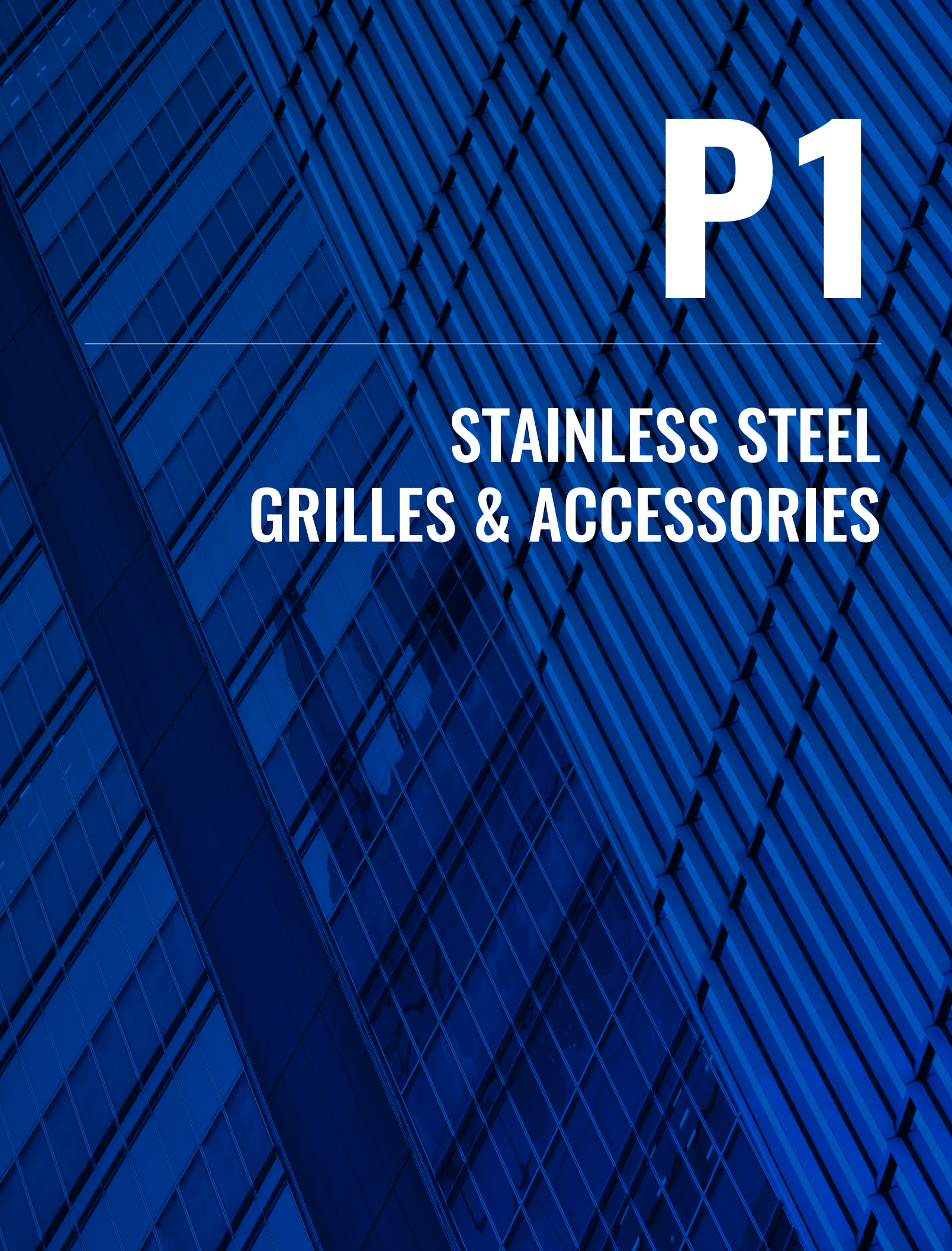




P1

STAINLESS STEEL GRILLES & ACCESSORIES

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9180

This stainless steel supply grille features individually adjustable curved blades and a multi-deflection discharge air pattern.



9700, 9700A, 9700D

These stainless steel door grilles feature a single or double core with beveled frame, designed for air transfer from room to room.



98PF (Accessory)

This stainless steel plaster frame is available for Krueger's stainless steel series of grilles and registers.



980

This stainless steel, single deflection supply grille features individually adjustable horizontal or vertical front blades, spaced on 3/4" centers.

9700 - Single Core, Flat Frame

9700A - Single Core, Flat Frame & Auxiliary Frame

9700D - Double Core, Flat Frame



90BD (Accessory)

This stainless steel OBD is available for Krueger's stainless steel series of grilles.



9880

This stainless steel, double deflection supply grille features individually adjustable front and rear blades, spaced on 3/4" centers.



91610, 91620, 91520

These heavy-duty, stainless steel, linear bar grilles feature fixed bars at different deflections, thickness, and spacing.

91610 - 1/8" Thick Bars Set at 0° or 15°, 3/8" Spacing

91620 - 1/8" Thick Bars Set at 0° or 15°, 1/2" Spacing

91520 - 1/4" Thick Bars Set at 0°, 1/2" Spacing



9580

This stainless steel return grille features fixed blades set at a 0° or 45° deflection, spaced on 3/4" centers.



9580HF

This stainless steel return grille features a hinged face with fixed blades set at a 0° or 45° deflection, spaced on 3/4" centers.



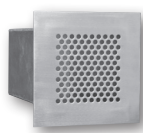
91240

This stainless steel supply diffuser features welded cores that are set at 1, 2, 3, or 4-way discharge air patterns.



9584P

This stainless steel supply grille features a perforated face, with 3/16" diameter holes on 1/4" staggered centers.



91310

This stainless steel, supply security grille features a perforated face with 5/16" diameter holes on 7/16" staggered centers and 1/8" continuous welded seams.



9580P

This stainless steel return grille features a perforated face, with 3/16" diameter holes on 1/4" staggered centers.



9EGC5

This stainless steel egg-crate return grille features 1/2"x1/2"x1/2" cube core with a 1 3/8" flange.

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9S84P

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9S80P

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9700, 9700A, 9700D

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91610, 91620, 91520

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98PF - Plaster Frame P1-115
9OBD - Opposed Blade Damper P1-116
9SRA - Square to Round Adapter P1-117

INTRODUCTION

Stainless steel is an alloy, or blend of selective metal ingredients, primarily iron, chromium and nickel. Sometimes small amounts of other metals are added to give some further special performance characteristics. The result is not one, but a family of iron-based alloys made up of over fifty different possible compositions. Each composition has specific properties: toughness, corrosion resistance and cleanability. Krueger offers the following two grades of stainless steel.

TYPICAL COMPOSITIONAL RANGES FOR GRADE 304

METAL	MINIMUM	MAXIMUM
C	-	0.08
Mn	-	2.00
Si	-	0.75
P	-	0.045
Si	-	0.030
Cr	18.00	20.00
Mo	-	-
Ni	8.00	10.50
N	-	0.10

GRADE 304 PROPERTIES

Grade 304 is the most versatile and most widely used stainless steel. Grade 304 is the standard "18/8" or 18 percent chromium and 8 percent nickel austenitic alloy producing a highly corrosion resistant non-magnetic material. 304 Stainless steel has excellent forming and welding characteristics and is available in a wide range of products, forms and finishes.

GRADE 304 CORROSION RESISTANCE

Grade 304 has excellent corrosion resistance in a wide range of atmospheric environments and resists most oxidizing acids and salt sprays. Grade 304 is considered resistant to potable water with approximately 200 mg/L (0.0267 oz/gal) chlorides at ambient temperatures, reducing to about 150 mg/L (0.0200 oz/gal) at 60°C (140°F).

TYPICAL COMPOSITIONAL RANGES FOR GRADE 316

METALS	MINIMUM	MAXIMUM
C	-	0.08
Mn	-	2.00
Si	-	0.75
P	-	0.045
Si	-	0.030
Cr	16.00	18.00
Mo	2.00	3.00
Ni	10.00	14.00
N	-	0.10

GRADE 316 PROPERTIES

Grade 316 is the standard molybdenum-bearing grade, second in importance to 304 amongst the austenitic stainless steels. It has excellent forming and welding characteristics. It is readily brake or roll formed into a variety of parts for applications in the industrial, architectural, and transportation fields. Grade 316 also has outstanding welding characteristics. Post-weld annealing is not required when welding thin sections.

GRADE 316 CORROSION RESISTANCE

The molybdenum gives 316 better overall corrosion resistant properties than Grade 304, particularly higher resistance to pitting and crevice corrosion in potable water with up to about 1000 mg/L (0.1335 oz/gal) chlorides at ambient temperatures, reducing to about 500 mg/L (0.0668 oz/gal) at 60°C. 316 is usually regarded as the standard "marine grade stainless steel".

INTRODUCTION

The 9180 series curved blade grille features individually, hand adjustable blades and multiple discharge configurations. Blade settings can be adjusted to increase or decrease the throw characteristics. These grilles are an excellent choice for residential and commercial buildings where different throw characteristics are needed for the same sized grille.

MODEL

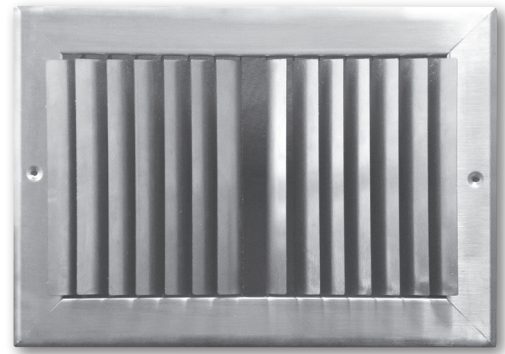
9180 - Curved blade supply grille

FEATURES

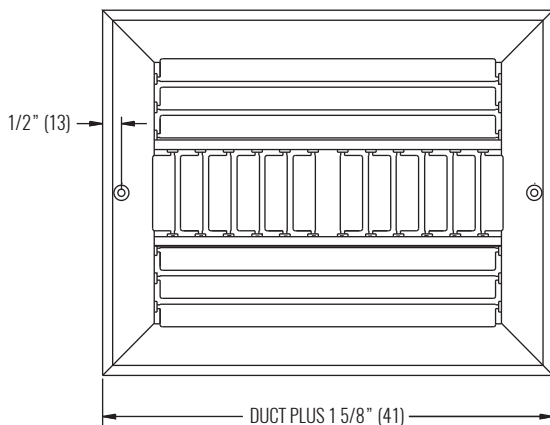
- 304 stainless steel construction (316 optional)
- 1, 2, 3, and 4-way deflection
- Adjustable blades
- Countersunk screw holes in mounting frame
- Standard finish is 90 - #4 Satin Polish or 44 - British White

ACCESSORIES

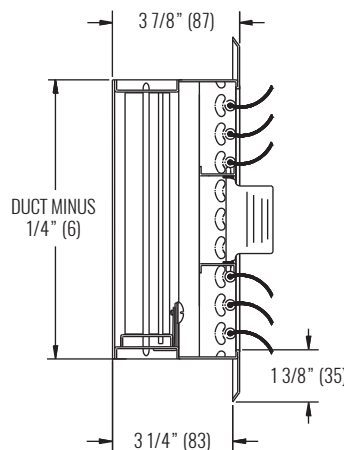
- Stainless steel OBD welded to unit, adjustable from face of grille (model 9OBD)
- Plaster frame (model 98PF)
- Square to round adapter (model 9SRA)



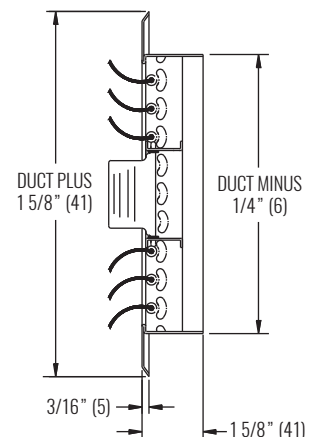
DIMENSIONAL DATA



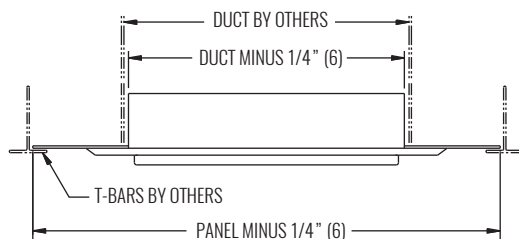
FACE VIEW, FRAME 22 SURFACE MOUNT



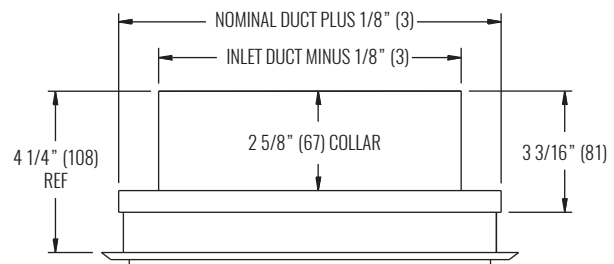
SIDE VIEW, FRAME 22 SURFACE MOUNT
9OBD SHOWN



SIDE VIEW, FRAME 22 SURFACE MOUNT
WITHOUT DAMPER

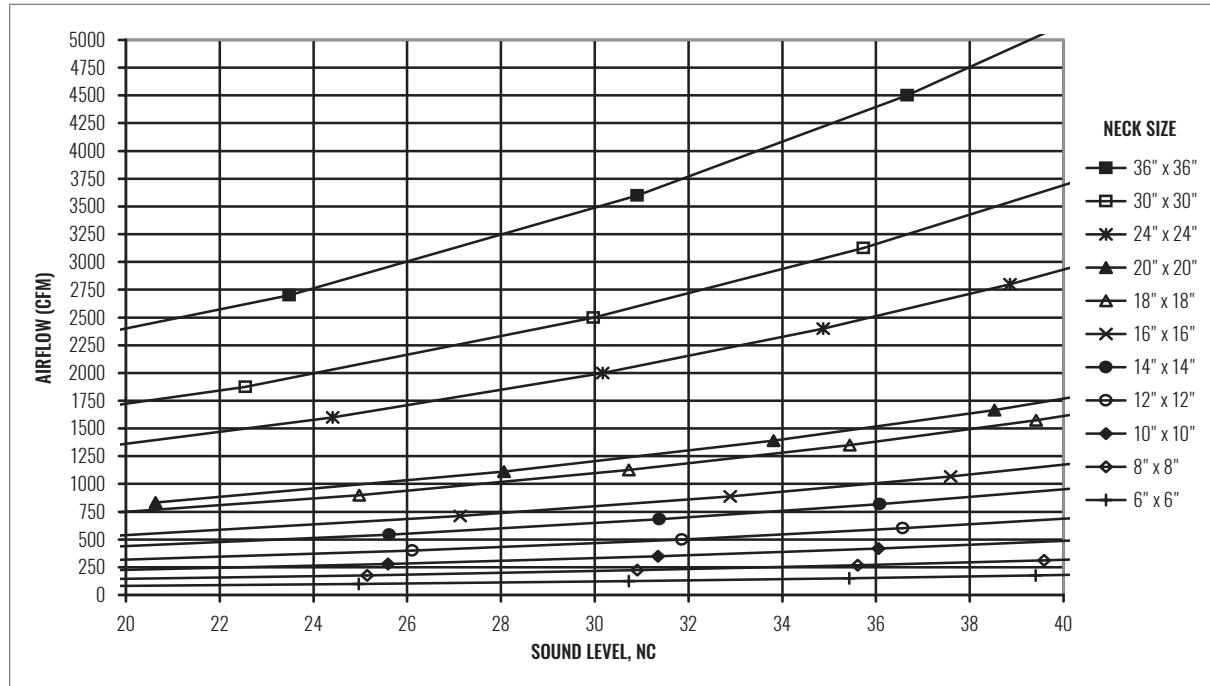
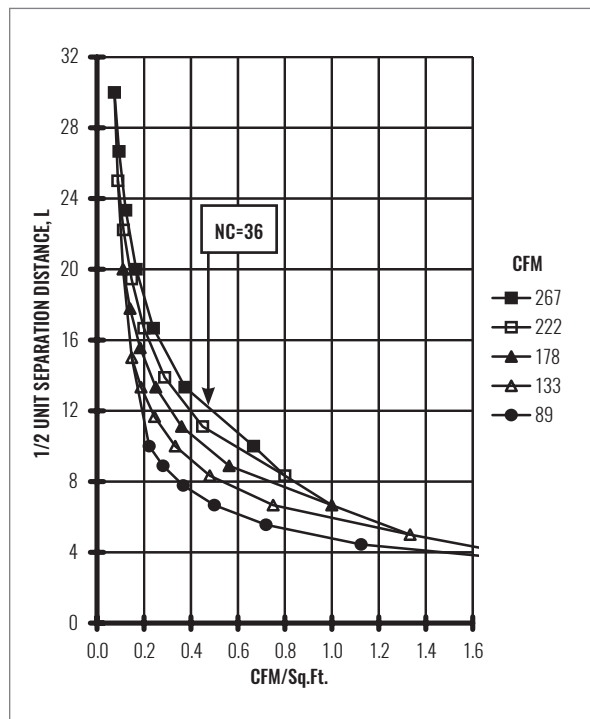
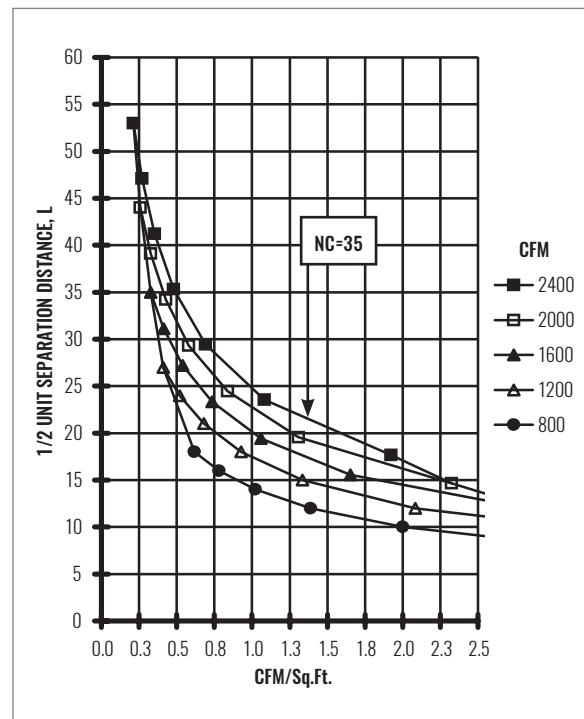


SIDE VIEW, FRAME 23 LAY-IN T-BAR



SIDE VIEW, SQUARE TO ROUND ADAPTER
MODEL 9SRA

NOTE: D imensions in parentheses are millimeters (mm).

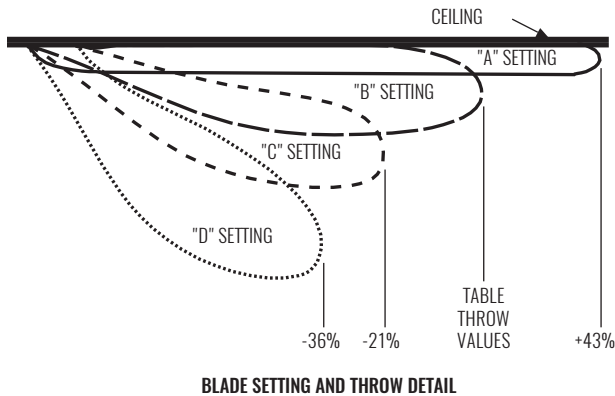
SOUND & ADPI CHARTS | HORIZONTAL THROW**AIRFLOW VS. NC (WITH OBD/MULTILOUVER)**
GRILLE SPACING FOR 80% ADPI:
8"x8" INLET, 4-WAY (WITH OBD/MULTILOUVER)

GRILLE SPACING FOR 80% ADPI:
24"x24" INLET, 4-WAY (WITH OBD/MULTILOUVER)


NOTES: Bottom two charts are at 20 BTUH/ft² loads. See the Engineering section of this catalog for instructions on how to read these charts and additional ADPI information.

PERFORMANCE DATA | IP | SQUARE, WITH OBD/MULTILOUVER

SIZE	NECK VEL	TOTAL PRES	AIR FLOW	SOUND	THROW DIRECTION				OCTAVE BAND, dB						
					1-WAY THROW	2-WAY THROW	3-WAY HROW	4-WAY THROW							
in	fpm	in wg	cfm	NC	ft	ft	ft	ft	2	3	4	5	6	7	
24 x 24	200	0.016	800	-	7 - 13 - 25	6 - 11 - 22	5 - 10 - 19	5 - 9 - 18	-	-	16	14	-	-	
	300	0.037	1200	17	13 - 19 - 38	11 - 17 - 33	10 - 14 - 29	9 - 13 - 27	16	21	27	25	20	15	
	400	0.065	1600	24	17 - 25 - 51	15 - 22 - 44	13 - 19 - 38	12 - 18 - 35	23	28	34	32	27	22	
	500	0.102	2000	30	21 - 32 - 63	18 - 28 - 55	16 - 24 - 48	15 - 22 - 44	29	34	40	38	33	28	
	600	0.146	2400	35	25 - 38 - 76	22 - 33 - 67	19 - 29 - 57	18 - 27 - 53	34	39	45	43	38	33	
	700	0.199	2800	39	30 - 44 - 89	26 - 39 - 78	22 - 33 - 67	21 - 31 - 62	38	43	49	47	42	37	
30 x 30	800	0.260	3200	42	34 - 51 - 101	30 - 44 - 89	25 - 38 - 76	24 - 35 - 71	41	46	52	50	45	40	
	200	0.016	1250	12	7 - 14 - 29	6 - 13 - 25	5 - 11 - 22	5 - 10 - 20	-	-	16	14	-	-	
	300	0.036	1875	23	14 - 22 - 43	13 - 19 - 38	11 - 16 - 32	10 - 15 - 30	16	21	27	25	20	15	
	400	0.063	2500	30	19 - 29 - 57	17 - 25 - 50	14 - 22 - 43	13 - 20 - 40	23	28	34	32	27	22	
	500	0.099	3125	36	24 - 36 - 72	21 - 31 - 63	18 - 27 - 54	17 - 25 - 50	29	34	40	38	33	28	
	600	0.142	3750	40	29 - 43 - 86	25 - 38 - 75	22 - 32 - 65	20 - 30 - 60	34	39	45	43	38	33	
36 x 36	700	0.194	4375	44	34 - 50 - 101	29 - 44 - 88	25 - 38 - 75	23 - 35 - 70	38	43	49	47	42	37	
	800	0.253	5000	48	38 - 57 - 115	34 - 50 - 101	29 - 43 - 86	27 - 40 - 80	41	46	52	50	45	40	
	200	0.016	1800	13	6 - 14 - 32	12 - 18 - 36	10 - 16 - 31	10 - 14 - 29	-	11	17	15	-	-	
	300	0.035	2700	23	14 - 24 - 48	18 - 27 - 54	16 - 23 - 47	14 - 22 - 43	16	21	27	25	20	15	
	400	0.062	3600	31	21 - 32 - 64	24 - 36 - 72	21 - 31 - 62	19 - 29 - 58	23	28	34	32	27	22	
	500	0.097	4500	37	27 - 40 - 80	30 - 45 - 90	26 - 39 - 78	24 - 36 - 72	29	34	40	38	33	28	
36 x 36	600	0.140	5400	41	32 - 48 - 96	36 - 54 - 109	31 - 47 - 93	29 - 43 - 87	34	39	45	43	38	33	
	700	0.191	6300	45	37 - 56 - 111	42 - 63 - 127	36 - 54 - 109	34 - 51 - 101	38	43	49	47	42	37	
	800	0.249	7200	49	42 - 64 - 127	48 - 72 - 145	41 - 62 - 124	39 - 58 - 116	41	46	52	50	45	40	

NOTES: Throw values are given for terminal velocities of 150, 100, and 50 FPM. Throw values are given for isothermal conditions. 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. The throw values given for 1-Way Throw is for [Total CFM] CFM per side. The throw values given for 2-Way Throw is for [Total CFM/2] CFM per side. The throw values given for 3-Way Throw is for [Total CFM/3] CFM per side. The throw values given for 4-Way Throw is for [Total CFM/4] CFM per side. See Krueger's selection software for performance data not shown, including octave band data.



NOTE: Reference page P1-5 for blade setting detail.

CORRECTION FACTOR (WITH OBD)			
BLADE SETTING	THROWS (MULTIPLY)	P _s (MULTIPLY)	NC (ADD)
A	1.43	1.30	+2
B	1.00	1.00	+0
C	0.79	0.72	-3
D	0.64	0.52	-4

CORRECTION FACTOR (WITHOUT OBD)			
BLADE SETTING	THROWS (MULTIPLY)	P _s (MULTIPLY)	NC (ADD)
A	1.43	1.20	+0
B	1.00	0.85	-3
C	0.70	0.61	-4
D	0.64	0.33	-6

PERFORMANCE DATA | IP | RECTANGULAR, WITH OBD/MULTILOUVER

SIZE	NECK VEL	TOTAL PRES	AIR FLOW	SOUND	THROW DIRECTION				OCTAVE BAND, dB						
					1-WAY THROW	2-WAY THROW	3-WAY HROW	4-WAY THROW							
in	fpm	in wg	cfm	NC	ft	ft	ft	ft	2	3	4	5	6	7	
4 x 24	200	0.023	133	-	6 - 8 - 17	5 - 7 - 15	4 - 6 - 13	4 - 6 - 12	-	15	21	19	14	-	
	300	0.052	200	20	8 - 13 - 25	7 - 11 - 22	6 - 9 - 19	6 - 9 - 18	20	25	31	29	24	19	
	400	0.092	267	27	11 - 17 - 34	10 - 15 - 29	8 - 13 - 25	8 - 12 - 23	28	33	39	37	32	27	
	500	0.144	333	33	14 - 21 - 42	12 - 18 - 37	10 - 16 - 31	10 - 15 - 29	33	38	44	42	37	32	
	600	0.208	400	38	17 - 25 - 50	15 - 22 - 44	13 - 19 - 38	12 - 18 - 35	38	43	49	47	42	37	
	700	0.283	467	42	20 - 29 - 59	17 - 26 - 51	15 - 22 - 44	14 - 21 - 41	42	47	53	51	46	41	
6 x 10	800	0.369	533	45	22 - 34 - 65	20 - 29 - 59	17 - 25 - 50	16 - 23 - 47	45	50	56	54	49	44	
	200	0.022	83	-	5 - 7 - 14	4 - 6 - 12	4 - 5 - 11	3 - 5 - 10	-	15	21	19	14	-	
	300	0.049	125	18	7 - 11 - 21	6 - 9 - 19	5 - 8 - 16	5 - 7 - 15	20	25	31	29	24	19	
	400	0.087	167	25	10 - 14 - 29	8 - 12 - 25	7 - 11 - 21	7 - 10 - 20	27	32	38	36	31	26	
	500	0.136	208	31	12 - 18 - 36	10 - 16 - 31	9 - 13 - 27	8 - 12 - 25	33	38	44	42	37	32	
	600	0.197	250	36	14 - 21 - 43	12 - 19 - 37	11 - 16 - 32	10 - 15 - 30	38	43	49	47	42	37	
6 x 12	700	0.267	292	40	17 - 25 - 48	15 - 22 - 44	12 - 19 - 37	12 - 17 - 35	42	47	53	51	46	41	
	800	0.349	333	43	19 - 29 - 52	17 - 25 - 49	14 - 21 - 43	13 - 20 - 39	45	50	56	54	49	44	
	200	0.021	100	-	5 - 7 - 15	4 - 7 - 13	4 - 6 - 11	3 - 5 - 10	-	15	21	19	14	-	
	300	0.048	150	18	7 - 11 - 22	7 - 10 - 20	6 - 8 - 17	5 - 8 - 16	20	25	31	29	24	19	
	400	0.085	200	26	10 - 15 - 30	9 - 13 - 26	7 - 11 - 22	7 - 10 - 21	27	32	38	36	31	26	
	500	0.133	250	31	12 - 19 - 37	11 - 16 - 33	9 - 14 - 28	9 - 13 - 26	33	38	44	42	37	32	
6 x 14	600	0.191	300	36	15 - 22 - 45	13 - 20 - 39	11 - 17 - 34	10 - 16 - 31	38	43	49	47	42	37	
	700	0.260	350	40	17 - 26 - 52	15 - 23 - 46	13 - 20 - 39	12 - 18 - 37	42	47	53	51	46	41	
	800	0.340	400	43	20 - 30 - 57	17 - 26 - 52	15 - 22 - 45	14 - 21 - 42	45	50	56	54	49	44	
	200	0.021	117	-	5 - 8 - 16	5 - 7 - 14	4 - 6 - 12	4 - 5 - 11	-	15	21	19	14	-	
	300	0.047	175	18	8 - 12 - 23	7 - 10 - 20	6 - 9 - 17	5 - 8 - 16	20	25	31	29	24	19	
	400	0.083	233	26	10 - 16 - 31	9 - 14 - 27	8 - 12 - 23	7 - 11 - 22	28	33	39	37	32	27	
6 x 16	500	0.130	292	32	13 - 19 - 39	11 - 17 - 34	10 - 15 - 29	9 - 14 - 27	33	38	44	42	37	32	
	600	0.188	350	36	16 - 23 - 47	14 - 20 - 41	12 - 17 - 35	11 - 16 - 33	38	43	49	47	42	37	
	700	0.256	408	40	18 - 27 - 54	16 - 24 - 48	14 - 20 - 41	13 - 19 - 38	42	47	53	51	46	41	
	800	0.334	467	44	21 - 31 - 61	18 - 27 - 54	16 - 23 - 47	14 - 22 - 43	45	50	56	54	49	44	
	200	0.021	133	-	5 - 8 - 16	5 - 7 - 14	4 - 6 - 12	4 - 6 - 11	-	14	20	18	13	-	
	300	0.046	200	19	8 - 12 - 24	7 - 11 - 21	6 - 9 - 18	6 - 8 - 17	20	25	31	29	24	19	
6 x 18	400	0.082	267	26	11 - 16 - 32	9 - 14 - 28	8 - 12 - 24	8 - 11 - 23	27	32	38	36	31	26	
	500	0.129	333	32	13 - 20 - 40	12 - 18 - 35	10 - 15 - 30	9 - 14 - 28	33	38	44	42	37	32	
	600	0.185	400	37	16 - 24 - 48	14 - 21 - 42	12 - 18 - 36	11 - 17 - 34	38	43	49	47	42	37	
	700	0.252	467	40	19 - 28 - 56	16 - 25 - 49	14 - 21 - 42	13 - 20 - 39	41	46	52	50	45	40	
	800	0.329	533	44	21 - 32 - 64	19 - 28 - 56	16 - 24 - 48	15 - 23 - 45	45	50	56	54	49	44	
	200	0.020	150	-	6 - 8 - 17	5 - 7 - 15	4 - 6 - 12	4 - 6 - 12	-	14	20	18	13	-	
6 x 20	300	0.046	225	19	8 - 12 - 25	7 - 11 - 22	6 - 9 - 19	6 - 9 - 17	20	25	31	29	24	19	
	400	0.081	300	26	11 - 17 - 33	10 - 15 - 29	8 - 12 - 25	8 - 12 - 23	27	32	38	36	31	26	
	500	0.127	375	32	14 - 21 - 42	12 - 18 - 36	10 - 16 - 31	10 - 15 - 29	33	38	44	42	37	32	
	600	0.183	450	37	17 - 25 - 50	15 - 22 - 44	12 - 19 - 37	12 - 17 - 35	38	43	49	47	42	37	
	700	0.249	525	41	19 - 29 - 58	17 - 25 - 51	15 - 22 - 44	14 - 20 - 41	42	47	53	51	46	41	
	800	0.325	600	44	22 - 33 - 66	19 - 29 - 58	17 - 25 - 50	15 - 23 - 46	45	50	56	54	49	44	
6 x 24	200	0.314	167	-	6 - 9 - 17	5 - 7 - 15	4 - 6 - 13	4 - 6 - 12	-	15	21	19	14	-	
	300	0.020	250	19	9 - 13 - 26	7 - 11 - 22	6 - 10 - 19	6 - 9 - 18	20	25	31	29	24	19	
	400	0.046	333	27	11 - 17 - 34	10 - 15 - 30	9 - 13 - 26	8 - 12 - 24	28	33	39	37	32	27	
	500	0.081	417	32	14 - 21 - 43	12 - 19 - 37	11 - 16 - 32	10 - 15 - 30	33	38	44	42	37	32	
	600	0.127	500	37	17 - 26 - 51	15 - 22 - 45	13 - 19 - 38	12 - 18 - 36	38	43	49	47	42	37	
	700	0.183	583	41	20 - 30 - 60	17 - 26 - 52	15 - 22 - 45	14 - 21 - 42	42	47	53	51	46	41	
6 x 24	800	0.249	667	44	23 - 34 - 68	20 - 30 - 60	17 - 26 - 51	16 - 24 - 48	45	50	56	54	49	44	
	200	0.326	200	-	6 - 9 - 18	5 - 8 - 16	4 - 7 - 13	4 - 6 - 13	-	15	21	19	14	-	
	300	0.045	300	20	9 - 13 - 27	8 - 12 - 24	7 - 10 - 20	6 - 9 - 19	21	26	32	30	25	20	
	400	0.080	400	27	12 - 18 - 36	10 - 16 - 31	9 - 13 - 27	8 - 13 - 25	28	33	39	37	32	27	
	500	0.124	500	33	15 - 22 - 45	13 - 20 - 39	11 - 17 - 34	10 - 16 - 31	34	39	45	43	38	33	
	600	0.179	600	37	18 - 27 - 54	16 - 24 - 47	13 - 20 - 40	13 - 19 - 38	38	43	49	47	42	37	
6 x 24	700	0.244	700	41	21 - 31 - 63	18 - 28 - 55	16 - 24 - 47	15 - 22 - 44	42	47	53	51	46	41	
	800	0.319	800	45	24 - 36 - 72	21 - 31 - 63	18 - 27 - 54	17 - 25 - 50	46	51	57	55	50	45	

NOTE: See notes and correction factors on page P1-15.

PERFORMANCE DATA | IP | RECTANGULAR, WITH OBD/MULTILOUVER

SIZE	NECK VEL	TOTAL PRES	AIR FLOW	SOUND	THROW DIRECTION				OCTAVE BAND, dB						
					1-WAY THROW	2-WAY THROW	3-WAY HROW	4-WAY THROW							
					ft	ft	ft	ft	2	3	4	5	6	7	
6 x 30	200	0.020	250	-	6 - 10 - 19	6 - 8 - 17	5 - 7 - 14	4 - 7 - 13	11	16	22	20	15	-	
	300	0.044	375	20	10 - 14 - 29	8 - 13 - 25	7 - 11 - 22	7 - 10 - 20	21	26	32	30	25	20	
	400	0.079	500	27	13 - 19 - 38	11 - 17 - 33	10 - 14 - 29	9 - 13 - 27	28	33	39	37	32	27	
	500	0.123	625	33	16 - 24 - 48	14 - 21 - 42	12 - 18 - 36	11 - 17 - 33	34	39	45	43	38	33	
	600	0.177	750	38	19 - 29 - 57	17 - 25 - 50	14 - 22 - 43	13 - 20 - 40	39	44	50	48	43	38	
	700	0.241	875	42	22 - 33 - 67	20 - 29 - 59	17 - 25 - 50	16 - 23 - 47	43	48	54	52	47	42	
	800	0.314	1000	45	25 - 38 - 76	22 - 33 - 67	19 - 29 - 57	18 - 27 - 54	46	51	57	55	50	45	
8 x 10	200	0.020	111	-	5 - 8 - 15	4 - 7 - 13	4 - 6 - 11	4 - 5 - 11	-	13	19	17	12	-	
	300	0.046	167	18	8 - 11 - 23	7 - 10 - 20	6 - 9 - 17	5 - 8 - 16	19	24	30	28	23	18	
	400	0.081	222	25	10 - 15 - 30	9 - 13 - 27	8 - 11 - 23	7 - 11 - 21	26	31	37	35	30	25	
	500	0.127	278	31	13 - 19 - 38	11 - 17 - 33	9 - 14 - 28	9 - 13 - 27	32	37	43	41	36	31	
	600	0.183	333	36	15 - 23 - 46	13 - 20 - 40	11 - 17 - 34	11 - 16 - 32	37	42	48	46	41	36	
	700	0.249	389	40	18 - 27 - 53	15 - 23 - 46	13 - 20 - 40	12 - 19 - 37	41	46	52	50	45	40	
	800	0.326	444	43	20 - 30 - 60	18 - 27 - 53	15 - 23 - 46	14 - 21 - 42	44	49	55	53	48	43	
8 x 12	200	0.020	133	-	5 - 8 - 16	5 - 7 - 14	4 - 6 - 12	4 - 6 - 11	-	14	20	18	13	-	
	300	0.045	200	18	8 - 12 - 24	7 - 10 - 21	6 - 9 - 18	6 - 8 - 17	19	24	30	28	23	18	
	400	0.079	267	26	11 - 16 - 32	9 - 14 - 28	8 - 12 - 24	7 - 11 - 22	27	32	38	36	31	26	
	500	0.124	333	31	13 - 20 - 40	12 - 17 - 35	10 - 15 - 30	9 - 14 - 28	32	37	43	41	36	31	
	600	0.178	400	36	16 - 24 - 48	14 - 21 - 42	12 - 18 - 36	11 - 17 - 33	37	42	48	46	41	36	
	700	0.243	467	40	19 - 28 - 56	16 - 24 - 49	14 - 21 - 42	13 - 19 - 39	41	46	52	50	45	40	
	800	0.317	533	44	21 - 32 - 64	19 - 28 - 56	16 - 24 - 48	15 - 22 - 44	45	50	56	54	49	44	
8 x 14	200	0.019	156	-	6 - 8 - 17	5 - 7 - 14	4 - 6 - 12	4 - 6 - 12	-	14	20	18	13	-	
	300	0.044	233	18	8 - 12 - 25	7 - 11 - 22	6 - 9 - 19	6 - 9 - 17	19	24	30	28	23	18	
	400	0.078	311	26	11 - 17 - 33	10 - 14 - 29	8 - 12 - 25	8 - 12 - 23	27	32	38	36	31	26	
	500	0.122	389	32	14 - 21 - 41	12 - 18 - 36	10 - 15 - 31	10 - 14 - 29	33	38	44	42	37	32	
	600	0.175	467	36	17 - 25 - 50	14 - 22 - 43	12 - 19 - 37	12 - 17 - 35	37	42	48	46	41	36	
	700	0.238	544	40	19 - 29 - 58	17 - 25 - 51	14 - 22 - 43	13 - 20 - 40	41	46	52	50	45	40	
	800	0.311	622	44	22 - 33 - 66	19 - 29 - 58	17 - 25 - 50	15 - 23 - 46	45	50	56	54	49	44	
8 x 16	200	0.019	178	-	6 - 9 - 17	5 - 7 - 15	4 - 6 - 13	4 - 6 - 12	-	14	20	18	13	-	
	300	0.043	267	19	9 - 13 - 26	7 - 11 - 22	6 - 10 - 19	6 - 9 - 18	20	25	31	29	24	19	
	400	0.077	356	26	11 - 17 - 34	10 - 15 - 30	9 - 13 - 26	8 - 12 - 24	27	32	38	36	31	26	
	500	0.120	444	32	14 - 21 - 43	12 - 19 - 37	11 - 16 - 32	10 - 15 - 30	33	38	44	42	37	32	
	600	0.173	533	37	17 - 26 - 51	15 - 22 - 45	13 - 19 - 39	12 - 18 - 36	38	43	49	47	42	37	
	700	0.235	622	41	20 - 30 - 60	17 - 26 - 52	15 - 22 - 45	14 - 21 - 42	42	47	53	51	46	41	
	800	0.307	711	44	23 - 34 - 68	20 - 30 - 60	17 - 26 - 51	16 - 24 - 48	45	50	56	54	49	44	
8 x 18	200	0.019	200	-	6 - 9 - 18	5 - 8 - 15	4 - 7 - 13	4 - 6 - 12	-	14	20	18	13	-	
	300	0.043	300	19	9 - 13 - 26	8 - 12 - 23	7 - 10 - 20	6 - 9 - 19	20	25	31	29	24	19	
	400	0.076	400	26	12 - 18 - 35	10 - 15 - 31	9 - 13 - 26	8 - 12 - 25	27	32	38	36	31	26	
	500	0.119	500	32	15 - 22 - 44	13 - 19 - 39	11 - 17 - 33	10 - 15 - 31	33	38	44	42	37	32	
	600	0.171	600	37	18 - 26 - 53	15 - 23 - 46	13 - 20 - 40	12 - 19 - 37	38	43	49	47	42	37	
	700	0.232	700	41	21 - 31 - 62	18 - 27 - 54	15 - 23 - 46	14 - 22 - 43	42	47	53	51	46	41	
	800	0.303	800	44	24 - 35 - 71	21 - 31 - 62	18 - 26 - 53	16 - 25 - 49	45	50	56	54	49	44	
8 x 20	200	0.019	222	-	6 - 9 - 18	5 - 8 - 16	5 - 7 - 14	4 - 6 - 13	-	15	21	19	14	-	
	300	0.042	333	19	9 - 14 - 27	8 - 12 - 24	7 - 10 - 20	6 - 10 - 19	20	25	31	29	24	19	
	400	0.075	444	27	12 - 18 - 36	11 - 16 - 32	9 - 14 - 27	8 - 13 - 25	28	33	39	37	32	27	
	500	0.118	556	32	15 - 23 - 45	13 - 20 - 40	11 - 17 - 34	11 - 16 - 32	33	38	44	42	37	32	
	600	0.169	667	37	18 - 27 - 55	16 - 24 - 48	14 - 20 - 41	13 - 19 - 38	38	43	49	47	42	37	
	700	0.230	778	41	21 - 32 - 64	19 - 28 - 56	16 - 24 - 48	15 - 22 - 45	42	47	53	51	46	41	
	800	0.301	889	44	24 - 36 - 73	21 - 32 - 64	18 - 27 - 55	17 - 25 - 51	45	50	56	54	49	44	
8 x 30	200	0.018	333	-	7 - 10 - 20	6 - 9 - 18	5 - 8 - 15	5 - 7 - 14	11	16	22	20	15	-	
	300	0.041	500	20	10 - 15 - 31	9 - 13 - 27	8 - 11 - 23	7 - 11 - 21	21	26	32	30	25	20	
	400	0.073	667	28	14 - 20 - 41	12 - 18 - 36	10 - 15 - 31	9 - 14 - 28	29	34	40	38	33	28	
	500	0.115	833	33	17 - 25 - 51	15 - 22 - 44	13 - 19 - 38	12 - 18 - 36	34	39	45	43	38	33	
	600	0.165	1000	38	20 - 31 - 61	18 - 27 - 53	15 - 23 - 46	14 - 21 - 43	39	44	50	48	43	38	
	700	0.224	1167	42	24 - 36 - 71	21 - 31 - 62	18 - 27 - 53	17 - 25 - 50	43	48	54	52	47	42	
	800	0.293	1333	45	27 - 41 - 81	24 - 36 - 71	20 - 31 - 61	19 - 28 - 57	46	51	57	55	50	45	

NOTE: See notes and correction factors on page P1-15.

PERFORMANCE DATA | IP | RECTANGULAR, WITH OBD/MULTILOUVER

SIZE	NECK VEL	TOTAL PRES	AIR FLOW	SOUND	THROW DIRECTION				OCTAVE BAND, dB						
					1-WAY THROW	2-WAY THROW	3-WAY HROW	4-WAY THROW							
in	fpm	in wg	cfm	NC	ft	ft	ft	ft	2	3	4	5	6	7	
8 x 36	200	0.018	400	-	8-12-23	7-10-20	6-9-17	5-8-16	11	16	22	20	15	-	
	300	0.041	600	21	12-17-35	10-15-30	9-13-26	8-12-24	22	27	33	31	26	21	
	400	0.073	800	28	15-23-46	14-20-41	12-17-35	11-16-32	29	34	40	38	33	28	
	500	0.114	1000	34	19-29-58	17-25-51	15-22-44	14-20-41	35	40	46	44	39	34	
	600	0.164	1200	38	23-35-70	20-30-61	17-26-52	16-24-49	39	44	50	48	43	38	
	700	0.223	1400	42	27-41-81	24-36-71	20-30-61	19-28-57	43	48	54	52	47	42	
10 x 12	800	0.291	1600	46	31-46-93	27-41-81	23-35-70	22-32-65	47	52	58	56	51	46	
	200	0.019	167	-	5-8-16	5-7-14	4-6-12	4-6-11	-	14	20	18	13	-	
	300	0.043	250	18	8-12-24	7-10-21	6-9-18	6-8-17	19	24	30	28	23	18	
	400	0.076	333	26	11-16-32	9-14-28	8-12-24	7-11-22	27	32	38	36	31	26	
	500	0.119	417	32	13-20-40	12-17-35	10-15-30	9-14-28	33	38	44	42	37	32	
	600	0.171	500	36	16-24-48	14-21-42	12-18-36	11-17-34	37	42	48	46	41	36	
10 x 14	700	0.233	583	40	19-28-56	16-24-49	14-21-42	13-20-39	41	46	52	50	45	40	
	800	0.304	667	44	21-32-64	19-28-56	16-24-48	15-22-45	45	50	56	54	49	44	
	200	0.019	194	-	6-9-17	5-7-15	4-6-13	4-6-12	-	14	20	18	13	-	
	300	0.042	292	19	9-13-26	7-11-22	6-10-19	6-9-18	20	25	31	29	24	19	
	400	0.075	389	26	11-17-34	10-15-30	9-13-26	8-12-24	27	32	38	36	31	26	
	500	0.117	486	32	14-21-43	12-19-37	11-16-32	10-15-30	33	38	44	42	37	32	
10 x 16	600	0.168	583	37	17-26-51	15-22-45	13-19-38	12-18-36	38	43	49	47	42	37	
	700	0.229	681	41	20-30-60	17-26-52	15-22-45	14-21-42	42	47	53	51	46	41	
	800	0.299	778	44	23-34-68	20-30-60	17-26-51	16-24-48	45	50	56	54	49	44	
	200	0.018	222	-	6-9-18	5-8-16	4-7-13	4-6-13	-	14	20	18	13	-	
	300	0.041	333	19	9-13-27	8-12-24	7-10-20	6-9-19	20	25	31	29	24	19	
	400	0.074	444	26	12-18-36	10-16-31	9-13-27	8-13-25	27	32	38	36	31	26	
10 x 24	500	0.115	556	32	15-22-45	13-20-39	11-17-34	10-16-31	33	38	44	42	37	32	
	600	0.166	667	37	18-27-54	16-24-47	13-20-40	13-19-38	38	43	49	47	42	37	
	700	0.225	778	41	21-31-63	18-28-55	16-24-47	15-22-44	42	47	53	51	46	41	
	800	0.294	889	44	24-36-72	21-31-63	18-27-54	17-25-50	45	50	56	54	49	44	
	200	0.018	333	-	7-11-21	6-9-19	5-8-16	5-7-15	-	15	21	19	14	-	
	300	0.040	500	20	11-16-32	9-14-28	8-12-24	7-11-22	21	26	32	30	25	20	
10 x 30	400	0.071	667	27	14-21-43	12-19-37	11-16-32	10-15-30	28	33	39	37	32	27	
	500	0.111	833	33	18-27-53	16-23-47	13-20-40	12-19-37	34	39	45	43	38	33	
	600	0.160	1000	38	21-32-64	19-28-56	16-24-48	15-22-45	39	44	50	48	43	38	
	700	0.218	1167	42	25-37-75	22-33-65	19-28-56	17-26-52	43	48	54	52	47	42	
	800	0.285	1333	45	28-43-85	25-37-75	21-32-64	20-30-60	46	51	57	55	50	45	
	200	0.018	417	-	8-12-23	7-10-20	6-9-18	5-8-16	11	16	22	20	15	-	
10 x 36	300	0.040	625	20	12-18-35	10-15-31	9-13-26	8-12-25	21	26	32	30	25	20	
	400	0.070	833	28	16-23-47	14-20-41	12-18-35	11-16-33	29	34	40	38	33	28	
	500	0.110	1042	34	20-29-59	17-26-51	15-22-44	14-20-41	35	40	46	44	39	34	
	600	0.158	1250	38	23-35-70	20-31-61	18-26-53	16-25-49	39	44	50	48	43	38	
	700	0.215	1458	42	27-41-82	24-36-72	20-31-61	19-29-57	43	48	54	52	47	42	
	800	0.281	1667	46	31-47-94	27-41-82	23-35-70	22-33-66	47	52	58	56	51	46	
12 x 14	200	0.017	500	-	8-13-25	7-11-22	6-9-19	6-9-18	11	16	22	20	15	-	
	300	0.039	750	21	13-19-38	11-17-33	9-14-28	9-13-27	22	27	33	31	26	21	
	400	0.070	1000	28	17-25-51	15-22-44	13-19-38	12-18-35	29	34	40	38	33	28	
	500	0.109	1250	34	21-32-63	18-28-55	16-24-47	15-22-44	35	40	46	44	39	34	
	600	0.157	1500	39	25-38-76	22-33-66	19-28-57	18-27-53	40	45	51	49	44	39	
	700	0.214	1750	43	30-44-89	26-39-78	22-33-66	21-31-62	44	49	55	53	48	43	
12 x 16	800	0.279	2000	46	34-51-101	30-44-89	25-38-76	24-35-71	47	52	58	56	51	46	
	200	0.018	233	-	6-9-18	5-8-16	5-7-14	4-6-13	-	14	20	18	13	-	
	300	0.041	350	19	9-14-27	8-12-24	7-10-21	6-10-19	20	25	31	29	24	19	
	400	0.073	467	26	12-18-37	11-16-32	9-14-27	9-13-26	27	32	38	36	31	26	
	500	0.114	583	32	15-23-46	13-20-40	11-17-34	11-16-32	33	38	44	42	37	32	
	600	0.164	700	37	18-27-55	16-24-48	14-21-41	13-19-38	38	43	49	47	42	37	
12 x 18	700	0.223	817	41	21-32-64	19-28-56	16-24-48	15-22-45	42	47	53	51	46	41	
	800	0.291	933	44	24-37-73	21-32-64	18-27-55	17-26-51	45	50	56	54	49	44	

NOTE: See notes and correction factors on page P1-15.

PERFORMANCE DATA | IP | RECTANGULAR, WITH OBD/MULTILOUVER

SIZE	NECK VEL	TOTAL PRES	AIR FLOW	SOUND	THROW DIRECTION				OCTAVE BAND, dB						
					1-WAY THROW	2-WAY THROW	3-WAY HROW	4-WAY THROW							
	in	fpm	in wg	cfm	NC	ft	ft	ft	ft	2	3	4	5	6	7
12" x 20"	200	0.018	333	-		7 - 11 - 21	6 - 9 - 19	5 - 8 - 16	5 - 7 - 15	-	15	21	19	14	-
	300	0.040	500	20		11 - 16 - 32	9 - 14 - 28	8 - 12 - 24	7 - 11 - 22	21	26	32	30	25	20
	400	0.070	667	27		14 - 21 - 42	12 - 19 - 37	11 - 16 - 32	10 - 15 - 30	28	33	39	37	32	27
	500	0.110	833	33		18 - 27 - 53	15 - 23 - 46	13 - 20 - 40	12 - 19 - 37	34	39	45	43	38	33
	600	0.158	1000	38		21 - 32 - 64	19 - 28 - 56	16 - 24 - 48	15 - 22 - 45	39	44	50	48	43	38
	700	0.215	1167	42		25 - 37 - 74	22 - 32 - 65	19 - 28 - 56	17 - 26 - 52	43	48	54	52	47	42
	800	0.281	1333	45		28 - 42 - 85	25 - 37 - 74	21 - 32 - 64	20 - 30 - 59	46	51	57	55	50	45
12" x 24"	200	0.017	400	-		8 - 11 - 23	7 - 10 - 20	6 - 9 - 17	5 - 8 - 16	11	16	22	20	15	-
	300	0.039	600	20		11 - 17 - 34	10 - 15 - 30	9 - 13 - 26	8 - 12 - 24	21	26	32	30	25	20
	400	0.069	800	27		15 - 23 - 46	13 - 20 - 40	11 - 17 - 34	11 - 16 - 32	28	33	39	37	32	27
	500	0.108	1000	33		19 - 29 - 57	17 - 25 - 50	14 - 21 - 43	13 - 20 - 40	34	39	45	43	38	33
	600	0.156	1200	38		23 - 34 - 69	20 - 30 - 60	17 - 26 - 52	16 - 24 - 48	39	44	50	48	43	38
	700	0.212	1400	42		27 - 40 - 80	23 - 35 - 70	20 - 30 - 60	19 - 28 - 56	43	48	54	52	47	42
	800	0.277	1600	45		31 - 46 - 92	27 - 40 - 80	23 - 34 - 69	21 - 32 - 64	46	51	57	55	50	45
12" x 36"	200	0.017	600	11		9 - 14 - 27	8 - 12 - 24	7 - 10 - 20	6 - 10 - 19	12	17	23	21	16	11
	300	0.038	900	21		14 - 20 - 41	12 - 18 - 36	10 - 15 - 31	10 - 14 - 29	22	27	33	31	26	21
	400	0.068	1200	29		18 - 27 - 54	16 - 24 - 48	14 - 20 - 41	13 - 19 - 38	30	35	41	39	34	29
	500	0.106	1500	34		23 - 34 - 68	20 - 30 - 60	17 - 26 - 51	16 - 24 - 48	35	40	46	44	39	34
	600	0.153	1800	39		27 - 41 - 82	24 - 36 - 71	20 - 31 - 61	19 - 29 - 57	40	45	51	49	44	39
	700	0.208	2100	43		32 - 48 - 95	28 - 42 - 83	24 - 36 - 71	22 - 33 - 67	44	49	55	53	48	43
	800	0.272	2400	46		36 - 54 - 109	32 - 48 - 95	27 - 41 - 82	25 - 38 - 76	47	52	58	56	51	46
14" x 18"	200	0.017	350	-		7 - 11 - 22	6 - 9 - 19	5 - 8 - 16	5 - 8 - 15	-	15	21	19	14	-
	300	0.039	525	20		11 - 16 - 32	9 - 14 - 28	8 - 12 - 24	8 - 11 - 23	21	26	32	30	25	20
	400	0.070	700	27		14 - 22 - 43	13 - 19 - 38	11 - 16 - 32	10 - 15 - 30	28	33	39	37	32	27
	500	0.109	875	33		18 - 27 - 54	16 - 24 - 47	14 - 20 - 41	13 - 19 - 38	34	39	45	43	38	33
	600	0.157	1050	38		22 - 32 - 65	19 - 28 - 57	16 - 24 - 49	15 - 23 - 45	39	44	50	48	43	38
	700	0.213	1225	42		25 - 38 - 76	22 - 33 - 66	19 - 28 - 57	18 - 26 - 53	43	48	54	52	47	42
	800	0.278	1400	45		29 - 43 - 86	25 - 38 - 76	22 - 32 - 65	20 - 30 - 61	46	51	57	55	50	45
14" x 24"	200	0.017	467	-		8 - 12 - 24	7 - 11 - 21	6 - 9 - 18	6 - 9 - 17	11	16	22	20	15	-
	300	0.038	700	20		12 - 18 - 37	11 - 16 - 32	9 - 14 - 27	9 - 13 - 26	21	26	32	30	25	20
	400	0.068	933	28		16 - 24 - 49	14 - 21 - 43	12 - 18 - 37	11 - 17 - 34	29	34	40	38	33	28
	500	0.106	1167	34		20 - 30 - 61	18 - 27 - 53	15 - 23 - 46	14 - 21 - 43	35	40	46	44	39	34
	600	0.153	1400	38		24 - 37 - 73	21 - 32 - 64	18 - 27 - 55	17 - 26 - 51	39	44	50	48	43	38
	700	0.208	1633	42		28 - 43 - 85	25 - 37 - 75	21 - 32 - 64	20 - 30 - 60	43	48	54	52	47	42
	800	0.272	1867	46		33 - 49 - 98	28 - 43 - 85	24 - 37 - 73	23 - 34 - 68	47	52	58	56	51	46
14" x 36"	200	0.017	700	11		9 - 14 - 29	8 - 13 - 25	7 - 11 - 22	6 - 10 - 20	12	17	23	21	16	11
	300	0.037	1050	21		14 - 22 - 43	13 - 19 - 38	11 - 16 - 33	10 - 15 - 30	22	27	33	31	26	21
	400	0.067	1400	29		19 - 29 - 58	17 - 25 - 51	14 - 22 - 43	14 - 20 - 41	30	35	41	39	34	29
	500	0.104	1750	35		24 - 36 - 72	21 - 32 - 63	18 - 27 - 54	17 - 25 - 51	36	41	47	45	40	35
	600	0.150	2100	39		29 - 43 - 87	25 - 38 - 76	22 - 33 - 65	20 - 30 - 61	40	45	51	49	44	39
	700	0.204	2450	43		34 - 51 - 101	30 - 44 - 89	25 - 38 - 76	24 - 35 - 71	44	49	55	53	48	43
	800	0.267	2800	47		39 - 58 - 116	34 - 51 - 101	29 - 43 - 87	27 - 41 - 81	48	53	59	57	52	47
16" x 18"	200	0.017	400	-		8 - 11 - 23	7 - 10 - 20	6 - 9 - 17	5 - 8 - 16	-	15	21	19	14	-
	300	0.039	600	20		11 - 17 - 34	10 - 15 - 30	9 - 13 - 26	8 - 12 - 24	21	26	32	30	25	20
	400	0.069	800	27		15 - 23 - 46	13 - 20 - 40	11 - 17 - 34	11 - 16 - 32	28	33	39	37	32	27
	500	0.107	1000	33		19 - 29 - 57	17 - 25 - 50	14 - 21 - 43	13 - 20 - 40	34	39	45	43	38	33
	600	0.154	1200	38		23 - 34 - 69	20 - 30 - 60	17 - 26 - 51	16 - 24 - 48	39	44	50	48	43	38
	700	0.210	1400	42		27 - 40 - 80	23 - 35 - 70	20 - 30 - 60	19 - 28 - 56	43	48	54	52	47	42
	800	0.274	1600	45		30 - 46 - 91	27 - 40 - 80	23 - 34 - 69	21 - 32 - 64	46	51	57	55	50	45
16" x 20"	200	0.017	444	-		8 - 12 - 24	7 - 10 - 21	6 - 9 - 18	6 - 8 - 17	11	16	22	20	15	-
	300	0.038	667	20		12 - 18 - 36	10 - 16 - 31	9 - 13 - 27	8 - 13 - 25	21	26	32	30	25	20
	400	0.068	889	28		16 - 24 - 48	14 - 21 - 42	12 - 18 - 36	11 - 17 - 33	29	34	40	38	33	28
	500	0.106	1111	33		20 - 30 - 60	17 - 26 - 52	15 - 22 - 45	14 - 21 - 42	34	39	45	43	38	33
	600	0.153	1333	38		24 - 36 - 72	21 - 31 - 63	18 - 27 - 54	17 - 25 - 50	39	44	50	48	43	38
	700	0.208	1556	42		28 - 42 - 84	24 - 37 - 73	21 - 31 - 63	19 - 29 - 58	43	48	54	52	47	42
	800	0.272	1778	45		32 - 48 - 95	28 - 42 - 84	24 - 36 - 72	22 - 33 - 67	46	51	57	55	50	45

NOTE: See notes and correction factors on page P1-15.

PERFORMANCE DATA | IP | RECTANGULAR, WITH OBD/MULTILOUVER

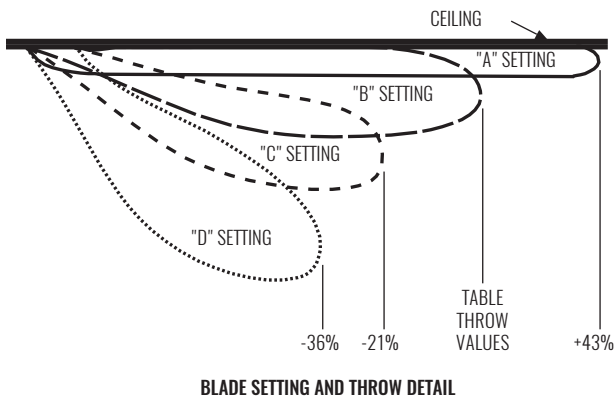
SIZE	NECK VEL	TOTAL PRES	AIR FLOW	SOUND	THROW DIRECTION				OCTAVE BAND, dB						
					1-WAY THROW	2-WAY THROW	3-WAY HROW	4-WAY THROW							
in	fpm	in wg	cfm	NC	ft	ft	ft	ft	2	3	4	5	6	7	
16" x 24"	200	0.017	533	-	9-13-26	8-11-23	6-10-19	6-9-18	11	16	22	20	15	-	
	300	0.038	800	21	13-19-39	11-17-34	10-14-29	9-14-27	22	27	33	31	26	21	
	400	0.067	1067	28	17-26-52	15-23-45	13-19-39	12-18-36	29	34	40	38	33	28	
	500	0.105	1333	34	21-32-64	19-28-56	16-24-48	15-23-45	35	40	46	44	39	34	
	600	0.151	1600	38	26-39-77	23-34-68	19-29-58	18-27-54	39	44	50	48	43	38	
	700	0.206	1867	42	30-45-90	26-39-79	23-34-68	21-32-63	43	48	54	52	47	42	
16" x 30"	800	0.268	2133	46	34-52-103	30-45-90	26-39-77	24-36-72	47	52	58	56	51	46	
	200	0.066	667	11	9-14-28	8-12-25	6-11-21	6-10-20	12	17	23	21	16	11	
	300	0.037	1000	21	14-21-42	12-19-37	11-16-32	10-15-30	22	27	33	31	26	21	
	400	0.066	1333	29	19-28-57	17-25-50	14-21-42	13-20-40	30	35	41	39	34	29	
	500	0.104	1667	34	24-35-71	21-31-62	18-27-53	17-25-50	35	40	46	44	39	34	
	600	0.149	2000	39	28-42-85	25-37-74	21-32-64	20-30-59	40	45	51	49	44	39	
16" x 36"	700	0.203	2333	43	33-50-99	29-43-87	25-37-74	23-35-69	44	49	55	53	48	43	
	800	0.265	2667	46	38-57-113	33-50-99	28-42-85	26-40-79	47	52	58	56	51	46	
	200	0.016	800	11	9-15-31	8-13-27	6-11-23	6-11-21	12	17	23	21	16	11	
	300	0.037	1200	22	15-23-46	13-20-40	11-17-34	11-16-32	23	28	34	32	27	22	
	400	0.066	1600	29	20-31-61	18-27-54	15-23-46	14-21-43	30	35	41	39	34	29	
	500	0.103	2000	35	26-38-77	22-33-67	19-29-57	18-27-54	36	41	47	45	40	35	
18" x 20"	600	0.148	2400	39	31-46-92	27-40-80	23-34-69	21-32-64	40	45	51	49	44	39	
	700	0.201	2800	43	36-54-107	31-47-94	27-40-80	25-37-75	44	49	55	53	48	43	
	800	0.263	3200	47	41-61-122	36-54-107	31-46-92	29-43-86	48	53	59	57	52	47	
	200	0.017	500	-	8-13-25	7-11-22	6-9-19	6-9-18	11	16	22	20	15	-	
	300	0.038	750	20	13-19-38	11-16-33	9-14-28	9-13-26	21	26	32	30	25	20	
	400	0.067	1000	28	17-25-50	15-22-44	13-19-38	12-18-35	29	34	40	38	33	28	
18" x 24"	500	0.105	1250	34	21-31-63	18-27-55	16-23-47	15-22-44	35	40	46	44	39	34	
	600	0.151	1500	38	25-38-75	22-33-66	19-28-56	18-26-53	39	44	50	48	43	38	
	700	0.206	1750	42	29-44-88	26-38-77	22-33-66	20-31-61	43	48	54	52	47	42	
	800	0.269	2000	46	33-50-100	29-44-88	25-38-75	23-35-70	47	52	58	56	51	46	
	200	0.017	600	-	9-14-27	8-12-24	6-10-20	6-9-19	11	16	22	20	15	-	
	300	0.037	900	21	14-20-41	12-18-35	10-15-30	9-14-28	22	27	33	31	26	21	
18" x 36"	400	0.066	1200	28	18-27-54	16-24-47	14-20-41	13-19-38	29	34	40	38	33	28	
	500	0.104	1500	34	23-34-68	20-30-59	17-25-51	16-24-47	35	40	46	44	39	34	
	600	0.149	1800	39	27-41-81	24-35-71	20-30-61	19-28-57	40	45	51	49	44	39	
	700	0.203	2100	43	32-47-95	28-41-83	24-35-71	22-33-66	44	49	55	53	48	43	
	800	0.266	2400	46	36-54-108	32-47-95	27-41-81	25-38-76	47	52	58	56	51	46	
	200	0.016	900	11	9-16-32	7-14-28	6-12-24	6-11-22	12	17	23	21	16	11	
20" x 24"	300	0.037	1350	22	16-24-48	14-21-42	12-18-36	11-17-34	23	28	34	32	27	22	
	400	0.065	1800	29	21-32-64	19-28-56	16-24-48	15-22-45	30	35	41	39	34	29	
	500	0.102	2250	35	27-40-80	23-35-70	20-30-60	19-28-56	36	41	47	45	40	35	
	600	0.146	2700	40	32-48-96	28-42-84	24-36-72	22-34-67	41	46	52	50	45	40	
	700	0.199	3150	44	37-56-112	33-49-98	28-42-84	26-39-79	45	50	56	54	49	44	
	800	0.260	3600	47	43-64-129	37-56-112	32-48-96	30-45-90	48	53	59	57	52	47	
20" x 36"	200	0.016	667	11	9-14-28	7-12-25	6-11-21	6-10-20	12	17	23	21	16	11	
	300	0.037	1000	21	14-21-42	12-19-37	11-16-32	10-15-30	22	27	33	31	26	21	
	400	0.066	1333	28	19-28-57	16-25-49	14-21-42	13-20-40	29	34	40	38	33	28	
	500	0.103	1667	34	24-35-71	21-31-62	18-26-53	16-25-49	35	40	46	44	39	34	
	600	0.148	2000	39	28-42-85	25-37-74	21-32-64	20-30-59	40	45	51	49	44	39	
	700	0.202	2333	43	33-49-99	29-43-87	25-37-74	23-35-69	44	49	55	53	48	43	
20" x 36"	800	0.263	2667	46	38-57-113	33-49-99	28-42-85	26-40-79	47	52	58	56	51	46	
	200	0.016	1000	12	9-17-34	7-15-29	6-13-25	6-12-24	13	18	24	22	17	12	
	300	0.036	1500	22	17-25-50	15-22-44	13-19-38	12-18-35	23	28	34	32	27	22	
	400	0.064	2000	29	22-34-67	20-29-59	17-25-50	16-24-47	30	35	41	39	34	29	
	500	0.101	2500	35	28-42-84	24-37-73	21-31-63	20-29-59	36	41	47	45	40	35	
	600	0.145	3000	40	34-50-101	29-44-88	25-38-76	24-35-71	41	46	52	50	45	40	
20" x 36"	700	0.197	3500	44	39-59-118	34-51-103	29-44-88	27-41-82	45	50	56	54	49	44	
	800	0.258	4000	47	45-67-134	39-59-118	34-50-101	31-47-94	48	53	59	57	52	47	

NOTE: See notes and correction factors on page P1-15.

PERFORMANCE DATA | IP | RECTANGULAR, WITH OBD/MULTILOUVER

SIZE	NECK VEL	TOTAL PRES	AIR FLOW	SOUND	THROW DIRECTION				OCTAVE BAND, dB						
					1-WAY THROW	2-WAY THROW	3-WAY HROW	4-WAY THROW							
in	fpm	in wg	cfm	NC	ft	ft	ft	ft	2	3	4	5	6	7	
24" x 30"	200	0.016	1000	12	8 - 17 - 34	7 - 15 - 29	6 - 13 - 25	6 - 12 - 23	13	18	24	22	17	12	
	300	0.036	1500	22	17 - 25 - 50	15 - 22 - 44	13 - 19 - 38	12 - 18 - 35	23	28	34	32	27	22	
	400	0.064	2000	29	22 - 34 - 67	20 - 29 - 59	17 - 25 - 50	16 - 23 - 47	30	35	41	39	34	29	
	500	0.100	2500	35	28 - 42 - 84	24 - 37 - 73	21 - 31 - 63	20 - 29 - 59	36	41	47	45	40	35	
	600	0.144	3000	40	34 - 50 - 101	29 - 44 - 88	25 - 38 - 75	23 - 35 - 70	41	46	52	50	45	40	
	700	0.196	3500	44	39 - 59 - 117	34 - 51 - 103	29 - 44 - 88	27 - 41 - 82	45	50	56	54	49	44	
	800	0.257	4000	47	45 - 67 - 134	39 - 59 - 117	34 - 50 - 101	31 - 47 - 94	48	53	59	57	52	47	
24" x 36"	200	0.016	1200	12	8 - 18 - 36	7 - 16 - 32	6 - 14 - 27	6 - 13 - 25	13	18	24	22	17	12	
	300	0.036	1800	22	18 - 27 - 54	16 - 24 - 48	14 - 20 - 41	13 - 19 - 38	23	28	34	32	27	22	
	400	0.064	2400	30	24 - 36 - 73	21 - 32 - 63	18 - 27 - 54	17 - 25 - 51	31	36	42	40	35	30	
	500	0.099	3000	36	30 - 45 - 91	26 - 40 - 79	23 - 34 - 68	21 - 32 - 63	37	42	48	46	41	36	
	600	0.143	3600	40	36 - 54 - 109	32 - 48 - 95	27 - 41 - 82	25 - 38 - 76	41	46	52	50	45	40	
	700	0.195	4200	44	42 - 63 - 127	37 - 56 - 111	32 - 48 - 95	30 - 44 - 89	45	50	56	54	49	44	
	800	0.254	4800	48	48 - 73 - 145	42 - 63 - 127	36 - 54 - 109	34 - 51 - 102	49	54	60	58	53	48	
30" x 36"	200	0.016	1500	13	8 - 19 - 40	7 - 17 - 35	6 - 14 - 30	6 - 13 - 28	14	19	25	23	18	13	
	300	0.035	2250	23	19 - 30 - 60	17 - 26 - 52	14 - 22 - 45	13 - 21 - 42	24	29	35	33	28	23	
	400	0.063	3000	30	27 - 40 - 80	23 - 35 - 70	20 - 30 - 60	19 - 28 - 56	31	36	42	40	35	30	
	500	0.098	3750	36	33 - 50 - 100	29 - 44 - 87	25 - 37 - 75	23 - 35 - 70	37	42	48	46	41	36	
	600	0.141	4500	41	40 - 60 - 120	35 - 52 - 105	30 - 45 - 90	28 - 42 - 84	42	47	53	51	46	41	
	700	0.192	5250	45	46 - 70 - 139	41 - 61 - 122	35 - 52 - 105	33 - 49 - 98	46	51	57	55	50	45	
	800	0.251	6000	48	53 - 80 - 159	46 - 70 - 139	40 - 60 - 120	37 - 56 - 112	49	54	60	58	53	48	

NOTES: Throw values are given for terminal velocities of 150, 100, and 50 FPM. Throw values are given for isothermal conditions. 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. The throw values given for 1-Way Throw is for [Total CFM] CFM per side. The throw values given for 2-Way Throw is for [Total CFM/2] CFM per side. The throw values given for 3-Way Throw is for [Total CFM/3] CFM per side. The throw values given for 4-Way Throw is for [Total CFM/4] CFM per side. See Krueger's selection software for performance data not shown, including octave band data.



BLADE SETTING AND THROW DETAIL

NOTE: Reference page P1-5 for blade setting detail.

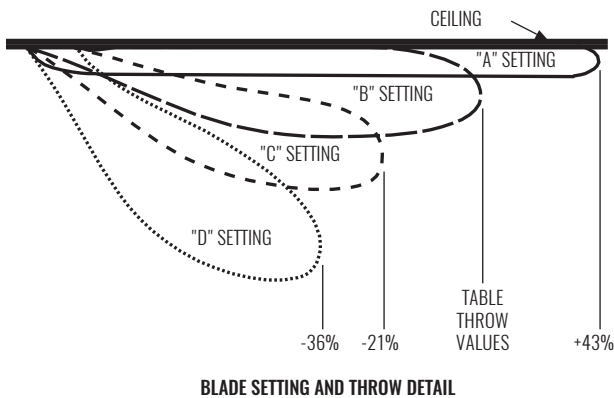
CORRECTION FACTOR (WITH OBD)			
BLADE SETTING	THROWS (MULTIPLY)	PS (MULTIPLY)	NC (ADD)
A	1.43	1.30	+2
B	1.00	1.00	+0
C	0.79	0.72	-3
D	0.64	0.52	-4

CORRECTION FACTOR (WITHOUT OBD)			
BLADE SETTING	THROWS (MULTIPLY)	PS (MULTIPLY)	NC (ADD)
A	1.43	1.20	+0
B	1.00	0.85	-3
C	0.70	0.61	-4
D	0.64	0.33	-6

PERFORMANCE DATA | METRIC | SQUARE, WITH OBD/MULTILOUVER

SIZE	NECK VEL	TOTAL PRES	AIR FLOW	SOUND	THROW DIRECTION				OCTAVE BAND, dB						
					1-WAY THROW	2-WAY THROW	3-WAY HROW	4-WAY THROW							
					m	m	m	m	2	3	4	5	6	7	
610 x 610	1.02	4.0	378	-	2.2 - 3.9 - 7.7	1.9 - 3.4 - 6.7	1.6 - 2.9 - 5.8	1.5 - 2.7 - 5.4	-	-	16	14	-	-	
	1.52	9.1	566	17	3.9 - 5.8 - 11.6	3.4 - 5.1 - 10.1	2.9 - 4.3 - 8.7	2.7 - 4.0 - 8.1	16	21	27	25	20	15	
	2.03	16.2	755	24	5.1 - 7.7 - 15.4	4.5 - 6.7 - 13.5	3.9 - 5.8 - 11.6	3.6 - 5.4 - 10.8	23	28	34	32	27	22	
	2.54	25.3	944	30	6.4 - 9.6 - 19.3	5.6 - 8.4 - 16.9	4.8 - 7.2 - 14.5	4.5 - 6.7 - 13.5	29	34	40	38	33	28	
	3.05	36.4	1133	35	7.7 - 11.6 - 23.1	6.7 - 10.1 - 20.2	5.8 - 8.7 - 17.3	5.4 - 8.1 - 16.2	34	39	45	43	38	33	
	3.56	49.5	1321	39	9.0 - 13.5 - 27.0	7.9 - 11.8 - 23.6	6.7 - 10.1 - 20.2	6.3 - 9.4 - 18.9	38	43	49	47	42	37	
	4.06	64.7	1510	42	10.3 - 15.4 - 30.8	9.0 - 13.5 - 27.0	7.7 - 11.6 - 23.1	7.2 - 10.8 - 21.6	41	46	52	50	45	40	
762 x 762	1.02	3.9	590	12	2.0 - 4.4 - 8.7	1.8 - 3.8 - 7.6	1.5 - 3.3 - 6.5	1.4 - 3.1 - 6.1	-	-	16	14	-	-	
	1.52	8.9	885	23	4.4 - 6.5 - 13.1	3.8 - 5.7 - 11.5	3.3 - 4.9 - 9.8	3.1 - 4.6 - 9.2	16	21	27	25	20	15	
	2.03	15.8	1180	30	5.8 - 8.7 - 17.5	5.1 - 7.6 - 15.3	4.4 - 6.5 - 13.1	4.1 - 6.1 - 12.2	23	28	34	32	27	22	
	2.54	24.6	1475	36	7.3 - 10.9 - 21.8	6.4 - 9.6 - 19.1	5.5 - 8.2 - 16.4	5.1 - 7.6 - 15.3	29	34	40	38	33	28	
	3.05	35.5	1770	40	8.7 - 13.1 - 26.2	7.6 - 11.5 - 22.9	6.5 - 9.8 - 19.6	6.1 - 9.2 - 18.3	34	39	45	43	38	33	
	3.56	48.3	2065	44	10.2 - 15.3 - 30.6	8.9 - 13.4 - 26.7	7.6 - 11.5 - 22.9	7.1 - 10.7 - 21.4	38	43	49	47	42	37	
	4.06	63.1	2360	48	11.6 - 17.5 - 34.9	10.2 - 15.3 - 30.6	8.7 - 13.1 - 26.2	8.2 - 12.2 - 24.5	41	46	52	50	45	40	
914 x 914	1.02	3.9	850	13	1.9 - 4.3 - 9.7	3.6 - 5.5 - 11.0	3.1 - 4.7 - 9.4	2.9 - 4.4 - 8.8	-	11	17	15	-	-	
	1.52	8.7	1274	23	4.3 - 7.3 - 14.5	5.5 - 8.3 - 16.5	4.7 - 7.1 - 14.1	4.4 - 6.6 - 13.2	16	21	27	25	20	15	
	2.03	15.5	1699	31	6.5 - 9.7 - 19.4	7.3 - 11.0 - 22.0	6.3 - 9.4 - 18.9	5.9 - 8.8 - 17.6	23	28	34	32	27	22	
	2.54	24.2	2124	37	8.1 - 12.1 - 24.2	9.2 - 13.8 - 27.5	7.9 - 11.8 - 23.6	7.3 - 11.0 - 22.0	29	34	40	38	33	28	
	3.05	34.9	2549	41	9.7 - 14.5 - 29.1	11.0 - 16.5 - 33.0	9.4 - 14.1 - 28.3	8.8 - 13.2 - 26.4	34	39	45	43	38	33	
	3.56	47.5	2973	45	11.3 - 16.9 - 33.9	12.8 - 19.3 - 38.5	11.0 - 16.5 - 33.0	10.3 - 15.4 - 30.8	38	43	49	47	42	37	
	4.06	62.0	3398	49	12.9 - 19.4 - 38.7	14.7 - 22.0 - 44.0	12.6 - 18.9 - 37.7	11.7 - 17.6 - 35.2	41	46	52	50	45	40	

NOTES: Throw values are given for terminal velocities of 0.75, 0.50, and 0.25 m/s. Throw values are given for isothermal conditions. 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. The throw values given for 1-Way Throw is for [Total L/s] L/s per side. The throw values given for 2-Way Throw is for [(Total L/s)/2] L/s per side. The throw values given for 3-Way Throw is for [(Total L/s)/3] L/s per side. The throw values given for 4-Way Throw is for [(Total L/s)/4] L/s per side. See Krueger's selection software for performance data not shown, including octave band data.



NOTE: Reference page P1-5 for blade setting detail.

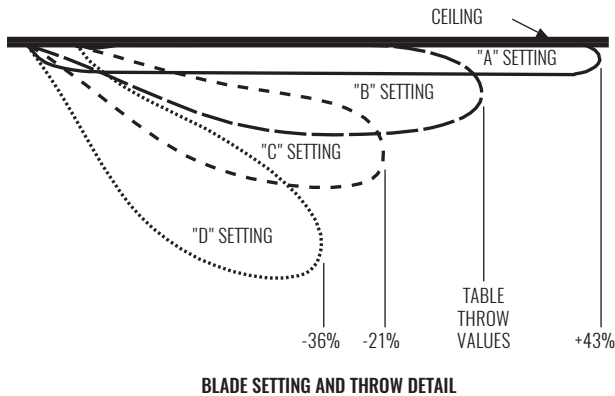
CORRECTION FACTOR (WITH OBD)			
BLADE SETTING	THROWS (MULTIPLY)	Ps (MULTIPLY)	NC (ADD)
A	1.43	1.30	+2
B	1.00	1.00	+0
C	0.79	0.72	-3
D	0.64	0.52	-4

CORRECTION FACTOR (WITHOUT OBD)			
BLADE SETTING	THROWS (MULTIPLY)	Ps (MULTIPLY)	NC (ADD)
A	1.43	1.20	+0
B	1.00	0.85	-3
C	0.70	0.61	-4
D	0.64	0.33	-6

PERFORMANCE DATA | METRIC | RECTANGULAR, WITH OBD/MULTILOUVER

SIZE	NECK VEL	TOTAL PRES	AIR FLOW	SOUND	THROW DIRECTION				OCTAVE BAND, dB						
					1-WAY THROW	2-WAY THROW	3-WAY HROW	4-WAY THROW							
cm	m/s	Pa	L/s	NC	m	m	m	m	2	3	4	5	6	7	
610 x 762	1.016	4.0	472	12	2.6 - 5.1 - 10.2	2.3 - 4.5 - 8.9	1.9 - 3.8 - 7.6	1.8 - 3.6 - 7.1	13	18	24	22	17	12	
	1.524	9.0	708	22	5.1 - 7.6 - 15.3	4.5 - 6.7 - 13.4	3.8 - 5.7 - 11.5	3.6 - 5.4 - 10.7	23	28	34	32	27	22	
	2.032	16.0	944	29	6.8 - 10.2 - 20.4	5.9 - 8.9 - 17.8	5.1 - 7.6 - 15.3	4.8 - 7.1 - 14.3	30	35	41	39	34	29	
	2.54	25.0	1180	35	8.5 - 12.7 - 25.5	7.4 - 11.2 - 22.3	6.4 - 9.6 - 19.1	5.9 - 8.9 - 17.8	36	41	47	45	40	35	
	3.048	35.9	1416	40	10.2 - 15.3 - 30.6	8.9 - 13.4 - 26.8	7.6 - 11.5 - 22.9	7.1 - 10.7 - 21.4	41	46	52	50	45	40	
	3.556	48.9	1652	44	11.9 - 17.8 - 35.7	10.4 - 15.6 - 31.2	8.9 - 13.4 - 26.8	8.3 - 12.5 - 25.0	45	50	56	54	49	44	
	4.064	63.9	1888	47	13.6 - 20.4 - 40.8	11.9 - 17.8 - 35.7	10.2 - 15.3 - 30.6	9.5 - 14.3 - 28.5	48	53	59	57	52	47	
610 x 914	1.016	4.0	566	12	2.6 - 5.5 - 11.0	2.3 - 4.8 - 9.6	1.9 - 4.1 - 8.3	1.8 - 3.9 - 7.7	13	18	24	22	17	12	
	1.524	8.9	850	22	5.5 - 8.3 - 16.5	4.8 - 7.2 - 14.5	4.1 - 6.2 - 12.4	3.9 - 5.8 - 11.6	23	28	34	32	27	22	
	2.032	15.8	1133	30	7.3 - 11.0 - 22.0	6.4 - 9.6 - 19.3	5.5 - 8.3 - 16.5	5.1 - 7.7 - 15.4	31	36	42	40	35	30	
	2.54	24.7	1416	36	9.2 - 13.8 - 27.6	8.0 - 12.1 - 24.1	6.9 - 10.3 - 20.7	6.4 - 9.6 - 19.3	37	42	48	46	41	36	
	3.048	35.6	1699	40	11.0 - 16.5 - 33.1	9.6 - 14.5 - 28.9	8.3 - 12.4 - 24.8	7.7 - 11.6 - 23.1	41	46	52	50	45	40	
	3.556	48.5	1982	44	12.9 - 19.3 - 38.6	11.3 - 16.9 - 33.8	9.6 - 14.5 - 28.9	9.0 - 13.5 - 27.0	45	50	56	54	49	44	
	4.064	63.3	2265	48	14.7 - 22.0 - 44.1	12.9 - 19.3 - 38.6	11.0 - 16.5 - 33.1	10.3 - 15.4 - 30.9	49	54	60	58	53	48	
762 x 914	1.016	3.9	708	13	2.6 - 5.8 - 12.1	2.2 - 5.1 - 10.6	1.9 - 4.3 - 9.1	1.8 - 4.0 - 8.5	14	19	25	23	18	13	
	1.524	8.8	1062	23	5.8 - 9.1 - 18.2	5.1 - 8.0 - 15.9	4.3 - 6.8 - 13.6	4.0 - 6.4 - 12.7	24	29	35	33	28	23	
	2.032	15.6	1416	30	8.1 - 12.1 - 24.2	7.1 - 10.6 - 21.2	6.1 - 9.1 - 18.2	5.7 - 8.5 - 17.0	31	36	42	40	35	30	
	2.54	24.4	1770	36	10.1 - 15.1 - 30.3	8.8 - 13.3 - 26.5	7.6 - 11.4 - 22.7	7.1 - 10.6 - 21.2	37	42	48	46	41	36	
	3.048	35.2	2124	41	12.1 - 18.2 - 36.3	10.6 - 15.9 - 31.8	9.1 - 13.6 - 27.3	8.5 - 12.7 - 25.4	42	47	53	51	46	41	
	3.556	47.9	2478	45	14.1 - 21.2 - 42.4	12.4 - 18.6 - 37.1	10.6 - 15.9 - 31.8	9.9 - 14.8 - 29.7	46	51	57	55	50	45	
	4.064	62.5	2832	48	16.2 - 24.2 - 48.5	14.1 - 21.2 - 42.4	12.1 - 18.2 - 36.3	11.3 - 17.0 - 33.9	49	54	60	58	53	48	

NOTES: Throw values are given for terminal velocities of 0.75, 0.50, and 0.25 m/s. Throw values are given for isothermal conditions. 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. The throw values given for 1-Way Throw is for [Total L/s] L/s per side. The throw values given for 2-Way Throw is for [(Total L/s)/2] L/s per side. The throw values given for 3-Way Throw is for [(Total L/s)/3] L/s per side. The throw values given for 4-Way Throw is for [(Total L/s)/4] L/s per side. See Krueger's selection software for performance data not shown, including octave band data.



NOTE: Reference page P1-5 for blade setting detail.

CORRECTION FACTOR (WITH OBD)			
BLADE SETTING	THROWS (MULTIPLY)	Ps (MULTIPLY)	NC (ADD)
A	1.43	1.30	+2
B	1.00	1.00	+0
C	0.79	0.72	-3
D	0.64	0.52	-4

CORRECTION FACTOR (WITHOUT OBD)			
BLADE SETTING	THROWS (MULTIPLY)	Ps (MULTIPLY)	NC (ADD)
A	1.43	1.20	+0
B	1.00	0.85	-3
C	0.70	0.61	-4
D	0.64	0.33	-6

ENGINEERING SPECIFICATION & CONFIGURATION

9180

The supply grille shall be a Krueger model 9180. This grille must have curved deflectors made of 20 gage 304 stainless steel that are individually adjustable from the face allowing the volume and discharge angle of air to be adjusted. The grille shall be built in 1, 2, 3 and 4-way blow patterns. The frame of the grille must be constructed of 20 gage 304 stainless steel with countersunk screw holes (#6x1 1/4" stainless sheet metal screws provided by manufacturer). This frame must also produce a border of 1-3/8" around all sides of the grille with mitered corners. Optional 304 stainless steel damper available made of 20 gage stainless steel welded to the supply grille and operable from the face.

Optional 316 stainless steel construction available.

FINISH

The finish shall be 90 - #4 Satin Polish, obtained by finishing with a 120-grit abrasive, or 44 - British White.

1. SERIES: (XXXX)

9180 - Curved Blade Supply Grille

2. PATTERN: (XX)

01 - 1-Way
02 - 2-Way
03 - 3-Way
04 - 4-Way

3. WIDTH: (XX)

4" - 48" in 2" Increments

4. HEIGHT: (XX)

4" - 48" in 2" Increments

5. MATERIAL: (XXX)

304 - Stainless Steel Grade 304
316 - Stainless Steel Grade 316

6. FRAME STYLE: (XXX)

F22 - Surface Mount
F23 - Lay-in T-Bar

7. PANEL: (XX)x(XX)

None
24"x24" *
24"x48" *

8. FASTENING METHOD: (XX)

00 - No Screw Holes
01 - Countersunk Screw Holes **

9. DAMPER: (XX)

00 - No Damper
01 - Stainless Steel OBD †

10. ACCESSORIES: (XX) (XX)

00 - No Accessories
01 - Plaster Frame
XX - Square to Round Adapter ‡
(Specify size from 04 - 18" in increments of 2", depending on neck size)

11. FINISH: (XX)

90 - #4 Satin Polish
44 - British White

* Only available with Frame 23.

** Unit shipped with #6x1 1/4" stainless steel sheet metal screws.

† Damper is welded to unit.

‡ Square to Round Adapter is not available with OBD.

SAMPLE CONFIGURATION: 9180 - 04 - 20x20 - 304 - F22 - NONE - 01 - 00 - 00 - 90



INTRODUCTION

The 980 series stainless steel single-adjustable grilles allow air spread to be set left and right or up and down for economical versatility. These grilles feature $\frac{3}{4}$ " on center blade spacing and are available for surface mount or lay-in T-bar applications.

MODEL

980 - Single Deflection Supply Grille

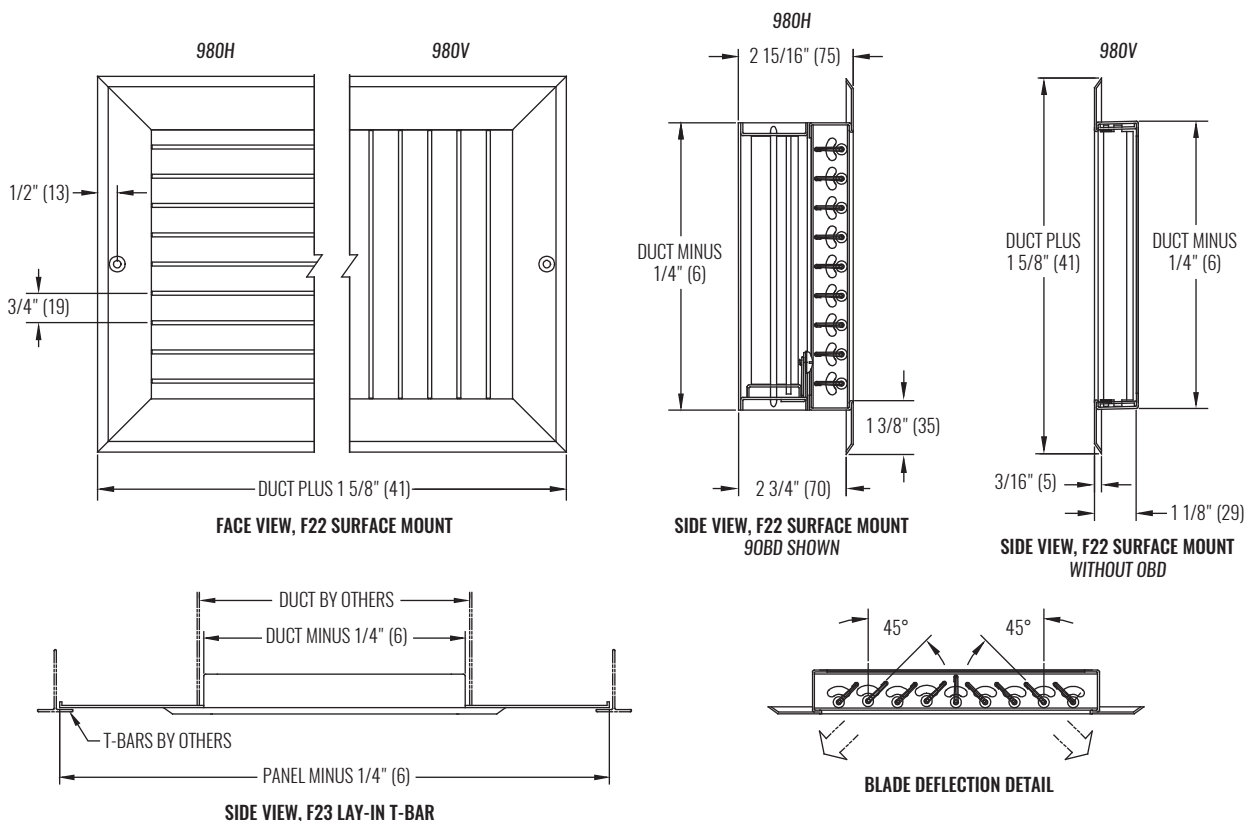
FEATURES

- 304 Stainless steel construction (316 optional)
- Sturdy deflection blades spaced on $\frac{3}{4}$ " centers
- Adjustable blades
- Countersunk screw holes in mounting frame
- Horizontal or vertical blades (H or V)
- Standard finish is 90 - #4 Satin Polish or 44 - British White

ACCESSORIES

- Stainless steel OBD welded to unit, adjustable from face of grille (model 90BD)
- Plaster frame (model 98PF)
- Square to round adapter (model 9SRA)

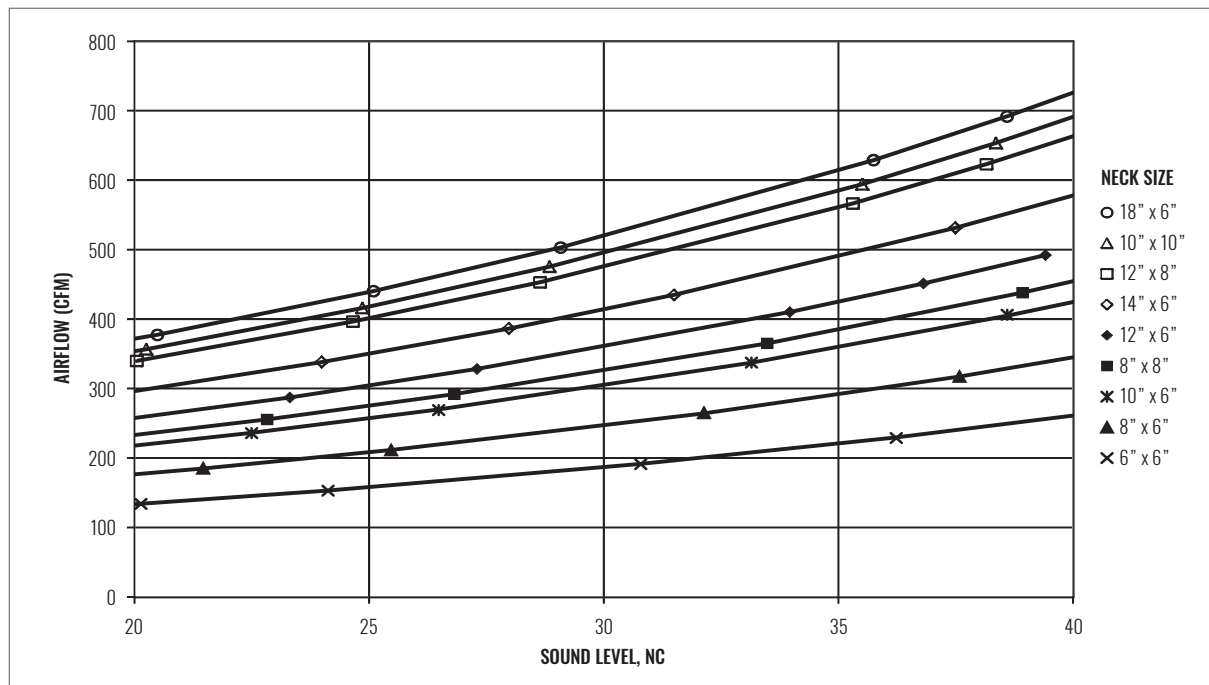
DIMENSIONAL DATA



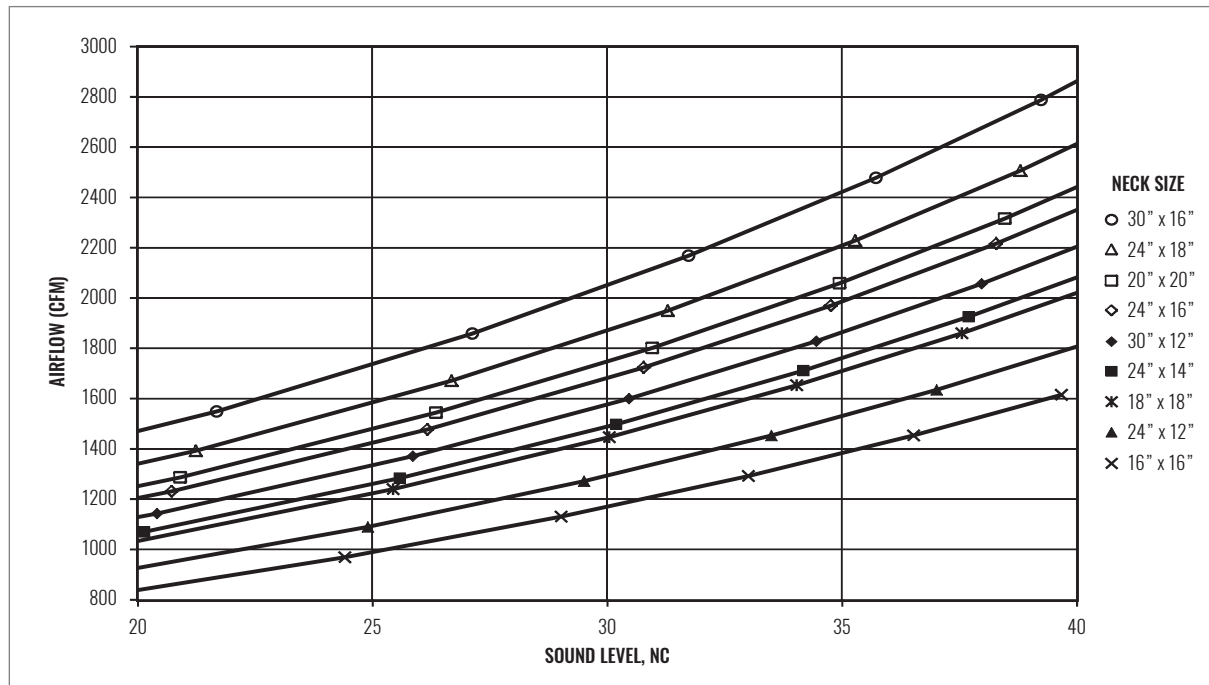
NOTE: Dimensions in parentheses are millimeters (mm).

SOUND CHARTS

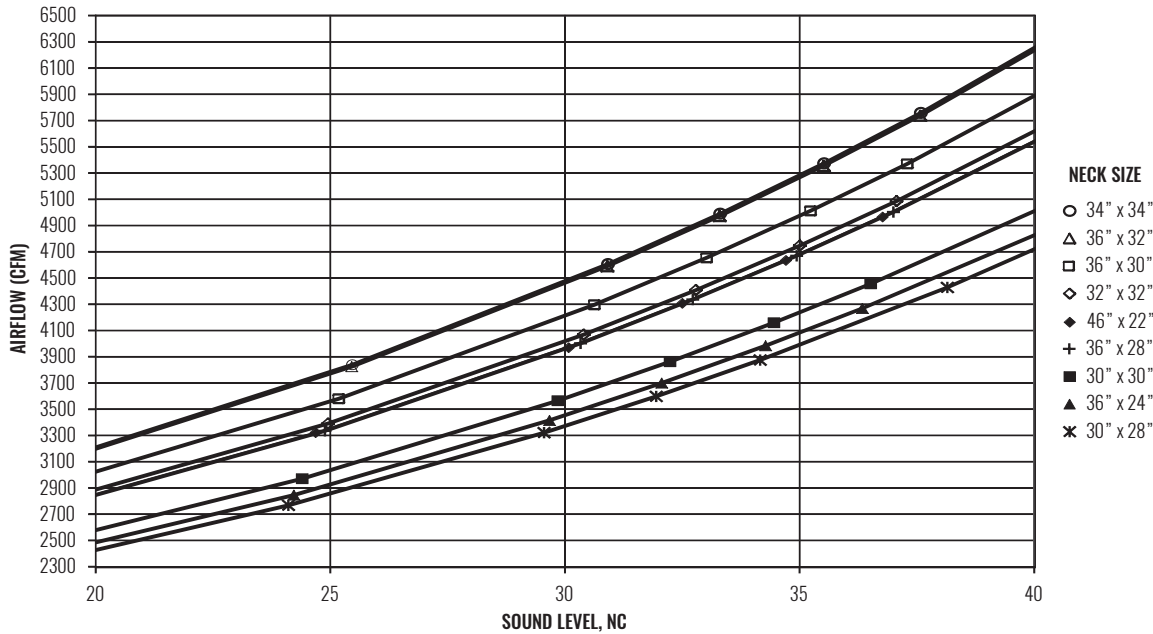
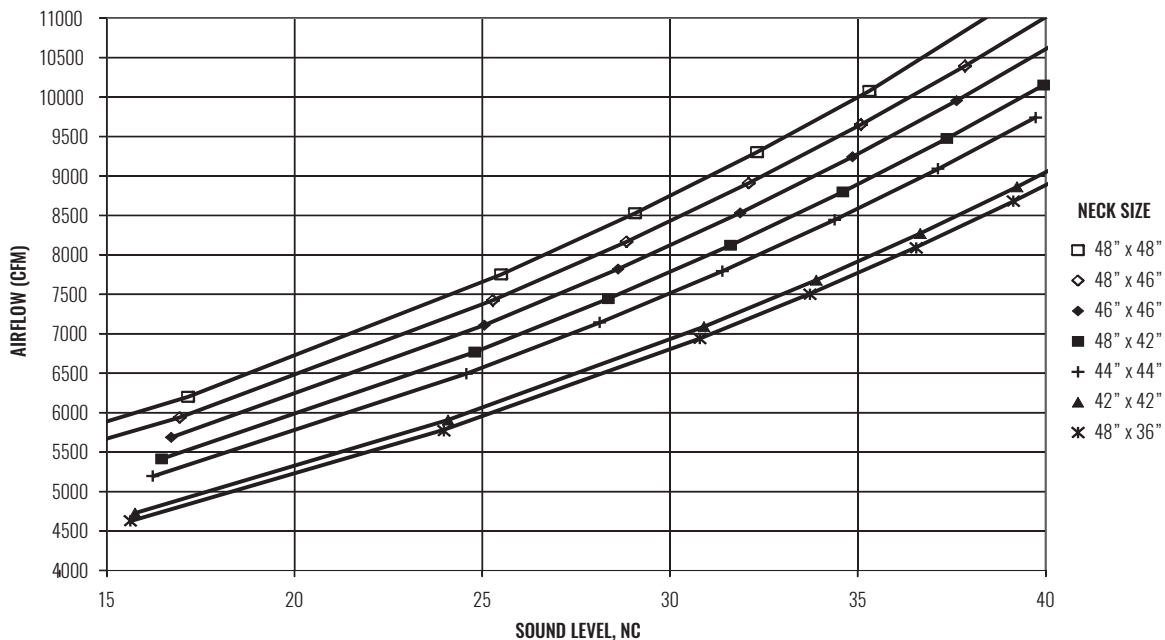
AIRFLOW VS. NC (WITH OBD/MULTILOUVER)



AIRFLOW VS. NC (WITH OBD/MULTILOUVER)



NOTES: Charts are at 20 BTUH/ft² loads. See the Engineering section of this catalog for instructions on how to read these charts and additional ADPI information.

SOUND CHARTS**AIRFLOW VS. NC (WITH OBD/MULTILOUVER)****AIRFLOW VS. NC (WITH OBD/MULTILOUVER)**

NOTES: Charts are at 20 BTUH/ft² loads. See the Engineering section of this catalog for instructions on how to read these charts and additional ADPI information.

PERFORMANCE DATA | IP | WITH OBD/MULTILOUVER

NOM DUCT	DUCT AREA	NECK VEL	AIR FLOW	0°		22.5°		45°		SOUND	OCTAVE BAND, dB					
				Pt	THROW	Pt	THROW	Pt	THROW							
in	ft ²	fpm	cfm	in wg	ft	in wg	ft	in wg	ft	NC	2	3	4	5	6	7
42 x 42	12.25	300	3545	.015	37 - 59 - 109	.021	28 - 46 - 85	.027	16 - 26 - 49	12	42	30	31	14	-	-
		425	5022	.030	55 - 83 - 130	.042	43 - 65 - 101	.053	25 - 37 - 59	22	51	39	40	27	12	-
		550	6499	.051	72 - 105 - 148	.070	56 - 81 - 115	.089	32 - 47 - 67	30	57	46	47	37	25	19
		675	7976	.077	88 - 116 - 164	.106	68 - 90 - 127	.135	40 - 52 - 74	36	61	52	53	44	35	30
		800	9453	.108	103 - 126 - 179	.149	80 - 98 - 139	.189	46 - 57 - 80	41	65	56	57	51	43	38
44 x 44	13.44	300	3897	.015	38 - 62 - 115	.021	30 - 48 - 89	.027	17 - 28 - 52	12	43	30	31	14	-	-
		425	5521	.030	58 - 87 - 137	.042	45 - 68 - 106	.053	26 - 39 - 61	23	51	40	41	27	13	-
		550	7145	.051	75 - 110 - 155	.070	58 - 85 - 120	.089	34 - 49 - 70	31	57	47	48	37	25	20
		675	8768	.077	92 - 122 - 172	.106	72 - 94 - 133	.135	42 - 55 - 77	37	62	52	53	45	35	30
		800	10392	.108	108 - 133 - 187	.149	84 - 103 - 145	.189	49 - 60 - 84	42	66	57	58	51	44	39
48 x 42	14.00	300	4061	.015	39 - 63 - 117	.021	30 - 49 - 91	.027	18 - 28 - 53	13	43	30	31	14	-	-
		425	5752	.030	59 - 89 - 139	.042	46 - 69 - 108	.053	27 - 40 - 63	23	51	40	41	27	13	-
		550	7444	.051	77 - 112 - 159	.070	60 - 87 - 123	.089	35 - 50 - 71	31	57	47	48	37	26	20
		675	9136	.077	94 - 124 - 176	.106	73 - 96 - 136	.135	42 - 56 - 79	37	62	52	53	45	36	30
		800	10828	.108	110 - 135 - 191	.149	86 - 105 - 148	.189	50 - 61 - 86	42	66	57	58	51	44	39
46 x 46	14.69	300	4266	.015	40 - 64 - 120	.021	31 - 50 - 93	.027	18 - 29 - 54	13	43	30	32	14	-	-
		425	6043	.030	61 - 91 - 143	.042	47 - 71 - 111	.053	27 - 41 - 64	23	51	40	41	28	13	-
		550	7821	.051	79 - 115 - 163	.070	61 - 89 - 126	.089	35 - 52 - 73	31	57	47	48	37	26	20
		675	9598	.077	97 - 127 - 180	.106	75 - 99 - 140	.135	44 - 57 - 81	37	62	53	54	45	36	30
		800	11375	.108	113 - 139 - 196	.149	88 - 107 - 152	.189	51 - 62 - 88	42	66	57	58	51	44	39
48 x 46	15.33	300	4454	.015	41 - 66 - 123	.021	32 - 51 - 95	.027	18 - 30 - 55	13	43	31	32	15	-	-
		425	6310	.030	62 - 93 - 146	.042	48 - 72 - 113	.053	28 - 42 - 66	23	52	40	41	28	13	-
		550	8166	.051	81 - 117 - 166	.070	62 - 91 - 129	.089	36 - 53 - 75	31	58	47	48	37	26	20
		675	10022	.077	99 - 130 - 184	.106	77 - 101 - 143	.135	44 - 59 - 83	37	62	53	54	45	36	31
		800	11878	.108	116 - 142 - 200	.149	90 - 110 - 155	.189	52 - 64 - 90	42	66	57	58	52	44	39
48 x 48	16.00	300	4651	.015	42 - 67 - 125	.021	33 - 52 - 97	.027	19 - 30 - 56	13	44	31	32	15	-	-
		425	6589	.030	64 - 95 - 149	.042	49 - 74 - 116	.053	29 - 43 - 67	24	52	40	41	28	13	-
		550	8527	.051	82 - 120 - 170	.070	64 - 93 - 132	.089	37 - 54 - 76	31	58	47	48	38	26	20
		675	10465	.077	101 - 133 - 188	.106	78 - 103 - 146	.135	45 - 60 - 85	37	63	53	54	45	36	31
		800	12403	.108	118 - 145 - 205	.149	92 - 112 - 159	.189	53 - 65 - 92	42	66	58	58	52	45	39

NOTES: Throw values are given for terminal velocities of 150, 100, and 50 FPM. Throw values are given for isothermal conditions. 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. See correction factors in table below. See Krueger's selection software for performance data not shown, including octave band data.

NC CORRECTION DAMPER (ADD)		NC CORRECTION BLADE DEFLECTION (ADD)			THROW CORRECTION (MULTIPLY)		Pt CORRECTION (MULTIPLY)	
OBD	NO OBD	0°	22.5°	45°	OBD	NO OBD	OBD	NO OBD
0	-2	0	+4	+9	1	0.98	1	0.88

PERFORMANCE DATA | METRIC | WITH OBD/MULTILOUVER

NOM DUCT	DUCT AREA	NECK VEL	AIR FLOW	0°		22.5°		45°		SOUND	OCTAVE BAND, dB					
				Pt	THROW	Pt	THROW	Pt	THROW		2	3	4	5	6	7
mm	m²	m/s	L/s	Pa	m	Pa	m	Pa	m	NC	2	3	4	5	6	7
1067 x 1067	1.14	1.52	1673	3.8	11.1 - 17.9 - 33.3	5.2	8.6 - 13.8 - 25.8	6.6	5.0 - 8.0 - 15.0	12	42	30	31	14	-	-
		2.16	2370	7.6	16.9 - 25.3 - 39.6	10.4	13.1 - 19.6 - 30.7	13.3	7.6 - 11.4 - 17.8	22	51	39	40	27	12	-
		2.79	3067	12.7	21.8 - 31.9 - 45.1	17.5	16.9 - 24.7 - 34.9	22.3	9.8 - 14.3 - 20.3	30	57	46	47	37	25	19
		3.43	3764	19.2	26.8 - 35.3 - 49.9	26.3	20.8 - 27.4 - 38.7	33.5	12.1 - 15.9 - 22.5	36	61	52	53	44	35	30
		4.06	4461	26.9	31.4 - 38.4 - 54.3	37.0	24.3 - 29.8 - 42.1	47.1	14.1 - 17.3 - 24.5	41	65	56	57	51	43	38
1118 x 1118	1.25	1.52	1839	3.8	11.7 - 18.7 - 34.9	5.2	9.0 - 14.5 - 27.0	6.6	5.3 - 8.4 - 15.7	12	43	30	31	14	-	-
		2.16	2606	7.6	17.7 - 26.5 - 41.5	10.4	13.7 - 20.6 - 32.2	13.3	8.0 - 11.9 - 18.7	23	51	40	41	27	13	-
		2.79	3372	12.7	22.9 - 33.4 - 47.2	17.5	17.7 - 25.9 - 36.6	22.3	10.3 - 15.0 - 21.3	31	57	47	48	37	25	20
		3.43	4138	19.2	28.1 - 37.0 - 52.3	26.3	21.8 - 28.7 - 40.6	33.5	12.6 - 16.7 - 23.6	37	62	52	53	45	35	30
		4.06	4904	26.9	32.9 - 40.3 - 57.0	37.0	25.5 - 31.2 - 44.2	47.1	14.8 - 18.1 - 25.6	42	66	57	58	51	44	39
1219 x 1067	1.30	1.52	1916	3.8	11.9 - 19.1 - 35.6	5.2	9.2 - 14.8 - 27.6	6.6	5.4 - 8.6 - 16.0	13	43	30	31	14	-	-
		2.16	2715	7.6	18.1 - 27.1 - 42.4	10.4	14.0 - 21.0 - 32.9	13.3	8.1 - 12.2 - 19.1	23	51	40	41	27	13	-
		2.79	3513	12.7	23.4 - 34.1 - 48.2	17.5	18.1 - 26.4 - 37.4	22.3	10.5 - 15.3 - 21.7	31	57	47	48	37	26	20
		3.43	4312	19.2	28.7 - 37.8 - 53.4	26.3	22.2 - 29.3 - 41.4	33.5	12.9 - 17.0 - 24.0	37	62	52	53	45	36	30
		4.06	5110	26.9	33.6 - 41.1 - 58.2	37.0	26.0 - 31.9 - 45.1	47.1	15.1 - 18.5 - 26.2	42	66	57	58	51	44	39
1168 x 1168	1.37	1.52	2013	3.8	12.2 - 19.6 - 36.5	5.2	9.5 - 15.2 - 28.3	6.6	5.5 - 8.8 - 16.4	13	43	30	32	14	-	-
		2.16	2852	7.6	18.5 - 27.8 - 43.4	10.4	14.3 - 21.5 - 33.7	13.3	8.3 - 12.5 - 19.6	23	51	40	41	28	13	-
		2.79	3691	12.7	24.0 - 34.9 - 49.4	17.5	18.6 - 27.1 - 38.3	22.3	10.8 - 15.7 - 22.2	31	57	47	48	37	26	20
		3.43	4530	19.2	29.4 - 38.7 - 54.8	26.3	22.8 - 30.0 - 42.4	33.5	13.2 - 17.4 - 24.6	37	62	53	54	45	36	30
		4.06	5369	26.9	34.4 - 42.2 - 59.6	37.0	26.7 - 32.7 - 46.2	47.1	15.5 - 19.0 - 26.8	42	66	57	58	51	44	39
1219 x 1168	1.42	1.52	2102	3.8	12.5 - 20.0 - 37.3	5.2	9.7 - 15.5 - 28.9	6.6	5.6 - 9.0 - 16.8	13	43	31	32	15	-	-
		2.16	2978	7.6	18.9 - 28.4 - 44.4	10.4	14.7 - 22.0 - 34.4	13.3	8.5 - 12.8 - 20.0	23	52	40	41	28	13	-
		2.79	3854	12.7	24.5 - 35.7 - 50.5	17.5	19.0 - 27.7 - 39.1	22.3	11.0 - 16.1 - 22.7	31	58	47	48	37	26	20
		3.43	4730	19.2	30.0 - 39.6 - 56.0	26.3	23.3 - 30.7 - 43.4	33.5	13.5 - 17.8 - 25.2	37	62	53	54	45	36	31
		4.06	5606	26.9	35.2 - 43.1 - 60.9	37.0	27.3 - 33.4 - 47.2	47.1	15.8 - 19.4 - 27.4	42	66	57	58	52	44	39
1219 x 1219	1.49	1.52	2195	3.8	12.8 - 20.5 - 38.1	5.2	9.9 - 15.9 - 29.5	6.6	5.7 - 9.2 - 17.2	13	44	31	32	15	-	-
		2.16	3110	7.6	19.3 - 29.0 - 45.4	10.4	15.0 - 22.5 - 35.2	13.3	8.7 - 13.0 - 20.4	24	52	40	41	28	13	-
		2.79	4024	12.7	25.0 - 36.5 - 51.6	17.5	19.4 - 28.3 - 40.0	22.3	11.3 - 16.4 - 23.2	31	58	47	48	38	26	20
		3.43	4939	19.2	30.7 - 40.4 - 57.2	26.3	23.8 - 31.3 - 44.3	33.5	13.8 - 18.2 - 25.7	37	63	53	54	45	36	31
		4.06	5854	26.9	35.9 - 44.0 - 62.2	37.0	27.9 - 34.1 - 48.2	47.1	16.2 - 19.8 - 28.0	42	66	58	58	52	45	39

NOTES: Throw values are given for terminal velocities of 0.75, 0.50, and 0.25 m/s. Throw values are given for isothermal conditions. 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. See correction factors in table below. See Krueger's selection software for performance data not shown, including octave band data.

NC CORRECTION DAMPER (ADD)		NC CORRECTION BLADE DEFLECTION (ADD)			THROW CORRECTION (MULTIPLY)		Pt CORRECTION (MULTIPLY)	
OBD	NO OBD	0°	22.5°	45°	OBD	NO OBD	OBD	NO OBD
0	-2	0	+4	+9	1	0.98	1	0.88

ENGINEERING SPECIFICATION & CONFIGURATION

980

The single deflection supply grille shall be a Krueger model 980. This grille must have individually adjustable blades on 3/4" centers with plastic blade pivots. The blades shall be constructed of roll formed 304 stainless steel with minimum 0.050" thickness. The frame of the grille must be constructed of 20 gage 304 stainless steel with countersunk screw holes (#6x1 1/4" stainless sheet metal screws provided by manufacturer). This frame must also produce a border of 1 3/8" around all sides of the grille with mitered corners. Optional 304 stainless steel damper available made of 20 gage stainless steel welded to the supply grille and operable from the face.

Optional 316 stainless steel construction available.

FINISH

The finish shall be 90 - #4 Satin Polish, obtained by finishing with a 120-grit abrasive, or 44 - British White.

1. SERIES: (XXX)

980 - Single Deflection Supply Grille with Adjustable Blades on 3/4" Centers

2. PATTERN: (X)

H - Horizontal Blades
V - Vertical Blades

3. WIDTH: (XX)

4" - 48" in 1" Increments

4. HEIGHT: (XX)

4" - 60" in 1" Increments

5. MATERIAL: (XXX)

304 - Stainless Steel Grade 304
316 - Stainless Steel Grade 316

6. FRAME STYLE: (XXX)

F22 - Surface Mount
F23 - Lay-in T-Bar

7. PANEL: (XX)x(XX)

None
24"x24" *
24"x48" *

8. FASTENING METHOD: (XX)

00 - No Screw Holes
01 - Countersunk Screw Holes **

9. DAMPER: (XX)

00 - No Damper
01 - Stainless Steel OBD †

10. ACCESSORIES: (XX) (XX)

00 - No Accessories
01 - Plaster Frame
XX - Square to Round Adapter ‡
(Specify size from 04 - 18" in increments of 2", depending on neck size)

11. FINISH: (XX)

90 - #4 Satin Polish
44 - British White

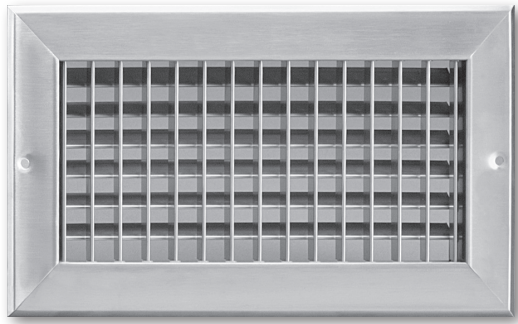
* Only available with Frame 23.

** Unit shipped with #6x1 1/4" stainless steel sheet metal screws.

† Damper is welded to unit.

‡ Square to Round Adapter is not available with OBD.

SAMPLE CONFIGURATION: 980 - H - 18x24 - 304 - F22 - NONE - 01 - 01 - 00 - 00 - 90



INTRODUCTION

The 9880 series stainless steel double-adjustable grilles allow air spread to be set left, right, up and down concurrently for maximum versatility. These grilles feature $\frac{3}{4}$ " on center blade spacing and are available for surface mount or lay-in T-bar applications.

MODEL

9880 - Double Deflection Supply Grille

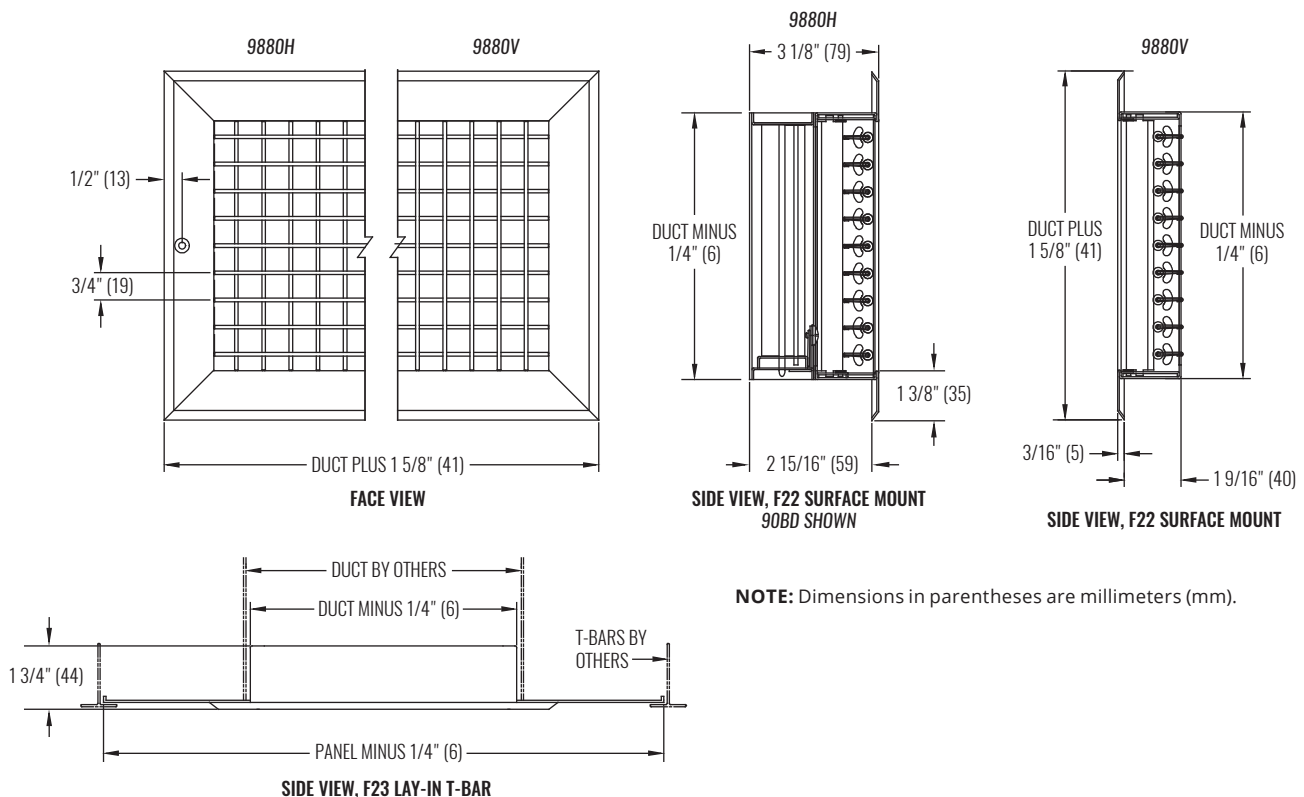
FEATURES

- 304 Stainless steel construction (316 optional)
- Sturdy front and rear deflection blades spaced on $\frac{3}{4}$ " centers
- Adjustable blades
- Countersunk screw holes in mounting frame
- Horizontal or vertical blades (H or V)
- Standard finish is 90 - #4 Satin Polish or 44 - British White

ACCESSORIES

- Stainless steel OBD welded to unit, adjustable from face of grille (model 90BD).
- Plaster frame (model 98PF).
- Square to round adapter (model 9SRA).

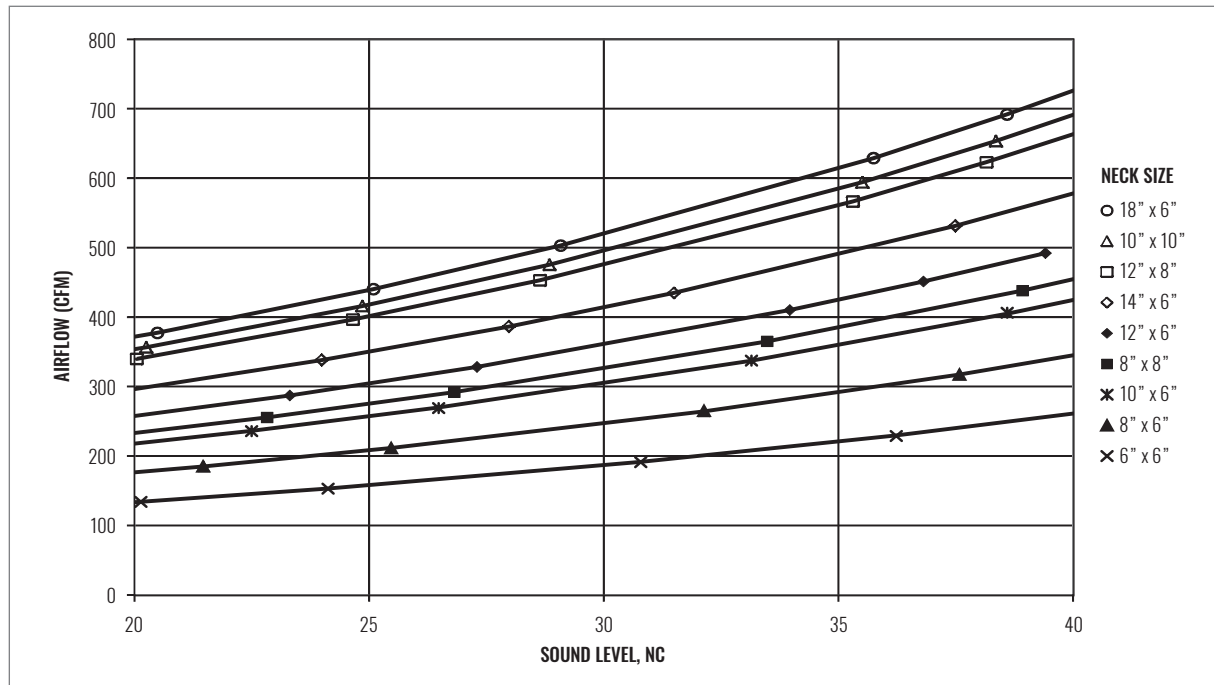
DIMENSIONAL DATA



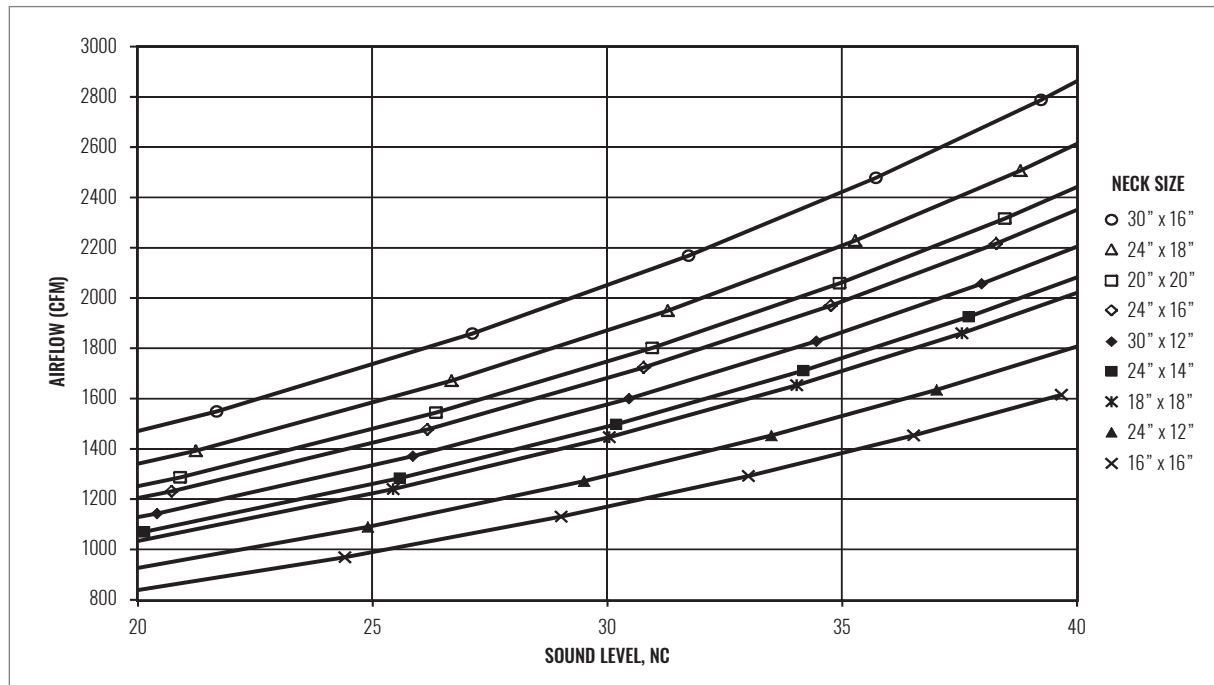
NOTE: Dimensions in parentheses are millimeters (mm).

SOUND CHARTS

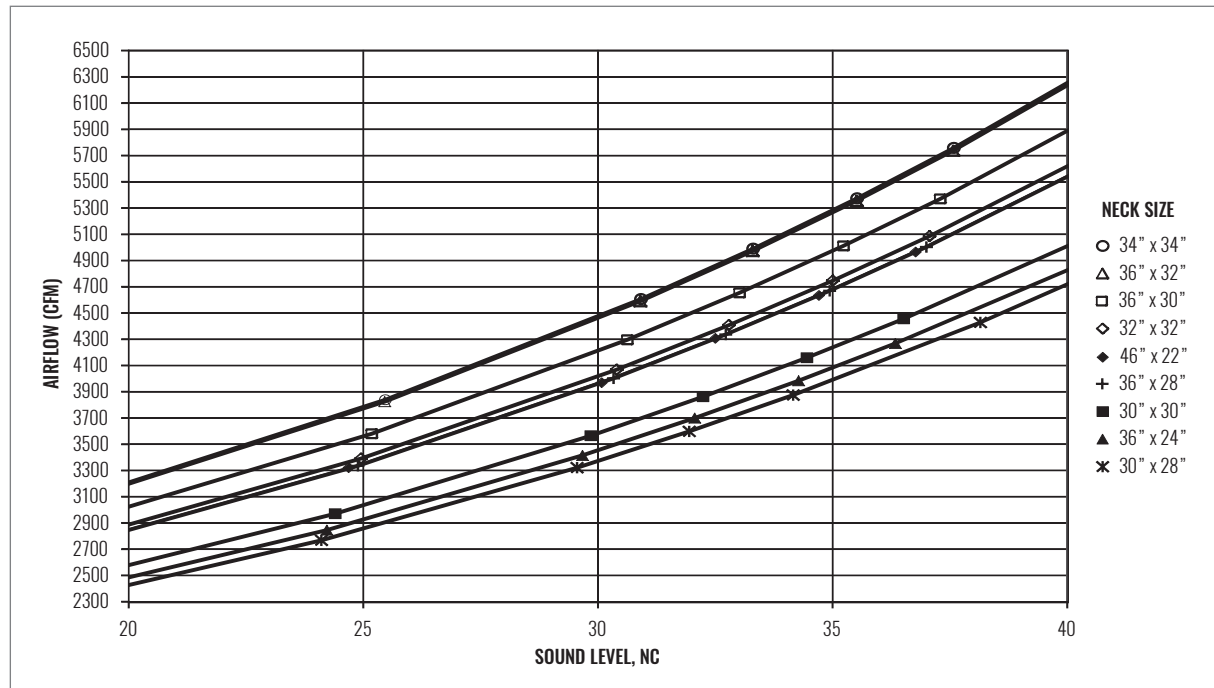
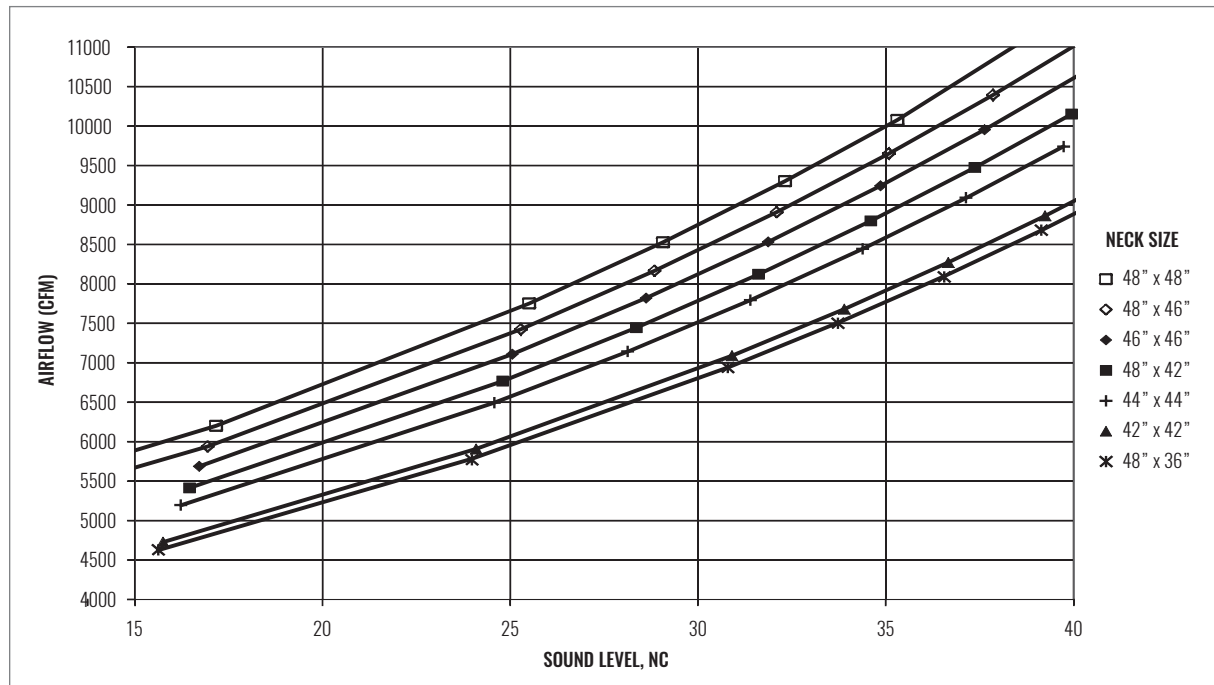
AIRFLOW VS. NC (WITH OBD/MULTILOUVER)



AIRFLOW VS. NC (WITH OBD/MULTILOUVER)



NOTES: Charts are at 20 BTUH/ft² loads. See the Engineering section of this catalog for instructions on how to read these charts and additional ADPI information.

SOUND CHARTS**AIRFLOW VS. NC (WITH OBD/MULTILOUVER)****AIRFLOW VS. NC (WITH OBD/MULTILOUVER)**

NOTES: Charts are at 20 BTUH/ft² loads. See the Engineering section of this catalog for instructions on how to read these charts and additional ADPI information.

PERFORMANCE DATA | IP | WITH OBD/MULTILOUVER

NOM DUCT	DUCT AREA	NECK VEL	AIR FLOW	0°		22.5°		45°		SOUND	OCTAVE BAND, dB							
				Pt	THROW	Pt	THROW	Pt	THROW		2	3	4	5	6	7		
in	ft²	fpm	cfm	in wg	ft	in wg	ft	in wg	ft	NC	2	3	4	5	6	7		
42 x 42	12.25	300	3545	.015	37 - 59 - 109	.021	28 - 46 - 85	.027	16 - 26 - 49	12	42	30	31	14	-	-		
		425	5022	.030	55 - 83 - 130	.042	43 - 65 - 101	.053	25 - 37 - 59	22	51	39	40	27	12	-		
		550	6499	.051	72 - 105 - 148	.070	56 - 81 - 115	.089	32 - 47 - 67	30	57	46	47	37	25	19		
		675	7976	.077	88 - 116 - 164	.106	68 - 90 - 127	.135	40 - 52 - 74	36	61	52	53	44	35	30		
		800	9453	.108	103 - 126 - 179	.149	80 - 98 - 139	.189	46 - 57 - 80	41	65	56	57	51	43	38		
		44 x 44	13.44	300	3897	.015	38 - 62 - 115	.021	30 - 48 - 89	.027	17 - 28 - 52	12	43	30	31	14	-	-
				425	5521	.030	58 - 87 - 137	.042	45 - 68 - 106	.053	26 - 39 - 61	23	51	40	41	27	13	-
				550	7145	.051	75 - 110 - 155	.070	58 - 85 - 120	.089	34 - 49 - 70	31	57	47	48	37	25	20
675	8768			.077	92 - 122 - 172	.106	72 - 94 - 133	.135	42 - 55 - 77	37	62	52	53	45	35	30		
		800	10392	.108	108 - 133 - 187	.149	84 - 103 - 145	.189	49 - 60 - 84	42	66	57	58	51	44	39		
		48 x 42	14.00	300	4061	.015	39 - 63 - 117	.021	30 - 49 - 91	.027	18 - 28 - 53	13	43	30	31	14	-	-
				425	5752	.030	59 - 89 - 139	.042	46 - 69 - 108	.053	27 - 40 - 63	23	51	40	41	27	13	-
				550	7444	.051	77 - 112 - 159	.070	60 - 87 - 123	.089	35 - 50 - 71	31	57	47	48	37	26	20
675	9136			.077	94 - 124 - 176	.106	73 - 96 - 136	.135	42 - 56 - 79	37	62	52	53	45	36	30		
		800	10828	.108	110 - 135 - 191	.149	86 - 105 - 148	.189	50 - 61 - 86	42	66	57	58	51	44	39		
		46 x 46	14.69	300	4266	.015	40 - 64 - 120	.021	31 - 50 - 93	.027	18 - 29 - 54	13	43	30	32	14	-	-
				425	6043	.030	61 - 91 - 143	.042	47 - 71 - 111	.053	27 - 41 - 64	23	51	40	41	28	13	-
				550	7821	.051	79 - 115 - 163	.070	61 - 89 - 126	.089	35 - 52 - 73	31	57	47	48	37	26	20
675	9598			.077	97 - 127 - 180	.106	75 - 99 - 140	.135	44 - 57 - 81	37	62	53	54	45	36	30		
		800	11375	.108	113 - 139 - 196	.149	88 - 107 - 152	.189	51 - 62 - 88	42	66	57	58	51	44	39		
		48 x 46	15.33	300	4454	.015	41 - 66 - 123	.021	32 - 51 - 95	.027	18 - 30 - 55	13	43	31	32	15	-	-
				425	6310	.030	62 - 93 - 146	.042	48 - 72 - 113	.053	28 - 42 - 66	23	52	40	41	28	13	-
				550	8166	.051	81 - 117 - 166	.070	62 - 91 - 129	.089	36 - 53 - 75	31	58	47	48	37	26	20
675	10022			.077	99 - 130 - 184	.106	77 - 101 - 143	.135	44 - 59 - 83	37	62	53	54	45	36	31		
		800	11878	.108	116 - 142 - 200	.149	90 - 110 - 155	.189	52 - 64 - 90	42	66	57	58	52	44	39		
		48 x 48	16.00	300	4651	.015	42 - 67 - 125	.021	33 - 52 - 97	.027	19 - 30 - 56	13	44	31	32	15	-	-
				425	6589	.030	64 - 95 - 149	.042	49 - 74 - 116	.053	29 - 43 - 67	24	52	40	41	28	13	-
				550	8527	.051	82 - 120 - 170	.070	64 - 93 - 132	.089	37 - 54 - 76	31	58	47	48	38	26	20
675	10465			.077	101 - 133 - 188	.106	78 - 103 - 146	.135	45 - 60 - 85	37	63	53	54	45	36	31		
		800	12403	.108	118 - 145 - 205	.149	92 - 112 - 159	.189	53 - 65 - 92	42	66	58	58	52	45	39		

NOTES: Throw values are given for terminal velocities of 150, 100, and 50 FPM. Throw values are given for isothermal conditions. 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. See correction factors in table below. See Krueger's selection software for performance data not shown, including octave band data.

NC CORRECTION DAMPER (ADD)		NC CORRECTION BLADE DEFLECTION (ADD)			THROW CORRECTION (MULTIPLY)		Pt CORRECTION (MULTIPLY)	
OBD	NO OBD	0°	22.5°	45°	OBD	NO OBD	OBD	NO OBD
0	-2	0	+4	+9	1	0.98	1	0.88

PERFORMANCE DATA | METRIC | WITH OBD/MULTILOUVER

NOM DUCT	DUCT AREA	NECK VEL	AIR FLOW	0°		22.5°		45°		SOUND	OCTAVE BAND, dB					
				Pt	THROW	Pt	THROW	Pt	THROW							
mm	m ²	m/s	L/s	Pa	m	Pa	m	Pa	m	NC	2	3	4	5	6	7
1067 x 1067	1.14	1.52	1673	3.8	11.1 - 17.9 - 33.3	5.2	8.6 - 13.8 - 25.8	6.6	5.0 - 8.0 - 15.0	12	42	30	31	14	-	-
		2.16	2370	7.6	16.9 - 25.3 - 39.6	10.4	13.1 - 19.6 - 30.7	13.3	7.6 - 11.4 - 17.8	22	51	39	40	27	12	-
		2.79	3067	12.7	21.8 - 31.9 - 45.1	17.5	16.9 - 24.7 - 34.9	22.3	9.8 - 14.3 - 20.3	30	57	46	47	37	25	19
		3.43	3764	19.2	26.8 - 35.3 - 49.9	26.3	20.8 - 27.4 - 38.7	33.5	12.1 - 15.9 - 22.5	36	61	52	53	44	35	30
		4.06	4461	26.9	31.4 - 38.4 - 54.3	37.0	24.3 - 29.8 - 42.1	47.1	14.1 - 17.3 - 24.5	41	65	56	57	51	43	38
1118 x 1118	1.25	1.52	1839	3.8	11.7 - 18.7 - 34.9	5.2	9.0 - 14.5 - 27.0	6.6	5.3 - 8.4 - 15.7	12	43	30	31	14	-	-
		2.16	2606	7.6	17.7 - 26.5 - 41.5	10.4	13.7 - 20.6 - 32.2	13.3	8.0 - 11.9 - 18.7	23	51	40	41	27	13	-
		2.79	3372	12.7	22.9 - 33.4 - 47.2	17.5	17.7 - 25.9 - 36.6	22.3	10.3 - 15.0 - 21.3	31	57	47	48	37	25	20
		3.43	4138	19.2	28.1 - 37.0 - 52.3	26.3	21.8 - 28.7 - 40.6	33.5	12.6 - 16.7 - 23.6	37	62	52	53	45	35	30
		4.06	4904	26.9	32.9 - 40.3 - 57.0	37.0	25.5 - 31.2 - 44.2	47.1	14.8 - 18.1 - 25.6	42	66	57	58	51	44	39
1219 x 1067	1.30	1.52	1916	3.8	11.9 - 19.1 - 35.6	5.2	9.2 - 14.8 - 27.6	6.6	5.4 - 8.6 - 16.0	13	43	30	31	14	-	-
		2.16	2715	7.6	18.1 - 27.1 - 42.4	10.4	14.0 - 21.0 - 32.9	13.3	8.1 - 12.2 - 19.1	23	51	40	41	27	13	-
		2.79	3513	12.7	23.4 - 34.1 - 48.2	17.5	18.1 - 26.4 - 37.4	22.3	10.5 - 15.3 - 21.7	31	57	47	48	37	26	20
		3.43	4312	19.2	28.7 - 37.8 - 53.4	26.3	22.2 - 29.3 - 41.4	33.5	12.9 - 17.0 - 24.0	37	62	52	53	45	36	30
		4.06	5110	26.9	33.6 - 41.1 - 58.2	37.0	26.0 - 31.9 - 45.1	47.1	15.1 - 18.5 - 26.2	42	66	57	58	51	44	39
1168 x 1168	1.37	1.52	2013	3.8	12.2 - 19.6 - 36.5	5.2	9.5 - 15.2 - 28.3	6.6	5.5 - 8.8 - 16.4	13	43	30	32	14	-	-
		2.16	2852	7.6	18.5 - 27.8 - 43.4	10.4	14.3 - 21.5 - 33.7	13.3	8.3 - 12.5 - 19.6	23	51	40	41	28	13	-
		2.79	3691	12.7	24.0 - 34.9 - 49.4	17.5	18.6 - 27.1 - 38.3	22.3	10.8 - 15.7 - 22.2	31	57	47	48	37	26	20
		3.43	4530	19.2	29.4 - 38.7 - 54.8	26.3	22.8 - 30.0 - 42.4	33.5	13.2 - 17.4 - 24.6	37	62	53	54	45	36	30
		4.06	5369	26.9	34.4 - 42.2 - 59.6	37.0	26.7 - 32.7 - 46.2	47.1	15.5 - 19.0 - 26.8	42	66	57	58	51	44	39
1219 x 1168	1.42	1.52	2102	3.8	12.5 - 20.0 - 37.3	5.2	9.7 - 15.5 - 28.9	6.6	5.6 - 9.0 - 16.8	13	43	31	32	15	-	-
		2.16	2978	7.6	18.9 - 28.4 - 44.4	10.4	14.7 - 22.0 - 34.4	13.3	8.5 - 12.8 - 20.0	23	52	40	41	28	13	-
		2.79	3854	12.7	24.5 - 35.7 - 50.5	17.5	19.0 - 27.7 - 39.1	22.3	11.0 - 16.1 - 22.7	31	58	47	48	37	26	20
		3.43	4730	19.2	30.0 - 39.6 - 56.0	26.3	23.3 - 30.7 - 43.4	33.5	13.5 - 17.8 - 25.2	37	62	53	54	45	36	31
		4.06	5606	26.9	35.2 - 43.1 - 60.9	37.0	27.3 - 33.4 - 47.2	47.1	15.8 - 19.4 - 27.4	42	66	57	58	52	44	39
1219 x 1219	1.49	1.52	2195	3.8	12.8 - 20.5 - 38.1	5.2	9.9 - 15.9 - 29.5	6.6	5.7 - 9.2 - 17.2	13	44	31	32	15	-	-
		2.16	3110	7.6	19.3 - 29.0 - 45.4	10.4	15.0 - 22.5 - 35.2	13.3	8.7 - 13.0 - 20.4	24	52	40	41	28	13	-
		2.79	4024	12.7	25.0 - 36.5 - 51.6	17.5	19.4 - 28.3 - 40.0	22.3	11.3 - 16.4 - 23.2	31	58	47	48	38	26	20
		3.43	4939	19.2	30.7 - 40.4 - 57.2	26.3	23.8 - 31.3 - 44.3	33.5	13.8 - 18.2 - 25.7	37	63	53	54	45	36	31
		4.06	5854	26.9	35.9 - 44.0 - 62.2	37.0	27.9 - 34.1 - 48.2	47.1	16.2 - 19.8 - 28.0	42	66	58	58	52	45	39

NOTES: Throw values are given for terminal velocities of 0.75, 0.50, and 0.25 m/s. Throw values are given for isothermal conditions. 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. See correction factors in table below. See Krueger's selection software for performance data not shown, including octave band data.

NC CORRECTION DAMPER (ADD)		NC CORRECTION BLADE DEFLECTION (ADD)			THROW CORRECTION (MULTIPLY)		Pt CORRECTION (MULTIPLY)	
OBD	NO OBD	0°	22.5°	45°	OBD	NO OBD	OBD	NO OBD
0	-2	0	+4	+9	1	0.98	1	0.88

ENGINEERING SPECIFICATION & CONFIGURATION

9880

The double deflection supply grille shall be a Krueger model 9880. This grille must have individually adjustable blades on 3/4" centers with plastic blade pivots. The blades shall be constructed of roll formed 304 stainless steel with minimum 0.050" thickness. The frame of the grille must be constructed of 20 gage 304 stainless steel with countersunk screw holes (#6x1 1/4" stainless sheet metal screws provided by manufacturer). This frame must also produce a border of 1 3/8" around all sides of the grille with mitered corners. Optional 304 stainless steel damper available made of 20 gage stainless steel welded to the supply grille and operable from the face.

Optional 316 stainless steel construction available.

FINISH

The finish shall be 90 - #4 Satin Polish, obtained by finishing with a 120-grit abrasive, or 44 - British White.

1. SERIES: (XXXX)

9880 - Double Deflection Supply Grille with Adjustable Blades on 3/4" Centers

2. PATTERN: (X)

H - Horizontal Front Blades
V - Vertical Front Blades

3. WIDTH: (XX)

4" - 48" in 1" Increments

4. HEIGHT: (XX)

4" - 48" in 1" Increments

5. MATERIAL: (XXX)

304 - Stainless Steel Grade 304
316 - Stainless Steel Grade 316

6. FRAME STYLE: (XXX)

F22 - Surface Mount
F23 - Lay-in T-Bar

7. PANEL: (XX)x(XX)

None
24"x24" *
24"x48" *

8. FASTENING METHOD: (XX)

00 - No Screw Holes
01 - Countersunk Screw Holes **

9. DAMPER: (XX)

00 - No Damper
01 - Stainless Steel OBD †

10. ACCESSORIES: (XX) (XX)

00 - No Accessories
01 - Plaster Frame
XX - Square to Round Adapter ‡
(Specify size from 04 - 18" in increments of 2", depending on neck size)

11. FINISH: (XX)

90 - #4 Satin Polish
44 - British White

* Only available with Frame 23.

** Unit shipped with #6x1 1/4" stainless steel sheet metal screws.

† Damper is welded to unit.

‡ Square to Round Adapter is not available with OBD.

SAMPLE CONFIGURATION: 9880 - V - 22x22 - 316 - F22 - NONE - 01 - 01 - 00 - 00 - 90

9S80

Stainless Steel Return Grille, Fixed Blades



INTRODUCTION

The 9S80 series stainless steel fixed-blade grilles may be set to either 0° or 45° deflection for performance and aesthetic versatility. These grilles feature $\frac{3}{4}$ " on center blade spacing and are available for surface mount or lay-in T-bar applications.

MODEL

9S80 - Fixed Blade Return Grille

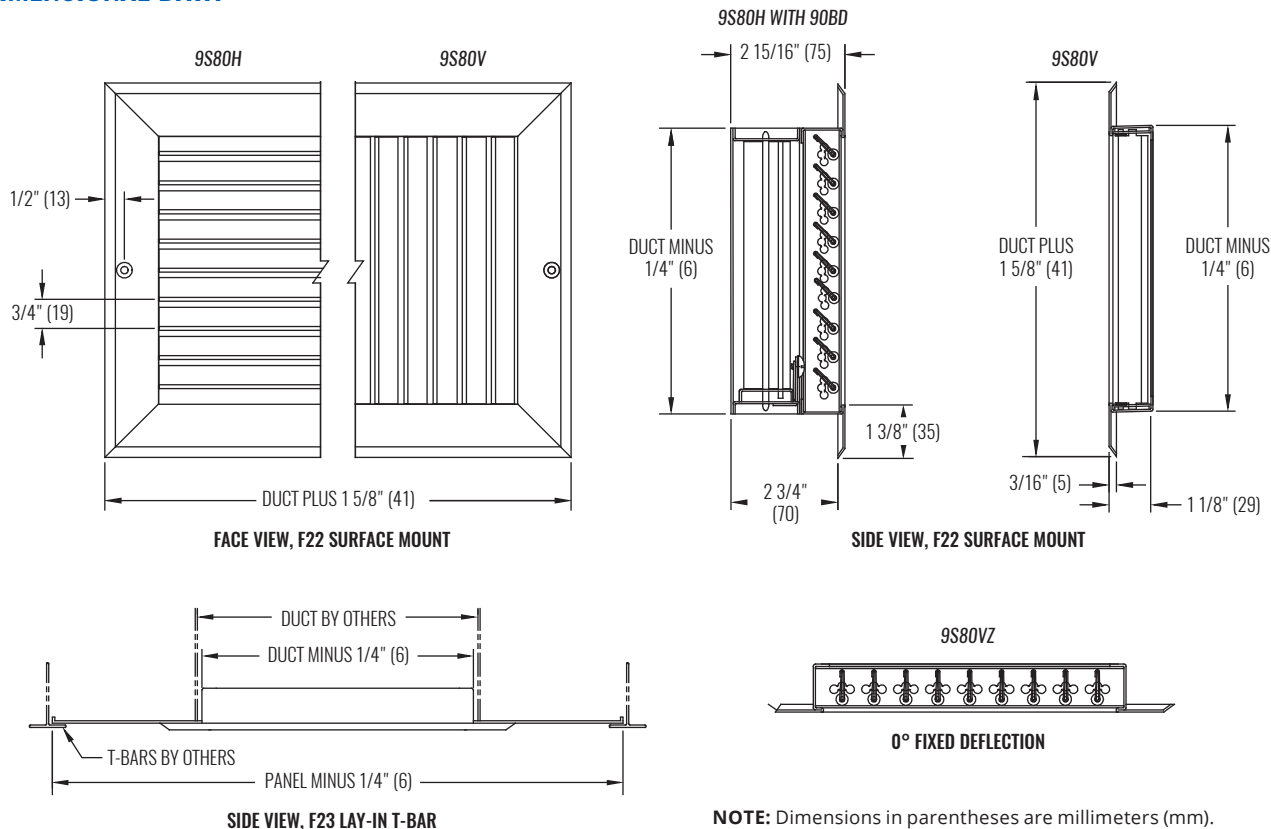
FEATURES

- 304 Stainless steel construction (316 optional)
- Sturdy deflection blades spaced on $\frac{3}{4}$ " centers
- Countersunk screw holes in mounting frame
- Horizontal or vertical blades at 45° (H or V)
- Horizontal or vertical blades at 0° (HZ or VZ)
- Standard finish is 90 - #4 Satin Polish or 44 - British White

ACCESSORIES

- Stainless steel OBD welded to unit, adjustable from face of grille (model 9OBD).
- Plaster frame (model 98PF).
- Square to round adapter (model 9SRA).

DIMENSIONAL DATA



NOTE: Dimensions in parentheses are millimeters (mm).

PERFORMANCE DATA

IP DATA					SOUND	METRIC DATA					OCTAVE BAND, dB					
NOM DUCT	DUCT AREA	NECK VEL	AIR FLOW	Ps		NOM DUCT	DUCT AREA	NECK VEL	AIR FLOW	Ps						
in	sq ft	fpm	cfm	in wg	NC	cm	sq m	m/s	l/s	Pa	2	3	4	5	6	7
6 x 6	0.25	300	57	-0.013	-	15.2 x 15.2	0.02	1.52	27	-3.1	38	23	19	-	-	-
		400	77	-0.022	-			2.03	36	-5.6	37	27	23	13	-	-
		500	96	-0.035	-			2.54	45	-8.7	36	30	26	17	12	-
		600	115	-0.051	13			3.05	54	-12.6	36	33	29	20	15	-
		700	134	-0.069	15			3.56	63	-17.1	36	35	31	23	17	12
		800	153	-0.090	17			4.06	72	-22.4	35	36	33	26	20	14
		900	172	-0.114	19			4.57	81	-28.3	35	38	35	28	22	16
		1000	191	-0.141	21			5.08	90	-35.0	35	39	36	30	24	18
		1100	211	-0.170	22			5.59	99	-42.3	35	41	38	32	25	20
8 x 6	0.33	300	79	-0.013	-	20.3 x 15.2	0.03	1.52	37	-3.1	39	25	20	-	-	-
		400	106	-0.022	-			2.03	50	-5.6	38	29	24	14	-	-
		500	132	-0.035	12			2.54	62	-8.7	38	32	28	18	13	-
		600	159	-0.051	14			3.05	75	-12.6	37	34	30	22	16	-
		700	185	-0.069	17			3.56	87	-17.1	37	36	33	25	19	13
		800	211	-0.090	19			4.06	100	-22.4	37	38	35	27	21	15
		900	238	-0.114	21			4.57	112	-28.3	36	39	36	29	23	17
		1000	264	-0.141	22			5.08	125	-35.0	36	41	38	31	25	19
		1100	291	-0.170	24			5.59	137	-42.3	36	42	39	33	27	21
10 x 6	0.42	300	101	-0.013	-	25.4 x 15.2	0.04	1.52	48	-3.1	40	26	21	-	-	-
		400	135	-0.022	-			2.03	64	-5.6	39	30	25	15	-	-
		500	169	-0.035	13			2.54	80	-8.7	39	33	29	19	14	-
		600	202	-0.051	15			3.05	95	-12.6	38	35	31	23	17	11
		700	236	-0.069	18			3.56	111	-17.1	38	37	34	26	20	14
		800	270	-0.090	20			4.06	127	-22.4	38	39	36	28	22	16
		900	304	-0.114	22			4.57	143	-28.3	37	40	37	30	24	19
		1000	337	-0.141	23			5.08	159	-35.0	37	42	39	32	26	20
		1100	371	-0.170	25			5.59	175	-42.3	37	43	40	34	28	22
8 x 8	0.44	300	110	-0.013	-	20.3 x 20.3	0.04	1.52	52	-3.1	40	26	21	-	-	-
		400	146	-0.022	-			2.03	69	-5.6	40	30	26	15	11	-
		500	183	-0.035	13			2.54	86	-8.7	39	33	29	20	14	-
		600	219	-0.051	16			3.05	103	-12.6	39	35	32	23	18	12
		700	256	-0.069	18			3.56	121	-17.1	38	37	34	26	20	14
		800	292	-0.090	20			4.06	138	-22.4	38	39	36	28	22	17
		900	329	-0.114	22			4.57	155	-28.3	38	41	38	31	24	19
		1000	365	-0.141	24			5.08	172	-35.0	38	42	39	33	26	21
		1100	402	-0.170	25			5.59	189	-42.3	37	43	41	34	28	22
12 x 6	0.50	300	123	-0.013	-	30.5 x 15.2	0.05	1.52	58	-3.1	41	27	22	-	-	-
		400	164	-0.022	-			2.03	77	-5.6	40	30	26	16	11	-
		500	205	-0.035	13			2.54	97	-8.7	40	33	29	20	15	-
		600	246	-0.051	16			3.05	116	-12.6	39	36	32	23	18	12
		700	287	-0.069	19			3.56	136	-17.1	39	38	34	26	21	15
		800	328	-0.090	21			4.06	155	-22.4	39	40	36	29	23	17
		900	369	-0.114	23			4.57	174	-28.3	38	41	38	31	25	19
		1000	410	-0.141	24			5.08	194	-35.0	38	43	40	33	27	21
		1100	451	-0.170	26			5.59	213	-42.3	38	44	41	35	28	23
14 x 6	0.58	300	145	-0.013	-	35.6 x 15.2	0.05	1.52	68	-3.1	41	27	22	11	-	-
		400	193	-0.022	11			2.03	91	-5.6	41	31	27	16	12	-
		500	242	-0.035	14			2.54	114	-8.7	40	34	30	21	16	-
		600	290	-0.051	17			3.05	137	-12.6	40	37	33	24	19	13
		700	338	-0.069	19			3.56	160	-17.1	40	39	35	27	21	16
		800	386	-0.090	21			4.06	182	-22.4	39	40	37	30	24	18
		900	435	-0.114	23			4.57	205	-28.3	39	42	39	32	26	20
		1000	483	-0.141	25			5.08	228	-35.0	39	43	40	34	27	22
		1100	531	-0.170	26			5.59	251	-42.3	38	45	42	36	29	24

NOTE: See notes and correction factors on page P1-69.

PERFORMANCE DATA

IP DATA						METRIC DATA					OCTAVE BAND, dB					
NOM DUCT	DUCT AREA	NECK VEL	AIR FLOW	Ps	SOUND	NOM DUCT	DUCT AREA	NECK VEL	AIR FLOW	Ps						
in	sq ft	fpm	cfm	in wg	NC	cm	sq m	m/s	l/s	Pa	2	3	4	5	6	7
12 x 8	0.67	300	170	-0.013	-	30.5 x 20.3	0.06	1.52	80	-3.1	42	28	23	12	-	-
		400	227	-0.022	11			2.03	107	-5.6	41	32	27	17	12	-
		500	283	-0.035	15			2.54	134	-8.7	41	35	31	21	16	-
		600	340	-0.051	18			3.05	160	-12.6	41	37	33	25	19	14
		700	396	-0.069	20			3.56	187	-17.1	40	39	36	28	22	16
		800	453	-0.090	22			4.06	214	-22.4	40	41	38	30	24	19
		900	510	-0.114	24			4.57	241	-28.3	40	43	39	33	26	21
		1000	566	-0.141	26			5.08	267	-35.0	39	44	41	34	28	23
		1100	623	-0.170	27			5.59	294	-42.3	39	45	42	36	30	24
10 x 10	0.69	300	178	-0.013	-	25.4 x 25.4	0.06	1.52	84	-3.1	42	28	23	12	-	-
		400	238	-0.022	12			2.03	112	-5.6	42	32	28	17	13	-
		500	297	-0.035	15			2.54	140	-8.7	41	35	31	22	16	11
		600	357	-0.051	18			3.05	168	-12.6	41	37	34	25	20	14
		700	416	-0.069	20			3.56	196	-17.1	40	39	36	28	22	17
		800	475	-0.090	22			4.06	224	-22.4	40	41	38	30	25	19
		900	535	-0.114	24			4.57	252	-28.3	40	43	40	33	27	21
		1000	594	-0.141	26			5.08	280	-35.0	40	44	41	35	28	23
		1100	654	-0.170	27			5.59	308	-42.3	39	45	43	36	30	24
18 x 6	0.75	300	189	-0.013	-	45.7 x 15.2	0.07	1.52	89	-3.1	43	28	24	12	-	-
		400	252	-0.022	12			2.03	119	-5.6	42	32	28	18	13	-
		500	314	-0.035	15			2.54	148	-8.7	41	35	31	22	17	11
		600	377	-0.051	18			3.05	178	-12.6	41	38	34	25	20	14
		700	440	-0.069	21			3.56	208	-17.1	41	40	36	28	22	17
		800	503	-0.090	23			4.06	237	-22.4	40	41	38	31	25	19
		900	566	-0.114	24			4.57	267	-28.3	40	43	40	33	27	21
		1000	629	-0.141	26			5.08	297	-35.0	40	44	42	35	29	23
		1100	692	-0.170	28			5.59	326	-42.3	40	46	43	37	30	25
12 x 10	0.83	300	217	-0.013	-	30.5 x 25.4	0.08	1.52	102	-3.1	43	29	24	13	-	-
		400	289	-0.022	12			2.03	136	-5.6	43	33	28	18	13	-
		500	361	-0.035	16			2.54	171	-8.7	42	36	32	22	17	11
		600	434	-0.051	19			3.05	205	-12.6	42	38	34	26	20	15
		700	506	-0.069	21			3.56	239	-17.1	41	40	37	29	23	17
		800	578	-0.090	23			4.06	273	-22.4	41	42	39	31	25	20
		900	650	-0.114	25			4.57	307	-28.3	41	44	41	34	27	22
		1000	723	-0.141	27			5.08	341	-35.0	40	45	42	36	29	24
		1100	795	-0.170	28			5.59	375	-42.3	40	46	44	37	31	25
22 x 6	0.92	300	232	-0.013	-	55.9 x 15.2	0.09	1.52	110	-3.1	43	29	24	13	-	-
		400	310	-0.022	13			2.03	146	-5.6	43	33	29	18	14	-
		500	387	-0.035	16			2.54	183	-8.7	42	36	32	23	18	12
		600	465	-0.051	19			3.05	219	-12.6	42	39	35	26	21	15
		700	542	-0.069	21			3.56	256	-17.1	42	41	37	29	23	18
		800	620	-0.090	24			4.06	293	-22.4	41	42	39	32	26	20
		900	697	-0.114	25			4.57	329	-28.3	41	44	41	34	28	22
		1000	775	-0.141	27			5.08	366	-35.0	41	45	42	36	29	24
		1100	852	-0.170	28			5.59	402	-42.3	40	47	44	38	31	26
12 x 12	1.00	300	264	-0.013	-	30.5 x 30.5	0.09	1.52	124	-3.1	44	30	25	14	-	-
		400	352	-0.022	13			2.03	166	-5.6	43	34	29	19	14	-
		500	439	-0.035	17			2.54	207	-8.7	43	37	33	23	18	12
		600	527	-0.051	20			3.05	249	-12.6	42	39	35	27	21	16
		700	615	-0.069	22			3.56	290	-17.1	42	41	38	30	24	18
		800	703	-0.090	24			4.06	332	-22.4	42	43	40	32	26	21
		900	791	-0.114	26			4.57	373	-28.3	41	44	41	34	28	23
		1000	879	-0.141	28			5.08	415	-35.0	41	46	43	36	30	24
		1100	967	-0.170	29			5.59	456	-42.3	41	47	44	38	32	26

NOTE: See notes and correction factors on page P1-69.

PERFORMANCE DATA

IP DATA					SOUND	METRIC DATA					OCTAVE BAND, dB						
NOM DUCT	DUCT AREA	NECK VEL	AIR FLOW	Ps		NOM DUCT	DUCT AREA	NECK VEL	AIR FLOW	Ps							
in	sq ft	fpm	cfm	in wg	NC	cm	sq m	m/s	l/s	Pa	2	3	4	5	6	7	
18 x 10	1.25	300	332	-0.013	-	45.7 x 25.4	0.12	1.52	157	-3.1	45	31	26	15	-	-	
		400	443	-0.022	14			2.03	209	-5.6	44	35	30	20	15	-	
		500	554	-0.035	18			2.54	261	-8.7	44	38	34	24	19	13	
		600	665	-0.051	21			3.05	314	-12.6	43	40	36	28	22	16	
		700	776	-0.069	23			3.56	366	-17.1	43	42	39	31	25	19	
		800	886	-0.090	25			4.06	418	-22.4	43	44	41	33	27	22	
		900	997	-0.114	27			4.57	471	-28.3	42	45	42	35	29	24	
		1000	1108	-0.141	29			5.08	523	-35.0	42	47	44	37	31	25	
		1100	1219	-0.170	30			5.59	575	-42.3	42	48	45	39	33	27	
14 x 14	1.36	300	366	-0.013	-	35.6 x 35.6	0.13	1.52	173	-3.1	45	31	26	15	11	-	
		400	488	-0.022	15			2.03	230	-5.6	45	35	31	20	16	-	
		500	610	-0.035	18			2.54	288	-8.7	44	38	34	25	19	14	
		600	732	-0.051	21			3.05	345	-12.6	44	40	37	28	23	17	
		700	853	-0.069	23			3.56	403	-17.1	43	43	39	31	25	20	
		800	975	-0.090	25			4.06	460	-22.4	43	44	41	34	28	22	
		900	1097	-0.114	27			4.57	518	-28.3	43	46	43	36	30	24	
		1000	1219	-0.141	29			5.08	575	-35.0	43	47	44	38	31	26	
		1100	1341	-0.170	30			5.59	633	-42.3	42	49	46	40	33	27	
27 x 8	1.50	300	396	-0.013	11	68.6 x 20.3	0.14	1.52	187	-3.1	46	32	27	15	11	-	
		400	529	-0.022	15			2.03	249	-5.6	45	35	31	21	16	-	
		500	661	-0.035	19			2.54	312	-8.7	45	38	34	25	20	14	
		600	793	-0.051	21			3.05	374	-12.6	44	41	37	28	23	17	
		700	925	-0.069	24			3.56	437	-17.1	44	43	39	31	26	20	
		800	1057	-0.090	26			4.06	499	-22.4	43	45	41	34	28	22	
		900	1189	-0.114	28			4.57	561	-28.3	43	46	43	36	30	24	
		1000	1322	-0.141	29			5.08	624	-35.0	43	48	45	38	32	26	
		1100	1454	-0.170	31			5.59	686	-42.3	43	49	46	40	33	28	
22 x 10	1.53	300	410	-0.013	11	55.9 x 25.4	0.14	1.52	193	-3.1	46	32	27	15	11	-	
		400	546	-0.022	15			2.03	258	-5.6	45	36	31	21	16	-	
		500	683	-0.035	19			2.54	322	-8.7	45	38	34	25	20	14	
		600	819	-0.051	22			3.05	387	-12.6	44	41	37	29	23	17	
		700	956	-0.069	24			3.56	451	-17.1	44	43	39	31	26	20	
		800	1092	-0.090	26			4.06	515	-22.4	44	45	41	34	28	22	
		900	1229	-0.114	28			4.57	580	-28.3	43	46	43	36	30	24	
		1000	1365	-0.141	29			5.08	644	-35.0	43	48	45	38	32	26	
		1100	1502	-0.170	31			5.59	709	-42.3	43	49	46	40	34	28	
24 x 10	1.67	300	448	-0.013	11	61.0 x 25.4	0.15	1.52	211	-3.1	46	32	27	16	12	-	
		400	597	-0.022	16			2.03	282	-5.6	46	36	32	21	16	11	
		500	747	-0.035	19			2.54	352	-8.7	45	39	35	25	20	15	
		600	896	-0.051	22			3.05	423	-12.6	45	41	38	29	23	18	
		700	1045	-0.069	24			3.56	493	-17.1	44	43	40	32	26	20	
		800	1195	-0.090	26			4.06	564	-22.4	44	45	42	34	28	23	
		900	1344	-0.114	28			4.57	634	-28.3	44	47	44	37	30	25	
		1000	1493	-0.141	30			5.08	705	-35.0	43	48	45	39	32	27	
		1100	1643	-0.170	31			5.59	775	-42.3	43	49	47	40	34	28	
18 x 14	1.75	300	476	-0.013	11	45.7 x 35.6	0.16	1.52	225	-3.1	47	32	27	16	12	-	
		400	635	-0.022	16			2.03	300	-5.6	46	36	32	22	17	11	
		500	794	-0.035	19			2.54	375	-8.7	45	39	35	26	21	15	
		600	952	-0.051	22			3.05	449	-12.6	45	42	38	29	24	18	
		700	1111	-0.069	25			3.56	524	-17.1	45	44	40	32	26	21	
		800	1270	-0.090	27			4.06	599	-22.4	44	45	42	35	29	23	
		900	1429	-0.114	28			4.57	674	-28.3	44	47	44	37	31	25	
		1000	1587	-0.141	30			5.08	749	-35.0	44	48	45	39	33	27	
		1100	1746	-0.170	32			5.59	824	-42.3	44	50	47	41	34	29	

NOTE: See notes and correction factors on page P1-69.

PERFORMANCE DATA

IP DATA					SOUND	METRIC DATA					OCTAVE BAND, dB						
NOM DUCT	DUCT AREA	NECK VEL	AIR FLOW	Ps		NOM DUCT	DUCT AREA	NECK VEL	AIR FLOW	Ps							
in	sq ft	fpm	cfm	in wg	NC	cm	sq m	m/s	l/s	Pa	2	3	4	5	6	7	
16 x 16	1.78	300	485	-0.013	12	40.6 x 40.6	0.17	1.52	229	-3.1	47	32	28	16	12	-	
		400	646	-0.022	16			2.03	305	-5.6	46	36	32	22	17	11	
		500	808	-0.035	19			2.54	381	-8.7	45	39	35	26	21	15	
		600	969	-0.051	22			3.05	457	-12.6	45	42	38	29	24	18	
		700	1131	-0.069	25			3.56	534	-17.1	45	44	40	32	26	21	
		800	1292	-0.090	27			4.06	610	-22.4	44	45	42	35	29	23	
		900	1454	-0.114	29			4.57	686	-28.3	44	47	44	37	31	25	
		1000	1615	-0.141	30			5.08	762	-35.0	44	48	46	39	33	27	
		1100	1777	-0.170	32			5.59	838	-42.3	44	50	47	41	34	29	
24 x 12	2.00	300	545	-0.013	12	61.0 x 30.5	0.19	1.52	257	-3.1	47	33	28	17	12	-	
		400	727	-0.022	16			2.03	343	-5.6	46	37	32	22	17	12	
		500	908	-0.035	20			2.54	429	-8.7	46	40	36	26	21	15	
		600	1090	-0.051	23			3.05	514	-12.6	45	42	38	30	24	19	
		700	1271	-0.069	25			3.56	600	-17.1	45	44	41	33	27	21	
		800	1453	-0.090	27			4.06	686	-22.4	45	46	43	35	29	24	
		900	1635	-0.114	29			4.57	772	-28.3	45	48	44	37	31	26	
		1000	1816	-0.141	31			5.08	857	-35.0	44	49	46	39	33	27	
		1100	1998	-0.170	32			5.59	943	-42.3	44	50	47	41	35	29	
18 x 18	2.25	300	620	-0.013	13	45.7 x 45.7	0.21	1.52	293	-3.1	48	33	29	17	13	-	
		400	827	-0.022	17			2.03	390	-5.6	47	37	33	23	18	12	
		500	1033	-0.035	21			2.54	488	-8.7	46	40	36	27	22	16	
		600	1240	-0.051	23			3.05	585	-12.6	46	43	39	30	25	19	
		700	1446	-0.069	26			3.56	683	-17.1	46	45	41	33	28	22	
		800	1653	-0.090	28			4.06	780	-22.4	45	47	43	36	30	24	
		900	1860	-0.114	30			4.57	878	-28.3	45	48	45	38	32	26	
		1000	2066	-0.141	31			5.08	975	-35.0	45	49	47	40	34	28	
		1100	2273	-0.170	33			5.59	1073	-42.3	45	51	48	42	35	30	
24 x 14	2.33	300	642	-0.013	13	61.0 x 35.6	0.22	1.52	303	-3.1	48	34	29	17	13	-	
		400	856	-0.022	17			2.03	404	-5.6	47	37	33	23	18	12	
		500	1070	-0.035	21			2.54	505	-8.7	47	40	36	27	22	16	
		600	1284	-0.051	23			3.05	606	-12.6	46	43	39	30	25	19	
		700	1498	-0.069	26			3.56	707	-17.1	46	45	41	33	28	22	
		800	1711	-0.090	28			4.06	808	-22.4	46	47	43	36	30	24	
		900	1925	-0.114	30			4.57	909	-28.3	45	48	45	38	32	26	
		1000	2139	-0.141	31			5.08	1010	-35.0	45	50	47	40	34	28	
		1100	2353	-0.170	33			5.59	1111	-42.3	45	51	48	42	35	30	
30 x 12	2.50	300	686	-0.013	13	76.2 x 30.5	0.23	1.52	324	-3.1	48	34	29	18	13	-	
		400	914	-0.022	17			2.03	431	-5.6	47	38	33	23	18	12	
		500	1143	-0.035	21			2.54	539	-8.7	47	41	37	27	22	16	
		600	1371	-0.051	24			3.05	647	-12.6	46	43	39	31	25	20	
		700	1600	-0.069	26			3.56	755	-17.1	46	45	42	34	28	22	
		800	1828	-0.090	28			4.06	863	-22.4	46	47	44	36	30	25	
		900	2057	-0.114	30			4.57	971	-28.3	46	49	45	38	32	27	
		1000	2285	-0.141	32			5.08	1078	-35.0	45	50	47	40	34	28	
		1100	2514	-0.170	33			5.59	1186	-42.3	45	51	48	42	36	30	
24 x 16	2.67	300	739	-0.013	13	61.0 x 40.6	0.25	1.52	349	-3.1	48	34	29	18	14	-	
		400	985	-0.022	18			2.03	465	-5.6	48	38	34	23	19	13	
		500	1231	-0.035	21			2.54	581	-8.7	47	41	37	28	22	17	
		600	1477	-0.051	24			3.05	697	-12.6	47	43	40	31	26	20	
		700	1724	-0.069	26			3.56	813	-17.1	46	45	42	34	28	23	
		800	1970	-0.090	29			4.06	930	-22.4	46	47	44	36	31	25	
		900	2216	-0.114	30			4.57	1046	-28.3	46	49	46	39	33	27	
		1000	2462	-0.141	32			5.08	1162	-35.0	46	50	47	41	34	29	
		1100	2708	-0.170	33			5.59	1278	-42.3	45	52	49	43	36	30	

NOTE: See notes and correction factors on page P1-69.

PERFORMANCE DATA

IP DATA					SOUND	METRIC DATA					OCTAVE BAND, dB					
NOM DUCT	DUCT AREA	NECK VEL	AIR FLOW	Ps		NOM DUCT	DUCT AREA	NECK VEL	AIR FLOW	Ps						
in	sq ft	fpm	cfm	in wg	NC	cm	sq m	m/s	l/s	Pa	2	3	4	5	6	7
30 x 28	5.83	200	1107	-0.006	11	76.2 x 71.1	0.54	1.02	522	-1.4	53	32	27	14	-	-
		300	1661	-0.013	17			1.52	784	-3.1	52	38	33	21	17	11
		400	2214	-0.022	21			2.03	1045	-5.6	51	41	37	27	22	16
		600	3321	-0.051	28			3.05	1567	-12.6	50	47	43	34	29	23
		700	3875	-0.069	30			3.56	1829	-17.1	50	49	45	37	32	26
		800	4428	-0.090	32			4.06	2090	-22.4	50	51	47	40	34	28
		900	4982	-0.114	34			4.57	2351	-28.3	49	52	49	42	36	30
		1000	5535	-0.141	36			5.08	2612	-35.0	49	54	51	44	38	32
		1100	6089	-0.170	37			5.59	2874	-42.3	49	55	52	46	39	34
36 x 24	6.00	200	1138	-0.006	11	91.4 x 61.0	0.56	1.02	537	-1.4	53	32	27	14	-	-
		300	1707	-0.013	17			1.52	806	-3.1	52	38	33	22	17	11
		400	2277	-0.022	21			2.03	1074	-5.6	51	42	37	27	22	16
		600	3415	-0.051	28			3.05	1612	-12.6	50	47	43	35	29	23
		700	3984	-0.069	30			3.56	1880	-17.1	50	49	46	38	32	26
		800	4553	-0.090	32			4.06	2149	-22.4	50	51	48	40	34	28
		900	5122	-0.114	34			4.57	2417	-28.3	49	52	49	42	36	30
		1000	5691	-0.141	36			5.08	2686	-35.0	49	54	51	44	38	32
		1100	6261	-0.170	37			5.59	2955	-42.3	49	55	52	46	40	34
30 x 30	6.25	200	1188	-0.006	11	76.2 x 76.2	0.58	1.02	561	-1.4	53	32	27	14	-	-
		300	1782	-0.013	17			1.52	841	-3.1	52	38	33	22	17	12
		400	2377	-0.022	22			2.03	1122	-5.6	51	42	37	27	22	17
		600	3565	-0.051	28			3.05	1682	-12.6	51	47	43	35	29	24
		700	4159	-0.069	30			3.56	1963	-17.1	50	49	46	38	32	26
		800	4753	-0.090	32			4.06	2243	-22.4	50	51	48	40	34	29
		900	5347	-0.114	34			4.57	2524	-28.3	50	53	49	42	36	31
		1000	5941	-0.141	36			5.08	2804	-35.0	49	54	51	44	38	33
		1100	6536	-0.170	37			5.59	3084	-42.3	49	55	52	46	40	34
36 x 28	7.00	200	1334	-0.006	11	91.4 x 71.1	0.65	1.02	630	-1.4	54	33	28	15	11	-
		300	2001	-0.013	18			1.52	944	-3.1	53	38	34	22	18	12
		400	2668	-0.022	22			2.03	1259	-5.6	52	42	38	28	23	17
		600	4002	-0.051	28			3.05	1889	-12.6	51	48	44	35	30	24
		700	4669	-0.069	31			3.56	2204	-17.1	51	50	46	38	32	27
		800	5336	-0.090	33			4.06	2519	-22.4	50	51	48	41	35	29
		900	6004	-0.114	35			4.57	2833	-28.3	50	53	50	43	37	31
		1000	6671	-0.141	36			5.08	3148	-35.0	50	54	52	45	39	33
		1100	7338	-0.170	38			5.59	3463	-42.3	50	56	53	47	40	35
46 x 22	7.03	200	1336	-0.006	11	116.8 x 55.9	0.65	1.02	630	-1.4	54	33	28	15	11	-
		300	2003	-0.013	18			1.52	945	-3.1	53	38	34	22	18	12
		400	2671	-0.022	22			2.03	1261	-5.6	52	42	38	28	23	17
		600	4007	-0.051	28			3.05	1891	-12.6	51	48	44	35	30	24
		700	4674	-0.069	31			3.56	2206	-17.1	51	50	46	38	32	27
		800	5342	-0.090	33			4.06	2521	-22.4	50	51	48	41	35	29
		900	6010	-0.114	35			4.57	2836	-28.3	50	53	50	43	37	31
		1000	6678	-0.141	36			5.08	3151	-35.0	50	54	52	45	39	33
		1100	7345	-0.170	38			5.59	3467	-42.3	50	56	53	47	40	35
32 x 32	7.11	200	1356	-0.006	11	81.3 x 81.3	0.66	1.02	640	-1.4	54	33	28	15	11	-
		300	2035	-0.013	18			1.52	960	-3.1	53	38	34	22	18	12
		400	2713	-0.022	22			2.03	1280	-5.6	52	42	38	28	23	17
		600	4069	-0.051	28			3.05	1920	-12.6	51	48	44	35	30	24
		700	4747	-0.069	31			3.56	2240	-17.1	51	50	46	38	33	27
		800	5425	-0.090	33			4.06	2560	-22.4	50	52	48	41	35	29
		900	6104	-0.114	35			4.57	2881	-28.3	50	53	50	43	37	31
		1000	6782	-0.141	36			5.08	3201	-35.0	50	55	52	45	39	33
		1100	7460	-0.170	38			5.59	3521	-42.3	50	56	53	47	40	35

NOTE: See notes and correction factors on page P1-69.

PERFORMANCE DATA

IP DATA					SOUND	METRIC DATA					OCTAVE BAND, dB						
NOM DUCT	DUCT AREA	NECK VEL	AIR FLOW	Ps		NOM DUCT	DUCT AREA	NECK VEL	AIR FLOW	Ps							
in	sq ft	fpm	cfm	in wg	NC	cm	sq m	m/s	l/s	Pa	2	3	4	5	6	7	
36 x 30	7.50	200	1432	-0.006	12	91.4 x 76.2	0.70	1.02	676	-1.4	54	33	28	15	11	-	
		300	2148	-0.013	18			1.52	1014	-3.1	53	39	34	22	18	12	
		400	2864	-0.022	22			2.03	1352	-5.6	52	43	38	28	23	17	
		600	4296	-0.051	29			3.05	2028	-12.6	51	48	44	36	30	24	
		700	5012	-0.069	31			3.56	2365	-17.1	51	50	46	38	33	27	
		800	5728	-0.090	33			4.06	2703	-22.4	51	52	48	41	35	29	
		900	6444	-0.114	35			4.57	3041	-28.3	50	53	50	43	37	31	
		1000	7160	-0.141	37			5.08	3379	-35.0	50	55	52	45	39	33	
		1100	7876	-0.170	38			5.59	3717	-42.3	50	56	53	47	41	35	
36 x 32	8.00	200	1530	-0.006	12	91.4 x 81.3	0.74	1.02	722	-1.4	47	27	21	-	-	-	
		300	2295	-0.013	18			1.52	1083	-3.1	46	32	27	16	12	-	
		400	3060	-0.022	23			2.03	1444	-5.6	46	36	32	21	16	11	
		600	4590	-0.051	29			3.05	2166	-12.6	45	41	38	29	23	18	
		700	5355	-0.069	31			3.56	2527	-17.1	44	43	40	32	26	20	
		800	6120	-0.090	33			4.06	2888	-22.4	44	45	42	34	28	23	
		900	6885	-0.114	35			4.57	3249	-28.3	44	47	44	37	30	25	
		1000	7650	-0.141	37			5.08	3610	-35.0	43	48	45	39	32	27	
		1100	8415	-0.170	38			5.59	3971	-42.3	43	49	47	40	34	28	
34 x 34	8.03	200	1536	-0.006	12	86.4 x 86.4	0.75	1.02	725	-1.4	47	27	21	-	-	-	
		300	2303	-0.013	18			1.52	1087	-3.1	47	32	27	16	12	-	
		400	3071	-0.022	23			2.03	1449	-5.6	46	36	32	22	17	11	
		600	4607	-0.051	29			3.05	2174	-12.6	45	42	38	29	24	18	
		700	5374	-0.069	31			3.56	2536	-17.1	45	44	40	32	26	21	
		800	6142	-0.090	33			4.06	2899	-22.4	44	45	42	35	29	23	
		900	6910	-0.114	35			4.57	3261	-28.3	44	47	44	37	31	25	
		1000	7678	-0.141	37			5.08	3623	-35.0	44	48	45	39	33	27	
		1100	8445	-0.170	38			5.59	3986	-42.3	44	50	47	41	34	29	
36 x 34	8.50	100	814	-0.001	-	91.4 x 86.4	0.79	0.51	384	-0.3	56	25	18	-	-	-	
		200	1628	-0.006	12			1.02	768	-1.4	54	34	28	15	12	-	
		300	2442	-0.013	19			1.52	1152	-3.1	53	39	34	23	19	13	
		400	3256	-0.022	23			2.03	1537	-5.6	53	43	39	28	24	18	
		500	4070	-0.035	26			2.54	1921	-8.7	52	46	42	33	28	22	
		600	4884	-0.051	29			3.05	2305	-12.6	52	48	45	36	31	25	
		800	6511	-0.090	34			4.06	3073	-22.4	51	52	49	42	36	30	
		1000	8139	-0.141	37			5.08	3841	-35.0	51	55	52	46	39	34	
		1100	8953	-0.170	39			5.59	4225	-42.3	50	57	54	48	41	36	
42 x 30	8.75	100	838	-0.001	-	106.7 x 76.2	0.81	0.51	395	-0.3	56	25	18	-	-	-	
		200	1676	-0.006	12			1.02	791	-1.4	55	34	28	15	12	-	
		300	2514	-0.013	19			1.52	1186	-3.1	54	39	35	23	19	13	
		400	3352	-0.022	23			2.03	1582	-5.6	53	43	39	29	24	18	
		500	4189	-0.035	27			2.54	1977	-8.7	52	46	42	33	28	22	
		600	5027	-0.051	29			3.05	2373	-12.6	52	49	45	36	31	25	
		800	6703	-0.090	34			4.06	3164	-22.4	51	52	49	42	36	30	
		1000	8379	-0.141	37			5.08	3954	-35.0	51	55	52	46	40	34	
		1100	9217	-0.170	39			5.59	4350	-42.3	51	57	54	48	41	36	
36 x 36	9.00	100	863	-0.001	-	91.4 x 91.4	0.84	0.51	407	-0.3	56	25	18	-	-	-	
		200	1726	-0.006	13			1.02	814	-1.4	55	34	29	16	12	-	
		300	2589	-0.013	19			1.52	1222	-3.1	54	39	35	23	19	13	
		400	3452	-0.022	23			2.03	1629	-5.6	53	43	39	29	24	18	
		500	4314	-0.035	27			2.54	2036	-8.7	53	46	42	33	28	22	
		600	5177	-0.051	30			3.05	2443	-12.6	52	49	45	36	31	25	
		800	6903	-0.090	34			4.06	3258	-22.4	51	53	49	42	36	30	
		1000	8629	-0.141	37			5.08	4072	-35.0	51	56	53	46	40	34	
		1100	9492	-0.170	39			5.59	4480	-42.3	51	57	54	48	41	36	

NOTE: See notes and correction factors on page P1-69.

PERFORMANCE DATA

IP DATA					SOUND	METRIC DATA					OCTAVE BAND, dB						
NOM DUCT	DUCT AREA	NECK VEL	AIR FLOW	Ps		NOM DUCT	DUCT AREA	NECK VEL	AIR FLOW	Ps							
in	sq ft	fpm	cfm	in wg	NC	cm	sq m	m/s	l/s	Pa	2	3	4	5	6	7	
48 x 30	10.00	100	960	-0.001	-	121.9 x 76.2	0.93	0.51	453	-0.3	57	25	19	-	-	-	
		200	1920	-0.006	13			1.02	906	-1.4	55	35	29	16	12	-	
		300	2879	-0.013	19			1.52	1359	-3.1	54	40	35	24	19	14	
		400	3839	-0.022	24			2.03	1812	-5.6	53	44	39	29	24	19	
		500	4799	-0.035	27			2.54	2265	-8.7	53	47	43	33	28	22	
		600	5759	-0.051	30			3.05	2718	-12.6	53	49	45	37	31	26	
		800	7678	-0.090	34			4.06	3624	-22.4	52	53	50	42	36	31	
		1000	9598	-0.141	38			5.08	4530	-35.0	51	56	53	46	40	35	
		1100	10557	-0.170	39			5.59	4983	-42.3	51	57	54	48	42	36	
38 x 38	10.03	100	964	-0.001	-	96.5 x 96.5	0.93	0.51	455	-0.3	57	25	19	-	-	-	
		200	1927	-0.006	13			1.02	910	-1.4	55	35	29	16	12	-	
		300	2891	-0.013	19			1.52	1364	-3.1	54	40	35	24	19	14	
		400	3854	-0.022	24			2.03	1819	-5.6	53	44	39	29	24	19	
		500	4818	-0.035	27			2.54	2274	-8.7	53	47	43	33	28	22	
		600	5782	-0.051	30			3.05	2729	-12.6	53	49	45	37	31	26	
		800	7709	-0.090	34			4.06	3638	-22.4	52	53	50	42	36	31	
		1000	9636	-0.141	38			5.08	4548	-35.0	51	56	53	46	40	35	
		1100	10599	-0.170	39			5.59	5002	-42.3	51	57	54	48	42	36	
42 x 36	10.50	100	1010	-0.001	-	106.7 x 91.4	0.98	0.51	477	-0.3	57	25	19	-	-	-	
		200	2020	-0.006	13			1.02	953	-1.4	55	35	29	16	13	-	
		300	3029	-0.013	19			1.52	1430	-3.1	54	40	35	24	20	14	
		400	4039	-0.022	24			2.03	1906	-5.6	54	44	40	29	25	19	
		500	5049	-0.035	27			2.54	2383	-8.7	53	47	43	34	28	23	
		600	6059	-0.051	30			3.05	2859	-12.6	53	49	46	37	32	26	
		800	8078	-0.090	35			4.06	3812	-22.4	52	53	50	42	37	31	
		1000	10098	-0.141	38			5.08	4766	-35.0	52	56	53	47	40	35	
		1100	11107	-0.170	40			5.59	5242	-42.3	51	57	55	48	42	36	
46 x 34	10.86	100	1045	-0.001	-	116.8 x 86.4	1.01	0.51	493	-0.3	57	26	19	-	-	-	
		200	2090	-0.006	13			1.02	986	-1.4	55	35	29	16	13	-	
		300	3135	-0.013	20			1.52	1479	-3.1	55	40	35	24	20	14	
		400	4179	-0.022	24			2.03	1972	-5.6	54	44	40	30	25	19	
		500	5224	-0.035	28			2.54	2466	-8.7	53	47	43	34	29	23	
		600	6269	-0.051	30			3.05	2959	-12.6	53	50	46	37	32	26	
		800	8359	-0.090	35			4.06	3945	-22.4	52	53	50	43	37	31	
		1000	10448	-0.141	38			5.08	4931	-35.0	52	56	53	47	41	35	
		1100	11493	-0.170	40			5.59	5424	-42.3	51	58	55	49	42	37	
42 x 38	11.08	100	1067	-0.001	-	106.7 x 96.5	1.03	0.51	504	-0.3	49	17	11	-	-	-	
		200	2134	-0.006	13			1.02	1007	-1.4	47	27	21	-	-	-	
		300	3201	-0.013	20			1.52	1511	-3.1	46	32	27	16	12	-	
		400	4268	-0.022	24			2.03	2014	-5.6	46	36	32	21	16	11	
		500	5335	-0.035	28			2.54	2518	-8.7	45	39	35	25	20	15	
		600	6402	-0.051	30			3.05	3022	-12.6	45	41	38	29	23	18	
		800	8536	-0.090	35			4.06	4029	-22.4	44	45	42	34	28	23	
		1000	10671	-0.141	38			5.08	5036	-35.0	43	48	45	39	32	27	
		1100	11738	-0.170	40			5.59	5540	-42.3	43	49	47	40	34	28	
40 x 40	11.11	100	1070	-0.001	-	101.6 x 101.6	1.03	0.51	505	-0.3	49	18	11	-	-	-	
		200	2140	-0.006	13			1.02	1010	-1.4	47	27	21	-	-	-	
		300	3210	-0.013	20			1.52	1515	-3.1	47	32	27	16	12	-	
		400	4279	-0.022	24			2.03	2020	-5.6	46	36	32	22	17	11	
		500	5349	-0.035	28			2.54	2525	-8.7	45	39	35	26	21	15	
		600	6419	-0.051	30			3.05	3029	-12.6	45	42	38	29	24	18	
		800	8559	-0.090	35			4.06	4039	-22.4	44	45	42	35	29	23	
		1000	10698	-0.141	38			5.08	5049	-35.0	44	48	45	39	33	27	
		1100	11768	-0.170	40			5.59	5554	-42.3	44	50	47	41	34	29	

NOTE: See notes and correction factors on page P1-69.

PERFORMANCE DATA

IP DATA					SOUND	METRIC DATA					OCTAVE BAND, dB						
NOM DUCT	DUCT AREA	NECK VEL	AIR FLOW	Ps		NOM DUCT	DUCT AREA	NECK VEL	AIR FLOW	Ps							
in	sq ft	fpm	cfm	in wg	NC	cm	sq m	m/s	l/s	Pa	2	3	4	5	6	7	
48 x 36	12.00	100	1157	-0.001	-	121.9 x 91.4	1.11	0.51	546	-0.3	57	26	20	-	-	-	
		200	2313	-0.006	14			1.02	1092	-1.4	56	35	30	17	13	-	
		300	3470	-0.013	20			1.52	1638	-3.1	55	41	36	25	20	14	
		400	4627	-0.022	25			2.03	2183	-5.6	54	45	40	30	25	19	
		500	5783	-0.035	28			2.54	2729	-8.7	54	48	44	34	29	23	
		600	6940	-0.051	31			3.05	3275	-12.6	53	50	46	38	32	26	
		800	9253	-0.090	35			4.06	4367	-22.4	53	54	51	43	37	31	
		1000	11566	-0.141	39			5.08	5459	-35.0	52	57	54	47	41	35	
		1100	12723	-0.170	40			5.59	6005	-42.3	52	58	55	49	43	37	
42 x 42	12.25	100	1182	-0.001	-	106.7 x 106.7	1.14	0.51	558	-0.3	58	26	20	-	-	-	
		200	2363	-0.006	14			1.02	1115	-1.4	56	35	30	17	13	-	
		300	3545	-0.013	20			1.52	1673	-3.1	55	41	36	25	20	14	
		400	4727	-0.022	25			2.03	2231	-5.6	54	45	40	30	25	19	
		500	5908	-0.035	28			2.54	2788	-8.7	54	48	44	34	29	23	
		600	7090	-0.051	31			3.05	3346	-12.6	53	50	46	38	32	27	
		800	9453	-0.090	35			4.06	4461	-22.4	53	54	51	43	37	32	
		1000	11816	-0.141	39			5.08	5577	-35.0	52	57	54	47	41	35	
		1100	12998	-0.170	40			5.59	6134	-42.3	52	58	55	49	43	37	
44 x 44	13.44	100	1299	-0.001	-	111.8 x 111.8	1.25	0.51	613	-0.3	58	27	20	-	-	-	
		200	2598	-0.006	14			1.02	1226	-1.4	56	36	30	17	14	-	
		300	3897	-0.013	21			1.52	1839	-3.1	55	41	36	25	21	15	
		400	5196	-0.022	25			2.03	2452	-5.6	55	45	41	30	26	20	
		500	6495	-0.035	28			2.54	3065	-8.7	54	48	44	35	29	24	
		600	7794	-0.051	31			3.05	3678	-12.6	54	50	47	38	33	27	
		800	10392	-0.090	36			4.06	4904	-22.4	53	54	51	44	38	32	
		1000	12990	-0.141	39			5.08	6131	-35.0	53	57	54	48	41	36	
		1100	14289	-0.170	41			5.59	6744	-42.3	52	59	56	50	43	37	
48 x 42	14.00	100	1354	-0.001	-	121.9 x 106.7	1.30	0.51	639	-0.3	58	27	20	-	-	-	
		200	2707	-0.006	14			1.02	1278	-1.4	57	36	31	18	14	-	
		300	4061	-0.013	21			1.52	1916	-3.1	56	41	37	25	21	15	
		400	5414	-0.022	25			2.03	2555	-5.6	55	45	41	31	26	20	
		500	6768	-0.035	29			2.54	3194	-8.7	54	48	44	35	30	24	
		600	8121	-0.051	31			3.05	3833	-12.6	54	51	47	38	33	27	
		800	10828	-0.090	36			4.06	5110	-22.4	53	54	51	44	38	32	
		1000	13535	-0.141	39			5.08	6388	-35.0	53	57	55	48	42	36	
		1100	14889	-0.170	41			5.59	7027	-42.3	53	59	56	50	43	38	
46 x 46	14.69	100	1422	-0.001	-	116.8 x 116.8	1.37	0.51	671	-0.3	58	27	20	-	-	-	
		200	2844	-0.006	15			1.02	1342	-1.4	57	36	31	18	14	-	
		300	4266	-0.013	21			1.52	2013	-3.1	56	42	37	25	21	15	
		400	5688	-0.022	25			2.03	2684	-5.6	55	45	41	31	26	20	
		500	7110	-0.035	29			2.54	3355	-8.7	55	48	44	35	30	24	
		600	8532	-0.051	32			3.05	4026	-12.6	54	51	47	38	33	27	
		800	11375	-0.090	36			4.06	5369	-22.4	54	55	51	44	38	32	
		1000	14219	-0.141	40			5.08	6711	-35.0	53	58	55	48	42	36	
		1100	15641	-0.170	41			5.59	7382	-42.3	53	59	56	50	43	38	
48 x 46	15.33	100	1485	-0.001	-	121.9 x 116.8	1.42	0.51	701	-0.3	59	27	21	-	-	-	
		200	2970	-0.006	-			1.02	1401	-1.4	57	36	31	18	14	-	
		300	4454	-0.013	-			1.52	2102	-3.1	56	42	37	26	21	15	
		400	5939	-0.022	-			2.03	2803	-5.6	55	46	41	31	26	20	
		500	7424	-0.035	-			2.54	3504	-8.7	55	49	45	35	30	24	
		600	8909	-0.051	-			3.05	4204	-12.6	54	51	47	39	33	27	
		800	11878	-0.090	-			4.06	5606	-22.4	54	55	52	44	38	32	
		1000	14848	-0.141	-			5.08	7007	-35.0	53	58	55	48	42	36	
		1100	16332	-0.170	-			5.59	7708	-42.3	53	59	56	50	44	38	

NOTE: See notes and correction factors on page P1-69.

PERFORMANCE DATA

IP DATA					SOUND	METRIC DATA					OCTAVE BAND, dB						
NOM DUCT	DUCT AREA	NECK VEL	AIR FLOW	P _s		NOM DUCT	DUCT AREA	NECK VEL	AIR FLOW	P _s							
in	sq ft	fpm	cfm	in wg	NC	cm	sq m	m/s	l/s	Pa	2	3	4	5	6	7	
48 x 48	16.00	100	1550	-0.001	-	121.9 x 121.9	1.49	0.51	732	-0.3	59	27	21	-	-	-	
		200	3101	-0.006	15			1.02	1463	-1.4	57	37	31	18	14	-	
		300	4651	-0.013	21			1.52	2195	-3.1	56	42	37	26	21	16	
		400	6202	-0.022	26			2.03	2927	-5.6	56	46	41	31	26	21	
		500	7752	-0.035	29			2.54	3659	-8.7	55	49	45	35	30	24	
		600	9302	-0.051	32			3.05	4390	-12.6	55	51	47	39	33	28	
		800	12403	-0.090	37			4.06	5854	-22.4	54	55	52	44	38	33	
		1000	15504	-0.141	40			5.08	7317	-35.0	53	58	55	49	42	37	
		1100	17054	-0.170	41			5.59	8049	-42.3	53	59	57	50	44	38	

NOTES: Performance data includes damper. Data was obtained from test conducted in accordance with ANSI / ASHRAE Standard 70-1991. All pressures are in inches of water (Pascals). NC values are based on Octave Band 2 - 7 sound power levels minus a room absorption of 10dB.

ENGINEERING SPECIFICATION & CONFIGURATION**9S80**

The return grille shall be a Krueger model 9S80. This grille must have fixed 45° deflection (H and V models) or 0° deflection (HZ and VZ models) blades on 3/4" centers constructed of roll formed 304 stainless steel with minimum 0.050" thickness. The frame of the grille must be constructed of 20 gage 304 stainless steel with countersunk screw holes (#6x1 1/4" stainless sheet metal screws provided by manufacturer). This frame must also produce a border of 1 3/8" around all sides of the grille with mitered corners. Optional 304 stainless steel damper available made of 20 gage stainless steel welded to the return grille and operable from the face.

Optional 316 stainless steel construction available.

FINISH

The finish shall be 90 - #4 Satin Polish, obtained by finishing with a 120-grit abrasive, or 44 - British White.

1. SERIES: (XXXX)

9S80 - Single Deflection Return Grille
with Blades on 3/4" Centers

2. PATTERN: (XX)

H - 45° Horizontal Blades
V - 45° Vertical Blades
HZ - 0° Horizontal Blades
VZ - 0° Vertical Blades

3. WIDTH: (XX)

4" - 48" in 1" Increments

4. HEIGHT: (XX)

4" - 60" in 1" Increments

5. MATERIAL: (XXX)

304 - Stainless Steel Grade 304
316 - Stainless Steel Grade 316

6. FRAME STYLE: (XXX)

F22 - Surface Mount
F23 - Lay-in T-Bar

7. PANEL: (XX)x(XX)

None
24"x24" *
24"x48" *

8. FASTENING METHOD: (XX)

00 - No Screw Holes
01 - Countersunk Screw Holes **

9. DAMPER: (XX)

00 - No Damper
01 - Stainless Steel OBD †

10. ACCESSORIES: (XX) (XX)

00 - No Accessories
01 - Plaster Frame
XX - Square to Round Adapter ‡
(Specify size from 04 - 18" in increments of 2",
depending on neck size)

11. FINISH: (XX)

90 - #4 Satin Polish
44 - British White

* Only available with Frame 23.

** Unit shipped with #6x1 1/4" stainless steel sheet metal screws.

† Damper is welded to unit.

‡ Square to Round Adapter is not available with OBD.

SAMPLE CONFIGURATION: 9S80 - HZ - 30x60 - 316 - F22 - NONE - 01 - 00 - 00 - 00 - 90

INTRODUCTION

The 9S80HF series stainless steel fixed-blade grilles with filter rack and hinged face may be set to either 0° or 45° deflection for performance and aesthetic versatility. These grilles feature $\frac{3}{4}$ " on center blade spacing and are available for surface mount or lay-in T-bar applications.

MODEL

9S80HF - Hinge Face, Fixed Blade Return Grille

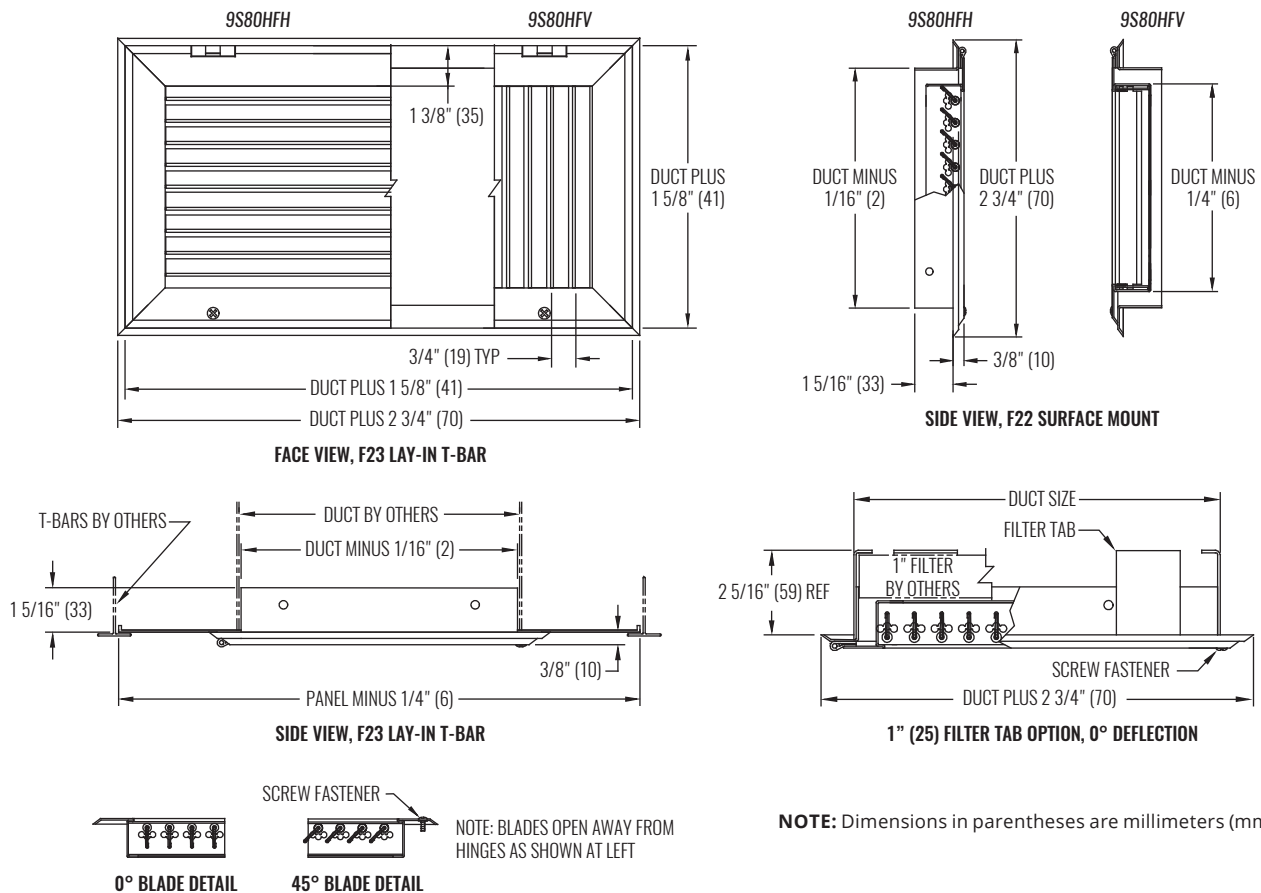
FEATURES

- 304 Stainless steel construction (316 optional)
- Sturdy deflection blades spaced on $\frac{3}{4}$ " centers
- Countersunk screw holes
- Horizontal or vertical blades at 45° (H or V)
- Horizontal or vertical blades at 0° (HZ or VZ)
- Standard finish is 90 - #4 Satin Polish or 44 - British White

ACCESSORIES

- Stainless steel OBD welded to unit, adjustable from face of grille (model 9OBD)
- Square to round adapter (model 9SRA)
- Filter clips for filter mounting

DIMENSIONAL DATA



NOTE: Dimensions in parentheses are millimeters (mm).

9S80HF

Stainless Steel Return Grille, Single Deflection, Hinged



PERFORMANCE DATA

IP DATA					SOUND	METRIC DATA					OCTAVE BAND, dB						
NOM DUCT	DUCT AREA	NECK VEL	AIR FLOW	Ps		NOM DUCT	DUCT AREA	NECK VEL	AIR FLOW	Ps							
in	sq ft	fpm	cfm	in wg	NC	cm	sq m	m/s	l/s	Pa	2	3	4	5	6	7	
6 x 6	0.25	300	57	-0.013	-	15.2 x 15.2	0.02	1.52	27	-3.1	38	23	19	-	-	-	
		400	77	-0.022	-			2.03	36	-5.6	37	27	23	13	-	-	
		500	96	-0.035	-			2.54	45	-8.7	36	30	26	17	12	-	
		600	115	-0.051	13			3.05	54	-12.6	36	33	29	20	15	-	
		700	134	-0.069	15			3.56	63	-17.1	36	35	31	23	17	12	
		800	153	-0.090	17			4.06	72	-22.4	35	36	33	26	20	14	
		900	172	-0.114	19			4.57	81	-28.3	35	38	35	28	22	16	
		1000	191	-0.141	21			5.08	90	-35.0	35	39	36	30	24	18	
		1100	211	-0.170	22			5.59	99	-42.3	35	41	38	32	25	20	
8 x 6	0.33	300	79	-0.013	-	20.3 x 15.2	0.03	1.52	37	-3.1	39	25	20	-	-	-	
		400	106	-0.022	-			2.03	50	-5.6	38	29	24	14	-	-	
		500	132	-0.035	12			2.54	62	-8.7	38	32	28	18	13	-	
		600	159	-0.051	14			3.05	75	-12.6	37	34	30	22	16	-	
		700	185	-0.069	17			3.56	87	-17.1	37	36	33	25	19	13	
		800	211	-0.090	19			4.06	100	-22.4	37	38	35	27	21	15	
		900	238	-0.114	21			4.57	112	-28.3	36	39	36	29	23	17	
		1000	264	-0.141	22			5.08	125	-35.0	36	41	38	31	25	19	
		1100	291	-0.170	24			5.59	137	-42.3	36	42	39	33	27	21	
10 x 6	0.42	300	101	-0.013	-	25.4 x 15.2	0.04	1.52	48	-3.1	40	26	21	-	-	-	
		400	135	-0.022	-			2.03	64	-5.6	39	30	25	15	-	-	
		500	169	-0.035	13			2.54	80	-8.7	39	33	29	19	14	-	
		600	202	-0.051	15			3.05	95	-12.6	38	35	31	23	17	11	
		700	236	-0.069	18			3.56	111	-17.1	38	37	34	26	20	14	
		800	270	-0.090	20			4.06	127	-22.4	38	39	36	28	22	16	
		900	304	-0.114	22			4.57	143	-28.3	37	40	37	30	24	19	
		1000	337	-0.141	23			5.08	159	-35.0	37	42	39	32	26	20	
		1100	371	-0.170	25			5.59	175	-42.3	37	43	40	34	28	22	
8 x 8	0.44	300	110	-0.013	-	20.3 x 20.3	0.04	1.52	52	-3.1	40	26	21	-	-	-	
		400	146	-0.022	-			2.03	69	-5.6	40	30	26	15	11	-	
		500	183	-0.035	13			2.54	86	-8.7	39	33	29	20	14	-	
		600	219	-0.051	16			3.05	103	-12.6	39	35	32	23	18	12	
		700	256	-0.069	18			3.56	121	-17.1	38	37	34	26	20	14	
		800	292	-0.090	20			4.06	138	-22.4	38	39	36	28	22	17	
		900	329	-0.114	22			4.57	155	-28.3	38	41	38	31	24	19	
		1000	365	-0.141	24			5.08	172	-35.0	38	42	39	33	26	21	
		1100	402	-0.170	25			5.59	189	-42.3	37	43	41	34	28	22	
12 x 6	0.50	300	123	-0.013	-	30.5 x 15.2	0.05	1.52	58	-3.1	41	27	22	-	-	-	
		400	164	-0.022	-			2.03	77	-5.6	40	30	26	16	11	-	
		500	205	-0.035	13			2.54	97	-8.7	40	33	29	20	15	-	
		600	246	-0.051	16			3.05	116	-12.6	39	36	32	23	18	12	
		700	287	-0.069	19			3.56	136	-17.1	39	38	34	26	21	15	
		800	328	-0.090	21			4.06	155	-22.4	39	40	36	29	23	17	
		900	369	-0.114	23			4.57	174	-28.3	38	41	38	31	25	19	
		1000	410	-0.141	24			5.08	194	-35.0	38	43	40	33	27	21	
		1100	451	-0.170	26			5.59	213	-42.3	38	44	41	35	28	23	
14 x 6	0.58	300	145	-0.013	-	35.6 x 15.2	0.05	1.52	68	-3.1	41	27	22	11	-	-	
		400	193	-0.022	11			2.03	91	-5.6	41	31	27	16	12	-	
		500	242	-0.035	14			2.54	114	-8.7	40	34	30	21	16	-	
		600	290	-0.051	17			3.05	137	-12.6	40	37	33	24	19	13	
		700	338	-0.069	19			3.56	160	-17.1	40	39	35	27	21	16	
		800	386	-0.090	21			4.06	182	-22.4	39	40	37	30	24	18	
		900	435	-0.114	23			4.57	205	-28.3	39	42	39	32	26	20	
		1000	483	-0.141	25			5.08	228	-35.0	39	43	40	34	27	22	
		1100	531	-0.170	26			5.59	251	-42.3	38	45	42	36	29	24	

NOTE: See notes and correction factors on page P1-82.

9S80HF

Stainless Steel Return Grille, Single Deflection, Hinged



PERFORMANCE DATA

IP DATA					SOUND	METRIC DATA					OCTAVE BAND, dB					
NOM DUCT	DUCT AREA	NECK VEL	AIR FLOW	Ps		NOM DUCT	DUCT AREA	NECK VEL	AIR FLOW	Ps						
in	sq ft	fpm	cfm	in wg	NC	cm	sq m	m/s	l/s	Pa	2	3	4	5	6	7
48 x 48	16.00	100	1550	-0.001	-	121.9 x 121.9	1.49	0.51	732	-0.3	59	27	21	-	-	-
		200	3101	-0.006	15			1.02	1463	-1.4	57	37	31	18	14	-
		300	4651	-0.013	21			1.52	2195	-3.1	56	42	37	26	21	16
		400	6202	-0.022	26			2.03	2927	-5.6	56	46	41	31	26	21
		500	7752	-0.035	29			2.54	3659	-8.7	55	49	45	35	30	24
		600	9302	-0.051	32			3.05	4390	-12.6	55	51	47	39	33	28
		800	12403	-0.090	37			4.06	5854	-22.4	54	55	52	44	38	33
		1000	15504	-0.141	40			5.08	7317	-35.0	53	58	55	49	42	37
		1100	17054	-0.170	41			5.59	8049	-42.3	53	59	57	50	44	38

NOTES: Performance data includes damper. Data was obtained from test conducted in accordance with ANSI / ASHRAE Standard 70-1991. All pressures are in inches of water (Pascals). NC values are based on Octave Band 2 - 7 sound power levels minus a room absorption of 10dB.

ENGINEERING SPECIFICATION & CONFIGURATION

9S80HF

The hinged face return grille shall be a Krueger model 9S80HF. This grille must have fixed 45° deflection (H and V models) or 0° deflection (HZ and VZ models) blades on 3/4" centers constructed of roll formed 304 stainless steel with minimum 0.050" thickness. The frame of the grille must be constructed of 18 gage 304 stainless steel and attach to a 20 gage 304 stainless steel sub-frame with stainless steel hinges and #8-32 stainless captive screws. The sub-frame shall have countersunk screw holes (#6 x 1 1/4" stainless sheet metal screws provided by manufacturer). The frame and sub-frame assembly must produce a border not exceeding 1 9/16" around all sides of the grille with mitered corners.

Optional 304 stainless steel damper available made of 20 gage stainless steel welded to the return grille and operable from the face.

Optional filter clips available for the sub-frame so assembly can accept a 1" thick filter.

Optional 316 stainless steel construction available.

FINISH

The finish shall be 90 - #4 Satin Polish, obtained by finishing with a 120-grit abrasive, or 44 - British White.

1. SERIES: (XXXXXX)

9S80HF - Hinged Face Return Grille

2. PATTERN: (XX)

H - 45° Horizontal Blades
V - 45° Vertical Blades
HZ - 0° Horizontal Blades
VZ - 0° Vertical Blades

3. WIDTH: (XX)

6" - 48" in 1" Increments

4. HEIGHT: (XX)

6" - 48" in 1" Increments

5. MATERIAL: (XXX)

304 - Stainless Steel Grade 304
316 - Stainless Steel Grade 316

6. FRAME STYLE: (XXX)

F22 - Surface Mount
F23 - Lay-in T-Bar

7. PANEL: (XX)x(XX)

None
24"x24" *
24"x48" *

8. FASTENING METHOD: (XX)

00 - No Screw Holes
01 - Countersunk Screw Holes **
08 - 1 1/2" Turn, Hinged Top ***
12 - 1 1/2" Turn, No Hinge ***

9. DAMPER: (XX)

00 - No Damper
01 - Stainless Steel OBD †

10. ACCESSORIES: (XX) (XX)

00 - No Accessories
XX - Square to Round Adapter ‡
(Specify size from 04 - 18" in increments of 2", depending on neck size)
FC - Filter Clips

11. FINISH: (XX)

90 - #4 Satin Polish
44 - British White

Maximum single size section is 36"x48".

* Only available with Frame 23.

** Unit shipped with #6x1 1/4" stainless steel sheet metal screws.

*** Fastening Method codes '08' and '12' use 1 1/2" turn captive machine screws.

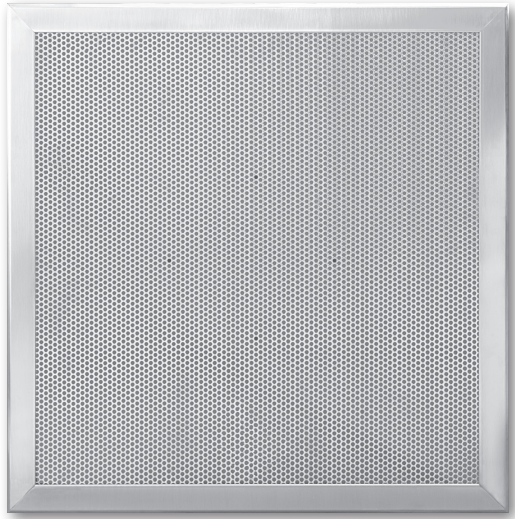
† Damper is welded to unit.

‡ Square to Round Adapter is not available with OBD.

SAMPLE CONFIGURATION: 9S80HF - H - 20x20 - 304 - F22 - NONE - 08 - 00 - FC - 90

9S84P

Stainless Steel Supply Diffuser, Perforated Face



INTRODUCTION

The 9S84P series stainless steel perforated diffuser features a one piece, 4-way deflector mounted to the back of the perforated face to give the aesthetics of a perforated diffuser with a 4-way blow pattern. They feature 51% free-area and are available for surface mount or lay-in T-bar applications.

MODEL

9S84P - Perforated Supply Diffuser

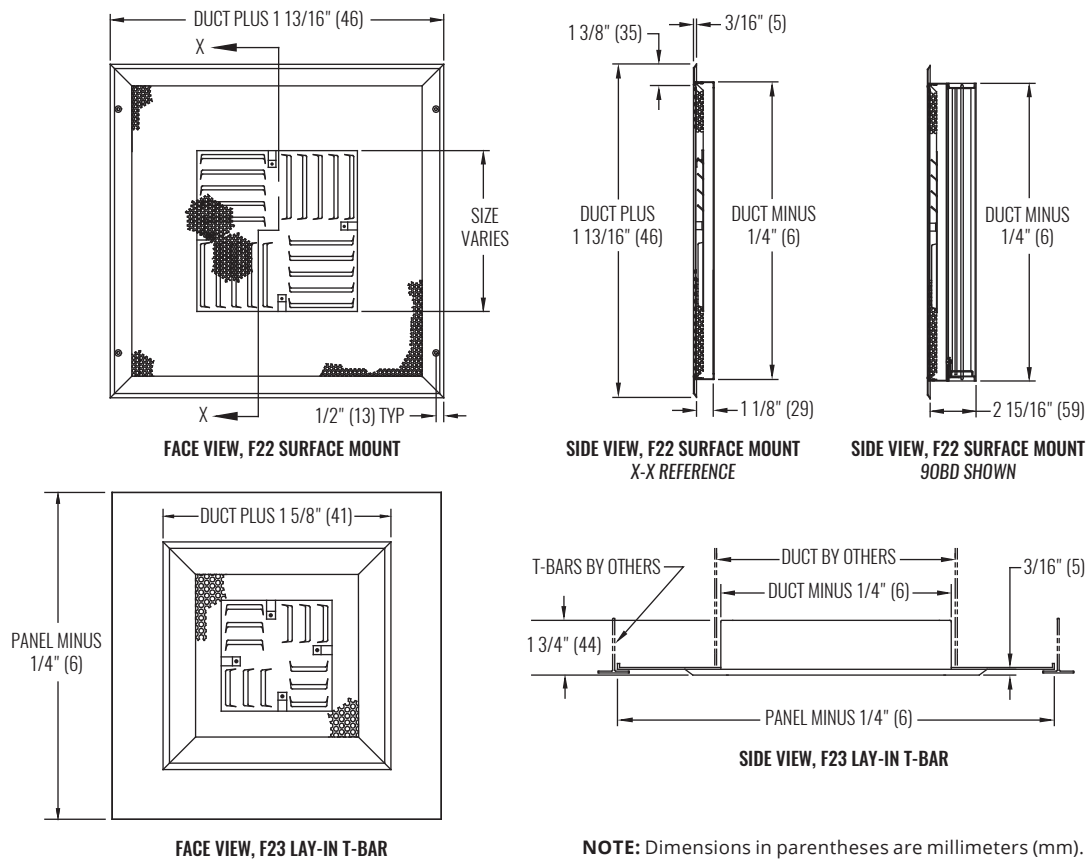
FEATURES

- 3/16" Holes on 1/4" staggered centers (51% free area)
- 304 Stainless steel construction (316 optional)
- 4-Way deflection
- Countersunk screw holes in mounting frame
- Standard finish is 90 - #4 Satin Polish or 44 - British White

ACCESSORIES

- Stainless steel OBD welded to unit, adjustable from face of diffuser (model 9OBD)
- Plaster frame (model 98PF)
- Square to round adapter (model 9SRA)

DIMENSIONAL DATA



PERFORMANCE DATA | SQUARE NECK, 24x24 PANEL, 4-WAY, NO DAMPER

NOM DUCT	IP DATA					SOUND	METRIC DATA					
	NECK VEL	AIR FLOW	Pt	Pv	4-WAY THROW		NOM DUCT	NECK VEL	AIR FLOW	Pt	Pv	4-WAY THROW
	in fpm	cfm	in wg	in wg	ft		cm	m/s	l/s	Pa	Pa	cm
6 x 6	300	75	0.017	.006	1 - 2 - 4	-	15.2 x 15.2	1.52	35	4.2	1.5	30 - 63 - 122
	400	100	0.029	.010	2 - 2 - 5	-		2.03	47	7.2	2.5	61 - 63 - 152
	500	125	0.046	.016	2 - 3 - 6	13		2.54	59	11.5	4.0	61 - 94 - 183
	600	150	0.066	.022	2 - 4 - 7	19		3.05	71	16.4	5.5	61 - 126 - 213
	700	175	0.090	.031	3 - 4 - 9	23		3.56	83	22.4	7.7	91 - 126 - 274
	800	200	0.118	.040	3 - 5 - 10	28		4.06	94	29.4	10.0	91 - 157 - 305
	1000	250	0.184	.062	4 - 6 - 11	35		5.08	118	45.8	15.4	122 - 189 - 335
	1200	300	0.265	.090	5 - 7 - 12	41		6.10	142	66.0	22.4	152 - 220 - 366
8 x 8	1400	350	0.360	.122	6 - 9 - 13	45	20.3 x 20.3	7.11	165	89.6	30.4	183 - 283 - 396
	300	133	0.019	.006	1 - 3 - 6	-		1.52	63	4.7	1.5	30 - 94 - 183
	400	178	0.034	.010	2 - 4 - 7	12		2.03	84	8.5	2.5	61 - 126 - 213
	500	222	0.052	.016	3 - 5 - 9	19		2.54	105	12.9	4.0	91 - 157 - 274
	600	267	0.075	.022	4 - 6 - 11	25		3.05	126	18.7	5.5	122 - 189 - 335
	700	311	0.103	.031	4 - 7 - 13	29		3.56	147	25.6	7.7	122 - 220 - 396
	800	356	0.134	.040	5 - 7 - 15	34		4.06	168	33.4	10.0	152 - 220 - 457
	1000	444	0.210	.062	6 - 9 - 16	41		5.08	210	52.3	15.4	183 - 283 - 488
10 x 10	1200	533	0.302	.090	7 - 11 - 18	47	25.4 x 25.4	6.10	252	75.2	22.4	213 - 346 - 549
	1400	622	0.411	.122	9 - 13 - 19	51		7.11	294	102.3	30.4	274 - 409 - 579
	300	208	0.022	.006	2 - 3 - 7	-		1.52	98	5.5	1.5	61 - 94 - 213
	400	278	0.039	.010	3 - 5 - 9	16		2.03	131	9.7	2.5	91 - 157 - 274
	500	347	0.061	.016	4 - 6 - 12	23		2.54	164	15.2	4.0	122 - 189 - 366
	600	417	0.087	.022	5 - 7 - 14	29		3.05	197	21.7	5.5	152 - 220 - 427
	700	486	0.119	.031	5 - 8 - 16	34		3.56	229	29.6	7.7	152 - 252 - 488
	800	556	0.155	.040	6 - 9 - 18	38		4.06	262	38.6	10.0	183 - 283 - 549
12 x 12	1000	694	0.243	.062	8 - 12 - 20	45	30.5 x 30.5	5.08	328	60.5	15.4	244 - 378 - 610
	1200	833	0.349	.090	9 - 14 - 22	51		6.10	393	86.9	22.4	274 - 441 - 671
	1400	972	0.476	.122	11 - 16 - 24	56		7.11	459	118.5	30.4	335 - 504 - 732
	300	300	0.032	.006	4 - 6 - 12	-		1.52	142	8.0	1.5	122 - 189 - 366
	400	400	0.057	.010	6 - 8 - 16	20		2.03	189	14.2	2.5	183 - 252 - 488
	500	500	0.089	.016	7 - 10 - 17	27		2.54	236	22.2	4.0	213 - 315 - 518
	600	600	0.128	.022	8 - 12 - 19	33		3.05	283	31.9	5.5	244 - 378 - 579
	700	700	0.174	.031	10 - 15 - 21	38		3.56	330	43.3	7.7	305 - 472 - 640
	800	800	0.227	.040	11 - 16 - 22	42		4.06	378	56.5	10.0	335 - 504 - 671
	1000	1000	0.355	.062	14 - 17 - 25	49		5.08	472	88.4	15.4	427 - 535 - 762
	1200	1200	0.510	.090	16 - 19 - 27	55		6.10	566	127.0	22.4	488 - 598 - 823
	1400	1400	0.695	.122	17 - 21 - 29	60		7.11	661	173.1	30.4	518 - 661 - 884

NOTES: Throw values are based on terminal velocities of 150, 100, and 50 FPM. Throw values are given for isothermal conditions. Sound data based on a 4 foot grille. Test conducted in accordance with ANSI / ASHRAE Standard 70, ISO 5219, and ISO 3741. Throw values given for 1-Way Throw are for [Total CFM] CFM per side (L/s). Throw values given for 2-Way Throw are for [Total CFM] CFM per side (L/s). Throw values given for 3-Way Throw are for [Total CFM] CFM per side (L/s).

PERFORMANCE DATA | SQUARE NECK, 24x24 PANEL, 1-3-WAY, NO DAMPER

IP DATA						METRIC DATA					
NOM DUCT	NECK VEL	AIR FLOW	1-WAY THROW	2-WAY THROW	3-WAY THROW	NOM DUCT	NECK VEL	AIR FLOW	1-WAY THROW	2-WAY THROW	3-WAY THROW
in	fpm	cfm	ft	ft	ft	cm	m/s	l/s	m	m	m
6 x 6	300	75	1 - 3 - 9	1 - 3 - 6	1 - 3 - 5	15.2 x 15.2	1.52	35	0 - 1 - 3	0 - 1 - 3	0 - 1 - 2
	400	100	2 - 5 - 12	2 - 4 - 9	2 - 4 - 7		2.03	47	1 - 2 - 4	1 - 1 - 4	1 - 1 - 2
	500	125	3 - 7 - 15	3 - 5 - 11	3 - 5 - 9		2.54	59	1 - 2 - 5	1 - 2 - 5	1 - 2 - 3
	600	150	5 - 9 - 17	4 - 6 - 13	4 - 5 - 11		3.05	71	2 - 3 - 5	1 - 2 - 5	1 - 2 - 3
	700	175	7 - 10 - 19	5 - 8 - 15	4 - 6 - 13		3.56	83	2 - 3 - 6	2 - 2 - 6	1 - 2 - 4
	800	200	8 - 12 - 20	6 - 9 - 17	5 - 7 - 14		4.06	94	2 - 4 - 6	2 - 3 - 6	2 - 2 - 4
	1000	250	10 - 15 - 22	7 - 11 - 19	6 - 9 - 16		5.08	118	3 - 5 - 7	2 - 3 - 7	2 - 3 - 5
	1200	300	12 - 17 - 24	9 - 13 - 21	7 - 11 - 17		6.10	142	4 - 5 - 7	3 - 4 - 7	2 - 3 - 5
8 x 8	1400	350	14 - 19 - 26	10 - 15 - 22	9 - 13 - 19	20.3 x 20.3	7.11	165	4 - 6 - 8	3 - 5 - 8	3 - 4 - 6
	300	133	2 - 4 - 12	2 - 4 - 9	2 - 4 - 7		1.52	63	1 - 1 - 4	1 - 1 - 4	1 - 1 - 2
	400	178	3 - 7 - 16	3 - 6 - 11	3 - 5 - 10		2.03	84	1 - 2 - 5	1 - 2 - 5	1 - 2 - 3
	500	222	5 - 10 - 20	5 - 7 - 14	4 - 6 - 12		2.54	105	2 - 3 - 6	2 - 2 - 6	1 - 2 - 4
	600	267	7 - 12 - 23	6 - 9 - 17	5 - 7 - 15		3.05	126	2 - 4 - 7	2 - 3 - 7	2 - 2 - 5
	700	311	9 - 14 - 25	7 - 10 - 20	6 - 9 - 17		3.56	147	3 - 4 - 8	2 - 3 - 8	2 - 3 - 5
	800	356	10 - 16 - 27	8 - 11 - 23	6 - 10 - 19		4.06	168	3 - 5 - 8	2 - 3 - 8	2 - 3 - 6
	1000	444	13 - 20 - 30	10 - 14 - 25	8 - 12 - 21		5.08	210	4 - 6 - 9	3 - 4 - 9	2 - 4 - 6
10 x 10	1200	533	16 - 23 - 33	11 - 17 - 28	10 - 15 - 23	25.4 x 25.4	6.10	252	5 - 7 - 10	3 - 5 - 10	3 - 5 - 7
	1400	622	18 - 25 - 35	13 - 20 - 30	11 - 17 - 25		7.11	294	5 - 8 - 11	4 - 6 - 11	3 - 5 - 8
	300	208	2 - 5 - 15	2 - 5 - 11	2 - 5 - 9		1.52	98	1 - 2 - 5	1 - 2 - 5	1 - 2 - 3
	400	278	4 - 8 - 20	4 - 7 - 14	4 - 6 - 12		2.03	131	1 - 2 - 6	1 - 2 - 6	1 - 2 - 4
	500	347	6 - 12 - 25	6 - 9 - 18	5 - 8 - 15		2.54	164	2 - 4 - 8	2 - 3 - 8	2 - 2 - 5
	600	417	8 - 15 - 29	7 - 11 - 21	6 - 9 - 18		3.05	197	2 - 5 - 9	2 - 3 - 9	2 - 3 - 5
	700	486	11 - 17 - 31	8 - 13 - 25	7 - 11 - 21		3.56	229	3 - 5 - 9	2 - 4 - 9	2 - 3 - 6
	800	556	13 - 20 - 33	10 - 14 - 28	8 - 12 - 23		4.06	262	4 - 6 - 10	3 - 4 - 10	2 - 4 - 7
12 x 12	1000	694	16 - 25 - 37	12 - 18 - 32	10 - 15 - 26	30.5 x 30.5	5.08	328	5 - 8 - 11	4 - 5 - 11	3 - 5 - 8
	1200	833	20 - 29 - 41	14 - 21 - 35	12 - 18 - 29		6.10	393	6 - 9 - 12	4 - 6 - 12	4 - 5 - 9
	1400	972	23 - 31 - 44	17 - 25 - 37	14 - 21 - 31		7.11	459	7 - 9 - 13	5 - 8 - 13	4 - 6 - 9
	300	300	8 - 13 - 24	6 - 10 - 19	5 - 8 - 16		1.52	142	2 - 4 - 7	2 - 3 - 7	2 - 2 - 5
	400	400	12 - 18 - 28	9 - 13 - 24	7 - 11 - 20		2.03	189	4 - 5 - 9	3 - 4 - 9	2 - 3 - 6
	500	500	15 - 22 - 32	11 - 16 - 27	9 - 14 - 22		2.54	236	5 - 7 - 10	3 - 5 - 10	3 - 4 - 7
	600	600	18 - 24 - 35	13 - 19 - 29	11 - 16 - 24		3.05	283	5 - 7 - 11	4 - 6 - 11	3 - 5 - 7
	700	700	20 - 26 - 37	15 - 22 - 32	13 - 19 - 26		3.56	330	6 - 8 - 11	5 - 7 - 11	4 - 6 - 8
12 x 12	800	800	23 - 28 - 40	17 - 24 - 34	14 - 20 - 28	30.5 x 30.5	4.06	378	7 - 9 - 12	5 - 7 - 12	4 - 6 - 9
	1000	1000	26 - 32 - 45	21 - 27 - 38	18 - 22 - 31		5.08	472	8 - 10 - 14	6 - 8 - 14	5 - 7 - 9
	1200	1200	28 - 35 - 49	24 - 29 - 42	20 - 24 - 34		6.10	566	9 - 11 - 15	7 - 9 - 15	6 - 7 - 10
	1400	1400	31 - 37 - 53	26 - 32 - 45	21 - 26 - 37		7.11	661	9 - 11 - 16	8 - 10 - 16	6 - 8 - 11

NOTES: Throw values are based on terminal velocities of 150, 100, and 50 FPM. Throw Values are given for isothermal conditions. Sound data based on a 4 foot grille. Test conducted in accordance with ANSI / ASHRAE Standard 70, ISO 5219, and ISO 3741. Throw values given for 1-Way Throw are for [Total CFM] CFM per side (L/s). Throw values given for 2-Way Throw are for [Total CFM] CFM per side (L/s). Throw values given for 3-Way Throw are for [Total CFM] CFM per side (L/s).

ENGINEERING SPECIFICATION & CONFIGURATION

9S84P

The perforated face supply diffuser shall be a Krueger model 9S84P. This diffuser must have 3/16" holes on 1/4" staggered centers resulting in a 51% free area face made of 20 gage 304 stainless steel. A 304 stainless steel 4-way air deflector shall be attached to the perforated face using stainless steel pop rivets. The frame of the diffuser must be constructed of 20 gage 304 stainless steel with countersunk screw holes (#6x1 1/4" stainless sheet metal screws provided by manufacturer). This frame must also produce a border of 1 3/8" around all sides of the diffuser with mitered corners. Optional 304 stainless steel damper available made of 20 gage stainless steel welded to the supply diffuser and operable from the face.

Optional 316 stainless steel construction available.

FINISH

The finish shall be 90- #4 Satin Polish, obtained by finishing with a 120-grit abrasive, or 44 - British White.

1. SERIES: (XXXXX)

9S84P - Perforated, Square Neck Supply Diffuser

2. PATTERN: (X)

4 - 4-Way

3. WIDTH: (XX)

4" - 48" in 1" Increments

4. HEIGHT: (XX)

4" - 48" in 1" Increments

5. MATERIAL: (XXX)

304 - Stainless Steel Grade 304

316 - Stainless Steel Grade 316

6. FRAME STYLE: (XXX)

F22 - Surface Mount

F23 - Lay-in T-Bar

7. PANEL: (XX)x(XX)

None

24"x24" *

24"x48" *

8. FASTENING METHOD: (XX)

00 - No Screw Holes

01 - Countersunk Screw Holes **

9. DAMPER: (XX)

00 - No Damper

01 - Stainless Steel OBD †

10. ACCESSORIES: (XX) (XX)

00 - No Accessories

01 - Plaster Frame

XX - Square to Round Adapter ‡

(Specify size from 04 - 18" in increments of 2", depending on neck size)

11. FINISH: (XX)

90 - #4 Satin Polish

44 - British White

Maximum single unit size is 48"x60".

* Only available with Frame 23.

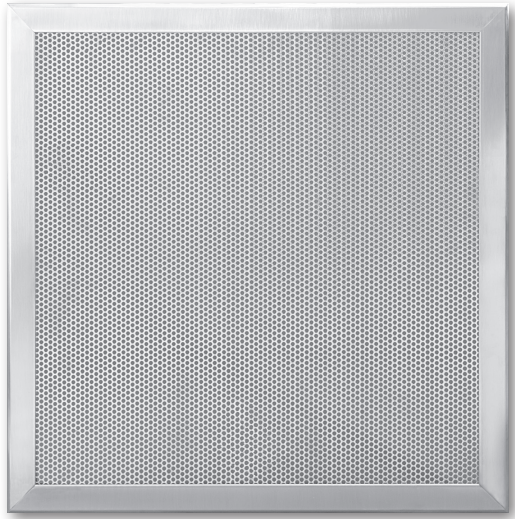
** Unit shipped with #6x1 1/4" stainless steel sheet metal screws.

† Damper is welded to unit.

‡ Square to Round Adapter is not available with OBD.

9S80P

Stainless Steel Return Diffuser, Perforated Face



INTRODUCTION

The 9S80P series stainless steel perforated diffusers feature 51% free-area and are used for return applications where bar-style grilles are not required. They are available for surface mount or lay-in T-bar applications.

MODEL

9S80P - Perforated Return Grille

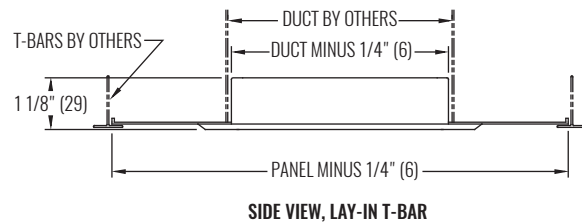
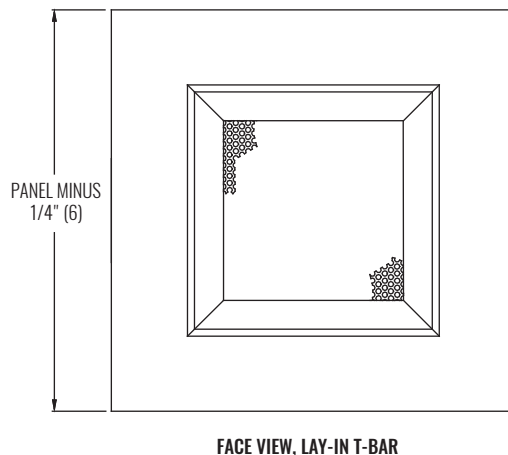
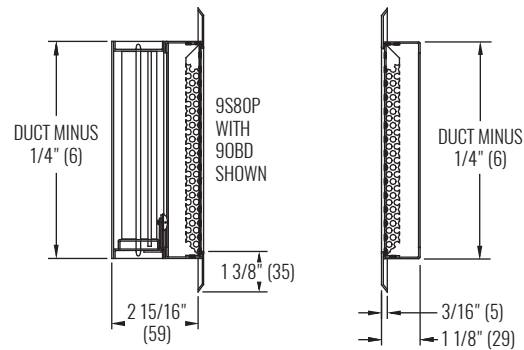
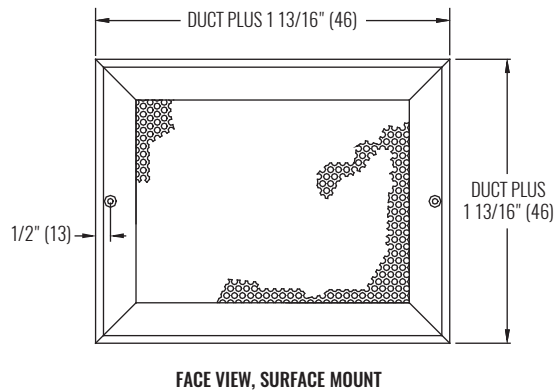
FEATURES

- 3/16" Holes on 1/4" staggered centers (51% free area)
- 304 Stainless steel construction (316 optional)
- Countersunk screw holes in mounting frame (optional)
- Standard finish is 90 - #4 Satin Polish or 44 - British White

ACCESSORIES

- Stainless steel OBD welded to unit, adjustable from face of grille (model 9OBD)
- Plaster frame (model 98PF)
- Square to round adapter (model 9SRA)

DIMENSIONAL DATA



NOTE: Dimensions in parentheses are millimeters (mm).

PERFORMANCE DATA | SQUARE NECK, NO DAMPER

IP DATA					SOUND	METRIC DATA				
NOM DUCT	DUCT AREA	NECK VEL	AIR FLOW	Ps		NOM DUCT	DUCT AREA	NECK VEL	AIR FLOW	Ps
in	sq ft	fpm	cfm	in wg	NC	cm	sq m	m/s	l/s	Pa
6 x 6	0.250	300	70	-.030	<20	15.2 x 15.2	0.023	1.52	33	-7.470
		400	90	-.050	<20			2.03	42	-12.450
		500	110	-.070	<20			2.54	52	-17.430
		600	130	-.110	<20			3.05	61	-27.390
		700	150	-.140	<20			3.56	71	-34.860
		800	180	-.190	<20			4.06	85	-47.310
		1000	220	-.290	20			5.08	104	-72.210
		1200	260	-.420	25			6.10	123	-104.580
8 x 8	0.444	300	120	-.030	<20	20.3 x 20.3	0.041	1.52	57	-7.470
		400	160	-.050	<20			2.03	76	-12.450
		500	200	-.070	<20			2.54	94	-17.430
		600	240	-.110	<20			3.05	113	-27.390
		700	280	-.140	<20			3.56	132	-34.860
		800	320	-.190	<20			4.06	151	-47.310
		1000	400	-.290	23			5.08	189	-72.210
		1200	480	-.420	27			6.10	227	-104.580
12 x 6	0.500	300	140	-.030	<20	30.5 x 15.2	0.046	1.52	66	-7.470
		400	180	-.050	<20			2.03	85	-12.450
		500	230	-.070	<20			2.54	109	-17.430
		600	270	-.110	<20			3.05	127	-27.390
		700	320	-.140	<20			3.56	151	-34.860
		800	360	-.190	<20			4.06	170	-47.310
		1000	450	-.290	23			5.08	212	-72.210
		1200	540	-.420	28			6.10	255	-104.580
10 x 10	0.694	300	190	-.030	<20	25.4 x 25.4	0.064	1.52	90	-7.470
		400	260	-.050	<20			2.03	123	-12.450
		500	320	-.070	<20			2.54	151	-17.430
		600	390	-.110	<20			3.05	184	-27.390
		700	450	-.140	<20			3.56	212	-34.860
		800	510	-.190	<20			4.06	241	-47.310
		1000	640	-.290	25			5.08	302	-72.210
		1200	770	-.420	29			6.10	363	-104.580
18 x 6	0.750	300	210	-.030	<20	45.7 x 15.2	0.070	1.52	99	-7.470
		400	280	-.050	<20			2.03	132	-12.450
		500	340	-.070	<20			2.54	160	-17.430
		600	410	-.110	<20			3.05	193	-27.390
		700	480	-.140	<20			3.56	227	-34.860
		800	550	-.190	20			4.06	260	-47.310
		1000	690	-.290	25			5.08	326	-72.210
		1200	830	-.420	30			6.10	392	-104.580
12 x 12	1.000	300	280	-.030	<20	30.5 x 30.5	0.093	1.52	132	-7.470
		400	380	-.050	<20			2.03	179	-12.450
		500	470	-.070	<20			2.54	222	-17.430
		600	560	-.110	<20			3.05	264	-27.390
		700	660	-.140	<20			3.56	311	-34.860
		800	750	-.190	21			4.06	354	-47.310
		1000	940	-.290	27			5.08	444	-72.210
		1200	1130	-.420	31			6.10	533	-104.580

NOTES: NC values are based on Octave Band 2 - 7 sound power levels minus a room absorption of 10dB. Dash (-) in space denotes an NC or dB value of less than 10. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-81.

PERFORMANCE DATA | SQUARE NECK, NO DAMPER

IP DATA					SOUND	METRIC DATA				
NOM DUCT	DUCT AREA	NECK VEL	AIR FLOW	Ps		NOM DUCT	DUCT AREA	NECK VEL	AIR FLOW	Ps
in	sq ft	fpm	cfm	in wg	NC	cm	sq m	m/s	l/s	Pa
14 x 14	1.361	300	390	-.030	<20	36 x 36	0.126	1.52	184	-7.470
		400	520	-.050	<20			2.03	245	-12.450
		500	640	-.070	<20			2.54	302	-17.430
		600	770	-.110	<20			3.05	363	-27.390
		700	900	-.140	<20			3.56	425	-34.860
		800	1030	-.190	22			4.06	486	-47.310
		1000	1290	-.290	28			5.08	609	-72.210
		1200	1550	-.420	32			6.10	732	-104.580
18 x 12	1.500	300	430	-.030	<20	45.7 x 30.5	0.139	1.52	203	-7.470
		400	570	-.050	<20			2.03	269	-12.450
		500	710	-.070	<20			2.54	335	-17.430
		600	850	-.110	<20			3.05	401	-27.390
		700	1000	-.140	20			3.56	472	-34.860
		800	1140	-.190	23			4.06	538	-47.310
		1000	1420	-.290	28			5.08	670	-72.210
		1200	1710	-.420	33			6.10	807	-104.580
24 x 10	1.667	300	470	-.030	<20	61.0 x 25.4	0.155	1.52	222	-7.470
		400	630	-.050	<20			2.03	297	-12.450
		500	790	-.070	<20			2.54	373	-17.430
		600	950	-.110	<20			3.05	448	-27.390
		700	1110	-.140	20			3.56	524	-34.860
		800	1260	-.190	23			4.06	595	-47.310
		1000	1580	-.290	29			5.08	746	-72.210
		1200	1890	-.420	33			6.10	892	-104.580
24 x 12	2.000	300	570	-.030	<20	61.0 x 30.5	0.186	1.52	269	-7.470
		400	760	-.050	<20			2.03	359	-12.450
		500	950	-.070	<20			2.54	448	-17.430
		600	1140	-.110	<20			3.05	538	-27.390
		700	1340	-.140	21			3.56	632	-34.860
		800	1530	-.190	24			4.06	722	-47.310
		1000	1910	-.290	30			5.08	901	-72.210
		1200	2290	-.420	34			6.10	1081	-104.580
30 x 12	2.500	300	720	-.030	<20	76.2 x 30.5	0.232	1.52	340	-7.470
		400	960	-.050	<20			2.03	453	-12.450
		500	1200	-.070	<20			2.54	566	-17.430
		600	1430	-.110	<20			3.05	675	-27.390
		700	1670	-.140	22			3.56	788	-34.860
		800	1910	-.190	25			4.06	901	-47.310
		1000	2390	-.290	31			5.08	1128	-72.210
		1200	2870	-.420	35			6.10	1354	-104.580
24 x 24	4.000	300	1160	-.030	<20	61.0 x 61.0	0.372	1.52	547	-7.470
		400	1550	-.050	<20			2.03	732	-12.450
		500	1940	-.070	<20			2.54	916	-17.430
		600	2330	-.110	20			3.05	1100	-27.390
		700	2710	-.140	24			3.56	1279	-34.860
		800	3100	-.190	27			4.06	1463	-47.310
		1000	3880	-.290	33			5.08	1831	-72.210
		1200	4650	-.420	37			6.10	2195	-104.580

NOTES: NC values are based on Octave Band 2 - 7 sound power levels minus a room absorption of 10dB. Dash (-) in space denotes an NC or dB value of less than 10. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-81.

PERFORMANCE DATA | SQUARE NECK, NO DAMPER

IP DATA					SOUND	METRIC DATA				
NOM DUCT	DUCT AREA	NECK VEL	AIR FLOW	P _s		NOM DUCT	DUCT AREA	NECK VEL	AIR FLOW	P _s
in	sq ft	fpm	cfm	in wg	NC	cm	sq m	m/s	l/s	Pa
30 x 30	6.250	300	1830	-.030	<20	76.2 x 76.2	0.581	1.52	864	-7.470
		400	2440	-.050	<20			2.03	1152	-12.450
		500	3050	-.070	<20			2.54	1439	-17.430
		600	3660	-.110	22			3.05	1727	-27.390
		700	4270	-.140	26			3.56	2015	-34.860
		800	4880	-.190	29			4.06	2303	-47.310
		1000	6090	-.290	35			5.08	2874	-72.210
		1200	7310	-.420	39			6.10	3450	-104.580
48 x 24	8.000	300	2340	-.030	<20	121.9 x 61.0	0.743	1.52	1104	-7.470
		400	3130	-.050	<20			2.03	1477	-12.450
		500	3910	-.070	<20			2.54	1845	-17.430
		600	4690	-.110	23			3.05	2213	-27.390
		700	5470	-.140	27			3.56	2582	-34.860
		800	6250	-.190	30			4.06	2950	-47.310
		1000	7810	-.290	36			5.08	3686	-72.210
		1200	9380	-.420	40			6.10	4427	-104.580
38 x 38	10.028	300	2950	-.030	<20	96.5 x 96.5	0.932	1.52	1392	-7.470
		400	3930	-.050	<20			2.03	1855	-12.450
		500	4920	-.070	20			2.54	2322	-17.430
		600	5900	-.110	24			3.05	2784	-27.390
		700	6880	-.140	28			3.56	3247	-34.860
		800	7860	-.190	31			4.06	3710	-47.310
		1000	9830	-.290	37			5.08	4639	-72.210
		1200	11800	-.420	41			6.10	5569	-104.580
48 x 36	12.000	300	3530	-.030	<20	121.9 x 91.4	1.115	1.52	1666	-7.470
		400	4710	-.050	<20			2.03	2223	-12.450
		500	5890	-.070	21			2.54	2780	-17.430
		600	7070	-.110	25			3.05	3337	-27.390
		700	8250	-.140	29			3.56	3894	-34.860
		800	9430	-.190	32			4.06	4450	-47.310
		1000	11780	-.290	38			5.08	5560	-72.210
		1200	14140	-.420	42			6.10	6673	-104.580
48 x 42	14.000	300	4130	-.030	<20	121.9 x 106.7	1.301	1.52	1949	-7.470
		400	5510	-.050	<20			2.03	2600	-12.450
		500	6880	-.070	21			2.54	3247	-17.430
		600	8260	-.110	26			3.05	3898	-27.390
		700	9640	-.140	29			3.56	4550	-34.860
		800	11010	-.190	33			4.06	5196	-47.310
		1000	13770	-.290	38			5.08	6499	-72.210
		1200	16520	-.420	43			6.10	7797	-104.580
48 x 48	16.000	300	4730	-.030	<20	121.9 x 121.9	1.486	1.52	2232	-7.470
		400	6300	-.050	<20			2.03	2973	-12.450
		500	7880	-.070	22			2.54	3719	-17.430
		600	9450	-.110	26			3.05	4460	-27.390
		700	11030	-.140	30			3.56	5206	-34.860
		800	12600	-.190	33			4.06	5947	-47.310
		1000	15750	-.290	39			5.08	7433	-72.210
		1200	18900	-.420	43			6.10	8920	-104.580

NOTES: NC values are based on Octave Band 2 - 7 sound power levels minus a room absorption of 10dB. Dash (-) in space denotes an NC or dB value of less than 10. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-81.

9S80P

Stainless Steel Return Diffuser, Perforated Face



ENGINEERING SPECIFICATION & CONFIGURATION

9S80P

The return grille shall be a Krueger model 9S80P. This grille must have 3/16" holes on 1/4" staggered centers resulting in a 51% free area face constructed of 20 gage 304 stainless steel. The frame of the grille must be constructed of 20 gage 304 stainless steel with countersunk screw holes (#6x1 1/4" stainless sheet metal screws provided by manufacturer). This frame must also produce a border of 1 3/8" around all sides of the grille with mitered corners. Optional 304 stainless steel damper available made of 20 gage stainless steel welded to the return grille and operable from the face.

Optional 316 stainless steel construction available.

FINISH

The finish shall be 90 - #4 Satin Polish, obtained by finishing with a 120-grit abrasive, or 44 - British White.

1. SERIES: (XXXXXX)

9S80P - Perforated Return Grille

2. WIDTH: (XX)

4" - 48" in 1" Increments

3. HEIGHT: (XX)

4" - 60" in 1" Increments

4. MATERIAL: (XXX)

304 - Stainless Steel Grade 304

316 - Stainless Steel Grade 316

5. FRAME STYLE: (XXX)

F22 - Surface Mount

F23 - Lay-in T-Bar

6. PANEL: (XX)x(XX)

None

24"x24" *

24"x48" *

7. FASTENING METHOD: (XX)

00 - No Screw Holes

01 - Countersunk Screw Holes **

8. DAMPER: (XX)

00 - No Damper

01 - Stainless Steel OBD †

9. ACCESSORIES: (XX) (XX)

00 - No Accessories

01 - Plaster Frame

XX - Square to Round Adapter ‡

(Specify size from 04 - 18" in increments of 2", depending on neck size)

10. FINISH: (XX)

90 - #4 Satin Polish

44 - British White

Maximum single unit size is 48"x60".

* Only available with Frame 23.

** Unit shipped with #6x1 1/4" stainless steel sheet metal screws.

† Damper is welded to unit.

‡ Square to Round Adapter is not available with OBD.

SAMPLE CONFIGURATION: 9S80P - 26x26 - 316 - F22 - NONE - 01 - 00 - 02 - 00 - 90

INTRODUCTION

The 9700 series transfer grilles are designed to ensure visual privacy while providing air circulation from one area to another. The 9700 provides a single side mounting frame for use where appearance is an issue on only one side, as in a utility or storage closet. The 9700A provides a double sided mounting frame (with no deflectors) to fit varying door thickness (minimum 2"), where a finished look is required on both sides, as in an office or kitchen door. The 9700D is a double core configuration to give the appearance of a finished grille on both sides. The sight-proof blade configuration and unobtrusive appearance make Krueger's 9700 series grille an ideal choice for wall or door air transfer from room to room.

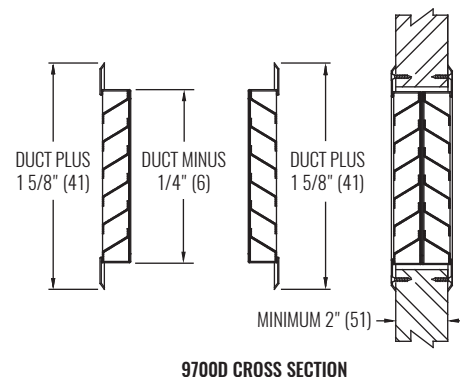
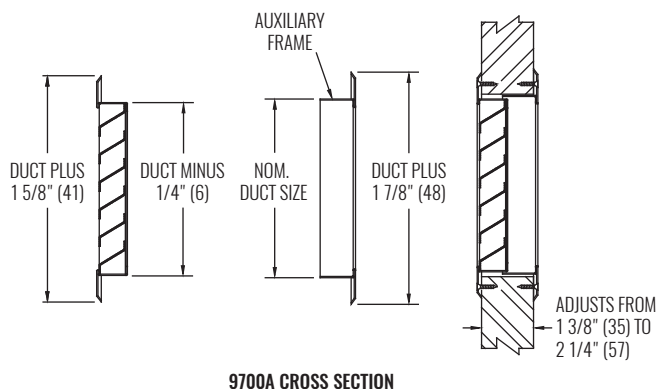
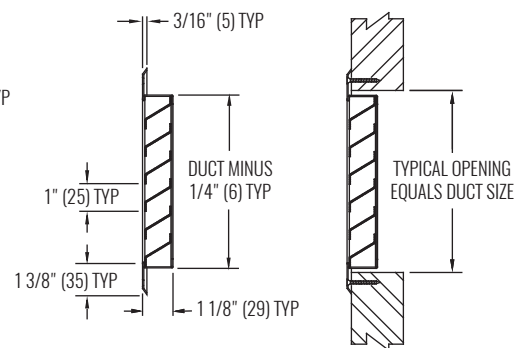
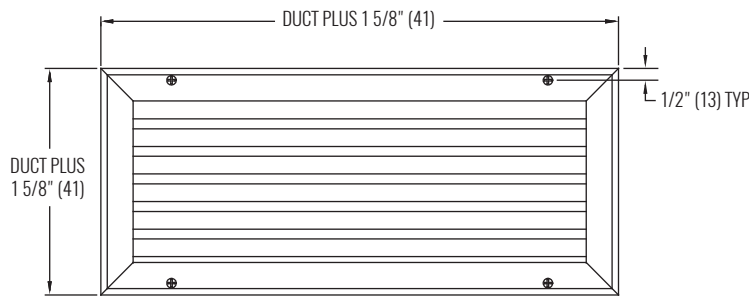
MODELS

- 9700 - Single core with beveled frame
- 9700A - Single core with 1 3/8" margin auxiliary frame, adjusts to fit door thickness from 1 3/8" to 2 1/4"
- 9700D - Double core with beveled frame, minimum door thickness of 2"

FEATURES

- 304 Stainless steel construction (316 optional)
- Standard finish is 90 - #4 Satin Polish or 44 - British White

DIMENSIONAL DATA



NOTE: Dimensions in parentheses are millimeters (mm).

9700, 9700A, 9700D

Stainless Steel Supply Grilles, Sightproof



ENGINEERING SPECIFICATION & CONFIGURATION

9700

The door grille shall be a Krueger model 9700. This grille shall have 20 gage, 304 stainless steel louvered blades spaced no further than 1" apart to provide a sight-proof barrier. The frame of the grille must be constructed of 20 gage 304 stainless steel and have countersunk screw holes. This frame must also produce a border of 1 3/8" around all sides of the grille with mitered corners.

9700A

Model 9700A is the same as 9700 but comes with a 18 gage 304 stainless steel auxiliary frame for mounting on the back side of the door grille.

9700D

Model 9700D is the same as 9700 but comes with a second core and frame constructed of 304 stainless steel with 20 gage louvered blades and 18 gage frame for mounting on the back side of the door grille to provide a sight-proof barrier.

Optional 316 stainless steel construction available.

FINISH

The finish shall be 90 - #4 Satin Polish, obtained by finishing with a 120-grit abrasive, or 44 - British White.

1. SERIES: (XXXXX)

9700 - Single Core Door Grille
9700A - Single Core Door Grille with Auxiliary Frame
9700D - Double Core Door Grille

2. PATTERN: (X)

H - Horizontal Front Blades
V - Vertical Front Blades

3. WIDTH: (XX)

4" - 48" in 1" Increments

4. HEIGHT: (XX)

4" - 60" in 1" Increments

5. MATERIAL: (XXX)

304 - Stainless Steel Grade 304
316 - Stainless Steel Grade 316

6. FINISH: (XX)

90 - #4 Satin Polish
44 - British White

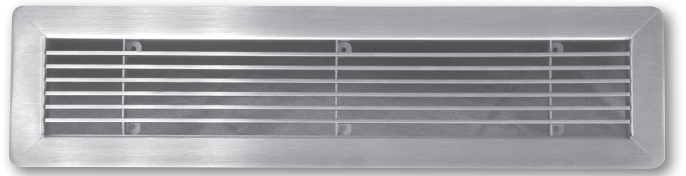
SAMPLE CONFIGURATION: 9700 - H - 12x12 - 304 - 90

INTRODUCTION

The 91610, 91620 and 91520 architectural linear stainless steel bar grilles are designed to provide a clean, strong, horizontal look while offering optimum performance. The availability of a variety of frames allow the grilles to blend, compliment, or contrast with the ceiling, sidewall, or sill installations. These grilles can be used on supply or return portions of heating, cooling or ventilation systems. The 91610, 91620 and 91520 series linear stainless steel bar grille is an excellent choice for installation in soffit/sill applications where airflow is required to wash over a window in a high humidity location.

MODELS

- 91610 - Supply or return linear bar grille with 0° or 15° blade deflection, 3/8" bar spacing, and 1/8" bar thickness
- 91620 - Supply or return linear bar grille with 0° or 15° blade deflection, 1/2" bar spacing, and 1/8" bar thickness
- 91520 - Supply or return linear bar grille with 0° blade deflection, 1/2" bar spacing, and 1/4" bar thickness



FEATURES

- Single section lengths from 4" to 60"; widths from 4" - 24"
- 304 Stainless steel construction (316 optional)
- Standard finish is 90 - #4 Satin Polish or 44 - British White

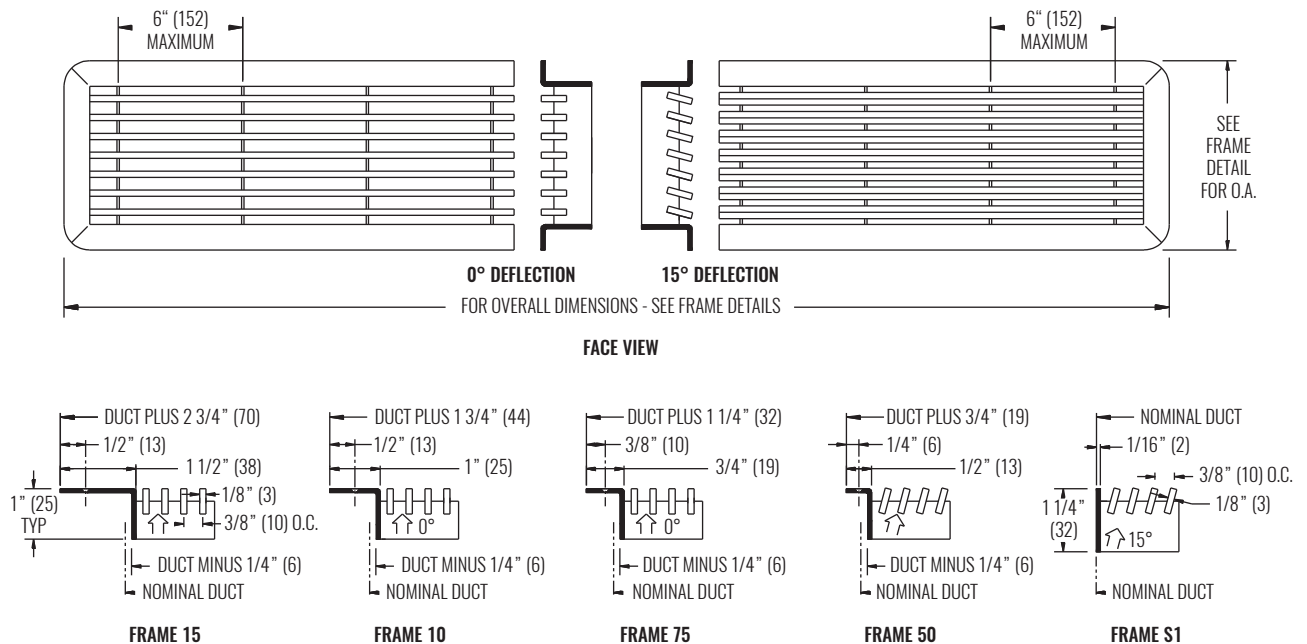
OPTIONS

- Concealed fastening

ACCESSORIES

- Stainless steel OBD welded to unit, adjustable from face of grille (model 9OBD)
- Blank-off strip
- Linear straightening grid

DIMENSIONAL DATA | 91610



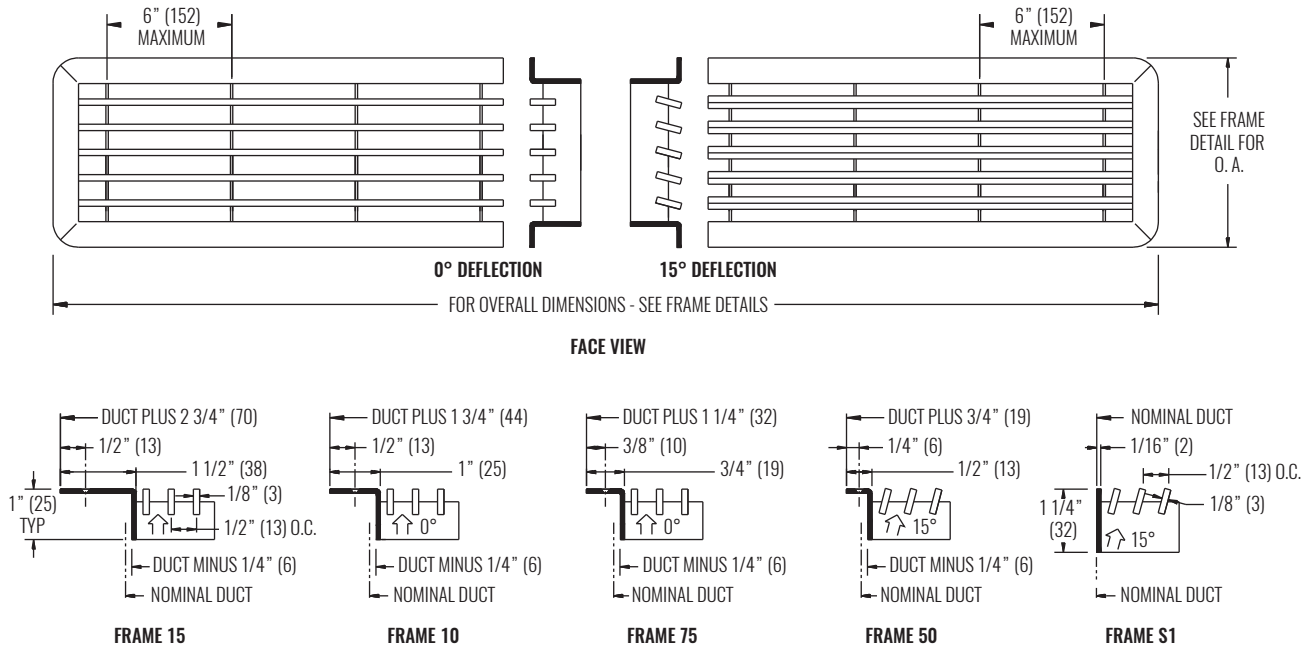
NOTE: Dimensions in parentheses are millimeters (mm).

91610, 91620, 91520

Stainless Steel Supply Grilles, Linear Bar

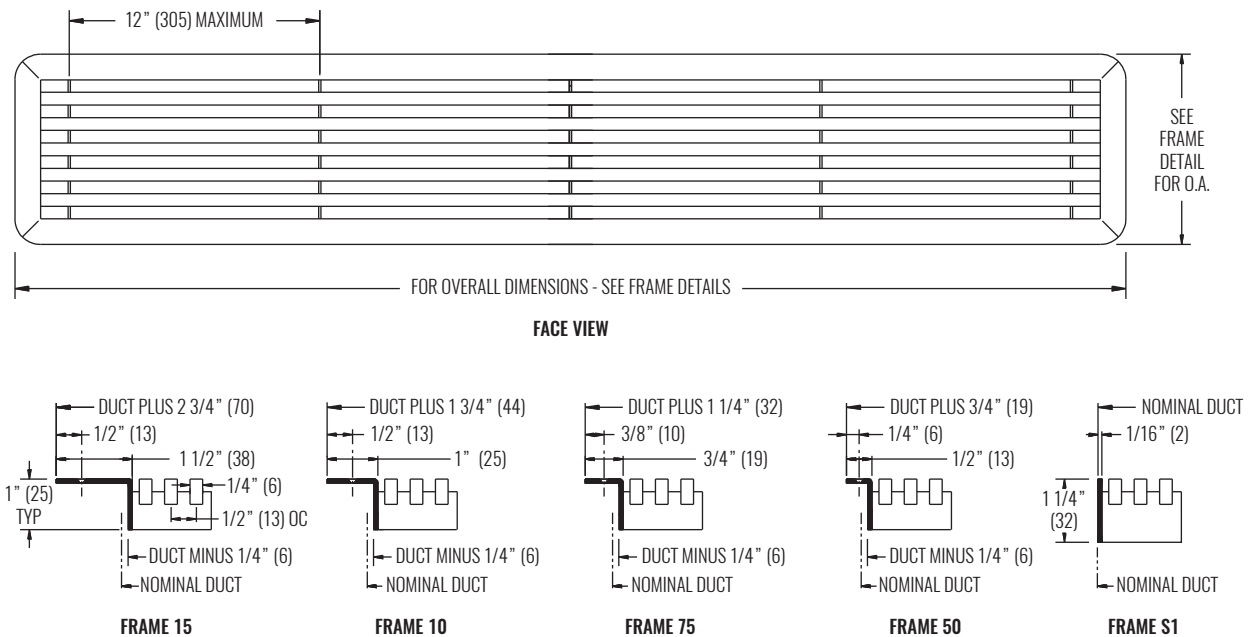


DIMENSIONAL DATA | 91620



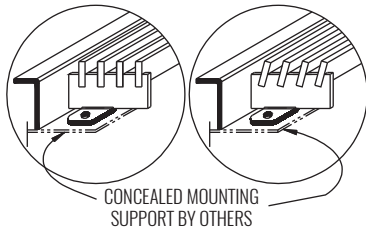
NOTE: Dimensions in parentheses are millimeters (mm).

DIMENSIONAL DATA | 91520

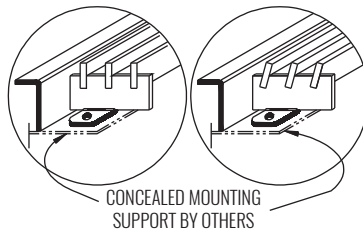


NOTE: Dimensions in parentheses are millimeters (mm).

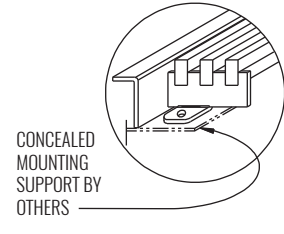
DIMENSIONAL DATA | CONCEALED FASTENING



91610 CONCEALED FASTENING

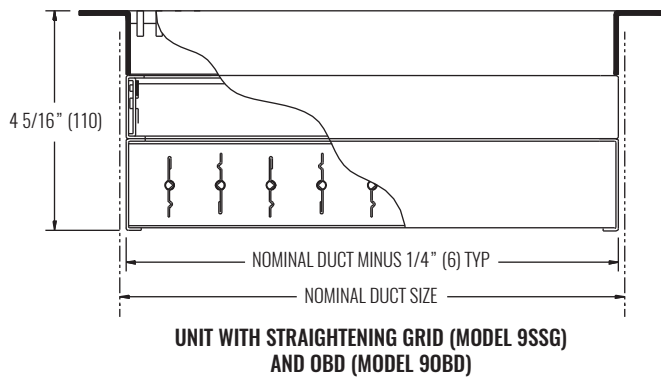


91620 CONCEALED FASTENING

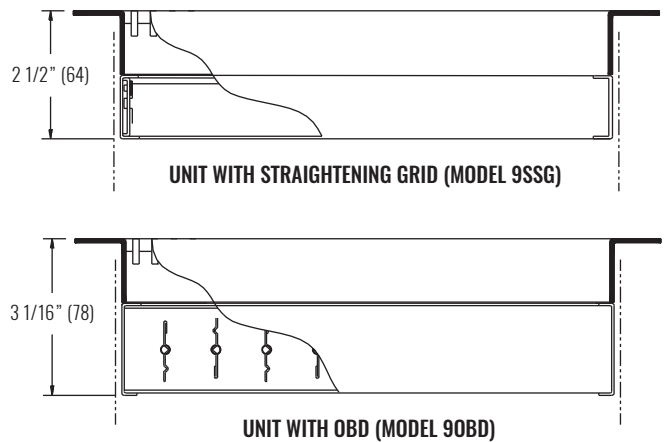


91520 CONCEALED FASTENING

DIMENSIONAL DATA | ACCESSORIES



NOTE: Dimensions in parentheses are millimeters (mm).



91610, 91620, 91520

Stainless Steel Supply Grilles, Linear Bar



PERFORMANCE DATA | 91610 | ROUND NECK, 0° DEFL, 1/8" BARS, 3/8" BAR SPACING, NO DAMPER

NOM DUCT	IP DATA				SOUND	METRIC DATA				
	NECK VEL	AIR FLOW	Ps	1-CORE THROW		NOM DUCT	NECK VEL	AIR FLOW	Ps	1-CORE THROW
in	fpm	cfm	in wg	ft	NC	cm	m/s	l/s	Pa	cm
4	200	67	.010	12	<25	10.2	1.02	32	2.5	378
	400	133	.040	15	<25		2.03	63	10.0	472
	600	200	.090	18	26		3.05	94	22.4	567
	800	267	.150	20	35		4.06	126	37.4	630
8	200	133	.010	14	<25	20.3	1.02	63	2.5	441
	400	267	.040	19	<25		2.03	126	10.0	598
	600	400	.090	23	29		3.05	189	22.4	724
	800	533	.150	25	36		4.06	252	37.4	787
12	200	200	.010	17	<25	30.5	1.02	94	2.5	535
	400	400	.040	23	<25		2.03	189	10.0	724
	600	600	.090	27	32		3.05	283	22.4	850
	800	800	.150	30	39		4.06	378	37.4	944

PERFORMANCE DATA | 91610 | ROUND NECK, 15° DEFL, 1/8" BARS, 3/8" BAR SPACING, NO DAMPER

NOM DUCT	IP DATA				SOUND	METRIC DATA				
	NECK VEL	AIR FLOW	Ps	1-CORE THROW		NOM DUCT	NECK VEL	AIR FLOW	Ps	1-CORE THROW
in	fpm	cfm	in wg	ft	NC	cm	m/s	l/s	Pa	cm
4	200	67	.010	12	<25	10.2	1.02	32	2.5	378
	400	133	.040	15	<25		2.03	63	10.0	472
	600	200	.090	17	28		3.05	94	22.4	535
	800	267	.150	19	36		4.06	126	37.4	598
8	200	133	.010	13	<25	20.3	1.02	63	2.5	409
	400	267	.040	18	<25		2.03	126	10.0	567
	600	400	.090	21	31		3.05	189	22.4	661
	800	533	.150	23	39		4.06	252	37.4	724
12	200	200	.010	15	<25	30.5	1.02	94	2.5	472
	400	400	.040	20	<25		2.03	189	10.0	630
	600	600	.090	25	32		3.05	283	22.4	787
	800	800	.150	28	40		4.06	378	37.4	881

NOTES: Throw values are based on a 4 foot sill grille and 100 FPM vertical throw. Throw values are given for isothermal conditions. Sound data based on a 4 foot grille. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-1991. For return use, pressure drop and NC levels are approximately the same.

LENGTH AND NC CORRECTION FACTORS

ACTIVE LENGTH	2.00	4.00	8.00	12.00	16.00	24.00	40+
NC THROW CORRECTION	-3.00	0.00	3.00	5.00	6.00	8.00	10.00

PERFORMANCE DATA | 91620 | ROUND NECK, 0° DEFL, 1/8" BARS, 1/2" BAR SPACING, NO DAMPER

NOM DUCT	IP DATA				SOUND	METRIC DATA				
	NECK VEL	AIR FLOW	Ps	1-CORE THROW		NOM DUCT	NECK VEL	AIR FLOW	Ps	1-CORE THROW
in	fpm	cfm	in wg	ft	NC	cm	m/s	l/s	Pa	cm
4	200	67	.010	12	<25	10.2	1.02	32	2.5	378
	400	133	.040	15	<25		2.03	63	10.0	472
	600	200	.090	18	26		3.05	94	22.4	567
	800	267	.150	20	35		4.06	126	37.4	630
8	200	133	.010	14	<25	20.3	1.02	63	2.5	441
	400	267	.040	19	<25		2.03	126	10.0	598
	600	400	.090	23	29		3.05	189	22.4	724
	800	533	.150	25	36		4.06	252	37.4	787
12	200	200	.010	17	<25	30.5	1.02	94	2.5	535
	400	400	.040	23	<25		2.03	189	10.0	724
	600	600	.090	27	32		3.05	283	22.4	850
	800	800	.150	30	39		4.06	378	37.4	944

PERFORMANCE DATA | 91620 | ROUND NECK, 15° DEFL, 1/8" BARS, 1/2" BAR SPACING, NO DAMPER

NOM DUCT	IP DATA				SOUND	METRIC DATA				
	NECK VEL	AIR FLOW	Ps	1-CORE THROW		NOM DUCT	NECK VEL	AIR FLOW	Ps	1-CORE THROW
in	fpm	cfm	in wg	ft	NC	cm	m/s	l/s	Pa	cm
4	200	67	.010	12	<25	10.2	1.02	32	2.5	378
	400	133	.040	15	<25		2.03	63	10.0	472
	600	200	.090	17	28		3.05	94	22.4	535
	800	267	.150	19	36		4.06	126	37.4	598
8	200	133	.010	13	<25	20.3	1.02	63	2.5	409
	400	267	.040	18	<25		2.03	126	10.0	567
	600	400	.090	21	31		3.05	189	22.4	661
	800	533	.150	23	39		4.06	252	37.4	724
12	200	200	.010	15	<25	30.5	1.02	94	2.5	472
	400	400	.040	20	<25		2.03	189	10.0	630
	600	600	.090	25	32		3.05	283	22.4	787
	800	800	.150	28	40		4.06	378	37.4	881

NOTES: Throw values are based on a 4 foot sill grille and 100 FPM vertical throw. Throw values are given for isothermal conditions. Sound data based on a 4 foot grille. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-1991. For return use, pressure drop and NC levels are approximately the same.

LENGTH AND NC CORRECTION FACTORS

ACTIVE LENGTH	2.00	4.00	8.00	12.00	16.00	24.00	40+
NC THROW CORRECTION	-3.00	0.00	3.00	5.00	6.00	8.00	10.00

91610, 91620, 91520

Stainless Steel Supply Grilles, Linear Bar



PERFORMANCE DATA | 91520 | ROUND NECK, 0° DEFL, 1/4" BARS, 1/2" BAR SPACING, NO DAMPER

NOM DUCT	IP DATA				SOUND	METRIC DATA				
	NECK VEL	AIR FLOW	Ps	1-CORE THROW		NOM DUCT	NECK VEL	AIR FLOW	Ps	1-CORE THROW
in	fpm	cfm	in wg	ft	NC	cm	m/s	l/s	Pa	cm
4	200	67	.010	12	<25	10.2	1.02	32	2.5	378
	400	133	.040	15	<25		2.03	63	10.0	472
	600	200	.090	17	<25		3.05	94	22.4	535
	800	267	.160	19	32		4.06	126	39.8	598
8	200	133	.010	14	<25	20.3	1.02	63	2.5	441
	400	267	.040	18	<25		2.03	126	10.0	567
	600	400	.090	21	26		3.05	189	22.4	661
	800	533	.160	26	35		4.06	252	39.8	818
12	200	200	.010	15	<25	30.5	1.02	94	2.5	472
	400	400	.040	21	<25		2.03	189	10.0	661
	600	600	.090	25	28		3.05	283	22.4	787
	800	800	.160	28	36		4.06	378	39.8	881

NOTES: Throw values are based on a 4 foot sill grille and 100 FPM vertical throw. Throw values are given for isothermal conditions. Sound data based on a 4 foot grille. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-1991. For return use, pressure drop and NC levels are approximately the same.

LENGTH AND NC CORRECTION FACTORS

ACTIVE LENGTH	2.00	4.00	8.00	12.00	16.00	24.00	40+
NC THROW CORRECTION	-3.00	0.00	3.00	5.00	6.00	8.00	10.00

ENGINEERING SPECIFICATION & CONFIGURATION

91610

The linear bar grille shall be Krueger model 91610 with 1/8" thick fixed bars at 0° or 15° deflection spaced on 3/8" centers. The 91610 shall be constructed of 304 stainless steel with the maximum length of 72". When end pieces require an end cap, the end cap must be welded to the linear frame. Screw attachment of end caps will not be accepted.

The 91610 linear bar core shall be welded to the 304 stainless steel frame with the fixed deflection bars running parallel to the longest dimension. Support bars for the core must not exceed 6" on center spacing.

Optional linear opposed blade damper (9OBD) shall be constructed of 304 stainless steel and welded to the 91610. Damper shall be operable from the face of the grille.

Optional 316 stainless steel construction available.

91620

The linear bar grille shall be Krueger model 91620 with 1/8" thick fixed bars at 0° or 15° deflection spaced on 1/2" centers. The 91620 shall be constructed of 304 stainless steel with the maximum length of 60". When end pieces require an end cap, the end cap must be welded to the linear frame. Screw attachment of end caps will not be accepted.

The 91620 linear bar core shall be welded to the 304 stainless steel frame with the fixed deflection bars running parallel to the longest dimension. Support bars for the core must not exceed 6" on center spacing.

Optional linear opposed blade damper (9OBD) shall be constructed of 304 stainless steel and welded to the 91620. Damper shall be operable from the face of the grille.

Optional 316 stainless steel construction available.

91520

The linear bar grille shall be Krueger model 91520 with 1/4" thick fixed bars at 0° deflection spaced on 1/2" centers. The 91520 shall be constructed of 304 stainless steel with the maximum length of 60". When end pieces require an end cap, the end cap must be welded to the linear frame. Screw attachment of end caps will not be accepted.

The 91520 linear bar core shall be welded to the 304 stainless steel frame with the fixed deflection bars running parallel to the longest dimension. Support bars for the core must not exceed 12" on center spacing.

Optional linear opposed blade damper (9OBD) shall be constructed of 304 stainless steel and welded to the 91520. Damper shall be operable from the face of the grille.

Optional 316 stainless steel construction available.

FINISH

The finish shall be 90 - #4 Satin Polish, obtained by finishing with a 120-grit abrasive, or 44 - British White.

1. SERIES: (XXXXX)

91610 - Linear Bar Grille, 1/8" Bars & 3/8" Spacing
91620 - Linear Bar Grille, 1/8" Bars & 1/2" Spacing
91520 - Linear Bar Grille, 1/4" Bars & 1/2" Spacing

2. WIDTH: (XX.XXX)

4" - 60" in 1/16" Increments

3. HEIGHT: (XX.XX)

4" - 24" in 1/4" Increments

4. MATERIAL: (XXX)

304 - Stainless Steel Grade 304
316 - Stainless Steel Grade 316

5. DEFLECTION: (XX)

00 - 0° Deflection
15 - 15° Deflection *

6. FRAME STYLE: (XXX)

F15 - 1 1/2" Flange
F10 - 1" Flange
F75 - 3/4" Flange
F50 - 1/2" Flange
S1 - Straight, No Flange

7. FASTENING METHOD: (XX)

00 - None
02 - Surface Mount, Concealed **
03 - Screw Hole Mounting ***

8. END BORDER: (X)

0 - End Cap, Both Sides
B - Butt Cut, Both Sides
L - Butt Cut, Left Side
R - Butt Cut, Right Side

9. DAMPER: (XX)

00 - No Damper
01 - Stainless Steel OBD †

10. ACCESSORIES: (X)

0 - No Accessories
B - Blank-off Strip
L - Linear Straightening Grid ‡

11. FINISH: (XX)

90 - #4 Satin Polish
44 - British White

* 91520 not available with 15° deflection.

** Surface Mount, Concealed Fastening is not available with 15° deflection.

*** Screw Hole Fastening Method not available with Frame S1.

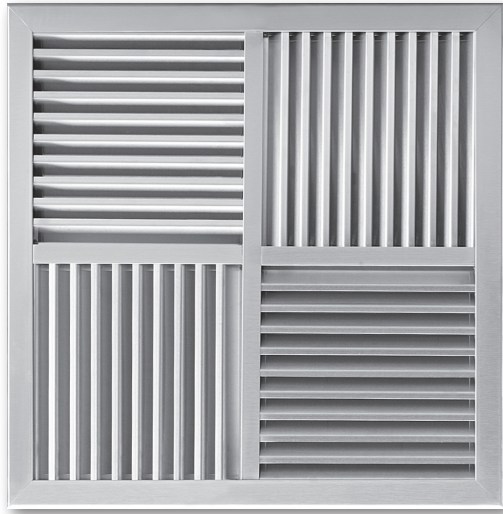
† Damper is welded to unit and is not available with Blank-off Strip Accessory or Surface Mount, Concealed Fastening Method.

‡ Not available with both Blank-off Strip & Straightening Grid

SAMPLE CONFIGURATION: 91620 - 55.125x8.25 - 304 - 15 - F10 - 03 - 0 - 00 - 0 - 90

91240

Stainless Steel Supply Diffuser, Fixed Core



INTRODUCTION

The 91240 series diffuser features an exposed blade, architectural appearance and moderate throws for use in a variety of commercial applications. The four fixed cores can be situated to provide one-way to four-way blow patterns. The 91240 series diffuser is available for surface mount or T-bar applications.

MODEL

91240 - Fixed Core Diffuser

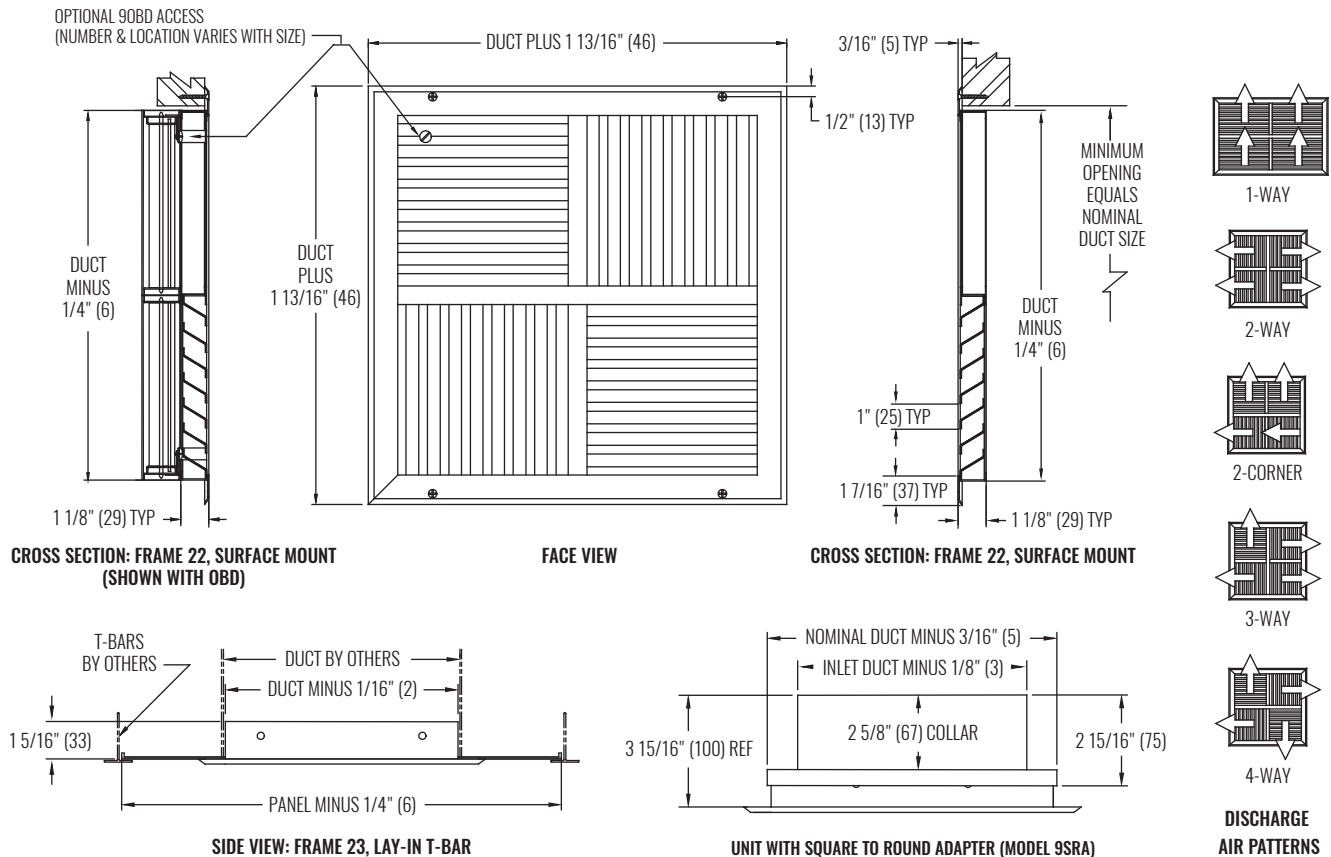
FEATURES

- 1, 2, 3, or 4-way discharge air patterns
- 304 stainless steel construction (316 optional)
- Countersunk screw holes in mounting frame
- Standard finish is 90 - #4 Satin Polish or 44 - British White

ACCESSORIES

- Stainless steel OBD welded to unit, adjustable from face of diffuser (model 90BD)
- Plaster frame (model 98PF)
- Square to round adapter (model 9SRA)

DIMENSIONAL DATA



NOTE: Dimensions in parentheses are millimeters (mm).

PERFORMANCE DATA | 1-CORE, NO DAMPER

IP DATA					SOUND	METRIC DATA				
NOM DUCT	NECK VEL	AIR FLOW	Pt	1-CORE THROW		NOM DUCT	NECK VEL	AIR FLOW	Pt	1-CORE THROW
in	fpm	cfm	in wg	ft	NC	cm	m/s	l/s	Pa	cm
6 x 6	400	91	.038	5 - 7 - 9	<20	15.2 x 15.2	2.03	43	9.5	152 - 220 - 274
	500	117	.108	6 - 9 - 11	<20		2.54	55	26.9	183 - 283 - 335
	600	143	.155	7 - 10 - 13	20-25		3.05	67	38.6	213 - 315 - 396
	700	169	.220	8 - 11 - 15	<30		3.56	80	54.8	244 - 346 - 457
	800	182	.285	9 - 12 - 16	30		4.06	86	71.0	274 - 378 - 488
	1000	234	.438	11 - 13 - 18	<40		5.08	110	109.1	335 - 409 - 549
8 x 8	400	169	.038	8 - 10 - 12	<20	20.3 x 20.3	2.03	80	9.5	244 - 315 - 366
	500	208	.108	9 - 12 - 14	<20		2.54	98	26.9	274 - 378 - 427
	600	247	.155	10 - 14 - 17	20-25		3.05	117	38.6	305 - 441 - 518
	700	286	.220	11 - 15 - 19	<30		3.56	135	54.8	335 - 472 - 579
	800	338	.285	12 - 16 - 20	35		4.06	160	71.0	366 - 504 - 610
	1000	416	.438	14 - 20 - 25	<40		5.08	196	109.1	427 - 630 - 762
10 x 10	400	247	.038	10 - 12 - 14	<20	25.4 x 25.4	2.03	117	9.5	305 - 378 - 427
	500	312	.108	10 - 14 - 18	<20		2.54	147	26.9	305 - 441 - 549
	600	377	.155	12 - 16 - 20	<25		3.05	178	38.6	366 - 504 - 610
	700	442	.220	13 - 17 - 21	30-35		3.56	209	54.8	396 - 535 - 640
	800	494	.285	14 - 19 - 23	35-40		4.06	233	71.0	427 - 598 - 701
	1000	624	.438	16 - 20 - 26	<45		5.08	294	109.1	488 - 630 - 792
12 x 12	400	377	.038	10 - 14 - 18	<20	30.5 x 30.5	2.03	178	9.5	305 - 441 - 549
	500	442	.108	12 - 16 - 20	20		2.54	209	26.9	366 - 504 - 610
	600	546	.155	14 - 18 - 22	25		3.05	258	38.6	427 - 567 - 671
	700	637	.220	15 - 18 - 23	30		3.56	301	54.8	457 - 567 - 701
	800	728	.285	16 - 21 - 26	35		4.06	344	71.0	488 - 661 - 792
	1000	910	.438	18 - 26 - 30	<45		5.08	429	109.1	549 - 818 - 914
14 x 14	400	494	.038	12 - 16 - 20	<20	35.6 x 35.6	2.03	233	9.5	366 - 504 - 610
	500	624	.108	14 - 18 - 24	20-25		2.54	294	26.9	427 - 567 - 732
	600	754	.155	16 - 20 - 26	<30		3.05	356	38.6	488 - 630 - 792
	700	871	.220	17 - 22 - 28	<35		3.56	411	54.8	518 - 693 - 853
	800	1001	.285	18 - 23 - 29	<40		4.06	472	71.0	549 - 724 - 884
	1000	1248	.438	20 - 28 - 36	<45		5.08	589	109.1	610 - 881 - 1097
16 x 16	400	650	.038	13 - 18 - 24	<20	40.6 x 40.6	2.03	307	9.5	396 - 567 - 732
	500	806	.108	16 - 22 - 27	20-25		2.54	380	26.9	488 - 693 - 823
	600	975	.155	18 - 24 - 29	<30		3.05	460	38.6	549 - 756 - 884
	700	1144	.220	19 - 24 - 30	<35		3.56	540	54.8	579 - 756 - 914
	800	1300	.285	20 - 26 - 32	<40		4.06	614	71.0	610 - 818 - 975
	1000	1638	.438	22 - 30 - 38	<45		5.08	773	109.1	671 - 944 - 1158
18 x 18	400	830	.038	15 - 21 - 26	<20	45.7 x 45.7	2.03	392	9.5	457 - 661 - 792
	500	1053	.108	18 - 25 - 30	20-25		2.54	497	26.9	549 - 787 - 914
	600	1287	.155	24 - 30 - 36	30		3.05	607	38.6	732 - 944 - 1097
	700	1482	.220	21 - 28 - 34	35		3.56	699	54.8	640 - 881 - 1036
	800	1664	.285	22 - 29 - 36	<40		4.06	785	71.0	671 - 913 - 1097
	1000	2080	.438	24 - 32 - 40	45		5.08	982	109.1	732 - 1007 - 1219
20 x 20	400	988	.038	16 - 24 - 28	<20	50.8 x 50.8	2.03	466	9.5	488 - 756 - 853
	500	1274	.108	20 - 26 - 32	20-25		2.54	601	26.9	610 - 818 - 975
	600	1508	.155	22 - 28 - 35	25-30		3.05	712	38.6	671 - 881 - 1067
	700	1768	.220	23 - 30 - 36	35-40		3.56	834	54.8	701 - 944 - 1097
	800	2028	.285	24 - 31 - 40	40		4.06	957	71.0	732 - 976 - 1219
	1000	2496	.438	26 - 34 - 44	45		5.08	1178	109.1	792 - 1070 - 1341
24 x 24	400	1480	.038	18 - 26 - 32	<20	61.0 x 61.0	2.03	698	9.5	549 - 818 - 975
	500	1820	.108	24 - 30 - 38	25		2.54	859	26.9	732 - 944 - 1158
	600	2184	.155	28 - 36 - 44	25-30		3.05	1031	38.6	853 - 1133 - 1341
	700	2548	.220	29 - 37 - 45	35-40		3.56	1203	54.8	884 - 1165 - 1372
	800	2912	.285	31 - 39 - 45	40-45		4.06	1374	71.0	945 - 1228 - 1372
	1000	3640	.438	26 - 41 - 49	45-50		5.08	1718	109.1	792 - 1291 - 1494

NOTES: Throw values are given for terminal velocities of 100, 75, and 50 fpm. Throw values are given for isothermal conditions. NC values are based on Octave Band 2-7 sound power levels minus a room absorption of 10dB. Dash (-) in space denotes an NC or dB value of less than 10. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-1991.

ENGINEERING SPECIFICATION & CONFIGURATION**91240**

The stainless steel fixed louvered core supply diffuser shall be Krueger model 91240. The diffuser's core shall be constructed of 304 stainless steel and be available with 1, 2, 3, and 4-way blow patterns. Blow patterns shall be fixed at manufacturing location and not be adjustable. The frame of the diffuser must be constructed of 20 gage 304 stainless steel with countersunk screw holes (#6x1 1/4" stainless sheet metal screws provided by manufacturer). This frame must also produce a border of 1 3/8" around all sides of the grille with mitered corners. Optional 304 stainless steel damper available made of 20 gage stainless steel welded to the bar grille and operable from the face.

Optional 316 stainless steel construction available.

FINISH

The finish shall be 90 - #4 Satin Polish, obtained by finishing with a 120-grit abrasive, or 44 - British White.

1. SERIES: (XXXXX)

91240 - Fixed Louvered Core Ceiling Diffuser

2. PATTERN: (XX)

01 - 1-Way
02 - 2-Way
2C - 2-Corner
03 - 3-Way
04 - 4-Way

3. WIDTH: (XX)

4" - 48" in 1" Increments

4. HEIGHT: (XX)

4" - 60" in 1" Increments

5. MATERIAL: (XXX)

304 - Stainless Steel Grade 304
316 - Stainless Steel Grade 316

6. FRAME STYLE: (XXX)

F22 - Surface Mount
F23 - Lay-in T-Bar

7. PANEL: (XX)x(XX)

None
24"x24"

8. FASTENING METHOD: (XX)

00 - No Screw Holes
01 - Countersunk Screw Holes *

9. DAMPER: (XX)

00 - No Damper
01 - Stainless Steel OBD **

10. ACCESSORIES: (XX) (XX)

00 - No Accessories
01 - Plaster Frame
XX - Square to Round Adapter ***
(Specify size from 04 - 18" in increments of 2", depending on neck size)

11. FINISH: (XX)

90 - #4 Satin Polish
44 - British White

* Unit is shipped with #6x1 1/4" stainless steel sheet metal screws.

** Damper is welded to unit.

*** Square to Round Adapter is not available with OBD.

SAMPLE CONFIGURATION: 91240 - 04 - 10x10 - 304 - F23 - 24x24 - 00 - 01 - 00 - 00 - 90

INTRODUCTION

The 91310 series maximum security grille features a perforated face plate that makes finger penetration difficult in areas that need a secure environment and 100% stainless steel construction. The 46% free area perforation provides minimum pressure loss, making the 91310 an ideal choice for secure areas that require large amounts of supply or return air.

MODEL

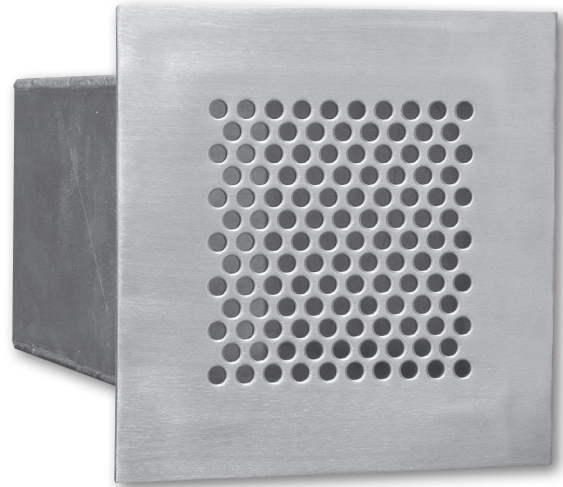
91310 - Maximum Security Grille

FEATURES

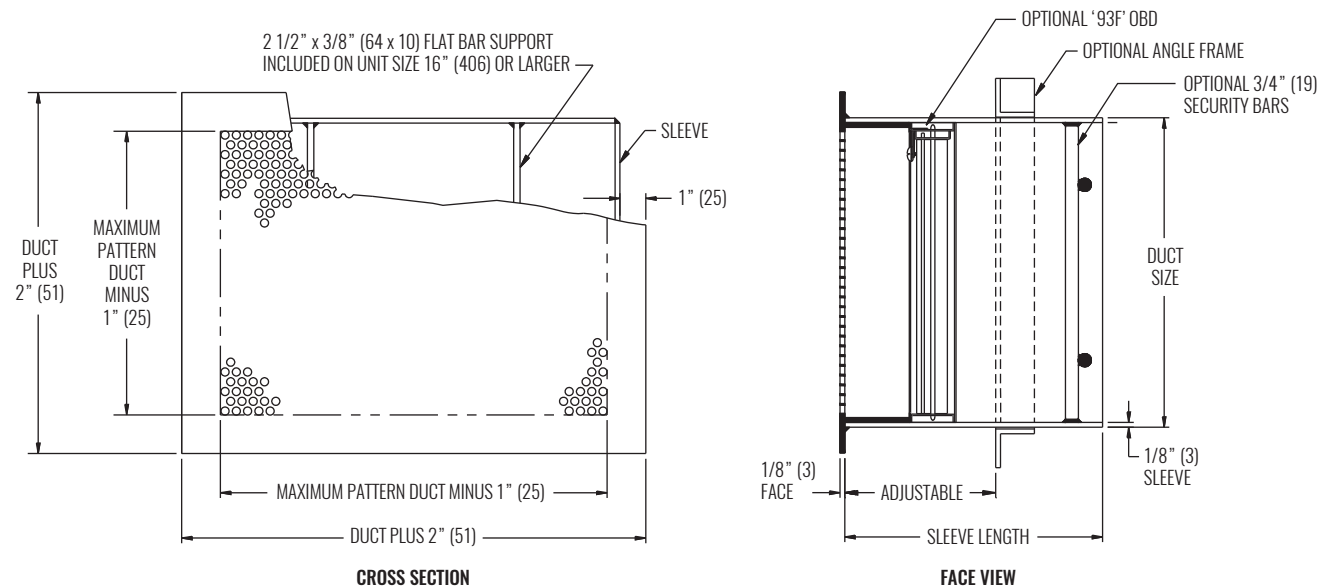
- 10 Gage perforated face and 5/16" holes on 7/16" staggered centers
- 10 Gage stitch welded sleeve
- 304 Stainless steel construction (316 optional)
- Standard finish is 90 - #4 Satin Polish

ACCESSORIES

- Angle frame, shipped loose
- Security bars on 6" centers
- Anchor bars
- Two angles, shipped loose
- Front or rear operated OBD (9OBD)



DIMENSIONAL DATA



NOTE: Dimensions in parentheses are millimeters (mm).

PERFORMANCE DATA | SQUARE NECK, 5/16" DIAMETER HOLES ON 7/16" STAGGERED CENTERS

NOM DUCT	IP DATA				SOUND	METRIC DATA				
	NECK VEL	AIR FLOW	Ps	1-CORE THROW		NOM DUCT	NECK VEL	AIR FLOW	Ps	1-CORE THROW
	in	fpm	cfm	in wg		cm	m/s	l/s	Pa	cm
6 x 6	200	30	.010	2 - 3 - 7	<20	15.2 x 15.2	1.02	14	2.5	61 - 94 - 213
	300	50	.020	4 - 6 - 11	<20		1.52	24	5.0	122 - 189 - 335
	400	60	.040	5 - 7 - 12	<20		2.03	28	10.0	152 - 220 - 366
	500	80	.060	6 - 9 - 14	22		2.54	38	14.9	183 - 283 - 427
	600	90	.090	7 - 10 - 15	28		3.05	42	22.4	213 - 315 - 457
	700	110	.120	8 - 12 - 17	32		3.56	52	29.9	244 - 378 - 518
8 x 8	200	60	.010	3 - 5 - 10	<20	20.3 x 20.3	1.02	28	2.5	91 - 157 - 305
	300	90	.020	5 - 7 - 15	<20		1.52	42	5.0	152 - 220 - 457
	400	130	.040	7 - 11 - 18	<20		2.03	61	10.0	213 - 346 - 549
	500	160	.060	9 - 13 - 20	25		2.54	76	14.9	274 - 409 - 610
	600	190	.090	10 - 15 - 22	31		3.05	90	22.4	305 - 472 - 671
	700	220	.120	12 - 17 - 24	36		3.56	104	29.9	366 - 535 - 732
10 x 8	200	80	.010	4 - 6 - 11	<20	25.4 x 20.3	1.02	38	2.5	122 - 189 - 335
	300	123	.020	6 - 9 - 17	<20		1.52	58	5.0	183 - 283 - 518
	400	160	.040	8 - 11 - 20	20		2.03	76	10.0	244 - 346 - 610
	500	210	.060	10 - 15 - 23	26		2.54	99	14.9	305 - 472 - 701
	600	250	.090	12 - 18 - 25	32		3.05	118	22.4	366 - 567 - 762
	700	290	.120	14 - 19 - 27	37		3.56	137	29.9	427 - 598 - 823
10 x 10	200	110	.010	5 - 7 - 14	<20	25.4 x 25.4	1.02	52	2.5	152 - 220 - 427
	300	160	.020	7 - 10 - 20	<20		1.52	76	5.0	213 - 315 - 610
	400	210	.040	9 - 13 - 23	21		2.03	99	10.0	274 - 409 - 701
	500	270	.060	11 - 17 - 26	28		2.54	127	14.9	335 - 535 - 792
	600	320	.090	13 - 20 - 29	33		3.05	151	22.4	396 - 630 - 884
	700	370	.120	15 - 22 - 31	38		3.56	175	29.9	457 - 693 - 945
12 x 12	200	160	.010	5 - 8 - 16	<20	30.5 x 30.5	1.02	76	2.5	152 - 252 - 488
	300	240	.020	8 - 12 - 24	<20		1.52	113	5.0	244 - 378 - 732
	400	320	.040	11 - 16 - 29	23		2.03	151	10.0	335 - 504 - 884
	500	400	.060	14 - 20 - 32	29		2.54	189	14.9	427 - 630 - 975
	600	480	.090	16 - 24 - 35	35		3.05	227	22.4	488 - 756 - 1067
	700	560	.120	19 - 27 - 38	40		3.56	264	29.9	579 - 850 - 1158
14 x 14	200	230	.010	7 - 10 - 20	<20	35.6 x 35.6	1.02	109	2.5	213 - 315 - 610
	300	340	.020	10 - 15 - 29	<20		1.52	160	5.0	305 - 472 - 884
	400	450	.040	13 - 19 - 34	24		2.03	212	10.0	396 - 598 - 1036
	500	560	.060	16 - 24 - 38	31		2.54	264	14.9	488 - 756 - 1158
	600	680	.090	20 - 29 - 42	36		3.05	321	22.4	610 - 913 - 1280
	700	790	.120	23 - 32 - 45	41		3.56	373	29.9	701 - 1007 - 1372

NOTES: Throw values are given for terminal velocities of 100, 75, and 50 fpm. Throw values are given for isothermal conditions. NC values are based on Octave Band 2-7 sound power levels minus a room absorption of 10dB. Dash (-) in space denotes an NC or dB value of less than 10. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-1991.

PERFORMANCE DATA | SQUARE NECK, 5/16" DIAMETER HOLES ON 7/16" STAGGERED CENTERS

IP DATA					SOUND	METRIC DATA				
NOM DUCT	NECK VEL	AIR FLOW	Ps	1-CORE THROW		NOM DUCT	NECK VEL	AIR FLOW	Ps	1-CORE THROW
in	fpm	cfm	in wg	ft		cm	m/s	l/s	Pa	cm
18 x 14	200	300	.010	8 - 11 - 23	<20	45.7 x 35.6	1.02	142	2.5	244 - 346 - 701
	300	440	.020	11 - 17 - 33	<20		1.52	208	5.0	335 - 535 - 1006
	400	590	.040	15 - 22 - 39	25		2.03	278	10.0	457 - 693 - 1189
	500	740	.060	19 - 28 - 44	32		2.54	349	14.9	579 - 881 - 1341
	600	890	.090	22 - 33 - 48	38		3.05	420	22.4	671 - 1039 - 1463
	700	1040	.120	26 - 37 - 52	42		3.56	491	29.9	792 - 1165 - 1585
18 x 18	200	390	.010	9 - 13 - 26	<20	45.7 x 45.7	1.02	184	2.5	274 - 409 - 792
	300	580	.020	13 - 19 - 38	<20		1.52	274	5.0	396 - 598 - 1158
	400	780	.040	17 - 26 - 45	26		2.03	368	10.0	518 - 818 - 1372
	500	970	.060	21 - 32 - 50	33		2.54	458	14.9	640 - 1007 - 1524
	600	1170	.090	26 - 38 - 55	39		3.05	552	22.4	792 - 1196 - 1676
	700	1360	.120	30 - 42 - 59	43		3.56	642	29.9	914 - 1322 - 1798
20 x 20	200	490	.010	10 - 14 - 29	<20	50.8 x 50.8	1.02	231	2.5	305 - 441 - 884
	300	730	.020	14 - 21 - 43	<20		1.52	345	5.0	427 - 661 - 1311
	400	980	.040	19 - 29 - 50	27		2.03	463	10.0	579 - 913 - 1524
	500	1220	.060	24 - 36 - 56	34		2.54	576	14.9	732 - 1133 - 1707
	600	1460	.090	28 - 43 - 62	40		3.05	689	22.4	853 - 1354 - 1890
	700	1710	.120	33 - 47 - 67	44		3.56	807	29.9	1006 - 1480 - 2042
24 x 24	200	720	.010	12 - 17 - 35	<20	61.0 x 61.0	1.02	340	2.5	366 - 535 - 1067
	300	1080	.020	17 - 26 - 52	20		1.52	510	5.0	518 - 818 - 1585
	400	1440	.040	23 - 35 - 61	29		2.03	680	10.0	701 - 1102 - 1859
	500	1800	.060	29 - 43 - 68	36		2.54	850	14.9	884 - 1354 - 2073
	600	2160	.090	35 - 52 - 75	41		3.05	1019	22.4	1067 - 1637 - 2286
	700	2520	.120	41 - 57 - 81	46		3.56	1189	29.9	1250 - 1794 - 2469
32 x 32	200	1310	.010	16 - 23 - 47	<20	81.3 x 81.3	1.02	618	2.5	488 - 724 - 1433
	300	1970	.020	23 - 35 - 70	23		1.52	930	5.0	701 - 1102 - 2134
	400	2630	.040	31 - 47 - 83	32		2.03	1241	10.0	945 - 1480 - 2530
	500	3280	.060	39 - 59 - 92	38		2.54	1548	14.9	1189 - 1857 - 2804
	600	3940	.090	47 - 70 - 101	44		3.05	1859	22.4	1433 - 2204 - 3078
	700	4600	.120	55 - 77 - 109	49		3.56	2171	29.9	1676 - 2424 - 3322

NOTES: Throw values are given for terminal velocities of 100, 75, and 50 fpm. Throw values are given for isothermal conditions. NC values are based on Octave Band 2-7 sound power levels minus a room absorption of 10dB. Dash (-) in space denotes an NC or dB value of less than 10. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-1991.

PERFORMANCE DATA | ROUND NECK, 5/16" DIAMETER HOLES ON 7/16" STAGGERED CENTERS

NOM DUCT	IP DATA				SOUND	METRIC DATA				
	NECK VEL	AIR FLOW	Ps	1-CORE THROW		NOM DUCT	NECK VEL	AIR FLOW	Ps	1-CORE THROW
	in	fpm	cfm	in wg		cm	m/s	l/s	Pa	cm
6	200	20	.010	2 - 3 - 5	<20	15.2	1.02	9	2.5	61 - 94 - 152
	300	40	.020	3 - 5 - 10	<20		1.52	19	5.0	91 - 157 - 305
	400	50	.040	4 - 7 - 11	<20		2.03	24	10.0	122 - 220 - 335
	500	60	.060	5 - 8 - 12	21		2.54	28	14.9	152 - 252 - 366
	600	70	.090	6 - 9 - 13	27		3.05	33	22.4	183 - 283 - 396
	700	90	.120	8 - 11 - 15	31		3.56	42	29.9	244 - 346 - 457
8	200	50	.010	3 - 5 - 9	<20	20.3	1.02	24	2.5	91 - 157 - 274
	300	70	.020	4 - 6 - 13	<20		1.52	33	5.0	122 - 189 - 396
	400	100	.040	6 - 9 - 16	<20		2.03	47	10.0	183 - 283 - 488
	500	120	.060	7 - 11 - 18	24		2.54	57	14.9	213 - 346 - 549
	600	150	.090	9 - 14 - 20	30		3.05	71	22.4	274 - 441 - 610
	700	170	.120	10 - 15 - 21	34		3.56	80	29.9	305 - 472 - 640
10	200	80	.010	4 - 6 - 11	<20	25.4	1.02	38	2.5	122 - 189 - 335
	300	130	.020	6 - 9 - 18	<20		1.52	61	5.0	183 - 283 - 549
	400	170	.040	8 - 12 - 21	20		2.03	80	10.0	244 - 378 - 640
	500	210	.060	10 - 15 - 23	27		2.54	99	14.9	305 - 472 - 701
	600	250	.090	12 - 18 - 25	32		3.05	118	22.4	366 - 567 - 762
	700	290	.120	14 - 19 - 27	37		3.56	137	29.9	427 - 598 - 823
12	200	130	.010	5 - 7 - 15	<20	30.5	1.02	61	2.5	152 - 220 - 457
	300	190	.020	7 - 11 - 22	<20		1.52	90	5.0	213 - 346 - 671
	400	250	.040	10 - 14 - 25	22		2.03	118	10.0	305 - 441 - 762
	500	320	.060	12 - 18 - 29	28		2.54	151	14.9	366 - 567 - 884
	600	380	.090	15 - 22 - 31	34		3.05	179	22.4	457 - 693 - 945
	700	440	.120	17 - 24 - 34	39		3.56	208	29.9	518 - 756 - 1036
14	200	180	.010	6 - 9 - 17	<20	35.6	1.02	85	2.5	183 - 283 - 518
	300	270	.020	9 - 13 - 26	<20		1.52	127	5.0	274 - 409 - 792
	400	350	.040	11 - 17 - 30	23		2.03	165	10.0	335 - 535 - 914
	500	440	.060	14 - 21 - 34	30		2.54	208	14.9	427 - 661 - 1036
	600	530	.090	17 - 26 - 37	35		3.05	250	22.4	518 - 818 - 1128
	700	620	.120	20 - 28 - 40	40		3.56	293	29.9	610 - 881 - 1219

NOTES: Throw values are given for terminal velocities of 100, 75, and 50 fpm. Throw values are given for isothermal conditions. NC values are based on Octave Band 2-7 sound power levels minus a room absorption of 10dB. Dash (-) in space denotes an NC or dB value of less than 10. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-1991.

PERFORMANCE DATA | ROUND NECK, 5/16" DIAMETER HOLES ON 7/16" STAGGERED CENTERS

NOM DUCT	IP DATA				SOUND	METRIC DATA				
	NECK VEL	AIR FLOW	Ps	1-CORE THROW		NOM DUCT	NECK VEL	AIR FLOW	Ps	1-CORE THROW
in	fpm	cfm	in wg	ft	NC	cm	m/s	l/s	Pa	cm
16	200	240	.010	7 - 10 - 20	<20	40.6	1.02	113	2.5	213 - 315 - 610
	300	360	.020	10 - 15 - 30	<20		1.52	170	5.0	305 - 472 - 914
	400	470	.040	13 - 20 - 35	24		2.03	222	10.0	396 - 630 - 1067
	500	590	.060	17 - 25 - 39	31		2.54	278	14.9	518 - 787 - 1189
	600	710	.090	20 - 30 - 43	37		3.05	335	22.4	610 - 944 - 1311
	700	830	.120	23 - 33 - 46	41		3.56	392	29.9	701 - 1039 - 1402
18	200	310	.010	8 - 11 - 23	<20	45.7	1.02	146	2.5	244 - 346 - 701
	300	460	.020	11 - 17 - 34	<20		1.52	217	5.0	335 - 535 - 1036
	400	610	.040	15 - 23 - 40	25		2.03	288	10.0	457 - 724 - 1219
	500	770	.060	19 - 28 - 45	32		2.54	363	14.9	579 - 881 - 1372
	600	920	.090	23 - 34 - 49	38		3.05	434	22.4	701 - 1070 - 1494
	700	1070	.120	26 - 37 - 53	42		3.56	505	29.9	792 - 1165 - 1615
20	200	380	.010	8 - 13 - 25	<20	50.8	1.02	179	2.5	244 - 409 - 762
	300	580	.020	13 - 19 - 38	<20		1.52	274	5.0	396 - 598 - 1158
	400	770	.040	17 - 25 - 45	26		2.03	363	10.0	518 - 787 - 1372
	500	960	.060	21 - 32 - 50	33		2.54	453	14.9	640 - 1007 - 1524
	600	1150	.090	25 - 38 - 55	39		3.05	543	22.4	762 - 1196 - 1676
	700	1340	.120	29 - 42 - 59	43		3.56	632	29.9	884 - 1322 - 1798
24	200	560	.010	10 - 15 - 30	<20	61.0	1.02	264	2.5	305 - 472 - 914
	300	850	.020	15 - 23 - 46	<20		1.52	401	5.0	457 - 724 - 1402
	400	1130	.040	20 - 31 - 54	28		2.03	533	10.0	610 - 976 - 1646
	500	1410	.060	26 - 38 - 61	35		2.54	665	14.9	792 - 1196 - 1859
	600	1690	.090	31 - 46 - 66	40		3.05	798	22.4	945 - 1448 - 2012
	700	1980	.120	36 - 51 - 72	45		3.56	934	29.9	1097 - 1605 - 2195

NOTES: Throw values are given for terminal velocities of 100, 75, and 50 fpm. Throw values are given for isothermal conditions. NC values are based on Octave Band 2-7 sound power levels minus a room absorption of 10dB. Dash (-) in space denotes an NC or dB value of less than 10. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70-1991.

ENGINEERING SPECIFICATION & CONFIGURATION**91310**

The security grille shall be a Krueger model 91310 stainless steel maximum security grille. The face of the maximum security grille shall have 5/16" diameter holes on 7/16" staggered centers with 46% free area and be 10 gage. The sleeve shall be 10 gage and stitch welded to the face of the maximum security grille and along the entire length of the sleeve. Construction shall be 100% 304 stainless steel.

Optional 316 stainless steel construction available.

FINISH

The finish shall be 90 - #4 Satin Polish, obtained by finishing with a 120-grit abrasive.

1. SERIES: (XXXXXX)

91310 - Supply/Return Security Grille

2. PATTERN: SLEEVE GAGE (XX)

10 - 10 Gage

3. WIDTH: (XX)

6" - 30" in 2" Increments, or 9" *

4. HEIGHT: (XX)

4" - 30" in 2" Increments, or 9" *

5. SLEEVE LENGTH: (XX)

6", 8", 10", 12", or 18"

6. MATERIAL: (XXX)

304 - Stainless Steel Grade 304

316 - Stainless Steel Grade 316

7. DAMPER: (XXX)

00 - No Damper

93L - Front Operated, Stainless Steel OBD **

93R - Rear Operated, Stainless Steel OBD **

8. ACCESSORIES: (XX) (XX)

00 - No Accessories

L - Angle Frame, Shipped Unpainted
& Loose for Field Installation

01 - Security Bars, 3/4" Diameter on 6" Centers

02 - Anchor Bars, 3/4" Diameter x 3" Long

07 - Two Loose Angles, Shipped Separately for
Field Installation

9. FINISH: (XX)

90 - #4 Satin Polish

* If selecting 9" Width, Height must also be 9".

** Damper is welded in sleeve.

SAMPLE CONFIGURATION: 91310 - 10 - 14x16 - 8 - 304 - 93F - L - 00 - 01

INTRODUCTION

The 9EGC5 egg-crate grille features a $\frac{1}{2}$ " x $\frac{1}{2}$ " x $\frac{1}{2}$ " stainless steel core with 1-3/8" flange. This allows large amounts of air to be returned through the grille while minimizing the pressure drop and sound. Surface mount and lay-in T-bar configurations are available.

MODEL

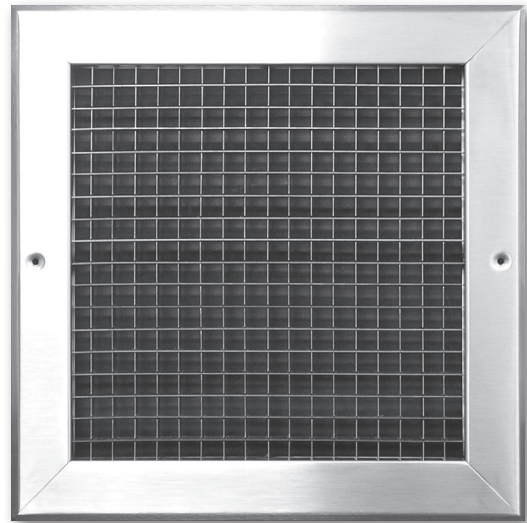
9EGC5 - $\frac{1}{2}$ "x $\frac{1}{2}$ "x $\frac{1}{2}$ " Stainless Steel Cube Core
Return Grille with 1 3/8" Flange

FEATURES

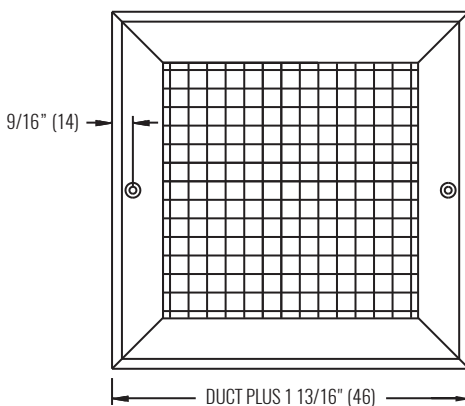
- 304 Stainless steel construction (316 optional)
- $\frac{1}{2}$ " x $\frac{1}{2}$ " x $\frac{1}{2}$ " core
- Countersunk screw holes
- Standard finish is 90 - #4 Satin Polish or 44 - British White

ACCESSORIES

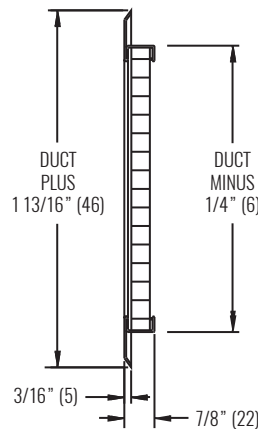
- Stainless steel OBD welded to unit, adjustable from face of grille (model 9OBD)
- Plaster frame (model 98PF)
- Square to round adapter (9SRA)



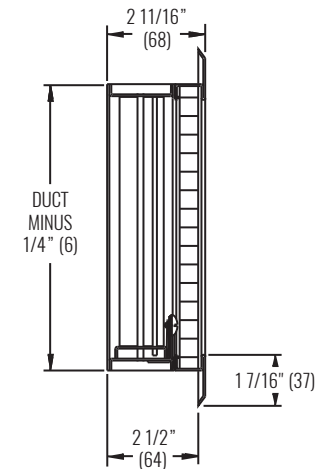
DIMENSIONAL DATA



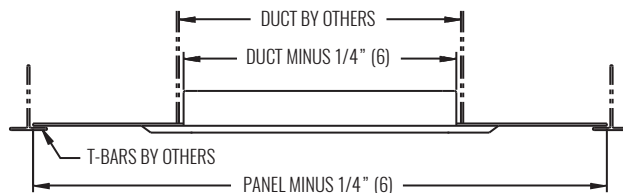
FACE VIEW



SIDE VIEW: FRAME 22, SURFACE MOUNT



SIDE VIEW: FRAME 22, SURFACE MOUNT
(SHOWN WITH OBD)



SIDE VIEW: FRAME 23, LAY-IN T-BAR

NOTE: Dimensions in parentheses are millimeters (mm).

9EGC5

Stainless Steel Return Grille, Egg Crate



ENGINEERING SPECIFICATION & CONFIGURATION

9EGC5

The return grille shall be a Krueger model 9EGC5. This grille must have at least 90% free area for core style 1/2" x 1/2" x 1/2" core. The frame of the grille must be constructed of 20 gage stainless steel with counter sunk screw holes (#6 x 1 1/4" stainless sheet metal screws provided by manufacturer). This frame must also produce a border of 1 3/8" around all sides of the grille with mitered corners. Optional 304 stainless steel damper available made of 20 gage stainless steel welded to the return grille and operable from the face.

Optional 316 stainless steel construction available.

FINISH

The finish shall be 90 - #4 Satin Polish, obtained by finishing with a 120-grit abrasive, or 44 - British White.

1. SERIES: (XXXXXX)

9EGC5 - Egg-crate Exhaust Grille
1/2" x 1/2" x 1/2" Core

2. WIDTH: (XX)

4" - 48" in 1" Increments

3. HEIGHT: (XX)

4" - 48" in 1" Increments

4. MATERIAL: (XXX)

304 - Stainless Steel Grade 304
316 - Stainless Steel Grade 316

5. FRAME STYLE: (XXX)

F22 - Surface Mount
F23 - Lay-in T-Bar

6. PANEL: (XX)x(XX)

None
24"x24" *
24"x48" *

7. FASTENING METHOD: (XX)

00 - No Screw Holes
01 - Countersunk Screw Holes **

8. DAMPER: (XX)

00 - No Damper
01 - Stainless Steel OBD †

9. ACCESSORIES: (XX) (XX)

00 - No Accessories
01 - Plaster Frame
XX - Square to Round Adapter ‡
(Specify size from 04 - 18" in increments of 2",
depending on neck size)

10. FINISH: (XX)

90 - #4 Satin Polish
44 - British White

* Only available with Frame 23.

** Unit shipped with #6x1 1/4" stainless steel sheet metal screws.

† Damper is welded to unit.

‡ Square to Round Adapter is not available with OBD.

SAMPLE CONFIGURATION: 9EGC5 - 22x22 - 316 - F22 - NONE - 00 - 01 - 00 - 90

INTRODUCTION

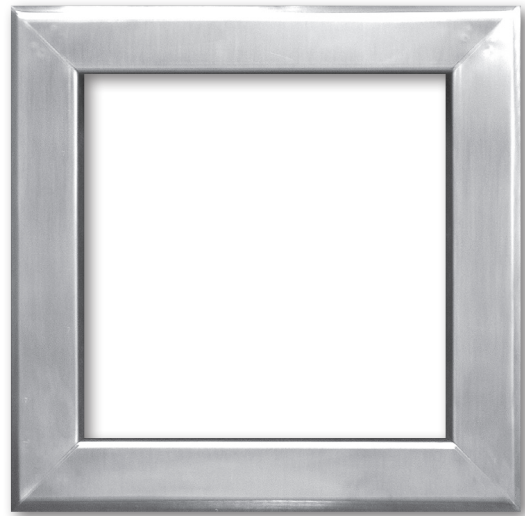
The 98PF stainless steel plaster frame is available for Krueger's stainless steel series grilles and registers. Standard construction is 304 stainless steel with 316 stainless steel construction as an additional option.

MODEL

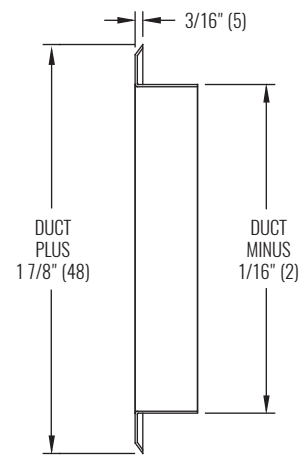
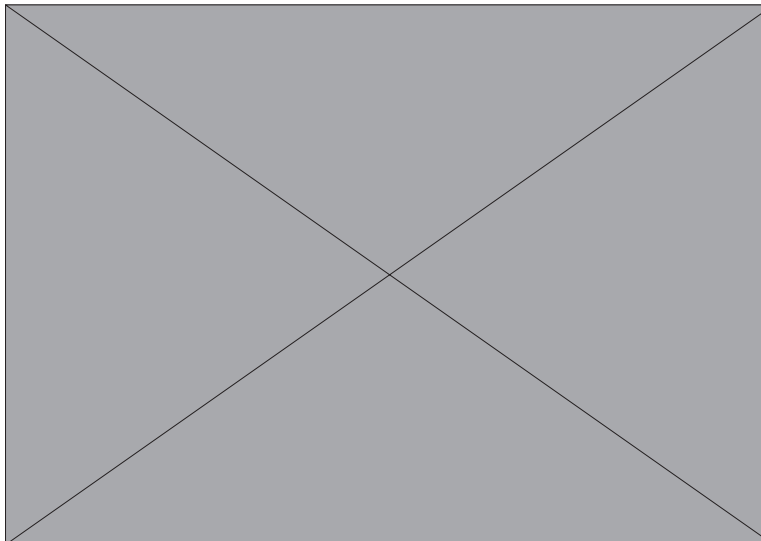
98PF - Plaster Frame

FEATURES

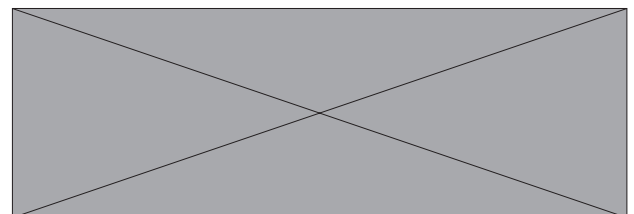
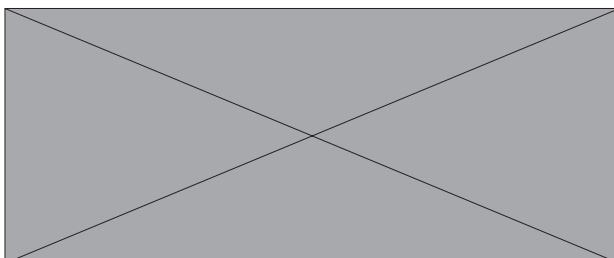
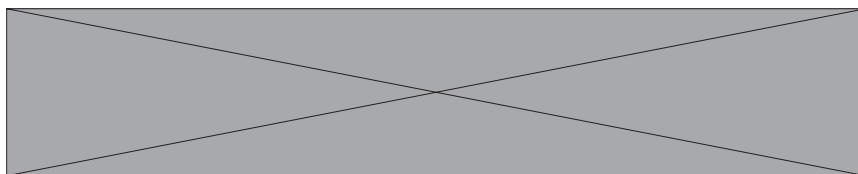
- Standard finish is 90 - #4 Satin Polish or 44 - British White



DIMENSIONAL DATA



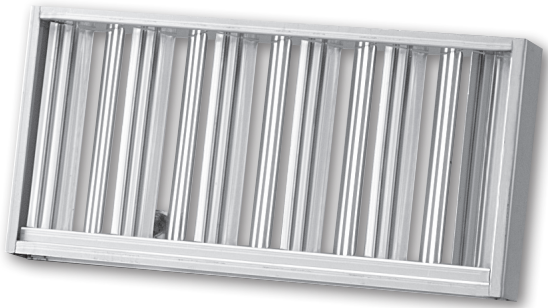
CROSS SECTION (L - L)



NOTE: Dimensions in parentheses are millimeters (mm).

90BD

Stainless Steel Accessory, Opposed Blade Damper



INTRODUCTION

The 90BD stainless steel OBD is available for Krueger's stainless steel series grilles. Standard construction is 304 stainless steel, but 316 stainless steel construction is available. The 90BD should be ordered with the grille since the damper needs to be welded to the grille.

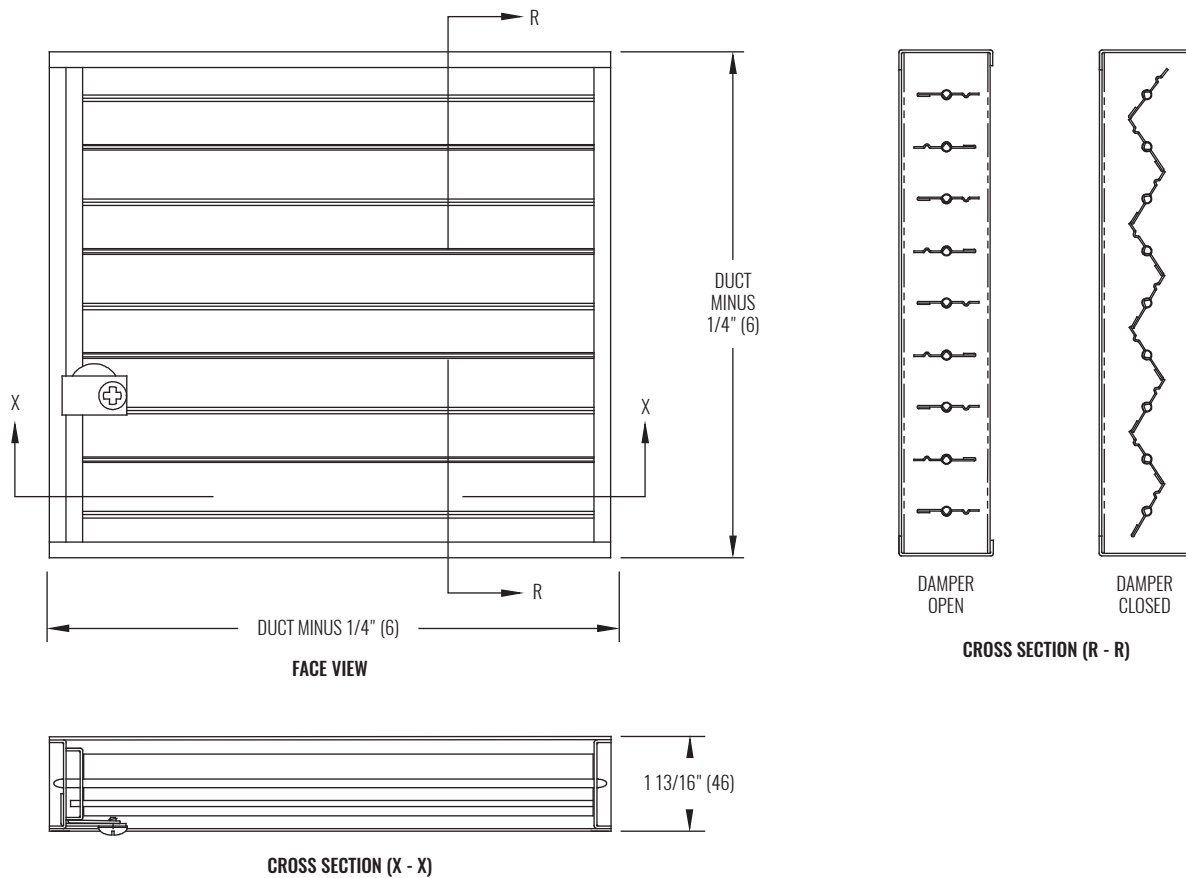
MODEL

90BD - Opposed Blade Damper

FEATURES

- Standard finish is 90 - #4 Satin Polish

DIMENSIONAL DATA



NOTE: Dimensions in parentheses are millimeters (mm).

INTRODUCTION

The 9SRA stainless steel square to round adapter is available for Krueger's stainless steel series grilles and diffusers. Standard construction is 304 stainless steel with 316 stainless steel construction as an additional option.

MODEL

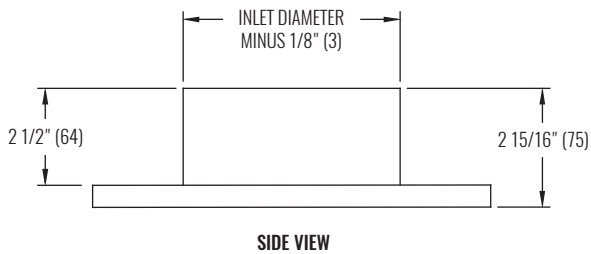
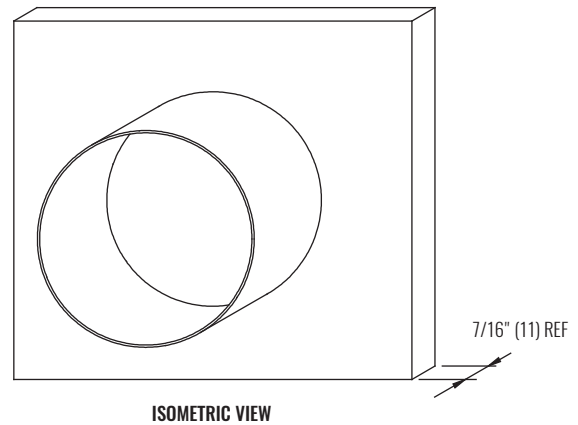
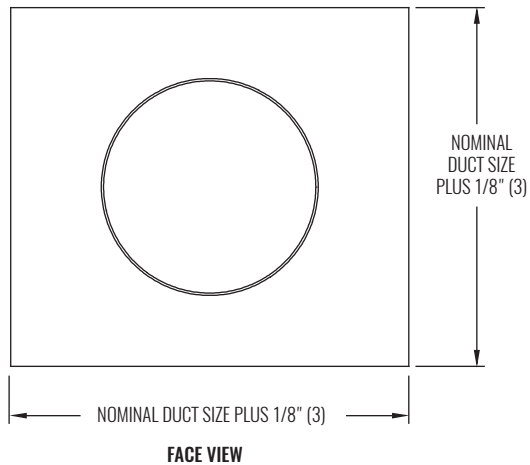
9SRA - Square to round adapter

FEATURES

- Standard finish is 90 - #4 Satin Polish



DIMENSIONAL DATA



NOTE: Dimensions in parentheses are millimeters (mm).