

# Filter Fan Kits



## Applications

- Most innovative technology for fan cooling and pressurizing of industrial enclosures.
- Provides a high quality, economical method of cooling enclosures
- Filtered passive ventilation can be provided by an exhaust filter for either convection cooling or in combination with a fan in forced air cooling
- Slim line design allows grille to protrude from enclosure surface less than one quarter inch
- Maintains aesthetics of enclosure

## Features

- All models are 115V with an expected service life of 30,000 hours
- High-performance fan motors and finger guards
- Polycarbonate fire retardant plastic grilles, UL94-VO
- Durable, reusable filter mat included
- Patented “Click and Fit” system allows for rapid filter fan and exhaust filter installation without screws (This time-saving feature cuts installation time by up to 30 minutes when compared to traditional box fan packages)
- Cutout template provided with every unit
- Filter fan or exhaust filter simply snaps into cutout opening
- Connector type: WPF10 Series 2 has 12-inch wires. WPF20-WPF60 Series has terminal strip.

## Standards

- cUL Recognized/CSA fan motor
- NEMA 1 (NEMA 12 with optional WPFG series gasket)
- IP43 (IP54 with optional WPFG Series gasket)

## Accessories

- Gaskets (WPFG Series) recommended if installing on enclosure with textured finish
- Replacement Filters (WPFM Series)



Part Number	Price	Amps at 50/60 Hz	Rated Voltage	Power Consumption at 50/60 Hz	Free Flow Air Delivery (CFM) <sup>1</sup>	Air Delivery with Exhaust (CFM) <sup>1</sup>	Max. Static Press. (PA)	Ambient Temp. Degree F Max/Min	Filter Density (G/M <sup>2</sup> )	Filtering Level	Sound Level (dB)	Required Cutout Sizes
WPF10-115BK	<--->	0.15/0.15	115V	12/12 Watts	16	10	29	140/14	150	67%	39	3.62x3.62 (92x92)
WPF20-115BK	<--->	0.25/0.25	115V	19/19 Watts	38	28	69	122/14	350	83%	49	4.92x4.92 (125x125)
WPF25-115BK	<--->	0.25/0.25	115V	18/18 Watts	89	62	57	122/14	350	83%	53	8.78x8.78 (223x223)
WPF30-115BK	<--->	0.5/0.5	115V	43/44 Watts	169	142	89	122/14	350	83%	55	8.78x8.78 (223x223)
WPF50-115BK <sup>2</sup>	<--->	0.6/0.7	115V	63/76 Watts	324	249	205	122/14	350	83%	69	11.46x11.46 (291x291)
WPF60-115BK <sup>2</sup>	<--->	1.2/1.6	115V	122/173 Watts	410	295	225	122/14	350	83%	71	11.46x11.46 (291x291)

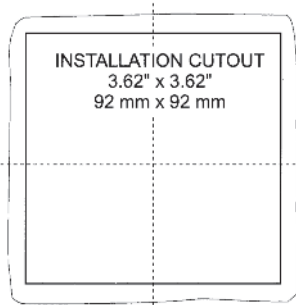
Note 1: For operation at 50Hz, reduce CFM by 15%.

Note 2: Intake fan use only  
Dimensions in inches (millimeters)

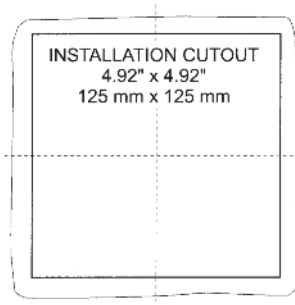
# Filter Fan Kit Cutouts and Dimensions



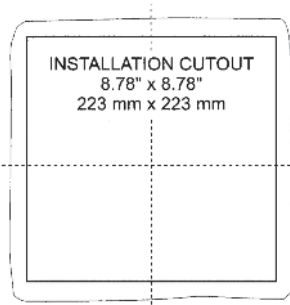
## Installation cutouts



WPF10-115BK

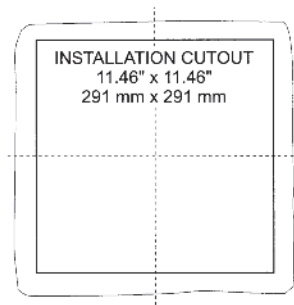


WPF20-115BK



WPF25-115BK

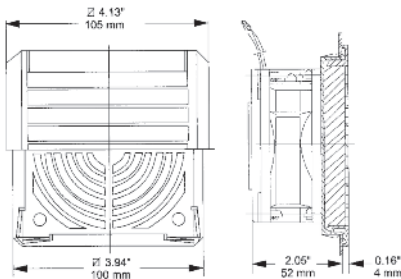
WPF30-115BK



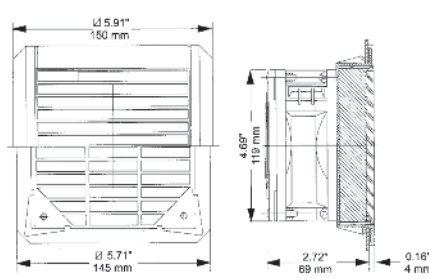
WPF50-115BK

WPF60-115BK

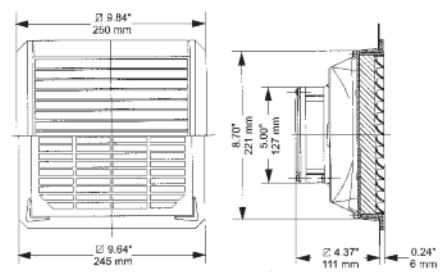
## Dimensions



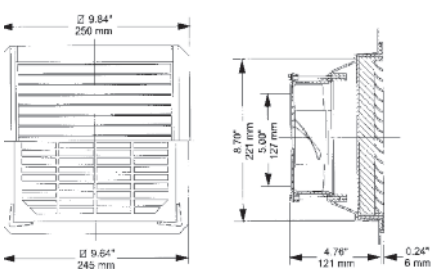
WPF10-115BK



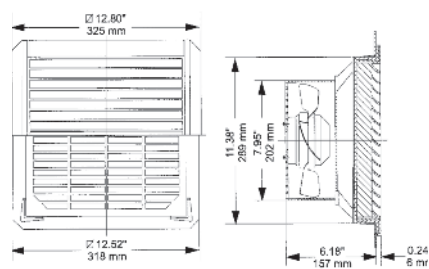
WPF20-115BK



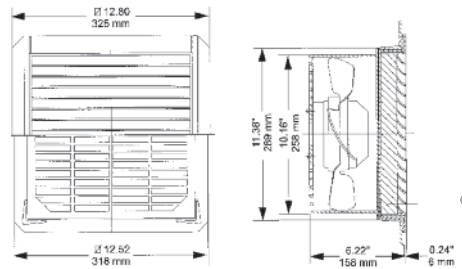
WPF25-115BK



WPF30-115BK



WPF50-115BK



WPF60-115BK

# Exhaust Grille and Filter Accessories



Part Number	Price	Filter Density (G/M2)	Mass Filter Level %	Required Cutout Dimensions
WPFA10BK	<--->	150	67%	3.62x3.62 (92x92)
WPFA20BK	<--->	350	83%	4.92x4.92 (125x125)
WPFA25-30BK	<--->	350	83%	8.78x8.78 (223x223)
WPFA50-60BK	<--->	350	83%	11.46x11.46 (291x291)

Dimensions in inches (millimeters)

## Exhaust grille

## Features

- Polycarbonate fire retardant plastic grilles, UL94-VO
- Durable, reusable filter mat included

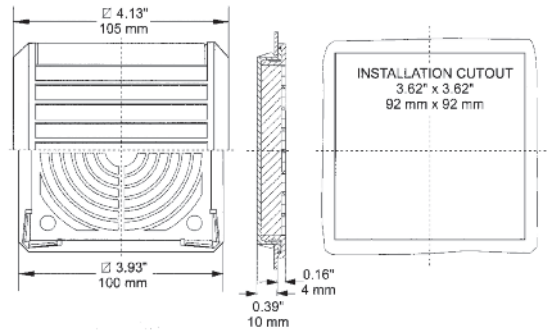
## Standards

- NEMA 1 (NEMA 12 with optional WPF Series gasket)
- IP43 (IP54 with optional WPF Series gasket)

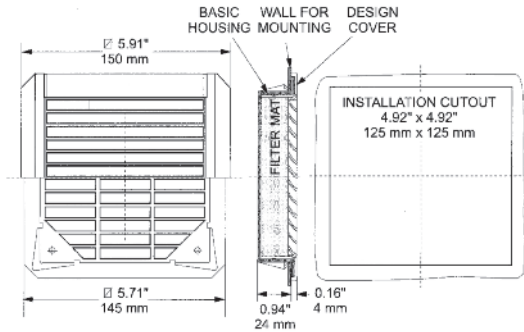
## Accessories

- Gaskets (WPF Series) recommended if installing on enclosure with textured finish

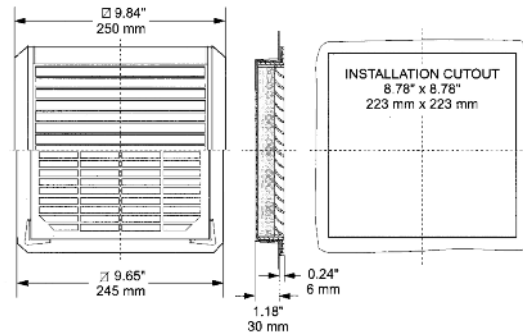
### WPFA10BK



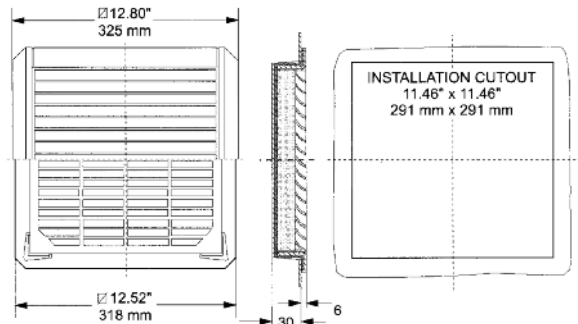
### WPFA20BK



### WPFA25-30BK



### WPFA50-60BK



# Exhaust Grille and Filter Accessories



Rubber gaskets for filter fans and exhaust grilles

## Features

- Packaged individually
- Provide added sealing protection between enclosure and fan housing
- Recommended when fans or exhaust grilles are installed on enclosures with textured finishes

## Standards

- Changes filterfan rating (WPF series) from NEMA 1 to NEMA 12 when installed

## Replacement filter mats

### Applications

- Replacement filter mats for WPF series filterfans and WPFA series exhaust grilles

### Features

- Made of washable synthetic fibers
- Reusable up to 20 times
- 100% resistant to humidity



Replacement Filter Mats							
Part Number	Price	Use With This Filterfan Kit Part Number	Price	Use With This Exhaust Grille and Filter Part Number	Price	Mass Filter Lever %	Dimensions HxW
<b>WPFM10</b>	<--->	WPF10-115BK	<--->	WPFA10BK	<--->	67	3.40x3.40 (85x85)
<b>WPFM20</b>	<--->	WPF20-115BK	<--->	WPFA20BK	<--->	83	4.50x4.50 (115x115)
<b>WPFM25-30</b>	<--->	WPF25-115BK	<--->	WPFA25-30BK	<--->	83	8.30x8.30 (210x210)
		WPF30-115BK	<--->				
<b>WPFM50-60</b>	<--->	WPF50-115BK	<--->	WPFA50-60BK	<--->	83	11x11 (280x280)
		WPF60-115BK	<--->				

Rubber Gaskets					
Part Number	Price	Use With Filterfan Kit Part Number	Price	Use With Exhaust Grille Part Number	Price
<b>WPFG10</b>	<--->	WPF10-115BK	<--->	WPFA10BK	<--->
<b>WPFG20</b>	<--->	WPF20-115BK	<--->	WPFA20BK	<--->
<b>WPFG25-30</b>	<--->	WPF25-115BK	<--->	WPFA25-30BK	<--->
		WPF30-115BK	<--->		
<b>WPFG50-60</b>	<--->	WPF50-115BK	<--->	WPFA50-60BK	<--->
		WPF60-115BK	<--->		

Enclosure Shipping Schedule		
Same day	1 - 7 days	1 -10 days
Color indicates shipping lead time in business days.		



# Filter Fan Kits

018000-02



## Applications

Filter fans provide an optimum climate in enclosures. The interior temperature of enclosures is reduced by channeling cooler filtered outside air into the enclosure, thus expelling heated internal air. The resulting air flow prevents formation of localized heat pockets and protects electronic components from over-heating.

Outdoor filter fans are used in outdoor enclosures where warm air must be dissipated. To clean and exchange the filter mat, you open the lockable door of the outdoor hood, eliminating the need to allow interior access to the enclosure. IP55 protection type is achieved due to the special design of the hood and the use of fine filter mats.

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## Features

- Easy filter change
- Outer door lock for outdoor models
- Impact resistant
- Weather/UV resistant UL 94V-0 (indoor)/UL94H-B (outdoor)
- No-screw installation - except outdoor models
- Low noise
- 120 VAC and 24 VDC models available
- Service life - 50,000 hrs@77°F (25°C) + 65%RH
- Connection type - 12 to 69 CFM - 2 wires w/case clamps, AWG 14, length 4"/136 to 373 CFM - 3 pole terminal, AWG 14, clamping torque 0.8 Nm
- Airflow direction easily switched on all models by reversing the axial fan.
- Includes self-adhesive gasket pre-installed on frame
- Optional mounting screws for additional support



## Standards

All models except outdoor: CE, RoHS, IP55, UL Type 1 when using supplied filter. For use with NEMA 1 and NEMA 12 enclosures only.

UL #: E234324

Note: Using fine filter mat F5 increases the protection to UL Type 12, but reduces the airflow. (See *Stego Air Volume and Pressure Data*, later in this section.)

Part Number	Price	Amps (mA)	Rated Voltage	Power Consumption (60 Hz for 120V models)	Free Flow Air Delivery (CFM)*	Air Delivery with Exhaust (CFM)**	Max. Static Pressure (Pa)*	Operating Temp. (Max/Min °F/°C)	Filter Density (g/m <sup>2</sup> )	Filtering Level	Sound Level (dB)	Required Cutout Sizes
<b>Filter Fans</b>												
018000-02	<-->	90	24 VDC	2.2W	12	9	19	158/14 °F (70/-10°C)	350	94%	31	3.82 x 3.82 inch (97.03mm x 97.03mm)
018000-01	<-->	160	120 VAC	13W	14	11	18				31	
018010-02	<-->	210	24 VDC	5W	32	25	32				40	4.92 x 4.92 inch (124.97mm x 124.97mm)
018010-01	<-->	180	120 VAC	15W	37	28	30				40	
018020-02	<-->	210	24 VDC	5W	60	40	23				39	6.93 x 6.93 inch (176.02mm x 176.02mm)
018020-01	<-->	180	120 VAC	15W	69	46	27				39	
018040-01	<-->	470	120 VAC	39W	136	84	60	140/-13°F (60/-25°C)	52	9.84 x 9.84 inch (249.94mm x 249.94mm)		
018030-03	<-->	840	24 VDC	20W	176	135	23	158/14 °F (70/-10°C)	53			
018030-01	<-->	700	120 VAC	60W	202	156	27	53	52	9.84 x 9.84 inch (249.94mm x 249.94mm)		
018050-01	<-->	780	120 VAC	85W	373	203	85	140/-13°F (60/-25°C)				
<b>Outdoor Filter Fans (Rain Hoods)</b>												
018210-04	<-->	210	24 VDC	5W	12	11.8	48	158/14 °F (70/-10°C)	360	98%	40	4.92 x 4.92 inch (124.97mm x 124.97mm)
018210-02	<-->	180	120 VAC	15W	14	14	54					

Dimensions in inches (millimeters)

\*Fan with filter and louver

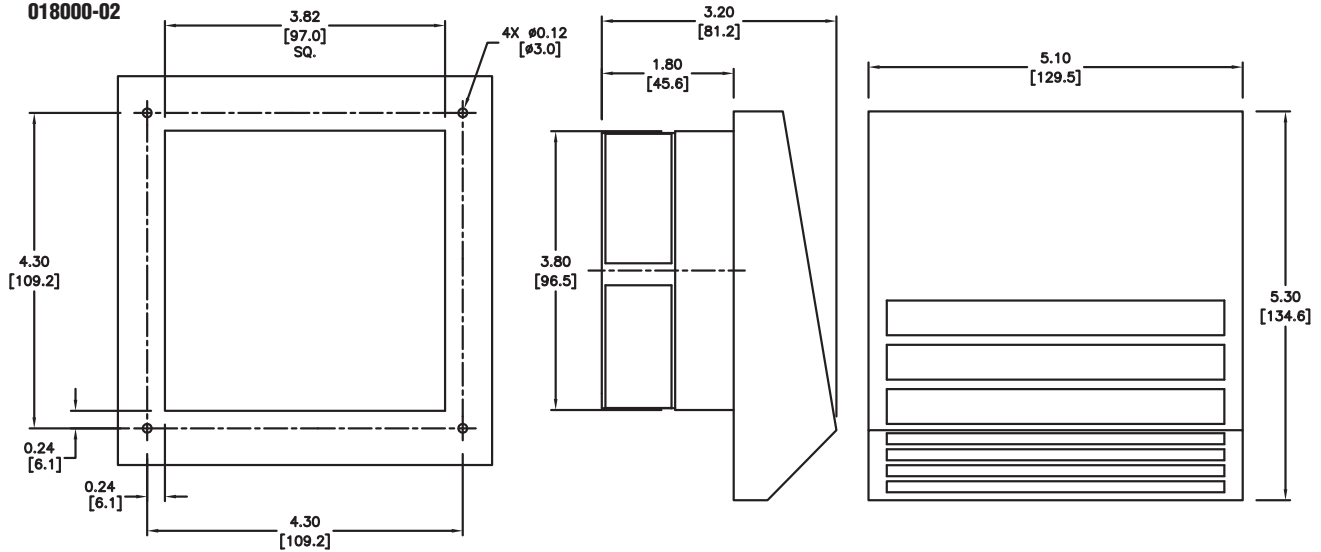
\*\*Fan with filter, louver, exhaust filter, and grille.



# Filter Fan Kit Cutouts and Dimensions

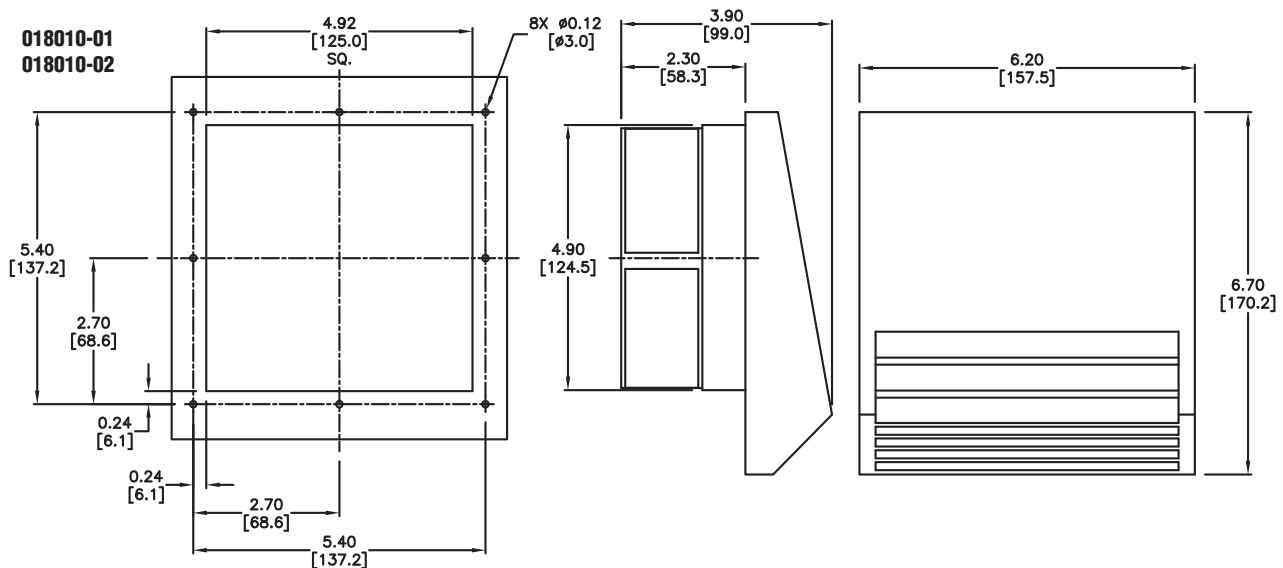
## Dimensions [in mm]

**018000-01**  
**018000-02**



CUTOUT DIMENSIONS

**018010-01**  
**018010-02**



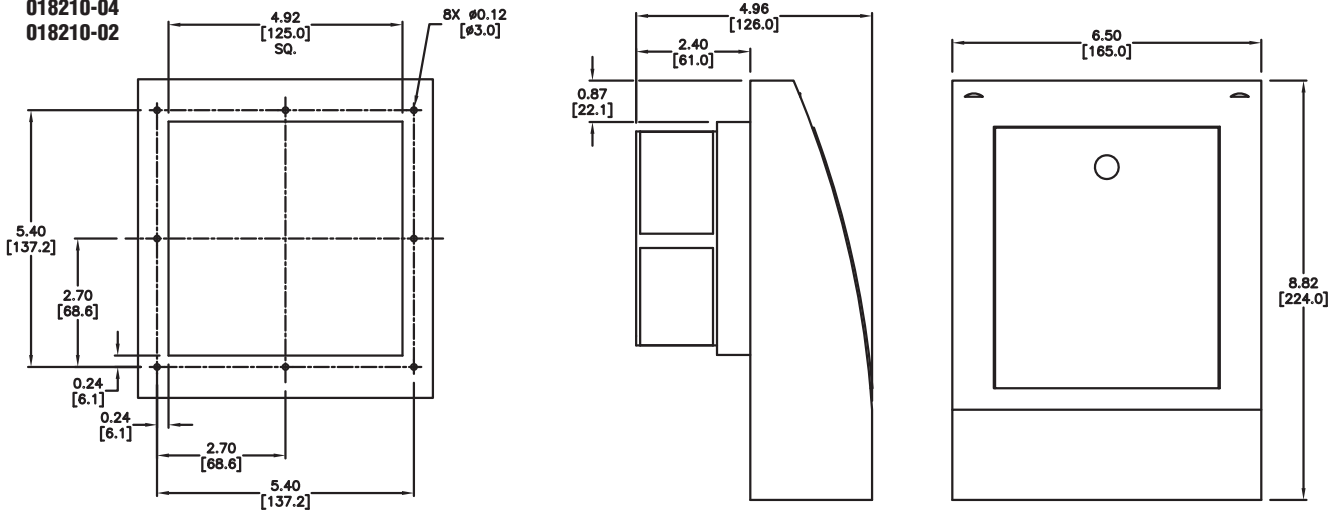
CUTOUT DIMENSIONS



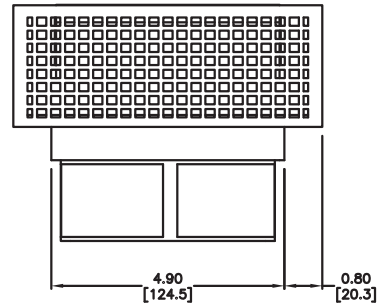
# Filter Fan Kit Cutouts and Dimensions

## Dimensions [in mm]

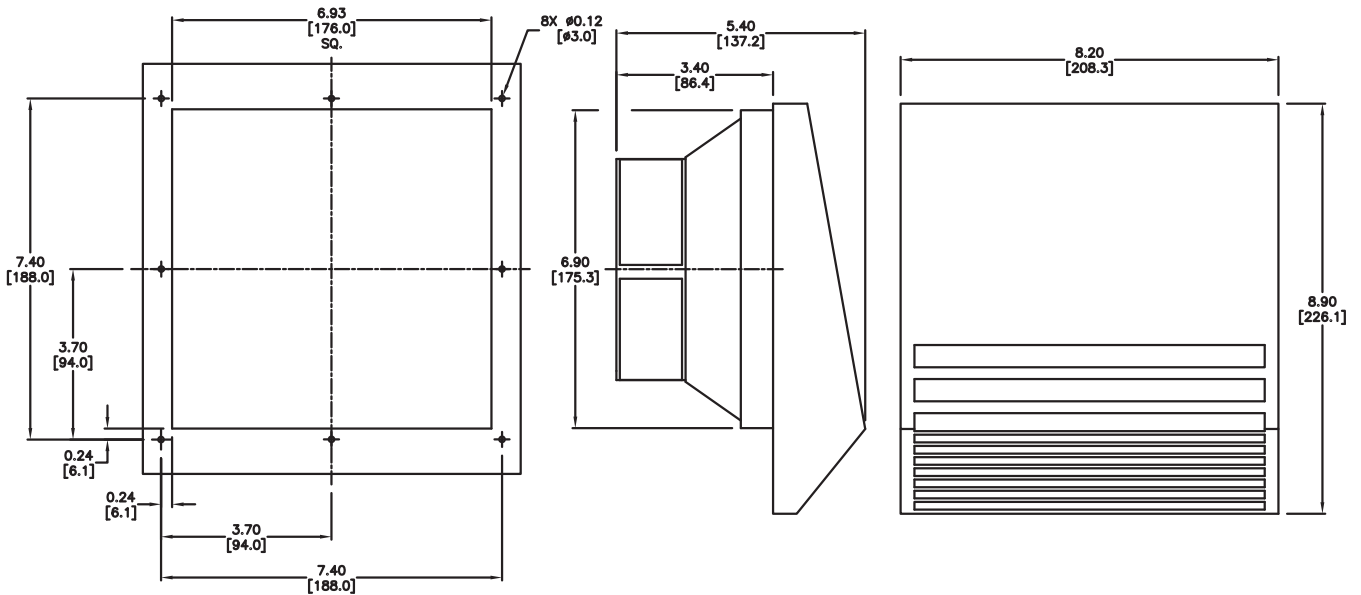
018210-04  
018210-02



CUTOUT DIMENSIONS



018020-01  
018020-02



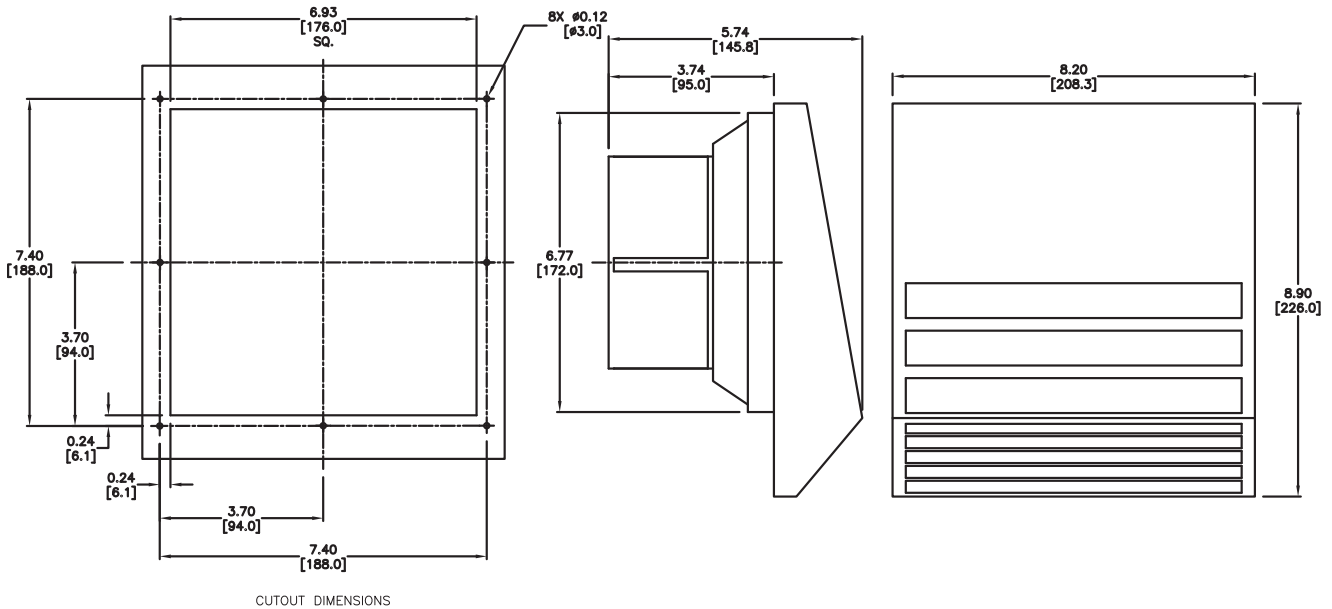
CUTOUT DIMENSIONS



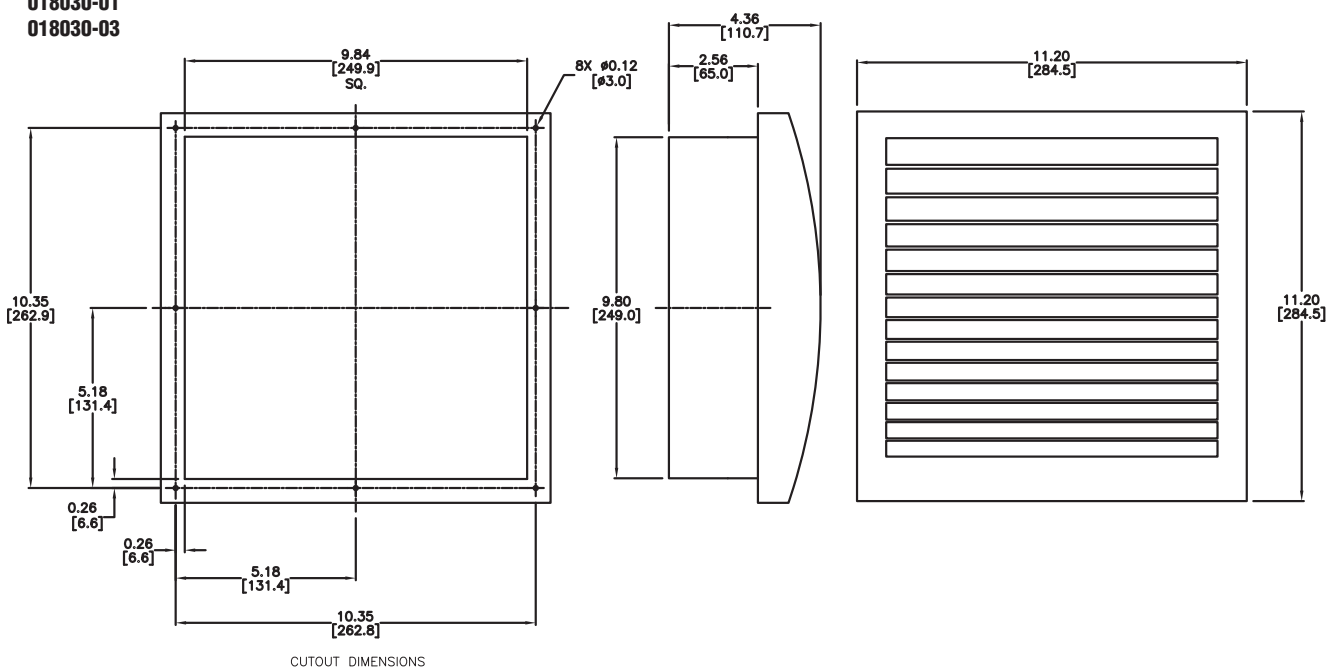
# Filter Fan Kit Cutouts and Dimensions

## Dimensions [in mm]

### 018040-01



### 018030-01 018030-03

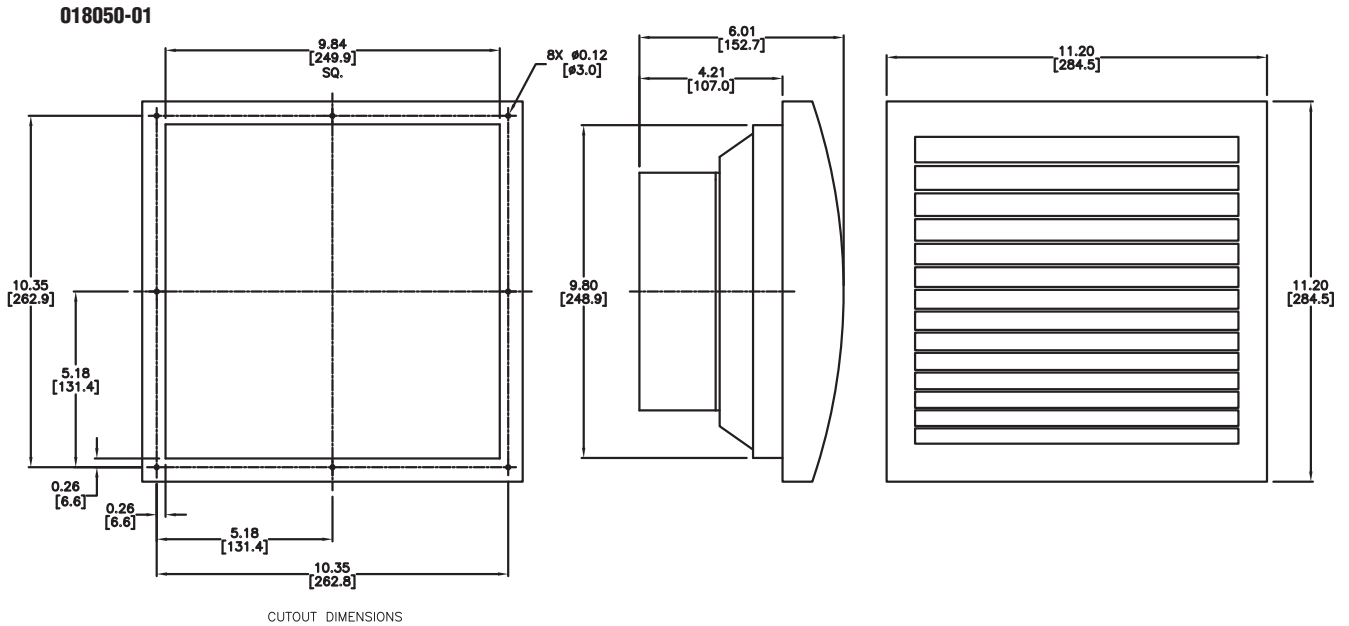






# Filter Fan Kit Cutouts and Dimensions

Dimensions [in mm]





# Exhaust Grilles With Filters

**118000-00**


## Features

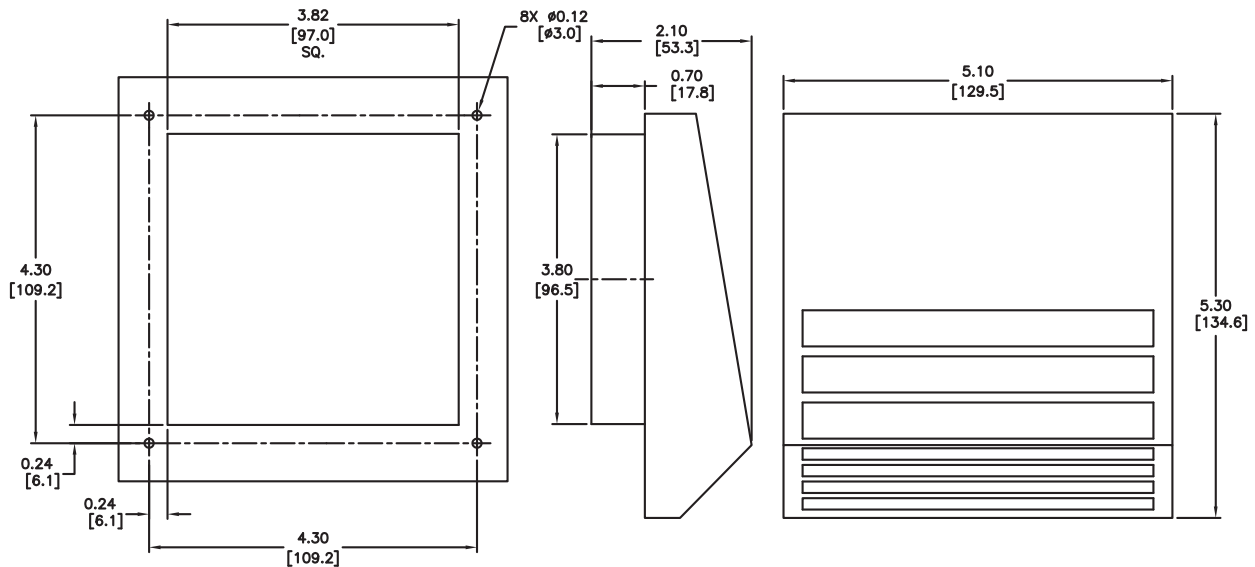
- No-screw installation
- Mounting depth 0.6 in. (16mm)

## Accessories

- Come with gaskets attached (adhesive-sided to stick on panel)

Part Number	Price	Filter Density (g/m <sup>2</sup> )	Mass Filter Level %
<b>Exhaust Grilles</b>			
<b>118000-00</b>	<--->	350	94%
<b>118010-00</b>	<--->		
<b>118020-00</b>	<--->		
<b>118030-00</b>	<--->		
<b>Outdoor Exhaust Grilles</b>			
<b>118210-00</b>	<--->	360	98%
Dimensions in inches (millimeters)			

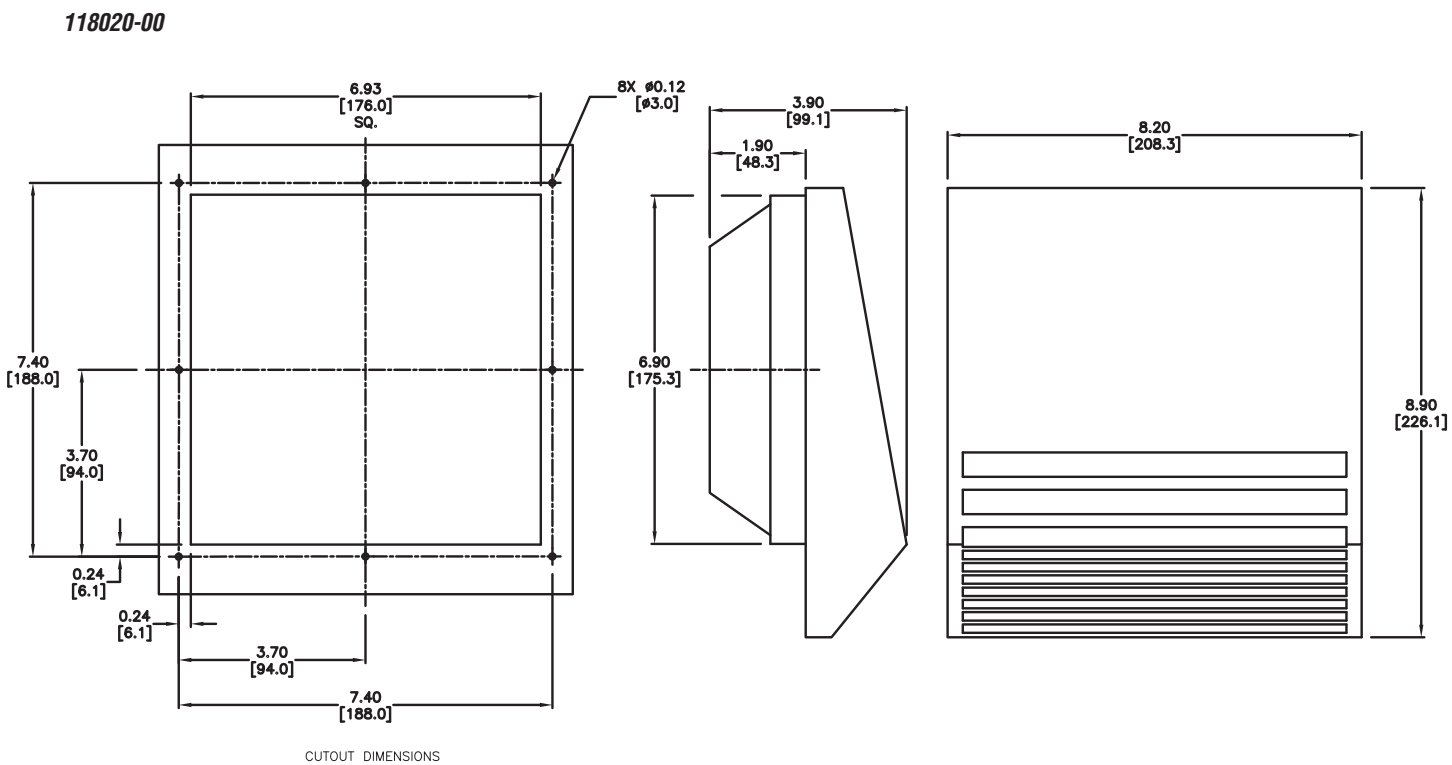
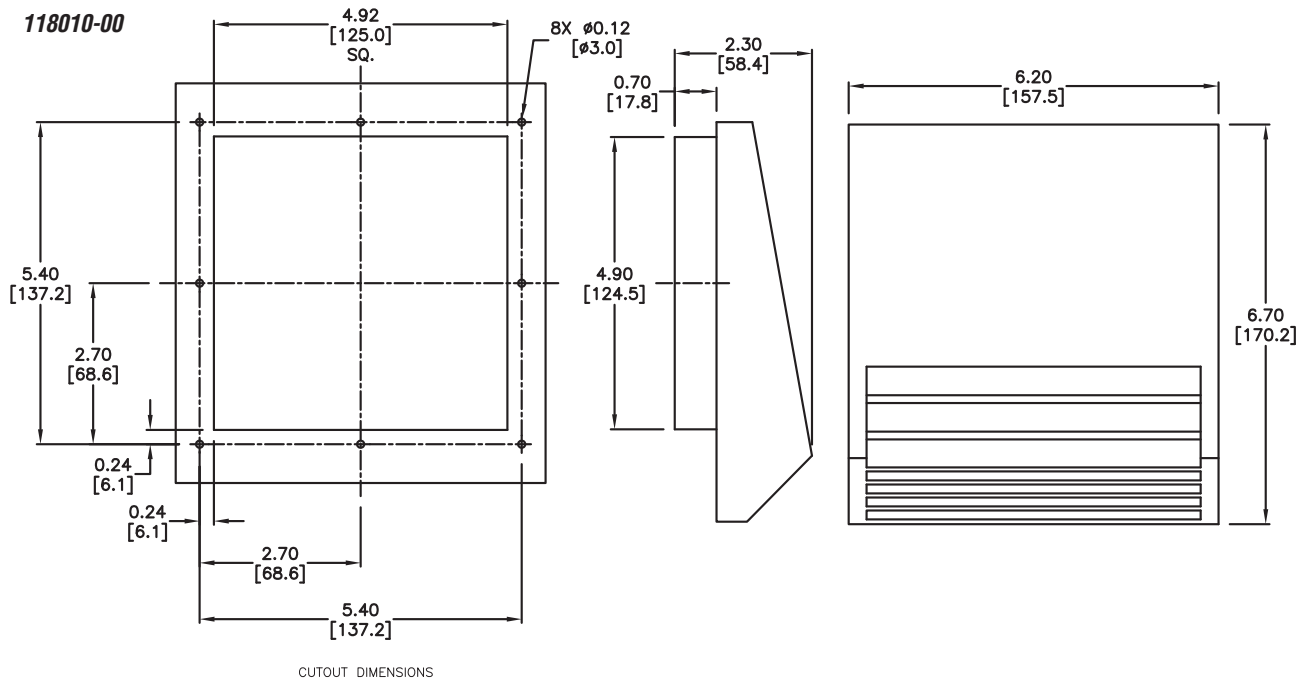
## Dimensions [in mm]

**118000-00**


CUTOUT DIMENSIONS



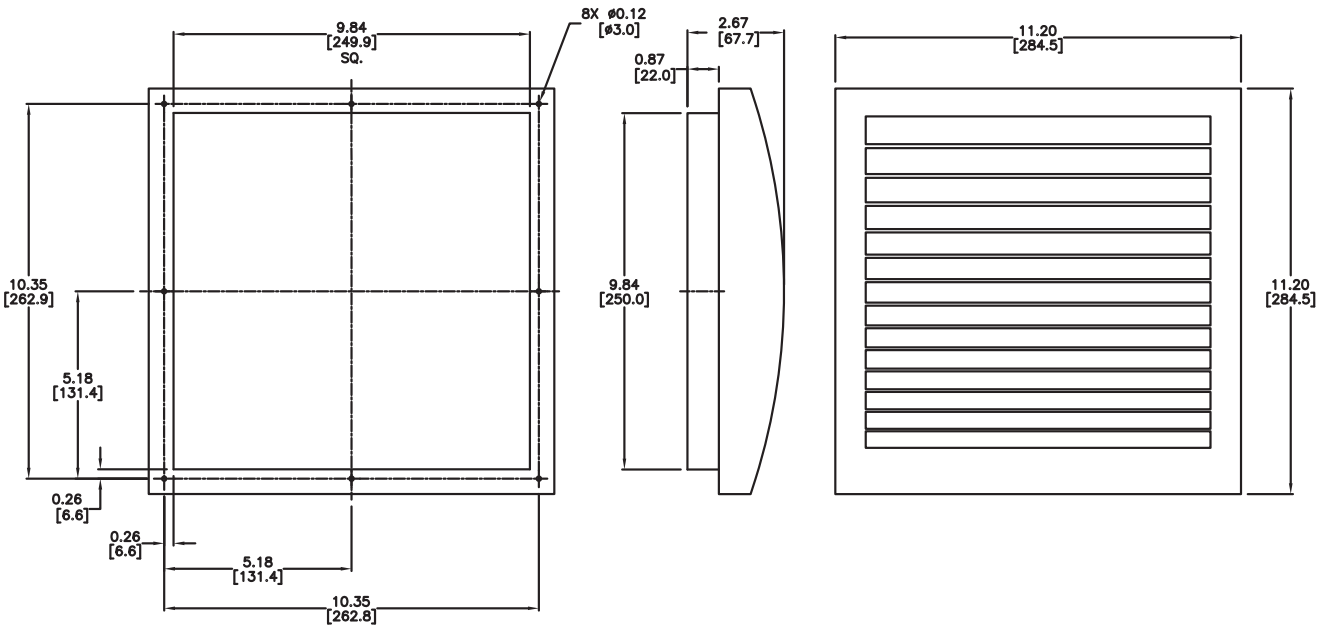
# Exhaust Grille and Filter Accessories





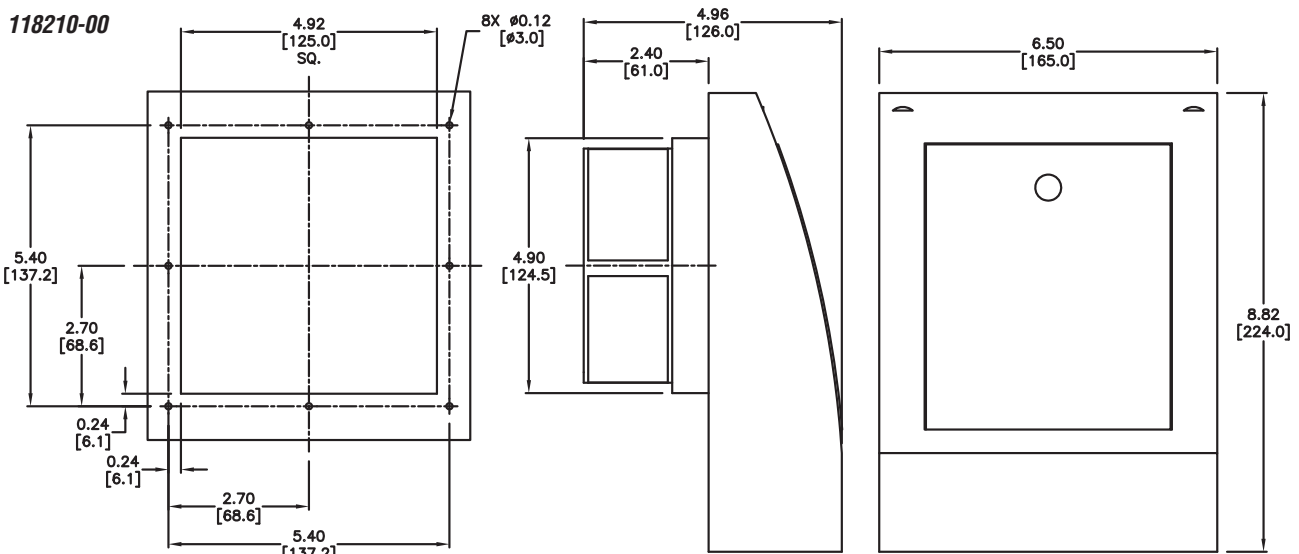
# Exhaust Grille and Filter Accessories

**118030-00**

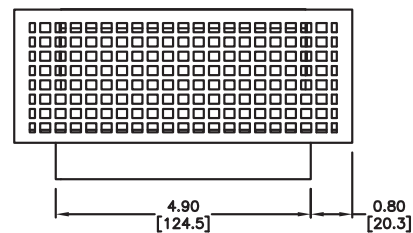


CUTOUT DIMENSIONS

**118210-00**



CUTOUT DIMENSIONS



# Enclosure Cooling – Selecting a Fan or Air Conditioner

## Fan selection

To select the proper size (CFM) fan for your forced air cooling solution, you need to determine the amount of heat to be removed (in watts) and determine the Delta T (Max. allowable internal enclosure temperature °F – Max. outside ambient temperature °F).

**CFM = Cubic Feet per Minute**

**P = Power to be dissipated in watts**

**CFM = (3.17 x P<sub>watts</sub>) / Delta T °F**

**Delta T = max. allowable internal enclosure temperature °F – max. outside ambient temperature °F**

## Air conditioner selection

To select the proper size air conditioner, the worst-case conditions should be considered, but take care not to choose an oversized unit.

There are two main factors in choosing an uninsulated metal NEMA rated enclosure located indoors:

- Internal heat load
- Heat load transfer

### Internal Heat Load

**Internal heat load** is the heat generated by the components inside the enclosure. This can be determined by a few different methods. The preferred method is to add the maximum heat output specifications that the manufacturers list for all the equipment installed in the cabinet. This is typically given in Watts, so use the following conversion:

**BTU per Hour = Watts x 3.413**

**Example:** The Watt-loss chart for the GS3 Drives shows that a GS3-2020 AC drive has a Watt-loss of 750 watts.

**BTU per Hour = 750 watts x 3.413**

**BTU per Hour = 2559**

### Heat Load Transfer

**Heat load transfer** is the heat lost (negative heat load transfer) or gained (positive heat load transfer) through the enclosure walls with the surrounding ambient air. This can be calculated by the following formula:

**Heat load transfer (BTU/H) = 1.25 x surface area (sq. ft. ) x (max. outside ambient air (°F) – max. allowable internal enclosure temperature air (°F))**

**Surface Area (sq. ft.) = 2 [(H x W) + (H x D) + (W x D)] / 144 sq. inches**

*Note: 1.25 is an industry standard constant for metal enclosures;  
0.62 should be used for plastic enclosures.*

Once you have determined your Internal Heat Load and the Heat Load Transfer, you can choose the proper size unit by calculating the needed cooling capacity.

**Cooling capacity (BTU/H) = Internal Heat Load ± Heat Load Transfer**

### Fan Selection Example

A NEMA 12 Hubbell Wiegmann N12302412 enclosure (30" high x 24" wide x 12" deep) contains a GS3-2020 AC drive (20 HP 230 volt) that has a maximum allowable operating temperature of 104°F and is located in a warehouse that has a maximum outside ambient air temperature of 95°F.

Power to be dissipated is stated in the specifications of the GS3-2020 and is found to be 750 watts, so P=750 watts

Delta T = Max. operating temperature for the GS3-2020 is 104°F – Max. ambient air temperature of 95°F

**Delta T = 9°F**

**CFM = (3.17 x 750 watts) / 9°F**

**CFM = 264**

Choose a Hubbell Wiegmann WPF60-115BK filter fan kit that provides 295 CFM with exhaust kit WPFA50-60BK

### Air Conditioner Selection Example

A NEMA 12 Hubbell Wiegmann N12302412 enclosure (30" high x 24" wide x 12" deep) contains a GS3-4030 AC drive (30 HP 460 volt) that has a maximum allowable operating temperature of 104°F and is located in a warehouse that has a maximum outside ambient air temperature of 115°F.

Power to be dissipated is stated in the specifications of the GS3-4030 and is found to be 1290 watts.

Internal heat load:

**BTU per Hour = 1290 watts x 3.413**

**BTU per Hour = 4403 BTU/H**

Heat load transfer:

**Heat load transfer (BTU/H) = 1.25 x 19 sq. ft. x (115°F – 104°F)**

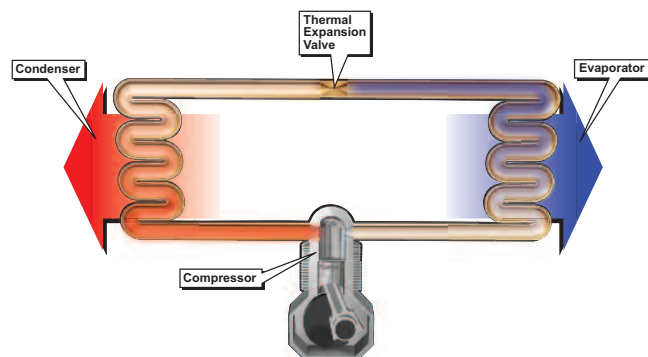
**Heat load transfer (BTU/H) = 261.25 BTU/H**

Cooling capacity:

**Cooling capacity (BTU/H) = 4403 BTU/H + 261.25 BTU/H**

**Cooling capacity (BTU/H) = 4664.25 BTU/H**

In this example, you are able to determine that a 5000 BTU/H unit is needed. Select a TA10-050-16-12 Stratus air conditioner.



Refrigeration Cycle