

BC 02



BETEC CAD.

Volume Control Dampers



VCD-GAB-22B

Selected Products of the company have been Classified / Listed / Tested by various international testing authorities.



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Table Of Contents

S. No	Description	Page No
1	General Information	1-2
2	VCD - B10 Series	3-4
3	VCD - B20 Series	5-6
4	VCD - B30 Series	7
5	VCD - B40 Series	8-9
6	Engineering and Performance Data	10-12
7	Installation Details	11
8	Ordering Data	13

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Volume Control Damper - VCD

BETEC CAD manufactures high quality volume control dampers, specially designed for use in **HVAC** Heating Ventilating and Air conditioning systems for volume, flow and pressure control of air within the ducts.

The light, medium and heavy duty construction of **VCD's** allow even distribution and flow control of air at high duct pressures and are suitable for various type of **HVAC** applications.

Blade operation, either parallel or opposed in operation fitted with tip seals to ensure minimum air leakage through the blades.



Volume Control Damper
MODEL: VCD-GB-21B

Standard Types and Models							
Product	Series	Model / Specification		Material		Blade Operation	Construction
				Frame	Blade		
VCD	B - 10	11	Single Skin	G*,S	G*, S, A,	A/B/C	Normal
		12	Double Skin	G*,A,S	G, A*,S	A/B/C	
	B - 20**	21	Single Skin	G*,S, A	G*, S, A	A/B/C	Low Leakage
		22	Double Skin	G*,A,S	G, A*, S	A/B/C	
	B - 30	31	Single Skin	G*,S,	G*, S	B	Round
		32	Double Skin	G*,S	G*, S	B	
	B - 40	41	Single Skin	G*,S	G*, S	A/B	Heavy Duty
		42	Double Skin	G*,S	G*, S	A/B	

Material Details

All types and models of volume control dampers are available in Galvanized Steel, Stainless Steel & Aluminium according to the design and application.

Sheet Metal Galvanized Steel (GI)

Zinc coating Z-22 to Z-27 as per **ASTM-A653** Standards.

Sheet Metal Aluminium (AL)

Aluminium Sheet as per Alloy **A1100** Standards.
Extruded aluminium as per Alloy **6063 A** Standards.

Sheet Metal Stainless Steel (SS)

Stainless steel **304 / 316L**.

BETEC CAD. VCD's are manufactured as per international standards and confirmed to NFPA 90 A and UL 181 standards for erosion.

Note:

* Indicates **BETEC CAD's** Standard Construction.

** Indicates **AMCA Certified**.

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Volume Control Damper - VCD

BETEC CAD's Volume control dampers are offered with either parallel or opposed blade operation. Each style has distinguishing characteristics with regard to the type of operation.

Blade Operation

Parallel blade operation-'A'

Parallel blade damper are constructed so all the blades move in the same direction and in parallel. Parallel blade orientation is typically used when the damper operates in two positions open and close.

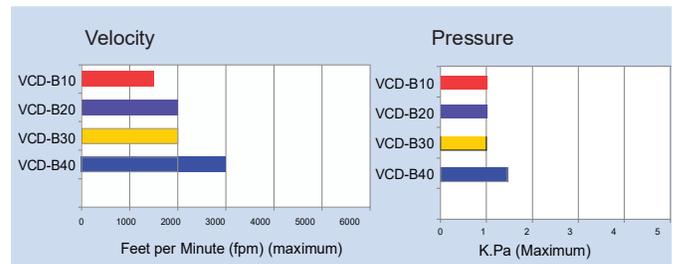
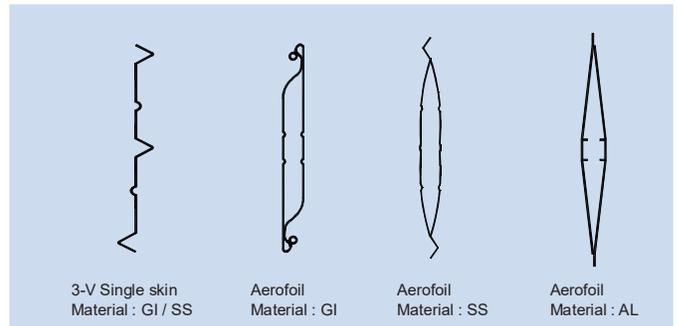
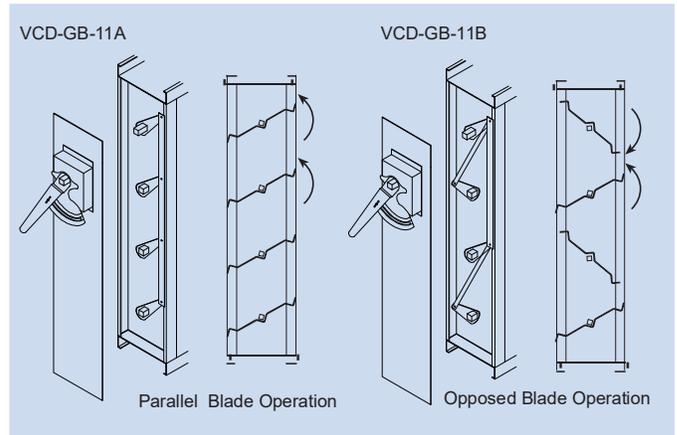
Opposed blade operation-'B'

Opposed blade dampers are constructed so blades next to each other move in opposite direction. Opposed blade configuration is typically used on dampers that modulate airflow.

Blade Type

'1' - **3V - Single skin blades** are formed from a single thickness galvanized or stainless steel, incorporating three longitudinal V-Type grooves running the full length of the blade to increase strength. This blade is designed for low to medium, velocity and pressure applications.

'2' - **Aerofoil - Double skin blades** are formed of double-skin galvanized steel, stainless steel or extruded aluminum. This blade design results in lower resistance to airflow and increased strength that is typically used in high pressure systems.



Parallel Blade Operation - "A"

Opposed Blade Operation - "B"

Gear Opposed Operation - "C"

Flange Styles:

*F2 Flange is Standard
F1/F3 Flanges are Optional

Operator:

Optional Supply Standard Supply*

Note: * Indicates **BETEC CAD's** Standard Construction.

Note: All Dimensions are in mm

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Volume Control Damper - VCD ; Normal Application

B - 10 Series

Type: Square and Rectangular

Model: VCD-GB-11A

Blade Type : 3V Single Skin ; Galvanized Construction

Blade Operation:A-Parallel,B-Opposed,C-Gear Opposed

BETEC CAD. B-10 Series volume control dampers are square and rectangular type with parallel or opposed blade operation having single skin blade design. These dampers are subjected to medium pressure applications to achieve efficient and rattle free operation.

The square and rectangular type **VCD's** are designed for handling maximum air capacities at minimum pressure drop.

Damper Performance Ratings

Operating Pressure - 4" w.g (1000 Pa.) Max.

Leakage - Class - III (Refer AMCA 500 D)

Velocity - 1500 fpm (7.5 m/s).

Standard Construction

Frame

6" x 1.18" x 18 gauge (150 x 30 x 1.2 mm) thick roll formed galvanized steel 'C' channel with Embossed type for low leakage application.

Blades

6" (152 mm) wide, 1.2 mm (18 gauge) thick galvanized steel 3V type roll formed.

Bushes

Nylon.

Mechanical Linkage

Galvanized steel linkages concealed within the frame.

Axles

12mm square galvanized steel.

Quadrant

Heavy gauge galvanized steel with position indications

Shut, 1/4 , 1/2, 3/4, **Open**.

Gasket

Neoprene / foam gasket.

Optional Fittings

Gear Wheel

Gear wheels are of heat resistant Nylon placed within the frame instead of mechanical linkage for rattle free smooth operation, operated with PVC knob / Quadrant.

Bushes

Brass / Bronze / Stainless Steel.

Axles

12 mm diameter galvanized steel.

Transitions

Neck adaptor for round duct connections.

Note :

Please contact **BETEC CAD.** for customized design & additional information.

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VCD-GB-11B

B-10 Series Single Skin Blade Model details					
Material Construction					
Model	Frame		Blade		Quadrant Material
	Material	Thick	Material	Thick	
VCD-GB-11A/B/C	GI	1.2 mm	GI	1.2 mm	GI
VCD-AB-11A/B/C	AL	1.2 mm	AL	1.2 mm	GI
VCD-GAB-11A/B/C	GI	1.2 mm	AL	1.2 mm	GI
VCD-GSB-11A/B/C	GI	1.2 mm	SS	1.2 mm	GI
VCD-SB-11A/B/C	SS	1.2 mm	SS	1.2 mm	SS

Alphabet indicates the type of blade operation

A - Parallel Blade

B - Opposed Blade

C - Gear Opposed Blade

Optional Construction

Frame : Thickness up to 1.5 mm

Frame Depth : 130 mm Optional

Blade : Thickness up to 1.5 mm

Blade Width : Up to 150 mm

Frame Type : SNC

Frame and Blade Material : Stainless Steel (304/316L)
: Aluminium

Any Combination of W x H											
VCD-GB-11A/B/C											
W - Inch	6"	8"	12"	16"	18"	20"	24"	28"	32"	36"	48"
H - Inch	6"	8"	12"	16"	18"	20"	24"	28"	32"	36"	48"

Note:

Increments of 2" (50 mm) possible with combination of 4" & 6" blade width.

Maximum single module size is 48"x48" (1200x1200 mm).

Damper, width W > 48" (1200 mm) or H > 48" (1200 mm), is provided with a center mullion partition.

Dampers of size W or H > 800 mm will have two side linkage.

Volume Control Damper - VCD ; Normal Application
B - 10 Series

Type: Square and Rectangular

Model: VCD-GAB-12A

Blade Type : Aerofoil ; Galvanized Construction

Blade Operation:A-Parallel,B-Opposed,C-Gear Opposed

BETEC CAD. B-10 Series volume control dampers are square and rectangular type with parallel or opposed blade operation having Aerofoil double skin blade design. These dampers are subjected to medium pressure applications to achieve efficient and uniform air distribution.

The square and rectangular type **VCD's** are designed for handling maximum air capacities at minimum pressure drop.

Damper Performance Ratings

Operating Pressure - 4" w.g (1000 Pa.) Max.

Leakage - Class - III (Refer AMCA 500D)

Velocity - 1500 fpm (7.5 m/s).

Standard Construction
Frame

6"x 1.18" x18 gauge (150 x 30 x 1.2 mm) thick roll formed galvanized steel 'C' Channel with Embossed type for low leakage application.

Blades

6" (152 mm) wide, 1 mm (18 gauge) thick extruded aluminium aerofoil type.

Bushes

Nylon.

Mechanical Linkage

Galvanized steel linkages concealed in the frame.

Axles

12 mm square galvanized steel.

Quadrant

Heavy gauge galvanized steel with position indications

Shut, 1/4 , 1/2, 3/4, Open.

Gasket

Neoprene / foam gasket.

Optional Fittings
Gear Wheel

Gear wheels are of heat resistant Nylon placed within the frame instead of mechanical linkage for rattle free smooth operation, operated with PVC knob / Quadrant.

Bushes

Brass / Bronze / Stainless Steel.

Axles

12 mm diameter galvanized steel.

Transitions

Neck adaptor for round duct connections.

Note :

Please contact **BETEC CAD.** for customized design & additional information.

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VCD-GAB-12A

B 10 Series Aerofoil Blade Model details					
Material Construction					
Model	Frame		Blade		Quadrant
	Material	Thick	Material	Thick	Material
VCD-GB-12A/B/C	GI	1.2 mm	GI	0.7 mm	GI
VCD-AB-12A/B/C	AL	1.2 mm	AL	1 mm	GI
VCD-GAB-12A/B/C	GI	1.2 mm	AL	1 mm	GI
VCD-GSB-12A/B/C	GI	1.2 mm	SS	0.7 mm	GI
VCD-SB-12A/B/C	SS	1.2 mm	SS	0.7 mm	SS

Alphabet indicates the type of blade operation

A - Parallel Blade

B - Opposed Blade

C - Gear Opposed Blade

Optional Construction

Frame : Thickness up to 1.5 mm

Frame Depth : 130 mm Optional

Blade : Thickness up to 1.2 mm

Blade Width : Up to 150 mm

Frame Type : SNC

Frame and Blade Material : Stainless Steel (304/316L)
: Aluminium

Any Combination of W x H											
VCD-GB-12A/B/C											
W- Inch	6"	8"	12"	16"	18"	20"	24"	28"	32"	36"	48"
H - Inch	6"	8"	12"	16"	18"	20"	24"	28"	32"	36"	48"

Note:

Increments of 2" (50 mm) possible with combination of 4" & 6" blade width.

Maximum single module size is 48"x48" (1200x1200 mm).

Damper, width W > 48" (1200 mm) or H > 48" (1200 mm), is provided with a center mullion partition.

Dampers of size W or H > 800 mm will have two side linkage.

Volume Control Damper - VCD ; Low Leakage Application

B - 20 Series

Type: Square and Rectangular

Model: VCD-GB-21B

Blade Type : 3V Single Skin ; Galvanized Construction

Blade Operation: A-Parallel, B-Opposed, C-Gear Opposed

BETEC CAD. B-21 Series volume control dampers are square and rectangular type with parallel or opposed blade operation having single skin blade design. These dampers are subjected to medium pressure applications to achieve low leakage efficient operation.

The square and rectangular type **VCD's** are designed for handling maximum air capacities at minimum pressure drop.

Damper Performance Ratings

Operating Pressure - 6" wg (1500 Pa.) Max.

Leakage - Class - I (Refer AMCA 500-D-12).

Velocity - 2000 fpm (10.1 m/s).

Standard Construction

Frame

6" x 1.18" x 18 gauge (150 x 30 x 1.2 mm) thick roll formed galvanized steel 'C' channel with Embossed type for low leakage application.

Blades

6" (152 mm) wide, 1.2 mm (18 gauge) thick galvanized steel 3V type roll formed.

Bushes

Nylon.

Mechanical Linkage

Galvanized steel linkages concealed in the frame.

Axles

12 mm square galvanized steel.

Quadrant

Heavy gauge galvanized steel with position indications

Shut, 1/4, 1/2, 3/4, **Open**.

Gasket

Neoprene / Foam / Silicone Rubber Gasket*

Jamb Seal

0.3 mm thick Stainless spring steel

Optional Fittings

Gear Wheel

Gear wheels are of heat resistant Nylon placed within the frame instead of mechanical linkage for rattle free smooth operation, operated with PVC knob / Quadrant.

Bushes

Brass / Bronze* /Stainless Steel.

Axles

12 mm diameter galvanized steel.

Transitions

Neck adaptor for round duct connections.

Note :

Please contact **BETEC CAD.** for customized design & additional information.

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Betec Cad certifies that the Model VCD-GB-21B 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 Program. The AMCA Certified Ratings Seal applies to air performance and air leakage.

B-20 Series Single Skin Blade Model details

Model	Material Construction				
	Frame		Blade		Quadrant Material
	Material	Thick	Material	Thick	
VCD-GB-21A/B*/C	GI	1.2 mm	GI	1.2 mm	GI
VCD-AB-21A/B/C	AL	1.2 mm	AL	1.2 mm	GI
VCD-GAB-21A/B/C	GI	1.2 mm	AL	1.2 mm	GI
VCD-GSB-21A/B/C	GI	1.2 mm	SS	1.2 mm	GI
VCD-SB-21A/B/C	SS	1.2 mm	SS	1.2 mm	SS

Alphabet indicates the type of blade operation

A - Parallel Blade

B - Opposed Blade

C - Gear Opposed Blade

Optional Construction

Frame : Thickness up to 1.5 mm

Frame Depth : 130 mm Optional

Blade : Thickness up to 1.5 mm

Blade Width : Up to 150 mm

Frame and Blade Material : Stainless Steel (304/316L)

: Aluminium

Any Combination of W x H											
VCD-GB-21A/B/C											
W- Inch	6"	8"	12"	16"	18"	20"	24"	28"	32"	36"	48"
H- Inch	6"	8"	12"	16"	18"	20"	24"	28"	32"	36"	48"

Note:

Increments of 2" (50 mm) possible with combination of 4" & 6" blade width.

Maximum single module size is 48"x48" (1200x1200 mm).

Damper, width W > 48" (1200 mm) or H > 48" (1200 mm), is provided with a center mullion partition.

Dampers of size W or H > 800 mm will have blade with stiffener

* Indicates Betec Cad Models Certified by AMCA.

Volume Control Damper - VCD; Low Leakage Application

B - 20 Series

Type: Square and Rectangular

Model: VCD-GAB-22B

Blade Type: Aerofoil ; Galvanized Construction

Blade Operation: A-Parallel, B-Opposed, C-Gear Opposed

BETEC CAD. B-22 Series volume control dampers are square and rectangular type with parallel or opposed blade operation having Aerofoil double skin blade design. These dampers are subjected to medium pressure applications to achieve low leakage and uniform air distribution.

The square and rectangular type **VCD's** are designed for handling maximum air capacities at minimum pressure drop.

Damper Performance Ratings

Operating Pressure - 6" wg (1500 Pa.) Max.

Leakage - Class - I (Refer AMCA 500-D-12).

Velocity - 2000 fpm (10.1 m/s).

Standard Construction

Frame

6" x 1.18" x 18 gauge (150 x 30 x 1.2 mm) thick roll formed galvanized steel 'C' channel with Embossed type for low leakage application.

Blades

6" (152 mm) wide, 1 mm (18 gauge) thick extruded aluminium aerofoil type.

Bushes

Nylon.

Mechanical Linkage

Galvanized steel linkages concealed in the frame.

Axles

12 mm square galvanized steel.

Quadrant

Heavy gauge galvanized steel with position indications

Shut, 1/4, 1/2, 3/4, **Open**.

Gasket

Neoprene / Foam / Silicone Rubber Gasket*

Jamb Seal

0.3 mm thick Stainless spring steel

Optional Fittings

Gear Wheel

Gear wheels are of heat resistant Nylon placed within the frame instead of mechanical linkage for rattle free smooth operation, operated with PVC knob / Quadrant.

Bushes

Brass / Bronze* /Stainless Steel.

Axles

12 mm diameter galvanized steel.

Transitions

Neck adaptor for round duct connections.

Note :

Please contact **BETEC CAD.** for customized design & additional information.

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B-20 Series Aerofoil Blade Model details					
Material Construction					
Model	Frame		Blade		Quadrant
	Material	Thick	Material	Thick	
VCD-GB-22A/B*/C	GI	1.2 mm	GI	0.7 mm	GI
VCD-AB-22A/B/C	AL	1.2 mm	AL	1 mm	GI
VCD-GAB-22A/B*/C	GI	1.2 mm	AL	1 mm	GI
VCD-GSB-22A/B/C	GI	1.2 mm	SS	0.7 mm	GI
VCD-SB-22A/B/C	SS	1.2 mm	SS	0.7 mm	SS

Alphabet indicates the type of blade operation

A - Parallel Blade

B - Opposed Blade

C - Gear Opposed Blade.

Optional Construction

Frame : Thickness up to 1.5 mm

Frame Depth : 130 mm Optional

Blade : Thickness up to 0.9 mm

Blade Width : Up to 150 mm

Frame and Blade Material : Stainless Steel (304/316L)

: Aluminium

Any Combination of W x H											
VCD-GB-22A/B/C											
W - Inch	6"	8"	12"	16"	18"	20"	24"	28"	32"	36"	48"
H - Inch	6"	8"	12"	16"	18"	20"	24"	28"	32"	36"	48"

Note:

Increments of 2" (50 mm) possible with combination of 4" & 6" blade width.

Maximum single module size is 48"x48" (1200x1200 mm).

Damper, width W > 48" (1200 mm) or H > 48" (1200 mm), is provided with a center mullion partition.

Dampers of size W or H > 800 mm will have blade with stiffener

* Indicates Betec Cad Models Certified by AMCA.

Volume Control Damper - VCD

B - 30 Series

Type: Round

Model: VCD-GB-31B

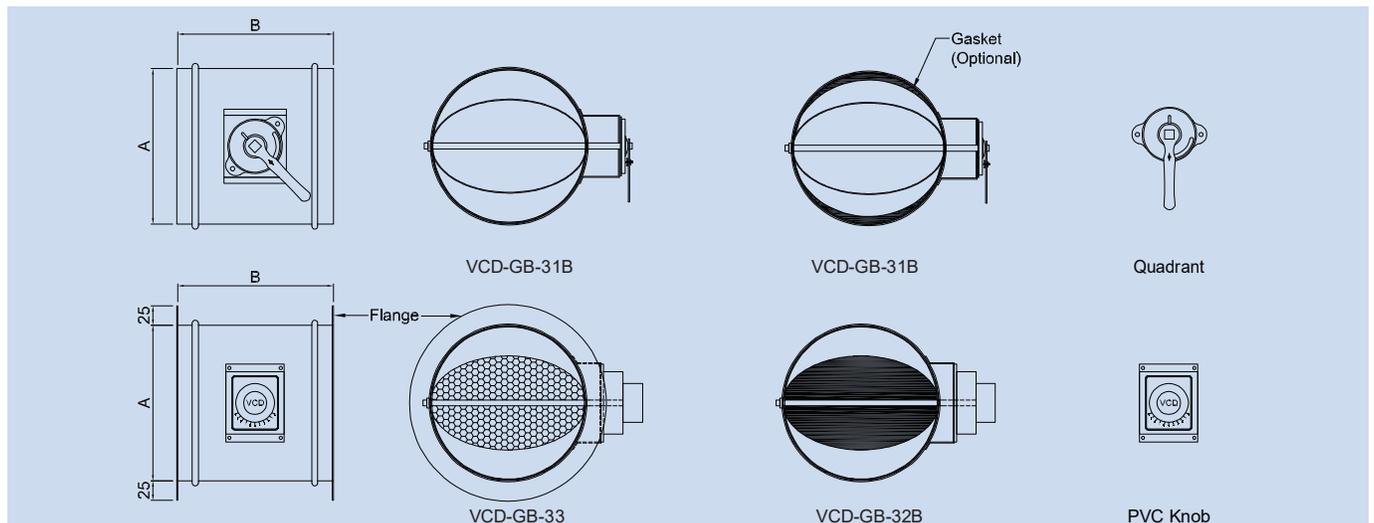
Blade Type : 1 - Single Skin; 2 - Double Skin; 3 - Perforated Blades; Galvanized Construction

Blade Operation : B-Opposed

B 31/32 A Ø mm	Width B mm	Frame Thickness in mm	Blade Thickness in mm
100Ø	150	0.7	0.9
150Ø	150	0.7	0.9
200Ø	150	0.7	0.9
250Ø	200	0.7	0.9
300Ø	250	0.9	1.2
350Ø	300	0.9	1.2
400Ø	350	1.2	1.5
450Ø	400	1.2	1.5



Constructional Details and Dimensions Model VCD-GB-30 Series



Standard Construction

Frame

0.7 mm (22 gauge) Galvanized sheet steel of thickness with continuous external grew on either edges to provide extra rigidity and spot welded at the joints.

Blades

0.9 mm (20 gauge) galvanized sheet steel of thickness.

Axles

8 mm Square galvanized steel.

Bushes

Nylon.

Quadrant

Heavy gauge galvanized steel with position indications Shut, 1/4, 1/2, 3/4, Open.

Optional Construction

Frame : Thickness up to 3 mm

Blade : Thickness up to 3 mm

Frame and Blade Material : Stainless Steel (304/316L).

B-30 Series Model details.			
Model	Material		Quadrant Material
	Frame	Blade	
VCD-GB-31/32/33B	GI	GI	GI
VCD-GSB-31/32/33B	GI	SS	GI
VCD-SB-31/32/33B	SS	SS	SS

Alphabet indicates the type of blade operation

B - Opposed Blade

Optional Fittings

Operator : PVC knob

Gasket : Neoprene / foam gasket to provide additional low leakage operation.

Flange : 25 mm / or as per customer request.

Note : Please contact **BETEC CAD.** for customized design & additional information.

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Volume Control Damper - VCD ; Heavy Duty Application

B - 40 Series

Type: Square and Rectangular

Model: VCD - GB-41 A/B

Blade Type : 3V Single Skin; Galvanized Construction

Blade Operation : A-Parallel, B-Opposed

BETEC CAD B-40 Series Volume control dampers are square and rectangular type with both parallel blade operation and opposed blade operation with single skin blade design. These heavy duty dampers are used under high pressure and velocity conditions to achieve efficient and rattle free operation.

The square and rectangular type **VCD's** are designed for handling maximum air capacities at minimum pressure drop.

Damper Performance Ratings

Pressure - 6" wg (1500 Pa.) Max.

Leakage - Class - II (Refer AMCA 500 D)

Velocity - 3000 fpm (15 m/s).

Standard Construction

Frame

6" x 1.18" x 16 gauge (150 x 30 x 1.5 mm) thick rollformed galvanized steel 'C' channel.

Blades

6" (150 mm) wide, 1.5 mm (16 gauge) thick galvanized steel 3V type rollformed.

Bushes

Bronze.

Mechanical Linkage

Galvanized steel linkages concealed in the frame.

Axles

12 mm square galvanized steel.

Quadrant

Heavy gauge galvanized steel with position indications

Shut, 1/4 , 1/2, 3/4, **Open**.

Gasket

Neoprene / foam gasket.

Jamb Seal

0.3 mm thick Stainless spring steel.

Optional Fittings

Bushes

Brass / Stainless Steel.

Flange Holes

Available customers request, please specify.

Transitions

Neck adaptor for round duct connections.

Note :

Please contact **BETEC CAD.** for customized design & additional information.

Selected Products of the company have been Classified / Listed / Tested by various international testing authorities.



VCD-GB-41B

B-40 Series Single Skin Blade Model details					
Material Construction					
Model	Frame		Blade		Quadrant
	Material	Thick	Material	Thick	Material
VCD-GB-41A/B	GI	1.5 mm	GI	1.5 mm	GI
VCD-GSB-41A/B	GI	1.5 mm	SS	1.5 mm	GI
VCD-SB-41A/B	SS	1.5 mm	SS	1.5 mm	SS

Alphabet indicates the type of blade operation

A - Parallel Blade.

B - Opposed Blade.

Optional Construction

Frame : Thickness up to 3 mm

Frame Depth : Up to 200 mm

Blade : Thickness up to 3 mm

Blade Width : Up to 150 mm

Frame and Blade Material : Stainless Steel (304/316L)

Any Combination of W x H											
VCD-GB-41A/B											
W - Inch	6"	8"	12"	16"	18"	20"	24"	28"	32"	36"	48"
H - Inch	6"	8"	12"	16"	18"	20"	24"	28"	32"	36"	48"

Note:

Increments of 2" (50 mm) possible with combination of 4" & 6" blade width.

Maximum single module size is 48"x48" (1200x1200 mm).

Damper, width W > 48" (1200 mm) or H > 48" (1200 mm), is provided with a center mullion partition.

Volume Control Damper - VCD; Heavy Duty Application

B- 40 Series

Type: Square and Rectangular

Model: VCD - GB-42A

Blade Type Aerofoil; Galvanized Construction

Blade Operation : A-Parallel, B-Opposed

BETEC CAD B-40 Series Volume control dampers are square and rectangular type with both parallel blade operation and opposed blade operation, double skin blade design. These heavy duty dampers are used under high pressure and velocity conditions to achieve efficient and rattle free operation.

The square and rectangular type **VCD's** are designed for handling maximum air capacities at minimum pressure drop.



Damper Performance Ratings

Operating Pressure - 6" wg (1500 Pa.) Max.

Leakage - Class - II (Refer to AMCA 500 D)

Velocity - 3000 fpm (15 m/s).

Standard Construction

Frame

6" x 1.18" x 16 gauge (150 x 30 x 1.5 mm) thick rollformed galvanized steel 'C' channel.

Blades

6" (150 mm) wide, 0.9 mm (20 gauge) thick galvanized steel Aerofoil type rollformed.

Bushes

Bronze.

Mechanical Linkage

Galvanized steel linkages concealed in the frame.

Axles

12 mm square galvanized steel.

Quadrant

Heavy gauge galvanized steel with position indications

Shut, 1/4 , 1/2, 3/4, **Open**.

Gasket

Neoprene / foam gasket.

Jamb Seal

0.3 mm thick Stainless spring steel.

Optional Fittings

Bushes

Brass/ Stainless Steel.

Flange Holes

Available customers request, please specify.

Transitions

Neck adaptor for round duct connections.

Note :

Please contact **BETEC CAD**. for customized design & additional information.

Selected Products of the company have been Classified / Listed / Tested by various international testing authorities.



B- 40 Series Aerofoil Blade Model Details					
Material Construction					
Model	Frame		Blade		Quadrant
	Material	Thick	Material	Thick	Material
VCD-GB-42A/B	GI	1.5 mm	GI	0.9 mm	GI
VCD-GSB-42A/B	GI	1.5 mm	SS	0.9 mm	GI
VCD-SB-42A/B	SS	1.5 mm	SS	0.9 mm	SS

Alphabet indicates the type of blade operation

A - Parallel Blade.

B - Opposed Blade.

Optional Construction

Frame : Thickness up to 3 mm

Frame Depth : Up to 200 mm

Blade : Thickness up to 2 mm

Blade Width : Up to 150 mm

Frame and Blade Material : Stainless Steel (304/316L)

Any Combination of W x H											
VCD-GB-42A/B											
W- Inch	6"	8"	12"	16"	18"	20"	24"	28"	32"	36"	48"
H - Inch	6"	8"	12"	16"	18"	20"	24"	28"	32"	36"	48"

Note:

Increments of 2" (50 mm) possible with combination of 4"& 6" blade width.

Maximum single module size is 48"x48" (1200x1200 mm).

Damper, width W > 48" (1200 mm) or H > 48" (1200 mm), is provided with a center mullion partition.

Engineering And Performance Data - VCD

B - 10/20/30/40 Series

Pressure drop for Volume Control Dampers

Single Skin Blade : VCD B 11/21/31/41

Aerofoil Blade : VCD B 12/22/32/42

AIR PERFORMANCE

- Tested for air performance at standard air density in accordance with ANSI/AMCA 500-D, Figure 5.3
- Data are based on a torque of 24 in-lb/ft² applied to close and seat the damper during the test.



Volume Control Damper

Betec Cad certifies that the Models VCD-GAB-22B/ VCD-GB-22B/VCD-GB-21B 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 Program. The AMCA Certified Ratings Seal applies to air performance and air leakage.

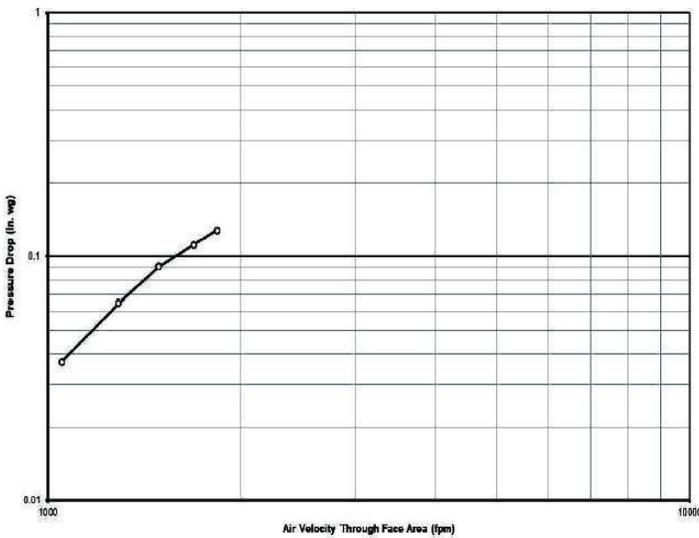
Pressure Loss Vs Face Velocity Pressure Drop For Models VCD - B10/20/30/40 Series.

SIZE 12" X12"	
Air Velocity (fpm)	Pressure Drop (in. wg)
1100	0.04
1400	0.07
1600	0.09
1800	0.12
1900	0.14

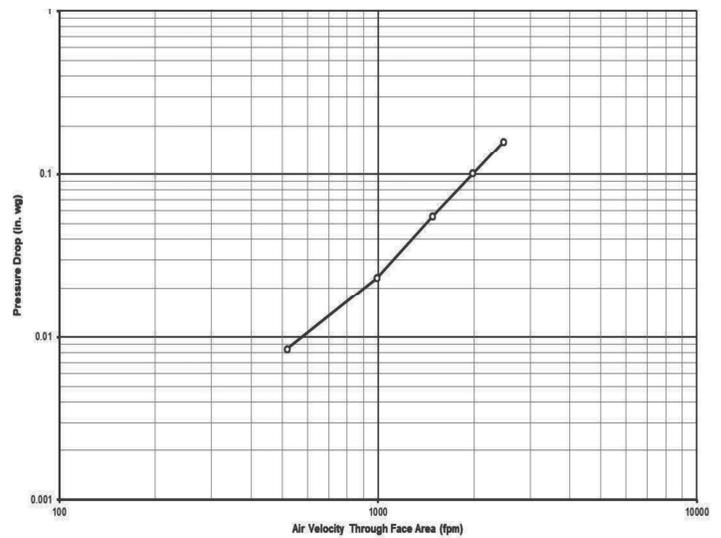
SIZE 24" X 24"	
Air Velocity (fpm)	Pressure Drop (in. wg)
520	0.008
1000	0.02
1600	0.06
2000	0.1
2600	0.18

SIZE 12" X 48"	
Air Velocity (fpm)	Pressure Drop (in. wg)
520	0.01
1000	0.04
1500	0.08
2000	0.14
2600	0.22

SIZE 48" X 12"	
Air Velocity (fpm)	Pressure Drop (in. wg)
520	0.007
1000	0.02
1600	0.05
2000	0.09
2600	0.14

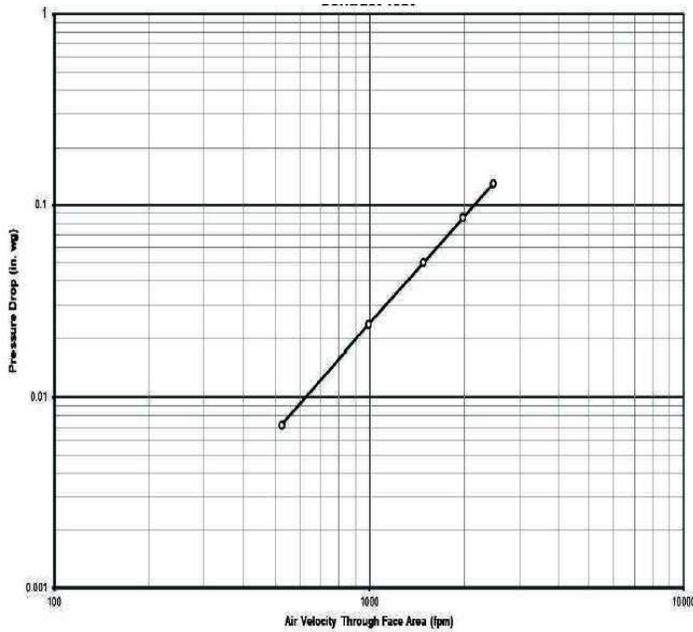


—○— Test Pressure Drop - Device Only
SIZE 12" X 12"

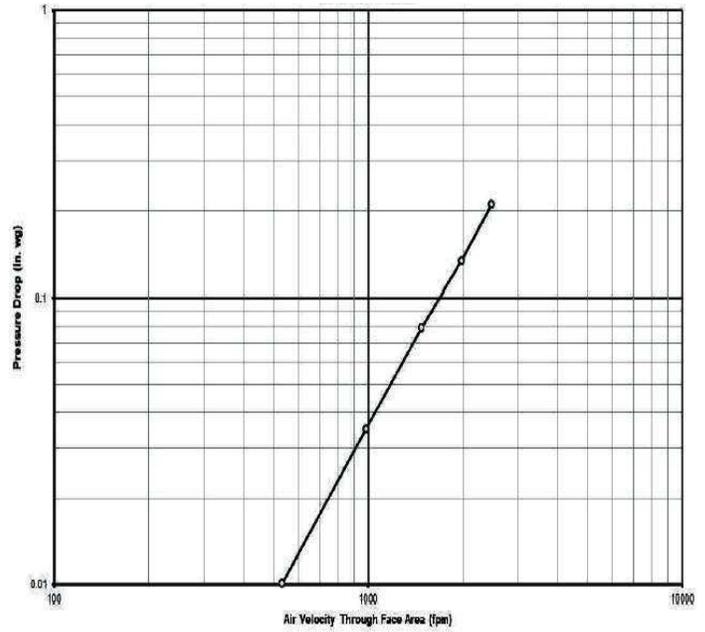


—○— Test Pressure Drop - Device Only
SIZE 24" X 24"

Selected Products of the company have been Classified / Listed / Tested by various international testing authorities.

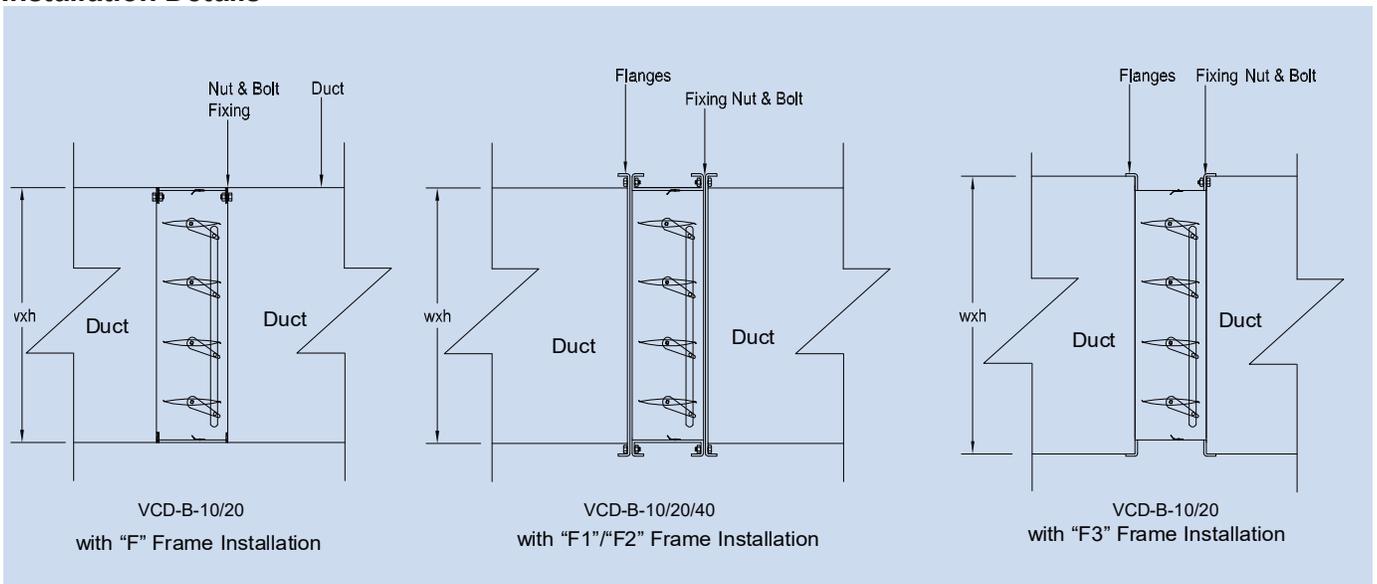


SIZE 48" X 12"



SIZE 12" X 48"

Installation Details



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Engineering And Performance Data - VCD

B 10/20/30/40 Series

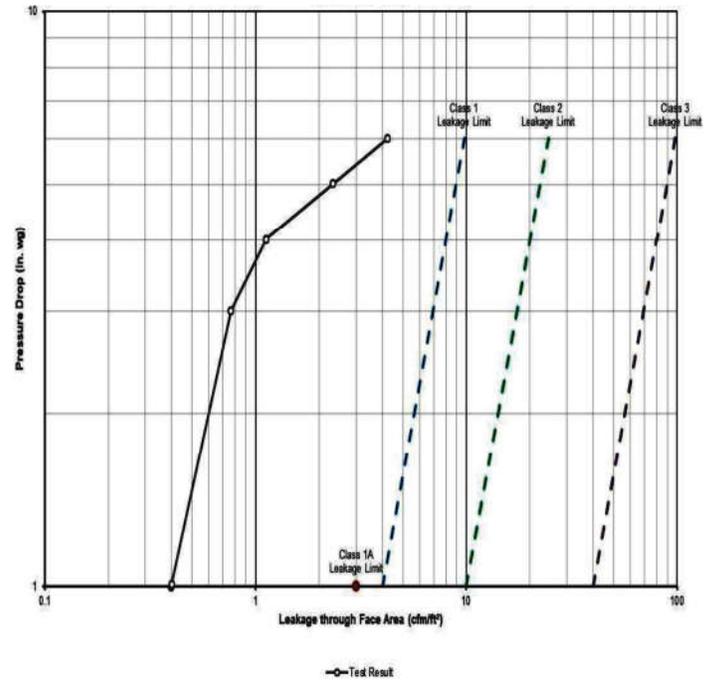
Leakage Characteristics for Volume Control Dampers

Models VCD - B 10/20/30/40 - Leakage Curve (Blades 100% Closed Position)

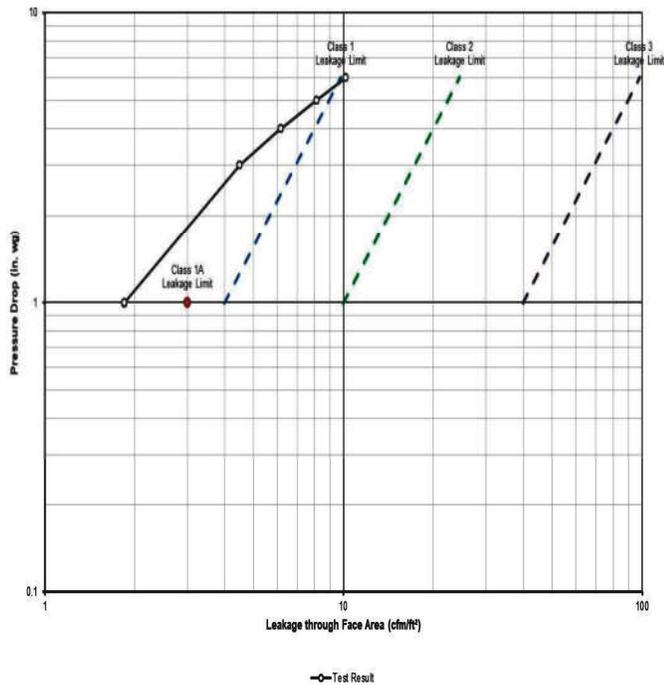
AIR LEAKAGE

- Air leakage is based on operation between 32 °F and 120 °F
- Tested for air leakage at standard air density in accordance with ANSI/AMCA Standard 500-D, Figure 5.4
- Data are based on a torque of 24 in-lb/ft² applied to close and seat the damper during the test.

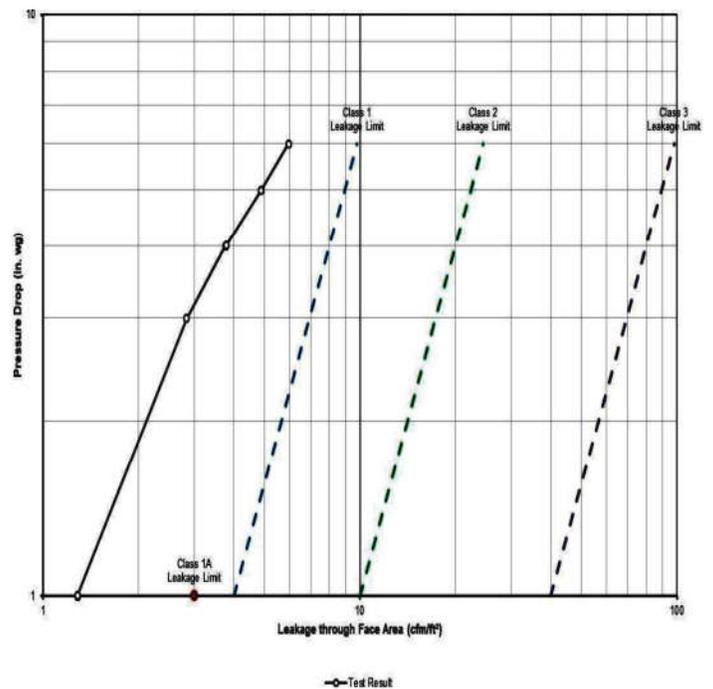
Maximum Allowable Leakage, cfm/ft ²				
Class	at 1 in.wg	at 4 in.wg	at 6 in.wg	at 8 in.wg
1A	3	N/A	N/A	N/A
1	4	8	10	11
2	10	20	24	28
3	40	80	98	112



VCD-GAB-22-B-36 "X 40"



VCD-GB-21-B-36 "X 40"



VCD-GB-22-B-36 "X 40"

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Volume Control Dampers - VCD

Ordering Data

VCD	Volume Control Damper						
↑	G	Galvanized Steel (GI)					
	S	Stainless Steel (SS)					
	A	Aluminium (AL)					
	↑	G	Galvanized Steel (GI)				
		A	Aluminium (AL)				
		S	Stainless Steel (SS)				
	↑	↑	B	BETEC CAD.			
			10	Normal Construction			
			20	Low Leakage Construction			
			30	Round			
		40	Heavy Duty				
		↑	1	Single Skin 3V			
			2	Aerofoil			
	3		Perforated				
	↑	↑	A	Parallel			
B			Opposed				
C			Gear Opposed				
VCD	X	X	B	X	X	X	
	Frame Material	Blade Material	Series	Blade Type	Blade Operation		

Note :

1) For blade type, add Series to Blade Type.
 For example: VCD-GB-(10+1=11) A => VCD-GB-11A.

2) If frame and blade material is same, use single alphabet.

Example : VCD-GB-11A where G = Galvanized frame and blade.

VCD-GAB-11A where G = Galvanized frame

A = Aluminium blade.

Betec Cad certifies that the Models VCD-GAB-22B/ VCD-GB-22B/ VCD-GB-21B are licensed to bear the AMCA Seal.

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October- 2020

BC 2.1



BETEC CAD.

Motorized Volume Control Dampers



MCD-GB-21A

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Table Of Contents

S. No	Description	Page No
1	General Information	1-2
2	MCD - B20 Series	3-4
3	MCD - B40 Series	5-6
4	Engineering and Performance Data	7-9
5	Installation Details	8
6	Ordering Data	10

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Motorized Volume Control Damper - MCD

BETEC CAD manufactures high quality Motorized volume control dampers, specially designed for use in **HVAC** Heating Ventilating and Air conditioning systems for volume, flow and pressure control of air within the ducts.

The light, medium and heavy duty construction of **MCD's** allow even distribution and flow control of air at high duct pressures and are suitable for various type of **HVAC** applications.

Blade operation, either parallel or opposed in operation fitted with tip seals to ensure minimum air leakage through the blades.



Motorized Volume Control Damper

Standard Types and Models							
Product	Series	Model / Specification		Material		Blade Operation	Construction
				Frame	Blade		
MCD	B - 20	21	Single Skin	G*,S	G*, S	A/B/C	Normal
		22	Double Skin	G*,A,S	G, A*,S	A/B/C	
	B - 40	41	Single Skin	G*,S	G*, S	A/B	Heavy Duty
		42	Double Skin	G*,S	G*, S	A/B	

Material Details

All types and models of motorized volume control dampers are available in Galvanized Steel, Stainless Steel & Aluminium according to the design and application.

Sheet Metal Galvanized Steel (GI)

Zinc coating Z-22 to Z-27 as per **ASTM-A653** Standards.

Sheet Metal Aluminium (AL)

Aluminium Sheet as per Alloy **A1100** Standards.
Extruded aluminium as per Alloy **6063 A** Standards.

Sheet Metal Stainless Steel (SS)

Stainless steel **304 / 316L**.

Applications:

- GI Construction** : For **HVAC** commercial, residential etc.
- AL Construction** : For Hospitals,Labs,Green Building etc.
- SS Construction** : For Offshore , Oil & Gas etc.

The respective alphabet indicates the type of material

- G** - Galvanized steel (**GI**)
- S** - Stainless steel (**SS**)
- A** - Aluminum (**AL**)

Alphabet indicates the type of blade operation

- A** - Parallel Blade.
- B** - Opposed Blade.
- C** - Gear Opposed Blade.

BETEC CAD. MCD's are manufactured as per international standards and confirmed to **NFPA 90 A** and **UL 181** standards for erosion.

Note:

* Indicates **BETEC CAD's** Standard Construction.

Selected Products of the company have been Classified / Listed / Tested by various international testing authorities.



Motorized Volume Control Damper - MCD

BETEC CAD's Motorized volume control dampers are offered with either parallel or opposed blade operation. Each style has distinguishing characteristics with regard to the type of operation.

Blade Operation

Parallel blade operation-'A'

Parallel blade damper are constructed so all the blades move in the same direction and in parallel. Parallel blade orientation is typically used when the damper operates in two positions open and close.

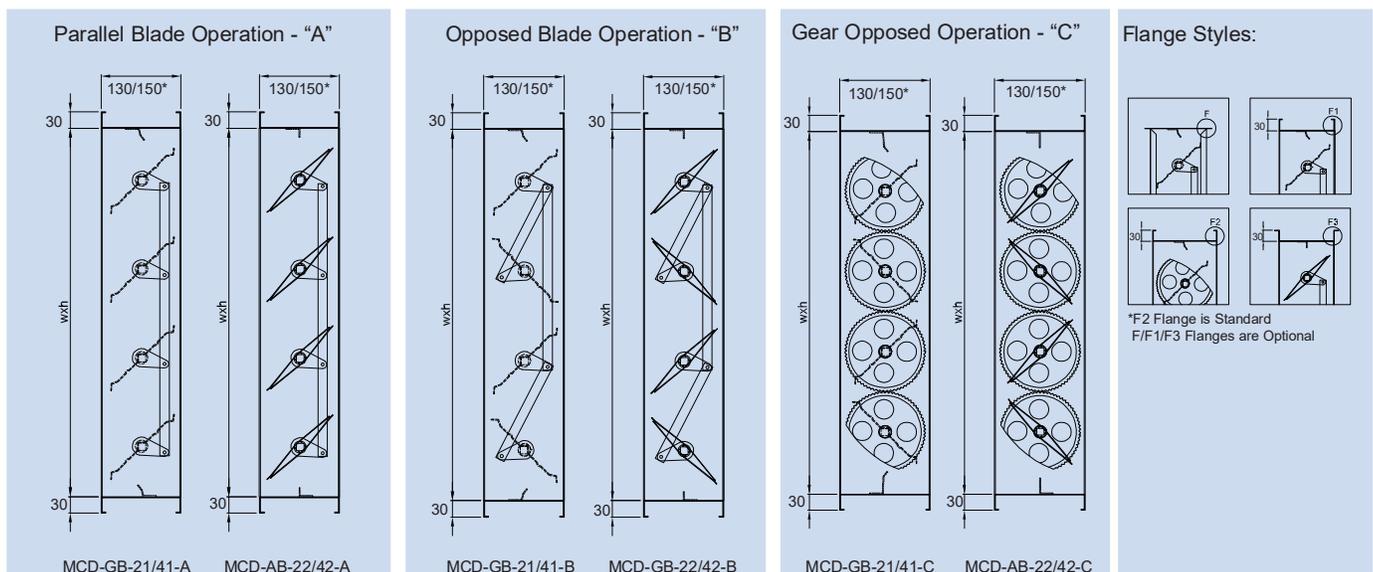
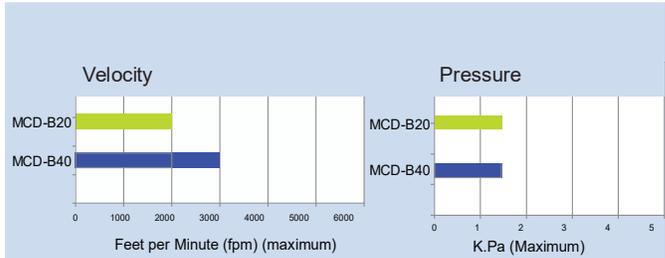
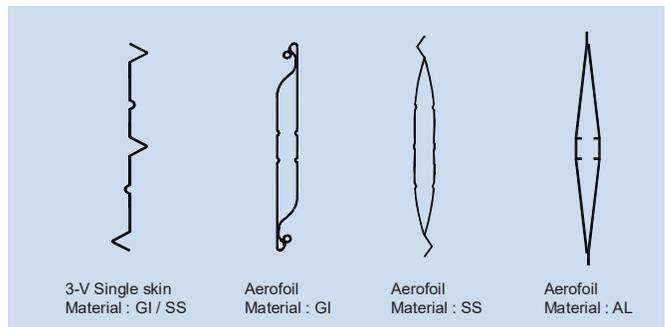
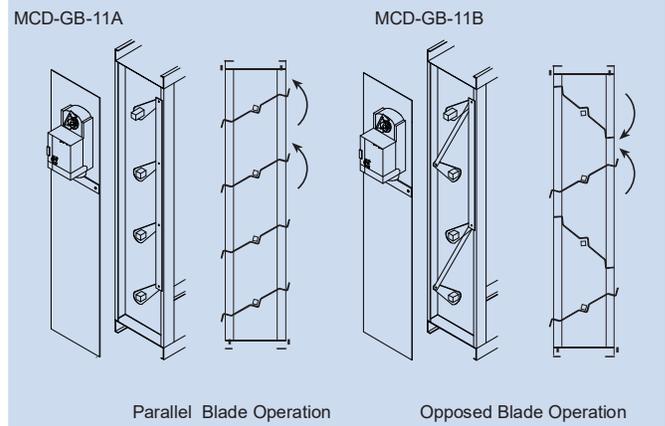
Opposed blade operation-'B'

Opposed blade dampers are constructed so blades next to each other move in opposite direction. Opposed blade configuration is typically used on dampers that modulate airflow.

Blade Type

'1' - **3V - Single skin blades** are formed from a single thickness galvanized or stainless steel, incorporating three longitudinal V-Type grooves running the full length of the blade to increase strength. This blade is designed for low to medium, velocity and pressure applications.

'2' - **Aerofoil - Double skin blades** are formed of double-skin galvanized steel, stainless steel or extruded aluminum. This blade design results in lower resistance to airflow and increased strength that is typically used in high pressure systems.



Note: * Indicates **BETEC CAD's** Standard Construction.

Selected Products of the company have been Classified / Listed / Tested by various international testing authorities.

Motorized Volume Control Damper - MCD; Low Leakage Application B-20 Series

Type: Square and Rectangular

Model: MCD-GB-21A

Blade Type : 3V Single Skin ; Galvanized Construction

Blade Operation: A-Parallel, B-Opposed, C-Gear Opposed

BETEC CAD. B-20 Series Motorized volume control dampers are square and rectangular type with parallel or opposed blade operation having single skin blade design. These dampers are subjected to medium pressure applications to achieve low leakage efficient operation. The square and rectangular type **MCD's** are designed for handling maximum air capacities at minimum pressure drop.



MCD-GB-21A

Damper Performance Ratings

Operating Pressure - 6" wg (1500 Pa.) Max.

Leakage - Class - I (Refer AMCA 500-D-12).

Velocity - 2000 fpm (10.1 m/s).

Standard Construction

Frame

6" x 1.18" x 18 gauge (150 x 30 x 1.2 mm) thick roll formed galvanized steel 'C' channel.

Blades

6" (152 mm) wide, 1.2 mm (18 gauge) thick galvanized steel 3V type roll formed.

Bushes

Bronze.

Mechanical Linkage

Galvanized steel linkages concealed in the frame.

Axles

12 mm square galvanized steel.

Gasket

Neoprene / foam gasket / Silicone Rubber Gasket*.

Jamb Seal

0.3 mm thick stainless spring steel

Actuator

Siemens (On / Off type 24V AC / 230V AC)

Optional Fittings

Gear Wheel

Gear wheels are of heat resistant Nylon placed within the frame instead of mechanical linkage for rattle free smooth operation.

Bushes

Brass / Nylon.

Axles

12 mm diameter galvanized steel.

Transitions

Neck adaptor for round duct connections.

Actuator

Honeywell / Belimo / Sauter (24V AC / 230V AC)

Note :

Please contact **BETEC CAD.** for customized design & additional information.

Selected Products of the company have been Classified / Listed / Tested by various international testing authorities.



B-20 Series Single Skin Blade Model Details				
Material Construction				
Model	Frame		Blade	
	Material	Thick	Material	Thick
MCD-GB-21A/B*/C	GI	1.2 mm	GI	1.2 mm
MCD-GSB-21A/B/C	GI	1.2 mm	SS	1.2 mm
MCD-SB-21A/B/C	SS	1.2 mm	SS	1.2 mm

Alphabet indicates the type of blade operation

A - Parallel Blade

B - Opposed Blade

C - Gear Opposed Blade

Optional Construction

Frame : Thickness up to 1.5 mm

Frame Depth : Up to 150 mm

Blade : Thickness up to 1.5 mm

Blade Width : Up to 150 mm

Frame and Blade Material : Stainless Steel (304/316L)

Any Combination of W x H											
MCD-GB-21A/B/C											
W- Inch	6"	8"	12"	16"	18"	20"	24"	28"	32"	36"	48"
H - Inch	6"	8"	12"	16"	18"	20"	24"	28"	32"	36"	40"

Note:

Increments of 2" (50 mm) possible with combination of 4" & 6" blade width.

Maximum single module size is 48"x40" (1200x1000 mm).

Damper, width W > 48" (1200 mm) or H > 40" (1000 mm), is provided with a center mullion partition.

Dampers of size W or H > 800 mm will have blade with stiffener.

* Indicates Betec Cad Models Certified by AMCA

Motorized Volume Control Damper - MCD; Low Leakage Application B-20 Series

Type: Square and Rectangular

Model: MCD-GAB-22A

Blade Type: Aerofoil ; Galvanized Construction

Blade Operation: A-Parallel, B-Opposed, C-Gear Opposed

BETEC CAD. B-20 Series Motorized volume control dampers are square and rectangular type with parallel or opposed blade operation having Aerofoil double skin blade design. These dampers are subjected to medium pressure applications to achieve low leakage and uniform air distribution.

The square and rectangular type **MCD's** are designed for handling maximum air capacities at minimum pressure drop.

Damper Performance Ratings

Operating Pressure - 6" wg (1500 Pa.) Max.

Leakage - Class - I (Refer AMCA 500-D-12).

Velocity - 2000 fpm (10.1 m/s).

Standard Construction

Frame

6" x 1.18" x 18 gauge (150 x 30 x 1.2 mm) thick roll formed galvanized steel 'C' channel.

Blades

6" (152 mm) wide, 1 mm (18 gauge) thick extruded aluminium aerofoil type.

Bushes

Bronze.

Mechanical Linkage

Galvanized steel linkages concealed in the frame.

Axles

12 mm square galvanized steel.

Gasket

Neoprene / foam gasket / Silicone Rubber Gasket*.

Jamb Seal

0.3 mm thick stainless spring steel.

Actuator

Siemens (On / Off type 24V AC / 230V AC)

Optional Fittings

Gear Wheel

Gear wheels are of heat resistant Nylon placed within the frame instead of mechanical linkage for rattle free smooth operation.

Bushes

Brass / Nylon.

Axles

12 mm diameter galvanized steel.

Transitions

Neck adaptor for round duct connections.

Actuator

Honeywell /Belimo/Sauter (24V AC / 230V AC)

Note :

Please contact **BETEC CAD.** for customized design & additional information.

Selected Products of the company have been Classified / Listed / Tested by various international testing authorities.



B-20 Series Aerofoil Blade Model Details				
Material Construction				
Model	Frame		Blade	
	Material	Thick	Material	Thick
MCD-GB-22A/B*	GI	1.2 mm	GI	0.7 mm
MCD-AB-22A/B/C	AL	1.2 mm	AL	1 mm
MCD-GAB-22A/B*/C	GI	1.2 mm	AL	1 mm
MCD-GSB-22A/B/C	GI	1.2 mm	SS	0.7 mm
MCD-SB-22A/B	SS	1.2 mm	SS	0.7 mm

Alphabet indicates the type of blade operation

A - Parallel Blade

B - Opposed Blade

C - Gear Opposed Blade.

Optional Construction

Frame : Thickness up to 1.5 mm

Frame Depth : Up to 150 mm

Blade : Thickness up to 0.9 mm

Blade Width : Up to 150 mm

Frame and Blade Material : Stainless Steel (304/316L)

Any Combination of W x H											
MCD-GB-22A/B/C											
W - Inch	6"	8"	12"	16"	18"	20"	24"	28"	32"	36"	48"
H - Inch	6"	8"	12"	16"	18"	20"	24"	28"	32"	36"	40"

Note:

Increments of 2" (50 mm) possible with combination of 4" & 6" blade width.

Maximum single module size is 48"x40" (1200x1000 mm).

Damper, width W > 48" (1200 mm) or H > 40" (1000 mm), is provided with a center mullion partition.

Dampers of size W or H > 800 mm will have blade with stiffener.

* Indicates Betec Cad Models Certified by AMCA

Motorized Volume Control Damper - MCD; Heavy Duty Application B-40 Series

Type: Square and Rectangular

Model: MCD - GB-41 A/B

Blade Type : 3V Single Skin; Galvanized Construction

Blade Operation : A-Parallel, B-Opposed

BETEC CAD B-40 Series Motorized Volume control dampers are square and rectangular type with both parallel blade operation and opposed blade operation with single skin blade design. These heavy duty dampers are used under high pressure and velocity conditions to achieve efficient and rattle free operation.

The square and rectangular type **MCD's** are designed for handling maximum air capacities at minimum pressure drop.

Damper Performance Ratings

Pressure - 6" wg (1500 Pa.) Max.

Leakage - Class - II (Refer AMCA 500 D)

Velocity - 3000 fpm (15 m/s).

Standard Construction

Frame

6" x 1.18" x 16 gauge (150 x 30 x 1.5 mm) thick rollformed galvanized steel 'C' channel.

Blades

6" (150 mm) wide, 1.5 mm (16 gauge) thick galvanized steel 3V type rollformed.

Bushes

Bronze.

Mechanical Linkage

Galvanized steel linkages concealed in the frame.

Axles

12 mm square galvanized steel.

Gasket

Neoprene / foam gasket /Silicone Rubber Gasket*.

Jamb Seal

0.3 mm thick stainless spring steel.

Actuator

Siemens (On / Off type 24V AC / 230V AC)

Optional Fittings

Bushes

Brass.

Flange Holes

Available customers request, please specify.

Transitions

Neck adaptor for round duct connections.

Actuator

Honeywell /Belimo/Sauter (24V AC / 230V AC)

Note :

Please contact **BETEC CAD.** for customized design & additional information.

Selected Products of the company have been Classified / Listed / Tested by various international testing authorities.



MCD-GB-41B

B-40 Series Single Skin Blade Model Details				
Material Construction				
Model	Frame		Blade	
	Material	Thick	Material	Thick
MCD-GB-41A/B	GI	1.5 mm	GI	1.5 mm
MCD-GSB-41A/B	GI	1.5 mm	SS	1.5 mm
MCD-SB-41A/B	SS	1.5 mm	SS	1.5 mm

Alphabet indicates the type of blade operation

A - Parallel Blade.

B - Opposed Blade.

Optional Construction

Frame : Thickness up to 3 mm

Frame Depth : Up to 200 mm

Blade : Thickness up to 3 mm

Blade Width : Up to 150 mm

Frame and Blade Material : Stainless Steel (304/316L)

Any Combination of W x H											
MCD-GB-41A/B											
W - Inch	6"	8"	12"	16"	18"	20"	24"	28"	32"	36"	48"
H - Inch	6"	8"	12"	16"	18"	20"	24"	28"	32"	36"	40"

Note:

Increments of 2" (50 mm) possible with combination of 4" & 6" blade width.

Maximum single module size is 48"x40" (1200x1000 mm).

Damper, width W > 48" (1200 mm) or H > 40" (1000 mm), is provided with a center mullion partition.

Motorized Volume Control Damper - MCD; Heavy Duty Application B-40 Series

Type: Square and Rectangular

Model: MCD - GB-42A

Blade Type: Aerofoil; Galvanized Construction

Blade Operation : A-Parallel, B-Opposed

BETEC CAD B-40 Series Motorized Volume control dampers are square and rectangular type with both parallel blade operation and opposed blade operation, double skin blade design. These heavy duty dampers are used under high pressure and velocity conditions to achieve efficient and rattle free operation.

The square and rectangular type **MCD's** are designed for handling maximum air capacities at minimum pressure drop.



MCD-GB-42B

Damper Performance Ratings

Operating Pressure - 6" wg (1500 Pa.) Max.

Leakage - Class - II (Refer to AMCA 500 D)

Velocity - 3000 fpm (15 m/s).

Standard Construction

Frame

6" x 1.18" x 16 gauge (150 x 3 x 1.5 mm) thick rollformed galvanized steel 'C' channel.

Blades

6" (150 mm) wide, 0.9 mm (20 gauge) thick galvanized steel Aerofoil type rollformed.

Bushes

Bronze.

Mechanical Linkage

Galvanized steel linkages concealed in the frame.

Axles

12 mm square galvanized steel.

Gasket

Neoprene / foam gasket /Silicone Rubber Gasket*.

Jamb Seal

0.3 mm thick stainless spring steel.

Actuator

Siemens (On / Off type 24V AC / 230V AC)

Optional Fittings

Bushes

Brass.

Flange Holes

Available customers request, please specify.

Transitions

Neck adaptor for round duct connections.

Actuator

Honeywell /Belimo/Sauter (24V AC / 230V AC)

Note :

Please contact **BETEC CAD.** for customized design & additional information.

Selected Products of the company have been Classified / Listed / Tested by various international testing authorities.

B- 40 Series Aerofoil Blade Model Details				
Material Construction				
Model	Frame		Blade	
	Material	Thick	Material	Thick
MCD-GB-42A/B	GI	1.5 mm	GI	0.9 mm
MCD-GSB-42A/B	GI	1.5 mm	SS	0.9 mm
MCD-SB-42A/B	SS	1.5 mm	SS	0.9 mm

Alphabet indicates the type of blade operation

A - Parallel Blade.

B - Opposed Blade.

Optional Construction

Frame : Thickness up to 3 mm

Frame Depth : Up to 200 mm

Blade : Thickness up to 2 mm

Blade Width : Up to 150 mm

Frame and Blade Material : Stainless Steel (304/316L)

Any Combination of W x H											
MCD-GB-42A/B											
W- Inch	6"	8"	12"	16"	18"	20"	24"	28"	32"	36"	48"
H - Inch	6"	8"	12"	16"	18"	20"	24"	28"	32"	36"	40"

Note:

Increments of 2" (50 mm) possible with combination of 4"& 6" blade width.

Maximum single module size is 48"x40" (1200x1000 mm).

Damper, width W > 48" (1200 mm) or H > 40" (1000 mm), is provided with a center mullion partition.

Engineering And Performance Data - MCD

B - 20 Series

Pressure drop for Motorized Control Dampers

Single Skin Blade : MCD B 21/41

Aerofoil Blade : MCD B 22/42

AIR PERFORMANCE

- Tested for air performance at standard air density in accordance with ANSI/AMCA 500-D, Figure 5.3
- Data are based on a torque of 24 in-lb/ft² applied to close and seat the damper during the test.



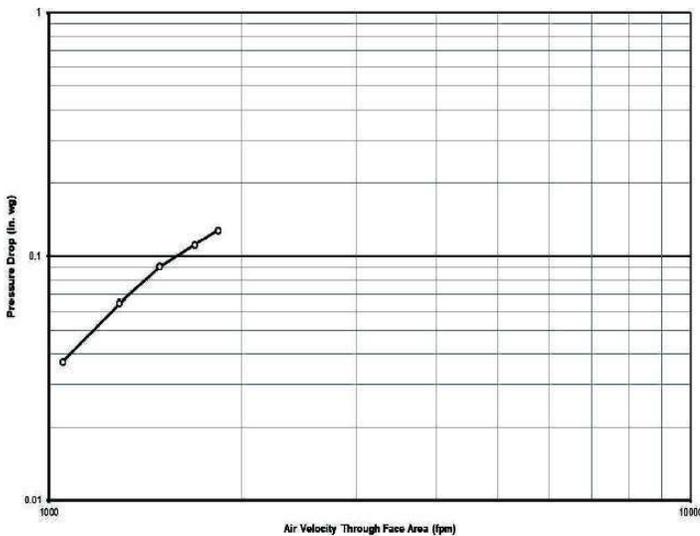
Pressure Loss Vs Face Velocity Pressure Drop For Models MCD - B 20/40 Series.

SIZE 12" X 12"	
Air Velocity (fpm)	Pressure Drop (in. wg)
1100	0.04
1400	0.07
1600	0.09
1800	0.12
1900	0.14

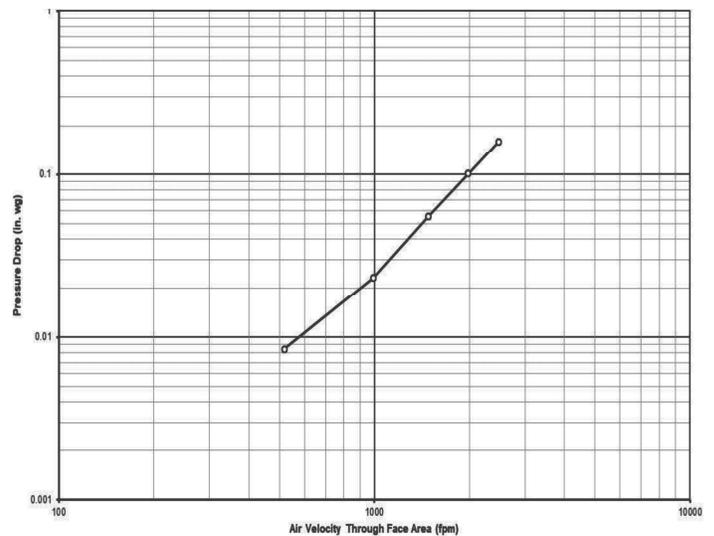
SIZE 24" X 24"	
Air Velocity (fpm)	Pressure Drop (in. wg)
520	0.008
1000	0.02
1600	0.06
2000	0.1
2600	0.18

SIZE 12" X 48"	
Air Velocity (fpm)	Pressure Drop (in. wg)
520	0.01
1000	0.04
1500	0.08
2000	0.14
2600	0.22

SIZE 48" X 12"	
Air Velocity (fpm)	Pressure Drop (in. wg)
520	0.007
1000	0.02
1600	0.05
2000	0.09
2600	0.14



SIZE 12" X 12"

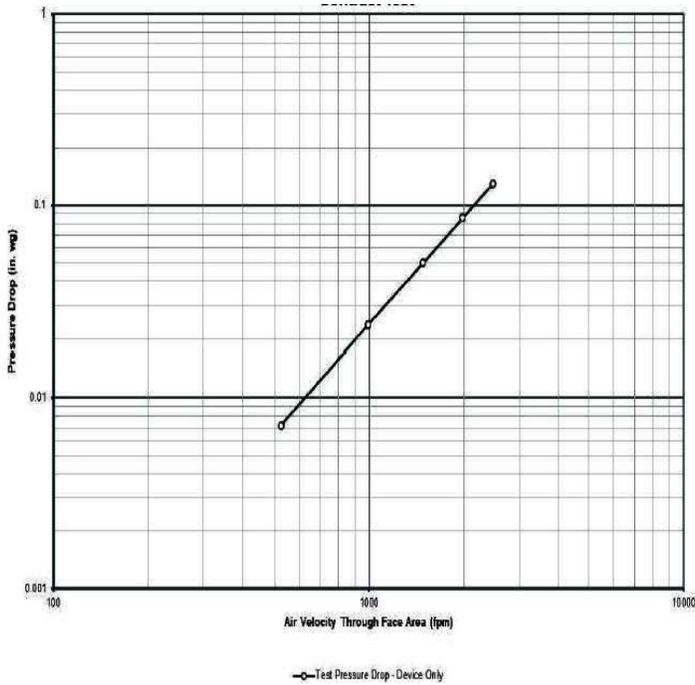


SIZE 24" X 24"

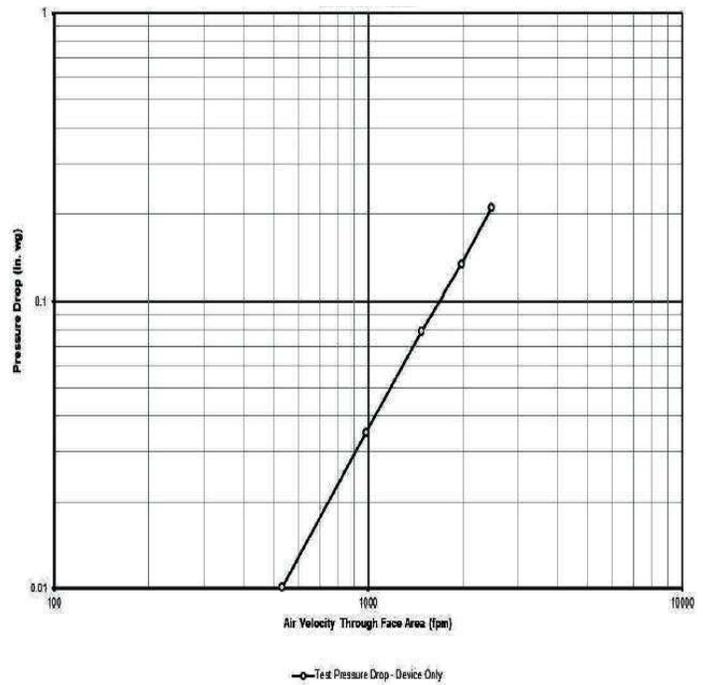
Selected Products of the company have been Classified / Listed / Tested by various international testing authorities.



Pressure drop for Motorized Control Dampers



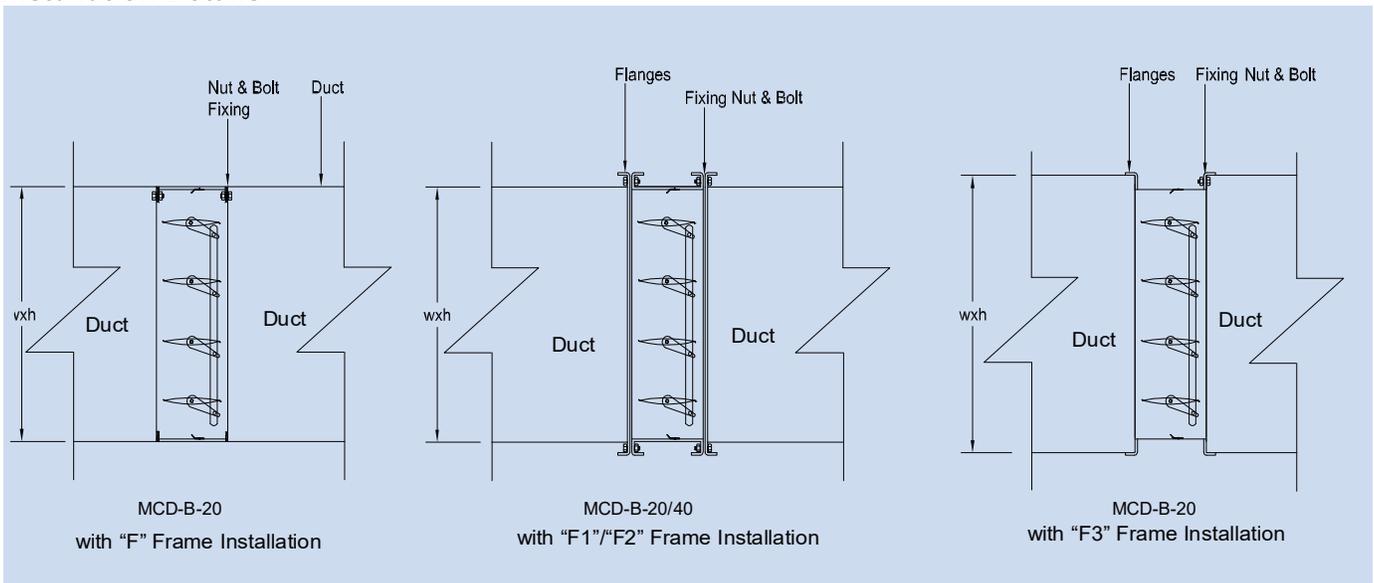
SIZE 48" X 12"



SIZE 12" X 48"

Note: MCD-B-20/40 Series Class - I Leakage type available on request.

Installation Details



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Engineering And Performance Data - MCD

B -20 Series

Leakage Characteristics for Motorized Control Dampers

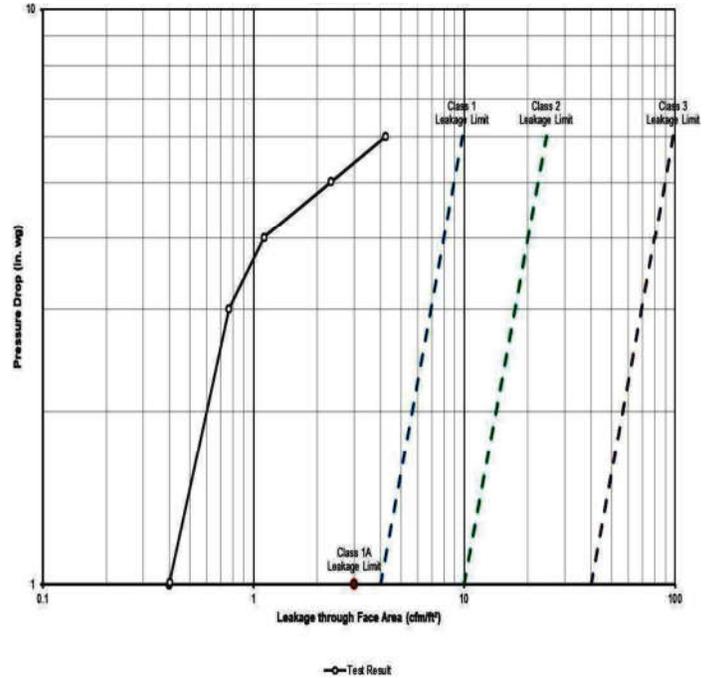
Models MCD - B 20/40 - Leakage Curve (Blades 100% Closed Position)

AIR LEAKAGE

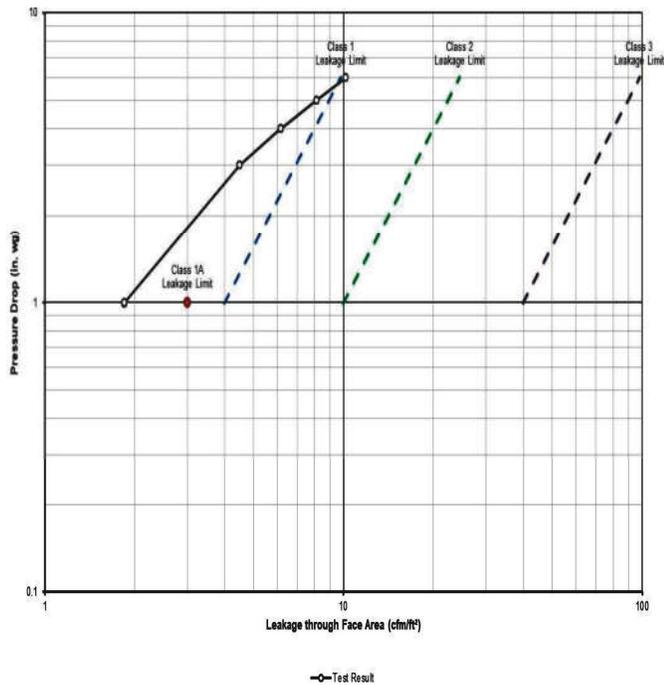
- Air leakage is based on operation between 32 °F and 120 °F
- Tested for air leakage at standard air density in accordance with ANSI/AMCA Standard 500-D, Figure 5.4
- Data are based on a torque of 24 in-lb/ft² applied to close and seat the damper during the test.

Maximum Allowable Leakage, cfm/ft ²				
Class	at 1 in.wg	at 4 in.wg	at 6 in.wg	at 8 in.wg
1A	3	N/A	N/A	N/A
1	4	8	10	11
2	10	20	24	28
3	40	80	98	112

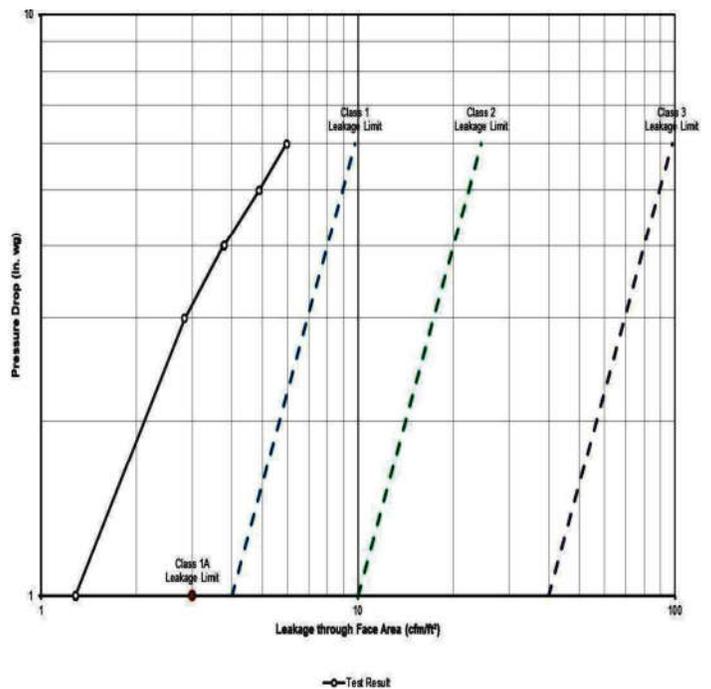
Details of MCD Leakage Class		
MCD-Series	Leakage Class	Static Pressure
MCD B-20 Series	Class - I	1.5 Kpa
MCD B-40 Series	Class - I	1.5 Kpa



MCD-GAB-22-B- 36 "X 40"



MCD-GB-21-B- 36 "X 40"



MCD-GB-22-B- 36 "X 40"

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