34	615 38			
14x6	0.58	0.48	Airflow, cfm NC	144 -	192 -	240 -	288 13	336 17	432 24	528 30	624 35	720 39			
16x6	0.67	0.57	Airflow, cfm NC	171 -	228 -	285 -	342 13	399 18	513 25	627 31	741 36	855 40			
12x8			Airflow, cfm NC	177 -	236 -	295 -	354 14	413 18	531 25	649 31	767 36	885 40			
10x10	0.69	0.59	Airflow, cfm NC	189 -	252 -	315 -	378 14	441 18	567 25	693 31	819 36	945 40			
18x6	0.75	0.63	Airflow, cfm NC	216 -	288 -	360 -	432 14	504 19	648 26	792 32	936 37	1080 41			
20x6	0.83	0.72	Airflow, cfm NC	231 -	308 -	385 -	462 15	539 19	693 26	847 32	1001 37	1155 41			
12x10			Airflow, cfm NC	264 -	352 -	440 -	528 15	616 20	792 27	968 33	1144 37	1320 42			
22x6	0.92	0.77	Airflow, cfm NC	333 -	444 -	555 11	666 16	777 21	999 28	1221 34	1443 38	1665 43			
24x6	1	0.88	Airflow, cfm NC	366 -	488 -	610 11	732 17	854 21	1098 28	1342 34	1586 39	1830 43			
18x10			Airflow, cfm NC	405 -	540 -	675 12	810 17	945 22	1215 29	1485 35	1755 39	2025 43			
36x6	1.36	1.22	Airflow, cfm NC	411 -	548 -	685 12	822 17	959 22	1233 29	1507 35	1781 39	2055 43			
18x12	1.5	1.35	Airflow, cfm NC	447 -	596 -	745 12	894 18	1043 22	1341 29	1639 35	1937 40	2235 44			
22x10	1.53	1.37	Airflow, cfm NC	477 -	636 -	795 13	954 18	1113 22	1431 29	1749 35	2067 40	2385 44			
30x8	1.67	1.49	Airflow, cfm NC	486 -	648 -	810 13	972 18	1134 22	1458 30	1782 35	2106 40	2430 44			
24x10			Airflow, cfm NC	546 -	728 -	910 13	1092 18	1274 23	1638 30	2002 36	2366 41	2730 45			
42x6	1.75	1.59	Airflow, cfm NC	621 -	828 -	1035 14	1242 19	1449 23	1863 31	2277 36	2691 41	3105 45			
16x16	1.78	1.62	Airflow, cfm NC	642 -	856 -	1070 14	1284 19	1498 24	1926 31	2354 37	2782 41	3210 45			
24x12	2	1.82	Airflow, cfm NC	687 -	916 -	1145 14	1374 19	1603 24	2061 31	2519 37	2977 42	3435 46			
18x16			Airflow, cfm NC	738 -	984 -	1230 15	1476 20	1722 24	2214 31	2706 37	3198 42	3690 46			
18x18	2.25	2.07	Airflow, cfm NC	771 -	1028 -	1285 15	1542 20	1799 24	2313 32	2827 37	3341 42	3855 46			
24x14	2.33	2.14	Airflow, cfm NC	825 -	1100 -	1375 15	1650 20	1925 25	2475 32	3025 38	3575 42	4125 47			
30x12	2.5	2.29	Airflow, cfm NC	933 -	1244 -	1555 16	1866 21	2177 25	2799 32	3421 38	4043 43	4665 47			
24x16	2.67	2.46	Airflow, cfm NC	942 -	1256 -	1570 16	1884 21	2198 25	2826 32	3454 38	4082 43	4710 47			
20x20	2.78	2.57	Airflow, cfm NC	966 -	1288 -	1610 16	1932 21	2254 25	2898 33	3542 38	4186 43	4830 47			
36x12	3	2.75	Airflow, cfm NC	1029 -	1372 -	1715 16	2058 21	2401 26	3087 33	3773 39	4459 43	5145 47			
30x16			Airflow, cfm NC	1050 -	1400 -	1750 16	2100 21	2450 26	3150 33	3850 39	4550 43	5250 48			
24x20	3.33	3.11	Airflow, cfm NC	942 -	1256 -	1570 16	1884 21	2198 25	2826 32	3454 38	4082 43	4710 47			
22x22	3.36	3.14	Airflow, cfm NC	966 -	1288 -	1610 16	1932 21	2254 25	2898 33	3542 38	4186 43	4830 47			
42x12	3.5	3.22	Airflow, cfm NC	1029 -	1372 -	1715 16	2058 21	2401 26	3087 33	3773 39	4459 43	5145 47			
36x14			Airflow, cfm NC	1050 -	1400 -	1750 16	2100 21	2450 26	3150 33	3850 39	4550 43	5250 48			

• Static pressures are negative, in inches of water, measured per ANSI/ASHRAE Standard 70-2006

• NC based on room absorption of 10 dB, re 10⁻¹² watts, measured per ANSI/ASHRAE Standard 70-2006

Engineering Data

94A Series: 94A, 94AHOV, 94AT, 94HOV Return Air Grilles & Registers

96AFB Steel Fixed-Bar Filter Grille

Performance based on nominal sizes shown in bold

Nominal Duct Size (in.)	Nominal Duct Area (ft ²)	Core Area (ft ²)	Core Velocity Velocity Pressure Neg. Static Pressure	NC-10		NC-20		NC-30		NC-40		1300 0.105 0.231	1500 0.140 0.307
				300 0.006 0.012	400 0.010 0.022	500 0.016 0.034	600 0.022 0.049	700 0.031 0.067	900 0.050 0.111	1100 0.075 0.165	1300 0.105 0.231		
48x12 24x24	4	3.75	Airflow, cfm NC	1125 -	1500 -	1875 16	2250 22	2625 26	3375 33	4125 39	4875 44	5625 48	
36x18	4.5	4.22	Airflow, cfm NC	1266 -	1688 -	2110 17	2532 22	2954 27	3798 34	4642 39	5486 44	6330 48	
36x20 30x24	5	4.71	Airflow, cfm NC	1413 -	1884 11	2355 17	2826 23	3297 27	4239 34	5181 40	6123 45	7065 49	
42x18	5.25	4.94	Airflow, cfm NC	1482 -	1976 11	2470 18	2964 23	3458 27	4446 34	5434 40	6422 45	7410 49	
28x28	5.44	5.16	Airflow, cfm NC	1548 -	2064 11	2580 18	3096 23	3612 27	4644 35	5676 40	6708 45	7740 49	
42x20 30x28	5.83	5.51	Airflow, cfm NC	1653 -	2204 12	2755 18	3306 23	3857 28	4959 35	6061 41	7163 45	8265 50	
48x18 36x24	6	5.66	Airflow, cfm NC	1698 -	2264 12	2830 18	3396 23	3962 28	5094 35	6226 41	7358 46	8490 50	
30x30	6.25	5.94	Airflow, cfm NC	1782 -	2376 12	2970 18	3564 24	4158 28	5346 35	6534 41	7722 46	8910 50	
42x24 36x28	7	6.66	Airflow, cfm NC	1998 -	2664 12	3330 19	3996 24	4662 28	5994 36	7326 41	8658 46	9990 50	
46x22	7.03	6.68	Airflow, cfm NC	2004 -	2672 12	3340 19	4008 24	4676 29	6012 36	7348 41	8684 46	10020 50	
32x32	7.11	6.78	Airflow, cfm NC	2034 -	2712 13	3390 19	4068 24	4746 29	6102 36	7458 42	8814 46	10170 50	
36x30	7.5	7.16	Airflow, cfm NC	2148 -	2864 13	3580 19	4296 24	5012 29	6444 36	7876 42	9308 47	10740 51	
48x24 36x32	8	7.63	Airflow, cfm NC	2289 -	3052 13	3815 19	4578 25	5341 29	6867 36	8393 42	9919 47	11445 51	
34x34	8.03	7.68	Airflow, cfm NC	2304 -	3072 13	3840 19	4608 25	5376 29	6912 36	8448 42	9984 47	11520 51	
36x34	8.5	8.14	Airflow, cfm NC	2442 -	3256 13	4070 20	4884 25	5698 29	7326 37	8954 42	10582 47	12210 51	
42x30	8.75	8.38	Airflow, cfm NC	2514 -	3352 13	4190 20	5028 25	5866 29	7542 37	9218 42	10894 47	12570 51	
36x36	9	8.63	Airflow, cfm NC	2589 -	3452 14	4315 20	5178 25	6041 30	7767 37	9493 43	11219 47	12945 51	
42x34 48x30	10	9.6	Airflow, cfm NC	2880 -	3840 14	4800 20	5760 26	6720 30	8640 37	10560 43	12480 48	14400 52	
38x38	10.03	9.64	Airflow, cfm NC	2892 -	3856 14	4820 20	5784 26	6748 30	8676 37	10604 43	12532 48	14460 52	
42x36	10.5	10.1	Airflow, cfm NC	3030 -	4040 14	5050 21	6060 26	7070 30	9090 38	11110 43	13130 48	15150 52	
46x34	10.86	10.45	Airflow, cfm NC	3135 -	4180 14	5225 21	6270 26	7315 30	9405 38	11495 43	13585 48	15675 52	
42x38	11.08	10.67	Airflow, cfm NC	3201 -	4268 14	5335 21	6402 26	7469 31	9603 38	11737 44	13871 48	16005 52	
40x40	11.11	10.7	Airflow, cfm NC	3210 -	4280 15	5350 21	6420 26	7490 31	9630 38	11770 44	13910 48	16050 52	
48x36	12	11.57	Airflow, cfm NC	3471 -	4628 15	5785 21	6942 26	8099 31	10413 38	12727 44	15041 49	17355 53	
42x42	12.25	11.82	Airflow, cfm NC	3546 -	4728 15	5910 21	7092 27	8274 31	10638 38	13002 44	15366 49	17730 53	
44x44	13.44	12.99	Airflow, cfm NC	3897 -	5196 15	6495 22	7794 27	9093 31	11691 39	14289 44	16887 49	19485 53	
48x42	14	13.54	Airflow, cfm NC	4062 -	5416 16	6770 22	8124 27	9478 32	12186 39	14894 45	17602 49	20310 53	
46x46	14.69	14.22	Airflow, cfm NC	4266 -	5688 16	7110 22	8532 27	9954 32	12798 39	15642 45	18486 50	21330 54	
48x46	15.33	14.85	Airflow, cfm NC	4455 -	5940 16	7425 22	8910 28	10395 32	13365 39	16335 45	19305 50	22275 54	
48x48	16	15.5	Airflow, cfm NC	4650 -	6200 16	7750 23	9300 28	10850 32	13950 39	17050 45	20150 50	23250 54	

- Static pressures are negative, in inches of water, measured per ANSI/ASHRAE Standard 70-2006

- NC based on room absorption of 10 dB, re 10⁻¹² watts, measured per ANSI/ASHRAE Standard 70-2006

NC-50

PFG Perforated Face Grille

PFG Perforated Face Grille

Return Air Grille Balancing Data

To Determine CFM:

1. Use an ALNOR Velometer with No. 2220 or 2220A Tip or a 4" rotating vane anemometer. If a 4" rotating vane anemometer is used, place dial face against perforated plate, and sample in a random manner for at least 1 minute.
2. Select proper Ak from Table by unit size and instrument used for measuring velocity.
3. Determine CFM by the following equation: $CFM = Ak \times \text{Average Velocity}$.

Sample Problem

Determine Return Airflow Rate (CFM) through a 10 x 10, using an ALNOR Velometer with Tip No. 2220 or 2220A.

Solution

1. Assume the average of 6 velocity readings taken with an ALNOR Velometer is 2000 FPM.
2. From Table, the Area Factor for a 10 x 10 using an ALNOR Velometer is $Ak = .39$ sq. ft.
3. $CFM = Ak \times \text{Average Velocity} = .39 \text{ sq. ft.} \times 2000 \text{ FPM} = 780 \text{ CFM}$

Neck Velocity			200	300	400	500	600	650	700	750	800	900
S.P. Drop w/OBD			.012	.027	.049	.078	.110	.130	.150	.170	.190	.240
Size	Ak ALNOR	Ak 4" ROT. Vane	Air Capacities - CFM									
10 x 10	.39	.55	140	210	285	350	415	450	485	520	555	625
12 x 12	.46	.79	200	300	400	500	600	650	700	750	800	900
14 x 14	.62	1.07	270	410	545	680	815	885	955	1020	1090	1225
10 x 22	.71	1.21	305	460	610	765	915	995	1070	1150	1220	1375
16 x 16	.82	1.40	355	530	710	890	1065	1155	1245	1335	1425	1600
18 x 18	1.05	1.77	450	675	900	1125	1350	1460	1575	1690	1800	2030
20 x 20	1.28	2.25	555	835	1110	1390	1665	1805	1945	2080	2220	2500
22 x 22	1.55	2.70	670	1010	1345	1680	2020	2180	2350	2520	2690	3020

Engineering Data

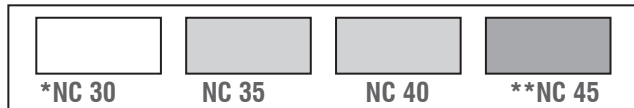
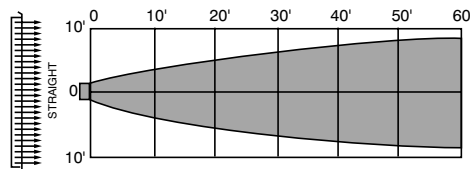
H and V Series

Deflection A

Face Velocity	400	500	600	700	800	900	1000	1100	1200	1300	1400	1600	1800	2000
Pressure Loss	.010	.016	.022	.031	.040	.050	.062	.075	.090	.105	.122	.160	.202	.249
8 x 4 CFM	60	80	95	110	125	140	155	170	185	205	220	250	280	310
Ak 156 Throw	6.5	8.0	10.0	12.0	13.0	15.0	16.0	18.0	19.0	22.0	23.0	26.0	29.0	33.0
10 x 4 CFM	80	100	120	140	160	180	200	220	240	260	275	315	355	395
Ak 198 Throw	7.5	9.5	12.0	13.0	15.0	17.0	19.0	20.0	22.0	24.0	26.0	29.0	33.0	37.0
12 x 4 CFM	95	120	145	170	190	215	240	265	290	310	335	385	430	480
Ak 240 Throw	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	25.0	26.0	28.0	33.0	36.0	41.0
14 x 4 CFM	115	140	170	195	225	255	280	310	340	365	395	450	510	565
Ak 282 Throw	9.0	11.0	13.0	15.0	18.0	20.0	22.0	24.0	27.0	29.0	31.0	35.0	40.0	44.0
12 x 5 CFM	125	155	185	215	250	280	310	340	370	405	435	495	560	620
Ak 310 Throw	9.0	12.0	14.0	16.0	19.0	21.0	23.0	25.0	28.0	30.0	32.0	37.0	42.0	46.0
10 x 6 CFM	125	155	190	220	250	280	315	345	375	405	440	500	565	625
Ak 313 Throw	9.0	12.0	14.0	16.0	19.0	21.0	23.0	26.0	28.0	30.0	33.0	37.0	42.0	46.0
14 x 5 CFM	145	180	220	255	290	330	365	400	435	475	510	580	655	730
Ak 364 Throw	10.0	13.0	15.0	18.0	20.0	23.0	25.0	28.0	30.0	32.0	35.0	40.0	45.0	50.0
12 x 6 CFM	150	190	225	265	305	340	380	415	455	495	530	605	680	760
Ak 379 Throw	10.0	13.0	15.0	18.0	21.0	23.0	26.0	28.0	31.0	33.0	36.0	41.0	46.0	51.0
16 x 5 CFM	165	210	250	295	335	375	420	460	500	545	585	670	750	835
Ak 418 Throw	11.0	13.0	16.0	19.0	22.0	24.0	27.0	30.0	32.0	35.0	38.0	43.0	48.0	54.0
14 x 6 CFM	180	225	270	310	355	400	445	490	535	580	625	715	805	890
Ak 446 Throw	11.0	14.0	17.0	19.0	22.0	25.0	28.0	30.0	33.0	36.0	39.0	44.0	50.0	55.0
16 x 6 CFM	205	255	305	360	410	460	510	565	615	665	715	820	920	1025
Ak 512 Throw	11.0	14.0	17.0	20.0	22.0	25.0	28.0	31.0	34.0	36.0	39.0	45.0	50.0	56.0
20 x 5 CFM	210	265	315	370	420	475	525	580	630	685	735	840	945	1050
Ak 526 Throw	12.0	15.0	18.0	21.0	24.0	27.0	30.0	33.0	36.0	39.0	42.0	48.0	54.0	60.0
24 x 5 CFM	255	315	380	445	505	570	635	695	760	825	890	1015	1140	1270
Ak 634 Throw	13.0	16.0	20.0	23.0	26.0	30.0	33.0	36.0	40.0	43.0	46.0	53.0	59.0	66.0
20 x 6 CFM	260	325	385	450	515	580	645	710	775	840	905	1030	1160	1290
Ak 645 Throw	13.0	17.0	20.0	23.0	27.0	30.0	33.0	37.0	40.0	43.0	47.0	53.0	60.0	67.0
24 x 6 CFM	310	390	465	545	620	700	775	855	930	1010	1090	1245	1400	1555
Ak 777 Throw	15.0	18.0	22.0	26.0	29.0	33.0	37.0	40.0	44.0	48.0	51.0	59.0	66.0	73.0
20 x 8 CFM	355	440	530	615	705	795	880	970	1060	1145	1235	1410	1590	1765
Ak 882 Throw	16.0	19.0	23.0	27.0	31.0	35.0	39.0	43.0	47.0	51.0	55.0	62.0	70.0	78.0
30 x 6 CFM	390	490	585	685	780	880	975	1075	1170	1270	1365	1560	1755	1950
Ak 976 Throw	16.0	21.0	25.0	29.0	33.0	37.0	41.0	45.0	49.0	53.0	57.0	66.0	74.0	82.0
24 x 8 CFM	425	530	635	740	850	955	1060	1165	1270	1380	1485	1695	1910	2120
Ak 1.060 Throw	17.0	21.0	23.0	30.0	34.0	38.0	43.0	47.0	51.0	56.0	60.0	68.0	77.0	85.0
30 x 8 CFM	535	670	805	940	1070	1205	1340	1475	1610	1740	1875	2145	2410	2680
Ak 1.340 Throw	19.0	24.0	29.0	34.0	38.0	43.0	48.0	53.0	58.0	62.0	67.0	77.0	87.0	96.0
24 x 10 CFM	540	675	810	945	1080	1215	1350	1485	1620	1755	1890	2160	2430	2700
Ak 1.350 Throw	19.0	24.0	29.0	34.0	39.0	43.0	48.0	53.0	58.0	63.0	68.0	77.0	87.0	97.0
36 x 8 CFM	645	805	965	1125	1290	1450	1610	1770	1930	2095	2255	2575	2900	3220
Ak 1.610 Throw	21.0	26.0	32.0	37.0	42.0	47.0	52.0	58.0	63.0	68.0	73.0	84.0	94.0	105.0
24 x 12 CFM	655	820	985	1150	1310	1475	1640	1805	1970	2130	2295	2625	2950	3270
Ak 1.640 Throw	21.0	27.0	32.0	37.0	43.0	48.0	53.0	59.0	64.0	69.0	75.0	85.0	96.0	107.0
30 x 10 CFM	675	845	1015	1185	1350	1520	1690	1860	2030	2195	2365	2705	3040	3380
Ak 1.690 Throw	21.0	27.0	32.0	38.0	43.0	48.0	54.0	59.0	65.0	70.0	75.0	86.0	97.0	108.0
36 x 10 CFM	815	1020	1225	1430	1630	1835	2040	2245	2450	2655	2855	3265	3670	4080
Ak 2.040 Throw	24.0	30.0	36.0	42.0	47.0	53.0	59.0	65.0	71.0	77.0	83.0	95.0	107.0	119.0
30 x 12 CFM	820	1025	1230	1435	1640	1845	2050	2255	2460	2665	2870	3280	3690	4100
Ak 2.050 Throw	24.0	30.0	36.0	42.0	48.0	54.0	59.0	65.0	71.0	77.0	83.0	95.0	107.0	119.0
36 x 12 CFM	990	1235	1480	1730	1975	2225	2470	2715	2965	3210	3460	3950	4451	4940
Ak 2.470 Throw	26.0	33.0	39.0	46.0	52.0	59.0	65.0	72.0	78.0	85.0	91.0	104.0	114.0	130.0

For sizes not listed and sizing tips see page 9

Terminal Velocity of 75 FPM



* less than or equal to

** greater than or equal to

Deflection C

Face Velocity	400	500	600	700	800	900	1000	1100	1200	1300	1400	1600	1800	2000	
Pressure Loss	.010	.016	.022	.031	.040	.050	.062	.075	.090	.105	.122	.160	.202	.249	
8 x 4	CFM	55	70	85	100	115	125	140	155	170	185	195	225	255	280
Ak 141	Throw	5.0	6.5	7.5	9.0	10.0	11.0	13.0	14.0	15.0	17.0	18.0	20.0	23.0	25.0
10 x 4	CFM	70	90	105	125	140	160	180	195	215	230	250	285	320	355
Ak 178	Throw	5.5	7.0	8.5	10.0	11.0	13.0	14.0	16.0	17.0	18.0	20.0	23.0	26.0	29.0
Ak 216	Throw	6.0	8.0	9.5	11.0	13.0	14.0	16.0	18.0	19.0	20.0	22.0	25.0	28.0	31.0
14 x 4	CFM	100	125	150	180	205	230	255	280	305	330	355	405	455	510
Ak 254	Throw	7.0	8.5	10.0	12.0	14.0	16.0	17.0	19.0	21.0	22.0	24.0	27.0	31.0	34.0
12 x 5	CFM	110	140	165	195	225	250	280	305	335	365	390	445	500	560
Ak 279	Throw	7.0	9.0	11.0	13.0	14.0	16.0	18.0	20.0	22.0	23.0	25.0	29.0	32.0	36.0
10 x 6	CFM	115	140	170	195	225	255	280	310	340	365	395	450	510	565
Ak 282	Throw	7.5	9.0	11.0	12.0	14.0	16.0	18.0	20.0	22.0	23.0	25.0	29.0	33.0	36.0
14 x 5	CFM	130	165	195	230	260	295	330	360	395	425	460	525	590	655
Ak 328	Throw	7.5	10.0	12.0	14.0	15.0	17.0	20.0	21.0	23.0	25.0	27.0	31.0	35.0	39.0
12 x 6	CFM	135	170	205	240	275	310	340	375	410	445	480	545	615	685
Ak 342	Throw	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	24.0	26.0	28.0	32.0	36.0	40.0
16 x 5	CFM	150	190	225	265	300	340	375	415	450	490	525	605	680	755
Ak 377	Throw	8.5	11.0	12.0	15.0	17.0	19.0	21.0	23.0	25.0	27.0	29.0	34.0	38.0	41.0
14 x 6	CFM	165	205	245	290	330	370	410	455	495	535	575	660	740	825
Ak 412	Throw	9.0	11.0	13.0	16.0	18.0	20.0	22.0	24.0	27.0	28.0	31.0	35.0	40.0	44.0
16 x 6	CFM	185	230	275	325	370	415	460	510	555	600	645	740	830	925
Ak 462	Throw	9.0	11.0	13.0	15.0	18.0	20.0	22.0	24.0	26.0	28.0	31.0	35.0	39.0	44.0
20 x 5	CFM	190	235	285	330	380	425	475	520	570	615	665	760	855	950
Ak 474	Throw	9.5	12.0	14.0	16.0	19.0	21.0	23.0	26.0	28.0	30.0	33.0	38.0	42.0	47.0
24 x 5	CFM	230	285	345	400	460	515	570	630	685	745	800	915	1030	1145
Ak 572	Throw	10.0	13.0	15.0	18.0	21.0	23.0	26.0	28.0	33.0	36.0	41.0	46.0	51.0	
20 x 6	CFM	230	290	350	405	465	525	580	640	695	755	815	930	1045	1160
Ak 581	Throw	10.0	13.0	16.0	18.0	21.0	23.0	26.0	29.0	31.0	34.0	36.0	41.0	47.0	52.0
24 x 6	CFM	280	350	420	490	560	630	700	770	840	910	980	1120	1260	1400
Ak 701	Throw	11.0	14.0	17.0	20.0	23.0	26.0	28.0	31.0	34.0	37.0	40.0	45.0	51.0	57.0
20 x 8	CFM	320	400	475	555	635	715	795	875	955	1035	1115	1270	1430	1590
Ak 795	Throw	12.0	15.0	18.0	21.0	24.0	27.0	30.0	33.0	36.0	39.0	42.0	48.0	54.0	61.0
30 x 6	CFM	350	440	530	615	705	790	880	970	1055	1145	1230	1410	1585	1760
Ak 880	Throw	13.0	16.0	19.0	22.0	26.0	29.0	32.0	35.0	38.0	41.0	46.0	51.0	57.0	64.0
24 x 8	CFM	385	480	575	670	765	865	960	1055	1150	1245	1345	1535	1725	1920
Ak 959	Throw	13.0	17.0	20.0	23.0	27.0	30.0	33.0	37.0	40.0	43.0	47.0	53.0	60.0	67.0
30 x 8	CFM	480	600	720	840	960	1080	1200	1320	1440	1560	1680	1920	2160	2400
Ak 1,200	Throw	15.0	19.0	22.0	26.0	30.0	33.0	37.0	41.0	45.0	48.0	52.0	60.0	67.0	74.0
24 x 10	CFM	490	610	730	855	975	1100	1220	1340	1465	1585	1710	1950	2200	2440
Ak 1,220	Throw	15.0	19.0	22.0	26.0	30.0	34.0	38.0	41.0	45.0	49.0	53.0	60.0	68.0	75.0
36 x 8	CFM	580	725	870	1015	1160	1305	1450	1595	1740	1885	2030	2320	2610	2900
Ak 1,450	Throw	16.0	20.0	25.0	29.0	33.0	37.0	41.0	45.0	49.0	53.0	57.0	65.0	74.0	82.0
24 x 12	CFM	590	735	880	1030	1175	1325	1470	1615	1765	1910	2060	2350	2645	2940
Ak 1,470	Throw	17.0	21.0	25.0	29.0	33.0	37.0	41.0	45.0	49.0	53.0	58.0	66.0	74.0	82.0
30 x 10	CFM	610	765	920	1070	1225	1375	1530	1685	1835	1990	2140	2450	2755	3060
Ak 1,530	Throw	17.0	21.0	25.0	29.0	34.0	38.0	42.0	46.0	50.0	55.0	59.0	67.0	76.0	84.0
36 x 10	CFM	735	920	1105	1290	1470	1655	1840	2025	2210	2390	2575	2945	3310	3680
Ak 1,840	Throw	18.0	23.0	28.0	32.0	37.0	42.0	46.0	51.0	55.0	60.0	65.0	74.0	83.0	92.0
30 x 12	CFM	740	925	1110	1295	1480	1665	1850	2035	2220	2405	2590	2960	3330	3700
Ak 1,850	Throw	19.0	23.0	28.0	32.0	37.0	42.0	46.0	51.0	56.0	60.0	65.0	74.0	83.0	93.0
36 x 12	CFM	890	115	1340	1560	1785	2000	2230	2455	2675	2900	3120	3570	4015	4460
Ak 2,230	Throw	20.0	25.0	31.0	36.0	41.0	46.0	51.0	56.0	61.0	66.0	71.0	81.0	92.0	102.0

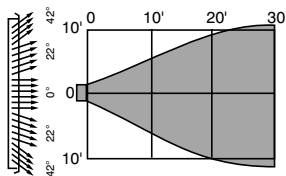
H and V Series

Deflection E

Face Velocity	400	500	600	700	800	900	1000	1100	1200	1300	1400	1600	1800	2000
Pressure Loss	.010	.016	.022	.031	.040	.050	.062	.075	.090	.105	.122	.160	.202	.249
8 x 4 CFM	45	60	70	85	95	105	120	130	140	155	165	190	210	235
Ak 127 Throw	2.5	3.5	4.0	5.0	5.5	6.0	6.5	7.5	8.0	8.5	9.5	11.0	12.0	13.0
10 x 4 CFM	60	75	90	105	120	135	150	165	180	195	210	240	270	300
Ak 162 Throw	3.0	3.5	4.5	5.0	6.0	6.5	7.5	8.0	9.0	9.5	10.0	12.0	13.0	15.0
12 x 4 CFM	80	100	120	140	160	175	195	215	235	255	275	315	355	395
Ak 197 Throw	4.5	6.0	7.5	8.5	10.0	11.0	12.0	13.0	14.0	16.0	17.0	19.0	22.0	24.0
14 x 4 CFM	90	115	140	160	185	210	230	255	275	300	325	370	415	460
Ak 231 Throw	5.0	6.5	8.0	9.0	11.0	12.0	13.0	14.0	16.0	17.0	18.0	21.0	23.0	26.0
12 x 5 CFM	100	125	150	180	205	230	255	280	305	330	355	405	455	510
Ak 254 Throw	5.5	6.5	8.0	9.5	12.0	12.0	14.0	15.0	16.0	18.0	19.0	22.0	25.0	27.0
10 x 6 CFM	105	130	155	180	205	230	255	285	310	335	360	410	465	515
Ak 257 Throw	5.5	7.5	8.5	9.5	11.0	12.0	14.0	15.0	17.0	18.0	19.0	22.0	25.0	28.0
14 x 5 CFM	120	150	180	210	240	270	300	330	360	385	415	475	535	595
Ak 291 Throw	6.0	7.5	9.0	10.0	12.0	13.0	15.0	16.0	18.0	19.0	21.0	24.0	27.0	30.0
12 x 6 CFM	125	155	185	220	250	280	310	340	375	405	435	500	560	620
Ak 311 Throw	6.0	7.5	9.0	11.0	12.0	14.0	15.0	17.0	18.0	20.0	21.0	24.0	28.0	30.0
16 x 5 CFM	135	170	205	240	275	310	345	375	410	445	480	550	615	685
Ak 343 Throw	6.5	8.0	9.5	11.0	13.0	14.0	16.0	17.0	19.0	21.0	22.0	26.0	29.0	32.0
14 x 6 CFM	145	185	220	255	290	330	365	400	440	475	510	585	655	730
Ak 365 Throw	6.5	8.5	10.0	11.0	13.0	15.0	16.0	18.0	20.0	21.0	23.0	26.0	29.0	33.0
16 x 6 CFM	170	215	240	300	345	390	430	475	545	560	605	690	775	860
Ak 431 Throw	7.0	9.0	11.0	12.0	14.0	16.0	18.0	20.0	21.0	23.0	25.0	28.0	32.0	36.0
20 x 5 CFM	190	235	280	330	375	425	470	515	565	610	660	750	845	940
Ak 470 Throw	7.5	9.5	11.0	13.0	15.0	17.0	19.0	20.0	22.0	24.0	26.0	30.0	33.0	37.0
24 x 5 CFM	210	260	310	365	415	470	520	570	625	675	730	830	935	1040
Ak 520 Throw	8.0	10.0	12.0	14.0	16.0	18.0	20.0	21.0	24.0	25.0	27.0	31.0	35.0	39.0
20 x 6 CFM	210	265	315	370	420	475	530	580	635	685	740	845	950	1055
Ak 528 Throw	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	24.0	26.0	28.0	32.0	35.0	39.0
24 x 6 CFM	255	320	380	445	510	575	635	700	765	830	890	1020	1145	1275
Ak 637 Throw	8.5	11.0	13.0	15.0	17.0	20.0	22.0	24.0	26.0	28.0	30.0	35.0	39.0	43.0
20 x 8 CFM	290	360	435	505	580	650	725	795	870	940	1010	1155	1300	1445
Ak 723 Throw	9.0	12.0	14.0	16.0	19.0	21.0	23.0	25.0	28.0	30.0	32.0	37.0	42.0	46.0
30 x 6 CFM	320	400	480	560	640	720	800	880	960	1040	1120	1280	1440	1600
Ak 800 Throw	10.0	12.0	15.0	17.0	19.0	22.0	24.0	27.0	29.0	32.0	34.0	39.0	44.0	49.0
24 x 8 CFM	350	435	525	610	700	785	870	960	1045	1135	1220	1400	1570	1745
Ak 872 Throw	10.0	13.0	15.0	18.0	20.0	23.0	25.0	28.0	30.0	33.0	36.0	41.0	46.0	51.0
30 x 8 CFM	435	545	655	765	870	980	1090	1200	1310	1415	1525	1745	1960	2180
Ak 1090 Throw	11.0	14.0	17.0	20.0	23.0	25.0	28.0	31.0	34.0	37.0	40.0	45.0	51.0	57.0
24 x 10 CFM	445	555	665	775	890	1000	1110	1220	1330	1445	1555	1775	2000	2220
Ak 1110 Throw	11.0	14.0	17.0	20.0	23.0	26.0	29.0	31.0	34.0	37.0	40.0	46.0	52.0	57.0
36 x 8 CFM	530	660	790	925	1055	1190	1320	1450	1585	1715	1850	2110	2375	2640
Ak 1320 Throw	14.0	17.0	21.0	24.0	27.0	31.0	34.0	38.0	41.0	45.0	48.0	55.0	62.0	69.0
24 x 12 CFM	535	670	805	940	1070	1205	1340	1475	1610	1740	1875	2145	2410	2680
Ak 1340 Throw	13.0	16.0	19.0	22.0	25.0	28.0	31.0	35.0	38.0	41.0	44.0	50.0	57.0	63.0
30 x 10 CFM	555	695	835	975	1110	1250	1390	1530	1670	1805	1945	2225	2500	2780
Ak 1390 Throw	13.0	16.0	19.0	22.0	26.0	29.0	32.0	38.0	38.0	42.0	45.0	51.0	58.0	64.0
36 x 10 CFM	670	835	1000	1170	1335	1505	1670	1835	2005	2170	2340	2670	3005	3340
Ak 1670 Throw	14.0	18.0	21.0	25.0	28.0	32.0	35.0	39.0	42.0	46.0	49.0	56.0	63.0	70.0
30 x 12 CFM	670	840	1010	1175	1345	1510	1680	1850	2015	2185	2350	2690	3025	3360
Ak 1680 Throw	14.0	16.0	21.0	25.0	28.0	32.0	35.0	39.0	42.0	46.0	49.0	56.0	63.0	70.0
36 x 12 CFM	810	1015	1220	1420	1625	1825	2030	2235	2435	2640	2840	3250	3655	4060
Ak 2030 Throw	15.0	19.0	23.0	27.0	31.0	35.0	39.0	43.0	46.0	50.0	54.0	62.0	70.0	78.0

For sizes not listed and sizing tips see page 9

Terminal Velocity of 75 FPM



Deflection G

Face Velocity	400	500	600	700	800	900	1000	1100	1200	1300	1400	1600	1800	2000
Pressure Loss	.010	.016	.022	.031	.040	.050	.062	.075	.090	.105	.122	.160	.202	.249
8 x 4	CFM	45	670	70	85	95	105	120	130	140	155	165	190	210
Ak 118	Throw	2.5	3.5	4.0	5.0	5.5	6.0	6.5	7.5	8.0	8.5	9.5	11.0	12.0
10 x 4	CFM	60	75	90	105	120	135	150	165	180	195	210	240	270
Ak 149	Throw	3.0	3.5	4.5	5.0	6.0	6.5	7.5	8.0	9.0	9.5	10.0	12.0	13.0
12 x 4	CFM	70	90	110	125	145	165	180	200	215	235	255	290	325
Ak 181	Throw	3.0	4.0	5.0	5.5	6.5	7.5	8.0	9.0	10.0	11.0	12.0	13.0	15.0
14 x 4	CFM	85	105	125	150	170	190	210	235	255	275	300	340	380
Ak 212	Throw	3.5	4.5	5.0	6.5	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	16.0
12 x 5	CFM	95	115	140	165	185	210	235	255	280	305	325	375	420
Ak 233	Throw	4.0	4.5	5.5	6.5	7.5	8.5	9.5	10.0	11.0	12.0	13.0	15.0	17.0
10 x 6	CFM	95	120	140	165	190	210	235	260	285	305	330	380	425
Ak 236	Throw	4.0	5.0	5.5	6.5	7.5	8.5	9.5	10.0	11.0	12.0	13.0	15.0	17.0
14 x 5	CFM	110	135	165	190	220	245	275	300	330	355	385	440	495
Ak 274	Throw	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	16.0	18.0
12 x 6	CFM	115	145	170	200	230	255	285	315	345	370	400	460	515
Ak 286	Throw	4.0	5.0	6.0	7.0	8.5	9.0	10.0	11.0	12.0	13.0	14.0	17.0	19.0
16 x 5	CFM	125	160	190	220	250	285	315	345	380	410	440	505	565
Ak 315	Throw	4.5	5.5	6.5	7.5	8.5	10.0	11.0	12.0	13.0	14.0	15.0	17.0	19.0
14 x 6	CFM	135	170	200	235	270	300	335	370	405	435	470	540	605
Ak 336	Throw	4.5	5.5	6.5	8.0	9.0	10.0	11.0	12.0	13.0	13.0	16.0	18.0	20.0
16 x 6	CFM	155	195	230	270	310	345	385	425	465	500	540	620	695
Ak 386	Throw	4.5	5.5	6.5	8.0	9.0	10.0	11.0	12.0	14.0	15.0	16.0	18.0	20.0
20 x 5	CFM	160	200	240	280	320	355	395	435	475	515	555	635	715
Ak 397	Throw	5.0	6.0	7.5	8.5	10.0	11.0	12.0	13.0	15.0	16.0	17.0	19.0	22.0
24 x 5	CFM	190	240	285	335	380	430	480	525	575	620	670	765	860
Ak 478	Throw	5.5	6.5	8.0	9.5	11.0	12.0	13.0	15.0	16.0	17.0	19.0	21.0	24.0
20 x 6	CFM	195	245	290	340	390	435	485	535	585	630	680	780	875
Ak 486	Throw	5.5	7.0	8.0	9.5	11.0	12.0	13.0	15.0	16.0	17.0	19.0	22.0	24.0
24 x 6	CFM	235	295	350	410	470	525	585	645	705	760	820	940	1055
Ak 586	Throw	6.0	7.5	9.0	10.0	12.0	13.0	15.0	16.0	18.0	19.0	21.0	24.0	27.0
20 x 8	CFM	265	335	400	465	530	600	665	730	800	865	930	1065	1195
Ak 665	Throw	6.5	8.0	9.5	11.0	13.0	14.0	16.0	17.0	19.0	21.0	22.0	25.0	28.0
30 x 6	CFM	295	370	440	515	590	660	735	810	885	955	1030	1180	1325
Ak 736	Throw	6.5	8.5	10.0	12.0	13.0	15.0	17.0	18.0	20.0	21.0	23.0	27.0	30.0
24 x 8	CFM	320	400	480	560	640	720	800	880	960	1045	1125	1285	1445
Ak 802	Throw	7.0	8.5	10.0	12.0	14.0	15.0	17.0	19.0	21.0	22.0	24.0	28.0	31.0
30 x 8	CFM	405	505	605	705	810	910	1010	1110	1210	1315	1415	1615	1820
Ak 1010	Throw	8.0	9.5	12.0	14.0	16.0	17.0	19.0	21.0	23.0	25.0	27.0	31.0	35.0
24 x 10	CFM	410	510	610	715	815	920	1020	1120	1225	1325	1430	1630	1835
Ak 1020	Throw	8.0	9.5	12.0	14.0	16.0	18.0	19.0	21.0	23.0	25.0	27.0	31.0	35.0
36 x 8	CFM	485	605	725	845	970	1090	1210	1330	1450	1575	1695	1935	2180
Ak 1210	Throw	8.5	11.0	13.0	15.0	17.0	19.0	21.0	23.0	25.0	28.0	30.0	34.0	38.0
24 x 12	CFM	490	615	740	860	985	1105	1230	1355	1475	1600	1720	1915	2160
Ak 1230	Throw	8.5	11.0	13.0	15.0	17.0	19.0	21.0	24.0	26.0	28.0	30.0	34.0	39.0
30 x 10	CFM	510	640	770	900	1025	1150	1280	1410	1535	1665	1790	2050	2305
Ak 1280	Throw	8.5	11.0	13.0	15.0	18.0	20.0	22.0	24.0	26.0	28.0	31.0	35.0	39.0
36 x 10	CFM	615	770	925	1080	1230	1385	1540	1695	1850	2000	2155	2465	2770
Ak 1540	Throw	9.5	12.0	14.0	17.0	19.0	22.0	24.0	26.0	29.0	31.0	34.0	38.0	43.0
30 x 12	CFM	620	775	930	1085	1240	1395	1550	1705	1860	2015	2170	2480	2790
Ak 1550	Throw	9.5	12.0	14.0	17.0	19.0	22.0	24.0	26.0	29.0	31.0	34.0	38.0	43.0
36 x 12	CFM	745	930	1115	1300	1490	1675	1860	2045	2230	2420	2605	2975	3350
Ak 1860	Throw	11.0	13.0	16.0	18.0	21.0	24.0	26.0	29.0	31.0	34.0	37.0	42.0	52.0

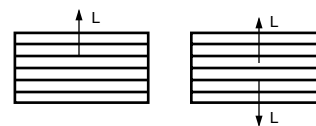
Engineering Data

C Series Curved-Blade Diffusers

C Series Curved-Blade Diffusers
Selection Procedure

1. Determine the diffuser air pattern best suited to the duct layout and room area to be served.
2. Select the air pattern type and CFM per outlet. The tables give the recommended limits of air volume per outlet for various ceiling heights. Choose the correct table for the style diffuser selected. Outlets are assumed to be mounted flush on the ceiling and no obstruction to the air stream.
3. Turn to the proper SIZE SELECTION TABLE for the air pattern desired.
4. Determine the appropriate size based on the CFM, Throw, Pressure Loss, and Face Velocity requirements.

One-Way, Two-Way



Face Velocity		400	500	600	700	800	900	1000	1100	1200
Pressure Loss		.010	.016	.022	.031	.040	.050	.062	.075	.090
6 x 6	CFM	35	45	55	65	70	80	90	100	110
Ak .090	Throw 1/2	3.5/2.5	5.0/3.5	6.0/4.0	7.0/5.0	7.5/5.5	8.5/6.0	9.5/7.0	11.0/7.5	11.5/8.5
8 x 6	CFM	40	50	60	70	80	90	100	110	120
Ak .100	Throw 1/2	3.5/2.5	4.5/3.0	5.5/4.0	6.5/4.5	7.0/5.0	8.0/6.0	9.0/6.5	10.0/7.0	11.0/7.5
10 x 6	CFM	60	75	90	105	120	135	150	165	180
Ak .150	Throw 1/2	5.0/3.5	6.0/4.5	7.0/5.0	8.5/6.0	9.5/7.0	11.0/7.5	12.0/8.5	13.0/9.5	14.0/10.0
8 x 8	CFM	65	80	95	110	130	145	160	175	190
Ak .160	Throw 1/2	5.0/3.5	6.0/4.5	7.5/5.0	8.5/6.0	10.0/7.0	11.0/8.0	12.0/9.0	14.0/9.5	15.0/10.0
12 x 6	CFM	70	90	110	125	145	160	180	200	215
Ak .180	Throw 1/2	5.0/3.5	6.5/4.5	8.0/5.5	9.0/6.5	11.0/7.5	12.0/8.5	13.0/9.5	15.0/10.0	16.0/11.0
14 x 6	CFM	85	105	125	145	170	190	210	230	250
Ak .210	Throw 1/2	5.5/4.0	7.0/5.0	8.5/6.0	10.0/7.0	11.0/8.0	13.0/9.0	14.0/10.0	16.0/11.0	17.0/12.0
10 x 10	CFM	95	120	145	170	190	215	240	265	290
Ak .240	Throw 1/2	6.0/4.0	7.5/5.0	9.0/6.5	10.0/7.5	12.0/8.0	13.0/9.5	15.0/10.0	16.0/11.0	18.0/13.0
12 x 10	CFM	115	145	175	205	230	260	290	320	350
Ak .290	Throw 1/2	6.5/4.5	8.0/5.5	9.5/7.0	11.0/8.0	13.0/9.0	14.0/10.0	16.0/11.0	18.0/13.0	19.0/14.0
16 x 8	CFM	125	155	185	215	250	280	310	340	370
Ak .310	Throw 1/2	6.5/5.0	8.5/6.0	10.0/7.0	12.0/8.0	13.0/9.5	15.0/11.0	17.0/12.0	18.0/13.0	20.0/14.0
12 x 12	CFM	140	175	210	245	280	315	350	385	420
Ak .350	Throw 1/2	7.0/5.0	9.0/6.0	11.0/7.5	12.0/8.5	14.0/10.0	16.0/11.0	18.0/12.0	19.0/14.0	21.0/15.0
16 x 12	CFM	185	230	275	320	370	415	460	505	550
Ak .460	Throw 1/2	8.0/5.5	10.0/7.5	12.0/9.0	14.0/10.0	16.0/11.0	18.0/13.0	20.0/14.0	22.0/16.0	24.0/17.0
14 x 14	CFM	190	240	290	335	385	430	480	530	575
Ak .480	Throw 1/2	8.0/5.5	10.0/7.5	12.0/9.0	14.0/10.0	17.0/12.0	18.0/13.0	21.0/15.0	23.0/16.0	25.0/17.0
16 x 16	CFM	250	315	380	440	505	565	630	695	755
Ak .630	Throw 1/2	9.5/6.5	12.0/8.5	14.0/10.0	16.0/12.0	19.0/13.0	21.0/15.0	23.0/17.0	26.0/18.0	28.0/20.0
20 x 14	CFM	270	340	410	475	545	610	680	750	815
Ak .680	Throw 1/2	9.5/7.0	12.0/8.5	15.0/10.0	17.0/12.0	19.0/14.0	22.0/15.0	24.0/17.0	27.0/19.0	29.0/21.0
24 x 12	CFM	280	350	420	490	560	630	700	770	840
Ak .700	Throw 1/2	10.0/7.0	12.0/8.5	15.0/10.0	17.0/12.0	20.0/14.0	22.0/16.0	25.0/17.0	27.0/19.0	30.0/21.0
30 x 10	CFM	290	365	440	510	585	655	730	805	875
Ak .730	Throw 1/2	10.0/7.0	13.0/9.0	15.0/11.0	18.0/12.0	20.0/14.0	23.0/16.0	25.0/18.0	28.0/20.0	30.0/21.0
36 x 10	CFM	350	440	530	615	705	790	880	970	1055
Ak .880	Throw 1/2	11.0/8.0	14.0/10.0	17.0/12.0	19.0/14.0	22.0/16.0	25.0/18.0	28.0/20.0	31.0/22.0	33.0/24.0
36 x 12	CFM	420	525	630	735	840	945	1050	1155	1260
Ak 1.050	Throw 1/2	12.0/8.5	15.0/11.0	18.0/13.0	21.0/15.0	24.0/17.0	27.0/19.0	30.0/21.0	33.0/23.0	36.0/25.0
30 x 16	CFM	460	575	690	805	920	1035	1150	1265	1380
Ak 1.150	Throw 1/2	12.0/9.0	16.0/11.0	19.0/13.0	22.0/15.0	25.0/18.0	28.0/20.0	31.0/22.0	34.0/24.0	37.0/26.0
36 x 16	CFM	560	700	840	980	1120	1260	1400	1540	1680
Ak 1.400	Throw 1/2	14.0/9.5	17.0/12.0	21.0/15.0	24.0/17.0	27.0/19.0	31.0/22.0	34.0/24.0	38.0/27.0	41.0/29.0

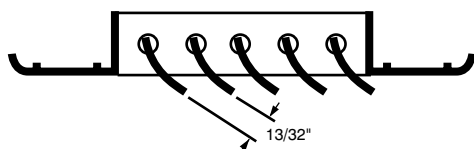
For sizes not listed and sizing tips see page 9

Terminal Velocity of 75 FPM

Curved-Blade – C Series



The Face Bars on the Curved-Blade Diffuser should be pre-set to the dimension shown below.

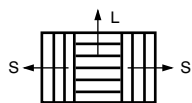


*NC 30	NC 35	**NC 40

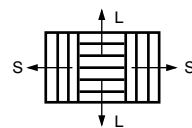
* less than or equal to

** greater than or equal to

C Series Curved-Blade Diffusers



Three-Way



Four-Way

Face Velocity	400	500	600	700	800	900	1000	1100	1200
Pressure Loss	.010	.016	.022	.031	.040	.050	.062	.075	.090
6 x 6 Ak .090	Total CFM 35 CFM L/S 9/13 Throw L/S 2.0/2.0	45 11/17 2.5/3.0	55 15/20 3.0/3.5	65 17/24 3.5/4.0	70 18/26 4.0/4.5	80 22/29 4.5/5.0	90 24/33 5.0/5.6	100 26/37 5.5/6.5	110 30/40 6.0/7.0
8 x 6 Ak .100	Total CFM 40 CFM L/S 18/11 Throw L/S 2.5/2.0	50 24/13 3.0/2.5	60 28/16 3.5/3.0	70 32/19 4.0/3.5	80 36/22 4.5/4.0	90 42/24 5.0/4.5	100 46/27 5.5/6.0	110 50/30 6.0/6.5	120 56/32 7.5/8.5
10 x 6 Ak .150	Total CFM 60 CFM L/S 22/19 Throw L/S 3.0/2.5	75 27/24 3.5/3.0	90 32/29 4.0/3.5	105 39/33 4.5/4.0	120 44/38 5.0/4.5	135 49/43 5.5/5.0	150 54/48 6.0/5.5	165 61/52 6.5/6.5	180 66/57 7.5/7.5
8 x 8 Ak .160	Total CFM 65 CFM L/S 31/17 Throw L/S 3.5/2.5	80 36/22 4.0/3.5	95 43/26 4.5/4.0	110 50/30 5.0/4.5	130 60/35 5.5/5.0	145 67/39 6.0/5.5	160 74/43 6.5/6.0	175 81/47 7.0/6.5	190 88/51 8.0/7.5
12 x 6 Ak .180	Total CFM 70 CFM L/S 20/25 Throw L/S 2.5/3.0	85 26/32 3.5/4.0	100 32/39 4.0/4.5	115 37/44 4.5/5.0	130 43/51 5.0/5.5	145 48/56 5.5/6.0	160 54/63 6.0/6.5	180 60/70 6.5/7.0	200 65/75 7.5/8.5
14 x 6 Ak .210	Total CFM 85 CFM L/S 21/32 Throw L/S 2.5/3.5	105 27/39 3.5/4.5	125 31/47 4.0/5.0	145 37/54 4.5/5.5	170 44/63 5.0/6.0	190 48/71 5.5/6.5	210 54/78 6.0/7.0	230 58/86 6.5/7.5	250 64/93 7.0/8.0
10 x 10 Ak .240	Total CFM 95 CFM L/S 35/30 Throw L/S 3.5/3.0	120 44/38 4.5/4.0	145 53/46 5.0/4.5	170 62/54 5.5/5.0	190 70/60 6.0/6.5	215 79/68 6.5/7.0	240 88/76 7.0/7.5	265 97/84 7.5/8.0	290 106/92 8.0/8.5
12 x 10 Ak .290	Total CFM 115 CFM L/S 35/40 Throw L/S 3.5/4.0	145 44/51 4.5/5.0	175 53/61 5.0/5.5	205 62/72 5.5/6.0	230 70/80 6.0/6.5	260 78/91 6.5/7.0	290 88/101 7.0/7.5	320 96/112 7.5/8.0	350 106/122 8.0/8.5
16 x 8 Ak .310	Total CFM 125 CFM L/S 43/41 Throw L/S 4.0/4.0	155 55/50 5.0/4.5	185 65/60 6.0/5.5	215 75/70 6.5/6.0	250 88/81 7.0/6.5	280 98/91 7.5/7.0	310 108/101 8.0/7.5	340 120/110 8.5/8.0	370 130/120 9.0/8.5
12 x 12 Ak .350	Total CFM 140 CFM L/S 42/49 Throw L/S 4.0/4.0	175 53/61 5.0/5.0	210 62/74 6.0/5.5	245 73/86 6.5/6.5	280 84/98 7.0/7.5	315 95/110 7.5/8.0	350 105/123 8.0/8.5	385 115/135 8.5/9.0	420 126/147 9.0/10.0
16 x 12 Ak .460	Total CFM 185 CFM L/S 65/60 Throw L/S 4.5/4.5	230 80/75 6.0/5.5	275 97/89 7.0/7.0	320 113/104 8.5/8.0	370 130/120 9.5/9.0	415 146/134 10.0/10.0	460 162/149 11.0/11.0	505 178/164 12.0/12.0	550 194/178 13.0/13.0
14 x 14 Ak .480	Total CFM 190 CFM L/S 48/71 Throw L/S 4.0/5.0	240 62/89 5.0/6.5	290 74/108 6.5/7.5	335 86/125 7.5/9.0	385 99/143 8.5/10.0	430 110/160 9.5/11.0	480 123/179 10.0/13.0	530 136/197 12.0/14.0	575 147/214 13.0/15.0
16 x 16 Ak .630	Total CFM 250 CFM L/S 88/81 Throw L/S 5.5/5.5	315 111/102 7.0/7.0	380 134/123 8.5/8.0	440 155/143 9.5/9.5	505 178/164 11.0/11.0	565 199/183 12.0/12.0	630 222/204 14.0/13.0	695 245/225 15.0/15.0	755 266/245 17.0/16.0
20 x 14 Ak .680	Total CFM 270 CFM L/S 76/97 Throw L/S 5.0/6.0	340 95/122 6.5/7.0	410 115/148 7.5/9.0	475 133/171 9.0/10.0	545 153/196 10.0/12.0	610 171/220 12.0/13.0	680 190/245 13.0/15.0	750 210/270 14.0/16.0	815 228/293 15.0/17.0
24 x 12 Ak .700	Total CFM 280 CFM L/S 90/95 Throw L/S 5.5/5.5	350 112/119 7.0/7.0	420 134/143 8.5/8.5	490 156/167 9.5/10.0	560 178/191 11.0/12.0	630 200/215 12.0/13.0	700 222/239 14.0/14.0	770 244/263 15.0/16.0	840 268/286 17.0/17.0
30 x 10 Ak .730	Total CFM 290 CFM L/S 92/99 Throw L/S 5.5/6.0	365 117/124 7.0/7.5	440 140/150 8.5/9.0	510 164/173 10.0/10.0	585 187/199 11.0/12.0	655 210/223 13.0/13.0	730 234/248 14.0/15.0	805 258/274 16.0/16.0	875 280/298 17.0/18.0
36 x 10 Ak .880	Total CFM 350 CFM L/S 113/118 Throw L/S 6.5/6.5	440 143/149 8.0/8.0	530 172/179 9.5/9.5	615 199/208 11.0/11.0	705 228/238 13.0/13.0	790 256/267 14.0/14.0	880 285/297 16.0/16.0	970 314/328 17.0/18.0	1055 342/357 19.0/19.0
36 x 12 Ak 1.050	Total CFM 420 CFM L/S 135/142 Throw L/S 7.0/7.0	525 169/178 8.5/9.0	630 203/214 10.0/11.0	735 237/249 12.0/12.0	840 270/285 14.0/14.0	945 304/320 15.0/16.0	1050 338/356 17.0/18.0	1155 372/392 19.0/19.0	1260 406/427 20.0/21.0
30 x 16 Ak 1.150	Total CFM 460 CFM L/S 148/156 Throw L/S 7.0/7.0	575 183/196 9.0/9.0	690 220/235 10.0/11.0	805 258/274 12.0/13.0	920 294/313 14.0/15.0	1035 331/352 16.0/16.0	1150 368/391 18.0/18.0	1265 405/430 19.0/20.0	1380 442/469 21.0/22.0
36 x 16 Ak 1.400	Total CFM 560 CFM L/S 180/190 Throw L/S 8.0/8.0	700 226/237 10.0/10.0	840 270/285 12.0/12.0	980 316/332 14.0/14.0	1120 360/380 16.0/16.0	1260 406/427 18.0/18.0	1400 450/475 20.0/20.0	1540 496/522 21.0/22.0	1680 540/570 23.0/24.0

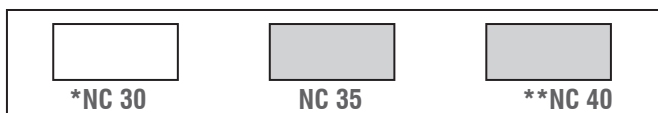
For sizes not listed and sizing tips see page 9

Terminal Velocity of 75 FPM

Face Velocity	400	500	600	700	800	900	1000	1100	1200
Pressure Loss	.010	.016	.022	.031	.040	.050	.062	.075	.090
6 x 6 Ak .090	Total CFM 35 CFM L/S 5/13 Throw L/S 1.5/2.0	45 6/17 2.0/3.5	55 7/20 2.5/4.0	65 9/24 3.0/3.5	70 9/26 3.5/4.0	80 11/29 4.0/4.5	90 13/33 4.5/5.0	100 15/40 5.0/5.5	110 17/45 5.5/6.0
8 x 6 Ak .100	Total CFM 40 CFM L/S 9/11 Throw L/S 1.5/1.5	50 12/13 2.5/2.0	60 14/16 3.0/2.5	70 16/19 3.5/3.0	80 18/22 4.0/3.5	90 21/24 4.5/4.5	100 23/27 5.0/5.5	110 25/30 5.5/6.5	120 28/32 6.0/7.0
10 x 6 Ak .150	Total CFM 60 CFM L/S 11/19 Throw L/S 2.0/2.5	75 14/24 2.5/3.5	90 16/29 3.0/4.0	105 19/33 3.5/4.5	120 22/38 4.0/5.0	135 25/43 4.5/5.5	150 27/48 5.0/6.0	165 30/52 5.5/6.5	180 33/57 6.0/7.0
8 x 8 Ak .160	Total CFM 65 CFM L/S 15/17 Throw L/S 2.5/2.0	80 18/22 3.0/2.5	95 22/26 3.5/3.0	110 25/30 4.0/3.5	130 30/35 4.5/4.5	145 33/39 5.0/5.5	160 37/43 5.5/6.5	175 40/47 6.0/7.0	190 44/51 6.5/7.5
12 x 6 Ak .180	Total CFM 70 CFM L/S 10/25 Throw L/S 2.0/3.0	85 13/32 2.5/4.0	100 16/39 3.0/5.0	115 19/44 3.5/5.5	130 22/51 4.0/6.0	145 24/56 4.5/7.0	160 27/63 5.0/8.0	180 30/70 5.5/8.5	200 33/75 6.0/9.0
14 x 6 Ak .210	Total CFM 85 CFM L/S 11/32 Throw L/S 2.0/3.5	105 13/39 2.5/4.5	125 16/47 3.0/5.0	145 18/54 3.5/6.0	170 22/63 4.0/7.0	190 24/71 4.5/8.0	210 27/78 5.0/9.0	230 30/86 5.5/10.0	250 32/93 6.0/11.0
10 x 10 Ak .240	Total CFM 95 CFM L/S 17/30 Throw L/S 2.5/3.0	120 22/38 3.0/4.0	145 26/46 3.5/5.0	170 31/54 4.0/6.0	190 35/60 4.5/7.0	215 39/68 5.0/8.0	240 44/76 5.5/9.0	265 48/84 6.0/10.0	290 53/92 7.0/11.0
12 x 10 Ak .290	Total CFM 115 CFM L/S 17/40 Throw L/S 2.5/4.0	145 22/51 3.0/5.0	175 26/61 3.5/6.0	205 31/72 4.0/7.0	230 35/80 4.5/8.0	260 39/91 5.0/9.0	290 44/101 5.5/10.0	320 48/112 6.0/11.0	350 53/122 7.0/12.0
16 x 8 Ak .310	Total CFM 125 CFM L/S 22/41 Throw L/S 3.0/4.0	155 27/50 3.5/4.5	185 33/60 4.0/5.5	215 38/70 4.5/6.5	250 44/81 5.0/7.5	280 49/91 5.5/8.5	310 55/100 6.0/9.0	340 60/110 6.5/10.0	370 65/120 7.0/11.0
12 x 12 Ak .350	Total CFM 140 CFM L/S 21/49 Throw L/S 2.5/4.0	175 26/61 3.5/5.0	210 31/74 4.0/6.0	245 37/86 4.5/7.0	280 42/98 5.0/8.0	315 47/110 5.5/9.0	350 52/123 6.0/10.0	385 57/135 6.5/11.0	420 63/147 7.0/12.0
16 x 12 Ak .460	Total CFM 185 CFM L/S 33/60 Throw L/S 3.5/4.5	230 40/75 4.0/5.5	275 48/89 5.0/7.0	320 56/104 6.0/8.0	370 65/120 7.0/9.0	415 73/135 8.0/10.0	460 81/149 9.0/11.0	505 89/164 10.0/12.0	550 97/178 11.0/13.0
14 x 14 Ak .480	Total CFM 190 CFM L/S 24/71 Throw L/S 3.0/5.0	240 31/89 3.5/6.5	290 37/108 4.0/7.5	335 43/125 5.0/9.0	385 49/143 6.0/10.0	430 55/160 7.0/11.0	480 61/179 8.0/12.0	530 68/197 9.0/13.0	575 74/214 10.0/14.0
16 x 16 Ak .630	Total CFM 250 CFM L/S 44/81 Throw L/S 4.0/5.5	315 55/102 5.0/6.5	380 67/123 6.0/8.0	440 77/143 7.0/9.5	505 89/164 8.0/11.0	565 99/183 9.0/12.0	630 111/204 10.0/13.0	695 122/225 11.0/15.0	755 133/245 12.0/16.0
20 x 14 Ak .680	Total CFM 270 CFM L/S 38/97 Throw L/S 3.5/6.0	340 48/122 4.5/7.0	410 57/148 5.5/9.0	475 67/171 6.5/10.0	545 76/196 7.5/11.0	610 85/220 8.5/12.0	680 95/245 9.5/13.0	750 105/270 10.5/14.0	815 114/293 11.5/15.0
24 x 12 Ak .700	Total CFM 280 CFM L/S 45/95 Throw L/S 4.0/5.5	350 56/119 5.0/7.0	420 67/143 6.0/8.5	490 78/167 7.0/10.0	560 89/191 8.0/12.0	630 100/215 9.0/13.0	700 111/239 10.0/14.0	770 122/263 11.0/16.0	840 134/286 12.0/17.0
30 x 10 Ak .730	Total CFM 290 CFM L/S 46/99 Throw L/S 4.0/6.0	365 58/124 5.0/7.5	440 70/150 6.0/9.0	510 82/173 7.0/10.0	585 94/199 8.0/12.0	655 105/223 9.0/13.0	730 117/248 10.0/15.0	805 129/274 11.0/16.0	875 140/298 12.0/18.0
36 x 10 Ak .880	Total CFM 350 CFM L/S 57/118 Throw L/S 4.5/6.5	440 71/149 5.5/8.0	530 86/179 6.5/9.5	615 100/208 8.0/11.0	705 114/238 9.0/13.0	790 128/267 10.0/14.0	880 143/297 11.0/16.0	970 157/328 12.0/18.0	1055 171/357 13.0/19.0
36 x 12 Ak 1.050	Total CFM 420 CFM L/S 67/142 Throw L/S 5.0/7.0	525 85/178 6.0/9.0	630 101/214 7.0/11.0	735 118/249 8.5/12.0	840 132/285 9.5/14.0	945 152/320 11.0/16.0	1050 169/356 12.0/18.0	1155 186/392 13.0/19.0	1260 203/427 14.0/21.0
30 x 16 Ak 1.150	Total CFM 460 CFM L/S 74/156 Throw L/S 5.0/7.0	575 92/196 6.0/9.0	690 110/235 7.5/11.0	805 129/274 8.5/13.0	920 147/313 10.0/15.0	1035 166/352 11.0/16.0	1150 184/391 12.0/18.0	1265 202/430 14.0/20.0	1380 221/469 15.0/22.0
36 x 16 Ak 1.400	Total CFM 560 CFM L/S 90/190 Throw L/S 5.5/8.0	700 113/237 6.5/10.0	840 135/285 8.5/12.0	980 158/332 9.5/14.0	1120 180/380 11.0/16.0	1260 203/427 12.0/18.0	1400 225/475 14.0/20.0	1540 248/522 15.0/22.0	1680 270/570 17.0/24.0

For sizes not listed and sizing tips see page 9

Terminal Velocity of 75 FPM



* less than or equal to

** greater than or equal to

Engineering Data

RH45, RH45T, RHD45, RHF45, ER45 Registers and Grilles

Face Velocity		400	500	600	700	800	900	1000
6 x 6	CFM	40	60	70	80	90	100	110
Ak .110	Ps	.037	.058	.083	.113	.148	.189	.232
8 x 8	CFM	100	120	140	170	190	220	240
Ak .240	Ps	.032	.050	.072	.098	.128	.163	.200
12 x 6	CFM	110	140	170	190	220	250	280
Ak .280	Ps	.031	.048	.069	.094	.122	.155	.191
14 x 6	CFM	30	170	200	230	270	300	330
Ak .330	Ps	.029	.045	.065	.088	.114	.145	.179
14 x 8	CFM	190	230	280	330	370	420	460
Ak .460	Ps	.025	.039	.055	.075	.097	.123	.152
12 x 12	CFM	250	310	370	430	490	550	610
Ak .610	Ps	.021	.032	.046	.062	.079	.100	.125
24 x 8	CFM	340	420	500	590	670	760	840
Ak .840	Ps	.020	.032	.046	.061	.079	.100	.124
18 x 12	CFM	380	480	570	670	760	860	950
Ak .950	Ps	.020	.032	.046	.061	.080	.101	.124
30 x 8	CFM	430	530	640	750	850	960	1100
Ak 1.070	Ps	.020	.032	.046	.061	.080	.101	.124
24 x 12	CFM	520	650	780	900	1000	1200	1300
Ak 1.290	Ps	.020	.032	.046	.062	.081	.102	.124
18 x 18	CFM	580	730	880	1000	1200	1300	1500
Ak 1.460	Ps	.020	.032	.046	.062	.081	.102	.124
30 x 12	CFM	650	820	980	1100	1300	1500	1600
Ak 1.630	Ps	.021	.032	.046	.062	.082	.103	.124
20 x 20	CFM	730	910	1100	1300	1500	1600	1800
Ak 1.820	Ps	.021	.032	.046	.063	.083	.104	.124
36 x 12	CFM	790	990	1200	1400	1600	1800	2000
Ak 1.980	Ps	.021	.032	.046	.063	.084	.105	.125
24 x 20	CFM	880	1100	1300	1500	1800	2000	2200
Ak 2.210	Ps	.021	.032	.047	.064	.085	.107	.126
30 x 18	CFM	1000	1200	1500	1700	2000	2200	2500
Ak 2.500	Ps	.021	.033	.048	.065	.087	.109	.128
24 x 24	CFM	1100	1300	1600	1900	2100	2400	2700
Ak 2.670	Ps	.022	.033	.048	.066	.088	.110	.130
36 x 18	CFM	1200	1500	1800	2100	2400	2700	3000
Ak 3.020	Ps	.023	.035	.051	.069	.092	.116	.137
30 x 24	CFM	1300	1700	2000	2400	2700	3000	3400
Ak 3.370	Ps	.024	.037	.053	.074	.096	.121	.144
36 x 24	CFM	1600	2000	2400	2900	3300	3700	4100
Ak 4.080	Ps	.027	.040	.058	.080	.105	.132	.158
30 x 30	CFM	1700	2100	2600	3000	3400	3800	4300
Ak 4.260	Ps	.027	.041	.060	.081	.107	.135	.162
36 x 30	CFM	2100	2600	3100	3600	4100	4600	5200
Ak 5.150	Ps	.030	.045	.066	.090	.117	.149	.179
48 x 24	CFM	2200	2800	3300	3900	4400	5000	5500
Ak 5.510	Ps	.031	.047	.069	.093	.122	.154	.186
36 x 36	CFM	2500	3100	3700	4400	5000	5600	6200
Ak 6.240	Ps	.034	.051	.074	.100	.130	.165	.200
48 x 36	CFM	3400	4200	5100	5900	6800	7600	8500
Ak 8.480	Ps	.025	.038	.055	.075	.098	.124	.153
48 x 48	CFM	4600	5800	6900	8100	9200	10000	12000
Ak 11.600	Ps	.022	.034	.048	.066	.086	.109	.134

For sizes not listed and sizing tips see page 9

RH90, RHD90 Registers and Grilles

Face Velocity		400	500	600	700	800	900	1000
6 x 6	CFM	50	63	76	88	101	113	126
Ak .130	Ps	.012	.019	.029	.038	.048	.055	.065
8 x 8	CFM	103	129	155	181	207	233	259
Ak .260	Ps	.011	.018	.028	.037	.046	.053	.063
12 x 6	CFM	119	148	178	208	237	267	297
Ak .300	Ps	.011	.018	.027	.036	.046	.053	.063
14 x 6	CFM	141	177	212	248	283	318	354
Ak .350	Ps	.011	.018	.027	.036	.045	.052	.062
14 x 8	CFM	195	244	292	341	390	438	487
Ak .490	Ps	.011	.018	.026	.035	.044	.051	.061
12 x 12	CFM	256	320	384	448	512	576	640
Ak .640	Ps	.011	.017	.025	.033	.042	.049	.059
24 x 8	CFM	348	435	523	610	697	784	871
Ak .870	Ps	.010	.017	.024	.032	.040	.047	.057
18 x 12	CFM	395	493	592	691	789	888	987
Ak .990	Ps	.010	.016	.023	.031	.039	.046	.056
30 x 8	CFM	441	552	662	772	882	993	1103
Ak 1.100	Ps	.010	.016	.023	.030	.038	.045	.055
24 x 12	CFM	535	668	802	936	1069	1203	1337
Ak 1.340	Ps	.010	.016	.021	.028	.036	.043	.053
18 x 18	CFM	605	756	907	1059	1210	1361	1512
Ak 1.510	Ps	.010	.016	.021	.027	.035	.042	.052
30 x 12	CFM	676	845	1014	1182	1351	1520	1689
Ak 1.690	Ps	.010	.016	.020	.026	.034	.041	.051
20 x 20	CFM	755	943	1132	1321	1509	1698	1887
Ak 1.890	Ps	.010	.016	.019	.026	.033	.040	.050
36 x 12	CFM	818	1023	1227	1432	1636	1841	2045
Ak 2.050	Ps	.010	.015	.019	.025	.032	.039	.049
24 x 20	CFM	914	1142	1370	1599	1827	2055	2284
Ak 2.280	Ps	.010	.015	.018	.024	.031	.038	.048
30 x 18	CFM	1034	1292	1551	1809	2068	2326	2584
Ak 2.580	Ps	.010	.015	.017	.023	.030	.037	.047
24 x 24	CFM	1106	1383	1659	1936	2213	2489	2766
Ak 2.770	Ps	.009	.015	.017	.023	.030	.037	.047
36 x 18	CFM	1252	1565	1878	2191	2505	2818	3131
Ak 3.130	Ps	.009	.015	.016	.022	.029	.036	.046
30 x 24	CFM	1399	1749	2099	2449	2799	3149	3499
Ak 3.500	Ps	.009	.015	.016	.022	.029	.036	.046
36 x 24	CFM	1697	2122	2546	2971	3395	3819	4244
Ak 4.240	Ps	.009	.014	.016	.023	.031	.038	.048
30 x 30	CFM	1773	2216	2659	3102	3546	3989	4432
Ak 4.430	Ps	.009	.014	.016	.023	.031	.038	.048
36 x 30	CFM	2154	2692	3231	3769	4307	4846	5384
Ak 5.380	Ps	.009	.014	.018	.026	.036	.043	.053
48 x 24	CFM	2308	2885	3462	4039	4616	5193	5771
Ak 5.770	Ps	.009	.014	.020	.028	.039	.046	.056
36 x 36	CFM	2621	3276	3931	4587	5242	5897	6552
Ak 6.550	Ps	.009	.014	.023	.033	.045	.052	.062
48 x 36	CFM	3588	4485	5382	6279	7176	8073	8971
Ak 8.970	Ps	.009	.014	.023	.033	.045	.052	.062
48 x 48	CFM	4946	6183	7419	8656	9893	11129	12366
Ak 12.400	Ps	.008	.013	.023	.033	.045	.052	.062
For sizes not listed and sizing tips see page 9								

Engineering Data

RE5, RED5, REF5 Series Return Air Registers and Grilles
 Performance based on nominal sizes shown in bold

Nominal Duct Size (in.)	Nominal Duct Area sq. ft	Core Area sq. ft	Core Velocity Velocity Pressure 1x1x1 Neg. Ps ½x½ Neg. Ps	NC 20				NC 30		NC 40			
				300	400	500	600	700	800	1000	1200	1400	
				0.006 0.013 0.013	0.01 0.024 0.024	0.016 0.037 0.037	0.022 0.054 0.053	0.031 0.073 0.073	0.04 0.096 0.095	0.062 0.15 0.148	0.09 0.216 0.213	0.122 0.294 0.29	
6x6	0.25	0.19	Airflow, cfm NC	57 -	76 -	95 -	114 10	133 17	152 22	190 31	228 39	266 45	
8x6	0.33	0.26	Airflow, cfm NC	78 -	104 -	130 -	156 10	182 17	208 22	260 31	312 39	364 45	
10x6	0.42	0.34	Airflow, cfm NC	102 -	136 -	170 -	204 11	238 17	272 23	340 32	408 39	476 46	
8x8	0.44	0.37	Airflow, cfm NC	111 -	148 -	185 -	222 11	259 17	296 23	370 32	444 39	518 46	
12x6	0.50	0.41	Airflow, cfm NC	123 -	164 -	205 -	246 11	287 18	328 23	410 32	492 40	574 46	
14x6	0.58	0.48	Airflow, cfm NC	144 -	192 -	240 -	288 11	336 18	384 23	480 32	576 40	672 46	
16x6	0.67	0.57	Airflow, cfm	171	228	285	342	399	456	570	684	798	
12x8			NC	-	-	-	12	18	23	32	40	46	
10x10	0.69	0.59	Airflow, cfm NC	177 -	236 -	295 -	354 12	413 18	472 23	590 33	708 40	826 46	
18x6	0.75	0.63	Airflow, cfm NC	189 -	252 -	315 -	378 12	441 18	504 24	630 33	756 40	882 46	
20x6	0.83	0.72	Airflow, cfm	216	288	360	432	504	576	720	864	1008	
12x10			NC	-	-	-	12	18	24	33	40	46	
22x6	0.92	0.77	Airflow, cfm NC	231 -	308 -	385 -	462 12	539 18	616 24	770 33	924 40	1078 47	
24x6	1.00	0.88	Airflow, cfm	264	352	440	528	616	704	880	1056	1232	
12x12			NC	-	-	-	12	18	24	33	40	47	
30x6	1.25	1.11	Airflow, cfm	333	444	555	666	777	888	1110	1332	1554	
18x10			NC	-	-	-	13	19	24	34	41	47	
14x14	1.36	1.22	Airflow, cfm NC	366 -	488 -	610 -	732 13	854 19	976 24	1220 34	1464 41	1708 47	
36x6	1.50	1.35	Airflow, cfm	405	540	675	810	945	1080	1350	1620	1890	
18x12			NC	-	-	-	13	19	24	34	41	47	
22x10	1.53	1.37	Airflow, cfm NC	411 -	548 -	685 -	822 13	959 19	1096 25	1370 34	1644 41	1918 47	
30x8	1.67	1.49	Airflow, cfm	447	596	745	894	1043	1192	1490	1788	2086	
24x10			NC	-	-	-	13	19	25	34	41	47	
42x6	1.75	1.59	Airflow, cfm	477	636	795	954	1113	1272	1590	1908	2226	
18x14			NC	-	-	-	13	19	25	34	41	47	
16x16	1.78	1.62	Airflow, cfm NC	486 -	648 -	810 -	972 13	1134 19	1296 25	1620 34	1944 41	2268 48	
24x12	2.00	1.82	Airflow, cfm	546	728	910	1092	1274	1456	1820	2184	2548	
18x16			NC	-	-	-	13	19	25	34	41	48	
18x18	2.25	2.07	Airflow, cfm NC	621 -	828 -	1035 -	1242 13	1449 19	1656 25	2070 34	2484 41	2898 48	
24x14	2.33	2.14	Airflow, cfm NC	642 -	856 -	1070 -	1284 13	1498 20	1712 25	2140 34	2568 42	2996 48	
30x12	2.50	2.29	Airflow, cfm NC	687 -	916 -	1145 -	1374 13	1603 20	1832 25	2290 34	2748 42	3206 48	
24x16	2.67	2.46	Airflow, cfm NC	738 -	984 -	1230 -	1476 13	1722 20	1968 25	2460 34	2952 42	3444 48	
20x20	2.78	2.57	Airflow, cfm NC	771 -	1028 -	1285 -	1542 13	1799 20	2056 25	2570 34	3084 42	3598 48	
36x12	3.00	2.75	Airflow, cfm NC	825 -	1100 -	1375 -	1650 14	1925 20	2200 25	2750 34	3300 42	3850 48	
30x16	3.33	3.11	Airflow, cfm	933	1244	1555	1866	2177	2488	3110	3732	4354	
24x20			NC	-	-	-	14	20	25	35	42	48	
	3.36	3.14	Airflow, cfm	942	1256	1570	1884	2198	2512	3140	3768	4396	
22x22			NC	-	-	-	14	20	25	35	42	48	
42x12	3.50	3.22	Airflow, cfm	966	1288	1610	1932	2254	2576	3220	3864	4508	
36x14			NC	-	-	-	14	20	26	35	42	48	
24x22	3.67	3.43	Airflow, cfm NC	1029 -	1372 -	1715 -	2058 14	2401 20	2744 26	3430 35	4116 42	4802 48	
30x18	3.75	3.50	Airflow, cfm NC	1050 -	1400 -	1750 -	2100 14	2450 20	2800 26	3500 35	4200 42	4900 48	

• Static pressures are negative, in inches of water, measured per ANSI/ASHRAE Standard 70-2006

• NC based on room absorption of 10dB, re 10⁻¹² watts, measured per ANSI/ASHRAE Standard 70-2006

RE5, RED5, REF5 Series Return Air Registers and Grilles
Performance based on nominal sizes shown in bold

Nominal Duct Size (in.)	Nominal Duct Area sq. ft	Core Area sq. ft	Core Velocity Velocity Pressure 1x1x1 Neg. Ps ½x½x½ Neg. Ps	NC 20 NC 30 NC 40											
				300	400	500	600	700	800	1000	1200	1400			
				0.006	0.01	0.016	0.022	0.031	0.04	0.062	0.09	0.122			
				0.013	0.024	0.037	0.054	0.073	0.096	0.15	0.216	0.294			
				0.013	0.024	0.037	0.053	0.073	0.095	0.148	0.213	0.29			
48x12			Airflow, cfm	1125	1500	1875	2250	2625	3000	3750	4500	5250			
24x24	4.00	3.75	NC	-	-	-	14	20	26	35	42	49			
			Airflow, cfm	1266	1688	2110	2532	2954	3376	4220	5064	5908			
36x18	4.50	4.22	NC	-	-	-	14	20	26	35	42	49			
36x20			Airflow, cfm	1413	1884	2355	2826	3297	3768	4710	5652	6594			
30x24	5.00	4.71	NC	-	-	-	14	21	26	35	43	49			
			Airflow, cfm	1482	1976	2470	2964	3458	3952	4940	5928	6916			
42x18	5.25	4.94	NC	-	-	-	14	21	26	35	43	49			
			Airflow, cfm	1548	2064	2580	3096	3612	4128	5160	6192	7224			
28x28	5.44	5.16	NC	-	-	-	14	21	26	35	43	49			
			Airflow, cfm	1653	2204	2755	3306	3857	4408	5510	6612	7714			
42x20	30x28	5.83	NC	-	-	-	14	21	26	35	43	49			
			Airflow, cfm	1698	2264	2830	3396	3962	4528	5660	6792	7924			
48x18	36x24	6.00	NC	-	-	-	14	21	26	35	43	49			
			Airflow, cfm	1782	2376	2970	3564	4158	4752	5940	7128	8316			
30x30	6.25	5.94	NC	-	-	-	15	21	26	35	43	49			
			Airflow, cfm	1998	2664	3330	3996	4662	5328	6660	7992	9324			
42x24	36x28	7.00	NC	-	-	-	15	21	26	36	43	49			
			Airflow, cfm	2004	2672	3340	4008	4676	5344	6680	8016	9352			
46x22	7.03	6.68	NC	-	-	-	15	21	26	36	43	49			
			Airflow, cfm	2034	2712	3390	4068	4746	5424	6780	8136	9492			
32x32	7.11	6.78	NC	-	-	-	15	21	27	36	43	49			
			Airflow, cfm	2148	2864	3580	4296	5012	5728	7160	8592	10024			
36x30	7.50	7.16	NC	-	-	-	15	21	27	36	43	49			
			Airflow, cfm	2289	3052	3815	4578	5341	6104	7630	9156	10682			
48x24	36x32	8.00	NC	-	-	-	15	21	27	36	43	49			
			Airflow, cfm	2304	3072	3840	4608	5376	6144	7680	9216	10752			
34x34	8.03	7.68	NC	-	-	-	15	21	27	36	43	49			
			Airflow, cfm	2442	3256	4070	4884	5698	6512	8140	9768	11396			
36x34	8.50	8.14	NC	-	-	-	15	21	27	36	43	50			
			Airflow, cfm	2514	3352	4190	5028	5866	6704	8380	10056	11732			
42x30	8.75	8.38	NC	-	-	-	15	21	27	36	43	50			
			Airflow, cfm	2589	3452	4315	5178	6041	6904	8630	10356	12082			
36x36	9.00	8.63	NC	-	-	-	15	21	27	36	43	50			
			Airflow, cfm	2880	3840	4800	5760	6720	7680	9600	11520	13440			
42x34	10.00	9.60	NC	-	-	-	15	21	27	36	43	50			
			Airflow, cfm	2892	3856	4820	5784	6748	7712	9640	11568	13496			
38x38	10.03	9.64	NC	-	-	-	15	21	27	36	43	50			
			Airflow, cfm	3030	4040	5050	6060	7070	8080	10100	12120	14140			
42x36	10.50	10.10	NC	-	-	-	15	22	27	36	44	50			
			Airflow, cfm	3135	4180	5225	6270	7315	8360	10450	12540	14630			
46x34	10.86	10.45	NC	-	-	-	15	22	27	36	44	50			
			Airflow, cfm	3201	4268	5335	6402	7469	8536	10670	12804	14938			
42x38	11.08	10.67	NC	-	-	-	15	22	27	36	44	50			
			Airflow, cfm	3210	4280	5350	6420	7490	8560	10700	12840	14980			
40x40	11.11	10.70	NC	-	-	-	15	22	27	36	44	50			
			Airflow, cfm	3471	4628	5785	6942	8099	9256	11570	13884	16198			
48x36	12.00	11.57	NC	-	-	-	15	22	27	36	44	50			
			Airflow, cfm	3546	4728	5910	7092	8274	9456	11820	14184	16548			
42x42	12.25	11.82	NC	-	-	-	15	22	27	36	44	50			
			Airflow, cfm	3897	5196	6495	7794	9093	10392	12990	15588	18186			
44x44	13.44	12.99	NC	-	-	-	16	22	27	36	44	50			
			Airflow, cfm	4062	5416	6770	8124	9478	10832	13540	16248	18956			
48x42	14.00	13.54	NC	-	-	-	16	22	27	37	44	50			
			Airflow, cfm	4266	5688	7110	8532	9954	11376	14220	17064	19908			
46x46	14.69	14.22	NC	-	-	-	16	22	27	37	44	50			
			Airflow, cfm	4455	5940	7425	8910	10395	11880	14850	17820	20790			
48x46	15.33	14.85	NC	-	-	-	16	22	27	37	44	50			
			Airflow, cfm	4650	6200	7750	9300	10850	12400	15500	18600	21700			
48x48	16.00	15.50	NC	-	-	-	16	22	28	37	44	50			

- Static pressures are negative, in inches of water, measured per ANSI/ASHRAE Standard 70-2006

- NC based on room absorption of 10dB, re 10⁻¹² watts, measured per ANSI/ASHRAE Standard 70-2006

TG, TGF Transfer Grilles

Face Velocity*		500	600	700	800	900	1000	1200	1400	1600	1800	2000	2200	2400	2600
10X6	CFM	145	174	203	232	261	290	348	406	464	522	580	638	696	754
Ak 0.29	Ps	0.2	0.3	0.4	0.5	0.7	0.8	1.1	1.3	1.6	1.8	2.1	2.3	2.6	2.9
8X8	CFM	150	180	210	240	270	300	360	420	480	540	600	660	720	780
Ak 0.3	Ps	0.1	0.3	0.4	0.5	0.6	0.8	1	1.3	1.5	1.7	2	2.2	2.5	2.7
12X6	CFM	170	204	238	272	306	340	408	476	544	612	680	748	816	884
Ak 0.34	Ps	0	0.1	0.2	0.3	0.4	0.6	0.8	1	1.2	1.4	1.6	1.9	2.1	2.3
14X6	CFM	200	240	280	320	360	400	480	560	640	720	800	880	960	1040
Ak 0.4	Ps	0	0.1	0.2	0.3	0.4	0.5	0.7	0.8	1	1.2	1.4	1.6	1.8	1.9
14X8	CFM	265	318	371	424	477	530	636	742	848	954	1060	1166	1272	1378
Ak 0.53	Ps	-0.1	0	0.1	0.2	0.2	0.3	0.5	0.6	0.8	1	1.1	1.3	1.5	1.6
20X6	CFM	285	342	399	456	513	570	684	798	912	1026	1140	1254	1368	1482
Ak 0.57	Ps	-0.1	0	0.1	0.1	0.2	0.3	0.4	0.5	0.7	0.8	0.9	1.1	1.2	1.3
12X12	CFM	345	414	483	552	621	690	828	966	1104	1242	1380	1518	1656	1794
Ak 0.69	Ps	-0.1	-0.1	0	0.1	0.1	0.2	0.3	0.4	0.6	0.7	0.8	0.9	1	1.2
30X6	CFM	430	516	602	688	774	860	1032	1204	1376	1548	1720	1892	2064	2236
Ak 0.86	Ps	-0.1	0	0	0.1	0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
16X12	CFM	460	552	644	736	828	920	1104	1288	1472	1656	1840	2024	2208	2392
Ak 0.92	Ps	-0.1	-0.1	0	0	0	0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.7	0.7
18X12	CFM	515	618	721	824	927	1030	1236	1442	1648	1854	2060	2266	2472	2678
Ak 1.03	Ps	-0.2	-0.1	-0.1	-0.1	0	0	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.6
20X12	CFM	575	690	805	920	1035	1150	1380	1610	1840	2070	2300	2530	2760	2990
Ak 1.15	Ps	-0.2	-0.1	-0.1	-0.1	0	0	0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.5

*Velocity measured 1" from face.

20 Round Diffuser

Neck Velocity		400	500	600	700	800	900	1000	1200	1400
6"	CFM	80	100	120	140	160	180	200	235	275
Ak .160	Ps	<.010	<.010	<.010	<.010	0.014	0.02	0.02	0.03	0.03
	Throw	2.00	2.00	2.0	3.0	3.0	4.0	4.0	5.0	6.0
8"	CFM	140	175	210	245	280	315	350	420	490
Ak .280	Ps	<.010	<.010	<.010	<.010	0.01	0.02	0.02	0.03	0.04
	Throw	3.5	3.0	3.0	4.0	4.0	5.0	5.0	7.0	8.0
10"	CFM	218	273	327	382	436	491	545	654	763
Ak .440	Ps	<.010	<.010	<.010	0.01	0.01	0.02	0.02	0.03	0.04
	Throw	3.0	3.0	4.0	5.0	5.0	6.0	7.0	8.0	10.0
12"	CFM	315	390	470	550	630	705	785	940	1100
Ak .660	Ps	<.010	<.010	<.010	0.01	0.01	0.02	0.02	0.03	0.04
	Throw	3.0	4.0	5.0	6.0	7.0	7.0	8.0	10.0	11.0
14"	CFM	425	530	635	745	850	955	1060	1270	1490
Ak .910	Ps	<.010	<.010	<.010	0.01	0.01	0.02	0.02	0.03	0.04
	Throw	4.0	5.0	6.0	7.0	8.0	8.0	9.0	11.0	13.0
16"	CFM	560	700	840	980	1120	1260	1400	1680	1960
Ak 1.200	Ps	<.010	<.010	<.010	0.01	0.01	0.02	0.02	0.03	0.04
	Throw	4.0	5.0	7.0	8.0	9.0	10.0	11.0	13.0	15.0
18"	CFM	710	885	1060	1240	1420	1590	1770	2120	2480
Ak 1.500	Ps	<.010	<.010	<.010	0.01	0.01	0.02	0.02	0.03	0.04
	Throw	5.0	6.0	7.0	9.0	10.0	11.0	12.0	15.0	17.0

24 Square Ceiling Diffuser

Face Velocity		300	400	500	600	700	800	900	1000
Pressure Loss		.006	.010	.016	.022	.031	.040	.050	.062
Neck Size 6"	CFM	50	65	85	100	115	130	150	165
Ak .165	Throw	3.5	4.5	5.5	6.5	8.0	9.0	10.0	11.0
Neck Size 8"	CFM	85	110	140	170	195	225	250	280
Ak .280	Throw	4.5	5.5	7.0	8.5	10.0	11.0	12.0	14.0
Neck Size 10"	CFM	125	170	210	250	295	335	380	420
Ak .420	Throw	5.0	6.5	8.0	9.5	11.5	13.0	15.0	16.0
Neck Size 12"	CFM	180	240	300	355	415	475	535	595
Ak .595	Throw	6.0	8.0	10.0	11.5	13.5	15.5	17.5	19.0
Neck Size 14"	CFM	245	330	410	490	575	655	740	820
Ak .820	Throw	7.0	9.0	11.5	13.5	16.0	18.0	20.0	22.5
Neck Size 16"	CFM	310	410	515	620	720	825	925	1030
Ak 1.030	Throw	7.5	10.0	12.5	15.0	18.0	20.0	22.0	25.0
Neck Size 18"	CFM	400	530	665	800	930	1065	1200	1330
Ak 1.330	Throw	8.5	11.0	14.0	17.0	20.0	23.0	26.0	28.0
Neck Size 20"	CFM	480	640	800	960	1120	1280	1440	1600
Ak 1.600	Throw	9.5	12.0	16.0	18.0	22.0	25.0	28.0	31.0
Neck Size 22"	CFM	570	760	950	1140	1330	1520	1710	1900
Ak 1.900	Throw	10.5	13.5	17.0	19.0	24.0	27.0	30.0	33.0
Neck Size 24"	CFM	690	920	1150	1380	1610	1840	2070	2300
Ak 2.300	Throw	11.0	14.5	18.5	22.0	26.0	30.0	33.0	36.0

Terminal Velocity of 50 FPM

NOTE: The use of a balancing hood is recommended to balance the system.

Ak = Effective Area in square feet

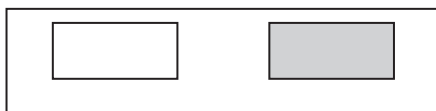
Ps = Static Pressure Loss in inches of water

NC = Noise Criteria, based on a 10dB room attenuation (Re: 10⁻¹² watts) ASHRAE 36-72.

Terminal Velocity of 100 fpm

Product tested with core in "out" position.

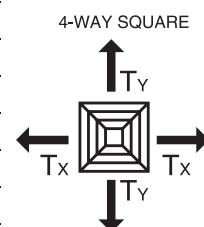
When diffusers are used on an exposed duct, multiply throw by 0.7



AR Series: ARE, ARS, ART Square & Rectangular Ceiling Diffusers — Steel/Aluminum

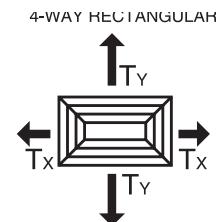
Four-Way Square

Face Velocity	500	600	700	800	900	1000	1200	1400	1600	1800	2000
Pressure Loss	.020	.020	.030	.040	.050	.060	.090	.120	.160	.200	.250
6 x 6 Ak .100	CFM Throw X/Y 2-3/2-3	50 60 2-3/2-3	60 70 2-4/2-4	70 80 2-4/2-4	80 90 3-5/3-5	90 100 3-5/3-5	100 120 4-6/4-6	120 140 4-8/4-8	140 160 5-8/5-8	160 180 5-9/5-9	180 200 6-11/6-11
9 x 9 Ak .220	CFM Throw X/Y 2-4/2-4	110 135 2-4/2-4	135 155 3-5/3-5	155 180 3-5/3-5	180 205 4-6/4-6	205 225 5-8/5-8	225 270 5-9/5-9	270 315 6-11/6-11	315 360 6-12/6-12	360 410 7-13/7-13	410 450 8-14/8-14
12 x 12 Ak .400	CFM Throw X/Y 3-5/3-5	200 240 3-5/3-5	240 280 4-6/4-6	280 320 4-8/4-8	320 360 5-8/5-8	360 400 5-9/5-9	400 480 6-11/6-11	480 560 7-13/7-13	560 640 8-15/8-15	640 725 9-17/9-17	725 800 10-19/10-19
15 x 15 Ak .620	CFM Throw X/Y 4-6/4-6	310 375 4-6/4-6	375 440 4-8/4-8	440 500 5-9/5-9	500 565 6-11/6-11	565 625 6-12/6-12	625 750 8-15/8-15	750 875 10-18/10-18	875 1000 10-19/10-19	1000 1125 12-21/12-21	1125 1250 13-23/13-23
18 x 18 Ak .900	CFM Throw X/Y 4-8/4-8	450 540 4-8/4-8	540 630 5-11/5-11	630 720 6-12/6-12	720 810 7-13/7-13	810 900 8-15/8-15	900 1080 10-17/10-17	1080 1260 11-20/11-20	1260 1440 13-23/13-23	1440 1620 15-27/15-27	1620 1800 16-30/16-30
21 x 21 Ak 1.230	CFM Throw X/Y 5-9/5-9	615 740 5-9/5-9	740 860 6-11/6-11	860 985 7-13/7-13	985 1110 8-14/8-14	1110 1230 9-15/9-15	1230 1475 9-17/9-17	1475 1725 11-21/11-21	1725 1970 13-25/13-25	1970 2220 15-29/15-29	2220 2460 17-31/17-31
24 x 24 Ak 1.600	CFM Throw X/Y 5-11/5-11	800 960 5-11/5-11	960 1120 7-13/7-13	1120 1275 7-14/7-14	1275 1440 8-15/8-15	1440 1600 9-17/9-17	1600 1925 10-19/10-19	1925 2240 12-23/12-23	2240 2570 14-29/14-29	2570 2890 16-31/16-31	2890 3200 18-35/18-35
27 x 27 Ak 2.020	CFM Throw X/Y 6-12/6-12	1010 1215 6-12/6-12	1215 1420 7-13/7-13	1420 1615 8-15/8-15	1615 1820 10-18/10-18	1820 2020 10-19/10-19	2020 2430 12-22/12-22	2430 2840 14-27/14-27	2840 3240 16-32/16-32	3240 3650 18-35/18-35	3650 4040 20-38/20-38
33 x 33 Ak 2.750	CFM Throw X/Y 7-13/7-13	1370 1650 7-13/7-13	1650 1925 9-16/9-16	1925 2200 10-18/10-18	2200 2470 21-21/21-21	2470 2750 14-24/14-24	2750 3300 16-27/16-27	3300 3850 18-33/18-33	3850 4400 19-37/19-37	4400 4950 23-41/23-41	4950 5500 27-46/27-46



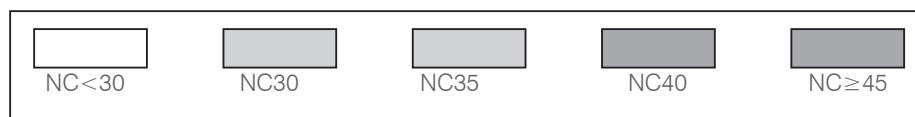
Four-Way Rectangular

Face Velocity	500	600	700	800	900	1000	1200	1400	1600	1800	2000
Pressure Loss	.020	.020	.030	.040	.050	.060	.090	.120	.160	.200	.250
9 x 6 Ak .150	CFM Throw X/Y 1-3/2-4	75 90 1-3/3-5	90 105 2-4/3-5	105 120 2-4/4-6	120 135 3-5/4-6	135 150 3-5/4-8	150 180 4-6/5-9	180 210 4-6/5-9	210 240 4-8/7-13	240 270 5-9/8-15	270 300 6-11/8-15
12 x 6 Ak .200	CFM Throw X/Y 1-3/3-5	100 120 1-3/4-6	120 140 2-4/4-8	140 160 2-4/5-9	160 180 3-5/6-11	180 200 4-6/7-13	200 240 4-8/8-15	240 280 4-8/8-15	280 320 5-9/10-18	320 360 6-11/11-21	360 400 8-14/11-19
12 x 9 Ak .300	CFM Throw X/Y 2-4/3-5	150 180 2-4/3-5	180 210 2-4/3-5	210 240 3-5/4-6	240 270 4-6/4-8	270 300 4-7/5-10	300 360 4-8/6-11	360 420 5-9/6-12	420 480 6-11/7-13	480 540 7-13/9-17	540 600 8-14/11-19
15 x 9 Ak .370	CFM Throw X/Y 2-4/4-6	185 225 2-4/4-6	225 265 3-5/5-9	265 300 4-6/6-11	300 340 4-6/6-12	340 375 4-8/8-14	375 450 5-9/8-15	450 525 5-9/9-17	525 600 6-12/11-21	600 675 7-13/13-25	675 750 7-13/13-25
18 x 9 Ak .450	CFM Throw X/Y 2-4/4-6	225 270 2-4/5-9	270 315 3-5/6-11	315 360 4-6/6-12	360 405 4-6/8-14	405 450 4-8/8-15	450 540 5-9/10-19	540 630 5-10/11-23	630 720 6-12/13-25	720 810 8-14/15-29	810 900 10-17/17-32
21 x 9 Ak .530	CFM Throw X/Y 2-4/5-9	265 320 2-4/5-9	320 370 2-4/6-11	370 425 3-5/8-14	425 475 4-6/8-15	475 530 4-8/10-18	530 635 4-8/10-19	635 740 5-9/11-21	740 850 6-17/13-25	850 955 8-13/16-31	955 1060 9-15/19-35
15 x 12 Ak .500	CFM Throw X/Y 3-5/4-6	250 300 3-5/4-6	300 350 3-5/4-8	350 400 4-6/5-9	400 450 4-8/6-11	450 500 5-9/6-12	500 600 6-11/7-13	600 700 6-12/8-15	700 800 7-13/10-18	800 900 8-15/11-21	900 1000 10-18/13-23
18 x 12 Ak .590	CFM Throw X/Y 2-4/4-8	295 355 3-5/5-9	355 415 4-6/6-11	415 475 4-6/6-12	475 535 4-8/7-13	535 595 5-9/8-14	595 715 6-11/8-15	715 835 6-12/10-18	835 950 8-14/11-21	950 1070 9-16/13-23	1070 1190 10-18/15-27
21 x 12 Ak .690	CFM Throw X/Y 3-5/5-9	345 415 3-5/5-9	415 485 4-6/7-13	485 555 4-8/8-14	555 625 4-8/8-15	625 690 5-9/10-18	690 830 6-11/11-21	830 970 7-13/14-26	970 1100 8-15/16-29	1100 1240 9-17/17-31	1240 1375 10-19/19-35
24 x 12 Ak .800	CFM Throw X/Y 2-4/6-11	400 480 2-4/6-11	480 560 4-6/7-13	560 640 4-8/8-14	640 720 4-8/9-16	720 800 4-8/10-18	800 960 5-9/11-21	960 1140 6-12/14-26	1140 1280 8-14/15-29	1280 1440 9-17/17-31	1440 1600 10-19/19-35
18 x 15 Ak .75	CFM Throw X/Y 4-6/4-8	375 450 4-6/4-8	450 525 4-8/5-9	525 600 5-9/6-11	600 675 6-11/6-12	675 750 6-12/8-14	750 900 7-13/8-15	900 1050 8-15/10-18	1050 1200 9-17/10-19	1200 1350 10-19/13-23	1350 1500 12-22/15-26
24 x 15 Ak 1.000	CFM Throw X/Y 4-6/6-11	500 600 4-6/6-11	600 700 4-8/6-12	700 800 5-9/8-14	800 900 6-11/9-17	900 1000 6-12/10-18	1000 1200 7-13/11-21	1200 1440 8-15/13-25	1440 1680 10-18/15-29	1680 1920 11-21/17-32	1920 2000 13-23/20-36
24 x 18 Ak 1.200	CFM Throw X/Y 4-8/6-11	600 720 4-8/6-11	720 840 5-9/6-12	840 960 6-11/7-14	960 1080 6-12/8-15	1080 1200 7-14/10-19	1200 1440 8-15/11-21	1440 1680 10-18/13-23	1680 1920 11-21/15-27	1920 2160 13-25/18-34	2160 2400 15-30/21-37
33 x 21 Ak 1.920	CFM Throw X/Y 4-8/8-15	960 1150 4-8/8-15	1150 1340 6-11/10-18	1340 1530 7-13/12-22	1530 1725 8-14/13-25	1725 1920 8-15/15-29	1920 2300 10-18/17-31	2300 2690 12-21/21-35	2690 3070 14-26/24-39	3070 3450 16-29/26-43	3450 3840 17-31/29-47
30 x 24 Ak 2.000	CFM Throw X/Y 6-11/7-13	1000 1200 6-11/7-13	1200 1400 6-12/8-15	1400 1600 8-14/10-18	1600 1800 8-15/11-21	1800 2000 10-18/13-23	2000 2400 10-19/14-26	2400 2800 12-23/16-29	2800 3200 15-28/19-35	3200 3600 16-31/21-39	3600 4000 19-35/24-43



Note 1: The minimum Throw Dimension is based on a terminal velocity of 200 fpm. The maximum Throw Dimension is based on a terminal velocity of 100 fpm.

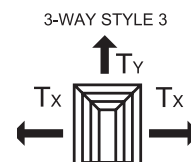
Ceiling Height in Feet	Maximum Recommended Cooling Temperature Differential	Maximum Recommended CFM Per Diffuser			
		SR/AR/ASR	SR/AR		
		Four-Way	Three-Way	Two-Way	One-Way
7	15°	400	300	200	100
8	20°	600	450	300	150
9	25°	1200	900	600	300
10	25°	1800	1350	900	450
12	30°	3200	2400	1600	800
14	30°	4800	3600	2400	1200
16	30°	6000	4500	3000	1500



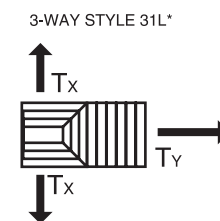
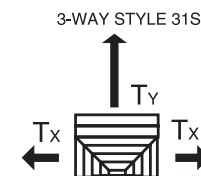
Engineering Data

AR Series: ARE, ARS, ART
Square & Rectangular Ceiling Diffusers — Aluminum
Three-Way Style 3

Face Velocity	500	600	700	800	900	1000	1200	1400	1600	1800	2000
Pressure Loss	.020	.020	.030	.040	.050	.060	.090	.120	.160	.200	.250
6 x 6	CFM	50	60	70	80	90	100	120	140	160	200
Ak .100	Throw X/Y	2-4/1-2	2-4/1-2	3-5/2-3	3-5/2-3	4-7/2-4	4-7/2-4	5-9/3-6	6-10/3-6	6-11/4-7	7-13/4-8
9 x 9	CFM	110	135	155	180	205	225	270	315	360	450
Ak .220	Throw X/Y	2-4/2-3	3-6/2-3	4-7/2-4	4-8/2-4	5-9/3-6	5-9/3-6	6-12/4-7	7-13/5-9	9-15/6-10	10-18/6-11
12 x 12	CFM	200	240	280	320	360	400	480	560	640	800
Ak .400	Throw X/Y	4-7/2-5	5-9/3-6	6-10/4-7	6-10/4-7	6-11/4-8	7-13/5-9	9-16/6-10	12-21/7-12	13-22/8-13	14-24/8-14
15 x 15	CFM	310	375	440	500	565	625	750	875	1000	1250
Ak .620	Throw X/Y	4-8/2-4	6-11/4-7	7-13/4-7	8-14/4-8	8-15/5-9	9-16/6-10	11-19/7-12	13-23/9-15	15-26/10-18	17-29/11-20
18 x 18	CFM	450	540	630	720	810	900	1080	1260	1440	1800
Ak .900	Throw X/Y	4-9/3-5	6-11/4-7	7-13/5-9	9-15/6-10	10-18/6-11	11-20/7-12	13-24/9-15	15-26/10-18	18-32/11-20	20-35/12-22
21 x 21	CFM	615	740	860	985	1110	1230	1475	1725	1970	2460
Ak 1.230	Throw X/Y	5-11/3-6	7-13/4-8	11-19/6-11	11-20/7-12	12-21/8-13	13-23/8-14	16-29/10-17	19-34/11-20	21-39/14-23	24-42/16-25
24 x 24	CFM	800	960	1120	1275	1440	1600	1925	2240	2570	3200
Ak 1.600	Throw X/Y	7-14/5-9	9-16/6-11	11-19/7-13	13-21/8-14	14-24/9-15	16-27/9-16	17-31/11-19	21-35/14-24	25-39/16-27	28-43/18-31
27 x 27	CFM	1010	1215	1420	1615	1820	2020	2430	2840	3240	4040
Ak 2.020	Throw X/Y	7-13/4-9	9-16/6-11	11-20/7-13	13-23/9-15	14-25/9-16	15-27/10-18	18-31/12-21	22-37/14-25	25-41/18-30	28-46/19-33

**Three-Way Style 31S and Style 31L***

Face Velocity	500	600	700	800	900	1000	1200	1400	1600	1800	2000
Pressure Loss	.020	.020	.030	.040	.050	.060	.090	.120	.160	.200	.250
9 x 6	CFM	75	90	105	120	135	150	180	210	240	300
Ak .150	Throw X/Y	2-3/4-7	2-3/4-7	2-3/4-7	2-4/4-8	3-5/5-8	3-6/5-9	4-7/6-11	4-8/7-12	6-10/9-15	6-11/10-17
9 x 9*	CFM	115	135	155	180	200	225	270	315	360	450
Ak .220	Throw X/Y	1-3/4-7	2-3/5-9	2-3/6-11	2-4/7-12	3-6/8-14	3-6/9-16	4-7/10-18	4-8/12-21	5-9/14-24	6-10/16-28
12 x 9	CFM	150	180	210	240	270	300	360	420	480	600
Ak .300	Throw X/Y	2-3/4-8	2-4/5-9	3-6/6-10	4-7/7-12	4-8/8-14	4-8/8-14	5-9/9-16	6-10/11-20	7-12/14-24	8-13/15-26
12 x 12*	CFM	200	240	280	320	360	400	480	560	640	800
Ak .40	Throw X/Y	2-3/5-11	2-4/7-13	3-6/9-15	3-6/10-17	4-7/11-19	4-8/12-21	6-10/15-26	6-11/18-32	7-12/20-34	7-13/21-36
15 x 15*	CFM	310	375	440	500	565	625	750	875	1000	1250
Ak .620	Throw X/Y	2-4/7-13	3-6/10-18	4-7/11-20	4-8/12-21	5-9/14-25	5-9/14-25	6-11/19-34	7-13/22-38	8-14/25-43	9-16/27-44
18 x 15	CFM	375	450	525	600	675	750	900	1050	1200	1500
Ak .750	Throw X/Y	3-6/7-13	4-7/9-15	4-8/9-16	5-9/11-20	6-10/13-23	6-11/15-26	7-13/17-30	9-16/19-35	10-18/22-39	11-20/27-40
21 x 18	CFM	525	630	735	840	945	1050	1260	1475	1680	2100
Ak 1.050	Throw X/Y	4-7/8-14	4-8/10-18	5-9/11-20	6-10/18-23	6-11/14-25	7-12/16-28	9-15/19-34	10-18/22-39	11-20/27-40	13-23/29-46
21 x 21*	CFM	615	740	860	985	1110	1230	1475	1725	1970	2460
Ak 1.230	Throw X/Y	3-6/9-17	4-8/12-21	5-9/16-27	6-10/17-30	7-11/19-32	7-12/21-36	9-15/26-40	11-19/30-45	13-22/34-51	15-25/39-56
27 x 21	CFM	780	940	1080	1250	1400	1560	1870	2180	2500	3120
Ak 1.560	Throw X/Y	5-9/10-18	5-9/11-20	6-10/13-22	7-12/15-26	8-14/18-32	9-16/21-36	11-19/23-40	13-21/25-43	15-24/29-47	17-29/34-53
30 x 24	CFM	1000	1200	1400	1600	1800	2000	2400	2800	3200	4000
Ak 2.000	Throw X/Y	5-9/11-20	6-11/13-23	7-13/16-27	8-14/17-31	9-16/20-35	10-18/22-40	12-21/25-44	14-25/31-48	16-29/34-53	18-32/38-57
33 x 27	CFM	1230	1475	1725	1970	2220	2460	2950	3450	3925	4920
Ak 2.460	Throw X/Y	6-10/13-23	7-13/17-28	8-14/19-33	9-16/21-35	11-18/23-39	12-20/25-44	14-25/29-47	16-29/33-51	18-33/37-56	22-37/42-59



Note 2: The minimum Throw Dimension is based on a terminal velocity of 170 fpm. The maximum Throw Dimension is based on a terminal velocity of 85 fpm.

*Style 31L not available in square configuration

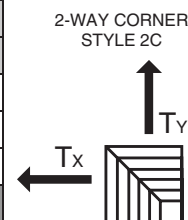
Ceiling Height in Feet	Maximum Recommended Cooling Temperature Differential	Maximum Recommended CFM Per Diffuser			
		SR/AR/ASR	SR/AR		
		Four-Way	Three-Way	Two-Way	One-Way
7	15°	400	300	200	100
8	20°	600	450	300	150
9	25°	1200	900	600	300
10	25°	1800	1350	900	450
12	30°	3200	2400	1600	800
14	30°	4800	3600	2400	1200
16	30°	6000	4500	3000	1500

NC < 30	NC30	NC35	NC40	NC ≥ 45
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AR Series: ARE, ARS, ART Square & Rectangular Ceiling Diffusers — Aluminum

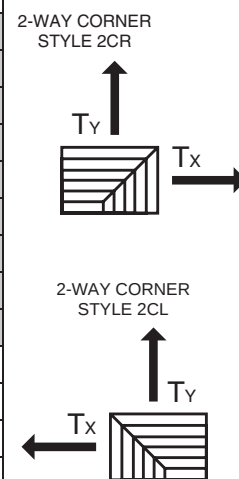
Two-Way Corner Style 2C

Face Velocity		500	600	700	800	900	1000	1200	1400	1600	1800	2000
Pressure Loss		.020	.020	.030	.040	.050	.060	.090	.120	.160	.200	.250
6 x 6	CFM	45	55	60	70	80	90	105	125	140	160	180
Ak .090	Throw X/Y	1-3/1-3	2-5/2-5	2-5/2-5	3-7/3-7	3-7/3-7	5-8/5-8	5-8/5-8	6-11/6-11	7-12/7-12	8-13/8-13	9-14/9-14
9 x 9	CFM	95	115	135	155	175	195	235	275	315	350	390
Ak .190	Throw X/Y	4-6/4-6	4-6/4-6	5-7/5-7	5-8/5-8	6-10/6-10	6-11/6-11	8-13/8-13	9-14/9-14	10-16/10-16	13-20/13-20	14-22/14-22
12 x 12	CFM	175	210	245	280	315	350	420	480	560	635	700
Ak .350	Throw X/Y	5-7/5-7	5-8/5-8	6-11/6-11	8-13/8-13	8-13/8-13	9-14/9-14	10-16/10-16	13-19/13-19	14-22/14-22	16-26/16-26	19-29/19-29
15 x 15	CFM	275	330	385	440	495	550	660	775	885	995	1100
Ak .550	Throw X/Y	5-9/5-9	7-12/7-12	8-13/8-13	9-14/9-14	10-16/10-16	11-18/11-18	13-21/13-21	15-25/15-25	19-29/19-29	21-33/21-33	23-36/23-36
18 x 18	CFM	390	470	545	625	700	780	935	1090	1250	1410	1560
Ak .780	Throw X/Y	7-12/7-12	9-14/9-14	10-15/10-15	10-16/10-16	12-19/12-19	14-22/14-22	16-25/16-25	18-29/18-29	21-33/21-33	25-38/25-38	28-42/28-42
21 x 21	CFM	540	650	760	865	975	1080	1300	1515	1730	1945	2160
Ak 1.080	Throw X/Y	8-13/8-13	10-15/10-15	12-18/12-18	13-21/13-21	15-23/15-23	17-28/17-28	20-32/20-32	22-35/22-35	25-39/25-39	29-43/29-43	32-47/32-47
24 x 24	CFM	705	845	990	1130	1270	1410	1690	1950	2250	2540	2820
Ak 1.410	Throw X/Y	9-16/9-16	11-18/11-18	13-21/13-21	15-24/15-24	17-27/17-27	19-29/19-29	22-34/22-34	25-38/25-38	29-42/29-42	33-47/33-47	37-51/37-51
27 x 27	CFM	880	1055	1230	1410	1585	1760	2110	2470	2820	3170	3520
Ak 1.760	Throw X/Y	10-17/10-17	12-19/12-19	14-22/14-22	16-26/16-26	19-29/19-29	21-33/21-33	24-37/24-37	28-41/28-41	32-46/32-46	35-50/35-50	39-55/39-55



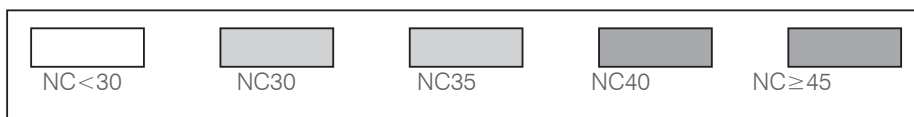
Two-Way Corner Style 2CR

Face Velocity		500	600	700	800	900	1000	1200	1400	1600	1800	2000
Pressure Loss		.020	.020	.030	.040	.050	.060	.090	.120	.160	.200	.250
9 x 6	CFM	65	80	95	105	120	130	160	185	210	240	260
Ak .130	Throw X/Y	2-4/3-5	3-5/4-7	4-6/5-8	4-6/5-8	5-7/6-11	5-7/6-11	6-9/8-13	6-10/9-14	7-12/11-16	8-13/13-21	10-16/16-25
12 x 6	CFM	90	105	120	140	160	175	210	245	280	315	350
Ak .170	Throw X/Y	2-4/3-6	3-5/5-8	3-5/6-11	4-6/7-12	5-7/8-13	5-7/9-14	5-8/10-15	6-11/13-20	7-12/15-24	8-13/17-26	10-15/19-29
15 x 6	CFM	110	130	155	175	200	220	265	310	350	395	440
Ak .220	Throw X/Y	2-4/5-8	3-5/6-10	3-5/7-12	4-6/8-13	5-7/10-15	5-8/11-17	6-9/13-20	6-10/15-24	8-12/17-27	10-14/20-30	11-17/22-34
12 x 9	CFM	130	155	180	210	235	260	310	365	415	470	520
Ak .260	Throw X/Y	4-6/5-7	4-6/5-8	5-7/6-10	5-8/6-11	6-10/8-12	6-11/9-14	8-13/10-16	11-17/14-21	19-19-16/24	13-20/17-26	14-23/19-30
15 x 9	CFM	165	195	230	260	295	325	390	460	525	590	650
Ak .320	Throw X/Y	4-6/6-10	5-7/6-11	6-8/8-12	6-9/10-14	6-11/10-16	7-12/12-19	9-14/14-22	10-15/16-25	12-17/19-29	13-20/21-33	14-22/23-35
18 x 9	CFM	195	235	275	310	350	390	470	545	625	700	780
Ak .390	Throw X/Y	4-6/6-11	5-7/8-13	5-7/9-14	5-8/10-15	6-10/11-18	7-12/13-21	8-13/16-25	9-15/19-29	11-17/22-33	12-20/23-35	14-22/26-39
21 x 9	CFM	230	275	320	365	410	455	545	635	730	820	910
Ak .450	Throw X/Y	4-6/8-13	5-7/10-15	6-8/11-17	6-9/12-19	6-10/13-21	6-11/15-24	8-13/18-29	10-15/22-34	12-18/24-38	13-21/26-42	15-25/30-47
15 x 12	CFM	220	260	305	350	390	435	525	610	700	785	870
Ak .430	Throw X/Y	5-7/5-8	5-8/6-11	6-10/8-13	7-12/9-14	8-13/10-16	9-14/12-19	11-18/14-22	13-20/16-25	15-24/19-29	16-26/21-32	18-29/24-37
18 x 12	CFM	260	315	370	420	475	525	630	735	840	945	1050
Ak .520	Throw X/Y	4-7/6-11	5-8/8-14	6-10/9-14	7-12/11-17	9-14/13-21	10-15/14-22	12-18/17-26	14-20/21-30	16-24/23-34	18-27/27-38	21-31/29-42
21 x 15	CFM	380	455	530	605	685	760	915	1060	1220	1370	1520
Ak .760	Throw X/Y	6-10/8-13	6-11/9-14	8-13/11-18	9-14/13-20	10-16/15-24	12-19/16-26	13-21/19-29	15-26/22-33	18-29/25-38	21-33/29-44	25-38/32-49
24 x 15	CFM	440	525	615	700	790	875	1050	1225	1400	1575	1750
Ak .870	Throw X/Y	4-9/8-14	6-11/10-16	8-13/13-20	9-14/15-24	10-16/16-26	12-19/19-29	14-22/22-34	16-25/25-38	19-29/29-44	21-32/33-48	25-37/37-52
21 x 18	CFM	460	550	640	735	825	915	1100	1280	1465	1645	1830
Ak .980	Throw X/Y	6-11/8-13	8-13/10-15	10-15/11-18	11-17/12-20	12-19/14-22	13-21/16-25	16-26/19-29	19-30/22-34	22-34/26-39	25-38/29-43	27-42/32-48
27 x 21	CFM	690	830	965	1100	1245	1380	1655	1935	2210	2490	2760
Ak 1.380	Throw X/Y	8-13/10-17	10-15/13-20	12-19/15-24	14-21/17-27	15-23/19-30	16-26/21-33	20-30/25-37	24-36/29-42	28-41/33-46	30-46/37-51	34-51/42-56



Note 3: The minimum Throw Dimension is based on a terminal velocity of 135 fpm. The maximum Throw Dimension is based on a terminal velocity of 65 fpm.

Ceiling Height in Feet	Maximum Recommended Cooling Temperature Differential	Maximum Recommended CFM Per Diffuser			
		SR/AR/ASR	SR/AR		
		Four-Way	Three-Way	Two-Way	One-Way
7	15°	400	300	200	100
8	20°	600	450	300	150
9	25°	1200	900	600	300
10	25°	1800	1350	900	450
12	30°	3200	2400	1600	800
14	30°	4800	3600	2400	1200
16	30°	6000	4500	3000	1500



Engineering Data

AR/SR Series: ARE, ARS, ART, SRE

Square & Rectangular Ceiling Diffusers — Steel/Aluminum

Two-Way Style 2L

Face Velocity		500	600	700	800	900	1000	1200	1400	1600	1800	2000
Pressure Loss		.020	.020	.030	.040	.050	.060	.090	.120	.160	.200	.250
9 x 6	CFM	65	80	95	105	120	130	160	185	210	240	260
Ak .130	Throw Y	3-5	3-5	5-7	6-8	7-10	7-10	8-12	10-14	11-17	14-20	16-23
12 x 6	CFM	90	105	120	140	160	175	210	245	280	315	350
Ak .170	Throw Y	3-5	5-7	6-8	6-9	7-10	8-12	10-14	12-18	15-21	16-23	17-25
15 x 6	CFM	110	130	155	175	200	220	265	310	350	395	440
Ak .220	Throw Y	4-6	6-8	6-9	7-10	9-13	10-14	10-15	13-19	15-21	18-26	21-30
12 x 9	CFM	130	155	180	210	235	260	310	365	415	470	520
Ak .260	Throw Y	5-7	6-8	6-9	8-12	10-14	10-14	11-17	14-21	16-24	19-27	20-31
15 x 9	CFM	165	195	230	260	295	325	390	460	525	590	650
Ak .320	Throw Y	6-8	7-10	8-12	9-13	10-15	12-18	14-20	16-24	18-26	21-31	24-35
18 x 9	CFM	195	235	275	310	350	390	470	545	625	700	780
Ak .390	Throw Y	6-9	8-12	9-13	10-14	11-17	13-19	15-21	17-25	19-29	22-33	25-39
21 x 9	CFM	230	275	320	365	410	455	545	635	730	820	910
Ak .450	Throw Y	7-10	8-12	9-13	11-16	12-18	14-20	16-24	19-27	22-32	25-36	29-41
15 x 12	CFM	220	260	305	350	390	435	525	610	700	785	870
Ak .430	Throw Y	6-9	8-12	10-14	10-15	12-18	14-20	15-24	18-27	22-32	24-36	28-41
18 x 12	CFM	260	315	370	420	475	525	630	735	840	945	1050
Ak .520	Throw Y	7-11	9-13	11-15	12-18	13-19	15-21	18-26	20-29	23-34	27-39	31-42
21 x 15	CFM	380	455	530	605	685	760	915	1060	1220	1370	1520
Ak .760	Throw Y	9-13	10-15	12-18	14-20	15-23	17-25	20-30	23-34	27-40	31-44	34-48
24 x 15	CFM	440	525	615	700	790	875	1050	1225	1400	1575	1750
Ak .870	Throw Y	8-14	11-16	13-19	15-21	17-25	19-29	22-33	25-38	29-42	33-48	38-54
21 x 18	CFM	460	550	640	735	825	915	1100	1280	1465	1645	1830
Ak .910	Throw Y	10-15	11-17	13-19	16-22	19-25	20-28	23-33	26-38	29-42	34-46	38-51
27 x 21	CFM	690	830	965	1100	1245	1380	1655	1935	2210	2490	2760
Ak 1.300	Throw Y	11-17	14-20	17-24	19-27	21-31	23-35	27-40	34-46	38-51	42-56	47-61

2-WAY STYLE 2L



Two-Way Style 2S

Face Velocity		500	600	700	800	900	1000	1200	1400	1600	1800	2000
Pressure Loss		.020	.020	.030	.040	.050	.060	.090	.120	.160	.200	.250
9 x 6	CFM	65	80	95	105	120	130	160	185	210	240	265
Ak .130	Throw X	3-6	4-7	5-8	6-9	8-12	9-13	10-14	11-17	13-19	15-23	17-26
12 x 6	CFM	90	105	120	140	160	175	210	245	280	315	350
Ak .170	Throw X	4-7	6-8	7-10	8-12	9-13	10-14	11-17	14-20	15-23	17-25	19-29
15 x 6	CFM	110	130	155	175	200	220	265	310	350	395	440
Ak .220	Throw X	5-7	6-9	7-10	9-13	10-15	11-17	13-19	15-23	18-26	21-30	23-34
12 x 9	CFM	130	155	180	210	235	260	310	365	415	470	520
Ak .260	Throw X	6-8	6-9	7-10	9-13	9-13	10-15	13-19	15-21	17-25	19-29	21-31
15 x 9	CFM	165	195	230	260	295	325	390	460	525	590	650
Ak .320	Throw X	7-10	8-12	9-13	10-14	12-18	14-20	16-24	18-26	19-29	23-33	27-39
18 x 9	CFM	195	235	275	310	350	390	470	545	625	700	780
Ak .390	Throw X	7-10	9-13	11-17	12-18	13-19	15-23	18-27	20-30	22-32	25-38	29-43
21 x 9	CFM	230	275	320	365	410	455	545	635	730	820	910
Ak .450	Throw X	9-13	9-14	10-15	12-18	15-21	16-24	19-29	22-33	26-38	29-42	32-47
15 x 12	CFM	220	260	305	350	390	435	525	610	700	785	870
Ak .430	Throw X	7-10	8-12	10-14	11-17	13-19	15-21	16-24	19-27	22-33	25-38	29-42
18 x 12	CFM	260	315	370	420	475	525	630	735	840	945	1050
Ak .520	Throw X	8-11	10-14	10-15	12-18	14-20	15-23	18-27	23-33	25-37	29-42	32-47
21 x 15	CFM	380	455	530	605	685	760	915	1060	1220	1370	1520
Ak .760	Throw X	10-15	11-17	14-20	15-23	18-26	20-29	22-33	26-38	29-42	35-46	39-51
24 x 15	CFM	440	525	615	700	790	875	1050	1225	1400	1575	1750
Ak .870	Throw X	9-14	11-17	15-21	17-25	19-29	22-32	25-37	28-41	33-45	38-51	43-56
21 x 18	CFM	460	550	640	735	825	915	1100	1280	1465	1645	1830
Ak .910	Throw X	11-17	12-18	14-20	16-24	19-27	20-29	23-34	27-40	32-45	37-49	40-55
27 x 21	CFM	690	830	965	1100	1245	1380	1655	1935	2210	2490	2760
Ak 1.300	Throw X	12-18	15-21	18-25	21-29	23-33	25-37	29-43	33-48	38-53	43-59	49-63

2-WAY STYLE 2S



Note 3: The minimum Throw Dimension is based on a terminal velocity of 135 fpm. The maximum Throw Dimension is based on a terminal velocity of 65 fpm.

Ceiling Height in Feet	Maximum Recommended Cooling Temperature Differential	Maximum Recommended CFM Per Diffuser			
		SR/AR/ASR	SR/AR		
		Four-Way	Three-Way	Two-Way	One-Way
7	15°	400	300	200	100
8	20°	600	450	300	150
9	25°	1200	900	600	300
10	25°	1800	1350	900	450
12	30°	3200	2400	1600	800
14	30°	4800	3600	2400	1200
16	30°	6000	4500	3000	1500

NC<30	NC30	NC35	NC40	NC≥45
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AR/SR Series: ARE, ARS, ART, SRE

Square & Rectangular Ceiling Diffusers — Steel/Aluminum

Two-Way Style 2

Face Velocity		500	600	700	800	900	1000	1200	1400	1600	1800	2000
Pressure Loss		.020	.020	.030	.040	.050	.060	.090	.120	.160	.200	.250
6 x 6	CFM	45	55	60	70	80	90	105	125	140	160	180
Ak .090	Throw Y	3-5	3-5	4-7	4-7	5-8	5-8	6-9	9-13	10-15	11-17	12-18
9 x 9	CFM	95	115	135	155	175	195	235	275	315	350	390
Ak .190	Throw Y	5-7	6-8	6-8	6-9	8-12	9-13	11-17	12-18	14-20	16-24	18-26
12 x 12	CFM	175	210	245	280	315	350	420	480	560	635	700
Ak .350	Throw Y	4-7	6-9	9-13	10-15	11-17	12-18	14-20	17-23	18-27	21-31	23-35
15 x 15	CFM	275	330	385	440	495	550	660	775	885	995	1100
Ak .550	Throw Y	8-12	10-14	10-15	12-18	14-20	15-23	18-27	22-32	24-36	26-39	29-43
18 x 18	CFM	390	470	545	625	700	780	935	1090	1250	1410	1560
Ak .780	Throw Y	9-15	11-17	12-18	14-20	15-23	18-26	20-30	24-36	27-42	31-45	36-51
21 x 21	CFM	540	650	760	865	975	1080	1300	1515	1730	1945	2160
Ak 1.080	Throw Y	11-17	14-20	15-23	18-26	19-29	23-35	26-40	29-44	34-49	38-54	43-59
24 x 24	CFM	705	845	990	1130	1270	1410	1690	1950	2250	2540	2820
Ak 1.410	Throw Y	12-19	14-22	17-25	20-30	21-33	23-35	27-40	34-46	39-51	42-56	46-60
27 x 27	CFM	880	1055	1230	1410	1585	1760	2110	2470	2820	3170	3520
Ak 1.760	Throw Y	12-20	15-23	18-26	21-31	24-36	26-40	30-45	35-50	39-56	43-61	48-66

2-WAY STYLE 2



One-Way Style

Face Velocity		500	600	700	800	900	1000	1200	1400	1600	1800	2000
Pressure Loss		.020	.020	.030	.040	.050	.060	.090	.120	.160	.200	.250
6 x 6	CFM	45	55	60	70	80	90	105	125	140	160	180
Ak .090	Throw	3-5	4-7	5-8	6-9	8-10	9-12	10-14	12-18	14-20	15-22	16-24
9 x 9	CFM	95	115	135	155	175	195	235	275	315	350	390
Ak .190	Throw	6-9	7-10	9-13	10-14	11-17	13-19	15-21	18-26	19-29	22-33	25-38
12 x 12	CFM	175	210	245	280	315	350	420	480	560	635	700
Ak .350	Throw	8-12	10-14	12-18	13-19	15-21	18-26	21-31	24-36	27-40	30-43	33-45
15 x 15	CFM	275	330	385	440	495	550	660	775	885	995	1100
Ak .550	Throw	10-16	13-19	14-22	18-26	19-29	21-31	25-37	30-43	35-46	38-50	42-56
18 x 18	CFM	390	470	545	625	700	780	935	1090	1250	1410	1560
Ak .780	Throw	13-21	15-23	18-26	19-29	22-33	25-38	29-42	35-46	42-49	44-52	49-56
21 x 21	CFM	540	650	760	865	975	1080	1300	1515	1730	1945	2160
Ak 1.080	Throw	14-23	17-25	21-30	24-36	27-40	30-43	34-48	39-54	44-60	48-64	53-68
24 x 24	CFM	705	845	990	1130	1270	1410	1690	1950	2250	2540	2820
Ak 1.410	Throw	20-29	23-33	24-36	27-40	30-44	35-48	39-54	43-60	48-65	52-69	56-74
27 x 27	CFM	880	1055	1230	1410	1585	1760	2110	2470	2820	3170	3520
Ak 1.760	Throw	19-27	22-31	25-38	28-42	33-47	36-53	43-58	49-63	54-68	60-73	65-77

1-WAY STYLE



Note 3: The minimum Throw Dimension is based on a terminal velocity of 135 fpm. The maximum Throw Dimension is based on a terminal velocity of 65 fpm.

Ceiling Height in Feet	Maximum Recommended Cooling Temperature Differential	Maximum Recommended CFM Per Diffuser			
		SR/AR/ASR	SR/AR		
		Four-Way	Three-Way	Two-Way	One-Way
7	15°	400	300	200	100
8	20°	600	450	300	150
9	25°	1200	900	600	300
10	25°	1800	1350	900	450
12	30°	3200	2400	1600	800
14	30°	4800	3600	2400	1200
16	30°	6000	4500	3000	1500

NC < 30	NC 30	NC 35	NC 40	NC ≥ 45

Engineering Data

AR/SR Series: ARE, ARS, ART, SRE

Square & Rectangular Ceiling Diffusers — Steel/Aluminum

One-Way Style 1L

Face Velocity		500	600	700	800	900	1000	1200	1400	1600	1800	2000
Pressure Loss		.020	.020	.030	.040	.050	.060	.090	.120	.160	.200	.250
9 x 6	CFM	65	80	95	105	120	130	160	185	210	240	265
Ak .130	Throw	5-8	6-9	7-11	8-12	9-13	10-15	12-18	15-21	16-24	19-29	21-32
12 x 6	CFM	90	105	120	140	160	175	210	245	280	315	350
Ak .170	Throw	5-8	6-9	6-13	9-14	10-15	12-18	14-20	17-25	18-27	20-30	23-35
15 x 6	CFM	110	130	155	175	200	220	265	310	350	395	440
Ak .220	Throw	5-8	7-10	9-13	10-15	12-18	14-20	16-24	18-27	21-31	24-36	28-41
12 x 9	CFM	130	155	180	210	235	260	310	365	415	470	520
Ak .260	Throw	7-10	8-12	10-14	11-17	12-18	14-20	17-25	19-29	22-23	25-37	28-41
15 x 9	CFM	165	195	230	260	295	325	390	460	525	590	650
Ak .320	Throw	9-13	10-14	11-17	12-18	15-23	17-25	20-30	22-33	25-37	29-42	32-45
18 x 9	CFM	195	235	275	310	350	390	470	545	625	700	780
Ak .390	Throw	9-13	10-15	12-18	14-20	16-24	18-26	20-30	25-37	27-40	31-44	36-48
15 x 12	CFM	220	260	305	350	390	435	525	610	700	785	870
Ak .430	Throw	10-14	11-17	13-19	15-23	18-26	19-29	22-32	26-39	30-43	35-48	39-54
18 x 12	CFM	260	315	370	420	475	525	630	735	840	945	1050
Ak .520	Throw	10-15	12-18	14-20	17-25	19-27	21-30	25-36	28-41	32-45	36-49	42-54
21 x 15	CFM	380	455	530	605	685	760	915	1060	1220	1370	1520
Ak .760	Throw	13-19	15-21	18-26	19-29	22-34	25-38	29-42	34-46	38-51	43-56	48-61
24 x 15	CFM	440	525	615	700	790	875	1050	1225	1400	1575	1750
Ak .870	Throw	14-22	16-24	18-27	21-31	24-36	27-40	30-43	35-47	41-52	46-57	53-61
21 x 18	CFM	460	550	640	735	825	915	1100	1280	1465	1645	1830
Ak .910	Throw	14-20	16-24	19-29	22-32	24-36	26-39	30-43	35-47	41-51	45-56	49-62
27 x 21	CFM	690	830	965	1100	1245	1380	1655	1935	2210	2490	2760
Ak 1.380	Throw	17-27	19-29	23-35	26-40	30-45	34-49	38-54	43-60	48-67	54-72	59-80

1-WAY STYLE 1L



One-Way Style 1S

Face Velocity		500	600	700	800	900	1000	1200	1400	1600	1800	2000
Pressure Loss		.020	.020	.030	.040	.050	.060	.090	.120	.160	.200	.250
9 x 6	CFM	65	80	95	105	120	130	160	185	210	240	265
Ak .130	Throw	4-7	5-9	7-11	9-13	11-17	13-19	15-21	16-24	18-27	21-32	23-35
12 x 6	CFM	90	105	120	140	160	175	210	245	280	315	350
Ak .170	Throw	6-10	8-12	10-15	12-17	14-19	15-21	17-25	21-31	23-35	25-37	29-44
15 x 6	CFM	110	130	155	175	200	220	265	310	350	395	440
Ak .220	Throw	9-12	10-14	12-18	14-20	16-24	18-26	21-31	23-35	27-40	31-45	35-51
12 x 9	CFM	130	155	180	210	235	260	310	365	415	470	520
Ak .260	Throw	8-12	10-14	10-15	12-18	14-20	16-24	18-27	23-33	24-37	28-42	30-44
15 x 9	CFM	165	195	230	260	295	325	390	460	525	590	650
Ak .320	Throw	10-15	12-18	13-19	15-21	18-26	22-32	23-35	26-39	30-43	35-46	38-47
18 x 9	CFM	195	235	275	310	350	390	470	545	625	700	780
Ak .390	Throw	11-17	13-19	15-23	17-25	20-30	22-33	25-38	31-44	34-45	38-47	42-51
15 x 12	CFM	220	260	305	350	390	435	525	610	700	785	870
Ak .430	Throw	11-16	12-18	15-21	17-25	19-29	22-32	25-38	28-44	33-45	36-49	42-54
18 x 12	CFM	260	315	370	420	475	525	630	735	840	945	1050
Ak .520	Throw	12-18	14-20	16-24	19-27	21-31	22-33	27-40	32-45	37-47	42-50	45-56
21 x 15	CFM	380	455	530	605	685	760	915	1060	1220	1370	1520
Ak .760	Throw	14-20	16-24	19-29	22-32	24-37	28-41	33-45	39-48	43-52	48-58	54-63
24 x 15	CFM	440	525	615	700	790	875	1050	1225	1400	1575	1750
Ak .870	Throw	16-23	18-26	22-32	25-37	28-41	32-45	37-47	44-54	49-59	54-66	59-71
21 x 18	CFM	460	550	640	735	825	915	1100	1280	1465	1645	1830
Ak .910	Throw	18-24	18-26	21-31	24-33	26-38	28-41	33-47	39-53	44-58	48-63	54-69
27 x 21	CFM	690	830	965	1100	1245	1380	1655	1935	2210	2490	2760
Ak 1.380	Throw	19-29	21-32	25-38	31-44	37-49	40-51	42-55	46-61	51-66	56-71	61-77

1-WAY STYLE 1S



Note 3: The minimum Throw Dimension is based on a terminal velocity of 135 fpm. The maximum Throw Dimension is based on a terminal velocity of 65 fpm.

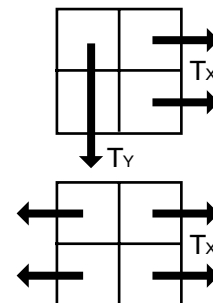
Ceiling Height in Feet	Maximum Recommended Cooling Temperature Differential	Maximum Recommended CFM Per Diffuser			
		SR/AR/ASR		SR/AR	
		Four-Way	Three-Way	Two-Way	One-Way
7	15°	400	300	200	100
8	20°	600	450	300	150
9	25°	1200	900	600	300
10	25°	1800	1350	900	450
12	30°	3200	2400	1600	800
14	30°	4800	3600	2400	1200
16	30°	6000	4500	3000	1500

NC < 30	NC 30	NC 35	NC 40	NC ≥ 45

MCD, MCDD, MCDS, MCDSD, MCDST, MCDSDT Modular Ceiling Diffuser — Aluminum

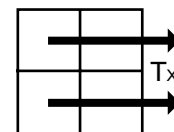
Two Way

Face Velocity		500	600	700	800	900	1000	1200	1400	1600	1800	2000
Pressure Loss		.020	.020	.030	.040	.050	.060	.090	.120	.160	.200	.250
6 x 6 Ak .090	CFM Throw X/Y NC	45 2-5/2-5 <20	55 3-5/3-5 <20	65 3-6/3-6 <20	70 3-6/3-6 <20	80 5-8/5-8 <20	90 5-9/5-9 <20	110 5-11/5-11 21	125 6-12/6-12 24	145 6-14/6-14 28	160 8-15/8-15 31	180 9-17/9-17 34
8 x 8 Ak .150	CFM Throw X/Y NC	80 3-6/3-6 <20	95 3-6/3-6 <20	110 5-8/5-8 <20	130 5-9/5-9 <20	145 5-11/5-11 <20	160 6-11/6-11 <20	190 6-14/6-14 22	225 8-15/8-15 26	255 9-17/9-17 29	290 11-18/11-18 32	320 11-20/11-20 35
10 x 10 Ak .250	CFM Throw X/Y NC	130 3-8/3-8 <20	155 5-9/5-9 <20	180 5-11/5-11 <20	210 6-11/6-11 <20	235 6-12/6-12 <20	260 8-12/8-12 <20	310 9-15/9-15 23	365 11-17/11-17 27	415 12-20/12-20 30	470 14-21/14-21 33	520 15-23/15-23 36
12 x 12 Ak .370	CFM Throw X/Y NC	190 5-9/5-9 <20	230 5-11/5-11 <20	265 6-12/6-12 <20	305 8-14/8-14 <20	340 8-15/8-15 <20	380 9-17/9-17 20	455 11-18/11-18 24	530 12-21/12-21 28	610 14-23/14-23 31	685 15-24/15-24 35	760 17-26/17-26 37
14 x 14 Ak .520	CFM Throw X/Y NC	260 5-11/5-11 <20	310 6-12/6-12 <20	365 8-14/8-14 <20	415 8-17/8-17 <20	470 9-18/9-18 <20	520 11-20/11-20 20	625 12-21/12-21 25	730 14-23/14-23 29	830 17-24/17-24 32	935 18-27/18-27 35	1040 20-29/20-29 38
16 x 16 Ak .700	CFM Throw X/Y NC	350 6-12/6-12 <20	420 8-14/8-14 <20	490 8-17/8-17 <20	560 9-18/9-18 <20	630 11-21/11-21 <20	700 12-23/12-23 21	840 14-26/14-26 26	980 17-29/17-29 30	1120 18-30/18-30 33	1260 21-32/21-32 36	1400 24-33/24-33 39
18 x 18 Ak .900	CFM Throw X/Y NC	450 6-14/6-14 <20	540 8-17/8-17 <20	630 9-18/9-18 <20	720 11-21/11-21 <20	810 12-23/12-23 20	900 14-24/14-24 22	1080 17-27/17-27 27	1260 18-30/18-30 31	1440 21-33/21-33 34	1620 24-35/24-35 37	1800 27-36/27-36 40
20 x 20 Ak 1.100	CFM Throw X/Y NC	555 8-15/8-15 <20	665 9-18/9-18 <20	775 11-21/11-21 <20	890 12-24/12-24 <20	1000 14-26/14-26 21	1110 15-29/15-29 24	1330 18-32/18-32 28	1555 21-35/21-35 32	1775 24-38/24-38 36	2000 27-39/27-39 39	2220 30-41/30-41 42
22 x 22 Ak 1.330	CFM Throw X/Y NC	665 8-17/8-17 <20	800 9-20/9-20 <20	930 12-23/12-23 <20	1065 14-26/14-26 22	1195 15-27/15-27 25	1330 17-30/17-30 28	1595 20-35/20-35 32	1860 23-38/23-38 36	2130 27-41/27-41 40	2395 29-44/29-44 43	2660 33-45/33-45 46



One-Way

Face Velocity		500	600	700	800	900	1000	1200	1400	1600	1800	2000
Pressure Loss		.020	.020	.030	.040	.050	.060	.090	.120	.160	.200	.250
6 x 6 Ak .090	CFM Throw NC	45 2-6 <20	55 4-6 <20	65 4-8 <20	70 4-8 <20	80 6-10 <20	90 6-12 <20	110 6-14 21	125 8-16 24	145 8-18 28	160 10-20 31	180 12-22 34
8 x 8 Ak .150	CFM Throw NC	80 4-8 <20	95 4-8 <20	110 6-10 <20	130 6-12 <20	145 6-14 <20	160 8-14 <20	190 8-18 22	225 10-20 26	255 12-22 29	290 14-24 32	320 14-26 35
10 x 10 Ak .250	CFM Throw NC	130 4-10 <20	155 6-12 <20	180 6-14 <20	210 8-14 <20	235 8-16 <20	260 10-16 <20	310 12-20 23	365 14-22 27	415 16-26 30	470 18-28 33	520 20-30 36
12 x 12 Ak .370	CFM Throw NC	190 6-12 <20	230 6-14 <20	265 8-16 <20	305 10-18 <20	340 10-20 <20	380 12-20 20	455 12-22 24	530 14-24 28	610 16-28 31	685 18-30 35	760 20-30 37
14 x 14 Ak .520	CFM Throw NC	260 6-14 <20	310 8-16 <20	365 10-18 <20	415 10-22 <20	470 12-24 <20	520 14-26 20	625 16-28 25	730 18-30 29	830 22-32 32	935 24-36 35	1040 26-38 38
16 x 16 Ak .700	CFM Throw NC	350 8-16 <20	420 10-18 <20	490 10-22 <20	560 12-24 <20	630 14-28 <20	700 16-30 21	840 18-34 26	980 22-38 30	1120 24-40 33	1260 28-42 36	1400 32-44 39
18 x 18 Ak .900	CFM Throw NC	450 8-18 <20	540 10-22 <20	630 12-24 <20	720 14-28 <20	810 16-30 20	900 18-36 22	1080 22-36 27	1260 24-40 31	1440 28-44 34	1620 32-46 37	1800 35-48 40
20 x 20 Ak 1.100	CFM Throw NC	555 10-20 <20	665 12-24 <20	775 14-28 <20	890 16-32 <20	1000 18-34 21	1110 20-38 24	1330 24-42 28	1555 28-46 32	1775 32-50 36	2000 36-52 39	2220 40-54 42
22 x 22 Ak 1.330	CFM Throw NC	665 10-22 <20	800 12-26 <20	930 16-30 <20	1065 18-34 20	1195 20-36 23	1330 22-40 26	1595 26-46 30	1860 30-50 34	2130 36-54 38	2395 38-58 41	2660 44-60 44

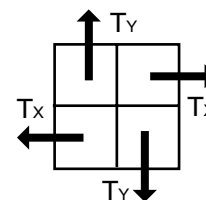


NOTES: The minimum Throw Dimension is based on a terminal velocity of 250 FPM. The maximum Throw Dimension is based on a terminal velocity of 125 FPM.
NC re 10db room Attenuation (LW10⁻¹²W)

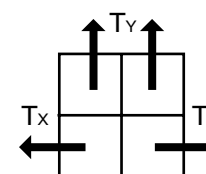
Engineering Data

MCD, MCDD, MCDS, MCDSD, MCDST, MCDSDT
Modular Ceiling Diffuser — Aluminum
Four-Way

Face Velocity		500	600	700	800	900	1000	1200	1400	1600	1800	2000
Pressure Loss		.020	.020	.030	.040	.050	.060	.090	.120	.160	.200	.250
6 x 6 Ak .090	CFM	45	55	65	70	80	90	110	125	145	160	180
	Throw X/Y NC	1-3/1-3 <20	2-3/2-3 <20	2-4/2-4 <20	2-4/2-4 <20	3-5/3-5 <20	3-6/3-6 <20	3-7/3-7 21	4-8/4-8 24	4-9/4-9 28	5-10/5-10 31	6-11/6-11 34
8 x 8 Ak .150	CFM	80	95	110	130	145	160	190	225	255	290	320
	Throw X/Y NC	2-4/2-4 <20	2-4/2-4 <20	3-5/3-5 <20	3-6/3-6 <20	3-7/3-7 <20	4-7/4-7 <20	4-9/4-9 22	5-10/5-10 26	6-11/6-11 29	7-12/7-12 32	7-13/7-13 35
10 x 10 Ak .250	CFM	130	155	180	210	235	260	310	365	415	470	520
	Throw X/Y NC	2-5/2-5 <20	3-6/3-6 <20	3-7/3-7 <20	4-7/4-7 <20	4-8/4-8 <20	5-8/5-8 <20	6-10/6-10 23	7-11/7-11 27	8-13/8-13 30	9-14/9-14 33	10-15/10-15 36
12 x 12 Ak .370	CFM	190	230	265	305	340	380	455	530	610	685	760
	Throw X/Y NC	3-6/3-6 <20	3-7/3-7 <20	4-8/4-8 <20	5-9/5-9 <20	5-10/5-10 <20	6-11/6-11 20	7-12/7-12 24	8-14/8-14 28	8-15/8-15 31	10-16/10-16 35	11-17/11-17 37
14 x 14 Ak .520	CFM	260	310	365	415	470	520	625	730	830	935	1040
	Throw X/Y NC	3-7/3-7 <20	4-8/4-8 <20	5-9/5-9 <20	5-11/5-11 <20	6-12/6-12 <20	7-13/7-13 20	8-14/8-14 25	9-15/9-15 29	11-16/11-16 32	12-18/12-18 35	13-19/13-19 38
16 x 16 Ak .700	CFM	350	420	490	560	630	700	840	980	1120	1260	1400
	Throw X/Y NC	4-8/4-8 <20	5-9/5-9 <20	5-11/5-11 <20	6-12/6-12 <20	7-14/7-14 <20	8-15/8-15 21	9-17/9-17 26	11-19/11-19 30	12-20/12-20 33	14-21/14-21 36	16-22/16-22 39
18 x 18 Ak .900	CFM	450	540	630	720	810	900	1080	1260	1440	1620	1800
	Throw X/Y NC	4-9/4-9 <20	5-11/5-11 <20	6-12/6-12 <20	7-14/7-14 <20	8-15/8-15 <20	9-16/9-16 22	11-18/11-18 27	12-20/12-20 31	14-22/14-22 34	16-23/16-23 37	18-24/18-24 40
20 x 20 Ak 1.100	CFM	555	665	775	890	1000	1110	1330	1555	1775	2000	2220
	Throw X/Y NC	5-10/5-10 <20	6-12/6-12 <20	7-14/7-14 <20	8-16/8-16 <20	9-17/9-17 21	10-19/10-19 24	12-21/12-21 28	14-23/14-23 32	16-25/16-25 36	18-26/18-26 39	20-27/20-27 42
22 x 22 Ak 1.330	CFM	665	800	930	1065	1195	1330	1595	1860	2130	2395	2660
	Throw X/Y NC	5-11/5-11 <20	6-13/6-13 <20	8-15/8-15 <20	9-17/9-17 20	10-18/10-18 23	11-20/11-20 26	13-23/13-23 30	15-25/15-25 34	18-27/18-27 38	19-29/19-29 41	22-30/22-30 44

**Three-Way**

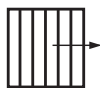
Face Velocity		500	600	700	800	900	1000	1200	1400	1600	1800	2000
Pressure Loss		.020	.020	.030	.040	.050	.060	.090	.120	.160	.200	.250
6 x 6 Ak .090	CFM	45	55	65	70	80	90	110	125	145	160	180
	Throw NC	1-3/2-5 <20	2-3/3-5 <20	2-4/3-6 <20	2-4/3-6 <20	3-5/5-8 <20	3-6/5-9 <20	3-7/5-11 21	4-8/6-12 24	4-9/6-14 28	5-10/8-15 31	6-11/9-17 34
8 x 8 Ak .150	CFM	80	95	110	130	145	160	190	225	255	290	320
	Throw NC	2-4/3-6 <20	2-4/3-6 <20	3-5/5-8 <20	3-6/5-9 <20	3-7/5-11 <20	4-7/6-11 <20	4-9/6-14 22	5-10/8-15 26	6-11/9-17 29	7-12/11-18 32	7-13/11-20 35
10 x 10 Ak .250	CFM	130	155	180	210	235	260	310	365	415	470	520
	Throw NC	2-5/3-8 <20	3-6/5-9 <20	3-7/5-11 <20	4-7/6-11 <20	4-8/6-12 <20	5-8/8-12 <20	6-10/9-15 23	7-11/11-17 27	8-13/12-20 30	9-14/14-21 33	10-15/15-23 36
12 x 12 Ak .370	CFM	190	230	265	305	340	380	455	530	610	685	760
	Throw NC	3-6/5-9 <20	3-7/5-11 <20	4-8/6-12 <20	5-9/8-14 <20	5-10/8-15 <20	6-11/9-17 20	7-12/11-18 24	8-14/12-21 28	9-15/14-23 31	10-16/15-24 35	11-17/17-26 37
14 x 14 Ak .520	CFM	260	310	365	415	470	520	625	730	830	935	1040
	Throw NC	3-7/5-11 <20	4-8/6-12 <20	5-9/8-14 <20	5-11/8-17 <20	6-12/9-18 <20	7-13/11-20 20	8-14/12-21 25	9-15/14-23 29	11-16/17-24 32	12-18/18-27 35	13-19/20-29 38
16 x 16 Ak .700	CFM	350	420	490	560	630	700	840	980	1120	1260	1400
	Throw NC	4-8/6-12 <20	5-9/8-14 <20	5-11/8-17 <20	6-12/9-18 <20	7-14/11-21 <20	8-15/12-23 21	9-17/14-26 26	11-19/17-29 30	12-20/18-30 33	14-21/21-32 36	16-22/24-33 39
18 x 18 Ak .900	CFM	450	540	630	720	810	900	1080	1260	1440	1620	1800
	Throw NC	4-9/6-14 <20	5-11/8-17 <20	6-12/9-18 <20	7-14/11-21 <20	8-15/12-23 20	9-16/14-24 22	11-18/17-27 27	12-20/18-30 31	14-22/21-33 34	16-23/24-35 37	18-24/27-36 40
20 x 20 Ak 1.100	CFM	555	665	775	890	1000	1110	1330	1555	1775	2000	2220
	Throw NC	5-10/8-15 <20	6-12/9-18 <20	7-14/11-21 <20	8-16/12-24 <20	9-17/14-26 21	10-19/15-29 24	12-21/18-32 28	14-23/21-35 32	16-25/24-38 36	18-26/27-39 39	20-27/30-41 42
22 x 22 Ak 1.330	CFM	665	800	930	1065	1195	1330	1595	1860	2130	2395	2660
	Throw NC	5-11/8-17 <20	6-13/9-20 <20	8-15/12-23 <20	9-17/14-26 20	10-18/15-27 23	11-20/17-30 26	13-23/20-35 30	15-25/23-38 34	18-27/27-41 38	19-29/29-44 41	22-30/33-45 44



NOTES: The minimum Throw Dimension is based on a terminal velocity of 250 FPM. The maximum Throw Dimension is based on a terminal velocity of 125 FPM.
 NC re 10db room Attenuation (LW10⁻¹²W)

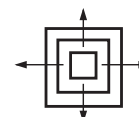
A500 Series

A501MS/A501OB One-Way Diffuser



Face Velocity		400	500	600	700	900	1100	1500
Pressure Loss		.010	.016	.022	.031	.050	.075	.140
6 x 6	CFM	55	65	75	90	120	140	195
Ak .13	Throw	5.0	6.0	7.0	8.0	10.0	12.0	15.0
8 x 8	CFM	75	90	105	120	150	180	240
Ak .20	Throw	6.0	7.0	8.0	10.0	12.0	15.0	18.0
10 x 10	CFM	115	135	155	175	235	290	395
Ak .29	Throw	7.0	8.0	10.0	12.0	15.0	19.0	24.0
12 x 12	CFM	170	210	255	300	380	470	610
Ak .42	Throw	8.0	10.0	12.0	15.0	19.0	24.0	29.0
14 x 14	CFM	250	305	360	410	505	610	800
Ak .59	Throw	11.0	13.0	15.0	18.0	24.0	30.0	35.0

A504MS/A504OB Four-Way Diffuser



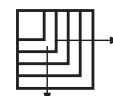
Face Velocity		400	500	600	700	900	1100	1500
Pressure Loss		.010	.016	.022	.031	.050	.075	.140
6 x 6	CFM	55	65	75	90	120	140	195
Ak .13	Throw	2.0	3.0	4.0	5.0	6.0	7.0	9.0
8 x 8	CFM	75	90	105	120	150	180	240
Ak .20	Throw	3.0	4.0	5.0	6.0	8.0	10.0	13.0
10 x 10	CFM	115	135	155	175	235	290	395
Ak .29	Throw	4.0	5.0	6.0	7.0	9.0	12.0	14.0
12 x 12	CFM	170	210	255	300	380	470	610
Ak .42	Throw	5.0	6.0	7.0	8.0	10.0	12.0	15.0
14 x 14	CFM	250	305	360	410	505	610	800
Ak .59	Throw	6.0	7.0	8.0	9.0	11.0	14.0	18.0

A502MS/A502OB Two-Way Diffuser



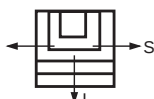
Face Velocity		400	500	600	700	900	1100	1500
Pressure Loss		.010	.016	.022	.031	.050	.075	.140
6 x 6	CFM	55	65	75	90	120	140	195
Ak .13	Throw	3.0	4.0	5.0	6.0	7.0	9.0	12.0
8 x 8	CFM	75	90	105	120	150	180	240
Ak .20	Throw	4.0	5.0	6.0	7.0	9.0	12.0	16.0
10 x 10	CFM	115	135	155	175	235	290	395
Ak .29	Throw	5.0	6.0	7.0	8.0	10.0	14.0	20.0
12 x 12	CFM	170	210	255	300	380	470	610
Ak .42	Throw	6.0	7.0	8.0	10.0	13.0	17.0	23.0
14 x 14	CFM	250	305	360	410	505	610	800
Ak .59	Throw	7.0	9.0	11.0	13.0	16.0	19.0	27.0

A505MS/A505OB Two-Way Corner Diffuser



Face Velocity		400	500	600	700	900	1100	1500
Pressure Loss		.010	.016	.022	.031	.050	.075	.140
6 x 6	CFM	55	65	75	90	120	140	195
Ak .13	Throw	3.0	4.0	5.0	6.0	7.0	9.0	12.0
8 x 8	CFM	75	90	105	120	150	180	240
Ak .20	Throw	4.0	5.0	6.0	7.0	9.0	12.0	16.0
10 x 10	CFM	115	135	155	175	235	290	395
Ak .29	Throw	5.0	6.0	7.0	8.0	10.0	14.0	20.0
12 x 12	CFM	170	210	255	300	380	470	610
Ak .42	Throw	6.0	7.0	8.0	10.0	13.0	17.0	23.0
14 x 14	CFM	250	305	360	410	505	610	800
Ak .59	Throw	7.0	9.0	11.0	13.0	16.0	19.0	27.0

A503MS/A503OB Three-Way Diffuser



Face Velocity		400	500	600	700	900	1100	1500
Pressure Loss		.010	.016	.022	.031	.050	.075	.140
6 x 6	CFM	55	65	75	90	120	140	195
Ak .13	Throw L/S	3.5/2.5	4.0/3.0	5.0/3.5	5.5/4.0	7.0/5.0	9.0/6.0	12.0/9.0
8 x 8	CFM	75	90	105	120	150	180	240
Ak .20	Throw L/S	4.0/2.0	5.0/2.5	6.0/3.5	7.0/4.0	8.0/4.5	10.0/5.5	12.0/7.0
10 x 10	CFM	115	135	155	175	235	290	395
Ak .29	Throw L/S	5.0/3.0	7.0/4.0	8.0/4.5	10.0/5.5	12.0/7.0	14.0/8.5	18.0/10.5
12 x 12	CFM	170	210	255	300	380	470	610
Ak .42	Throw L/S	7.0/4.0	8.5/4.5	10.0/5.5	12.0/6.5	15.0/8.5	18.0/10.0	23.0/14.0
14 x 14	CFM	250	305	360	410	505	610	800
Ak .59	Throw L/S	8.0/5.5	10.0/6.0	11.5/7.0	13.0/7.5	15.5/9.0	20.0/11.0	27.0/16.0

<NC 20	NC 20-30	NC 30-35	NC 35-40

Terminal velocity of FPM

NC Noise criteria rating. NC is based on 10db room absorption (ref. 10⁻¹² watts).

Tested in accordance with ASHRAE 36-72, ADC 1062: GRD84 and ISO 3741.

Engineering Data

SV and SVH Spiral Diffusers
USV, USVH Universal Spiral Diffusers

See page 38 for min. duct diameter.

Face Velocity		300	400	500	600	700	800	1000	1200
Total Pressure		.016	.029	.046	.066	.090	.117	.183	.263
10 x 3 Ak .14	CFM	42	56	70	84	98	112	140	168
	Horizontal Throw	7-3	8-4	9-5	10-6	11-7	12-8	13-9	14-10
	Noise Criteria	-	-	-	-	-	23	29	35
12 x 3 Ak .18	CFM	54	72	90	108	126	144	180	216
	Horizontal Throw	8-5	9-6	10-7	11-8	12-8	13-9	14-10	16-11
	Noise Criteria	-	-	-	-	20	24	31	36
10 x 4 14 x 3 Ak .21	CFM	63	84	105	126	147	168	210	252
	Horizontal Throw	8-5	10-7	11-8	12-8	13-9	14-10	16-11	17-12
	Noise Criteria	-	-	-	-	21	25	31	37
16 x 3 12 x 4 Ak .25	CFM	75	100	125	150	175	200	250	300
	Horizontal Throw	9-5	11-7	12-8	13-9	14-10	15-11	17-12	19-13
	Noise Criteria	-	-	-	-	21	25	32	37
24 x 3 12 x 6 Ak .39	CFM	117	156	195	234	273	312	390	468
	Horizontal Throw	12-7	13-9	15-10	17-11	18-12	19-13	21-15	24-16
	Noise Criteria	-	-	-	-	23	27	34	39
24 x 4 16 x 6 Ak .52	CFM	156	208	260	312	364	416	520	624
	Horizontal Throw	13-8	16-11	18-12	19-13	21-14	22-15	25-17	27-19
	Noise Criteria	-	-	-	20	24	28	35	40
14 x 8 18 x 6 Ak .63	CFM	189	252	315	378	441	504	630	756
	Horizontal Throw	15-8	17-12	19-13	21-14	23-16	24-17	27-19	30-20
	Noise Criteria	-	-	-	20	25	29	36	41
20 x 6 Ak .66	CFM	198	264	330	396	462	528	660	792
	Horizontal Throw	15-9	18-12	20-13	22-15	24-16	25-17	28-19	31-21
	Noise Criteria	-	-	-	21	25	29	36	41
16 x 8 Ak .71	CFM	213	284	355	426	497	568	710	852
	Horizontal Throw	16-9	18-13	20-14	23-15	24-17	26-18	30-20	35-22
	Noise Criteria	-	-	-	21	26	30	36	42
24 x 6 18 x 8 Ak .88	CFM	264	352	440	528	616	704	880	1056
	Horizontal Throw	18-10	20-14	23-16	25-17	27-18	29-20	32-22	36-24
	Noise Criteria	-	-	-	22	26	30	37	43
20 x 8 16 x 10 Ak .98	CFM	294	392	490	588	686	784	980	1176
	Horizontal Throw	19-10	21-15	24-17	26-18	28-19	30-21	34-23	38-25
	Noise Criteria	-	-	-	23	27	31	38	44
18 x 10 Ak 1.11	CFM	333	444	555	666	777	888	1110	1332
	Horizontal Throw	20-11	23-16	25-18	28-19	30-21	32-22	36-25	40-27
	Noise Criteria	-	-	-	23	27	31	38	44
36 x 6 18 x 12 Ak 1.35	CFM	405	540	675	810	945	1080	1350	1620
	Horizontal Throw	22-12	25-17	28-19	31-21	34-23	36-24	40-27	44-30
	Noise Criteria	-	-	-	24	28	32	39	44
24 x 10 20 x 12 Ak 1.49	CFM	447	596	745	894	1043	1192	1490	1788
	Horizontal Throw	23-13	26-18	30-20	32-22	35-24	37-26	42-29	46-31
	Noise Criteria	-	-	-	24	29	33	39	45
24 x 12 Ak 1.82	CFM	546	728	910	1092	1274	1456	1820	2184
	Horizontal Throw	25-14	30-20	33-22	36-25	39-27	42-28	47-32	51-35
	Noise Criteria	-	-	-	25	30	34	40	46
36 x 10 30 x 12 Ak 2.29	CFM	687	916	1145	1374	1603	1832	2290	2748
	Horizontal Throw	29-16	33-22	37-25	41-28	44-30	47-32	53-36	61-42
	Noise Criteria	-	-	20	26	30	34	41	47
36 x 12 Ak 2.75	CFM	825	1100	1375	1650	1925	2200	2750	3300
	Horizontal Throw	31-18	36-25	41-28	44-30	48-33	51-35	57-39	63-43
	Noise Criteria	-	-	21	27	31	35	42	47

Terminal Velocity of 75 and 150 FPM, respectively

NOTES:

1. Total Pressure in inches water column.
2. Throw data are in feet at terminal velocities of 75 and 150 FPM, respectively.
3. Noise Criteria based on a 10 dB room attenuation (Re: 10⁻¹² watts).

L Series

NOTES:

- Table 1 based on up to 4-foot grille length. For longer lengths, correct throw and NC per **Table 2**.
- When using continuous grille lengths with alternate active and inactive sections, a reduction in throw can be obtained by omitting the factors contained in **Table 2**.
- Bar style 30 and 0
Increase **Table 1** NC + 5 NC
- Supply air temperature effect on horizontal throw is shown in Table 3. vertical down-throw at varying supply temperatures is shown in Table 4.
- When spreading the air path with a horizontal deflection of 22° per side in grille lengths up to 4 feet:
Multiply **Table 1** Throw x .75
Increase **Table 1** NC + 5 NC
Multiply **Table 1** P_s x 1.20
Multiply **Table 5** A_k x .90
- Terminal velocities (V_t) at the minimum and maximum throw (T) values are rated at 125 FPM and 75 FPM respectively with corresponding room velocities (V_r) of 50 FPM and 35 FPM.

Table 1 - Supply Air

CFM/Ft of total Linear length	Listed Width in Inches	Min. P _s in H ₂ O		Face Velocity (V _f) FPM		Throw (T) in Feet		Minimum Ceiling Height in Feet				NC
		Bar Style		Bar Style		Sidewall	Sill/Floor					
		00 and 15	30 and 01	00 and 15	30 and 01	Min.-Max.	Min.-Max.	@ -18F	T	@ -25F	T	
20	1½	.01	.01	500	575	6-9	1-2	8		9		<20
30	1½	.03	.04	750	865	7-10	2-3	9		10		25
	2	.01	.01	475	545	6-9	1-2					20
40	1½	.05	.07	1000	1150	9-13	3-5	9		11		30
	2	.02	.03	635	730	8-11	2-4					25
	2½	.01	.01	460	530	7-10	2-3					20
50	1½	.03	.12	1250	1440	11-16	4-9	9½		11		30
	2	.03	.04	790	910	10-14	3-7					25
	2½	.02	.03	575	660	9-13	2-6					20
	3	<.01	.01	440	505	8-12	2-5					<20
60	2	.05	.07	950	1090	12-18	5-11	9½		12		30
	2½	.02	.03	690	795	11-16	4-9					25
	3	.01	.01	530	610	10-14	3-7					20
	4	<.01	.01	370	425	8-12	2-5					<20
70	2	.06	.08	1110	1275	14-20	7-13	10		12		30
	2½	.03	.04	810	935	13-19	6-12					30
	3	.02	.03	660	760	11-16	4-9					25
	4	<.01	.01	435	500	10-14	3-7					<20
80	2	.08	.10	1275	1450	16-23	9-16	10½		12½		30
	2½	.04	.05	920	1060	15-21	8-14					30
	3	.03	.04	700	805	13-18	6-11					25
	4	.01	.01	495	570	11-16	4-9					20
90	2½	.05	.07	1030	1185	17-24	10-17	11		13		30
	3	.04	.05	785	905	15-21	8-14					30
	4	.01	.02	550	635	13-18	6-11					25
	5	<.01	.01	450	520	11-16	4-9					20
	2½	.06	.08	1150	1325	19-27	12-20					30
100	3	.04	.05	875	1010	16-23	9-16	11		13		30
	4	.02	.03	620	715	14-20	7-13					25
	5	.01	.01	500	575	12-18	5-11					20
	3	.06	.08	1050	1210	19-28	11-20					30
	4	.03	.04	745	855	17-24	9-16					30
120	5	.02	.03	600	680	15-22	7-14	11½		13		25
	6	<.01	.01	480	550	13-19	5-11					20
	3	.08	.11	1220	1410	22-32	14-24					35
	4	.04	.05	870	1000	19-28	11-20					30
140	5	.02	.03	700	810	17-25	9-17	11½		14		25
	6	.01	.01	560	645	15-22	7-14					20
	4	.05	.07	990	1140	22-32	13-23					35
	5	.03	.04	800	925	19-29	10-20					30
160	6	.02	.03	640	735	18-26	9-17	12		15		25
	8	.01	.01	460	530	15-22	6-13					20
	4	.07	.09	1110	1275	25-36	16-27					35
	5	.04	.05	900	1035	22-33	13-24					30
180	6	.03	.04	725	835	20-30	11-21	12		15		25
	8	.02	.03	520	600	17-25	8-16					20
	4	.08	.11	1240	1425	28-41	-					40
	5	.05	.07	1000	1150	24-36	-					35
200	6	.04	.05	800	925	23-33	-	12		15		30
	8	.02	.03	575	665	20-28	-					25
	5	.08	.11	1250	1440	30-46	-					40
	6	.05	.07	1000	1150	27-39	-					35
250	8	.03	.04	720	830	25-35	-	13		15		30
	10	.01	.01	550	625	21-32	-					25
	6	.07	.09	1200	1375	33-48	-					40
	8	.04	.05	865	1000	29-42	-					35
300	10	.02	.03	665	765	25-39	-	13		15		30
	12	.01	.01	545	630	23-33	-					25
	8	.05	.08	1020	1175	34-48	-					40
	10	.03	.04	780	900	29-45	-					35
350	12	.02	.03	640	735	26-38	-	13		15		30
	8	.08	.11	1170	1350	40-55	-					40
	10	.04	.05	890	1025	33-50	-					35
	12	.03	.04	730	845	33-44	-					30

Symbols:

- V_t Terminal Velocity in FPM
V_r Room Velocity in FPM
V_k Face Velocity in FPM
A_k Outlet Area in Square Feet
A_n Neck Area in Square Feet
P_s Static Pressure in H₂O
NC 18dB Room Attenuation
T Throw in Feet: see Note 6.
ΔT Temperature Differential

L Series

Table 2 - Continuous Grille Length Factors

Grille Length in Feet	Modify Table 1 by listed values for grille lengths above 4 feet.	
	Throw (T)	
	Sidewall Min.-Max.	Sill/Floor Min.-Max. NC
4-6	No Change	
7-20	T x 1.10	
21-100	T x 1.15	

Table 3 - Supply Air Temperature Factors

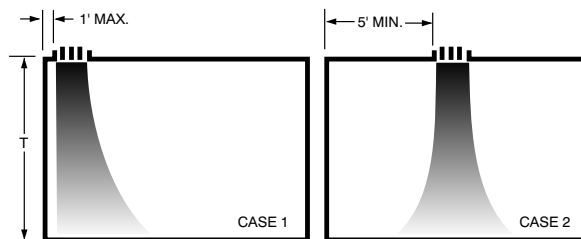
Multiply Throw in Table 1 (or factor in Table 2 if used) by listed value.			
Sidewall Sill/Floor	@-20F T	@ 0F T	@+25F T
	T x 1.00	T x 1.10	T x 1.20

Table 4 - Vertical Down-Throw and Supply Air Temperature Factors

Multiply Throw-Sidewall in Table 1 (or factor in Table 2 if used) by listed value.			
Case	@-20F T Cooling	@ 0F T Ventilating	@+25F T Heating
Case 1	T x 1.00	T x .90	T x .60
Case 2	T x .70	T x .60	T x .40

Table 5 - Supply Grille Areas (per foot of length)

Listed Width in Inches																		
	1½	2	2½	3	4	5	6	8	10	12	14	16	18	20	24	30	36	
A _n	.13	.17	.21	.25	.33	.42	.50	.67	.84	1.00	1.20	1.30	1.50	1.70	2.00	2.50	3.00	
00 and 15 Bar Styles																		
A _k	.04	.06	.09	.11	.16	.20	.25	.35	.45	.55	.68	.79	.90	1.00	1.30	1.60	2.10	
30 and 01 Bar Styles																		
A _k	.03	.05	.08	.09	.14	.17	.21	.30	.38	.47	.58	.67	.77	.85	1.10	1.40	1.80	



Return Air CFM per Foot of Length

Listed Width in Inches	A _k Area	Bar Style	NC 20-25 Nonducted		NC 30 Ducted		NC 35-40 Ducted	
			-.02" P _s CFM	-.03" P _s CFM	-.08" P _s CFM	-.10" P _s CFM	-.15" P _s CFM	-.20" P _s CFM
1½	.13	00 and 15	20	25	40	45	55	65
	.12	01 and 30	15	20	35	40	45	55
2	.18	00 and 15	30	40	65	70	90	100
	.17	01 and 30	25	35	55	60	75	85
2½	.23	00 and 15	45	50	85	95	115	135
	.22	01 and 30	35	45	70	80	100	115
3	.27	00 and 15	55	65	105	120	145	165
	.25	01 and 30	45	55	90	100	120	140
4	.34	00 and 15	75	90	150	165	205	235
	.33	01 and 30	60	75	125	140	170	195
5	.41	00 and 15	95	120	190	215	260	305
	.39	01 and 30	80	100	160	180	220	255
6	.46	00 and 15	120	145	240	265	325	375
	.44	01 and 30	100	120	200	220	270	315
8	.57	00 and 15	160	200	325	360	445	515
	.54	01 and 30	135	165	270	305	370	430
10	.68	00 and 15	210	255	415	465	570	655
	.64	01 and 30	175	215	350	390	475	550
12	.76	00 and 15	255	310	510	565	695	800
	.72	01 and 30	210	260	425	475	580	670
16	.93	00 and 15	350	430	700	785	960	1100
	.86	01 and 30	285	350	570	635	780	900
20	1.10	00 and 15	445	545	885	990	1220	1410
	1.00	01 and 30	365	445	730	815	1000	1160
24	1.25	00 and 15	540	660	1080	1210	1475	1710
	1.15	01 and 30	440	540	880	985	1200	1390

S Series

IP/METRIC DATA: 1/2" SLOT WIDTH, CONTINUOUS SLOT

	IP Data				NC	Metric Data				Octave Band, dB						
	Air Flow	Press Ps	1-Way Throw	2-Way Throw		Air Flow	Press Ps	1-Way Throw	2-Way Throw							
	CFM/ft	"WG	ft	ft		L/s/m	Pa	m	m							
1 Slot	5	0.004	1 - 2 - 7		-	8	1.1	0.2 - 0.6 - 2.2		37	24	24	12	-	-	
	13	0.030	6 - 9 - 18		26	20	7.4	1.7 - 2.8 - 5.4		48	44	42	33	26	23	
	17	0.051	8 - 12 - 20		32	26	12.7	2.5 - 3.7 - 6.2		51	49	47	39	32	28	
	21	0.078	10 - 15 - 23		36	33	19.3	3.0 - 4.5 - 6.8		53	53	51	44	37	32	
	29	0.148	14 - 19 - 26		43	45	36.9	4.2 - 5.7 - 8.0		57	60	57	51	44	38	
2 Slots	10	0.004	2 - 4 - 12	1 - 3 - 8	10	15	1.1	0.5 - 1.2 - 3.5	0.4 - 0.9 - 2.5	40	27	27	15	-	-	
	22	0.021	9 - 13 - 23	6 - 9 - 16	26	34	5.3	2.6 - 3.9 - 7.0	1.8 - 2.8 - 5.0	49	43	42	33	25	23	
	28	0.035	11 - 16 - 26	8 - 12 - 18	31	43	8.6	3.3 - 5.0 - 7.9	2.3 - 3.5 - 5.6	51	48	46	38	31	27	
	34	0.051	13 - 20 - 29	9 - 14 - 20	35	53	12.7	4.0 - 6.0 - 8.7	2.8 - 4.3 - 6.2	54	52	50	42	35	31	
	46	0.093	18 - 24 - 33	13 - 17 - 24	41	71	23.2	5.4 - 7.2 - 10.1	3.8 - 5.1 - 7.2	57	58	55	49	42	36	
3 Slots	15	0.004	3 - 6 - 15		12	23	1.1	0.8 - 1.8 - 4.6		37	21	21	-	-	-	
	31	0.019	10 - 16 - 27		27	48	4.7	3.2 - 4.8 - 8.3		50	44	42	33	25	23	
	39	0.030	13 - 20 - 31		31	60	7.4	4.0 - 6.0 - 9.3		52	48	46	38	31	28	
	47	0.043	16 - 24 - 34		35	73	10.8	4.8 - 7.2 - 10.2		54	52	50	42	35	31	
	63	0.078	21 - 28 - 39		41	98	19.3	6.5 - 8.4 - 11.9		58	58	55	49	42	36	
4 Slots	20	0.004	3 - 8 - 18	2 - 5 - 13	13	31	1.1	1.0 - 2.3 - 5.5	0.7 - 1.6 - 3.9	43	30	30	18	-	11	
	40	0.018	12 - 18 - 31	9 - 13 - 22	27	62	4.4	3.7 - 5.5 - 9.4	2.6 - 3.9 - 6.7	51	44	43	34	26	24	
	50	0.028	15 - 23 - 35	11 - 16 - 25	32	77	6.9	4.6 - 6.9 - 10.6	3.3 - 4.9 - 7.5	53	49	47	39	31	28	
	60	0.040	18 - 27 - 38	13 - 19 - 27	36	93	9.9	5.5 - 8.2 - 11.6	3.9 - 5.8 - 8.2	55	52	50	43	35	32	
	80	0.070	24 - 31 - 44	17 - 22 - 31	41	124	17.5	7.4 - 9.4 - 13.4	5.2 - 6.7 - 9.4	58	58	56	49	42	37	
5 Slots	25	0.004	4 - 9 - 21		14	39	1.1	1.2 - 2.8 - 6.3		44	31	31	19	11	12	
	49	0.017	14 - 20 - 34		28	76	4.2	4.1 - 6.2 - 10.5		51	45	43	34	26	25	
	61	0.026	17 - 25 - 38		32	94	6.5	5.1 - 7.7 - 11.7		54	49	47	39	31	29	
	73	0.038	20 - 30 - 42		36	113	9.4	6.1 - 9.0 - 12.8		56	53	51	43	36	32	
	97	0.066	27 - 34 - 48		42	150	16.5	8.1 - 10.4 - 14.7		59	59	56	49	42	37	
6 Slots	30	0.004	5 - 10 - 23	3 - 7 - 16	15	46	1.1	1.4 - 3.2 - 7.0	1.0 - 2.2 - 5.0	45	32	32	20	12	13	
	58	0.016	15 - 22 - 37	10 - 16 - 26	28	90	4.1	4.5 - 6.8 - 11.4	3.2 - 4.8 - 8.0	52	45	44	35	27	25	
	72	0.025	18 - 28 - 42	13 - 20 - 29	33	111	6.3	5.6 - 8.4 - 12.7	4.0 - 5.9 - 9.0	54	50	48	39	32	29	
	86	0.036	22 - 32 - 46	16 - 23 - 32	37	133	9.0	6.7 - 9.8 - 13.9	4.7 - 6.9 - 9.8	56	53	51	43	36	32	
	114	0.064	29 - 37 - 52	21 - 26 - 37	42	177	15.8	8.9 - 11.3 - 16.0	6.3 - 8.0 - 11.3	60	59	57	50	42	38	
7 Slots	35	0.004	5 - 12 - 25		16	54	1.1	1.6 - 3.5 - 7.6		44	29	29	17	-	11	
	65	0.015	16 - 23 - 40		28	101	3.8	4.7 - 7.1 - 12.0		52	45	44	34	27	25	
	80	0.023	19 - 29 - 44		33	124	5.7	5.8 - 8.7 - 13.4		55	49	48	39	31	29	
	95	0.032	23 - 34 - 48		36	147	8.1	6.9 - 10.3 - 14.6		57	53	51	43	35	32	
	125	0.056	30 - 39 - 55		42	194	14.0	9.1 - 11.8 - 16.7		60	58	56	49	42	37	
8 Slots	40	0.004	6 - 13 - 27	4 - 9 - 19	16	62	1.1	1.7 - 3.9 - 8.2	1.2 - 2.7 - 5.8	46	33	33	21	13	14	
	74	0.015	17 - 25 - 42	12 - 18 - 30	29	115	3.8	5.1 - 7.6 - 12.9	3.6 - 5.4 - 9.1	53	46	44	35	27	26	
	91	0.023	21 - 31 - 47	15 - 22 - 33	33	141	5.7	6.3 - 9.4 - 14.3	4.4 - 6.6 - 10.1	55	50	48	39	32	29	
	108	0.032	24 - 36 - 51	17 - 26 - 36	37	167	8.0	7.4 - 11.0 - 15.5	5.2 - 7.8 - 11.0	57	53	51	43	36	33	
	142	0.056	32 - 41 - 59	23 - 29 - 41	42	220	13.8	9.8 - 12.6 - 17.8	6.9 - 8.9 - 12.6	60	59	57	49	42	38	

NOTES: Throw values are given for terminal velocities of 150, 100, and 50 FPM (0.75, 0.50, and 0.25 m/s). Throw values are given for isothermal conditions and a 4' (1219) length. For other lengths, see correction charts below. NC values are based on octave band 2 - 7 sound power levels minus a room absorption of 10dB, re10⁻¹² Watts. Dash in space denotes a NC or dB value of less than 10. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70, ISO Standard 5219, and ISO Standard 3741. Pressures are for diffuser section only. Plenums will add to the sound level and pressure drop. Keep inlet velocities below 800 FPM to reduce plenum generated sound levels and pressure drop. Odd numbered slots for 2-Way data have been intentionally left blank. See selection software for performance data not shown, including octave band data.

NC Addition For Length					
Length, ft	2	4	6	8	10
Length, m	0.6	1.2	1.8	2.4	3.0
Supply	-2	0	+2	+3	+5
Return with Blades	0	+3	+5	+6	+8

Throw Multiplier for Length					
Length, ft	2	4	8	10	12
Length, m	0.6	1.2	2.4	3.0	3.6
Correction	0.7	0	1.5	1.7	1.8

S Series

IP/METRIC DATA: 1/2" SLOT WIDTH, CONTINUOUS SLOT

	IP Data			NC	Metric Data			Octave Band, dB						
	Air Flow	Press Ps	Vertical Throw		Air Flow	Press Ps	Vertical Throw							
	CFM/ft	"WG	ft		L/s/m	Pa	m	2	3	4	5	6	7	
1 Slot	5	0.003	1 - 2 - 5	-	8	0.6	0.3 - 0.6 - 1.5	-	-	-	-	-	-	
	35	0.127	12 - 14 - 20	15	54	31.5	3.5 - 4.3 - 6.1	43	39	30	16	11	-	
	50	0.259	14 - 17 - 24	24	78	64.4	4.2 - 5.2 - 7.3	50	46	39	22	17	-	
	65	0.437	16 - 19 - 27	30	101	108.8	4.8 - 5.9 - 8.3	54	52	45	27	21	14	
	95	0.933	19 - 23 - 33	40	147	232.4	5.8 - 7.1 - 10.0	61	60	54	34	27	20	
2 Slots	10	0.003	1 - 3 - 7	-	16	0.6	0.4 - 1.0 - 2.3	-	-	-	-	-	-	
	60	0.093	15 - 19 - 26	14	93	23.2	4.5 - 5.6 - 8.0	43	38	30	16	12	-	
	85	0.187	18 - 22 - 31	23	132	46.5	5.5 - 6.7 - 9.5	50	46	38	23	17	-	
	110	0.313	21 - 25 - 36	30	171	77.9	6.2 - 7.6 - 10.8	54	51	44	27	21	14	
	160	0.662	25 - 30 - 43	39	248	164.8	7.5 - 9.2 - 13.0	61	59	53	34	27	20	
3 Slots	15	0.003	2 - 4 - 9	-	23	0.6	0.5 - 1.2 - 2.8	-	-	-	-	-	-	
	85	0.083	17 - 22 - 31	15	132	20.7	5.3 - 6.7 - 9.5	44	39	30	17	13	-	
	120	0.165	21 - 26 - 37	24	186	41.2	6.5 - 8.0 - 11.3	50	46	38	23	18	11	
	155	0.276	24 - 30 - 42	30	241	68.7	7.4 - 9.1 - 12.8	55	52	44	28	22	15	
	225	0.582	29 - 36 - 51	39	349	144.8	8.9 - 10.9 - 15.5	62	59	53	34	28	21	
4 Slots	20	0.003	2 - 5 - 11	-	31	0.6	0.6 - 1.4 - 3.2	13	-	-	-	-	-	
	110	0.078	20 - 25 - 36	16	171	19.5	6.0 - 7.6 - 10.8	45	39	31	18	13	-	
	155	0.155	24 - 30 - 42	24	241	38.7	7.4 - 9.1 - 12.8	51	47	39	24	19	12	
	200	0.259	28 - 34 - 48	31	310	64.4	8.4 - 10.3 - 14.6	56	52	45	28	23	16	
	290	0.544	33 - 41 - 58	40	450	135.3	10.1 - 12.4 - 17.6	62	60	53	35	28	21	
5 Slots	25	0.003	2 - 5 - 12	-	39	0.6	0.7 - 1.6 - 3.6	14	-	-	-	-	-	
	125	0.065	20 - 27 - 38	15	194	16.1	6.1 - 8.1 - 11.5	44	38	30	17	13	-	
	175	0.127	26 - 32 - 45	23	272	31.5	7.9 - 9.6 - 13.6	50	46	37	23	18	11	
	225	0.209	29 - 36 - 51	29	349	52.1	8.9 - 10.9 - 15.5	55	51	43	28	22	15	
	325	0.437	35 - 43 - 61	39	505	108.8	10.7 - 13.1 - 18.6	61	59	52	34	28	21	
6 Slots	30	0.003	3 - 6 - 13	-	47	0.6	0.8 - 1.8 - 4.0	15	-	-	-	-	-	
	150	0.065	22 - 29 - 42	16	233	16.1	6.7 - 8.9 - 12.6	45	39	30	18	14	-	
	210	0.127	28 - 35 - 49	24	326	31.5	8.6 - 10.6 - 14.9	51	46	38	24	19	12	
	270	0.209	32 - 39 - 56	30	419	52.1	9.8 - 12.0 - 16.9	55	52	44	28	23	16	
	390	0.437	39 - 47 - 67	39	605	108.8	11.8 - 14.4 - 20.4	62	59	53	35	29	22	
7 Slots	35	0.003	3 - 6 - 14	-	54	0.6	0.9 - 1.9 - 4.3	13	-	-	-	-	-	
	185	0.072	25 - 33 - 46	18	287	18.0	7.6 - 9.9 - 14.0	46	41	32	19	15	-	
	260	0.143	32 - 39 - 55	26	404	35.5	9.6 - 11.8 - 16.6	53	48	40	26	21	14	
	335	0.237	36 - 44 - 62	33	520	59.0	10.9 - 13.3 - 18.9	57	54	46	30	24	17	
	485	0.496	43 - 53 - 75	42	753	123.6	13.1 - 16.0 - 22.7	64	61	55	37	30	23	
8 Slots	40	0.003	3 - 7 - 15	-	62	0.6	0.9 - 2.1 - 4.6	16	-	-	-	-	-	
	200	0.065	25 - 34 - 48	17	310	16.1	7.7 - 10.3 - 14.6	46	40	32	19	15	-	
	280	0.127	33 - 40 - 57	25	435	31.5	10.0 - 12.2 - 17.2	52	48	40	25	20	13	
	360	0.209	37 - 45 - 64	32	559	52.1	11.3 - 13.8 - 19.6	57	53	45	30	24	17	
	520	0.437	45 - 55 - 77	41	807	108.8	13.6 - 16.6 - 23.5	63	61	54	36	30	23	

NOTES: Throw values are given for terminal velocities of 150, 100, and 50 FPM (0.75, 0.50, and 0.25 m/s). Throw values are given for isothermal conditions and a 4' (1219) length. For other lengths, see correction charts below. NC values are based on octave band 2 - 7 sound power levels minus a room absorption of 10dB, re 10⁻¹² Watts. Dash in space denotes a NC or dB value of less than 10. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70, ISO Standard 5219, and ISO Standard 3741. Pressures are for diffuser section only. Plenums will add to the sound level and pressure drop. Keep inlet velocities below 800 FPM to reduce plenum generated sound levels and pressure drop. See selection software for performance data not shown, including octave band data.

NC Addition For Length					
Length, ft	2	4	6	8	10
Length, m	0.6	1.2	1.8	2.4	3.0
Supply	-2	0	+2	+3	+5
Return with Blades	0	+3	+5	+6	+8

Throw Multiplier for Length					
Length, ft	2	4	8	10	12
Length, m	0.6	1.2	2.4	3.0	3.6
Correction	0.7	0	1.5	1.7	1.8

S Series

IP/METRIC DATA: 1/2" SLOT WIDTH, CONTINUOUS SLOT

	IP Data			NC	Metric Data			Octave Band, dB						
	Air Flow	Press Ps	Vertical Throw		Air Flow	Press Ps	Vertical Throw							
	CFM/ft	"WG	ft		L/s/m	Pa	m	2	3	4	5	6	7	
1 Slot	5	0.001	0 - 1 - 3	-	8	0.3	0.1 - 0.3 - 1.0	-	-	-	-	-	-	-
	55	0.162	11 - 14 - 20	18	85	40.3	3.5 - 4.2 - 6.0	48	38	34	20	-	-	-
	80	0.342	14 - 17 - 24	26	124	85.2	4.2 - 5.1 - 7.2	55	45	41	26	15	-	-
	105	0.590	16 - 19 - 27	32	163	146.8	4.8 - 5.8 - 8.3	60	49	46	30	19	11	-
	155	1.285	19 - 23 - 33	41	240	320.0	5.8 - 7.1 - 10.0	67	56	53	36	25	17	-
2 Slots	10	0.001	1 - 2 - 5	-	15	0.3	0.2 - 0.5 - 1.6	-	-	-	-	-	-	-
	90	0.108	15 - 18 - 25	17	139	27.0	4.4 - 5.4 - 7.7	48	38	34	20	-	-	-
	130	0.226	17 - 21 - 30	25	201	56.3	5.3 - 6.5 - 9.2	54	44	40	26	15	-	-
	170	0.386	20 - 24 - 35	31	263	96.2	6.1 - 7.4 - 10.5	59	49	45	30	19	12	-
	250	0.836	24 - 30 - 42	40	387	208.1	7.4 - 9.0 - 12.8	66	55	52	36	24	17	-
3 Slots	15	0.001	1 - 2 - 7	-	23	0.3	0.3 - 0.7 - 2.1	-	-	-	-	-	-	-
	115	0.079	16 - 20 - 28	16	178	19.6	5.0 - 6.1 - 8.7	47	37	33	19	-	-	-
	165	0.162	20 - 24 - 34	24	255	40.3	6.0 - 7.3 - 10.4	53	43	39	25	14	-	-
	215	0.275	22 - 28 - 39	30	333	68.4	6.8 - 8.4 - 11.8	58	48	44	29	18	11	-
	315	0.590	27 - 33 - 47	39	488	146.8	8.3 - 10.1 - 14.3	65	54	51	35	24	16	-
4 Slots	20	0.001	1 - 3 - 8	-	31	0.3	0.4 - 0.8 - 2.4	11	-	-	-	-	-	-
	150	0.075	19 - 23 - 33	17	232	18.7	5.7 - 7.0 - 9.9	47	38	33	20	-	-	-
	215	0.155	22 - 28 - 39	25	333	38.5	6.8 - 8.4 - 11.8	54	44	40	26	15	-	-
	280	0.262	26 - 31 - 44	31	434	65.3	7.8 - 9.5 - 13.5	59	49	45	30	19	12	-
	410	0.562	31 - 38 - 54	40	635	139.9	9.4 - 11.6 - 16.3	66	55	52	36	25	17	-
5 Slots	25	0.001	1 - 3 - 9	-	39	0.3	0.4 - 1.0 - 2.7	12	-	-	-	-	-	-
	185	0.073	21 - 26 - 36	18	286	18.2	6.3 - 7.8 - 11.0	48	39	34	21	11	-	-
	265	0.150	25 - 31 - 43	26	410	37.4	7.6 - 9.3 - 13.1	55	45	41	26	16	-	-
	345	0.255	28 - 35 - 49	32	534	63.4	8.7 - 10.6 - 15.0	59	49	45	31	20	13	-
	505	0.546	34 - 42 - 60	40	782	135.9	10.5 - 12.8 - 18.1	66	56	52	36	25	18	-
6 Slots	30	0.001	2 - 4 - 10	-	46	0.3	0.5 - 1.1 - 3.0	13	-	-	-	-	-	-
	210	0.066	22 - 27 - 38	18	325	16.3	6.8 - 8.3 - 11.7	48	39	34	21	11	-	-
	300	0.134	27 - 33 - 46	25	465	33.3	8.1 - 9.9 - 14.0	54	45	40	26	16	-	-
	390	0.226	30 - 37 - 52	31	604	56.3	9.2 - 11.3 - 15.9	59	49	45	30	20	13	-
	570	0.483	37 - 45 - 63	40	883	120.2	11.1 - 13.6 - 19.3	66	55	52	36	25	18	-
7 Slots	35	0.001	2 - 4 - 11	-	54	0.3	0.5 - 1.2 - 3.3	11	-	-	-	-	-	-
	235	0.060	23 - 29 - 41	18	364	15.0	7.1 - 8.7 - 12.4	48	39	34	21	11	-	-
	335	0.123	28 - 34 - 49	25	519	30.5	8.5 - 10.4 - 14.8	54	45	40	26	16	-	-
	435	0.207	32 - 39 - 55	31	674	51.4	9.7 - 11.9 - 16.8	59	49	45	30	20	13	-
	635	0.440	39 - 47 - 67	40	983	109.6	11.7 - 14.4 - 20.3	66	55	52	36	25	18	-
8 Slots	40	0.001	2 - 4 - 12	-	62	0.3	0.6 - 1.3 - 3.5	14	-	-	-	-	-	-
	260	0.057	25 - 30 - 43	18	403	14.1	7.5 - 9.2 - 13.0	48	39	34	21	11	-	-
	370	0.114	29 - 36 - 51	25	573	28.5	9.0 - 11.0 - 15.5	54	45	40	26	16	-	-
	480	0.193	34 - 41 - 58	31	743	47.9	10.2 - 12.5 - 17.7	59	49	45	30	20	13	-
	700	0.410	41 - 50 - 70	40	1084	102.0	12.3 - 15.1 - 21.3	66	55	52	36	25	18	-

NOTES: Throw values are given for terminal velocities of 150, 100, and 50 FPM (0.75, 0.50, and 0.25 m/s). Throw values are given for isothermal conditions and a 4' (1219) length. For other lengths, see correction charts below. NC values are based on octave band 2 - 7 sound power levels minus a room absorption of 10dB, re10⁻¹² Watts. Dash in space denotes a NC or dB value of less than 10. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70, ISO Standard 5219, and ISO Standard 3741. Pressures are for diffuser section only. Plenums will add to the sound level and pressure drop. Keep inlet velocities below 800 FPM to reduce plenum generated sound levels and pressure drop. See selection software for performance data not shown, including octave band data.

NC Addition For Length					
Length, ft	2	4	6	8	10
Length, m	0.6	1.2	1.8	2.4	3.0
Supply	-2	0	+2	+3	+5
Return with Blades	0	+3	+5	+6	+8

Throw Multiplier for Length					
Length, ft	2	4	8	10	12
Length, m	0.6	1.2	2.4	3.0	3.6
Correction	0.7	0	1.5	1.7	1.8

Engineering Data

S Series

IP/METRIC DATA: 3/4" SLOT WIDTH, CONTINUOUS SLOT

	IP Data					Metric Data					Octave Band, dB						
	Air Flow	Press Ps	1-Way Throw	2-Way Throw	NC	Air Flow	Press Ps	1-Way Throw	2-Way Throw								
	CFM/ft	"WG	ft	ft		L/s/m	Pa	m	m		2	3	4	5	6	7	
1 Slot	5	0.003	1 - 1 - 6		-	8	0.8	0.2 - 0.4 - 1.7			26	12	-	-	-	-	
	15	0.030	6 - 10 - 19		14	23	7.4	1.7 - 3.0 - 5.8			40	34	31	19	-	-	
	20	0.053	9 - 13 - 22		21	31	13.2	2.6 - 4.0 - 6.7			43	40	37	28	19	14	
	25	0.083	11 - 16 - 25		27	39	20.7	3.3 - 4.9 - 7.5			46	45	43	34	26	19	
	35	0.163	15 - 21 - 29		35	54	40.5	4.6 - 6.2 - 8.8			50	52	50	44	36	27	
2 Slots	10	0.003	1 - 3 - 10	1 - 2 - 7	-	16	0.8	0.4 - 0.9 - 3.2	0.3 - 0.6 - 2.2		29	15	-	-	-	-	
	30	0.030	10 - 16 - 27	7 - 11 - 19	17	47	7.4	3.2 - 4.7 - 8.2	2.2 - 3.4 - 5.8		43	37	34	22	13	11	
	40	0.053	14 - 21 - 31	10 - 15 - 22	25	62	13.2	4.2 - 6.3 - 9.4	3.0 - 4.5 - 6.7		46	43	40	31	22	17	
	50	0.083	17 - 25 - 35	12 - 17 - 25	30	78	20.7	5.3 - 7.5 - 10.6	3.7 - 5.3 - 7.5		49	48	46	37	29	22	
	70	0.163	24 - 29 - 41	17 - 21 - 29	39	109	40.5	7.2 - 8.8 - 12.5	5.1 - 6.2 - 8.8		53	55	53	47	39	30	
3 Slots	15	0.003	2 - 4 - 13		-	23	0.8	0.6 - 1.2 - 4.1			26	-	-	-	-	-	
	45	0.030	13 - 20 - 33		19	70	7.4	4.1 - 6.1 - 10.0			45	39	36	24	15	12	
	60	0.053	18 - 27 - 38		27	93	13.2	5.4 - 8.1 - 11.6			48	45	42	33	24	19	
	75	0.083	22 - 30 - 43		32	116	20.7	6.8 - 9.1 - 12.9			51	50	47	39	31	24	
	105	0.163	29 - 36 - 50		41	163	40.5	8.8 - 10.8 - 15.3			55	56	55	49	41	32	
4 Slots	20	0.003	2 - 5 - 16	2 - 4 - 11	-	31	0.8	0.7 - 1.6 - 4.8	0.5 - 1.1 - 3.4		32	18	12	-	-	-	
	60	0.030	16 - 24 - 38	11 - 17 - 27	21	93	7.4	4.8 - 7.2 - 11.6	3.4 - 5.1 - 8.2		46	40	37	25	17	14	
	80	0.053	21 - 31 - 44	15 - 22 - 31	28	124	13.2	6.4 - 9.4 - 13.4	4.6 - 6.7 - 9.4		49	46	43	34	25	20	
	100	0.083	26 - 35 - 49	19 - 25 - 35	34	155	20.7	8.0 - 10.6 - 14.9	5.7 - 7.5 - 10.6		52	51	49	40	32	25	
	140	0.163	34 - 41 - 58	24 - 29 - 41	42	217	40.5	10.2 - 12.5 - 17.7	7.2 - 8.8 - 12.5		56	58	56	50	42	33	
5 Slots	25	0.003	3 - 6 - 18		-	39	0.8	0.8 - 1.8 - 5.5			33	19	13	-	-	-	
	75	0.030	18 - 27 - 43		22	116	7.4	5.5 - 8.2 - 12.9			47	41	38	26	17	15	
	100	0.053	24 - 35 - 49		29	155	13.2	7.3 - 10.6 - 14.9			50	47	44	35	26	21	
	125	0.083	30 - 39 - 55		35	194	20.7	9.1 - 11.8 - 16.7			53	52	50	41	33	26	
	175	0.163	38 - 46 - 65		43	272	40.5	11.4 - 14.0 - 19.8			57	59	57	51	43	34	
6 Slots	30	0.003	3 - 7 - 20	2 - 5 - 14	-	47	0.8	0.9 - 2.1 - 6.1	0.7 - 1.5 - 4.3		34	19	13	-	-	-	
	90	0.030	20 - 30 - 47	14 - 21 - 33	23	140	7.4	6.1 - 9.1 - 14.2	4.3 - 6.4 - 10.0		48	42	39	27	18	15	
	120	0.053	27 - 38 - 54	19 - 27 - 38	30	186	13.2	8.1 - 11.6 - 16.4	5.7 - 8.2 - 11.6		51	48	45	36	27	22	
	150	0.083	33 - 43 - 60	24 - 30 - 43	35	233	20.7	10.1 - 12.9 - 18.3	7.2 - 9.1 - 12.9		54	53	50	42	34	27	
	210	0.163	41 - 50 - 71	29 - 36 - 50	44	326	40.5	12.5 - 15.3 - 21.6	8.8 - 10.8 - 15.3		58	59	58	52	44	35	
7 Slots	35	0.003	3 - 8 - 22		-	54	0.8	1.0 - 2.3 - 6.6			33	17	-	-	-	-	
	101	0.028	21 - 31 - 49		22	157	6.9	6.4 - 9.6 - 15.0			48	42	38	27	18	15	
	134	0.049	28 - 40 - 57		30	208	12.1	8.5 - 12.2 - 17.3			51	48	45	35	26	22	
	167	0.076	35 - 45 - 64		35	259	18.8	10.5 - 13.7 - 19.3			54	52	50	41	33	27	
	233	0.147	43 - 53 - 75		43	362	36.6	13.2 - 16.1 - 22.8			58	59	58	51	43	34	
8 Slots	40	0.003	4 - 8 - 23	3 - 6 - 17	-	62	0.8	1.1 - 2.5 - 7.1	0.8 - 1.8 - 5.0		35	21	15	-	-	-	
	112	0.026	22 - 33 - 52	15 - 23 - 37	22	174	6.5	6.6 - 10.0 - 15.8	4.7 - 7.1 - 11.2		48	42	38	26	17	15	
	148	0.045	29 - 42 - 60	20 - 30 - 42	29	230	11.3	8.8 - 12.9 - 18.2	6.2 - 9.1 - 12.8		51	48	45	35	26	21	
	184	0.070	36 - 47 - 67	25 - 33 - 47	35	286	17.5	10.9 - 14.3 - 20.3	7.7 - 10.1 - 14.3		54	52	50	41	32	26	
	256	0.136	45 - 56 - 79	32 - 39 - 56	43	397	33.8	13.8 - 16.9 - 23.9	9.8 - 11.9 - 16.9		58	59	57	50	42	34	

NOTES: Throw values are given for terminal velocities of 150, 100, and 50 FPM (0.75, 0.50, and 0.25 m/s). Throw values are given for isothermal conditions and a 4' (1219) length. For other lengths, see correction charts below. NC values are based on octave band 2 - 7 sound power levels minus a room absorption of 10dB, re10⁻¹² Watts. Dash in space denotes a NC or dB value of less than 10. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70, ISO Standard 5219, and ISO Standard 3741. Pressures are for diffuser section only. Plenums will add to the sound level and pressure drop. Keep inlet velocities below 800 FPM to reduce plenum generated sound levels and pressure drop. Odd numbered slots for 2-Way data have been intentionally left blank. See selection software for performance data not shown, including octave band data.

NC Addition For Length					
Length, ft	2	4	6	8	10
Length, m	0.6	1.2	1.8	2.4	3.0
Supply	-2	0	+2	+3	+5
Return with Blades	0	+3	+5	+6	+8

Throw Multiplier for Length					
Length, ft	2	4	8	10	12
Length, m	0.6	1.2	2.4	3.0	3.6
Correction	0.7	0	1.5	1.7	1.8

S Series

IP/METRIC DATA: 3/4" SLOT WIDTH, CONTINUOUS SLOT

	IP Data			NC	Metric Data			Octave Band, dB						
	Air Flow	Press Ps	Vertical Throw		Air Flow	Press Ps	Vertical Throw							
	CFM/ft	"WG	ft		L/s/m	Pa	m	2	3	4	5	6	7	
1 Slot	20	0.032	6 - 10 - 15	-	31	8.1	1.9 - 2.9 - 4.6	28	23	18	12	-	-	
	70	0.397	16 - 20 - 28	22	109	99.0	5.0 - 6.1 - 8.6	50	45	37	28	21	14	
	95	0.732	19 - 23 - 33	28	147	182.3	5.8 - 7.1 - 10.0	55	50	42	32	24	18	
	120	1.168	21 - 26 - 37	33	186	290.8	6.5 - 8.0 - 11.3	59	54	46	35	27	20	
	170	2.344	26 - 31 - 44	40	264	583.7	7.8 - 9.5 - 13.4	65	60	51	40	31	24	
2 Slots	30	0.018	7 - 10 - 19	-	47	4.5	2.1 - 3.1 - 5.6	26	21	16	11	-	-	
	110	0.245	21 - 25 - 36	21	171	61.1	6.2 - 7.6 - 10.8	48	43	37	28	21	14	
	150	0.456	24 - 29 - 42	27	233	113.6	7.3 - 8.9 - 12.6	54	49	42	32	24	18	
	190	0.732	27 - 33 - 47	32	295	182.3	8.2 - 10.0 - 14.2	58	53	45	35	27	21	
	270	1.478	32 - 39 - 56	39	419	368.1	9.8 - 12.0 - 16.9	64	59	51	40	31	25	
3 Slots	40	0.014	8 - 11 - 21	-	62	3.6	2.3 - 3.5 - 6.5	21	15	11	-	-	-	
	160	0.231	25 - 30 - 43	22	248	57.5	7.5 - 9.2 - 13.0	50	45	38	29	22	16	
	220	0.436	29 - 36 - 50	28	342	108.6	8.8 - 10.8 - 15.3	55	50	43	34	26	19	
	280	0.707	33 - 40 - 57	33	435	175.9	10.0 - 12.2 - 17.2	59	54	47	37	29	22	
	400	1.442	39 - 48 - 68	41	621	359.1	11.9 - 14.6 - 20.6	65	61	52	42	33	26	
4 Slots	50	0.013	8 - 12 - 24	-	78	3.2	2.5 - 3.8 - 7.3	26	21	16	11	-	-	
	200	0.203	28 - 34 - 48	22	310	50.5	8.4 - 10.3 - 14.6	50	45	38	30	23	16	
	275	0.383	32 - 40 - 56	29	427	95.5	9.9 - 12.1 - 17.1	55	50	43	34	26	20	
	350	0.621	37 - 45 - 63	34	543	154.6	11.1 - 13.6 - 19.3	59	54	47	37	29	23	
	500	1.267	44 - 54 - 76	41	776	315.6	13.3 - 16.3 - 23.0	66	61	53	42	33	27	
5 Slots	60	0.018	9 - 13 - 26	-	93	4.5	2.7 - 4.0 - 8.0	26	21	17	12	-	-	
	240	0.292	30 - 37 - 53	23	373	72.7	9.2 - 11.3 - 16.0	50	45	38	30	23	17	
	330	0.552	36 - 44 - 62	29	512	137.5	10.8 - 13.2 - 18.7	56	51	44	34	27	20	
	420	0.894	40 - 49 - 69	34	652	222.7	12.2 - 14.9 - 21.1	60	55	47	38	30	23	
	600	1.825	48 - 59 - 83	41	931	454.4	14.6 - 17.9 - 25.2	66	61	53	42	34	27	
6 Slots	70	0.011	9 - 14 - 28	-	109	2.8	2.9 - 4.3 - 8.6	26	21	17	12	-	-	
	270	0.164	32 - 39 - 56	22	419	40.9	9.8 - 12.0 - 16.9	50	45	38	30	23	17	
	370	0.308	38 - 46 - 65	28	574	76.8	11.4 - 14.0 - 19.8	55	50	43	34	27	20	
	470	0.498	42 - 52 - 74	33	730	123.9	12.9 - 15.8 - 22.3	59	54	47	38	30	23	
	670	1.011	51 - 62 - 88	41	1040	251.9	15.4 - 18.9 - 26.7	65	60	53	42	34	27	
7 Slots	80	0.011	10 - 15 - 30	-	124	2.6	3.0 - 4.6 - 9.1	24	19	15	11	-	-	
	310	0.159	34 - 42 - 60	23	481	39.6	10.5 - 12.8 - 18.1	50	45	39	31	24	17	
	425	0.299	40 - 49 - 70	29	660	74.5	12.3 - 15.0 - 21.2	56	51	44	35	27	21	
	540	0.483	45 - 56 - 79	34	838	120.2	13.8 - 16.9 - 24.0	60	55	47	38	30	24	
	770	0.982	54 - 67 - 94	41	1195	244.4	16.5 - 20.2 - 28.6	66	61	53	43	34	28	
8 Slots	90	0.010	11 - 16 - 32	-	140	2.6	3.2 - 4.8 - 9.6	27	22	18	13	-	-	
	330	0.138	36 - 44 - 62	22	512	34.4	10.8 - 13.2 - 18.7	49	44	38	30	24	17	
	450	0.257	42 - 51 - 72	28	699	63.9	12.6 - 15.5 - 21.9	55	50	43	34	27	21	
	570	0.412	47 - 57 - 81	33	885	102.5	14.2 - 17.4 - 24.6	59	54	47	38	30	23	
	810	0.832	56 - 68 - 96	40	1257	207.1	16.9 - 20.7 - 29.3	65	60	52	42	34	27	

NOTES: Throw values are given for terminal velocities of 150, 100, and 50 FPM (0.75, 0.50, and 0.25 m/s). Throw values are given for isothermal conditions and a 4' (1219) length. For other lengths, see correction charts below. NC values are based on octave band 2 - 7 sound power levels minus a room absorption of 10dB, re10⁻¹² Watts. Dash in space denotes a NC or dB value of less than 10. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70, ISO Standard 5219, and ISO Standard 3741. Pressures are for diffuser section only. Plenums will add to the sound level and pressure drop. Keep inlet velocities below 800 FPM to reduce plenum generated sound levels and pressure drop. See selection software for performance data not shown, including octave band data.

NC Addition For Length					
Length, ft	2	4	6	8	10
Length, m	0.6	1.2	1.8	2.4	3.0
Supply	-2	0	+2	+3	+5
Return with Blades	0	+3	+5	+6	+8

Throw Multiplier for Length					
Length, ft	2	4	8	10	12
Length, m	0.6	1.2	2.4	3.0	3.6
Correction	0.7	0	1.5	1.7	1.8

S Series

IP/METRIC DATA: 3/4" SLOT WIDTH, CONTINUOUS SLOT

	IP Data				Metric Data				Octave Band, dB						
	Air Flow	Press Ps	Vertical Throw	NC	Air Flow	Press Ps	Vertical Throw								
	CFM/ft	"WG	ft		L/s/m	Pa	m		2	3	4	5	6	7	
1 Slot	10	0.002	1 - 1 - 5	-	16	0.5	0.2 - 0.4 - 1.5	-	-	-	-	-	-	-	-
	70	0.100	12 - 16 - 22	16	109	25.0	3.6 - 4.8 - 6.8	46	37	32	25	17	-	-	-
	100	0.205	15 - 19 - 27	23	155	51.1	4.7 - 5.7 - 8.1	53	44	38	30	20	11	-	-
	130	0.347	17 - 21 - 30	30	202	86.3	5.3 - 6.5 - 9.2	58	49	42	33	23	14	-	-
	190	0.740	21 - 26 - 37	39	295	184.3	6.4 - 7.9 - 11.1	65	56	49	38	27	18	-	-
2 Slots	20	0.002	1 - 3 - 8	-	31	0.5	0.4 - 1.0 - 2.5	13	-	-	-	-	-	-	-
	130	0.087	17 - 21 - 30	18	202	21.6	5.3 - 6.5 - 9.2	48	39	34	27	19	-	-	-
	185	0.175	21 - 26 - 36	25	287	43.7	6.3 - 7.8 - 11.0	55	46	40	32	23	13	-	-
	240	0.295	24 - 29 - 41	32	373	73.5	7.2 - 8.8 - 12.5	59	50	44	35	25	16	-	-
	350	0.628	29 - 35 - 50	41	543	156.4	8.7 - 10.7 - 15.1	66	57	50	40	29	20	-	-
3 Slots	30	0.002	2 - 5 - 11	-	47	0.5	0.6 - 1.4 - 3.3	-	-	-	-	-	-	-	-
	180	0.074	21 - 25 - 36	18	279	18.4	6.3 - 7.7 - 10.8	48	39	35	28	20	-	-	-
	255	0.148	24 - 30 - 42	26	396	36.9	7.4 - 9.1 - 12.9	55	46	40	32	23	14	-	-
	330	0.248	28 - 34 - 48	32	512	61.8	8.5 - 10.4 - 14.7	60	50	44	36	26	17	-	-
	480	0.525	34 - 41 - 58	41	745	130.7	10.2 - 12.5 - 17.7	66	57	51	41	30	21	-	-
4 Slots	40	0.002	3 - 6 - 13	-	62	0.5	0.8 - 1.8 - 3.9	16	-	-	-	-	-	-	-
	210	0.057	22 - 27 - 38	17	326	14.1	6.8 - 8.3 - 11.7	47	38	34	27	20	-	-	-
	295	0.112	26 - 32 - 46	24	458	27.8	8.0 - 9.8 - 13.9	53	44	39	32	23	14	-	-
	380	0.185	30 - 37 - 52	30	590	46.1	9.1 - 11.1 - 15.7	58	49	43	35	26	17	-	-
	550	0.388	36 - 44 - 62	39	854	96.5	10.9 - 13.4 - 18.9	65	56	49	40	30	21	-	-
5 Slots	50	0.002	3 - 7 - 15	-	78	0.5	0.9 - 2.1 - 4.5	17	-	-	-	-	-	-	-
	270	0.060	25 - 31 - 44	19	419	14.9	7.7 - 9.4 - 13.3	49	40	35	28	21	11	-	-
	380	0.118	30 - 37 - 52	26	590	29.5	9.1 - 11.1 - 15.7	55	46	41	33	24	15	-	-
	490	0.197	34 - 42 - 59	32	761	49.0	10.3 - 12.6 - 17.9	60	51	45	36	27	18	-	-
	710	0.413	41 - 50 - 71	41	1102	103.0	12.4 - 15.2 - 21.5	66	57	51	41	31	22	-	-
6 Slots	60	0.002	4 - 8 - 16	-	93	0.5	1.1 - 2.4 - 5.0	18	-	-	-	-	-	-	-
	300	0.051	27 - 33 - 46	18	466	12.8	8.1 - 9.9 - 14.0	48	39	35	28	21	11	-	-
	420	0.100	31 - 38 - 54	25	652	25.0	9.5 - 11.7 - 16.5	54	45	40	33	24	15	-	-
	540	0.166	36 - 44 - 62	31	838	41.4	10.8 - 13.3 - 18.8	59	50	44	36	27	18	-	-
	780	0.347	43 - 52 - 74	40	1211	86.3	13.0 - 15.9 - 22.5	66	56	50	41	31	22	-	-
7 Slots	70	0.002	4 - 9 - 18	-	109	0.5	1.2 - 2.7 - 5.4	16	-	-	-	-	-	-	-
	350	0.051	29 - 35 - 50	19	543	12.8	8.7 - 10.7 - 15.1	49	40	35	29	21	12	-	-
	490	0.100	34 - 42 - 59	26	761	25.0	10.3 - 12.6 - 17.9	55	46	41	33	25	16	-	-
	630	0.166	38 - 47 - 67	32	978	41.4	11.7 - 14.3 - 20.3	59	50	45	37	28	18	-	-
	910	0.347	46 - 57 - 80	40	1413	86.3	14.1 - 17.2 - 24.3	66	57	51	41	32	22	-	-
8 Slots	80	0.002	4 - 10 - 19	-	124	0.5	1.3 - 2.9 - 5.9	19	11	-	-	-	-	-	-
	380	0.046	30 - 37 - 52	19	590	11.5	9.1 - 11.1 - 15.7	48	39	35	29	21	12	-	-
	530	0.090	35 - 43 - 61	25	823	22.4	10.7 - 13.1 - 18.6	54	46	41	33	25	16	-	-
	680	0.148	40 - 49 - 69	31	1056	36.9	12.1 - 14.9 - 21.0	59	50	45	36	28	18	-	-
	980	0.308	48 - 59 - 83	40	1521	76.6	14.6 - 17.9 - 25.3	66	57	50	41	32	22	-	-

NOTES: Throw values are given for terminal velocities of 150, 100, and 50 FPM (0.75, 0.50, and 0.25 m/s). Throw values are given for isothermal conditions and a 4' (1219) length. For other lengths, see correction charts below. NC values are based on octave band 2 - 7 sound power levels minus a room absorption of 10dB, re10⁻¹² Watts. Dash in space denotes a NC or dB value of less than 10. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70, ISO Standard 5219, and ISO Standard 3741. Pressures are for diffuser section only. Plenums will add to the sound level and pressure drop. Keep inlet velocities below 800 FPM to reduce plenum generated sound levels and pressure drop. See selection software for performance data not shown, including octave band data.

NC Addition For Length					
Length, ft	2	4	6	8	10
Length, m	0.6	1.2	1.8	2.4	3.0
Supply	-2	0	+2	+3	+5
Return with Blades	0	+3	+5	+6	+8

Throw Multiplier for Length					
Length, ft	2	4	8	10	12
Length, m	0.6	1.2	2.4	3.0	3.6
Correction	0.7	0	1.5	1.7	1.8

S Series

IP/METRIC DATA: 1" SLOT WIDTH, CONTINUOUS SLOT

	IP Data				NC	Metric Data				Octave Band, dB						
	Air Flow	Press Ps	1-Way Throw	2-Way Throw		Air Flow	Press Ps	1-Way Throw	2-Way Throw							
	CFM/ft	"WG	ft	ft		L/s/m	Pa	m	m	2	3	4	5	6	7	
1 Slot	5	0.003	0 - 1 - 4		-	8	0.7	0.1 - 0.3 - 1.3		17	-	-	-	-	-	
	25	0.066	10 - 15 - 25		17	39	16.3	3.0 - 4.6 - 7.5		40	36	33	24	14	-	
	35	0.129	14 - 21 - 29		25	54	32.0	4.3 - 6.2 - 8.8		44	42	41	33	24	16	
	45	0.213	18 - 23 - 33		31	70	52.9	5.5 - 7.1 - 10.0		48	47	46	39	32	23	
	65	0.444	23 - 28 - 40		40	101	110.4	7.0 - 8.5 - 12.0		53	55	55	49	43	33	
2 Slots	10	0.003	1 - 2 - 9	1 - 2 - 6	-	16	0.7	0.3 - 0.7 - 2.6	0.2 - 0.5 - 1.9	20	-	-	-	-	-	
	44	0.051	14 - 21 - 33	10 - 15 - 23	17	68	12.7	4.2 - 6.3 - 9.9	3.0 - 4.5 - 7.0	41	36	33	23	13	-	
	61	0.098	19 - 27 - 38	14 - 19 - 27	25	95	24.3	5.8 - 8.3 - 11.7	4.1 - 5.8 - 8.2	46	43	41	32	23	16	
	78	0.160	25 - 31 - 43	17 - 22 - 31	31	121	39.8	7.5 - 9.3 - 13.2	5.3 - 6.6 - 9.3	49	47	46	38	31	22	
	112	0.329	30 - 37 - 52	21 - 26 - 37	40	174	82.0	9.1 - 11.2 - 15.8	6.5 - 7.9 - 11.2	54	55	54	48	42	32	
3 Slots	15	0.003	1 - 3 - 12		-	23	0.7	0.4 - 0.9 - 3.6		17	-	-	-	-	-	
	65	0.049	17 - 26 - 40		18	101	12.3	5.3 - 7.9 - 12.0		43	37	34	24	15	-	
	90	0.094	24 - 33 - 47		26	140	23.5	7.3 - 10.0 - 14.2		47	44	42	33	24	17	
	115	0.154	30 - 37 - 53		32	179	38.4	9.2 - 11.3 - 16.0		50	49	48	40	32	24	
	165	0.318	36 - 45 - 63		41	256	79.1	11.1 - 13.6 - 19.2		55	56	56	49	43	33	
4 Slots	20	0.003	2 - 4 - 14	1 - 3 - 10	-	31	0.7	0.5 - 1.1 - 4.3	0.4 - 0.8 - 3.1	23	-	-	-	-	-	
	80	0.042	19 - 28 - 44	13 - 20 - 31	18	124	10.5	5.8 - 8.7 - 13.4	4.1 - 6.1 - 9.4	43	37	34	24	13	-	
	110	0.079	26 - 36 - 52	18 - 26 - 36	25	171	19.8	7.9 - 11.1 - 15.7	5.6 - 7.8 - 11.1	47	43	41	32	23	16	
	140	0.129	33 - 41 - 58	23 - 29 - 41	31	217	32.0	10.1 - 12.5 - 17.7	7.1 - 8.8 - 12.5	50	48	47	39	30	23	
	200	0.262	40 - 49 - 69	28 - 35 - 49	40	310	65.3	12.2 - 14.9 - 21.1	8.6 - 10.6 - 14.9	55	55	55	48	41	32	
5 Slots	25	0.003	2 - 4 - 16		-	39	0.7	0.6 - 1.3 - 4.9		24	-	-	-	-	-	
	95	0.038	20 - 31 - 48		17	147	9.4	6.2 - 9.3 - 14.6		43	37	34	23	13	-	
	130	0.071	28 - 40 - 56		25	202	17.7	8.5 - 12.0 - 17.0		47	43	41	32	22	16	
	165	0.114	36 - 45 - 63		31	256	28.5	10.8 - 13.6 - 19.2		51	48	46	38	30	22	
	235	0.232	43 - 53 - 75		40	365	57.7	13.2 - 16.2 - 22.9		56	55	54	47	40	31	
6 Slots	30	0.003	2 - 5 - 18	2 - 3 - 13	-	47	0.7	0.7 - 1.5 - 5.4	0.5 - 1.0 - 3.8	25	11	-	-	-	-	
	110	0.035	22 - 33 - 52	15 - 23 - 36	17	171	8.8	6.6 - 9.9 - 15.7	4.7 - 7.0 - 11.1	43	37	34	23	13	-	
	150	0.066	30 - 43 - 60	21 - 30 - 43	25	233	16.3	9.0 - 12.9 - 18.3	6.4 - 9.1 - 12.9	48	43	41	31	22	15	
	190	0.105	38 - 48 - 68	27 - 34 - 48	31	295	26.2	11.5 - 14.6 - 20.6	8.1 - 10.3 - 14.6	51	48	46	38	29	22	
	270	0.213	47 - 57 - 81	33 - 40 - 57	40	419	52.9	14.2 - 17.4 - 24.5	10.0 - 12.3 - 17.4	56	55	54	47	40	31	
7 Slots	35	0.003	2 - 5 - 19		-	54	0.7	0.7 - 1.6 - 5.9		24	-	-	-	-	-	
	125	0.033	23 - 35 - 55		17	194	8.3	7.0 - 10.5 - 16.7		44	37	34	23	12	-	
	170	0.062	31 - 45 - 64		25	264	15.4	9.6 - 13.8 - 19.5		48	43	41	31	22	15	
	215	0.099	40 - 51 - 72		31	334	24.7	12.1 - 15.5 - 21.9		51	48	46	38	29	21	
	305	0.199	50 - 61 - 86		40	473	49.6	15.1 - 18.4 - 26.1		56	55	54	47	39	31	
8 Slots	40	0.003	3 - 6 - 21	2 - 4 - 15	-	62	0.7	0.8 - 1.8 - 6.3	0.6 - 1.2 - 4.5	26	12	-	-	-	-	
	140	0.032	24 - 37 - 58	17 - 26 - 41	18	217	8.0	7.4 - 11.1 - 17.7	5.2 - 7.8 - 12.5	44	37	34	23	12	-	
	190	0.059	33 - 48 - 68	23 - 34 - 48	25	295	14.7	10.0 - 14.6 - 20.6	7.1 - 10.3 - 14.6	48	44	41	31	22	15	
	240	0.094	42 - 54 - 76	29 - 38 - 54	31	373	23.5	12.7 - 16.4 - 23.1	9.0 - 11.6 - 16.4	51	48	46	37	29	21	
	340	0.190	52 - 64 - 91	37 - 45 - 64	40	528	47.2	15.9 - 19.5 - 27.5	11.2 - 13.8 - 19.5	56	55	54	47	39	31	

NOTES: Throw values are given for terminal velocities of 150, 100, and 50 FPM (0.75, 0.50, and 0.25 m/s). Throw values are given for isothermal conditions and a 4' (1219) length. For other lengths, see correction charts below. NC values are based on octave band 2 - 7 sound power levels minus a room absorption of 10dB, re10⁻¹² Watts. Dash in space denotes a NC or dB value of less than 10. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70, ISO Standard 5219, and ISO Standard 3741. Pressures are for diffuser section only. Plenums will add to the sound level and pressure drop. Keep inlet velocities below 800 FPM to reduce plenum generated sound levels and pressure drop. Odd numbered slots for 2-Way data have been intentionally left blank. See selection software for performance data not shown, including octave band data.

NC Addition For Length					
Length, ft	2	4	6	8	10
Length, m	0.6	1.2	1.8	2.4	3.0
Supply	-2	0	+2	+3	+5
Return with Blades	0	+3	+5	+6	+8

Throw Multiplier for Length					
Length, ft	2	4	8	10	12
Length, m	0.6	1.2	2.4	3.0	3.6
Correction	0.7	0	1.5	1.7	1.8

S Series

IP/METRIC DATA: 1" SLOT WIDTH, CONTINUOUS SLOT

	IP Data			NC	Metric Data			Octave Band, dB						
	Air Flow	Press Ps	Vertical Throw		Air Flow	Press Ps	Vertical Throw							
	CFM/ft	"WG	ft		L/s/m	Pa	m	2	3	4	5	6	7	
1 Slot	5	0.002	1 - 1 - 4	-	8	0.4	0.2 - 0.4 - 1.4	-	-	-	-	-	-	
	75	0.339	17 - 21 - 29	19	116	84.4	5.2 - 6.3 - 8.9	47	41	36	29	22	12	
	110	0.729	21 - 25 - 36	26	171	181.5	6.2 - 7.6 - 10.8	54	48	42	34	26	17	
	145	1.266	24 - 29 - 41	32	225	315.3	7.2 - 8.8 - 12.4	59	53	46	38	29	20	
	215	2.784	29 - 35 - 50	40	334	693.3	8.7 - 10.7 - 15.1	66	60	52	43	34	24	
2 Slots	10	0.002	1 - 2 - 6	-	16	0.4	0.3 - 0.6 - 2.0	-	-	-	-	-	-	
	130	0.254	22 - 27 - 39	20	202	63.4	6.8 - 8.3 - 11.8	47	41	36	30	23	14	
	190	0.544	27 - 33 - 47	27	295	135.4	8.2 - 10.0 - 14.2	54	48	42	35	28	18	
	250	0.941	31 - 38 - 54	32	388	234.3	9.4 - 11.5 - 16.3	59	53	47	39	31	21	
	370	2.061	38 - 46 - 65	40	574	513.3	11.4 - 14.0 - 19.8	66	60	53	44	35	26	
3 Slots	15	0.002	1 - 3 - 8	-	23	0.4	0.4 - 0.8 - 2.4	-	-	-	-	-	-	
	175	0.205	26 - 32 - 45	20	272	51.0	7.9 - 9.6 - 13.6	47	41	36	31	24	14	
	255	0.435	31 - 38 - 54	27	396	108.4	9.5 - 11.6 - 16.5	54	48	42	36	28	18	
	335	0.751	36 - 44 - 62	32	520	187.0	10.9 - 13.3 - 18.9	59	53	47	39	31	21	
	495	1.640	44 - 53 - 75	40	768	408.3	13.2 - 16.2 - 22.9	66	60	53	44	36	26	
4 Slots	20	0.002	1 - 3 - 9	-	31	0.4	0.4 - 0.9 - 2.8	-	-	-	-	-	-	
	220	0.182	29 - 36 - 50	20	342	45.4	8.8 - 10.8 - 15.3	47	41	37	31	24	15	
	320	0.385	35 - 43 - 61	27	497	96.0	10.6 - 13.0 - 18.4	54	48	43	36	29	19	
	420	0.664	40 - 49 - 69	32	652	165.3	12.2 - 14.9 - 21.1	59	53	47	40	32	22	
	620	1.447	49 - 60 - 84	40	963	360.3	14.8 - 18.1 - 25.7	66	60	53	45	36	27	
5 Slots	25	0.002	2 - 3 - 10	-	39	0.4	0.5 - 1.1 - 3.2	-	-	-	-	-	-	
	265	0.169	32 - 39 - 55	21	411	42.1	9.7 - 11.9 - 16.8	47	42	37	32	25	15	
	385	0.357	38 - 47 - 67	27	598	88.9	11.7 - 14.3 - 20.2	54	48	43	37	29	19	
	505	0.614	44 - 54 - 76	32	784	153.0	13.4 - 16.4 - 23.2	59	53	47	40	32	23	
	745	1.337	53 - 65 - 93	40	1157	333.0	16.2 - 19.9 - 28.1	66	60	53	45	37	27	
6 Slots	30	0.002	2 - 4 - 11	-	47	0.4	0.5 - 1.2 - 3.5	-	-	-	-	-	-	
	300	0.151	34 - 42 - 59	21	466	37.5	10.3 - 12.6 - 17.9	47	41	37	32	25	15	
	435	0.317	41 - 50 - 71	27	675	78.8	12.4 - 15.2 - 21.5	54	48	43	37	29	20	
	570	0.544	47 - 57 - 81	32	885	135.4	14.2 - 17.4 - 24.6	59	53	47	40	32	23	
	840	1.181	57 - 69 - 98	40	1304	293.9	17.2 - 21.1 - 29.9	66	60	53	45	37	27	
7 Slots	35	0.002	2 - 4 - 12	-	54	0.4	0.6 - 1.3 - 3.8	-	-	-	-	-	-	
	345	0.146	36 - 45 - 63	21	536	36.4	11.1 - 13.5 - 19.1	48	42	37	32	25	16	
	500	0.307	44 - 54 - 76	28	776	76.5	13.3 - 16.3 - 23.0	54	48	43	37	30	20	
	655	0.527	50 - 61 - 87	32	1017	131.3	15.2 - 18.7 - 26.4	59	53	47	41	33	23	
	965	1.145	61 - 74 - 105	40	1498	285.0	18.5 - 22.6 - 32.0	66	60	54	46	37	28	
8 Slots	40	0.002	2 - 4 - 13	-	62	0.4	0.6 - 1.4 - 4.0	-	-	-	-	-	-	
	380	0.136	38 - 47 - 66	21	590	33.8	11.6 - 14.2 - 20.1	47	42	37	32	26	16	
	550	0.285	46 - 56 - 80	28	854	70.9	14.0 - 17.1 - 24.2	54	48	43	37	30	20	
	720	0.488	53 - 64 - 91	32	1118	121.5	16.0 - 19.6 - 27.7	59	53	47	41	33	23	
	1060	1.057	64 - 78 - 110	40	1646	263.3	19.4 - 23.7 - 33.6	66	60	54	46	37	28	

NOTES: Throw values are given for terminal velocities of 150, 100, and 50 FPM (0.75, 0.50, and 0.25 m/s). Throw values are given for isothermal conditions and a 4' (1219) length. For other lengths, see correction charts below. NC values are based on octave band 2 - 7 sound power levels minus a room absorption of 10dB, re10⁻¹² Watts. Dash in space denotes a NC or dB value of less than 10. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70, ISO Standard 5219, and ISO Standard 3741. Pressures are for diffuser section only. Plenums will add to the sound level and pressure drop. Keep inlet velocities below 800 FPM to reduce plenum generated sound levels and pressure drop. See selection software for performance data not shown, including octave band data.

NC Addition For Length					
Length, ft	2	4	6	8	10
Length, m	0.6	1.2	1.8	2.4	3.0
Supply	-2	0	+2	+3	+5
Return with Blades	0	+3	+5	+6	+8

Throw Multiplier for Length					
Length, ft	2	4	8	10	12
Length, m	0.6	1.2	2.4	3.0	3.6
Correction	0.7	0	1.5	1.7	1.8

S Series

IP/METRIC DATA: 1" SLOT WIDTH, CONTINUOUS SLOT

	IP Data			NC	Metric Data			Octave Band, dB						
	Air Flow	Press Ps	Vertical Throw		Air Flow	Press Ps	Vertical Throw							
	CFM/ft	"WG	ft		L/s/m	Pa	m	2	3	4	5	6	7	
1 Slot	5	0.000	0 - 0 - 1	-	8	0.1	0.0 - 0.1 - 0.4	-	-	-	-	-	-	-
	85	0.082	14 - 17 - 24	15	132	20.5	4.2 - 5.1 - 7.2	46	37	32	23	13	-	-
	125	0.178	17 - 20 - 29	23	194	44.3	5.0 - 6.2 - 8.7	53	44	37	29	17	-	-
	165	0.310	19 - 23 - 33	30	256	77.2	5.8 - 7.1 - 10.0	58	49	42	32	20	11	-
	245	0.684	23 - 28 - 40	39	380	170.2	7.1 - 8.7 - 12.2	65	56	48	38	24	15	-
2 Slots	10	0.000	0 - 1 - 3	-	16	0.1	0.1 - 0.2 - 0.9	-	-	-	-	-	-	-
	150	0.064	18 - 22 - 31	16	233	16.0	5.5 - 6.8 - 9.6	47	38	33	25	14	-	-
	220	0.138	22 - 27 - 38	24	342	34.3	6.7 - 8.2 - 11.6	54	45	38	30	19	-	-
	290	0.239	25 - 31 - 44	31	450	59.6	7.7 - 9.4 - 13.3	59	49	43	34	22	12	-
	430	0.527	31 - 38 - 53	40	668	131.1	9.4 - 11.5 - 16.2	66	56	49	39	26	16	-
3 Slots	15	0.000	1 - 1 - 5	-	23	0.1	0.2 - 0.4 - 1.5	-	-	-	-	-	-	-
	205	0.053	21 - 26 - 37	17	318	13.2	6.5 - 7.9 - 11.2	47	38	33	25	15	-	-
	300	0.114	26 - 31 - 45	24	466	28.4	7.8 - 9.6 - 13.5	54	45	39	30	19	-	-
	395	0.197	30 - 36 - 51	31	613	49.2	9.0 - 11.0 - 15.5	59	49	43	34	22	13	-
	585	0.433	36 - 44 - 62	40	908	107.8	10.9 - 13.4 - 18.9	66	56	49	40	27	17	-
4 Slots	20	0.000	1 - 2 - 6	-	31	0.1	0.2 - 0.5 - 2.0	-	-	-	-	-	-	-
	260	0.048	24 - 29 - 41	17	404	12.0	7.3 - 8.9 - 12.6	47	38	34	26	16	-	-
	380	0.103	29 - 35 - 50	25	590	25.6	8.8 - 10.8 - 15.2	54	45	39	31	20	-	-
	500	0.178	33 - 41 - 58	31	776	44.3	10.1 - 12.4 - 17.5	59	50	43	35	23	13	-
	740	0.390	40 - 49 - 70	40	1149	97.1	12.3 - 15.0 - 21.3	66	57	49	40	27	18	-
5 Slots	25	0.000	1 - 2 - 8	-	39	0.1	0.3 - 0.6 - 2.4	-	-	-	-	-	-	-
	305	0.042	26 - 32 - 45	17	473	10.6	7.9 - 9.7 - 13.7	47	38	34	26	16	-	-
	445	0.090	31 - 38 - 54	24	691	22.5	9.5 - 11.7 - 16.5	54	45	39	31	20	11	-
	585	0.156	36 - 44 - 62	31	908	38.8	10.9 - 13.4 - 18.9	59	50	43	35	23	14	-
	865	0.341	44 - 53 - 76	40	1343	84.9	13.3 - 16.3 - 23.0	66	56	49	40	27	18	-
6 Slots	30	0.000	1 - 2 - 9	-	47	0.1	0.3 - 0.7 - 2.8	-	-	-	-	-	-	-
	350	0.039	28 - 34 - 48	17	543	9.7	8.4 - 10.3 - 14.6	47	38	34	26	16	-	-
	510	0.082	34 - 41 - 58	24	792	20.5	10.2 - 12.5 - 17.7	54	45	39	31	21	11	-
	670	0.142	38 - 47 - 67	31	1040	35.4	11.7 - 14.3 - 20.2	59	50	43	35	23	14	-
	990	0.310	47 - 57 - 81	40	1537	77.2	14.2 - 17.4 - 24.6	66	56	49	40	28	18	-
7 Slots	35	0.000	1 - 3 - 10	-	54	0.1	0.3 - 0.8 - 3.1	-	-	-	-	-	-	-
	395	0.036	30 - 36 - 51	17	613	9.0	9.0 - 11.0 - 15.5	47	38	34	26	17	-	-
	575	0.077	36 - 44 - 62	24	893	19.1	10.8 - 13.3 - 18.7	54	45	39	31	21	11	-
	755	0.133	41 - 50 - 71	31	1172	33.0	12.4 - 15.2 - 21.5	59	50	44	35	24	14	-
	1115	0.289	50 - 61 - 86	40	1731	72.0	15.1 - 18.5 - 26.1	66	56	50	40	28	19	-
8 Slots	40	0.000	1 - 3 - 11	-	62	0.1	0.4 - 0.9 - 3.5	-	-	-	-	-	-	-
	440	0.034	31 - 38 - 54	18	683	8.6	9.5 - 11.6 - 16.4	47	38	34	26	17	-	-
	640	0.073	38 - 46 - 65	24	994	18.2	11.4 - 14.0 - 19.8	54	45	40	32	21	12	-
	840	0.126	43 - 53 - 75	31	1304	31.3	13.1 - 16.0 - 22.7	59	50	44	35	24	15	-
	1240	0.274	52 - 64 - 91	40	1925	68.1	15.9 - 19.5 - 27.5	66	57	50	41	28	19	-

NOTES: Throw values are given for terminal velocities of 150, 100, and 50 FPM (0.75, 0.50, and 0.25 m/s). Throw values are given for isothermal conditions and a 4' (1219) length. For other lengths, see correction charts below. NC values are based on octave band 2 - 7 sound power levels minus a room absorption of 10dB, re10⁻¹² Watts. Dash in space denotes a NC or dB value of less than 10. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70, ISO Standard 5219, and ISO Standard 3741. Pressures are for diffuser section only. Plenums will add to the sound level and pressure drop. Keep inlet velocities below 800 FPM to reduce plenum generated sound levels and pressure drop. See selection software for performance data not shown, including octave band data.

NC Addition For Length					
Length, ft	2	4	6	8	10
Length, m	0.6	1.2	1.8	2.4	3.0
Supply	-2	0	+2	+3	+5
Return with Blades	0	+3	+5	+6	+8

Throw Multiplier for Length					
Length, ft	2	4	8	10	12
Length, m	0.6	1.2	2.4	3.0	3.6
Correction	0.7	0	1.5	1.7	1.8

Engineering Data

DL Drum Louver

6-Inch

Size (H x W)	A _k Area	Neck Area (Ft ²)	Outlet* Velocity	800	1000	1200	1400	1600	1800	2100
			Static Pressure	.007	.010	.015	.025	.030	.040	.052
			Total Pressure	.039	.065	.100	.147	.194	.254	.330
6 x 9	.16	.375	CFM	128	160	192	224	256	228	336
			Throw	6-7-13	8-11-14	10-14-23	12-17-26	4-19-29	16-21-32	17-23-35
6 x 12	.21	.500	CFM	168	210	252	294	336	378	441
			Throw	8-10-18	10-15-24	12-17-27	14-18-30	15-20-33	17-22-37	18-23-41
6 x 18	.32	.750	CFM	256	320	384	448	512	576	672
			Throw	10-14-23	13-18-30	15-20-34	18-23-38	20-26-43	23-30-48	25-32-52
6 x 24	.41	1.000	CFM	328	410	492	574	656	738	861
			Throw	12-17-28	16-21-35	19-25-40	22-29-45	24-33-51	27-36-56	30-38-61
6 x 30	.52	1.250	CFM	416	520	624	728	832	936	1092
			Throw	15-20-33	18-24-39	22-28-44	25-32-50	27-37-56	30-40-61	33-43-66
6 x 36	.62	1.500	CFM	496	620	744	868	992	1116	1302
			Throw	17-23-37	20-26-43	24-30-47	28-35-54	31-40-60	34-44-65	37-46-72
6 x 48	.83	2.000	CFM	664	830	996	1162	1328	1494	1743
			Throw	20-26-41	23-29-47	26-35-55	32-41-62	36-45-66	40-49-72	44-53-78
6 x 60	1.05	2.500	CFM	840	1000	1260	1470	1680	1890	2205
			Throw	22-29-45	25-32-52	29-39-61	36-46-70	41-50-79	46-54-86	49-59-96

Data based on 8dB room attenuation

10-Inch

Size (H x W)	A _k Area	Neck Area (Ft ²)	Outlet* Velocity	800	1000	1200	1400	1600	1800	2100
			Static Pressure	.007	.010	.015	.025	.030	.040	.052
			Total Pressure	.039	.065	.100	.147	.194	.254	.330
10 x 10	.60	1.390	CFM	480	600	720	840	960	1080	1260
			Throw	19-23-33	23-27-40	26-31-46	29-35-53	32-39-58	35-42-64	38-46-69
10 x 25	.75	1.740	CFM	600	750	900	1050	1200	1350	1575
			Throw	21-24-38	25-29-46	28-34-53	32-38-60	35-42-66	38-46-73	41-50-79
10 x 30	.90	1.080	CFM	720	900	1080	1260	1440	1620	1890
			Throw	22-25-41	27-31-51	31-36-58	35-41-66	39-46-74	42-50-81	46-54-88
10 x 35	1.05	2.440	CFM	840	1050	1260	1470	1680	1890	2205
			Throw	22-27-43	27-33-53	32-39-62	37-45-71	41-50-81	45-54-89	49-59-98
10 x 40	1.20	2.780	CFM	960	1200	1440	1680	1920	2160	2520
			Throw	23-28-47	28-34-58	34-41-59	39-48-79	44-59-88	48-59-96	53-65-105
10 x 50	1.50	3.470	CFM	1200	1500	1800	2100	2400	2700	3150
			Throw	25-31-52	31-39-63	37-46-74	44-53-82	48-59-91	54-65-100	60-72-110
10 x 60	1.85	4.170	CFM	1480	1850	2220	2590	2960	3330	3885
			Throw	25-33-59	33-42-73	40-50-84	47-58-95	54-55-108	61-74-118	68-81-128
10 x 70	2.15	4.860	CFM	1720	2150	2580	3010	3440	3870	4515
			Throw	28-36-62	35-46-78	43-54-93	50-63-108	58-71-123	65-79-135	72-87-147

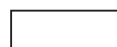
Data based on 8dB room attenuation

*Outlet velocity and A_k based on 15° deflection

Throw data is based on Terminal Velocities of 150 FPM, 100 FPM, and 50 FPM respectively.

THROW-NC-TOTAL PRESSURE are based on 15° blade deflection. For 0° or 30° deflection the following correction factors should be applied to the table values.

	Throw	Total Pressure	NC
0°	1.2	0.795	-4
30°	0.8	1.430	+5



NC < 30



NC < 35



NC < 40

DL Drum Louver

12-Inch

Size (H x W)	A _k Area	Neck Area (Ft ²)	Outlet* Velocity	800	1000	1200	1400	1600	1800	2100
			Static Pressure	.007	.010	.015	.025	.030	.040	.052
			Total Pressure	.039	.065	.100	.147	.194	.254	.330
12 x 20	.70	1.670	CFM	560	700	840	980	1120	1260	1470
			Throw	10-20-35	18-25-43	23-31-51	26-35-58	29-39-64	33-44-71	36-49-78
12 x 30	1.05	2.500	CFM	840	1050	1260	1470	1680	1890	2205
			Throw	17-25-42	24-32-53	28-38-63	33-43-72	38-49-81	43-55-90	48-60-99
12 x 40	1.40	3.330	CFM	1120	1400	1680	1960	2240	2520	2940
			Throw	20-28-49	27-36-62	32-43-74	38-50-86	44-57-97	49-64-107	55-61-120
12 x 50	1.75	4.160	CFM	1400	1750	2100	2450	2800	3150	3675
			Throw	22-29-56	29-39-71	37-48-85	44-56-99	51-64-117	58-73-127	64-81-138
12 x 60	2.15	5.000	CFM	1720	2150	2580	3010	3440	3870	4515
			Throw	25-33-61	33-44-78	42-53-94	49-63-110	58-74-125	66-83-140	75-92-155
12 x 70	2.50	5.830	CFM	2000	2500	3000	3500	4000	4500	5250
			Throw	28-37-68	37-49-87	47-61-107	57-73-125	67-86-142	76-97-160	86-110-180

Data based on 8dB room attenuation

15-Inch

Size (H x W)	A _k Area	Neck Area (Ft ²)	Outlet* Velocity	800	1000	1200	1400	1600	1800	2100
			Static Pressure	.007	.010	.015	.025	.030	.040	.052
			Total Pressure	.039	.065	.100	.147	.194	.254	.330
15 x 15	.75	1.560	CFM	600	750	900	1050	1200	1350	1575
			Throw	3-10-28	9-18-36	14-24-36	21-27-50	24-30-56	25-32-58	29-38-69
15 x 20	1.00	2.080	CFM	800	1000	1200	1400	1600	1800	2100
			Throw	9-17-35	17-24-43	22-28-52	25-32-60	29-37-68	31-40-72	35-44-80
15 x 25	1.25	2.600	CFM	1000	1250	1500	1750	2000	2250	2625
			Throw	13-21-38	21-26-48	25-32-58	29-38-68	34-43-77	38-48-86	42-54-95
15 x 30	1.55	3.120	CFM	1240	1550	1860	2170	2480	2790	3255
			Throw	14-23-42	22-28-54	27-35-65	32-41-76	37-47-86	41-54-97	46-59-107
15 x 40	2.05	4.170	CFM	1640	2050	2460	2870	3280	3690	4305
			Throw	19-25-48	27-35-66	35-43-79	39-50-93	45-58-105	51-65-118	57-72-130
15 x 50	2.55	5.210	CFM	2040	2550	3060	3570	4080	4590	5355
			Throw	24-30-61	31-40-78	38-48-96	45-58-114	52-66-130	58-75-145	65-83-163
15 x 60	3.00	6.250	CFM	2400	3000	3600	4200	4800	5400	6300
			Throw	27-34-68	35-46-88	43-58-106	52-68-125	60-79-143	68-89-160	76-100-176
15 x 70	3.50	7.300	CFM	2800	3500	4200	4900	5600	6300	7350
			Throw	29-38-72	40-51-95	50-64-118	60-76-140	71-89-160	81-101-184	90-112-195

Data based on 8dB room attenuation

*Outlet velocity and Ak based on 15° deflection

Throw data is based on Terminal Velocities of 150 FPM, 100 FPM, and 50 FPM respectively.

THROW-NC-TOTAL PRESSURE are based on 15° blade deflection. For 0° or 30° deflection the following correction factors should be applied to the table values.

	Throw	Total Pressure	NC
0°	1.2	0.795	-4
30°	0.8	1.430	+5

NC < 30	NC < 35	NC < 40
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Engineering Data

Stationary Louvers

1530ZC, 1530ZF

Free Area in Square Feet

		WIDTH														
		12	18	24	30	36	42	48	54	60	66	72	78	84	90	96
HEIGHT	12	0.37	0.58	0.80	0.98	1.19	1.41	1.62	1.80	2.02	2.23	2.45	2.63	2.84	3.06	3.27
	18	0.60	0.96	1.31	1.60	1.96	2.31	2.66	2.95	3.31	3.66	4.01	4.31	4.66	5.01	5.37
	24	0.84	1.33	1.82	2.23	2.72	3.21	3.70	4.11	4.60	5.09	5.58	5.99	6.48	6.97	7.46
	30	1.07	1.70	2.33	2.85	3.48	4.11	4.73	5.26	5.89	6.51	7.14	7.66	8.29	8.92	9.55
	36	1.31	2.07	2.84	3.48	4.24	5.01	5.77	6.41	7.18	7.94	8.71	9.34	10.11	10.87	11.64
	42	1.54	2.45	3.35	4.10	5.00	5.91	6.81	7.56	8.46	9.37	10.27	11.02	11.92	12.83	13.73
	48	1.78	2.82	3.86	4.72	5.77	6.81	7.85	8.71	9.75	10.79	11.83	12.70	13.74	14.78	15.82
	54	2.01	3.19	4.37	5.35	6.53	7.70	8.88	9.86	11.04	12.22	13.40	14.38	15.56	16.74	17.91
	60	2.25	3.56	4.88	5.97	7.29	8.60	9.92	11.02	12.33	13.65	14.96	16.06	17.37	18.69	20.00
	66	2.48	3.93	5.39	6.60	8.05	9.50	10.96	12.17	13.62	15.07	16.53	17.74	19.19	20.64	22.10
72	2.72	4.31	5.90	7.22	8.81	10.40	11.99	13.32	14.91	16.50	18.09	19.42	21.01	22.60	24.19	
78	2.95	4.68	6.41	7.85	9.58	11.30	13.03	14.47	16.20	17.93	19.65	21.09	22.82	24.55	26.28	
84	3.19	5.05	6.92	8.47	10.34	12.20	14.07	15.62	17.49	19.35	21.22	22.77	24.64	26.50	28.37	
90	3.42	5.42	7.43	9.10	11.10	13.10	15.10	16.77	18.78	20.78	22.78	24.45	26.45	28.46	30.46	

245ZC, 245ZF

Free Area in Square Feet

		WIDTH														
		12	18	24	30	36	42	48	54	60	66	72	78	84	90	96
HEIGHT	12	0.26	0.41	0.56	0.71	0.86	1.01	1.16	1.31	1.46	1.61	1.76	1.91	2.06	2.21	2.36
	18	0.45	0.71	0.96	1.22	1.48	1.73	1.99	2.25	2.50	2.76	3.02	3.27	3.53	3.79	4.05
	24	0.76	1.20	1.63	2.07	2.50	2.94	3.37	3.81	4.24	4.68	5.11	5.55	5.98	6.42	6.86
	30	0.95	1.49	2.03	2.57	3.12	3.66	4.20	4.74	5.29	5.83	6.37	6.91	7.45	8.00	8.54
	36	1.14	1.78	2.43	3.08	3.73	4.38	5.03	5.68	6.33	6.98	7.62	8.27	8.92	9.57	10.22
	42	1.32	2.08	2.83	3.59	4.35	5.10	5.86	6.61	7.37	8.12	8.88	9.64	10.39	11.15	11.90
	48	1.51	2.37	3.23	4.10	4.96	5.82	6.69	7.55	8.41	9.27	10.14	11.00	11.86	12.72	13.59
	54	1.70	2.67	3.64	4.60	5.57	6.54	7.51	8.48	9.45	10.42	11.39	12.36	13.33	14.30	15.27
	60	1.88	2.96	4.04	5.11	6.19	7.26	8.34	9.42	10.49	11.57	12.65	13.72	14.80	15.87	16.95
	66	2.20	3.45	4.71	5.96	7.21	8.47	9.72	10.98	12.23	13.49	14.74	16.00	17.25	18.51	19.76
72	2.38	3.74	5.11	6.47	7.83	9.19	10.55	11.91	13.27	14.64	16.00	17.36	18.72	20.08	21.44	
78	2.57	4.04	5.51	6.97	8.44	9.91	11.38	12.85	14.32	15.78	17.25	18.72	20.19	21.66	23.13	
84	2.76	4.33	5.91	7.48	9.06	10.63	12.21	13.78	15.36	16.93	18.51	20.08	21.66	23.23	24.81	
90	2.94	4.63	6.31	7.99	9.67	11.35	13.04	14.72	16.40	18.08	19.76	21.45	23.13	24.81	26.49	

1545ZC, 1545ZF

Free Area in Square Feet

		WIDTH														
		12	18	24	30	36	42	48	54	60	66	72	78	84	90	96
HEIGHT	12	0.30	0.47	0.64	0.79	0.96	1.14	1.31	1.45	1.63	1.80	1.97	2.12	2.29	2.47	2.64
	18	0.50	0.79	1.08	1.32	1.61	1.90	2.20	2.44	2.73	3.02	3.31	3.55	3.85	4.14	4.43
	24	0.70	1.11	1.52	1.86	2.26	2.67	3.08	3.42	3.83	4.24	4.65	4.99	5.40	5.81	6.21
	30	0.90	1.42	1.95	2.39	2.92	3.44	3.97	4.41	4.93	5.46	5.98	6.42	6.95	7.48	8.00
	36	1.10	1.74	2.39	2.92	3.57	4.21	4.85	5.39	6.03	6.68	7.32	7.86	8.50	9.14	9.79
	42	1.30	2.06	2.82	3.46	4.22	4.98	5.74	6.37	7.14	7.90	8.66	9.29	10.05	10.81	11.58
	48	1.50	2.38	3.26	3.99	4.87	5.75	6.63	7.36	8.24	9.12	9.99	10.73	11.61	12.48	13.36
	54	1.70	2.70	3.69	4.52	5.52	6.52	7.51	8.34	9.34	10.33	11.33	12.16	13.16	14.15	15.15
	60	1.90	3.02	4.13	5.06	6.17	7.28	8.40	9.33	10.44	11.55	12.67	13.60	14.71	15.82	16.94
	66	2.10	3.33	4.57	5.59	6.82	8.05	9.28	10.31	11.54	12.77	14.00	15.03	16.26	17.49	18.72
72	2.30	3.65	5.00	6.13	7.47	8.82	10.17	11.29	12.64	13.99	15.34	16.46	17.81	19.16	20.51	
78	2.50	3.97	5.44	6.66	8.12	9.59	11.06	12.28	13.74	15.21	16.68	17.90	19.37	20.83	22.30	
84	2.71	4.29	5.87	7.19	8.78	10.36	11.94	13.26	14.85	16.43	18.01	19.33	20.92	22.50	24.08	
90	2.91	4.61	6.31	7.73	9.43	11.13	12.83	14.25	15.95	17.65	19.35	20.77	22.47	24.17	25.87	

445ZC, 445ZF

Free Area in Square Feet

		WIDTH														
		12	18	24	30	36	42	48	54	60	66	72	78	84	90	96
HEIGHT	12	0.33	0.53	0.73	0.93	1.13	1.34	1.54	1.74	1.94	2.07	2.28	2.48	2.68	2.88	3.08
	18	0.55	0.89	1.22	1.56	1.90	2.23	2.57	2.91	3.25	3.47	3.81	4.25	4.48	4.82	5.16
	24	0.82	1.32	1.82	2.32	2.82	3.32	3.82	4.32	4.83	5.16	5.66	6.16	6.66	7.16	7.67
	30	1.04	1.67	2.31	2.95	3.58	4.22	4.86	5.49	6.13	6.56	7.19	7.83	8.47	9.10	9.74
	36	1.30	2.10	2.90	3.71	4.51	5.31	6.11	6.91	7.71	8.24	9.05	9.85	10.65	11.45	12.25
	42	1.52	2.46	3.40	4.33	5.27	6.21	7.14	8.08	9.02	9.64	10.58	11.51	12.45	13.39	14.32
	48	1.79	2.89	3.99	5.09	6.19	7.29	8.39	9.49	10.60	11.33	12.43	13.53	14.63	15.73	16.83
	54	2.01	3.25	4.48	5.72	6.96	8.19	9.43	10.66	11.90	12.73	13.96	15.20	16.45	17.67	18.91
	60	2.28	3.68	5.08	6.48	7.88	9.28	10.68	12.08	13.48	14.41	15.81	17.22	18.62	20.02	21.42
	66	2.50	4.03	5.57	7.10	8.64	10.18	11.71	13.25	14.79	15.81	17.35	18.88	20.42	21.95	23.49
72	2.76	4.46	6.16	7.86	9.56	11.26	12.97	14.67	16.37	17.50	19.20	20.99	22.60	24.30	26.00	
78	2.98	4.82	6.66	8.49	10.33	12.16	14.00	15.84	17.67	18.90	20.73	22.57	24.40	26.24	28.07	
84	3.25	5.25	7.25	9.25	11.25	13.25	15.25	17.25	19.25	20.58	22.58	24.48	26.58	28.58	30.58	
90	3.47	5.61	7.74	9.88	12.01	14.15	16.28	18.42	20.56	21.98	24.12	26.25	28.39	30.52	32.66	

Adjustable Louvers

4ABC

Free Area in Square Feet

		WIDTH														
		12	18	24	30	36	42	48	54	60	66	72	78	84	90	96
HEIGHT	12	0.24	0.38	0.53	0.67	0.82	0.96	1.11	1.25	1.40	1.54	1.68	1.83	1.97	2.12	2.26
	18	0.42	0.68	0.93	1.19	1.45	1.71	1.96	2.22	2.48	2.73	2.99	3.25	3.51	3.76	4.02
	24	0.55	0.88	1.22	1.55	1.88	2.22	2.55	2.89	3.22	3.56	3.89	4.23	4.56	4.89	5.23
	30	0.76	1.23	1.69	2.16	2.62	3.09	3.55	4.02	4.48	4.95	5.41	5.88	6.34	6.81	7.27
	36	0.93	1.49	2.06	2.62	3.19	3.76	4.32	4.89	5.45	6.02	6.58	7.15	7.72	8.28	8.85
	42	1.11	1.79	2.47	3.15	3.83	4.51	5.19	5.87	6.55	7.23	7.91	8.59	9.27	9.95	10.63
	48	1.30	2.09	2.88	3.67	4.46	5.26	6.05	6.84	7.63	8.42	9.22	10.01	10.80	11.59	12.38
	54	1.42	2.29	3.16	4.03	4.90	5.77	6.64	7.51	8.38	9.25	10.11	10.98	11.85	12.73	13.59
	60	1.64	2.64	3.64	4.64	5.64	6.64	7.64	8.64	9.64	10.64	11.64	12.64	13.64	14.64	15.64
	66	1.80	2.90	4.00	5.10	6.20	7.30	8.40	9.51	10.61	11.71	12.81	13.91	15.01	16.11	17.21
72	1.99	3.20	4.42	5.63	6.84	8.06	9.27	10.49	11.70	12.92	14.15	15.34	16.56	17.77	18.99	
78	2.17	3.50	4.82	6.15	7.48	8.80	10.13	11.46	12.78	14.11	15.44	16.76	18.09	19.42	20.74	
84	2.30	3.70	5.11	6.51	7.91	9.32	10.72	12.13	13.53	14.93	16.34	17.74	19.14	20.55	21.95	
90	2.51	4.05	5.58	7.12	8.65	10.19	11.72	13.25	14.79	16.32	17.86	19.39	20.93	22.46	24.00	
96	2.68	4.31	5.95	7.58	9.22	10.85	12.49	14.12	15.76	17.39	19.03	20.67	22.30	23.94	25.57	

4-Way Rezzin TBar Diffuser

		Neck Velocity FPM									
		400	500	600	700	800	900	1000	1200	1400	1600
6"	CFM	79	98	118	137	157	177	196	236	275	314
	Static Pressure	.003	.005	.006	.008	.011	.013	.016	.023	.031	.041
	Total Pressure	.015	.024	.034	.046	.060	.076	.094	.134	.183	.238
	NC	-	-	-	-	-	-	15	22	26	31
8"	CFM	140	175	209	244	279	314	349	419	489	559
	Static Pressure	.009	.014	.021	.028	.037	.046	.057	.082	.111	.145
	Total Pressure	.019	.030	.043	.058	.076	.096	.118	.170	.231	.301
	NC	-	-	-	-	18	22	23	31	35	39
10"	CFM	218	273	327	382	436	491	545	654	764	873
	Static Pressure	.009	.014	.021	.028	.037	.047	.058	.083	.113	.148
	Total Pressure	.019	.029	.042	.058	.075	.095	.117	.169	.230	.300
	NC	-	-	-	-	18	22	26	31	36	40
12"	CFM	314	393	471	550	628	707	785	942	1100	1257
	Static Pressure	.015	.022	.032	.044	.059	.076	.095	.142	.198	.264
	Total Pressure	.025	.038	.054	.074	.098	.126	.157	.231	.319	.422
	NC	-	-	-	18	20	26	29	36	41	45
14"	CFM	428	535	641	748	855	962	1069	1283	1497	1710
	Static Pressure	.015	.023	.033	.044	.057	.072	.089	.128	.175	.228
	Total Pressure	.025	.037	.053	.072	.094	.119	.146	.211	.287	.375
	NC	-	-	-	15	21	25	29	35	40	44

Throw Data - Terminal Velocity of 75 FPM

Neck Velocity	400	500	600	700	800	900	1000	1200	1400	1600
CFM	79	98	118	137	157	177	196	236	275	314
6"	3.1	3.9	4.6	5.4	6.2	7.0	7.7	9.3	10.8	12.4
CFM	140	175	209	244	279	314	349	419	489	559
8"	5.3	6.7	8.0	9.3	10.7	12.0	13.3	16.0	18.7	21.3
CFM	218	273	327	382	436	491	545	654	764	873
10"	6.3	7.9	9.4	11.0	12.6	14.1	15.7	18.8	22.0	25.1
CFM	314	393	471	550	628	707	785	942	1100	1257
12"	7.1	8.8	10.6	12.4	14.2	15.9	17.7	21.2	24.8	28.3
CFM	428	535	641	748	855	962	1069	1283	1497	1710
14"	9.1	11.3	13.6	15.9	18.1	20.4	22.7	27.2	31.8	36.3

Throw Data - Terminal Velocity of 150 FPM

Neck Velocity	400	500	600	700	800	900	1000	1200	1400	1600
CFM	79	98	118	137	157	177	196	236	275	314
6"	1.3	1.7	2.0	2.4	2.7	3.0	3.4	4.0	4.7	5.4
CFM	140	175	209	244	279	314	349	419	489	559
8"	2.2	2.7	3.3	3.8	4.4	4.9	5.5	6.6	7.7	8.8
CFM	218	273	327	382	436	491	545	654	764	873
10"	2.5	3.1	3.7	4.4	5.0	5.6	6.2	7.5	8.7	10.0
CFM	314	393	471	550	628	707	785	942	1100	1257
12"	3.8	4.8	5.8	6.7	7.7	8.6	9.6	11.5	13.4	15.3
CFM	428	535	641	748	855	962	1069	1283	1497	1710
14"	4.2	5.2	6.3	7.3	8.3	9.4	10.4	12.5	14.6	16.7

Rezzin Modular Core Tbar Diffuser

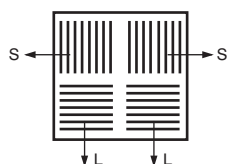
		Neck Velocity FPM									
		400	500	600	700	800	900	1000	1200	1400	1600
6"	CFM	79	98	118	137	157	177	196	236	275	314
	Static Pressure	.003	.005	.007	.010	.013	.017	.021	.030	.041	.054
	Total Pressure	.018	.023	.026	.035	.043	.067	.086	.120	.166	.209
	NC	-	-	-	-	-	16	20	24	30	34
8"	CFM	140	175	209	244	279	314	349	419	489	559
	Static Pressure	.004	.006	.008	.011	.014	.017	.020	.028	.036	.045
	Total Pressure	.013	.021	.030	.041	.053	.066	.081	.115	.155	.201
	NC	-	-	-	-	17	22	24	34	37	41
10"	CFM	218	273	327	382	436	491	545	654	764	873
	Static Pressure	.004	.007	.010	.013	.017	.022	.027	.039	.053	.069
	Total Pressure	.014	.021	.031	.042	.055	.070	.086	.124	.170	.222
	NC	-	-	-	17	22	26	34	42	44	48
12"	CFM	314	393	471	550	628	707	785	942	1100	1257
	Static Pressure	.006	.009	.012	.017	.022	.028	.034	.048	.065	.084
	Total Pressure	.015	.024	.035	.047	.061	.077	.095	.137	.186	.242
	NC	-	-	-	20	24	27	35	40	45	49
14"	CFM	428	535	641	748	855	962	1069	1283	1497	1710
	Static Pressure	.008	.013	.018	.024	.031	.040	.048	.069	.093	.120
	Total Pressure	.017	.030	.041	.056	.071	.090	.114	.144	.200	.278
	NC	-	-	15	23	27	34	39	44	48	51
16"	CFM	559	698	838	977	1117	1257	1396	1676	1955	2234
	Static Pressure	.012	.019	.028	.037	.048	.061	.075	.107	.145	.189
	Total Pressure	.022	.034	.049	.066	.086	.108	.134	.192	.260	.339
	NC	-	-	24	27	31	38	40	45	49	51

Engineering Data

Rezzin Modular Core Tbar Diffuser

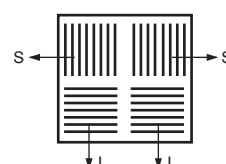
Throw Data - Terminal Velocity of 75 FPM

Neck Velocity		400	500	600	700	800	900	1000	1200	1400	1600
CFM		79	98	118	137	157	177	196	236	275	314
6"	1-direction	3.5	4.4	5.3	6.2	7.1	7.9	8.8	10.6	12.4	14.1
	2-direction	4.5	5.6	6.8	7.9	9.0	10.2	11.3	13.6	15.8	18.1
	3-direction Short	0.9	1.1	1.3	1.5	1.7	2.0	2.2	2.6	3.0	3.5
	3-direction Long	1.2	1.5	1.8	2.1	2.5	2.8	3.1	3.7	4.3	4.9
	4-direction	0.6	0.8	0.9	1.1	1.2	1.4	1.5	1.8	2.1	2.5
Neck Velocity		400	500	600	700	800	900	1000	1200	1400	1600
CFM		140	175	209	244	279	314	349	419	489	559
8"	1-direction	3.1	3.9	4.6	5.4	6.2	7.0	7.7	9.3	10.8	12.4
	2-direction	4.4	5.5	6.6	7.7	8.8	9.9	11.0	13.2	15.4	17.6
	3-direction Short	2.0	2.5	3.0	3.5	4.0	4.5	5.0	6.0	7.1	8.1
	3-direction Long	3.5	4.4	5.3	6.2	7.0	7.9	8.8	10.6	12.3	14.1
	4-direction	1.5	1.9	2.3	2.7	3.1	3.4	3.8	4.6	5.4	6.1
Neck Velocity		400	500	600	700	800	900	1000	1200	1400	1600
CFM		218	273	327	382	436	491	545	654	764	873
10"	1-direction	6.1	7.6	9.2	10.7	12.2	13.7	15.3	18.3	21.4	24.4
	2-direction	7.1	8.9	10.7	12.5	14.3	16.1	17.8	21.4	25.0	28.5
	3-direction Short	2.1	2.6	3.1	3.7	4.2	4.7	5.2	6.3	7.3	8.4
	3-direction Long	6.4	8.0	9.6	11.2	12.8	14.4	16.0	19.2	22.4	25.6
	4-direction	2.9	3.6	4.3	5.0	5.7	6.4	7.1	8.6	10.0	11.4
Neck Velocity		400	500	600	700	800	900	1000	1200	1400	1600
CFM		314	393	471	550	628	707	785	942	1100	1257
12"	1-direction	9.8	12.2	14.7	17.1	19.6	22.0	24.5	29.3	34.2	39.1
	2-direction	9.1	11.4	13.6	15.9	18.2	20.5	22.7	27.3	31.8	36.4
	3-direction Short	3.6	4.5	5.4	6.3	7.2	8.1	9.0	10.8	12.6	14.4
	3-direction Long	8.0	10.0	12.0	14.0	16.0	18.0	20.1	24.1	28.1	32.1
	4-direction	2.1	2.6	3.1	3.7	4.2	4.7	5.2	6.3	7.3	8.4
Neck Velocity		400	500	600	700	800	900	1000	1200	1400	1600
CFM		428	535	641	748	855	962	1069	1283	1497	1710
14"	1-direction	12.1	15.1	18.2	21.2	24.2	27.3	30.3	36.3	42.4	48.5
	2-direction	8.4	10.5	12.6	14.7	16.8	18.9	21.0	25.2	29.4	33.6
	3-direction Short	3.9	4.9	5.9	6.8	7.8	8.8	9.8	11.7	13.7	15.7
	3-direction Long	7.0	8.8	10.5	12.3	14.0	15.8	17.5	21.0	24.5	28.0
	4-direction	2.8	3.5	4.2	4.9	5.6	6.3	7.0	8.4	9.8	11.2
Neck Velocity		400	500	600	700	800	900	1000	1200	1400	1600
CFM		559	698	838	977	1117	1257	1396	1676	1955	2234
16"	1-direction	24.3	30.4	36.5	42.5	48.6	54.7	60.8	72.9	85.1	97.2
	2-direction	14.1	17.6	21.1	24.6	28.1	31.7	35.2	42.2	49.3	56.3
	3-direction Short	11.2	14.0	16.8	19.7	22.5	25.3	28.1	33.7	39.3	44.9
	3-direction Long	16.3	20.4	24.5	28.6	32.7	36.7	40.8	49.0	57.1	65.3
	4-direction	3.2	4.0	4.9	5.7	6.5	7.3	8.1	9.7	11.3	12.9



Throw Data - Terminal Velocity of 150 FPM

Neck Velocity		400	500	600	700	800	900	1000	1200	1400	1600
CFM		79	98	118	137	157	177	196	236	275	314
6"	1-direction	1.5	1.9	2.3	2.6	3.0	3.4	3.8	4.2	4.5	4.9
	2-direction	1.7	2.1	2.5	3.0	3.4	3.8	4.2	4.7	5.1	5.5
	3-direction Short	0.6	0.7	0.9	1.0	1.2	1.3	1.5	1.6	1.8	1.9
	3-direction Long	0.3	0.4	0.4	0.5	0.6	0.7	0.7	0.8	0.9	0.9
	4-direction	0.6	0.7	0.8	1.0	1.1	1.2	1.4	1.5	1.7	1.8
Neck Velocity		400	500	600	700	800	900	1000	1200	1400	1600
CFM		140	175	209	244	279	314	349	419	489	559
8"	1-direction	1.6	2.1	2.5	2.9	3.3	3.7	4.1	4.5	4.9	5.4
	2-direction	1.7	2.1	2.5	2.9	3.3	3.8	4.2	4.6	5.0	5.4
	3-direction Short	1.3	1.6	1.9	2.3	2.6	2.9	3.2	3.5	3.9	4.2
	3-direction Long	1.5	1.9	2.2	2.6	3.0	3.3	3.7	4.1	4.5	4.8
	4-direction	1.1	1.4	1.6	1.9	2.2	2.5	2.7	3.0	3.3	3.6
Neck Velocity		400	500	600	700	800	900	1000	1200	1400	1600
CFM		218	273	327	382	436	491	545	654	764	873
10"	1-direction	3.0	3.7	4.5	5.2	6.0	6.7	7.5	8.2	9.0	9.7
	2-direction	2.8	3.5	4.1	4.8	5.5	6.2	6.9	7.6	8.3	9.0
	3-direction Short	1.5	1.9	2.2	2.6	3.0	3.4	3.7	4.1	4.5	4.8
	3-direction Long	2.5	3.1	3.7	4.3	5.0	5.6	6.2	6.8	7.4	8.1
	4-direction	2.3	2.9	3.4	4.0	4.6	5.2	5.7	6.3	6.9	7.5
Neck Velocity		400	500	600	700	800	900	1000	1200	1400	1600
CFM		314	393	471	550	628	707	785	942	1100	1257
12"	1-direction	3.4	4.3	5.2	6.0	6.9	7.8	8.6	9.5	10.3	11.2
	2-direction	2.1	2.6	3.1	3.6	4.1	4.7	5.2	5.7	6.2	6.7
	3-direction Short	2.4	3.0	3.6	4.2	4.8	5.4	6.0	6.7	7.3	7.9
	3-direction Long	2.1	2.6	3.1	3.6	4.1	4.7	5.2	5.7	6.2	6.7
	4-direction	1.7	2.1	2.5	2.9	3.3	3.8	4.2	4.6	5.0	5.4
Neck Velocity		400	500	600	700	800	900	1000	1200	1400	1600
CFM		428	535	641	748	855	962	1069	1283	1497	1710
14"	1-direction	5.3	6.6	7.9	9.3	10.6	11.9	13.2	14.5	15.9	17.2
	2-direction	3.0	3.8	4.6	5.3	6.1	6.8	7.6	8.3	9.1	9.9
	3-direction Short	2.3	2.9	3.5	4.1	4.6	5.2	5.8	6.4	6.9	7.5
	3-direction Long	2.6	3.2	3.9	4.5	5.1	5.8	6.4	7.1	7.7	8.4
	4-direction	2.2	2.7	3.2	3.8	4.3	4.9	5.4	5.9	6.5	7.0
Neck Velocity		400	500	600	700	800	900	1000	1200	1400	1600
CFM		559	698	838	977	1117	1257	1396	1676	1955	2234
16"	1-direction	14.9	18.6	22.3	26.0	29.7	33.5	37.2	40.9	44.6	48.3
	2-direction	7.0	8.7	10.4	12.2	13.9	15.6	17.4	19.1	20.9	22.6
	3-direction Short	5.2	6.5	7.8	9.1	10.4	11.7	13.0	14.3	15.6	16.9
	3-direction Long	6.7	8.4	10.0	11.7	13.4	15.1	16.7	18.4	20.1	21.8
	4-direction	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.6



Rezzin Square Ceiling Diffuser

Rezzin Square (two-way corner)

Neck Velocity			300	400	500	600	700
Neck Size	6"	CFM	60	80	100	120	135
Ak	0.284	Ps	0.002	0.004	0.006	0.008	0.011
Vt	75	Throw	2.5	3.5	4.0	5.0	6.0
Vt	100	Throw	2.5	3.0	4.0	4.5	5.5
Vt	150	Throw	1.5	2.0	2.5	3.0	3.5
Neck size	7"	CFM	82	109	136	164	191
Ak	0.267	Ps	0.009	0.016	0.025	0.037	0.050
Vt	75	Throw	4.0	5.0	6.0	7.5	8.5
Vt	100	Throw	3.5	4.5	5.5	7.0	8.0
Vt	150	Throw	2.5	3.0	4.0	4.5	5.5
Neck size	8"	CFM	105	140	175	209	244
Ak	0.251	Ps	0.016	0.029	0.045	0.065	0.088
Vt	75	Throw	5.0	6.5	8.0	9.5	11.0
Vt	100	Throw	4.5	6.0	7.5	9.0	10.5
Vt	150	Throw	3.0	4.0	5.0	6.0	7.0

Rezzin Square (three-way)

Neck Velocity			300		400		500		600		700	
Neck Size 6"		CFM	60		80		100		120		135	
Ak	0.247	Ps	0.002		0.004		0.006		0.008		0.011	
Vt	75 S/L	Throw	2.0	2.5	3.0	3.5	3.5	4.5	4.5	5.5	5.0	6.0
Vt	100 S/L	Throw	2.0	2.5	3.0	3.5	3.5	4.0	4.0	5.0	5.0	6.0
Vt	150 S/L	Throw	1.5	1.5	2.0	2.0	2.5	3.0	3.0	3.5	3.0	4.0
Neck Size 7"		CFM	80		110		135		165		190	
Ak	0.243	Ps	0.009		0.016		0.026		0.037		0.050	
Vt	75 S/L	Throw	2.5	4.0	3.5	5.5	4.5	7.0	5.5	8.5	6.0	9.5
Vt	100 S/L	Throw	2.5	3.5	3.5	5.3	4.0	6.3	5.0	7.5	5.5	9.0
Vt	150 S/L	Throw	1.8	2.5	2.5	3.5	3.0	4.5	3.5	5.5	4.0	6.0
Neck Size 8"		CFM	105		140		175		210		245	
Ak	0.239	Ps	0.016		0.029		0.046		0.066		0.090	
Vt	75 S/L	Throw	3.0	5.5	4.0	7.5	5.0	9.0	6.0	11.0	7.0	13.0
Vt	100 S/L	Throw	3.0	5.0	3.5	7.0	4.5	8.5	5.5	10.5	6.5	12.0
Vt	150 S/L	Throw	2.0	3.5	2.5	4.5	3.0	6.0	3.5	7.0	4.5	8.0

Rezzin Square (four-way)

Neck Velocity			300	400	500	600	700
Neck Size	6"	CFM	60	80	100	120	135
Ak	0.210	Ps	0.001	0.002	0.003	0.005	0.006
Vt	75	Throw	3.0	3.5	4.5	5.5	6.5
Vt	100	Throw			4.5	5.0	6.0
Vt	150	Throw	1.5	2.5	3.0	3.5	4.0
Neck Size	7"	CFM	80	110	135	165	190
Ak	0.209	Ps	0.003	0.005	0.008	0.011	0.015
Vt	75	Throw			6.0	7.5	8.5
Vt	100	Throw	3.5	4.5	5.5	7.0	8.0
Vt	150	Throw	2.5	3.0	4.0	4.5	5.5
Neck Size	8"	CFM	105	140	175	210	245
Ak	0.209	Ps	0.005	0.008	0.013	0.018	0.025
Vt	75	Throw	4.5	6.0	7.5	9.0	10.5
Vt	100	Throw	4.0	5.5	7.0	8.5	10.0
Vt	150	Throw	3.0	3.5	4.5	5.5	6.5

Rezzin Round Ceiling Diffuser

Face Velocity		300	400	500	600	700	800	900	1000
Neck Size 6"	CFM	67	89	112	134	157	179	201	224
Ak .224	Ps	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
	Throw	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00
Neck Size 7"	CFM	69	92	115	137	160	183	206	229
Ak .229	Ps	0.05	0.09	0.13	0.19	0.26	0.34	0.43	0.53
	Throw	1.75	2.25	2.75	3.25	3.75	4.25	5.00	5.50
Neck Size 8"	CFM	70	94	117	141	164	188	211	235
Ak .235	Ps	0.10	0.17	0.26	0.38	0.52	0.67	0.85	1.05
	Throw	2.00	2.50	3.00	3.50	4.00	4.50	5.50	6.00

Terminal Velocity of 50 FPM

Engineering Data

659T/659TI/PFT/PFTI Series Performance

Average Face Velocity		300	400	500	600
659T Ak 2.440	CFM	730	975	1220	1465
	-Ps	.017	.030	.047	.067
PFT Ak 2.740	CFM	820	1095	1370	1645
	-Ps	.028	.050	.078	.113
659-TI w/12" collar Ak 2.230	CFM	670	890	1115	1340
	-Ps	.084	.147	.230	.330
w/14" collar Ak 2.260	CFM	680	905	1130	1355
	-Ps	.060	.105	.165	.240
w/16" collar Ak 2.320	CFM	695	930	1160	1390
	-Ps	.039	.068	.106	.155
PFTI w/12" collar Ak 2.320	CFM	770	1025	1280	1535
	-Ps	.098	.170	.265	.380
w/14" collar Ak 2.590	CFM	775	1035	1295	1555
	-Ps	.076	.125	.200	.283
w/16" collar Ak 2.630	CFM	790	1050	1315	1580
	-Ps	.055	.094	.145	.210

Note: Tested without filters. Typical capacity is 2 CFM per square inch of nominal filter area. Recommended face velocity is 300-450 FPM. Velocities higher will decrease filter performance, increase flow resistance, and possibly be of noise concern. Velocity measured 1" from face.

96AFBT/96AFBTI

Face Velocity		300	400	500	600	700
20 x 20	CFM	675	900	1125	1350	1575
	Static Pressure (in W.C.)	-0.024	-0.042	-0.065	-0.094	-0.128
Ak 2.25	Total Pressure (in W.C.)	-0.018	-0.032	-0.050	-0.072	-0.098

Note: Tested without filters. Typical capacity is 2 CFM per square inch of nominal filter area. Recommended face velocity is 300-450 FPM. Velocities higher will decrease filter performance, increase flow resistance, and possibly be of noise concern. Velocity measured 1" from face.

RE5T/RE5TI
 REF5T/REF5TI
 Rezzin Egg Crate
 RHF45T
 RH45T

Average Face Velocity		300	400	500	600	700	800	900	1000
RE5T/RE5TI 22 x 22 Ak 3.14	CFM	942	1256	1570	1884	2198	4464	5022	5320
	-Ps	.006	.001	.016	.022	.031			
46 x 22 Ak 6.68	CFM	2004	2672	3340	4008	4676			
	-Ps	.006	.001	.016	.022	.031			
RH45T 22 x 22 Ak 2.610	CFM	785	1045	1305	1565	1825			
	-Ps	.015	.030	.043	.062	.084			
46 x 22 Ak 5.460	CFM	1635	2180	2725	3270	3815			
	-Ps	.006	.001	.016	.022	.031			
REF5T*/REF5TI* 20 x 20 Ak 2.57	CF	771	1028	1285	1542	1799			
	-Ps	.003	.006	.010	.014	.019			
44 x 20 Ak 5.58	CFM	1674	2232	2790	3348	3906			
	-Ps	.003	.006	.009	.013	.018			
Rezzin Egg Crate 20 x 20 Ak 1.400	CFM	420	560	700	840	980			
	-Ps	.004	.008	.013	.018	.025			
RHF45T* 20 x 20 Ak 2.170	CFM	650	870	1085	1300	1520			
	-Ps	.015	.025	.040	.060	.080			
44 x 20 Ak 4.770	CFM	1430	1910	2385	2860	3340			
	-Ps	.015	.024	.039	.058	.078			

Note: Tested without filters. Typical capacity is 2 CFM per square inch of nominal filter area. Recommended face velocity is 300-450 FPM. Velocities higher will decrease filter performance, increase flow resistance, and possibly be of noise concern. Velocity measured 1" from face.

441 & 445

Neck Velocity		250	350	450	550	650	750	850	1000	1200
6" Diameter	CFM	50	70	90	110	130	145	165	195	235
	Ps	.004	.009	.014	.021	.029	.036	.046	.065	.092
Ak .370	NC	<20	<20	<20	<20	<20	22	26	33	36
	441 Throw	5.5	7.0	9.5	11.0	14.0	16.0	18.0	22.0	24.0
Ak .430	445 Throw	4.0	5.0	6.5	8.0	10.0	11.0	13.0	15.0	17.0
8" Diameter	CFM	85	120	155	190	225	260	295	350	420
	Ps	.006	.011	.018	.027	.037	.050	.064	.090	.127
Ak .450	NC	<20	<20	<20	<20	22	27	33	35	38
	441 Throw	7.0	10.0	13.0	16.0	18.0	21.0	25.0	29.0	31.0
Ak .530	445 Throw	5.0	7.0	9.5	12.0	13.0	15.0	18.0	21.0	23.0
10" Diameter	CFM	135	190	245	300	355	410	465	545	655
	Ps	.009	.018	.030	.044	.062	.082	.105	.145	.212
Ak .530	NC	<20	<20	<20	24	31	34	42	44	44
	441 Throw	9.0	12.0	16.0	20.0	24.0	27.0	30.0	32.0	34.0
Ak .620	445 Throw	6.5	9.0	11.0	14.0	17.0	19.0	21.0	23.0	24.0
12" Diameter	CFM	195	275	355	430	510	590	670	785	940
	Ps	.013	.026	.044	.064	.090	.120	.155	.215	.300
Ak .590	NC	<20	<20	26	33	38	42	44	46	48
	441 Throw	10.0	13.0	19.0	25.0	30.0	32.0	33.0	34.0	35.0
Ak .700	445 Throw	7.5	9.0	14.0	17.0	21.0	23.0	24.0	25.0	26.0
14" Diameter	CFM	265	375	480	590	695	800	910	1070	1285
	Ps	.018	.036	.059	.089	.125	.165	.210	.295	.410
Ak .640	NC	<20	22	29	36	42	>45	>45	>45	>45
	441 Throw	8.0	13.0	22.0	26.0	28.0	30.0	31.0	32.0	33.0
Ak .750	445 Throw	6.0	10.0	16.0	20.0	22.0	24.0	26.0	28.0	30.0

Note: The use of a balancing hood is recommended to balance the system.

NC is based on 10dB room attenuation (Re: 10⁻¹² watts) ASHRAE 36-72.
 Terminal Velocity of 75 FPM

442, 443 & 444 SurfAire®

Neck Velocity		250	350	450	550	650	750	850	1000	1200
6" Diameter	CFM	50	70	90	110	130	145	165	195	235
	Ps	.004	.009	.014	.021	.029	.036	.046	.065	.094
Ak .430	NC	<20	<20	<20	<20	23	27	31	35	35
	444 Throw	3.0	3.5	4.5	6.0	7.5	8.0	9.0	11.0	12.0
Ak .430	443 Throw*	3.0/4.0	3.5/5.0	4.5/6.5	6.0/8.0	7.5/10.0	8.0/11.0	9.0/13.0	11.0/15.0	12.0/17.0
	442 Throw*	4.0	5.0	6.5	8.0	10.0	11.0	13.0	15.0	17.0
8" Diameter	CFM	85	120	155	190	225	260	295	350	420
	Ps	.006	.012	.019	.029	.040	.054	.070	.098	.140
Ak .530	NC	<20	<20	<20	21	26	31	34	37	37
	444 Throw	4.0	5.0	6.5	8.0	9.5	11.0	13.0	15.0	17.0
Ak .530	443 Throw*	4.0/5.5	5.0/7.0	6.5/9.0	8.0/11.0	9.5/14.0	11.0/16.0	13.0/19.0	15.0/21.0	17.0/23.0
	442 Throw*	5.5	7.0	9.0	11.0	14.0	16.0	19.0	21.0	23.0
10" Diameter	CFM	135	190	245	300	355	410	465	545	655
	Ps	.009	.017	.028	.043	.069	.078	.102	.140	.205
Ak .620	NC	<20	<20	<20	22	29	35	38	42	46
	444 Throw	4.0	6.0	8.0	10.0	12.0	13.0	15.0	18.0	19.0
Ak .620	443 Throw*	4.0/6.0	6.0/8.0	8.0/11.0	10.0/14.0	12.0/17.0	13.0/19.0	15.0/21.0	18.0/25.0	19.0/26.0
	442 Throw*	6.0	8.0	11.0	14.0	17.0	19.0	21.0	25.0	26.0
12" Diameter	CFM	190	245	355	450	530	590	670	785	940
	Ps	.012	.024	.040	.059	.082	.110	.142	.195	.275
Ak .700	NC	<20	<20	22	28	35	39	44	47	52
	444 Throw	5.0	7.5	10.0	11.5	14.0	16.0	18.0	19.0	20.0
Ak .700	443 Throw*	5.0/8.5	7.5/11.0	10.0/14.0	11.5/17.0	14.0/19.0	16.0/23.0	18.0/25.0	19.0/26.0	20.0/27.0
	442 Throw*	8.5	11.0	14.0	17.0	19.0	23.0	25.0	26.0	27.0
14" Diameter	CFM	285	375	480	590	695	800	910	1070	1285
	Ps	.015	.031	.050	.075	.105	.137	.177	.245	.350
Ak .750	NC	<20	21	27	31	36	40	45	48	53
	444 Throw	6.0	9.0	11.0	14.0	17.0	19.0	20.0	22.0	24.0
Ak .750	443 Throw*	6.0/8.5	9.0/13.0	11.0/16.0	14.0/20.0	17.0/24.0	19.0/26.0	20.0/27.0	22.0/28.0	24.0/29.0
	442 Throw*	8.5	13.0	16.0	20.0	24.0	26.0	27.0	28.0	29.0

Note: The use of a balancing hood is recommended to balance the system.
 NC is based on 10dB room attenuation (Re: 10⁻¹² watts) ASHRAE 36-72.
 Terminal Velocity of 75 FPM



673T, 673TI, 673TPI R6

6" Diameter Inlet	CFM	100	150	200	225	250	275	300
Ak .730	NC	<20	<20	21	24	27	30	32
	Static Pressure	-.057	-.127	-.226	-.287	-.354	-.428	-.509
8" Diameter Inlet	CFM	150	200	250	300	400	500	550
Ak .795	NC	<20	<20	<20	<20	25	31	36
	Static Pressure	-.040	-.072	-.112	-.161	-.287	-.448	-.542
10" Diameter Inlet	CFM	300	400	500	600	700	800	850
Ak .880	NC	<20	<20	<20	24	28	33	35
	Static Pressure	-.066	-.117	-.183	-.264	-.359	-.469	-.530
12" Diameter Inlet	CFM	400	500	600	700	800	1000	1200
Ak .980	NC	<20	<20	<20	20	22	28	34
	Static Pressure	-.057	-.088	-.127	-.173	-.226	-.354	-.509
14" Diameter Inlet	CFM	600	700	800	1000	1200	1400	1600
Ak 1.105	NC	<20	<20	<20	20	24	28	34
	Static Pressure	-.069	-.094	-.122	-.191	-.275	-.374	-.489
16" Diameter Inlet	CFM	800	1000	1200	1600	1800	2000	2200
Ak 1.240	NC	<20	<20	<20	25	28	31	36
	Static Pressure	-.072	-.112	-.161	-.287	-.363	-.448	-.542

REN4

Neck Velocity		180	220	300	350	400	450	500	580	650	700
6" Diameter Ak .430	CFM	35	45	60	70	80	90	100	115	130	135
	Ps	.002	.003	.004	.006	.008	.010	.012	.015	.020	.022
	NC	<20	<20	<20	<20	<20	<20	20	22	26	30
	Throw	3.0	3.5	4.5	5.5	6.5	7.5	8.0	9.0	11.0	11.0
8" Diameter Ak .530	CFM	65	75	105	120	140	155	175	200	225	245
	Ps	.002	.003	.006	.008	.010	.013	.016	.021	.027	.032
	NC	<20	<20	<20	<20	<20	22	25	30	35	38
	Throw	4.0	5.0	6.0	7.0	8.5	9.5	11.0	12.0	13.0	15.0
10" Diameter Ak .620	CFM	100	120	165	190	220	245	275	315	355	380
	Ps	.003	.005	.009	.011	.015	.019	.024	.031	.040	.045
	NC	<20	<20	<20	<20	20	23	27	33	35	39
	Throw	4.0	5.5	7.0	8.0	9.5	11.0	12.0	13.0	15.0	16.0
12" Diameter Ak .700	CFM	140	175	235	275	315	355	395	455	510	550
	Ps	.005	.007	.013	.018	.023	.029	.036	.048	.061	.071
	NC	<20	<20	<20	<20	21	24	27	33	36	40
	Throw	4.5	5.5	7.0	8.0	10.0	11.0	12.0	14.0	15.0	17.0
14" Diameter Ak .750	CFM	190	235	320	375	430	480	535	620	695	750
	Ps	.007	.011	.020	.027	.036	.044	.055	.074	.094	.107
	NC	<20	<20	<20	<20	20	24	28	32	35	40
	Throw	4.5	5.5	7.0	8.5	10.0	11.0	12.0	14.0	16.0	17.0

Note: The use of a balancing hood is recommended to balance the system.

NC is based on 10dB room attenuation (Re: 10^{-12} watts) ASHRAE 36-72.
Terminal Velocity of 75 FPM

RENPS, RENPS 56, ARENPS, PDS

Neck Velocity		300	400	500	600	700	800	900	1000	1100
6" Diameter An .200	CFM	60	80	100	120	140	160	180	200	220
	Ps	.008	.011	.017	.024	.032	.042	.054	.066	.080
	NC	<20	<20	<20	<20	24	27	32	36	38
	Throw	1.0	2.0	3.0	3.0	4.0	4.0	5.0	5.0	6.0
8" Diameter An .350	CFM	105	140	175	210	245	280	310	350	385
	Ps	.008	.011	.017	.024	.034	.043	.054	.068	.083
	NC	<20	<20	<20	<20	24	27	30	34	38
	Throw	2.0	3.0	4.0	4.0	5.0	6.0	7.0	8.0	8.5
10" Diameter An .540	CFM	165	220	270	325	385	430	490	550	600
	Ps	.008	.012	.017	.024	.032	.043	.056	.068	.082
	NC	<20	<20	<20	<20	24	29	33	36	42
	Throw	2.0	3.0	4.0	5.0	5.0	6.0	7.0	8.0	9.0
12" Diameter An .780	CFM	230	310	390	470	550	610	700	780	870
	Ps	.009	.016	.026	.037	.050	.065	.080	.100	.125
	NC	<20	<20	<20	<20	23	26	31	34	37
	Throw	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0
14" Diameter An 1.070	CFM	315	430	535	640	750	855	960	1090	1200
	Ps	.009	.016	.026	.037	.050	.065	.083	.125	.150
	NC	<20	<20	<20	<20	30	35	39	43	45
	Throw	3.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0

Note: The use of a balancing hood is recommended to balance the system.

NC is based on 10dB room attenuation (Re: 10^{-12} watts) ASHRAE 36-72.
Terminal Velocity of 75 FPM An = Neck Area in Sq. Ft.

PDSD

AFPD, HVS/HVS R6, FPD/FPD R6, FPD3/FPD3 R6

Neck Velocity		400	500	600	700	800	900	1000	1200	1400	1600
6" Diameter An .200 Ak .780	CFM	80	100	120	135	155	175	195	235	275	315
	Ps	.008	.012	.017	.021	.028	.035	.043	.063	.086	.112
	NC	<20	<20	<20	<20	<20	<20	20	25	30	35
	Throw	2.0	3.0	3.0	3.5	4.0	4.5	5.0	6.0	7.0	8.0
8" Diameter An .350 Ak .920	CFM	140	175	210	245	280	315	350	420	490	560
	Ps	.010	.015	.022	.029	.038	.049	.060	.086	.117	.150
	NC	<20	<20	<20	<20	20	25	30	35	35	40
	Throw	3.5	4.5	5.5	6.5	7.0	8.0	9.0	10.5	12.5	14.5
10" Diameter An .540 Ak 1.200	CFM	220	270	325	380	435	490	545	655	765	870
	Ps	.014	.021	.030	.041	.054	.068	.084	.122	.167	.212
	NC	<20	<20	<20	<20	25	30	35	40	45	45
	Throw	5.5	7.0	8.5	10.0	11.0	12.5	14.0	17.0	19.5	22.0
12" Diameter An .780 Ak 1.650	CFM	315	390	470	550	630	705	785	940	1100	1255
	Ps	.015	.023	.033	.045	.060	.072	.094	.132	.180	.230
	NC	<20	<20	<20	<20	30	35	40	45	45	45
	Throw	6.0	7.5	9.0	10.5	12.0	13.5	15.0	18.0	21.0	24.0
14" Diameter An 1.070 Ak 2.060	CFM	430	535	640	750	855	960	1070	1285	1500	1710
	Ps	.023	.036	.051	.071	.093	.115	.140	.205	.277	.350
	NC	<20	<20	<20	<20	30	35	40	45	50	55
	Throw	6.5	8.0	9.5	11.5	13.0	14.5	16.0	19.0	22.5	25.0

Terminal Velocity of 75 FPM

An = Neck Area in Sq. Ft.

NC = Noise Criteria based on 10dB room absorption (Re: 10^{-12} watts).

Neck Velocity		300	400	500	600	700	800	900	1000	1200
6" Diameter An .200	CFM	60	80	100	120	135	155	175	195	235
	Ps	.007	.013	.020	.029	.037	.048	.062	.076	.110
	NC	<20	<20	<20	<20	21	24	28	33	37
	1-Way Throw	4.0	6.0	7.0	8.0	10.0	11.0	13.0	14.0	16.0
8" Diameter An .350	CFM	105	140	175	210	245	280	315	350	420
	Ps	.011	.019	.030	.043	.059	.077	.097	.120	.173
	NC	<20	<20	<20	<20	22	27	31	35	40
	1-Way Throw	6.0	8.0	10.0	11.5	13.0	14.5	16.0	18.0	21.0
10" Diameter An .540	CFM	165	220	275	325	385	430	490	550	600
	Ps	.015	.026	.040	.056	.076	.100	.125	.155	.225
	NC	<20	<20	<20	<20	21	27	33	40	45
	1-Way Throw	8.5	11.0	14.0	16.5	19.0	22.0	25.0	27.0	30.0
12" Diameter An .780	CFM	235	315	395	470	550	630	705	785	940
	Ps	.016	.029	.045	.068	.086	.113	.140	.170	.250
	NC	<20	<20	<20	<20	20	25	32	38	44
	1-Way Throw	10.0	13.0	16.5	19.5	22.0	25.0	27.0	30.0	34.0
14" Diameter An 1.070	CFM	320	430	535	640	750	855	960	1070	1285
	Ps	.021	.037	.057	.082	.112	.145	.180	.225	.320
	NC	<20	<20	<20	<20	26	31	36	40	49
	1-Way Throw	11.0	15.0	19.0	22.5	26.0	29.0	32.0	35.0	39.0

Notes: The use of a balancing hood is recommended to balance the system.

NC is based on 10dB room attenuation (Re: 10^{-12} watts) ASHRAE 36-72.
Terminal Velocity of 75 FPM

DPD/DPD R6, ADPD

Neck Velocity		400	500	600	700	800	900	1000	1200	1400	1600
6" Diameter An .200 Ak .279	CFM	80	100	120	135	155	175	195	235	275	315
	Ps	.006	.010	.014	.018	.023	.030	.037	.054	.073	.096
	NC	<20	<20	<20	<20	<20	20	25	30	35	40
	Throw	1.0	2.0	2.0	2.5	3.0	3.5	4.0	4.5	5.5	6.5
8" Diameter An .350 Ak .354	CFM	140	175	210	245	280	315	350	420	490	560
	Ps	.010	.015	.022	.029	.038	.049	.060	.086	.117	.150
	NC	<20	<20	<20	<20	20	25	30	35	40	45
	Throw	2.5	3.5	4.0	4.5	5.0	5.5	6.0	7.0	8.0	9.0
10" Diameter An .540 Ak .400	CFM	220	275	325	380	435	490	545	655	765	875
	Ps	.014	.021	.030	.041	.054	.068	.084	.122	.167	.212
	NC	<20	<20	<20	<20	20	25	30	35	40	50
	Throw	4.0	5.5	6.5	8.0	9.0	10.5	11.5	14.5	17.0	20.0
12" Diameter An .780 Ak .397	CFM	315	395	470	550	630	705	785	945	1100	1260
	Ps	.015	.023	.033	.045	.060	.072	.094	.132	.180	.230
	NC	<20	<20	<20	<20	30	35	40	45	50	50
	Throw	5.5	7.0	8.5	10.0	11.5	13.0	14.5	17.5	20.5	24.0
14" Diameter An 1.070 Ak .393	CFM	430	535	640	750	855	960	1070	1280	1500	1710
	Ps	.023	.036	.051	.071	.093	.115	.140	.205	.277	.350
	NC	<20	<20	<20	<20	30	35	40	45	50	55
	Throw	7.0	8.5	10.5	12.0	13.5	15.5	17.0	20.5	24.0	24.5

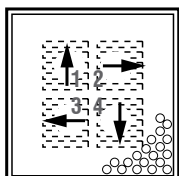
Terminal Velocity of 75 FPM

An = Neck Area in Sq. Ft.

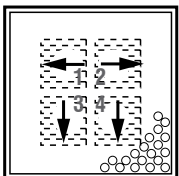
NC = Noise Criteria based on 10dB room absorption (Re: 10^{-12} watts).

Engineering Data

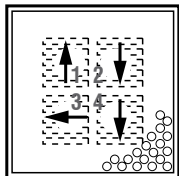
Probe Position: The probe is held 1 inch in from the outer edge of the diffuser, flush with the face.


Four-Way (Short Throw)

- For throw in all four directions, use short throw data.

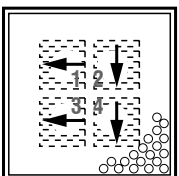

Three-Way (Short Throw)

- For throw in all three directions, use short throw data.


Three-Way (Long & Short)

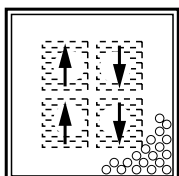
- For throw in the #2 & #4 direction use long throw data.

- For throw in the #1 & #3 directions, use short throw data.

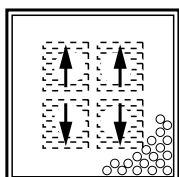

Two-Way Corner (Long & Short)

- For throw in the #2 & #4 direction use long throw data.

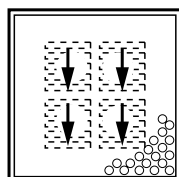
- For throw in the #1 & #3 directions, use short throw data.


Two-Way (Long Throw)

- For throw in both directions use long throw data.


Two-Way (Short Throw)

- For throw in both directions use short throw data.


One-Way (Long Throw)

- For throw use long throw data.

SBP

Neck Velocity		300	400	500	600	700	800	900	1000	1200	1400
Velocity Pressure		.006	.010	.016	.022	.031	.040	.051	.062	.090	.122
6" Diameter	CFM	60	80	100	120	140	160	180	200	240	280
	Total Pressure	.005	.008	.013	.025	.025	.032	.041	.050	.027	.098
	Short Horizontal Throw	2-1-1	2-1-1	3-1-1	3-2-1	4-2-1	4-2-1	5-2-2	5-3-2	6-3-2	7-4-2
	Long Horizontal Throw	3-1-1	4-2-1	5-2-2	6-3-2	7-3-2	8-4-3	9-4-3	10-5-3	12-6-4	14-7-5
	Noise Criteria	<20	<20	<20	<20	<20	22	24	26	31	37
8" Diameter	CFM	105	140	175	210	245	280	315	350	420	490
	Total Pressure	.009	.015	.024	.034	.046	.061	.077	.095	.136	.185
	Short Horizontal Throw	3-1-1	4-2-1	5-2-2	6-4-3	7-3-2	8-4-3	9-4-3	10-5-3	12-6-4	14-7-5
	Long Horizontal Throw	5-3-2	7-4-2	9-5-3	11-5-4	13-6-4	15-7-5	16-8-5	18-9-6	22-11-7	25-13-8
	Noise Criteria	<20	<20	<20	<20	20	25	30	34	39	44
10" Diameter	CFM	165	220	275	330	385	440	495	550	660	770
	Total Pressure	.013	.023	.036	.052	.071	.092	.117	.144	.208	.283
	Short Horizontal Throw	5-2-2	6-3-2	8-4-3	10-5-3	11-6-4	13-6-4	14-7-5	16-8-5	19-10-6	23-11-8
	Long Horizontal Throw	9-5-3	12-6-4	15-8-5	18-9-6	21-11-7	24-12-8	27-14-9	30-15-10	36-18-12	42-21-14
	Noise Criteria	<20	<20	<20	22	25	28	33	36	41	47
12" Diameter	CFM	240	320	400	480	560	640	720	800	960	1120
	Total Pressure	.017	.030	.047	.068	.093	.121	.153	.189	.273	.371
	Short Horizontal Throw	7-4-2	10-5-3	12-6-4	15-7-5	17-9-6	20-10-7	22-11-7	25-12-8	30-15-10	35-17-12
	Long Horizontal Throw	14-7-5	19-9-6	23-12-8	28-14-9	33-16-11	37-19-12	42-21-14	47-23-16	56-28-19	65-33-22
	Noise Criteria	<20	<20	21	25	29	32	35	38	44	50
14" Diameter	CFM	330	440	550	660	770	880	990	1100	1320	1540
	Total Pressure	.020	.036	.057	.081	.111	.145	.183	.226	.326	.443
	Short Horizontal Throw	11-6-4	15-7-5	18-9-6	22-11-7	26-13-9	29-15-10	33-17-11	37-18-12	44-22-15	52-26-17
	Long Horizontal Throw	21-10-7	28-14-9	34-17-11	41-21-14	48-24-16	55-28-18	62-31-21	69-34-23	83-41-28	97-48-32
	Noise Criteria	<20	<20	25	31	36	40	43	45	48	53

Notes:

1. Tests conducted in accordance with ANSI/ASHRAE 70-1991 at isothermal conditions.
2. Tests conducted with a straight rigid inlet condition. Other inlet conditions may alter performance.
3. Unit of measure: Neck Velocity = FPM; Velocity Pressure = in. w.c. Air Flow Rate = CFM; Total Pressure = in. w.c. Throw = ft at 50, 100, and 150 fpm terminal velocity
4. Noise Criteria (NC) is based upon 10 dB room absorption (Re: 10^{-12} watts) evaluated at 125 thru 4000 Hz octave bands.
5. Flow hoods are recommended for system balancing.

PD, PDR, RENP

Neck Velocity		200	300	400	500	600	700	800
6" Diameter	CFM	40	60	80	100	120	135	155
	-Ps	.003	.007	.012	.019	.027	.034	.044
8" Diameter	CFM	70	105	140	175	210	245	380
	-Ps	.004	.010	.017	.026	.037	.051	.068
10" Diameter	CFM	110	165	220	275	325	380	435
	-Ps	.005	.011	.020	.030	.043	.058	.076
12" Diameter	CFM	155	235	315	395	470	550	630
	-Ps	.005	.012	.021	.033	.046	.063	.083
14" Diameter	CFM	215	320	430	535	640	750	855
	-Ps	.006	.013	.023	.035	.050	.069	.090
16" Diameter	CFM	280	420	560	700	840	975	1115
	-Ps	.008	.018	.031	.048	.070	.094	.120
18" Diameter	CFM	355	530	705	885	1060	1235	1415
	-Ps	.008	.018	.031	.049	.070	.092	.125
24" x 24"	CFM	735	1100	1470	1835	2200	2570	2935
	-Ps	.008	.018	.032	.050	.070	.095	.130

Note: The use of a balancing hood is recommended to balance the system.
 NC is based on 10 db room attenuation (Re: 10^{-12} watts) ASHRAE 36-72.
 X=less than 20.
 Terminal velocity of 75 FPM.

CBPS Supply

One-Way Supply

		Neck Velocity - V_N							
Neck Size		300	400	500	600	700	800	1000	1200
6"	CFM	60	80	100	120	140	160	200	240
	Ps	.060	.080	.100	.150	.200	.260	.400	.580
	Throw	2.5-4.0-5.0	3.5-5.0-6.0	4.0-6.0-7.0	4.5-7.0-8.5	5.5-8.0-9.5	6.5-9.5-11.5	8.0-12.0-14.5	9.5-14.0-17.0
	NC	<20	<20	<20	22	26	30	40	>45
8"	CFM	105	140	175	210	245	280	350	420
	Ps	.080	.110	.160	.240	.320	.420	.650	.930
	Throw	4.0-6.0-7.0	5.5-8.0-9.5	6.5-10.0-12.0	8.0-12.0-14.5	7.5-14.0-17.0	10.5-10.6-19.0	13.5-20.0-24.0	16.0-24.0-29.0
	NC	<20	<20	21	26	31	39	>45	>45
10"	CFM	165	220	275	325	380	435	545	650
	Ps	.080	.110	.170	.250	.320	.430	.660	.940
	Throw	4.5-7.0-8.5	6.5-9.5-11.5	8.0-12.0-14.5	9.5-14.5-17.5	11.0-16.5-20.0	12.5-19.0-23.0	16.0-24.0-29.0	19.0-28.5-34.0
	NC	<20	<20	23	26	34	40	>45	>45
12"	CFM	235	315	395	470	550	630	790	940
	Ps	.080	.110	.170	.250	.340	.440	.690	.980
	Throw	5.5-8.5-10.0	7.5-11.0-13.5	9.5-14.0-17.0	11.0-16.5-20.0	13.0-19.5-26.5	14.5-22.0-26.5	18.5-27.5-33.0	22.0-33.0-39.5
	NC	<20	20	25	33	40	45	>45	>45
14"	CFM	325	430	535	640	750	860	1075	1275
	Ps	.110	.140	.210	.300	.420	.550	.860	1.200
	Throw	4.5-7.0-8.5	6.5-9.5-11.5	8.0-12.0-14.5	9.5-14.5-17.5	11.5-17.0-20.5	13.0-17.5-23.5	16.5-24.5-29.5	19.5-29.0-35.0
	NC	<20	20	25	30	38	44	>45	>45
16"	CFM	420	560	700	840	980	1120	1400	1680
	Ps	.020	.040	.060	.080	.110	.140	.220	.260
	Throw	5.0-8.0-10.0	7.0-10.0-12.0	10.0-13.0-16.0	12.0-15.0-18.0	13.0-18.0-21.0	14.0-19.0-24.0	18.0-26.0-30.0	20.0-31.0-36.0
	NC	<20	<20	26	34	39	43	>45	>45

Two-Way Supply

		Neck Velocity - V_N							
Neck Size		300	400	500	600	700	800	1000	1200
6"	CFM	60	80	100	120	140	160	200	240
	Ps	.050	.070	.090	.130	.170	.220	.340	.500
	Throw	2.0-3.0-3.5	2.5-3.5-4.5	3.5-5.0-6.0	4.0-5.5-6.5	4.5-6.5-8.0	5.0-7.5-9.0	6.5-9.5-11.5	7.5-11.5-13.5
	NC	<20	<20	<20	20	24	28	37	44
8"	CFM	105	140	175	210	245	280	350	420
	Ps	.040	.054	.084	.120	.165	.215	.330	.480
	Throw	3.0-4.5-5.5	3.5-5.5-6.5	4.5-7.0-8.5	5.5-8.5-10.0	6.5-9.5-11.5	7.5-11.0-13.0	9.5-14.0-17.0	11.0-16.5-20.0
	NC	<20	<20	<20	23	29	36	43	>45
10"	CFM	165	220	275	325	380	435	545	650
	Ps	.060	.080	.130	.180	.250	.310	.510	.730
	Throw	4.5-6.5-7.5	5.5-8.5-10.0	7.0-10.5-12.5	8.5-12.5-15.0	9.5-14.5-17.5	11.0-16.5-20.0	14.0-21.0-25.0	16.5-25.0-30.0
	NC	<20	<20	<20	25	29	37	45	>45
12"	CFM	235	315	395	470	550	630	790	940
	Ps	.050	.070	.110	.150	.210	.270	.430	.600
	Throw	4.5-6.5-7.5	5.5-8.5-10.0	7.0-10.5-12.5	8.5-12.5-15.0	10.0-15.0-18.0	11.5-17.0-20.5	14.5-21.5-26.0	17.0-25.5-30.5
	NC	<20	<20	23	30	37	43	>45	>45
14"	CFM	325	430	535	640	750	860	1075	1275
	Ps	.050	.070	.100	.150	.200	.260	.410	.570
	Throw	3.5-5.5-6.5	4.5-7.0-8.5	6.0-9.0-11.0	7.0-10.5-12.5	8.5-12.5-15.0	9.5-14.0-17.0	11.5-17.5-21.0	14.0-21.0-25.0
	NC	<20	<20	22	28	35	40	>45	>45
16"	CFM	420	560	700	840	980	1120	1400	1680
	Ps	.020	.040	.060	.080	.110	.140	.220	.260
	Throw	4.0-6.0-8.0	5.0-8.0-9.0	7.0-10.0-12.0	9.0-11.0-13.0	10.0-14.0-16.0	11.0-16.0-19.0	13.0-19.0-24.0	16.0-22.0-27.0
	NC	<20	<20	26	34	39	43	>45	>45

Three-Way Supply

		Neck Velocity - V_N							
Neck Size		300	400	500	600	700	800	1000	1200
6"	CFM	60	80	100	120	140	160	200	240
	Ps	.020	.030	.040	.060	.080	.100	.150	.230
	Throw	2.5-3.5-4.5	3.0-4.5-5.5	3.5-5.5-6.5	4.5-6.5-8.0	5.0-7.5-9.0	5.5-8.5-10.5	7.5-11.0-13.5	8.5-13.0-15.5
	NC	<20	<20	<20	<20	23	25	34	40
8"	CFM	105	140	175	210	245	280	350	420
	Ps	.020	.030	.040	.060	.080	.100	.160	.220
	Throw	3.0-4.0-5.0	4.0-5.5-6.5	4.5-7.0-8.5	5.5-8.0-9.5	6.5-9.5-11.5	7.5-11.0-13.5	9.0-13.5-16.0	11.0-16.5-20.0
	NC	<20	<20	<20	21	26	33	39	44
10"	CFM	165	220	275	325	380	435	545	650
	Ps	.030	.040	.060	.090	.120	.150	.240	.340
	Throw	4.5-6.5-8.0	5.5-8.5-10.5	7.0-10.5-12.5	8.5-12.5-15.0	9.5-14.5-17.5	11.5-17.0-20.5	14.0-21.0-25.0	17.0-25.0-30.0
	NC	<20	<20	<20	21	26	34	41	>45
12"	CFM	235	315	395	470	550	630	790	940
	Ps	.020	.030	.050	.070	.100	.130	.200	.290
	Throw	4.5-6.5-8.0	5.5-8.5-10.0	7.0-10.5-12.5	8.5-12.5-15.0	10.0-14.5-17.5	11.0-16.5-20.0	13.5-20.5-24.5	16.5-24.5-29.5
	NC	<20	<20	21	27	34	39	44	>45
14"	CFM	325	430	535	640	750	860	1075	1275
	Ps	.020	.030	.050	.070	.100	.130	.200	.280
	Throw	4.0-5.0-7.0	5.5-8.0-9.5	6.0-9.0-11.0	8.0-12.0-14.5	9.5-14.0-17.0	10.5-16.0-19.5	13.5-20.0-24.0	15.5-23.5-28.0
	NC	<20	<20	20	25	32	37	44	>45
16"	CFM	420	560	700	840	980	1120	1400	1680
	Ps	.020	.040	.060	.080	.110	.140	.220	.260
	Throw	5.0-6.0-8.0	6.0-9.0-10.0	7.0-9.0-12.0	9.0-13.0-15.0	10.0-13.0-16.0	11.0-15.0-18.0	12.0-18.0-21.0	15.0-21.0-26.0
	NC	<20	<20	26	34	39	43	>45	>45

NOTES:

1. **Ps** is static Pressure Loss in inches of H_2O
2. **NC** is based on 10db room attenuation (Re: 10^{-12} watts)
3. Throw is iso-thermal air at 150, 100, 75 FPM terminal velocities.
4. The use of a balancing hood is recommended to balance the system.

Recommended Noise Criteria and Face Velocity Ranges are on page 6

Engineering Data

CBPS Supply

Four-Way Supply

		Neck Velocity - V_N							
Neck Size		300	400	500	600	700	800	1000	1200
6"	CFM	60	80	100	120	140	160	200	240
	Ps	<.010	.010	.020	.030	.040	.050	.080	.120
	Throw	1.5-2.0-2.5	1.5-2.5-3.0	2.0-3.0-4.0	2.5-3.5-4.5	3.0-4.5-5.5	3.5-5.0-6.0	4.0-6.0-7.0	5.0-7.5-9.0
	NC	<20	<20	<20	<20	21	24	32	38
8"	CFM	105	140	175	210	245	280	350	420
	Ps	<.010	.010	.020	.030	.040	.060	.090	.120
	Throw	1.5-2.5-3.0	2.0-3.0-4.0	2.5-4.0-5.0	3.5-5.0-6.0	4.0-5.5-7.0	4.5-6.5-8.0	5.5-8.0-10.0	6.5-9.5-11.5
	NC	<20	<20	<20	<20	25	31	37	42
10"	CFM	165	220	275	325	380	435	545	650
	Ps	0.01	.020	.030	.040	.060	.070	.110	.160
	Throw	3.0-4.0-5.0	3.5-5.5-6.5	4.5-6.5-8.0	5.5-8.0-10.0	6.0-9.0-11.0	7.0-10.5-12.5	9.0-13.0-15.5	10.5-15.5-18.5
	NC	<20	<20	<20	21	27	32	39	44
12"	CFM	235	315	395	470	550	630	790	940
	Ps	.010	.020	.030	.040	.060	.080	.120	.170
	Throw	2.5-3.5-4.0	3.0-4.5-5.5	3.5-5.5-6.5	4.5-7.0-8.5	5.5-8.0-9.5	6.0-7.0-11.0	7.5-11.5-14.0	9.0-13.5-16.0
	NC	<20	<20	20	26	32	37	42	>45
14"	CFM	325	430	535	640	750	860	1075	1275
	Ps	.010	.020	.030	.050	.060	.080	.130	.180
	Throw	2.0-3.0-3.5	2.5-4.0-5.0	3.5-5.0-6.0	4.0-6.0-7.0	4.5-7.0-8.5	5.5-8.0-10.0	6.5-10.0-12.0	7.5-11.5-14.0
	NC	<20	<20	<20	24	30	35	42	>45
16"	CFM	420	560	700	840	980	1120	1400	1680
	Ps	.020	.040	.060	.080	.110	.140	.220	.260
	Throw	3.0-4.0-5.0	4.0-6.0-7.0	5.0-8.0-11.0	6.0-9.0-12.0	8.0-11.0-14.0	9.0-13.0-16.0	10.0-15.0-19.0	12.0-17.0-22.0
	NC	<20	<20	26	34	39	43	>45	>45

NOTES:

1. **Ps** is static Pressure Loss in inches of H₂O
2. **NC** is based on 10db room attenuation (Re: 10⁻¹² watts)
3. Throw is iso-thermal air at 150, 100, 75 FPM terminal velocities.
4. The use of a balancing hood is recommended to balance the system.

CBPR Return

Neck Velocity - V_N		200	300	400	500	600	700	800
-Ps		.01	.02	.03	.05	.07	.10	.12
6" Diameter	CFM	40	60	80	100	120	140	160
8" Diameter	CFM	70	105	140	175	210	245	280
10" Diameter	CFM	110	165	220	275	330	385	440
12" Diameter	CFM	160	240	320	395	475	550	630
14" Diameter	CFM	215	320	430	535	640	750	855
16" Diameter	CFM	281	420	563	698	836	975	1114
18" Diameter	CFM	356	531	712	881	1056	1231	1406

DPD12

Neck Velocity		400	500	600	700	800	900	1000	1200	1400
6"	CFM	80	100	120	135	155	175	195	235	275
	Ps	.006	.010	.014	.018	.023	.030	.037	.054	.073
	NC	<20	<20	<20	<20	<20	20	25	30	35
	Throw	1.0	2.0	2.0	2.5	3.0	3.5	4.0	4.5	5.5
7"	CFM	107	134	160	187	214	240	267	320	374
	Ps	.008	.012	.017	.025	.031	.043	.052	.075	.103
	NC	<20	<20	<20	20	25	30	30	35	40
	Throw	2.5	3.5	4.0	4.5	5.0	5.5	6.0	7.0	8.0
8"	CFM	140	175	210	245	280	315	350	420	490
	Ps	.010	.015	.022	.029	.038	.049	.060	.086	.117
	NC	<20	<20	<20	20	25	30	30	35	40
	Throw	2.5	3.5	4.0	4.5	5.0	5.5	6.0	7.0	8.0

Terminal Velocity of 75 FPM

An = Neck Area in Sq. Ft.

NC = Noise Criteria based on 10dB room absorption (Re: 10⁻¹² watts).

FPD12

Neck Velocity		400	500	600	700	800	1000	1200	1400	1600
6"	CFM	80	100	120	135	155	195	235	275	315
	Ps	.008	.012	.019	.025	.033	.052	.074	.101	.131
	NC	<20	<20	<20	<20	<20	25	30	35	40
	Throw	4	5	5	6	7	8	9	10	11
7"	CFM	107	134	160	187	214	267	321	374	428
	Ps	.01	.015	.023	.031	.041	.064	.091	.125	.162
	NC	<20	<20	<20	<20	20	30	35	40	45
	Throw	4	5	6	7	8	10	11	12	13
8"	CFM	140	175	210	245	280	350	420	490	560
	Ps	.012	.019	.028	.038	.05	.078	.112	.153	.199
	NC	<20	<20	<20	<20	20	30	35	40	45
	Throw	5	6	7	8	9	11	12	14	15

Terminal Velocity of 75 FPM

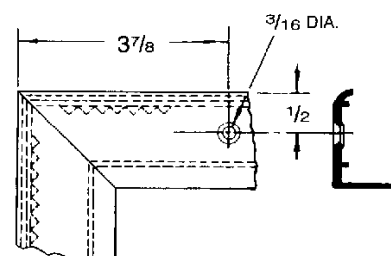
An = Neck Area in Sq. Ft.

NC = Noise Criteria based on 10dB room absorption (Re: 10⁻¹² watts).

Engineering Data

Screw Hole Chart for Extruded Aluminum Line V Series, H Series, C Series, RH Series

		W I D T H			
		4	10 THRU 16	18 THRU 28	30 THRU 48
H E I G H T	4	LONG DIMENSION 2 SCREWS	LONG DIMENSION 4 SCREWS	LONG DIMENSION 6 SCREWS	LONG DIMENSION 8 SCREWS
	8	LONG DIMENSION 4 SCREWS	LONG DIMENSION 6 SCREWS	LONG DIMENSION 8 SCREWS	LONG DIMENSION 10 SCREWS
	18	LONG DIMENSION 4 SCREWS	LONG DIMENSION 6 SCREWS	LONG DIMENSION 8 SCREWS	LONG DIMENSION 10 SCREWS
	20	LONG DIMENSION 4 SCREWS	LONG DIMENSION 6 SCREWS	LONG DIMENSION 8 SCREWS	LONG DIMENSION 10 SCREWS
	22	LONG DIMENSION 4 SCREWS	LONG DIMENSION 6 SCREWS	LONG DIMENSION 8 SCREWS	LONG DIMENSION 10 SCREWS
H E I G H T	28	LONG DIMENSION 4 SCREWS	LONG DIMENSION 6 SCREWS	LONG DIMENSION 8 SCREWS	LONG DIMENSION 10 SCREWS
	30	LONG DIMENSION 4 SCREWS	LONG DIMENSION 6 SCREWS	LONG DIMENSION 8 SCREWS	LONG DIMENSION 10 SCREWS
	46	LONG DIMENSION 4 SCREWS	LONG DIMENSION 6 SCREWS	LONG DIMENSION 8 SCREWS	LONG DIMENSION 10 SCREWS
	48	LONG DIMENSION 4 SCREWS	LONG DIMENSION 6 SCREWS	LONG DIMENSION 8 SCREWS	LONG DIMENSION 10 SCREWS
	48	LONG DIMENSION 4 SCREWS	LONG DIMENSION 6 SCREWS	LONG DIMENSION 8 SCREWS	LONG DIMENSION 10 SCREWS



**Drop Chart, Use with size selection charts
821, 831, 92 Series, 98VOH, H and V Series**

Instructions for use of Drop Chart

The drop of the air stream is determined by using the throw and velocity of the register selected. On the drop chart, lay a straight edge connecting these values. The total drop of the air stream will be the sum of the drop due to temperature (D_t) and the drop due to spread (D_s).

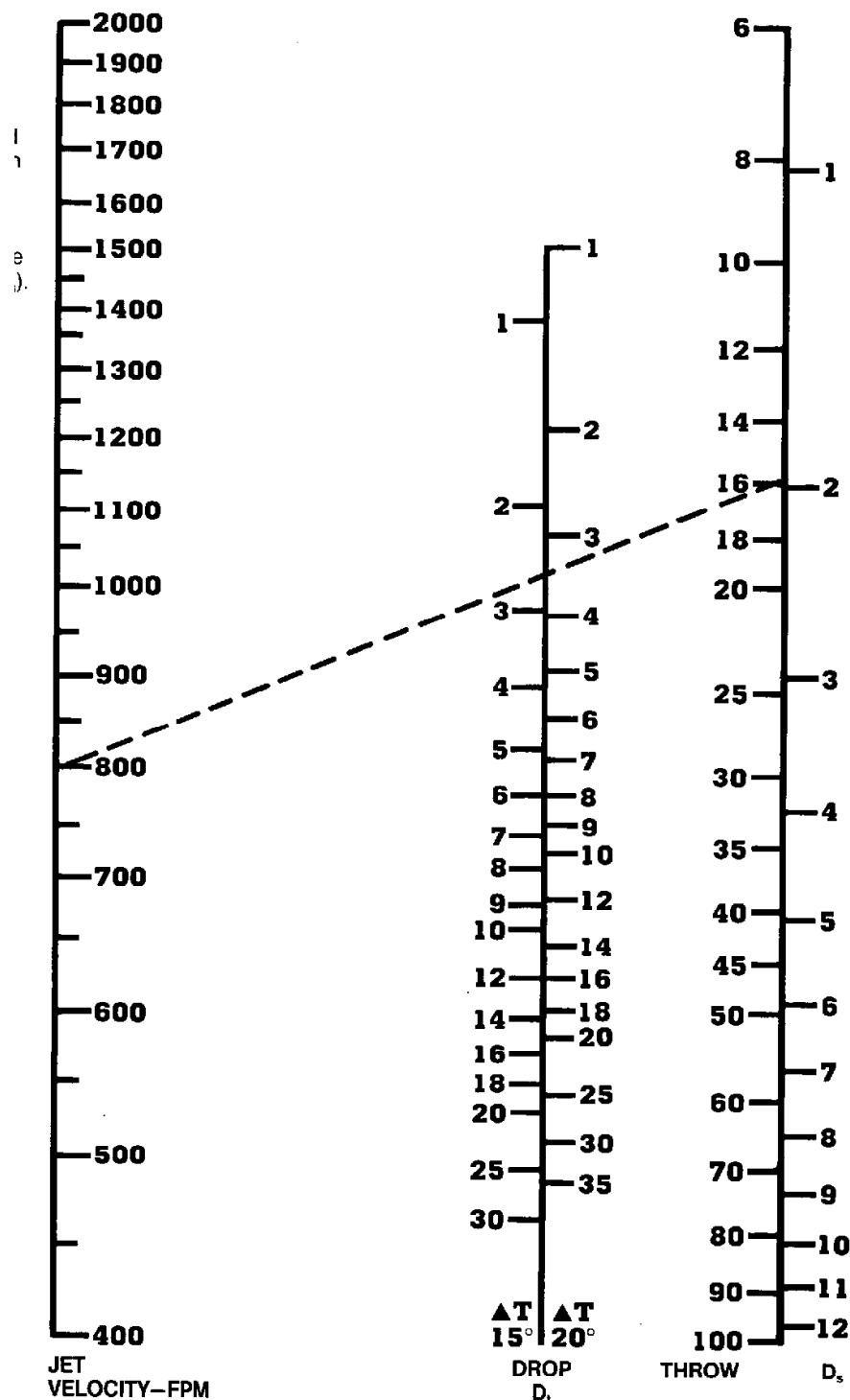
Example: The drop for a 92 Series register "C" deflection 16x5 size has an 800 fpm velocity and a 16 foot throw. Connect these two points on the chart and read the drops as follows:

$$D_t = 2.7' D_s = 2'$$

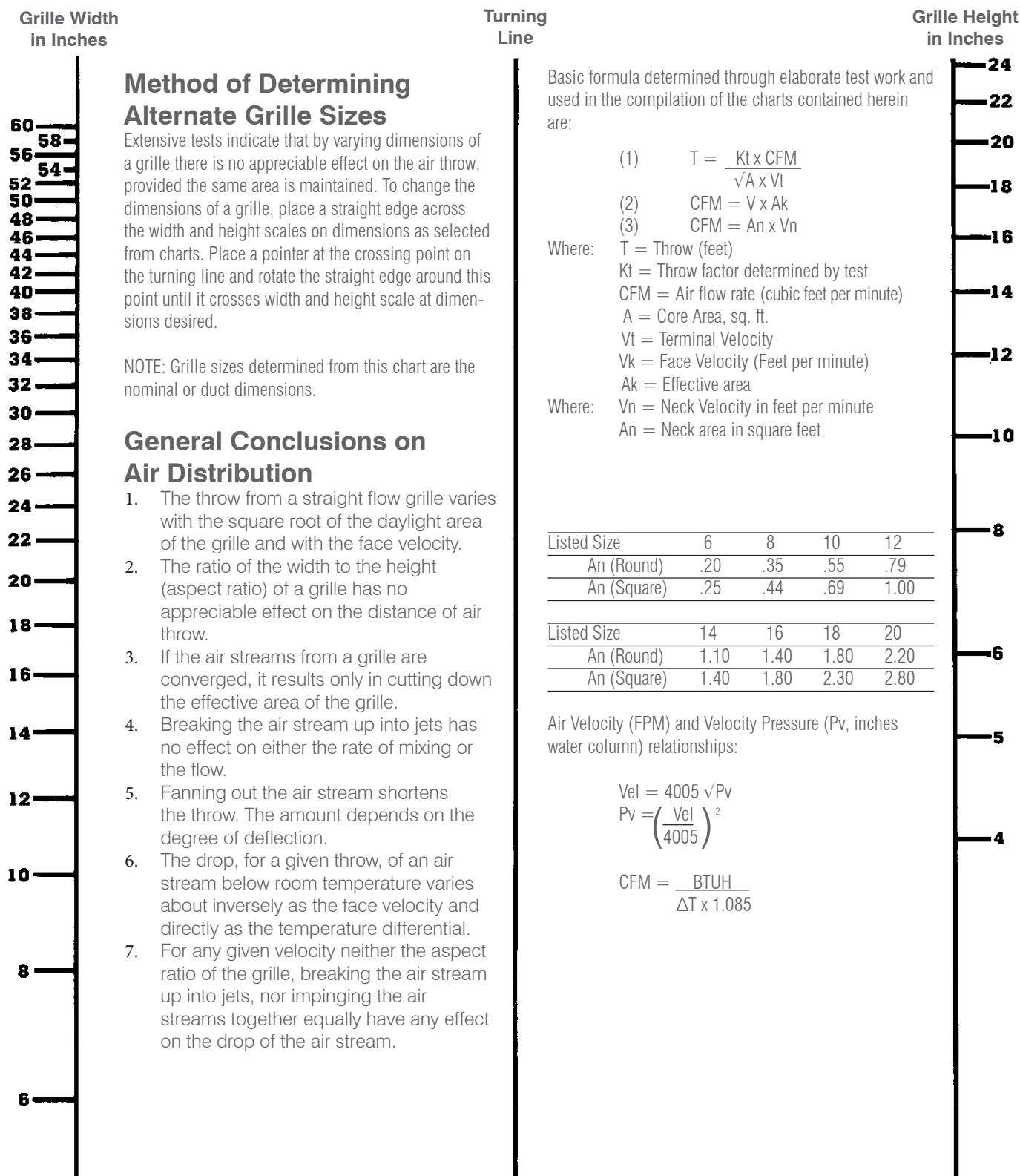
$$D_{\text{total}} = 2.7 + 2 = 4.7'$$

D_t = Drop along line of throw due to temperature difference.

D_s = Drop resulting from vertical spread.



92 Series, H and V Series Alternate Sizing Graph



Suggested Specifications



Surfaire® T-Bar Diffusers

Furnish and install Hart & Cooley SurfAire® insulated ceiling diffusers as shown on the plans. The diffuser shall be a 2'x2' T-Bar lay-in. Face shall be stucco embossed aluminum with off-white baked enamel finish for ceiling aesthetics, corrosion protection and ease of cleaning. Face will have formed deflector apertures which distribute air in thin layers along the ceiling surface and which provide for optimum dispersion in one, two, three, four-way or two-way corner patterns.

Back panel shall be formed galvanized steel covered with glass fiber insulation and an aluminum foil vapor barrier. Insulation is held securely in place by face margin edge fold over. Insulation will be prescored to accept specified collar sizes.

5400 Series collars will be supplied providing efficient, tight attachment with bayonet fasteners to mating prepunched holes in back panel. Collars will provide flex duct locking tabs and damper mounting slots. Collar damper slots provide for damper attachment or removal at any time.

3800 Series, fully adjustable, butterfly dampers shall be supplied (if specified). Damper adjustment handle is inserted before or after damper is mounted and is removable at any time.

Perforated Insulated T-Bar Diffusers and Return Grilles

Contractor shall furnish and install Hart & Cooley PDS perforated diffuser or PDSD perforated diffuser with deflectors as indicated on the plans. Perforated diffusers shall be 2'x2' T-Bar lay-in. Exposed face will have a minimum 51% free area and be coated with off-white baked enamel finish. Deflectors (if specified) shall be fully adjustable, externally providing one, two, three, four-way or two-way corner air diffusion capability.

Back panel shall be black pre-coated formed steel covered with glass fiber insulation and an aluminum foil vapor barrier. Insulation is held securely in place by face margin edge fold over. Insulation is prescored to accept specified collar sizes.

5400 Series collars will be supplied providing efficient, tight attachment with bayonet fasteners to mating pre-punched holes in back panel. Collars will provide flex duct locking tabs and damper mounting slots. Collar damper slots provide for damper attachment or removal at any time.

3800 Series fully adjustable butterfly dampers shall be supplied (if specified). Damper adjustment handle is inserted before or after damper is mounted and is removable at any time.

Matching Hart & Cooley PDR perforated return air grilles shall be furnished according to the plans.

Removable Face Perforated T-Bar Diffusers and Return Grilles

Contractor shall furnish and install Hart & Cooley RFPS series perforated diffusers as indicated on the plans. Exposed face will be of a removable hinged style with a minimum 51% free area and be coated with white baked enamel finish. Deflectors are to be the patented,

directable deflector to ensure proper adjustable air deflection. Back panel shall be black, pre-coated, formed steel to minimize sight into diffuser.

5400 Series collars will be supplied providing efficient, tight attachment with bayonet fasteners to mating pre-punched holes in back panel. Collars will provide flex duct locking tabs and damper mounting slots. Collar damper slots provide for damper attachment or removal at any time.

3800 Series fully adjustable butterfly dampers shall be supplied (if specified). Damper adjustment handle is inserted before or after damper is mounted and is removable at any time.

Matching Hart & Cooley RFPR perforated return air grilles shall be furnished according to the plans.

High Volume Supply T-Bar Diffuser

Contractor shall furnish and install Hart & Cooley HVS high volume supply 2'x2' T-Bar lay-in diffuser as shown on the plans. This diffuser will consist of a formed back panel and three stepdown formed elements, all made of heavy gauge steel. Finish shall be an off-white baked enamel. Interior air diffusion elements are easily removable at any time without tools for access to damper control rod. The air diffusion pattern shall be a full 360°.

The back panel shall be fully insulated with fiberglass having an aluminum foil vapor barrier. Insulation is held rigidly in place with adhesive and will be prescored to accept specified collar sizes.

5400 Series collars will be supplied providing efficient, tight attachment with bayonet fasteners to mating pre-punched holes in back panel. Collars will provide flex duct locking tabs and damper mounting slots. Collar damper slots provide for damper attachment or removal at any time.

3800 Series fully adjustable butterfly dampers shall be supplied (if specified). Damper adjustment handle is inserted before or after damper is mounted and is removable at any time.

Fixed Pattern T-Bar Diffuser

Contractor shall furnish and install Hart & Cooley FPD fixed pattern diffuser 2'x2' T-Bar lay-in as shown on the plans. This diffuser will consist of a formed back panel and two stepdown formed elements, all made of heavy gauge steel. Finish shall be an off-white baked enamel. Interior air diffusion elements are easily removable at any time without tools for access to damper or neck. The air diffusion pattern shall be a full 360°.

3800 Series fully adjustable butterfly dampers shall be supplied (if specified) and can be adjustable through the face.

Glossary of Terms

Ceiling or Wall Effect

The tendency of an air stream moving along a wall or ceiling surface to remain in contact with that surface.

Core Area

The total plane area of that portion of a grille, face, or register bounded by a line tangent to the outer opening through which air can pass. The core area is less than the register size. Example, a 14-in. x 8-in. register may have a core that is 1 in. less than the listed size; so, the core area is 13 in. x 7 in. – 91 sq. in.

Diffuser

An outlet discharging supply air in a spreading pattern.

Diffusion

Distribution of air within a space by an outlet discharging supply air in a spreading pattern.

Drop

The vertical distance between the base of the outlet and the bottom of the air stream at the end of the horizontal throw.

Effective Area, Ak (Sq. Ft.)

The calculated area of an outlet based on the average measured velocity between the fins.

Envelope

The outer boundary of an air stream moving at a specific velocity (for example, a 50 fpm envelope).

Free Area

The total minimum area of the openings in the air outlet or inlet through which air can pass.

Grille

A louvered covering for an opening through which air passes.

Induction

The process of drawing room air into the projected air stream due to the velocity of the projected air stream (sometimes called aspiration).

Jet Velocity, Fpm (Face Velocity)

The average measured velocity of air passing between the fins.

Natural Convection Currents

Air currents created by a buoyancy effect caused by the difference in temperature between the room air and the air in contact with a warm or cold surface.

Outlet

Any opening through which air is delivered to condition a space.

Outlet Velocity, Fpm

The average velocity of the supply air, measured as it passes through the plane of the opening in the supply outlet.

Pressure Loss, WG

Indicates how much total pressure is required to move air through a register.

Primary Air

The mixture of supply air from the outlet and room air within the 1 50 fpm envelope.

Radius of Diffusion, Ft.

The horizontal distance (throw) from a ceiling diffuser to the point of terminal velocity.

Register

A grille which is equipped with a damper or control valve, and which directs air in a nonspreading jet.

Return

Any opening through which air is removed from a conditioned space.

Spread, Ft.

The maximum width of the total air stream at the point of terminal velocity.

Static Pressure, PS

The outward force of air within a duct measured in inches of water.

Stratification Boundary

The boundary between room air currents moving faster than 1 5 fpm and the stratification zone.

Stratified Zone

A region in which room air velocity is less than 1 5 fpm.

Temperature Differential

The temperature difference between the primary and the room air.

Temperature Variation (ΔT)

The temperature difference between points within the same space.

Terminal Velocity, Fpm

When the velocity of total air drops to 50 or 75 fpm, depending on the particular application, it reaches terminal velocity. Terminal velocity is not sharply defined for all applications.

Throw (Blow), Ft.

The horizontal distance an air stream travels after leaving a horizontal sidewall outlet before maximum velocity is reduced to terminal velocity. For a perimeter outlet, throw is the vertical distance the air stream travels before maximum velocity is reduced to terminal velocity.

Total Air

The mixture of projected air and room air set in motion by the supply air.

Total Pressure, Pt

The sum of the velocity and static pressures measured in inches of water.

Vane Ratio

The ratio showing depth of vane to minimum width between two adjacent vanes.

Velocity Pressure, Pv

The forward-moving force of air within a duct measured in inches of water.

NC Noise Criteria

A single number noise rating system that indicates what Broad Band, continuous sounds are reasonably acceptable.



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