



## Product Overview

Aluminium Honeycomb Air Ventilation Panels consist of an aluminium honeycomb foil held in a rigid extruded aluminium mounting frame. The foil, formed and laminated into a series of honeycomb cells that are glued and perforated or laser welded at the join, ensures a conductive path at each join. Although the foil is conductive in all directions, to enhance EMI performance, two pieces of honeycomb polarised at 90° to each other are recommended.

Shielding is achieved by using waveguide design principles (Honeycomb cell length four times cell diameter).

The frame can be supplied with an integral or separate EMI/RFI gasket, and can be treated with a variety of finishes to provide corrosion protection or improve conductivity.

### Applications

Ventilation panels are designed for use in electronic enclosures where good air flow is required for cooling and ventilation but where EMC compliance must be ensured. Typical applications are:

- Electronic Enclosures
- Air Conditioning Units
- Fan housings
- EMC Racks
- Communication shelters

### Availability

An extensive range of aluminium extrusion mounting frames are available from stock offering a choice of mounting methods and sizes.

Available as custom sizes with no additional cost.

Frames can be supplied with fixing holes or captive threaded inserts to aid mounting.

Honeycomb can be supplied in a number of configurations to suit different EMI/RFI Shielding performance requirements. Such as straight through, polarized and a choice of cell size.

Standard perforated honeycomb is available with 30°, 45°, 60° and 90° angles from stock and Laser welded aluminium honeycomb is also available to special order.

For vulnerable situations weld mesh or expanded aluminium kick plates can be fitted.

Removable dust filters and integral insect screens can be provided.

## Product Overview (Continued)

### Design Considerations

Any environmental conditions such as moisture and dust control including:

- Air Flow requirement
- External louvers for rain protection
- Drain holes
- Any additional gasketing

Constructional requirements and finishes including:

- Angled honeycomb for rain protection or directional air flow.
- Rigidity of vent frame and enclosure so as to prevent bowing of either surface when compressing the gasket.
- Fixing requirements e.g. holes or threaded inserts ensuring appropriate position and size of hole-centres. (Holes in the corners of the frame should be avoided.)
- If specifying captive inserts in both sides of the frame off-set the positions by 10mm minimum.
- Round vents tend to be an expensive option due to the complexity of manufacturing method.
- Fully welded corners.
- Type of gasket required.
- Frame style.
- Honeycomb configuration.
- Corrosion, electrical conductivity etc, (see Finishes section below)
- Weld mesh or expanded aluminium kick plates
- Removable dust filters and integral insect screens can be provided

### Removable Dust Filters and Insect Screen

#### Dust Filter

This consists of a aluminium frame 1701, 1705, 1706, 1707 & 1709 which holds a polyester polyurethane dust filter. This is held in place on one side by a stainless steel weld mesh. This frame then mounts on to one side of the honeycomb vent panel by captive screws. Easily removed for cleaning with a mild detergent and rinsed with water. A range of different filter options are available.

Aluminium honeycomb vent panels fitted with removable dust filters usually require assisted air flow.

Standard filter foam is stocked in two thicknesses to suit the above frame styles.

30, 45 and 60 pores per inch, others are available to meet specific requirements.



#### Insect Screen

This is a woven aluminium cloth inserted on one face or between the honeycomb and provides protection from the ingress of insects. Wire dia 0.28mm open area 66%.

## Product Overview (Continued)

### Production Capabilities

Kemtron manufacture its range of EMC vent panels using the latest technology and, with the exception of painting and electro less plating, all processes are kept in house, giving us flexibility and total control over quality. Kemtron has invested heavily in this area making us the market leaders for price, delivery, quality and availability.

Fully programmable CNC machines for the notching & cutting of the frame extrusions and drilling of exact and repeatable holes combined with the latest TIG welding equipment allows Kemtron to offer a fast delivery, competitive range of aluminium vent panels produced to customer designs. This advanced technology also eliminates the need for additional tooling and set-up charges. Kemtron holds a large range of aluminium extrusions and aluminium honeycomb in stock.

In addition to vent panels, Kemtron manufactures a huge range of EMI shielding products, including conductive Elastomers, oriented wire, knitted wire mesh, connector gaskets.

Vent panels made with styles 1701, 1703, 1705, 1706 & 1707 are supplied with 3 corners notched and the 4th joined corner welded and have an external corner radii of 3mm.

### Finishes

Vent panels can be supplied with a range of finishes including:

- Painted
- Electro less plated Tin or Nickel
- Kempass (ROHS ) Aluminium Passivation process
- Trivalent chromium (Rohs compliant) or Hexavalent chromium

Kemtron's standard finish (KEM-PAS) for aluminium vent panels fully meets the RoHS directive and replaces Alocrom1200. Kemtron's in-house process applies a permanganate passivation which is a chromate free, inorganic and non toxic coating. The process produces a dense, uniform coating consisting of aluminium and reduced manganese oxides giving a golden yellow colour to the surface. The surface finish is conductive with a low contact resistance equalling Alocrom 1200. It also meets all requirements of MIL-C-5541E for corrosion and electrical conductivity.

We are also able to offer a comprehensive range of painted finishes to complement our standard KEM-PAS finish. Using industry leading wet paint solutions from Trimite, we offer full painting and preparation to DEF STAN specifications including matt and gloss finishes. In addition we can also offer Infra Red Reflecting (IRR) matt finishes complying with DEF STAN 00-23, 80-166 and STANAG 2338.

For less critical / commercial applications requiring a protected finish we recommend polyester powder coating. This is tough material that offers excellent resistance to fresh and saltwater, petrol, linseed and penetrating oils, along with limited resistance to various acids. We are happy to advise on specific examples if required. As the epoxy process is an electrostatic method, it offers excellent penetration of the honeycomb cells, further aiding resistance to corrosion. With both processes, we are able to offer a full range of colours to RAL/BS charts.

### Gaskets

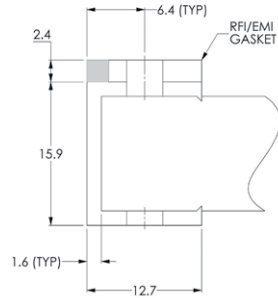
- Knitted Monel mesh = Frames with a gasket groove
- 440-0024 = Orientated Aluminium wire in silicone sponge 2.4mm thick
- Knitted Monel wire mesh with a Neoprene sponge carrier 2.4mm thick
- Beryllium Copper finger stock

### Notice

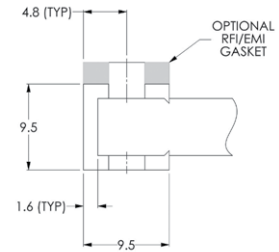
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## Product Overview (Continued)

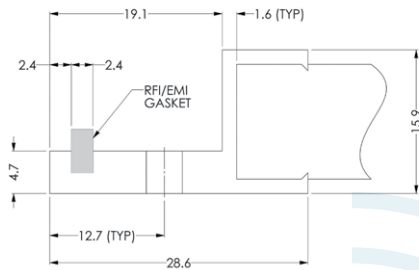
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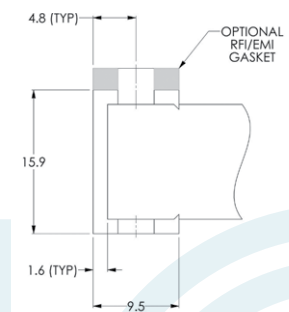
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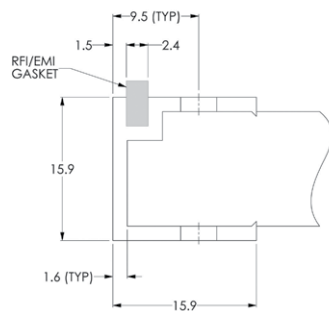
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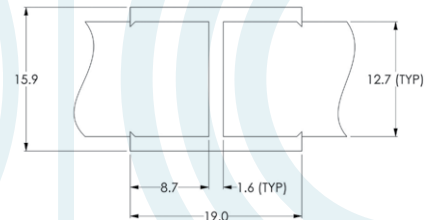
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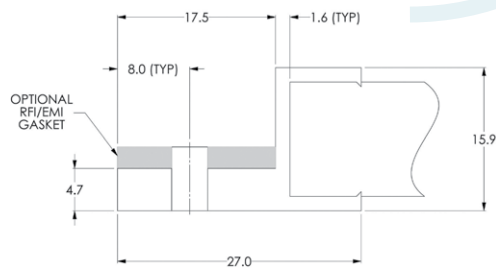
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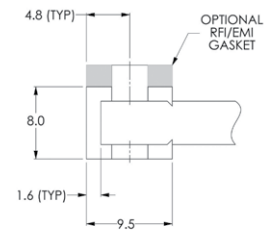
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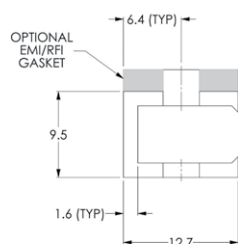
1704



1709



1705



## Technical Specifications

### Tolerances

Standard tolerances for overall finished vent dimensions are +/- 0.8mm  
 Standard tolerances on hole centres are +/- 0.4mm  
 Typical corner radii on frame styles 1701, 1703, 1705, 1706 & 1707 are R3.0mm  
 1702 & 1704 frame styles have square corners and are fully welded

### Specifications

Aluminium Frame	6063-T6
Aluminium Honeycomb	5052 grade
Monel Wire	BS3075 NA13
Neoprene sponge	Mil-R-6130 Type 11 grade A condition soft
Beryllium Copper	alloy 25 (CA172)
Silicone Rubber	ZZ-R-765 Class 2 Grade 40
Aluminium Wire	5056

### Honeycomb

Type 1	2 layers 3.2cell x 3.2mm thick honeycomb (total 6.4mm)
Type 2	1 layer 3.2cell x 6.35mm thick honeycomb
Type 3	1 layer 1.6cell x 6.35mm thick honeycomb
Type 4	2 layers 3.2cell x 6.35mm thick honeycomb (total 12.7mm)
Type 5	1 layer 3.2cell x 6.35 thick honeycomb + 1 layer 3.2cell x 6.35mm thick slant honeycomb (total 12.7mm)

### Honeycomb Combinations

Frame Style	Type 1	Type 2	Type 3	Type 4	Type 5
1701				✓	✓
1702				✓	✓
1703				✓	✓
1704				✓	✓
1705	✓	✓	✓		
1706	✓	✓	✓		
1707				✓	✓
1709	✓	✓	✓		

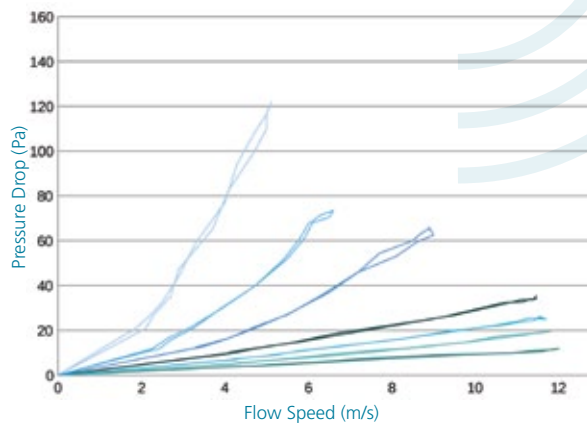
All of the above frame styles and honeycomb combinations are available with the option of a stainless steel kick-plate

### EMC Performance (db)

#### Honeycomb Type

Frequency	Field	Type 1	Type 2	Type 3	Type 4	Type 5
200kHz	H	66	39	65	71	71
100MHz	E	105	80	105	105	105
500MHz	P	81	55	50	93	93
2GHz	P	85	52	60	94	94
10GHz	P	85	61	72	82	90

### Standard Vent Results Graph



### Graph Key

	Type 5 30°
	Type 5 45°
	Type 5 60°
	Type 4
	Type 1
	Type 3