

Application

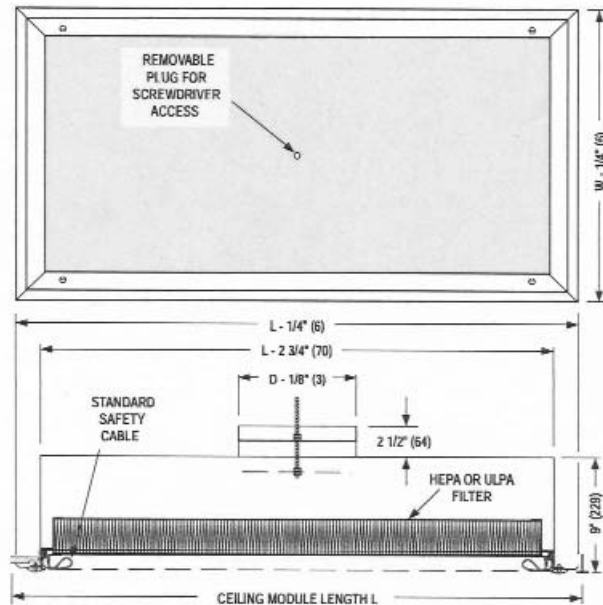
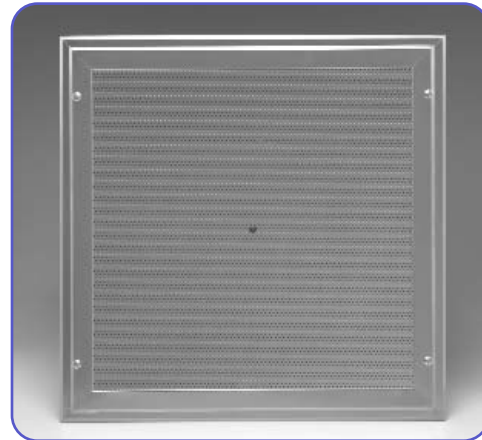
The Carnes DB Series Laminar Flow Diffusers are used to produce a non-aspirating, low velocity, uniformly downward moving "piston" of conditioned air. They are designed to accommodate a Gel Seal HEPA or ULPA filter. The filters can be easily removed and replaced from the face of the unit. These quality filters incorporate a separatorless 2" (51) deep media, integral test port and an anodized aluminum gel seal frame.

Standard Features

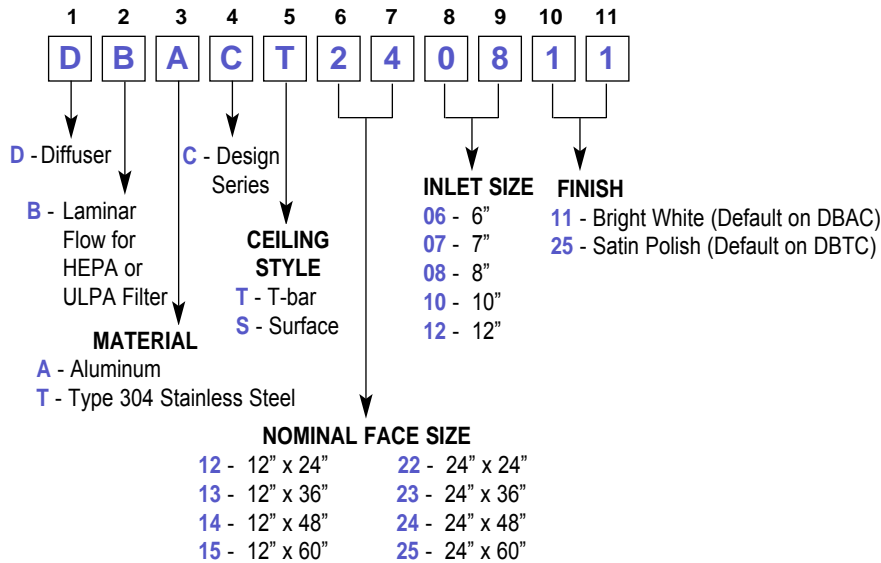
- Available in type 304 stainless steel or alum. construction.
- Same unit will work for both T-bar or surface mount applications.
- Face plate is attached with 1/4 turn fasteners and is easily removable.
- Safety cables are included as standard to prevent accidental dropping of removable face.
- Perforated face has 3/32" holes on 60° 1/4" staggered centers (13% free area).
- Round inlets are standard.
- Integral seismic clips are standard.
- Clear anodized extruded aluminum filter frame with a test port for damper adjustment, filter pressure drop measurement or to perform leakage (scan) test.
- Filters are packaged independently from the diffuser final installation in the field (by others). Filter needs to be purchased separately.
- HEPA filter has 99.99% minimum removal efficiency on 0.3 micrometer particle size. ULPA filter has 99.9995% minimum removal efficiency on 0.12 micrometer particle size.
- Integral damper with screwdriver slot adjustment is easily adjustable.
- Standard finish is #3 Satin polished for stainless steel and Carnes bright white for aluminum.

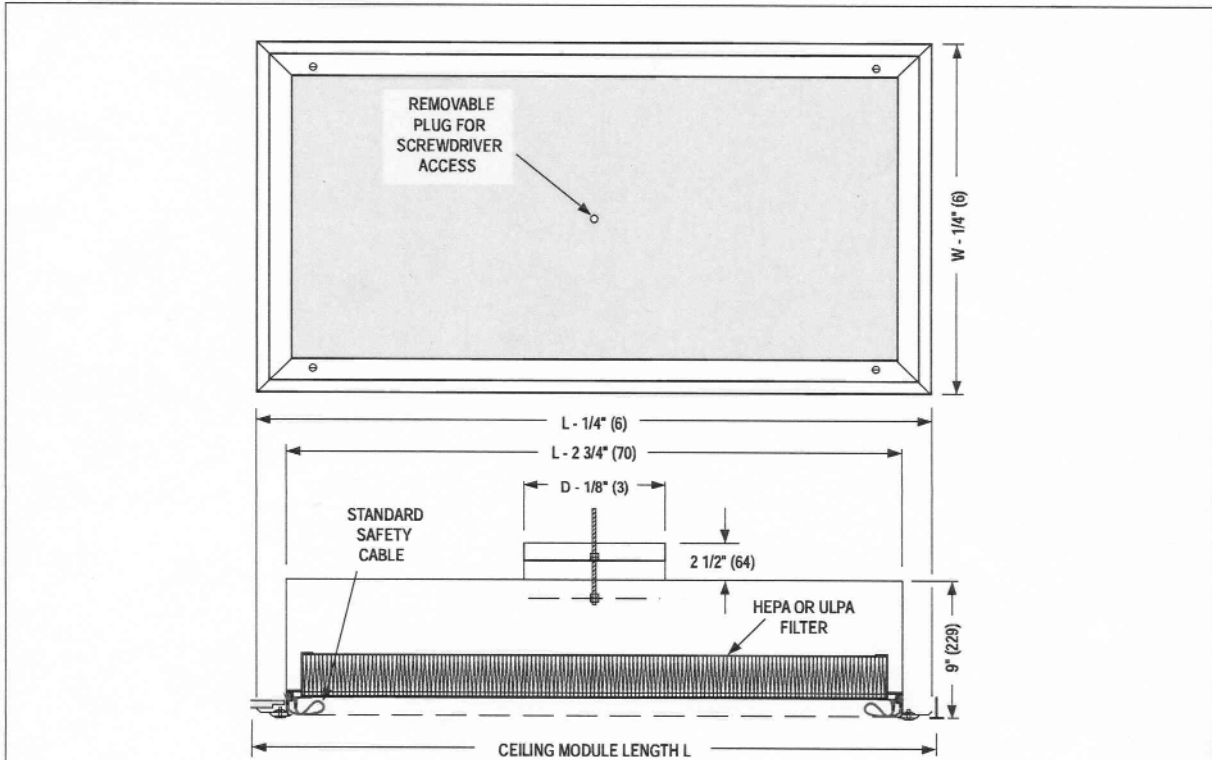
Available Options

- 316 stainless steel construction available.
- Other colors available upon request.
- Model DXHA HEPA filter has 99.99% minimum removal efficiency on 0.3 micrometer particle size (p. A247).
- Model DXUA ULPA filter has 99.9995% minimum removal efficiency on 0.12 micrometer particle size (p. A247).



Model Numbering System



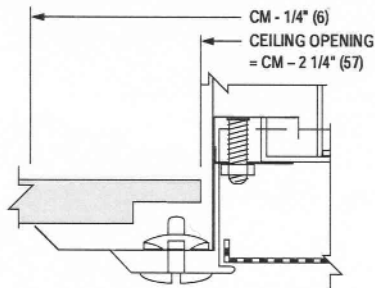


Model LFHDP

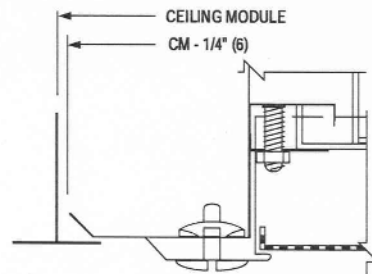
Ceiling Module Sizes L x W & Nominal Round Duct Sizes D

L x W	Imperial Modules (inches)		48 x 12	60 x 12	24 x 24	36 x 24	48 x 24	60 x 24
	Metric Modules (mm)		1200 x 300	1500 x 300	600 x 600	900 x 600	1200 x 600	1500 x 600
Duct Size D	(inches)		6, 7, 8	6, 7, 8	6, 7, 8	6, 7, 8, 10	7, 8, 10, 12	10, 12
	(mm)		152, 178, 203	152, 178, 203	152, 178, 203	152, 178, 203, 254	178, 203, 254, 305	254, 305

Type S Surface Mount Detail



Type L Lay-in T-Bar Detail



With HEPA Filter • 99.99% Minimum Removal Efficiency on 0.30 Micrometer Particle Size

8" dia. Inlet

	Air Flow, CFM	100	120	140	160	180	200	220	240	260	280	290
48"x12"	Total Pressure	0.17	0.24	0.33	0.43	0.55	0.68	0.82	0.98	1.14	1.33	1.42
	Static Pressure	0.16	0.24	0.32	0.42	0.53	0.66	0.79	0.94	1.11	1.28	1.38
	NC	—	17	19	22	25	27	29	31	34	35	37
	Throw	.5-1-2	.5-1-3	1-1.5-4	1.5-2-4	1.5-2.5-5	2-3.5-5	2.5-4-6	3-4.5-7	3-4.5-7.5	4-5.5-8	4.5-6-9
60"x12"	Total Pressure	0.11	0.16	0.22	0.28	0.36	0.44	0.54	0.64	0.75	0.87	0.93
	Static Pressure	0.11	0.15	0.21	0.27	0.34	0.42	0.51	0.61	0.71	0.83	0.89
	NC	—	16	18	21	24	25	28	30	33	34	36
	Throw	.5-1-2	1-1-3	1-1.5-4	1-2-4	1-2.5-4.5	2-3.5-5	2-4-5.5	3-4-6.5	3-5-7	4-5-8	4-6-8.5

	Air Flow, CFM	100	120	140	160	180	200	220	240	260	280	295
24"x24"	Total Pressure	0.17	0.24	0.32	0.42	0.54	0.66	0.80	0.95	1.12	1.30	1.44
	Static Pressure	0.16	0.23	0.31	0.41	0.52	0.64	0.77	0.92	1.08	1.25	1.39
	NC	—	17	19	22	25	27	29	31	34	35	37
	Throw	.5-1-2	.5-1-3	1-1.5-4	1.5-2-4	1.5-2.5-5	2-3.5-6	2.5-4-6	3-4.5-7	3-4.5-7.5	4-5.5-8	4.5-6-9
36"x24"	Total Pressure	0.07	0.10	0.14	0.18	0.23	0.29	0.35	0.41	0.48	0.56	0.62
	Static Pressure	0.07	0.10	0.13	0.17	0.21	0.26	0.32	0.38	0.45	0.52	0.58
	NC	—	15	18	21	24	26	28	30	33	34	36
	Throw	0-1-1.5	0-1-2	0-1-3	1-2-3.5	1-2-4.5	2-3-5	2-3-5.5	2-3.5-6	2.5-4.5-7	3-5-8	3-5-8
48"x24"	Total Pressure	0.05	0.07	0.09	0.12	0.15	0.18	0.22	0.27	0.31	0.36	0.40
	Static Pressure	0.04	0.06	0.08	0.10	0.13	0.16	0.20	0.24	0.28	0.32	0.36
	NC	—	—	17	20	23	25	27	30	32	33	35
	Throw	0-5-1.5	.5-1-2	.5-1-2.5	1-1.5-3	1-2-4	1-2-5	1.5-2.5-5	2-3-6	2-4-6.5	2-4.5-7	3-5-7

10" dia. Inlet

	Air Flow, CFM	160	180	200	220	240	260	280	300	320	340	360
36"x24"	Total Pressure	0.14	0.18	0.22	0.27	0.32	0.37	0.43	0.50	0.56	0.64	0.71
	Static Pressure	0.14	0.17	0.21	0.26	0.30	0.36	0.41	0.48	0.54	0.61	0.69
	NC	15	18	20	21	23	26	28	30	32	34	36
	Throw	1-2-3.5	1-2-4.5	2-3-5	2-3-5.5	2-3.5-6	2.5-4-7	3-5-8	3-5-8	4-5.5-8.5	4-6-9	5-7-9.5
48"x24"	Total Pressure	0.08	0.10	0.13	0.15	0.18	0.21	0.25	0.28	0.32	0.37	0.41
	Static Pressure	0.08	0.10	0.12	0.14	0.17	0.20	0.23	0.27	0.30	0.34	0.38
	NC	—	15	18	19	22	25	27	29	31	33	35
	Throw	1-1-3	1-2-4	1-2-5	1.5-2.5-5	2-3-6	2-4-6.5	2-4.5-7	3-5-7	3-5-8	4-6-8.5	5-7-9
60"x24"	Total Pressure	0.06	0.07	0.09	0.11	0.13	0.15	0.17	0.20	0.22	0.25	0.28
	Static Pressure	0.05	0.06	0.08	0.10	0.11	0.13	0.15	0.18	0.20	0.23	0.26
	NC	—	—	17	19	22	24	27	29	31	33	35
	Throw	1-1-3	1-2-4	1-2-5	1.5-2.5-5	2-3-6	2-4-6.5	2-4.5-7	3-5-7	3-5-8	4-6-8.5	5-7-9

12" dia. Inlet

	Air Flow, CFM	230	260	290	315	345	375	400	430	460	490	520
48"x24"	Total Pressure	0.16	0.20	0.25	0.29	0.35	0.42	0.48	0.55	0.63	0.71	0.80
	Static Pressure	0.15	0.19	0.24	0.28	0.34	0.40	0.46	0.53	0.61	0.69	0.78
	NC	15	18	21	22	25	28	30	32	35	38	42
	Throw	1-2-6	1.5-3-6.5	2-4-7	3-5-8	4-5.5-8	4.5-6-8.5	5-7-9.5	5.5-7.5-10	6-8-11	6.5-8.5-11.5	7-9-12
60"x24"	Total Pressure	0.10	0.13	0.16	0.19	0.23	0.27	0.31	0.36	0.41	0.47	0.53
	Static Pressure	0.10	0.12	0.16	0.18	0.22	0.26	0.30	0.34	0.39	0.44	0.50
	NC	15	18	21	22	25	28	30	32	35	38	42
	Throw	1-2-6	2-3-6	2-4-7	3-5-8	4-5.5-7.5	4.5-6-8.5	5-6-9	5.5-7.5-9.5	6-8-10.5	6-8.5-11	6.5-8.5-11.5

- CFM** - cubic feet per minute
- FPM** - feet per minute velocity
- Pt** - total pressure - inches w.g.
- Ps** - static pressure - inches w.g.
- T** - throw in feet
- NC** - Noise Criteria (values) based on 10 dB room absorption, re 10⁻¹² watts

- Performance Notes:**
1. Throws are the average vertical distance in feet to terminal velocities of 100, 75 and 50 fpm. Based upon a cooling ΔT of 10°F. 9 ft. ceiling.
 2. Performance data is for diffusers with clean filters. Filters may be operated up to a final resistance of 2" w.g. (500 Pa).

3. *Maximum air flow shown is based on 150 fpm velocity per square foot of filter face area. Exceeding these air flows may result in reduced filter efficiencies. Refer to the engineering section for more details.
4. Data derived from tests conducted in accordance with ANSI/ASHRAE Standard 70 — 1991.

With ULPA Filter • 99.9995% Minimum Removal Efficiency on 0.12 Micrometer Particle Size

8" dia. Inlet

	Air Flow, CFM	100	120	140	160	180	200	220	240	260	280	290
48"x12"	Total Pressure	0.20	0.29	0.39	0.51	0.65	0.80	0.96	1.15	1.35	1.56	1.68
	Static Pressure	0.19	0.28	0.38	0.50	0.63	0.78	0.94	1.12	1.31	1.52	1.63
	NC	—	17	19	22	25	27	29	31	34	35	37
	Throw	.5-1-2	.5-1-3	1-1.5-4	1.5-2-4	1.5-2.5-5	2-3.5-5	2.5-4-6	3-4.5-7	3-4.5-7.5	4-5.5-8	4.5-6-9
60"x12"	Total Pressure	0.13	0.18	0.25	0.33	0.42	0.51	0.62	0.74	0.87	1.01	1.08
	Static Pressure	0.12	0.18	0.24	0.31	0.40	0.49	0.60	0.71	0.83	0.96	1.03
	NC	—	16	18	21	24	25	28	30	33	34	36
	Throw	.5-1-2	1-1-3	1-1.5-4	1-2-4	1-2.5-4.5	2-3.5-5	2-4-5.5	3-4-6.5	3-5-7	4-5-8	4-6-8.5

	Air Flow, CFM	100	120	140	160	180	200	220	240	260	280	295
24"x24"	Total Pressure	0.19	0.28	0.38	0.50	0.63	0.78	0.94	1.12	1.31	1.52	1.69
	Static Pressure	0.19	0.27	0.37	0.48	0.61	0.75	0.91	1.09	1.28	1.48	1.64
	NC	—	17	19	22	25	27	29	31	34	35	37
	Throw	.5-1-2	.5-1-3	1-1.5-4	1.5-2-4	1.5-2.5-5	2-3.5-6	2.5-4-6	3-4.5-7	3-4.5-7.5	4-5.5-8	4.5-6-9
36"x24"	Total Pressure	0.08	0.12	0.16	0.21	0.26	0.32	0.39	0.47	0.55	0.64	0.71
	Static Pressure	0.08	0.11	0.15	0.19	0.25	0.30	0.37	0.44	0.51	0.59	0.66
	NC	—	15	18	21	24	26	28	30	33	34	36
	Throw	0-1-1.5	0-1-2	0-1-3	1-2-3.5	1-2-4.5	2-3-5	2-3-5.5	2-3.5-6	2.5-4.5-7	3-5-8	3-5-8
48"x24"	Total Pressure	0.05	0.07	0.10	0.13	0.17	0.20	0.25	0.29	0.34	0.40	0.44
	Static Pressure	0.05	0.07	0.09	0.12	0.15	0.18	0.22	0.26	0.31	0.36	0.40
	NC	—	—	17	20	23	25	27	30	32	33	35
	Throw	0-5-1.5	.5-1-2	.5-1-2.5	1-1.5-3	1-2-4	1-2-5	1.5-2.5-5	2-3-6	2-4-6.5	2-4.5-7	3-5-7

10" dia. Inlet

	Air Flow, CFM	160	180	200	220	240	260	280	300	320	340	360
36"x24"	Total Pressure	0.17	0.21	0.26	0.31	0.37	0.44	0.51	0.58	0.66	0.75	0.84
	Static Pressure	0.16	0.20	0.25	0.30	0.36	0.42	0.49	0.56	0.64	0.72	0.81
	NC	15	18	20	21	23	26	28	30	32	34	36
	Throw	1-2-3.5	1-2-4.5	2-3-5	2-3-5.5	2-3.5-6	2.5-4-7	3-5-8	3-5-8	4-5.5-8.5	4-6-9	5-7-9.5
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	Static Pressure	0.09	0.11	0.14	0.17	0.20	0.23	0.27	0.31	0.35	0.40	0.44
	NC	—	15	18	19	22	25	27	29	31	33	35
	Throw	1-1-3	1-2-4	1-2-5	1.5-2.5-5	2-3-6	2-4-6.5	2-4.5-7	3-5-7	3-5-8	4-6-8.5	5-7-9
60"x24"	Total Pressure	0.06	0.08	0.10	0.12	0.14	0.17	0.19	0.22	0.25	0.29	0.32
	Static Pressure	0.06	0.07	0.09	0.11	0.13	0.15	0.18	0.20	0.23	0.26	0.29
	NC	—	—	17	19	22	24	27	29	31	33	35
	Throw	1-1-3	1-2-4	1-2-5	1.5-2.5-5	2-3-6	2-4-6.5	2-4.5-7	3-5-7	3-5-8	4-6-8.5	5-7-9

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48"x24"	Total Pressure	0.18	0.23	0.29	0.34	0.41	0.49	0.55	0.64	0.73	0.83	0.93
	Static Pressure	0.18	0.23	0.28	0.33	0.40	0.47	0.54	0.62	0.71	0.80	0.91
	NC	15	18	21	22	25	28	30	32	35	38	42
	Throw	1-2-6	1.5-3-6.5	2-4-7	3-5-8	4-5.5-8	4.5-6-8.5	5-7-9.5	5.5-7.5-10	6-8-11	6.5-8.5-11.5	7-9-12
60"x24"	Total Pressure	0.12	0.15	0.19	0.22	0.27	0.32	0.36	0.41	0.47	0.54	0.61
	Static Pressure	0.11	0.14	0.18	0.21	0.25	0.30	0.34	0.39	0.45	0.51	0.58
	NC	15	18	21	22	25	28	30	32	35	38	42
	Throw	1-2-6	2-3-6	2-4-7	3-5-8	4-5.5-7.5	4.5-6-8.5	5-6-9	5.5-7.5-9.5	6-8-10.5	6-8.5-11	6.5-8.5-11.5

- CFM** - cubic feet per minute
- FPM** - feet per minute velocity
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- Ps** - static pressure - inches w.g.
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