

## AIRFOIL BLADE — RETURN AIR

### 45° DEFLECTION, 3/4 (19) BLADE SPACING

The airfoil blades are fixed at a 45° angle. This grille is vision proof when installed in a low or high sidewall location with grille blade deflection facing away from the line of sight. In addition, a diverse selection of mounting frames are available to suit many suspended ceiling designs.

**Aluminum – Models 7145H, 7145V**

**Page F79**

Suffix '-O' adds a steel OBD

Suffix '-OA' adds an aluminum OBD

### 0° DEFLECTION, 3/4 (19) BLADE SPACING

The airfoil blades are fixed at a 45° angle. This grille is vision proof when installed in a low or high sidewall location with grille blade deflection facing away from the line of sight. In addition, a diverse selection of mounting frames are available to suit many suspended ceiling designs.

**Aluminum – Models 71FH, 71FV**

**Page F79**

Suffix '-O' adds a steel OBD

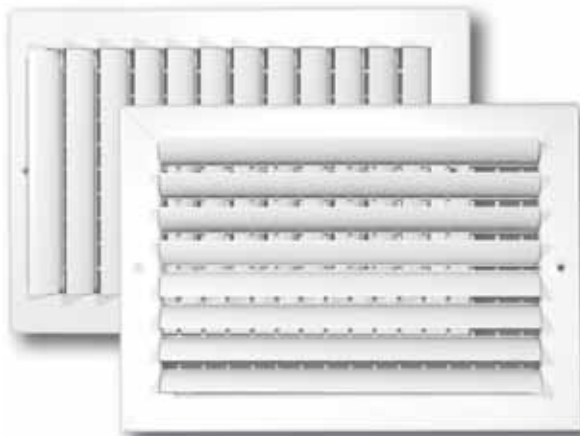
Suffix '-OA' adds an aluminum OBD



Models 71FH, 7145H

## CURVED BLADE DIRECTIONAL GRILLES AND REGISTERS

Nailor's curved blade directional grilles and registers are designed to meet the demand for top quality and competitive prices. Constructed with extruded aluminum blades, this model series is unobtrusive in appearance for architectural excellence. The grilles and registers may be used in sidewall and ceiling applications. Optional opposed blade dampers have a screwdriver slot operator for adjustment through the face of the register. The 1 1/4" (32) frames have countersunk screw holes for an inconspicuous appearance.



Models 51CD, 61CD

### CURVED BLADE WITH DEFLECTION VANES

The models in this series have individually adjustable curved blades that provide a true directional pattern. They also incorporate a set of rear adjustable vanes for complete directional control and flow equalization. They are available with one or two way directional throw.

**Aluminum – Model 51CD**

**Page F86**

Suffix '-O' adds a steel OBD

Suffix '-OA' adds an aluminum OBD

**Steel – Model 61CD**

**Page F88**

Suffix '-O' adds a steel OBD

### CURVED BLADE WITHOUT DEFLECTION VANES

The models in this series have curved blades that provide a true directional pattern. There are twelve available patterns to choose from.

**Aluminum – Model 51C**

One and Two-Way

**Page F86**

Three and Four-Way

**Page F87**

Suffix '-O' adds a steel OBD

Suffix '-OA' adds an aluminum OBD

**Steel – Model 61C**

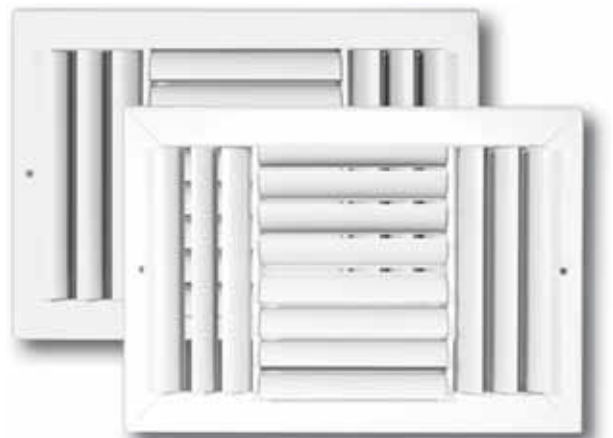
One and Two-Way

**Page F88**

Three and Four-Way

**Page F89**

Suffix '-O' adds a steel OBD



Models 51C, 61C

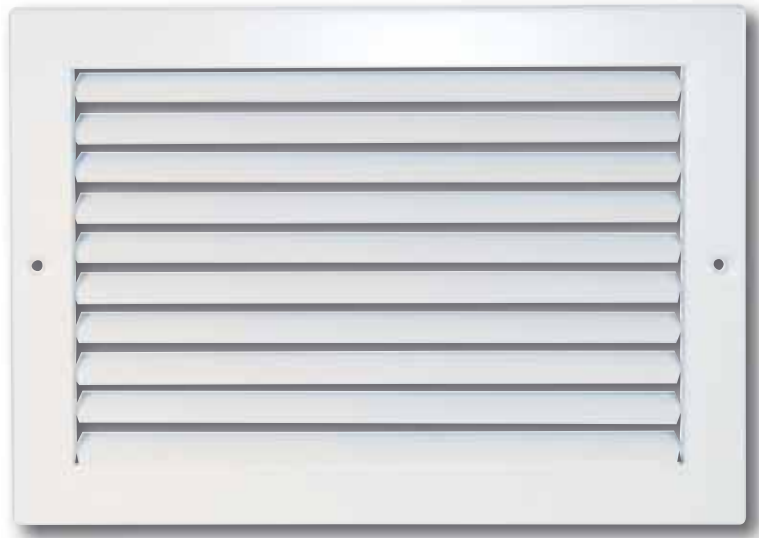
## AIRFOIL BLADE RETURN GRILLES AND REGISTERS

- FIXED 45° OR 0° BLADE DEFLECTION
- EXTRUDED ALUMINUM
- PREMIUM QUALITY
- PREMIUM PERFORMANCE

### Models:

7145H, 7145V, 71FH and 71FV

- Suffix '-O' adds a steel opposed blade damper
- Suffix '-OA' adds an aluminum opposed blade damper



Model 7145H

Models 7145H and 71FH Return Grilles and Registers have fixed horizontal blades (parallel to width/first specified dim.) spaced on 3/4" (19) centers with 45° or 0° straight face deflection.

Models 7145V and 71FV Return Grilles and Registers have fixed vertical blades (parallel to height/second specified dim.) spaced on 3/4" (19) centers with 45° or 0° straight face deflection. Their appearance complements the supply grilles and registers in the 7100 Series.

The streamlined airfoil shaped blades and open spacing maintain a minimum effective free area capacity of 55% for 45° and 75% for 0°, which minimizes intake velocity, reduces inlet pressure and provides quiet operation. The smooth shapes do not accumulate lint and plug up. Deflected blade grilles installed in a low or high side wall location are vision-proof with the grille blade deflection facing away from the line of sight.

**Frame/Border Type S Surface Mount** – This style has a flanged frame with an overall face dimension that is 1 3/4" (44) larger than the listed duct size. It is furnished as standard with countersunk screw holes and mounting screws.

**Frame/Border Type L Lay-in T-Bar** – This style is similar to above, but is sized on the overall face dimension to suit standard lay-in T-bar ceiling modules and is supplied less screw holes. It is the model of choice for ducted return air applications. The nominal duct size is 2" (51) smaller than the ceiling module. When installed, the frame/border is partially visible within the perimeter of the ceiling opening and provides a visually appealing architectural finish.

**Frame/Border Type A Lay-in T-Bar, Concealed Angle Frame** – This style has a narrow corrosion-resistant steel frame that surrounds the core and is invisible when installed in standard lay-in T-Bar ceilings. It is suited for non-ducted plenum return air applications. This frame also permits the attachment of an optional opposed blade damper.

**Frame/Border Type F Narrow Regressed T-Bar** – This style has been specially designed for return air applications to integrate with and complement "Fineline®" type suspended ceiling systems. It is suited for non-ducted plenum return air applications. The corrosion-resistant steel frame includes a support rail on four sides, which allows for the full area of the ceiling module to be utilized.

Panel mounting is also available in an assortment of styles to suit most other ceiling types. Refer to page number F194 in the Options and Accessories section for further information.

### STANDARD FEATURES:

• Frame/border Type S has 1 1/4" (32) wide face border with a 1" (25) overlap margin standard, furnished with countersunk screw holes and mounting screws.

NF Narrow Frame with 1" (25) face border optional. Concealed mounting is optional.

• Available in sizes from 4" x 4" to 48" x 48" (102 x 102 to 1219 x 1219) in single section construction. Multiple section assemblies are available.

### CONSTRUCTION MATERIAL:

• Aluminum construction – rigid, heavy gauge extruded frames with reinforced mitered corners.

• Aluminum blades – streamlined airfoil shaped extruded blades on 3/4" (19) centers. Blades positively hold deflection setting under all conditions of velocity and pressure.

• Steel or aluminum integral dampers are opposed blade design with screwdriver slot operator.

### FINISH OPTIONS:

• AW Appliance White finish is standard. Other finishes are available.

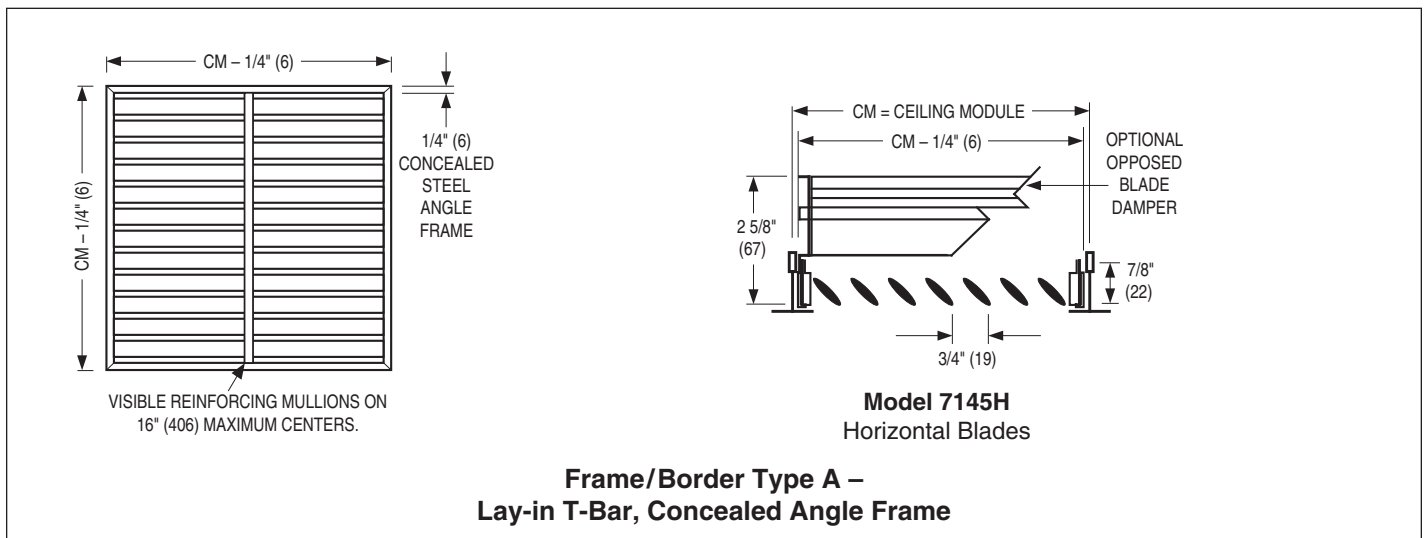
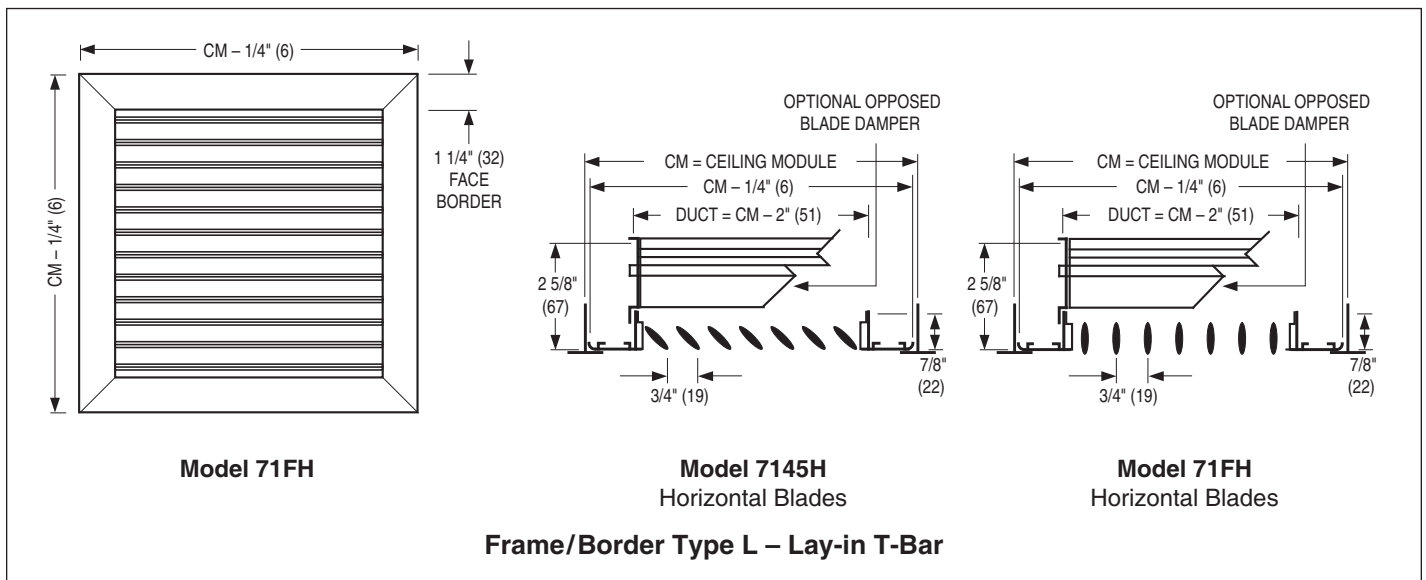
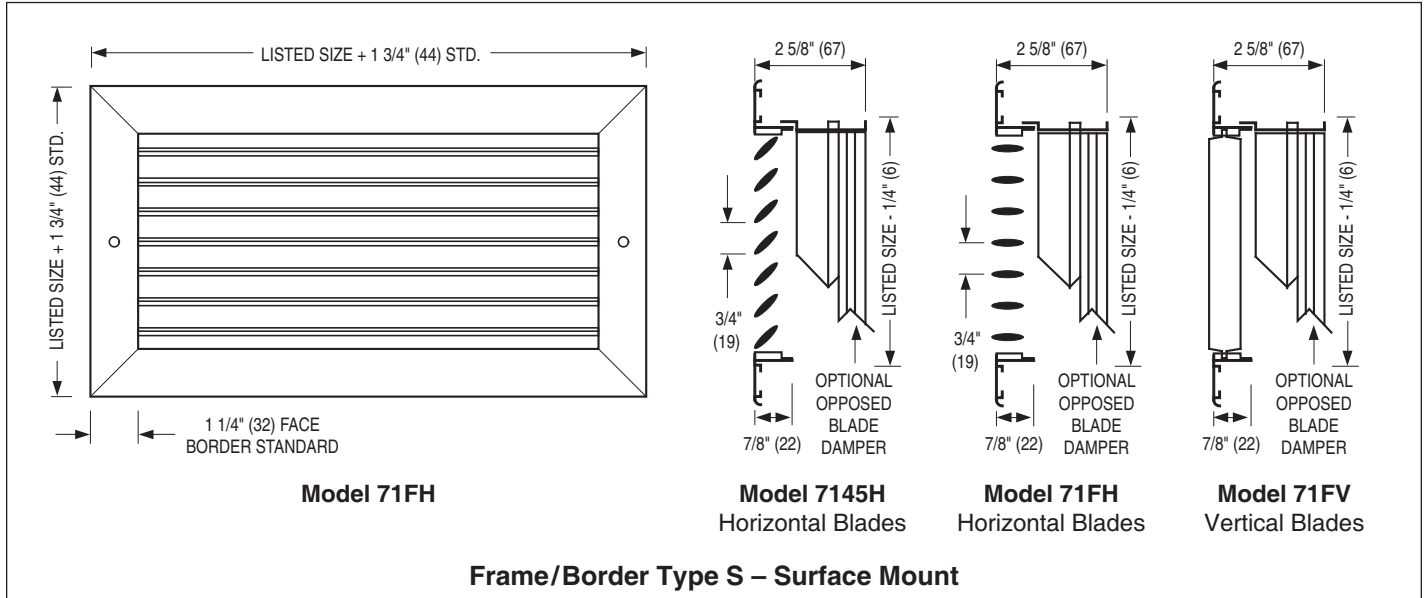
### OPTIONS AND ACCESSORIES:

- IS Insect Screen
- PF Plaster Frame
- GK Foam Gasket
- EQT Earthquake Tabs

For additional options and accessories, see page F191.

## DIMENSIONAL DATA:

### 7100 SERIES RETURN 3/4" (19) BLADE SPACING



## PERFORMANCE DATA:

### FIXED BLADE RETURN GRILLES AND REGISTERS • AIRFOIL BLADE 7100 SERIES

#### MODELS: 7145H, 7145V

Listed Duct Size (inches)	Alternate Sizes (inches)	Core Area (sq. ft.)	Ak Factor	Core Velocity Velocity Pressure Neg. Static Pressure	100	200	300	400	500	600	700	800	900	1000
					.001 .003	.002 .011	.006 .025	.010 .045	.016 .070	.022 .101	.031 .138	.040 .180	.050 .228	.062 .281
6 x 6	8 x 4 10 x 4	0.20	0.23	CFM	20	40	60	80	100	120	140	160	180	200
				Noise Criteria	-	-	-	-	-	17	22	26	30	34
8 x 6	10 x 5 12 x 4	0.28	0.30	CFM	28	56	84	112	140	168	196	224	252	280
				Noise Criteria	-	-	-	-	-	18	23	27	31	35
10 x 6	12 x 5 16 x 4	0.35	0.37	CFM	35	70	105	140	175	210	245	280	315	350
				Noise Criteria	-	-	-	-	-	19	24	28	32	36
8 x 8	14 x 5	0.38	0.40	CFM	38	76	114	152	190	228	266	304	342	380
				Noise Criteria	-	-	-	-	15	20	25	29	33	37
12 x 6	18 x 4	0.42	0.45	CFM	42	84	126	168	210	252	294	336	378	420
				Noise Criteria	-	-	-	-	16	21	25	29	33	37
12 x 8	16 x 6 24 x 4	0.58	0.59	CFM	58	116	174	232	290	348	406	464	522	580
				Noise Criteria	-	-	-	-	17	22	26	31	35	39
10 x 10	14 x 7 26 x 4	0.61	0.62	CFM	61	122	183	244	305	366	427	488	549	610
				Noise Criteria	-	-	-	-	17	22	27	32	35	39
18 x 6	14 x 8 28 x 4	0.65	0.67	CFM	65	130	195	260	325	390	455	520	585	650
				Noise Criteria	-	-	-	-	18	23	28	32	36	39
12 x 10	16 x 8 24 x 5	0.74	0.74	CFM	74	148	222	296	370	444	518	592	666	740
				Noise Criteria	-	-	-	-	18	23	28	33	37	40
12 x 12	14 x 10 18 x 8	0.90	0.89	CFM	90	180	270	360	450	540	630	720	810	900
				Noise Criteria	-	-	-	-	19	24	29	34	37	40
14 x 14	16 x 12 20 x 10	1.24	1.22	CFM	124	248	372	496	620	744	868	992	1116	1240
				Noise Criteria	-	-	-	-	19	24	29	34	38	41
18 x 12	16 x 14 20 x 10	1.37	1.34	CFM	137	274	411	548	685	822	959	1096	1233	1370
				Noise Criteria	-	-	-	15	20	25	30	35	38	41
24 x 10	20 x 12 30 x 8	1.52	1.49	CFM	152	304	456	608	760	912	1064	1216	1368	1520
				Noise Criteria	-	-	-	15	20	25	30	36	39	42
16 x 16	18 x 14 22 x 12	1.64	1.58	CFM	164	328	492	656	820	984	1148	1312	1476	1640
				Noise Criteria	-	-	-	16	21	26	31	36	39	42
24 x 12	18 x 16 20 x 14	1.85	1.78	CFM	185	370	555	740	925	1110	1295	1480	1665	1850
				Noise Criteria	-	-	-	16	21	26	31	36	39	43
18 x 18	20 x 16 24 x 14	2.10	2.01	CFM	210	420	630	840	1050	1260	1470	1680	1890	2100
				Noise Criteria	-	-	-	16	21	27	32	37	40	43
30 x 12	20 x 18 22 x 16	2.32	2.23	CFM	232	464	696	928	1160	1392	1624	1856	2088	2320
				Noise Criteria	-	-	-	17	22	27	32	37	40	44
20 x 20	24 x 18 26 x 16	2.61	2.48	CFM	261	522	783	1044	1305	1566	1827	2088	2349	2610
				Noise Criteria	-	-	-	17	22	28	33	38	41	44
22 x 22	24 x 20 26 x 18	3.17	3.00	CFM	317	634	951	1268	1585	1902	2219	2536	2853	3170
				Noise Criteria	-	-	-	18	23	29	33	38	41	45
30 x 18	24 x 22 34 x 16	3.54	3.34	CFM	354	708	1062	1416	1770	2124	2478	2832	3186	3540
				Noise Criteria	-	-	-	18	23	29	34	39	42	46
24 x 24	26 x 22 28 x 20	3.79	3.56	CFM	379	758	1137	1516	1895	2274	2653	3032	3411	3790
				Noise Criteria	-	-	-	18	23	29	34	39	42	46
36 x 18	32 x 20 40 x 16	4.27	4.01	CFM	427	854	1281	1708	2135	2562	2989	3416	3843	4270
				Noise Criteria	-	-	-	19	24	30	35	40	43	47
26 x 26	28 x 24 48 x 14	4.47	4.19	CFM	447	894	1341	1788	2235	2682	3129	3576	4023	4470
				Noise Criteria	-	-	-	19	24	30	35	40	43	47
30 x 24	28 x 26 32 x 22	4.77	4.46	CFM	477	954	1431	1908	2385	2862	3339	3816	4293	4770
				Noise Criteria	-	-	-	20	25	31	36	40	44	48
28 x 28	30 x 26 36 x 22	5.20	4.85	CFM	520	1040	1560	2080	2600	3120	3640	4160	4680	5200
				Noise Criteria	-	-	-	20	25	31	36	41	44	48
36 x 24	30 x 28 40 x 22	5.74	5.35	CFM	574	1148	1722	2296	2870	3444	4018	4592	5166	5740
				Noise Criteria	-	-	-	20	26	32	36	41	45	49
30 x 30	34 x 26 38 x 24	5.99	5.57	CFM	599	1198	1797	2396	2995	3594	4193	4792	5391	5990
				Noise Criteria	-	-	-	20	26	32	37	41	45	49

For performance data notes, see F82.

## PERFORMANCE DATA:

### FIXED BLADE RETURN GRILLES AND REGISTERS • AIRFOIL BLADE 7100 SERIES

#### MODELS: 7145H, 7145V

Listed Duct Size (inches)	Alternate Sizes (inches)	Core Area (sq. ft.)	Ak Factor	Core Velocity Velocity Pressure Neg. Static Pressure	100 .001 .003	200 .002 .011	300 .006 .025	400 .010 .045	500 .016 .070	600 .022 .101	700 .031 .138	800 .040 .180	900 .050 .228	1000 .062 .281
32 x 32	36 x 30 46 x 22 38 x 28	6.84	6.34	CFM Noise Criteria	684 —	1368 —	2052 —	2736 21	3420 27	4104 33	4788 37	5472 42	6156 46	6840 50
48 x 24	34 x 34 38 x 30 36 x 32 48 x 28	7.69	7.13	CFM Noise Criteria	769 —	1538 —	2307 15	3076 21	3845 27	4614 33	5383 38	6152 42	6921 46	7690 50
36 x 36	38 x 34 46 x 28 42 x 30 48 x 26	8.69	8.02	CFM Noise Criteria	869 —	1738 —	2607 15	3476 22	4345 27	5214 34	6083 39	6952 43	7821 47	8690 51
38 x 38	42 x 34 48 x 30 44 x 34	9.70	8.94	CFM Noise Criteria	970 —	1940 —	2910 16	3880 22	4850 28	5820 34	6790 39	7760 43	8730 47	9700 51
40 x 40	42 x 36 48 x 32 46 x 34	10.77	9.90	CFM Noise Criteria	1077 —	2154 —	3231 16	4308 22	5385 28	6462 34	7539 40	8616 43	9693 48	10770 52
42 x 42	44 x 40 48 x 36 46 x 38	11.89	10.92	CFM Noise Criteria	1189 —	2378 —	3567 17	4756 23	5945 29	7134 35	8323 40	9512 44	10701 48	11890 52
44 x 44	46 x 42	13.07	11.98	CFM Noise Criteria	1307 —	2614 —	3921 17	5228 23	6535 29	7842 35	9149 40	10456 44	11763 48	13070 52
46 x 46		14.30	13.10	CFM Noise Criteria	1430 —	2860 —	4290 18	5720 24	7150 30	8580 36	10010 41	11440 45	12870 49	14300 53
48 x 48		15.59	14.26	CFM Noise Criteria	1559 —	3118 —	4677 18	6236 24	7795 30	9354 36	10913 41	12472 45	14031 49	15590 53

#### Performance Notes:

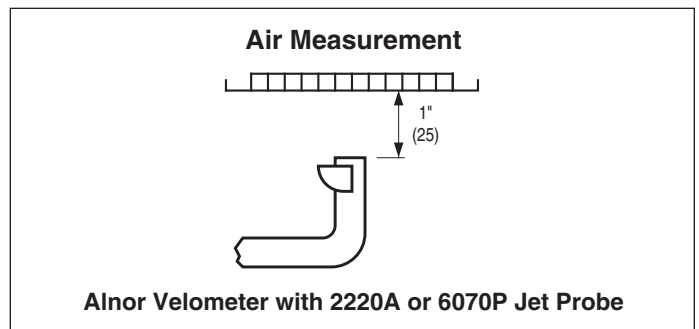
- All pressures are in inches w.g..
- Core Velocity is in feet per minute.
- Performance data is for grille with opposed blade damper. Apply the following correction factors for grille without damper.

**Neg. Static Pressure** Listed Value x 0.91.

**Noise Criteria** Listed value – 4.

4. Noise Criteria (NC) values are based on a room absorption of 10 dB, re 10<sup>-12</sup> watts. Dash (—) in space denotes a Noise Criteria level of less than 15.

5. Data derived from tests conducted in accordance with ANSI/ASHRAE Standard 70 – 2006.



#### Airflow Measurements:

- Balancing factors are applicable with or without dampers, providing uniform airflow exists into grille or register.
- Take velocity readings at a number of locations on the inlet face (a minimum of 4), while positioning probe as shown above, one inch out from the face.
- Total the various velocity readings and divide by the number of readings taken to arrive at an average inlet velocity (V<sub>k</sub> in FPM).
- Calculate the airflow (CFM) by multiplying the average velocity by the appropriate Ak factor.  
Airflow (CFM) = Average velocity (V<sub>k</sub>) x Ak.

## PERFORMANCE DATA:

### FIXED BLADE RETURN GRILLES AND REGISTERS • AIRFOIL BLADE 7100 SERIES

#### MODELS: 71FH, 71FV

Listed Duct Size (inches)	Alternate Sizes (inches)	Core Area (sq. ft.)	Ak Factor	Core Velocity Velocity Pressure Neg. Static Pressure	100	200	300	400	500	600	700	800	900	1000
					.001 .002	.002 .007	.006 .017	.010 .030	.016 .047	.022 .067	.031 .092	.040 .120	.050 .152	.062 .187
6 x 6	8 x 4 10 x 4	0.20	0.23	CFM Noise Criteria	20 -	40 -	60 -	80 -	100 -	120 17	140 22	160 26	180 30	200 34
8 x 6	10 x 5 12 x 4	0.28	0.30	CFM Noise Criteria	28 -	56 -	84 -	112 -	140 -	168 18	196 23	224 27	252 31	280 35
10 x 6	12 x 5 16 x 4	0.35	0.37	CFM Noise Criteria	35 -	70 -	105 -	140 -	175 -	210 19	245 24	280 28	315 32	350 36
8 x 8	14 x 5	0.38	0.40	CFM Noise Criteria	38 -	76 -	114 -	152 -	190 15	228 20	266 25	304 29	342 33	380 37
12 x 6	18 x 4	0.42	0.45	CFM Noise Criteria	42 -	84 -	126 -	168 -	210 -	252 17	294 20	336 23	378 27	420 31
12 x 8	16 x 6 24 x 4	0.58	0.59	CFM Noise Criteria	58 -	116 -	174 -	232 -	290 -	348 17	406 20	464 24	522 28	580 32
10 x 10	14 x 7 26 x 4	0.61	0.62	CFM Noise Criteria	61 -	122 -	183 -	244 -	305 -	366 17	427 20	488 25	549 28	610 33
18 x 6	14 x 8 30 x 4 28 x 4	0.65	0.67	CFM Noise Criteria	65 -	130 -	195 -	260 -	325 -	390 18	455 21	520 25	585 29	650 33
12 x 10	16 x 8 20 x 6 24 x 5	0.74	0.74	CFM Noise Criteria	74 -	148 -	222 -	296 -	370 -	444 19	518 22	592 26	666 30	740 33
12 x 12	14 x 10 24 x 6 18 x 8 38 x 4	0.90	0.89	CFM Noise Criteria	90 -	180 -	270 -	360 -	450 15	540 19	630 22	720 27	810 30	900 33
14 x 14	16 x 12 24 x 8 20 x 10 34 x 6	1.24	1.22	CFM Noise Criteria	124 -	248 -	372 -	496 -	620 15	744 20	868 23	992 27	1116 31	1240 34
18 x 12	16 x 14 28 x 8 20 x 10 38 x 6	1.37	1.34	CFM Noise Criteria	137 -	274 -	411 -	548 -	685 16	822 21	959 24	1096 29	1233 32	1370 35
24 x 10	20 x 12 30 x 8	1.52	1.49	CFM Noise Criteria	152 -	304 -	456 -	608 -	760 16	912 21	1064 25	1216 30	1368 33	1520 36
16 x 16	18 x 14 30 x 10 22 x 12 36 x 8	1.64	1.58	CFM Noise Criteria	164 -	328 -	492 -	656 -	820 17	984 21	1148 25	1312 30	1476 33	1640 36
24 x 12	18 x 16 30 x 10 20 x 14 36 x 8	1.85	1.78	CFM Noise Criteria	185 -	370 -	555 -	740 -	925 17	1110 22	1295 25	1480 30	1665 33	1850 37
18 x 18	20 x 16 28 x 12 24 x 14 32 x 10	2.10	2.01	CFM Noise Criteria	210 -	420 -	630 -	840 -	1050 17	1260 22	1470 26	1680 31	1890 34	2100 37
30 x 12	20 x 18 26 x 14 22 x 16 36 x 10	2.32	2.23	CFM Noise Criteria	232 -	464 -	696 -	928 -	1160 17	1392 22	1624 26	1856 31	2088 34	2320 38
20 x 20	24 x 18 30 x 14 26 x 16 36 x 12	2.61	2.48	CFM Noise Criteria	261 -	522 -	783 -	1044 -	1305 17	1566 22	1827 26	2088 31	2349 34	2610 38
22 x 22	24 x 20 30 x 16 26 x 18 36 x 14	3.17	3.00	CFM Noise Criteria	317 -	634 -	951 -	1268 -	1585 18	1902 23	2219 27	2536 31	2853 34	3170 38
30 x 18	24 x 22 40 x 14 34 x 16	3.54	3.34	CFM Noise Criteria	354 -	708 -	1062 -	1416 -	1770 18	2124 23	2478 27	2832 32	3186 35	3540 39
24 x 24	26 x 22 32 x 18 28 x 20 36 x 16	3.79	3.56	CFM Noise Criteria	379 -	758 -	1137 -	1516 -	1895 -	2274 -	2653 -	3032 -	3411 -	3790 -
36 x 18	32 x 20 46 x 14 40 x 16	4.27	4.01	CFM Noise Criteria	427 -	854 -	1281 -	1708 15	2135 20	2562 24	2989 28	3416 33	3843 36	4270 40
26 x 26	28 x 24 48 x 14	4.47	4.19	CFM Noise Criteria	447 -	864 -	1341 -	1788 15	2235 20	2682 24	3129 28	3576 33	4023 36	4470 40
30 x 24	28 x 26 36 x 20 32 x 22 40 x 18	4.77	4.46	CFM Noise Criteria	477 -	954 -	1431 -	1908 16	2385 21	2862 25	3339 29	3816 33	4293 37	4770 41
28 x 28	30 x 26 40 x 20 36 x 22	5.20	4.85	CFM Noise Criteria	520 -	1040 -	1560 -	2080 16	2600 21	3120 25	3640 29	4160 34	4680 37	5200 41
36 x 24	30 x 28 44 x 20 40 x 22	5.74	5.35	CFM Noise Criteria	574 -	1148 -	1722 -	2296 16	2870 21	3444 25	4018 29	4592 34	5166 38	5740 42
30 x 30	34 x 26 48 x 20 38 x 24	5.99	5.57	CFM Noise Criteria	599 -	1198 -	1797 -	2396 16	2995 21	3594 26	4193 30	4792 34	5391 38	5990 42

GRILLES AND REGISTERS

F

For performance data notes, see F84.

## PERFORMANCE DATA:

### FIXED BLADE RETURN GRILLES AND REGISTERS • AIRFOIL BLADE 7100 SERIES

#### MODELS: 71FH, 71FV

Listed Duct Size (inches)	Alternate Sizes (inches)	Core Area (sq. ft.)	Ak Factor	Core Velocity Velocity Pressure Neg. Static Pressure	100	200	300	400	500	600	700	800	900	1000
					.001 .002	.002 .007	.006 .017	.010 .030	.016 .047	.022 .067	.031 .092	.040 .120	.050 .152	.062 .187
32 x 32	36 x 30 46 x 22 38 x 28	6.84	6.34	CFM	684	1368	2052	2736	3420	4104	4788	5472	6156	6840
				Noise Criteria	-	-	-	16	22	26	30	35	39	43
48 x 24	34 x 34 38 x 30 36 x 32 48 x 28	7.69	7.13	CFM	769	1538	2307	3076	3845	4614	5383	6152	6921	7690
				Noise Criteria	-	-	-	16	22	27	31	35	39	43
36 x 36	38 x 34 46 x 28 42 x 30 48 x 26	8.69	8.02	CFM	869	1738	2607	3476	4345	5214	6083	6952	7821	8690
				Noise Criteria	-	-	-	17	22	27	32	36	40	44
38 x 38	42 x 34 48 x 30 44 x 34	9.70	8.94	CFM	970	1940	2910	3880	4850	5820	6790	7760	8730	9700
				Noise Criteria	-	-	-	17	23	28	32	36	40	44
40 x 40	42 x 36 48 x 32 46 x 34	10.77	9.90	CFM	1077	2154	3231	4308	5385	6462	7539	8616	9693	10770
				Noise Criteria	-	-	-	18	24	28	33	36	41	45
42 x 42	44 x 40 48 x 36 46 x 38	11.89	10.92	CFM	1189	2378	3567	4756	5945	7134	8323	9512	10701	11890
				Noise Criteria	-	-	-	18	24	29	33	37	41	45
44 x 44	46 x 42	13.07	11.98	CFM	1307	2614	3921	5228	6535	7842	9149	10456	11763	13070
				Noise Criteria	-	-	-	18	24	29	33	37	41	45
46 x 46		14.30	13.10	CFM	1430	2860	4290	5720	7150	8580	10010	11440	12870	14300
				Noise Criteria	-	-	-	19	25	30	34	38	42	46
48 x 48		15.59	14.26	CFM	1559	3118	4677	6236	7795	9354	10913	12472	14031	15590
				Noise Criteria	-	-	-	19	25	30	34	38	42	46

#### Performance Notes:

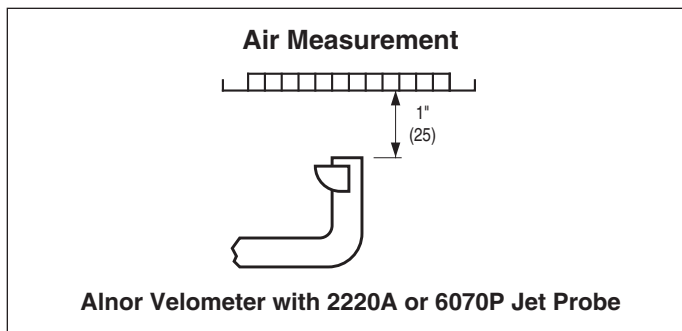
- All pressures are in inches w.g..
- Core Velocity is in feet per minute.
- Performance data is for grille with opposed blade damper. Apply the following correction factors for grille without damper.

**Neg. Static Pressure** Listed Value x 0.91.

**Noise Criteria** Listed value - 4.

4. Noise Criteria (NC) values are based on a room absorption of 10 dB, re 10<sup>-12</sup> watts. Dash (-) in space denotes a Noise Criteria level of less than 15.

5. Data derived from tests conducted in accordance with ANSI/ASHRAE Standard 70 - 2006.



#### Airflow Measurements:

- Balancing factors are applicable with or without dampers, providing uniform airflow exists into grille or register.
- Take velocity readings at a number of locations on the inlet face (a minimum of 4), while positioning probe as shown above, one inch out from the face.
- Total the various velocity readings and divide by the number of readings taken to arrive at an average inlet velocity (Vk in FPM).
- Calculate the airflow (CFM) by multiplying the average velocity by the appropriate Ak factor.  
Airflow (CFM) = Average velocity (Vk) x Ak.

## HOW TO ORDER OR TO SPECIFY

### MODEL SERIES: 7100

### ALUMINUM AIRFOIL BLADE RETURN GRILLES AND REGISTERS

EXAMPLE: 7145H - O - 24 x 12 - S - — - AW - DMI - A - —

- |  |  |  |
|--|--|--|
| <p><b>1. Models</b></p> <p><b>Horizontal/Long Dimension Blades:</b></p> <p>71FH Fixed, 0° Deflection,<br/>3/4" (19) Spacing</p> <p>7145H Fixed, 45° Deflection,<br/>3/4" (19) Spacing</p> <p><b>Vertical/Short Dimension Blades:</b></p> <p>71FV Fixed, 0° Deflection,<br/>3/4" (19) Spacing</p> <p>7145V Fixed, 45° Deflection,<br/>3/4" (19) Spacing</p> | <p>FPA Aluminum Finline® Panel</p> <p>SPS Steel Spline Panel</p> <p>SPA Aluminum Spline Panel</p> <p>MPS Steel Metal Pan Panel</p> <p>MPA Aluminum Metal Pan Panel</p> <p>TPS Steel Tegular Panel</p> <p>TPA Aluminum Tegular Pan Panel</p> <p><b>5. Ceiling Module Size</b></p> <p><b>Panel Size</b><br/>(Use only for panel mounting, frame/<br/>border Types PL, SP, MP, FP and TP)</p> <p>— None (default)</p> <p><b>Imperial (inches)</b><br/>12 x 12, 20 x 20, 24 x 12, 24 x 24,<br/>36 x 12, 36 x 24, 48 x 12, 48 x 24</p> <p><b>Metric (mm)</b><br/>300 x 300, 500 x 500, 600 x 300,<br/>600 x 600, 900 x 300, 900 x 600,<br/>1200 x 300, 1200 x 600</p> <p><b>6. Finish</b></p> <p>AW Appliance White (default)</p> <p>AL Aluminum</p> <p>BK Black</p> <p>BW British White</p> <p>LBP Light Bronze Paint</p> <p>MBP Medium Bronze Paint</p> <p>DBP Dark Bronze Paint</p> <p>MI Mill</p> <p>PC Prime Coat</p> <p>PPA Paint Prepared Aluminum</p> <p>SA Satin Anodized (clear)</p> <p>SP Special Custom Color</p> | <p><b>8. Fastening</b><br/>(only for frame/border Types S, NF)</p> <p>A Screw Holes (default)</p> <p>C Concealed Mounting Straps</p> <p>D Concealed Screw Holes in Neck***</p> <p>N None</p> <p><b>OPTIONS &amp; ACCESSORIES:</b></p> <p>— None (default)</p> <p><b>9. Insect Screen</b></p> <p>IS Insect Screen</p> <p><b>10. Plaster Sub-Frame</b></p> <p>PF Plaster Sub-Frame</p> <p><b>11. Gaskets</b></p> <p>GK Foam Gasket</p> <p><b>12. Earthquake Tabs</b></p> <p>EQT Earthquake Tabs</p> <p><b>Notes:</b></p> <p>1. For a standard grille with no special requirements, specification is only required as far as the damper selection. The "default" will automatically select "standard". For example, an aluminum register, fixed 45° airfoil blades vertical and steel damper, is <b>Model 7145V-O</b>. Unit will be supplied with screw holes and AW Appliance White finish.</p> <p>2. The horizontal dimension must always be specified first; for example 24" x 12" (610 x 305) or 12" x 24" (305 x 610).</p> <p>3. Nailor recommends the selection of vertical front blades on supply models for the majority of commercial applications.</p> <p>4. * For Type L Lay-in, grille neck size is ceiling module size – 2 (51).</p> <p style="padding-left: 20px;">** For Panel mounting, maximum grille neck size is ceiling module size – 3 (76).</p> <p style="padding-left: 20px;">*** Only available on Fixed 0° deflection.</p> |
|--|--|--|

### MODEL SERIES: 7100

### ALUMINUM AIRFOIL BLADE RETURN GRILLES AND REGISTERS

**SUGGESTED SPECIFICATION:**

Furnish and install **Nailor Model** (select one) **7145H, 7145V, 71FH or 71FV Airfoil Blade Airfoil Blade Return Grilles** of the types and sizes as shown on the plans and air distribution schedules. The grilles shall have extruded aluminum fixed blades that are airfoil shaped and spaced on 3/4" (19) centers. The frame is to be constructed from heavy gauge extruded aluminum with reinforced mitered corners. The finish shall be AW Appliance White (optional finishes are available).

(Optional) An opposed blade damper, constructed of heavy gauge corrosion-resistant steel (aluminum is optional) and operable from the face of the grille, shall be provided with all units.

The manufacturer shall provide published performance data for the grille, which shall be tested in accordance with ANSI/ASHRAE Standard 70 – 2006.



## PRODUCT OVERVIEW OPTIONS AND ACCESSORIES FOR GRILLES AND REGISTERS

### MOUNTING FRAMES

- Up to four methods of fastening available for most models.
- Sub-frame available for professionally finished openings.
- Surface mount adapter frame for plaster and sheet rock ceilings are available in steel and aluminum. They simplify installation, save time and allow ceiling plenum access.
- Panel mounting available to suit architectural ceiling systems.

### OPTIONS

- A selection of optional items that are available on grilles and registers.
- Information on custom sizing for special applications.

### FINISHES

- Selection of standard and non-standard finishes to choose from.
- Anodizing of aluminum products.

### AIR BALANCING DEVICES

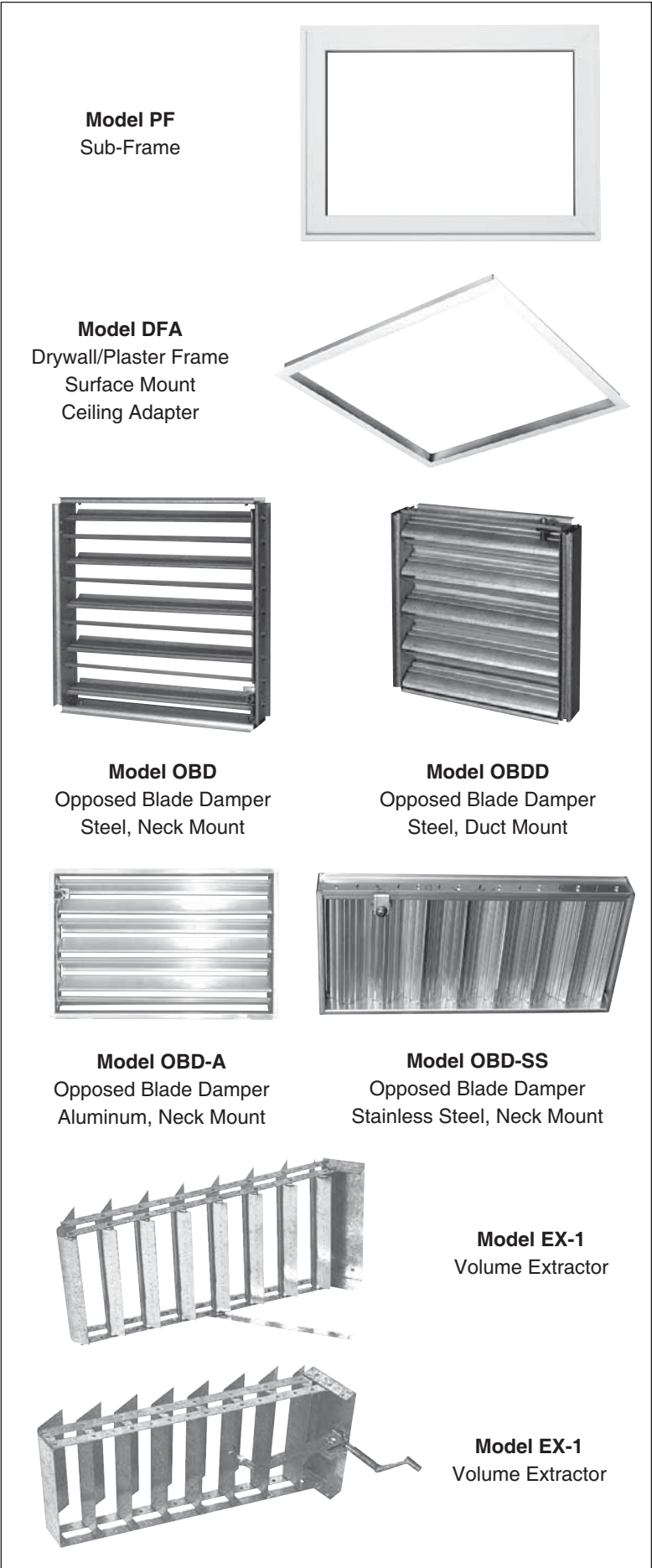
- Opposed blade dampers for every application.
- Volume extractors.

Effective air balancing of an HVAC System requires the correct selection, specification and installation of the right product to suit the system design.

Nailor offers a comprehensive range of models and options to cover all applications.

Nailor balancing devices are:

- Easy to select and specify. Many items can be supplied as factory mounted or packaged accessories on grilles and registers.
- Designed to offer a smooth, accurate and predictable response during adjustment for precise air metering.
- Designed to provide quick access and adjustment.
- Engineered with attention to optimizing airflow, in order to minimize noise, turbulence and pressure drop.

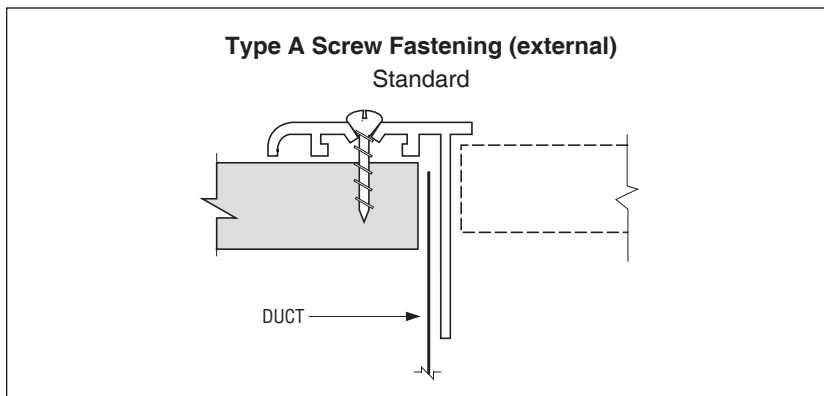


## Fastening and Border Frames

### Type A Screw Fastening (External)

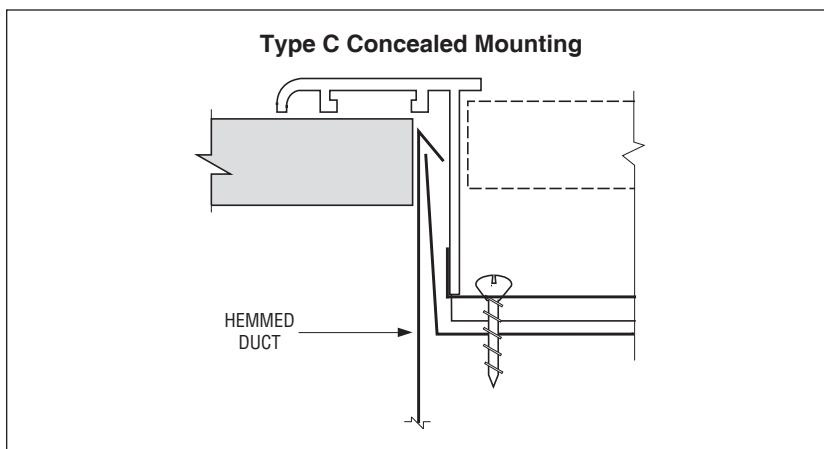
Standard method of fastening for all Nailor grilles and registers in surface mount applications. All Nailor grilles and registers are supplied this way unless specified otherwise. Universal application for all models and cost effective installation.

Screw holes are countersunk in the frame for most models to provide an aesthetically pleasing appearance and are sized for #8 x 1 1/2" (38) oval-head screws which are supplied from the factory packed with each grille or register and are painted to match the specified finish.



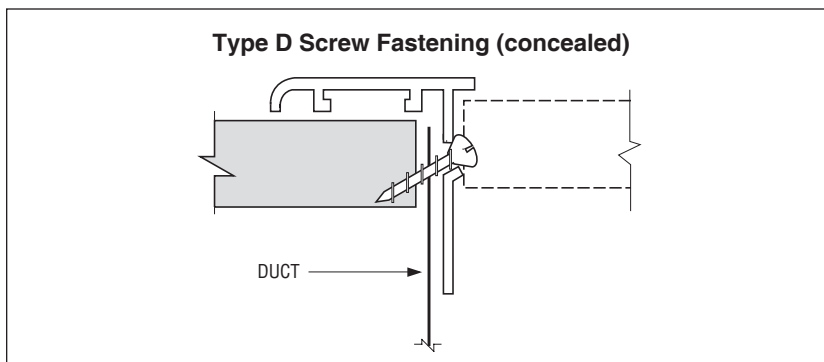
### Type C Concealed Mounting

Grilles and registers are supplied with concealed mounting straps (at additional cost) which permit surface mounting with concealed screws, allowing a clean frame appearance. The bracket is shipped loose for installation in the field (by others). The bracket attaches to the back of the grille screws to an adjustable mounting strap which can either be secured directly to the duct wall or hooked into a hem formed in the end of the duct. Not available on return air grilles with 1/2" (13) spacing and a fixed angled blade deflection. Maximum size: 36" x 36" (914 x 914).



### Type D Screw Fastening (Concealed)

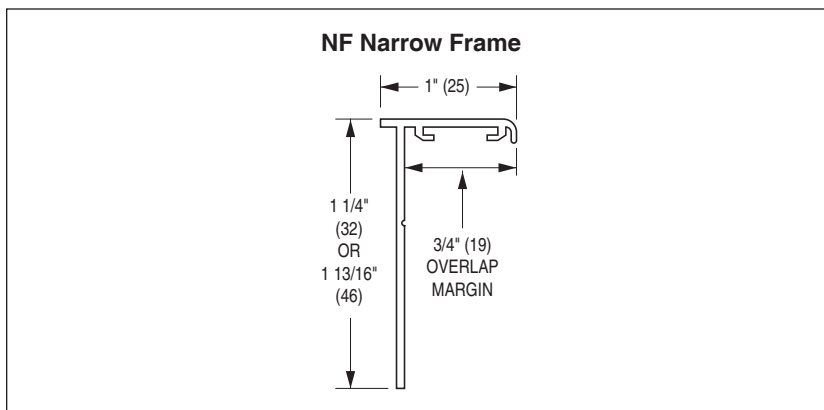
Screw holes are provided in the neck of the grille or register frame. Screws are field installed at an angle through the grille frame and into the ductwork, providing a clean frame appearance. Installation is more difficult than Type A due to the space constriction between the grille blades. Care must be taken not to bend or scratch the grille. Not recommended on return air grilles with a fixed angled blade deflection as accessibility to screw holes is greatly restricted.



### Type NF Narrow Frame

An optional reduced 1" (25) wide narrow border frame is available on most aluminum models to satisfy architectural considerations.

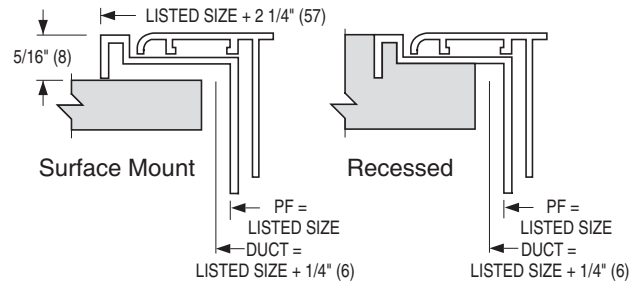
See individual models for availability.



## Mounting Frames

### PF Plaster/Mounting Frame

Available (at additional cost) with most standard steel and aluminum grilles and registers. The Model PF Plaster Frame is constructed from extruded aluminum and provides a convenient and professional way for finishing off the grille or register opening. It provides a stable anchor for attachment, while enabling the grille or register to be detached and replaced readily without disturbing the finished surface of the wall or ceiling opening. It may be used for surface mounting on various materials or recess mounted in wet plaster.



Model PF Plaster Frame

### DFS (Steel), DFA (Aluminum) Drywall/Plaster Frame

The DF Series are for mounting in finished drywall or plaster ceilings to accept any standard lay-in type grille, register, diffuser or other ceiling component. Installation of the air outlet is as simple as inserting them in a standard lay-in T-Bar type ceiling system.

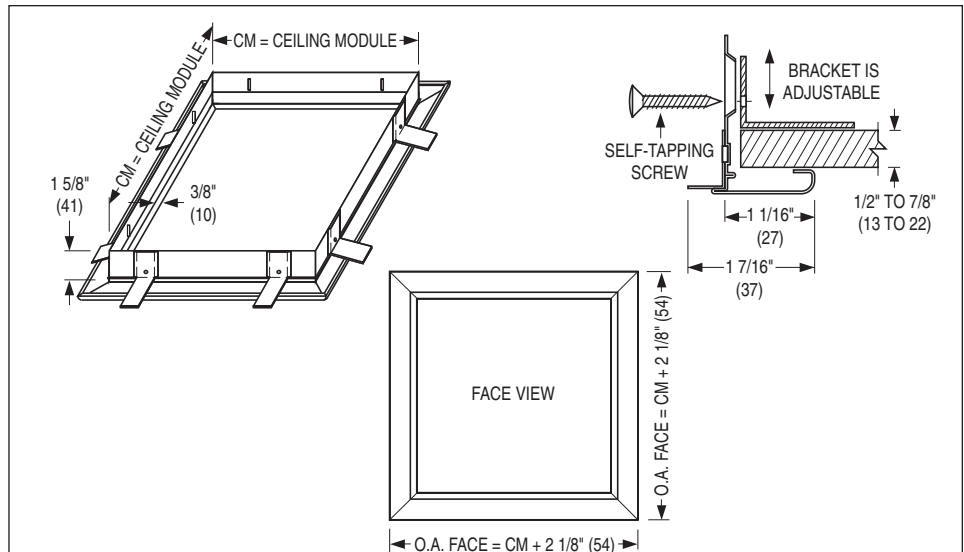
The DF Series simplifies and reduces installation time compared with surface mount type diffusers. This is especially true where flexible duct is utilized. A major benefit is that the DF Series allows access to the ceiling plenum space above for maintenance purposes without the need for separate access doors. The finished appearance is professional and aesthetically pleasing.

**Standard Finish:** AW Appliance White. Other finishes are available.

**Model DFS** is installed quickly and easily using adjustable fastening angle brackets which adapt to various ceiling thicknesses. Frames are roll-formed corrosion-resistant steel with staked and mitered corners.

IMPERIAL MODULES		METRIC MODULES
Imperial Units (inches)	S.I. Units (mm)	S.I. Units (mm)
12 x 12	305 x 305	300 x 300
16 x 16	406 x 406	400 x 400
20 x 20	508 x 508	500 x 500
24 x 12	610 x 305	600 x 300
24 x 24	610 x 610	600 x 600

Ceiling opening = CM + 1/4" (6)

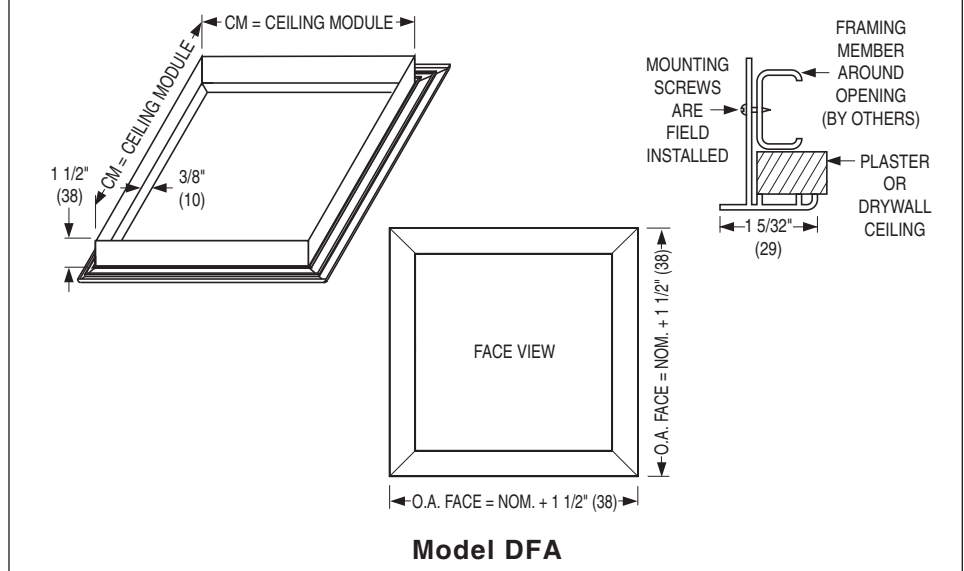


Model DFS

**Model DFA** requires framing of the ceiling opening with 'C' channel or wood studs for attachment with mounting screws (by others).

IMPERIAL MODULES		METRIC MODULES
Imperial Units (inches)	S.I. Units (mm)	S.I. Units (mm)
12 x 12	305 x 305	300 x 300
16 x 16	406 x 406	400 x 400
20 x 20	508 x 508	500 x 500
24 x 12	610 x 305	600 x 300
24 x 24	610 x 610	600 x 600
36 x 24	914 x 610	900 x 600
48 x 12	1219 x 305	1200 x 300
48 x 24	1219 x 1219	1200 x 600
60 x 12	1524 x 305	1500 x 300

Ceiling opening = CM + 1/4" (6)



Model DFA

## Panel Mounting/Ceiling Modules

A panel can be added to the majority of Nailor's steel and aluminum return grilles to suit many special architectural ceiling designs and ceiling module sizes. These panel mount grilles are available in corrosion-resistant steel for the 6100 series steel grilles and both aluminum and corrosion-resistant steel for the 5100 and 7100 series aluminum grilles.

To specify a steel panel; add the suffix S to the end of the selected panel variant. To specify an aluminum panel; add the suffix A to the end of the selected panel variant. e.g. If a steel panel is required with a Spline Type ceiling module, the variant code will become SPS.

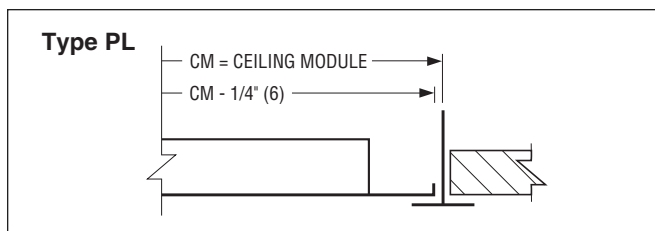
The maximum grille neck sizes available for panel mounting will be the ceiling module size selected - 3" (76).

### Available Ceiling Module Sizes

Ceiling Module	
Imperial Units (in.)	Metric Units (mm)
12 x 12	300 x 300
24 x 12	600 x 300
36 x 12	900 x 300
48 x 12	1200 x 300
20 x 20	500 x 500
24 x 24	600 x 600
36 x 24	900 x 600
48 x 24	1200 x 600

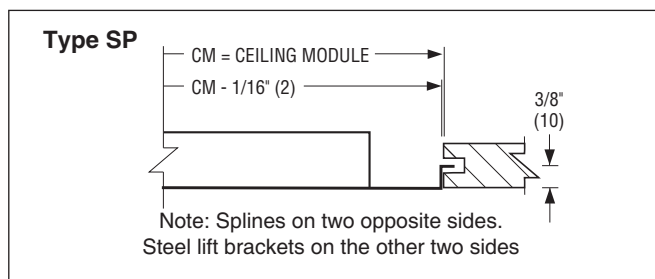
### Border Type PL: Lay-in T-Bar

Grille or register is mounted in an extended panel to suit standard T-Bar Lay-in Type ceilings.



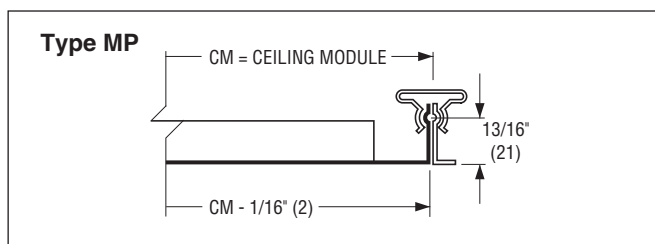
### Border Type SP: Spline

The grille or register is mounted in an extended panel to suit spline type ceiling modules.



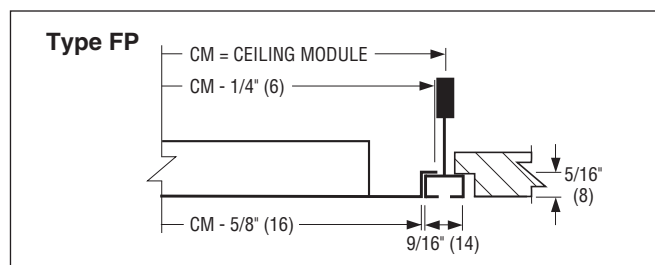
### Border Type MP: Metal Pan/Snap-in

The grille or register is mounted in an extended panel to suit metal pan ceilings that have snap-in type ceiling modules.



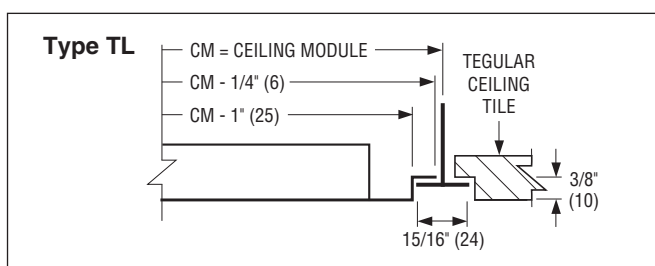
### Border Type FP: Narrow Regressed T-Bar (Fineline®)

The grille or register is mounted in an extended panel that will fit a narrow regressed T-Bar ceiling grid.



### Border Type TL: Tegular Type T-Bar

The grille or register is mounted in a panel that will extend below the T-Bar ceiling grid.



## Options, Custom Sizing and Finishes

### OPTIONS:

#### RACA Return Air Crosstalk Attenuator

Return Air Crosstalk Attenuator is designed to greatly reduce the amount of sound transferred from the return air plenum through open vents or return grilles, into the adjoining space.

#### EQT Earthquake Tabs

Earthquake (seismic) retaining safety tabs are available; factory installed on grilles or registers when required by local building code that units be independently restrained and safety wired to supporting structure.

#### GK Foam Gaskets

An optional foam gasket is available factory installed on the rear of all Type S corrosion-resistant steel and aluminum surface mount grilles and registers.

Eliminates air leakage and the possibility of dirt streaking and smudging from entrainment, particularly when installed on unevenly finished surfaces such as stucco.

#### IS Insect Screen

1/16" (2) galvanized steel mesh, factory installed.

### CUSTOM SIZING:

#### Oversized Units

For specialized applications and architectural considerations; certain grilles and registers can be manufactured in single sections larger than the standard published maximum size at additional cost. Aspect ratio, tolerances, manufacturing capability and weight have all to be considered by the factory prior to acceptance. Consult your Nailor representative for specific applications.

#### Fractional/Hard Metric Sizes

Nailor grilles and registers have been designed and are manufactured to suit HVAC systems where the duct design has been done using Imperial Units of measurement (i.e. feet and inches). The majority of Nailor grilles and registers are fabricated as standard in 1" (25) nominal incremental units, giving the designer great flexibility during sizing selection.

At additional cost, the majority of Nailor grilles and registers can be custom fabricated in fractional sizes for special applications and in Hard Metric (S.I. Units) when the HVAC duct design has been done using the Metric System.

Consult your Nailor representative for availability on specific project applications.

### FINISHES:

#### POWDER COAT

##### AW Appliance White (standard)

A white finish that is currently the industry standard. Closely matches standard finishes supplied by the majority of T-Bar ceiling system manufacturers. (No additional cost).

##### AL Aluminum

Contains suspended metal particles to give the appearance of a silver grey metallic or anodized finish. (No additional cost).

##### WH Off-White

Has a creamy appearance. (Additional cost)

##### BW British White

Matches most white ceiling tiles. (No additional cost)

##### LBP Light Bronze Paint

An economical alternative that closely matches industry standard anodizing in color, sheen and appearance. (Additional cost)

##### MBP Medium Bronze Paint

An economical alternative that closely matches industry standard anodizing in color, sheen and appearance. (Additional cost)

##### DBP Dark Bronze Paint

An economical alternative that closely matches industry standard anodizing in color, sheen and appearance. (Additional cost)

##### BK Black

This black has a matte finish. (Additional cost)

##### SP Special

The Nailor range of diffusers are available in any color for special architectural consideration. Custom colors are individually mixed to match customer supplied samples. (Additional cost)

### ALUMINUM PRODUCT FINISHES:

#### SA Satin (Clear) Anodized

Adds a smooth satin finish to further protect the aluminum from corrosion (clear). (Additional cost)

### STAINLESS STEEL PRODUCT FINISH ONLY:

#### #4 Brushed Satin Polished

Stainless Steel models only. (No additional cost)

### ALSO AVAILABLE:

#### MI Mill Finish

(No additional cost).

#### PPA Paint Prepared Aluminum (Washed only)

(No additional cost).

#### PC Prime Coat Paint

Color will vary (Additional cost).

## Sound Reduction for Return Air Grilles

### RETURN AIR CROSSTALK ATTENUATOR – STEEL – RETURN AIR GRILLES

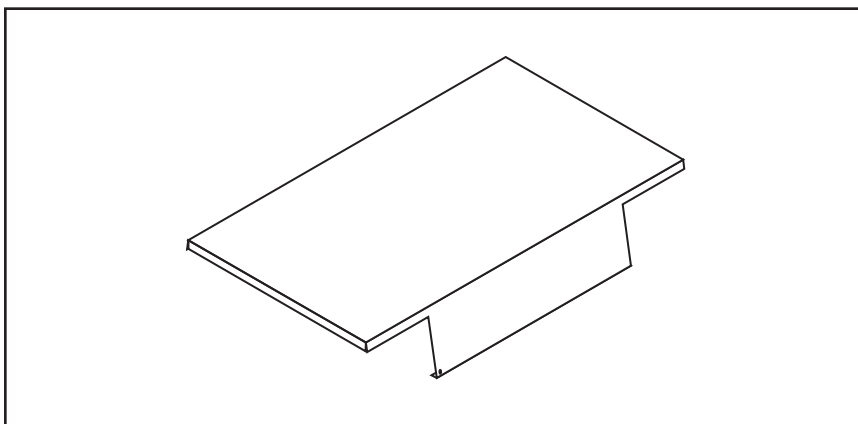
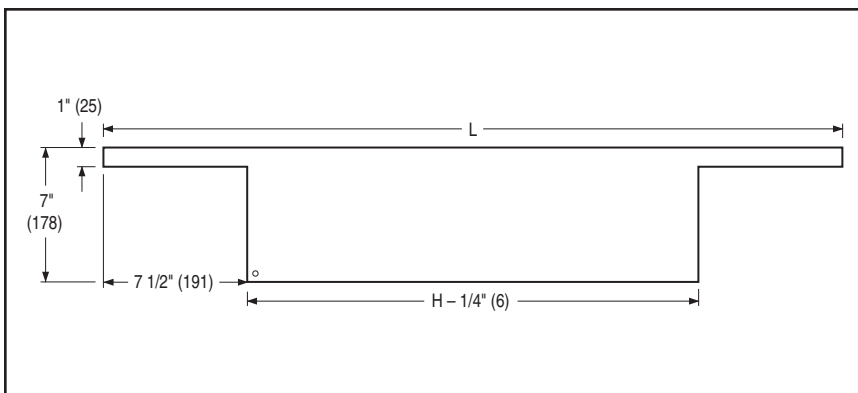
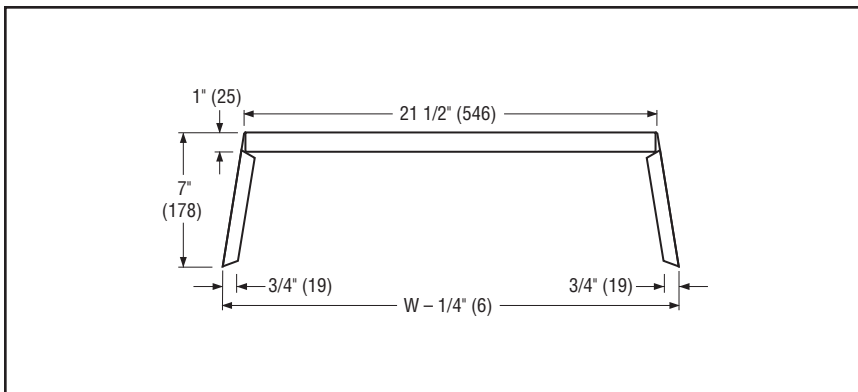
Nailor Model RACA Return Air Crosstalk Attenuator is designed to greatly reduce the amount of sound transferred from the return air plenum through open vents or return grilles, into the adjoining space. For use with non-ducted return grilles in Lay-in T-Bar applications, the RACA allows return air to flow through with minimal pressure drop, while reducing the sound transmission by 7 – 10 NC. Constructed of 22 gauge galvanized steel, the compact, light weight design takes up minimal space in the return plenum, rests on the ceiling grid for easy installation and works effectively as a light shield. Available with 1" (25) fiberglass insulation as standard or optional 1" (25) fiber-free closed cell foam insulation. The RACA fits standard grille sizes and is ideal for interior offices, conference rooms, hotel rooms as well as recording studios.

#### FEATURES:

- Economical and light-weight design.
- Fits standard grille sizes.
- Easy installation sits on ceiling grid.
- Compact design takes up minimal space in return plenum.
- 1" (25) fiberglass insulation (standard).

#### DIMENSIONAL DATA:

CM Ceiling Module	W	H	L
12" x 12" (305 x 305)	12" (305)	12" (305)	26 1/2" (673)
24" x 12" (610 x 305)	24" (610)	12" (305)	26 1/2" (673)
20" x 20" (508 x 508)	20" (508)	20" (508)	34 1/2" (876)
24" x 24" (610 x 610)	24" (610)	24" (610)	38 1/2" (978)
30" x 30" (762 x 762)	30" (762)	30" (762)	44 1/2" (1130)
48" x 24" (1219 x 610)	48" (1219)	24" (610)	38 1/2" (978)



## Air Balancing Devices

### OPPOSED BLADE DAMPERS — STEEL AND ALUMINUM

Nailor Opposed Blade Dampers are manufactured from heavy gauge, roll-formed, corrosion-resistant steel or extruded aluminum blades and frame with miscellaneous steel components.

The gang operated multi-blade design with blades closing at 45 degrees permits fine volume control for accurate balancing with minimum disturbance to the airflow pattern. Blades are individually pivoted on 1" (25) centers.

#### GRILLE MOUNT MODELS:

**OBD Steel**

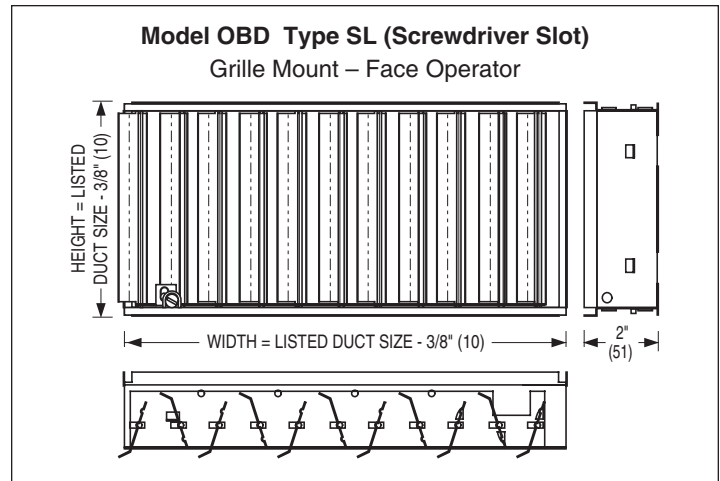
**OBD-A Aluminum**

This style of damper mounts directly on the neck of the grille and is sized to fit most Nailor grilles. Uses steel barbed S-clips for easy field mounting or removal when ordered separately. Supplied as standard with a screwdriver slot operator (Type SL) on supply registers and a screwdriver pivot lever operator (Type PL) on fixed, angled deflection return registers. Type SL operator is standard if damper is ordered separately from grille. A lever operator (Type GL) is available as an option on fixed, angled deflection return registers. Can be specified as an integral part of the grille (register) by adding a - O (steel) or - OA (aluminum) suffix to the grille model.

Min. Size = 4" x 2 1/2" (102 x 64) Max. Size = 24" x 24" (610 x 610).

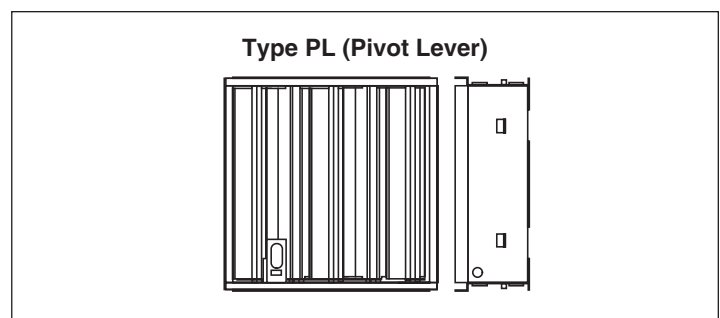
#### Type SL Operator

The SL Operator incorporates a screwdriver slot, which adjusts from the face of the register. This operator is the standard supplied with supply air registers such as the single and double deflection adjustable blade.



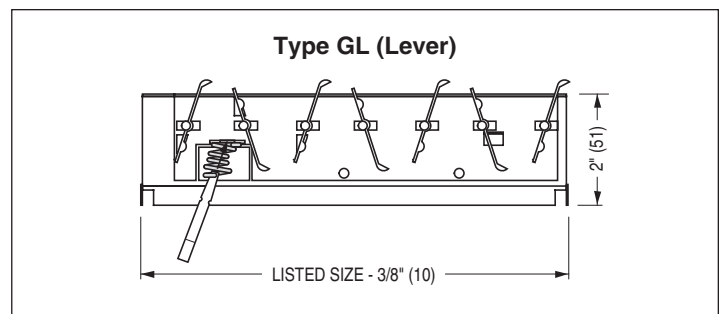
#### Type PL Operator

The PL Operator is a concealed pivot lever, which is adjusted from the face of the register using a screwdriver. This operator is for use only on fixed blade, angled deflection, return air grilles. When specifying, the blade orientation of the damper must be opposite of the grille.



#### Type GL Operator

The GL Operator incorporates a lever that adjusts without the use of tools. The lever operator extends through the grille face and is an alternative for fixed blade, angled deflection, return air grilles. When specifying, the blade orientation of the damper must be opposite of the grille being used and the grille model must be specified.



## Air Balancing Devices

### DUCT MOUNT MODELS:

**OBDD Steel**

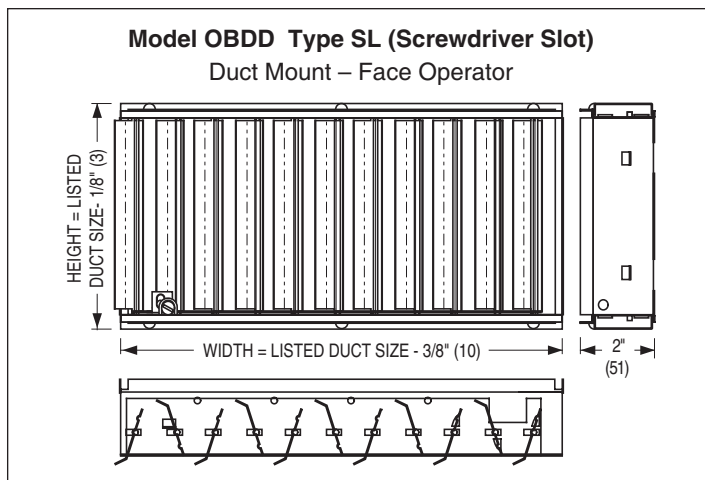
**OBDD-A Aluminum**

Designed for field installation, this damper mounts independently in the duct, separate from and behind the grille. Sized to suit and offer a friction fit in nominally sized ducts. Secure the dampers with 1/2" (13) long sheet metal screws (by others) through the double walled sub-frame. Supplied as standard with a screwdriver slot operator (Type SL).

Min. Size = 4" x 2 1/2" (102 x 64) Max. Size = 24" x 24" (610 x 610)

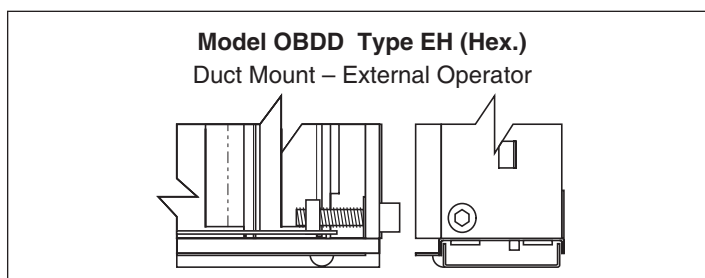
### Type SL Operator

These models are supplied with a screwdriver slot face operator that is accessed from inside the duct by removing the grille.



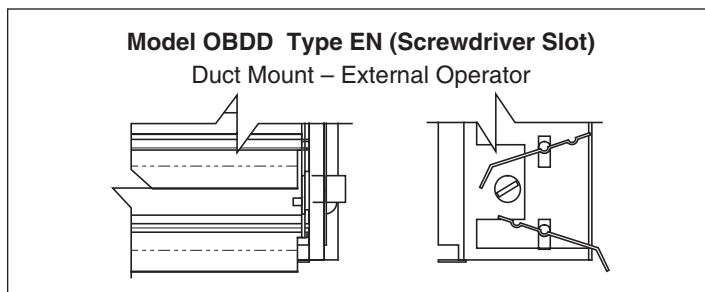
### Type EH Operator

The EH Operator incorporates an external hex device that penetrates the duct wall to provide control. For use with 3/16" (5) Allen key wrench (by others).



### Type EN Operator

The EN Operator incorporates an external (nylon) screwdriver slot device. This device is controlled externally through the duct.



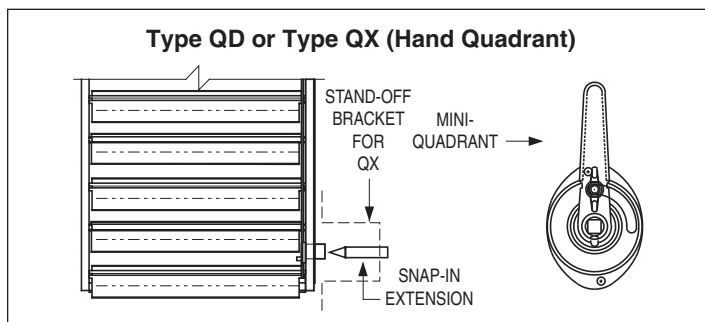
### Type QD Operator \*

The QD Operator includes a nylon snap-in extension that fits an external (nylon) operator. This device also includes a hand locking quadrant operator for control and position indication.

### Type QX Operator \*

The QX Operator includes a nylon snap-in extension that fits an external (nylon) operator. This device also includes a 2" (51) stand-off bracket and hand locking quadrant for control and position indication. To ensure quadrant is located on vertical side of duct, specify damper with blades parallel to the horizontal duct dimension.

\*Not available on Model OBDD-A





## Air Balancing Devices

### OPPOSED BLADE DAMPERS — STAINLESS STEEL

Nailor Stainless Steel Opposed Blade Dampers feature heavy gauge, roll-formed blades and a heavy duty frame in all stainless steel construction. Type 304 stainless steel is standard with Type 316 as an available option.

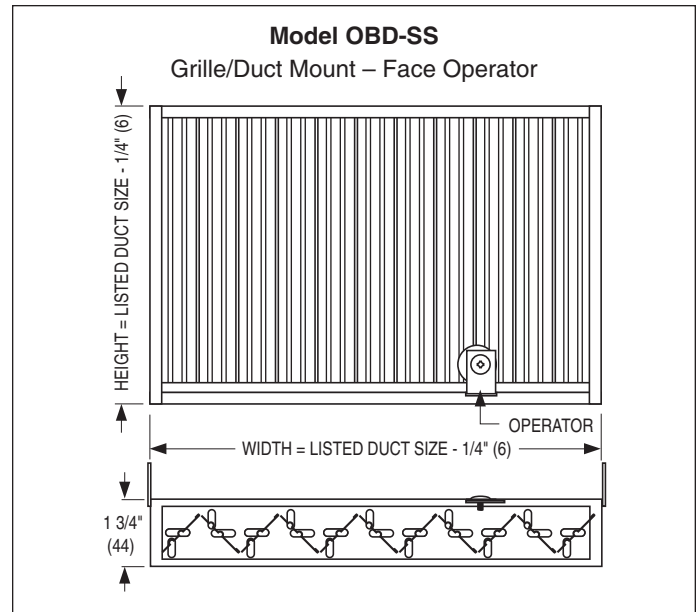
The gang operated multi-blade design with blades closing at 45 degrees permits fine volume control for accurate balancing with minimum disturbance to the airflow pattern. Blades are individually pivoted on 1" (25) centers.

#### GRILLE/DUCT MOUNT MODELS:

##### OBD-SS Stainless Steel

When ordered as part of the stainless steel grille, (using the suffix '-O' on the model number), the dampers are factory welded to the grille frame to provide a secure non-removable connection. If the dampers are ordered separately, they are supplied with mounting tabs. The tabs allow the dampers to be field installed onto a grille or to be mounted independently in the duct, separate from and behind the grille.

All Nailor stainless steel dampers feature a Philip's head screwdriver operator that is accessed through the face of the grille.



## Volume Extractors

### MODEL SERIES

**EX** Blades on 2" centers

**EXD** Blades on 1" centers

The **Model Series EX Volume Extractors** uniformly divert air from the main duct into the branch take-off and across the face of a grille or diffuser. Gang-operated parallel blades available on 2" (51) or 1" (25) centers pivot from full open to full closed with blades overlapping for shut-off. The curved blade design improves airflow by reducing turbulence, thereby reducing noise and pressure drop.

Specify or order: Length x Width. (Length is first dimension. Blades are parallel to width, second dimension).

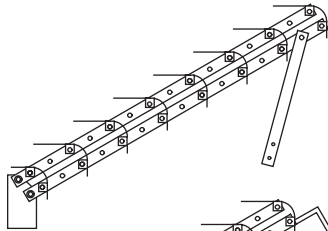
### FEATURES:

- Material: Galvanized steel.
- Minimum size: 6" x 4" (152 x 102).
- Maximum size: 36" x 36" (914 x 914).

### Operator Types

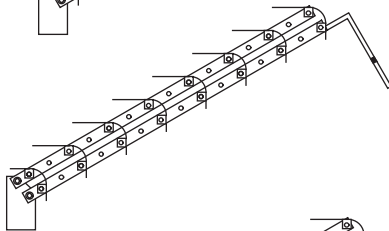
#### EX/EXD-1

Standard unit with adjusting strap.



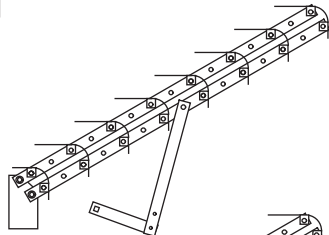
#### EX/EXD-1-R

Rod operator for external operation.



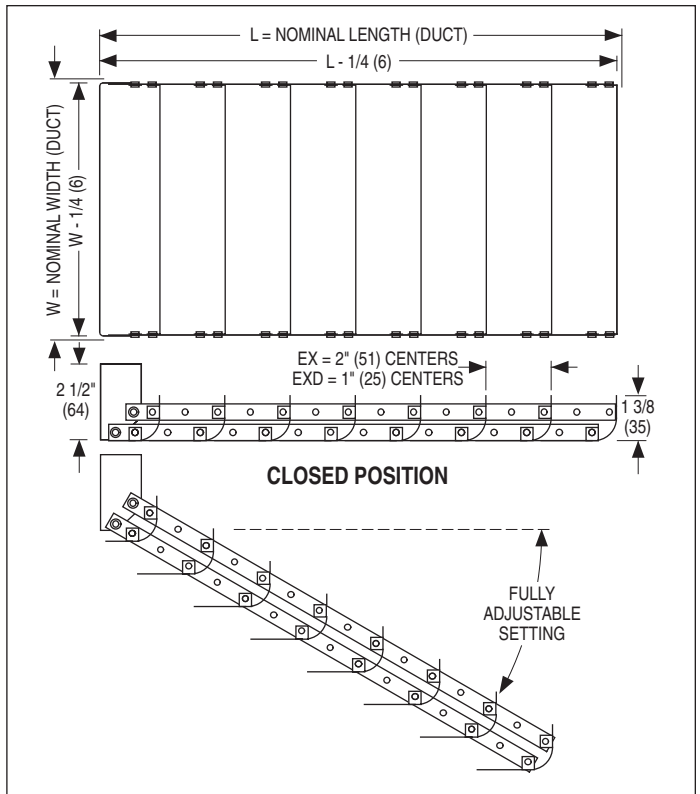
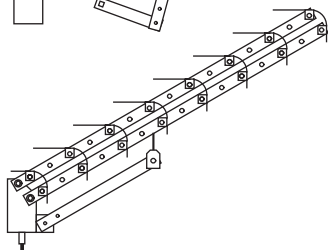
#### EX/EXD-2

Linkage with 7/16" (11) square hole (2 per unit). Remote operator (eg. Young Regulator #1) by others.



#### EX/EXD-3

Screw gear operator. Adjusts with 3/16" (48) wrench (by others).



### Optional Accessories

#### RLD

Locking device for Models **EX/EXD-1-R**.

