

# 90

## HEAVY DUTY RETURN GYM GRILLE



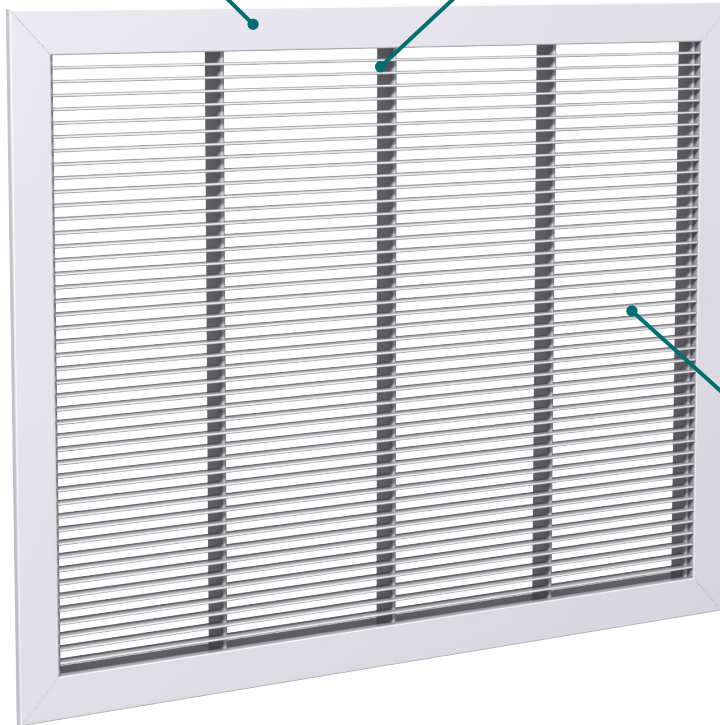
# 90

## Heavy Duty Return Gym Grille

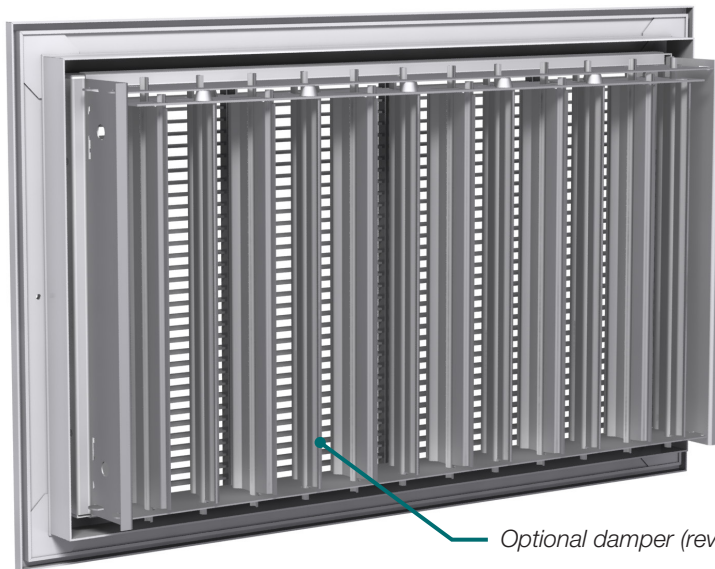
The 90 Series Heavy Duty Return Gym Grille features a fully welded border and mandrel tubes that support the blades to prevent damage, making them ideal for heavy duty applications. Available in both steel and aluminum construction with multiple core styles and mounting options, the 90 Series can be customized to suit each application.

*Fully welded, heavy duty construction is ideal for demanding applications*

*Mandrel tubes support blades to prevent damage to the grille*



*Multiple blade spacing and deflection options*



*Optional damper (reverse)*

## AESTHETIC AND PERFORMANCE OPTIONS

- + Many performance and aesthetic options, including a unique 30° blade deflection, allow the 90 Series to be customized to provide the ideal combination of airflow and sight resistance for each application.
- + Finish options, including anodized for aluminum grilles, and large single piece aluminum construction, up to 48 in. x 96 in., ensure aesthetic needs are met.

## FILTER FRAME

- + The filter frame option is intended to be incorporated into a conveniently serviceable return air filtration system and is designed for ceiling or wall mounting in recirculating air systems.
- + The filter frame option can be selected to accept standard 1 in. or 2 in. filter media and is available in two styles that allow access to the filter for cleaning including:
  - ¼ turn quick release fasteners that allow complete removal of the grille
  - A combination of ¼ turn fasteners and a piano hinge that allows hinging of the grille



*Optional filter frame (reverse)*

## TYPICAL APPLICATIONS

The 90 Series is specifically designed for applications such as gymnasiums, factories, warehouses, heavy traffic corridors and any general public area where durability is essential.

## CONSTRUCTION

- + Models
  - 90 - Steel, 3/8 in. spacing, 0° deflection
  - 91 - Steel, 3/8 in. spacing, 45° deflection
  - 93 - Steel, 1/2 in. spacing, 45° deflection
  - 95 - Steel, 3/4 in. spacing, 0° deflection
  - 96 - Steel, 3/4 in. spacing, 45° deflection
  - 97 - Extruded aluminum, 1/2 in. spacing, 0° deflection
  - 98 - Extruded aluminum, 1/2 in. spacing, 45° deflection
  - 99 - Extruded aluminum, 1/2 in. spacing, 30° deflection
- + Available Sizes
  - Maximum (one piece, aluminum): 48 in. x 96 in.
  - Maximum (one piece, steel): 48 in. x 48 in.
- + Options
  - Mounting Frame
  - Steel opposed blade damper (VCS3)
  - Heavy duty steel opposed blade damper (VCS5)
  - Aluminum opposed blade damper (VCS3AL)
  - Filter frame (90FH/91FH/95FH/96FH)

PERFORMANCE DATA

90 / 90FH – 3/8 in. blade spacing, 0° deflection steel

Core Area (sq. ft.)	Nominal Size	Core Velocity (fpm) Velocity Pressure (in. w.g.) Neg Static Pressure (in. w.g.)	NC 20				NC 30				NC 40				NC 50
			400	500	600	700	800	900	1000	1100	1200	1400			
			0.010	0.016	0.022	0.031	0.040	0.050	0.062	0.075	0.090	0.122			
0.15	7 x 4 6 x 5	Flow Rate (cfm)	60	75	90	105	120	135	150	165	180	210			
		Sound (NC)	-	-	20	25	29	33	37	40	43	48			
0.18	8 x 4 6 x 6 7 x 5	Flow Rate (cfm)	72	90	108	126	144	162	180	198	216	252			
		Sound (NC)	-	-	20	25	29	33	37	40	43	48			
0.22	10 x 4 7 x 6 8 x 5	Flow Rate (cfm)	88	110	132	154	176	198	220	242	264	308			
		Sound (NC)	-	15	21	26	30	34	38	41	44	49			
0.26	12 x 4 8 x 6 10 x 5	Flow Rate (cfm)	104	130	156	182	208	234	260	286	312	364			
		Sound (NC)	-	15	21	26	31	35	38	41	44	50			
0.30	14 x 4	Flow Rate (cfm)	120	150	180	210	240	270	300	330	360	420			
		Sound (NC)	-	15	21	27	31	35	39	42	45	50			
0.34	16 x 4 10 x 6 12 x 5	Flow Rate (cfm)	136	170	204	238	272	306	340	374	408	476			
		Sound (NC)	-	15	22	27	31	35	39	42	45	50			
0.39	18 x 4 12 x 6 14 x 5 8 x 8	Flow Rate (cfm)	156	195	234	273	312	351	390	429	468	546			
		Sound (NC)	-	16	22	27	31	35	39	42	45	50			
0.46	20 x 4 14 x 6 16 x 5 10 x 8	Flow Rate (cfm)	184	230	276	322	368	414	460	506	552	644			
		Sound (NC)	-	17	23	28	32	36	40	43	46	51			
0.52	24 x 4 16 x 6 18 x 5	Flow Rate (cfm)	208	260	312	364	416	468	520	572	624	728			
		Sound (NC)	-	17	23	28	32	36	40	43	46	51			
0.60	28 x 4 18 x 6 10 x 10 20 x 5 12 x 8	Flow Rate (cfm)	240	300	360	420	480	540	600	660	720	840			
		Sound (NC)	-	18	24	29	33	37	41	44	47	52			
0.69	30 x 4 20 x 6 12 x 10 24 x 5 14 x 8	Flow Rate (cfm)	276	345	414	483	552	621	690	759	828	966			
		Sound (NC)	-	18	24	29	33	37	41	44	47	52			
0.81	36 x 4 22 x 6 14 x 10 28 x 5 16 x 8	Flow Rate (cfm)	324	405	486	567	648	729	810	891	972	1134			
		Sound (NC)	-	18	24	29	33	37	41	44	47	52			
0.90	40 x 4 26 x 6 16 x 10 30 x 5 18 x 8 12 x 12	Flow Rate (cfm)	360	450	540	630	720	810	900	990	1080	1260			
		Sound (NC)	-	19	25	30	34	38	42	45	48	53			
1.07	48 x 4 30 x 6 14 x 12 36 x 5 18 x 10	Flow Rate (cfm)	428	535	642	749	856	963	1070	1177	1284	1498			
		Sound (NC)	-	19	25	30	34	38	42	45	48	53			
1.18	34 x 6 20 x 10 14 x 14 24 x 8 16 x 12	Flow Rate (cfm)	472	590	708	826	944	1062	1180	1298	1416	1652			
		Sound (NC)	-	19	25	30	34	38	42	45	48	53			
1.34	60 x 4 36 x 6 16 x 14 48 x 5 18 x 12	Flow Rate (cfm)	536	670	804	938	1072	1206	1340	1474	1608	1876			
		Sound (NC)	-	20	26	31	35	39	43	46	49	54			
1.60	72 x 4 24 x 10 18 x 14 30 x 8 22 x 12 16 x 16	Flow Rate (cfm)	640	800	960	1120	1280	1440	1600	1760	1920	2240			
		Sound (NC)	-	20	26	31	35	39	43	46	49	54			
1.80	60 x 5 36 x 8 24 x 12 18 x 16 48 x 6 30 x 10 20 x 14	Flow Rate (cfm)	720	900	1080	1260	1440	1620	1800	1980	2160	2520			
		Sound (NC)	-	21	27	32	36	40	44	47	50	55			
2.08	72 x 5 40 x 8 30 x 12 20 x 16 60 x 6 36 x 10 24 x 14 18 x 18	Flow Rate (cfm)	832	1040	1248	1456	1664	1872	2080	2288	2496	2912			
		Sound (NC)	-	21	27	32	36	40	44	47	50	55			
2.45	72 x 6 32 x 12 24 x 16 48 x 8 26 x 14 20 x 18	Flow Rate (cfm)	980	1225	1470	1715	1960	2205	2450	2695	2940	3430			
		Sound (NC)	-	22	28	33	37	41	45	48	51	56			
2.78	36 x 12 26 x 16 22 x 20 30 x 14 24 x 18	Flow Rate (cfm)	1112	1390	1668	1946	2224	2502	2780	3058	3336	3892			
		Sound (NC)	-	22	28	33	37	41	45	48	51	56			
3.11	60 x 8 40 x 12 30 x 16 24 x 20 48 x 10 36 x 14 26 x 18	Flow Rate (cfm)	1244	1555	1866	2177	2488	2799	3110	3421	3732	4354			
		Sound (NC) NC	-	22	28	33	37	41	45	48	51	56			
3.61	72 x 8 48 x 12 30 x 18 60 x 10 36 x 16 24 x 24	Flow Rate (cfm)	1444	1805	2166	2527	2888	3249	3610	3971	4332	5054			
		Sound (NC)	15	23	29	34	38	42	46	49	52	57			
4.29	48 x 14 32 x 20 36 x 18 28 x 24	Flow Rate (cfm)	1716	2145	2574	3003	3432	3861	4290	4719	5148	6006			
		Sound (NC)	15	23	29	34	38	42	46	49	52	57			
4.65	72 x 10 36 x 20 48 x 16 30 x 24	Flow Rate (cfm)	1860	2325	2790	3255	3720	4185	4650	5115	5580	6510			
		Sound (NC)	15	23	29	34	38	42	46	49	52	57			
5.58	72 x 12 48 x 18 60 x 14 36 x 24	Flow Rate (cfm)	2232	2790	3348	3906	4464	5022	5580	6138	6696	7812			
		Sound (NC)	16	24	30	35	39	43	47	50	53	58			
6.25	72 x 14 48 x 20 60 x 16 30 x 30	Flow Rate (cfm)	2500	3125	3750	4375	5000	5625	6250	6875	7500	8750			
		Sound (NC)	16	24	30	35	39	43	47	50	53	58			

Performance Notes:

1. Tested in accordance with ASHRAE Standard 70-2006 "Method of Testing for Rating the Performance of Air Outlets and Inlets."
2. Air flow is in cfm.
3. All pressures are in in. w.g. s.p. = Static Pressure.
4. NC values are based on room absorption of 10 dB re 10<sup>-12</sup> Watts and one grille.
5. Blanks "-" indicate an NC level below 15.
6. Grille tested with damper. Corrections for grille without damper:  
 — Multiply negative static pressure by 0.83.  
 — Subtract 4 from listed NC.

# PERFORMANCE DATA

91 / 91FH – 3/8 in. blade spacing, 45° deflection steel

Core Area (sq. ft.)	Nominal Size	Core Velocity (fpm)	NC 20					NC 30			NC 40			NC 50
			200	250	300	350	400	500	600	700	800	900		
			0.002	0.004	0.006	0.008	0.010	0.016	0.022	0.030	0.040	0.050		
		Neg Static Pressure (in. w.g.)	0.017	0.026	0.038	0.051	0.067	0.104	0.150	0.205	0.267	0.338		
0.15	7 x 4 6 x 5	Flow Rate (cfm)	30	37	45	52	60	75	90	105	120	135		
		Sound (NC)	-	17	21	25	28	33	37	41	44	47		
0.18	8 x 4    6 x 6 7 x 5	Flow Rate (cfm)	36	45	54	63	72	90	108	126	144	162		
		Sound (NC)	-	18	22	26	29	34	38	42	45	48		
0.22	10 x 4    7 x 6 8 x 5	Flow Rate (cfm)	44	55	66	77	88	110	132	154	176	198		
		Sound (NC)	-	18	22	26	29	34	38	42	45	48		
0.26	12 x 4    8 x 6 10 x 5	Flow Rate (cfm)	50	65	78	91	104	130	156	182	208	234		
		Sound (NC)	-	19	23	27	30	35	39	43	46	49		
0.30	14 x 4	Flow Rate (cfm)	60	75	90	105	120	150	180	210	240	270		
		Sound (NC)	-	19	23	27	30	35	39	43	46	49		
0.34	16 x 4    10 x 6 12 x 5	Flow Rate (cfm)	68	85	102	119	136	170	204	238	272	306		
		Sound (NC)	-	19	23	27	30	35	39	43	46	49		
0.39	18 x 4    12 x 6 14 x 5    8 x 8	Flow Rate (cfm)	78	98	117	137	156	195	234	273	312	351		
		Sound (NC)	15	20	24	28	31	36	40	44	47	50		
0.46	20 x 4    14 x 6 16 x 5    10 x 8	Flow Rate (cfm)	92	115	138	161	184	230	276	322	368	414		
		Sound (NC)	15	20	24	28	31	36	40	44	47	50		
0.52	24 x 4    16 x 6 18 x 5	Flow Rate (cfm)	104	130	156	182	208	260	312	364	416	468		
		Sound (NC)	15	20	24	28	31	36	40	44	47	50		
0.60	28 x 4    18 x 6    10 x 10 20 x 5    12 x 8	Flow Rate (cfm)	120	150	180	210	240	300	360	420	480	540		
		Sound (NC)	16	21	25	29	32	37	41	45	48	51		
0.69	30 x 4    20 x 6    12 x 10 24 x 5    14 x 8	Flow Rate (cfm)	138	173	207	242	276	345	414	483	552	621		
		Sound (NC)	16	21	25	29	32	37	41	45	48	51		
0.81	36 x 4    22 x 6    14 x 10 28 x 5    16 x 8	Flow Rate (cfm)	162	202	242	283	324	405	486	567	648	729		
		Sound (NC)	16	21	25	29	32	37	41	45	48	51		
0.90	40 x 4    26 x 6    16 x 10 30 x 5    18 x 8    12 x 12	Flow Rate (cfm)	180	225	270	315	360	450	540	630	720	810		
		Sound (NC)	17	22	26	30	33	38	42	46	49	52		
1.07	48 x 4    30 x 6    14 x 12 36 x 5    18 x 10	Flow Rate (cfm)	214	267	321	374	428	535	642	749	856	963		
		Sound (NC)	17	22	26	30	33	38	42	46	49	52		
1.18	34 x 6    20 x 10    14 x 14 24 x 8    16 x 12	Flow Rate (cfm)	236	295	354	413	472	590	708	826	944	1062		
		Sound (NC)	17	22	26	30	33	38	42	46	49	52		
1.34	60 x 4    36 x 6    16 x 14 48 x 5    18 x 12	Flow Rate (cfm)	268	335	402	469	536	670	804	938	1072	1206		
		Sound (NC)	18	23	27	31	34	39	43	47	50	53		
1.60	72 x 4    24 x 10    18 x 14 30 x 8    22 x 12    16 x 16	Flow Rate (cfm)	320	400	480	560	640	800	960	1120	1280	1440		
		Sound (NC)	18	23	27	31	34	39	43	47	50	53		
1.80	60 x 5    36 x 8    24 x 12    18 x 16 48 x 6    30 x 10    20 x 14	Flow Rate (cfm)	360	450	540	630	720	900	1080	1260	1440	1620		
		Sound (NC)	18	23	27	31	34	39	43	47	50	53		
2.08	72 x 5    40 x 8    30 x 12    20 x 16 60 x 6    36 x 10    24 x 14    18 x 18	Flow Rate (cfm)	416	520	624	728	832	1040	1248	1456	1664	1872		
		Sound (NC)	19	24	28	32	35	40	44	48	51	54		
2.45	72 x 6    32 x 12    24 x 16 48 x 8    26 x 14    20 x 18	Flow Rate (cfm)	490	612	735	857	980	1225	1470	1715	1960	2205		
		Sound (NC)	19	24	28	32	35	40	44	48	51	54		
2.78	36 x 12    26 x 16    22 x 20 30 x 14    24 x 18	Flow Rate (cfm)	556	695	834	973	1112	1390	1668	1946	2224	2502		
		Sound (NC)	20	25	29	33	36	41	45	49	52	55		
3.11	60 x 8    40 x 12    30 x 16    24 x 20 48 x 10    36 x 14    26 x 18	Flow Rate (cfm)	622	777	933	1088	1244	1555	1866	2177	2488	2799		
		Sound (NC) NC	20	25	29	33	36	41	45	49	52	55		
3.61	72 x 8    48 x 12    30 x 18 60 x 10    36 x 16    24 x 24	Flow Rate (cfm)	722	902	1083	1263	1444	1805	2166	2527	2888	3249		
		Sound (NC)	20	25	29	33	36	41	45	49	52	55		
4.29	48 x 14    32 x 20 36 x 18    28 x 24	Flow Rate (cfm)	858	1072	1287	1501	1716	2145	2574	3003	3432	3861		
		Sound (NC)	21	26	30	34	37	42	46	50	53	56		
4.65	72 x 10    36 x 20 48 x 16    30 x 24	Flow Rate (cfm)	930	1162	1395	1627	1860	2325	2790	3255	3720	4185		
		Sound (NC)	21	26	30	34	37	42	46	50	53	56		
5.58	72 x 12    48 x 18 60 x 14    36 x 24	Flow Rate (cfm)	1116	1395	1674	1953	2232	2790	3348	3906	4464	5022		
		Sound (NC)	21	26	30	34	37	42	46	50	53	56		
6.25	72 x 14    48 x 20 60 x 16    30 x 30	Flow Rate (cfm)	1250	1562	1875	2187	2500	3125	3750	4375	5000	5625		
		Sound (NC)	22	27	31	35	38	43	47	51	54	57		

**Performance Notes:**

1. Tested in accordance with ASHRAE Standard 70-2006 "Method of Testing for Rating the Performance of Air Outlets and Inlets."
2. Air flow is in cfm.
3. All pressures are in in. w.g. s.p. = Static Pressure.
4. NC values are based on room absorption of 10 dB re 10<sup>-12</sup> Watts and one grille.
5. Blanks "-" indicate an NC level below 15.
6. Grille tested with damper. Corrections for grille without damper:  
 — Multiply negative static pressure by 0.93.  
 — Subtract 2 from listed NC.

# PERFORMANCE DATA

93 – 1/2 in. blade spacing, 45° deflection steel

Core Area (sq. ft.)	Nominal Size	Core Velocity (fpm)	NC 20										
			200	250	300	350	400	500	600	700	800	900	
			0.002	0.004	0.006	0.008	0.010	0.016	0.022	0.030	0.040	0.050	
		Neg Static Pressure (in. w.g.)	0.011	0.017	0.024	0.033	0.043	0.067	0.096	0.131	0.171	0.216	
0.15	7 x 4 6 x 5	Flow Rate (cfm)	30	38	45	53	60	75	90	105	120	135	
		Sound (NC)	-	-	-	-	-	-	-	17	21	24	
0.18	8 x 4 6 x 6 7 x 5	Flow Rate (cfm)	36	45	54	63	72	90	108	126	144	162	
		Sound (NC)	-	-	-	-	-	-	-	18	22	25	
0.22	10 x 4 7 x 6 8 x 5	Flow Rate (cfm)	44	55	66	77	88	110	132	154	176	198	
		Sound (NC)	-	-	-	-	-	-	-	19	23	26	
0.26	12 x 4 8 x 6 10 x 5	Flow Rate (cfm)	52	65	78	91	104	130	156	182	208	234	
		Sound (NC)	-	-	-	-	-	-	-	16	20	24	27
0.30	14 x 4	Flow Rate (cfm)	60	75	90	105	120	150	180	210	240	270	
		Sound (NC)	-	-	-	-	-	-	-	17	21	25	28
0.34	16 x 4 10 x 6 12 x 5	Flow Rate (cfm)	68	85	102	119	136	170	204	238	272	306	
		Sound (NC)	-	-	-	-	-	-	-	17	22	25	29
0.39	18 x 4 12 x 6 14 x 5 8 x 8	Flow Rate (cfm)	78	98	117	137	156	195	234	273	312	351	
		Sound (NC)	-	-	-	-	-	-	-	18	22	26	30
0.46	20 x 4 14 x 6 16 x 5 10 x 8	Flow Rate (cfm)	80	100	120	140	160	200	240	280	320	360	
		Sound (NC)	-	-	-	-	-	-	-	18	23	26	30
0.52	24 x 4 16 x 6 18 x 5	Flow Rate (cfm)	104	130	156	182	208	260	312	364	416	468	
		Sound (NC)	-	-	-	-	-	-	-	20	24	28	31
0.60	28 x 4 18 x 6 10 x 10 20 x 5 12 x 8	Flow Rate (cfm)	120	150	180	210	240	300	360	420	480	540	
		Sound (NC)	-	-	-	-	-	-	15	20	25	29	32
0.69	30 x 4 20 x 6 12 x 10 24 x 5 14 x 8	Flow Rate (cfm)	138	173	207	242	276	345	414	483	552	621	
		Sound (NC)	-	-	-	-	-	-	16	21	26	29	33
0.81	36 x 4 22 x 6 14 x 10 28 x 5 16 x 8	Flow Rate (cfm)	162	203	243	284	324	405	486	567	648	729	
		Sound (NC)	-	-	-	-	-	-	17	22	27	30	34
0.90	40 x 4 26 x 6 16 x 10 30 x 5 18 x 8 12 x 12	Flow Rate (cfm)	180	225	270	315	360	450	540	630	720	810	
		Sound (NC)	-	-	-	-	-	-	18	23	27	31	34
1.07	48 x 4 30 x 6 14 x 12 36 x 5 18 x 10	Flow Rate (cfm)	214	268	321	375	428	535	642	749	856	963	
		Sound (NC)	-	-	-	-	-	-	19	24	28	32	35
1.18	34 x 6 20 x 10 14 x 14 24 x 8 16 x 12	Flow Rate (cfm)	236	295	354	413	472	590	708	826	944	1062	
		Sound (NC)	-	-	-	-	-	-	19	24	29	33	36
1.34	60 x 4 36 x 6 16 x 14 48 x 5 18 x 12	Flow Rate (cfm)	268	335	402	469	536	670	804	938	1072	1206	
		Sound (NC)	-	-	-	-	-	-	20	25	29	33	37
1.60	72 x 4 24 x 10 18 x 14 30 x 8 22 x 12 16 x 16	Flow Rate (cfm)	320	400	480	560	640	800	960	1120	1280	1440	
		Sound (NC)	-	-	-	-	-	-	21	26	30	34	38
1.80	60 x 5 36 x 8 24 x 12 18 x 16 48 x 6 30 x 10 20 x 14	Flow Rate (cfm)	360	450	540	630	720	900	1080	1260	1440	1620	
		Sound (NC)	-	-	-	-	-	-	15	22	27	31	35
2.08	72 x 5 40 x 8 30 x 12 20 x 16 60 x 6 36 x 10 24 x 14 18 x 18	Flow Rate (cfm)	416	520	624	728	832	1040	1248	1456	1664	1872	
		Sound (NC)	-	-	-	-	-	-	16	22	28	32	36
2.45	72 x 6 32 x 12 24 x 16 48 x 8 26 x 14 20 x 18	Flow Rate (cfm)	490	613	735	858	980	1225	1470	1715	1960	2205	
		Sound (NC)	-	-	-	-	-	-	17	23	29	33	37
2.78	36 x 12 26 x 16 22 x 20 30 x 14 24 x 18	Flow Rate (cfm)	556	695	834	973	1112	1390	1668	1946	2224	2502	
		Sound (NC)	-	-	-	-	-	-	18	24	29	34	37
3.11	60 x 8 40 x 12 30 x 16 24 x 20 48 x 10 36 x 14 26 x 18	Flow Rate (cfm)	622	778	933	1089	1244	1555	1866	2177	2488	2799	
		Sound (NC) NC	-	-	-	-	-	-	18	25	30	34	38
3.61	72 x 8 48 x 12 30 x 18 60 x 10 36 x 16 24 x 24	Flow Rate (cfm)	722	903	1083	1264	1444	1805	2166	2527	2888	3249	
		Sound (NC)	-	-	-	-	-	-	15	19	26	31	35
4.29	48 x 14 32 x 20 36 x 18 28 x 24	Flow Rate (cfm)	858	1073	1287	1502	1716	2145	2574	3003	3432	3861	
		Sound (NC)	-	-	-	-	-	-	16	20	27	32	36
4.65	72 x 10 36 x 20 48 x 16 30 x 24	Flow Rate (cfm)	930	1163	1395	1628	1860	2325	2790	3255	3720	4185	
		Sound (NC)	-	-	-	-	-	-	17	21	27	32	37
5.58	72 x 12 48 x 18 60 x 14 36 x 24	Flow Rate (cfm)	1116	1395	1674	1953	2232	2790	3348	3906	4464	5022	
		Sound (NC)	-	-	-	-	-	-	18	22	28	33	38
6.25	72 x 14 48 x 20 60 x 16 30 x 30	Flow Rate (cfm)	1250	1563	1875	2188	2500	3125	3750	4375	5000	5625	
		Sound (NC)	-	-	-	-	-	-	18	22	29	34	38

**Performance Notes:**

1. Tested in accordance with ASHRAE Standard 70-2006 "Method of Testing for Rating the Performance of Air Outlets and Inlets."
2. Air flow is in cfm.
3. All pressures are in in. w.g. s.p. = Static Pressure.
4. NC values are based on room absorption of 10 dB re 10<sup>-12</sup> Watts and one grille.
5. Blanks "-" indicate an NC level below 15.
6. Grille tested with damper. Corrections for grille without damper:  
 — Multiply negative static pressure by 0.93.  
 — Subtract 2 from listed NC.

# PERFORMANCE DATA

95 / 95FH – 3/4 in. blade spacing, 0° deflection steel

Core Area (sq. ft.)	Nominal Size	Core Velocity (fpm) Velocity Pressure (in. w.g.) Neg Static Pressure (in. w.g.)	NC 20					NC 30				NC 40	
			400	500	600	700	800	900	1000	1100	1200	1400	
			0.010	0.016	0.022	0.031	0.040	0.051	0.062	0.075	0.090	0.122	
0.15	7 x 4 6 x 5	Flow Rate (cfm)	60	75	90	105	120	135	150	165	180	210	
		Sound (NC)	-	-	-	18	23	27	30	34	37	42	
0.18	8 x 4 6 x 6 7 x 5	Flow Rate (cfm)	72	90	108	126	144	162	180	198	216	252	
		Sound (NC)	-	-	-	19	23	27	31	34	37	43	
0.22	10 x 4 7 x 6 8 x 5	Flow Rate (cfm)	88	110	132	154	176	198	220	242	264	308	
		Sound (NC)	-	-	-	19	24	28	31	35	38	43	
0.26	12 x 4 8 x 6 10 x 5	Flow Rate (cfm)	104	130	156	182	208	234	260	286	312	364	
		Sound (NC)	-	-	-	19	24	28	32	35	38	44	
0.30	14 x 4	Flow Rate (cfm)	120	150	180	210	240	270	300	330	360	420	
		Sound (NC)	-	-	15	20	25	29	32	36	39	44	
0.34	16 x 4 10 x 6 12 x 5	Flow Rate (cfm)	136	170	204	238	272	306	340	374	408	476	
		Sound (NC)	-	-	15	20	25	29	33	36	39	44	
0.39	18 x 4 12 x 6 14 x 5 8 x 8	Flow Rate (cfm)	156	195	234	273	312	351	390	429	468	546	
		Sound (NC)	-	-	15	21	25	29	33	36	39	45	
0.46	20 x 4 14 x 6 16 x 5 10 x 8	Flow Rate (cfm)	184	230	276	322	368	414	460	506	552	644	
		Sound (NC)	-	-	16	21	26	30	33	37	40	45	
0.52	24 x 4 16 x 6 18 x 5	Flow Rate (cfm)	208	260	312	364	416	468	520	572	624	728	
		Sound (NC)	-	-	16	21	26	30	34	37	40	45	
0.60	28 x 4 18 x 6 10 x 10 20 x 5 12 x 8	Flow Rate (cfm)	240	300	360	420	480	540	600	660	720	840	
		Sound (NC)	-	-	16	22	26	30	34	37	40	46	
0.69	30 x 4 20 x 6 12 x 10 24 x 5 14 x 8	Flow Rate (cfm)	276	345	414	483	552	621	690	759	828	966	
		Sound (NC)	-	-	17	22	27	31	34	38	41	46	
0.81	36 x 4 24 x 6 14 x 10 28 x 5 16 x 8	Flow Rate (cfm)	324	405	486	567	648	729	810	891	972	1134	
		Sound (NC)	-	-	17	22	27	31	35	38	41	47	
0.90	40 x 4 26 x 6 16 x 10 30 x 5 18 x 8 12 x 12	Flow Rate (cfm)	360	450	540	630	720	810	900	990	1080	1260	
		Sound (NC)	-	-	17	23	27	31	35	38	41	47	
1.07	48 x 4 30 x 6 14 x 12 36 x 5 18 x 10	Flow Rate (cfm)	428	535	642	749	856	963	1070	1177	1284	1498	
		Sound (NC)	-	-	18	23	28	32	36	39	42	47	
1.18	34 x 6 20 x 10 14 x 14 24 x 8 16 x 12	Flow Rate (cfm)	472	590	708	826	944	1062	1180	1298	1416	1652	
		Sound (NC)	-	-	18	23	28	32	36	39	42	48	
1.34	60 x 4 36 x 6 16 x 14 48 x 5 18 x 12	Flow Rate (cfm)	536	670	804	938	1072	1206	1340	1474	1608	1876	
		Sound (NC)	-	-	18	24	28	33	36	39	42	48	
1.60	72 x 4 24 x 10 18 x 14 30 x 8 22 x 12 16 x 16	Flow Rate (cfm)	640	800	960	1120	1280	1440	1600	1760	1920	2240	
		Sound (NC)	-	-	19	24	29	33	37	40	43	48	
1.80	60 x 5 36 x 8 24 x 12 18 x 16 48 x 6 30 x 10 20 x 14	Flow Rate (cfm)	720	900	1080	1260	1440	1620	1800	1980	2160	2520	
		Sound (NC)	-	-	19	25	29	33	37	40	43	49	
2.08	72 x 5 40 x 8 30 x 12 20 x 16 60 x 6 36 x 10 24 x 14 18 x 18	Flow Rate (cfm)	832	1040	1248	1456	1664	1872	2080	2288	2496	2912	
		Sound (NC)	-	-	20	25	30	34	37	41	44	49	
2.45	72 x 6 32 x 12 24 x 16 48 x 8 26 x 14 20 x 18	Flow Rate (cfm)	980	1225	1470	1715	1960	2205	2450	2695	2940	3430	
		Sound (NC)	-	-	20	25	30	34	38	41	44	49	
2.78	36 x 12 26 x 16 22 x 20 30 x 14 24 x 18	Flow Rate (cfm)	1112	1390	1668	1946	2224	2502	2780	3058	3336	3892	
		Sound (NC)	-	-	20	26	30	34	38	41	44	50	
3.11	60 x 8 40 x 12 30 x 16 24 x 20 48 x 10 36 x 14 26 x 18	Flow Rate (cfm)	1244	1555	1866	2177	2488	2799	3110	3421	3732	4354	
		Sound (NC) NC	-	-	21	26	31	35	38	42	45	50	
3.61	72 x 8 48 x 12 30 x 18 60 x 10 36 x 16 24 x 24	Flow Rate (cfm)	1444	1805	2166	2527	2888	3249	3610	3971	4332	5054	
		Sound (NC)	-	15	21	26	31	35	39	42	45	50	
4.29	48 x 14 32 x 20 36 x 18 28 x 24	Flow Rate (cfm)	1716	2145	2574	3003	3432	3861	4290	4719	5148	6006	
		Sound (NC)	-	15	21	27	31	36	39	43	46	51	
4.65	72 x 10 36 x 20 48 x 16 30 x 24	Flow Rate (cfm)	1860	2325	2790	3255	3720	4185	4650	5115	5580	6510	
		Sound (NC)	-	15	22	27	32	36	39	43	46	51	
5.58	72 x 12 48 x 18 60 x 14 36 x 24	Flow Rate (cfm)	2232	2790	3348	3906	4464	5022	5580	6138	6696	7812	
		Sound (NC)	-	16	22	27	32	36	40	43	46	52	
6.25	72 x 14 48 x 20 60 x 16 30 x 30	Flow Rate (cfm)	2500	3125	3750	4375	5000	5625	6250	6875	7500	8750	
		Sound (NC)	-	16	22	23	32	37	40	43	47	52	

**Performance Notes:**

1. Tested in accordance with ASHRAE Standard 70-2006 "Method of Testing for Rating the Performance of Air Outlets and Inlets."
2. Air flow is in cfm.
3. All pressures are in in. w.g. s.p. = Static Pressure.
4. NC values are based on room absorption of 10 dB re 10<sup>-12</sup> Watts and one grille.
5. Blanks "-" indicate an NC level below 15.
6. Grille tested with damper. Corrections for grille without damper:  
— Multiply negative static pressure by 0.87.  
— Subtract 4 from listed NC.

# PERFORMANCE DATA

96 / 96FH – 3/4 in. blade spacing, 45° deflection steel

Core Area (sq. ft.)	Nominal Size	Core Velocity (fpm)	NC 20										
			200	250	300	350	400	500	600	700	800	900	
			0.003	0.004	0.006	0.008	0.010	0.016	0.022	0.031	0.040	0.051	
		Neg Static Pressure (in. w.g.)	0.006	0.010	0.014	0.019	0.025	0.040	0.057	0.077	0.101	0.129	
0.15	7 x 4 6 x 5	Flow Rate (cfm)	30	37	45	52	60	75	90	105	120	135	
		Sound (NC)	-	-	-	-	-	-	15	20	24	27	
0.18	8 x 4 6 x 6 7 x 5	Flow Rate (cfm)	36	45	54	63	72	90	108	126	144	162	
		Sound (NC)	-	-	-	-	-	-	16	20	24	28	
0.22	7 x 6 8 x 5	Flow Rate (cfm)	44	55	66	77	88	110	132	154	176	198	
		Sound (NC)	-	-	-	-	-	-	17	21	25	29	
0.26	12 x 4 8 x 6 10 x 5	Flow Rate (cfm)	52	65	78	91	104	130	156	182	208	234	
		Sound (NC)	-	-	-	-	-	-	17	22	26	29	
0.30	14 x 4	Flow Rate (cfm)	60	75	90	105	120	150	180	210	240	270	
		Sound (NC)	-	-	-	-	-	-	18	23	26	30	
0.34	16 x 4 10 x 6 12 x 5	Flow Rate (cfm)	68	85	102	119	136	170	204	238	272	306	
		Sound (NC)	-	-	-	-	-	-	18	23	27	30	
0.39	18 x 4 12 x 6 14 x 5 8 x 8	Flow Rate (cfm)	78	98	117	137	156	195	234	273	312	351	
		Sound (NC)	-	-	-	-	-	-	19	24	28	31	
0.46	20 x 4 14 x 6 16 x 5 10 x 8	Flow Rate (cfm)	92	115	138	161	184	230	276	322	368	414	
		Sound (NC)	-	-	-	-	-	-	20	24	28	32	
0.52	24 x 4 16 x 6 18 x 5	Flow Rate (cfm)	104	130	156	182	208	260	312	364	416	468	
		Sound (NC)	-	-	-	-	-	-	15	20	25	29	
0.60	28 x 4 18 x 6 10 x 10 20 x 5 12 x 8	Flow Rate (cfm)	120	150	180	210	240	300	360	420	480	540	
		Sound (NC)	-	-	-	-	-	-	15	21	25	29	
0.69	30 x 4 20 x 6 12 x 10 24 x 5 14 x 8	Flow Rate (cfm)	138	173	207	242	276	345	414	483	552	621	
		Sound (NC)	-	-	-	-	-	-	15	21	25	29	
0.81	36 x 4 22 x 6 14 x 10 28 x 5 16 x 8	Flow Rate (cfm)	162	202	243	283	324	405	486	567	648	729	
		Sound (NC)	-	-	-	-	-	-	17	22	27	31	
0.90	40 x 4 26 x 6 16 x 10 30 x 5 18 x 8 12 x 12	Flow Rate (cfm)	180	225	270	315	360	450	540	630	720	810	
		Sound (NC)	-	-	-	-	-	-	17	22	27	31	
1.07	48 x 4 30 x 6 14 x 12 36 x 5 18 x 10	Flow Rate (cfm)	214	267	321	374	428	535	642	749	856	963	
		Sound (NC)	-	-	-	-	-	-	18	23	28	32	
1.18	34 x 6 20 x 10 14 x 14 24 x 8 16 x 12	Flow Rate (cfm)	236	295	354	413	472	590	708	826	944	1062	
		Sound (NC)	-	-	-	-	-	-	19	24	28	32	
1.34	60 x 4 36 x 6 16 x 14 48 x 5 18 x 12	Flow Rate (cfm)	268	335	402	469	536	670	804	938	1072	1206	
		Sound (NC)	-	-	-	-	-	-	19	24	29	33	
1.60	72 x 4 24 x 10 18 x 14 30 x 8 22 x 12 16 x 16	Flow Rate (cfm)	320	400	480	560	640	800	960	1120	1280	1440	
		Sound (NC)	-	-	-	-	-	-	19	25	29	33	
1.80	60 x 5 36 x 8 24 x 12 18 x 16 48 x 6 30 x 10 20 x 14	Flow Rate (cfm)	360	450	540	630	720	900	1080	1260	1440	1620	
		Sound (NC)	-	-	-	-	-	-	20	25	30	34	
2.08	72 x 5 40 x 8 30 x 12 20 x 16 60 x 6 36 x 10 24 x 14 18 x 18	Flow Rate (cfm)	416	520	624	728	832	1040	1248	1456	1664	1872	
		Sound (NC)	-	-	-	-	-	-	21	26	31	34	
2.45	72 x 6 32 x 12 24 x 16 48 x 8 26 x 14 20 x 18	Flow Rate (cfm)	490	612	735	857	980	1225	1470	1715	1916	2205	
		Sound (NC)	-	-	-	-	15	21	27	31	35	39	
2.78	36 x 12 26 x 16 22 x 20 30 x 14 24 x 18	Flow Rate (cfm)	556	695	834	973	1112	1390	1668	1946	2224	2502	
		Sound (NC)	-	-	-	-	15	22	27	32	36	39	
3.11	60 x 8 40 x 12 30 x 16 24 x 20 48 x 10 36 x 14 26 x 18	Flow Rate (cfm)	622	777	933	1088	1244	1555	1866	2177	2488	2799	
		Sound (NC) NC	-	-	-	-	16	22	28	32	36	40	
3.61	72 x 8 48 x 12 30 x 18 60 x 10 36 x 16 24 x 24	Flow Rate (cfm)	722	902	1083	1263	1444	1805	2166	2527	2888	3249	
		Sound (NC)	-	-	-	-	16	23	28	33	37	40	
4.29	48 x 14 32 x 20 36 x 18 28 x 24	Flow Rate (cfm)	858	1072	1287	1501	1716	2145	2574	3003	3432	3861	
		Sound (NC)	-	-	-	-	17	24	29	34	37	41	
4.65	72 x 10 36 x 20 48 x 16 30 x 24	Flow Rate (cfm)	930	1162	1395	1627	1860	2325	2790	3255	3720	4185	
		Sound (NC)	-	-	-	-	17	24	29	34	38	41	
5.58	72 x 12 48 x 18 60 x 14 36 x 24	Flow Rate (cfm)	1116	1395	1674	1953	2232	2790	3348	3906	4464	5022	
		Sound (NC)	-	-	-	-	14	18	25	20	35	38	
6.25	72 x 14 48 x 20 60 x 16 30 x 30	Flow Rate (cfm)	1250	1562	1875	2187	2500	3125	3750	4375	5000	5625	
		Sound (NC)	-	-	-	15	18	25	30	35	39	42	

**Performance Notes:**

1. Tested in accordance with ASHRAE Standard 70-2006 "Method of Testing for Rating the Performance of Air Outlets and Inlets."
2. Air flow is in cfm.
3. All pressures are in in. w.g. s.p. = Static Pressure.
4. NC values are based on room absorption of 10 dB re 10<sup>-12</sup> Watts and one grille.
5. Blanks "-" indicate an NC level below 15.
6. Grille tested with damper. Corrections for grille without damper:  
 — Multiply negative static pressure by 0.90.  
 — Subtract 5 from listed NC.



# PERFORMANCE DATA

97 – 1/2 in. blade spacing, 0° deflection, ext. alum.

Core Area (sq. ft.)	Nominal Size	NC 20											
		Core Velocity (fpm)		200	250	300	350	400	500	600	700	800	900
		Velocity Pressure (in. w.g.)	0.003	0.004	0.006	0.008	0.010	0.016	0.022	0.031	0.040	0.051	
Neg Static Pressure (in. w.g.)		0.006	0.010	0.014	0.018	0.024	0.038	0.054	0.074	0.097	0.122		
0.15	7 x 4 6 x 5	Flow Rate (cfm)	30	38	45	53	60	75	90	105	120	135	
		Sound (NC)	-	-	-	-	-	-	-	16	20	24	
0.18	8 x 4 6 x 6 7 x 5	Flow Rate (cfm)	36	45	54	63	72	90	108	126	144	162	
		Sound (NC)	-	-	-	-	-	-	-	18	22	25	
0.22	7 x 6 8 x 5	Flow Rate (cfm)	44	55	66	77	88	110	132	154	176	198	
		Sound (NC)	-	-	-	-	-	-	-	19	23	26	
0.26	12 x 4 8 x 6 10 x 5	Flow Rate (cfm)	52	65	78	91	104	130	156	182	208	234	
		Sound (NC)	-	-	-	-	-	-	-	15	20	24	
0.30	14 x 4	Flow Rate (cfm)	60	75	90	105	120	150	180	210	240	270	
		Sound (NC)	-	-	-	-	-	-	-	16	20	24	
0.34	16 x 4 10 x 6 12 x 5	Flow Rate (cfm)	68	85	102	119	136	170	204	238	272	306	
		Sound (NC)	-	-	-	-	-	-	-	16	21	25	
0.39	18 x 4 12 x 6 14 x 5 8 x 8	Flow Rate (cfm)	78	98	117	137	156	195	234	273	312	351	
		Sound (NC)	-	-	-	-	-	-	-	17	22	26	
0.46	20 x 4 14 x 6 16 x 5 10 x 8	Flow Rate (cfm)	92	115	138	161	184	230	276	322	368	414	
		Sound (NC)	-	-	-	-	-	-	-	18	23	27	
0.52	24 x 4 16 x 6 18 x 5	Flow Rate (cfm)	104	130	156	182	208	260	312	364	416	468	
		Sound (NC)	-	-	-	-	-	-	-	19	24	28	
0.60	28 x 4 18 x 6 10 x 10 20 x 5 12 x 8	Flow Rate (cfm)	120	150	180	210	240	300	360	420	480	540	
		Sound (NC)	-	-	-	-	-	-	-	20	24	28	
0.69	30 x 4 20 x 6 12 x 10 24 x 5 14 x 8	Flow Rate (cfm)	138	173	207	242	276	345	414	483	552	621	
		Sound (NC)	-	-	-	-	-	-	-	20	25	29	
0.81	36 x 4 22 x 6 14 x 10 28 x 5 16 x 8	Flow Rate (cfm)	162	203	243	283	324	405	486	567	648	729	
		Sound (NC)	-	-	-	-	-	-	-	21	26	30	
0.90	40 x 4 26 x 6 16 x 10 30 x 5 18 x 8 12 x 12	Flow Rate (cfm)	180	225	270	315	360	450	540	630	720	810	
		Sound (NC)	-	-	-	-	-	-	-	22	27	31	
1.07	48 x 4 30 x 6 14 x 12 36 x 5 18 x 10	Flow Rate (cfm)	214	268	321	375	428	535	642	749	856	963	
		Sound (NC)	-	-	-	-	-	-	-	17	23	28	
1.18	34 x 6 20 x 10 14 x 14 24 x 8 16 x 12	Flow Rate (cfm)	236	295	354	413	472	590	708	826	944	1062	
		Sound (NC)	-	-	-	-	-	-	-	18	23	28	
1.34	60 x 4 36 x 6 16 x 14 48 x 5 18 x 12	Flow Rate (cfm)	268	335	402	469	536	670	804	938	1072	1206	
		Sound (NC)	-	-	-	-	-	-	-	19	24	29	
1.60	72 x 4 24 x 10 18 x 14 30 x 8 22 x 12 16 x 16	Flow Rate (cfm)	320	400	480	560	640	800	960	1120	1280	1440	
		Sound (NC)	-	-	-	-	-	-	-	20	25	30	
1.80	60 x 5 36 x 8 24 x 12 18 x 16 48 x 6 30 x 10 20 x 14	Flow Rate (cfm)	360	450	540	630	720	900	1080	1260	1440	1620	
		Sound (NC)	-	-	-	-	-	-	-	20	26	31	
2.08	72 x 5 40 x 8 30 x 12 20 x 16 60 x 6 36 x 10 24 x 14 18 x 18	Flow Rate (cfm)	416	520	624	728	832	1040	1248	1456	1664	1872	
		Sound (NC)	-	-	-	-	-	-	-	21	27	31	
2.45	72 x 6 32 x 12 24 x 16 48 x 8 26 x 14 20 x 18	Flow Rate (cfm)	490	613	735	858	980	1225	1470	1715	1916	2205	
		Sound (NC)	-	-	-	-	-	-	-	22	28	32	
2.78	36 x 12 26 x 16 22 x 20 30 x 14 24 x 18	Flow Rate (cfm)	556	695	834	973	1112	1390	1668	1946	2224	2502	
		Sound (NC)	-	-	-	-	-	-	-	23	28	33	
3.11	60 x 8 40 x 12 30 x 16 24 x 20 48 x 10 36 x 14 26 x 18	Flow Rate (cfm)	622	778	933	1089	1244	1555	1866	2177	2488	2799	
		Sound (NC) NC	-	-	-	-	-	-	-	23	29	34	
3.61	72 x 8 48 x 12 30 x 18 60 x 10 36 x 16 24 x 24	Flow Rate (cfm)	722	903	1083	1264	1444	1805	2166	2527	2888	3249	
		Sound (NC)	-	-	-	-	-	-	-	24	30	34	
4.29	48 x 14 32 x 20 36 x 18 28 x 24	Flow Rate (cfm)	858	1073	1287	1502	1716	2145	2574	3003	3432	3861	
		Sound (NC)	-	-	-	-	-	-	-	25	31	35	
4.65	72 x 10 36 x 20 48 x 16 30 x 24	Flow Rate (cfm)	930	1163	1395	1628	1860	2325	2790	3255	3720	4185	
		Sound (NC)	-	-	-	-	-	-	-	26	31	36	
5.58	72 x 12 48 x 18 60 x 14 36 x 24	Flow Rate (cfm)	1116	1395	1674	1953	2232	2790	3348	3906	4464	5022	
		Sound (NC)	-	-	-	-	-	-	-	27	32	37	
6.25	72 x 14 48 x 20 60 x 16 30 x 30	Flow Rate (cfm)	1250	1563	1875	2188	2500	3125	3750	4375	5000	5625	
		Sound (NC)	-	-	-	-	-	-	-	27	33	38	

**Performance Notes:**

1. Tested in accordance with ASHRAE Standard 70-2006 "Method of Testing for Rating the Performance of Air Outlets and Inlets."
2. Air flow is in cfm.
3. All pressures are in in. w.g. s.p. = Static Pressure.
4. NC values are based on room absorption of 10 dB re 10<sup>-12</sup> Watts and one grille.
5. Blanks "-" indicate an NC level below 15.
6. Grille tested with damper. Corrections for grille without damper:  
 — Multiply negative static pressure by 0.87.  
 — Subtract 7 from listed NC.

# PERFORMANCE DATA

98 – 1/2 in. blade spacing, 45° deflection, ext. alum.

Core Area (sq. ft.)	Nominal Size		NC 20								
			Core Velocity (fpm)		200	250	300	350	400	450	
			Velocity Pressure (in. w.g.)	0.002	0.004	0.006	0.008	0.010	0.013		
		Neg Static Pressure (in. w.g.)	0.021	0.033	0.047	0.064	0.083	0.102			
0.15	7 x 4		Flow Rate (cfm)	30	37	45	52	60	70		
	6 x 5		Sound (NC)	—	—	—	18	21	24		
0.18	8 x 4	6 x 6	Flow Rate (cfm)	36	45	54	63	72	81		
	7 x 5		Sound (NC)	—	—	—	18	21	24		
0.22	10 x 4	7 x 6	Flow Rate (cfm)	44	55	66	77	88	100		
	8 x 5		Sound (NC)	—	—	15	19	22	25		
0.26	12 x 4	8 x 6	Flow Rate (cfm)	52	65	78	91	104	117		
	10 x 5		Sound (NC)	—	—	15	19	22	25		
0.30	14 x 4		Flow Rate (cfm)	60	75	90	105	120	135		
			Sound (NC)	—	—	16	20	23	26		
0.34	16 x 4	10 x 6	Flow Rate (cfm)	68	85	102	119	136	153		
	12 x 5		Sound (NC)	—	—	16	20	23	26		
0.39	18 x 4	12 x 6	Flow Rate (cfm)	78	98	117	137	156	176		
	14 x 5	8 x 8	Sound (NC)	—	—	17	21	24	27		
0.46	20 x 4	14 x 6	Flow Rate (cfm)	92	115	138	161	184	207		
	16 x 5	10 x 8	Sound (NC)	—	—	17	21	24	27		
0.52	24 x 4	16 x 6	Flow Rate (cfm)	104	130	156	182	208	234		
	18 x 5		Sound (NC)	—	—	17	21	24	27		
0.60	28 x 4	18 x 6	10 x 10	Flow Rate (cfm)	120	150	180	210	240	270	
	20 x 5	12 x 8		Sound (NC)	—	—	18	22	25	28	
0.69	30 x 4	20 x 6	12 x 10	Flow Rate (cfm)	138	173	207	242	276	311	
	24 x 5	14 x 8		Sound (NC)	—	—	18	22	25	28	
0.81	36 x 4	22 x 6	14 x 10	Flow Rate (cfm)	162	202	243	283	324	365	
	28 x 5	16 x 8		Sound (NC)	—	—	18	22	25	28	
0.90	40 x 4	26 x 6	16 x 10	Flow Rate (cfm)	180	225	270	315	360	405	
	30 x 5	18 x 8	12 x 12	Sound (NC)	—	—	19	23	26	29	
1.07	48 x 4	30 x 6	14 x 12	Flow Rate (cfm)	214	267	321	374	428	482	
	36 x 5	18 x 10		Sound (NC)	—	—	19	23	26	29	
1.18	34 x 6	20 x 10	14 x 14	Flow Rate (cfm)	236	295	354	413	472	531	
	24 x 8	16 x 12		Sound (NC)	—	—	19	23	26	29	
1.34	60 x 4	36 x 6	16 x 14	Flow Rate (cfm)	268	335	402	469	536	603	
	48 x 5	18 x 12		Sound (NC)	—	15	20	24	27	30	
1.60	72 x 4	24 x 10	18 x 14	Flow Rate (cfm)	320	400	480	560	640	720	
	30 x 8	22 x 12	16 x 16	Sound (NC)	—	15	20	24	27	30	
1.80	60 x 5	36 x 8	24 x 12	18 x 16	Flow Rate (cfm)	360	450	540	630	720	810
	48 x 6	30 x 10	20 x 14		Sound (NC)	—	16	21	25	28	31
2.08	72 x 5	40 x 8	30 x 12	20 x 16	Flow Rate (cfm)	416	520	624	728	832	936
	60 x 6	36 x 10	24 x 14	18 x 18	Sound (NC)	—	16	21	25	28	31
2.45	72 x 6	32 x 12	24 x 16		Flow Rate (cfm)	490	612	735	857	980	1103
	48 x 8	26 x 14	20 x 18		Sound (NC)	—	16	21	25	28	31
2.78	36 x 12	26 x 16	22 x 20		Flow Rate (cfm)	556	695	834	973	1112	1251
	30 x 14	24 x 18			Sound (NC)	—	17	22	26	29	32
3.11	60 x 8	40 x 12	30 x 16	24 x 20	Flow Rate (cfm)	622	777	933	1088	1244	1400
	48 x 10	36 x 14	26 x 18		Sound (NC) NC	—	17	22	26	29	32
3.61	72 x 8	48 x 12	30 x 18		Flow Rate (cfm)	722	902	1083	1263	1444	1625
	60 x 10	36 x 16	24 x 24		Sound (NC)	—	17	22	26	29	32
4.29	48 x 14	32 x 20			Flow Rate (cfm)	858	1072	1287	1501	1716	1930
	36 x 18	28 x 24			Sound (NC)	—	18	23	27	30	33
4.65	72 x 10	36 x 20			Flow Rate (cfm)	930	1162	1395	1627	1860	2093
	48 x 16	30 x 24			Sound (NC)	—	18	23	27	30	33
5.58	72 x 12	48 x 18			Flow Rate (cfm)	1116	1395	1674	1953	2232	2511
	60 x 14	36 x 24			Sound (NC)	—	18	23	27	30	33
6.25	72 x 14	48 x 20			Flow Rate (cfm)	1250	1562	1875	2187	2500	2813
	60 x 16	30 x 30			Sound (NC)	—	19	24	28	31	34

**Performance Notes:**

1. Tested in accordance with ASHRAE Standard 70-2006 "Method of Testing for Rating the Performance of Air Outlets and Inlets."
2. Air flow is in cfm.
3. All pressures are in in. w.g. s.p. = Static Pressure.
4. Core style 98 is not recommended for core velocities in excess of 450 fpm.
5. NC values are based on room absorption of 10 dB re 10<sup>-12</sup> Watts and one grille.
6. Blanks "-" indicate an NC level below 15.
7. Grille tested with damper. Corrections for grille without damper:  
 — Multiply negative static pressure by 0.96.  
 — Subtract 2 from listed NC.

# PERFORMANCE DATA

99 – 1/2 in. blade spacing, 30° deflection, ext. alum.

Core Area (sq. ft.)	Nominal Size	Core Velocity (fpm) Velocity Pressure (in. w.g.) Neg Static Pressure (in. w.g.)	NC 20						NC 30						NC 40					
			200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	
			0.002	0.004	0.006	0.008	0.010	0.013	0.016	0.019	0.022	0.026	0.031	0.035	0.040	0.045	0.050	0.056	0.062	
0.15	7x4 6x5	Flow Rate (cfm)	30	38	45	53	60	68	75	83	90	98	105	113	120	128	135	143	150	
		Sound (NC)	-	-	-	-	-	17	21	24	27	29	32	34	36	38	40	42	44	
0.18	8x4 6x6 7x5	Flow Rate (cfm)	36	45	54	63	72	81	90	99	108	117	126	135	144	153	162	171	180	
		Sound (NC)	-	-	-	-	-	17	21	24	27	30	32	34	36	38	40	42	44	
0.22	10x4 7x6 8x5	Flow Rate (cfm)	44	55	66	77	88	99	110	121	132	143	154	165	176	187	198	209	220	
		Sound (NC)	-	-	-	-	-	18	21	24	27	30	32	34	37	39	40	42	44	
0.26	12x4 8x6 10x5	Flow Rate (cfm)	52	65	78	91	104	117	130	143	156	169	182	195	208	221	234	247	260	
		Sound (NC)	-	-	-	-	-	18	21	24	27	30	32	35	37	39	41	42	44	
0.30	14x4	Flow Rate (cfm)	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	
		Sound (NC)	-	-	-	-	-	18	21	24	27	30	32	35	37	39	41	42	44	
0.34	16x4 10x6 12x5	Flow Rate (cfm)	68	85	102	119	136	153	170	187	204	221	238	255	272	289	306	323	340	
		Sound (NC)	-	-	-	-	-	18	21	25	27	30	32	35	37	39	41	43	44	
0.39	18x4 12x6 14x5 8x8	Flow Rate (cfm)	78	98	117	137	156	176	195	215	234	254	273	293	312	332	351	371	390	
		Sound (NC)	-	-	-	-	-	18	21	25	27	30	33	35	37	39	41	43	44	
0.46	20x4 14x6 16x5 10x8	Flow Rate (cfm)	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	
		Sound (NC)	-	-	-	-	-	18	22	25	28	30	33	35	37	39	41	43	44	
0.52	24x4 16x6 18x5	Flow Rate (cfm)	104	130	156	182	208	234	260	286	312	338	364	390	416	442	468	494	520	
		Sound (NC)	-	-	-	-	-	18	22	25	28	30	33	35	37	39	41	43	45	
0.60	28x4 18x6 10x10 20x5 12x8	Flow Rate (cfm)	120	150	180	210	240	270	300	330	360	390	420	450	480	510	540	570	600	
		Sound (NC)	-	-	-	-	-	18	22	25	28	30	33	35	37	39	41	43	45	
0.69	30x4 20x6 12x10 24x5 14x8	Flow Rate (cfm)	138	173	207	242	276	311	345	380	414	449	483	518	552	587	621	656	690	
		Sound (NC)	-	-	-	-	-	18	22	25	28	31	33	35	37	39	41	43	45	
0.81	36x4 22x6 14x10 28x5 16x8	Flow Rate (cfm)	162	203	243	284	324	365	405	446	486	527	567	608	648	689	729	770	810	
		Sound (NC)	-	-	-	-	-	19	22	25	28	31	33	35	38	40	41	43	45	
0.90	40x4 26x6 16x10 30x5 18x8 12x12	Flow Rate (cfm)	180	225	270	315	360	405	450	495	540	585	630	675	720	765	810	855	900	
		Sound (NC)	-	-	-	-	-	19	22	25	28	31	33	35	38	40	41	43	45	
1.07	48x4 30x6 14x12 36x5 18x10	Flow Rate (cfm)	214	268	321	375	428	482	535	589	642	696	749	803	856	910	963	1017	1070	
		Sound (NC)	-	-	-	-	-	19	22	25	28	31	33	36	38	40	42	43	45	
1.18	34x6 20x10 14x14 24x8 16x12	Flow Rate (cfm)	236	295	354	413	472	531	590	649	708	767	826	885	944	1003	1062	1121	1180	
		Sound (NC)	-	-	-	-	-	19	22	25	28	31	33	36	38	40	42	43	45	
1.34	60x4 36x6 16x14 48x5 18x12	Flow Rate (cfm)	268	335	402	469	536	603	670	737	804	871	938	1005	1072	1139	1206	1273	1340	
		Sound (NC)	-	-	-	-	-	15	19	22	26	28	31	33	36	38	40	42	44	45
1.60	72x4 24x10 18x14 30x8 22x12 16x16	Flow Rate (cfm)	320	400	480	560	640	720	800	880	960	1040	1120	1200	1280	1360	1440	1520	1600	
		Sound (NC)	-	-	-	-	-	15	19	23	26	29	31	34	36	38	40	42	44	45
1.80	60x5 36x8 24x12 18x16 48x6 30x10 20x14	Flow Rate (cfm)	360	450	540	630	720	810	900	990	1080	1170	1260	1350	1440	1530	1620	1710	1800	
		Sound (NC)	-	-	-	-	-	15	19	23	26	29	31	34	36	38	40	42	44	45
2.08	75x5 40x8 30x12 20x16 60x6 36x10 24x14 18x18	Flow Rate (cfm)	416	520	624	728	832	936	1040	1144	1248	1352	1456	1560	1664	1768	1872	1976	2080	
		Sound (NC)	-	-	-	-	-	15	19	23	26	29	31	34	36	38	40	42	44	46
2.45	72x6 32x12 24x16 48x8 26x14 20x18	Flow Rate (cfm)	490	613	735	858	980	1103	1225	1348	1470	1593	1715	1838	1960	2083	2205	2328	2450	
		Sound (NC)	-	-	-	-	-	16	19	23	26	29	31	34	36	38	40	42	44	46
2.78	36x12 26x16 22x20 30x14 24x18	Flow Rate (cfm)	556	695	834	973	1112	1251	1390	1529	1668	1807	1946	2085	2224	2363	2502	2641	2780	
		Sound (NC)	-	-	-	-	-	16	19	23	26	29	32	34	36	38	40	42	44	46
3.11	60x8 40x12 30x16 24x20 48x10 36x14 26x18	Flow Rate (cfm)	622	778	933	1089	1244	1400	1555	1711	1866	2022	2177	2333	2488	2644	2799	2955	3110	
		Sound (NC) NC	-	-	-	-	-	16	20	23	26	29	32	34	36	39	41	42	44	46
3.61	72x8 48x12 30x18 60x10 36x16 24x24	Flow Rate (cfm)	722	903	1083	1264	1444	1625	1805	1986	2166	2347	2527	2708	2888	3069	3249	3430	3610	
		Sound (NC)	-	-	-	-	-	16	20	23	26	29	32	34	37	39	41	43	44	46
4.29	48x14 32x20 36x18 28x24	Flow Rate (cfm)	858	1073	1287	1502	1716	1931	2145	2360	2574	2789	3003	3218	3432	3647	3861	4076	4290	
		Sound (NC)	-	-	-	-	-	16	20	23	26	29	32	34	37	39	41	43	44	46
4.65	72x10 36x20 48x16 30x24	Flow Rate (cfm)	930	1163	1395	1628	1860	2093	2325	2558	2790	3023	3255	3488	3720	3953	4185	4418	4650	
		Sound (NC)	-	-	-	-	-	16	20	23	26	29	32	34	37	39	41	43	44	46
5.58	72x12 48x14 60x14 36x24	Flow Rate (cfm)	1116	1395	1674	1953	2232	2511	2790	3069	3348	3627	3906	4185	4464	4743	5022	5301	5580	
		Sound (NC)	-	-	-	-	-	16	20	23	27	29	32	35	37	39	41	43	45	46
6.25	72x14 48x20 60x16 30x30	Flow Rate (cfm)	1250	1563	1875	2188	2500	2813	3125	3438	3750	4063	4375	4688	5000	5313	5625	5938	6250	
		Sound (NC)	-	-	-	-	-	16	20	24	27	30	32	35	37	39	41	43	45	46

**Performance Notes:**

- Tested in accordance with ASHRAE Standard 70-2006 "Method of Testing for Rating the Performance of Air Outlets and Inlets."
- Air flow is in cfm.
- All pressures are in in. w.g.
- s.p. = Static Pressure.
- NC values are based on room absorption of 10 dB re 10<sup>-12</sup> Watts and one grille.
- Blanks "-" indicate an NC level below 15.
- Grille tested with damper. Corrections for grille without damper:  
— Multiply negative static pressure by 0.87.  
— Subtract 7 from listed NC.



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