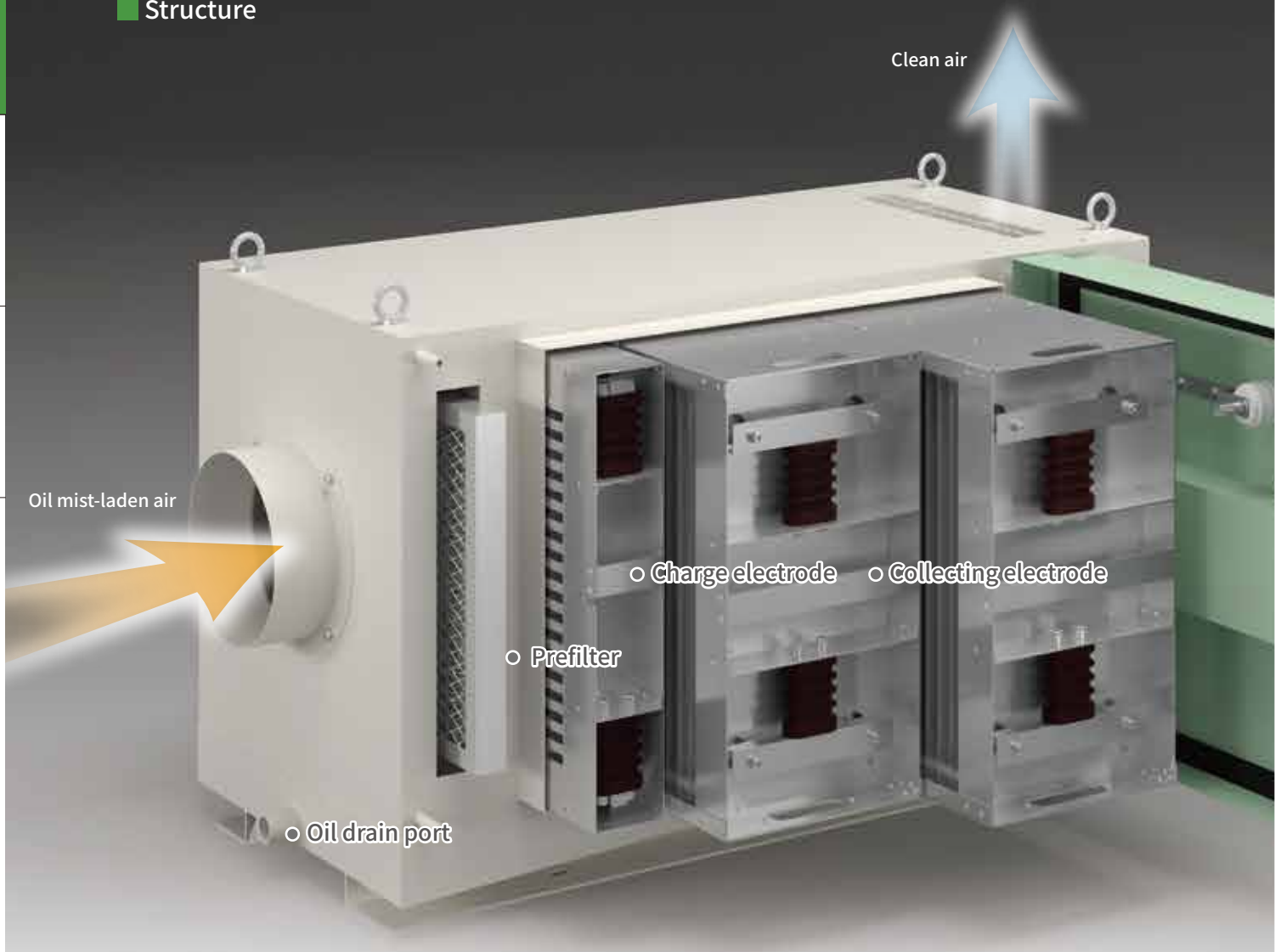
Electrostatic oil mist collector OMC-E325

Structure & mechanism

Original technology enebled suctioning high concentration mist

Structure



Operation panel and lamp

Notifies abnormality and maintenance time by fulfulling moritoring function. The readily visible lamps are easily noticeable even from a distant place.

Electrode

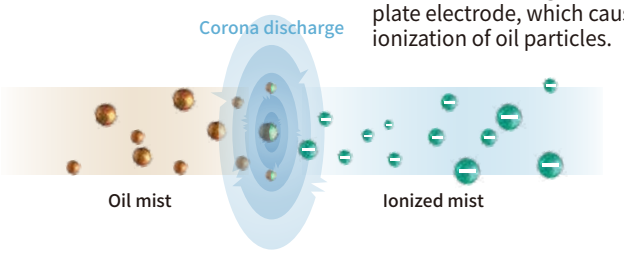
Realized light weight by separating charge and collecting electrodes. Each electrode unit has handles for making detachment easy. Designed for ease of maintenance work.

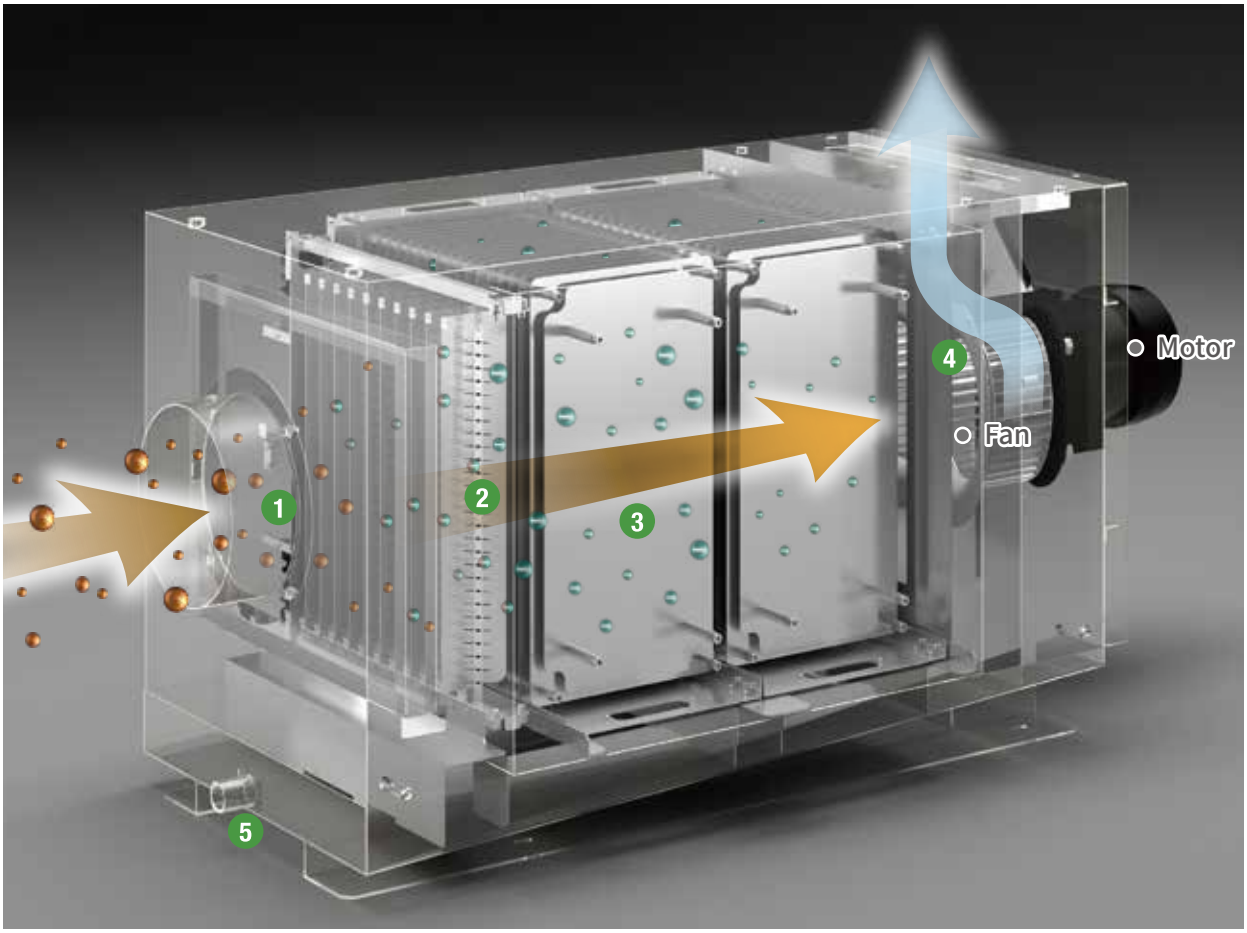
Rectification plate

Rectification plate guides air to go out straight up, which prevents operators and equipment from direct exposure to the air.

Mechanism

1. Oil mist-laden air passes through the pre-filter and then goes into Charge electrode.
2. At Charge electrode, corona discarge occurs between the high-voltage needle electrode and the grounded plate electrode, which causes ionization of oil particles.
3. At Collection electrode, high voltage is applied to the parallel arranged plate electrodes so they absorb the particles that ionized by electrostatic force.
4. Particles escaped from the Electrode 1 are collected in the Electrode 2 and purified air is discharged from the fan.
5. Collected particles are liquified and then discharged from the drain port.

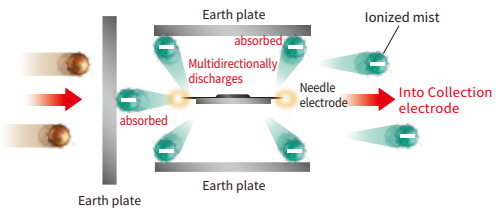




Key feature

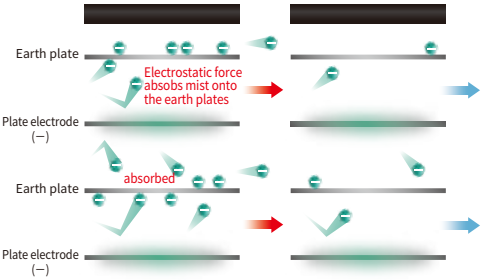
Wide-angle emission of ion

The uniquely designed needle electrodes realized multidirectional discharge. This largely expands discharge area of oil mist.



Complete absorption in two step

Enhanced mist absorption rate by enlarging plate surface area of collection electrode. 2-step collection system prevents escape of mist. Amazingly high collection rate and mist concentration rate have thus been achieved.



Electrostatic Oil mist collector

OMC-E310

RoHS2

Collection method

ELECTROSTATIC

Features

eco Energy Saving

High efficiency

Model/Specifications

Model	OMC-E310
Max. air flow	7／8m³／min
Collection efficiency	Min. 99% (by gravimetric method)
Type of mist collectable	Oil-based and water-soluble
Rated voltage	3-phase, 200VAC, 50/ 60Hz
Rated motor output	0.2kW（2P）
Rated current consump.	1.3/1.4A or less
Rated power consump.	240/320W or less
Working temperature	0 to ＋40°C
Working humidity	10 to 80%RH, free from condensation
Noise	74dB (A)
Max. oil mist density	300mg³/min
Max. suction air temp.	+40°C
Ozone concentration	Less than 0.04 ppm
Display	Power (White), Electrode energization (Orange), Electrode check (Red)
External output	Alarm output 2c 250VAC 2A, 30VDC 2A
Safety circuit	High voltage cutoff and motor stop in the event of frequent spark discharges, high voltage short circuit and door open
Suction port diameter	ϕ148mm
Conformity / Environment	RoHS2
Drain port	ϕ18 pipe
High voltage output (Switchable on board) / HV	DC-9kV/-8kV/-7kV
High voltage output (Switchable on board) / LV	DC-6kV/-5kV/-4kV
Color	10GY9/1 equivalent, 10GY8/4 equivalent
Weight	51kg
Standard accessories	ϕ18 drain hose 2m , 1 drain hose band, 1 instruction manual

See page 41 for cautions.

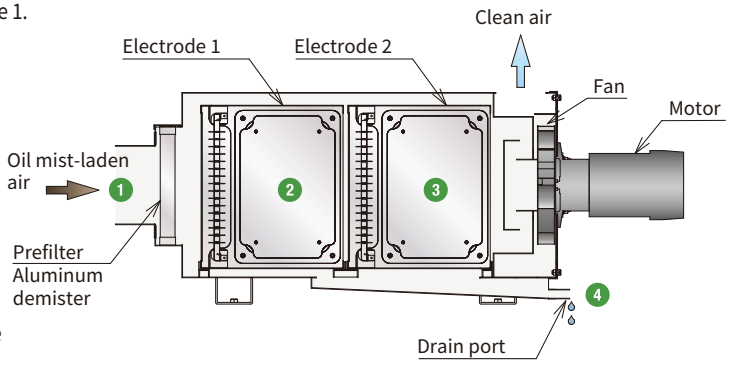
Mechanism

1

Oil mist-laden air goes into the Electrode 1.

2

The electrode consists of charge part and collection part.
At the charge part, corona discharge takes place between the high-voltage needle electrodes and the grounded plate electrodes and this causes ionization of oil mist.
At the collection part, high voltage is applied to the parallel arranged plate electrodes so they absorb the particles which have been ionaized by electrostatic force.



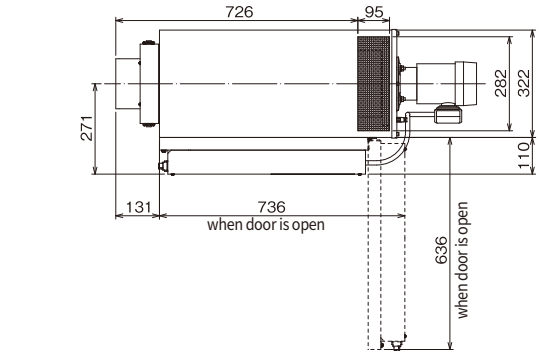
3

Particles escaped from the Electrode 1 are collected in the Electrode 2 and purified air goes out from the fan.

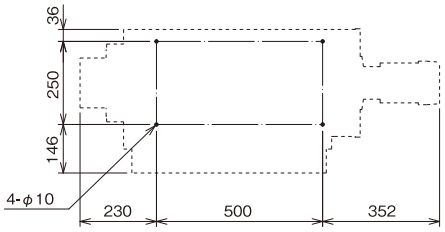
4

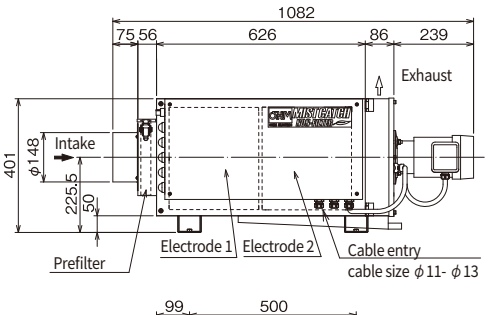
Collected oil particles are liquified and then discharged from the drain port.

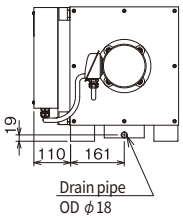
Dimensional drawing

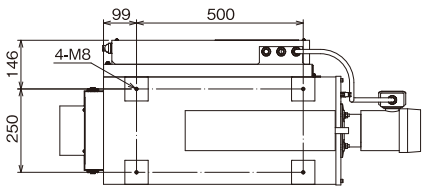


● Mounting cutout



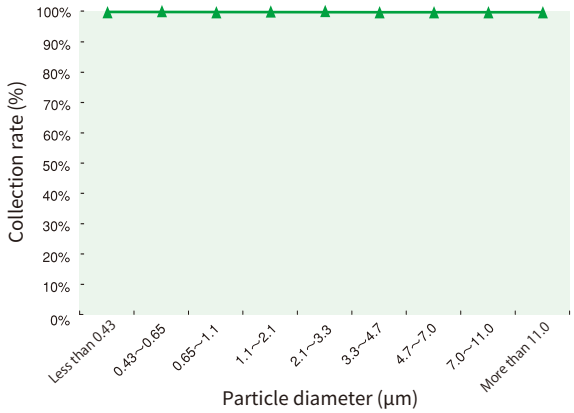




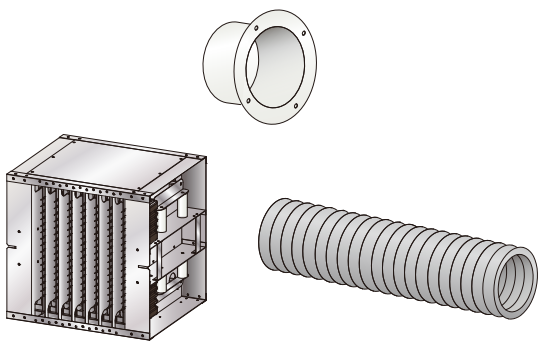


Collection rate

Test oil : Water-insoluble cutting oil
Measured by : Low Volume Air Sampler type AN-200



Option



See P035

Electrostatic Oil mist collector

OMC-E315

RoHS2

Collection method

ELECTROSTATIC

Features

Eco Energy Saving

High efficiency

Model/Specifications

Model		OMC-E315
Max. air flow		12／14m³／min
Collection efficiency		Min. 99% (by gravimetric method)
Type of mist collectable		Oil-based and water-soluble
Rated voltage		3-phase, 200VAC, 50/ 60Hz
Rated motor output		0.4kW（2P）
Rated current consump.		1.7/1.9A or less
Rated power consump.		370/540W or less
Working temperature		0 to ＋40°C
Working humidity		10 to 80%RH, free from condensation
Noise		79dB (A)
Max. oil mist density		300mg³/min
Max. suction air temp.		+40°C
Ozone concentration		Less than 0.04 ppm
Display		Power (White), Electrode energization (Orange), Electrode check (Red)
External output		Alarm output 2c 250VAC 2A, 30VDC 2A
Safety circuit		High voltage cutoff and motor stop in the event of frequent spark discharges, high voltage short circuit and door open
Suction port diameter		ϕ148mm
Conformity	Environment	RoHS2
Drain port		ϕ18 pipe
High voltage output (Switchable on board)	HV	DC-9kV/-8kV/-7kV
	LV	DC-6kV/-5kV/-4kV
Color		10GY9/1 equivalent, 10GY8/4 equivalent
Weight		52kg
Standard accessories		ϕ18 drain hose 2m , 1 drain hose band, 1 instruction manual

See page 41 for cautions.

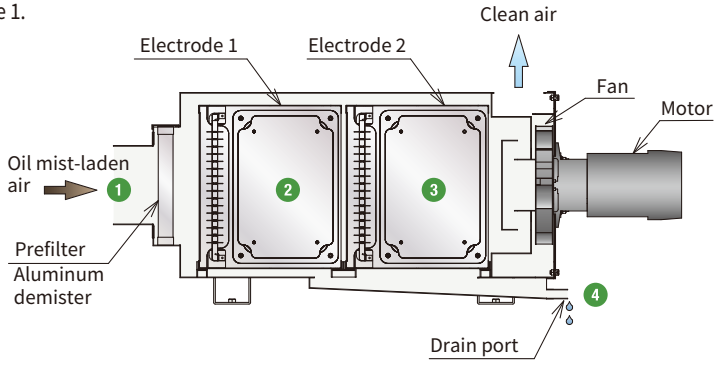
Mechanism

1

Oil mist-laden air goes into the Electrode 1.

2

The electrode consists of charge part and collection part.
At the charge part, corona discharge takes place between the high-voltage needle electrodes and the grounded plate electrodes and this causes ionization of oil mist.
At the collection part, high voltage is applied to the parallel arranged plate electrodes so they absorb the particles which have been ionaized by electrostatic force.



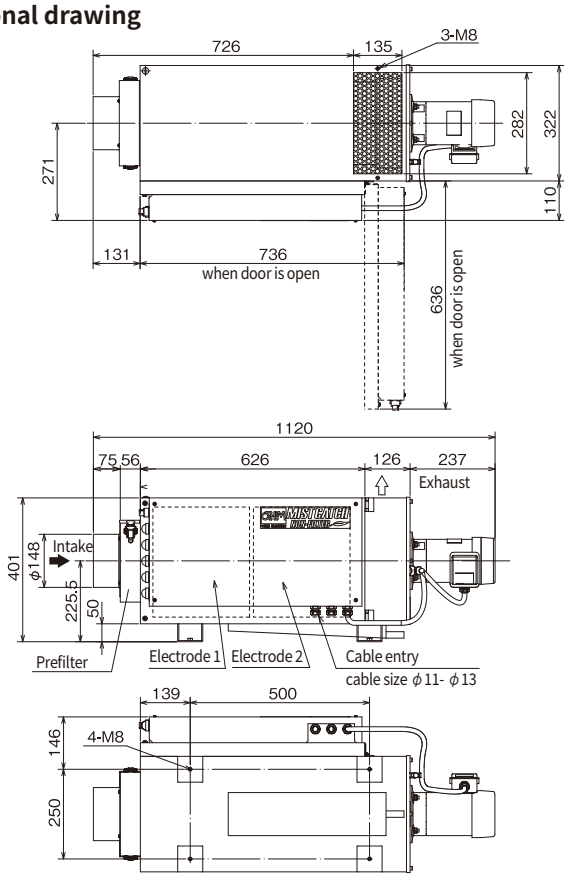
3

Particles escaped from the Electrode 1 are collected in the Electrode 2 and purified air goes out from the fan.

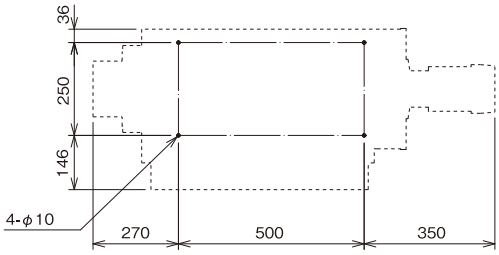
4

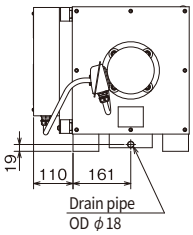
Collected oil particles are liquified and then discharged from the drain port.

Dimensional drawing



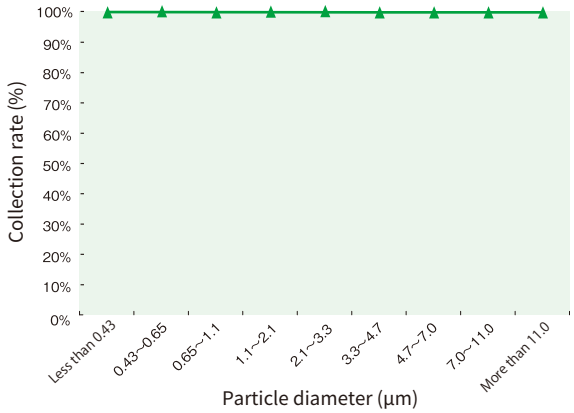
Mounting cutout



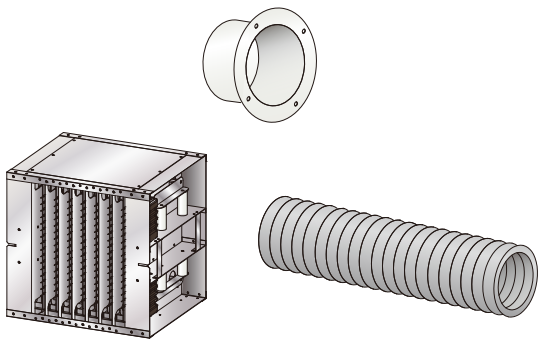


Collection rate

Test oil : Water-insoluble cutting oil
Measured by : Low Volume Air Sampler type AN-200



Option



See P035

Electrostatic Oil mist collector

OMC-E325

RoHS

Collection method

ELECTROSTATIC

Features

eco Energy Saving

High efficiency

Model/Specifications

Model		OMC-E325
Max. air flow *1		22／25m³／min
Max. static pressure *1		0.68／0.96 kPa
Collection efficiency		Min. 99% (by gravimetric method)
Type of mist collectable		Oil-based and water-soluble
Rated voltage		3-phase, 200VAC, 50/ 60Hz
Rated motor output		0.75kW（2P）
Motor efficiency *2		81.5/81.1 IE3/IE3
Rated current consump. *1		2.5/3.2A or less
Rated power consump. *1		590/900W or less
Working temperature		0 to ＋40℃
Working humidity		10 to 80%RH, free from condensation
Noise		72dB (A)
Max. oil mist density		300mg³/min
Max. suction air temp.		+40℃
Ozone concentration		Less than 0.04 ppm
Display		Power (White), Operation (Orange), Alarm (Red)
External input		24VDC Continuous signal
External output		Alarm output 1a (250VAC 2A, 30VDC 2A) ×2
Safety circuit		High voltage cutoff and motor stop in the events of freaquent sparking, high voltage short circuit, overcurrent, overcurrent on motor, abnormal heating of high voltage power board or door open
Conformity	Environment	RoHS2
Suction port diameter		ϕ198mm
Drain port		ϕ31 pipe
High voltage output		DC-9kV/-8kV/-7kV (switchable on operation panel)
Color		10GY9/1 equivalent, 10GY8/4 equivalent
Weight		108kg
Standard accessories		ϕ18 drain hose 2m , 1 drain hose band, 1 instruction manual

*1. Rated value at 25℃ ambient temperature *2. Efficiency value of the motor only.

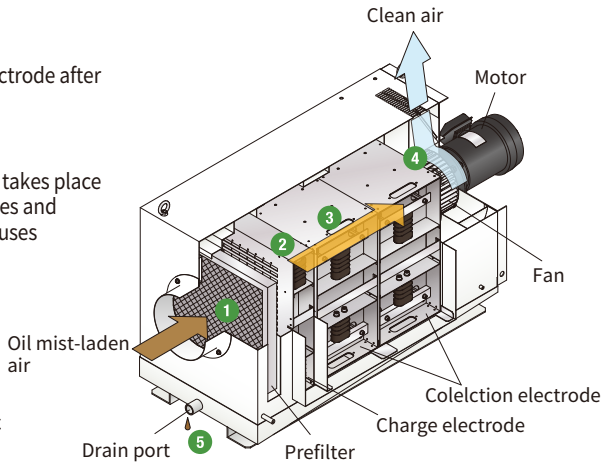
See page 41 for cautions.

Mechanism

1 Oil mist-laden air goes into the charge electrode after passing through the Prefilter.

2 At the charge electrode, corona discharge takes place between the high-voltage needle electrodes and the grounded plate electrodes and this causes ionization of oil mist.

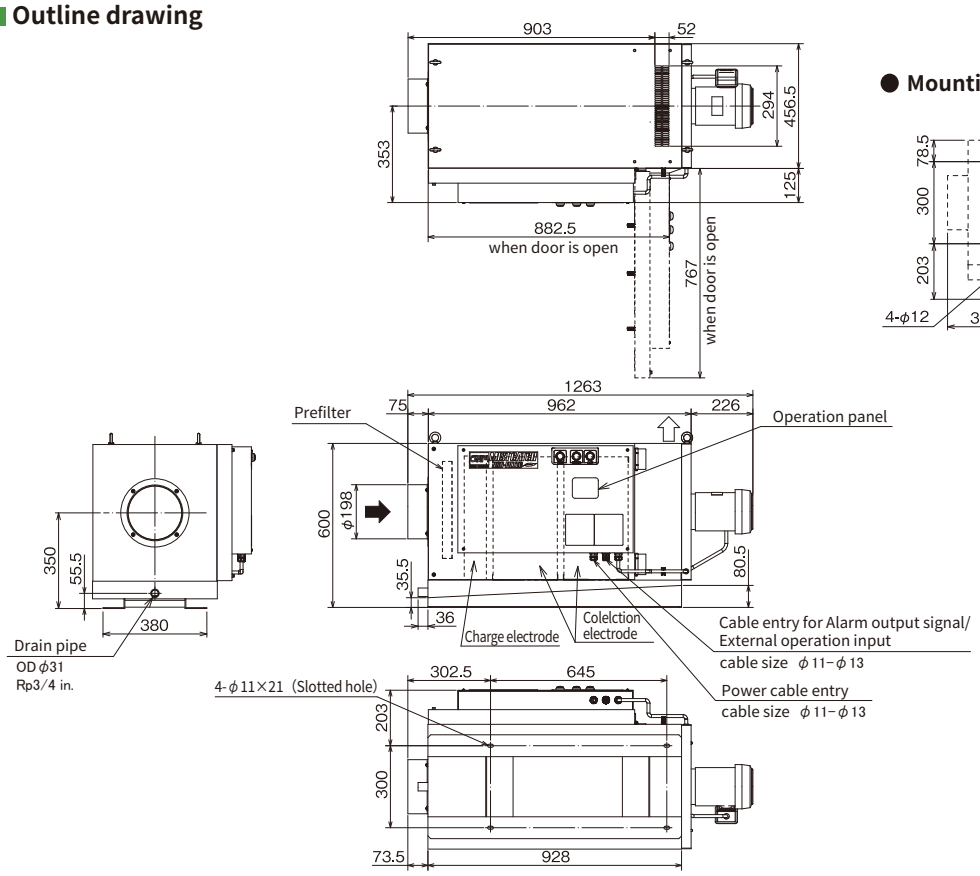
3 At the collection part, high voltage is applied to the parallel arranged plate electrodes so they absorb the particles which have been ionaized by electrostatic force.



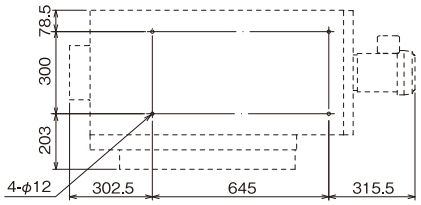
4 Particles escaped from the 1st Collection electrode will be collected in the 2nd electrode and purified air will be discharged from the fan.

5 Collected oil particles are liquified and then discharged from the drain port.

Outline drawing

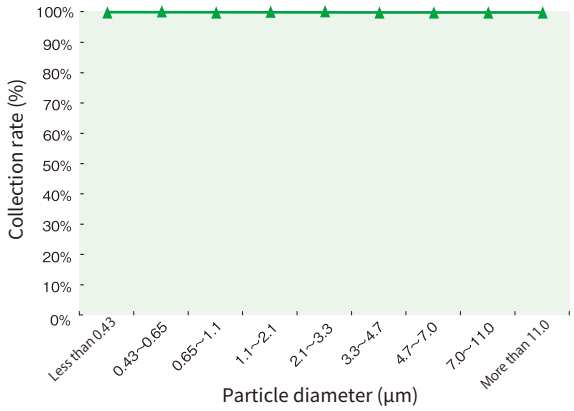


Mounting cutout

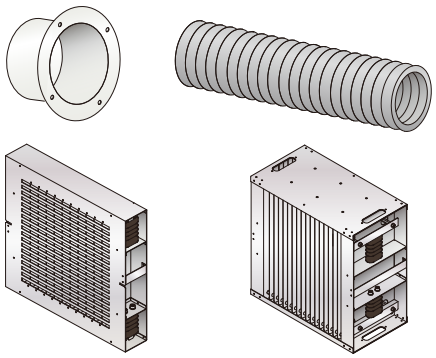


Collection rate

Test oil : Water-insoluble cutting oil
Measured by : Low Volume Air Sampler type AN-200



Option



See P035

Electrostatic Oil mist collector

OMC-E345

RoHS

Collection method

ELECTROSTATIC

Features

Eco Energy Saving

High efficiency

Model/Specifications

Model	OMC-E345
Max. air flow *1	40／45m³／min
Max. static pressure *1	0.86／1.21 kPa
Collection efficiency	Min. 99% (by gravimetric method)
Type of mist collectable	Oil-based and water-soluble
Rated voltage	3-phase, 200VAC, 50/ 60Hz
Rated motor output	1.5kW （2P）
Motor efficiency *2	85.8/85.6 IE3/IE3
Rated current consump. *1	4.2/5.8A or less
Rated power consump. *1	1090/1730W or less
Working temperature	0 to ＋40°C
Working humidity	10 to 80%RH, free from condensation
Noise	75dB (A)
Max. oil mist density	300mg³/min
Max. suction air temp.	+40°C
Ozone concentration	Less than 0.04 ppm
Display	Power (White), Operation (Orange), Alarm (Red)
External input	24VDC Continuous signal
External output	Alarm output 1a (250VAC 2A, 30VDC 2A) ×2
Safety circuit	High voltage cutoff and motor stop in the events of freaquent sparking, high voltage short circuit, overcurrent, overcurrent on motor, abnormal heating of high voltage power board or door open
Conformity / Environment	RoHS2
Suction port diameter	Ø200mm at three places
Drain port	ϕ31 pipe
High voltage output	DC-9kV/-8kV/-7kV (switchable on operation panel)
Color	10GY9/1 equivalent, 10GY8/4 equivalent
Weight	185.0kg
Standard accessories	ϕ18 drain hose 2m , 1 drain hose band, 1 instruction manual

*1. Rated value at 25°C ambient temperature with 3 suction ports *2. Efficiency value of the motor only *No duct connection port is attached.

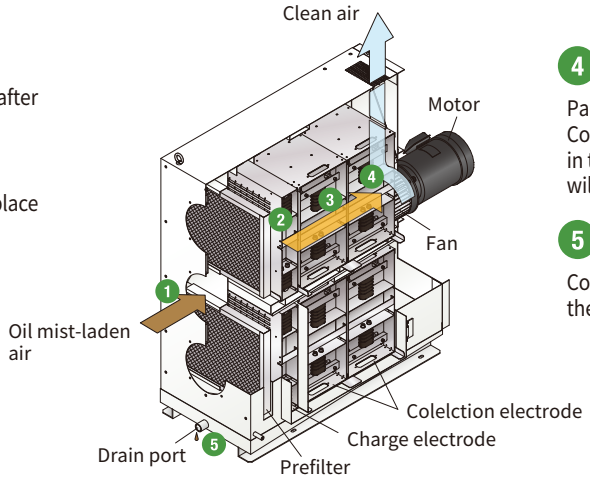
See page 41 for cautions.

Mechanism

1
Oil mist-laden air goes into the charge electrode after passing through the Prefilter.

2
At the charge electrode, corona discharge takes place between the high-voltage needle electrodes and the grounded plate electrodes and this causes ionization of oil mist.

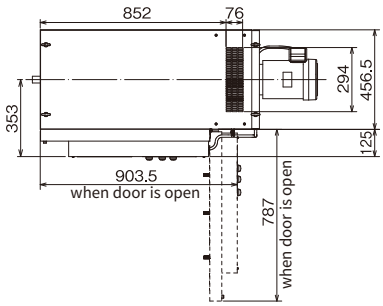
3
At the collection part, high voltage is applied to the parallel arranged plate electrodes so they absorb the particles which have been ionaized by electrostatic force.



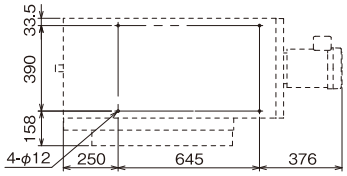
4
Particles escaped from the 1st Collection electrode will be collected in the 2nd electrode and purified air will be discharged from the fan.

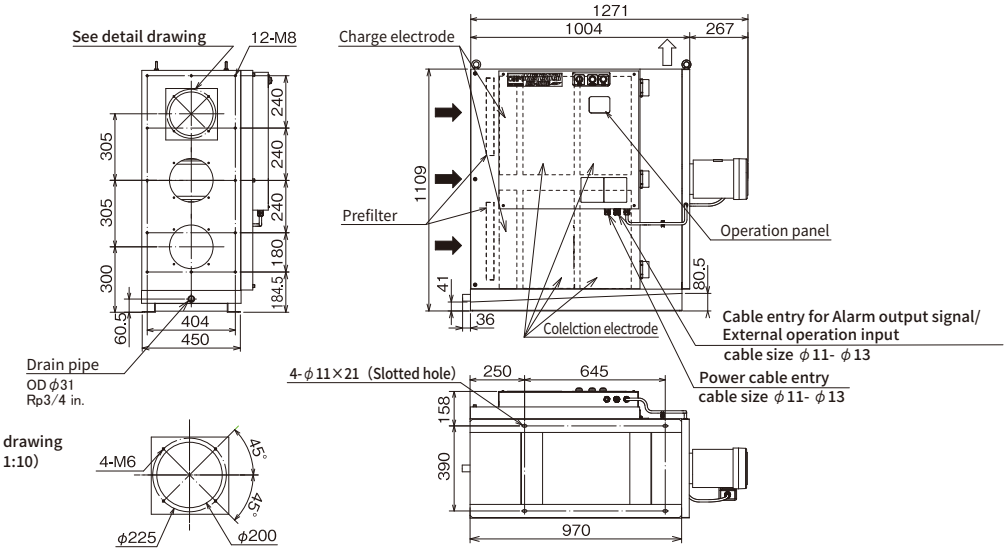
5
Collected oil particles are liquified and then discharged from the drain port.

Dimensional drawing



Mounting cutout

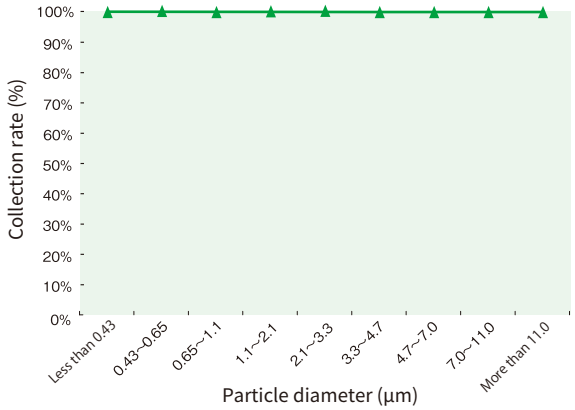




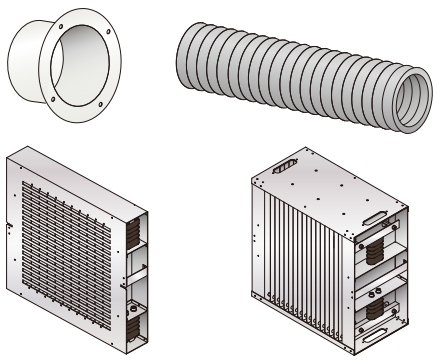
■Detail drawing (Scale 1:10)

Collection rate

Test oil : Water-insoluble cutting oil
Measured by : Low Volume Air Sampler type AN-200



Option



See P035

Electrostatic Oil mist collector

OMC-E21

Example of use

RoHS2

Collection method

ELECTROSTATIC

Features

Eco Energy Saving

High efficiency

Model/Specifications

Model		OMC-E21
Max. air flow		8／10m³／min
Collection efficiency		Min. 99% (by gravimetric method)
Type of mist collectable		Oil-based and water-soluble
Rated voltage		3-phase, 200VAC, 50/ 60Hz
Rated motor output		0.2kW（2P）
Rated current consump.		1.7/2.0A or less
Working temperature		0 to ＋40°C
Working humidity		10 to 80%RH, free from condensation
Noise		75dB (A)
Max. oil mist density		150mg /m³
Max. suction air temp.		+40°C
Ozone concentration		Less than 0.04 ppm
Display		Power (White), Operation (Orange), Electrode check (Red)
External output		Alarm output 1c 250VAC 2A, 30VDC 2A
Safety circuit		High voltage cutoff and motor stop in the event of frequent spark discharges, high voltage short circuit and door open
Conformity	Environment	RoHS2
Suction port diameter		ϕ18 pipe
Drain port		DC-9kV/-8kV/-7kV
High voltage output		DC-6kV/-5kV/-4kV
Color		10GY9/1 equivalent, 10GY8/4 equivalent
Weight		44kg
Standard accessories		ϕ18 drain hose 2m , 1 drain hose band, 1 instruction manual

*No duct flange for fitting to the Φ125 duct hose is attached.

See page 41 for cautions.

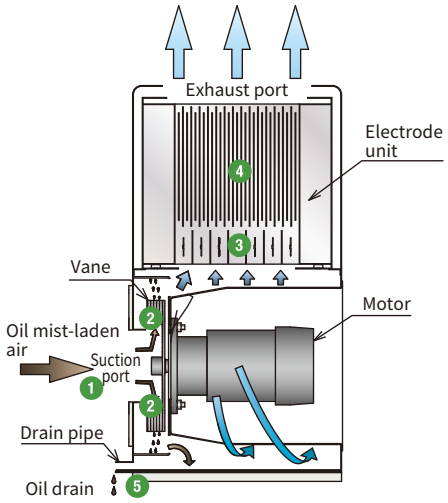
Mechanism

1

Oil-containing air is inhaled through the air intake from underneath of MIST CATCH by its rapidly spinning vane attached to the motor shaft.

2

The inhaled air flow is then accelerated by centrifugal force when passing through the numerous pores of the vane and collides against the inner wall of the MIST CATCH housing. This separates oil particles from the outgoing air. Particles larger than ☒μm are eliminated in this process (Primary treatment).



3

Small particles escaped from the 1st process will go into the electrode unit.

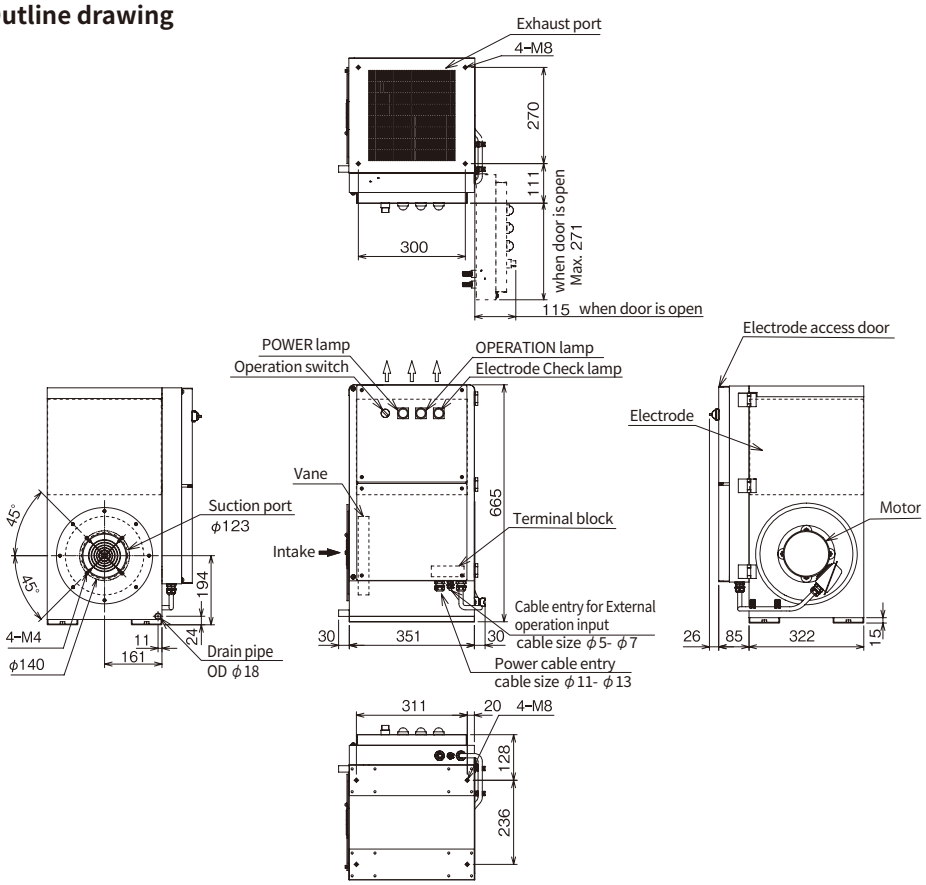
4

The electrode consists of charge part and collection part. At the charge part, corona discharge takes place between the high-voltage needle electrodes and the grounded plate electrodes and this causes ionization of oil mist. At the collection part, high voltage is applied to the parallel arranged plate electrodes so they absorb the particles which have been ionaized by electrostatic force.

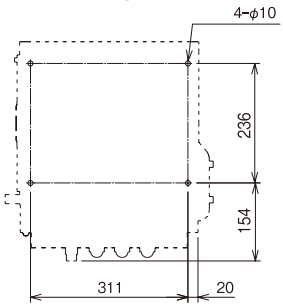
5

Collected oil particles are liquified and then discharged from the drain port.

Outline drawing

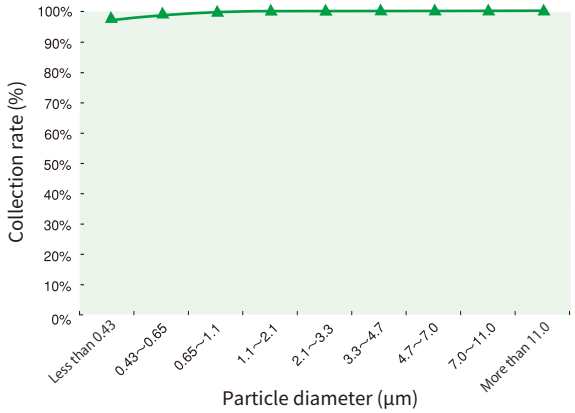


● Mounting cutout

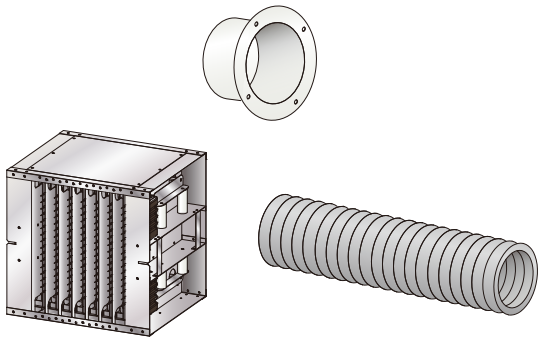


Collection rate

Test oil : Water-insoluble cutting oil
Measured by : Low Volume Air Sampler type AN-200



Option



See P037

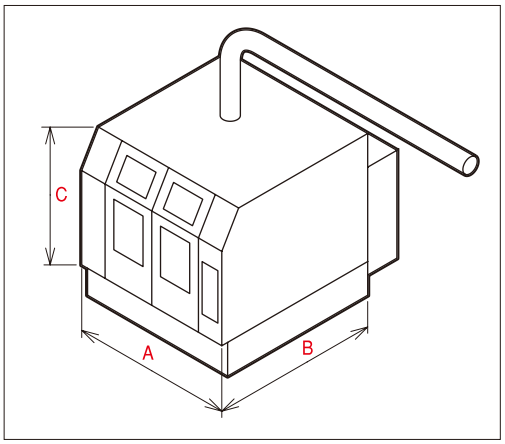
Model selection

When mist generation source is almost fully covered

Required air volume Q (m³/min) = Inner capacity of process area A x B x C (m³) x coefficient

Coefficient value (by mist concentration and door opening frequency)

Door opening/closing every 4 hours or longer = 4
Door opening/closing every 1 hour = 5
Every few minutes with low mist concentration = 8
Every few minutes with high mist concentration = 10



Example: A= 1500mm, B=650mm, C=800mm

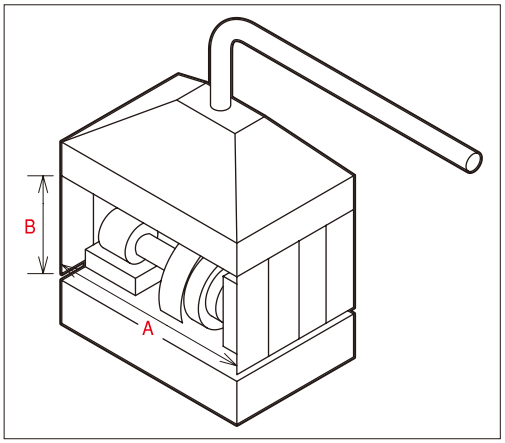
Inner capacity of process area (A x B X C) = 0.78m³
If coefficient value is 10,
the required air volue Q(m³/min) will be 0.78 (m³) x 10 = 7.8

From the above, the models having air volume of 7.8 m³ are found to be suitable to this application.

When mist generation source is exposed and the housing has a large opening

Required air volume Q (m³/min)
= Cross section of opening area A x B (m²) x Surface velocity Vf (m/s)

Q: Required air volume
Vf: Surface velocity = 0.3 to 0.5 m/s



Example: A= 1000mm, B=600mm

Cross section of opening area (A x B) = 0.6m²
If surface velocity is 0.5(m/s),
the required air volue Q(m³/min) will be
0.6 (m²) x Vf {(0.5(m/s) x 60}= 18

From the above, the models having air volume of 18 m³ are found to be suitable to this application.

Precautions for model selection

To select a correct model, the following matters should be taken into account.

(1) If required air volume was underestimated, expected effect will not be obtained.
(2) If required air volume was overestimated, the collection unit or vane of the mist collector can be easily clogged because of excess dust suctioned. Selecting an unnecessarily large model will also result in a waste of equipment and operation costs.