



BADR and ASFOUR
Engineering & Metal Industries

Fixed Louvers

(Drainable Blades)



CVS 
LOUVER SERIES



MODEL FL-D-4 HIGH PERFORMANCE 4" FIXED LOUVER

STANDARD CONSTRUCTION:

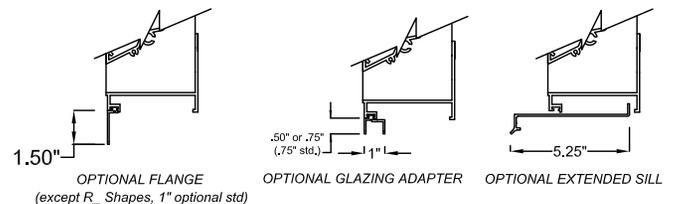
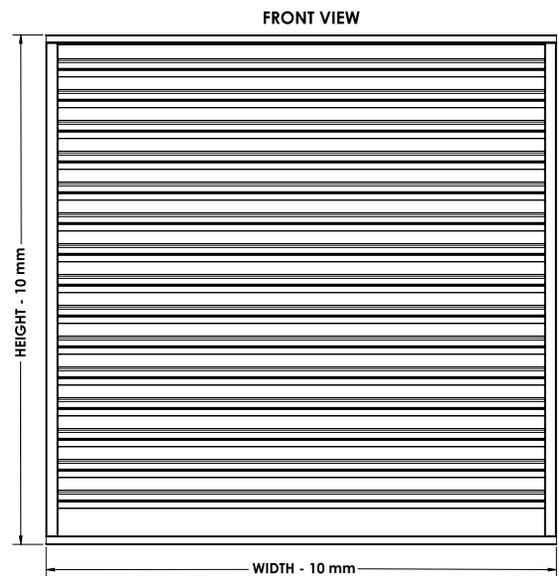
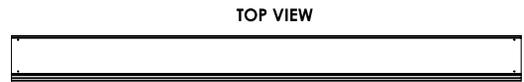
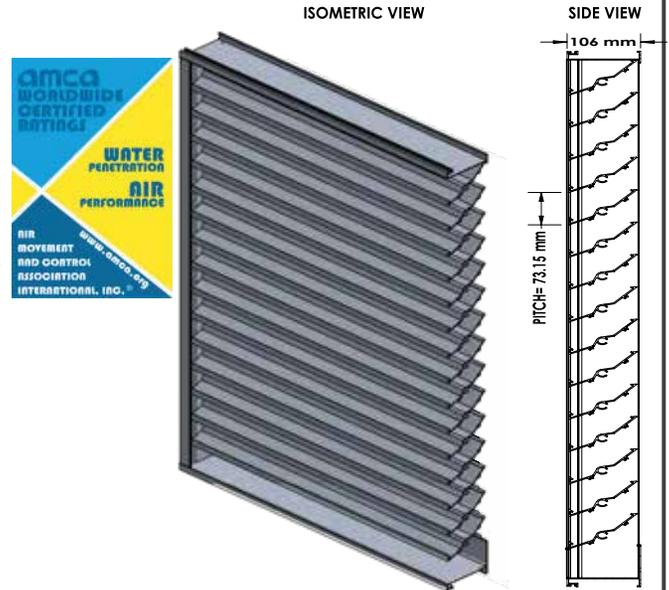
- Frame:** 0.081" (2.00 mm) Extruded Aluminum, 4.19" (106 mm) Deep
- Blade:** 0.081" (2.00 mm) Extruded Aluminum positioned on a 37° angle on approximately 2.88" (73.15 mm) centers.
- Birdscreen:** 0.5" x .039" (12 mm x 1 mm) wire mesh or flattened aluminum. Screen is mounted as standard on inside (rear) as looking from exterior of building.
- Finish:** RAL 9010 (Std.). For other finishes, please contact the manufacturer.
- Minimum Section Size:** 12" x 12" (300 mm x 300 mm)
- Maximum Single Section Size:** 120" x 84" (3000 mm x 2100 mm) / 84" x 120" (2100 mm x 3000 mm)

OPTIONS:

- FBC Approved for +/- 50 PSF (FL 12335.1)
- Flanged Frame (1.50" std.)
- Custom Frame (1", 2", or 3"), (1.5", 2" , 3" for shapes R)
- Extended Sill
- Security Bars
- Filter Racks (No screen)
- Insect Screen (Other screens available)
- Glazing Adapter (0.50" or 0.75")
- Hinged Sub Frame
- Split Deflection 45°/ 0° blades
- Welded Construction (Wind load +/- 50 psf 0.125" (6 mm) construction
- Blank-off, Alum., non-insulated, no screen, non-removable
- Blank-off, Alum., non-insulated, with bird screen or insect screen
- Blank-off, Alum., insulated double wall, with bird screen, removable
- Blank-off, Alum., insulated double wall, no screen, non-removable

AVAILABLE FINISHES:

- Powder Polyester TGIC** (2 coats) baked on at 410°F, 2.5 to 3.5 mils Meets AAMA-2603 Standards
- Powder Super durable polyester** (2 coats) baked on at 410°F, 2.5 to 3.5 mils Meets AAMA-2604-05 Standards
- Acrylic baked enamel** (ACRA-BOND® ULTRA) by AkzoNobel baked on at 350°F, 0.8 to 1.2 mils dry Meets AAMA-2603 Standards
- Kynar®** (ALUM*A*STAR®) 2 coats by AkzoNobel baked on at 450°F, 1.2 to 1.6 mils dry Meets AAMA-2604-05 Standards
- Kynar 500®** or HYLAR® 5000 70% TRINAR® (2 coats) by AkzoNobel baked on at 450°F, 1.2 to 1.6 mils dry, Meets AAMA-2605-05 Standards
- Kynar 500®** or HYLAR® 5000 (70% Tri-Scnt II) (2 coats) by AkzoNobel, a superior finish to other metallic or anodized finishes. A blend of mica, ceramic, and inorganic pigments creates subtle yet dazzling design that goes beyond metallic color without the requirement of a clear coat. 14 standard colors - custom colors available. Baked on at 415°F, 1.4 to 1.8 mils dry, meets AAMA 2605-05.
- Clear Anodize** 204 R-1 Class II (AA-C22A31)(0.4 to 0.7 mil)
- Clear Anodize** 215 R-1 Class I (AA-C22A41)(>0.7 mil)
- Integral Color Anodize** (AA-C22A42)(>0.7 mil)
- Clear coat available for all above finishes.
- Hylar® 5000 is a registered trademark of Solvay Solexis, Inc.
- Kynar® 500 is a registered trademark of Arkema.
- ALUM*A*STAR® 50 and TRINAR® are registered trademarks of AkzoNobel
- ACRA-BOND® ULTRA is a registered trademark of AkzoNobel

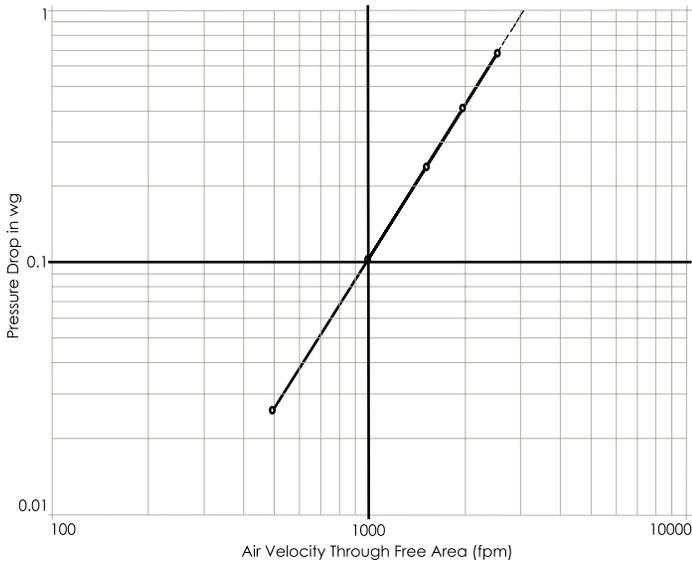


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HIGH PERFORMANCE 4" FIXED LOUVER MODELFL-D-4	Cat ID: FL-D-4	Rev. No.: 01	Date: September 2021	Page: 1/4
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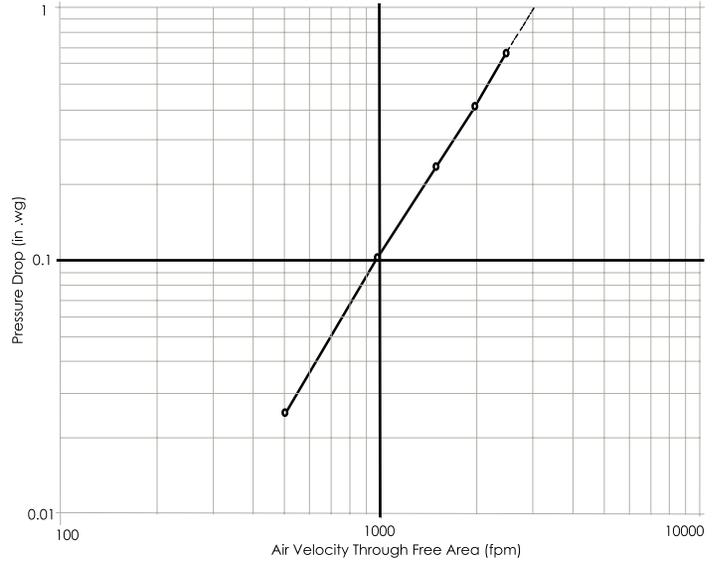
PRESSURE DROP - INTAKE



Tested in accordance with ANSI/AMCA 500-L, Figure 5.5
 Test sample size is 1220 mm x 1220 mm (48 in. x 48 in.)
 Air performance data are based on Intake performance with standard air - 0.075 lb/ft³

Detail No.	V _{Free Area} (fpm)	ΔP _{DS} (in. wg)
1	2497	0.68
2	1989	0.43
3	1493	0.24
4	1001	0.11
5	499	0.03

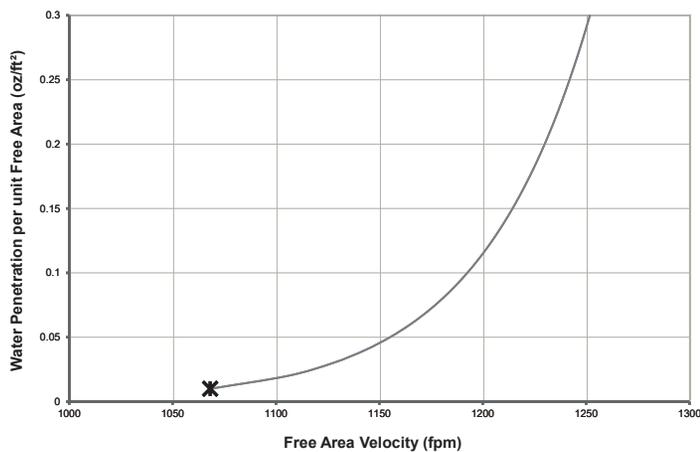
PRESSURE DROP - EXHAUST



Tested in accordance with ANSI/AMCA 500-L, Figure 5.5
 Test sample size is 1220 mm x 1220 mm (48 in. x 48 in.)
 Air performance data are based on Exhaust performance with standard air - 0.075 lb/ft³

Detail No.	V _{Free Area} (fpm)	ΔP _{DS} (in. wg)
1	2500	0.68
2	1992	0.41
3	1493	0.24
4	998	0.10
5	499	0.02

WATER PENETRATION



— Water Penetration of CVS FL-D-4 X Beginning of Water Penetration

Test sample size is 1220 mm x 1220 mm 48 in. x 48 in.
 Beginning of water penetration per AMCA Publication 511 Section 8.3.2 based on AMCA measured free area: **1068.3 fpm**

Detail No.	V _{Free Area} (fpm)	Net Weight (oz./ft. ²)
1	927	0.001
2	1031	0.003
3	1083	0.016
4	1135	0.035

SUGGESTED SPECIFICATION

Furnish and install louvers as hereinafter specified where shown on plans or as described in schedules. Louvers shall be stationary drainable type with drain gutters in each blade and downspouts in jambs and mullions. Stationary drainable blades shall be contained within a 4.19" (106 mm) frame. Louver components (heads, jambs, sills, blades and mullions) shall be factory assembled by the louver manufacturer. Louver sizes too large for shipping shall be built by the contractor from factory assembled louver sections to provide overall sizes required.

Louvers shall be model CVS FL-D-4, 6063-T6 Aluminum construction as follows:

- FRAME: 4.19" (106 mm) deep, 0.081" (2 mm) nominal wall thickness.
- BLADES: 0.081" (2 mm) nominal wall thickness. Blades are positioned at 39° angle and spaced approx. 2.88" (73.15 mm) center to center.
- SCREEN: 0.5" x 0.039" (12 mm x 1 mm) wire mesh or flattened aluminium on the inside (rear).
- FINISH: Select finish specification from CVS Finishes brochure.

Published louver performance bearing the AMCA Certified Ratings Seal for Air Performance & Water Penetration must be submitted for approval prior to fabrication and must demonstrate pressure drop and water penetration equal to or less than the CVS model specified.

AMCA Standard 500 provides a reasonable basis for testing and rating louvers. Testing to AMCA 500-L is performed under a certain set of laboratory conditions. This does not guarantee that other conditions will not occur in the actual environment where louvers must operate. The louver system should be designed with a reasonable safety factor for louver performance to ensure protection from water carryover, design with a performance level somewhat below maximum desired pressure drop and 0.01 oz./sq/ ft. of water penetration.



FREE AREA CHART FL-D-4

Height (H)	Width (W)																		
	300 mm	450 mm	600 mm	750 mm	900 mm	1050 mm	1200 mm	1350 mm	1500 mm	1650 mm	1800 mm	1950 mm	2100 mm	2250 mm	2400 mm	2550 mm	2700 mm	2850 mm	3000 mm
12 In.	0.33 ft ²	0.54 ft ²	0.74 ft ²	0.94 ft ²	1.15 ft ²	1.35 ft ²	1.55 ft ²	1.76 ft ²	1.96 ft ²	2.16 ft ²	2.36 ft ²	2.57 ft ²	2.77 ft ²	2.97 ft ²	3.18 ft ²	3.38 ft ²	3.58 ft ²	3.79 ft ²	3.99 ft ²
18 In.	0.03 m ²	0.05 m ²	0.06 m ²	0.08 m ²	0.10 m ²	0.12 m ²	0.14 m ²	0.15 m ²	0.17 m ²	0.19 m ²	0.21 m ²	0.23 m ²	0.24 m ²	0.26 m ²	0.28 m ²	0.30 m ²	0.32 m ²	0.33 m ²	0.35 m ²
30 In.	0.58 ft ²	0.93 ft ²	1.28 ft ²	1.64 ft ²	1.99 ft ²	2.34 ft ²	2.69 ft ²	3.04 ft ²	3.40 ft ²	3.75 ft ²	4.10 ft ²	4.45 ft ²	4.80 ft ²	5.16 ft ²	5.51 ft ²	5.86 ft ²	6.21 ft ²	6.56 ft ²	6.92 ft ²
450 mm	0.05 m ²	0.08 m ²	0.11 m ²	0.14 m ²	0.18 m ²	0.21 m ²	0.24 m ²	0.27 m ²	0.30 m ²	0.33 m ²	0.36 m ²	0.39 m ²	0.42 m ²	0.46 m ²	0.49 m ²	0.52 m ²	0.55 m ²	0.58 m ²	0.61 m ²
600 mm	0.07 m ²	0.12 m ²	0.16 m ²	0.21 m ²	0.25 m ²	0.29 m ²	0.34 m ²	0.38 m ²	0.43 m ²	0.47 m ²	0.52 m ²	0.56 m ²	0.61 m ²	0.65 m ²	0.69 m ²	0.74 m ²	0.78 m ²	0.83 m ²	0.87 m ²
750 mm	0.09 m ²	0.15 m ²	0.21 m ²	0.27 m ²	0.33 m ²	0.38 m ²	0.44 m ²	0.50 m ²	0.56 m ²	0.61 m ²	0.67 m ²	0.73 m ²	0.79 m ²	0.84 m ²	0.90 m ²	0.96 m ²	1.02 m ²	1.07 m ²	1.13 m ²
900 mm	0.12 m ²	0.19 m ²	0.26 m ²	0.33 m ²	0.40 m ²	0.47 m ²	0.54 m ²	0.61 m ²	0.68 m ²	0.75 m ²	0.83 m ²	0.90 m ²	0.97 m ²	1.04 m ²	1.11 m ²	1.18 m ²	1.25 m ²	1.32 m ²	1.39 m ²
1050 mm	0.14 m ²	0.22 m ²	0.31 m ²	0.39 m ²	0.47 m ²	0.56 m ²	0.64 m ²	0.73 m ²	0.81 m ²	0.90 m ²	0.98 m ²	1.06 m ²	1.15 m ²	1.23 m ²	1.32 m ²	1.40 m ²	1.49 m ²	1.57 m ²	1.65 m ²
1200 mm	0.16 m ²	0.26 m ²	0.36 m ²	0.45 m ²	0.55 m ²	0.65 m ²	0.75 m ²	0.84 m ²	0.94 m ²	1.04 m ²	1.14 m ²	1.24 m ²	1.33 m ²	1.43 m ²	1.53 m ²	1.63 m ²	1.72 m ²	1.82 m ²	1.92 m ²
1500 mm	0.20 m ²	0.33 m ²	0.45 m ²	0.58 m ²	0.70 m ²	0.82 m ²	0.95 m ²	1.07 m ²	1.20 m ²	1.32 m ²	1.44 m ²	1.57 m ²	1.69 m ²	1.82 m ²	1.94 m ²	2.06 m ²	2.19 m ²	2.31 m ²	2.44 m ²
1650 mm	0.23 m ²	0.36 m ²	0.50 m ²	0.64 m ²	0.77 m ²	0.91 m ²	1.05 m ²	1.19 m ²	1.32 m ²	1.46 m ²	1.60 m ²	1.74 m ²	1.87 m ²	2.01 m ²	2.15 m ²	2.28 m ²	2.42 m ²	2.56 m ²	2.70 m ²
1800 mm	0.25 m ²	0.40 m ²	0.55 m ²	0.70 m ²	0.85 m ²	1.00 m ²	1.15 m ²	1.30 m ²	1.45 m ²	1.60 m ²	1.75 m ²	1.90 m ²	2.05 m ²	2.20 m ²	2.35 m ²	2.51 m ²	2.66 m ²	2.81 m ²	2.96 m ²
1950 mm	0.26 m ²	0.42 m ²	0.58 m ²	0.74 m ²	0.90 m ²	1.06 m ²	1.22 m ²	1.38 m ²	1.53 m ²	1.69 m ²	1.85 m ²	2.01 m ²	2.17 m ²	2.33 m ²	2.49 m ²	2.65 m ²	2.81 m ²	2.97 m ²	3.13 m ²
2100 mm	0.28 m ²	0.46 m ²	0.63 m ²	0.80 m ²	0.97 m ²	1.15 m ²	1.32 m ²	1.49 m ²	1.66 m ²	1.84 m ²	2.01 m ²	2.18 m ²	2.35 m ²	2.53 m ²	2.70 m ²	2.87 m ²	3.04 m ²	3.22 m ²	3.39 m ²
2250 mm	0.30 m ²	0.49 m ²	0.68 m ²	0.86 m ²	1.05 m ²	1.23 m ²	1.42 m ²	1.60 m ²	1.79 m ²	1.98 m ²	2.16 m ²	2.35 m ²	2.53 m ²	2.71 m ²	2.90 m ²	3.08 m ²	3.26 m ²	3.44 m ²	3.62 m ²
2400 mm	0.33 m ²	0.53 m ²	0.72 m ²	0.92 m ²	1.12 m ²	1.32 m ²	1.52 m ²	1.72 m ²	1.92 m ²	2.12 m ²	2.32 m ²	2.52 m ²	2.71 m ²	2.90 m ²	3.09 m ²	3.28 m ²	3.47 m ²	3.66 m ²	3.85 m ²
2550 mm	0.35 m ²	0.56 m ²	0.77 m ²	0.99 m ²	1.20 m ²	1.41 m ²	1.62 m ²	1.83 m ²	2.05 m ²	2.26 m ²	2.47 m ²	2.68 m ²	2.90 m ²	3.11 m ²	3.32 m ²	3.53 m ²	3.74 m ²	3.95 m ²	4.16 m ²
2700 mm	0.37 m ²	0.60 m ²	0.82 m ²	1.05 m ²	1.27 m ²	1.50 m ²	1.72 m ²	1.95 m ²	2.17 m ²	2.40 m ²	2.63 m ²	2.85 m ²	3.08 m ²	3.30 m ²	3.53 m ²	3.76 m ²	3.99 m ²	4.22 m ²	4.45 m ²
2850 mm	0.39 m ²	0.63 m ²	0.87 m ²	1.11 m ²	1.35 m ²	1.59 m ²	1.82 m ²	2.06 m ²	2.30 m ²	2.54 m ²	2.78 m ²	3.02 m ²	3.26 m ²	3.50 m ²	3.74 m ²	3.98 m ²	4.22 m ²	4.46 m ²	4.70 m ²
3000 mm	0.41 m ²	0.67 m ²	0.92 m ²	1.17 m ²	1.42 m ²	1.67 m ²	1.93 m ²	2.18 m ²	2.43 m ²	2.68 m ²	2.93 m ²	3.19 m ²	3.44 m ²	3.69 m ²	3.94 m ²	4.19 m ²	4.44 m ²	4.69 m ²	4.94 m ²

--- Louvers will be manufactured in multi-section configuration for these highlighted sizes.



Central Ventilation Systems certifies that FL-D-4 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.

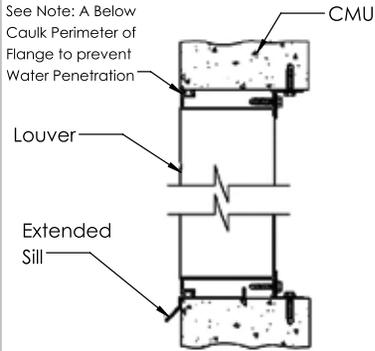
The AMCA Certified Ratings Seal applies to Air Performance and Water Penetration ratings.



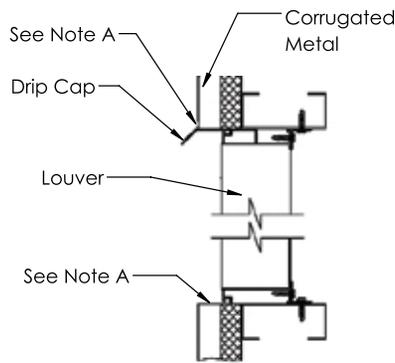


Louver Installation Instructions

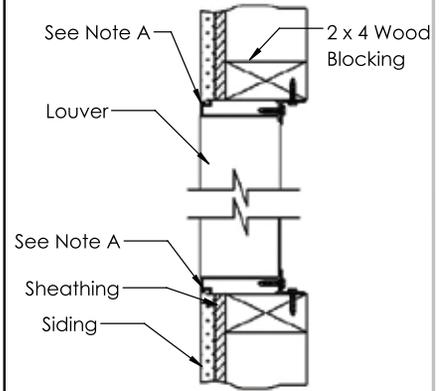
Masonry Wall



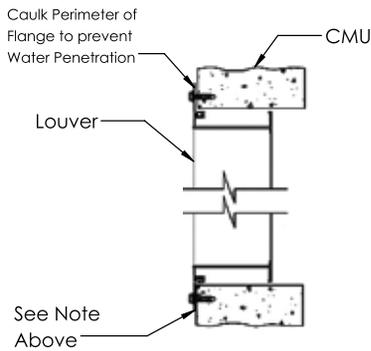
Metal Panel Wall



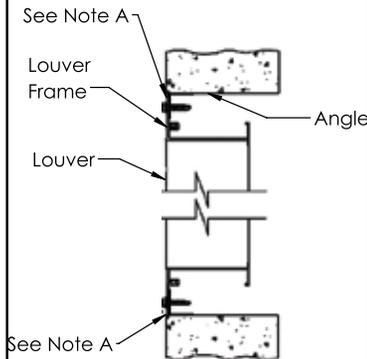
Wood Installation



Flange Mount

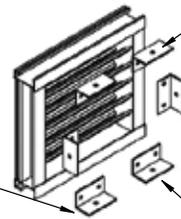


Angle Subframe



Suggested are (2) 7/32" diameter holes & (2) #10 x 5/8" sheet metal screws for angle attachment to louver. Not by CVS

To prevent corrosion, apply heavy coating of bituminous paint on any surface in contact with concrete, masonry or dissimilar metals

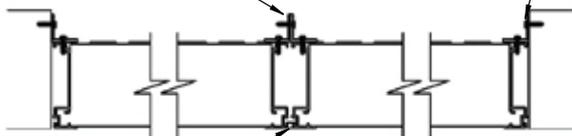


Holes for attachment to wall conditions drilled in field by customer. Anchor for your specific installation not supplied by CVS

Multi-Section Assembly / Plan View

Attach Louver Sections together with vertical angles or angle clips and min. #10sms, placed 12" max. o.c., $\Phi 3/8"$ thru bolts may also be used. Not Supplied by CVS

Holes for attachment to wall conditions drilled in field by customer. Anchors for your specific installation not supplied by CVS

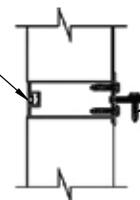


See Note A

Multi-Section Assembly / Elevation View

Optional: Attach louver sections together with horizontal angles or angle clips and min. #10 sms, placed 12" max. o.c., $\Phi 3/8"$ thru bolts may also be used. Not Supplied by CVS

See Note A



Note A: After the louver is secured to the substrate, install backer rod and caulking (not provided by CVS) around the perimeter of the louver to the substrate and at section joints where possible. If mullion strips are provided, place caulk behind mullion strip (if possible) before attaching. If mullion strips already installed, apply a small bead where it touches the louver. Due to continuing research, **Central Ventilation Systems (CVS)** reserves the right to change specifications without notice.

Product Range

- ▶ Fire-Resisting Ductwork (BS & EN)
- ▶ Fire-rated Insulation (ASTM & UL)
- ▶ Sound Attenuators (ASTM & BS)
- ▶ VAV Boxes (AHRI)
- ▶ Life Safety Dampers (UL)
- ▶ Control Dampers (AMCA & BS)
- ▶ Access Doors (BS & EN)
- ▶ Louvers (AMCA)
- ▶ Smoke Exhaust, Building, Car Park & Tunnel Ventilation Fans (AMCA & EN)
- ▶ Domestic and Industrial Ventilation Fans
- ▶ AHU, FAHU, FCU, RTU, ERV & Ecology Units (Eurovent, TUV & AHRI)
- ▶ Electrostatic Precipitators (ESPs) & UL Listed Air Filters (UL)

Our Brands



Non-Coated Fire-Resisting Ductwork
& Life Safety Dampers



Coated Fire-Resisting
Ductwork



Control Dampers, Louvers,
Sound Attenuators & VAV Boxes



Fire-rated Insulation

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