

Application

Model DFDTF-210 is a value engineered multi-blade fire damper with increased size capability. The redesigned DFDTF-210 has 3V style blades and no jackshaft or manual quadrant. The DFDTF-210 has been qualified to 4000 fpm (20.3 m/s) and 8 in. wg (2 kPa) for dynamic closure in emergency fire situations. Model DFDTF-210 may be installed vertically (with blades running horizontal) or horizontally and is rated for airflow in either direction.

Ratings
UL555 Fire Resistance Rating

Fire Rating: 1 1/2 hours
 Dynamic Closure Rating: Actual ratings are size dependent
 Maximum Velocity: 4000 fpm (20.3 m/s)
 Maximum Pressure: 8 in. wg (2 kPa)

Construction	Standard	Optional
Frame Material	Galvanized steel	-
Frame Material Thickness	16 ga. (1.5mm)	-
Frame Type	5 in. x 1 in. (127mm x 25mm) hat channel	-
Blade Material	Galvanized steel	-
Blade Material Thickness	16 ga. (1.5mm)	-
Blade Type	3V	-
Linkage	Plated steel out of airstream, concealed in jamb	304SS
Axle Bearings	Bronze	-
Axle Material	Plated steel	304SS
Closure Device	Fusible link	-
Closure Temperature	165°F (74°C)	212°F (100°C)

Model DFDTF-210 is intended for installation in accordance with fire damper requirements established by:

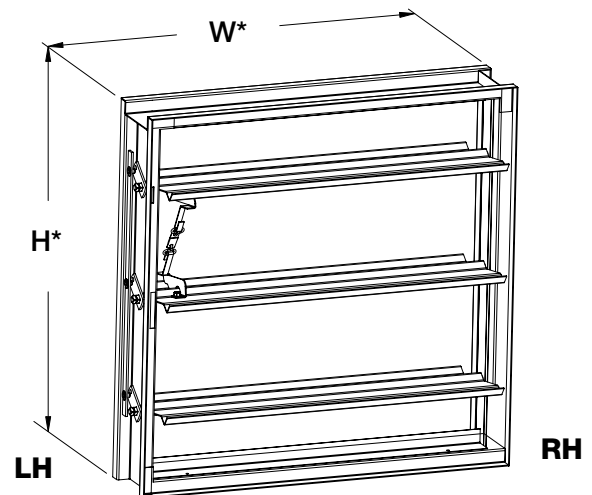
National Fire Protection Association
 NFPA Standards 80, 90A & 101

IBC International Building Codes
CSFM California State Fire Marshal
 Fire damper listing (#3225-0981:0103)

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



Greenheck Fan Corporation certifies that the model DFDTF-210 shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Programs. The AMCA Certified Ratings Seal applies to air performance ratings only.



*W & H dimensions furnished approximately 1/4 in. (6mm) undersize. (Add sleeve thickness for overall sleeved damper dimension)

Features:

- Frames are constructed with reinforced corners. Low profile head and sill are used on sizes less than 17 in. (432mm) high.
- Blades are reinforced with 3 longitudinal structurally designed vee's.

Options:

- POC retaining angles
- Sealed transition and sleeve
- Flanges
- Greenheck Test Switches (GTS-4)
- Transitions (R, C, O)
- Factory Installed Accessories
 - Retaining angles
 - Quick connect breakaway connection
 - S & Drive breakaway
 - Access door

Inches (mm)	2000 fpm (10.2 m/s) 4 in. wg (1 kPa)	4000 fpm (20.3 m/s) 8 in. wg (2 kPa)
Minimum size	8 x 12 (203 x 305)	8 x 12 (203 x 305)
Maximum single section size - Vertical	32 x 50 (813 x 1270)	32 x 50 (813 x 1270)
Maximum single section size - Horizontal	32 x 48 (813 x 1219)	32 x 48 (813 x 1219)
Maximum multi section size - Vertical	96 x 72 (2438 x 1829)	64 x 50 (1626 x 1270)
Maximum multi section - Horizontal	96 x 72 (2438 x 1829) or 32 x 96 (813 x 2438)	64 x 48 (1626 x 1219)

This pressure drop testing was conducted in accordance with AMCA Standard 500-D using the three configurations shown. All data has been corrected to represent standard air at a density of .075 lb/ft³(1.201 kg/m³).

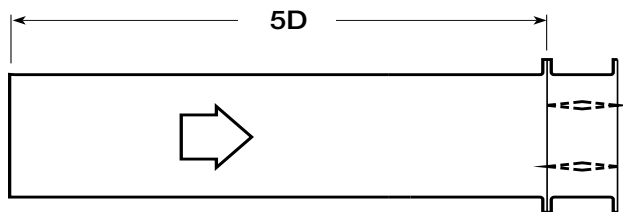
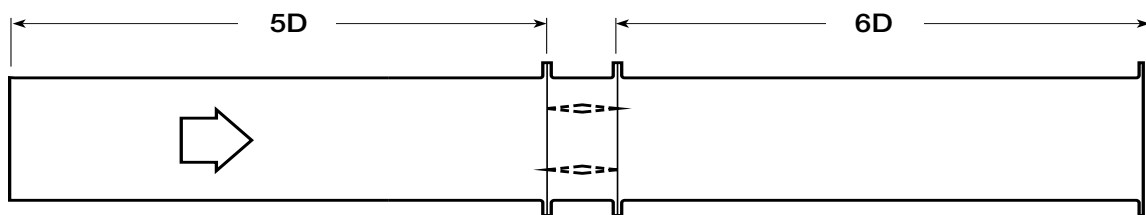
Actual pressure drop found in any HVAC system is a combination of many factors. This pressure drop information along with an analysis of other system influences should be used to estimate actual pressure losses for a damper installed in a given HVAC system.

AMCA Test Figures

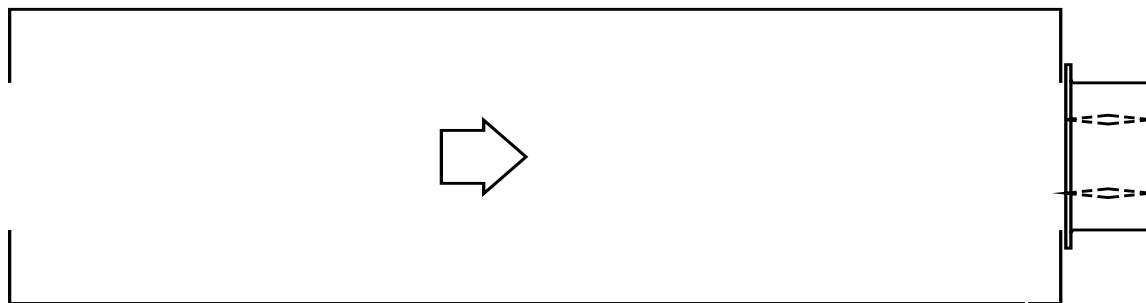
Figure 5.3 Illustrates a fully ducted damper. This configuration has the lowest pressure drop of the three test configurations because entrance and exit losses are minimized by straight duct runs upstream and downstream of the damper.

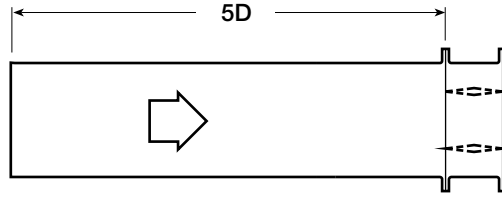
Figure 5.2 Illustrates a ducted damper exhausting air into an open area. This configuration has a lower pressure drop than Figure 5.5 because entrance losses are minimized by a straight duct run upstream of the damper.

Figure 5.5 Illustrates a plenum mounted damper. This configuration has the highest pressure drop because of extremely high entrance and exit losses due to the sudden changes of area in the system.

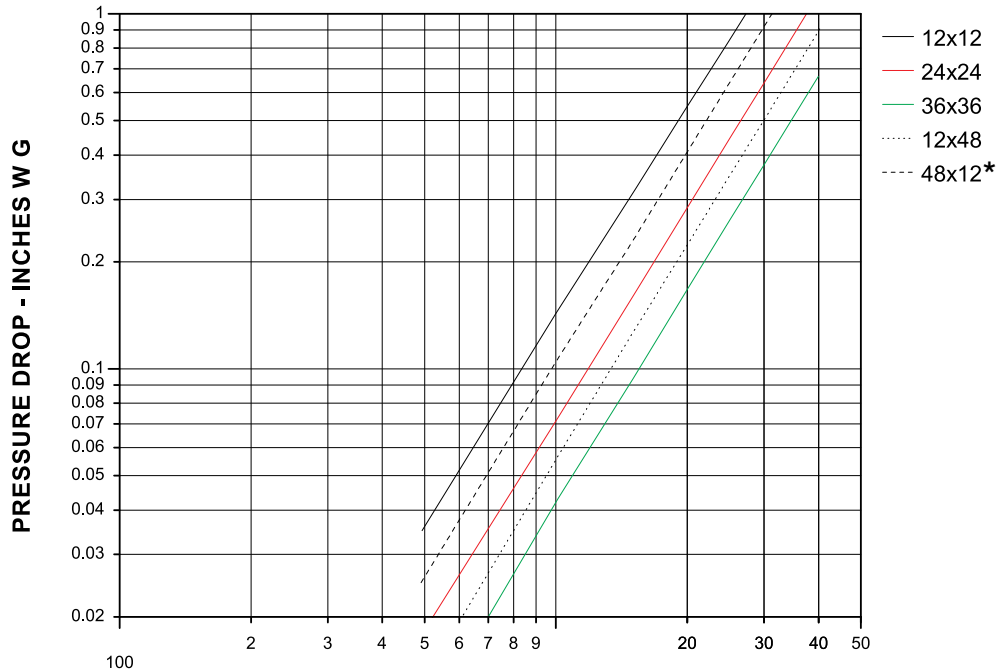


$$D = \sqrt{\frac{4(W)(H)}{3.14}}$$





VELOCITY VS. PRESSURE DROP



FACE VELOCITY - FEET/MINUTE

AMCA FIG. 5.2

12 in. x 12 in. (305mm x 305mm)

Velocity (fpm)	Pressure Drop (in. wg)
500	0.04
1000	0.14
1500	0.31
2000	0.55
2500	0.86
3000	1.24
3500	1.69
4000	2.20

24 in. x 24 in. (610mm x 610mm)

Velocity (fpm)	Pressure Drop (in. wg)
500	0.02
1000	0.07
1500	0.16
2000	0.29
2500	0.45
3000	0.65
3500	0.89
4000	1.16

36 in. x 36 in. (914mm x 914mm)

Velocity (fpm)	Pressure Drop (in. wg)
500	0.01
1000	0.04
1500	0.09
2000	0.16
2500	0.25
3000	0.36
3500	0.49
4000	0.64

12 in. x 48 in. (305mm x 1219mm)

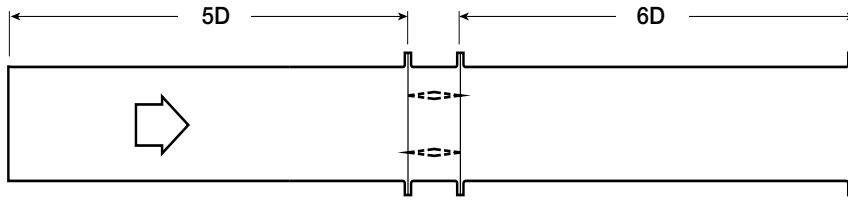
Velocity (fpm)	Pressure Drop (in. wg)
500	0.01
1000	0.06
1500	0.13
2000	0.23
2500	0.36
3000	0.52
3500	0.70
4000	0.92

48 in. x 12 in. (1219mm x 305mm)

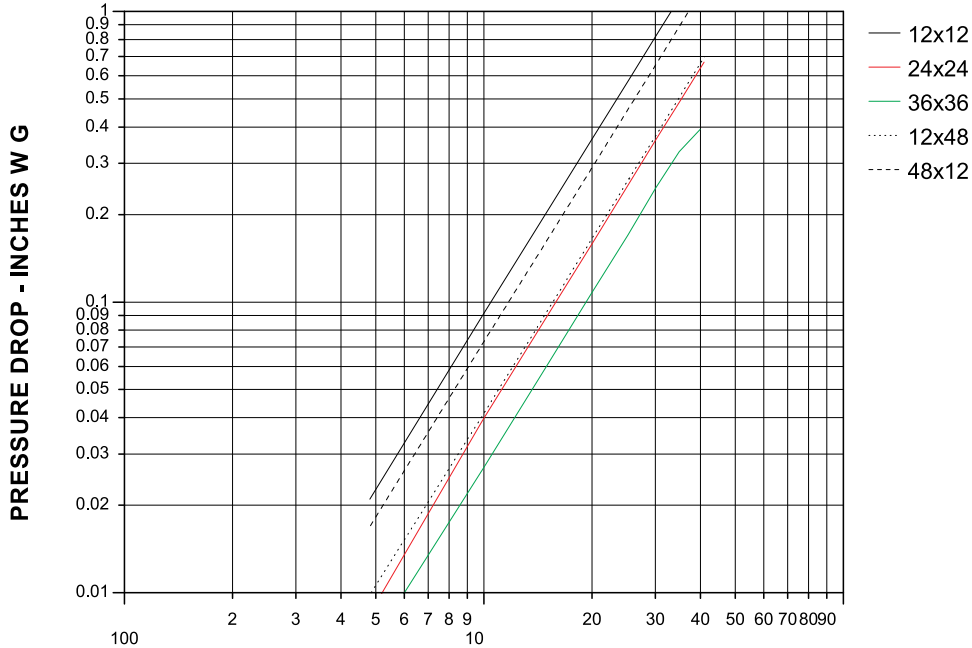
Velocity (fpm)	Pressure Drop (in. wg)
500	0.03
1000	0.10
1500	0.23
2000	0.41
2500	0.63
3000	0.91
3500	1.24
4000	1.62



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VELOCITY VS. PRESSURE DROP



FACE VELOCITY - FEET/MINUTE

AMCA FIG. 5.3

12 in. x 12 in. (305mm x 305mm)

Velocity (fpm)	Pressure Drop (in. wg)
500	0.02
1000	0.09
1500	0.20
2000	0.36
2500	0.56
3000	0.81
3500	1.10
4000	1.44

24 in. x 24 in. (610mm x 610mm)

Velocity (fpm)	Pressure Drop (in. wg)
500	0.01
1000	0.04
1500	0.09
2000	0.16
2500	0.25
3000	0.35
3500	0.48
4000	0.63

36 in. x 36 in. (914mm x 914mm)

Velocity (fpm)	Pressure Drop (in. wg)
500	0.01
1000	0.03
1500	0.06
2000	0.11
2500	0.17
3000	0.24
3500	0.33
4000	0.42

12 in. x 48 in. (305mm x 1219mm)

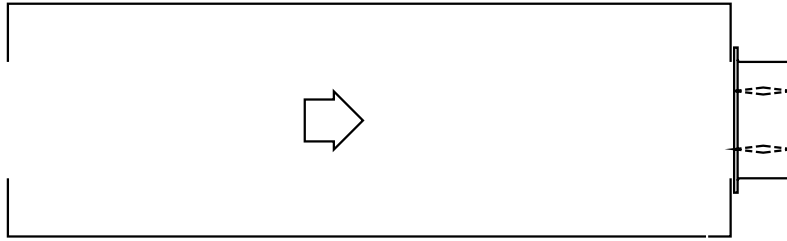
Velocity (fpm)	Pressure Drop (in. wg)
500	0.01
1000	0.04
1500	0.10
2000	0.17
2500	0.27
3000	0.39
3500	0.53
4000	0.70

48 in. x 12 in. (1219mm x 305mm)

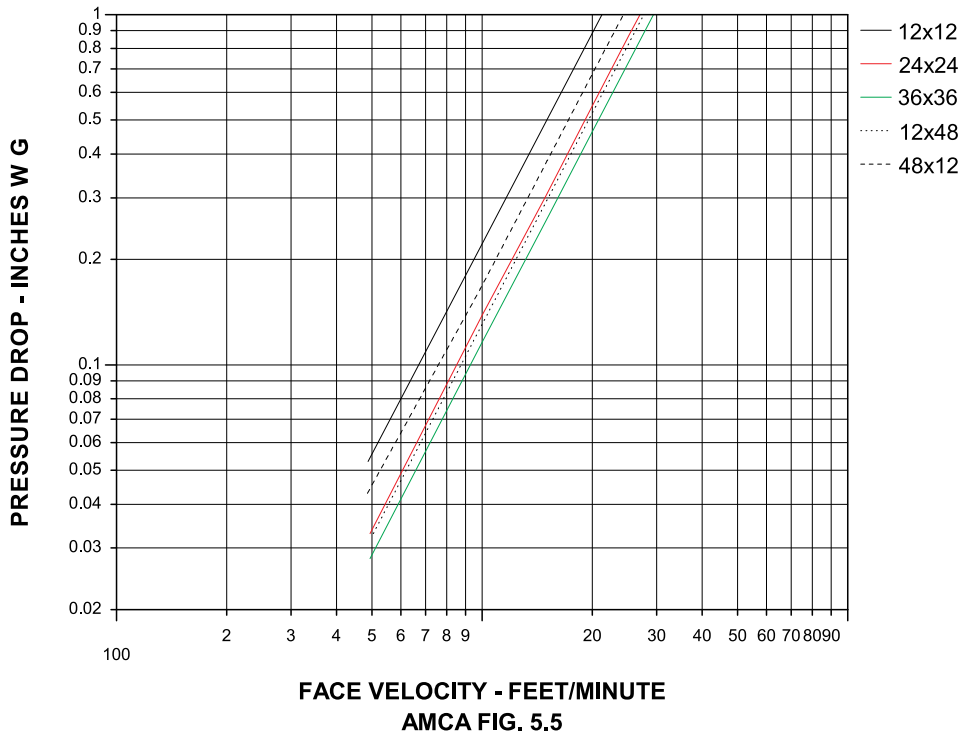
Velocity (fpm)	Pressure Drop (in. wg)
500	0.02
1000	0.07
1500	0.16
2000	0.29
2500	0.45
3000	0.64
3500	0.88
4000	1.14



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VELOCITY VS. PRESSURE DROP



AMCA FIG. 5.5

12 in. x 12 in. (305mm x 305mm)

Velocity (fpm)	Pressure Drop (in. wg)
500	0.06
1000	0.22
1500	0.50
2000	0.89
2500	1.39
3000	2.00
3500	2.72
4000	3.55

24 in. x 24 in. (610mm x 610mm)

Velocity (fpm)	Pressure Drop (in. wg)
500	0.03
1000	0.14
1500	0.31
2000	0.54
2500	0.85
3000	1.22
3500	1.66
4000	2.17

36 in. x 36 in. (914mm x 914mm)

Velocity (fpm)	Pressure Drop (in. wg)
500	0.03
1000	0.12
1500	0.26
2000	0.46
2500	0.73
3000	1.05
3500	1.42
4000	1.86

12 in. x 48 in. (305mm x 1219mm)

Velocity (fpm)	Pressure Drop (in. wg)
500	0.03
1000	0.13
1500	0.30
2000	0.53
2500	0.83
3000	1.19
3500	1.62
4000	2.11

48 in. x 12 in. (1219mm x 305mm)

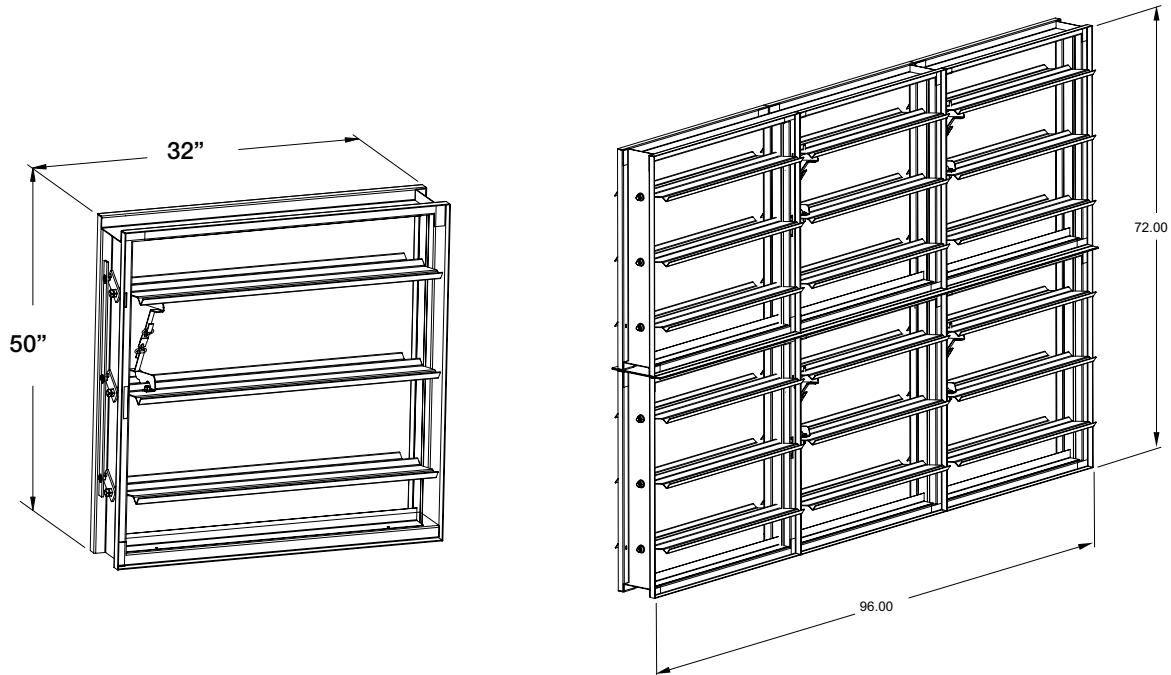
Velocity (fpm)	Pressure Drop (in. wg)
500	0.04
1000	0.17
1500	0.38
2000	0.67
2500	1.04
3000	1.50
3500	2.05
4000	2.67



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Damper Sizing Information

Dampers larger than maximum single section size are supplied as a factory assembly of two or more sections of equal size. The following figures show maximum damper section size and assembly configurations for multi-section dampers.



Specifications

Fire Dampers meeting the following specifications shall be furnished and installed where shown on plans and/or described in schedules. Dampers shall meet the requirements of the latest edition of NFPA 80, 90A, & 101.

Dampers shall be tested, rated and labeled in accordance with the latest edition of UL Standard 555. Dampers shall have a UL555 fire rating of 1 1/2 hours. Each damper shall be equipped with a heat responsive device which has been tested and approved for use with the damper assembly in accordance with UL555. The heat responsive device shall have a temperature rating of (specifier select one of the following) 165°F (74°C) or 212°F (121°C). Dampers shall be UL labeled for use in dynamic systems. The damper shall have a dynamic closure pressure rating of 8 in. wg (2 kPa).

UL555 Dynamic Closure Ratings shall be qualified for airflow and pressure in either direction through the damper. UL ratings shall allow for mounting damper vertically (with blades running horizontal) or horizontally. Damper blades shall be 16 ga. (1.5mm) galvanized steel 3V type with three longitudinal grooves for reinforcement. Blades

shall be completely symmetrical relative to their axle pivot point, presenting identical resistance to airflow and operation in either direction through the damper (blades that are non-symmetrical relative to their axle pivot point or utilize blade stops larger than 0.5 in. [13mm] are unacceptable).

Damper frames shall be galvanized steel formed into a structural hat channel shape with reinforced corners. Bearings shall be sintered bronze sleeve type rotating in extruded holes in the damper frame.

The Damper Manufacturer's submittal data shall certify all air performance pressure drop data is licensed in accordance with the AMCA Certified Ratings Program for Test Figures 5.2, 5.3, and 5.5. Damper air performance data shall be developed in accordance with the latest edition of AMCA Standard 500-D. Dampers shall be labeled with the AMCA Air Performance Seal.

The basis of design is Greenheck model DFDTF-210.

