

# TM-2™ TM-4™

## DUCTED, DISPOSABLE CEILING FILTER MODULES

- Lightweight – easy to install
- Classified per the Underwriters Laboratories Inc UL-900 Standard
- One piece top with integral inlet collar
- Module assembled without screws or other fasteners – no metal shavings or filings
- Factory scan tested
- Suitable for gasketed and gel grid systems

The TM-2 and TM-4 ducted modules are lightweight, disposable HEPA filter ceiling modules. Both are designed for optimum filter performance in cleanrooms with individually ducted modules.

The TM-2 is a cost-efficient commercial filtration module for ISO Class 7 to Class 4 cleanrooms, ideally suited for healthcare, food processing or other applications where clean air is a priority.

The TM-4 is a superior air filtration module designed for ISO Class 3 to Class 1 cleanrooms that demand higher efficiency, such as in the microelectronics industry. TM-4 modules are also suitable for applications requiring lower pressure drop than conventional ducted modules.

With the use of high-efficiency membrane media filters, the TM-2 module can now also be used in ISO Class 3 to Class 1 cleanrooms at lower pressure drops.

All standard TM-2 and TM-4 modules come with either a 10" or 12" diameter inlet (with special size inlets available). Both have an adjustable distribution plate, which can be adjusted with a screwdriver from the room side through an access port located in the center divider of the module. An optional design with a fixed perforated distribution plate is also available (center divider with access port not included).

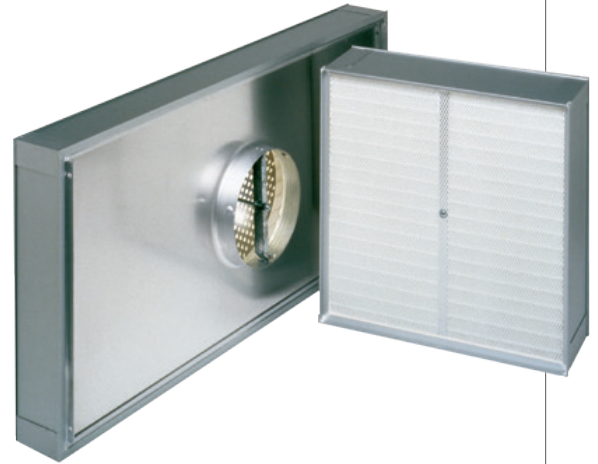
All standard modules come with an integral expanded metal painted face grille.

### **Sturdy, Lightweight Housing**

Both the TM-2 and TM-4 modules come in a variety of sizes, offering flexibility for any installation. The TM-2 24" x 24" module weighs 14 pounds and the 24" x 48" size weighs 24 pounds. The TM-4 weighs 26 pounds and 42 pounds, respectively. The two larger sized modules weigh substantially less than competitive units.

With the AAF TM-2 and TM-4 modules, the possibility of bypass leakage is virtually eliminated. All metal to metal joints are bonded to prevent leakage. Plus, each unit is entirely factory-sealed, so there are no leak paths between the filter inlet and air leaving side.

One room side air sampling port allows for checking of static pressure or contamination levels of the air entering the module. The same port is also used to adjust the damper-diffuser. Housings are available with four suspension points for attachment of hangers.



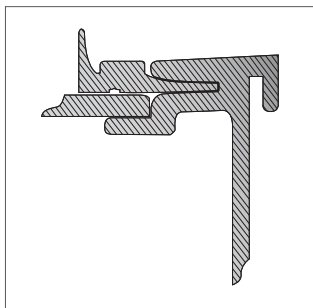
# TM-2 and TM-4 Filter Modules

## AstroCel® II Mini-Pleat Filter Optimizes Capture, Minimizes Resistance, and Reduces Costs

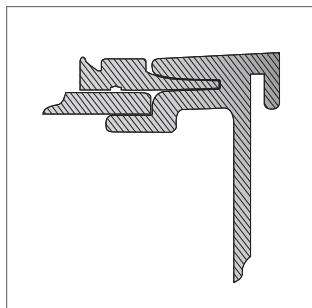
The media in each AstroCel II filter is made of glass microfibers formed into a thick mat, pleated to allow a large amount of media surface area to be incorporated within the housing. The pleats are spaced with narrow ribbons of filter media, allowing the air to flow through the filter pack with minimum resistance. The pack is sealed inside the housing on all four sides with a white urethane sealant that eliminates voids and leakage.

The TM-2 and TM-4 modules are now available with MEGAcel II media. MEGAcel II media offer superior durability and resistance to both chemical and mechanical damage for worry-free performance in challenging applications. Additionally these media packs offer much lower airflow resistance to provide energy savings.

### Construction Detail



TM-2 or TM-4 with Seismic Hanger



TM-2 or TM-4 without Hanger

### Ease of Installation

The low profile housing and light weight of the TM-2 and TM-4 modules make installing them the easiest of any ceiling modules on the market.

The modules are typically installed in a 1½" or 2" T-bar ceiling grid or 2" wide gel or gasket seal, heavy-duty ceiling grids, suspended from the building structure. Simply set the unit in place in the ceiling grid, then connect and seal the flexible supply air duct to the inlet collar. Dimples on the inlet collar prevent the flex duct from slipping off. No hold-down clamping is necessary between the filter and the ceiling grid. Modules can be accessed from the room side of the ceiling grid.

When the maximum design resistance has been reached, the entire module is simply discarded. This eliminates the time-consuming task of removing, replacing, and resealing filter cartridges.

### Efficiency Selection

Choose from a variety of efficiencies:

HEPA Filter – 99.99% on .30 micrometer particles

ULPA Filter – 99.9995% on .10 to .20 micrometer particles

Application specific efficiencies available.

## Typical Cleanroom ISO-14644-1 Cleanliness Classification by Segment

Selected airborne particulate cleanliness classes for cleanrooms and cleanzones											
Industry	ISO Class 1	ISO Class 2	ISO Class 3	ISO Class 4	ISO Class 5	ISO Class 6	ISO Class 7	ISO Class 8	ISO Class 9		
Microelectronics	•	•	•	•	•	•	•	•	•		•
Pharmaceuticals			•	•	•	•	•	•	•	•	•
Aerospace			•	•	•	•	•	•	•	•	•
Medical Devices					•	•	•	•	•	•	•
F&B and Healthcare						•	•	•	•	•	•

## TM-2 Features

- Low Profile Housing (5" Gasket, 5¾" Gel)
- Two inch Filter Pack Depth
- Lightweight, Disposable Module
- MEGAcel II or AstroGel II Mini-pleat Filter Pack
- Gasket or Knife Edge Options

The AAF TM-2 series, with its mini-pleat pack, is a commercial, cost efficient performer that delivers peak filtration in unidirectional and non-directional flow cleanrooms from ISO 8 to ISO 4. Its lightweight, disposable design, ease of installation, and efficiency options make it ideal for applications where it is important to regulate the quality of air.

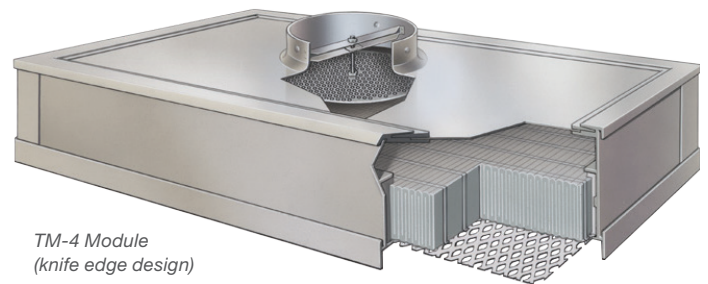


*TM-4 Module  
(gasket seal design)*

## TM-4 Features

- Low Resistance, High Airflow
- Low Profile Housing (7" Gasket, 7¾" Gel)
- Choice of Filter Pack Depth (2½", 3", 3½", 4")
- Gasket or Knife Edge Options

The AAF TM-4 series, with its deep-pleat pack, was developed to meet industry requirements for large cleanrooms with individually ducted modules. This superior efficiency module reduces operating energy costs without compromising the demand for optimum filter performance. The TM-4 is available with custom efficiencies ranging up to 99.999995% on .10 to .20 micrometer size particles, making it ideal for ISO 3 Waferfabs.



*TM-4 Module  
(knife edge design)*

# TM-2™ TM-4™

## Product Information

Size vs. Rated Airflow @100 FPM Face Velocity<sup>1</sup>

Nominal Size (in.)	Gel Seal Type <sup>2</sup> with 3/4" Skirt		2" H.D. Gasketed <sup>2</sup> Grid Type		1 1/2" Gasketed Grid <sup>2</sup> Type	
	Actual Size (in.)	CFM	Actual Size (in.)	CFM	Actual Size (in.)	CFM
24 x 24	23 x 23	315	23 1/4 x 23 1/4	325	23 5/8 x 23 5/8	335
24 x 36	23 x 35	495	23 1/4 x 35 1/4	505	23 5/8 x 35 5/8	520
24 x 42	23 x 41	590	23 1/4 x 41 1/4	600	23 5/8 x 41 5/8	615
24 x 48	23 x 47	680	23 1/4 x 47 1/4	690	23 5/8 x 47 5/8	710

<sup>1</sup>Factory airflow/resistance test is volumetric and determined by multiplying net free area of filter pack by 100 CFM/sq. ft.

<sup>2</sup>Sizes shown are typical. Check size to that recommended by ceiling grid manufacturer.

## Product Data

Filter Pack Resistance Data<sup>3</sup>

Performance Classification	Efficiency Rating	Resistance @ 100 FPM (in. w.g.) Nominal Filter Pack Depth				
		2"*	2 1/2"	3"	3 1/2"	4"
HEPA	99.99% @ .3pm	.47	.38	.31	.28	.25
ULPA	99.9995% @ .1 to .2 pm	.68	.55	.46	.40	.32

Resistance can be further reduced by using MEGAcel II filters

<sup>3</sup>The resistance values shown may vary up to plus/minus 10%.

\*Maximum pack depth available for TM-2 Modules.

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9920 Corporate Campus Drive, Suite 2200, Louisville, KY 40223-5690  
888.223.2003 Fax 888.223.6500 | aafintl.com

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ISO Certified Firm

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