

# FDM

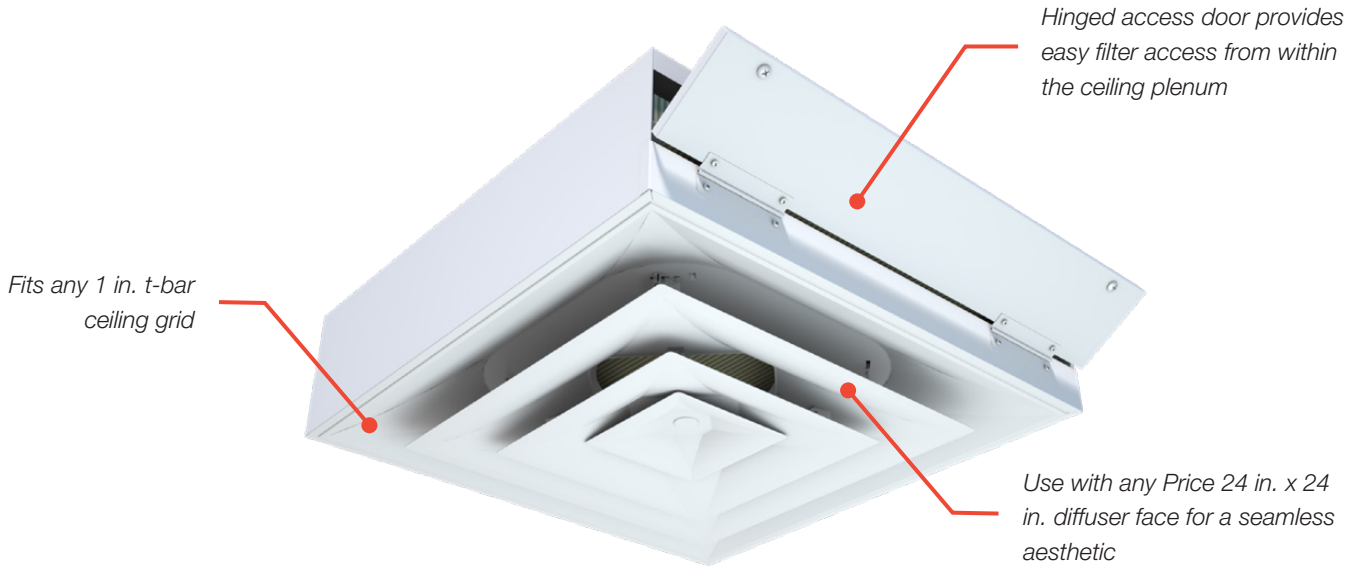
## FILTERED DIFFUSER MODULE



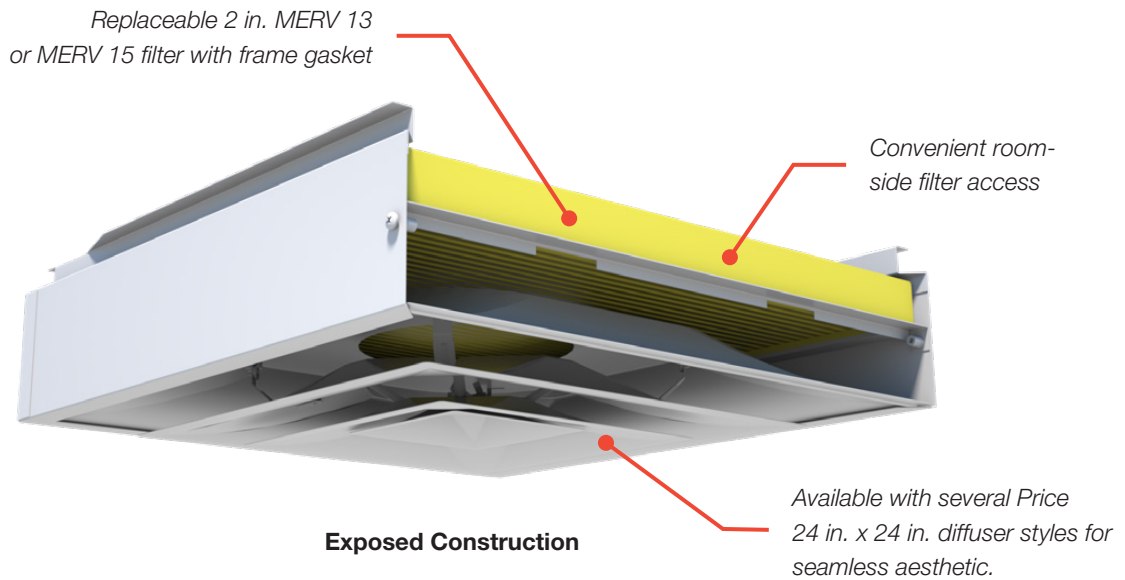
# FDM

## Filtered Diffuser Module

Easy to implement, the FDM can replace or modify existing diffusers to provide MERV 13 or MERV 15 filtration in a matter of minutes. Implementing filtration at each diffuser effectively reduces the concentration of airborne contaminants, thereby reducing the probability of exposure to those contaminants. Upgrading a typical overhead mixing system to include filters at each diffuser with the FDM requires very few changes to the overall HVAC system, keeping the cost of implementation low.



### Recessed Construction



### Exposed Construction

## QUICK AND EASY INSTALLATION

- + Easy to implement without any major changes to the HVAC system, the FDM simply replaces or modifies existing diffusers.
- + The FDM fits into a standard 1 in. t-bar ceiling grid and can be selected with 24 in. x 24 in. diffuser faces like square plaque or square cone diffusers to match an existing aesthetic.

## DISTRIBUTED FILTRATION

- + Filtration within each individual diffuser provides flexibility and zone-level contamination control reducing the probability of exposure to airborne particulate.

## RECESSED CONSTRUCTION

- + The FDM with recessed construction is installed on top of the t-bar ceiling grid, fully replacing existing diffusers and providing a seamless appearance from the room side.
- + Filter replacement requires access to the ceiling plenum, where filters can be slid in/out of the plenum box through a hinged access door.

## EXPOSED CONSTRUCTION

- + For extremely fast installation, the FDM with exposed construction is suspended from the t-bar ceiling grid, directly below existing diffusers eliminating the need for ductwork changes.
- + Held in place between the t-bar ceiling grid and the original diffuser, this attachment forces air from the original diffuser through a filter before being discharged through a secondary diffuser face.
- + Filters are accessible from the room side, by sliding the filter in or out of the side access panel.

## TYPICAL APPLICATIONS

The FDM is intended to quickly and easily add MERV 13 or MERV 15 filtration, at the diffuser level, to an existing HVAC system. This solution can be used in almost any space including offices, classrooms, and retail applications.

## CONSTRUCTION OPTIONS

- + Style
  - Recessed
  - Exposed
- + Filter
  - MERV 13
  - MERV 15

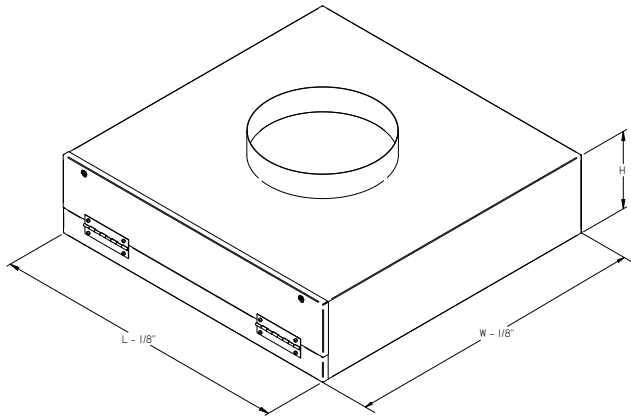


*Recessed*



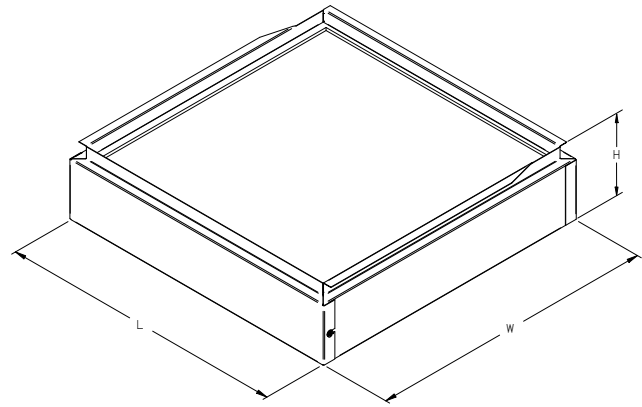
*Exposed*

**DIMENSIONAL DATA**  
 RECESSED



Nominal Sizes		
W x L	Inlet Sizes	H
24 in. x 24 in.	8, 10, 12	6 1/4 in.

**EXPOSED**



Nominal Sizes	
W x L	H (below ceiling)
24 in. x 24 in.	6 in.

# PERFORMANCE DATA

## SMD/AMD

Neck Velocity (fpm)		300	400	500	600	700	800	900
Duct Size 6 in. x 6 in.	Flow Rate (cfm)	75	100	125	150	175	200	225
	Static Pressure - MERV 13 (in. w.g.)	0.05	0.075	0.103	0.142	0.205	0.256	0.314
	Static Pressure - MERV 15 (in. w.g.)	0.09	0.115	0.143	0.182	0.225	0.276	0.334
	Sound (NC)	-	-	17	23	27	31	36
		A B	A B	A B	A B	A B	A B	A B
Duct Area 0.25 ft <sup>2</sup>	4A cfm/Side Throw (ft)	19	25	31	38	44	50	56
		4-6-12	5-8-15	7-10-16	8-12-18	9-14-19	11-15-21	12-16-22
	3A cfm/Side Throw (ft)	19 28	25 38	31 47	38 56	44 66	50 75	56 84
		4-6-12 5-7-14	5-8-15 6-10-16	7-10-16 8-12-18	8-12-18 10-14-20	9-14-19 11-15-22	11-15-21 13-16-23	12-16-22 14-17-25
	2S, 2G cfm/Side Throw (ft)	38	50	63	75	88	100	113
	6-8-15	7-11-18	9-14-20	11-15-22	13-17-24	15-18-25	15-19-27	
1S cfm/Side Throw (ft)	75	100	125	150	175	200	225	
	8-12-19	11-15-22	13-17-24	15-19-27	17-20-29	18-22-31	19-23-33	
Duct Size 9 in. x 9 in.	Flow Rate (cfm)	169	225	282	338	394	450	507
	Static Pressure - MERV 13 (in. w.g.)	0.07	0.095	0.133	0.172	0.225	0.296	0.354
	Static Pressure - MERV 15 (in. w.g.)	0.09	0.115	0.163	0.202	0.275	0.356	0.414
	Sound (NC)	-	-	21	27	31	35	39
		A B	A B	A B	A B	A B	A B	
Duct Area 0.56 ft <sup>2</sup>	4A cfm/Side Throw (ft)	42	56	71	85	99	113	127
		6-9-16	8-12-18	10-15-21	12-16-23	14-17-24	15-18-26	16-20-28
	3A cfm/Side Throw (ft)	42 63	56 84	71 106	85 127	99 148	113 169	127 190
		6-9-16 7-11-18	8-12-18 10-15-21	10-15-21 12-16-23	12-16-23 15-18-25	14-17-24 16-19-27	15-18-26 17-21-29	16-20-28 18-22-31
	2S, 2G cfm/Side Throw (ft)	85	113	141	169	197	225	254
	8-13-19	11-16-22	14-18-25	16-19-28	17-21-30	18-22-32	19-24-34	
1S cfm/Side Throw (ft)	169	225	282	338	394	450	507	
	12-17-24	16-19-27	18-22-31	19-24-34	21-26-36	22-27-39	21-29-41	
Duct Size 12 in. x 12 in.	Flow Rate (cfm)	300	400	500	600	700	800	900
	Static Pressure - MERV 13 (in. w.g.)	0.08	0.115	0.163	0.232	0.295	0.356	0.434
	Static Pressure - MERV 15 (in. w.g.)	0.11	0.165	0.223	0.262	0.335	0.406	0.494
	Sound (NC)	-	17	24	30	34	38	42
		A B	A B	A B	A B	A B	A B	
Duct Area 1.00 ft <sup>2</sup>	4A cfm/Side Throw (ft)	75	100	125	150	175	200	225
		8-12-19	11-15-22	13-17-24	15-19-27	17-20-29	18-22-31	19-23-33
	3A cfm/Side Throw (ft)	75 113	100 150	125 188	150 225	175 263	200 300	225 338
		8-12-19 10-15-21	11-15-22 13-17-24	13-17-24 16-19-27	15-19-27 17-21-30	17-20-29 19-23-32	18-22-31 20-24-35	19-23-33 21-26-37
	2S, 2G cfm/Side Throw (ft)	150	200	250	300	350	400	450
	11-16-23	15-19-26	17-21-30	19-23-32	20-25-35	22-26-37	23-28-40	
1S cfm/Side Throw (ft)	300	400	500	600	700	800	900	
	16-20-28	19-23-32	21-26-36	23-28-40	25-30-43	26-32-46	28-34-48	

For Performance Notes and Return Factors, see end of section.

## Core Style Legend



# PERFORMANCE DATA

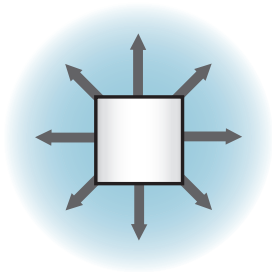
## SCD – 24 IN. X 24 IN. FACE SIZE

Listed Size	Neck Velocity (fpm)	400	500	600	700	800	900	1000	1200	1400	1600
6	Static Pressure - MERV 13 (in. w.g.)	0.025	0.027	0.032	0.055	0.06	0.066	0.072	0.095	0.111	0.129
	Static Pressure - MERV 15 (in. w.g.)	0.065	0.067	0.072	0.075	0.08	0.086	0.092	0.125	0.141	0.159
	Flow Rate (cfm)	78	98	118	137	157	176	196	235	274	314
	Sound (NC)	-	-	-	-	15	19	22	28	33	37
	Throw (ft.)	1-2-4	1-2-4	2-3-5	2-3-6	2-4-7	3-4-7	3-4-7	4-5-8	4-6-9	5-7-9
8	Static Pressure - MERV 13 (in. w.g.)	0.026	0.049	0.055	0.069	0.075	0.082	0.1	0.116	0.157	0.21
	Static Pressure - MERV 15 (in. w.g.)	0.066	0.069	0.075	0.099	0.105	0.112	0.15	0.166	0.217	0.24
	Flow Rate (cfm)	140	175	209	244	279	314	349	419	489	558
	Sound (NC)	-	-	-	-	19	22	26	31	36	40
	Throw (ft.)	2-2-5	2-3-6	2-4-7	3-4-8	3-5-9	4-6-9	4-6-10	5-7-11	6-8-12	7-9-12
10	Static Pressure - MERV 13 (in. w.g.)	0.049	0.064	0.082	0.089	0.118	0.128	0.17	0.215	0.256	0.311
	Static Pressure - MERV 15 (in. w.g.)	0.069	0.094	0.132	0.139	0.178	0.188	0.2	0.255	0.306	0.371
	Flow Rate (cfm)	218	273	327	382	436	491	545	654	763	872
	Sound (NC)	-	-	-	17	21	25	28	34	39	43
	Throw (ft.)	2-3-6	3-4-8	3-5-9	4-6-10	4-6-11	5-7-12	5-8-12	6-9-13	8-10-14	9-11-15
12	Static Pressure - MERV 13 (in. w.g.)	0.063	0.08	0.109	0.149	0.181	0.195	0.22	0.295	0.347	0.434
	Static Pressure - MERV 15 (in. w.g.)	0.093	0.13	0.169	0.179	0.221	0.235	0.27	0.355	0.437	0.534
	Flow Rate (cfm)	314	393	471	550	628	707	785	942	1099	1256
	Sound (NC)	-	-	-	19	24	27	30	36	41	45
	Throw (ft.)	3-4-8	3-5-10	4-6-11	5-7-12	5-8-13	6-9-14	7-10-15	8-11-16	9-12-17	11-13-19

**Performance Notes:**

1. Tested in accordance with ASHRAE Standard 70 - 2006 *Method of Testing for Rating the Performance of Air Outlets and Inlets*.
2. Airflow is in cubic feet per minute [cfm].
3. NC, sound pressure levels, are based on a room absorption of 10 dB re 10<sup>-12</sup> Watts, and a single diffuser/grille.
4. Blanks "-" indicate an NC level below 15.
5. All pressures are in inches of water column [in. w.g.].
6. Pressures not listed can be calculated using the following formula:  $P_{total} = P_{static} + P_{velocity}$
7. Throw data is based on supply air and room air being at isothermal conditions.
8. Throw data is given in feet [ft] to terminal velocities of:  
150 fpm (minimum)  
100 fpm (middle)  
50 fpm (maximum).
9. Diffuser tested with a ceiling. If the diffuser is mounted on an exposed duct, multiply the throw in the performance table by 0.70
10. Does not include effects of ceiling radiation damper (SCD-FR)

## Throw Diagram



Plan View - Horizontal Radial Pattern

# PERFORMANCE DATA

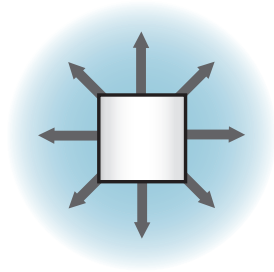
## SPD – 24 IN. X 24 IN. FACE SIZE

Listed Size	Neck Velocity (fpm)	400	500	600	700	800	900	1000	1200	1400	1600
6	Static Pressure - MERV 13 (in. w.g.)	0.02	0.02	0.021	0.021	0.041	0.043	0.043	0.043	0.055	0.056
	Static Pressure - MERV 15 (in. w.g.)	0.06	0.06	0.061	0.061	0.061	0.063	0.063	0.063	0.085	0.086
	Flow Rate (cfm)	78	98	118	137	157	176	196	235	274	314
	Sound (NC)	-	-	-	-	-	19	22	29	34	38
	Throw (ft)	1-2-4	1-2-4	2-3-5	2-3-6	2-4-6	3-4-7	3-4-7	4-5-8	4-6-9	5-7-9
8	Static Pressure - MERV 13 (in. w.g.)	0.028	0.053	0.06	0.066	0.084	0.093	0.113	0.136	0.184	0.245
	Static Pressure - MERV 15 (in. w.g.)	0.068	0.073	0.08	0.086	0.114	0.123	0.163	0.186	0.244	0.275
	Flow Rate (cfm)	140	175	209	244	279	314	349	419	489	558
	Sound (NC)	-	-	-	-	19	23	27	33	38	43
	Throw (ft)	2-2-5	2-3-6	2-4-7	3-4-8	3-5-9	4-6-9	4-6-10	5-7-11	6-8-12	7-9-12
10	Static Pressure - MERV 13 (in. w.g.)	0.059	0.079	0.103	0.117	0.155	0.176	0.228	0.299	0.371	0.461
	Static Pressure - MERV 15 (in. w.g.)	0.079	0.109	0.153	0.167	0.215	0.236	0.258	0.339	0.421	0.521
	Flow Rate (cfm)	218	273	327	382	436	491	545	654	763	872
	Sound (NC)	-	-	-	18	22	26	30	36	41	46
	Throw (ft)	2-3-6	3-4-8	3-5-9	4-6-10	4-6-11	5-7-12	5-8-12	6-9-13	8-10-14	9-11-15
12	Static Pressure - MERV 13 (in. w.g.)	0.081	0.109	0.151	0.206	0.236	0.29	0.337	0.463	0.576	0.734
	Static Pressure - MERV 15 (in. w.g.)	0.111	0.159	0.211	0.236	0.266	0.33	0.387	0.523	0.666	0.834
	Flow Rate (cfm)	314	393	471	550	628	707	785	942	1099	1256
	Sound (NC)	-	-	15	21	25	29	33	39	44	49
	Throw (ft)	3-4-8	3-5-10	4-6-11	5-7-12	5-8-13	6-9-14	7-10-15	8-11-16	9-12-17	11-13-19

**Performance Notes:**

1. Tested in accordance with ASHRAE Standard 70 - 2006 "Method of Testing for Rating the Performance of Air Outlets and Inlets."
2. Airflow is in cubic feet per minute [cfm].
3. NC, sound pressure levels, are based on a room absorption of 10 dB re 10<sup>-12</sup> Watts, and a single diffuser/grille.
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8. Throw data is given in feet [ft] to terminal velocities of:  
150 fpm (minimum)  
100 fpm (middle)  
50 fpm (maximum)
9. Diffuser tested with a ceiling. If the diffuser is mounted on an exposed duct, multiply the radii of diffusion in the table by 0.70.
10. Does not include effects of ceiling radiation damper (SPD-FR)

## Throw Diagram



Plan View - Horizontal Radial Pattern



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