

Model DFD-355 Types CR, CO & C

100% Free Area - Sealed for High Pressure Systems
3 Hour Fire Resistance Rating

APPLICATION

Model DFD-355 is approved for use in walls, floors and partitions with fire resistance ratings of 3 hours or more. This model carries a 3 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-355 meets the requirements for fire dampers established by:

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

Underwriters Laboratories Standard 555 (Listing #R-13317)

BOCA National Building Codes

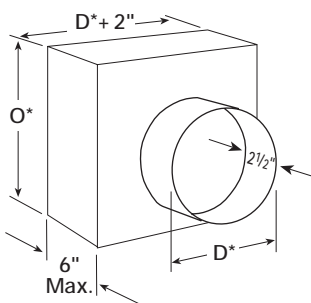
ICBO Uniform Building Codes (UBC Standard 43-7)

SBCCI Standard Building Codes

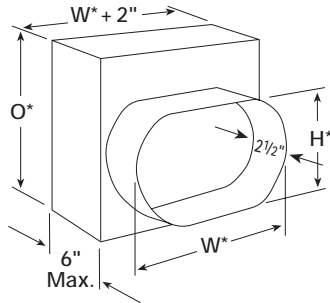
New York City (MEA listing #260-91-M)

California State Fire Marshall

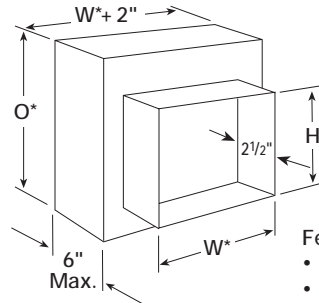
(Listing #3225-981:102 for use in walls)



TYPE CR



TYPE CO

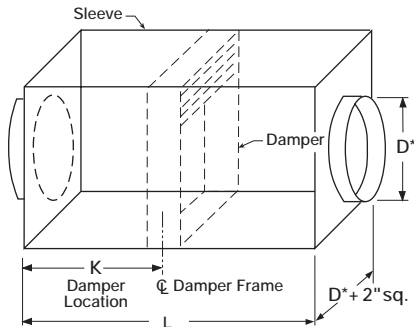


TYPE C

Features:

- Stainless steel closure springs
- Fusible links (165° standard, 212° available)
- Can be mounted horizontally or vertically.

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



FACTORY SLEEVE OPTION

DFD-355 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".

"K" dimension specifies location of damper within the sleeve. Minimum is 4", maximum is "L" less 4", 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).

| Qty. | Type CR CO C | Damper Size | | Fusible Link Temp (165° F std.) | Factory Sleeve Option | | | | | | |
|------------|-----------------------|-------------|----|------------------------------------|-----------------------|---|-------|--|--|--|----------|
| | | W* D* | H* | | Dimensions | | Gauge | | | | Material |
| | | | | | L | K | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| Project | | | | | Location | | | | | | |
| Contractor | | | | | Design Specifier | | | | | | |

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 W x H 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"x12" Type C damper is 4332 fpm. Maximum airflow velocity through a 24" dia. Type CR damper with the same installation is 5545 fpm .

Maximum Airflow Velocity Ratings (FPM) for *Unducted* Installations Model DFD-355 Types CR, CO, C

**Vertical Damper Installation
Horizontal Airflow**

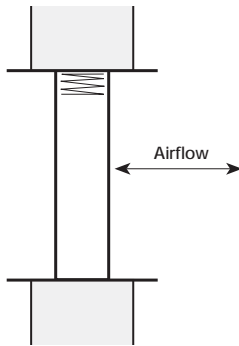


Table A

| Type CR | |
|---------|-------|
| Dia. | FPM |
| 3"-9" | 14036 |
| >9-20 | 10105 |
| >20-31 | 7556 |

| Damper Height (H) inches | Damper Width (W) inches | | |
|--------------------------|----------------------------------|--------------------------------|--------------------------------|
| | 10 | 22 | 34 |
| 9 | C-10824 CO-13414 1 section | | |
| 20 | | C-7871 CO-9225 1 section | |
| 31 | | | C-5903 CO-6976 1 section |

**Horizontal Damper Installation
Airflow Down**

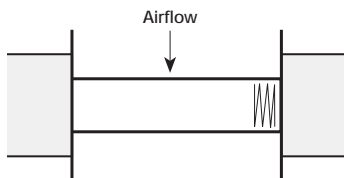


Table B

| Type CR | |
|---------|-------|
| Dia. | FPM |
| 3"-9" | 14377 |
| >9-20 | 6142 |
| >20-31 | 2349 |

| Damper Height (H) inches | Damper Width (W) inches | | |
|--------------------------|----------------------------------|--------------------------------|--------------------------------|
| | 10 | 22 | 34 |
| 9 | C-11086 CO-13740 1 section | | |
| 20 | | C-4784 CO-5607 1 section | |
| 31 | | | C-1835 CO-2169 1 section |

**Horizontal Damper Installation
Airflow Up**

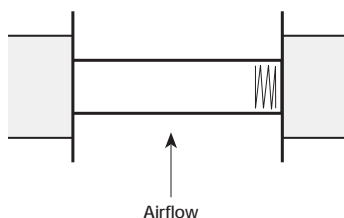


Table C

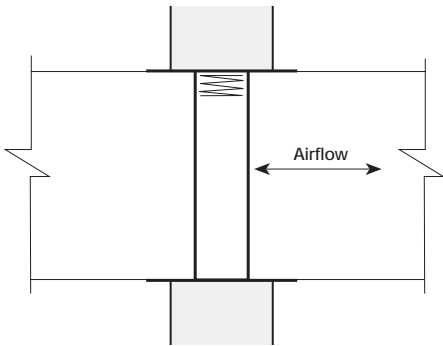
| Type CR | |
|---------|-------|
| Dia. | FPM |
| 3"-9" | 14810 |
| >9-20 | 8488 |
| >20-31 | 3419 |

| Damper Height (H) inches | Damper Width (W) inches | | |
|--------------------------|----------------------------------|--------------------------------|--------------------------------|
| | 10 | 22 | 34 |
| 9 | C-11420 CO-14154 1 section | | |
| 20 | | C-6611 CO-7748 1 section | |
| 31 | | | C-2671 CO-3157 1 section |

Maximum Airflow Velocity Ratings (FPM) for *Ducted* Installations Model DFD-355 Types CR, CO, C

**Vertical Damper Installation
Horizontal Airflow**

Table D

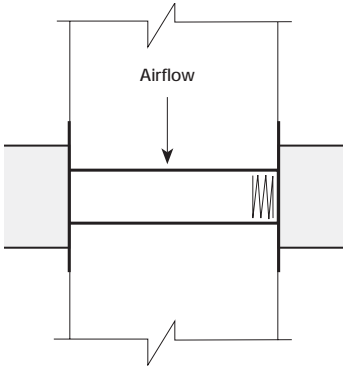


| Type CR | |
|---------|-------|
| Dia. | FPM |
| 3"-9" | 10451 |
| >9-20 | 6730 |
| >20-31 | 5545 |

| Damper Height (H) inches | Damper Width (W) inches | | |
|--------------------------|--------------------------------|--------------------------------|--------------------------------|
| | 10 | 22 | 34 |
| 9 | C-8059 CO-9988 1 section | | |
| 20 | | C-5242 CO-6144 1 section | |
| 31 | | | C-4332 CO-5120 1 section |

**Horizontal Damper Installation
Airflow Down**

Table E

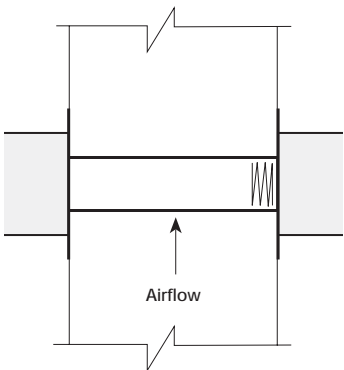


| Type CR | |
|---------|-------|
| Dia. | FPM |
| 3"-9" | 12094 |
| >9-20 | 4278 |
| >20-31 | 1580 |

| Damper Height (H) inches | Damper Width (W) inches | | |
|--------------------------|---------------------------------|--------------------------------|--------------------------------|
| | 10 | 22 | 34 |
| 9 | C-9326 CO-11558 1 section | | |
| 20 | | C-3332 CO-3905 1 section | |
| 31 | | | C-1234 CO-1458 1 section |

**Horizontal Damper Installation
Airflow Up**

Table F



| Type CR | |
|---------|------|
| Dia. | FPM |
| 3"-9" | 8967 |
| >9-20 | 5107 |
| >20-31 | 1972 |

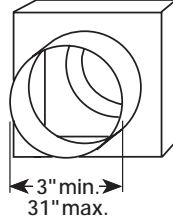
| Damper Height (H) inches | Damper Width (W) inches | | |
|--------------------------|--------------------------------|--------------------------------|--------------------------------|
| | 10 | 22 | 34 |
| 9 | C-6915 CO-8570 1 section | | |
| 20 | | C-3978 CO-4662 1 section | |
| 31 | | | C-1540 CO-1821 1 section |

DFD-355 Types CR, CO & C

Three hour rated dampers are normally furnished in single section size only. Multi-section assembly is allowable with some limitations. Consult Greenheck for specific information.

SIZE LIMITATIONS (CR)

| | | Vertical or Horizontal |
|----|---------|------------------------|
| | | Single Section |
| CR | Minimum | 3" dia. |
| | Maximum | 31" dia. |

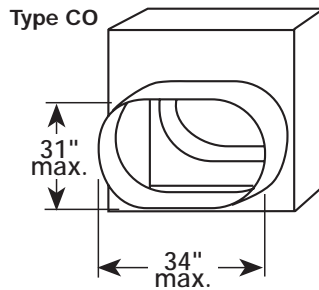
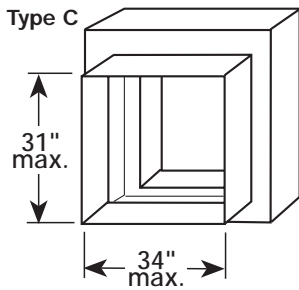


SIZE LIMITATIONS (C and CO)

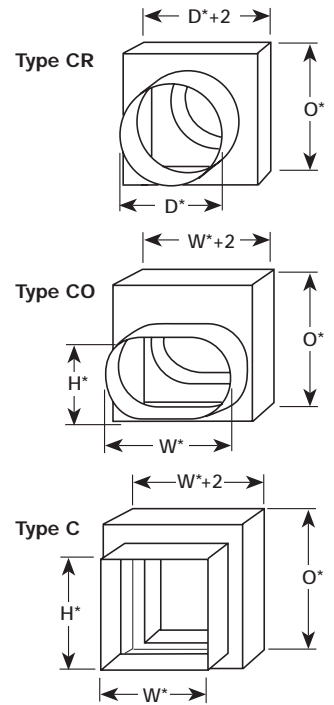
| | | Vertical or Horizontal |
|------|---------|------------------------|
| | | Single Section |
| CO&C | Minimum | 3"x3" |
| | Maximum | 34"x31" |

Installation of sizes larger than the maximums shown requires approval of the authority having jurisdiction.

Maximum Single Section Dimensions



Overall Damper Dimensions



| H* or D* | O* |
|----------|----|
| 3" | 6" |
| 4 | 7 |
| 5 | 8 |
| 6 | 9 |
| 7 | 10 |
| 8 | 11 |
| 9 | 12 |
| 10 | 13 |
| 11 | 14 |
| 12 | 15 |
| 13 | 16 |
| 14 | 17 |
| 15 | 19 |
| 16 | 20 |
| 17 | 21 |
| 18 | 22 |
| 19 | 23 |
| 20 | 24 |
| 21 | 25 |
| 22 | 27 |
| 23 | 28 |
| 24 | 29 |
| 25 | 30 |
| 26 | 31 |
| 27 | 32 |
| 28 | 33 |
| 29 | 34 |
| 30 | 35 |
| 31 | 36 |

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