



CLEAN AIR
FOR INDUSTRY.



EMULSION MIST SEPARATOR ENA-D



THE TASK

Our emulsion mist separators ENA-D remove water soluble aerosols created by coolants during cutting and metalworking. Reusable wire mesh filters effectively separate emulsion mist aerosols. Our product lineup includes a graduated series of systems with air volumes up to 60,000 m³/h, which can be customized to even larger airflows due to their modular design.

THE SEPARATION PRINCIPLE

- Multi stage process
- Reusable wire mesh filter elements
- Separation is achieved by a combination of inertia, coalescence, diffusion and screening effect..



APPLICATIONS

- Cutting processes such as drilling, turning, milling, broaching, honing, grinding
- Shaping processes such as rolling, deep drawing, pressing
- Machine tools, machining centers and transfer systems for cutting processes
- Rolling mills for sheet metal and steel, light alloys and heavy non-ferrous metals
- Pressing for molding and deep-drawn parts made from steel, light-alloy or non-ferrous metals
- Die-casting

HOW IT WORKS

The untreated/contaminated air enters the air inlet chamber (1) where gravitational separation removes larger mist droplets from the air. The incoming air flow is captured in filter stage 1 (4) and is directed on to the second filtration stage (5). Both wire mesh filters are reusable.

The separator is preconfigured for optional automatic rinsing which can be activated to prevent excessive contamination of the filter media. During operation water or emulsion is sprayed through nozzles (6) on the surface of the first separation stage (4) to keep the wire mesh wet and flush away dirt. The separated emulsion and the rinsing agent run through the first filtration stage (4) onto the slanted floor basin (7) and drain out of the unit through the drainpipe (3) integrated siphon.

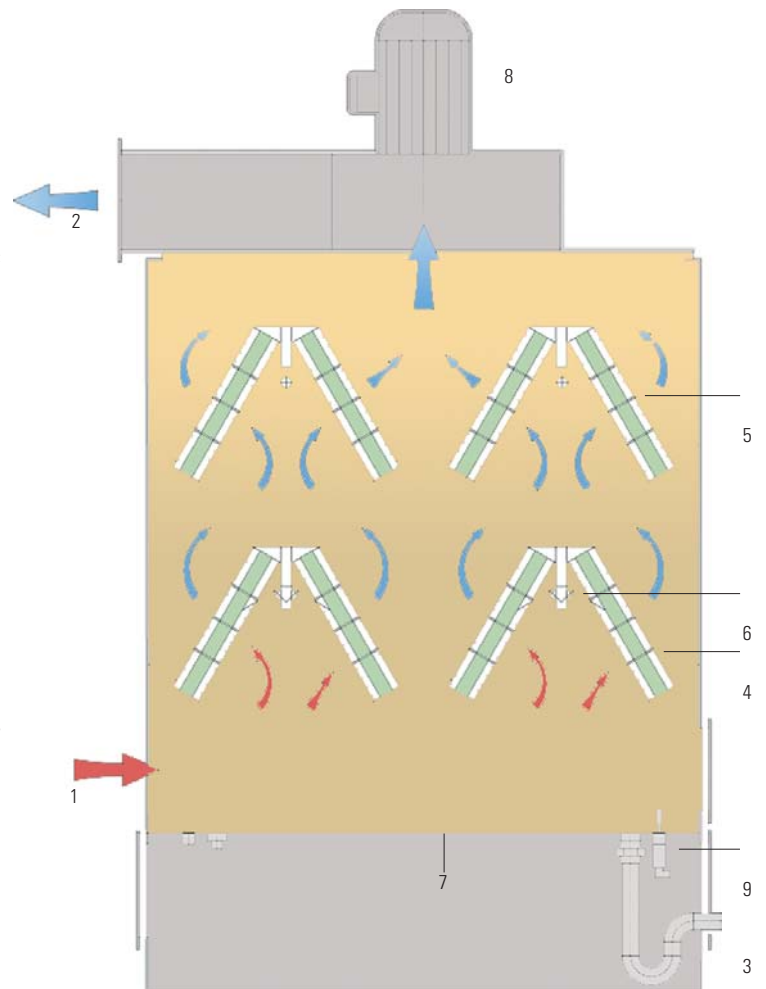
Depending on the operating conditions, the separated emulsion can be either reused in the machine or be pumped into a reconditioning unit.

The two filtration stages can be easily checked by opening the access doors. Filter elements can be removed for cleaning or exchange if necessary.

A top-mounted radial fan (8) or an external fan provides the necessary air flow and vacuum.

After passing through the filtration stages the cleaned air exits the unit via the fan or clean air outlet (2) and can be re-circulated into the workplace or ducted to the outdoors, depending on workplace conditions and clean air regulations (Recirculation or vented air operation).

Depending on applicable noise regulations, installation of an exhaust silencer at the fan outlet might be required.



- 1 Inlet chamber for untreated air
- 2 Clean air outlet
- 3 Drain
- 4 Filtration stage 1
- 5 Filtration stage 2
- 6 Spray nozzles
- 7 Floor basin
- 8 Fan
- 9 Fill level monitoring

FILTER ELEMENTS

Reusable wire mesh filter elements.

AUTOMATIC CLEANING OF FILTER ELEMENTS

The separators are preconfigured for optional automatic rinsing. The cleaning process can be configured individually to fit the specific application. The cleaning process can be activated with a solenoid valve during operation (short intervals) and after the filter unit has been turned off. Plain water (in some instances an emulsion takes its place) serves as the cleaning fluid. Spray nozzles spray the water onto the surface of the filter elements. This type of backwashing prevents excessive contamination of the installed filters. The backwashing process can also be controlled manually in "Manual Operation" mode.

DISPOSAL

The separated emulsion is collected in the floor basin of the unit and is then reintroduced into the emulsion circulation of the machine via return pipe or removed for reconditioning. The return pipe must be vacuum sealed either by using a siphon or by immersing it in the coolant sump by at least 300 millimeters.

FAN UNIT

Depending on the placement of the unit, the air volume and the necessary pressure differential, every configuration of the mist collector is available either with an external fan, or with a top-mounted fan for compact overall dimensions.

RECIRCULATION OF EXHAUST AIR

The highly efficient separation of aerosols frequently allows the cleaned air to be re-circulated into the workplace. Higher concentrations of gaseous components present in the cleaned air must be ducted outdoors. As an alternative, an additional cleaning stage (cooling and condensation, or adsorption filter) is possible.

PLACEMENT

The units are designed for indoor installation. Placing the units outside is possible if taking special precautionary measures.

ELECTRICAL SYSTEM

The switch cabinet controls the operation of the system and meets both VDE as well as our own demanding Keller norms. We will also build to customer specifications.

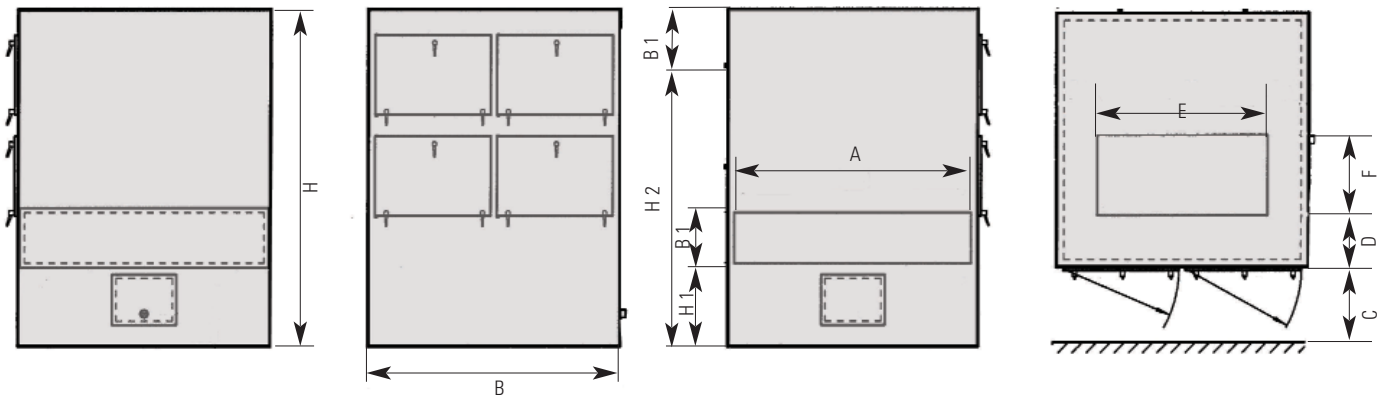
ACCESSORIES

- Preliminary chip separator
- Tramp oil separator
- Electro-pneumatic ball valve
- Fill level indicator
- Floor basin made from stainless steel (1.4571)
- Leakage sensor
- Tank with pump for separated cooling lubricants



UNIT DIMENSIONS AND TECHNICAL SPECIFICATIONS, ENA-D

Please refer to illustrations below for details.

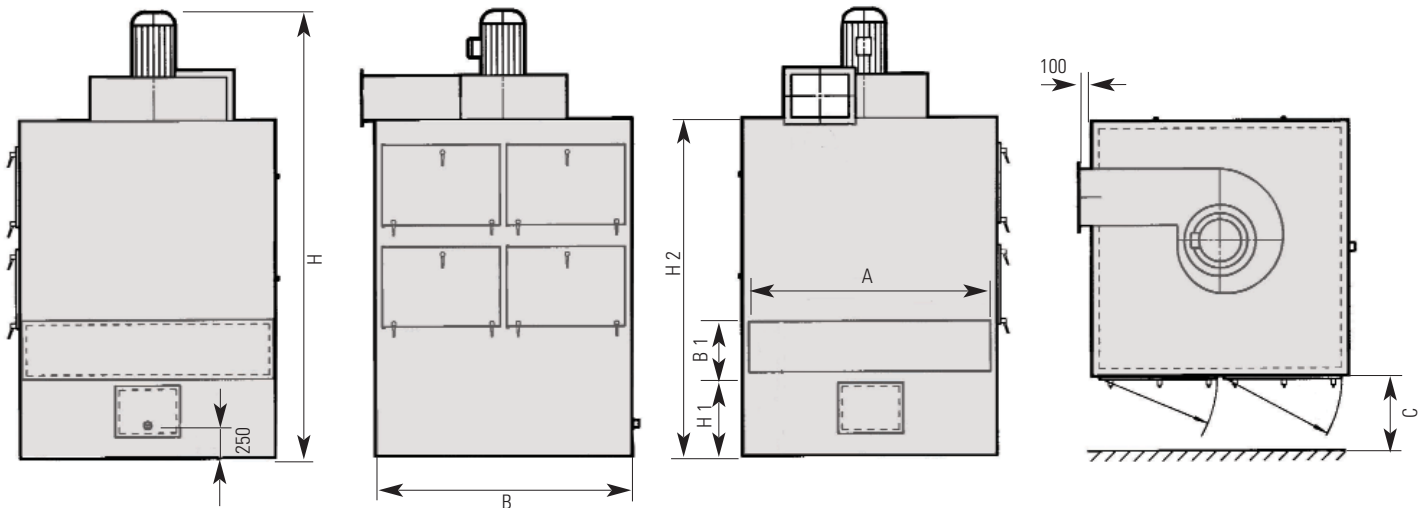


	ENA-1-D	ENA-2-D	ENA-3-D	ENA-4-D	ENA-5-D
B	1000 x 1200	1200 x 1200	1600 x 1600	2000 x 2000	2400 x 2400
H	1750	2650	2750	2650	2650
H1	650	650	650	650	650
H2	1535	2280	2280	-	-
A	1100	1100	1500	1900	2300
B1	125	250	350	400	450
C	1300	1300	900	1300	1300
D	-	-	-	400	450
E	-	-	-	1360	1600
F	-	-	-	640	640
Untreated Air Inlet	left/right	left/right	left/right	left/right	left/right
Clean Air Outlet	left/right	left/right	left	top	top
Rated Air Volume m ³ /h	10.000	15.000	30.000	45.000	60.000
Spray Nozzles	1x	2x	6x	8x	8x
Weight in kg	410	650	1100	1800	2200

Subject to modification

UNIT DIMENSIONS AND TECHNICAL SPECIFICATIONS, ENA-DV

Please refer to illustrations below for details.



	ENA-1-D-3.5V	ENA-1-D-5.0V	ENA-1-D-7.5V	ENA-1-D-10V	ENA-2-D-15V	ENA-3-D-20V
B	1000 x 1200	1000 x 1200	1000 x 1200	1000 x 1200	1200 x 1200	1600 x 1600
H	2300	2370	2410	2550	3450	3710
H1	650	650	650	650	650	650
H2	1700	1700	1700	1700	2600	2700
A	1100	1100	1100	1100	1100	1500
B1	125	125	125	125	250	350
C	1300	1300	1300	1300	1300	900
Untreated Air Inlet	left/right	left/right	left/right	left/right	left/right	left/right
Clean Air Outlet	0°/90°/180°/270°	0°/90°/180°/270°	0°/90°/180°/270°	0°/90°/180°/270°	0°/90°/180°/270°	0°/90°/180°/270°
Engine Power Output kW	4	5,5	7,5	11	18,5	22
Sound Pressure Level dB (A)*	75	75	77	77	79	79
Rated Air Volume m ³ /h	3.500	5.000	7.500	10.000	15.000	20.000
Spray Nozzles	1x	1x	1x	1x	2x	6x
Weight kg	570	580	590	620	910	1750

Subject to modification
*) measured at a distance of 1 m from the unit (door),
measured according to DIN EN ISO 3744

COMPACT SEPARATION TECHNOLOGY – EMULSION MIST SEPARATOR ENA-K

HIGHLY EFFICIENT SEPARATION FOR METALWORKING APPLICATIONS

With the emulsion mist separators of the ENA-K series, Keller Luftechnik has developed compact units for capturing and separating water-soluble coolant mists. This unit can be used as an independent unit or situated on top of or adjacent to a machine tool.

The control of the separator can be effected directly via the machine. As an alternative, we have a range of controls available. They can either be attached to the system or delivered separately. For this purpose we dispose of plug-type connections in different lengths.

SEPARATION PRINCIPLE

A multi-stage separation process cleans the untreated air using a combination of inertia, screening effect, coalescence and diffusion. The composition of the reusable wire mesh filter elements is customized to separate the specific droplet spectrum of the application. As an option, a third filtration stage (for the separation of fumes and smoke) can be added.

ACCESSORIES

- Downstream Filter Stage F9 - H13
- Spraying of filtration stage 1

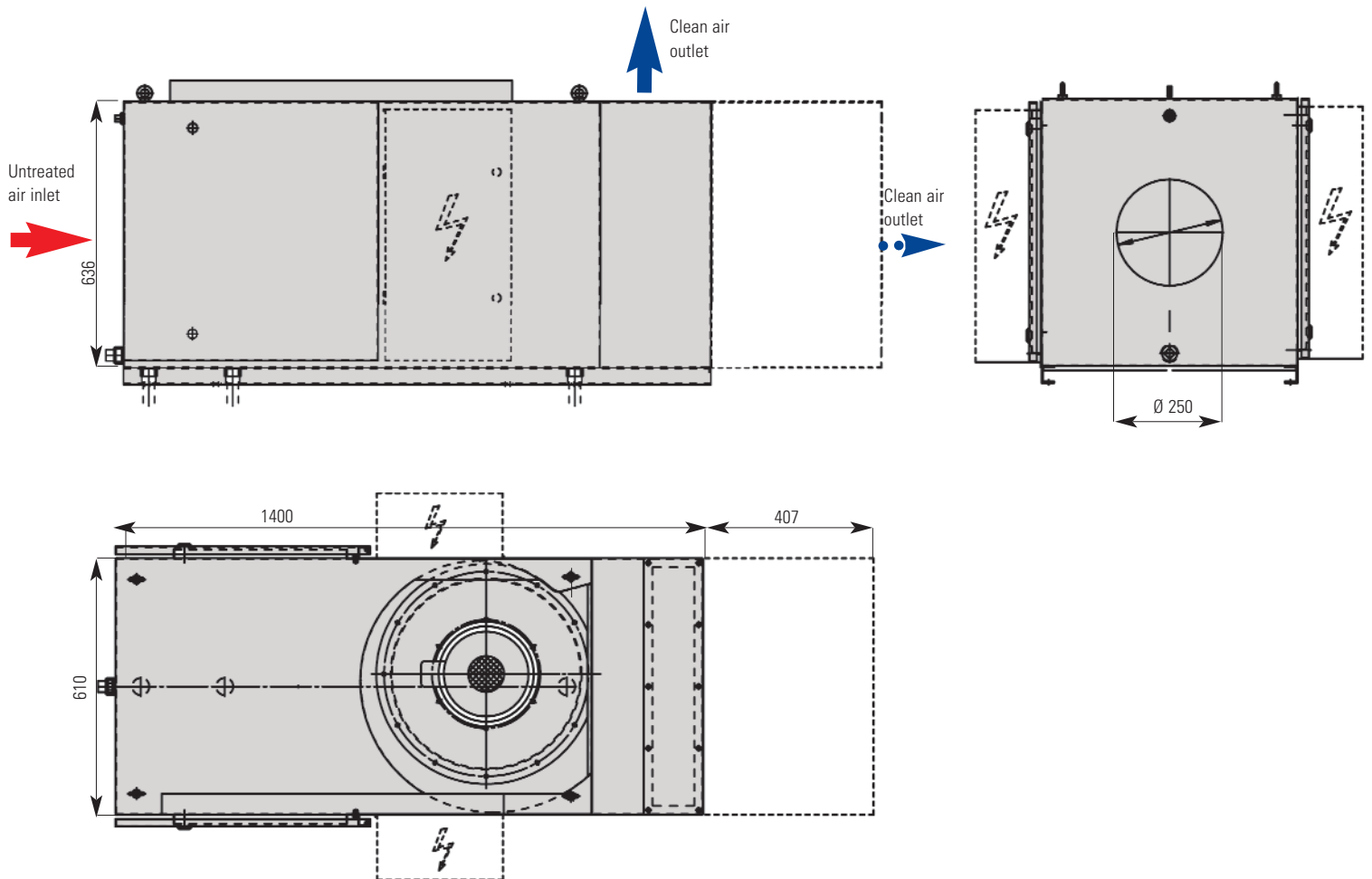


APPLICATIONS

- Cutting processes such as drilling, turning, milling, broaching, honing, grinding
- Shaping processes such as rolling, deep drawing, pressing
- Machine tools, machining centers and transfer systems for cutting processes
- Presses for molding and deep-drawn parts made from steel, light-alloy or non-ferrous metals
- Die casting machines
- Grinding machines

ADVANTAGES

- Small and compact filter housing
- Machine top mounting possible
- Switch and control system loosely or attached
- Turnable by 180°
- 24-hour operation with option to rinse during operation
- No downtime required



ENA-K	ENA-1-K-1.0	ENA-1-K-2.0
NW untreated air inlet	Ø 250	Ø 250
Optional 3. Filter Stage B1 [mm]	407	407
Untreated Air Inlet	left/right	left/right
Clean Air Outlet	right/left	right/left
Engine Power Output kW	1,5	3,3
Sound Pressure Level dB (A)*	72	72
Air Volume rated at m ³ /h	1000	2000
Spray Nozzles	1x	1x
Weight in kg	ca. 175	ca. 175

Subject to modification

*) measured at a distance of 1 m from the unit (door),
measured according to DIN EN ISO 3744



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REFERENCE INSTALLATIONS



REFERENCES END CUSTOMERS

AUDI, Germany, Hungary
MTU, Friedrichshafen, Munich
BOSCH Rexroth, Horb
CONTINENTAL TEVES, Gifhorn
DAIMLER, Germany, Mexico
EUROCOPTER, Donauwörth
GROB, Mindelheim
HEIDELBERGER DRUCKMASCHINEN, Amstetten
BMW, Germany, Austria, Great Britain
FORD, Germany, France, Spain, Great Britain, Mexico
OPEL, Hungary
PEUGEOT, France
PORSCHE, Germany
SEAT, Spain
VW, Germany, Mexico, China, Belgium
EWS, Uhingen
FEDERAL MOGUL, Germany
GETRAG, Germany, England, Slovakia, France

REFERENCES MACHINE MANUFACTURERS

GILDEMEISTER, Munich
HELLER, Nürtingen
WEISSER, St. Georgen
BOEHRINGER, Göppingen
CHIRON, Tuttlingen
EMAG, Germany, France, Italy
INDEX, Esslingen



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