

**WSO MIST  
COLLECTORS**

# **EASY MIST MANAGEMENT**



**Donaldson**  
FILTRATION SOLUTIONS

# Mystery Solved

Coolants and lubricants help make the magic happen in a wet machining process, but they will always create some undesirable mist. Whether it's water-soluble, oil or oily smoke mist being generated, it can negatively impact air quality for workers or lead to costly maintenance issues. That's why manufacturers are under increased pressure to implement the most effective and efficient mist control solutions for their specific machining processes.



## Specifying for Optimal Performance

With so many variables in play, it can be difficult for a manufacturer to dial in and maintain the appropriate mist collection system. Too much moisture — or too little — reduces the life of machining tools and equipment and can cause maintenance problems. In addition, equipment, speeds, cycle times and high pressure systems can change airflow or filter needs.



## Meeting Regulations

Effective mist control is critical for meeting OSHA and ACGIH standards to protect workers from exposure to potentially harmful substances, as well as ANSI/NFPA and regulatory requirements governing fumes, dust and particulates generated during manufacturing. The addition of a HEPA final filter can add to the collector's efficiency and performance helping increase worker and facility safety.



## Ongoing Support and Maintenance

If a machining mist control system is not properly maintained, you will have an ongoing struggle on your hands. From break-downs and compromised air quality to accidents and injuries, poor machine mist management can cause a host of health and production problems. Access to local support resources is important.

## Common Applications:

- » CNC Machining
- » Forming
- » Turning
- » Grinding
- » Milling
- » Quenching
- » Cutting



**90,000+**  
**MIST COLLECTORS**  
**INSTALLED**

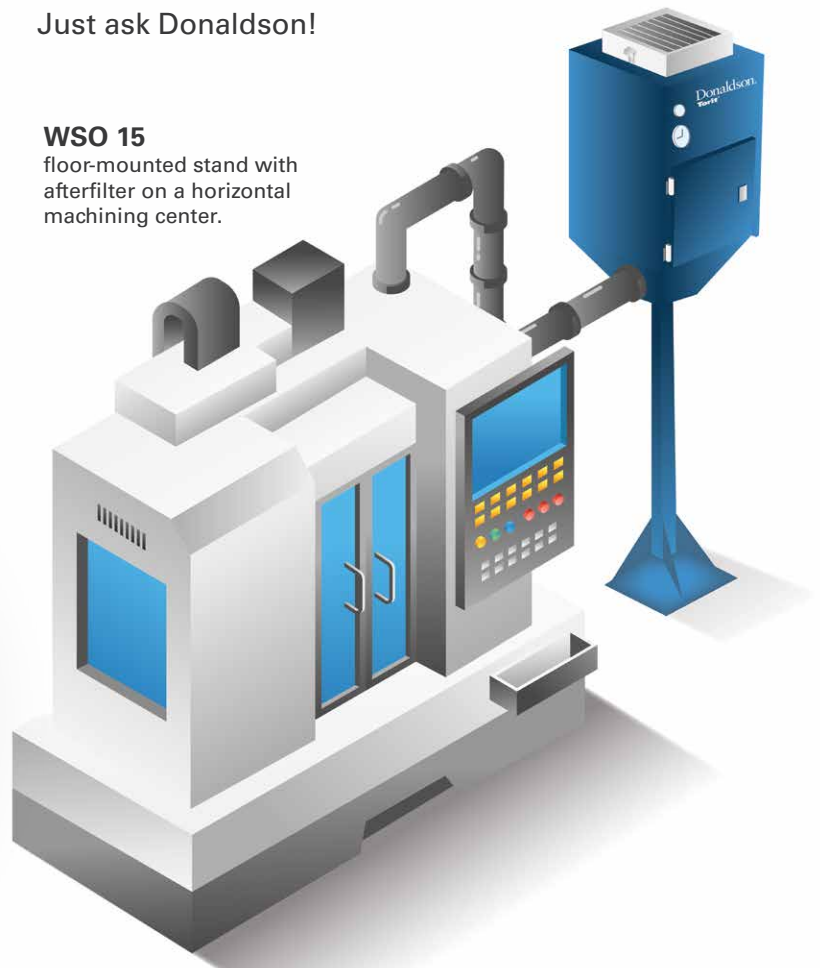
**OVER 45**  
**YEARS**  
**OF MIST EXPERIENCE**



## The WSO Difference

The versatile Donaldson Torit WSO Mist Collector is designed for easy maintenance with front load filter changeouts saving significant labor and downtime. The WSO uses our market proven Synteq™ XP Media Technology for superior draining, resulting in lower pressure drop and longer filter life. It can also be configured to meet your specific needs. Just ask Donaldson!

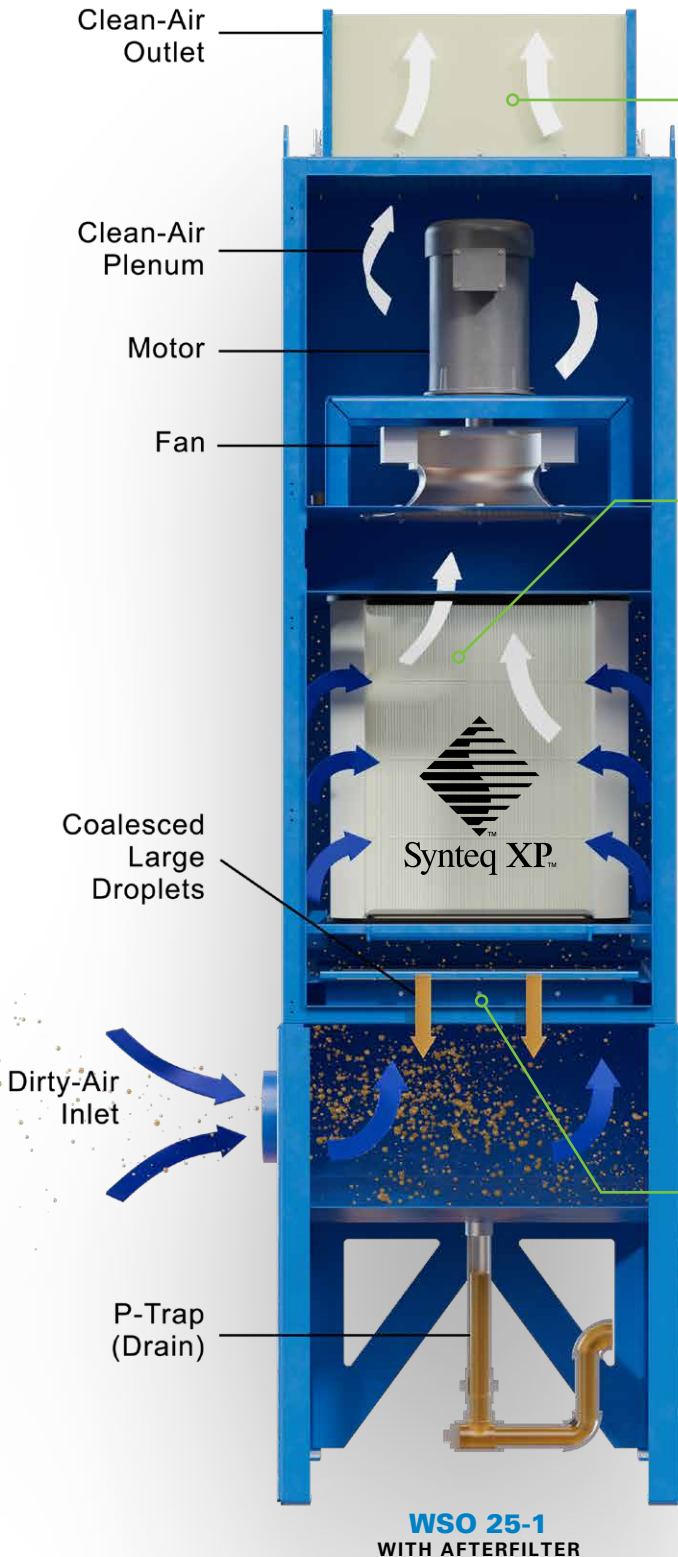
**WSO 15**  
floor-mounted stand with  
afterfilter on a horizontal  
machining center.



### WSO Offers:

- » 3-in-1 solutions for mist applications
- » Advanced Synteq XP high efficiency media
- » Cross-flow filter design for better drainage
- » Easy front-load filter changeouts
- » Energy savings
- » Continuous-duty design
- » Lower life cycle costs
- » Quiet operation
- » Configurations for machine mounting, floor stands, ceiling, or ducted central systems
- » UL-approved electrical components
- » 10-year warranty

# Versatile in Application, Flexible in Design



### 3RD STAGE

## Final Filter (Optional)

- » **DOP**  
95% efficient on 0.3 micron mist and smoke.
- » **HEPA**  
99.97% efficient on 0.3 micron mist and smoke.

### 2ND STAGE

## Primary Filter (Select one)

- » **Synteq XP - W**  
Designed to efficiently handle mist generated from water-soluble coolant. It offers an economical solution with fast draining capabilities, even for heavy loads of water-based liquid.
- » **Synteq XP - S**  
Achieves the highest efficiency in capturing smoke from machining, even in challenging applications.
- » **Synteq XP - O**  
Designed for small oil aerosols, such as mist from straight oil machining.

### 1ST STAGE

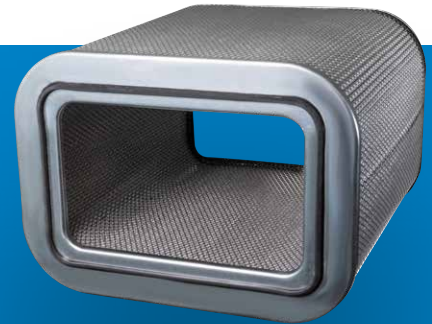
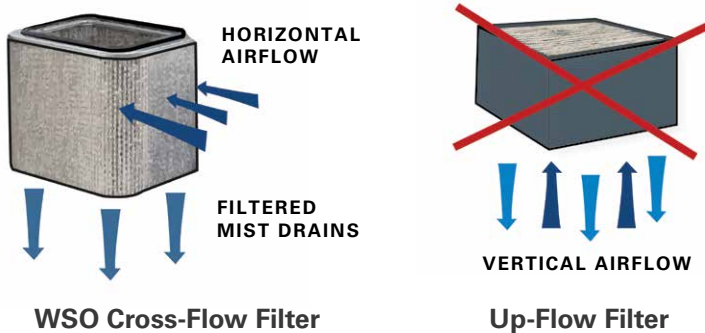
## Prefilter Options (Select one)

- » **Metal Screen**  
For heavier dust/grit from wet grinding.
- » **Metal Mesh**  
For most water-soluble mist.
- » **Polypropylene Mesh**  
For most straight oil mist.
- » **High Efficiency 1st Stage**  
For oily smoke.

# Oblong Cartridges Outperform Traditional Filters

## Cross-Flow Filter Design

Cross-flow filter design allows for better drainage meaning longer filter life. Dirty air flows horizontally through the walls of the WSO filter, perpendicular to drainage of collected and coalesced mist. This design promotes optimum drainage, which extends filter life and returns collected coolant for re-use. Conventional mist collectors have an upflow design impeding drainage and causing short filter life.



### WSO Oblong Filter Shape Features:

- » Up to 45% more filter surface area than pocket filters and round cartridges
- » Best fit in rectangular cabinet
- » Lower pressure drop
- » Longer filter life

## Industry-Leading Removal Efficiency

**Water Soluble**

**99.8%\***

REMOVAL EFFICIENCY

**PARTICLE SIZE:  
2-20 MICRONS**

**Oil**

**99.5%\***

REMOVAL EFFICIENCY

**PARTICLE SIZE:  
0.8-5 MICRONS**

**Smoke**

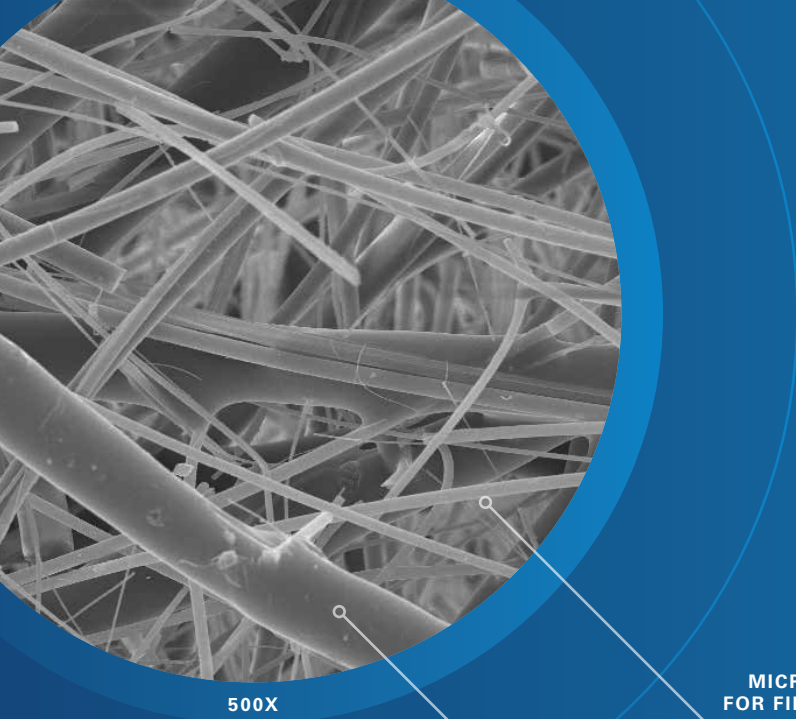
**99.97%\***

REMOVAL EFFICIENCY

**PARTICLE SIZE:  
0.07-1.2 MICRONS**

\* Stated efficiency typical for water-soluble and straight oil applications. The use of 95% DOP or HEPA filter may be required.

\*\* Stated efficiency typical for oily smoke application using a HEPA final filter.



500X

MICRO-GLASS  
FOR FILTRATION

BI-COMPONENT  
BINDING FIBER

During the media manufacturing process, the surface of the binding fiber is heat fused to make it bond to the surrounding micro-glass—no resin webbing to block pores.



## Advanced Filter Media for Mist

Proprietary Synteq XP Media Technology is a revolutionary new media for mist collection that provides high-efficiency, low-operating-pressure drop, and long filter life when compared to traditional media.

- » Engineered blend of small and large fibers, with proprietary, resin-free bonding system
- » Small fibers are scientifically proven to increase efficiency
- » Large fibers provide structural support and clear drain channels
- » Proprietary bonding system stabilizes pore structure for optimum performance

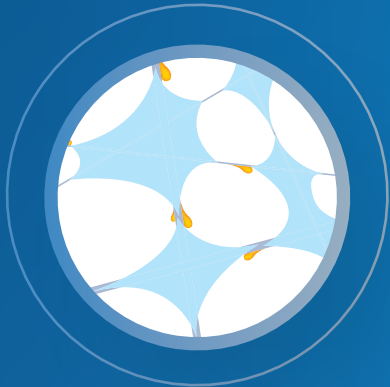
View Donaldson’s entire portfolio of filters with industry-leading Synteq media technology at [Shop.Donaldson.com](http://Shop.Donaldson.com).

## Inherent Constraints of Traditional Filter Media



### Traditional Mist Cartridge Filter Media (with Resins)

- » Made with resins to bond fibers
- » Resins reduce air pathways and block drainage

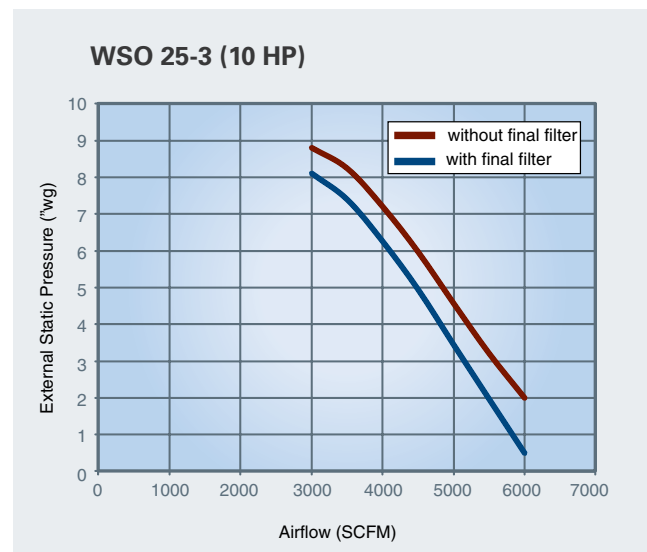
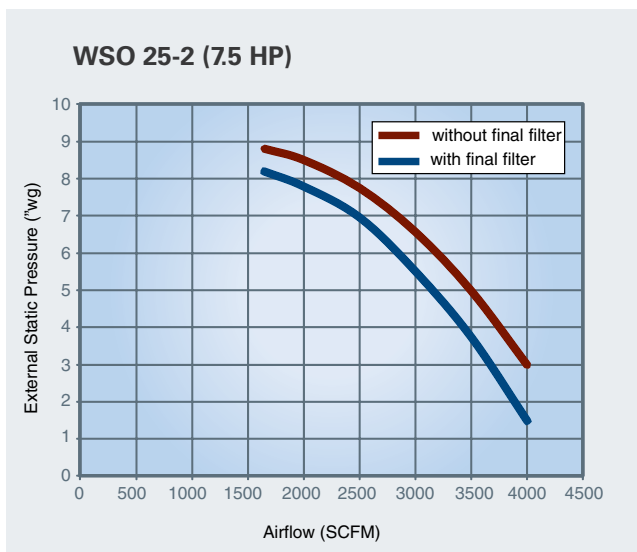
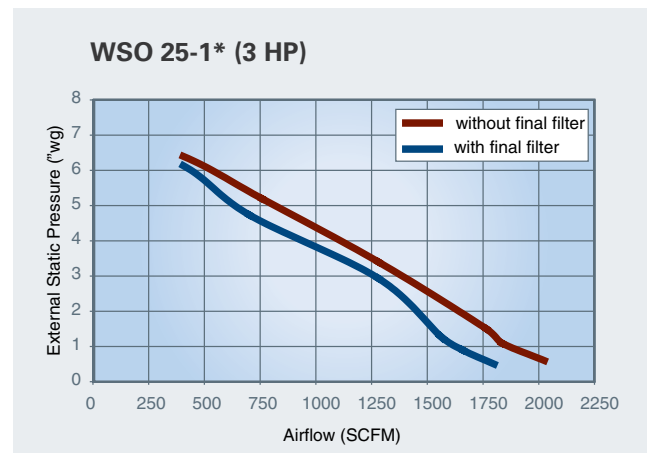
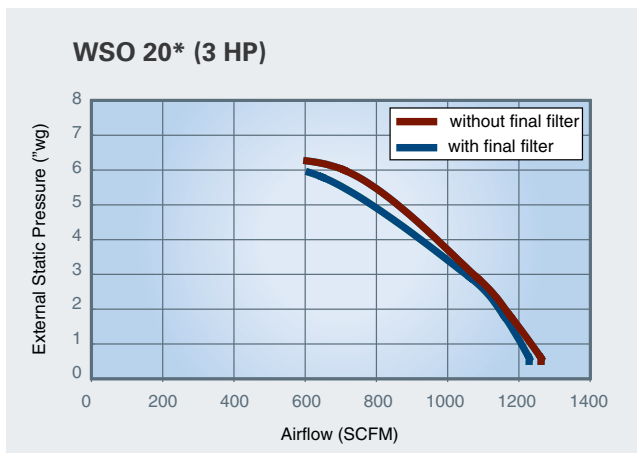
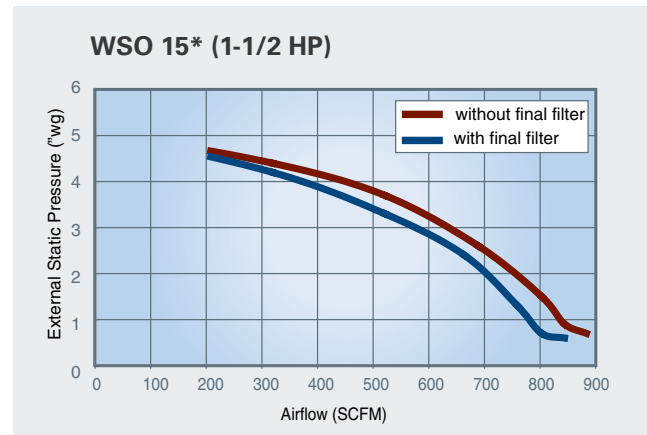
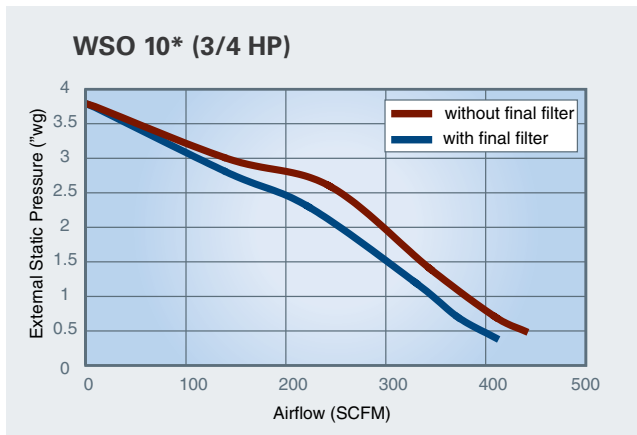


### Traditional Mist Panel Filter Media (Loose Fibers)

- » Four-layer media structure without fiber bonding
- » Fibers sag under weight of oil
- » Fiber movement creates larger holes that pass oil

# Powerful Performance: System Curves for WSO

Unlike other products that require upgrades for more demanding applications, each WSO comes standard with a unique high performance fan. The system curves below indicate available external static pressure to the unit with clean filters.



\* WSO 10, 15, 20, and 25-1 have integral power packs (motor and fan).

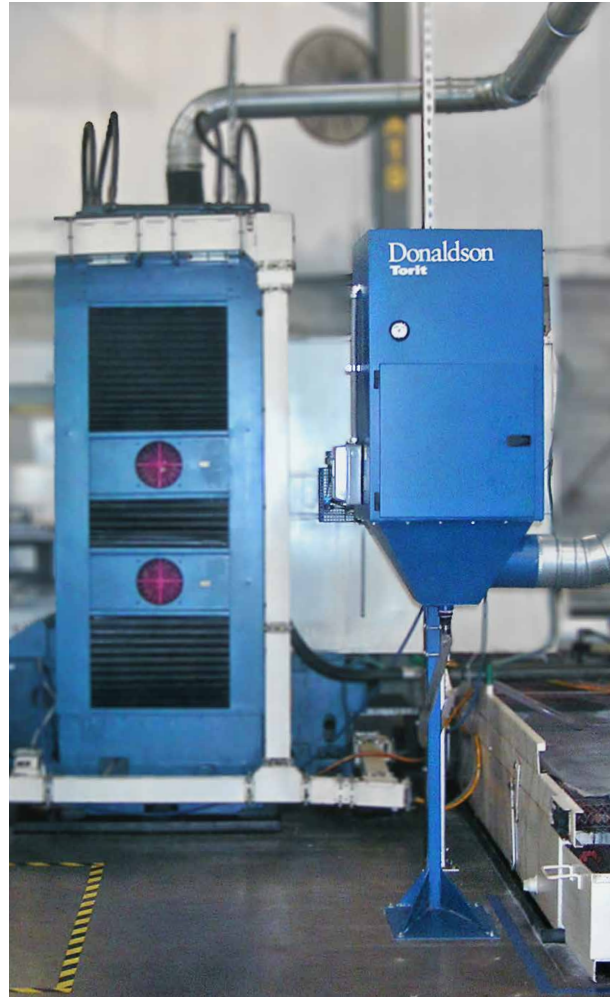


# Flexible Configurations for Multiple Applications



**WSO - Oil Mist**

20,000 cfm (33,973 m<sup>3</sup>/h)



**WSO - Smoke**

850 cfm (1,444 m<sup>3</sup>/h)



**WSO - Cold Forming**

1,200 cfm (2,038 m<sup>3</sup>/h)



**WSO - Oil Water Soluable Mist**

1,200 cfm (2,038m<sup>3</sup>/h)



## WSO Mist Collector Reduced Smoke, Maintenance Time and Cost

United Gear & Assembly, Inc. (UGA) manufactures gears and shafts for motors, generators, transmissions and drive trains.

Hobbing is a machining process in which gear teeth are generated by a series of cuts with a helical cutting tool called a hob. Hobbing uses sulfuric oil, which can create a lot of smoke. Even dry hobbing, which cuts down on the amount of oil, still generates excessive smoke when the gears are cleaned with compressed air.

“The sulfuric oil used in our gear hobbers was generating too much smoke — our facility was filling up in just a few minutes. And while our dry hobbers use less oil, they also generated a lot of smoke,” said UGA’s Tom Huppert.

UGA achieved immediate success when it installed its first Donaldson Torit WSO Mist Collector. The WSO provides filter solutions for the three mist categories: water-soluble coolants, straight oil, and the most challenging — oily smoke.

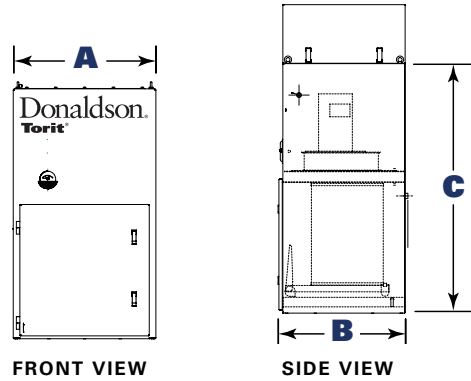
The WSO uses revolutionary Synteq™ XP media, which blends small and large fibers with a proprietary, resin-free bonding system that provides high efficiency, low operating pressure and long filter life when compared to traditional filters.

“The WSO mist collector has been running for two years and we’ve only had to change the filter once,” said Huppert. “Both our maintenance time and cost have been significantly reduced.”

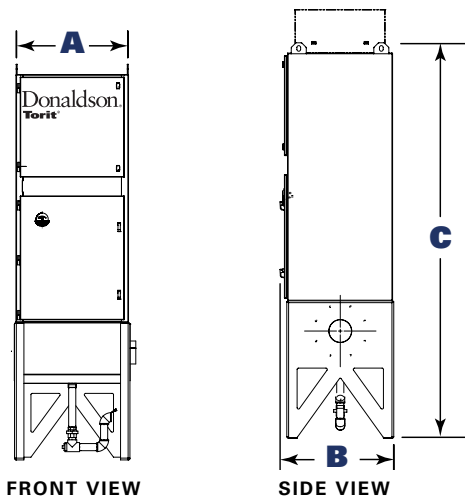


# Dimensions and Specifications

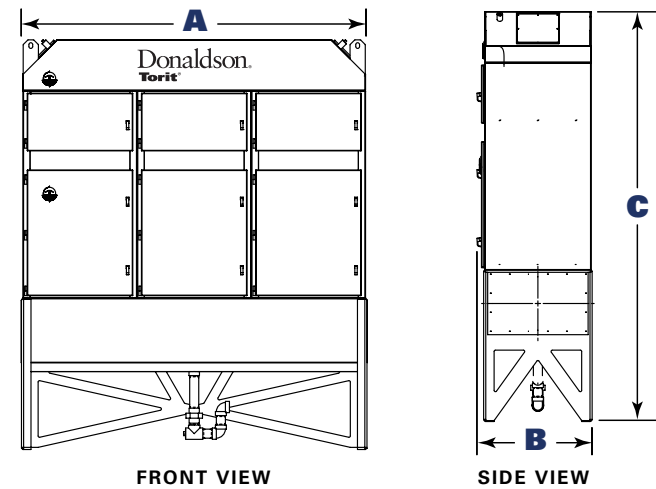
## WSO 10, 15, 20 MACHINE MOUNTED (MM)



## WSO 20, 25-1 FLOOR MOUNTED (FM)



## WSO 25-2, 25-3 FLOOR MOUNTED (FM)



Models	Nominal Airflow*		No. of Filters	Filter Height		Filter Area						Motor (hp)	Shipping Weight		Dimensions								Sound Level** dB(A)	
						Water		Oil		Smoke					A		B		C without Afterfilter		C with Afterfilter		without Afterfilter	with Afterfilter
	cfm	m <sup>3</sup> /h		in	mm	ft	m <sup>2</sup>	ft	m <sup>2</sup>	ft	m <sup>2</sup>		in	mm	in	mm	in	mm	in	mm	in	mm		
WSO 10	450	764	1	10	254	50	4.6	43	4.0	—	—	¾	180	81.6	19.0	482.6	20.9	530.9	33.2	843.3	36.5	927.1	66	63
WSO 15	850	1444	1	15	381	125	11.6	109	10.1	85	7.9	1½	250	113.4	24.0	609.6	24	609.6	41.2	1046.5	44.5	1130.3	70	68
WSO 20	1230	2089	1	20	508	167	15.5	146	13.6	113	10.5	3	285	129.3	28.0	711.2	26	660.4	49.1	1247.1	60.6	1539.2	70	68
WSO 20 (FM)	1230	2089	1	20	508	167	15.5	146	13.6	113	10.5	3	385	174.6	28.0	711.2	26	660.4	85.2	2164.1	96.6	2453.6	70	68
WSO 25-1	1850	3143	1	25	635	286	26.6	245	22.8	195	18.1	3	750	340.2	30.8	782.3	30.3	769.6	105.4	2677.2	114.3	2903.2	71	69
WSO 25-2	3700	6285	2	25	635	572	53.1	490	45.5	390	36.2	†	1000	453.6	60.8	1544.3	30.3	769.6	107.7	2735.6	107.6	2733.0	†	†
WSO 25-3	5550	9428	3	25	635	858	79.7	735	68.3	585	54.3	†	1330	603.3	90.8	2306.3	30.3	769.6	107.7	2735.6	107.6	2733.0	†	†

\* Based on clean filters.

\*\* Published dB(A) sound pressure levels were made in a hemi-anechoic chamber. Units were run with clean filters and maximum airflow through approximately 10 feet (3 meters) of ducting connected to an inlet plenum. Measurements were made 1.5 meters off the ground, 1 meter away from the collector, on the filter door side of the mist collector. Actual installed equipment sound pressure levels will vary depending upon the measurement location, the operating conditions, the installation, and the surrounding environment.

† Optional fans available. See optional fan specifications for sound level data.

FEATURES AND EQUIPMENT OPTIONS	WSO MODELS*					
	10, 15, 20		20, 25-1		25-2, 25-3	
Collector Design†	STD	OPT	STD	OPT	STD	OPT
Mild Steel Construction	X		X		X	
Inlet Hopper with Collar		X	X		X	
Inlet Hopper with Legs		X		X		X
Inlet Hopper with Vibration Isolators		X				
Integral Power Packs	X		X			X
Machine Mount	X					
Ceiling Mount		X				
Floor Mount		X	X		X	
P-Trap Assembly		X		X		X
Drain Collection Container		X		X		
Flex-Duct		X				
<b>Filters</b>						
First-Stage Wire Mesh	X		X		X	
First-Stage Polypropylene Mesh		X		X		X
High Efficiency First-Stage		X		X		X
Synteq XP for Water Soluble	X		X		X	
Synteq XP for Straight Oil		X		X		X
Synteq XP for Smoke		X		X		X
Third-Stage HEPA Filter		X		X		X
Third-Stage 95% DOP Filter		X		X		X
<b>Paint System</b>						
Textured Multi-Coat Paint Finish with 2,000-Hour Salt Spray Performance	X		X		X	
Custom Color		X		X		X
<b>Electrical Controls, Gauges &amp; Enclosures</b>						
Minihelic*** Gauge	X					
Magnehelic*** Gauge			X		X	
IEC Motor Starter		X		X		X
Type 12 (NEMA & UL) Motor Starter		X		X		X
Junction Box - Mounted & Prewired		X		X		
Remote Start/Stop		X		X		X
Machine Tool Interlock		X		X		X
Mounted and Prewired Motor Starters		X				
<b>Warranty</b>						
10-Year Warranty	X		X		X	

† Donaldson Torit equipment is designed to IBC guidelines for specific wind speed exposure and seismic spectral acceleration at grade level. Contact your Donaldson Torit representative for detailed information available on the equipment's Spec Control drawings. Equipment may be customized to meet unique, customer-specified site requirements.

\* Custom size units larger than WSO 25-3 are also available.

\*\* Minihelic and Magnehelic are registered trademarks of Dwyer Instruments, Inc.



# Collecting Confidence

Donaldson's comprehensive dust collection solutions help process owners effectively address their dust, fume, and mist collection challenges by providing knowledgeable guidance, industry-leading equipment as well as unrivaled aftermarket service and support.

With our Consultative, Comprehensive, Connected approach to dust, fume, and mist control, Donaldson is with you every step of the way.



**Consultative:** Donaldson completes a thorough review with you, listening to your operational needs and challenges.



**Comprehensive:** With that understanding, we will develop a solution using industry-leading products and technology.



**Connected:** You will have unrivaled access to global aftermarket specialists, collector performance monitoring, along with service and support professionals providing the answers you need.



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