

# Modular MediaFilter™ Collector

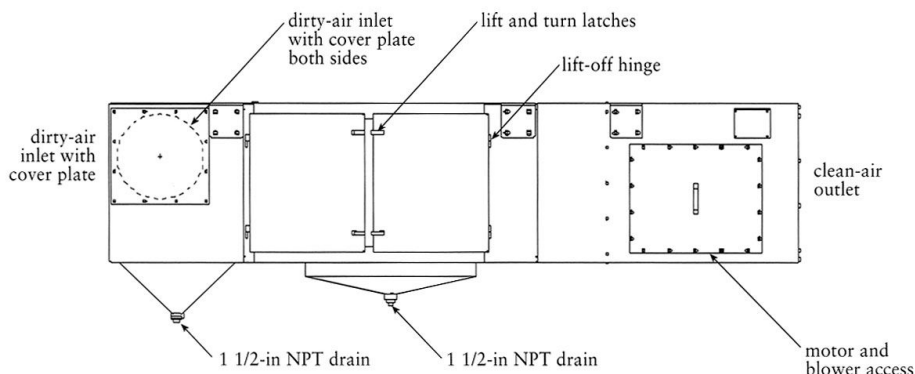
## Product Overview – Modular MediaFilter™ – Horizontal Series

In 2002, the FD product line was replaced with the Modular MediaFilter Horizontal Series collectors. Two versions – Source and Ambient – are available to filter mist, smoke, dust, fume and odors from a variety of applications such as grinding, wet machining, and soldering. The Modular MediaFilter Horizontal Series offer numerous standard features and benefits including:

- Redesigned drainage hoppers from the FD series.
- High durability powder paint coating.
- Improved mounting brackets for safe installation.
- Direct drive power packs

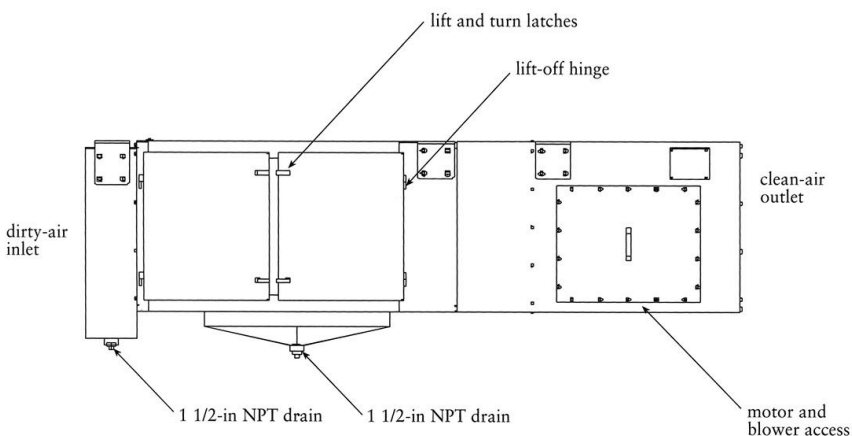
**MMF – HS** stands for Modular MediaFilter Horizontal Source referring to the horizontal collector orientation and source collection of mist at the point of generation using hooding and ductwork. Four standard models are available: HS-1A, HS-2A, HS-1B, and HS-2B. HS stands

for Horizontal Source collector; the number after the dash indicates the number of modules; the letter after the dash refers to the power pack. The MMF – HS contains a source collection module followed by three standard filter stages. The first stage is a 4" impinger. The second stage is a 1" aluminum mesh. The third stage is a 95% ASHRAE fiberglass vee-bag. Optional High Efficiency First Stage, Multi-vee, HEPA and carbon filter modules are also available.



**MMF – HA** stands for Modular MediaFilter Horizontal Ambient referring to the horizontal collector orientation and general ambient collection of airborne mist and dust. Four standard models are available: HA-1A, HA-2A, HA-1B, and HA-2B. HA stands for Horizontal Ambient collector; the

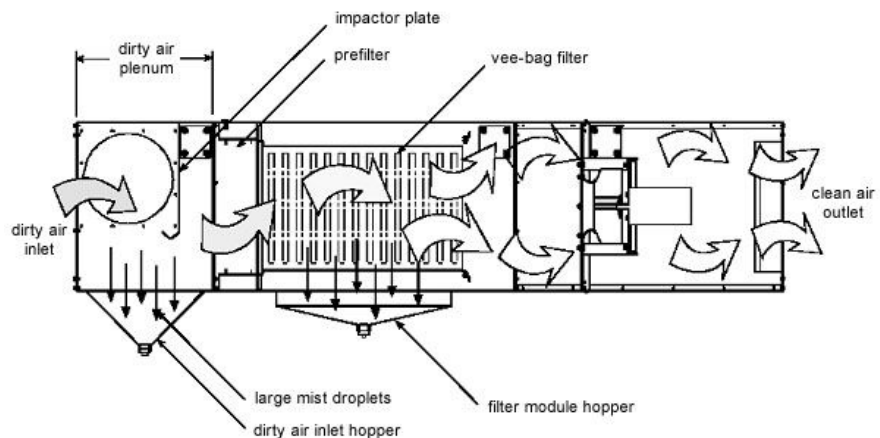
number after the dash indicates the number of modules; the letter after the dash refers to the power pack. The MMF – HA contains three standard filter stages. The first stage is a 1" aluminum mesh. The second stage is a 4" multi-vee. The third stage is a 95% ASHRAE fiberglass vee-bag. Optional High Efficiency First Stage, Impinger, HEPA and carbon filter modules are also available.



## Operational Explanation

### MMF – HS

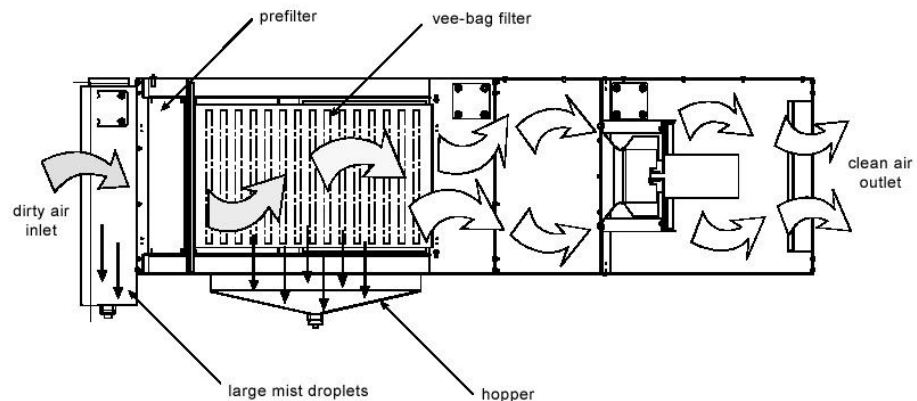
During normal operation, contaminated air enters the unit through one of two side inlet collars. The dirty-air plenum is designed to reduce the incoming air velocity and cause large droplets to separate from the airstream. The reduced-velocity air passes across an impactor plate that separates the droplets



from the airstream where they fall into the first hopper. The air passes through a reusable first-stage impinger designed to collect and coalesce large droplets and particles. Smaller mist droplets pass to the second-stage aluminum mesh and third-stage fiberglass vee-bag. As mist particles coalesce and form large droplets, the droplets run down into the bottom of the filter and drain into the second hopper. The collected liquid drains from both hoppers into P-traps or collection bottles. Clean, mist-free air discharges through the end of the collector.

### MMF – HA

During normal operation, contaminated air enters the unit through the open inlet located on the end of the unit. The air passes through a disposable multi-vee filter. Smaller mist droplets pass to a second-stage 1" aluminum mesh. The finest mist passes to a third-stage fiberglass vee-bag. The



multi-vee's open pleat design and vee-bags' precise bag spacing allows contaminant loading through the life of the filters. As mist particles coalesce and form large droplets, the droplets run down into the bottom of the filter and drain into the hopper. The collected liquid drains from the hopper into P-traps or collection bottles. Clean air discharges through the end of the collector.

## Application Summary

Mist is defined as small droplets of materials that are ordinarily liquid at normal temperature and pressure and are suspended in the air. For use with a mist collector, this is further defined as metalworking fluids used in machine tool operations. Typical metalworking fluids include straight oil, oil- and water-soluble, semi-synthetic and synthetic coolants. Mist particles are created by two basic means: mechanical action and thermal effects. Mechanical action refers to the mist generated from the oil or coolant nozzle; mechanical action creates a mist typically greater than

one micron in size. Thermal effects occur when localized heat vaporizes the coolant, and then the vapor cools, condensing into a mist. Thermal effects create mist from 0.01 to 1 micron in size. Other contaminants, such as dust coming off the part or the tool and smoke from the combustion of the oil or coolant, are also generated in the use of metalworking fluids in machine tool operations.

Metal working fluids are used for a number of reasons. Primarily for heat removal (cooling) and lubrication. Secondary functions of metal working fluids are corrosion protection, removal of chips and swarf, lubrication of the machine tool, and for control of rancidity. Different types of metal working fluids are selected based on the need of the customer's machining operation. See the Wet Machining application paper online at DTIC (Donaldson Torit Information Center) for more information about metal working fluids.

Mist collection is done for numerous reasons, including: visual clarity of part being machined and containment of mist/contaminants. Secondary benefits of mist collection are reduced health effects such as sore throats, respiratory problems, and even cancer; reduced maintenance problems like slippery floors and dirty lights and walls; and increased worker productivity with a cleaner, healthier work environment.

**HEPA or 95% DOP Option:** Smoke, and sub-micron particles generated from heat build up is quite common in applications where straight oils and water-soluble coolants are used. In applications where heavier amounts of smoke or thermally generated particles are generated, the HEPA filter module or the 95% DOP filter module option is recommended. The 95% DOP filter has a higher capacity, but is not as efficient as the HEPA filter.

**Carbon Option:** Burning coolants can create odors and solvent-based straight oils can generate vapors that require collection. An optional Carbon module is available for removal of nuisance gas/vapor and odorous contaminants. Some odors are particles instead of vapors, in which case use a HEPA filter. Contact Applications Engineering for proper sizing of the Carbon module.

## Sizing and Selecting Criteria

There are three different methods for calculating the required airflow from an enclosed machining center. Each of these methods should be evaluated based on the specific needs of the customer, design of the machine enclosure, and available locations for the inlet hood. See the Wet Machining application paper online at DTIC (Donaldson Torit Information Center) for more information about calculating the required airflow.

Once the required airflow is determined, select a collector based on fan pack performance noted in the Data Sheets and Price Sheets. Recall that continuous or standard duty is designed for continuous (up to and including 24 hours per day, 7 days per week) operation when no drainage (shut down) time is available. Intermittent or moderate duty is designed for moderate product cycles when drain time is available.

## Features and Benefits

Features	Benefits
<b>Modular design</b>	<ul style="list-style-type: none"> <li>• Variety of design layouts and filter choices provide flexibility and expandability</li> </ul>
<b>Filter access doors</b>	<ul style="list-style-type: none"> <li>• Easy filter changeout</li> <li>• Simple maintenance</li> </ul>
<b>Horizontal design</b>	<ul style="list-style-type: none"> <li>• Saves valuable floor space</li> </ul>
<b>Ambient models</b>	<ul style="list-style-type: none"> <li>• Reduced worker exposure to mist and other contaminants where source collection is not practical</li> </ul>
<b>Source capture models</b>	<ul style="list-style-type: none"> <li>• Reduced worker exposure to mist and other contaminants at the source.</li> </ul>
<b>Redesigned drainage hoppers</b>	<ul style="list-style-type: none"> <li>• Improved drainage of collected mist</li> <li>• Longer filter life when filter media does not sit in “pooled” mist</li> </ul>
<b>Powder coating</b>	<ul style="list-style-type: none"> <li>• Durable paint</li> </ul>
<b>Factory installed junction box</b>	<ul style="list-style-type: none"> <li>• Faster and easier installation (option)</li> </ul>
<b>Clean air plenum foam silencing</b>	<ul style="list-style-type: none"> <li>• Quiet operation</li> </ul>
<b>Power pack access panel</b>	<ul style="list-style-type: none"> <li>• Easy fan and motor serviceability</li> </ul>
<b>Source collection inlet module with impactor</b>	<ul style="list-style-type: none"> <li>• Reduced contaminant loading to filters prolonging filter life</li> </ul>
<b>Mounting brackets</b>	<ul style="list-style-type: none"> <li>• Safe installation</li> </ul>