



Application and Design

The heavy duty SEHCD-230 is constructed of 316 stainless steel and is designed for corrosive or severe environment HVAC and industrial process control system applications. A flanged frame is standard and additional options, including parallel and opposed blade action, are available.

Ratings (See pages 2 and 3 for specific limitations)

Pressure: 8.5 - 15 in. wg (2.1 - 3.7 kPa) - differential pressure

Velocity: 4000 - 5000 fpm (20.3 - 25.4 m/s)

Temperature: 250° - 400°F (121°C - 204°C) Temperatures over 250°F (121°C) require special blade end clearance. For higher temperatures, consult Greenheck.

Standard Construction

Frame: 8 in. x 2 in. x 14 ga. (203mm x 51mm x 2mm) 316 stainless steel channel.

Blades: Double skin 16 ga. (1.6mm) 316 stainless steel, symmetrical design with 8 in. (203mm) maximum depth.

Axles: 3/4 in. (19mm) dia. 316 stainless steel

Linkage: External heavy duty type with 316 stainless steel clevis arms and tie bars and stainless steel pivot pins.

Bearings: Stainless steel sleeve type pressed into frame.

Finish: Mill

Size Limitations:

Maximum Size: 60 in. W x 96 in. H
(1524mm W x 2438mm H)

Minimum Size: Single blade 6 in. W x 6 in. H
(152mm x 152mm)
Multiple blades 6 in. W x 11 in. H
(152mm W x 279mm H)

Flange Width (D): 2 in. (51mm) standard; 1 1/2 in. (38mm) or 2 1/2 in. (64mm) optional

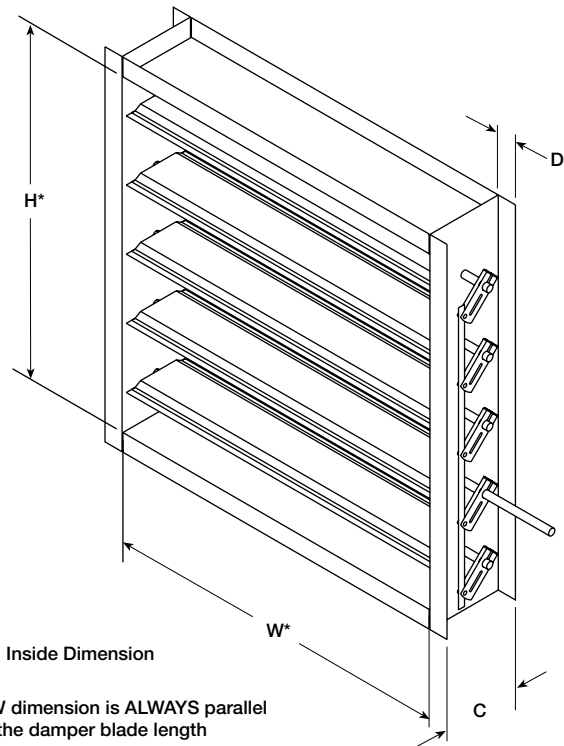
Frame Depth (C): Standard 8 in. (203mm)
10 in. (254mm) optional

Optional Features:

- 10 or 12 ga. (3.5 or 2.7mm) 316 stainless steel frame
- 14 ga. (2mm) 316 stainless steel blades
- EPDM or silicone rubber blade seals
- 316 stainless steel O-ring axle shaft seal
- Blades run vertically**

Paint Options:

- Hi Pro Polyester
- Industrial Epoxy
- Epoxy
- High Temperature Silver
- Baked Enamel



Pressure Limitations

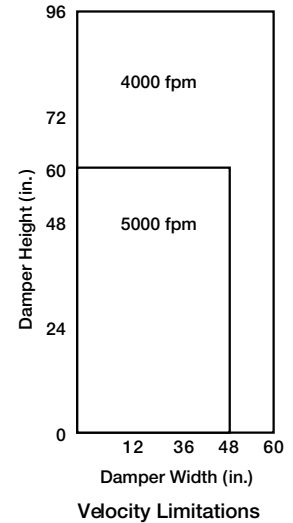
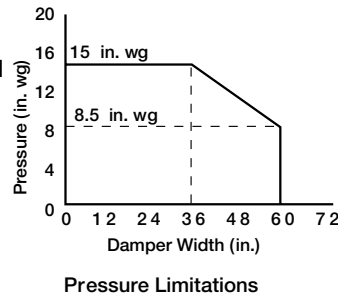
The chart at the right shows conservative pressure limitations based on a maximum blade deflection of $w/360$.

Temperature Limitations

Blade seals: Silicone Rubber -40° to $+400^{\circ}$ F
 (-40° to $+204^{\circ}$ C)
 EPDM -20° to $+250^{\circ}$ F
 (-29° to $+121^{\circ}$ C)

Jamb seals: Flexible stainless steel -40° to $+400^{\circ}$ F
 (-40° to $+204^{\circ}$ C)

For higher temperatures consult Greenheck



Velocity Limitations

The chart at far right shows conservative velocity limitations based on damper size.

Pressure Drop Data

This pressure drop data 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 $.075 \text{ lb/ft}^3$ (1.2 kg/m^3).

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 the 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 the high entrance and exit losses due to the sudden changes of area in the system.

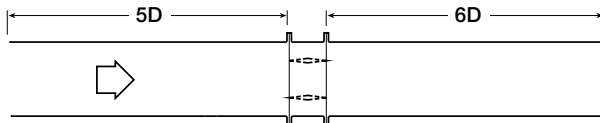


Fig. 5.3

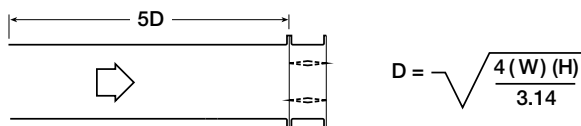


Fig. 5.2

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

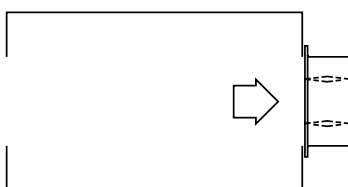
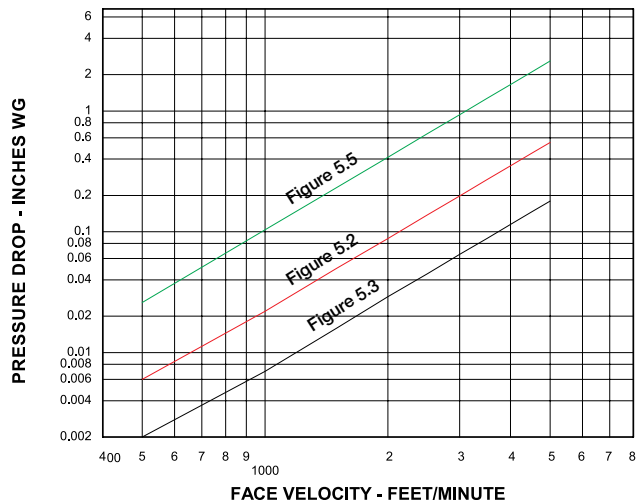


Fig. 5.5

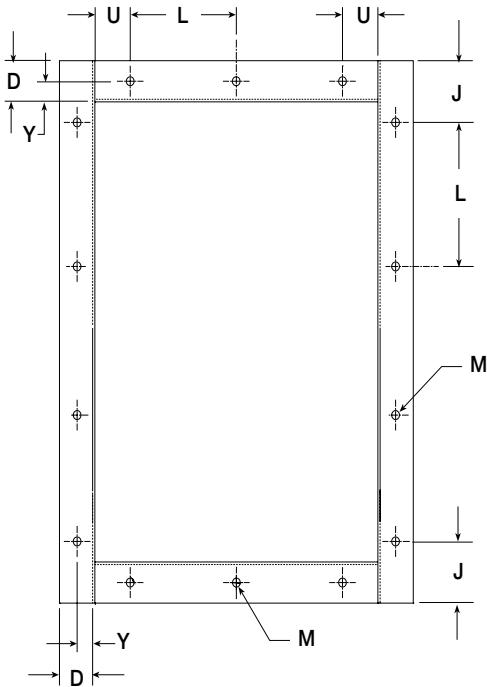
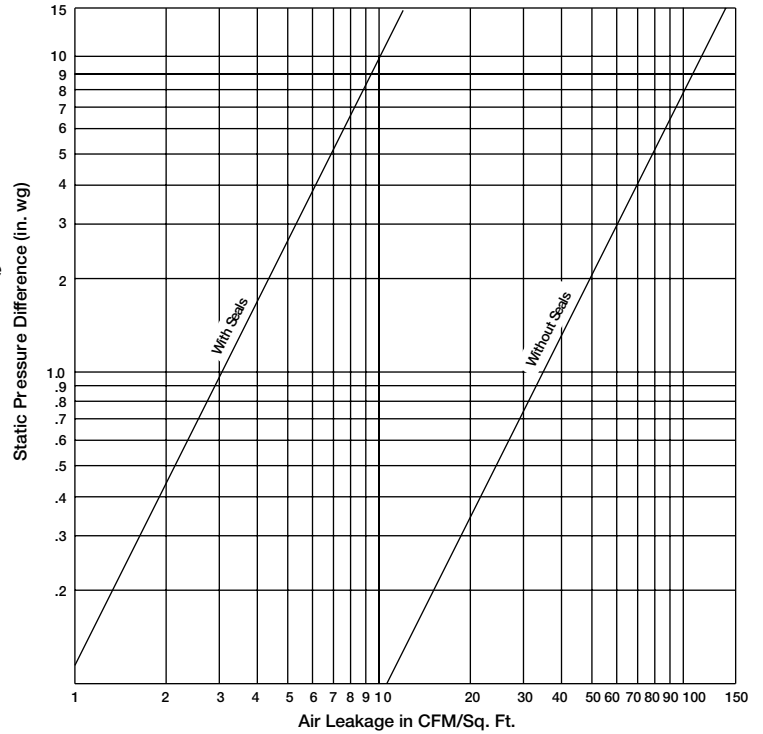
**Pressure Drop
36 in. x 36 in. (914mm x 914mm) Damper**



Leakage
36 in. x 36 in. (914mm x 914mm) Damper
 (based on 5 in. lb/ft² of torque)

Leakage Data

Damper leakage (with blades fully closed) varies based on the type of low leakage seals applied. Model SEHCD-230 is available with no seals (standard) or with stainless steel jamb seals and vinyl or silicone rubber blade seals. Leakage testing was conducted in accordance with AMCA Standard 500-D and is expressed as CFM per sq.ft. of damper face area. All data has been corrected to represent standard air at a density of .075 lb/ft³ (1.2 kg/m³).

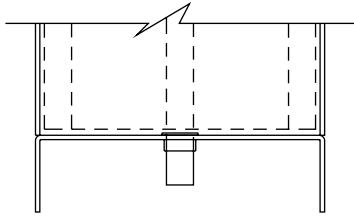


Bolt holes are available as an option. Greenheck's standard pattern is 7/16 in. (11mm) diameter holes (M dimension) spaced 6 in. (152mm) on center (L dimension). Also, available is custom bolt hole pattern within the limitations of the chart below.

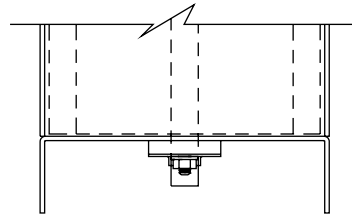
Bolt Hole Limitations

Dim.	Standard	(Min./Max.)	Description
J		(D/2 min.)	First/Last Space in Jamb
F		(1 min.)	No. of Holes in Jamb
L	6 in. (152mm)	2 in. /12 in. (51mm/305mm)	Hole Spacing
M	7/16 in. (11mm)	1/4 in. / 11/16 in. (6mm/17mm)	Mounting Hole Diameter
U		3/4 in. min. (19mm)	First/Last Space in Head/Sill
V		1 min. (25mm)	No. of Holes in Head/Sill
Y	D/2 in. (D/51mm)	3/4 in./D-3/4 in. (19mm/D -19mm)	Centerline of bolt hole from inside edge of frame

Bearing and Shaft Options



Sleeve Bearing
Pressed into Frame
Stainless Steel
(Standard)



Shaft Seal O-ring Type
with Sleeve Bearing
(Optional)

Specifications

Industrial grade control dampers meeting the following specifications shall be furnished and installed where shown on plans and/or as described in schedules.

Dampers shall consist of: a 14 ga. (2mm) 316 stainless steel channel frame with 8 in. (203mm) minimum depth and 2 in. (51mm) flanges; double skin airfoil type blades fabricated from two layers of 16 ga. (1.6mm) 316 stainless steel; 3/4 in. (19mm) dia. 316 stainless steel axles turning in stainless steel sleeve bearings; and external (out of the airstream) blade-to-blade linkage.

Damper manufacturer's printed application and performance data including pressure, velocity and temperature limitations shall be submitted for approval showing damper suitable for

pressures to 15 in. wg (3.7 kPa), velocities to 5000 fpm (25.4 m/s) and temperatures to 400°F (204°C). Testing and ratings to be in accordance with AMCA Standard 500-D.

Specifier may add the following:

Dampers shall be equipped with blade and jamb seals for low leakage performance. Blade seals shall be: *select one of the following* EPDM synthetic rubber for 250°F (121°C) maximum temperature, *or* Silicone Rubber for 400°F (204°C) maximum temperature. Jamb seals shall be flexible 316 stainless steel. Damper manufacturer's printed performance data showing standard air leakage less than 4 cfm/ft² @ 1 in. wg (73cmh/m² @ .25 kPa) and less than 8 cfm/ft² @ 4 in. wg (146cmh/m² @ 1 kPa) shall be submitted for approval. Testing and ratings shall be per AMCA Standard 500-D.

Basis of design is Greenheck model SEHCD-230.

