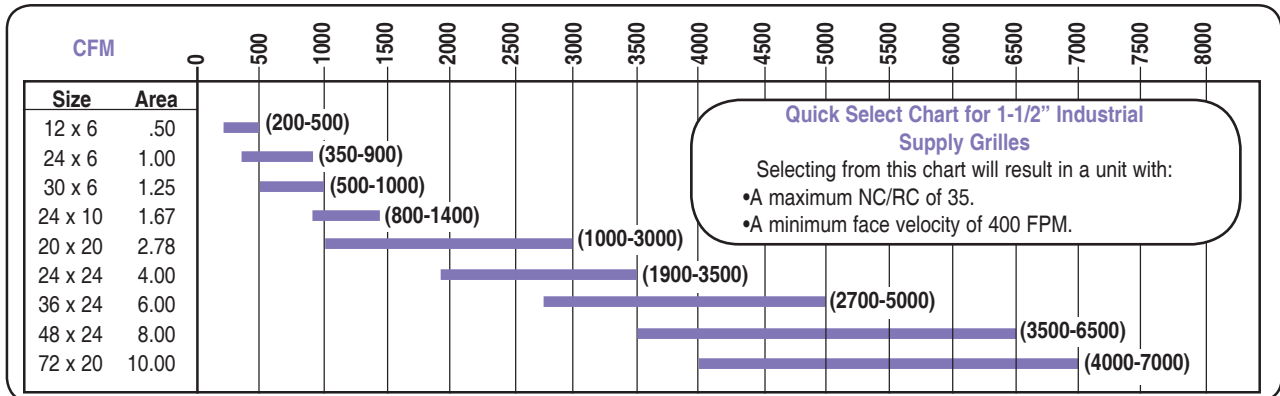
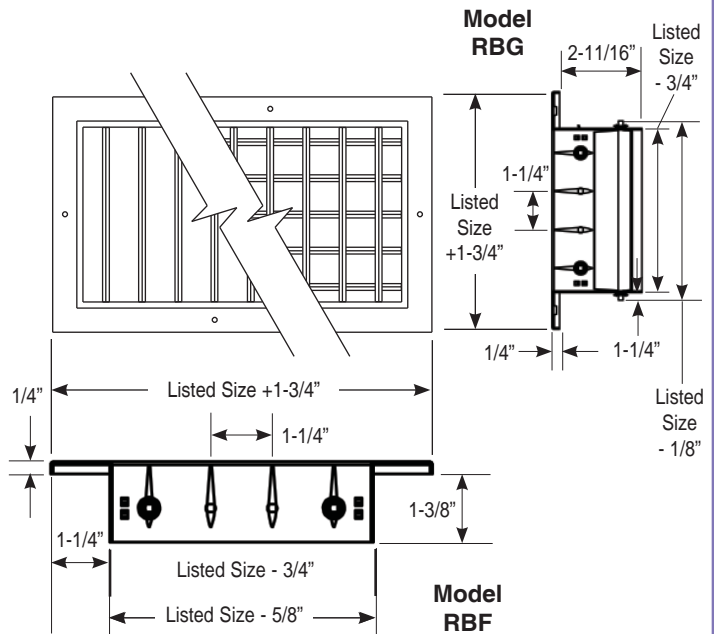


Application:

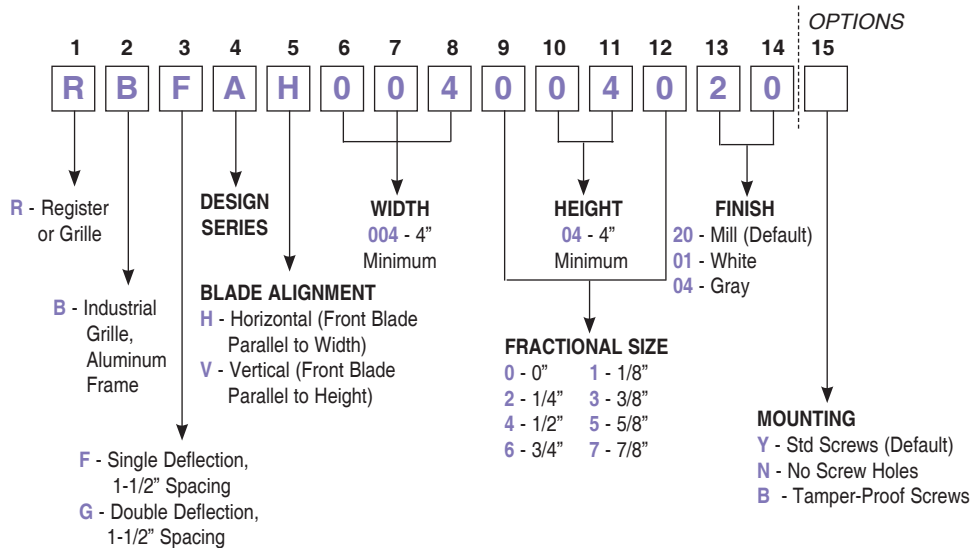
Originally designed for textile applications, this model now serves well in any area where the air volume is large, and easy removal for cleaning is required.

Standard Features:

- Extruded aluminum blade and frame construction.
- Single or double deflection design. Blades are 1-1/4" deep, on 1-1/4" centers, and can be aligned horizontally or vertically.
- Blades are airfoil shape, and are individually adjustable for fine tuning of throw, blow pattern or spread.
- Removable and reversible for easy cleaning and re-adjustment for seasonal heating and cooling conditions.
- Standard finish is mill finish. Other finishes are available upon request.
- Note that this is not available with a damper. If a damper is needed for balancing purposes, use the model RXFCL opposed blade damper and mount it upstream in the duct.



Model Numbering System — Industrial Grilles, 1-1/2" Single & Double Deflection Supply (Models RBF, RBG)



Heavy Duty Registers & Grilles

Nominal Size: 12" x 6" (.50 sq. ft.)										
Duct Velocity	200	300	400	500	600	700	800	900	1000	
Flow (CFM)	100	150	200	250	300	350	400	450	500	
0°	Total Press.	0.006	0.015	0.027	0.042	0.060	0.082	0.107	0.135	0.167
	Throw	7-11-21	10-15-30	14-21-42	18-27-54	21-32-63	25-38-75	28-42-84	31-47-93	35-53-105
	NC	<20	<20	<20	<20	<20	24	28	31	35
22.5°	Total Press.	0.007	0.016	0.029	0.045	0.065	0.089	0.117	0.148	0.182
	Throw	5-8-15	8-12-24	10-15-30	14-21-42	16-24-48	19-29-57	21-32-63	24-36-72	27-41-81
	NC	<20	<20	<20	<20	<20	25	29	32	36
45°	Total Press.	0.012	0.027	0.048	0.074	0.107	0.145	0.190	0.241	0.297
	Throw	4-6-12	5-8-15	8-12-24	10-15-30	11-17-33	14-21-42	15-23-45	17-26-51	19-29-57
	NC	<20	<20	<20	<20	<20	30	34	37	41
Nominal Size: 12" x 8" (.67 sq. ft.)										
Duct Velocity	225	300	375	450	525	600	675	750	900	
Flow (CFM)	150	200	250	300	350	400	450	500	600	
0°	Total Press.	0.008	0.015	0.023	0.034	0.045	0.059	0.075	0.093	0.135
	Throw	9-14-27	12-18-36	15-23-45	18-27-54	21-32-63	24-36-72	27-41-81	31-47-93	37-56-111
	NC	<20	<20	<20	<20	<20	20	23	27	32
22.5°	Total Press.	0.009	0.016	0.025	0.036	0.050	0.065	0.082	0.102	0.147
	Throw	7-11-21	9-14-27	11-17-33	14-21-42	16-24-48	18-27-54	21-32-63	24-36-72	28-42-84
	NC	<20	<20	<20	<20	<20	21	24	28	33
45°	Total Press.	0.015	0.026	0.041	0.059	0.081	0.105	0.134	0.166	0.238
	Throw	5-8-15	7-11-21	8-12-24	10-15-30	11-17-33	13-20-39	15-23-45	17-26-51	20-30-60
	NC	<20	<20	<20	<20	<20	26	29	33	38
Nominal Size: 12" x 10" (.83 sq. ft.)										
Duct Velocity	240	300	360	420	480	540	600	720	840	
Flow (CFM)	200	250	300	350	400	450	500	600	700	
0°	Total Press.	0.008	0.015	0.023	0.034	0.045	0.059	0.075	0.093	0.135
	Throw	9-14-27	12-18-36	15-23-45	18-27-54	21-32-63	24-36-72	27-41-81	31-47-93	37-56-111
	NC	<20	<20	<20	<20	<20	20	23	27	32
22.5°	Total Press.	0.009	0.016	0.025	0.036	0.050	0.065	0.082	0.102	0.147
	Throw	7-11-21	9-14-27	11-17-33	14-21-42	16-24-48	18-27-54	21-32-63	24-36-72	28-42-84
	NC	<20	<20	<20	<20	<20	21	24	28	33
45°	Total Press.	0.015	0.026	0.041	0.059	0.081	0.105	0.134	0.166	0.238
	Throw	5-8-15	7-11-21	8-12-24	10-15-30	11-17-33	13-20-39	15-23-45	17-26-51	20-30-60
	NC	<20	<20	<20	<20	<20	26	29	33	38
Nominal Size: 24" x 6" (1.00 sq. ft.)										
Duct Velocity	394	450	506	563	675	788	900	1013	1125	
Flow (CFM)	350	400	450	500	600	700	800	900	1000	
0°	Total Press.	0.024	0.031	0.040	0.049	0.071	0.097	0.127	0.161	0.199
	Throw	19-29-57	22-33-66	25-38-75	27-41-81	33-50-99	38-57-114	44-66-132	49-74-147	55-83-165
	NC	<20	<20	<20	<20	23	27	31	35	38
22.5°	Total Press.	0.026	0.034	0.044	0.053	0.078	0.106	0.138	0.176	0.216
	Throw	15-23-45	17-26-51	19-27-57	21-32-63	25-38-75	29-44-87	34-51-102	38-57-114	42-63-126
	NC	<20	<20	<20	<20	24	28	32	36	39
45°	Total Press.	0.043	0.055	0.070	0.087	0.125	0.172	0.223	0.282	0.35
	Throw	10-15-30	12-18-36	14-21-42	15-23-45	18-27-54	21-32-63	24-36-72	27-41-81	30-45-90
	NC	<20	<20	<20	<20	30	33	37	42	44
Nominal Size: 30" x 6" (1.25 sq. ft.)										
Duct Velocity	360	400	480	560	640	720	800	880	960	
Flow (CFM)	450	500	600	700	800	900	1000	1100	1200	
0°	Total Press.	0.025	0.030	0.044	0.060	0.078	0.099	0.124	0.150	0.178
	Throw	22-33-66	24-36-72	29-44-87	34-51-102	39-59-117	44-66-132	49-74-147	54-81-162	59-89-177
	NC	<20	<20	<20	23	28	31	34	37	40
22.5°	Total Press.	0.027	0.033	0.048	0.066	0.086	0.109	0.135	0.163	0.194
	Throw	17-26-51	18-27-54	22-33-66	26-39-78	30-45-90	34-51-102	38-57-114	41-62-123	45-68-135
	NC	<20	<20	<20	24	29	32	35	38	45
45°	Total Press.	0.044	0.054	0.078	0.107	0.139	0.176	0.218	0.263	0.313
	Throw	12-18-36	13-20-39	16-24-48	19-29-57	21-32-63	24-36-72	27-41-81	30-45-90	32-48-96
	NC	<20	<20	<20	29	34	37	41	44	46

Notes on Performance Data:

- Performance data is based on tests conducted in accordance with ANSI/ASHRAE Standard 70-1991.
- Actual Performance in the field may vary.
- Testing was conducted in isothermal conditions.
- Sound level values are based on a room absorption of 10db re 10⁻¹² watts.
- A "----" indicates an NC value less than 10.

Nominal Size: 20" x 10" (1.39 sq. ft.)									
Duct Velocity	432	504	576	648	720	792	864	936	1008
Flow (CFM)	600	700	800	900	1000	1100	1200	1300	1400
0° Total Press.	0.034	0.046	0.060	0.076	0.095	0.115	0.137	0.161	0.186
Throw	27-41-81	32-48-96	36-54-108	41-62-123	46-69-138	50-75-150	55-83-165	59-89-177	64-96-192
NC	<20	<20	22	25	29	32	34	37	39
22.5° Total Press.	0.037	0.050	0.066	0.083	0.103	0.124	0.149	0.175	0.203
Throw	21-32-63	25-38-75	28-42-84	31-47-93	35-53-105	38-57-114	42-63-126	45-68-135	49-74-147
NC	<20	<20	23	26	30	33	35	38	40
45° Total Press.	0.060	0.082	0.107	0.136	0.167	0.203	0.241	0.282	0.327
Throw	15-23-45	18-27-54	20-30-60	22-33-66	25-38-75	27-41-81	30-45-90	32-48-96	35-53-105
NC	<20	<20	28	31	35	38	40	43	45
Nominal Size: 24" x 10" (1.67 sq. ft.)									
Duct Velocity	540	600	660	720	780	840	900	960	1080
Flow (CFM)	900	1000	1100	1200	1300	1400	1500	1600	1800
0° Total Press.	0.053	0.066	0.080	0.095	0.112	0.130	0.149	0.170	0.214
Throw	37-56-111	42-63-126	48-72-144	50-75-150	54-81-162	59-89-177	63-95-189	67-101-201	75-113-225
NC	20	24	27	29	32	34	36	38	42
22.5° Total Press.	0.058	0.072	0.087	0.103	0.122	0.141	0.163	0.184	0.233
Throw	28-42-84	32-48-96	35-53-105	38-57-114	41-62-123	45-68-135	48-72-144	51-77-153	58-87-174
NC	21	25	28	30	33	35	37	39	43
45° Total Press.	0.094	0.117	0.141	0.169	0.198	0.228	0.263	0.299	0.378
Throw	20-30-60	23-35-69	25-38-75	27-41-81	30-45-90	32-48-96	34-51-102	37-56-111	41-62-123
NC	26	30	34	35	38	40	42	44	48
Nominal Size: 28" x 10" (1.94 sq. ft.)									
Duct Velocity	463	514	566	617	669	720	771	823	926
Flow (CFM)	900	1000	1100	1200	1300	1400	1500	1600	1800
0° Total Press.	0.038	0.047	0.057	0.068	0.079	0.092	0.106	0.120	0.153
Throw	34-51-102	36-54-108	46-69-138	46-69-138	49-74-147	53-80-159	57-86-171	61-92-183	69-104-207
NC	<20	<20	21	24	26	28	31	33	36
22.5° Total Press.	0.041	0.051	0.062	0.074	0.086	0.100	0.115	0.131	0.166
Throw	26-39-78	28-42-84	32-48-96	35-53-105	38-57-114	41-62-123	44-66-132	47-71-141	53-80-159
NC	<20	<20	22	25	27	29	32	34	37
45° Total Press.	0.067	0.083	0.100	0.119	0.140	0.163	0.186	0.212	0.269
Throw	19-29-57	20-30-60	23-35-69	25-38-75	27-41-81	29-44-87	31-47-93	33-50-99	38-57-114
NC	<20	<20	27	30	32	34	37	39	42
Nominal Size: 20" x 20" (2.78 sq. ft.)									
Duct Velocity	216	252	288	324	360	720	1080	1260	1440
Flow (CFM)	600	700	800	900	1000	2000	3000	3500	4000
0° Total Press.	0.007	0.010	0.013	0.017	0.020	0.083	0.189	0.256	0.330
Throw	18-27-54	21-32-63	24-36-72	27-41-81	31-47-93	61-92-183	92-138-276	108-162-324	123-185-369
NC	<20	<20	<20	<20	<20	23	35	40	44
22.5° Total Press.	0.008	0.011	0.014	0.018	0.022	0.091	0.205	0.280	0.370
Throw	14-21-42	16-24-48	18-27-54	21-32-63	24-36-72	47-71-141	70-105-210	83-125-249	97-146-291
NC	<20	<20	<20	<20	<20	24	36	41	45
45° Total Press.	0.013	0.018	0.023	0.029	0.036	0.148	0.332	0.453	0.590
Throw	10-15-30	11-17-33	13-20-39	15-23-45	17-26-51	33-50-99	50-75-150	59-89-177	68-102-204
NC	<20	<20	<20	<20	<20	29	41	46	51
Nominal Size: 24" x 24" (4.00 sq. ft.)									
Duct Velocity	225	250	500	750	875	1000	1125	1250	1375
Flow (CFM)	900	1000	2000	3000	3500	4000	4500	5000	5500
0° Total Press.	0.008	0.009	0.039	0.089	0.122	0.159	0.210	0.249	0.294
Throw	23-35-69	25-38-75	51-77-153	76-114-228	89-134-267	102-153-306	115-173-345	127-191-381	137-206-411
NC	<20	<20	20	32	36	41	44	47	50
22.5° Total Press.	0.009	0.010	0.043	0.097	0.133	0.174	0.221	0.271	0.325
Throw	18-27-54	19-29-57	39-59-117	58-87-174	68-102-204	78-117-234	88-132-264	97-146-291	104-156-312
NC	<20	<20	21	33	37	42	45	48	51
45° Total Press.	0.014	0.017	0.070	0.158	0.214	0.280	0.356	0.439	0.550
Throw	12-18-36	14-21-42	26-39-78	42-63-126	49-74-147	58-87-174	63-95-189	69-104-207	75-113-225
NC	<20	<20	26	38	41	47	50	53	56

- Notes on Performance Data:**
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 - Actual Performance in the field may vary.
 - Testing was conducted in isothermal conditions.
 - Sound level values are based on a room absorption of 10db re 10⁻¹² watts.
 - A "----" indicates an NC value less than 10.

Heavy Duty Registers & Grilles

Nominal Size: 28" x 24" (4.67 sq. ft.)									
Duct Velocity	214	429	643	750	857	964	1071	1179	1286
Flow (CFM)	1000	2000	3000	3500	4000	4500	5000	5500	6000
0° Total Press.	0.007	0.028	0.064	0.088	0.115	0.146	0.180	0.219	0.260
Throw	23-35-69	46-69-138	69-104-207	80-120-240	92-138-276	106-159-318	115-173-345	126-189-378	138-207-414
NC	<20	<20	28	32	36	40	43	46	48
22.5° Total Press.	0.008	0.031	0.070	0.096	0.125	0.159	0.198	0.239	0.284
Throw	18-27-54	36-54-108	54-81-162	63-95-189	72-108-216	82-123-246	90-135-270	100-150-300	108-162-324
NC	<20	<20	29	33	37	41	44	47	49
45° Total Press.	0.012	0.052	0.116	0.158	0.206	0.260	0.319	0.388	0.461
Throw	13-20-39	26-39-78	39-59-117	45-68-135	52-78-156	58-87-174	65-98-195	72-108-216	78-117-234
NC	<20	<20	34	38	42	40	49	52	54
Nominal Size: 36" x 24" (6.00 sq. ft.)									
Duct Velocity	500	583	667	750	833	917	1000	1083	1167
Flow (CFM)	3000	3500	4000	4500	5000	5500	6000	6500	7000
0° Total Press.	0.039	0.053	0.083	0.089	0.108	0.132	0.157	0.184	0.21
Throw	62-93-186	72-108-216	82-123-246	92-138-276	102-153-306	112-168-336	124-186-372	135-203-405	145-218-435
NC	<20	24	28	30	34	37	40	43	45
22.5° Total Press.	0.042	0.058	0.075	0.095	0.117	0.144	0.171	0.201	0.233
Throw	46-69-138	54-81-162	62-93-186	70-105-210	78-117-234	86-129-258	92-138-276	103-155-309	111-167-333
NC	<20	25	29	32	35	38	41	44	46
45° Total Press.	0.068	0.093	0.122	0.155	0.192	0.232	0.277	0.325	0.377
Throw	33-50-99	38-57-114	44-66-132	50-75-150	56-84-168	61-92-183	66-99-198	74-111-222	79-119-237
NC	<20	30	34	37	40	43	46	49	51
Nominal Size: 48" x 20" (6.67 sq. ft.)									
Duct Velocity	525	600	675	750	825	900	975	1050	1125
Flow (CFM)	3500	4000	4500	5000	5500	6000	6500	7000	7500
0° Total Press.	0.045	0.058	0.074	0.092	0.112	0.133	0.156	0.180	0.207
Throw	68-102-204	78-117-234	87-131-261	97-146-291	106-159-318	116-174-348	126-189-378	136-204-408	146-219-43
NC	<20	24	27	30	33	36	38	40	42
22.5° Total Press.	0.049	0.064	0.082	0.100	0.121	0.144	0.170	0.198	0.226
Throw	52-78-156	60-90-180	67-101-201	75-113-225	82-123-246	90-135-270	97-146-291	104-156-312	112-168-336
NC	20	25	28	31	34	37	39	41	43
45° Total Press.	0.079	0.103	0.131	0.163	0.197	0.234	0.274	0.318	0.365
Throw	36-54-108	42-63-126	48-72-144	53-80-159	58-87-174	64-96-192	69-104-207	75-113-225	79-119-237
NC	25	30	33	36	39	42	44	46	48
Nominal Size: 48" x 24" (8.00 sq. ft.)									
Duct Velocity	438	500	562	625	688	750	812	875	938
Flow (CFM)	3500	4000	4500	5000	5500	6000	6500	7000	7500
0° Total Press.	0.030	0.040	0.052	0.063	0.076	0.091	0.107	0.124	0.143
Throw	64-96-192	74-111-222	83-125-249	92-138-276	100-150-300	111-167-333	119-179-357	128-192-384	138-207-414
NC	<20	21	24	27	30	33	35	37	39
22.5° Total Press.	0.034	0.044	0.056	0.069	0.083	0.098	0.117	0.137	0.156
Throw	49-74-147	56-84-168	63-95-189	70-105-210	77-116-231	84-126-252	91-137-273	98-147-294	105-158-315
NC	<20	22	25	28	31	34	36	38	40
45° Total Press.	0.055	0.071	0.090	0.112	0.136	0.162	0.190	0.221	0.251
Throw	35-53-105	40-60-120	45-68-135	50-75-150	55-83-165	60-90-180	65-98-195	70-105-210	75-113-225
NC	22	27	30	33	36	39	41	43	45
Nominal Size: 72" x 20" (10.00 sq. ft.)									
Duct Velocity	400	450	500	550	600	650	700	750	800
Flow (CFM)	4000	4500	5000	5500	6000	6500	7000	7500	8000
0° Total Press.	0.024	0.030	0.038	0.046	0.055	0.064	0.075	0.086	0.098
Throw	64-96-192	72-108-216	80-120-240	88-132-264	96-144-288	104-156-312	112-168-336	120-180-360	128-192-384
NC	<20	21	24	27	30	32	34	36	38
22.5° Total Press.	0.026	0.033	0.042	0.050	0.059	0.070	0.082	0.094	0.107
Throw	48-72-144	54-81-162	60-90-180	66-99-198	72-108-216	78-117-234	84-126-252	90-135-270	96-144-288
NC<20	<20	22	25	28	31	33	35	37	39
45° Total Press.	0.043	0.055	0.067	0.082	0.097	0.114	0.133	0.153	0.172
Throw	34-51-102	38-57-114	42-63-126	46-69-138	51-77-153	55-83-165	60-90-180	64-96-192	68-102-204
NC	24	27	30	33	36	38	40	42	44

Notes on

Performance Data:

- Performance data is based on tests conducted in accordance with ANSI/ASHRAE Standard 70-1991.
- Actual Performance in the field may vary.
- Testing was conducted in isothermal conditions.
- Sound level values are based on a room absorption of 10db re 10⁻¹² watts.
- A "----" indicates an NC value less than 10.

Nominal Size: 72" x 24" (12.00 sq. ft.)										
	Duct Velocity	375	417	458	500	542	583	625	667	708
	Flow (CFM)	4500	5000	5500	6000	6500	7000	7500	8000	8500
0°	Total Press.	0.021	0.026	0.031	0.038	0.044	0.052	0.059	0.067	0.075
	Throw	65-98-195	72-108-216	79-119-237	86-129-258	93-140-279	100-150-300	108-162-324	116-174-348	122-183-366
	NC	<20	21	24	27	29	31	33	35	37
22.5°	Total Press.	0.023	0.028	0.034	0.040	0.048	0.056	0.064	0.072	0.082
	Throw	50-75-150	55-83-165	60-90-180	66-99-198	71-107-213	75-113-225	82-123-246	88-132-264	83-125-249
	NC	<20	22	25	28	30	32	34	36	38
45°	Total Press.	0.037	0.046	0.056	0.066	0.078	0.091	0.104	0.118	0.134
	Throw	35-53-105	39-59-117	42-63-126	46-69-138	50-75-150	54-81-162	59-89-177	64-96-192	87-131-261
	NC	24	27	30	33	35	37	39	41	43
Nominal Size: 44" x 44" (13.44 sq. ft.)										
	Duct Velocity	372	409	446	483	521	558	595	632	669
	Flow (CFM)	5000	5500	6000	6500	7000	7500	8000	8500	9000
0°	Total Press.	0.023	0.028	0.034	0.039	0.046	0.053	0.061	0.068	0.076
	Throw	73-110-219	79-119-237	86-129-258	93-140-279	100-150-300	108-162-324	116-174-348	123-185-369	130-195-390
	NC	<20	21	24	26	28	30	32	34	36
22.5°	Total Press.	0.025	0.031	0.037	0.044	0.060	0.058	0.066	0.074	0.083
	Throw	56-84-168	61-92-183	66-99-198	71-107-213	76-114-228	82-123-264	88-132-264	94-141-282	100-150-300
	NC	<20	22	25	27	29	31	33	35	37
45°	Total Press.	0.042	0.050	0.060	0.070	0.062	0.094	0.107	0.121	0.137
	Throw	40-60-120	43-65-129	47-71-141	50-75-150	54-81-162	59-89-177	64-96-192	87-131-261	70-105-210
	NC	24	27	30	33	34	36	38	40	42
Nominal Size: 48" x 48" (16.00 sq. ft.)										
	Duct Velocity	375	406	438	469	500	531	562	594	625
	Flow (CFM)	6000	6500	7000	7500	8000	8500	9000	9500	10000
0°	Total Press.	0.023	0.027	0.032	0.037	0.043	0.048	0.053	0.060	0.067
	Throw	80-120-240	86-129-258	92-137-273	99-149-297	106-159-318	113-170-339	120-180-360	127-191-381	134-201-402
	NC	21	23	25	27	29	31	33	35	37
22.5°	Total Press.	0.026	0.030	0.035	0.040	0.046	0.052	0.058	0.065	0.072
	Throw	61-92-183	66-99-198	70-105-210	76-114-228	82-123-246	87-131-261	92-138-276	97-146-291	102-153-306
	NC	22	24	26	28	30	32	34	36	38
45°	Total Press.	0.042	0.049	0.057	0.066	0.075	0.085	0.095	0.107	0.118
	Throw	44-66-132	47-71-141	50-75-150	54-81-162	58-87-174	62-93-186	66-99-198	70-105-210	74-110-222
	NC	27	29	31	33	35	37	39	41	43

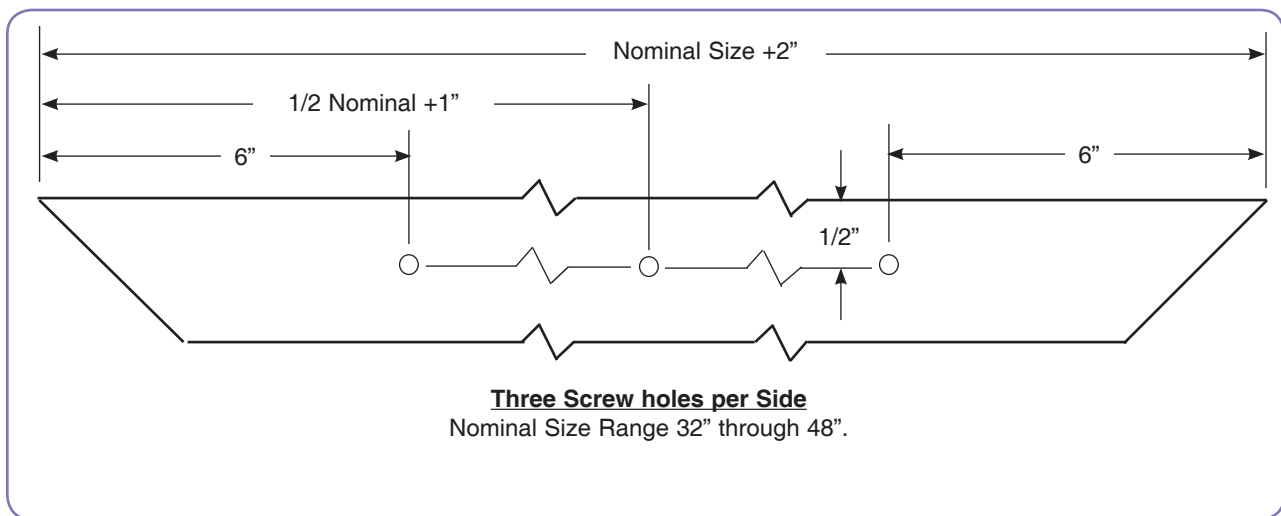
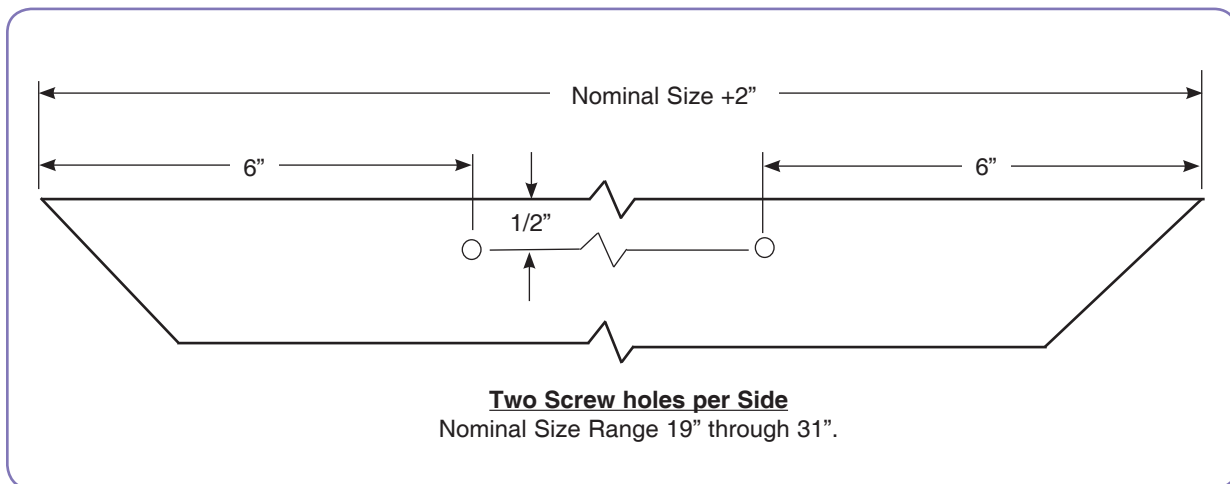
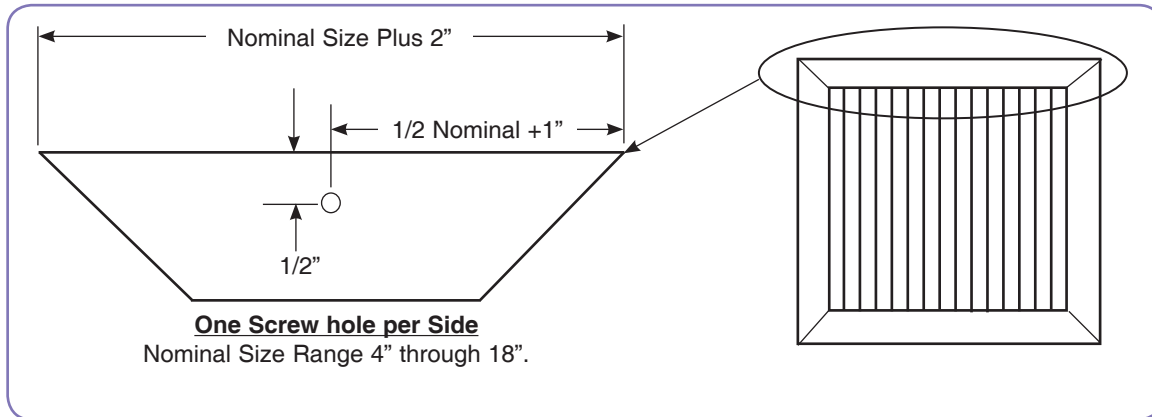
Notes on Performance Data:

- Performance data is based on tests conducted in accordance with ANSI/ASHRAE Standard 70-1991.
- Actual Performance in the field may vary.
- Testing was conducted in isothermal conditions.
- Sound level values are based on a room absorption of 10db re 10⁻¹² watts.
- A "----" indicates an NC value less than 10.

NOTES:

Screw Hole Location on Steel Registers and Grilles

- Screw holes on the face are standard on Registers and Grilles.
- Steel R&G can be ordered without screw holes, for use with concealed hangers.
- The screw hole is 5/32" in diameter, counter sunk.
- Each Register or Grille is provided with the appropriate number of screws as standard.
- The standard screw is a #8 x 1-1/4" counter sunk screw, with a flat blade head.
- Tamper-proof screws are available as an option.

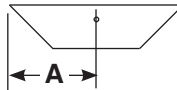


Screw Hole Location for the following Registers & Grilles

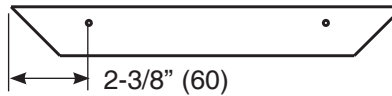
40° Return RSHA, RTHA
 0° Return RSEA, RTEA

Hole location for long side (if grille is rectangular) or opposite sides (if grille is square).

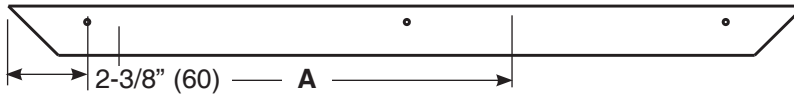
Nominal Size ->	4" (102)	6" (152)	8" (203)
Dim. "A" ->	3" (76)	4" (102)	5" (127)



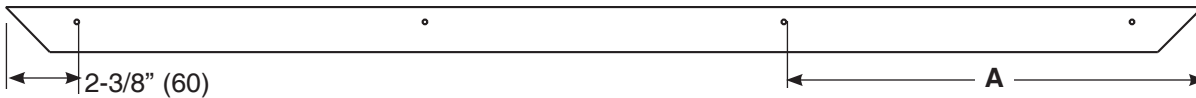
Nominal Size ->	10" (254)	12" (305)	14" (356)	16" (406)	18" (457)	20" (508)
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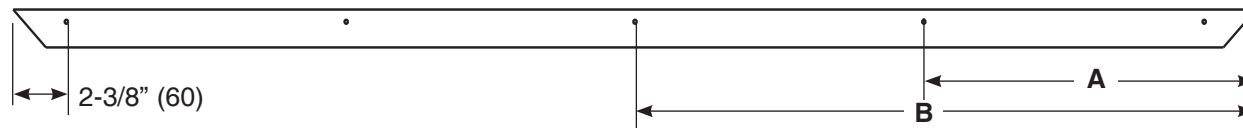
Nominal Size ->	22" (559)	24" (610)	26" (660)	28" (711)	30" (762)	32" (813)	34" (864)	36" (914)
Dim. "A" ->	12" (305)	13" (330)	14" (356)	15" (381)	16" (406)	17" (432)	18" (457)	19" (483)



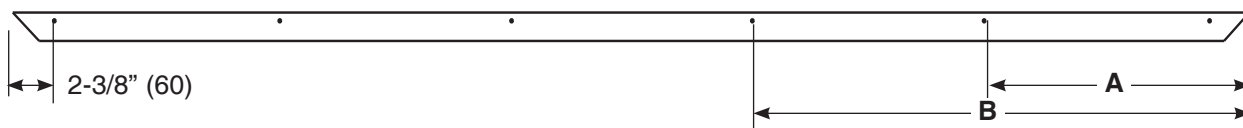
Nominal Size ->	38" (965)	40" (1016)	42" (1067)	44" (1118)	46" (1168)	48" (1219)	50" (1270)	52" (1321)
Dim. "A" ->	14" (356)	15" (381)	15 1/2" (394)	16" (406)	17" (432)	17 1/2" (445)	18" (457)	19" (483)



Nominal Size ->	54" (1372)	56" (1422)	58" (1473)	60" (1524)	62" (1575)	64" (1626)	66" (1676)	68" (1727)
Dim. "A" ->	15" (381)	15 1/2" (394)	16" (406)	16 1/2" (419)	17" (432)	17 1/2" (445)	18" (457)	18 1/2" (470)
Dim. "B" ->	28" (711)	29" (737)	30" (762)	31" (787)	32" (813)	33" (838)	34" (864)	35" (889)



Nominal Size ->	70" (1778)	72" (1829)
Dim. "A" ->	15 1/2" (394)	16" (406)
Dim. "B" ->	29" (737)	30" (762)

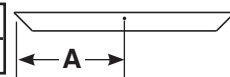


Hole Location for other sides.

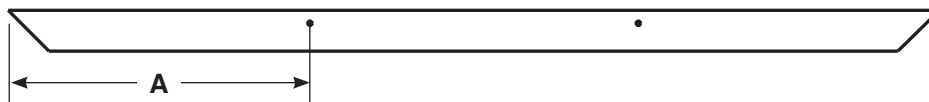
Nominal Size ->	4" (102)	6" (152)	8" (203)	10" (254)	12" (305)	14" (356)
	No Screw Holes					



Nominal Size ->	16" (406)	18" (457)	20" (508)	22" (559)	24" (610)	26" (660)	28" (711)	30" (762)
Dim. "A" ->	9" (229)	10" (254)	11" (279)	12" (305)	13" (330)	14" (356)	15" (381)	16" (406)



Nominal Size ->	32" (813)	34" (864)	36" (914)	38" (965)	40" (1016)	42" (1067)	44" (1118)	46" (1168)	48" (1219)
Dim. "A" ->	11" (279)	12" (305)	13" (330)	13" (330)	14" (356)	15" (381)	16" (406)	16" (406)	17" (432)



Notes:

- Standard screws are #8 x 1-1/4" (32) Phillips head sheet metal screws.
- Holes are countersunk for flush appearance.
- Hole center is placed 1/2" (13) in from outside edge.
- Metric (SI) dimensions are given in millimeters.

Heavy Duty Registers & Grilles

SCREW HOLE LOCATIONS

For M-Series Aluminum Registers and Grilles (except Door and Partition Grilles)

SIZE	LONG DIMENSION AND NUMBER OF HOLES																																															
	ONE HOLE																		TWO HOLES												THREE HOLES																	
4	[Grid]																																															
5	[Grid]																																															
6	FOUR SCREWS																		[Grid]																		[Grid]											
7	[Grid]																		[Grid]												[Grid]																	
8	[Grid]																		SIX SCREWS												EIGHT SCREWS																	
9	[Grid]																		[Grid]												[Grid]																	
10	[Grid]																		[Grid]												[Grid]																	
11	[Grid]																		[Grid]												[Grid]																	
12	[Grid]																		[Grid]												[Grid]																	
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22	[Grid]																		EIGHT SCREWS												[Grid]																	
23	[Grid]																		[Grid]												[Grid]																	
24	[Grid]																		[Grid]												TEN SCREWS																	
25	[Grid]																		[Grid]												[Grid]																	
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27	[Grid]																		[Grid]												[Grid]																	
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33	[Grid]																		[Grid]												[Grid]																	
34	[Grid]																		[Grid]												TWELVE SCREWS																	
35	[Grid]																		[Grid]												[Grid]																	
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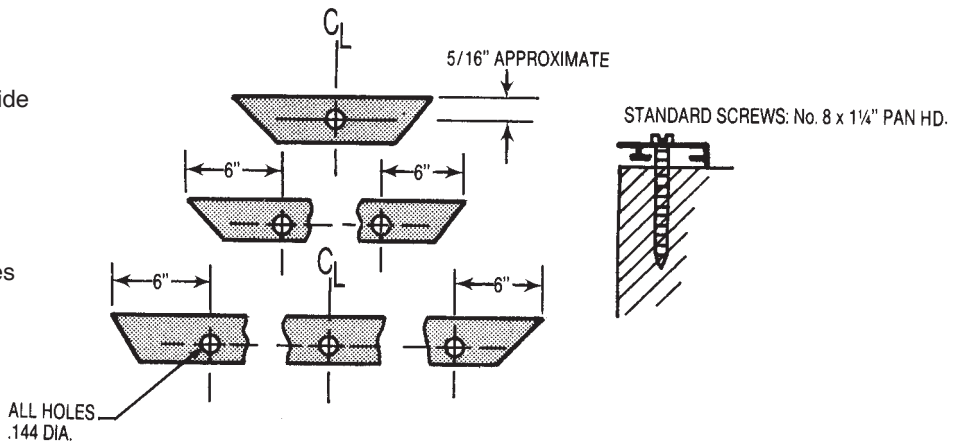
Heavy Duty Registers & Grilles

NOTES:

When one mounting per side is provided:

When two mounting holes per side are provided:

When three mounting holes per side are provided:



Panel for T-bar Ceiling (Option T)

Application

This option is used when the grille is to mount in a suspended ceiling, but is too small to lay in by itself. The grille is set in a panel that will lay into the appropriate size and type of ceiling.

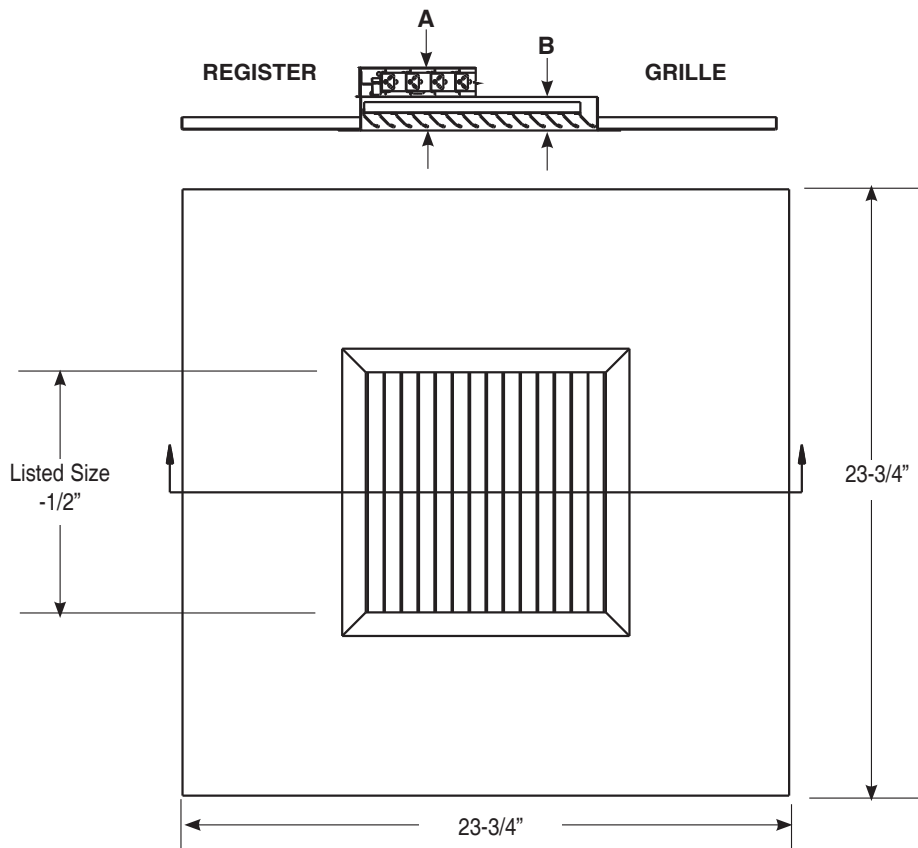
Features

The largest grille in this catalog that will fit in the following T-bar grid sizes is as follows:

T-bar Grid	Maximum Grille Nominal Size
12" x 12"	8" x 8"
12" x 24"	8" x 20"
24" x 24"	20" x 20"
24" x 48"	20" x 44" (Louvered and Perforated Face Returns)
24" x 48"	20" x 36" (Single and Double Deflection Supplies, and 0° and 45° Returns)

Sizing Note:

Carnes offers all steel, stainless steel and B-series aluminum grilles in a nominal 21-3/4" x 21-3/4" size that lays into standard 15/16" flat face T-bar with no need for Option T.



Sheared Frame for T-bar (Option S)

Application

This option is used when the grille is sized to lay into a suspended ceiling, and the design requires the largest possible grille for the opening.

Features

When this option is specified on the following sizes, Carnes shears the grille frame down to the following face outside diameters for layin ceilings.

Grille Nominal Size	Normal Face O. D.	Sheared Face O. D.
10" x 10"	12" x 12"	11-3/4" x 11-3/4"
10" x 22"	12" x 24"	11-3/4" x 23-3/4"
22" x 22"	24" x 24"	23-3/4" x 23-3/4"
22" x 46"	24" x 48"	23-3/4" x 47-3/4"

(Note: This size is only available on steel and B-series aluminum louvered and perforated face returns)

Sizing Note:

Carnes offers all steel, stainless steel and B-series aluminum grilles in a nominal 21-3/4" x 21-3/4" size that lays into standard 15/16" flat face T-bar with no need for Option S.

Heavy Duty Registers & Grilles

No Screw Holes (Option N)

Application

This option is used when the grille is sized to lay into a suspended ceiling, and screw holes are therefore not needed, or when the installation requires custom placement of the screw holes.

Features

When this option is specified, Carnes manufactures the grille with no screw holes in the face.

Tamper-Proof Screws (Option B)

Application

This option is used to prevent casual access to the duct.

Features

- The screw used is Holt-Head Type A tamper-proof screw, size #8 x 1-1/4".
- Hand drivers, service drivers and power driver tips are available from Carnes.

Z-Clips for Spline Ceiling (Option Z)

Application

This is used to mount certain grille sizes in concealed spline ceilings.

Features

The option is applied to any of the steel, stainless steel and B-series aluminum grilles in the following nominal sizes to mount in the following concealed spline ceiling sizes:

<u>Grille Nominal Size</u>	<u>Spline Ceiling Size</u>
10" x 10"	12" x 12"
10" x 22"	12" x 24"
22" x 22"	24" x 24"

Sizing Note:

- Screw holes are automatically deleted when Option Z is specified.
- For grille sizes smaller than shown, custom mounting panels are available on request.

W-Clips for Snap-in Metal Pan Ceiling (Option U)

Application

This option is used to mount certain grille sizes in snap-in metal pan ceilings.

Features

This option is applied to any of the steel, stainless steel and B-series aluminum grilles in the following nominal sizes to mount in the following snap-in metal pan ceilings.

<u>Grille Nominal Size</u>	<u>Snap-in Metal Pan Ceiling Size</u>
22" x 22"	24" x 24"
10" x 22"	12" x 24"

- Screw holes are automatically deleted when Option U is specified.
- For grille sizes smaller than shown, custom mounting panels are available on request.

NOTES:

Debris Screen (Option 1)

Application

This option is used to prevent insects from getting through the grille, either into the duct or into the room.

Features

- The material used is 1814 insect screen.
- This option is available on both grilles and registers.

Concealed Hangers (Option C)

Application

This option is used to provide concealed mounting and tools-free duct access.

Features

- It requires that the duct be made 1” larger than the nominal grille size.
- If the duct is already installed, as in retro-fits, sizing the grille down by 1” will accomplish the same thing.
- Screw holes are automatically deleted when Option C is specified.
- A spring is factory-mounted on the back of the flange, and this spring snaps into a mounting bracket that is field mounted in the duct opening.

Pull Cord Damper Operator (Options P and A)

Application

This option allows balancing when the damper is mounted upstream of the grille, and the only access to the damper is through the grille.

Features

- Heavy duty cord is permanently mounted to damper.
- Cord ends are tucked behind grille face after balancing.
- Option P is used when the damper is mounted parallel to the floor.
- Option A is used when the damper is mounted perpendicular to the floor.

Lever Operator (Option V)

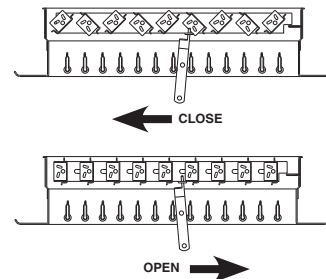
Application

This option allows tools-free balancing from the face of the register.

Features

- Lever is permanently mounted to register.
- Option V is available on these models:

	Steel	Aluminum	Stainless Steel
Single Deflection Supply	RTSB	RNSM	RMSB
Double Deflection Supply	RTDB	RNDM	RMDB
0° Fixed Return	RTRB	RNRM	RMRB
45° Fixed Return	RTAB	RNAM	RMAB



Fusible Link for Register (Option F)

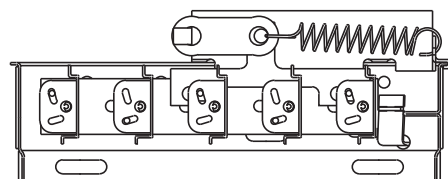
Application

Fusible links are general used in hazardous locations to prevent the possible spread of fire or reduce updrafts in case of fire. They are not UL-listed as fire dampers.

Features

- The link melts at approximately 160° Fahrenheit, activating a spring which pulls the damper closed.
- A link is mounted to each damper in a multi-damper assembly.
- The link does not interfere with the normal setting of the damper, but requires one inch of added depth in the duct.

Square/Rectangular Damper Model RXEA shown with Fusible Link installed.



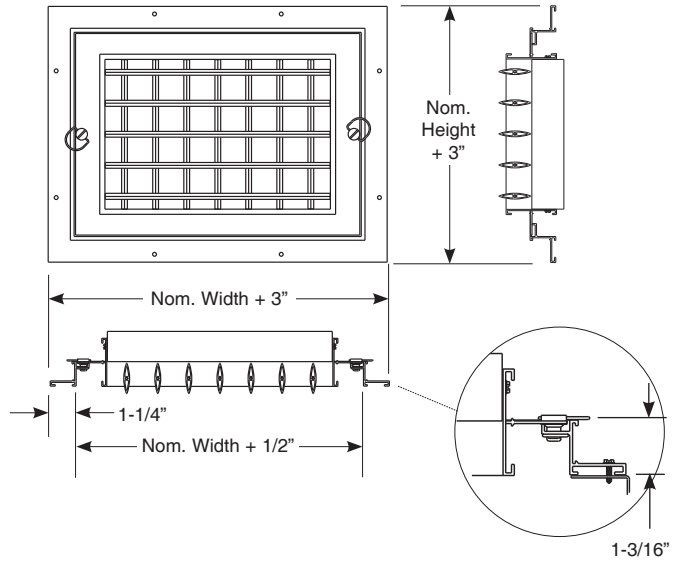
**Option "M" for 1-1/2" Double Deflection
Supply Grille Model R&G**

Application:

Use with the Double Deflection 1-1/2" Supply Grille when frequent or regular removal is required, either for cleaning or periodic alteration of the discharge.

Standard Features:

- All extruded aluminum construction
- Grille is held to frame by 1/4-turn fasteners.
- Standard finish is #20 mill finish.



NOTES: