

Model DFD-150 Types CR, CO & C

100% Free Area - Low to Medium Pressure Systems
1 1/2 Hour Fire Resistance Rating

Application

Model DFD-150 is approved for use in walls, floors and partitions with fire resistance ratings less than 3 hours. This model carries a 1 1/2 hour UL fire damper label. UL 555 classifies dynamic rated fire dampers for use in HVAC systems that are operational in the event of fire.

Construction

Galvanized steel (in gauges required by UL listing R-13317)

Installation

All fire damper installations require the use of sleeves, angles and methods described in Greenheck Fire Damper Installation Instructions #452763, included with every damper shipment. Sleeves can be field fabricated or factory furnished as a complete damper/sleeve assembly. See Factory Sleeve Option below for details.

Model DFD-150 meets the requirements for fire dampers established by:

National Fire Protection Association
(NFPA Standards 90A & 101)

BOCA National Building Codes

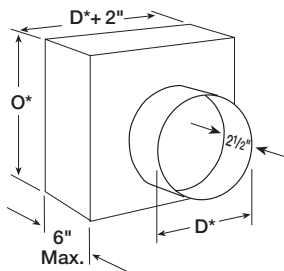
ICBO Uniform Building Codes (UBC Standard 43-7)

SBCCI Standard Building Codes

New York City (MEA listing #260-91-M)

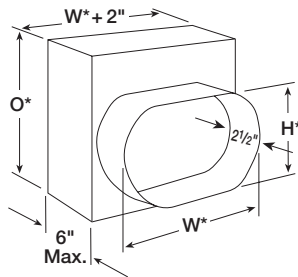
California State Fire Marshal (Listing #3225-981:102)

"UL CLASSIFIED (see complete marking on product)"
"UL CLASSIFIED to Canadian safety standards (see complete marking on product)"
 Standard 555 (Listing #R13317)

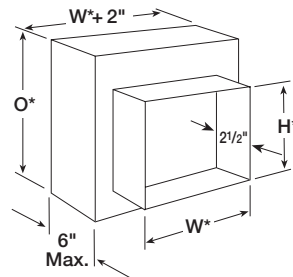


TYPE CR

All dimensions shown in inches



TYPE CO

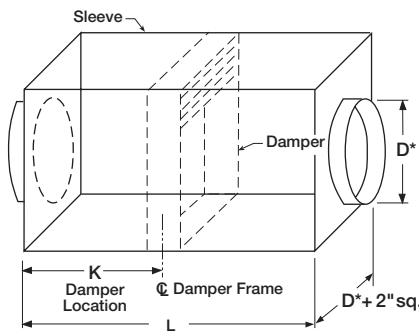


TYPE C

Features:

- Stainless steel closure springs
- Fusible links (165°F standard, 212°F & 286°F available)
- Can be mounted horizontally or vertically (see limitations on page 4)

* These dimensions are furnished approximately 1/4 in. undersize, except round and oval dimensions which are 1/8 in. undersize. (Add sleeve thickness for overall sleeved damper dimension)



All dimensions shown in inches

Factory Sleeve Option

DFD-150 Fire Dampers are available in factory furnished sleeves. Sleeves are galvanized steel and are available in 10 thru 20 ga. thicknesses and lengths up to 36 in.

"K" dimension specifies location of damper within the sleeve. Minimum is 4 in., maximum is "L" less 4 in., which allows for mounting angle installation and duct connection at each end of sleeve. If "K" dimension is not specified, it will be provided as one half of "L" dimension (damper centered in sleeve).

Horizontal dampers must be installed with the "K" dimension on the top side (per UL test: see label on damper).

Horizontal dampers must have the access door installed on the top side to facilitate reopening of the blades should the link melt.

Qty.	Type CR CO C	Damper Size		Fusible Link Temp (165°F std.)	Factory Sleeve Option					
		W*	H*		Dimensions		Gauge	Material		
					L	K				

Project

Location

Contractor

Design Specifier

UNDUCTED VELOCITY RATINGS

DFD-150 TYPE CR, CO, C

Dynamic Rated Fire Damper Application

Airflow ratings for dynamic fire dampers vary depending on the type of installation. UL Standard 555 provides for testing and dynamic rating of fire dampers in the six installations illustrated. Use the following steps to verify that a fire damper is properly rated for the application intended:

1. Check the maximum pressure that can occur with damper fully closed. **Model DFD dampers are rated to close against 8 in. w.g.**
2. Select the Installation and Airflow Velocity Table that approximates the installation being considered.
For example: Ducted installation with vertical damper, horizontal airflow would use Table D.
3. Using the WxH damper dimensions (see page 1) determine the maximum velocity rating in fpm from the proper Airflow Velocity Table.
For example: Using Table D for a ducted vertical damper installation with horizontal airflow, the maximum velocity through a 30 in. x12 in. Type C damper is 4332 fpm. Maximum airflow velocity through a 24 in. dia. Type CR damper with the same installation is 5545 fpm.

Maximum Airflow Velocity Ratings (FPM) for Unducted Installations

Vertical Damper Installation Horizontal Airflow

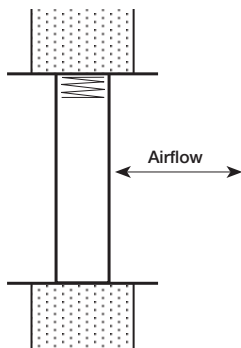


Table A

Type CR	
Dia.	FPM
3-9 in.	14036
>9-20	10105
>20-31	7556
>31-44	2182

Damper Height (H) inches	Damper Width (W) inches						
	10	22	34	46	70	106	118
9	C-10824 CO-13414 1 section			C-3764 CO-4075 2 sections		C-1893 CO-2020 3 sections	C-1417 CO-1502 4 sections
20	C-7871 CO-9225 1 section						
31		C-5903 CO-6976 1 section		C-2867 CO-3141 2 sections			
44	C-3577 CO-5364 2 sections	C-2772 CO-3583 2 sections	C-1711 CO-2074 4 sections	C-1346 CO-1539 4 sections		C-905 CO-977 6 sections	C-678 CO-725 8 sections
		22	34	46	70	94	106

Horizontal Damper Installation Airflow Down

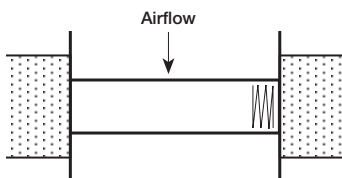


Table B

Type CR	
Dia.	FPM
3-9 in.	14377
>9-20	6142
>20-31	2349
>31-44	1326

Damper Height (H) inches	Damper Width (W) inches						
	10	22	34	46	70	106	118
9	C-11086 CO-13740 1 section			C-2288 CO-2477 2 sections		C-588 CO-628 3 sections	C-440 CO-467 4 sections
20	C-4784 CO-5607 1 section						
31		C-1835 CO-2169 1 section		C-891 CO-976 2 sections			
44	C-2174 CO-3260 2 sections	C-862 CO-1114 2 sections	C-1040 CO-1260 4 sections	C-418 CO-478 4 sections		C-281 CO-303 6 sections	C-210 CO-225 8 sections
		22	34	46	70	94	106

Horizontal Damper Installation Airflow Up

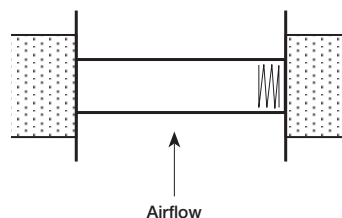


Table C

Type CR	
Dia.	FPM
3-9 in.	14810
>9-20	8488
>20-31	3419
>31-44	1833

Damper Height (H) inches	Damper Width (W) inches						
	10	22	34	46	70	106	118
9	C-11420 CO-14154 1 section			C-3162 CO-3423 2 sections		C-856 CO-914 3 sections	C-641 CO-679 4 sections
20	C-6611 CO-7748 1 section						
31		C-2671 CO-3157 1 section		C-1297 CO-1421 2 sections			
44	C-3005 CO-4505 2 sections	C-1254 CO-1621 2 sections	C-1437 CO-1742 4 sections	C-609 CO-696 4 sections		C-409 CO-442 6 sections	C-306 CO-328 8 sections
		22	34	46	70	94	106

DUCTED VELOCITY RATINGS

DFD-150 TYPE CR, CO, C

Dynamic Ratings for Multi-Section Damper Assemblies

Dampers larger than maximum single section size are supplied in 2 or more sections of equal size (see pg.4). In the event of fire it must be assumed that each damper section will close at a slightly different time and that the last damper section remaining open will be handling the entire airflow volume. Airflow ratings in Tables A-F for dampers larger than single section are based on this assumption. These tables also show the number of sections in a multi-section damper assembly.

Consult factory for velocity limitations on dampers over 44 in. in height.

Maximum Airflow Velocity Ratings (FPM) for Ducted Installations

**Vertical Damper Installation
Horizontal Airflow**

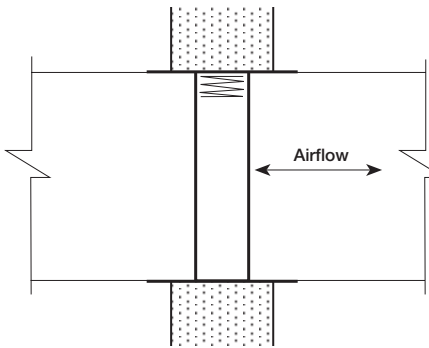


Table D

Type CR	
Dia.	FPM
3-9 in.	10451
>9-20	6370
>20-31	5545
>31-44	1453

Damper Height (H) inches	Damper Width (W) inches						
	10	22	34	46	70	106	118
9	C-8059 CO-9988 1 section			C-2507 CO-2714 2 sections			
20		C-5242 CO-6144 1 section				C-1389 CO-1482 3 sections	C-1040 CO-1102 4 sections
31			C-4332 CO-5120 1 section		C-2104 CO-2305 2 sections		
44		C-2382 CO-3572 2 sections	C-2034 CO-2629 2 sections	C-1139 CO-1381 4 sections	C-988 CO-1130 4 sections	C-664 CO-717 6 sections	C-497 CO-532 8 sections
		22	34	46	70	94	106 118

**Horizontal Damper Installation
Airflow Down**

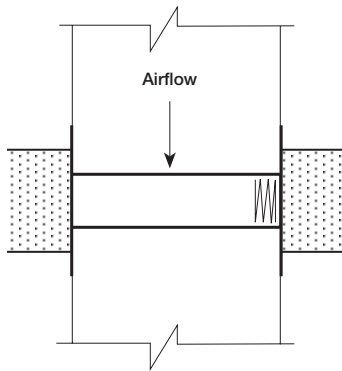


Table E

Type CR	
Dia.	FPM
3-9 in.	12094
>9-20	4278
>20-31	1580
>31-44	924

Damper Height (H) inches	Damper Width (W) inches						
	10	22	34	46	70	106	118
9	C-9326 CO-11558 1 section			C-1593 CO-1725 2 sections			
20		C-3332 CO-3905 1 section				C-395 CO-422 3 sections	C-296 CO-314 4 sections
31			C-1234 CO-1458 1 section		C-599 CO-656 2 sections		
44		C-1514 CO-2271 2 sections	C-579 CO-749 2 sections	C-724 CO-878 4 sections	C-281 CO-322 4 sections	C-189 CO-204 6 sections	C-141 CO-151 8 sections
		22	34	46	70	94	106 118

**Horizontal Damper Installation
Airflow Up**

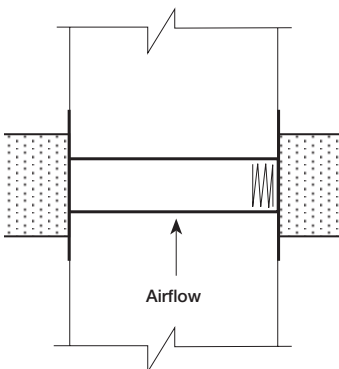


Table F

Type CR	
Dia.	FPM
3-9 in.	8967
>9-20	5107
>20-31	1972
>31-44	1103

Damper Height (H) inches	Damper Width (W) inches						
	10	22	34	46	70	106	118
9	C-6915 CO-8570 1 section			C-1902 CO-2060 2 sections			
20		C-3978 CO-4662 1 section				C-494 CO-527 3 sections	C-370 CO-392 4 sections
31			C-1540 CO-1821 1 section		C-748 CO-820 2 sections		
44		C-1808 CO-2711 2 sections	C-723 CO-935 2 sections	C-864 CO-1048 4 sections	C-351 CO-401 4 sections	C-236 CO-255 6 sections	C-177 CO-189 8 sections
		22	34	46	70	94	106 118

SIZING DATA

DFD-150 TYPE CR, CO, & C

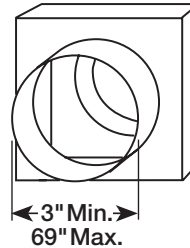
Dampers larger than maximum single section size are supplied as a factory assembly of two or more sections of equal size. These multi-section damper assemblies may have slightly less than 100% free area because of the mullions where damper sections join.

The following charts and illustrations show minimum and maximum damper section size and assembly configurations for multi-section dampers.

Size Limitations (CR)

		Vertical or Horizontal		Vertical Only
		Single Section	Multi-Section	Multi-Section
CR	Minimum	3 dia.	NA	NA
	Maximum	31 dia.	44 dia.	69 dia.

Type 'CR' dampers over 44 dia. utilize reinforcement rods and a vertical mullion. All dimensions shown in inches.

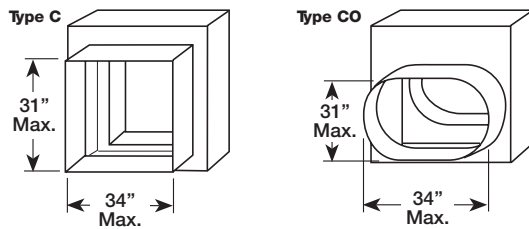


Size Limitations (CO & C)

		Vertical or Horizontal		Vertical Only
		Single Section	Multi-Section	Multi-Section
CO & C	Minimum	3 x 3	NA	NA
	Maximum	① 34 x 31	② 94x4 4 or ③ 118 x 36	④ 72 x 69

Installation of sizes larger than the maximums shown requires approval of the authority having jurisdiction. All dimensions shown in inches.

① Maximum Single Section Dimensions



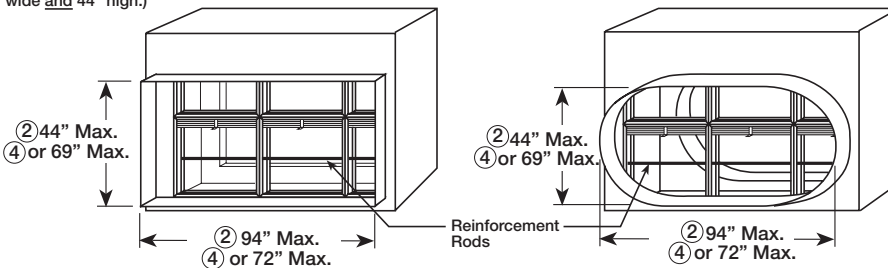
All transitions are positioned 1 in. from bottom of sleeve.

② Multi-Section Limitations

Maximum damper height is 44" when combination width is 94" or less.

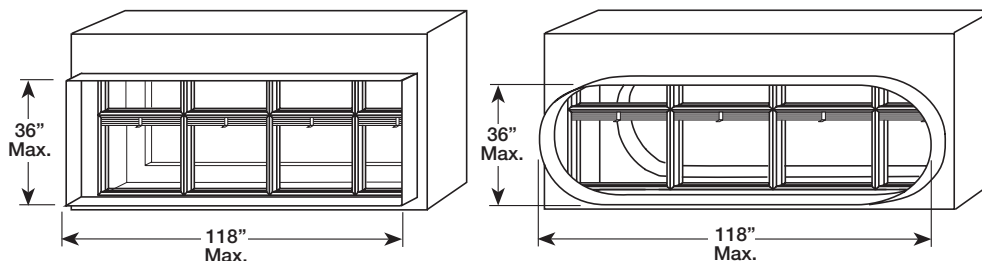
④ Multi-Section Limitations

Maximum damper height is 69" when combination width is 72" or less. (Vertical mullion provided on dampers over 34" wide and 44" high.)



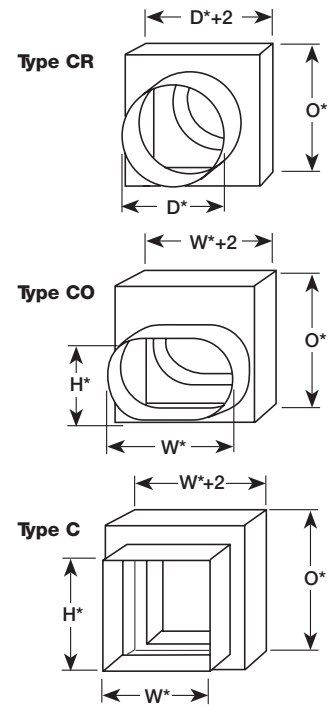
③ Multi-Section Limitations

Maximum transition height is 36" when transition width is greater than 94" and less than or equal to 118".



All dimensions shown in inches.

Overall Damper Dimensions



H or D	O	H or D	O
3 in.	6 in.	36 in.	40 in.
4	7	37	41
5	8	38	42
6	9	39	43
7	10	40	44
8	11	41	45
9	12	42	46
10	13	43	47
11	14	44	48
12	15	45	49
13	16	46	51
14	17	47	52
15	19	48	53
16	20	49	54
17	21	50	55
18	22	51	56
19	23	52	57
20	24	53	58
21	25	54	59
22	27	55	60
23	28	56	61
24	29	57	62
25	30	58	63
26	31	59	64
27	32	60	65
28	33	61	66
29	34	62	67
30	35	63	68
31	36	64	69
32	36	65	70
33	37	66	71
34	38	67	72
35	39	68	73
		69	74

*These dimensions are furnished approximately 1/4 in. undersize, except round and oval dimensions which are approximately 1/8 in. undersize.