



AIR CONTROL DAMPER MODEL KACAB10 or 20 ALUMINUM AIRFOIL AIR CONTROL DAMPER

STANDARD CONSTRUCTION

FRAME:

16 Ga galvanized steel interlocking hat channel frame construction.

22Ga galvanized steel Flat type frame.

BLADES:

Extruded aluminum double skin airfoil blades

Parallel blades model KACAB10

Opposed blades model KACAB20

BEARINGS:

Nylon bearings

AXLES:

0.47"(12mm) Square zinc plated steel stud

LINKAGE:

Concealed in frame 10Ga (3mm) zinc plated steel

MANUAL HAND-QUADRANT:

Galvanized steel die cast hand-quadrant plated for square or round shaft installed on an elevated bearing bracket

BRACKET:

1" (25mm) elevated hand bracket

FINISH:

Mill galvanized

OPTIONS:

1) Rubber foam blade seals. (-BS)

2) BEARINGS:

Bronze bearings (std for motorized dampers)
or stainless steel bearings.

3) FRAME CONSTRUCTION

Aluminum frame construction
or stainless steel frame construction.

4) ACTUATORS:

- Electric (24,120 & 230V) or pneumatic.
- Spring return or non spring return.
- With or without auxiliary switch.

5) Blades indicator switch - BIS

6) FLANGES:

Standard duct flanges 35 mm (with 1.5 mm thickness for damper without sleeve or same as sleeve thickness)
or duct mate flanges 35mm

7) SLEEVES (Not applicable on Flat type):

- Refer to the air control damper sleeve catalogue for standard type of sleeve
- Double skin

8) EXTENDED SHAFT (without Hand Quadrant):

4.7" (120mm) extended shaft (round or square) beyond the air control frame.

9) 2" Elevated hand bracket.

10) Extended frame depth for Flat Type



APPLICATION

KACAB volume dampers series are designed to provide superior air control with high performance and heavy duty construction. KACAB 10 or 20 Dampers are specifically designed for manual balancing applications. They are suitable for use in the majority of commercial medium to high pressure and velocity HVAC systems.

They are designed and built to provide a cost effective and reliable dampers for reduced volume control and not positive shut-off.

MINIMUM SIZES:

a) SINGLE BLADE FLAT TYPE:

4"W(101mm) x 4"H(101mm).

b) SINGLE BLADE HAT TYPE:

14"W(355mm) x 6"H(152mm) & 12"W(305mm) x 8"H(203mm)
& 6"W(152mm) x 10"H(254mm)

c) MULTI-BLADES :

6"W(152mm) x 12"H(305mm)

Notes: Dampers with width 4" & 5" are only available up to 8" height

MAXIMUM SIZES:

a) SINGLE BLADE FLAT TYPE:

10"W(254mm) x 8"H(203mm) & 12"W(305mm) x 6"H(152mm)

b) SINGLE BLADE HAT TYPE:

48"W(1219mm) x 10"H(254mm)

c) MULTI-BLADES SINGLE SECTION:

48"W(1219mm)x 48"H(1219mm)

MULTI-SECTIONS: UNLIMITED

For hat type : dampers are supplied 1/4" less than order WIDTH & HEIGHT unless specified "ACTUAL SIZE"

For flat type: dampers are supplied with "ACTUAL SIZE"



AIR CONTROL DAMPER MODEL KACAB11 or 21

ALUMINUM AIRFOIL LOW LEAK AIR CONTROL DAMPER

STANDARD CONSTRUCTION

FRAME:

16 Ga galvanized steel interlocking hat channel frame construction.

22Ga galvanized steel Flat type frame.

BLADES:

Extruded aluminum double skin airfoil blades

Parallel blades model KACAB11

Opposed blades model KACAB21

SEALS:

Stainless Steel Jamb Seal

BEARINGS:

Nylon bearings

AXLES:

0.47"(12mm) Square zinc plated steel stud

LINKAGE:

Concealed in frame 10Ga (3mm) zinc plated steel

MANUAL HAND-QUADRANT:

Galvanized steel die cast hand-quadrant plated for square or round shaft installed on an elevated bearing bracket

BRACKET:

1" (25mm) elevated hand bracket

FINISH:

Mill galvanized

OPTIONS:

1) BEARINGS:

Bronze bearings (std for motorized dampers) or stainless steel bearings.

2) FRAME CONSTRUCTION

Aluminum frame construction or stainless steel frame construction.

3) ACTUATORS:

- Electric (24,120 & 230V) or pneumatic.
- Spring return or non spring return.
- With or without auxiliary switch.

4) Blades indicator switch - BIS

5) FLANGES:

Standard duct flanges 35 mm (with 1.5 mm thickness for damper without sleeve or same as sleeve thickness) or duct mate flanges 35mm

6) SLEEVES (Not applicable on Flat type):

- Refer to the air control damper sleeve catalogue for standard type of sleeve
- Double skin

7) EXTENDED SHAFT (without Hand Quadrant):

4.7" (120mm) extended shaft (round or square) beyond the air control frame.

8) 2" Elevated hand bracket.

9) Extended frame depth for Flat Type



APPLICATION

KACAB volume dampers series are designed to provide superior air control with high performance and heavy duty construction. KACAB 11 or 21 Dampers are specifically designed for manual balancing applications. They are suitable for use in the majority of commercial medium to high pressure and velocity HVAC systems.

They are designed and built to provide a cost effective and reliable dampers for reduced volume control and not positive shut-off.

MINIMUM SIZES:

a) SINGLE BLADE FLAT TYPE:

4"W(101mm) x 4"H(101mm).

b) SINGLE BLADE HAT TYPE:

14"W(355mm) x 6"H(152mm) & 12"W(305mm) x 8"H(203mm) & 6"W(152mm) x 10"H(254mm)

c) MULTI-BLADES :

6"W(152mm) x 12"H(305mm)

Notes: Dampers with width 4" & 5" are only available up to 8" height

MAXIMUM SIZES:

a) SINGLE BLADE FLAT TYPE:

10"W(254mm) x 8"H(203mm) & 12"W(305mm) x 6"H(152mm)

b) SINGLE BLADE HAT TYPE:

48"W(1219mm) x 10"H(254mm)

c) MULTI-BLADES SINGLE SECTION:

48"W(1219mm)x 48"H(1219mm)

MULTI-SECTIONS: UNLIMITED

For hat type : dampers are supplied 1/4" less than order WIDTH & HEIGHT unless specified "ACTUAL SIZE"

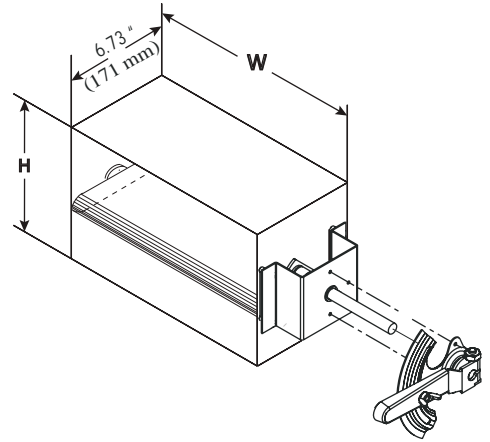
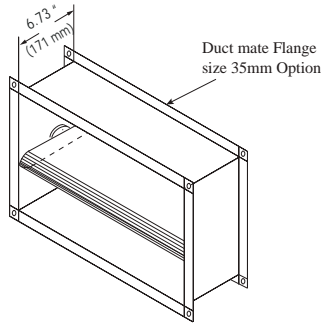
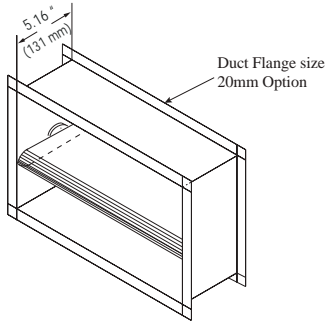
For flat type: dampers are supplied with "ACTUAL SIZE"

AIR CONTROL DAMPER

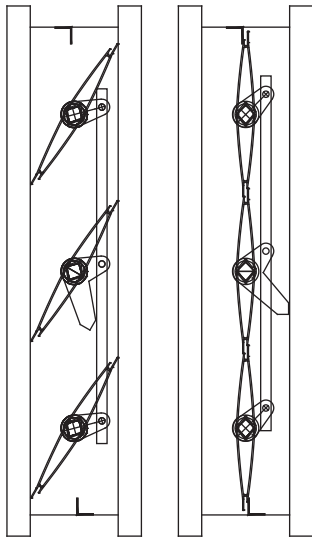
MODEL KACAB10, 20, 11 & 21

DETAILS

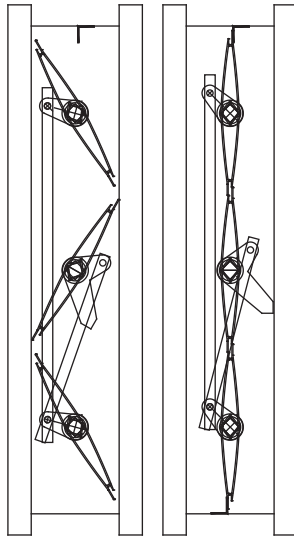
FLAT TYPE



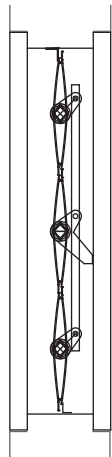
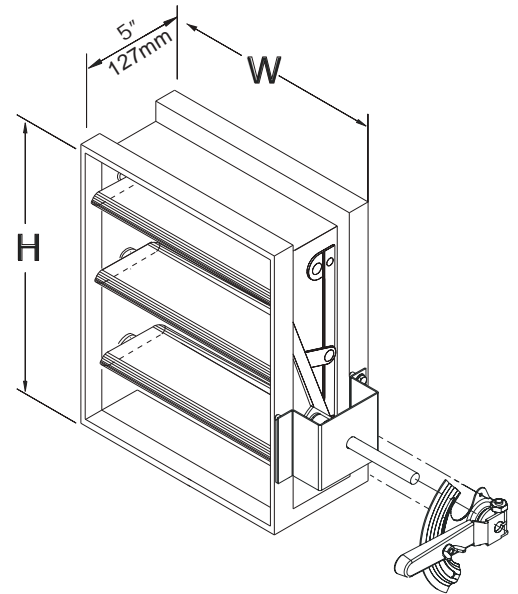
HAT TYPE



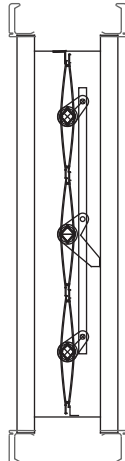
Parallel Blades



Opposed Blades



Duct Flanges 35mm



Duct Mate Flanges 35mm



Motorized Damper



AIR CONTROL DAMPER

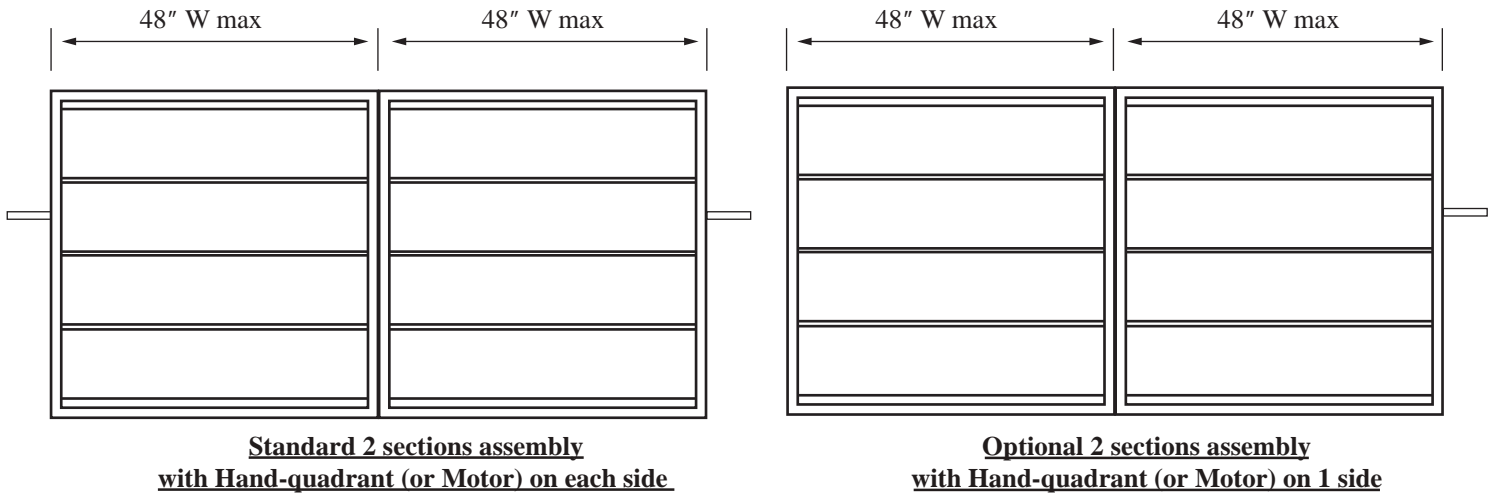
MODEL KACAB10, 20, 11 & 21

DETAILS

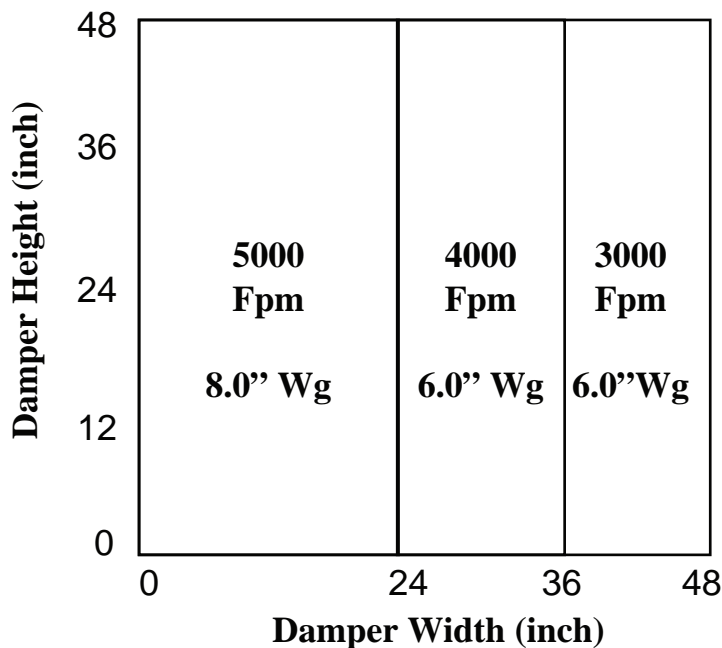
Multi-Section Assembly

Damper larger than maximum single section size, will be made up of multiple equal section sections to be assembled at site (as standard) by sheet metal screw or #10 bolts & nuts with hand-quadrant on each side of the damper.

Damper can be factory assembled with single side hand-quadrant as optional with limited assembly of 2 sections --limitation is required to avoid damage during transportation-- unless assembled with factory mounted sleeve.



Velocity & Pressure Limitations



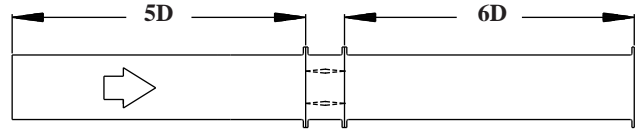


AIR CONTROL DAMPER MODEL KACAB10, 20, 11 & 21

PERFORMANCE DATA

AMCA Test Figures

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



Damper in Fully open position

48"x12" (1219x305mm)

Velocity (Fpm)	Pressure Drop (In.Wg)
500	0.01
1000	0.04
1500	0.09
2000	0.17
3000	0.44

12"x48" (305x1219mm)

Velocity (Fpm)	Pressure Drop (In.Wg)
500	0.007
1000	0.02
1500	0.04
2000	0.08
3000	0.18

12"x12" (305x305mm)

Velocity (Fpm)	Pressure Drop (In.Wg)
1000	0.06
1500	0.14
2000	0.24
2500	0.394
3000	0.58

24"x24" (610x610mm)

Velocity (Fpm)	Pressure Drop (In.Wg)
800	0.02
1000	0.02
1500	0.06
2000	0.11
3000	0.29

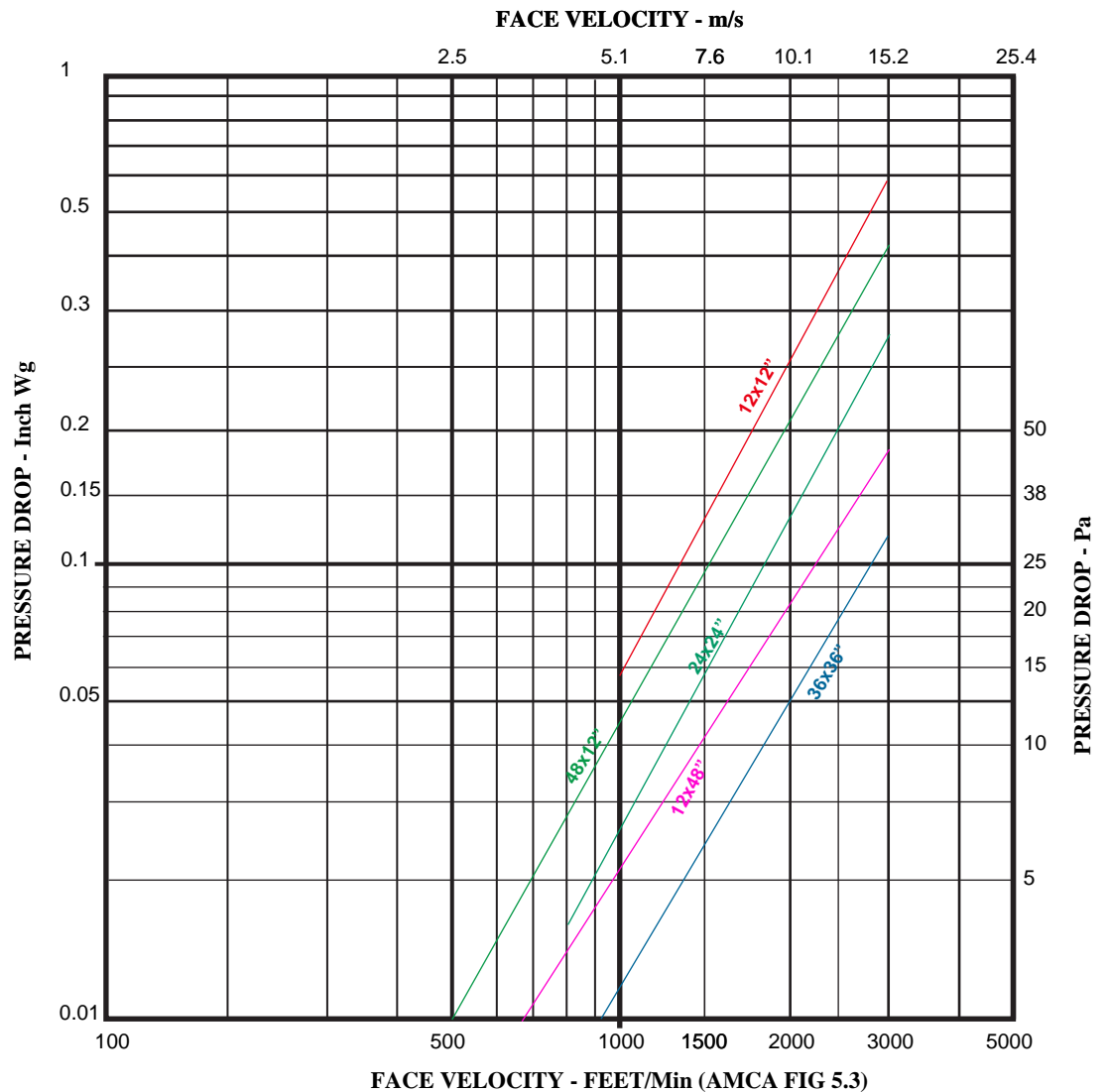
36"x36" (914x914mm)

Velocity (Fpm)	Pressure Drop (In.Wg)
800	0.008
1000	0.01
1500	0.03
2000	0.05
3000	0.17

Tested for Air Performance in accordance with ANSI/AMCA Standard 500-D, Figure 5.3. Air performance testing was conducted using opposed blade dampers; the same results can be applied to parallel blade dampers. All data has been corrected to represent standard air density .075 lb/ft

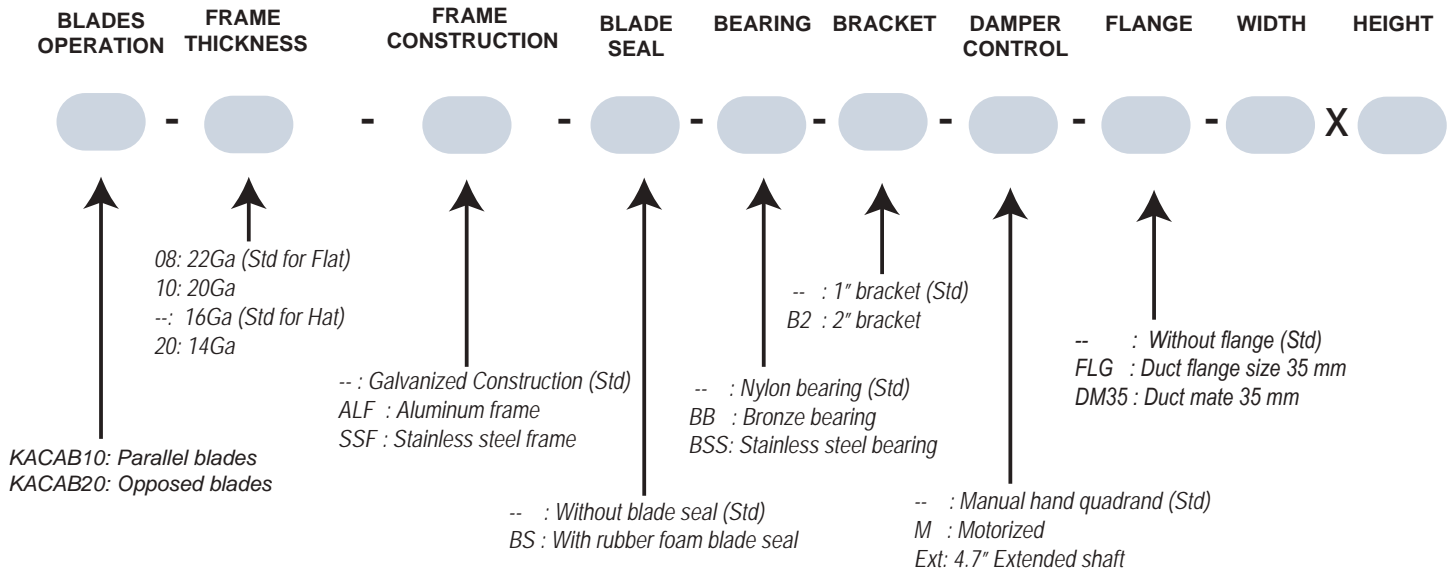


KBE International certifies that the model KACAB shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Programs. The AMCA Certified Ratings Seal applies to Air Performance ratings.





AIR CONTROL DAMPER MODEL KACAB10 or 20 ORDERING INFORMATION



Example: KACAB20-BB-M-24x24 -- Motorized damper 24x24 Hat type 16ga galvanized frame with bronze bearing.
KACAB10-08-BSS-8x8 - Manual damper 8x8 Flat type with 22ga galvanized frame & stainless steel bearing

ACTUATOR SELECTION:

Please select the specifications needed for the actuator:

Electric	<input type="checkbox"/>	Pneumatic	<input type="checkbox"/>
24 VAC	<input type="checkbox"/>	230VAC	<input type="checkbox"/>
Spring return	<input type="checkbox"/>	Non spring return	<input type="checkbox"/>
On/Off	<input type="checkbox"/>	Modulating	<input type="checkbox"/>
With auxiliary switch	<input type="checkbox"/>	Without auxiliary switch	<input type="checkbox"/>

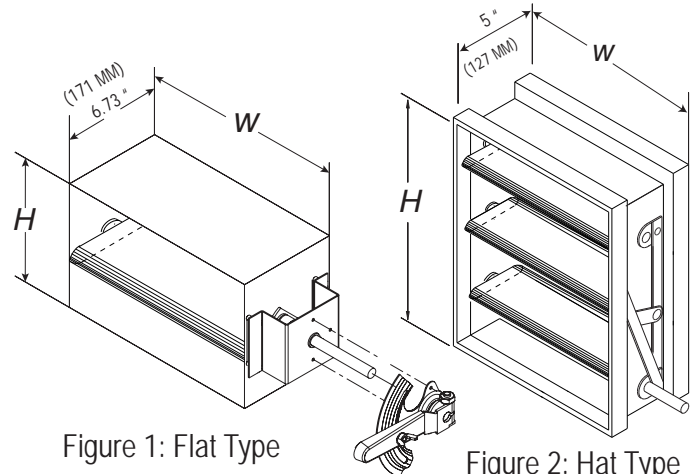


Figure 1: Flat Type

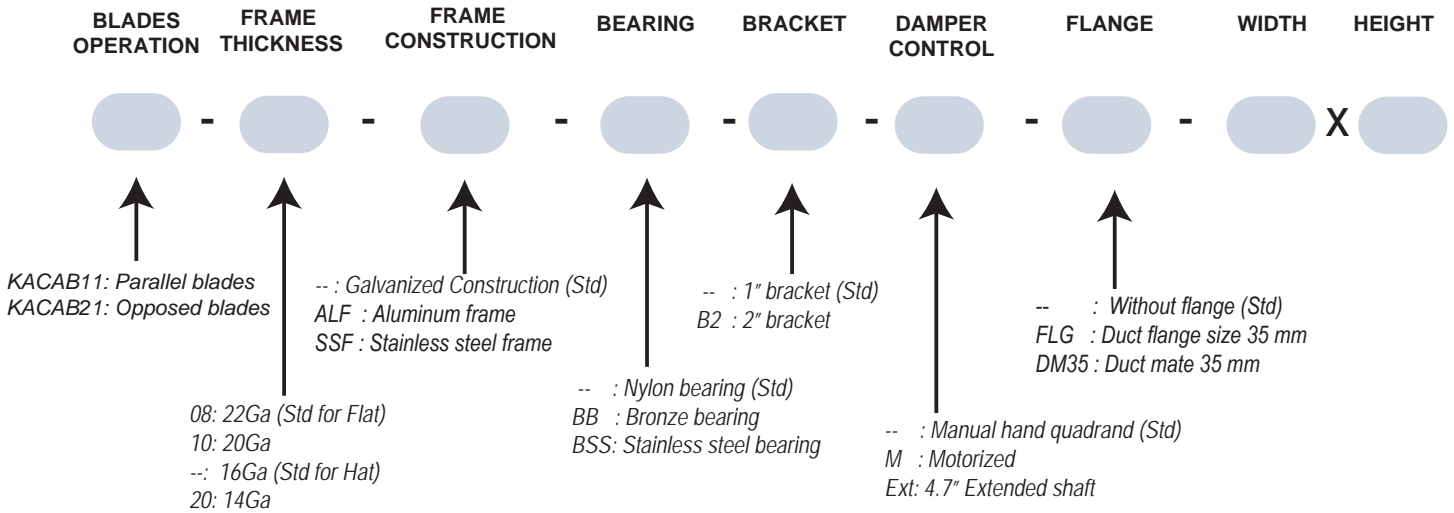
Figure 2: Hat Type

Note:
Volume Dampers with width or height that exceed 48" (1200mm) are manufactured as multiple section and field assembled by others.

	4	5	6	8	10	12	14	...	46	48
4	Single Blade Flat Type									
5										
6										
8	Single Blade Flat Type					Single Blade Hat Type				
10										
12	N/A		Multi Blade Hat Type							
14										
...										
46										
48										



AIR CONTROL DAMPER MODEL KACAB11 or 21 ORDERING INFORMATION



Example: KACAB21-SSF-M- FLG-24x24 -- Motorized damper 24x24 Hat type 16ga stainless steel frame with duct flange.
 KACAB11-08-BB-8x8 - Manual damper 8x8 Flat type with 22ga galvanized frame & bronze bearing

ACTUATOR SELECTION:

Please select the specifications needed for the actuator:

Electric <input type="checkbox"/>	Pneumatic <input type="checkbox"/>
24 VAC <input type="checkbox"/> 230VAC <input type="checkbox"/>	Spring return <input type="checkbox"/>
Spring return <input type="checkbox"/> Non spring return <input type="checkbox"/>	Non spring return <input type="checkbox"/>
On/Off <input type="checkbox"/> Modulating <input type="checkbox"/>	
With auxiliary switch <input type="checkbox"/> Without auxiliary switch <input type="checkbox"/>	

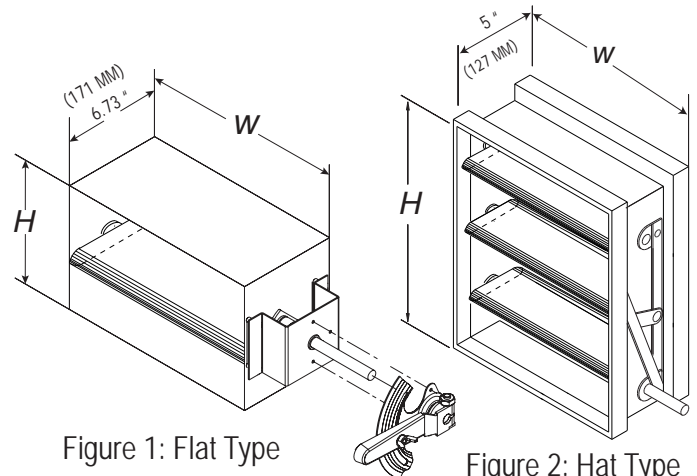


Figure 1: Flat Type

Figure 2: Hat Type

Note:
 Volume Dampers with width or height that exceed 48" (1200mm) are manufactured as multiple section and field assembled by others.

	4	5	6	8	10	12	14	...	46	48
4	Single Blade Flat Type									
5										
6										
8	Single Blade Flat Type					Single Blade Hat Type				
10										
12	N/A		Multi Blade Hat Type							
14										
...										
46										
48										



AIR CONTROL DAMPER MODEL KACAB12 or 22 ALUMINUM AIRFOIL LEAKAGE RATED DAMPER

APPLICATION

KACAB-12 or 22 is an Ultra low leakage damper designed to provide superior air control with high performance and heavy duty construction. Dampers are especially designed for manual & motorized balancing & Shut off applications. They are suitable for use in the majority of commercial medium to high pressure and velocity HVAC systems.

They comply to IECC (International Energy Conservation Code) with a leakage rating of 3cfm/ft² at 1"Wg pressure (55cmh/m² at 0.25Kpa) or less.

STANDARD CONSTRUCTION

FRAME:

16 GA galvanized steel interlocking hat channel frame construction.

BLADES:

Extruded aluminum **double skin airfoil** blades

Parallel blades model KACAB12

Opposed blades model KACAB22

SEALS:

Stainless Steel Jamb Seal

Rubber Foam Blade Seal

BEARINGS:

Nylon bearings

AXLES:

0.47"(12mm) Square zinc plated steel stud

LINKAGE:

Concealed in frame 10Ga (3mm) zinc plated steel

MANUAL HAND-QUADRANT:

Galvanized steel die cast hand-quadrant plated for square or round shaft installed on an elevated bearing bracket

BRACKET:

1" (25mm) elevated hand bracket

FINISH:

Mill galvanized

MINIMUM SIZES:

a) SINGLE BLADE: 6"W(152mm) x 6"H(152mm)

b) MULTI-BLADES: 6"W(152mm) x 12"H(305mm)

MAXIMUM SIZES:

a) SINGLE BLADE: 48"W(1219mm) x 10"H(254mm)

b) MULTI-BLADES SINGLE SECTION:

48"W(1219mm)x 48"H(1219mm)

MULTI-SECTIONS: UNLIMITED

Dampers are supplied 1/4" less than order WIDTH & HEIGHT unless specified "ACTUAL SIZE"



OPTIONS:

1) BEARINGS:

Bronze bearings (std for motorized dampers) or stainless steel bearings.

2) FRAME CONSTRUCTION

Aluminum frame construction or stainless steel frame construction.

3) ACTUATORS:

a) Electric (24,120 & 230V) or pneumatic.

b) Spring return or non spring return.

c) With or without auxiliary switch.

4) Blades indicator switch - BIS

5) FLANGES:

Standard duct flanges 35 mm (with 1.5 mm thickness for damper without sleeve or same as sleeve thickness) or duct mate flanges 35mm

6) SLEEVES :

a) Refer to the air control damper sleeve catalogue for standard type of sleeve

b) Double skin

7) EXTENDED SHAFT (without Hand Quadrant):

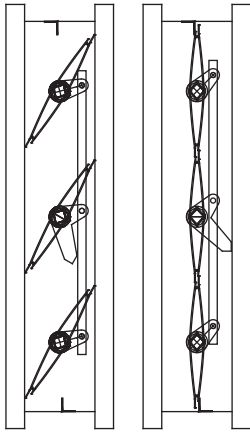
4.7" (120mm) extended Shaft (round or square) beyond the air control frame.

8) 2" Elevated hand bracket.

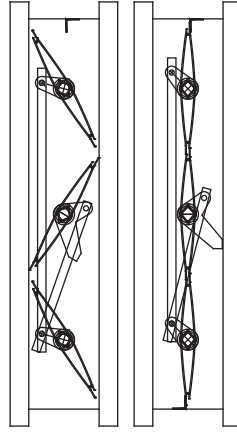
AIR CONTROL DAMPER

MODEL KACAB12 or 22

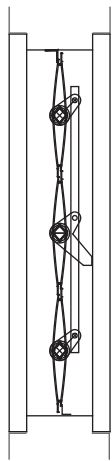
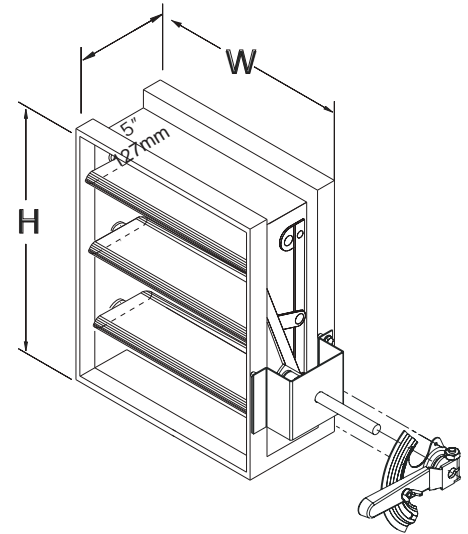
DETAILS



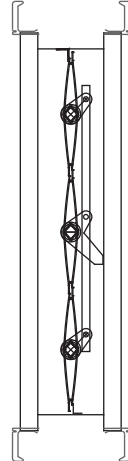
Parallel Blades



Opposed Blades



Duct Flanges 35mm



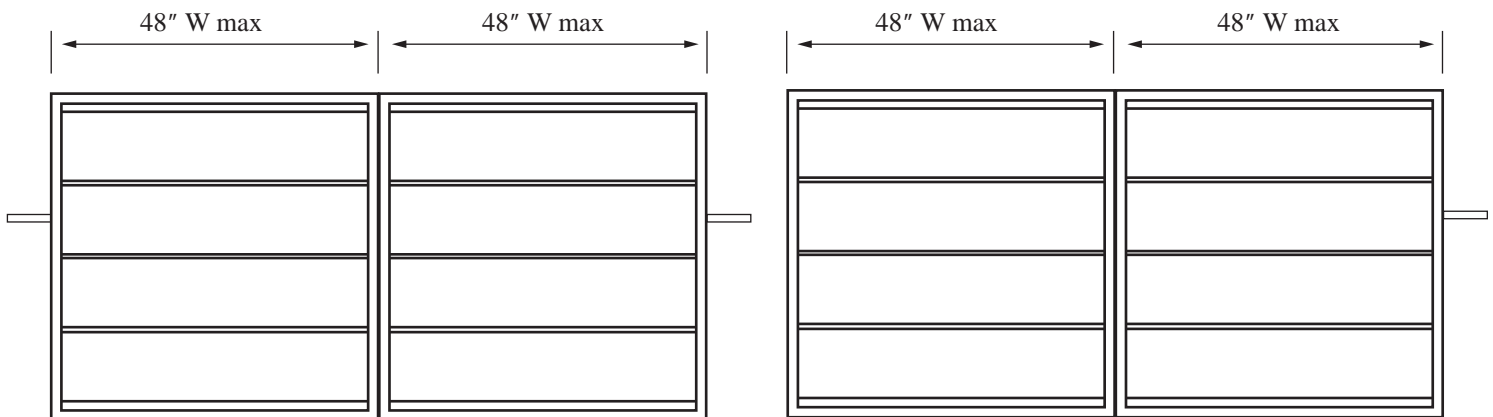
Duct Mate Flanges 35mm



Motorized Damper

Multi-Section Assembly

Damper larger than maximum single section size, will be made up of multiple equal section sections to be assembled at site (as standard) by sheet metal screw or #10 bolts & nuts with hand-quadrant on each side of the damper. Damper can be factory assembled with single side hand-quadrant as optional with limited assembly of 2 sections --limitation is required to avoid damage during transportation-- unless assembled with factory mounted sleeve.



Standard 2 sections assembly with Hand-quadrant (or Motor) on each side

Optional 2 sections assembly with Hand-quadrant (or Motor) on 1 side

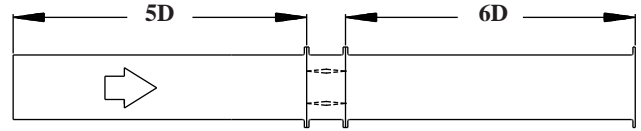


AIR CONTROL DAMPER MODEL KACAB-12 & 22

PERFORMANCE DATA

AMCA Test Figures

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



Damper in Fully open position

48"x12" (1219x305mm)

Velocity (Fpm)	Pressure Drop (In.Wg)
500	0.01
1000	0.04
1500	0.09
2000	0.17
3000	0.44

12"x48" (305x1219mm)

Velocity (Fpm)	Pressure Drop (In.Wg)
500	0.008
1000	0.03
1500	0.07
2000	0.12
3000	0.27

12"x12" (305x305mm)

Velocity (Fpm)	Pressure Drop (In.Wg)
1000	0.06
1500	0.14
2000	0.24
2500	0.39
3000	0.58

24"x24" (610x610mm)

Velocity (Fpm)	Pressure Drop (In.Wg)
800	0.02
1000	0.02
1500	0.06
2000	0.11
3000	0.29

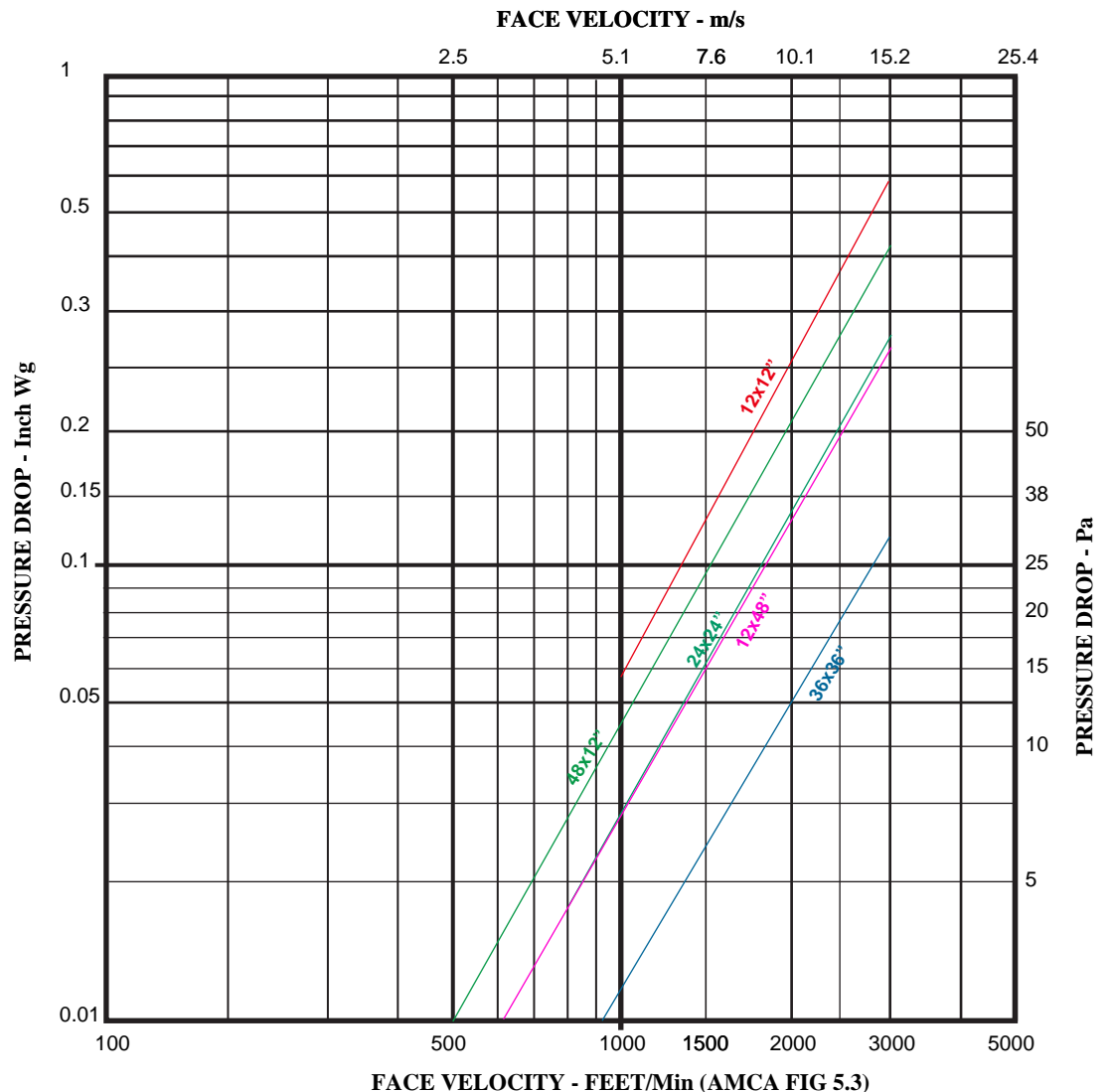
36"x36" (914x914mm)

Velocity (Fpm)	Pressure Drop (In.Wg)
800	0.008
1000	0.01
1500	0.03
2000	0.05
3000	0.12

Tested for Air Performance in accordance with ANSI/AMCA Standard 500-D, Figure 5.3. Air performance testing was conducted using opposed blade dampers; the same results can be applied to parallel blade dampers. All data has been corrected to represent standard air density .075 lb/ft



KBE International certifies that the model KACAB 12 & 22 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 Leakage and Air Performance ratings.





AIR CONTROL DAMPER

MODEL KACAB12 or 22

LEAKAGE

AMCA Certified Leakage

Maximum Damper Width	Leakage Class at:		
	1 in.Wg (0.25Kpa)	4 in.Wg (1.0 Kpa)	6 in.Wg (1.5Kpa)
48 in. (1219mm)	1A	1	1

Leakage Class Definitions:

- Leakage Class 1A - 3 cfm/ft² @ 1 in. wg (0.015 m³/s/ m² @ 0.25 kPa)
- Leakage Class 1 - 4 cfm/ft² @ 1 in. wg (0.020 m³/s/ m² @ 0.25 kPa)
- Leakage Class 1 - 8 cfm/ft² @ 4 in. wg (0.041 m³/s/ m² @ 1.0 kPa)
- Leakage Class 1 - 9.7 cfm/ft² @ 6 in. wg (0.049 m³/s/ m² @ 1.5 kPa)

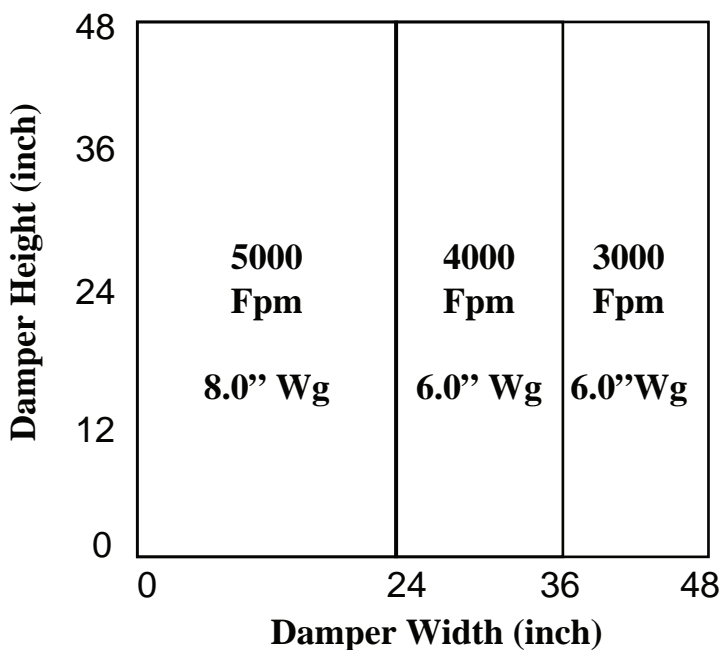


KBE International certifies that the model KACAB 12 & 22 shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Programs. The AMCA Certified Ratings Seal applies to Air Leakage and Air Performance ratings.

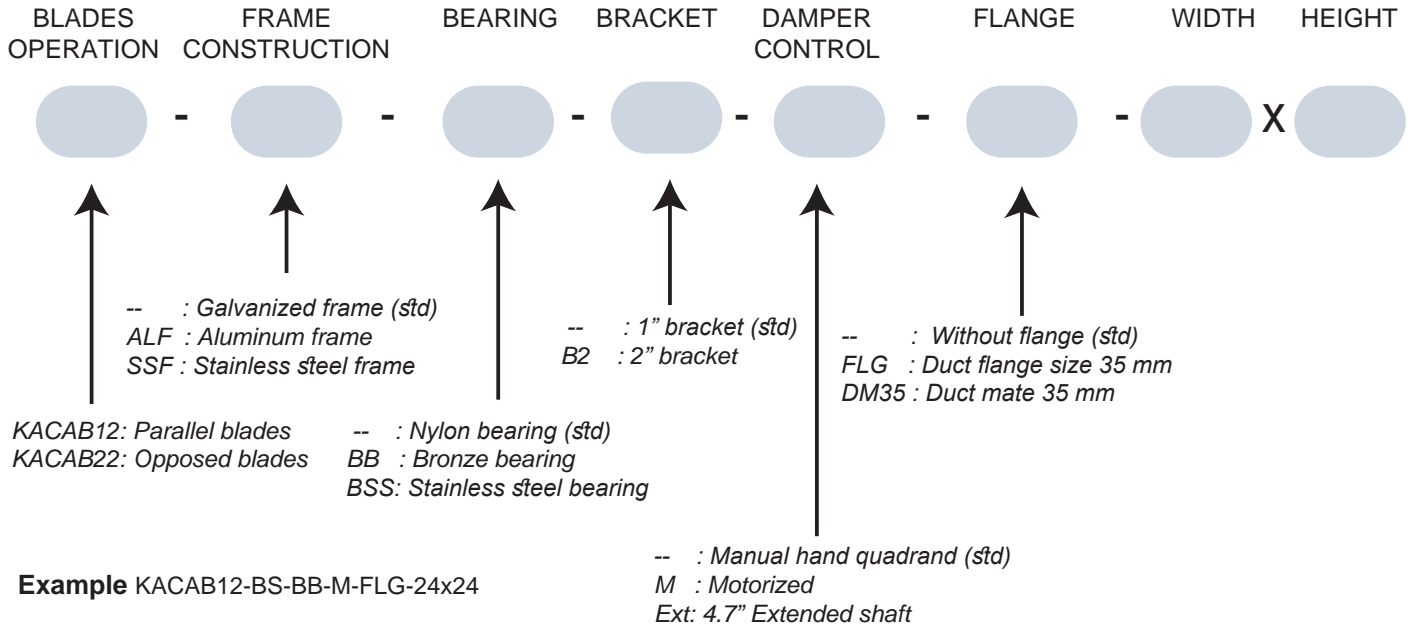
Air leakage is based on operation between 32°F (0°C) and 120°F (49°C). Tested for leakage in accordance with ANSI/AMCA Standard 500-D, Figure 5.5.

Data Are based on a Torque of 18in.lb/ft² applied to close & seat the damper during the test

Velocity & Pressure Limitations



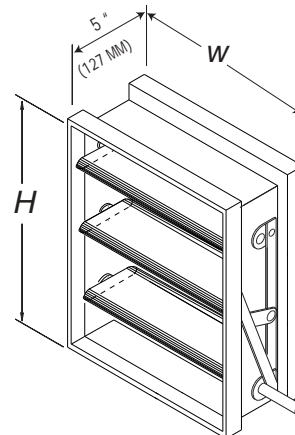
AIR CONTROL DAMPER MODEL KACAB12 or 22 ORDERING INFORMATION



ACTUATOR SELECTION:

Please select the specifications needed for the actuator:

Electric	<input type="checkbox"/>	Pneumatic	<input type="checkbox"/>
24 VAC	<input type="checkbox"/>	230VAC	<input type="checkbox"/>
Spring return	<input type="checkbox"/>	Non spring return	<input type="checkbox"/>
On/Off	<input type="checkbox"/>	Modulating	<input type="checkbox"/>
With auxiliary switch	<input type="checkbox"/>	Without auxiliary switch	<input type="checkbox"/>



Note:

Volume Dampers with width or height that exceed 48" (1200mm) are manufactured as multiple section and field assembled by others.

	6	8	10	12	14	...	46	48
6	Single Blade							
8								
10								
12	Multi Blade							
14								
...								
46								
48								