

Damper Advantages

- Quick Build Products
- Construction
- Performance

QUICK
DELIVERY



THE GREENHECK DAMPER

ADVANTAGE



 **GREENHECK**
Building Value in Air.

February
2017

Greenheck dampers bring the same quality engineering and manufacturing that has earned Greenheck its position as an industry leader. Aggressive research and development has made Greenheck the best choice in the damper industry. Greenheck has the most UL Classified dampers and the largest selection of AMCA Licensed dampers in the industry.



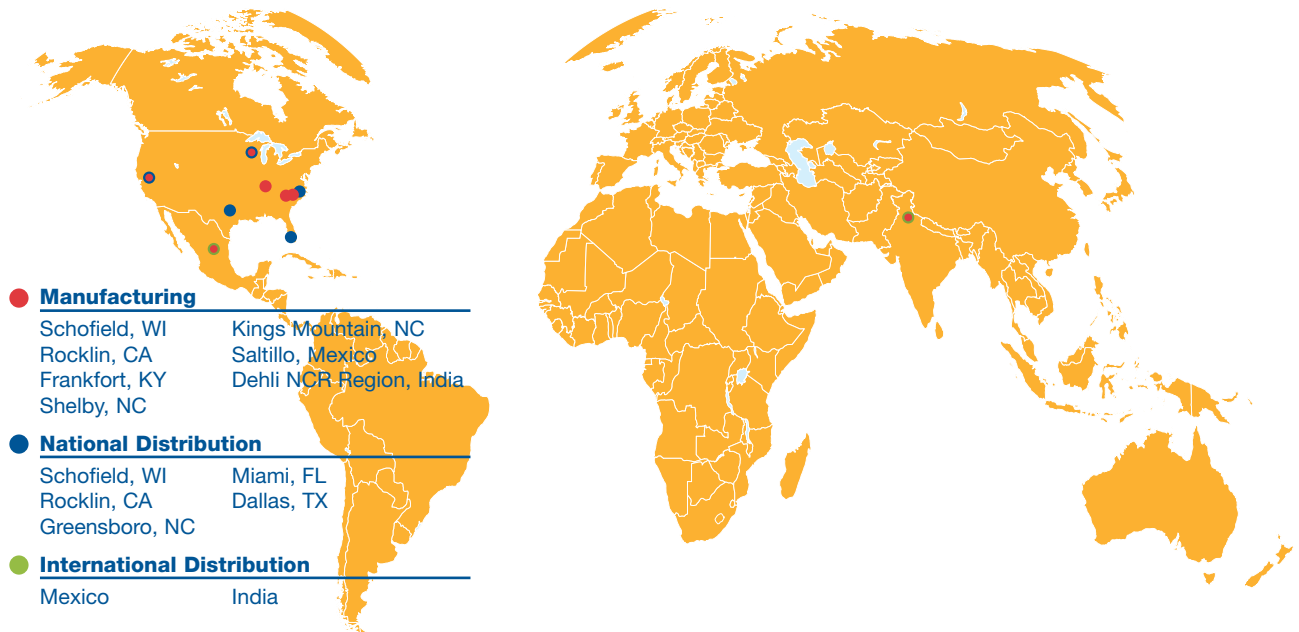
Unparalleled In-House Testing Capabilities

Internal testing capabilities are directly related to product quality and the ability to meet stringent code requirements. With industry-leading testing abilities, Greenheck can introduce new products faster, and can quickly develop qualified products for your unique applications. Our dampers qualify to UL555, UL555S and AMCA 500-D test standards.



A Global Presence

Greenheck operates multiple manufacturing locations, national, and international distribution centers:



Enjoy Greenheck’s extraordinary service, before, during and after the sale.



Greenheck offers added value to our wide selection of top performing, energy-efficient products by providing several unique Greenheck service programs.

- Our **Quick Delivery** Program ensures shipment of our in-stock products within 24 hours of placing your order. Our **Quick Build** made-to-order products can be produced in 1-3-5-10-15- or 25 day production cycles, depending upon their complexity.
- Greenheck’s free **Computer Aided Product Selection** program (CAPS), rated by many as the best in the industry, helps you conveniently and efficiently select the right products for the challenge at hand.
- Greenheck has been **Green** for a long time! Our energy-saving products and ongoing corporate commitment to sustainability can help you qualify for LEED credits.
- Our **3D service** allows you to download at no charge lightweight, easy-to-use AutoDesk™ Revit™ 3D drawings for many of our ventilation products.

Find out more about these special Greenheck services at greenheck.com

Quick Build Options

Greenheck has a large damper offering available quickly. This chart shows the quick build models available by lead time. Keep in mind, all models available on next day, can be shipped in 3, 5, 10, 15 or 25 days.

Stock*	Next Day	3 Day	5 Day	10, 15 and 25 Day
BD-90	CFSD-211, 212	CRD-1LP, 1WJ, 2, 60	BR-10, 11, 12, 30, 31, 32, 40, 41, 42	AMD-23, 33, 42, 42V
BD-100	CRD-1, 1WT, 501	FBH-23, 33, 43	CRD-60X	AMS
BD-300, 320, 330	DFD-110, 150, 310, 350	FBV-23, 33, 43	FD-100, 300	HB-110, 120, 230, 240***
CAD-10	DFD-150x10, x12, x14, x16	Duct Heaters IDHB, IDHC	HB-110, 120, 230, 240**	HCD-120, 130, 135, 140***
CRD-1, 2	DFD-210	IMO-310, 311	HCD-120, 130, 135, 140**	HB-330**
CRD-300 series	DFDAF-310, 330	SEDFD-210	HCD-220, 230, 240**	HBR-050**
CRD-700	DFDR-510	SEFSD-211	HPR-120, 230, 330**	HBS-330, 331, 430, 431**
HAD-10	DFDTF-120	SEVCD-23, 33	HSD-401	HCD-120, 130, 135, 140***
RAD	EM-10, 11, 12, 30, 31, 32, 40, 41, 42	SESMD-201	ICD-44, 45	HCD-220, 230, 240***
WB-10G	ES-10, 11, 12, 30, 31, 32, 40, 41, 42	SSFSD-211	SEBR-10, 11, 12, 30, 31, 32, 40, 41, 42	HPR-120, 230, 330***
WD-90	FD-110, 150, 310, 350	SSIMO-310, 311	SEFSDR-511	HCDR-050, 150, 250, 350, 351**
WD-100	FD-150x10, x12, x14, x16	SSSMD-201	SESMDR-501	SSWDR-53
WD-323, 330, 340	FDR-510	WD-100, 110, 120	SSDFD-150, 350	VCDRM-50, 53
WD-410	FSD-211, 212, 213	WD-200, 210, 220	SSDFDR-510	
	FSD-311, 312, 311V, 331	WD-300, 320, 323, 330, 340	SSFD-150, 350	
	FSDR-511, 512	WD-400, 410, 420, 430	SSFDR-510	
	GFSD-211, 212		SSFSDR-511	
	MBD-10, 10M, 15		SSSMDR-501	
	MBDR-50		WDR-53	
	ODFD-150, OFD-150			
	OFSD-211, 212, 311, 312			
	RBD-10, RBDR-50			
	SMD-201, 202, 203			
	SMD-301, 301V, 302			
	SMD-401, SMD-401EF			
	SMDR-501, 502			
	VCD-20, 23, 33, 34, 40, 42, 43			
	VCD-20V, 23V, 33V, 34V, 42V, 43V			
	VCDR-50, 53			

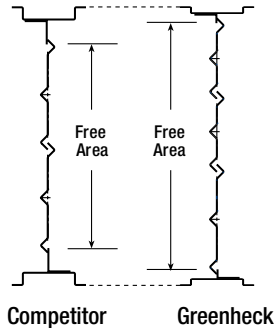
* See CAPS for sizes

** Unpainted

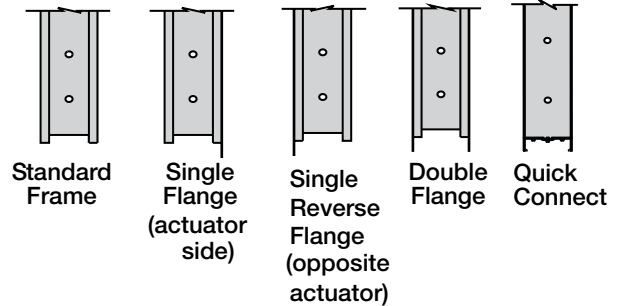
*** Painted (limited offering)



**Tog-L-Loc®
Reinforced Corner**



Low Profile Frame

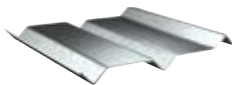


Frame Types

Frame

Each frame is built with four separate pieces of material and joined by our Tog-L-Loc® process with the following advantages:

- **Rigid frame** - When two pieces of 16 ga. (1.5mm) steel are joined by the Tog-L-Loc® system, the joint has an equivalent thickness of 10 ga. (3.5mm) steel.
- **Increased corrosion resistance** -The high temperatures from welding removes the galvanized finish from damper frames. As the Tog-L-Loc® process doesn't use heat, Greenheck damper frames have greater corrosion resistance by retaining the galvanized coating.
- **Optimal free area** - On all dampers that are 17 in. (432mm) high or less, Greenheck uses a low profile top and bottom frame section to maximize free area.
- **Square frame** - Using four separate frame components (top, bottom, and two sides), Greenheck's Tog-L-Loc® process results in four sturdy, 90° joints. This ensures that each Greenheck damper is square and provides optimum performance in the field.



3V Blade



Steel Airfoil Blade



Aluminum Airfoil Blade



ICD Blade

Blades

The 3V blade is designed for velocities up to 3,000 ft/min. and 5 in. wg static pressure (standard on models VCD-20, 20V, 23V, and SEVCD-23).

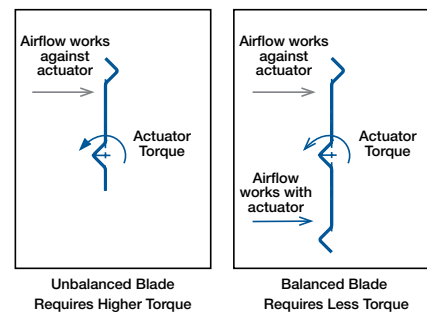
The steel airfoil blade design results in lower resistance to airflow and increased strength that is typically used in velocities up to 4,000 ft/min. and 10 in. wg static pressure. Airfoil blades are standard on models VCD-33, 33V, 34, and 34V.

The extruded airfoil blade (aluminum) design is utilized when high performance requirements of airstream velocities up to 6,000 ft/min. and 10 in. wg static pressure. Extruded airfoil blade are standard on VCD-43 and VCD-43V.

The ICD series damper blades feature a thermally broken airfoil shaped blades with polyurethane foam.

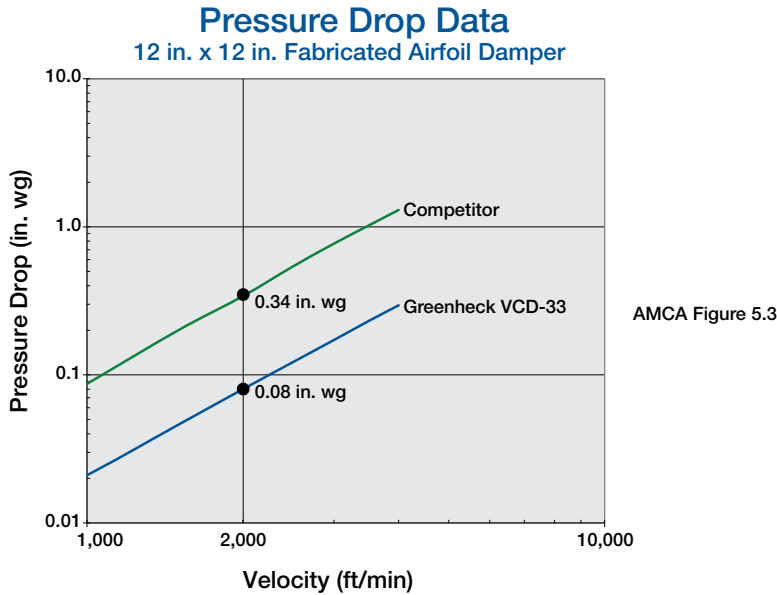
Variable Symmetric Blade Design (VSB)

Variable Symmetric Blade design (VSB) uses two principles to increase damper performance. First, all damper blades are symmetric about their axis. Second, any combination 4, 5, 6, and 7 in. (102, 127, 152, and 178mm) blade widths are used in a single damper.



Pressure Drop Comparison

Greenheck compared the pressure drop data of a VCD-33 12 in. wide x 12 in. high (305mm x 305mm) versus a competitor's equivalent 12 in. wide x 12 in. high (305mm x 305mm) damper. Both dampers were installed in an identical system which drew 2000 ft/min. of airflow through them. The results were dramatic!



Leakage

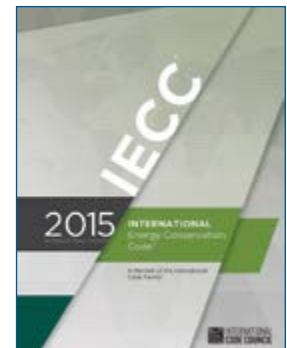
Three common code energy standards that pertain to dampers are:

ASHRAE Standard 90.1 (2013 edition) states that maximum damper leakage at 1 in. wg for a:

- non-motorized damper is 20 cfm/ft² or
- motorized damper is 4 cfm/ft². (See Table 6.4.3.4.3 from ASHRAE Standard 90.1)

California Title 24 (2013 edition, section 140.4.4) states that the dampers shall be certified in accordance with AMCA Publication 511 to have a maximum leakage of 10 cfm/ft² at 1 in. wg. The dampers have been tested and are able to open and close against the rated airflow and pressure of the system after 60,000 damper opening and closing cycles.

IECC (2015, section C403.2.4.3) that outdoor air supply and exhaust opening be supplied with Class 1 motorized dampers with a maximum leakage rate of 4 cfm/ft² at 1 in. wg when tested in accordance with AMCA 500D.



Greenheck's volume control dampers meet the requirements of ASHRAE, California Title 24 and IECC.

*Leakage Class Definitions

The *maximum* allowable leakage is defined by AMCA as the following:

- Leakage Class 1A - 3 cfm/ft² @ 1 in. wg (Class 1A is only defined at 1 in. wg)
- Leakage Class 1 - 4 cfm/ft² @ 1 in. wg
- 8 cfm/ft² @ 4 in. wg
- 11 cfm/ft² @ 8 in. wg
- 12.6 cfm/ft² @ 10 in. wg

Model	Maximum Leakage cfm/sq. ft. (cmh/sq.m)	
	Pressure	
	@ 1 in. wg (.25 kPa)	@ 4 in. wg (1 kPa)
VCD-23, 23V, 43, 43V, SEVCD-23	Class 1A	Class 1
VCD-40	Class 1A	Class 1
VCD-33, 33V, 34, 42, 42V	Class 1A	Class 1
VCDR-53	Class 1	Class 1
VCDRM-53	Class 1	Class 1



Balancing Dampers

Balancing dampers are control dampers that regulate the flow of air, but are not intended to be used in applications as a positive shut off or for automatic control. They are available with manual quadrants or remote control with an actuator.



Control Dampers

Control dampers regulate the flow of air in the same manner as balancing dampers. In addition, they can be used as a positive shut off or for automatic control. They can be controlled manually or with actuators. Face and bypass dampers are also available.



Insulated Control Damper

The ICD series was developed for applications where it is necessary to minimize thermal transfer and reduce condensation. The ICD series is AMCA Licensed for air leakage, air performance, and energy efficiency.



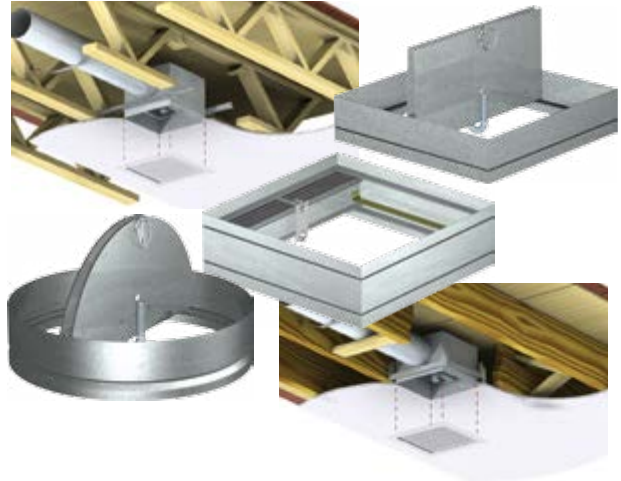
Air Measuring Dampers

Greenheck airflow measuring dampers are available with either differential pressure-based technology or thermal dispersion technology. For most applications, either technology can be used. When specifications don't call out a specific technology, the differential pressure-based AMD's (Air Measuring - Pressure Differential) will be the most cost-effective solution. However, thermal dispersion airflow stations (AMD-xxTD's) are better suited for applications where airflows below 300 ft/min. are consistently being measured.



Fire Dampers

Fire dampers are required by all building codes to maintain the required fire resistance ratings of walls, partitions and floors when they are penetrated by air ducts and transfer openings. These products are tested and classified in accordance with UL Standard 555.



Ceiling Radiation Dampers

The ceiling radiation dampers are designed to protect penetrations through the ceiling membrane of fire resistive floor ceiling and/or roof ceiling assemblies. These products are tested and listed in accordance with UL Standard 555C.



Smoke Dampers

Smoke dampers have two applications:

1. They may be applied in a passive smoke control system where they simply close and prevent the circulation of air and smoke through a duct or a ventilation opening in a smoke barrier.
2. They may be applied as part of an engineered smoke control system designed to control the spread of smoke using walls and floors as barriers and using the building's HVAC system and/or dedicated fans to create pressure differences.

These products are tested and classified in accordance with UL Standard 555S.



Combination Fire Smoke Dampers

Combination fire smoke dampers perform the function of both a fire damper and a smoke damper.

Building layouts and designs often combine fire and smoke rated partitions and barriers requiring the installation of both a fire damper and smoke damper at the same location. These products are tested and classified in accordance with both UL555 and UL555S.

Greenheck has a complete line of dampers for your needs!



- Commercial Control Dampers
- Industrial Control Dampers
- Combination Fire, Smoke, Fire and Smoke Dampers
- Ceiling Radiation Dampers
- Backdraft Dampers
- Pressure Relief Dampers
- Balancing Dampers
- Access Doors
- Marine Products
- Severe Environment Dampers
- Industrial Smoke Dampers
- Insulated Thermally Broken Dampers
- Air Measuring Dampers
- Pressure Relief Dampers
- Barometric Relief Dampers
- Industrial Backdraft Dampers
- Tunnel Transit Dampers
- Bubble-Tight Dampers
- Blast and Tornado Dampers



Our Commitment

As a result of our commitment to continuous improvement, Greenheck reserves the right to change specifications without notice.

Specific Greenheck product warranties are located on greenheck.com within the product area tabs and in the Library under Warranties.



Prepared to Support Green Building Efforts

