

**PRODUCTS TESTING >>**

The following tables include the results of tests conducted on three square ceiling diffusers. The test results include noise criteria (NC) static pressure versus airflow, throw and Ak. The diffusers were selected and supplied by Beta in 1991. The extrapolations and interpolations were made to cover a full range of sizes and parameters according to ETL Testing Laboratories Inc. who made the tests.

**TEST METHOD >>**

The air diffusers were tested in accordance with the Air Diffusion Council test code for grilles, registers and diffusers No. ADC 1062:GRD-84. The test was conducted in ETL Testing Laboratories Inc.

The diffusers were installed in the ADC facility and supplied with measured volume of air. The static pressure was measured (1-1.5) duct diameter upstream of the diffuser inlet.

Acoustical data was obtained employing a Bruel and Kjaer digital frequency analyzer and analyzed by computer.

Sound power levels were plotted on a graph of Noise Criteria Curves which are in the ADC codes.





CEILING DIFFUSERS 4WSAD-4WRAD

PERFORMANCE DATA - SUPPLY



*SI UNITS

SIZE	An	Ak	Vn	1.016	1.270	1.524	1.778	2.032	2.540	3.048	3.556	4.064
150X150	L/S		24	35	41	47	59	71	83	94	106	124
	Pt	0.009	0.330	0.711	1.295	2.007	3.658	5.029	3.0-3.9-5.4	3.3-4.2-5.7	3.0-3.9-5.4	3.3-4.2-5.7
	Th		0.9-1.2-2.4	1.2-1.8-3.3	1.5-2.4-3.9	1.8-2.7-4.2	2.1-3.3-4.8	2.7-3.6-5.1	3.0-3.9-5.4	3.3-4.2-5.7	3.0-3.9-5.4	3.3-4.2-5.7
	NC		<15	<15	<15	<15	<15	<15	24	29	33	33
225X150	L/S		35	44	53	62	71	88	106	124	142	142
	Pt	0.014	0.330	0.711	1.295	2.032	3.658	4.978	6.502	6.502	6.502	6.502
	Th		1.2-1.8-3.3	1.5-2.1-3.9	1.8-2.4-4.2	2.1-3.0-4.8	2.4-3.3-5.1	3.0-3.9-6.0	3.6-4.5-6.6	4.2-5.1-7.2	4.5-5.4-7.5	4.5-5.4-7.5
	NC		<15	<15	<15	<15	<15	<15	20	26	30	34
300X150	L/S		47	59	71	83	94	118	142	165	189	189
	Pt	0.018	0.330	0.737	1.321	2.057	3.658	4.978	6.502	6.502	6.502	6.502
	Th		1.5-2.1-4.2	1.8-2.7-4.5	2.1-3.0-4.8	2.4-3.3-5.4	2.7-3.6-5.7	3.3-4.2-6.6	3.9-4.8-7.2	4.5-5.4-7.8	5.1-6.0-8.4	5.1-6.0-8.4
	NC		<15	<15	<15	<15	<15	<15	21	27	31	35
225X225	L/S		53	66	80	93	106	133	159	186	213	213
	Pt	0.020	0.330	0.737	1.321	2.057	3.658	4.978	6.502	6.502	6.502	6.502
	Th		1.5-2.1-4.2	1.8-2.7-4.8	2.1-3.3-5.4	2.4-3.6-6.0	3.0-4.2-6.3	3.3-4.8-6.9	4.2-5.4-7.8	4.8-6.0-8.4	5.1-6.3-9.3	5.1-6.3-9.3
	NC		<15	<15	<15	<15	<15	<15	22	28	33	37
375X150	L/S		59	74	88	103	118	147	177	206	236	236
	Pt	0.022	0.395	0.914	1.651	2.515	3.658	4.978	6.502	6.502	6.502	6.502
	Th		1.5-2.4-4.2	1.8-2.7-4.8	2.1-3.3-5.7	2.7-3.9-6.3	3.3-4.5-6.9	3.9-5.1-7.5	4.5-5.7-8.1	5.1-6.3-8.7	6.0-7.2-9.9	6.0-7.2-9.9
	NC		<15	<15	<15	<15	<15	<15	22	28	32	36
450X150	L/S		71	88	106	124	142	177	212	248	283	283
	Pt	0.026	0.395	0.914	1.651	2.515	3.658	4.978	6.502	6.502	6.502	6.502
	Th		1.8-2.7-4.5	2.1-3.3-5.7	2.4-3.6-6.0	3.0-4.2-6.6	3.6-4.8-7.5	4.2-5.4-8.1	4.8-6.0-9.0	5.4-6.9-9.9	6.3-7.8-11.1	6.3-7.8-11.1
	NC		<15	<15	<15	<15	<15	<15	23	29	33	37
300X225	L/S		71	88	106	124	142	177	212	248	283	283
	Pt	0.026	0.395	0.914	1.651	2.515	3.658	4.978	6.502	6.502	6.502	6.502
	Th		1.8-2.7-4.5	2.1-3.3-5.7	2.4-3.6-6.0	3.0-4.2-6.6	3.6-4.8-7.5	4.2-5.4-8.1	4.8-6.0-9.0	5.4-6.9-9.9	6.3-7.8-11.1	6.3-7.8-11.1
	NC		<15	<15	<15	<15	<15	<15	23	29	33	37
525X150	L/S		83	103	124	145	165	206	248	289	330	330
	Pt	0.031	0.395	0.914	1.651	2.515	3.658	4.978	6.502	6.502	6.502	6.502
	Th		1.8-2.7-4.8	2.1-3.3-6.0	3.0-3.9-6.9	3.3-4.5-7.5	3.6-4.8-8.1	4.2-5.4-8.7	5.1-6.0-9.3	5.7-6.9-10.2	6.3-7.8-11.1	6.3-7.8-11.1
	NC		<15	<15	<15	<15	<15	<15	23	29	33	37





CEILING DIFFUSERS 4WSAD-4WRAD

PERFORMANCE DATA - SUPPLY

*SI UNITS

SIZE	An	Ak	Vn	1.016	1.270	1.524	1.778	2.032	2.540	3.048	3.556	4.064
375x225	L/S		L/S	89	111	133	155	177	221	266	310	354
	Pt	0.033	Pt	0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502
	Th		Th	1.8-2.7-4.5	2.4-3.0-5.7	3.7-3.9-6.9	3.3-4.5-7.2	3.6-5.1-7.8	7.2-5.7-8.7	5.1-6.3-9.6	5.7-6.9-10.5	6.6-7.8-11.4
	NC		NC	<15	15	17	20	24	30	34	38	42
300x300	L/S		L/S	94	118	142	165	189	236	283	330	378
	Pt	0.033	Pt	0.356	0.533	0.787	1.067	1.397	2.159	3.150	4.242	5.563
	Th		Th	1.8-2.7-5.4	2.1-3.3-6.3	2.7-3.9-7.2	3.3-4.8-7.8	3.6-5.4-8.1	4.5-6.3-9.0	5.4-7.2-9.9	6.3-7.8-10.8	6.9-8.1-11.4
	NC		NC	<15	<15	<15	16	19	25	32	36	40
600x150	L/S		L/S	94	118	142	165	189	236	283	330	378
	Pt	0.033	Pt	0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502
	Th		Th	1.7-2.8-5.5	2.7-3.6-6.6	3.0-4.2-7.5	3.6-4.8-8.1	3.9-5.7-8.4	4.8-6.6-9.3	5.7-7.5-10.2	6.6-8.1-11.1	7.2-8.4-11.7
	NC		NC	<15	<15	<15	<15	17	24	30	34	38
450x225	L/S		L/S	106	133	159	186	212	265	319	372	425
	Pt	0.039	Pt	0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502
	Th		Th	2.4-3.3-6.0	2.7-3.6-6.9	3.0-4.2-7.5	3.6-5.1-7.8	4.2-6.0-9.0	5.1-6.9-9.6	6.0-7.5-10.5	6.6-8.1-11.1	7.2-8.7-12
	NC		NC	<15	<15	<15	15	18	25	31	35	39
375x300	L/S		L/S	118	147	177	206	236	295	354	413	472
	Pt	0.043	Pt	0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502
	Th		Th	2.4-3.3-6.6	2.7-3.9-6.9	3.0-4.5-7.5	3.6-5.4-8.1	4.5-6.3-9.0	5.4-6.9-9.9	6.3-7.8-10.5	6.9-8.4-11.1	7.5-9.3-12.6
	NC		NC	<15	<15	<15	15	19	26	32	36	40
525x225	L/S		L/S	124	155	186	217	248	310	372	434	496
	Pt	0.045	Pt	0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502
	Th		Th	2.4-3.0-6.0	2.7-3.6-6.6	3.0-4.8-7.5	3.6-5.7-8.1	4.2-6.0-8.7	5.1-6.6-9.3	6.0-7.5-9.9	6.9-8.4-11.1	7.2-9.0-12.9
	NC		NC	<15	<15	<15	15	18	25	31	35	39
600x225	L/S		L/S	142	177	212	248	283	354	425	496	566
	Pt	0.052	Pt	0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502
	Th		Th	2.4-3.0-6.0	2.7-4.2-6.9	3.3-5.1-7.5	3.9-5.7-8.1	4.5-6.0-8.7	5.4-6.9-9.3	6.3-7.5-10.2	6.9-8.7-11.1	7.5-9.0-12.9
	NC		NC	<15	<15	<15	15	19	26	32	36	40
450x300	L/S		L/S	142	177	212	248	283	354	425	496	566
	Pt	0.052	Pt	0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502
	Th		Th	2.4-3.0-6.0	2.7-3.9-6.6	3.3-4.8-7.2	3.6-5.4-7.8	4.2-5.7-8.4	5.1-6.6-9.0	6.0-7.2-9.9	6.9-8.4-10.8	7.2-8.7-12.3
	NC		NC	<15	<15	<15	15	20	27	33	37	41





CEILING DIFFUSERS 4WSAD-4WRAD

PERFORMANCE DATA - SUPPLY

*SI UNITS

SIZE	An	Ak	Vn	1.016	1.270	1.524	1.778	2.032	2.540	3.048	3.556	4.064	
375x375	L/S	0.054	148	184	221	258	295	369	443	516	590	661	
	Pt	0.145	0.356	0.559	0.813	1.092	1.422	2.210	3.200	4.369	5.715	7.155	
	Th	2.4-3.6-6.9	3.0-4.2-8.1	3.6-5.1-9.0	3.9-5.7-9.9	4.8-6.9-10.2	5.7-8.1-11.4	6.9-9.0-12.9	7.8-9.6-13.8	8.4-10.2-15			
	NC	<15	<15	17	23	28	35	41	45	49			
525x300	L/S	0.060	165	206	248	289	330	413	496	578	661	743	
	Pt	0.163	0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502	8.191	
	Th	2.4-3.6-7.5	3.0-4.5-8.4	3.6-5.4-9.3	4.5-6.6-9.6	5.1-7.5-10.5	6.3-8.4-12.3	7.5-9.3-13.2	8.1-9.9-14.4	9.0-10.8-15.6			
	NC	<15	<15	<15	15	20	27	33	37	41			
450x375	L/S	0.064	177	221	265	310	354	442	531	619	708	797	
	Pt	0.174	0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502	8.191	
	Th	2.4-3.3-7.2	3.0-4.8-8.7	3.9-5.7-9.3	4.5-6.9-9.9	5.1-7.2-10.2	6.6-8.7-12.6	7.5-9.3-13.5	8.4-10.2-15	9.3-11.1-16.2			
	NC	<15	<15	<15	17	21	28	34	38	42			
600x300	L/S	0.068	189	236	283	330	378	472	566	661	755	849	
	Pt	0.186	0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502	8.191	
	Th	2.4-3.3-7.2	3.4-4.8-8.7	3.9-6.0-9.3	4.5-6.9-9.9	5.7-7.8-11.4	6.9-8.7-12.9	7.8-9.6-14.1	8.4-10.5-15.3	9.0-11.4-16.8			
	NC	<15	<15	<15	17	21	28	34	38	42			
525x375	L/S	0.074	207	258	310	361	413	516	620	723	826	929	
	Pt	0.203	0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502	8.191	
	Th	2.7-3.9-7.8	3.3-5.1-8.7	3.9-6.3-9.3	4.8-7.2-10.5	6.0-8.1-12.0	7.2-9.0-13.2	7.8-9.9-14.4	8.4-10.8-15.9	9.3-11.7-17.7			
	NC	<15	<15	<15	17	21	28	34	38	42			
450x450	L/S	0.073	212	265	319	372	425	531	637	743	849	955	
	Pt	0.209	0.381	0.584	0.838	1.143	1.473	2.311	3.353	4.521	5.969	7.617	
	Th	2.7-4.2-8.1	3.3-5.1-9.6	4.2-6.0-10.5	4.8-6.9-11.7	5.7-8.1-12.3	6.6-9.6-13.5	8.1-10.5-15.3	9.3-11.4-16.2	12.3-16.2-17.7			
	NC	<15	18	22	27	34	39	44	48	53			
600x375	L/S	0.084	236	295	354	413	472	590	708	826	944	1062	
	Pt	0.232	0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502	8.191	
	Th	2.7-4.5-8.7	3.6-5.4-9.9	4.2-6.3-10.8	5.4-7.8-11.7	6.0-8.7-12.6	7.2-9.9-14.1	9.0-11.1-15.9	12.0-15.6-17.1	12.9-16.5-18.3			
	NC	<15	<15	<15	18	22	29	35	39	43			
525x450	L/S	0.088	248	310	372	434	496	619	743	867	991	1115	
	Pt	0.244	0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502	8.191	
	Th	2.4-4.2-7.8	3.6-5.4-9.9	4.2-6.0-10.5	5.4-8.1-12.0	5.7-8.4-12.6	6.9-9.3-13.5	8.7-10.8-15.0	12.0-15.3-17.1	13.5-16.8-18.9			
	NC	<15	<15	<15	18	22	29	36	39	43			





CEILING DIFFUSERS 4WSAD-4WRAD

PERFORMANCE DATA - SUPPLY



*SI UNITS

SIZE	An	Ak	Vn	1.016	1.270	1.524	1.778	2.032	2.540	3.048	3.556	4.064
600x450	0.279	0.101	L/S	283	354	425	496	566	708	849	991	1133
			Pt	0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502
			Th	3.3-4.8-9.3	3.9-6.0-10.8	4.8-7.2-12.3	5.7-8.1-13.5	6.6-9.6-14.1	8.4-11.1-15.6	9.9-12.6-17.7	11.4-13.8-18.3	12.3-14.7-20.4
			NC	<15	<15	19	23	30	36	40	44	
525x525	0.285	0.099	L/S	289	361	434	506	578	723	867	1012	1156
			Pt	0.381	0.610	0.864	1.168	1.524	2.413	3.454	4.724	6.121
			Th	3.3-4.6-9.3	3.9-6.0-11.1	4.8-7.2-12.3	5.7-8.1-13.5	6.6-9.6-14.1	7.8-11.1-15.9	9.6-12.6-17.7	10.8-13.2-18.9	11.7-14.1-20.7
			NC	16	20	25	31	37	42	47	51	55
600x525	0.325	0.117	L/S	330	413	496	578	661	826	991	1156	1321
			Pt	0.395	0.616	0.914	1.205	1.651	2.515	3.658	4.978	6.502
			Th	3.3-5.1-9.9	4.2-6.6-11.7	5.4-7.8-12.6	6.3-9.0-13.5	6.9-10.2-14.7	8.7-11.7-16.8	10.5-12.6-18.0	11.4-13.5-19.8	12.3-14.7-21.6
			NC	<15	<15	15	18	24	31	37	41	45
600x600	0.372	0.130	L/S	378	472	566	661	755	944	1133	1321	1510
			Pt	0.381	0.610	0.889	1.194	1.549	2.413	3.505	4.775	6.223
			Th	3.6-5.7-10.8	4.5-6.9-12.9	5.4-8.1-14.1	6.3-9.3-15.6	7.5-11.1-16.2	9.0-12.9-18.0	11.1-14.1-20.1	12.3-15.3-21.6	13.5-16.2-23.7
			NC	18	23	29	34	40	45	50	53	57
SYMBOLS	<p>L/S : Air volume in litre per second Ak : Effective area in square meter An : Neck area in square meter Vn : Neck velocity in meter per second Pt : Total pressure in mm water gauge Th : Throw in meter NC : Noise Criteria</p>											
CONDITIONS	<p>* Supply.. * Damper is fully open. * Noise Criteria values are based on (10 dB) room attenuation</p>											
NOTES	<p>* The large throw values are based on the minimum terminal velocity of 0.25 m/sec. * The middle throw values are based on the middle terminal velocity of 0.5 m/sec. * The small throw values are based on the maximum terminal velocity of 0.75 m/sec. * For Rectangular Diffusers- throw values mentioned are for the longer side of the diffuser- for shorter sides throw values are 0.7-0.75 of the mentioned ones.</p>											
CORRECTION FOR 1-2 AND 3 WAY	<p>* Noise Criteria : No correction required. * Pressure : No correction required. * Throw : 3 way - increase from 10 - 20% 2 way - increase from 20 - 30% 1 way - increase from 40 - 50% * Drop : No correction required.</p>											





CEILING DIFFUSERS 4WSAD-4WRAD

PERFORMANCE DATA - RETURN

*SI UNITS

SIZE	An	Vn	1.5	2	2.5	3	3.6	4.1
150 x 150	L/S	L/S	35	47	59	71	83	94
	Ps	Ps	1.270	2.032	3.302	4.572	6.350	8.128
	NC	NC	<15	17	25	31	36	41
225 x 150	L/S	L/S	53	71	88	106	124	142
	Ps	Ps	1.524	2.540	3.810	5.588	7.620	9.906
	NC	NC	<15	19	28	33	38	44
300 x 150	L/S	L/S	71	94	118	142	165	189
	Ps	Ps	1.524	2.540	3.810	5.588	7.620	9.906
	NC	NC	<15	21	29	34	40	45
225 x 225	L/S	L/S	79	106	132	159	185	211
	Ps	Ps	1.524	2.540	3.810	5.588	7.620	9.906
	NC	NC	<15	22	30	36	41	46
375 x 150	L/S	L/S	88	118	147	177	206	236
	Ps	Ps	1.524	2.626	3.986	5.764	7.881	10.253
	NC	NC	<15	23	31	36	42	46
450 x 150	L/S	L/S	106	142	177	212	248	283
	Ps	Ps	1.524	2.793	4.320	6.098	8.382	10.922
	NC	NC	15	24	32	37	43	47
300 x 225	L/S	L/S	106	142	177	212	248	283
	Ps	Ps	1.524	2.793	4.320	6.098	8.382	10.922
	NC	NC	15	24	32	37	43	47
525 x 150	L/S	L/S	124	165	206	248	289	330
	Ps	Ps	1.524	2.794	4.318	6.096	8.382	10.922
	NC	NC	16	25	33	38	44	48
375 x 225	L/S	L/S	133	177	221	266	310	354
	Ps	Ps	1.524	2.794	4.318	6.096	8.382	10.922
	NC	NC	16	26	33	38	45	48
300 x 300	L/S	L/S	142	189	236	283	330	378
	Ps	Ps	1.524	2.794	4.318	6.096	8.382	10.922
	NC	NC	16	26	33	39	45	49
600 x 150	L/S	L/S	142	189	236	283	330	378
	Ps	Ps	1.524	2.794	4.318	6.096	8.382	10.922
	NC	NC	16	26	33	39	45	49
450 x 225	L/S	L/S	159	212	265	319	372	425
	Ps	Ps	1.524	2.794	4.318	6.096	8.382	10.922
	NC	NC	17	27	34	40	46	50
375 x 300	L/S	L/S	177	236	295	354	413	472
	Ps	Ps	1.524	2.794	4.318	6.096	8.382	10.922
	NC	NC	17	27	34	40	46	50
525 x 225	L/S	L/S	186	248	310	372	434	496
	Ps	Ps	1.524	2.794	4.318	6.096	8.382	10.922
	NC	NC	18	27	35	41	46	51
600 x 225	L/S	L/S	212	283	354	425	495	566
	Ps	Ps	1.524	2.794	4.318	6.096	8.382	10.922
	NC	NC	19	28	36	42	47	52
450 x 300	L/S	L/S	212	283	354	425	495	566
	Ps	Ps	1.524	2.794	4.318	6.096	8.382	10.922
	NC	NC	19	28	36	42	47	52





CEILING DIFFUSERS 4WSAD-4WRAD

PERFORMANCE DATA - RETURN



*SI UNITS

SIZE	An	Vn	1.5	2	2.5	3	3.6	4.1
375 x 375	L/S	221	294	368	442	515	589	661
	Ps	1.524	2.794	4.318	6.096	8.382	10.922	13.21
	NC	19	28	36	42	47	52	57
525 x 300	L/S	248	330	413	495	578	661	743
	Ps	1.524	2.794	4.318	6.096	8.382	10.922	13.21
	NC	20	29	37	42	48	53	58
450 x 375	L/S	265	354	442	531	619	708	796
	Ps	1.524	2.794	4.318	6.096	8.382	10.922	13.21
	NC	20	29	37	43	49	53	58
600 x 300	L/S	283	378	472	566	661	755	849
	Ps	1.524	2.794	4.318	6.096	8.382	10.922	13.21
	NC	21	30	37	43	49	53	58
525 x 375	L/S	310	413	516	620	723	826	929
	Ps	1.524	2.794	4.318	6.096	8.382	10.922	13.21
	NC	21	31	38	44	50	54	59
450 x 450	L/S	319	425	531	637	743	849	955
	Ps	1.524	2.794	4.318	6.096	8.382	10.922	13.21
	NC	21	31	38	44	50	54	59
600 x 375	L/S	354	472	590	708	826	944	1062
	Ps	1.524	2.794	4.318	6.096	8.382	10.922	13.21
	NC	22	32	39	45	51	55	60
525 x 450	L/S	372	495	619	743	867	991	1115
	Ps	1.524	2.794	4.318	6.096	8.382	10.922	13.21
	NC	22	32	39	45	51	55	60
600 x 450	L/S	425	566	708	849	991	1133	1275
	Ps	1.524	2.794	4.318	6.096	8.382	10.922	13.21
	NC	23	33	40	46	52	56	61
525 x 525	L/S	433	578	722	866	1011	1155	1300
	Ps	1.524	2.794	4.318	6.096	8.382	10.922	13.21
	NC	23	33	40	46	52	56	61
600 x 525	L/S	495	661	826	991	1156	1321	1486
	Ps	1.524	2.794	4.318	6.096	8.382	10.922	13.21
	NC	24	34	41	47	53	57	62
600 x 600	L/S	566	755	944	1133	1321	1510	1700
	Ps	1.524	2.794	4.318	6.096	8.382	10.922	13.21
	NC	24	34	42	48	53	58	63

SYMBOLS

- L/S : Air volume in Litre per second
- *An : Neck area in meter squared
- *Vn : Neck velocity in meter per second
- *Ps : Negative static pressure in mm water gauge
- *Nc : Noise Criteria

CONDITIONS

- * Return
- * Damper is fully open.
- * Noise Criteria is based on (10dB) room attenuation.





CEILING DIFFUSERS 4WSAD-4WRAD



PERFORMANCE DATA - SUPPLY

*IMPERIAL UNITS

SIZE	An	Ak	Vn	200	250	300	350	400	500	600	700	800
6 X 6	0.250	0.096	CFM	50	63	75	88	100	125	150	175	200
			Pt	0.013	0.020	0.028	0.039	0.051	0.079	0.144	0.156	0.198
			Th	3-4-8	4-6-11	4-7-12	5-8-13	6-9-14	7-11-16	9-12-17	10-13-18	11-14-19
			NC	<15	<15	<15	<15	<15	19	24	29	33
9 X 6	0.375	0.146	CFM	75	93	112	131	150	187	225	262	300
			Pt	0.013	0.020	0.028	0.039	0.051	0.080	0.144	0.196	0.256
			Th	4-6-11	5-7-13	6-8-14	7-10-16	8-11-17	10-13-20	12-15-22	14-17-24	15-18-25
			NC	<15	<15	<15	<15	<15	20	26	30	34
12 X 6	0.500	0.192	CFM	100	125	150	175	200	250	300	350	400
			Pt	0.013	0.020	0.029	0.040	0.052	0.081	0.144	0.196	0.256
			Th	5-7-14	6-9-15	7-10-16	8-11-18	9-12-19	11-14-22	13-16-24	15-18-26	17-20-28
			NC	<15	<15	<15	<15	<15	21	27	31	35
9 X 9	0.563	0.210	CFM	110	140	170	195	225	280	335	395	450
			Pt	0.013	0.020	0.029	0.040	0.052	0.081	0.117	0.160	0.208
			Th	5-7-14	6-9-16	7-11-18	8-12-20	10-14-21	11-16-23	14-18-26	16-20-28	17-21-31
			NC	<15	<15	<15	<15	16	22	28	33	37
15 X 6	0.625	0.239	CFM	125	156	188	219	250	312	375	438	500
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256
			Th	5-8-14	6-9-16	7-11-19	9-13-21	11-15-23	13-17-25	15-19-27	17-21-29	20-24-33
			NC	<15	<15	<15	<15	15	22	28	32	36
18 X 6	0.750	0.284	CFM	150	188	225	263	300	375	450	525	600
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256
			Th	6-9-15	7-11-19	8-12-20	10-14-22	12-16-25	14-18-27	16-20-30	18-23-33	21-26-37
			NC	<15	<15	<15	<15	16	23	29	33	37
12 X 9	0.750	0.284	CFM	150	188	225	263	300	375	450	525	600
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256
			Th	6-9-15	7-11-19	8-12-20	10-14-22	12-16-25	14-18-27	16-20-30	18-23-33	21-26-37
			NC	<15	<15	<15	<15	16	23	29	33	37
21 X 6	0.875	0.330	CFM	175	218	262	306	350	437	525	612	700
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256
			Th	6-9-16	7-11-20	10-13-23	11-15-25	12-16-27	14-18-29	17-20-31	19-23-34	21-26-37
			NC	<15	<15	<15	<15	16	23	29	33	37
15 X 9	0.938	0.353	CFM	188	235	281	328	375	469	563	657	750
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256
			Th	6-9-15	8-10-19	9-13-23	11-15-24	12-17-26	14-19-29	17-21-32	19-23-35	22-26-38
			NC	<15	15	17	20	24	30	34	38	42
12 X 12	1.000	0.353	CFM	200	250	300	350	400	500	600	700	800
			Pt	0.014	0.021	0.031	0.042	0.055	0.085	0.124	0.167	0.219
			Th	6-9-18	7-11-21	9-13-24	11-16-26	12-18-27	15-21-30	18-24-33	21-26-36	23-27-38
			NC	<15	<15	<15	16	19	25	32	36	40





CEILING DIFFUSERS 4WSAD-4WRAD

PERFORMANCE DATA - SUPPLY

*IMPERIAL UNITS

SIZE	An	Ak	Vn	200	250	300	350	400	500	600	700	800
24 X 6	1.000	0.358	CFM	200	250	300	350	400	500	600	700	800
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256
			Th	7-10-19	9-12-22	10-14-25	12-16-27	13-19-28	16-22-31	19-25-34	22-27-37	24-28-39
			NC	<15	<15	<15	<15	17	24	30	34	38
18 X 9	1.125	0.420	CFM	226	282	337	393	450	562	675	768	900
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256
			Th	8-11-20	9-12-23	10-14-25	12-17-26	14-20-30	17-23-32	20-25-35	22-27-37	24-29-40
			NC	<15	<15	<15	15	18	25	31	35	39
15 X 12	1.250	0.465	CFM	250	313	375	438	500	625	750	875	1000
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256
			Th	8-11-22	9-13-23	10-15-25	12-18-27	15-21-30	18-23-33	21-26-35	23-28-37	25-31-42
			NC	<15	<15	<15	15	19	26	32	36	40
21 X 9	1.313	0.488	CFM	262	327	393	458	524	655	786	917	1050
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256
			Th	8-10-20	9-12-22	10-16-25	12-19-27	14-20-29	17-22-31	20-25-33	23-28-37	24-30-43
			NC	<15	<15	<15	15	18	25	31	35	39
24 X 9	1.500	0.555	CFM	300	375	450	525	600	750	900	1050	1200
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256
			Th	8-10-20	9-14-23	11-17-25	13-19-27	15-20-29	18-23-31	21-25-34	23-29-37	25-30-43
			NC	<15	<15	<15	15	19	26	32	36	40
18 X 12	1.500	0.555	CFM	305	380	458	530	600	750	900	1050	1200
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256
			Th	8-10-20	9-13-22	11-16-24	12-18-26	14-19-28	17-22-30	20-24-33	23-28-36	24-29-41
			NC	<15	<15	<15	15	20	27	33	37	41
15 X 15	1.563	0.577	CFM	310	390	470	545	625	780	940	1090	1250
			Pt	0.014	0.022	0.032	0.043	0.056	0.087	0.126	0.172	0.225
			Th	8-12-23	10-14-27	12-17-30	13-19-33	16-23-34	19-27-38	23-30-43	26-32-46	28-34-50
			NC	<15	<15	17	23	28	35	41	45	49
21 X 12	1.750	0.644	CFM	350	438	525	613	700	875	1050	1225	1400
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256
			Th	8-12-25	10-15-28	12-18-31	15-22-32	17-25-35	21-28-41	25-31-44	27-33-48	30-36-52
			NC	<15	<15	<15	15	20	27	33	37	41
18 X 15	1.875	0.688	CFM	375	468	562	656	750	937	1125	1312	1500
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256
			Th	8-11-24	10-16-29	13-19-31	15-23-33	17-24-34	22-29-42	25-31-45	28-34-50	31-37-54
			NC	<15	<15	<15	17	21	28	34	38	42
24 X 12	2.000	0.732	CFM	400	500	600	700	800	1000	1200	1400	1600
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256
			Th	8-11-24	11-16-29	13-20-31	15-23-33	19-26-38	23-29-43	26-32-47	28-35-51	30-38-56
			NC	<15	<15	<15	17	21	28	34	38	42





CEILING DIFFUSERS 4WSAD-4WRAD

PERFORMANCE DATA - SUPPLY

*IMPERIAL UNITS

SIZE	An	Ak	Vn	200	250	300	350	400	500	600	700	800	
21X15	2.188	0.799	CFM	436	546	655	765	875	1092	1312	1532	1750	
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256	
			Th	9-13-26	11-17-29	13-21-31	16-24-35	20-27-40	24-30-44	28-36-53	31-39-59		
			NC	<15	<15	<15	17	21	28	34	38	42	
18X18	2.250	0.785	CFM	450	560	675	785	900	1125	1350	1575	1800	
			Pt	0.015	0.023	0.033	0.045	0.058	0.091	0.132	0.178	0.235	
			Th	9-14-27	11-17-32	14-20-35	16-23-39	19-27-41	22-32-45	27-35-51	31-38-54	41-54-59	
			NC	<15	18	22	27	34	39	44	48	53	
24X15	2.500	0.908	CFM	500	625	750	875	1000	1250	1500	1750	2000	
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256	
			Th	9-15-29	12-18-33	14-21-36	18-26-39	20-29-42	24-33-47	30-37-53	40-52-57	43-55-61	
			NC	<15	<15	18	22	29	35	39	43		
21X18	2.625	0.952	CFM	526	657	787	918	1050	1310	1570	1830	2090	
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256	
			Th	8-14-26	12-18-33	14-20-35	18-27-40	19-28-42	23-31-45	29-36-50	40-51-57	45-56-63	
			NC	<15	<15	18	22	29	36	39	43		
24X18	3.000	1.083	CFM	600	750	900	1050	1200	1500	1800	2100	2400	
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256	
			Th	11-16-31	13-20-36	16-24-41	19-27-45	22-32-47	28-37-52	33-42-59	38-46-61	41-49-68	
			NC	<15	<15	<15	19	23	30	36	40	44	
21X21	3.063	1.065	CFM	610	765	920	1070	1225	1530	1835	2140	2450	
			Pt	0.015	0.024	0.034	0.046	0.060	0.095	0.136	0.186	0.241	
			Th	11-16-31	13-20-37	16-24-41	19-27-45	22-32-47	26-37-53	32-41-59	36-44-63	39-47-69	
			NC	16	20	25	31	37	42	47	51	55	
24X21	3.500	1.256	CFM	700	875	1050	1225	1400	1750	2100	2450	2800	
			Pt	0.016	0.024	0.036	0.047	0.065	0.099	0.144	0.196	0.256	
			Th	11-17-33	14-22-39	18-26-42	21-30-45	23-34-49	29-39-56	35-42-60	38-45-66	41-49-72	
			NC	<15	<15	15	18	24	31	37	41	45	
24X24	4.000	1.400	CFM	800	1000	1200	1400	1600	2000	2400	2800	3200	
			Pt	0.015	0.024	0.035	0.047	0.061	0.095	0.138	0.188	0.245	
			Th	12-19-36	15-23-43	18-27-47	21-31-52	25-37-54	30-43-60	37-47-67	41-51-72	45-54-79	
			NC	18	23	29	34	40	45	50	53	57	

SYMBOLS
 CFM : Air volume in cubic foot per minute.
 Ak : Effective area in square foot.
 An : Neck area in square foot.
 Vn : Neck velocity in foot per minute.
 Pt : Total pressure in inch water gauge.
 Th : Throw in feet.
 NC : Noise Criteria.

CONDITIONS
 * Supply.
 * Damper is fully open
 * Noise Criteria values are based on (10dB) room attenuation.

NOTES
 * The large throw values are based on the minimum terminal velocity of 50 fpm.
 * The middle throw values are based on the middle terminal velocity of 100 fpm.
 * The small throw values are based on the maximum terminal velocity of 150fpm.
 * For Rectangular Diffusers - throw values mentioned are for the longer side of the diffuser - for shorter sides throw values are 0.7-0.75 of the mentioned ones.

CORRECTION FOR 1-2 AND 3 WAY
 * Criteria : No correction required.
 * Pressure : No correction required.
 * Throw : 3 way - increase from 10 - 20%
 2 way - increase from 20 - 30%
 1 way - increase from 40 - 50%
 * Drop : No correction required.





CEILING DIFFUSERS 4WSAD-4WRAD

PERFORMANCE DATA - RETURN

CEILING DIFFUSERS



4WSAD-4WRAD

SIZE	An	Vn	300	400	500	600	700	800
6 X 6	0.250	CFM	75	100	125	150	175	200
		Ps	0.050	0.080	0.130	0.180	0.250	0.320
		NC	<15	17	25	31	36	41
9 X 6	0.375	CFM	113	150	188	225	263	300
		Ps	0.060	0.100	0.150	0.220	0.300	0.390
		NC	<15	19	28	33	38	44
12 X 6	0.500	CFM	150	200	250	300	350	400
		Ps	0.060	0.100	0.150	0.220	0.300	0.390
		NC	<15	21	29	34	40	45
9 X 9	0.563	CFM	168	224	280	336	392	448
		Ps	0.060	0.100	0.150	0.220	0.300	0.390
		NC	<15	22	30	36	41	46
15 X 6	0.625	CFM	188	250	313	375	438	500
		Ps	0.060	0.103	0.157	0.227	0.310	0.404
		NC	<15	23	31	36	42	46
18 X 6	0.750	CFM	225	300	375	450	525	600
		Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	15	24	32	37	43	47
12 X 9	0.750	CFM	263	350	438	525	613	700
		Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	16	25	33	38	44	48
15 X 9	0.938	CFM	281	375	469	563	657	750
		Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	16	26	33	38	45	48
12 X 12	1.000	CFM	300	400	500	600	700	800
		Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	16	26	33	39	45	49
24 X 6	1.000	CFM	300	400	500	600	700	800
		Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	16	26	33	39	45	49
18 X 9	1.125	CFM	338	450	563	675	788	900
		Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	17	27	34	40	46	50
15 X 12	1.250	CFM	375	500	625	750	875	1000
		Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	17	27	34	40	46	50
21 X 9	1.313	CFM	394	525	657	788	919	1050
		Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	18	27	35	41	46	51
24 X 9	1.500	CFM	450	600	750	900	1050	1200
		Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	19	28	36	42	47	52
18 X 12	1.500	CFM	450	600	750	900	1050	1200
		Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	19	28	36	42	47	52

*IMPERIAL UNITS





CEILING DIFFUSERS 4WSAD-4WRAD

PERFORMANCE DATA - RETURN

*IMPERIAL UNITS

SIZE	An	Vn	300	400	500	600	700	800
15 X 15	1.563	CFM	468	624	780	936	1092	1248
		Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	19	28	36	42	47	52
21 X 12	1.750	CFM	525	700	875	1050	1225	1400
		Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	20	29	37	42	48	53
18 X 15	1.875	CFM	563	750	938	1125	1313	1500
		Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	20	29	37	43	49	53
24 X 12	2.000	CFM	600	800	1000	1200	1400	1600
		Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	21	30	37	43	49	53
21 X 15	2.188	CFM	656	875	1094	1313	1532	1750
		Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	21	31	38	44	50	54
18 X 18	2.250	CFM	675	900	1125	1350	1575	1800
		Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	21	31	38	44	50	54
24 X 15	2.500	CFM	750	1000	1250	1500	1750	2000
		Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	22	32	39	45	51	55
21 X 18	2.625	CFM	788	1050	1313	1575	1838	2100
		Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	22	32	39	45	51	55
24 X 18	3.000	CFM	900	1200	1500	1800	2100	2400
		Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	23	33	40	46	52	56
21 X 21	3.063	CFM	918	1224	1530	1836	2142	2448
		Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	23	33	40	46	52	56
24 X 21	3.500	CFM	1050	1400	1750	2100	2450	2800
		Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	24	34	41	47	53	57
24 X 24	4.000	CFM	1200	1600	2000	2400	2800	3200
		Ps	0.060	0.110	0.170	0.240	0.330	0.430
		NC	24	34	42	48	53	58

SYMBOLS

CFM : Air volume in cubic foot per minute.
 An : Neck area in foot squared.
 Vn : Neck velocity in foot per minute.
 Ps : Negative static pressure in inch water gauge.
 NC : Noise Criteria.

CONDITIONS

* Return.
 * Damper is fully open.
 * Noise Criteria is based on (10dB) room attenuation.

