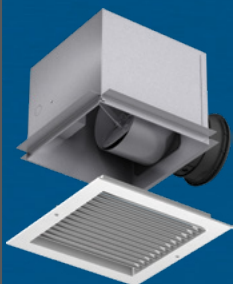
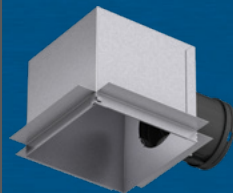
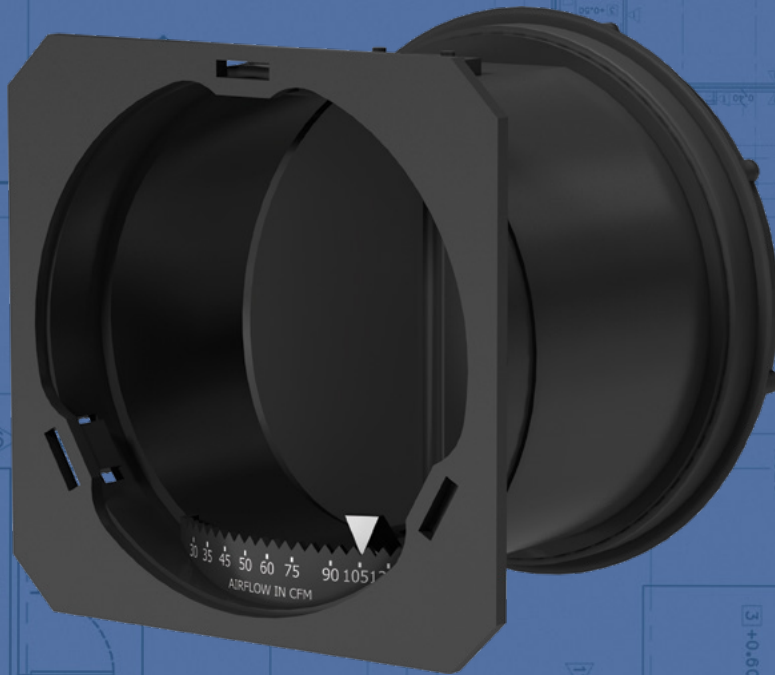


Automatic Balancing Dampers

Model ABD

Application and Selection Guide



September
2022

Traditional Balancing System With Pressure Fluctuations

Stand-alone balancing dampers cannot adjust to changes in pressure resulting in incorrect airflows. The consequences of changes in system pressure result in:

- Increased energy costs when over-ventilating a space.
- Poor indoor air quality when under-ventilating a space.



Balanced System

When using Automatic Balancing Dampers (ABD series):

- Automatically adjust airflow to changes in the system pressure.
- Automatically adjust the blade position to compensate for changes in pressure, reducing the amount of fan energy required to ventilate a space while improving the indoor air quality.





Apartments and Condos



Bathroom Ventilation



Hotels and Motels



Education Buildings and Dormitories



Hospitals and Clinics



Assisted Living and Nursing Homes

Automatic balancing dampers are designed to maintain a constant airflow volume in HVAC applications. These dampers can be used to balance HVAC systems eliminating the need for on-site balancing. The ABDs can be used in supply or exhaust applications.

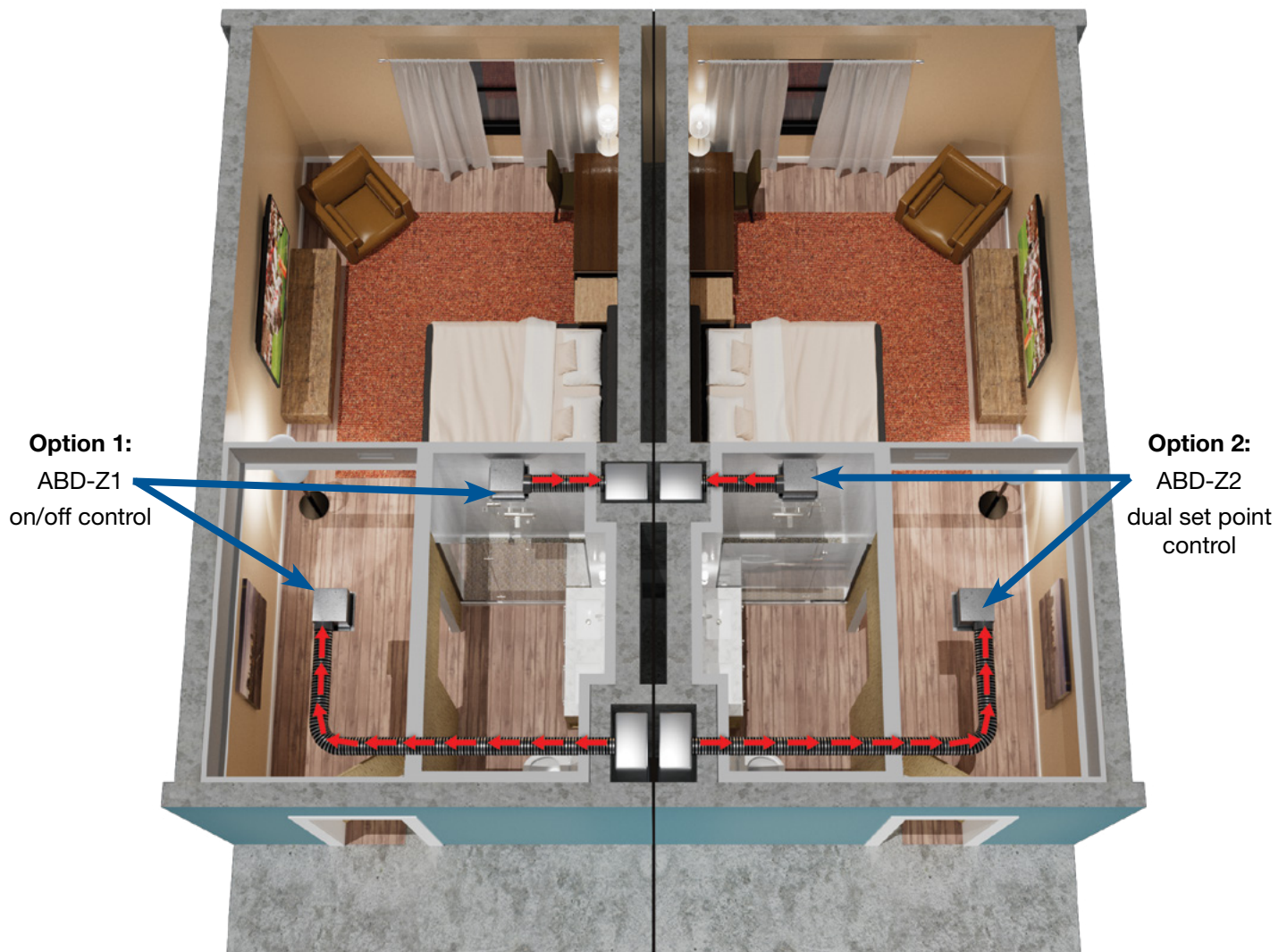


See complete marking on product.
UL 2043 Classification
R39668

Classified by UL to UL 2043 for heat and visible smoke release (UL File R39668)

- Supply and exhaust air in offices
- Balancing exhaust/return and supply airflows in high-rise building duct risers, common areas, and living spaces
- Regulation of make-up air
- Bathroom exhaust
- Clean room air supply balancing for ceiling filter modules. Maintains constant airflow even as filter resistance increases
- Balancing supply airflow from packaged rooftop A/C units
- Balancing supply and exhaust/return of heat recovery ventilation systems
- Regulating outdoor air injections from central supply fan into individual room fan coil units or heat pumps

ABD-Z1s and Z2s are commonly used in hotel room applications. When the room is unoccupied, ABD-Z1s can be used to shut off ventilation and save energy. When the room is occupied, the actuator of the ABD-Z1 can be energized by a BAS, an occupancy sensor, or any type of switch to ventilate to the selected constant CFM set point of the ABD valve. ABD-Z2s can be used in the same way, but are used when a minimum CFM ventilation rate is desired when the space is unoccupied and then a boosted higher CFM ventilation rate is needed when the space is occupied.



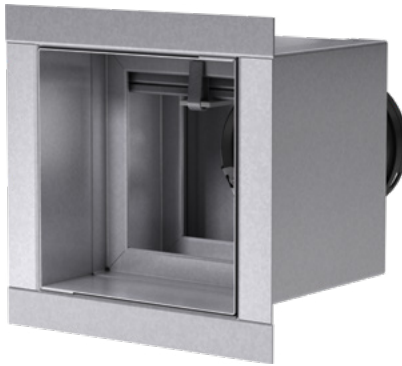
ABD

Model ABD is an automatic balancing damper designed to maintain constant airflow volume in HVAC applications. The damper blade is calibrated to automatically adjust to changing pressures. This damper can be used in supply or exhaust applications.



ABD-FD

Model ABD-FD is an automatic balancing damper with a UL 555 rated 1½ or 3 hour static fire damper. The ABD-FD is designed to maintain a constant airflow volume in HVAC applications. The damper blade is calibrated to automatically adjust to changing pressures. The assembly will include an UL 2043 rated ABD, flanged sleeve, UL 555 rated curtain fire damper (FD-150 or FD-350), and optional grille.

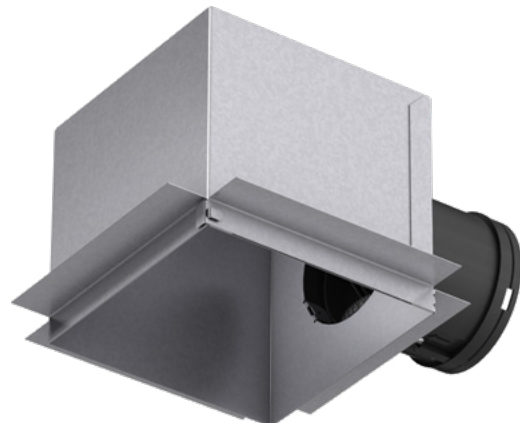


ABD-RB

Model ABD-RB combines an automatic balancing damper (model ABD) with the convenience of a factory-supplied register box. The ABD-RB can be configured for supply or exhaust applications and can be mounted in both walls and ceilings. In addition, the ABD can be mounted in either the side or the back of the register box. All ABD models maintain a constant CFM independent of the system pressure to prevent over or under ventilation. The ABD-RB is also available with a factory-supplied grille.



ABD-RB: Wall mount



ABD-RB : Ceiling mount

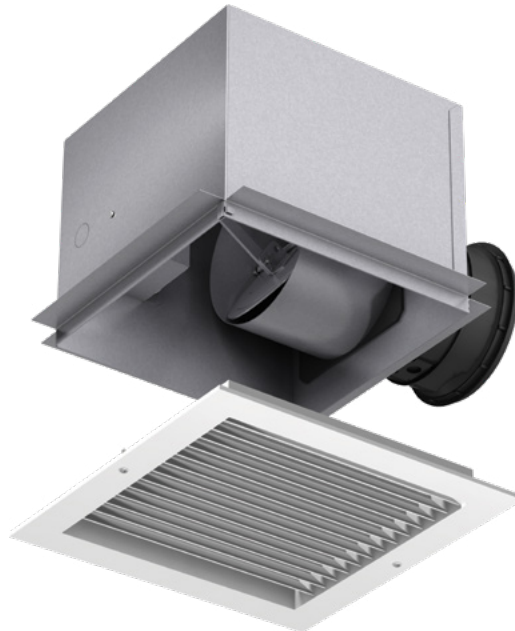
ABD-T

Model ABD-T is an automatic balancing damper with a square transition. The transition can be removed and flipped to the other side of the damper using a factory-supplied quick adapter plate. The ABD-T can be used in both supply and exhaust applications.



ABD-Z1

Model ABD-Z1 is designed to provide on/off control to a ventilation system. The ABD-Z1 has a shutoff damper with an electric actuator, automatic balancing damper (ABD), and a plenum box as one assembly.



ABD-Z2

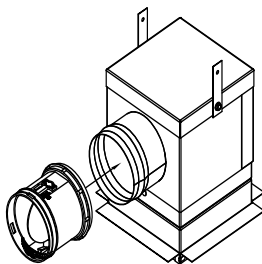
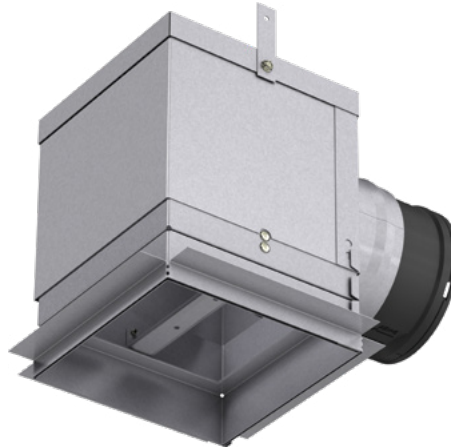
The ABD-Z2 is an automatic balancing damper that includes a two-position actuator which allows the unit to toggle between two user defined constant CFM set point minimum and a boosted on demand CFM. The ABD-Z2 is ideal for helping achieve the requirements of ASHRAE 62.2 for acceptable indoor air quality.

Optional return/exhaust grille is available.

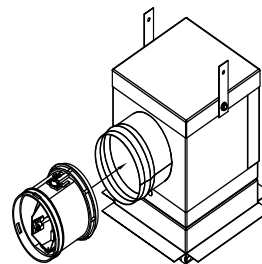
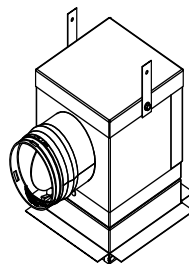


ABD Installation for Supply and Exhaust Applications

The ABD may be installed with a UL 555C rated ceiling radiation damper (CRD). This allows for a compact assembly designed to maintain a constant airflow volume in HVAC applications, while also limiting the radiant heat transfer through openings in the ceiling membrane of fire resistance-rated floor/ceiling assemblies of three hours or less.



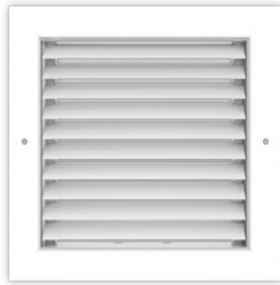
ABD INSTALLATION
FOR SUPPLY APPLICATIONS



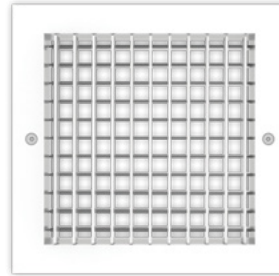
ABD INSTALLATION
FOR RETURN/EXHAUST APPLICATIONS

The following grilles are available on ABD-FD, ABD-RB, ABD-Z1, and ABD-Z2.

**Return/Exhaust Grille
Surface Mount**



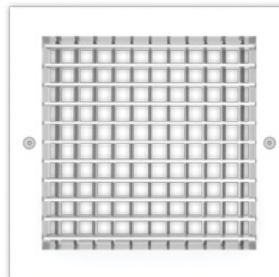
**Double Deflection Grille
Vertical Blades**



**Single Deflection
Grille Vertical Blades**



**Double Deflection Grille
Horizontal Blades**



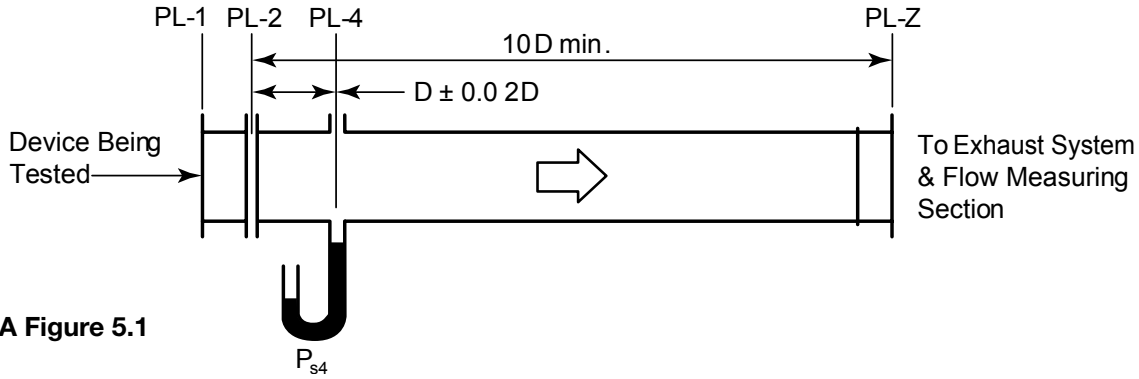
Ratings

		ABD	ABD-FD	ABD-RB	ABD-T	ABD-Z1	ABD-Z2
Pressure Rating	0.2 in. wg to 2 in. wg (0.05 kPa to 0.5 kPa)	✓	✓	✓	✓	✓	✓
Volume	25 cfm to 425 cfm (.012 m ³ /s to .201 m ³ /s)	✓		✓	✓		
	25 cfm to 275 cfm (.012 m ³ /s to .130 m ³ /s)		✓			✓	✓
Temperature	25°F to 150°F (-4°C to 65°C)	✓	✓	✓	✓	✓	✓

Airflow Range by Size

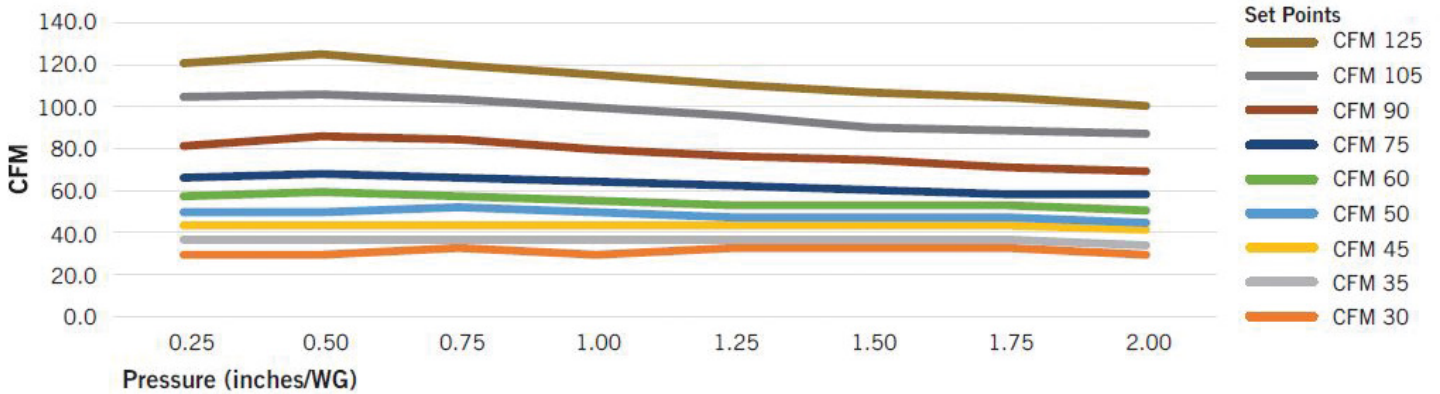
ABD Diameter in. (mm)	Individual Set Points	Airflow Range CFM* (m ³ /s)	ABD	ABD-FD	ABD-RB	ABD-T	ABD-Z1	ABD-Z2
4 (102)	20	25 to 130 (.012 to .061)	✓	✓	✓	✓	✓	✓
5 (127)	20	25 to 130 (.012 to .061)	✓		✓	✓		
6 (152 mm)	24	50 to 275 (.024 to .130)	✓	✓	✓	✓	✓	✓
8 (203) Exhaust	26	125 to 400 (.059 to .189)	✓		✓	✓		
8 (203) Supply	26	105 to 425 (.050 to .201)	✓		✓	✓		

* Note: Airflow range determined through +/- 10% of average airflow over the pressure range.

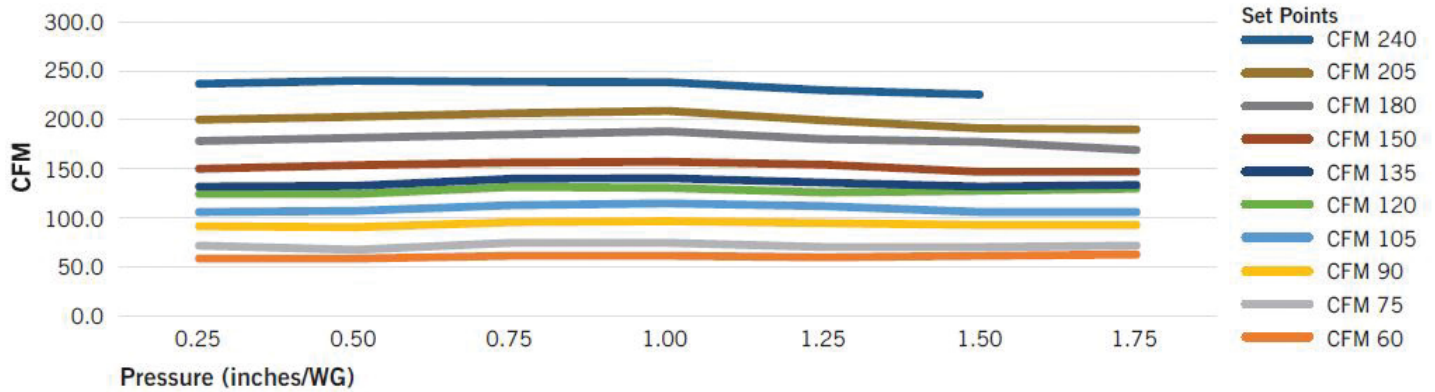


AMCA Figure 5.1

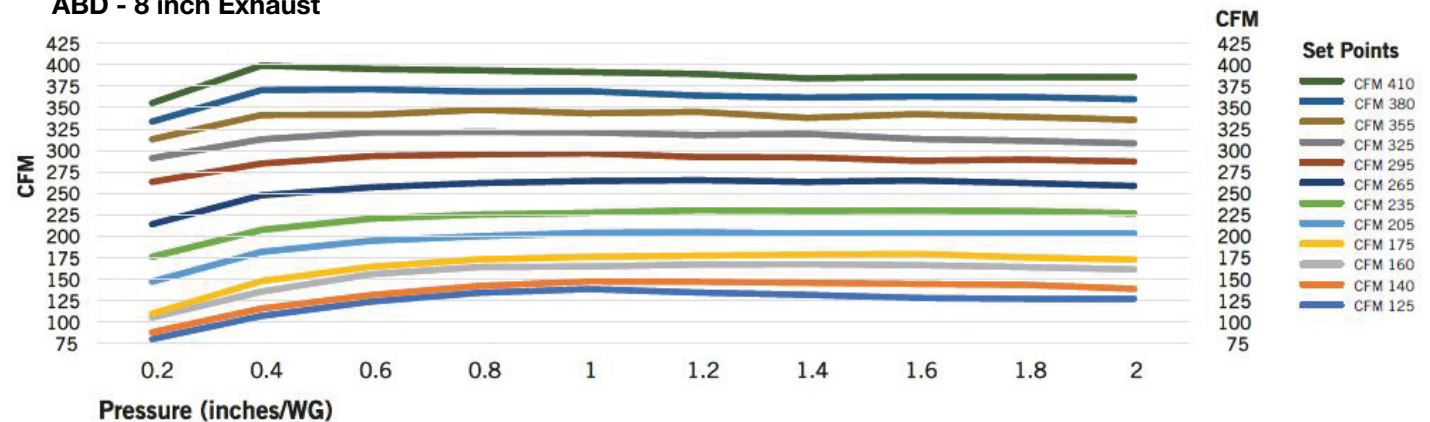
ABD - 4 and 5 inch



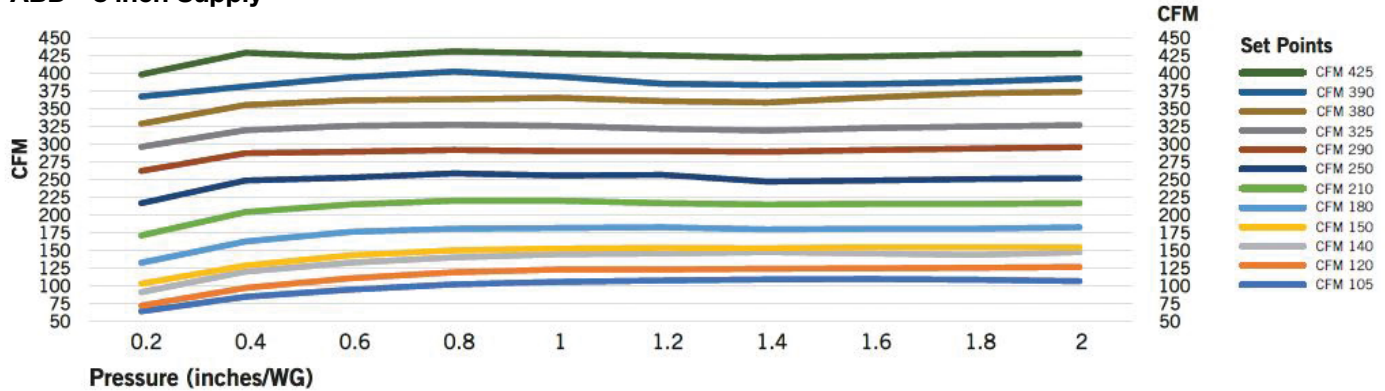
ABD - 6 inch



ABD - 8 inch Exhaust



ABD - 8 inch Supply



Sound Performance Data - Noise Criterion (NC)

4 and 5 inch		NC values at CFM					
		30	45	60	75	90	105
Pressure (in. wg)	0.25	27	26	27	26	27	28
	0.5	36	41	39	39	38	40
	0.75	40	44	43	42	42	43
	1	45	47	46	45	46	46
	1.5	48	49	50	49	49	50
	1.75	50	51	52	52	51	52
	2	52	53	53	52	53	54

6 inch		NC values at CFM				
		75	105	135	170	205
Pressure (in. wg)	0.25	27	28	29	28	30
	0.5	36	36	36	36	38
	0.75	42	41	41	41	42
	1	45	45	46	45	45
	1.5	47	51	52	52	51
	1.75	48	52	53	53	53
	2	50	53	54	55	56

8 inch		NC values at CFM											
		125	140	160	175	205	235	265	295	325	355	380	410
Pressure (in. wg)	0.2	15	15	15	15	15	15	15	15	15	15	15	15
	0.4	20	20	20	21	21	21	22	22	21	21	20	20
	0.6	24	24	24	24	24	24	25	25	25	26	26	26
	0.8	24	25	25	25	26	26	27	27	27	27	27	27
	1	27	28	28	29	30	30	30	31	31	32	32	33
	1.2	29	30	31	31.5	32	32	32	32	34	35	35	36
	1.4	30	31	31	32	33	34	35	36	36	37	37	38
	1.6	30	31	31	32	33	34	35	36	36	37	37	38
	1.8	31	31	32	33	34	35	37	38	38	38	39	39
	2	31	33	34	35	36	37	38	39	39	40	40	41

Sound data is for ABD only (doesn't include grille or register box).

Links

[Automatic Balancing Damper Video](#)



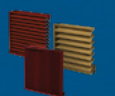
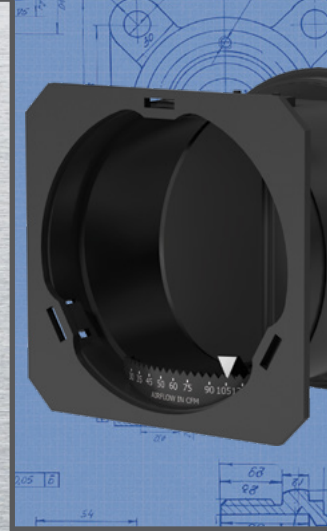
[Automatic Balancing Damper Demo Video](#)



[Automatic Balancing Damper Product Page](#)



[Automatic Balancing Damper Linked-in](#)



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Greenheck delivers value to mechanical engineers by helping them solve virtually any air quality challenges their clients face with a comprehensive selection of

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