10200/ARR
Buyline 4822

ARROW LOUVERS

The Preferred Line

PUBLICATION 697–03

ARROW
LOUVERS

Arrow Louvers are custom-built, quality assemblies manufactured to meet your design specifications. Our louvers are constructed of extruded aluminum, steel, and a variety of materials to meet the varying demands of your specific ventilation application. To blend in with your design, we can provide nearly any louver finish that is desired.

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HIGH PERFORMANCE LOUVERS

Arrow is proud to introduce louver models that combine pleasing architectural features with excellent performance.

These models all are licensed to bear the AMCA seal for the certified ratings of air and water penetration.

Arrow United offers the most complete product line of architectural louvers to meet all of your needs.

ARCHITECTURAL LOUVERS

Arrow Louvers are custom-built, quality assemblies manufactured to meet your specifications.

The most popular and most frequently specified, high performance louvers are shown on the following pages.

Our louvers are constructed of extruded aluminum, steel, and a variety of materials to meet the varying demands of each specific ventilation system application.

We can provide nearly any louver finish that is desired.

QUALITY / PERFORMANCE / RELIABILITY

For over 40 years, Arrow Louvers have been satisfying the needs and demands of architects and engineers.

Working closely with these architects and engineers has given us a wealth of experience that allows Arrow to perform at increasingly high standards and dependability.

Our engineering staff will be glad to provide you with design and layout assistance for any application.

AMCA

Arrow United Industries is an active member of the Air Movement and Control Association.

AMCA Certified and Rated Louvers depicted in this brochure were tested in accordance with the latest AMCA Publication 511.

CAPABILITIES

The information in this publication includes the most often used louvers. Arrow has the capability and expertise to meet any “custom” requirement that you may need.

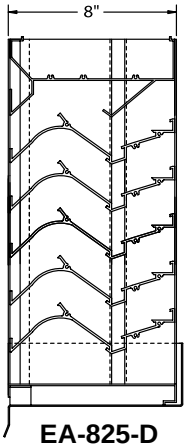
In order to conform to AMCA requirements, we refer throughout the catalog to types of blade configurations as “Baffle” and “Standard.” Formerly, Baffle blades were known as “K,” “Stormproof,” etc. and Standard blades were known as “J,” “Weatherproof,” etc.

ARROW
The Preferred Line

High Performance Model

Horizontal Storm Louver - For Wind Driven Rain

Model EA-825-D – 8 Inches Deep



EA-825-D

LOUVER PERFORMANCE STATEMENT

Louver Model EA-825-D shall be fabricated to provide a minumum of (56.3%), 9.01 square feet of free area for a 48" x 48" size louver. This louver shall have a water penetration classification “A”, for 1m x 1m size, when tested for wind driven rainfall at 29 mph at an intake velocity of 888 FPM with 3" of rainfall.

High Performance Model

Horizontal Storm Louver - For Wind Driven Rain

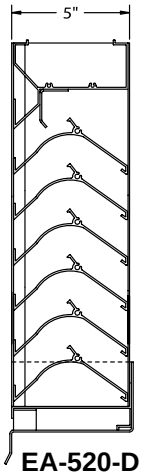
Model EA-520-D – 5 Inches Deep

LOUVER PERFORMANCE STATEMENT

Louver Model EA-520-D for a size 1m x 1m (39.37" x 39.37") core area, 41.99" x 44.18" nominal. Shall have a free area 6.62 square feet, and shall have the following performance.

WIND VELOCITY MPH	RAINFALL RATE IN./HR.	CORE AREA VELOCITY FPM	AIRFLOW CFM	FREE AREA VELOCITY FPM	EFFECTIVENESS RATIO	CLASS	DISCHARGE LOSS COEFFICIENT CLASS INTAKE
29	3"	489	5266	795	99%	A	3

This Product Is AMCA Licensed



EA-520-D

High Performance Model

Vertical Storm Louver - For Wind Driven Rain

Model EA-662-VSL – 6 Inches Deep

Model EA-662-VSL
This louver model is available in custom sizes and a variety of architectural finishes.

LOUVER PERFORMANCE STATEMENT

Louver Model EA-662-VSL shall be fabricated to provide a minimum of (53%), 8.51 square feet of free area for a 48" X 48" size Louver and bear the AMCA Certified Ratings Seal for air performance, water penetration and wind driven rain. The ratings shall show a beginning point of water penetration at .01 ounces per square foot of free area to be above 1250 FPM. (10,638) cubic feet per minute, with .103 inches water gauge pressure drop at 1000 FPM air intake, and at a 1m x 1m (39.37" x 39.37"). Core area 41.99" x 44.18" nominal free area of 6.0 square feet and the following performance.

WIND VELOCITY MPH	RAINFALL RATE IN./HR.	CORE AREA VELOCITY FPM	AIRFLOW CFM	FREE AREA VELOCITY FPM	EFFECTIVENESS RATIO	CLASS	DISCHARGE LOSS COEFFICIENT CLASS INTAKE
29	3"	689	7422	1237	100%	A	1
50	8"	687	7396	1233	98.7%	B	1

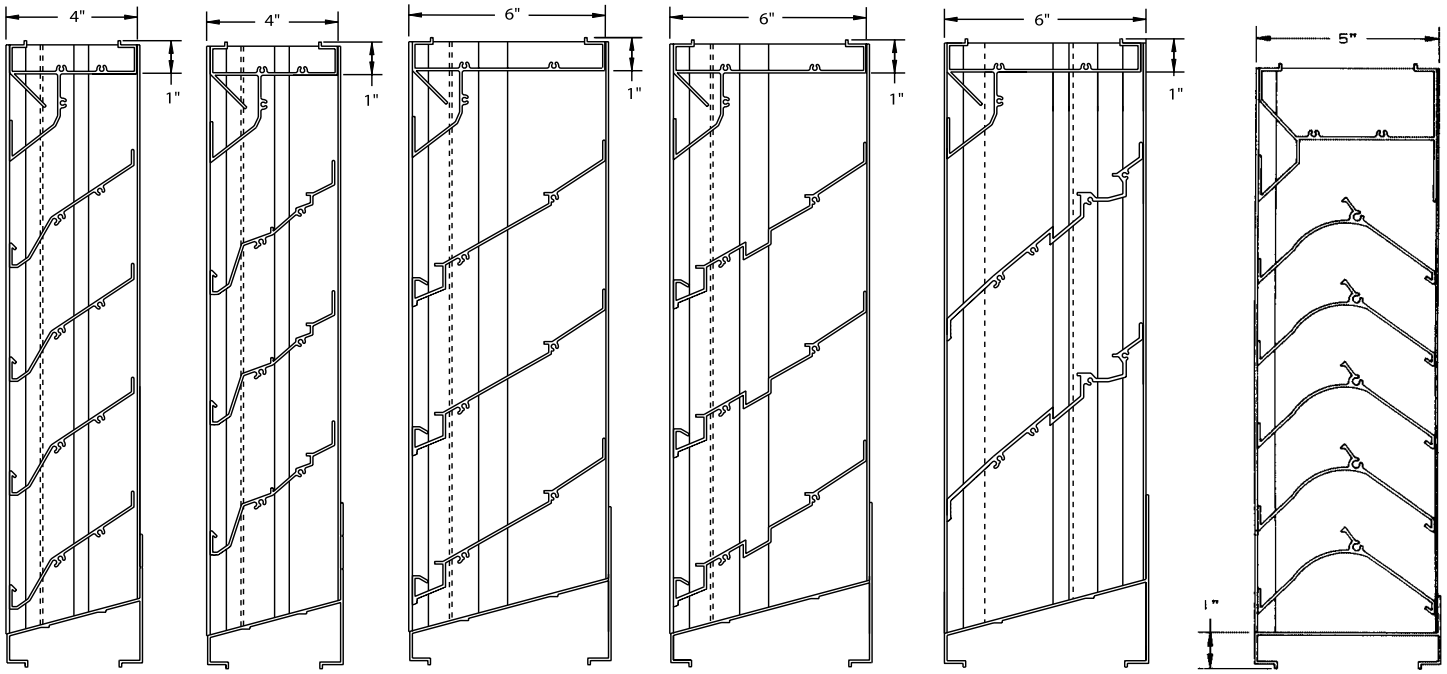
This Product Is AMCA Licensed

In addition, this Louver is also tested to the “Building Services Research And Information Association” (BSRIA) and certified to the requirements contained in the 5th edition of the HEVAC Technical Specifications, “Laboratory testing and ratings of weather louvers when subjected to simulated wind driven rain”. The certified rating for this Louver shall show a class “A” rating at a wind speed of 30.2 MPH at an intake velocity of 1435 FPM with 2.95 inches of rainfall having a coefficient of discharge or entry of .419, class 1 rating.

STATIONARY EXTRUDED ALUMINUM DRAIN LOUVERS

High Performance Models

10200/ARR
Buyline 4822



EA-415-D **EA-425-DD** **EA-615-D** **EA-625-DD** **EA-640-DR** **EA-522-D**

SUGGESTED SPECIFICATIONS:

Material shall be extruded aluminum of 6063-T52 alloy. Blades and frame to be minimum .081" or .125" thick. Blades to be drainable type with troughs designed to drain off water into hidden downspouts at jambs and mullions. Visible mullions required for louver widths above 96". Full head and sill with blades and jamb contained within. All fasteners to be stainless steel or aluminum. All louvers furnished with ½" flattened aluminum .051" birdscreen. Louvers are furnished in mill finish.

For finishes, screens and colors, see Design & Construction Features.

SUGGESTED LOUVER PERFORMANCE SPECIFICATION:

Louver Model __ shall be fabricated to provide a minimum of (__ %) __ square feet of free Area for a 48" by 48" louver size, and bear the AMCA certified ratings program seal for air performance and water penetration. The rating shall show a beginning point of water penetration at .01 ounces per square foot of free area at a free area velocity of __ feet per minute, (__) cubic feet per minute with __ inches water gauge pressure drop for air intake at __feet per minute free area velocity.

LOUVER PERFORMANCE (48" x 48" SIZE)

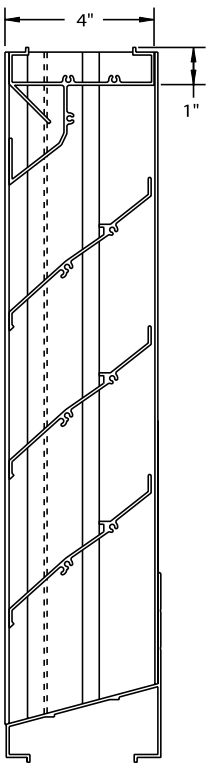
MODEL	BLADE STYLE	BLADE ANGLE	FRAME DEPTH	BLADE SPACING	FREE AREA SQ. FT.(%)	MAX. FREE AREA VELOCITY	WATER PENETRATION (OZ. PER SQ. FT.)	AIR FLOW (CFM)	INTAKE PRESS. DROP @1000 FPM
EA-415-D	DRAIN	37°	4"	3½"	9.07(57%)	1071	.01	9,714	.14
EA-425-DD	DRAIN	45°	4"	4"	8.37(52%)	1075	.01	8,998	.14
EA-615-D	DRAIN	42°	6"	4½"	8.97(56%)	1250	.01	11,213	.12
EA-625-DD	DRAIN	42°	6"	4½"	8.91(56%)	1250	.01	11,138	.12
EA-640-DR	DRAIN	45°	6"	5⅜"	8.40(53%)	1223	.01	10,273	.14
EA-522-D	DRAIN	43°	5"	2¼"	9.06(57%)	1130	.01	10,238	.45

amca CERTIFIED RATINGS
WATER PENETRATION
AIR PERFORMANCE
AIR MOVEMENT AND CONTROL ASSOCIATION, INC.

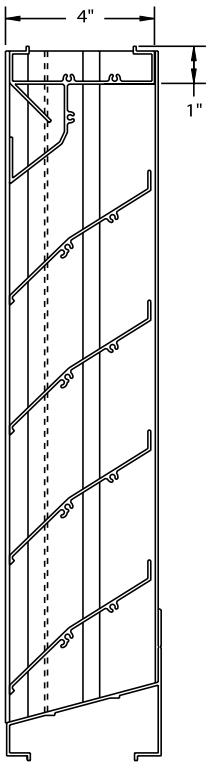
Arrow United certifies that Models EA-415-D, EA-425-DD, EA-615-D, EA-625-DD, EA-522-D, EA-640-DR louvers shown herein are licensed to bear the AMCA Seal. The ratings shown are based on tests made in accordance with the AMCA Standard 500 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to air performance ratings and water penetration ratings.

ARROW
The Preferred Line

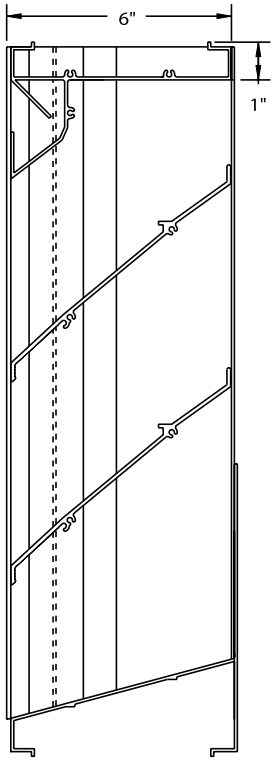
HIGH PERFORMANCE MODELS



EA-405



EA-410



EA-605

SUGGESTED SPECIFICATIONS:

Material shall be extruded aluminum of 6063-T52 alloy. Blades and frame to be minimum .081" or .125" thick. Visible mullions required for louver widths above 96". Full head and sill with blades and jamb contained within. All fasteners to be stainless steel or aluminum. All louvers furnished with ½" flattened aluminum .051" bird screen. Louvers are furnished in mill finish.

For finishes, screens and colors, see Design & Construction Features.

SUGGESTED LOUVER PERFORMANCE SPECIFICATION:

Louver Model __ shall be fabricated to provide a minimum of (__ %) __ square feet of free Area for a 48" by 48" louver size, and bear the AMCA certified ratings program seal for air performance and water penetration. The rating shall show a beginning point of water penetration at .01 ounces per square foot of free area at a free area velocity of __ feet per minute, (__) cubic feet per minute with __ inches water gauge pressure drop for air intake at __ feet per minute free area velocity.

LOUVER PERFORMANCE (48" x 48" SIZE)

MODEL	BLADE STYLE	BLADE ANGLE	FRAME DEPTH	BLADE SPACING	FREE AREA SQ. FT.(%)	MAX. FREE AREA VELOCITY	WATER PENETRATION (OZ. PER SQ.FT.)	AIR FLOW (CFM)	INTAKE PRESS. DROP @1000 FPM
EA-405	J/K	45°	4"	4"	9.02 (56%)	932	.01	8,407	.15
EA-410	J	37°	4"	3½"	9.16 (57%)	876	.01	8,024	.13
EA-605	J/K	45°	6"	5⅜"	8.73 (55%)	1093	.01	9,542	.13

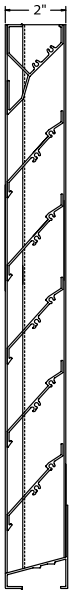
amca CERTIFIED RATINGS WATER AIR AIR MOVEMENT AND CONTROL ASSOCIATION INC.

Arrow United certifies that Models EA-405, EA-410, EA-605, louvers shown herein are licensed to bear the AMCA Seal. The ratings shown are based on tests made in accordance with the AMCA Standard 500 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to air performance ratings and water penetration ratings.

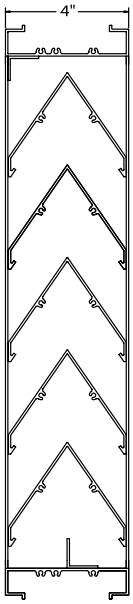
10200/ARR
Buyline 4822

SPECIAL APPLICATION LOUVERS

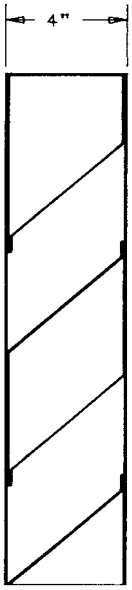
EA-150



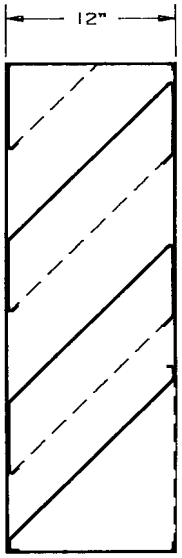
EA-200



C-33



FS-401 (LF/HF)



ACOUSTICAL LOUVER
AC-482-12

SUGGESTED SPECIFICATIONS:

Material shall be extruded aluminum of 6063-T52 alloy. Blades and frame to be minimum .063", or .081", thick. Visible mullions required for louver widths above 48". Full head and sill with blades and jamb contained within. All fasteners to be stainless steel or aluminum. All louvers furnished with ½" flattened aluminum .051" bird screen. Louvers are furnished in mill finish.

NARROW PROFILE TYPES

MODEL	BLADE STYLE	BLADE ANGLE	FRAME DEPTH	BLADE SPACING	FREE AREA SQ. FT. (%) 48"x 48"
EA-150	K	30°	1½"	1½"	7.4 (46%)
EA-200	K	45°	2"	2⅞"	7.2(45%)

SIGHTPROOF TYPES

MODEL	BLADE STYLE	BLADE ANGLE	FRAME DEPTH	BLADE SPACING	FREE AREA SQ. FT. (%) 48"x 48"
C-33	V	HOR. OR VERT.	4"	3"	5.6 (35%)
Y-27	Y	HOR. OR VERT.	4"	3"	3.8 (24%)

ACOUSTICAL LOUVERS

SUGGESTED SPECIFICATIONS:

Frame shall be 4" deep, channel or flange type, 16 gauge galvanized steel.

Blades shall be 18 gauge galvanized steel, be a fixed 45° angle, with 22 gauge galvanized perforated steel interior surface.

Blades shall be filled with sound insulation. Screen shall be provided as ½" square mesh, galvanized 19 gauge. Finish to be mill.

The Arrow model FS-401 acoustical louver low frequency and high frequency sound performance data is presented in two different tables. Review the appropriate table and select the attenuation value for the design noise criteria corrective action required.

MODEL FS-401-LF (Low Frequency)

OCTAVE BAND / FREQUENCY	1 / 63	2 / 125	3 / 250	4 / 500	5 / 1000	6 / 2000	7 / 4000	8 / 8000
FREE FIELD OF NOISE REDUCTION (db)	12	14	12	12	9	11	13	15

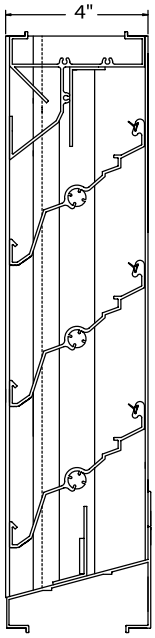
MODEL FS-401-HF (High Frequency)

OCTAVE BAND / FREQUENCY	1 / 63	2 / 125	3 / 250	4 / 500	5 / 1000	6 / 2000	7 / 4000	8 / 8000
FREE FIELD OF NOISE REDUCTION (db)	8	7	9	10	14	16	16	18

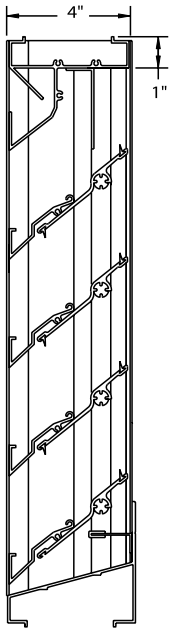
ARROW
The Preferred Line

ADJUSTABLE/COMBINATION EXTRUDED ALUMINUM LOUVERS

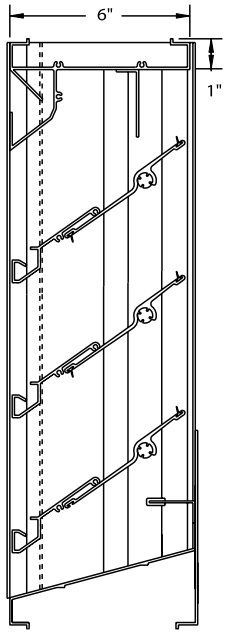
DRAIN TYPES



EA-450-D

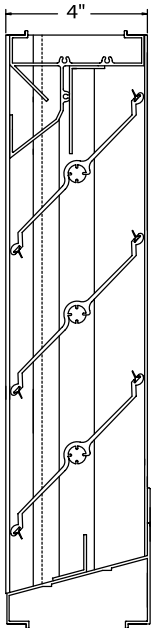


EA-480-D

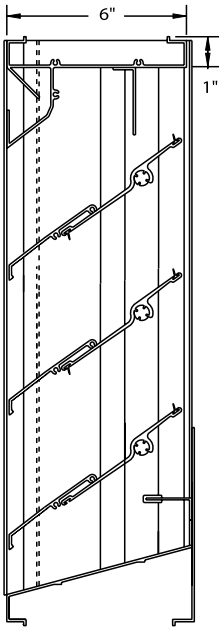


EA-680-D

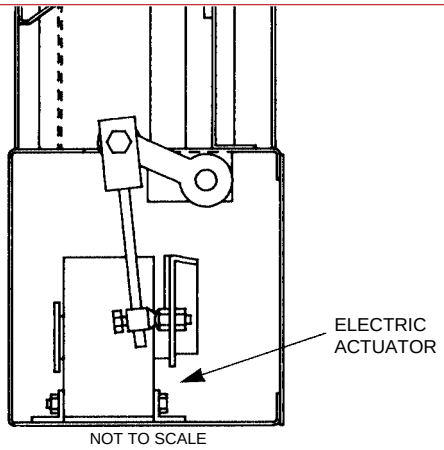
STANDARD TYPES



EA-444



EA-681



"CONCEALED ACTUATOR" OPTION

These adjustable and combination (adjustable and stationary) louvers with drainable blades offer efficient control of air flow combined with maximum weather protection.

SUGGESTED SPECIFICATIONS: EXTRUDED ALUMINUM CONSTRUCTION

Blades shall be drainable (with troughs), with hidden downspouts at jambs and mullions. Full head and sills with blades and jamb contained within. ½" dia. extruded aluminum axles of PinLock design with Double-Sealed bearings. Operating linkage concealed in channel and out of air stream. All fasteners to be stainless steel or aluminum. All louvers furnished with ½" flattened aluminum .051" bird screen. Maximum single panel size is 48"w x 96"h. Standard finish is mill. For optional operators, see Design & Construction Features.

OPERATORS

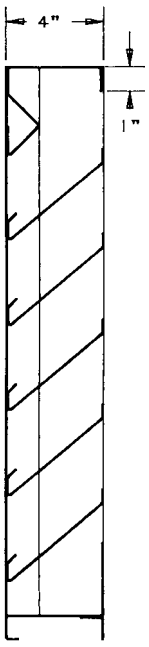
Many types are available—from simple, manual locking quadrants to rack-and-pinion gear operators, electric, pneumatic, commercial and industrial actuators.

LOUVER PERFORMANCE (48" x 48" SIZE)

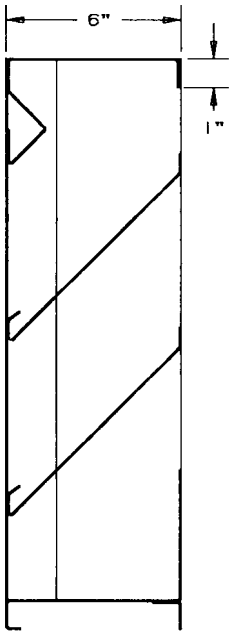
	MODEL	BLADE STYLE	BLADE ANGLE	FRAME DEPTH	BLADE SPACING	FREE AREA SQ. FT.(%)	MAX. FREE AREA VELOCITY (FPM)	WATER PENETRATION (OZ. PER SQ. FT.)	AIR FLOW (CFM)	INTAKE PRESS.DROP
COMBINATION TYPE AMCA LICENSED	EA-680-D	DRAIN	35°	6"	4½"	8.24(52%)	1029	.01	8,479	.11
	EA-681	J	35°	6"	4½"	8.38(52%)	981	.01	8,221	.12
	EA-480-D	DRAIN	35°	4"	3½"	8.36(52%)	994	.01	8,310	.14

HIGH PERFORMANCE MODELS

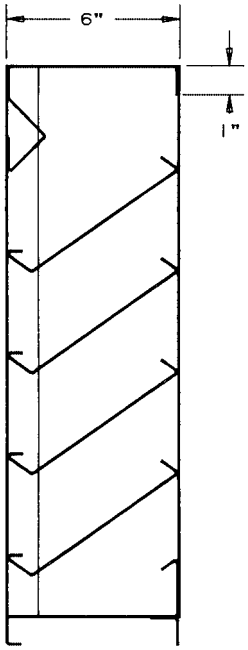
DRAIN TYPE



FS-406-D

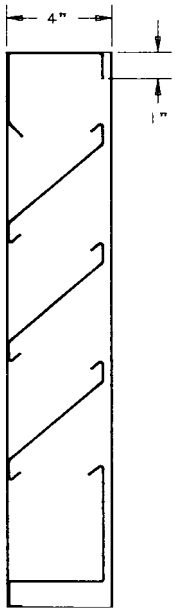


FS-606-D

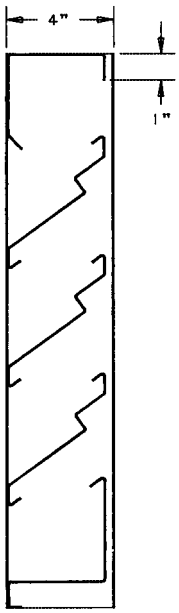


FS-615-D

STANDARD TYPE



FS-400



FS-405

SUGGESTED SPECIFICATIONS: (DRAIN TYPE)

Material shall be a minimum of 18 ga. galvanized steel. Frames shall be Channel Type or Flange Type. Blades to be drainable type with troughs designed to drain off water into hidden downspouts at jambs and mullions. Mullions shall be standard jambs with a mullion cover plate. Full head and sill with blades and jamb contained within. Louvers shall be mechanically fastened and/or welded for maximum service. Louvers shall be furnished with ½", 19 ga. galvanized mesh bird screen secured to louver with removable frame of same material. Louvers shall have mill galvanized finish.

LOUVER PERFORMANCE (48" x 48" SIZE)

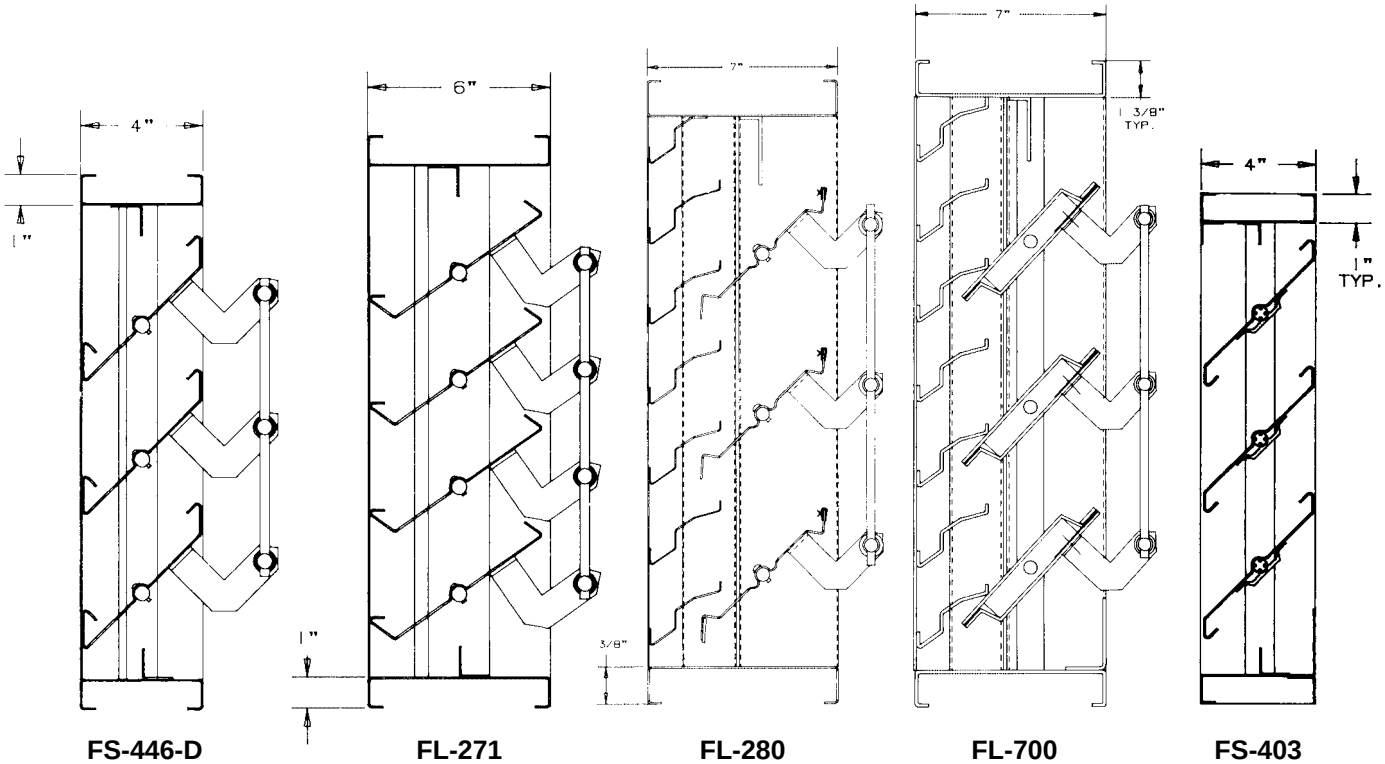
MODEL	BLADE STYLE	BLADE ANGLE	FRAME DEPTH	BLADE SPACING	FREE AREA SQ. FT.(%)	MAX. FREE AREA VELOCITY (FPM)	AIR FLOW (CFM)	INTAKE PRESS.DROP (IN.)	WATER PENETRATION (OZ. PER SQ. FT.)
FS-406-D	DRAIN	45°	4"	4"	8.0(50%)	987	7896	.13	.01
FS-606-D	DRAIN	45°	6"	6"	8.31(52%)	952	7911	.14	.01
FS-615-D	DRAIN	35°	6"	3½"	8.84(55%)	1250	11,050	.14	.01
FS-400	J	45°	4"	4⅛"	8.1(51%)	614	4,980	.07	.01
FS-405	K	45°	4"	4⅛"	8.25(52%)	643	5305	.07	.01

amca CERTIFIED RATINGS — WATER PENETRATION — AIR PERFORMANCE — AIR MOVEMENT AND CONTROL ASSOCIATION, INC.

Arrow United certifies that models. FS-406-D, FS-606-D, FS-615-D, FS-400, FS-405 louvers shown herein are licensed to bear the AMCA Seal. The ratings shown are based on tests made in accordance with the AMCA Standard 500 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to air performance ratings and water penetration ratings.

ARROW
The Preferred Line

ADJUSTABLE/COMBINATION FORMED METAL DRAIN LOUVERS



FS-446-D **FL-271** **FL-280** **FL-700** **FS-403 (Non-Drain Type)**

These formed metal adjustable louvers with drainable blades offer efficient control of air flow with maximum weather protection. Formed metal louvers are available in galvanized steel, stainless steel, copper and other materials and gauges.

SUGGESTED SPECIFICATIONS:

Material shall be a minimum of 18 ga. galvanized steel. Frames shall be Channel Type or Flange Type. Blades to be drainable type with troughs designed to drain off water into hidden downspouts at jambs and mullions. Full head and sill with blades and jamb contained within. ½" dia. plated steel axles, with Chevron type bracket. Louvers to be mechanically fastened and/or welded for maximum service. Bearings are the bronze oilite, self-lubricating type. Louvers shall be furnished with ½",19 ga. galvanized mesh bird screen secured to louver with removable frame of same material. Standard finish is galvanized mill.

OPERATORS:

Many types are available—from simple manual locking quadrants to rack-and-pinion gear operators, electric, pneumatic, commercial and industrial actuators.

MODEL FS-446-D
ADJUSTABLE - 4" DEEP.

Formed metal adjustable louver, 45° drainable type. Formed metal louvers are available in galvanized steel, stainless steel and other materials and gauges.

MODEL FL-271
ADJUSTABLE - 6" DEEP.

Formed metal adjustable louvers, 35° drainable offer efficient control of air flow with maximum weather protection. Formed metal louvers are available in galvanized steel, stainless steel and other materials and gauges.

MODEL FL-280
COMBINATION - 7" DEEP (35° BLADE ANGLE).

Material can be galvanized steel, stainless steel, and other materials and gauges.

MODEL FL-700
COMBINATION - INSULATED / ACOUSTICAL BLADE - 7" DEEP (35° BLADE ANGLE)

This combination louver provides good free area, low water penetration with an adjustable insulated blade that can provide a thermal barrier and acoustical efficiency.

MODEL FS-403
ADJUSTABLE - 4" DEEP FORMED METAL NON-DRAIN - 45° TYPE

Used for standard ventilation applications.

DESIGN AND CONSTRUCTION FEATURES

MATERIAL

Extruded aluminum is the preferred metal because of its durable quality and adaptability to a wide range of finishes and colors.

Formed metal of galvanized steel is comparable in performance yet lower in cost and is an attractive alternative. In addition, louvers may be fabricated from other materials. All fabricated metal louvers have welded construction for maximum durability

FINISHES

Standard finish is mill. However, in many applications, a protective finish is required. The finishes listed below vary in cost and durability so it is important to take environmental conditions into consideration. The most popular finishes are listed below:

- PRIME COAT: a bonding agent required before application of a finished coat.
- CLEAR LACQUER: a protective coat on etched or anodized finishes.
- ETCHING: provides a flat matte appearance.
- CLEAR ANODIZE: provides a hard, dense surface with a satin appearance. Available in .4 mil (204-R1) or .7 mil (215-R1).
- DURANODIC: a superior anodized finish. Affords maximum protection. .7 mil thickness. Available in Bronze or Black.
- BAKED ENAMEL: a hard finish. Economical and long lasting.
- FLUOROPOLYMER (with Kynar®): a superior coating, extremely flexible and color fast. Available in a wide range of architectural colors.

STANDARD SCREENS

Extruded aluminum louvers are furnished with ½" flattened aluminum .051" bird screen.

Formed metal louvers are furnished with ½" sq. mesh, 19 ga. galvanized screen.

Frames are made of either extruded aluminum or formed metal, usually fastened to the inside of louvers and easily removable for cleaning.

Other screen types available are listed below:

- ½" sq. mesh, 16 ga. (.063") aluminum, galvanized or stainless steel.
- ½" sq. mesh, 12 ga. (.081") aluminum.
- Insect screen 18/14 (.011") bronze.
- Insect screen 18/16 (.011") aluminum.

PANELS

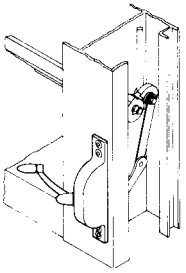
Aluminum Blank-off Panels (.051") and Sandwich Insulation Panels (.051",1"and 2" thick) aid in sealing off inactive areas in a louver system in addition to meeting insulation requirements.

OPERATORS

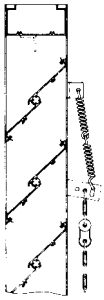
Many types are available - from simple, manual locking quadrants to rack-and-pinion gear operators, electric, pneumatic, commercial and industrial actuators.

Amoung the most commonly used manual operators are:

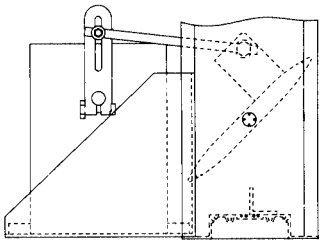
- Model 0-24: for hand crank operations.
- Model 0-18: chain operated (with spring closure and fusible link) for out-of-reach locations.
- Model 0-81: for mounting on power units or remote mitered gear box units (not shown).



Model 0-24



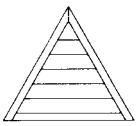
Model 0-18

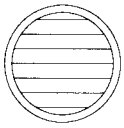


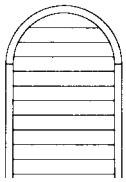
Electrical Actuator and "L" Brackets

CUSTOM SHAPES

All stationary louvers can be furnished in circular, semi-circular, triangular and other geometric shapes. For information on custom applications, write factory with specific requirements.



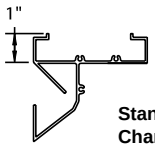




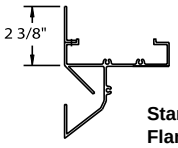
LOUVER ACCESSORIES

Louvers are fabricated ½" smaller in width and height (unless specified otherwise) to allow for installation clearances.

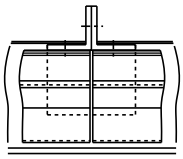
Channel or Flange Type framed louvers are available with mullions of the sliding interlocking type or with hidden mullions for continuous horizontal or vertical blade-line.



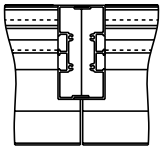
Standard Head Channel Frame



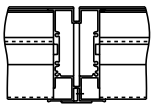
Standard Head Flanged Frame



Drain Pan Under Continuous Line Hidden Mullions

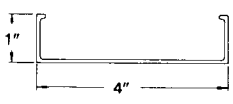


Concealed Mullions

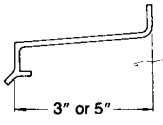


Visible Mullions

Sub-frames and extended sub-sills are used to accommodate ususual opening conditions. 3" or 5", standard sub-sills (.125" thick) and standard subframes (.081" thick) are furnished in extruded aluminum of 6063-T52 alloy. Other materials and gauges are available on special order.



Sub-Frames



Extended Sub-Frames

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