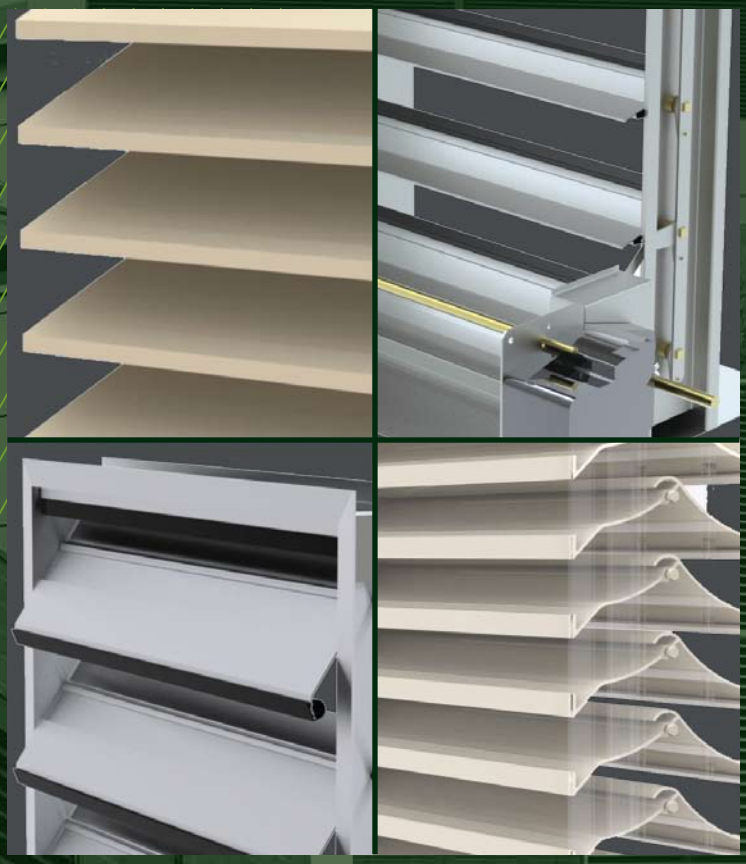
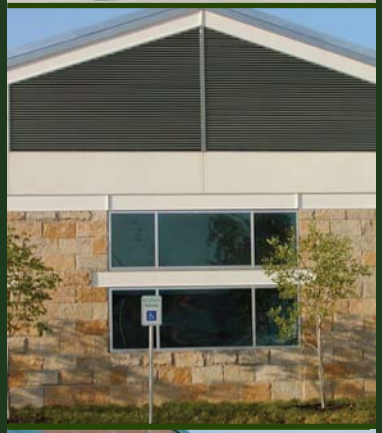
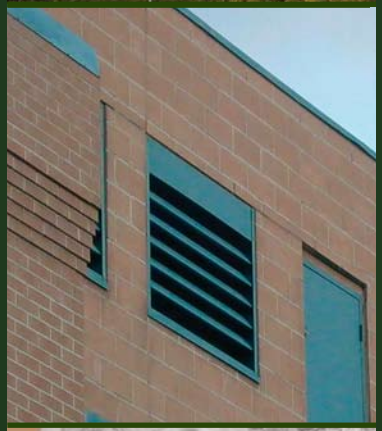
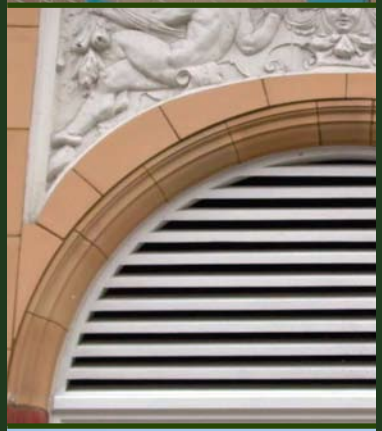
NCA®



LOUVERS, DAMPERS & SCREENS







NCA PRODUCT GUIDE

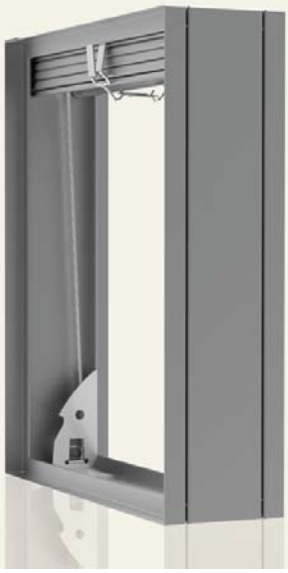
At NCA, we continually work to improve our products. Product descriptions, dimensions and performance information are subject to changes without notice. For the most current available literature, please visit www.ncamfg.com

FIRE DAMPERS
Series FD & FDD

The FD and FDD series of 1-1/2 & 3 hour rated curtain fire dampers are UL, ULC and California State Fire Marshal listed dampers, available for either vertical or horizontal mount. The FD series are static rated dampers for use in duct systems or penetrations where there is no or negligible airflow when the damper closes (i.e. Fans Off Systems). The FDD series are dynamic rated dampers and are approved for use in HVAC systems where the air handling units will stay running during a fire.

- Available with a full range of factory sleeves including integral sleeved models.
- Can be provided with a full offering of duct transitions including Type B (blades out of airstream), Type C, Round and Oval transitions for 100% free area.
- Slim Line and Ultra Slim Line models available (Models FD(D)-A-SL & FD(D)-A-USL) available for transfer applications and space constrained applications.
- Flanged sleeve and “out of wall" grille mount versions available.
- FDD-MB Multiblade dampers offer large dynamic ratings without actuators.
- True round models available (Models FD-RD & FDD-RD).

FD-AH



STATIC FIRE DAMPERS (UL555 STATIC FIRE RATED) - FOR “FANS OFF" SYSTEMS

FD Model & Description	Walls	Floors	Single Angle Installation	“No Angle" Flanged Sleeve Installation	Out of Wall/ Floor - Grille Access	Round Duct
FD-A / 1.5 Hr / Type A	120 x 120	96 x 48 or 120 x 40	108 x 108 (max.36 ft²)	42 x 48		58
FD-A / 3 Hr / Type A	48 x 48 or 80 x 40	80 x 40				38
FD-A-S / 1.5 Hr / Integral Sleeve	48 x 48	40 x 40	48 x 48	42 x 48		38
FD-A-SL / 1.5 Hr / Slimline / Type A	120 x 120	96 x 48 or 120 x 40	108 x 108 (max.36 ft²)	42 x 48		
FD-A-SL / 3 Hr / Slimline / Type A	48 x 48 or 80 x 40	80 x 40				
FD-A-USL / 1.5 or 3 Hr/ “Ultra" Slimline / Type A	40 x 40	40 x 40				
FD-B / 1.5 Hr / Type B	120 x 115	96 x 43 or 120 x 36	108 x 108 (max.36 ft²)	42 x 48		
FD-B / 3 Hr / Type B	48 x 43 or 80 x 36	80 x 36				
FD-B-S / 1.5 Hr / Integral Sleeve / Type B	48 x 43	40 x 36	48 x 43	42 x 43		

STATIC FIRE DAMPERS (UL555 STATIC FIRE RATED) - FOR "FANS OFF" SYSTEMS

FD Model & Description	Walls	Floors	Single Angle Installation	"No Angle" Flanged Sleeve Installation	Out of Wall/ Floor - Grille Access	Round Duct
FD-B-SL / 1.5 Hr / Slimline Type B	120 x 115	96 x 43 or 120 x 36	108 x 108 (max.36 ft²)	42 x 48		
FD-B-SL / 3 Hr / Slimline Type B	48 x 43 or 80 x 36	80 x 36				
FD-C / 1.5 Hr / Type C	119 x 114	119 x 35	108 x 108 (max.36 ft²)	42 x 48		86
FD-C / 3 Hr / Type C	79 x 35	79 x 35				35
FD-C-S / 1.5 Hr / Integral Sleeve / Type C	47 x 42	39 x 35	47 x 42			42
FD-MB-3V / 1.5 Hr / 3V Multiblade	108 x 96	72 x 48	108 x 96	42 x 48		
FD-MB-3V / 3 Hr / 3V Multiblade	72 x 48	72 x 48				
FD-MB-AF / 1.5 Hr / Airfoil Multiblade	108 x 96	36 x 48	108 x 96 (max.36 ft²)	42 x 48		
FD-MB-AF / 3 Hr / Airfoil Multiblade	72 x 48	36 x 48				
FD-OW / 1.5 Hr / Out of Wall Assembly	42 x 48	42 x 48			42 x 48	
FD-RD / 1.5 Hr / True Round	24	24				24

Note: All dimensions are maximum allowable sizes listed width x height in inches.

DYNAMIC FIRE DAMPERS (UL555 DYNAMIC FIRE RATED) - FOR "FANS ON" SYSTEMS *

FDD Model & Description	Walls	Floors	Single Angle Installation	"No Angle" Flanged Sleeve Installation	Out of Wall / Floor	Round Duct
FDD-A / 1.5 or 3 Hr / Type A	72 x 36	36 x 36	72 x 36	42 x 36		34
FDD-A-S / 1.5 Hr / Integral Sleeve	36 x 36	24 x 24	36 x 36	24 x 24		22
FDD-A-SL / 1.5 or 3 Hr / Slimline / Type A	72 x 36	36 x 36	72 x 36	42 x 36		
FDD-B / 1.5 or 3 Hr / Type B	72 x 32	36 x 32	72 x 32	42 x 32		
FDD-B-S / 1.5 Hr / Integral Sleeve / Type B	36 x 32	24 x 21	36 x 32	36 x 32		
FDD-B-SL / 1.5 or 3 Hr / Slimline Type B	72 x 32	36 x 32	72 x 32	42 x 32		
FDD-C / 1.5 or 3 Hr / Type C	71 x 31	35 x 31	71 x 31	42 x 31		31
FDD-C-S / 1.5 Hr / Integral Sleeve / Type C	35 x 31	23 x 20	35 x 31			31
FDD-MB-3V / 1.5 Hr / 3V Multiblade	108 x 96	72 x 96	108 x 96	42 x 48		
FDD-MB-3V / 3 Hr / 3V Multiblade	72 x 48	72 x 48	72 x 48			
FDD-MB-AF / 1.5 Hr / Airfoil Multiblade	108 x 96	36 x 48	108 x 96	42 x 48		
FDD-MB-AF / 3 Hr / Airfoil Multiblade	72 x 48	36 x 48	72 x 48			
FDD-OW / 1.5 Hr / Out of Wall Assembly	42 x 36	36 x 36	42 x 36		42 x 36	
FDD-RD / 1.5 Hr / True Round	24	24	24			24

**Dampers rated at 2000 FPM & 4" w.g.* *Note: All dimensions are maximum allowable sizes listed width x height in inches.*

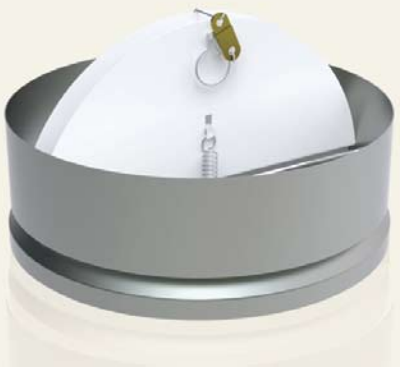
CEILING RADIATION DAMPERS
Series CD & CFS

The CD series offers a complete range of UL, ULC and California State Fire Marshal listed butterfly blade ceiling radiation dampers. The CD series is suitable for application in surface mount (steel duct drop) and lay-in applications. When provided with the optional adjustable volume control, NCA's CD series can double as a volume control damper.

The CFS Series are thermal fabric blade curtain-type ceiling radiation dampers, ideal for compact design requirements.

- Available in Square/Rectangular or True Round shapes.
- Optional adjustable volume control allows damper to double as volume damper.
- Optional factory square to round adapters available for easy duct connection (Model CD-RD-T).
- CFS Series fabric style dampers available in standard (CFS) and slimline (CFS-2F) Square/Rectangular frame styles.

CD-RD



CEILING RADIATION DAMPERS (UL5555C RATED)

CD • CFS Model & Description	Round	Rectangular	Volume Adjuster	L500 Series Listed (See Submittal)	Square to Round Transition
CD-RD / Round Butterfly	18				
CD-RD-A / Round Butterfly	18		Yes		
CD-S/R / Square/Rectangular		22 x 22			
CD-S/R-A / Square/Rectangular		22 x 22	Yes		
CD-RD-T / Round Butterfly with Transition		22 x 22			18
CD-RD-A/T / Round Butterfly with Transition		22 x 22	Yes		18
CD-S/R-HC / Wood Truss				16 x 12	
CFS / Fabric Curtain		24 x 24			
CFS-2F / Low Profile Fabric Curtain		24 x 24			
CFSR / Fabric Curtain with Round Transition		24 x 24			22

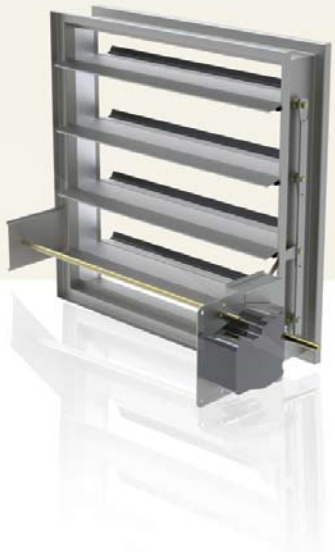
Note: All dimensions are maximum allowable sizes listed width x height in inches.

SMOKE DAMPERS
Series SSD-3V, SSD-AF & SSD-RD

The SSD series are UL, ULC and California State Fire Marshal listed as a UL555S smoke damper. The SSD series is available with UL555S Class I or Class II leakage ratings and a variety of electric and pneumatic actuators.

- Available with either UL Class I or Class II leakage.
- Available for both vertical and horizontal mount.
- Full range of factory sleeve gauges and lengths available.
- Available with 24VAC, 120VAC or 230VAC electric actuators or pneumatic actuators.

SSD-AF



SMOKE DAMPERS (UL555S LEAKAGE RATED)

SSD Model & Description	Walls	Floors	Round Duct	Smoke Detector
SSD-3V-201 / Class I / 3V Blade	144 x 96	144 x 96		✔
SSD-3V-202 / Class II / 3V Blade	144 x 96	144 x 96		✔
SSD-AF-201 / Class I / Airfoil Blade	144 x 96	144 x 96		✔
SSD-AF-202 / Class II / Airfoil Blade	144 x 96	144 x 96		✔
SSD-RD-201 / Class I / True Round	24 dia.	24 dia.	24	Consult Factory
SSD-RD-202 / Class II / True Round	24 dia.	24 dia.	24	Consult Factory

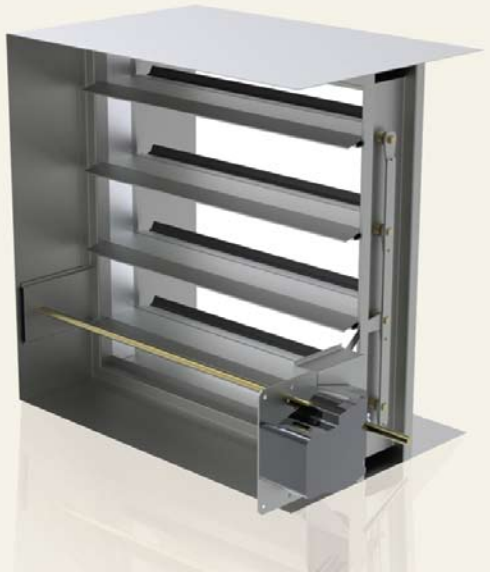
Note: All dimensions are maximum allowable sizes listed width x height in inches.

COMBINATION FIRE/SMOKE DAMPERS
Series FSD-3V, FSD-AF & FSD-RD

The FSD series are UL, ULC and California State Fire Marshal listed as both a UL555 fire and UL555S smoke damper. Available in both 1-1/2 and 3 hour fire ratings, the FSD series is available with UL555S Class I or Class II leakage ratings and a variety of electric and pneumatic actuators.

- Available in 1-1/2 or 3 Hour fire ratings, with either UL Class I or Class II leakage ratings.
- Available for both vertical and horizontal mount.
- FSD-AF damper feature airfoil shaped blades for superior pressure drop performance.
- True round dampers available (Series FSD-RD).
- Full range of factory sleeve gauges and lengths available.
- Available with 24VAC, 120VAC or 230VAC electric actuators or pneumatic actuators.
- Provided with a resettable heat responsive thermostat (STO/R). Dual thermostat override capable (DTO/R).

FSD-AF-211

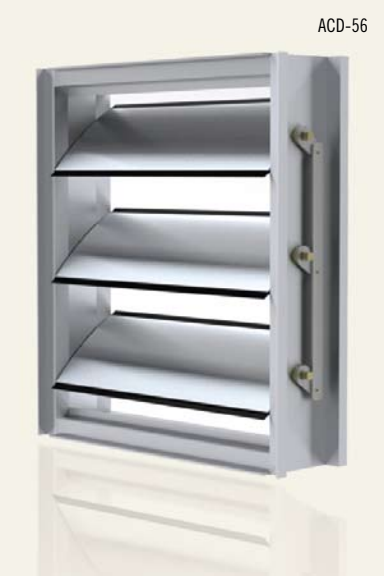


COMBINATION FIRE AND SMOKE DAMPERS (UL555 FIRE & UL555S LEAKAGE RATED)

FSD Model & Description	Walls	Floors	Single Angle Installation	"No Angle" Flanged Sleeve Installation	Out of Wall/Floor - Grille Access	Round Duct	Tunnel / Corridor Ceilings	Factory Smoke Detector
FSD-3V-211 / 1.5 Hr / Class I / 3V Blade	108 x 96	72 x 96	108 x 96 (max.36 ft2)	42 x 48		94"		✔
FSD-3V-212 / 1.5 Hr / Class II / 3V Blade	108 x 96	72 x 96	108 x 96 (max.36 ft2)	42 x 48		94"		✔
FSD-3V-231 / 3 Hr / Class I / 3V Blade	72 x 96	72 x 96				70"		✔
FSD-3V-232 / 3 Hr / Class II / 3V Blade	72 x 96	72 x 96				70"		✔
FSD-3V-OW-211 / 1.5 Hr / Class I / 3V Blade					42 x 48			
FSD-3V-OW-212 / 1.5 Hr / Class II / 3V Blade					42 x 48			
FSD-3V-FA-211 / 1.5 Hr / Class I / 3V Blade					42 x 48			Consult Factory
FSD-3V-FA-212 / 1.5 Hr / Class II / 3V Blade					42 x 48			Consult Factory
FSD-AF-211 / 1.5 Hr / Class I / Airfoil	108 x 96	36 x 48	108 x 96 (max.36 ft2)	42 x 48		94"(V) 34"(H)		✔
FSD-AF-212 / 1.5 Hr / Class II / Airfoil	108 x 96	36 x 48	108 x 96 (max.36 ft2)	42 x 48		94"(V) 34"(H)		✔
FSD-AF-231 / 3 Hr / Class I / Airfoil	72 x 96	36 x 48				70"(V) 34"(H)		✔
FSD-AF-232 / 3 Hr / Class II / Airfoil	72 x 96	36 x 48				70"(V) 34"(H)		✔
FSD-AF-OW-211 / 1.5 Hr / Class I / Airfoil					42 x 48			
FSD-AF-OW-212 / 1.5 Hr / Class II / Airfoil					42 x 48			
FSD-AF-FA-211 / 1.5 Hr / Class I / Airfoil					42 x 48			Consult Factory
FSD-AF-FA-212 / 1.5 Hr / Class II / Airfoil					42 x 48			Consult Factory
FSD-RD-211 / 1.5 Hr / Class I / True Round	24 dia.	24 dia.	24			24		Consult Factory
FSD-RD-212 / 1.5 Hr / Class II / True Round	24 dia.	24 dia.	24			24		Consult Factory
FSD-3V-CR-211 / 1 Hr / Class I / Tunnel Corridor	24 x 24	24 x 24		24 x 24			24 x 24	Consult Factory
FSD-3V-CR-212 / 1 Hr / Class II / Tunnel Corridor	24 x 24	24 x 24		24 x 24			24 x 24	Consult Factory

Note: All dimensions are maximum allowable sizes listed width x height in inches.

CONTROL AND BALANCING DAMPERS
Series ACD, SCD, PBD, OBD & MBD


ACD-56

The ACD series of control dampers are fabricated of heavy gauge 6063-T5 extruded aluminum. Featuring an airfoil shaped blade design, the ACD series demonstrates superior pressure drop performance (tested to the AMCA 500-D standard) and are available in a wide variety of leakage levels.

The SCD series of control dampers have been designed and tested to provide a reliable and cost effective control damper. Fabricated of roll-formed galvanized steel frames and blades, the SCD series features concealed linkage and is available in either parallel or opposed blade operation.

The PBD and OBD series (PBD with parallel blades, OBD with opposed blades) are high quality dampers with 'in the airstream' linkage. Available in a wide variety of finishes, leakage ratings and materials (12-16 gauge galvanized steel, .080 aluminum or 304 stainless), the PBD and OBD series are ideally suited as a control damper where hidden linkages could present service issues (ex: built up AHU or rooftop units).

The MBD series are galvanized steel dampers designed and built to provide a cost effective and reliable damper for reduced volume control. The MBD series is not intended for positive shut off or automatic operation; an ACD or SCD series control damper would be the appropriate choice in those applications.

CONTROL DAMPERS

ACD OBD Model	Material Description Frame	Material Description Blade	Blade Operation	Seals	Single Section Limits	Maximum System Pressure (in. w.g.)*	Maximum Velocity (FPM)*	Leakage (CFM/Sq. Ft. @ .01" w.g.)*	Temperature Range*
ACD-44	4" Ext. Alum.	4" Airfoil Ext. Alum.	Parallel or Opposed	Std.	60"w x 72"h	4.0	3,500	1.6	-40°F to 185°F
ACD-54	5" Extr. Alum.	4" Airfoil Extr. Alum.	Parallel or Opposed	Std.	60"w x 72"h	4.0	3,500	1.6	-40°F to 185°F
ACD-56	5" Extr. Alum.	6" Airfoil Extr. Alum.	Parallel or Opposed	Std.	60"w x 72"h	4.0	3,500	1.0	-40°F to 185°F
ACD-56-I	5" Extr. Alum. Insulated	6" Airfoil Extr. Alum. Insulated	Parallel or Opposed	Std.	60"w x 72"h	4.0	3,500	1.0	-40°F to 185°F
OBD-106	3.5"x16ga. Galv.	6" x 16ga. Galv.	Opposed	Opt.	48"w x 72"h	2.5	2,000	3.1**	15°F to 160°F
OBD-106R	2" x 12ga. Round Galv.	16ga. Galv.	Opposed	Opt.	14" Dia. Min. / 40" Dia. Max.	2.5	2,000		15°F to 160°F

CONTROL DAMPERS

PBD SCD ZMD Model	Material Description Frame	Material Description Blade	Blade Operation	Seals	Single Section Limits	Maximum System Pressure (in. w.g.)*	Maximum Velocity (FPM)*	Leakage (CFM/Sq. Ft. @ .01" w.g.)*	Temperature Range*
PBD-100	3.5" x 16ga. Galv.	6" x 16ga. Galv.	Parallel	Opt.	48"w x 72"h	2.5	2,000	3.1**	15°F to 160°F
PBD-100-INS	3.5" x 16ga. Galv.	6"x 16ga. Galv. Insulated	Parallel	Std.	48"w x 72"h	2.5	2,000	3.1	15°F to 160°F
PBD-100RM	2" x 12ga. Round Galv.	6" x 16ga. Galv.	Parallel	Opt.	14" Dia. Min. / 40" Dia. Max.	2.5	2,000		15°F to 160°F
PBD-100RS	8" x 18-20ga. Round Galv.	16ga. Galv.	Single Blade	N/A	36" Dia.	2.5	2,000		15°F to 160°F
SCD-57	5" x 20ga. Galv.	4.25" to 7.25" x 16ga. Galv.	Parallel or Opposed	Opt.	48"w x 72"h	2.5	2,000	3.1**	-40°F to 185°F
SCD-AF	5" x 20ga. Galv.	5" to 7" x 14ga.1 Airfoil Galv.	Parallel or Opposed	Std.	48"w x 72"h	4.0	4,400	3.1	-40°F to 185°F
SCD-IB-59	5" x 20ga. Galv.	6" Airfoil Extr. Alum. Insulated	Parallel or Opposed	Std.	60"w x 72"h	4.0	3,500	3.0	-40°F to 185°F
SCD-LL-57	5" x 20ga. Galv.	4.25" to 7.25" x 16ga. Galv.	Parallel or Opposed	Std.	48"w x 72"h	2.5	2,000	3.5	-40°F to 185°F
SCD-LL-HD-57	5" x 12 ga.[1] Galv.	4.25" to 7.25" x 10ga.[1] Galv.	Parallel or Opposed	Std.	48"w x 72"h	7.0	3,500	3.5	-40°F to 185°F
SCD-RD-88	10" x 18-22ga. Round Galv.	Galv.	Single Blade	N/A	24" Dia.	4.0	1,500	N/A	15°F to 160°F
SCD-RD-LL-88	10" x 18-22ga. Round Galv.	Galv.	Single Blade	Std.	24" Dia.	4.0	1,500	1.0	15°F to 160°F
ZMD-3V	6" x 16ga. Galv.	5.25" x 16ga. Galv.	Parallel	Std.				6.0	
ZMD-AF	6" Extr. Alum.	6" Airfoil Extr. Alum.	Parallel					6.0	

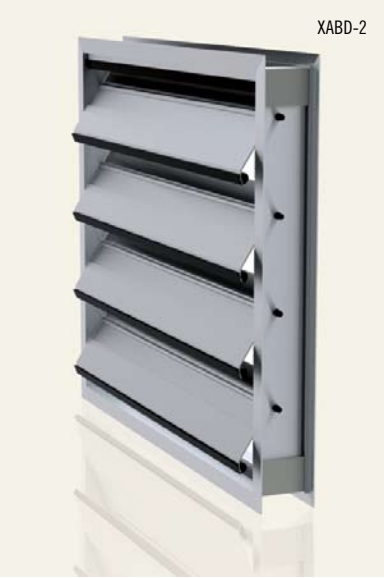
BALANCING DAMPERS (not intended for use with actuators)

MBD PBD Model	Material Description Frame	Material Description Blade	Blade Operation	Seals	Single Section Limits	Maximum System Pressure (in. w.g.)*	Maximum Velocity (FPM)*	Leakage (CFM/Sq. Ft. @ 1" w.g.)*	Temperature Range*
MBD-57	5" x 20ga. Galv.	4.25" to 7.25" x 16ga.Galv.	Parallel or Opposed	N/A	48"w x 48"h	2.5	1,500	N/A	-40°F to 185°F
MBD-RD-88	10" x 18-22ga. Round Galv.	Galv.	Single Blade	N/A	24" Dia.	2.5	1,500	N/A	15°F to 160°F
PBD-20	3" x 18ga. Galv.	4" to 12" x 18ga. Galv.	Single Blade	N/A	36"w x 12"h	1.0	1,500	N/A	
PBD-20RS	8" x 20ga. Round Galv.	18ga. Galv.	Single Blade	N/A	20" Dia.	1.0	1,500	N/A	

[1]Equivalent gauge - Material is composed of multiple layers of material to form equivalent gauges
** Consult factory for values exceeding listed limits*
*** Blade & Jamb seals required to achieve leakage performance*

BACKDRAFT & BAROMETRIC DAMPERS
Series XABD, CBD, HBD, FBD & BDD-SS

The XABD series are high-quality extruded aluminum backdraft dampers. The dampers are available in a variety of frame styles (box, front flange or rear flange) and can be provided with a variety of counterweights (assist or retard) or electric actuators to aid in operation.


XABD-2

The CBD counter balance damper or barometric damper is designed to act primarily as an up or down blast damper but can be mounted vertically as well. The CBD includes blade-mounted, adjustable steel counterweights that allow for field control of the first point of opening and full open limits.

The HBD series of heavy duty backdraft dampers are designed for higher pressure, velocity or temperature environments. Dampers are fabricated of heavy gauge galvanized steel standard; these dampers are capable of operating up to 250°F and up to 3,000 fpm (HBD-H).

The FBD features neoprene coated fiberglass 'blades' in a galvanized steel frame. Appropriate for use up to a maximum velocity of 1,000 fpm, the FBD's nonmetallic blades offer quiet operation with no metallic noises and long-term operation due to no mechanical pivots.

The BDD-SS is fabricated of 304 stainless steel frame and blades with stainless axles and linkage, making this damper ideally suited for use in corrosive environments. Available with box or flanged frame, the BDD-SS is rated for use up to 1,500 fpm and 1.5" w.g.

BACKDRAFT & BAROMETRIC DAMPERS

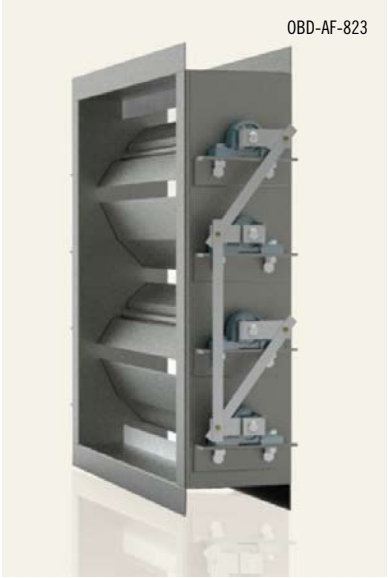
XABD - CBD - HBD FBD - BDD	Material Description		Blade		Single Section	Maximum System Pressure	Maximum Velocity	Leakage (CFM/Sq. Ft.	Temperature
Model	Frame	Blade	Operation	Seals	Limits	(in. w.g.)*	(FPM)*	@ .01" w.g.)*	Range*
XABD-1	2.5" Extr. Alum.	5" Formed Alum.	Parallel	Std.	36"w x 52"h	1.0	1,500	5.1	-40°F to 185°F
XABD-2	2.5" Extr. Alum.	5" Extr. Alum.	Parallel	Std.	40"w x 52"h	2.0	2,500	4.5	-40°F to 185°F
CBD-112	3-3/8" x 16ga. Galv.	Formed Alum.	Parallel	Std.	48"w x 72"h	1.5	1,000		15°F to 160°F
HBD-M	3.5" x 16ga. Galv.	6" x 18ga. Galv.	Parallel	Opt.	48"w x 72"h	2.5	2,500		15°F to 160°F
HBD-H	8" x 12ga. Galv.	6" x 16ga. Galv.	Parallel	Opt.	48"w x 72"h	4.0	3,000		15°F to 160°F
FBD	2" to 4" x 18ga. Galv.	Coated Fiberglass	N/A	N/A	36"w x 24"h	1.0	1,000	N/A	-20°F to 200°F
BDD-SS	18ga. 304 Stainless	26ga. 304 Stainless	Parallel	Std.	30"w x 72"h	1.5	1,500		-40°F to 185°F

** Consult factory for values exceeding listed limits*

INDUSTRIAL DAMPERS
Series PBD-OBD & PBD-RD

The PBD-OBD series of industrial control dampers are designed for high velocity / high pressure applications. Available with either airfoil or corrugated blade designs, the PBD-OBD series has models capable of performing at 5,000 fpm and 14" w.g.

The PBD-RD series of industrial control dampers are true round, single blade dampers designed for high velocity / high pressure applications. Applied for control of shut-off purposes, the PBD-RD series has models capable of performing at 6,000 fpm and 15" w.g.


OBD-AF-823

INDUSTRIAL DAMPERS

PBD Model	Material Description Frame	Blade	Blade Operation	Seals	Single Section Limits	Maximum System Pressure (in. w.g.)*	Maximum Velocity (FPM)*	Temperature Range*
PBD-500RS	6" to 12" x 10ga.- 1/4" Round Galv.	2 layers x 10ga. Galv.	Single	Std.	48" Dia.	15.0	6,000	0°F to 250°F
PBD-800RS	8" x 10ga.- 3/16" Round Galv.	10ga to 1/4" Galv.	Single	Opt.	60" Dia.	6.0	4,000	0°F to 250°F
PBD-900RS	9" x 10ga.- 1/4" Round Galv.	1/4" Galv.	Single	Opt.	48" Dia.	13.0	6,000	0°F to 250°F
PBD-OBD-820	8" x 14ga. Galv.	6" x 16ga. Galv.	Parallel or Opposed	Opt.	48"w x 96"h	3.0	2,000	0°F to 250°F
PBD-OBD-AF-101	3.5" x 14ga. Galv.	6" x 16ga. Airfoil Galv.	Parallel or Opposed	Opt.	48"w x 72"h	8.0	4,000	0°F to 250°F
PBD-OBD-AF-821	8" x 14ga. Galv.	5" to 8" x 16ga. Airfoil Galv	Parallel or Opposed	Opt.	48"w x 96"h	10.0	5,000	0°F to 250°F
PBD-OBD-AF-822	8" x 14ga. Galv.	5" to 8" x 16ga. Airfoil Galv	Parallel or Opposed	Opt.	60"w x 96"h	14.0	5,000	0°F to 250°F
PBD-OBD-AF-823	8" x 12ga. Galv.	6" to 8" x 14ga. Airfoil Galv	Parallel or Opposed	Opt.	60"w x 96"h	14.0	5,000	0°F to 250°F

** Consult factory for values exceeding listed limits*

EXTRUDED ALUMINUM LOUVERS
Series XA & WDR

The XA series of louvers are available in a wide variety of blade styles and angles to meet every application. Fabricated of extruded .081" (6063-T5) aluminum frames and blades, the XA series can be provided with channel frames, sill extensions or flanged frames, expanded aluminum bird screen (standard) and exposed or hidden mullion options for multi-unit assemblies. An extensive choice of finishing options is offered including: prime coat, baked enamel, Kynar 500® and anodized finishes.

- A wide variety of blades shapes are available within the extruded louver line:

  XAJ Series – Non-drainable 'straight' blade louvers.

  XAL Series – J/K or Z step blades for improved water penetration performance.

  XAD series – Drainable blade louvers for excellent water penetration protection. The XADV incorporates a chevron style blade offering a sight-proof option.

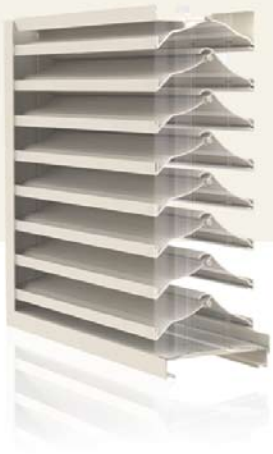
- Many models within the XA series are AMCA certified for both water and air performance.

XAJ-4-45

The WDR series are AMCA certified sight-proof louvers with exceptional prevention of water penetration. Fabricated of .081" (6063-T5) extruded aluminum have been evaluated at AMCA for wind-driven rain performance up to 50 mph and 8 in/hr. An extensive choice of finishing options is offered including: prime coat, baked enamel, Kynar 500® and anodized finishes.

- All WDR Louvers offer sight-proof construction and AMCA ratings for water penetration up to 50 mph and 8 in/hr.
- Available in 4" (WDR-4) & 6" WDR-6) deep frames and 6" deep vertical blade configuration (WDRV-6).

WDR-6



Kynar 500® is a registered trademark of Arkema, Inc.

Performance & Water Penetration Data
(for 48"x48" test unit only)

XA Model	Blade Depth	Blade Style	Drainable Head	Blade Angle	Free Area	Maximum Free Area Velocity (fpm)	Maximum Air Volume (cfm)
EXTRUDED NON-DRAINABLE LOUVERS							
XAJ-4*	4"	J	No	45°	46%	690	5,085
XAJ-4-GL*	4"	J	Yes	45°	47%	975	7,303
XAL-2-GL*	2"	Thinline J/K	Yes	45°	48%	797	6,153
XAL-4*	4"	J/K	Yes	37.5°	57%	840	7,686
XAL-6*	6"	J/K	Yes	37.5°	59%	872	8,214
XAZ-4-30-GL	4"	Step - J/K	Yes	30°	52%	983	8,159
EXTRUDED DRAINABLE LOUVERS							
XAD-2-45-GL*	2"	Drainable	Yes	45°	43%	1,100	7,590
XAD-4*	4"	Drainable	No	37.5°	51%	1,000	8,100
XAD-4-45*	4"	Drainable	No	45°	51%	1,062	8,615
XAD-4-45-GL*	4"	Drainable	Yes	45°	54%	803	6,938
XAD-6-GL *	6"	Drainable	Yes	37.5°	51%	1,155	9,459
XADD-4-45-GL*	4"	Double Drainable	Yes	45°	44%	1,082	7,563
XADV-4	4"	Chevron	No	60°	33%	749	3,910
XAD-4-IE	4"	Drainable	No	45° / 90°	53% / 71%	898	7,615
XAD-3D-6	6"	Recessed - Drainable	Yes	37.5°	54%	1,063	9,195
HURRICANE LOUVERS							
XAD-6-MD*	6"	Drainable	Yes	37.5°	54%	1,022	8,799

Performance & Water Penetration Data
(for 48"x48" test unit only)

WDR Model	Blade Depth	Blade Style	Drainable Head	Blade Angle	Free Area	Maximum Free Area Velocity (fpm)	Maximum Air Volume (cfm)
WIND-DRIVE RAIN LOUVERS							
WDR-4*	4"	Horizontal	No	55°	46%	Variable	Variable
WDR-6*	6"	Horizontal	Yes	22°	51%	Variable	Variable
WDRV-6*	6"	Vertical	No	34°	54%	Variable	Variable

Velocity and Air Volume data is the first point of water penetration as tested in accordance with AMCA Standard 500-L Performance reported is at standard air density 0.075 lbs/ft^3. Water Penetration Test is based upon 15 minute exposure. Performance data does not include the effects of bird or insect screen.

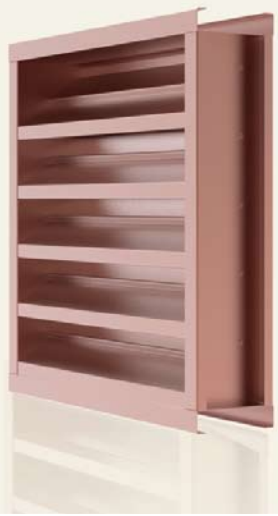
*** AMCA Certified Data**

FORMED METAL & ACOUSTICAL LOUVERS
Series SL & ACS

The SL series of formed louvers are fabricated of galvanized steel frames and blades. They can be fabricated with channel frames, flange frames and sill extensions and are available in 2", 4" & 6" frame styles. An extensive choice of finishing options is offered including: prime coat, baked enamel and Kynar 500®.

- A wide variety of blades shapes are available within the extruded louver line:
  - SLJ Series – Non-drainable 'straight' blade louvers.
  - SLZ Series – Z (step) blades for improved water penetration performance.
  - SLD Series – Drainable blade louvers for excellent water penetration protection.
  - SLV Series – Chevron shaped blades provide sight proof performance.
- Many models within the SL series are AMCA certified for both water and air performance.

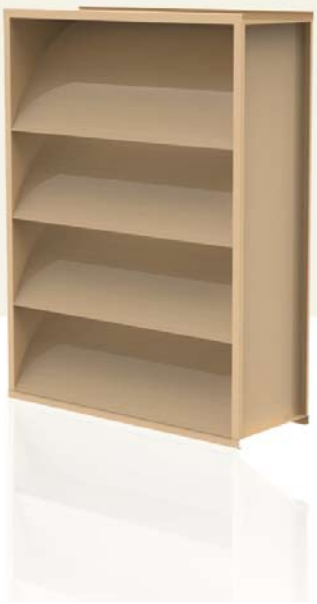
SLZ-4-30



Recommended for installation in noisy environments, **the ACS series** of acoustical louvers include insulated blades to lower sound transmission through the louver. These galvanized steel louvers are available in straight blade (ACSLJ) and airfoil blade (ACSLJAF) designs and range in frame depth from 6" to 12" deep.

- Frame constructed of 16 ga. galvanized steel and blades constructed of 20 ga. galvanized steel.
- Available in straight blade frame depths of 6", 8" and 12" and airfoil blade design with a 12" frame depth, each with a variety of frame styles; channel frame, flanged frame, sill extensions.
- Acoustical performance tested to ASTM E 90-97 and E 413-87.

ACSLJAF-12



Kynar 500® is a registered trademark of Arkema, Inc.

FORMED STEEL LOUVERS

Water Penetration Data
(for 48"x48" test unit only)

SL Model	Blade Depth	Blade Style	Drainable Head	Blade Angle	Free Area	Maximum Free Area Velocity (fpm)	Maximum Air Volume (cfm)
SLD-4-45-GL*	4"	Drainable	Yes	45°	44%	1,181	8,350
SLD-4-GL*	4"	Drainable	Yes	37.5°	55%	1,078	9,454
SLD-6-45-GL*	6"	Drainable	Yes	45°	52%	980	8,212
SLD-6-GL*	6"	Drainable	Yes	37.5°	56%	1,250+	11,200+
SLJ-2	2"	J	No	45°	44%	625	4,350
SLJ-4	4"	J	No	45°	44%	775	5,425
SLJ-4-30	4"	J	No	30°	50%	708	5,607
SLJ-6	6"	J	No	45°	48%	845	6,515
SLV-4	4"	Chevron	No	60°	31%	703	3,480
SLV-6	6"	Chevron	No	60°	33%	743	3,901
SLZ-4*	4"	Step - J/K	Yes	45°	44%	891	6,317
SLZ-4-30	4"	Step - J/K	No	30°	42%	736	4,968
SLZ-6	6"	Step - J/K	Yes	45°	48%	893	6,787

*** AMCA Certified Data**

ACOUSTICAL LOUVERS

Water Penetration Data
(for 48"x48" test unit only)

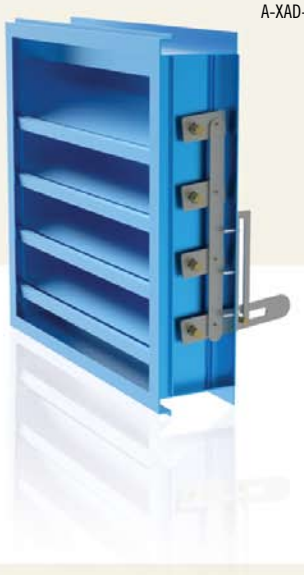
ACS Model	Blade Depth	Blade Style	Drainable Head	Blade Angle	Free Area	Maximum Free Area Velocity (fpm)	Maximum Air Volume (cfm)
ACSLJ-6	6"	Straight	No	45°	25%	970	3,851
ACSLJ-8	8"	Straight	No	45°	22%	1,060	3,784
ACSLJ-12	12"	Straight	No	45°	22%	1,208	4,204
ACSLJ-AF-12	12"	Airfoil	No	45°	21%	1,250+	4,200+

Velocity and Air Volume data is the first point of water penetration as tested in accordance with AMCA Standard 500-L. Performance reported is at standard air density 0.075 lbs/ft^3. Water Penetration Test is based upon 15 minute exposure. Performance data does not include the effects of bird or insect screen.

ADJUSTABLE & COMBINATION LOUVERS
Series A-XA, A-SL & CA-X

The A-XA series of extruded aluminum louvers provide all the features and benefits of the fixed blade versions of the XA series louvers, but include the added feature of adjustable blades. The adjustable (operable) louvers allow for the weather protection of a louver when open and can provide positive shut-off when no airflow is required.

- Frame and blades constructed of .081" (6063-T5) extruded aluminum.
- Available in 4" and 6" frames with drainable or "J" type blades.
- The A-XAD-4-45-GL louver is AMCA licensed with certified air performance and water penetration data.


A-XAD-4

The A-SL series of formed steel louvers provide all the features and benefits of the fixed blade versions of the SL series louvers, but include the added feature of adjustable blades. The adjustable (operable) louvers allow for the weather protection of a louver when open and can provide positive shut off when no airflow is required.

- Frame and blades constructed of 20 ga. galvanized steel.
- Available in 4" and 6" frames with drainable or "J" type blades.

The CA-X series of extruded aluminum louvers provide the features and benefits of the XA series of louvers while including the benefits of an operable louver. The CA-X series feature fixed front blades for weather protection and a consistent appearance, and feature operable rear blades to allow for flow control and shut off when desired.

- Frame and blades constructed of extruded aluminum (6063-T5).
- Available in 4" and 6" frames with drainable or "JJ" type blades.
- Several CA-X series louvers are AMCA licensed with certified air performance and water penetration data.
- Specialized use models integrate backdraft dampers to provide control of airflow (CE-X for exhaust and CI-X for intake).

EXTRUDED OPERABLE LOUVERS

Water Penetration Data
(for 48"x48" test unit only)

A-XA

Model	Blade Depth	Blade Style	Drainable Head	Blade Angle	Free Area	Maximum Free Area Velocity (fpm)	Maximum Air Volume (cfm)
A-XAD-4	4"	Drainable	No	37.5°	47%	920	6,983
A-XAD-4-45-GL*	4"	Drainable	Yes	45°	41%	969	6,328
A-XAD-6	6"	Drainable	No	37.5°	49%	976	7,662
A-XAD-46	6"	Drainable	No	45° / 90°	41% / 72%	976	6,403
A-XAJ-4	4"	J	No	45°	41%	920	6,008

FORMED STEEL OPERABLE LOUVERS

Water Penetration Data
(for 48"x48" test unit only)

A-SL

Model	Blade Depth	Blade Style	Drainable Head	Blade Angle	Free Area	Maximum Free Area Velocity (fpm)	Maximum Air Volume (cfm)
A-SLD-4	4"	Drainable	No	37.5°	45%	1,011	7,219
A-SLD-4-45-GL	4"	Drainable	Yes	45°	41%	1,007	6,656
A-SLD-6	6"	Drainable	No	37.5°	53%	1,011	8,614
A-SLJ-4	4"	J	No	45°	39%	696	4,315
A-SLJ-6	6"	J	No	45°	45%	707	5,062

EXTRUDED COMBINATION LOUVERS

Water Penetration Data
(for 48"x48" test unit only)

CA-X

Model	Blade Depth	Blade Style	Drainable Head	Blade Angle	Free Area	Maximum Free Area Velocity (fpm)	Maximum Air Volume (cfm)
CA-XAD-4-45-GL*	4"	Drainable	Yes	45°	47%	986	7,474
CA-XAD-6*	6"	Drainable	No	37.5°	48%	840	6,451
CA-XAD-6-45-GL*	6"	Drainable	Yes	45°	41%	957	6,326
CA-XAJ-6	6"	J	No	37.5°	47%	760	5,746
CE-XAD-4	4"	Drainable	No	37.5°	47%	N/A	N/A
CE-XAJ-4	4"	J	No	45°	40%	N/A	N/A
CI-XAD-4	4"	Drainable	No	37.5°	41%	950	6,166
CI-XAJ-4	4"	J	No	45°	37%	690	4,106

Velocity and Air Volume data is the first point of water penetration as tested in accordance with AMCA Standard 500-L. Performance reported is at standard air density 0.075 lbs/ft³. Water Penetration Test is based upon 15 minute exposure. Performance data does not include the effects of bird or insect screen.

*** AMCA Certified Data**

EQUIPMENT SCREENS
Series ES

The ES series of equipment screens offer an effective and economical means to hide and protect equipment. The ES series are fabricated of extruded aluminum (6063-T5) and are designed to provide an attractive appearance with hidden blade supports to prevent sagging and bows. They are provided with post corners as a standard part of the design, but can be optionally provided with mitered corners if architecturally desired.

- The ESH series are provided with horizontally mounted blades and are available in 2", 4" and 6" frames and horizontally mounted standard, reversed or sight proof blades.
- The ESV series features vertically mounted sightproof blades and are available in 2-5/8" and 4" frames.

ESHX-4

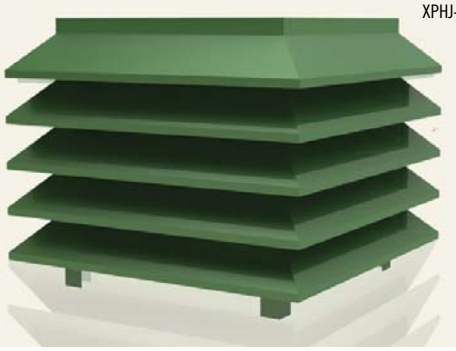
EQUIPMENT SCREENS

ES Model	Blade Depth	Blade Style	Drainable Head	Blade Angle
ESHX-2	2"	Horizontal Inverted-J	-	45°
ESHX-4	4"	Horizontal Inverted-J	-	45°
ESHX-6	6"	Horizontal Inverted-J	-	45°
ESHX-R-4	4"	J	-	45°
ESHX-R-6	6"	J	-	45°
ESHX-V-4	4"	Chevron	-	60°
ESVX-T	2-5/8"	Vertical Cladding	-	90°
ESVX-V-4	4"	Vertical Chevron	-	60°

PENTHOUSES & GRAVITY HOODS
Series XPH, FPH, ARV & GRV

Available with virtually all of the blade options from our louvers, our penthouses can be fabricated to meet a wide variety of job needs. Available with post or mitered corners, hinged roofs, insulated roofs and anticondensate coatings, the **XPH and FPH series** can accommodate virtually any job requirement.

- The XPH series of extruded aluminum (6063-T5) penthouses can be fabricated with virtually any of the blade options found in the XA series of louvers.
- The FPH series of galvanized steel penthouses can be fabricated with virtually any of the blade options found in the SL series of louvers.


XPHJ-4

The ARV series (Aluminum) and **GRV Series** (Galvanized Steel) hoods feature a low-profile design available for supply (ARV-S / GRV-S) and exhaust (ARV-E / GRV-E) applications. Various screens and finishes are available with this durable unit that includes all structural support angles and a fully welded, fully mitered base. Also available with optional insulated and hinged roofs, special bases for existing curbs.

FINISHES

NCA offers a broad range of finishes to meet every job's requirements.
The Primary Finish options are:

- **Prime Coat** – When field painting is required, NCA applies a modified zinc chromate primer. This is the least reliable painting method and field cleaning must be performed prior to painting.
- **Baked Enamel** – A high quality, yet economical finish for both aluminum and galvanized steel products. After the products are chemically cleaned, a prime coat is applied followed by approximately 1.5 mils of polyurethane acrylic or polyester-based powder and then baked to create a tough, glossy enamel coating.
- **Kynar 500®** – Superior finish for louvers. Excellent for color retention and resistance to chemicals, chalking, fading and weather damage. Meets AAMA specification 2605.2.
- **204 R1 Clear Anodize** – Designated by the Aluminum Association as AA-M10-C22A31, this finish provides a clear anodize coating of .4 to .7 mils which enhances the appearance of aluminum louvers and increases their resistance to weather damage.
- **215 R1 Clear Anodize** – Designated by the Aluminum Association as AA-M10-C22A41, this finish provides a clear anodize coating of .7 mils minimum which provides superior weather resistance and is recommended for corrosive atmosphere.
- **Colored Anodize** – Designated by the Aluminum Association as AA-M10-C22A42, this finish offers excellent weather and corrosion protection on aluminum louvers along with the added advantage of a colored finish. (Slight color variation may occur in production runs.)

NCA has a wide selection of standard colors in stock, but virtually limitless colors are available for matching to sample chips provided.

Kynar 500® is a registered trademark of Arkema, Inc.

THE NCA ADVANTAGE...

NCA is a leading manufacturer of AMCA certified louvers, penthouses, screens, control dampers, backdraft dampers and UL-listed fire, smoke and fire/smoke dampers.

NCA is also a team of professionals committed to maintaining our position as the leader in the industry in customer service and quick delivery of high quality and high performance engineered products.

Industry Leading Quick Build Program

- Same day, 1 day, 3 day, 5 day and 10 day quick build options & express shipping
- Dampers included in the NCA Quick Build Program: fire, smoke, fire/smoke, ceiling radiation, control, backdraft & industrial
- Louvers included in the NCA Quick Build Program: extruded aluminum, galvanized steel, stationary, adjustable, combination and factory finished

Superior Manufacturing & Packaging

- Efficient modern manufacturing processes that produce high quality products
- Properly sized, tagged and loaded high quality crating and packaging
- Simple field assembly of large and multiple section units
- Custom manufacturing; products built to your specifications

Engineering Expertise & Support

- CAD generated electronic submittals and accurate professional drawings
- Design, layout, product selection and application assistance
- Continuous investment in product research and development
- Performance data you can depend on

METAL INDUSTRIES, INC.®

BUILT ON THE PAST, FOCUSED ON THE FUTURE

Metal Industries, Inc. offers a complete line of quality air distribution products and air terminal units. Our company is dedicated to providing the highest level of service in the HVAC industry. Since our inception in 1947, Metal Industries, Inc. has grown to become a leading worldwide supplier of commercial air distribution products. Metal Industries, Inc. products are sold under several brands throughout the United States and around the world.

The Metal Industries, Inc. product offering includes grilles, registers, diffusers, air terminals units, louvers, penthouses, equipment screens, sun shades, dampers and life-safety products. Metal Industries, Inc. has a broad network of representatives knowledgeable in all phases of HVAC design and selection; our experienced team, along with the technical expertise of our representative network can provide custom solutions for even the most complex air distribution challenges and energy saving strategies.

Metal Industries, Inc. is a privately owned company located in Clearwater, Florida.

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