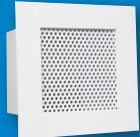


1310, 1310TF & 51310
These perforated face supply grilles feature 5/16" diameter holes on 7/16" staggered centers.



13SD
This perforated face supply grille features 3/16" diameter holes on 9/32" staggered centers.



1320
This lattice face supply grille features 2"x2" square holes and wire mesh between face plate and backer plate.



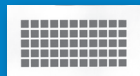
1330
This louvered face supply grille features a wire mesh between the mullion and mesh guard. Blades set horizontally at 40°.



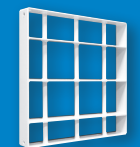
1340
This lattice face with louvered core supply diffuser features 13/16" square holes and 3/16" fret.



51350
This aluminum supply and return grille features 3/16"x3/4" bars on 1/2" centers. Bars are set at 0° deflection.



1380 & 51380
These lattice or perforated face plates feature 13/16" square holes with 3/16" fret or 5/16" diameter holes on 7/16" staggered centers.



1390
This barred duct work features a vertical or horizontal security bar. Round bars are 3/4" diameter. Flat bars are 2 1/2"x1/4".



1390F
This barred duct work with sleeve features vertical and horizontal round security bars. Round bars are 3/4" diameter.

1310, 1310TF, 51310

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13SD

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1390F

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Engineering Specification L1-60

Security Grille Accessories

Dimensional Information L1-61

Introduction: 1310, 1310TF, 51310

The 1310/51310 series maximum security grilles feature a perforated face plate that makes finger penetration difficult in areas that need a secure environment. The 46% free area perforation provides minimum pressure loss, making the 1310/51310 an ideal choice for secure areas that require large amounts of supply or return air.

MODELS

- 1310 - Maximum security steel grille with 3/16" thick perforated face and 5/16" holes on 7/16" staggered centers.
- 1310TF - Maximum security steel transfer grille with two 3/16" thick perforated faces and 5/16" holes on 7/16" staggered centers.
- 51310 - Medium security aluminum grille with 1/8" thick perforated face and 5/16" holes on 7/16" staggered centers.

FEATURES

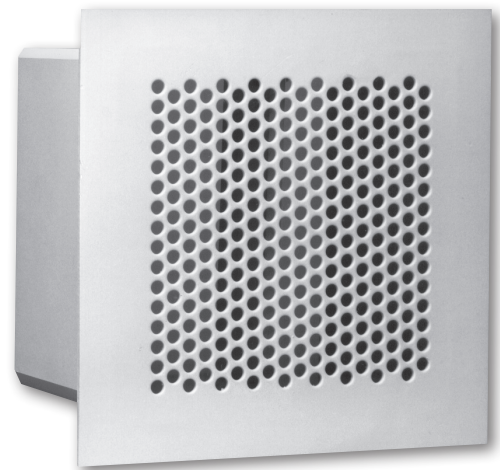
- 3/16" Thick stitch welded sleeve (steel),
1/8" Thick stitch welded sleeve (aluminum).
- 30"x30" Maximum single unit size.
- 6", 8", 10", 12", 14", 16", and 18" Sleeve lengths.

ACCESSORIES

- Angle frame shipped loose and unpainted.
(Steel is constructed of 1 1/2"x1 1/2"x3/16" angle;
aluminum is constructed of 1 1/2"x1 1/2"x1/8" angle.)
- Security bars on 6" centers.
(Steel is constructed of 3/4" diameter bars;
aluminum is constructed of 1/2" diameter bars.)
- Anchor bars. (Steel is constructed of 3"x3/4" diameter bars;
aluminum is constructed of 3"x1/2" diameter bars.)
- Two loose angles shipped loose and unpainted.
(Steel is constructed of 1 1/2"x1 1/2"x3/16" angle;
aluminum is constructed of 1 1/2"x1 1/2"x1/8" angle.)
- Front or rear operated OBD.

FINISHES

- Standard finish is #44 British White.
- Optional finish is Mill.



1310

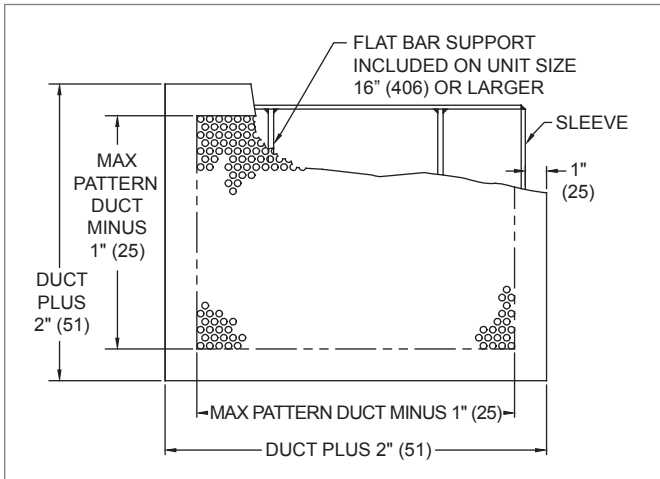


1310TF

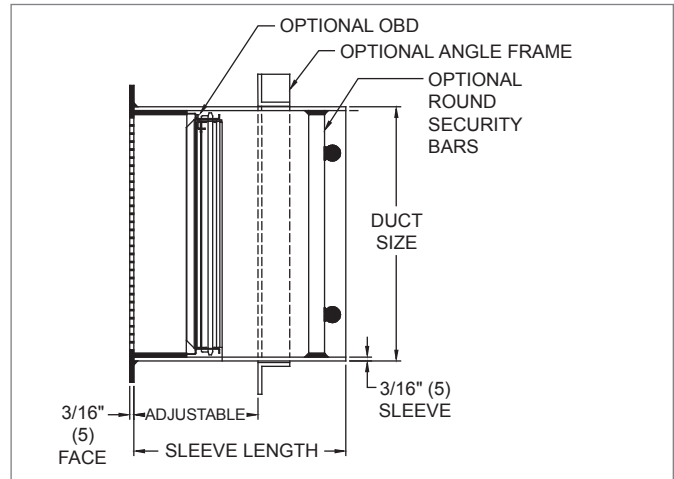
1310 | Security Grille with Perforated Face

1310 Dimensional Information

1310, FACE VIEW



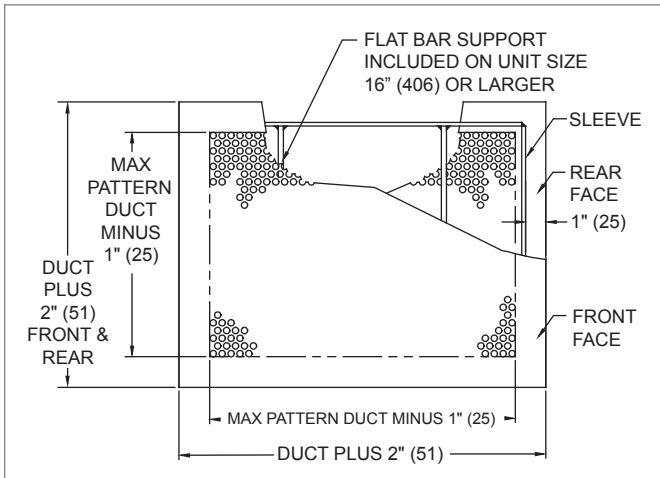
1310, CROSS SECTION



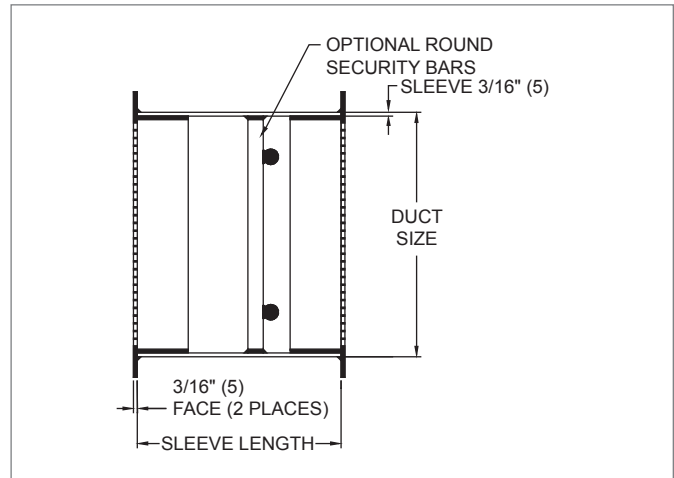
SECURITY GRILLES

1310TF Dimensional Information

1310TF, FACE VIEW

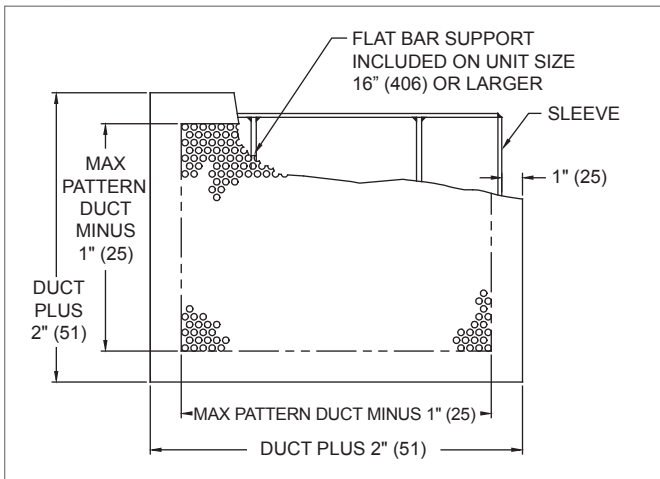


1310TF, CROSS SECTION

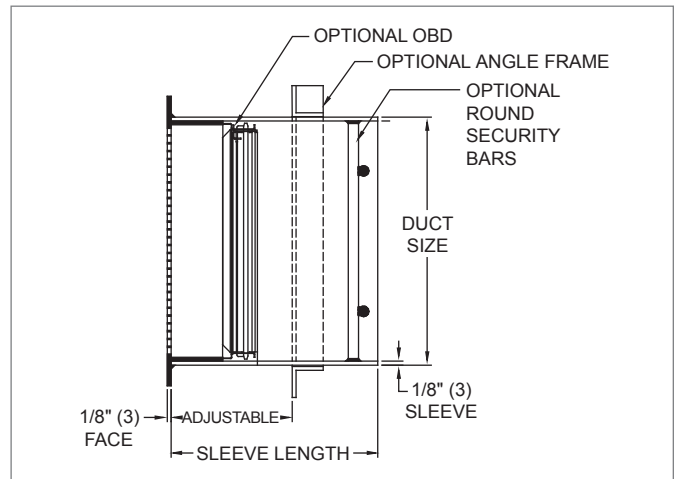


51310 Dimensional Information

51310, FACE VIEW



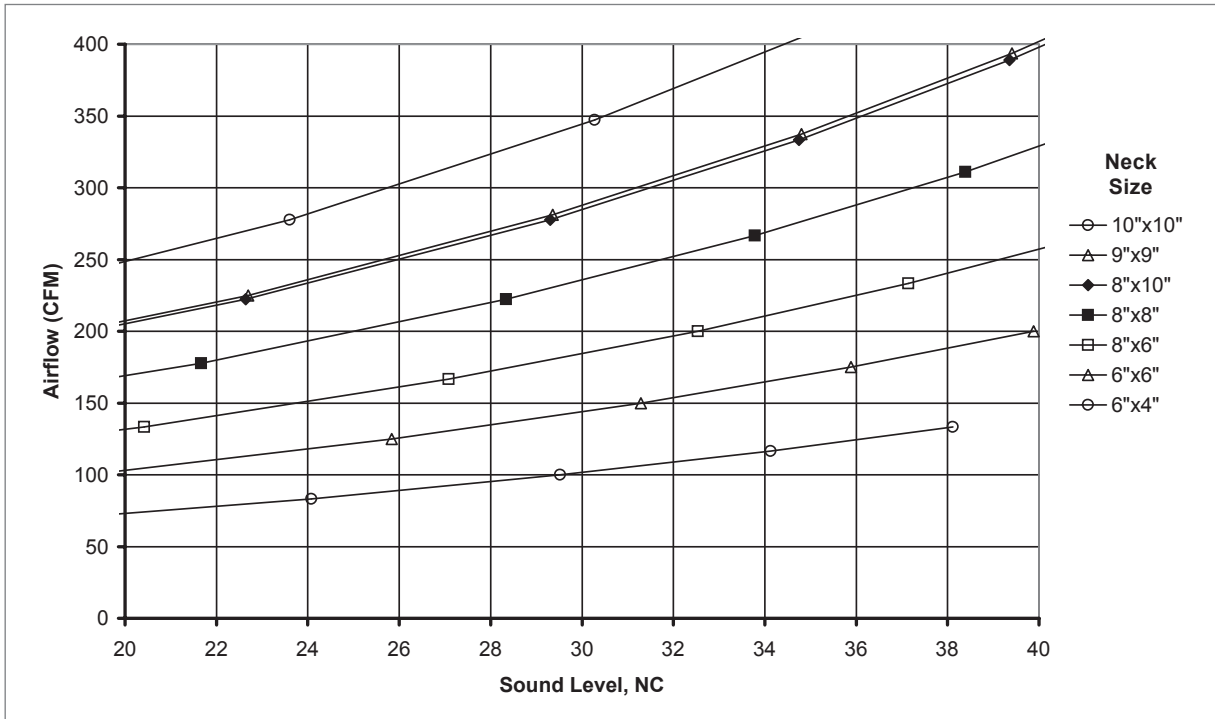
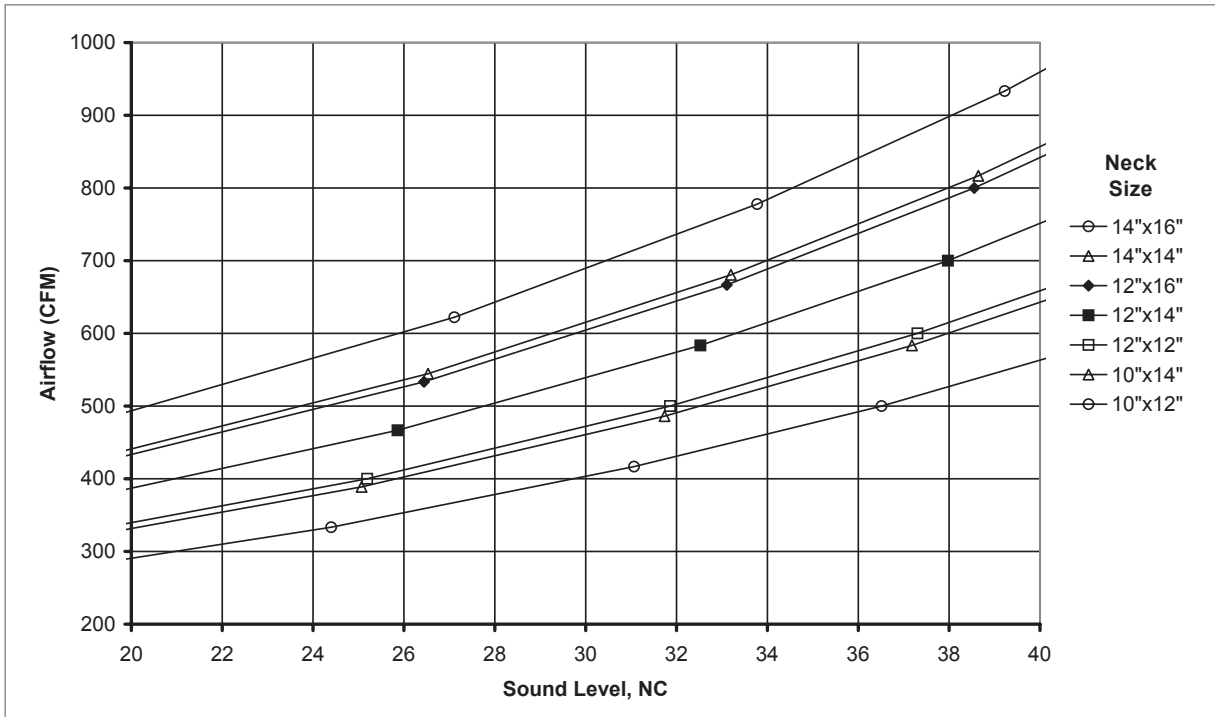
51310, CROSS SECTION



NOTE: Dimensions in parentheses are mm.

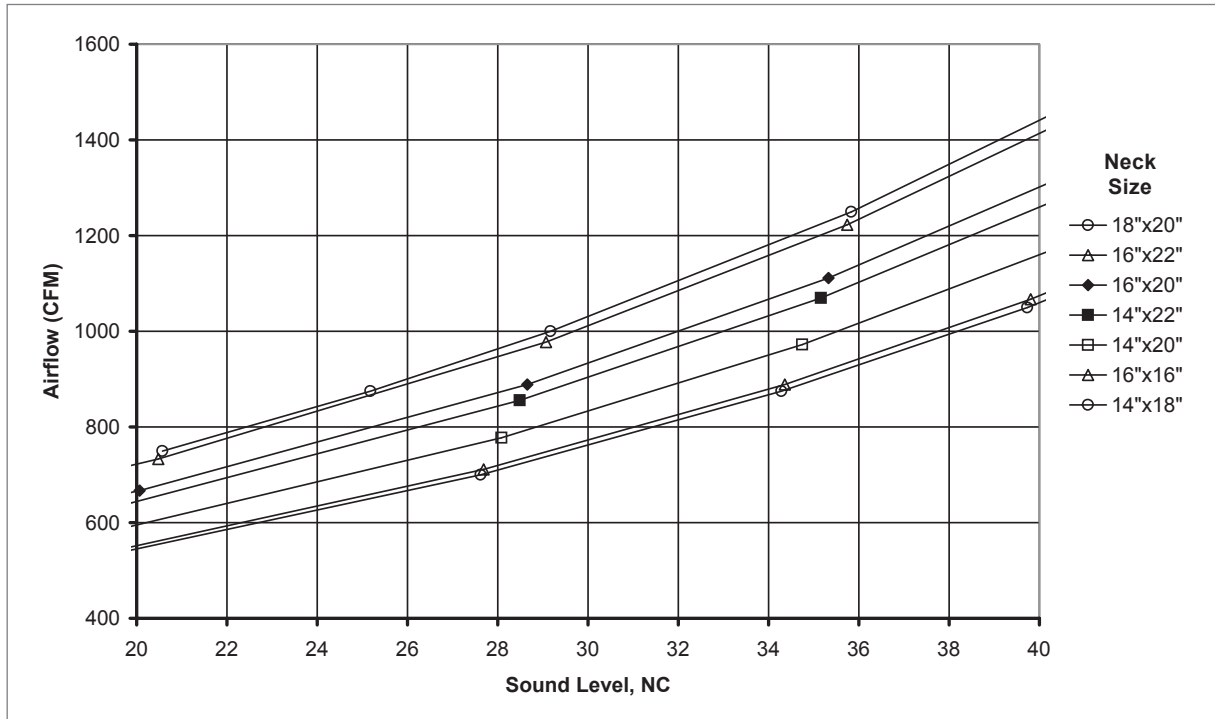
1
3
1
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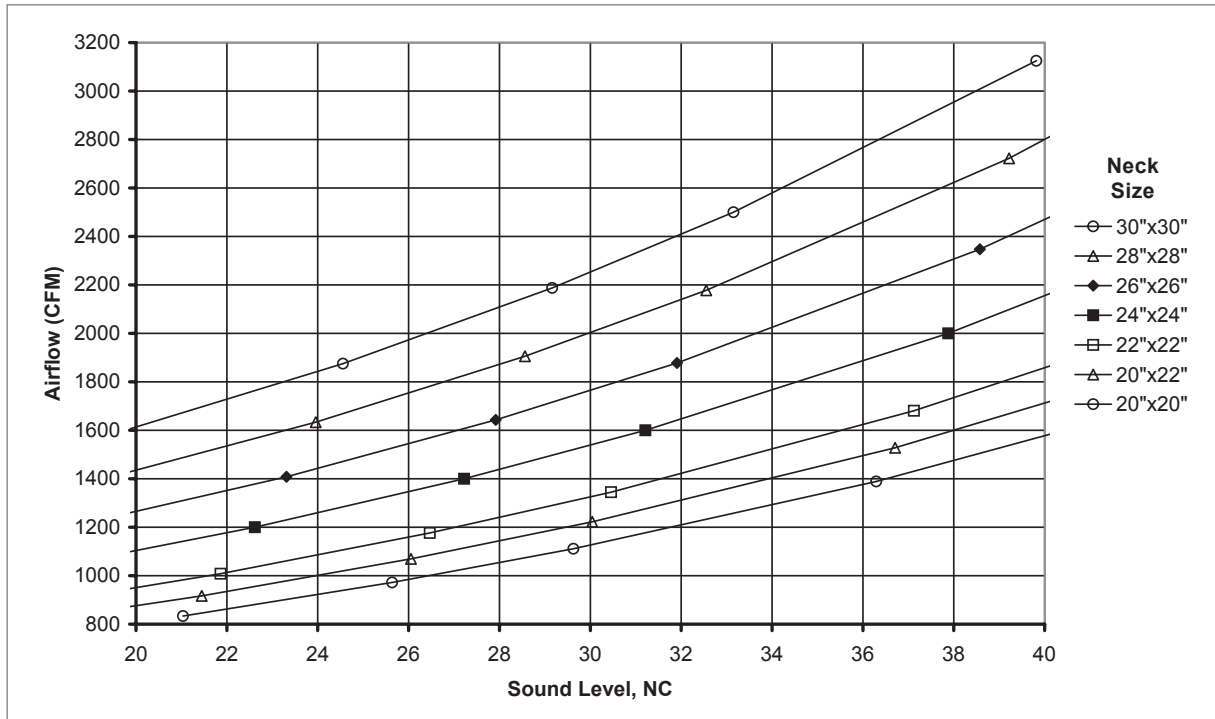
1310, 1310TF, 51310 Reference Charts
AIRFLOW VS. NC LEVEL: 1310, 1310TF, 51310 (NO DAMPER)

AIRFLOW VS. NC LEVEL: 1310, 1310TF, 51310 (NO DAMPER)


1310, 1310TF, 51310 Reference Charts

AIRFLOW VS. NC LEVEL: 1310, 1310TF, 51310 (NO DAMPER)



AIRFLOW VS. NC LEVEL: 1310, 1310TF, 51310 (NO DAMPER)



SECURITY GRILLES

1
3
1
0

1310, 1310TF, 51310 Performance Data: Horizontal Throw

IP/METRIC DATA: 1310, 1310TF, 51310 (NO DAMPER)

IP Data						NC	Metric Data					
Nom Duct	Duct Area	Neck Vel	Air Flow	Pt	Throw		Nom Duct	Duct Area	Neck Vel	Air Flow	Pt	Throw
in	ft ²	FPM	CFM	"WG	ft		mm	m ²	m/s	L/s	Pa	m
6" x 4"	0.167	100	17	.005	1 - 2 - 4	-	152 x 102	0.015	0.51	8	1.2	0.2 - 0.5 - 1.2
		150	25	.011	2 - 3 - 6	-			0.76	12	2.8	0.5 - 0.9 - 1.8
		200	33	.020	3 - 4 - 8	-			1.02	16	4.9	0.8 - 1.2 - 2.4
		300	50	.044	4 - 6 - 11	-			1.52	24	11.0	1.2 - 1.8 - 3.3
		400	67	.079	5 - 8 - 13	17			2.03	31	19.6	1.6 - 2.4 - 3.9
		500	83	.123	6 - 10 - 14	24			2.54	39	30.6	2.0 - 3.0 - 4.3
		600	100	.177	8 - 11 - 16	30			3.05	47	44.1	2.4 - 3.3 - 4.7
		700	117	.241	9 - 12 - 17	34			3.56	55	60.0	2.8 - 3.6 - 5.1
		800	133	.315	10 - 13 - 18	38	4.06	63	78.4	3.2 - 3.9 - 5.5		
6" x 6"	0.250	100	25	.005	1 - 2 - 5	-	152 x 152	0.023	0.51	12	1.2	0.3 - 0.6 - 1.5
		150	38	.011	2 - 4 - 7	-			0.76	18	2.8	0.6 - 1.1 - 2.2
		200	50	.020	3 - 5 - 10	-			1.02	24	4.9	1.0 - 1.5 - 2.9
		300	75	.044	5 - 7 - 13	11			1.52	35	11.0	1.5 - 2.2 - 4.1
		400	100	.079	6 - 10 - 16	19			2.03	47	19.6	1.9 - 2.9 - 4.7
		500	125	.123	8 - 12 - 17	26			2.54	59	30.6	2.4 - 3.6 - 5.3
		600	150	.177	10 - 13 - 19	31			3.05	71	44.1	2.9 - 4.1 - 5.8
		700	175	.241	11 - 15 - 21	36			3.56	83	60.0	3.4 - 4.4 - 6.3
		800	200	.315	13 - 16 - 22	40	4.06	94	78.4	3.9 - 4.7 - 6.7		
8" x 6"	0.333	100	33	.005	1 - 2 - 6	-	203 x 152	0.031	0.51	16	1.2	0.3 - 0.7 - 1.7
		150	50	.011	2 - 4 - 8	-			0.76	24	2.8	0.7 - 1.3 - 2.5
		200	67	.020	4 - 6 - 11	-			1.02	31	4.9	1.1 - 1.7 - 3.4
		300	100	.044	6 - 8 - 16	12			1.52	47	11.0	1.7 - 2.5 - 4.7
		400	133	.079	7 - 11 - 18	20			2.03	63	19.6	2.2 - 3.4 - 5.5
		500	167	.123	9 - 14 - 20	27			2.54	79	30.6	2.8 - 4.2 - 6.1
		600	200	.177	11 - 16 - 22	33			3.05	94	44.1	3.4 - 4.7 - 6.7
		700	233	.241	13 - 17 - 24	37			3.56	110	60.0	3.9 - 5.1 - 7.2
		800	267	.315	15 - 18 - 25	41	4.06	126	78.4	4.5 - 5.5 - 7.7		
8" x 8"	0.444	100	44	.005	1 - 3 - 6	-	203 x 203	0.041	0.51	21	1.2	0.4 - 0.8 - 1.9
		150	67	.011	3 - 5 - 10	-			0.76	31	2.8	0.8 - 1.5 - 2.9
		200	89	.020	4 - 6 - 13	-			1.02	42	4.9	1.3 - 1.9 - 3.9
		300	133	.044	6 - 10 - 18	13			1.52	63	11.0	1.9 - 2.9 - 5.5
		400	178	.079	8 - 13 - 21	22			2.03	84	19.6	2.6 - 3.9 - 6.3
		500	222	.123	11 - 16 - 23	28			2.54	105	30.6	3.2 - 4.8 - 7.0
		600	267	.177	13 - 18 - 25	34			3.05	126	44.1	3.9 - 5.5 - 7.7
		700	311	.241	15 - 19 - 27	38			3.56	147	60.0	4.5 - 5.9 - 8.3
		800	356	.315	17 - 21 - 29	42	4.06	168	78.4	5.1 - 6.3 - 8.9		
8" x 10"	0.556	100	56	.005	1 - 3 - 7	-	203 x 254	0.052	0.51	26	1.2	0.4 - 0.9 - 2.2
		150	83	.011	3 - 5 - 11	-			0.76	39	2.8	0.9 - 1.6 - 3.2
		200	111	.020	5 - 7 - 14	-			1.02	52	4.9	1.4 - 2.2 - 4.3
		300	167	.044	7 - 11 - 20	14			1.52	79	11.0	2.2 - 3.2 - 6.1
		400	222	.079	9 - 14 - 23	23			2.03	105	19.6	2.9 - 4.3 - 7.0
		500	278	.123	12 - 18 - 26	29			2.54	131	30.6	3.6 - 5.4 - 7.9
		600	333	.177	14 - 20 - 28	35			3.05	157	44.1	4.3 - 6.1 - 8.6
		700	389	.241	17 - 22 - 31	39			3.56	184	60.0	5.0 - 6.6 - 9.3
		800	444	.315	19 - 23 - 33	43	4.06	210	78.4	5.8 - 7.0 - 10.0		
9" x 9"	0.563	100	56	.005	1 - 3 - 7	-	229 x 229	0.052	0.51	27	1.2	0.4 - 0.9 - 2.2
		150	84	.011	3 - 5 - 11	-			0.76	40	2.8	0.9 - 1.6 - 3.3
		200	113	.020	5 - 7 - 14	-			1.02	53	4.9	1.5 - 2.2 - 4.4
		300	169	.044	7 - 11 - 20	14			1.52	80	11.0	2.2 - 3.3 - 6.1
		400	225	.079	10 - 14 - 23	23			2.03	106	19.6	2.9 - 4.4 - 7.1
		500	281	.123	12 - 18 - 26	29			2.54	133	30.6	3.6 - 5.4 - 7.9
		600	338	.177	14 - 20 - 29	35			3.05	159	44.1	4.4 - 6.1 - 8.7
		700	394	.241	17 - 22 - 31	39			3.56	186	60.0	5.1 - 6.6 - 9.4
		800	450	.315	19 - 23 - 33	43	4.06	212	78.4	5.8 - 7.1 - 10.0		

NOTES: Throw values are given for isothermal conditions and terminal velocities of 150, 100, and 50 FPM (0.75, 0.50, and 0.25 m/s). 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 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 Krueger's selection program for performance data not shown, including octave band data.

1310, 1310TF, 51310 Performance Data: Horizontal Throw

IP/METRIC DATA: 1310, 1310TF, 51310 (NO DAMPER)

SECURITY GRILLES

IP Data							Metric Data					
Nom Duct	Duct Area	Neck Vel	Air Flow	Pt	Throw	NC	Nom Duct	Duct Area	Neck Vel	Air Flow	Pt	Throw
in	ft²	FPM	CFM	"WG	ft		mm	m²	m/s	L/s	Pa	m
10" x 10"	0.694	100	69	.005	1 - 3 - 8	-	254 x 254	0.065	0.51	33	1.2	0.5 - 1.0 - 2.4
		150	104	.011	3 - 6 - 12	-			0.76	49	2.8	1.0 - 1.8 - 3.6
		200	139	.020	5 - 8 - 16	-			1.02	66	4.9	1.6 - 2.4 - 4.8
		250	174	.031	7 - 10 - 20	-			1.27	82	7.7	2.0 - 3.0 - 6.0
		300	208	.044	8 - 12 - 22	15			1.52	98	11.0	2.4 - 3.6 - 6.8
		400	278	.079	11 - 16 - 26	24			2.03	131	19.6	3.2 - 4.8 - 7.9
		500	347	.123	13 - 20 - 29	30			2.54	164	30.6	4.0 - 6.0 - 8.8
		600	417	.177	16 - 22 - 32	36			3.05	197	44.1	4.8 - 6.8 - 9.7
700	486	.241	19 - 24 - 34	40	3.56	229	60.0	5.6 - 7.4 - 10.4				
10" x 12"	0.833	100	83	.005	2 - 4 - 9	-	254 x 305	0.077	0.51	39	1.2	0.5 - 1.1 - 2.6
		150	125	.011	4 - 7 - 13	-			0.76	59	2.8	1.1 - 2.0 - 4.0
		200	167	.020	6 - 9 - 17	-			1.02	79	4.9	1.8 - 2.6 - 5.3
		250	208	.031	7 - 11 - 22	-			1.27	98	7.7	2.2 - 3.3 - 6.6
		300	250	.044	9 - 13 - 25	16			1.52	118	11.0	2.6 - 4.0 - 7.5
		400	333	.079	12 - 17 - 28	24			2.03	157	19.6	3.5 - 5.3 - 8.6
		500	417	.123	15 - 22 - 32	31			2.54	197	30.6	4.4 - 6.6 - 9.7
		600	500	.177	17 - 25 - 35	37			3.05	236	44.1	5.3 - 7.5 - 10.6
700	583	.241	20 - 27 - 38	41	3.56	275	60.0	6.2 - 8.1 - 11.4				
10" x 14"	0.972	100	97	.005	2 - 4 - 9	-	254 x 356	0.090	0.51	46	1.2	0.5 - 1.2 - 2.9
		150	146	.011	4 - 7 - 14	-			0.76	69	2.8	1.2 - 2.1 - 4.3
		200	194	.020	6 - 9 - 19	-			1.02	92	4.9	1.9 - 2.9 - 5.7
		250	243	.031	8 - 12 - 24	11			1.27	115	7.7	2.4 - 3.6 - 7.2
		300	292	.044	9 - 14 - 27	16			1.52	138	11.0	2.9 - 4.3 - 8.1
		400	389	.079	13 - 19 - 31	25			2.03	184	19.6	3.8 - 5.7 - 9.3
		500	486	.123	16 - 24 - 34	32			2.54	229	30.6	4.8 - 7.2 - 10.4
		600	583	.177	19 - 27 - 38	37			3.05	275	44.1	5.7 - 8.1 - 11.4
700	681	.241	22 - 29 - 41	42	3.56	321	60.0	6.7 - 8.7 - 12.3				
12" x 12"	1.000	100	100	.005	2 - 4 - 10	-	305 x 305	0.093	0.51	47	1.2	0.5 - 1.2 - 2.9
		150	150	.011	4 - 7 - 14	-			0.76	71	2.8	1.2 - 2.2 - 4.4
		200	200	.020	6 - 10 - 19	-			1.02	94	4.9	1.9 - 2.9 - 5.8
		250	250	.031	8 - 12 - 24	11			1.27	118	7.7	2.4 - 3.6 - 7.3
		300	300	.044	10 - 14 - 27	17			1.52	142	11.0	2.9 - 4.4 - 8.2
		400	400	.079	13 - 19 - 31	25			2.03	189	19.6	3.9 - 5.8 - 9.5
		500	500	.123	16 - 24 - 35	32			2.54	236	30.6	4.8 - 7.3 - 10.6
		600	600	.177	19 - 27 - 38	37			3.05	283	44.1	5.8 - 8.2 - 11.6
700	700	.241	22 - 29 - 41	42	3.56	330	60.0	6.8 - 8.8 - 12.5				
12" x 14"	1.167	100	117	.005	2 - 4 - 10	-	305 x 356	0.108	0.51	55	1.2	0.6 - 1.3 - 3.1
		150	175	.011	4 - 8 - 15	-			0.76	83	2.8	1.3 - 2.4 - 4.7
		200	233	.020	7 - 10 - 21	-			1.02	110	4.9	2.1 - 3.1 - 6.3
		250	292	.031	9 - 13 - 26	12			1.27	138	7.7	2.6 - 3.9 - 7.8
		300	350	.044	10 - 15 - 29	17			1.52	165	11.0	3.1 - 4.7 - 8.8
		400	467	.079	14 - 21 - 34	26			2.03	220	19.6	4.2 - 6.3 - 10.2
		500	583	.123	17 - 26 - 38	33			2.54	275	30.6	5.2 - 7.8 - 11.4
		600	700	.177	21 - 29 - 41	38			3.05	330	44.1	6.3 - 8.8 - 12.5
700	817	.241	24 - 31 - 44	43	3.56	385	60.0	7.3 - 9.6 - 13.5				
12" x 16"	1.333	100	133	.005	2 - 5 - 11	-	305 x 406	0.124	0.51	63	1.2	0.6 - 1.4 - 3.4
		150	200	.011	5 - 8 - 17	-			0.76	94	2.8	1.4 - 2.5 - 5.0
		200	267	.020	7 - 11 - 22	-			1.02	126	4.9	2.2 - 3.4 - 6.7
		250	333	.031	9 - 14 - 28	12			1.27	157	7.7	2.8 - 4.2 - 8.4
		300	400	.044	11 - 17 - 31	18			1.52	189	11.0	3.4 - 5.0 - 9.5
		400	533	.079	15 - 22 - 36	26			2.03	252	19.6	4.5 - 6.7 - 10.9
		500	667	.123	18 - 28 - 40	33			2.54	315	30.6	5.6 - 8.4 - 12.2
		600	800	.177	22 - 31 - 44	39			3.05	378	44.1	6.7 - 9.5 - 13.4
700	933	.241	26 - 34 - 48	43	3.56	440	60.0	7.8 - 10.2 - 14.4				

1 NOTES: Throw values are given for isothermal conditions and terminal velocities of 150, 100, and 50 FPM (0.75, 0.50, and 0.25 m/s). NC values
 3 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 value of less
 1 than 10. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70, ISO Standard 5219, and ISO Standard 3741.
 0 See Krueger's selection program for performance data not shown, including octave band data.

1310, 1310TF, 51310 Performance Data: Horizontal Throw

IP/METRIC DATA: 1310, 1310TF, 51310 (NO DAMPER)

IP Data							Metric Data					
Nom Duct	Duct Area	Neck Vel	Air Flow	Pt	Throw	NC	Nom Duct	Duct Area	Neck Vel	Air Flow	Pt	Throw
in	ft ²	FPM	CFM	"WG	ft		mm	m ²	m/s	L/s	Pa	m
14" x 14"	1.361	100	136	.005	2 - 5 - 11	-	356 x 356	0.126	0.51	64	1.2	0.6 - 1.4 - 3.4
		150	204	.011	5 - 8 - 17	-			0.76	96	2.8	1.4 - 2.5 - 5.1
		200	272	.020	7 - 11 - 22	-			1.02	128	4.9	2.3 - 3.4 - 6.8
		250	340	.031	9 - 14 - 28	12			1.27	161	7.7	2.8 - 4.2 - 8.5
		300	408	.044	11 - 17 - 31	18			1.52	193	11.0	3.4 - 5.1 - 9.6
		400	544	.079	15 - 22 - 36	27			2.03	257	19.6	4.5 - 6.8 - 11.0
		500	681	.123	19 - 28 - 41	33			2.54	321	30.6	5.6 - 8.5 - 12.3
		600	817	.177	22 - 31 - 44	39			3.05	385	44.1	6.8 - 9.6 - 13.5
700	953	.241	26 - 34 - 48	43	3.56	450	60.0	7.9 - 10.3 - 14.6				
14" x 16"	1.556	100	156	.005	2 - 5 - 12	-	356 x 406	0.145	0.51	73	1.2	0.7 - 1.5 - 3.6
		150	233	.011	5 - 9 - 18	-			0.76	110	2.8	1.5 - 2.7 - 5.4
		200	311	.020	8 - 12 - 24	-			1.02	147	4.9	2.4 - 3.6 - 7.2
		250	389	.031	10 - 15 - 30	13			1.27	184	7.7	3.0 - 4.5 - 9.0
		300	467	.044	12 - 18 - 34	19			1.52	220	11.0	3.6 - 5.4 - 10.2
		400	622	.079	16 - 24 - 39	27			2.03	294	19.6	4.8 - 7.2 - 11.8
		500	778	.123	20 - 30 - 43	34			2.54	367	30.6	6.0 - 9.0 - 13.2
		600	933	.177	24 - 34 - 48	39			3.05	440	44.1	7.2 - 10.2 - 14.4
700	1089	.241	28 - 36 - 51	44	3.56	514	60.0	8.4 - 11.0 - 15.6				
14" x 18"	1.750	100	175	.005	2 - 5 - 13	-	356 x 457	0.163	0.51	83	1.2	0.7 - 1.6 - 3.8
		150	263	.011	5 - 9 - 19	-			0.76	124	2.8	1.6 - 2.9 - 5.8
		200	350	.020	8 - 13 - 25	-			1.02	165	4.9	2.6 - 3.8 - 7.7
		250	438	.031	11 - 16 - 32	14			1.27	206	7.7	3.2 - 4.8 - 9.6
		300	525	.044	13 - 19 - 36	19			1.52	248	11.0	3.8 - 5.8 - 10.8
		400	700	.079	17 - 25 - 41	28			2.03	330	19.6	5.1 - 7.7 - 12.5
		500	875	.123	21 - 32 - 46	34			2.54	413	30.6	6.4 - 9.6 - 14.0
		600	1050	.177	25 - 36 - 50	40			3.05	496	44.1	7.7 - 10.8 - 15.3
700	1225	.241	29 - 39 - 54	44	3.56	578	60.0	9.0 - 11.7 - 16.6				
16" x 16"	1.778	100	178	.005	2 - 5 - 13	-	406 x 406	0.165	0.51	84	1.2	0.7 - 1.6 - 3.9
		150	267	.011	5 - 10 - 19	-			0.76	126	2.8	1.6 - 2.9 - 5.8
		200	356	.020	8 - 13 - 25	-			1.02	168	4.9	2.6 - 3.9 - 7.7
		250	444	.031	11 - 16 - 32	14			1.27	210	7.7	3.2 - 4.8 - 9.7
		300	533	.044	13 - 19 - 36	19			1.52	252	11.0	3.9 - 5.8 - 10.9
		400	711	.079	17 - 25 - 41	28			2.03	336	19.6	5.2 - 7.7 - 12.6
		500	889	.123	21 - 32 - 46	34			2.54	420	30.6	6.4 - 9.7 - 14.1
		600	1067	.177	25 - 36 - 51	40			3.05	503	44.1	7.7 - 10.9 - 15.4
700	1244	.241	30 - 39 - 55	44	3.56	587	60.0	9.0 - 11.8 - 16.7				
14" x 20"	1.944	100	194	.005	2 - 6 - 13	-	356 x 508	0.181	0.51	92	1.2	0.8 - 1.7 - 4.0
		150	292	.011	6 - 10 - 20	-			0.76	138	2.8	1.7 - 3.0 - 6.1
		200	389	.020	9 - 13 - 27	-			1.02	184	4.9	2.7 - 4.0 - 8.1
		250	486	.031	11 - 17 - 33	14			1.27	229	7.7	3.4 - 5.1 - 10.1
		300	583	.044	13 - 20 - 38	19			1.52	275	11.0	4.0 - 6.1 - 11.4
		400	778	.079	18 - 27 - 43	28			2.03	367	19.6	5.4 - 8.1 - 13.2
		500	972	.123	22 - 33 - 49	35			2.54	459	30.6	6.7 - 10.1 - 14.7
		600	1167	.177	27 - 38 - 53	40			3.05	551	44.1	8.1 - 11.4 - 16.2
700	1361	.241	31 - 41 - 57	45	3.56	642	60.0	9.4 - 12.3 - 17.4				
14" x 22"	2.139	100	214	.005	3 - 6 - 14	-	356 x 559	0.199	0.51	101	1.2	0.8 - 1.8 - 4.2
		150	321	.011	6 - 10 - 21	-			0.76	151	2.8	1.8 - 3.2 - 6.4
		200	428	.020	9 - 14 - 28	-			1.02	202	4.9	2.8 - 4.2 - 8.5
		250	535	.031	12 - 17 - 35	14			1.27	252	7.7	3.5 - 5.3 - 10.6
		300	642	.044	14 - 21 - 39	20			1.52	303	11.0	4.2 - 6.4 - 12.0
		400	856	.079	19 - 28 - 46	28			2.03	404	19.6	5.7 - 8.5 - 13.8
		500	1069	.123	23 - 35 - 51	35			2.54	505	30.6	7.1 - 10.6 - 15.5
		600	1283	.177	28 - 39 - 56	41			3.05	606	44.1	8.5 - 12.0 - 16.9
700	1497	.241	33 - 43 - 60	45	3.56	707	60.0	9.9 - 12.9 - 18.3				

NOTES: Throw values are given for isothermal conditions and terminal velocities of 150, 100, and 50 FPM (0.75, 0.50, and 0.25 m/s). 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 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 Krueger's selection program for performance data not shown, including octave band data.

1310, 1310TF, 51310 Performance Data: Horizontal Throw

IP/METRIC DATA: 1310, 1310TF, 51310 (NO Damper)

SECURITY GRILLES

IP Data							Metric Data					
Nom Duct	Duct Area	Neck Vel	Air Flow	Pt	Throw	NC	Nom Duct	Duct Area	Neck Vel	Air Flow	Pt	Throw
in	ft²	FPM	CFM	"WG	ft		mm	m²	m/s	L/s	Pa	m
16" x 20"	2.222	100	222	.005	3 - 6 - 14	-	406 x 508	0.206	0.51	105	1.2	0.8 - 1.8 - 4.3
		150	333	.011	6 - 11 - 21	-			0.76	157	2.8	1.8 - 3.2 - 6.5
		200	444	.020	9 - 14 - 28	-			1.02	210	4.9	2.9 - 4.3 - 8.7
		250	556	.031	12 - 18 - 36	15			1.27	262	7.7	3.6 - 5.4 - 10.8
		300	667	.044	14 - 21 - 40	20			1.52	315	11.0	4.3 - 6.5 - 12.2
		400	889	.079	19 - 28 - 46	29			2.03	420	19.6	5.8 - 8.7 - 14.1
		500	1111	.123	24 - 36 - 52	35			2.54	524	30.6	7.2 - 10.8 - 15.8
		600	1333	.177	28 - 40 - 57	41			3.05	629	44.1	8.7 - 12.2 - 17.3
700	1556	.241	33 - 43 - 61	45	3.56	734	60.0	10.1 - 13.2 - 18.7				
16" x 22"	2.444	100	244	.005	3 - 6 - 15	-	406 x 559	0.227	0.51	115	1.2	0.9 - 1.9 - 4.5
		150	367	.011	6 - 11 - 22	-			0.76	173	2.8	1.9 - 3.4 - 6.8
		200	489	.020	10 - 15 - 30	-			1.02	231	4.9	3.0 - 4.5 - 9.1
		250	611	.031	12 - 19 - 37	15			1.27	288	7.7	3.8 - 5.7 - 11.3
		300	733	.044	15 - 22 - 42	20			1.52	346	11.0	4.5 - 6.8 - 12.8
		400	978	.079	20 - 30 - 49	29			2.03	461	19.6	6.1 - 9.1 - 14.8
		500	1222	.123	25 - 37 - 54	36			2.54	577	30.6	7.6 - 11.3 - 16.5
		600	1467	.177	30 - 42 - 60	41			3.05	692	44.1	9.1 - 12.8 - 18.1
700	1711	.241	35 - 46 - 64	46	3.56	808	60.0	10.6 - 13.8 - 19.6				
18" x 20"	2.500	100	250	.005	3 - 6 - 15	-	457 x 508	0.232	0.51	118	1.2	0.9 - 1.9 - 4.6
		150	375	.011	6 - 11 - 23	-			0.76	177	2.8	1.9 - 3.4 - 6.9
		200	500	.020	10 - 15 - 30	-			1.02	236	4.9	3.1 - 4.6 - 9.2
		250	625	.031	13 - 19 - 38	15			1.27	295	7.7	3.8 - 5.7 - 11.5
		300	750	.044	15 - 23 - 43	21			1.52	354	11.0	4.6 - 6.9 - 13.0
		350	875	.060	18 - 26 - 46	25			1.78	413	15.0	5.4 - 8.0 - 14.0
		400	1000	.079	20 - 30 - 49	29			2.03	472	19.6	6.1 - 9.2 - 15.0
		500	1250	.123	25 - 38 - 55	36			2.54	590	30.6	7.6 - 11.5 - 16.7
600	1500	.177	30 - 43 - 60	41	3.05	708	44.1	9.2 - 13.0 - 18.3				
20" x 20"	2.778	100	278	.005	3 - 7 - 16	-	508 x 508	0.258	0.51	131	1.2	0.9 - 2.0 - 4.8
		150	417	.011	7 - 12 - 24	-			0.76	197	2.8	2.0 - 3.6 - 7.3
		200	556	.020	11 - 16 - 32	-			1.02	262	4.9	3.2 - 4.8 - 9.7
		250	694	.031	13 - 20 - 40	16			1.27	328	7.7	4.0 - 6.0 - 12.1
		300	833	.044	16 - 24 - 45	21			1.52	393	11.0	4.8 - 7.3 - 13.7
		350	972	.060	19 - 28 - 49	26			1.78	459	15.0	5.6 - 8.5 - 14.7
		400	1111	.079	21 - 32 - 52	30			2.03	524	19.6	6.4 - 9.7 - 15.8
		500	1389	.123	27 - 40 - 58	36			2.54	655	30.6	8.1 - 12.1 - 17.6
600	1667	.177	32 - 45 - 64	42	3.05	787	44.1	9.7 - 13.7 - 19.3				
20" x 22"	3.056	100	306	.005	3 - 7 - 17	-	508 x 559	0.284	0.51	144	1.2	1.0 - 2.1 - 5.1
		150	458	.011	7 - 13 - 25	-			0.76	216	2.8	2.1 - 3.8 - 7.6
		200	611	.020	11 - 17 - 33	-			1.02	288	4.9	3.4 - 5.1 - 10.1
		250	764	.031	14 - 21 - 42	16			1.27	361	7.7	4.2 - 6.3 - 12.7
		300	917	.044	17 - 25 - 47	21			1.52	433	11.0	5.1 - 7.6 - 14.3
		350	1069	.060	19 - 29 - 51	26			1.78	505	15.0	5.9 - 8.9 - 15.5
		400	1222	.079	22 - 33 - 54	30			2.03	577	19.6	6.8 - 10.1 - 16.5
		500	1528	.123	28 - 42 - 61	37			2.54	721	30.6	8.5 - 12.7 - 18.5
600	1833	.177	33 - 47 - 67	42	3.05	865	44.1	10.1 - 14.3 - 20.2				
22" x 22"	3.361	100	336	.005	3 - 7 - 18	-	559 x 559	0.312	0.51	159	1.2	1.0 - 2.2 - 5.3
		150	504	.011	7 - 13 - 26	-			0.76	238	2.8	2.2 - 4.0 - 8.0
		200	672	.020	12 - 18 - 35	-			1.02	317	4.9	3.5 - 5.3 - 10.6
		250	840	.031	15 - 22 - 44	16			1.27	397	7.7	4.4 - 6.7 - 13.3
		300	1008	.044	18 - 26 - 49	22			1.52	476	11.0	5.3 - 8.0 - 15.0
		350	1176	.060	20 - 31 - 53	26			1.78	555	15.0	6.2 - 9.3 - 16.2
		400	1344	.079	23 - 35 - 57	30			2.03	635	19.6	7.1 - 10.6 - 17.3
		500	1681	.123	29 - 44 - 64	37			2.54	793	30.6	8.9 - 13.3 - 19.4
600	2017	.177	35 - 49 - 70	43	3.05	952	44.1	10.6 - 15.0 - 21.2				

1 NOTES: Throw values are given for isothermal conditions and terminal velocities of 150, 100, and 50 FPM (0.75, 0.50, and 0.25 m/s). NC values
 3 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 value of less
 1 than 10. Data was obtained from tests conducted in accordance with ANSI/ASHRAE Standard 70, ISO Standard 5219, and ISO Standard 3741.
 0 See Krueger's selection program for performance data not shown, including octave band data.

1310, 1310TF, 51310 Performance Data: Horizontal Throw

IP/METRIC DATA: 1310, 1310TF, 51310 (NO DAMPER)

IP Data							Metric Data					
Nom Duct	Duct Area	Neck Vel	Air Flow	Pt	Throw	NC	Nom Duct	Duct Area	Neck Vel	Air Flow	Pt	Throw
in	ft ²	FPM	CFM	"WG	ft		mm	m ²	m/s	L/s	Pa	m
24" x 24"	4.000	100	400	.005	4 - 8 - 19	-	610 x 610	0.372	0.51	189	1.2	1.1 - 2.4 - 5.8
		150	600	.011	8 - 14 - 29	-			0.76	283	2.8	2.4 - 4.4 - 8.7
		200	800	.020	13 - 19 - 38	11			1.02	378	4.9	3.9 - 5.8 - 11.6
		250	1000	.031	16 - 24 - 48	17			1.27	472	7.7	4.8 - 7.3 - 14.5
		300	1200	.044	19 - 29 - 54	23			1.52	566	11.0	5.8 - 8.7 - 16.4
		350	1400	.060	22 - 33 - 58	27			1.78	661	15.0	6.8 - 10.2 - 17.7
		400	1600	.079	25 - 38 - 62	31			2.03	755	19.6	7.7 - 11.6 - 18.9
		500	2000	.123	32 - 48 - 70	38			2.54	944	30.6	9.7 - 14.5 - 21.1
600	2400	.177	38 - 54 - 76	43	3.05	1133	44.1	11.6 - 16.4 - 23.2				
26" x 26"	4.694	100	469	.005	4 - 9 - 21	-	660 x 660	0.436	0.51	222	1.2	1.2 - 2.7 - 6.3
		150	704	.011	9 - 16 - 31	-			0.76	332	2.8	2.7 - 4.7 - 9.4
		200	939	.020	14 - 21 - 41	11			1.02	443	4.9	4.2 - 6.3 - 12.6
		250	1174	.031	17 - 26 - 52	18			1.27	554	7.7	5.2 - 7.9 - 15.7
		300	1408	.044	21 - 31 - 58	23			1.52	665	11.0	6.3 - 9.4 - 17.7
		350	1643	.060	24 - 36 - 63	28			1.78	775	15.0	7.3 - 11.0 - 19.2
		400	1878	.079	28 - 41 - 67	32			2.03	886	19.6	8.4 - 12.6 - 20.5
		500	2347	.123	34 - 52 - 75	39			2.54	1108	30.6	10.5 - 15.7 - 22.9
600	2817	.177	41 - 58 - 83	44	3.05	1329	44.1	12.6 - 17.7 - 25.1				
28" x 28"	5.444	100	544	.005	4 - 9 - 22	-	711 x 711	0.506	0.51	257	1.2	1.3 - 2.9 - 6.8
		150	817	.011	9 - 17 - 33	-			0.76	385	2.8	2.9 - 5.1 - 10.2
		200	1089	.020	15 - 22 - 45	12			1.02	514	4.9	4.5 - 6.8 - 13.5
		250	1361	.031	19 - 28 - 56	19			1.27	642	7.7	5.6 - 8.5 - 16.9
		300	1633	.044	22 - 33 - 63	24			1.52	771	11.0	6.8 - 10.2 - 19.1
		350	1906	.060	26 - 39 - 68	29			1.78	899	15.0	7.9 - 11.9 - 20.6
		400	2178	.079	30 - 45 - 73	33			2.03	1028	19.6	9.0 - 13.5 - 22.1
		500	2722	.123	37 - 56 - 81	39			2.54	1285	30.6	11.3 - 16.9 - 24.7
600	3267	.177	45 - 63 - 89	45	3.05	1542	44.1	13.5 - 19.1 - 27.0				
30" x 30"	6.250	100	625	.005	4 - 10 - 24	-	762 x 762	0.581	0.51	295	1.2	1.4 - 3.1 - 7.3
		150	938	.011	10 - 18 - 36	-			0.76	442	2.8	3.1 - 5.4 - 10.9
		200	1250	.020	16 - 24 - 48	12			1.02	590	4.9	4.8 - 7.3 - 14.5
		250	1563	.031	20 - 30 - 60	19			1.27	737	7.7	6.0 - 9.1 - 18.1
		300	1875	.044	24 - 36 - 67	25			1.52	885	11.0	7.3 - 10.9 - 20.5
		350	2188	.060	28 - 42 - 73	29			1.78	1032	15.0	8.5 - 12.7 - 22.1
		400	2500	.079	32 - 48 - 78	33			2.03	1180	19.6	9.7 - 14.5 - 23.6
		500	3125	.123	40 - 60 - 87	40			2.54	1475	30.6	12.1 - 18.1 - 26.4
600	3750	.177	48 - 67 - 95	45	3.05	1770	44.1	14.5 - 20.5 - 29.0				

NOTES: Throw values are given for isothermal conditions and terminal velocities of 150, 100, and 50 FPM (0.75, 0.50, and 0.25 m/s). 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 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 Krueger's selection program for performance data not shown, including octave band data.

1310, 1310TF, 51310 Suggested Specification & Configuration

1310, 51310

The security grille shall be a Krueger model 1310 (steel, maximum security) or 51310 (aluminum, medium security). The face of the maximum security grille shall have 5/16" diameter holes on 7/16" staggered centers with 46% free area and be 3/16" thick for 1310 (steel) or 1/8" thick for 51310 (aluminum). The sleeve shall be 3/16" thick for 1310 (steel) or 1/8" thick for 51310 (aluminum) and stitch welded to the face of the maximum security grille and along the entire length of the sleeve.

1310TF

The maximum security transfer grille shall be a Krueger model 1310TF (steel). The maximum security transfer grille shall have two faces with 5/16" diameter holes on 7/16" staggered centers with 46% free area and be 3/16" thick. The two faces shall be connected by an 3/16" thick sleeve. The sleeve shall be stitch welded to the two faces and along the entire length of the sleeve.

Optional front or rear operated steel opposed blade damper for the 1310 (steel). Optional front or rear operated aluminum opposed blade damper for the 51310 (aluminum).

Other options for the 1310 (steel) security grilles include two loose 1 1/2"x1 1/2"x3/16" steel angles, steel angle frame 1 1/2"x1 1/2"x3/16" welded at the corners, 3/4" diameter x 3" long steel anchor bars and 3/4" diameter steel security bars.

The 1310TF (steel) accessories are 3/4" diameter x 3" long steel anchor bars and 3/4" diameter steel security bars.

Other options for the 51310 (aluminum) security grille include two loose 1 1/2"x1 1/2"x1/8" aluminum angles, aluminum angle frame 1 1/2"x1 1/2"x1/8" welded at the corners, 1/2" diameter x 3" long aluminum anchor bars and 3/4" diameter aluminum security bars.

PERFORMANCE

The manufacturer shall provide published (printed or electronic) performance data for the diffuser. Performance data shall include 2 - 7 octave band sound power levels. The diffuser shall be tested in accordance to the data standards at the time of product introduction or ANSI/ASHRAE Standard 70.

FINISH

The paint finish shall be #44 British White and be an anodic acrylic paint, baked at 315°F for 30 minutes. The paint thickness shall be 0.8 – 1.0 mils, gloss at 60° per ASTM D523-89 of 50 – 85%, pencil hardness per ASTM D3363-92A of HB – H, crosshatch adhesion per ASTM D3359-83 of 4B – 5B, impact per ASTM D2794-93 of direct impact >100 in/lb and reverse impact >80 in/lb, salt spray per ASTM B117-9048 of 96 hours, humidity per ASTM D2247-92 of >500 hours and water soak per ASTM D870-92 of 250 hours.

- 1. SERIES: (XXXXXX)**
 1310 - Steel Supply and Return Security Grille
 51310 - Aluminum Supply and Return Security Grille
 1310TF - Steel Transfer Grille
- 2. WIDTH: (XX)**
 6" - 30" in 2" Increments or 9" *
- 3. HEIGHT: (XX)**
 4" - 30" in 2" Increments or 9" *
- 4. SLEEVE LENGTH: (XX)**
 6", 8", 10", 12", 14", 16", or 18"
- 5. DAMPER: (XXX)**
 00 - No Damper
 3F - Front Operated Steel OBD **
 3R - Rear Operated Steel OBD **
 53F - Front Operated Aluminum OBD ***
 53R - Rear Operated Aluminum OBD ***
- 6. ACCESSORIES: (XX) (XX)**
 00 - No Accessories
 0L - Angle Frame Shipped Unpainted and Loose for Field Installation †
 01 - Security Bars, 3/4" Diameter Round Steel Bar on 6" Centers †
 02 - Anchor Bars, 3/4" Diameter x 3" Long ††
 07 - Two Loose Angles, Shipped Separately for Field Installation †
- 7. FINISH: (XX)**
 01 - Mill
 44 - British White

For 1310TF, wall will be constructed around grille or backfill.
 * If selecting 9" width, height must also be 9".
 ** Damper welded in sleeve.
 *** Available to 51310 only. Damper tack welded in sleeve.
 † Accessories L and 07 only available to 1310/51310 series.
 † For 51310, security bars are 1/2" diameter aluminum bars on 6" centers.
 †† For 51310, anchor bars are 1/2" diameter x 3" long.

SAMPLE CONFIGURATION: 1310 - 18x18 - 10 - 3F - 0L - 00 - 44