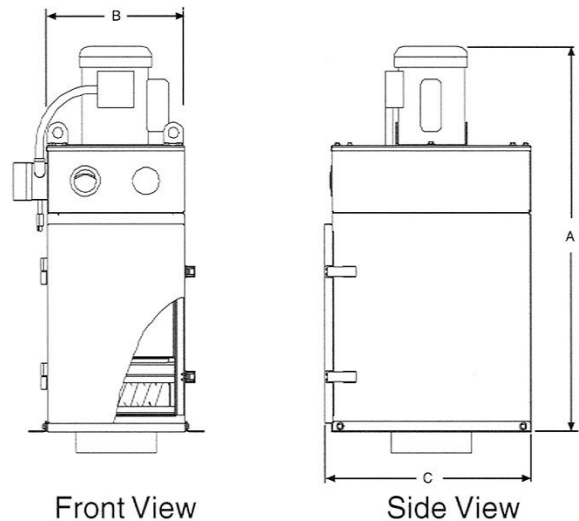


Mini-Mist Collector

Product Overview

Designed in 1999, the machine-mountable Mini-Mist collector is used to collect coolant mists such as oil, water-soluble and synthetic coolant mists. These mists can be created by a variety of machining operations and other industrial processes. The unit will also collect a small amount of dust. With the optional HEPA filter smoke from machining operations can also be collected. Standard sizes handle 300 to 1200 cfm (510 to 2,039 m³/hr).

Designed to be compact, the Mini-Mist model numbers MM 500 and MM 1200 indicate the nominal airflow capacity on intermittent-duty applications. These models include an integral, ½ to 1½ hp direct drive airfoil fan and optional HEPA filter. The small footprint makes the models ideal for machine mounting. The MM 1200 can also be overhead mounted (See Installation and Operation Manual); wall mounted with the optional wall-mounting bracket; or stand alone with optional plenum and leg base.



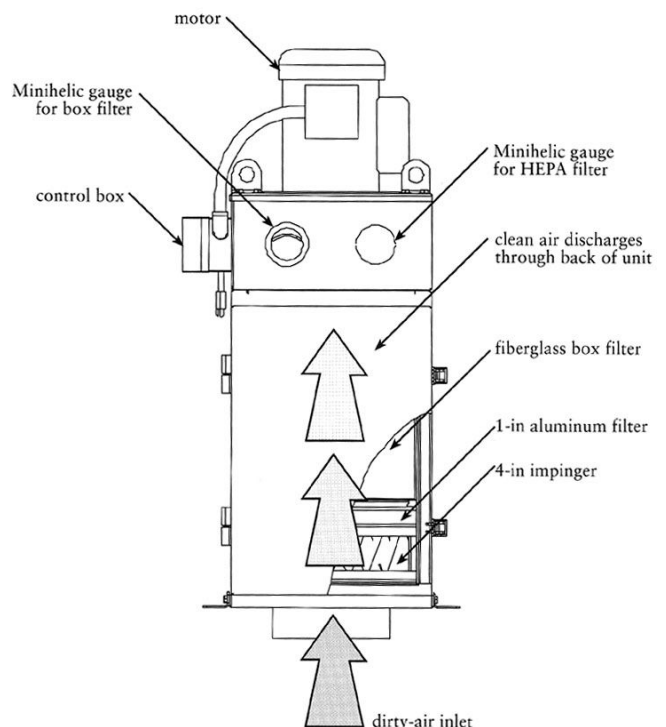
Operation Explanation

Normal Operation: During normal operation, contaminated air enters the Mini-Mist collector through the inlet opening located on the bottom of the unit.

The air passes through the first stage filter that is designed to collect and coalesce large droplets. The impinger is reusable and may be cleaned periodically.

The air that passes through the first stage filter still contains large particles, and smaller mist droplets. A second stage mesh filter provides the next level of filtration, trapping large particulate. The second stage mesh filter is also reusable and may be cleaned periodically.

The air then passes through the fiberglass box filter, the third and most efficient stage of filtration. This filter is the heart of the Mini-Mist system. It features a pleated fiberglass filter media that traps particulate, as well as collects, coalesces, and drains fine mists. This box filter uses the highest loft (thickness) and



finest fibers available for superior efficiency and holding capacity. Clean, mist-free air exits the filter element and enters the fan. The fan and motor are enclosed in an acoustically lined clean air chamber for quiet operation. Clean air exhausts through the top of the collector.

At machine shutdown, the droplets drain back into the machining center or optional container.

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.

The Mini-Mist can collect some dust along with the mist; however, it should not be operated without mist. There should be some type of liquid material present to allow coalescing and filter drainage, which will help remove collected solids and increase filter life. The extremes of very heavy oils and very light, thin oils should be avoided. The very heavy oils (similar to tar consistency) will not drain. The very light, thin oils (similar to gasoline consistency) may evaporate.

The general guidelines that are key for applying a machine-mountable Mini-Mist collector are provided here. Updates to this information will be found in future product announcements.

Air-to-Media Ratio: Applications with mineral or straight oil should be operated at a maximum air-to-media ratio of 14:1. The maximum recommended ratio for all other applications is 20:1. To allow draining, continuous operations should be run at 10:1 or less.

HEPA Option: Smoke is quite common in applications where a straight or mineral oil is used. In applications where a great amount of smoke is created, the HEPA filter option is recommended.

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.

Features and Benefits

Features	Benefits
Machine-mountable configuration	<ul style="list-style-type: none">• Unit mounts directly to the machining center for easy and inexpensive installation and changes to plant layout
Mini-Mist box filter	<ul style="list-style-type: none">• The highest loft (thickness) and finest fibers available for superior efficiency and holding capacity
Built-in silencer	<ul style="list-style-type: none">• Quiet operation, with a sound rating of 72 (MM 500) and 74 (MM 1200) dB(A)
Filter gage	<ul style="list-style-type: none">• No maintenance guesswork is required
Easy filter changeout	<ul style="list-style-type: none">• Filter changeout is quick and easy with minimal worker contact with the collected fluid and reduced maintenance time and costs
Prewired 110 volt	<ul style="list-style-type: none">• Easy installation without the need to remove collector panels to access the motor, reducing installation cost
Optional HEPA assembly	<ul style="list-style-type: none">• Excellent for applications where smoke is present