AMANO Corporation

⚠ Follow the safety instructions below

- Read the instructions manual carefully before using the product and use the product correctly.
- Use this machine to collect water-soluble and oil-based mists.
- To collect oil-based mist, install the optional after-filter and then use the product.
- Do not collect the following substances using this product.
  - Inflammable substances ··· Petrol, thinner, benzine, kerosene and paints etc
  - Dust ····· Dust and fumes
  - Kindling ····· Cigarette ends, ash, etc
  - Others ····· Water, water vapor and chemicals
  - Oils and mists with a low flash point (80°C or less)
- This machine is not explosion-proof. It cannot be installed in hazardous locations specified by laws and regulations.
- Do not use it in or near places where flammable/corrosive fog, smoke, or gas is concentrated, or where there is explosive combustible dust.
- It should be connected to an earthing.
- If there is a short circuit because the device is not connected to an earthing, it may result in fire or electric shock, and the static electricity may cause equipment failure or malfunction.
- Install the pipes such that they do not droop down to prevent the liquid from being accumulated and that the pipes are placed at the optimum shortest distance according to the collection conditions.
- Before inspecting the product or replacing parts, be sure to turn off the power supply and check that the fan has stopped completely.
- This product cannot remove odors and gas components.

Specifications and descriptions contained in this catalog may be subject to change without notice.

Please direct any questions to:

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2023.01

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amanoenvironmental.com

Time & Air
AMANO

Filterless Mist Collector

MR Series
FILTERLESS MIST COLLECTOR

ISO 9001 SYSTEM CERTIFICATION SGS
ISO 14001 SYSTEM CERTIFICATION SGS
Hosoe Facility in JAPAN

Our evolved filterless mist collector is here!

Equipped with a self-drain system and inverter control, its performance duration is greatly extended

AMANO Environmental
An AMANO Company

MR Filterless Mist Collector

A new standard of mist collectors is here for an ever-evolving society!

Registered design

Extended Performance Duration

Clogging of the collection disk has been reduced by adopting a self-draining system (positive pressure oil drain).

Improved energy efficiency

Inverter control enables operation with optimum airflow.
The improved energy efficiency also contributes to CO^2 reduction.

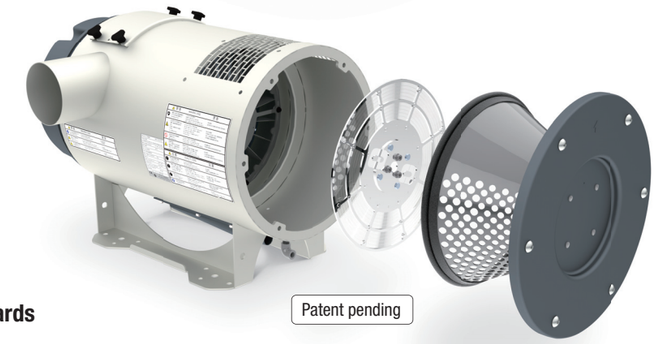
*Compatible models: MR-10, 15, 25

Improved maintainability

Improved accessibility and attachment/removal of the collection disk.
Contributes to further reduction of maintenance workload.

Improved compliant with global standards

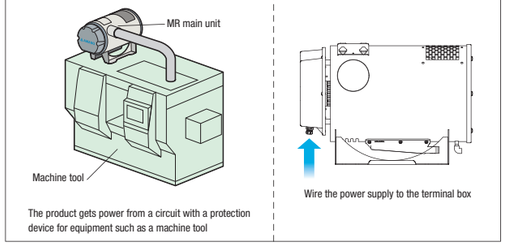
Complies with CE standard (200V), TSCA PBT5 substance regulation, and RoHS PM motor used



Patent pending

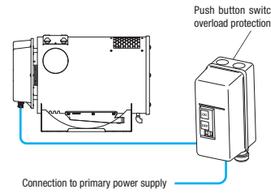
Summary of the Power Supply Method

- The MR main unit does not have a motor protection device. Get the power supply from a circuit with a protection device for equipment such as a machine tool.
- When using the MR main unit by itself, install electrical components with protection devices (push button switch with an overload protection device and no-fuse circuit breaker or earth leakage circuit breaker).



The product gets power from a circuit with a protection device for equipment such as a machine tool

Example of installing electrical components



Note:
It is not possible to just connect a no-fuse circuit breaker or an earth leakage circuit breaker.Be sure to install a pushbutton switch with an overload protection device in a set.

Q&A

Standard specifications are described here.

Q How is this product different from the conventional MJ series?

A Even though the basic concept of this model is the same as that of the conventional filterless mist collector MJ series where it has a filterless system that does not generate waste and has the same collection performance, this model offers improved features such as improved maintainability, a built-in inverter, and a self-drain system.

Q What is the self-drain system?

A Conventional mist collectors are structured such that the absorbed mist is collected in the negative-pressure part inside the machine, making it necessary to prevent backflow by sealing the drain hose when discharging the mist outside the machine. The MR series has a uniquely arranged internal structure that collects the mist in the positive pressure part and discharges the drain out of the machine. This eliminates the need for a liquid drain seal, thereby eliminating the time and effort required for managing the liquid drain seal.

Q What happens if the collection disk is clogged?

A The Filterless Mist Collector uses its collection disk with fine slits to collect mist. However, the slits of the collection disk get clogged by the dust in the absorbed mist that comes from workpieces which causes a drop in the suction airflow. Therefore, periodic inspection of the collection disk is still necessary. However, it has been confirmed through a simultaneous operation that the clogging has been reduced in the MR series as compared to the conventional type, as the MR series has a self-drain system.

Q How has the maintainability improved?

A So far, it was necessary to remove three parts to inspect the collection disk. However, the unique internal structural arrangement of this series allows access to the collection disk by removing one part. As there is no need to remove the suction duct, the maintenance process becomes safer and faster. In our comparisons, we found that the time required to remove the collection disk has been reduced by approximately 60%.

Q Can it be used for oil-based mists as well as highly concentrated mists?

A You can use the MR series product to collect oil-based mists and highly concentrated mist by installing the after-filter (paid option). For collecting oil-based mists and highly concentrated mists, Amano recommends the EM-e II/III series electrostatic precipitator mist collectors which have high collection performance and are resistant to clogging.

Q Can it be used in any countries?

A This series has acquired the CE mark as a standard. Moreover, as a PM motor is used in this product, high-efficiency regulations for low-voltage motors from other countries are not applicable (except for some countries) to it, making it easy to use.

Q What is the function of the board provided in MR?

A Functions such as airflow adjustment by setting the fan speed (8 stages/ 65 to 100%), delayed stop, and external signal interlocking are provided.
(Models equipped with these functions: MR-10, 15 and 25)

Q What should I do if I am upgrading from the conventional MJ series?

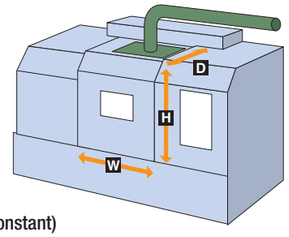
A Models with the same airflow range that have the same number after the series name have compatible mounting bolt pitches. When upgrading, you can keep using the currently used stand without any changes.

*However, this varies depending on the usage conditions such as the concentration and type of mist.

Model Selection

When mist density is high (Installation on machine tools, etc.)

$$Q(m^3/min)=(W\times D\times H)\times 4.0$$



Q : Airflow of the mist collector

W×D×H : Capacity of the processing room (m^3)

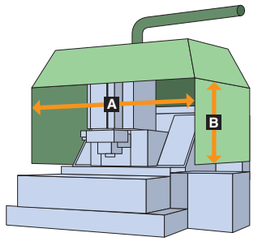
4.0 : Ventilation frequency per minute in the processing room (times/min) (= empirical constant)

	W×D×H(㎥)	Model
50Hz	0.75 or less	MR-5
60Hz	0.90 or less	MR-5

	W×D×H(㎥)	Model
50/60Hz common	0.75～1.55	MR-10
	1.55～2.50	MR-15
	2.50～3.65	MR-25

When mist density is low

$$Q(m^3/min)=(A\times B)\times V(m/s)\times 60(min)$$



Q : Airflow of the mist collector

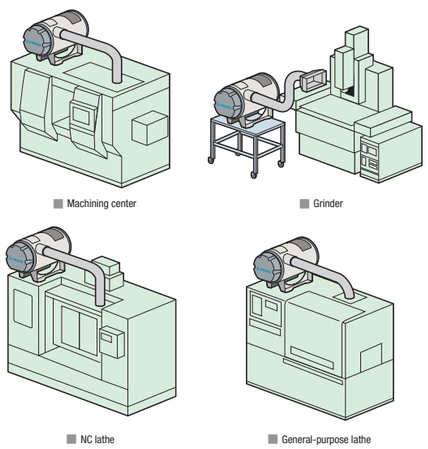
A×B : Area of the open part (m^2)

V : Required wind speed for mist collection (=0.5m/s)

	A×B(㎡)	Model
50Hz	0.065 or less	MR-5
60Hz	0.08 or less	MR-5

	A×B(㎡)	Model
50/60Hz common	0.065～0.170	MR-10
	0.170～0.270	MR-15
	0.270～0.400	MR-25

Installation Method

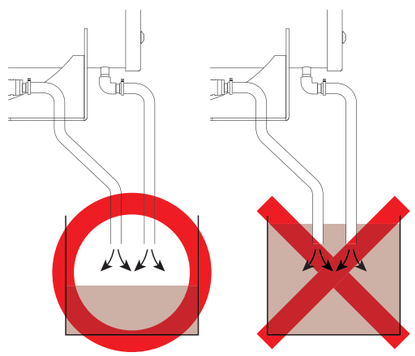


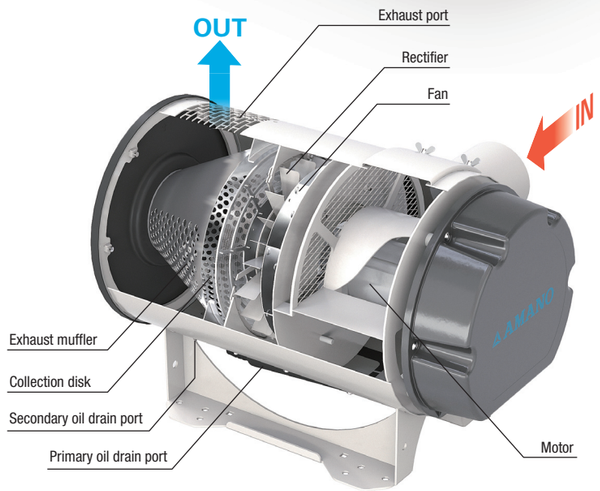
■ Machining center ■ Grinder

■ NC lathe ■ General-purpose lathe

Oil Draining

Be sure to mount the oil drain hose as shown in the figure below.





Internal Structure Diagram

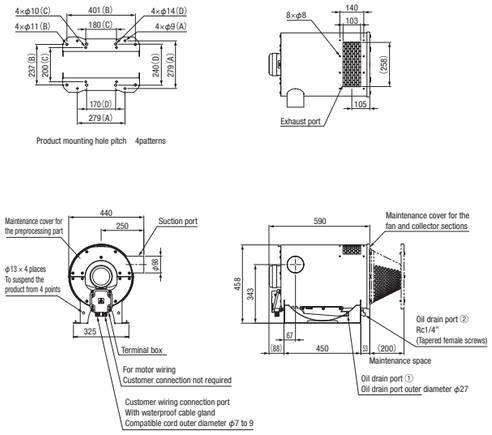
• Full range of options and peripheral components •

Feel free to contact our nearest branch or sales office.

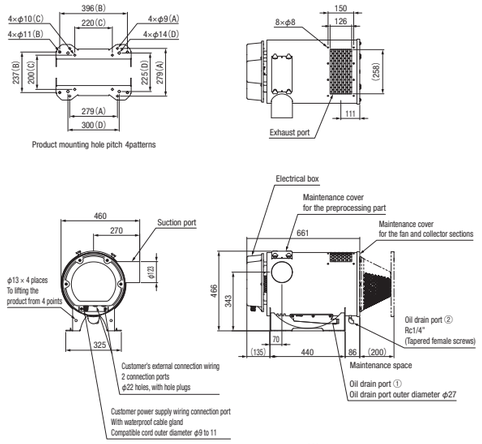
Exterior Diagram

Unit : mm

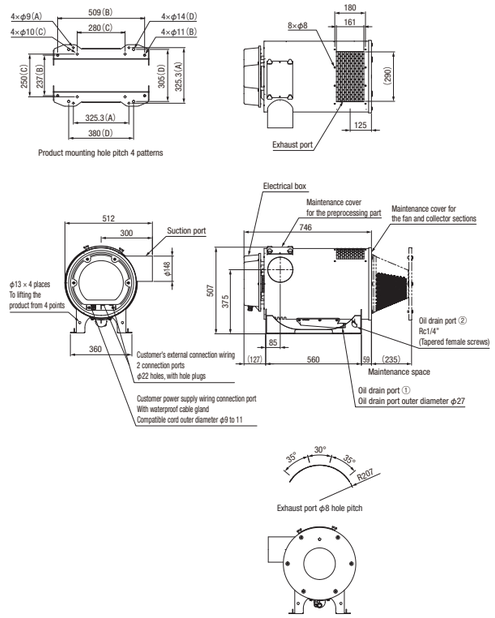
MR-5 (0.4kW)



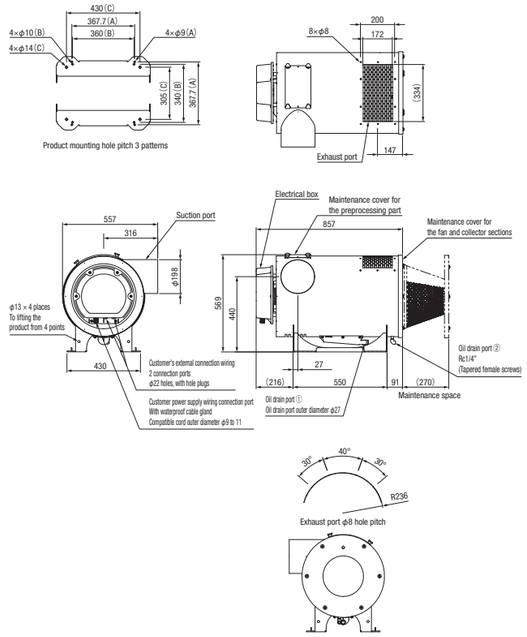
MR-10 (0.75kW)



MR-15 (1.5kW)



MR-25 (2.2kW)



Product name	Illustration	Size (Unit mm)	Applicable models			
			MR-5	MR-10	MR-15	MR-25
Reducer		φ100⇒φ125	OMS83600			
		φ100⇒φ150	OMS83700			
		φ125⇒φ150		OMT83600		
		φ125⇒φ200		OMT83700		
		φ150⇒φ200			OMU8360	
Elbow		φ100	OMS8380	OMS8380	OMS8380	
		φ125	OMT8380	OMT8380	OMT8380	OMT8380
		φ150	OMU8380	OMU8380	OMU8380	OMU8380
		φ200		OMV8380	OMV8380	OMV8380
Bifurcated pipe		φ100	OMS8390	OMS8390	OMS8390	
		φ125	OMT8390	OMT8390	OMT8390	OMT8390
		φ150	OMU8390	OMU8390	OMU8390	OMU8390
		φ200		OMV8390	OMV8390	OMV8390
Oil-resistant duct hose		φ100	CWN0100**			
		φ125		CWN0125**		
		φ150			CWN0150**	
		φ200				CWN0200**
PVC duct hose (Separate cuffs are necessary)		φ100	CWF0100**			
		φ125		CWF0125**		
		φ150			CWF0150**	
		φ200				CWF0200**
Cuffs [No resistance to oil]		φ100	CWF710000			
		φ125		CWF712500		
		φ150			CWF715000	
		φ200				CWF720000
Wire hose band (When using cuffs)		φ100	CWF910000			
		φ125		CWF912500		
		φ150			CWF915000	
		φ200				CWF920000
SY band (To directly fix the oil-resistant duct hose)		φ100	CWN910000			
		φ125		CWN912500		
		φ150			CWN915000	
		φ200				CWN920000

*The last two digits of the duct hose part number indicate the length. (1m unit) Example: CWF010002 => Means a diameter of φ100mm and a length of 2m.

Product name	Illustration	Size (Unit mm)	Applicable models			
			MR-5	MR-10	MR-15	MR-25
Exhaust port, packing, bolt set		φ100	MVR87017	MVS87017		
		φ125	MVR87027	MVS87027	MVT87017	
		φ150		MVS87037	MVT87027	MVU87017
		φ200				MVU87027

Product name	Illustration	Applicable models			
		MR-5	MR-10	MR-15	MR-25
Stand with a height adjustment feature (H500 to 800 mm)		MVR84107	MVS84107	MVT84107	MVU84107
Caster set		MVR85055			

Product name	Illustration	Applicable models			
		MR-5	MR-10	MR-15	MR-25
Anti-vibration rubber set		MVR85107			

Product name	Illustration	Applicable models			
		MR-5	MR-10	MR-15	MR-25
Push button switch		MVR86017	MVS86017	MVT86017	MVU86017
No fuse breaker		MVR86027	MVS86027		
Earth leakage breaker		MVR86207	MVS86207		
Switch/breaker mounting stay (Bolt set)		MVR86407		MVT86407	

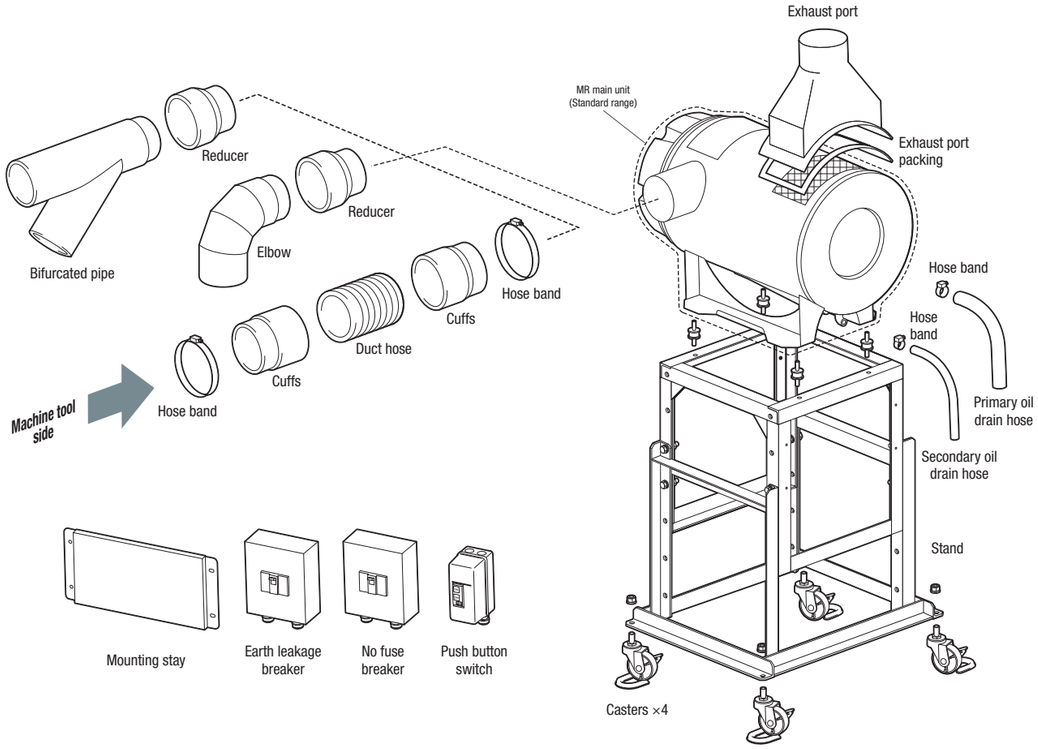
*Customers will have to prepare the cables separately.
*The mounting stay is exclusively for the height adjustable stand.

Product name	Illustration	Length	Applicable models			
			MR-5	MR-10	MR-15	MR-25
Primary side oil drain hose and hose band set		3m	MVR88017			
		5m	MVR88027			
Secondary side oil drain hose and hose band set		3m	MVR88117			
		5m	MVR88127			

Types	Connection method	Product name	Applicable models			
			MR-5	MR-10	MR-15	MR-25
When using an oil-resistant duct hose (a type that does not harden easily with oil) *The cuffs are not resistant to oil.		Oil-resistant duct hose	CWN0100**	CWN0125**	CWN0150**	CWN0200**
		Cuffs (Not oil-resistant)	CWF710000	CWF712500	CWF715000	CWF720000
		Wire hose band	CWF910000	CWF912500	CWF915000	CWF920000
		Oil-resistant duct hose	CWN0100**	CWN0125**	CWN0150**	CWN0200**
		SY band (*)	CWN910000	CWN912500	CWN915000	CWN920000
		*The SY band is used when the oil-resistant duct hose is directly connected without using cuffs (not oil-resistant).				
When using a PVC duct hose (No oil resistance)		PVC duct hose	CWF0100**	CWF0125**	CWF0150**	CWF0200**
		Cuffs (Not oil-resistant)	CWF710000	CWF712500	CWF715000	CWF720000
		Wire hose band	CWF910000	CWF912500	CWF915000	CWF920000

*The last two digits of the duct hose part number indicate the length. (1m unit) Example: CWF010002 ⇒ Means a diameter of Φ100mm and a length of 2m.
*The cuffs are not resistant to oil.

Options and Peripheral Components



- Fix the duct hoses (without cuffs) directly using the SY band.
  The band's wire fastens the concave part to the irregular part of the bellow-like surface of the duct.
- Use the hose band to fix the edge of the cuff when fixing the cuff.

*Prepare a caulking compound to connect the reducer, bifurcated pipe, elbow and exhaust port.
*Apply the caulking compound to connection points such as the inner surfaces of ducts and cuffs to prevent oil leakage.

Maintenance

*Periodic inspections are necessary (to check for foreign matter adhesion, abnormal oil accumulation, abnormal vibration, abnormal noise, and other issues).

Read the "Instructions Manual" carefully before using the product and use the product correctly.

Support System

Feel free to contact our support center in case of a failure or malfunction.

アトムス ATMS ECO

We recommend periodic inspection services.

For any inquiries regarding maintenance

E-mail : ATMS-Eco@amano.co.jp

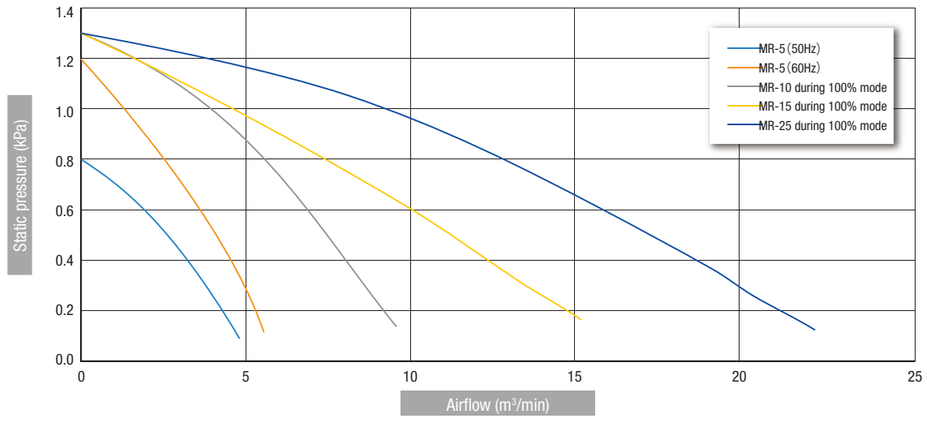
Amano Environmental Support Center　Operating hours: Please check our homepage.

Specifications

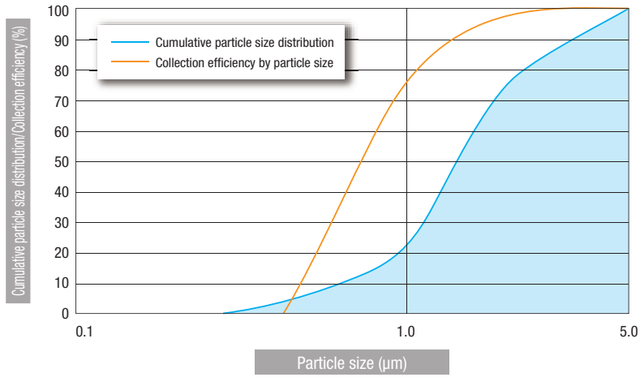
		MR-5		MR-10	MR-15	MR-25
Power supply	Rated voltage	3-phase 200 V 50/60 Hz common		3-phase 200 to 240 V 50/60 Hz common		
	Motor output [kW]	0.4		0.75	1.5	2.2
	Recommended breaker selected value [A]	5		20		
Performance	Maximum processing airflow [m3/min]	50Hz	4.8	9.5	15.0	22.0
		60Hz	5.5			
	Fully closed static pressure [kPa]	50Hz	0.8	1.3	1.3	1.3
		60Hz	1.2			
	Noise level [dB (A)] * Permissible value + 2 [dB] or less	70		73	75	76
Control	Control	No		Yes (Dedicated board)		
	Speed switchover	No		8 stages (Set with the DIP switch on the board)		
	Delayed stop	No		Yes (Set with the DIP switch on the board)		
Collection target		Water-soluble mist (pH 7.0 to 10.5) *Particle size 2 μm or more				
Collection method		Rotary collision				
Maximum absorbed mist concentration [mg/m3]		50				
Collection efficiency [%]		99.9 *Particle size 5 [μm] or more				
Absorption temperature/Ambient temperature [℃]		5 to 50/ 5 to 40				
Power cord		Sold separately (4 cores)				
Inner diameter of oil drain compatible hose [mm]		Primary oil drain port: 25/Secondary oil drain port:10				
Exterior	Suction port diameter (Outer diameter) [mm]	ϕ98		ϕ123	ϕ148	ϕ198
	Size W×D×H [mm]	440×590×460		460×660×466	512×746×507	557×857×569
	Weight [kg]	45		35	50	65
	Paint color	JPMA (Japan Paint Manufacturers Association) F35-85A/YN-40				
Accessories		·Hose nipple for the secondary oil drainage				

Performance Curve

■ Standard specifications



Collection efficiency by particle size



Collection efficiency 99.9%

When absorbing mist particles of 5 μm

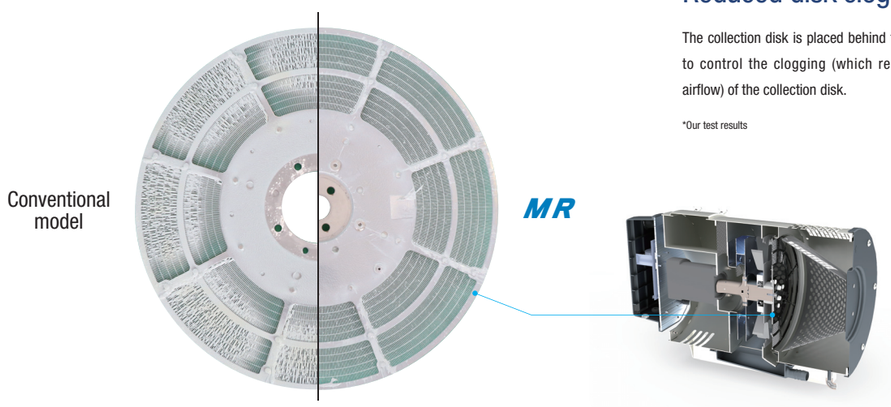
While it has a self-draining system that does not use any filters, it has the same collection performance of conventional models.
It can also collect 0.3 μm particles by installing an after-filter (paid option).

■ Collection target: Vegetable cutting oil for semi-dry cutting

*Standard specification: Rotary collision type (No after-filter)

Comparison of Collection Disk Clogging (vs Conventional Models)

This is the comparison of disk clogging in a test under the same load conditions.



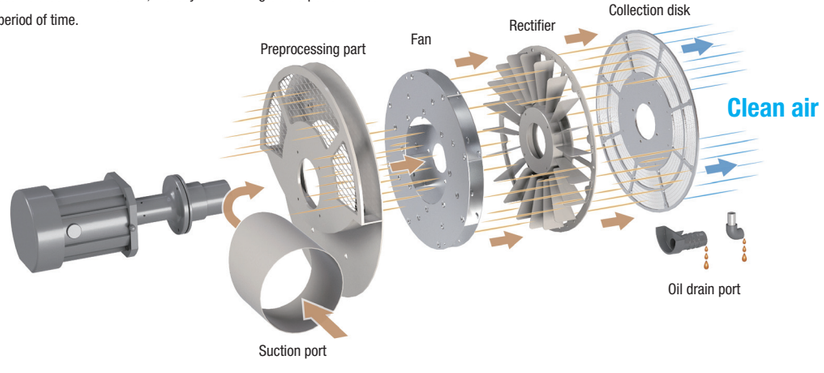
Reduced disk clogging

The collection disk is placed behind the fan and rectifier to control the clogging (which reduces the suction airflow) of the collection disk.

*Our test results

Uses Exhaust Pressure to Forcibly Drain the Mist

Suction port → Preprocessing part → Fan → Collection disk → Exhaust
Oil does not get accumulated inside the unit, thereby maintaining stable performance over an extended period of time.



Standard specifications are described in this page.

Standard specifications are described in this page. Models with function: MR-10, 15, 25

Operation at optimum airflow

Insufficient airflow	Excess airflow	Adjusted to the optimum airflow
		

Mist control	×

Mist control	○
Energy efficiency	△
Collection disk load	△

Mist control	○
Energy efficiency	○
Collection disk load	○

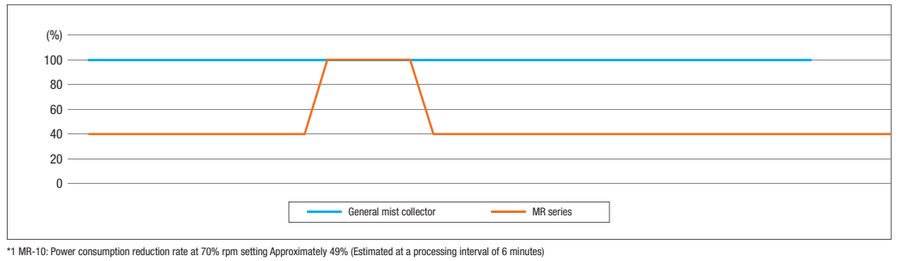
Example of energy-saving operation by using the product with the machine tools

	Door close	Start of process	Processing	End of process	Door open	Work set	Door close	Start of process	Processing	End of process	Completion of work
Remote operation command		ON									
Process completion signal					ON						
General mist collector		100% mode									
Filterless Mist Collector MR Series		Optimum airflow operation during the process 65% to 100% (any settings)			Mist spread prevention operation 100% (Fixed)	Optimum airflow operation during the process 65% to 100% (any settings)					Delayed stop operation 65% to 100% (any settings)

- ☐ Remote operation mode selection
- ☐ Delayed stop operation selection
- ☐ Speed control usage
- ○ Remote operation signal
- ○ Interlocking with the process completion signal

(☐ : Settings on the attached board
○ : External operation signal)

Power consumption ratio



*1 MR-10: Power consumption reduction rate at 70% rpm setting Approximately 49% (Estimated at a processing interval of 6 minutes)

Provides an 8-stage Airflow Switching Function (Fixed Motor Rotation Operation)

Operation mode	MR-10	MR-15	MR-25
	Airflow [m³/min]		
100%	9.5	15	22
95%	9	14.25	20.5
90%	8.5	13.5	19.5
85%	8	12.75	18.5
80%	7.5	12	17.5
75%	7	11.25	16.5
70%	6.5	10.5	15.5
65%	6	9.75	14.5