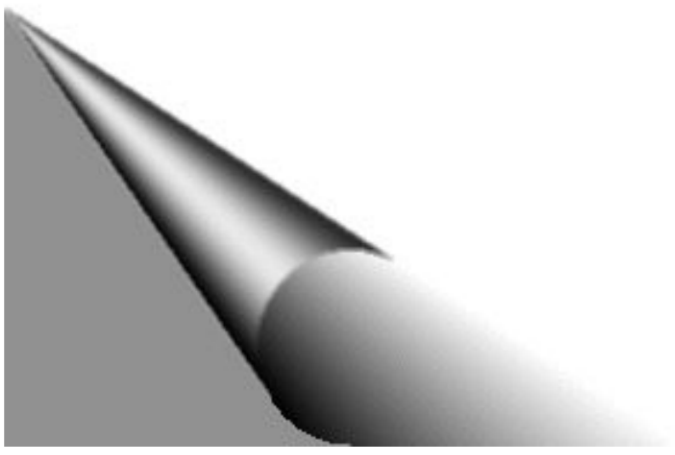
TENPLUS

TEN PLUS ARCHITECTURAL

Louvers • Sunshades • Vision Screens

InterCoast
BUILDING SOLUTIONS



OUR COMMITMENT

TEN Plus owes its success to the simple business philosophy of providing quality products, great service, and an unwavering commitment to customer satisfaction.

We accomplish our goals by investing in people and technology. We strive to improve productivity and optimize the use of our resources through investment in state-of-the-art equipment, training and the use of innovative design principles. Rigorous quality control and workplace safety practices ensure the well-being of our employees and business partners.

Our technical representatives possess comprehensive louver knowledge and extensive field experience. Each one is capable of assisting you through the design and engineering stage, as well as overcoming the unforeseen field conditions.

We trust that this catalogue will prove to be a useful aid and resource to selecting your louvers, sunshades and vision screens. However, should you have any questions or unique conditions requiring greater detail, please feel free to call us for assistance. Our staff is attentive to your needs and eager to serve you. We look forward to your call.

Ten Plus Architectural Products Ltd. 26 – 6535 Millcreek Drive, Mississauga, ON L5N 2M2
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NOTE: Although great care has been taken in the production of this catalogue, illustrative or copy errors may occur. TEN Plus Architechtural Products Ltd. assumes no liability for any errors contained herein. This publication supercedes all prior technical, policy, and print data. Specifications subject to change without notice.

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LOUVER SELECTION CHART

EXTRUDED ALUMINUM LOUVERS + VISION SCREENS

Model	Classification	Depth	Min. Height	AMCA Air Performance Certification	AMCA Water Performance Certification	AMCA Wind Driven Rain Certification
G1384	Door grille	1-3/8" - 1-3/4" (35 - 45mm)	6" (152mm)	-	-	-
B4450	Block vent	4" (102mm)	4" (102mm)	-	-	-
H2451	Storm blade	2" (52mm)	12" (305mm)	-	-	-
H4451	Storm blade	4" (102mm)	18" (457mm)	Yes	Yes	-
V4454	Sight proof	4" (102mm)	18" (457mm)	-	-	-
D4493	Drainable	4" (102mm)	18" (457mm)	Yes	Yes	-
H4451	Louvered Penthouse	4" (102mm)	18" (457mm)	Yes	Yes	-
S4522	Vision screen	4" (102mm)	18" (457mm)	-	-	-
V4454	Vision screen	4" (102mm)	18" (457mm)	-	-	-
R5455	Storm resistant	5" (127mm)	18" (457mm)	Yes	Yes	Yes
H6451	Storm blade	6" (152mm)	18" (457mm)	Yes	Yes	-
D6403	Drainable	6" (152mm)	18" (457mm)	Yes	Yes	-
S6452	Vision screen	6" (152mm)	18" (457mm)	-	-	-
A6457	Acoustical	6" (152mm)	18" (457mm)	-	-	-
R7355	Storm resistant	7" (178mm)	18" (457mm)	Yes	Yes	Yes
A8457	Acoustical	8" (203mm)	18" (457mm)	-	-	-
A12457	Acoustical	12" (305mm)	18" (457mm)	-	-	-

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LOUVER SELECTION GUIDELINES

FREE AREA

Free area is the unobstructed area of a louver through which air can pass freely. The free area and total volume of air will determine the velocity of air through the louver. The free area velocity determines the size of the louver based on design constraints such as static pressure drop and water penetration.

SIZING LOUVERS

To choose the correct louver size, please use the following steps:

- Determine which louver would be best suited for the applicati on.
- Determine the total volume of air (Cubic Feet per Minute or C FM) that will pass through the louver.
- Determine the most important design criteria, by choosing from a, b or c:
  - a) Not to allow water to penetrate the louver. If water penetration is the most important design criteria, then use a velocity less than that shown on the water penetration chart.
  - b) Not to exceed a determined static pressure drop. If static pressure drop is the most important design criteria, then use a velocity equal to that shown on the pressure drop chart.
  - c) If both are equally important, use the lower of the two velocities.
- To determine the total free area required, divide the volume of air (CFM) by the velocity through the free area (FPM).
- Match the free area required to the free area chart of the chosen louver. This will determine the overall dimensions of the louver required.

Feel free to call us for assistance on proper louvre sizing.

DRAINABLE LOUVERS

Drainable louvers are designed to collect the water that flows down each individual blade face and disperse the water through spouts in the mullions and jambs.

Drainable louvers are effective only when the blades and drainage spouts are free of debris. They should be checked regularly and cleaned when necessary, to ensure they continue to perform well. To benefit from their performance, drainable louvers should never be specified as continuous line louvers. The design of the louver system requires that the collected water be diverted from the face of each blade. By eliminating the visible mullions on a large span of d rainable louvers, it is possible for water to collect in the gu tters and overflow. This overflow, cascades down the face of the louver and may be sucked into the fans and mechanical systems behind the louver.

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ACCESSORIES

AVAILABLE ACC ESSORIES

- Custom louver shapes available
- Flanged frames
- Frames with glazing adaptor for curtain wall and window mullions
- 1/2" x 1/2" (12 x 12mm) inter-crimped 14 gauge (0.063") aluminum bird screens
- 5/8" (16 mm) mesh, 0.50" (1.27 mm) thick expanded and flattened aluminum bird screen
- 16 x 18 aluminum mesh insect screen
- Continuous blade construction with hidden mullions to give an uninterrupted appearance
- Continuous blade construction is not recommended for use on drainable louvers, save for model R7355
- Single sheet and insulated blank-off panels are available in aluminum or galvanized steel
- All welded construction is available when required
- Hinged louvered doors for applications that require access to the room or equipment behind the louver
- Security bars behind louvers
- Custom sill lengths and shapes are available

If you require an item not shown here, please contact our office. We will assist you in designing a louver or a feature that meets your design requirements.

FINISHES

- THREE COAT SYSTEM
  Superior performance three coat system (primer/colour coat/clear coat) including thermal setting application of 70% fluoropolymer resin minimum, PVDF with added colour pigment finish exceeding or meeting AAMA 2605 requirements. Ensure fluoropolymer baked resins form a continuous physically locked finish during manufacturing process. Apply fluoropolymer finish after multistage chemical treatment cleaning providing corrosion resistance surface ready to receive primer. Acceptable Product: Duranar XL by PPG Industries or equivalent by Valspar.

- TWO COAT SYSTEM
  High performance two coat system including thermal setting application of 70% fluoropolymer resin minimum, PVDF with added colour pigment finish exceeding or meeting AAMA 2605 requirements. Ensure fluoropolymer baked resins form a continuous physically locked finish during manufacturing process. Apply fluoropolymer finish after multistage chemical treatment cleaning providing corrosion resistance surface ready to receive primer. Acceptable Product: "Duranar" by PPG Industries or equivalent by Valspar.

- ONE COAT SYSTEM
  Pigmented Organic Thermal Setting Finish Process: (1 Coat Wet System) meeting or exceeding AAMA 2603. Acceptable Product: "Duracron" by PPG Industries or equivalent by Valspar.

- COLOUR ANODIZED FINISH
  Ensure aluminum finish is colour anodized in accordance with Aluminum Association Finish Designation AA-M12C22A44, Class I, minimum 0.018 mm (0.7 mils) thick finish. Colour to be selected by consultan t.

- CLEAR ANODIZED FINISH
  Ensure aluminum finish is clear anodized in accordance with Aluminum Association Finish Designation AA-M12C22A41, Class I, minimum 0.018 mm (0.7 mils) thick for exterior applications and AA-12C22A31, Class II, minimum 0.01 mm (0.4 mils) thick for interior applic ations.

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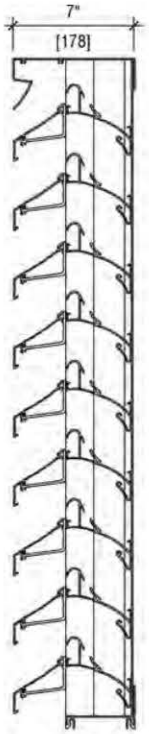
MODEL R7355 STORM RESISTANT DRAINABLE LOUVER

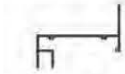
PERFORMANCE

Performance Rating Standard	AMCA Standard 500L
Louver Type	Continuous Line or Mullion Construction
Louver Depth	7" (178 mm)
Blade Angle	35^0
Free Area – 4'x4' Unit	8.03 sq.ft. (0.75 m^2)
Percentage Free Area	50.3%
Free Area Velocity at Beginning Point of Water Penetration (0.01 oz / ft^2)	759 FPM (3.86 m/s)
Air Volume at Beginning Point of Water Penetration 4' x 4' Unit (test duration of 15 minutes)	6097 CFM (2.9 m^3/s)
Pressure Drop at Beginning Point of Water Penetration	0.25 in. H_2O (62.3 Pa)
Notes	Tested without bird screens
WIND DRIVEN RAIN WATER PENETRATION DATA (29 mph (13 m/s) wind velocity with a 3 in/hr (75 mm/hr) rainfall rate):	
Effectiveness Ratio: 99.1% (Class "A" Rating)	Core Ventilation Rate: 1.0 m/s (196 fpm) Free Area Velocity: 1.7 m/s (342 fpm)
Effectiveness Ratio: 98.7% (Class "B" Rating)	Core Ventilation Rate: 1.4 m/s (280 fpm) Free Area Velocity: 2.5 m/s (490 fpm)



VERTICAL SECTION


FLANGE FRAME OPTIONAL


GLAZING FRAME OPTIONAL

ABBREVIATED SPECIFICATION

Where indicated on drawings, supply and install 7" (178 mm) deep, storm resistant louver Model R7355. Submit all details to consultant for approval prior to fabrication.

Head, sill, jambs, mullions, and blades shall have a nominal thickness of 0.080" (2.0 mm) 6063-T5 aluminum alloy. Jambs and Mullions to be recessed and concealed, and shall have integral vertical gutters to direct water to the bottom of the exterior face of the louver away from the building. Front blades shall be continuous, with no exposed vertical mullions, with rear blades that include an integral horizontal gutter to lead water to the vertical gutters in the mullions and jambs. Provide a sill pan flashing at base of louvers. Louvers shall be supplied with a 1/2" (12 mm), 19 gauge (1 mm) welded and re-galvanized wire mesh in a mill finish, with aluminum frame. Fasteners shall be standard zinc plated steel or stainless steel.

Materials Manufacturer: Ten Plus Architectural Products Ltd., 26 - 6535 Millcreek Drive, Mississauga, Ontario, Canada, L5N 2M2; Phone: (866) 884-0717; Email: info@tenplus-online.com; URL: www.tenplus-online.com

Structural supports shall be designed and furnished by the louver manufacturer to support a wind load of 20 psf (958 Pa), unless specified otherwise. Any louver opening greater than 10' (3 m) high, will require a horizontal girt at mid span, by others.

The louver manufacturer shall submit data, on a 4' x 4' (1.2 x1.2 m) unit, showing that the louver performs to the above criteria, based on tests & procedures performed in accordance with the AMCA Publication 511, and comply with the "Certified Ratings Program" licensed to bear the AMCA seal.

Louvers shall be fabricated with mill finish aluminum and the finish shall be applied after assembly. Select desired finish from the following:

For superior performance, 3 coat PVDF system including a thermal setting application of 70% fluoropolymer resin. OR High performance 2 coat, PVDF system including a thermal setting application of 70% fluoropolymer resin. OR Pigmented Organic Thermal Setting Finish 1 coat system meeting or exceeding AAMA 2603. OR (Color Anodize) Ensure aluminum finish is colour anodized in accordance with Aluminum Association Finish Designation AA-M12C22A44, Class I, minimum 0.018 mm (0.7 mils) thick finish. Color to be selected by consultant. OR (Clear Anodize) Ensure aluminum finish is clear anodized in accordance with Aluminum Association Finish Designation AA-M12C22A41, Class I, minimum 0.018 mm (0.7 mils) thick for exterior applications and AA-12C22A31, Class II, minimum 0.01 mm (0.4 mils) thick for interior applications.

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PERFORMANCE RATINGS – LOUVER MODEL R7355

FREE AREA CHART

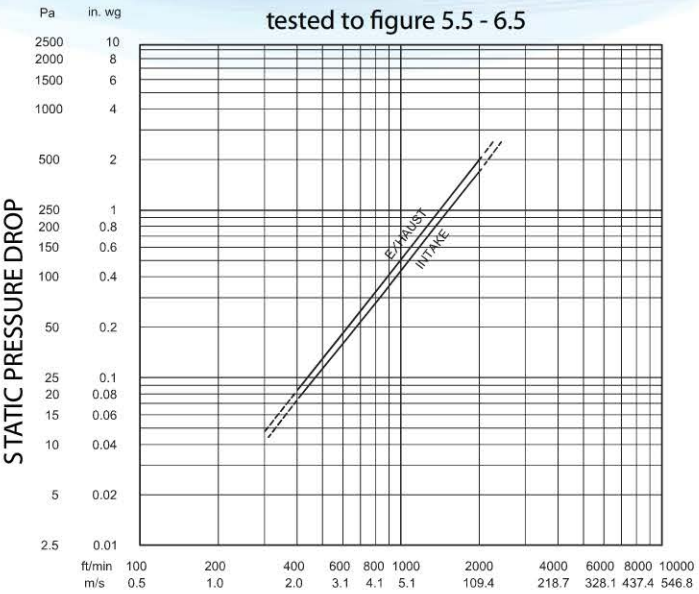
Louver Width

Louver Height inches / mm	12 / 305	24 / 610	36 / 914	48 / 1219	60 / 1524
	Free Area - Square Feet / Square Meters				
12 / 305	0.30 / 0.03	0.69 / 0.06	1.07 / 0.10	1.46 / 0.14	1.84 / 0.17
24 / 610	0.76 / 0.07	1.72 / 0.16	2.69 / 0.25	3.65 / 0.34	4.61 / 0.43
36 / 914	1.22 / 0.11	2.76 / 0.26	4.30 / 0.40	5.84 / 0.54	7.38 / 0.69
48 / 1219	1.68 / 0.16	3.79 / 0.35	5.91 / 0.55	8.03 / 0.75	10.15 / 0.94
60 / 1524	2.13 / 0.20	4.83 / 0.45	7.52 / 0.70	10.22 / 0.95	12.91 / 1.20
72 / 1829	2.59 / 0.24	5.86 / 0.54	9.14 / 0.85	12.41 / 1.15	15.68 / 1.46
84 / 2134	3.05 / 0.28	6.90 / 0.64	10.75 / 1.00	14.60 / 1.36	18.45 / 1.71
96 / 2438	3.51 / 0.33	7.93 / 0.74	12.36 / 1.15	16.79 / 1.56	21.22 / 1.97
108 / 2743	3.96 / 0.37	8.97 / 0.83	13.97 / 1.30	18.98 / 1.76	23.98 / 2.23
120 / 3048	4.42 / 0.41	10.00 / 0.93	15.58 / 1.45	21.17 / 1.97	26.75 / 2.49
132 / 3353	4.88 / 0.45	11.04 / 1.03	17.20 / 1.60	23.36 / 2.17	29.52 / 2.74
144 / 3658	5.33 / 0.50	12.07 / 1.12	18.81 / 1.75	25.55 / 2.37	32.28 / 3.00

AIR FLOW RESISTANCE

(TEST SIZE OF 4' X 4')

tested to figure 5.5 - 6.5



AIR VELOCITY

Ten Plus Architectural Products Ltd. certifies that louver model RS7355 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 only to Air Performance, Water Penetration and Wind Driven Rain ratings.

Submittal R7355 January12, 2014

WIND DRIVEN RAIN PERFORMANCE

Core velocity - m/s (f/m)	0 (0)	0.6 (126)	1.0 (196)	1.4 (280)	1.9 (377)	2.4 (476)	3.0 (588)	3.5 (680)
Free area velocity - m/s (f/m)	0 (0)	1.1 (220)	1.7 (342)	2.5 (490)	3.4 (659)	4.2 (832)	5.2 (1027)	6.0 (1188)
Effectiveness classification	A	A	A	B	B	B	C	D
Effectiveness ratio	99.8%	99.6%	99.1%	98.7%	98.0%	95.1%	84.1%	71.3%

Discharge Loss Coeefficient Class (Intake) = 3

This test is based on a 1m x 1m (39.37" x 39.37") louver core size, at a rainfall rate of 76mm/hr (3 in/hr), with wind driven rain applied to the face of the louver at a velocity of 13 m/s (29 mph). The above table shows the effectiveness against water penetration at each corresponding ventilation airflow rate.

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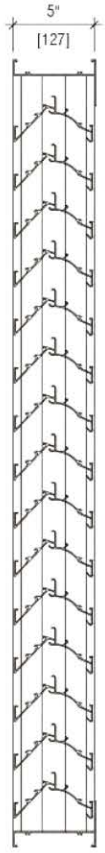
MODEL R5455 STORM RESISTANT DRAINABLE LOUVER

PERFORMANCE

Performance Rating Standard	AMCA Standard 500L
Louver Type	Mullion Construction
Louver Depth	5" (127 mm)
Blade Angle	45^0
Free Area – 4'x4' Unit	7.54 sq.ft. (0.70 m^2)
Percentage Free Area	47.1%
Free Area Velocity at Beginning Point of Water Penetration (0.01 oz / ft^2)	1100 FPM (5.59 m/s)
Air Volume at Beginning Point of Water Penetration 4' x 4' Unit (test duration of 15 minutes)	8294 CFM (4.0 m^3/s)
Pressure Drop at Beginning Point of Water Penetration	0.40 in. H_2O (39.5 Pa)
Notes	Tested without bird screens
WIND DRIVEN RAIN WATER PENETRATION DATA (29 mph (13 m/s) wind velocity with a 3 in/hr (75 mm/hr) rainfall rate):	
Effectiveness Ratio: 99.8% (Class "A" Rating)	Core Ventilation Rate: 0.7 m/s (133 fpm) Free area velocity: 1.4 m/s (276 fpm)
Effectiveness Ratio: 98.9% (Class "B" Rating)	Core Ventilation Rate: 1.0 m/s (192 fpm) Free area velocity: 2 m/s (388 fpm)



VERTICAL SECTION

FLANGE FRAME OPTIONAL

GLAZING FRAME OPTIONAL

ABBREVIATED SPECIFICATION

Where indicated on drawings, supply and install 5" (127 mm) deep storm resistant louver Model R5455. Submit all details to consultant for approval prior to fabrication.

Head, sill, jambs and mullions shall have a minimum thickness of 0.080" (2.0 mm) 6063-T5 aluminum alloy. Jambs and Mullions shall have integral, vertical gutters to direct water to the bottom of the exterior face of the louver and away from the building. Blades shall be, 0.070" (1.77 mm) 6063-T5 aluminum alloy and include an integral horizontal gutter to lead water to the vertical gutters in the mullions and jambs provided with a sill pan flashing. Louvers shall be supplied with a 1/2" (12 mm), 19 gauge (1 mm) welded and regalvanized wire mesh in a mill finish, aluminum frame. Fasteners shall be standard zinc plated steel or stainless steel.

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Structural supports shall be designed and furnished by the louver manufacturer to support a wind load of 20 psf (958 Pa), unless specified otherwise. Any louver opening greater that 10' (3 m) high, will require a horizontal girt, at mid span by others.

The louver manufacturer shall submit data, on a 4' x 4' (1.2 x1.2 m) unit, showing that the louver performs to the above criteria, based on tests & procedures performed in accordance with the AMCA Publication 511, and comply with the "Certified Ratings Program" licensed to bear the AMCA seal.

Louvers shall be fabricated with mill finish aluminum and the finish shall be applied after assembly. Select desired finish from the following:

For superior performance, 3 coat PVDF system including a thermal setting application of 70% fluoropolymer resin. OR High performance 2 coat, PVDF system including a thermal setting application of 70% fluoropolymer resin. OR Pigmented Organic Thermal Setting Finish 1 coat system meeting or exceeding AAMA 2603. OR (Color Anodize) Ensure aluminum finish is colour anodized in accordance with Aluminum Association Finish Designation AA-M12C22A44, Class I, minimum 0.018 mm (0.7 mils) thick finish. Color to be selected by consultant. OR (Clear Anodize) Ensure aluminum finish is clear anodized in accordance with Aluminum Association Finish Designation AA-M12C22A41, Class I, minimum 0.018 mm (0.7 mils) thick for exterior applications and AA-12C22A31, Class II, minimum 0.01 mm (0.4 mils) thick for interior applications.

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PERFORMANCE RATINGS – LOUVER MODEL R5455

FREE AREA CHART

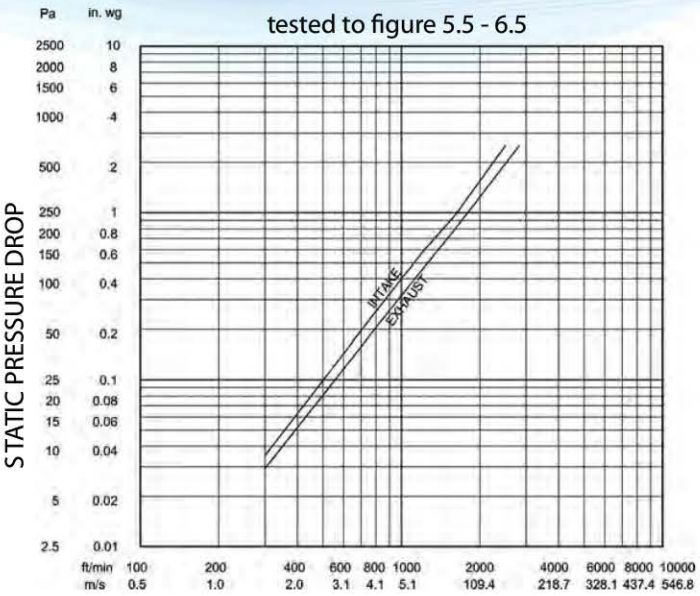
Louver Width

Louver Height: inches / mm	12 / 305	24 / 610	36 / 914	48 / 1219	60 / 1524
	Free Area - Square Feet / Square Meters				
12 / 305	0.27 / 0.02	0.60 / 0.06	0.92 / 0.09	1.25 / 0.12	1.58 / 0.15
24 / 610	0.66 / 0.06	1.46 / 0.14	2.27 / 0.21	3.08 / 0.29	3.89 / 0.36
36 / 914	1.13 / 0.11	2.52 / 0.23	3.91 / 0.36	5.31 / 0.49	6.70 / 0.62
48 / 1219	1.71 / 0.16	3.81 / 0.35	5.91 / 0.55	7.54 / 0.70	10.11 / 0.94
60 / 1524	1.99 / 0.19	4.45 / 0.41	6.90 / 0.64	9.36 / 0.87	11.81 / 1.10
72 / 1829	2.47 / 0.23	5.51 / 0.51	8.55 / 0.79	11.58 / 1.08	14.62 / 1.36
84 / 2134	2.94 / 0.27	6.57 / 0.61	10.19 / 0.95	13.81 / 1.28	17.43 / 1.62
96 / 2438	3.52 / 0.33	7.86 / 0.73	12.19 / 1.13	16.52 / 1.54	20.86 / 1.94
108 / 2743	3.74 / 0.35	8.34 / 0.78	12.94 / 1.20	17.55 / 1.63	22.15 / 2.06
120 / 3048	4.20 / 0.39	9.37 / 0.87	14.54 / 1.35	19.71 / 1.83	24.88 / 2.31
132 / 3353	4.67 / 0.43	10.42 / 0.97	16.17 / 1.50	21.92 / 2.04	27.67 / 2.57
144 / 3658	5.51 / 0.48	11.48 / 1.07	17.81 / 1.66	24.14 / 2.24	30.48 / 2.83

AIR FLOW RESISTANCE

(TEST SIZE OF 4' X 4')

tested to figure 5.5 - 6.5



AIR VELOCITY

Ten Plus Architectural Products Ltd. certifies that louver model RS5454 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 only to Air Performance, Water Penetration and Wind Driven Rain ratings.

WIND DRIVEN RAIN PERFORMANCE

Core velocity - m/s (f/m)	0 (0)	0.7 (133)	1.0 (192)	1.4 (279)	1.9 (382)	2.4 (473)	3.0 (595)	3.5 (697)
Free area velocity - m/s (f/m)	0 (0)	1.4 (268)	2.0 (388)	2.9 (563)	3.9 (770)	4.8 (953)	6.1 (1199)	7.1 (1404)
Effectiveness classification	A	A	B	B	C	C	C	D
Effectiveness ratio	99.80%	99.40%	98.90%	97.20%	94.80%	92.30%	85.70%	74.70%

Discharge Loss Coeefficient Class (Intake) = 3

This test is based on a 1m x 1m (39.37" x 39.37") louver core size, at a rainfall rate of 76mm/hr (3 in/hr), with wind driven rain applied to the face of the louver at a velocity of 13 m/s (29 mph). The above table shows the effectiveness against water penetration at each corresponding ventilation airflow rate.

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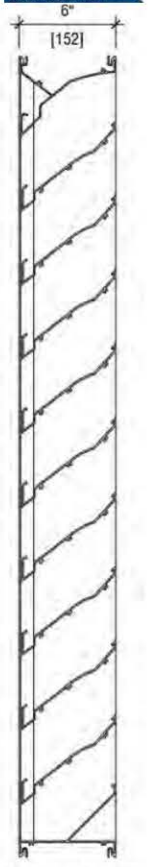
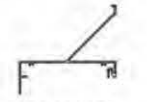
MODEL D6403 DRAINABLE LOUVER

PERFORMANCE

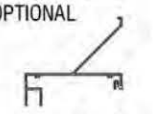
Performance Rating Standard	AMCA Standard 500L
Louver Type	Mullion or Continuous Line Construction
Louver Depth	6" (152 mm)
Blade Angle	40^0
Free Area – 4'x4' Unit	9.01 sq.ft. (0.837 m^2)
Percentage Free Area	56.3%
Free Area Velocity at Beginning Point of Water Penetration (0.01 oz / ft^2)	969.9 FPM (4.93 m/s)
Air Volume at Beginning Point of Water Penetration 4' x 4' Unit (test duration of 15 minutes)	8739 CFM (4.12 m^3/s)
Pressure Drop at Beginning Point of Water Penetration	0.16 in. H_2O (39.5 Pa)
Notes	Tested without bird screens



VERTICAL SECTION



FLANGE FRAME OPTIONAL



GLAZING FRAME OPTIONAL

ABBREVIATED SPECIFICATION

Where indicated on drawings, supply and install 6" (152 mm) deep, drainable louver Model D6403. Submit all details to consultant for approval prior to fabrication. Head, sill, jambs and mullions shall have a minimum thickness of 0.080" (2.0 mm) 6063-T5 aluminum alloy.

Jambs and Mullions shall have integral, vertical gutters to direct water to the bottom of the exterior face of the louver and away from the building. Blades shall be, 0.090" (2.3 mm) 6063-T5 aluminum alloy and include an integral horizontal gutter to lead water to the vertical gutters in the mullions and jambs. Louvers shall be supplied with a 1/2" (12 mm), 19 gauge (1 mm) welded and regalvanized wire mesh in a mill finish, aluminum frame. Fasteners shall be standard zinc plated steel or stainless steel.

Materials Manufacturer: Ten Plus Architectural Products Ltd., 26 - 6535 Millcreek Drive, Mississauga, Ontario, Canada, L5N 2M2; Phone: (866) 884-0717; Email: info@tenplus-online.com; URL: www.tenplus-online.com

Structural supports shall be designed and furnished by the louver manufacturer to support a wind load of 20 psf (958 Pa), unless specified otherwise. Any louver opening greater that 10' (3 m) high, will require a horizontal girt, at mid span by others.

The louver manufacturer shall submit data, on a 4' x 4' (1.2 x1.2 m) unit, showing that the louver performs to the following criteria, based on tests & procedures performed in accordance with the AMCA Publication 511, and comply with the "Certified Ratings Program" licensed to bear the AMCA seal:

Free area = 9.01 sq.ft. (0.837 m^2)
Free area velocity at point of beginning water penetration = 969.9 FPM (4.93 m/s)
Intake pressure drop at beginning point of water penetration = 0.16 in. H_2O (39.5 Pa)

Louvers shall be fabricated with mill finish aluminum and the finish shall be applied after assembly. Select desired finish from the following:

For superior performance, 3 coat PVDF system including a thermal setting application of 70% fluoropolymer resin. OR High performance 2 coat, PVDF system including a thermal setting application of 70% fluoropolymer resin. OR Pigmented Organic Thermal Setting Finish 1 coat system meeting or exceeding AAMA 2603. OR (Color Anodize) Ensure aluminum finish is colour anodized in accordance with Aluminum Association Finish Designation AA-M12C22A44, Class I, minimum 0.018 mm (0.7 mils) thick finish. Color to be selected by consultant. OR (Clear Anodize) Ensure aluminum finish is clear anodized in accordance with Aluminum Association Finish Designation AA-M12C22A41, Class I, minimum 0.018 mm (0.7 mils) thick for exterior applications and AA-12C22A31, Class II, minimum 0.01 mm (0.4 mils) thick for interior applications.

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PERFORMANCE RATINGS – LOUVER MODEL D6403

FREE AREA CHART

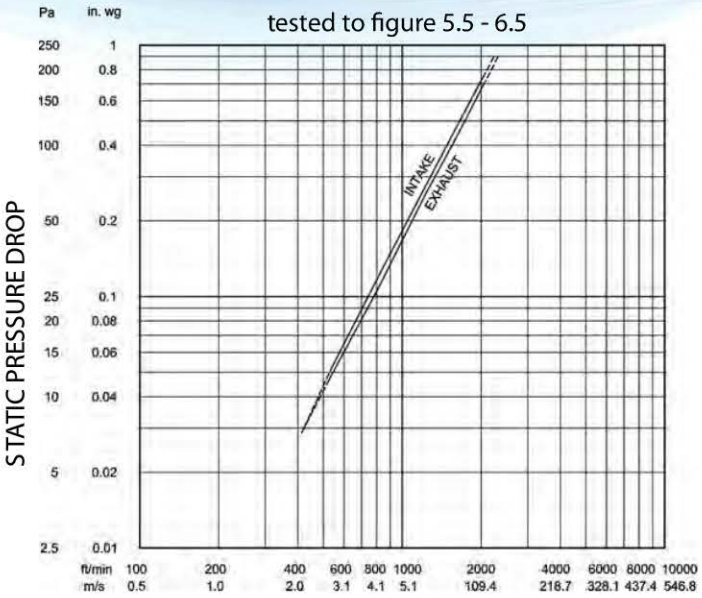
Louver Width

Louver Height inches / mm	12 / 305	24 / 610	36 / 914	48 / 1219	60 / 1524
	Free Area - Square Feet / Square Meters				
12 / 305	0.30 / 0.03	0.67 / 0.06	1.04 / 0.10	1.40 / 0.13	1.77 / 0.16
24 / 610	0.78 / 0.07	1.75 / 0.16	2.71 / 0.25	3.67 / 0.34	4.64 / 0.43
36 / 914	1.38 / 0.13	3.07 / 0.29	4.76 / 0.44	6.46 / 0.60	8.15 / 0.76
48 / 1219	1.86 / 0.17	4.15 / 0.39	6.44 / 0.60	8.72 / 0.81	11.02 / 1.02
60 / 1524	2.45 / 0.23	5.47 / 0.51	8.49 / 0.79	11.51 / 1.07	14.52 / 1.35
72 / 1829	2.94 / 0.27	6.55 / 0.61	10.17 / 0.94	13.78 / 1.28	17.40 / 1.62
84 / 2134	3.42 / 0.32	7.63 / 0.71	11.84 / 1.10	16.05 / 1.49	20.27 / 1.88
96 / 2438	4.01 / 0.37	8.95 / 0.83	13.89 / 1.29	18.84 / 1.75	23.78 / 2.21
108 / 2743	4.50 / 0.42	10.03 / 0.93	15.57 / 1.45	21.11 / 1.96	26.64 / 2.48
120 / 3048	4.98 / 0.46	11.11 / 1.03	17.25 / 1.60	23.38 / 2.17	29.51 / 2.74
132 / 3353	5.58 / 0.52	12.44 / 1.16	19.30 / 1.79	26.16 / 2.43	33.02 / 3.07
144 / 3658	6.06 / 0.56	13.52 / 1.26	20.98 / 1.95	28.43 / 2.64	35.89 / 3.34

AIR FLOW RESISTANCE

(TEST SIZE OF 4' X 4')

tested to figure 5.5 - 6.5



AIR VELOCITY

Ten Plus Architectural Products Ltd. certifies that louver model D6403 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 only to Air Performance, Water Penetration ratings.

Submittal D6403 January12, 2014

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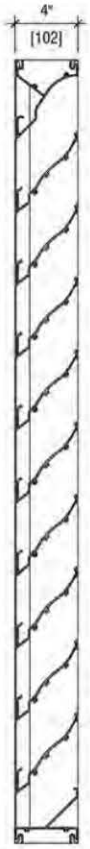
MODEL D4493 DRAINABLE LOUVER

PERFORMANCE

Performance Rating Standard	AMCA Standard 500L
Louver Type	Mullion or Continuous Line Construction
Louver Depth	4" (102 mm)
Blade Angle	49°
Free Area – 4'x4' Unit	7.68 sq.ft. (0.714 m^2)
Percentage Free Area	48%
Free Area Velocity at Beginning Point of Water Penetration (0.01 oz / ft^2)	1033.2 FPM (5.25 m/s)
Air Volume at Beginning Point of Water Penetration 4' x 4' Unit (test duration of 15 minutes)	7935 CFM (3.75 m^3/s)
Pressure Drop at Beginning Point of Water Penetration	0.25 in. H_2O (62.3 Pa)
Notes	Tested without bird screens



VERTICAL SECTION

FLANGE FRAME OPTIONAL

GLAZING FRAME OPTIONAL

ABBREVIATED SPECIFICATION

Where indicated on drawings, supply and install 4" (102 mm) deep, drainable louver Model D4493. Submit all details to consultant for approval prior to fabrication. Head, sill, jambs and mullions shall have a minimum thickness of 0.080" (2.0 mm) 6063-T5 aluminum alloy.

Jambs and Mullions shall have integral, vertical gutters to direct water to the bottom of the exterior face of the louver and away from the building. Blades shall be 0.080" (2.0 mm) 6063-T5 aluminum alloy and include an integral horizontal gutter to lead water to the vertical gutters in the mullions and jambs. Louvers shall be supplied with a 1/2" (12 mm), 19 gauge (1 mm) welded and regalvanized wire mesh in a mill finish, aluminum frame. Fasteners shall be standard zinc plated steel or stainless steel.

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Structural supports shall be designed and furnished by the louver manufacturer to support a wind load of 20 psf (958 Pa), unless specified otherwise. Any louver opening greater that 10' (3 m) high, will require a horizontal girt, at mid span by others.

The louver manufacturer shall submit data, on a 4' x 4' (1.2 x1.2 m) unit, showing that the louver performs to the following criteria, based on tests & procedures performed in accordance with the AMCA Publication 511, and comply with the "Certified Ratings Program" licensed to bear the AMCA seal:

Free area = 7.68 sq. ft. (0.714 m^2)
Free area velocity at point of beginning water penetration = 1033.2 FPM (5.25 m/s)
Intake pressure drop at beginning point of water penetration = 0.25 in. H2O (62.3 Pa)

Louvers shall be fabricated with mill finish aluminum and the finish shall be applied after assembly. Select desired finish from the following:

For superior performance, 3 coat PVDF system including a thermal setting application of 70% fluoropolymer resin. OR High performance 2 coat, PVDF system including a thermal setting application of 70% fluoropolymer resin. OR Pigmented Organic Thermal Setting Finish 1 coat system meeting or exceeding AAMA 2603. OR (Color Anodize) Ensure aluminum finish is colour anodized in accordance with Aluminum Association Finish Designation AA-M12C22A44, Class I, minimum 0.018 mm (0.7 mils) thick finish. Color to be selected by consultant. OR (Clear Anodize) Ensure aluminum finish is clear anodized in accordance with Aluminum Association Finish Designation AA-M12C22A41, Class I, minimum 0.018 mm (0.7 mils) thick for exterior applications and AA-12C22A31, Class II, minimum 0.01 mm (0.4 mils) thick for interior applications.

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PERFORMANCE RATINGS – LOUVER MODEL D4493

FREE AREA CHART

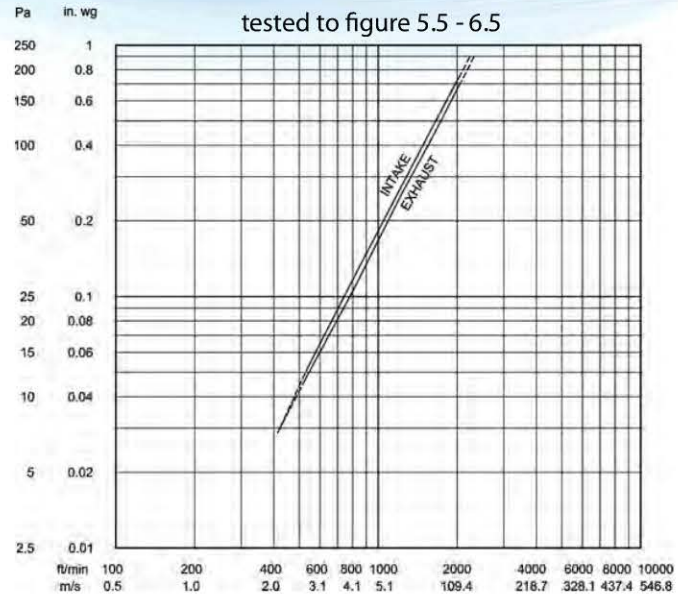
Louver Width

Louver Height: inches / mm	12 / 305	24 / 610	36 / 914	48 / 1219	60 / 1524
	Free Area - Square Feet / Square Meters				
12 / 305	0.30 / 0.03	0.67 / 0.06	1.05 / 0.10	1.42 / 0.13	1.79 / 0.17
24 / 610	0.70 / 0.07	1.57 / 0.15	2.44 / 0.23	3.30 / 0.31	4.17 / 0.39
36 / 914	1.23 / 0.11	2.74 / 0.25	4.25 / 0.39	5.76 / 0.54	7.27 / 0.68
48 / 1219	1.62 / 0.15	3.62 / 0.34	5.61 / 0.52	7.68 / 0.71	9.60 / 0.89
60 / 1524	2.15 / 0.20	4.80 / 0.45	7.45 / 0.69	10.10 / 0.94	12.75 / 1.19
72 / 1829	2.55 / 0.24	5.68 / 0.53	8.82 / 0.82	11.95 / 1.11	15.08 / 1.40
84 / 2134	2.94 / 0.27	6.56 / 0.61	10.18 / 0.95	13.80 / 1.28	17.42 / 1.62
96 / 2438	3.47 / 0.32	7.75 / 0.72	12.02 / 1.12	16.29 / 1.51	20.57 / 1.91
108 / 2743	3.87 / 0.36	8.62 / 0.80	13.38 / 1.24	18.14 / 1.69	22.90 / 2.13
120 / 3048	4.57 / 0.42	10.20 / 0.95	15.83 / 1.47	21.45 / 1.99	27.08 / 2.52
132 / 3353	4.79 / 0.45	10.69 / 0.99	16.59 / 1.54	22.49 / 2.09	28.38 / 2.64
144 / 3658	5.19 / 0.48	11.57 / 1.08	17.96 / 1.67	24.34 / 2.26	30.72 / 2.86

AIR FLOW RESISTANCE

(TEST SIZE OF 4' X 4')

tested to figure 5.5 - 6.5



AIR VELOCITY

Ten Plus Architectural Products Ltd. certifies that louver model D4493 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 only to Air Performance, Water Penetration ratings.

Submittal D4493 January12, 2014

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