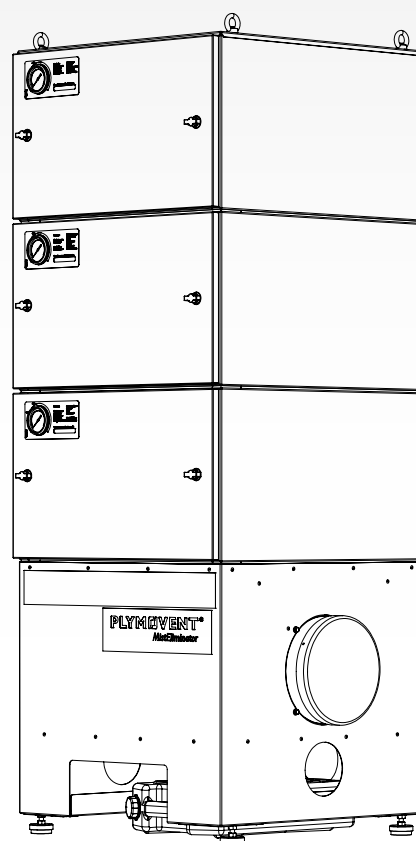


Oil mist filter

MISTELIMINATOR



EN

Installation and user manual

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EN | ORIGINAL INSTRUCTION

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To improve comprehension for people whose first language is not English, we have written parts of this manual in Simplified Technical English (STE). STE is a controlled language originally developed for aerospace industry maintenance manuals. It offers a carefully limited and standardized subset of English, along with specific writing rules.









PREFACE

Using this manual

This manual is intended to be used as a work of reference for professional, well trained and authorised users to be able to safely install, use, maintain and repair the product mentioned on the cover of this document.

Pictograms and symbols

The following pictograms and symbols are used in this manual:

	TIP Suggestions and recommendations to simplify carrying out tasks and actions.
	ATTENTION A remark with additional information for the user. A remark brings possible problems to the user's attention.
	CAUTION! Procedures, if not carried out with the necessary caution, could damage the product, the workshop or the environment.
	WARNING! Procedures which, if not carried out with the necessary caution, may damage the product or cause serious personal injury.
	CAUTION! Denotes risk of electric shock.
	WARNING! Fire hazard! Important warning to prevent fire.
	Personal protective equipment (PPE) Instruction to use respiratory protection when you do service, maintenance and repair jobs, as well as during functional testing. We recommend to use a half-face respirator according to EN 149:2001 + A1:2009, class FFP3 (Directive 89/686/EEC).
	Personal protective equipment (PPE) Instruction to use protective gloves when you do service, maintenance and repair jobs.

Text indicators

Listings indicated by "-" (hyphen) concern enumerations.
Listings indicated by "•" (bullet point) describe steps to perform.

Service and technical support

For information about specific adjustments, maintenance or repair jobs which are not dealt with in this manual, please contact the supplier of the product. He will always be willing to help you. Make sure you have the following specifications at hand:

- product name
- serial number

You can find these data on the identification plate.

1 INTRODUCTION

1.1 Identification of the product

The identification plate contains, among other things, the following data:

- product name
- serial number
- supply voltage and frequency
- power consumption



1.2 General description

The MistEliminator is a stationary filter for mainly oil mist applications, to be used in machine tool processes. Depending on the specific application, it is available with four different filter packages¹, with or without integrated fan module. In case of recirculation it is recommended to use a MistEliminator with additional HEPA filter (ME-32 and ME-42 series).

Except for the ME-42/F1 and ME-42/F2 with integrated fan, the MistEliminator requires no power.

1.3 Options and accessories

The following products can be obtained as an option and/or accessory:

ME-31/32/41/42 only:

- FUA fan series for direct mounting on MistEliminator
- FF-DUCT/250: duct connection Ø 250 mm
- FF-FAN/S: filter-fan adapter FUA-1800/2100
- FF-FAN/B: filter-fan adapter FUA-3000/4700
- FF-RACK: mounting frame

1.4 Technical specifications

Weight:	
- ME-31	- 98 kg (207 lbs)
- ME-32	- 134 kg (295 lbs)
- ME-41	- 104 kg (229 lbs)
- ME-42	- 138 kg (304 lbs)
- ME-42/F1	- 182 kg (401 lbs)
- ME-42/F2	- 190 kg (419 lbs)
Filter efficiency (ME-31/ME-41)	ISO ePM1 90% according to EN ISO 16890
Filter class (ME-32/ME-42/ME-42/F1/F2)	H13 according to EN 1822
Pressure drop:	(for dimensional purpose)
- ME-31	- 700 Pa (2.7 in. WG)
- ME-32	- 1200 Pa (4.75 in. WG)
- ME-41	- 1300 Pa (5.1 in. WG)
- ME-42	- 1500 Pa (6.0 in. WG)
Negative pressure	max. 4000 Pa (16 in. WG)
Airflow ^{*)} :	Max.:
- ME-31/ME-32	- 3000 m ³ /h (1750 CFM)
- ME-41/ME-42	- 2000 m ³ /h (1175 CFM)
Volume of oil container	8 liters (2 gallon)
^{*)} Max. airflow is a ceiling value and generally not recommended as a design value for operating the ME unit, as it might lead to short lifespan of filters. The performance of the ME unit is next to airflow influenced by other variables like amount and composition of metal working fluid, process, temperature and pre-treatment. Ask your local expert on the recommended airflow for your system design.	



Refer to the available product data sheets for detailed product specifications.

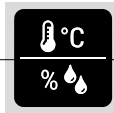
1.5 Dimensions

Refer to Fig. I on page 8.



1. **ME-31: bag filter;** for "polluted" or burnt high viscosity oil/emulsion
ME-32: bag filter + HEPA filter; for "polluted" or burnt high viscosity oil/emulsion + recirculation
ME-41: two-stage coalescer filter; for "clean" or recyclable low viscosity oil
ME-42 series: two-stage coalescer filter + HEPA filter; for "clean" or recyclable low viscosity oil + recirculation

1.6 Ambient conditions



Operating temperature:	
- min.	5°C (41°F)
- nom.	20°C (68°F)
- max.	45°C (113°F)
Max. relative humidity	80%
Suitable for outdoor use	no

composition of oil mist depends on the fluid and the process and can contain oil, water, metal fume (evaporated and condensed metal), soot, metal particulate and a variety of additives added to the metal working fluid.

The extracted oil mist enters the MistEliminator at the bottom through the air inlet module. The inlet module distributes the air and prevents large particles from entering the filter packages.

Subsequent filter stages:

General:

1. HydroFilter; impinger to separate oil droplets and coalesce oil mist into droplets
2. Aluminium mesh pre filter to keep larger particles

ME-31:

3. Bag filter for main filtration

ME-32:

3. Bag filter for main filtration
4. HEPA filter for final filtration

ME-41:

3. OC-1 self-draining filter cassette that coalesces oil mist to droplets and collects *medium sized* particles
4. OC-2 self-draining filter cassette that coalesces oil mist to droplets and collects *fine* particles

ME-42 series:

3. OC-1 self-draining filter cassette that coalesces oil mist to droplets and collects *medium sized* particles
4. OC-2 self-draining filter cassette that coalesces oil mist to droplets and collects *fine* particles
5. HEPA filter for final filtration

The oil and other substances end up in the container underneath.

If provided with a HEPA filter (ME-32 and ME-42 series), the clean air can be recirculated in the workshop. Without HEPA filter (ME-31 and ME-41 series) it is recommended not to recirculate but to exhaust the filtered air to the atmosphere.

2 PRODUCT DESCRIPTION

The product consists of the following main components and elements:

Fig. 2.1

ME-31:

- A oil container
- B air inlet module
- C HydroFilter (impinger)
- D aluminium mesh prefilter
- E bag filter

Additionally for ME-32:

- F HEPA filter

ME-41:

- G oil container
- H air inlet module
- I HydroFilter (impinger)
- J aluminium mesh prefilter
- K OC-1 (coalescer filter stage 1)
- L OC-2 (coalescer filter stage 2)

Additionally for ME-42:

- M HEPA filter

Additionally for ME-42/F1:

- N 1,1 kW fan

Additionally for ME-42/F2:

- O 2,2 kW fan

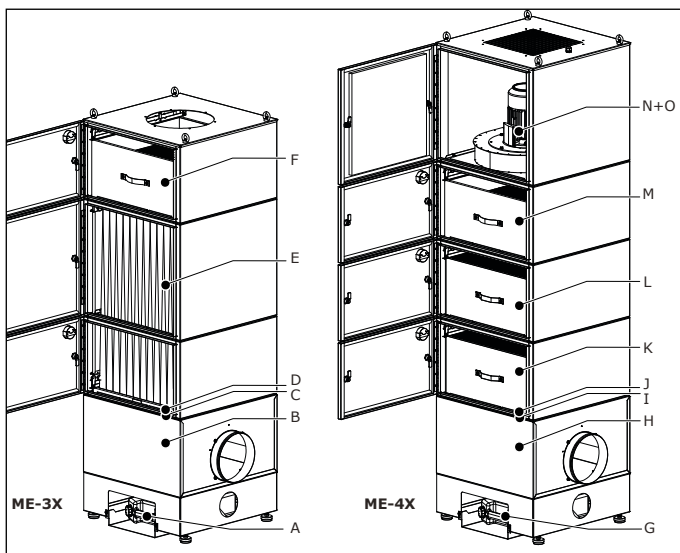


Fig. 2.1 Main components and elements

2.1 Operation



The extracted air contains oil mist that is released during machine tool processes by impact with the machine tool or by heat of a hot surface; in this case the liquid particles are condensed from a vapour. Heat generated oil mist is often referred to as smoke. The



WARNING!

Check with local or state health & safety authorities on recirculation regulations.

Differential pressure gauges on each filter module indicate when the filters must be replaced.

3 SAFETY

General

The manufacturer does not accept any liability for damage to the product or personal injury caused by ignoring of the safety instructions in this manual, or by negligence during installation, use, maintenance, and repair of the product mentioned on the cover of this document and any corresponding accessories. Specific working conditions or used accessories may require additional safety instructions. Immediately contact your supplier if you detect a potential danger when using the product.



The user of the product is always fully responsible for observing the local safety instructions and regulations. Observe all applicable safety instructions and regulations.

User manual

- Everyone working on or with the product, must be familiar with the contents of this manual and must strictly observe the instructions therein. The management should instruct the personnel in accordance with the manual and observe all instructions and directions given.
- Do not change the order of the steps to perform.
- Keep the manual with the product.

Users

- The use of this product is exclusively reserved to authorised, trained and qualified users. Temporary personnel and personnel in training can only use the product under supervision and responsibility of skilled engineers.
- Stay alert and keep your attention to your work. Do not use the product when you are under the influence of drugs, alcohol or medicine.
- The product is not to be used by children or persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.
- Children must be supervised not to play with the product.

Intended use²

The product has been designed exclusively for filtering oil, water soluble coolants, emulsions and/or oily smoke which are released during the most common machine tool processes³. Using the product for other purposes is considered contrary to its intended use. The manufacturer accepts no liability for any damage or injury resulting from such use. The product has been built in accordance with state-of-the-art standards and recognised safety regulations. Only use this product when in technically perfect condition in accordance with its intended use and the instructions explained in the user manual.

Technical specifications

Do not change the specifications given in this manual.


Modifications

Modification of (parts of) the product is not allowed.

Product combinations

If the product is used in combination with other products or machines, the safety instructions in the documentation of these products also apply.

Use

	<p>WARNING! Fire hazard! Do not use the product for:</p> <ul style="list-style-type: none">- extracting and/or filtering flammable, glowing or burning particles or solids or liquids- extracting and/or filtering of aggressive fumes (such as hydrochloric acid) or sharp particles- sucking cigarettes, cigars, oiled tissues, and other burning particles, objects, and acids
--	---

2. "Intended use" as explained in EN-ISO 12100-1 is the use for which the technical product is suited as specified by the manufacturer, inclusive of his directions in the sales brochure. In case of doubt it is the use which can be deduced from the construction, the model and the function of the technical product which is considered normal use. Operating the machine within the limits of its intended use also involves observing the instructions in the user manual.
3. E.g.: CNC machining centers for cutting, boring, drilling and honing; machines for metal forming operations like cold heading and stamping; oil mist produced by heat and surface treatments like hardening and wet grinding



WARNING!

Do **not** use the product for:

- oxy-fuel cutting
- aluminium laser cutting
- arc-air gouging
- paint mist
- extraction of hot gases (more than 45°C/113°F continuously)
- grinding aluminium and magnesium
- flame spraying
- extraction of cement, saw dust, wood dust, grit etc.
- explosive environments or explosive substances/gases

Note: this list is not all-embracing.

Installation

- The installation of this product is exclusively reserved to authorised, trained and qualified engineers.
- Electric connection, if applicable, to be executed in accordance with local requirements. Ensure compliance with the EMC regulatory arrangements.
- During installation, always use Personal Protective Equipment (PPE) to avoid injury. This also applies for persons who enter the work area during installation.
- Use sufficient climbing gear and safety guards when working on a higher level than 2 metres (local restrictions may apply).
- Do not install the product in front of entrances and exits which must be used for emergency services.
- If not placed on the floor, make sure the support system is strong enough to carry the product.
- Ensure the workspace is well illuminated.
- Use common sense. Stay alert and keep your attention to your work. Do not install the product when you are under the influence of drugs, alcohol or medicine.
- Make sure that the workshop, in the vicinity of the product, contains sufficient approved fire extinguishers.

Use

- Inspect the product and check it for damage. Verify the functioning of the safety features.
- During use, always use Personal Protective Equipment (PPE) to avoid injury. This also applies for persons who enter the work area.
- Check the working environment. Do not allow unauthorised persons to enter the working environment.
- Protect the product against water and humidity.
- Make sure the room is always sufficiently ventilated; this applies especially to confined spaces.



Service, maintenance and repairs


- Obey the maintenance intervals given in this manual. Overdue maintenance can lead to high costs for repair and revisions and can render the guarantee null and void.
- During service, maintenance and repair jobs, always use Personal Protective Equipment (PPE) to avoid injury. This also applies for persons who enter the work area.
- Use sufficient climbing gear and safety guards when working on a higher level than 2 metres (local restrictions may apply).



ATTENTION!

Service, maintenance and repairs must be performed in accordance with directive TRGS 560 and TRGS 528 by authorised, qualified and trained persons (skilled) using appropriate work practices.

	CAUTION! Before you carry out service, maintenance and/or repair jobs, fully disconnect the system from the mains (if applicable) or turn off the connected extraction system.
	WARNING! Use the filter system with full filter package only.

	WARNING! Use sealed ductwork and duct connections to prevent oil leakage.
---	---

4 INSTALLATION

4.1 Positioning

You can mount the MistEliminator on the floor or on a platform.

The air inlet module allows for connection of the machining device on either the left or the right side. The unused side of the module must be closed by the supplied duct cap.



4.2 Tools and requirements

You need the following tools and requirements to install the system:

- lifting equipment
- level
- duct connection material
- wrenches



4.3 Unpacking

The MistEliminator is supplied fully assembled.

Make sure that the product is complete. The package contains:

- assembled filter unit



Packed in air inlet module:

- adjustable foot (4)
- duct cap Ø 250 mm
- oil container

If parts are missing or damaged, contact your supplier.

4.4 Installation

To mount the unit, do the following.



Fig. 4.2

- Install the adjustable feet (A).
- Put the unit at an appropriate position.
- If necessary: use the adjustable feet to make it level.
- Connect the air inlet module to the machining device.
- Put the duct cap on the other side of the air inlet module.
- Put the oil container underneath the unit.

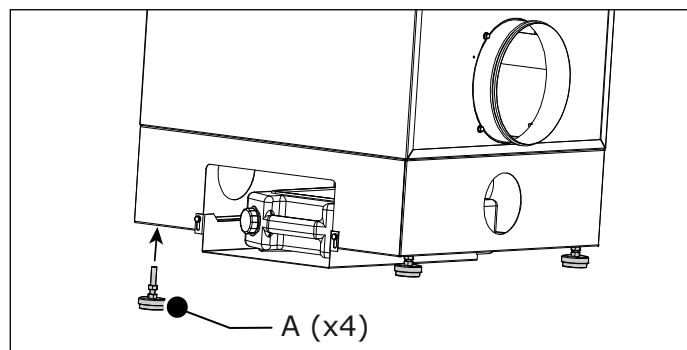


Fig. 4.2 Adjustable feet

ME-42/F1 and ME-42/F2 only:

- If required/necessary: connect the fan outlet to an exhaust duct.


Other types (without integrated fan):

- Install an optional FUA-series fan on the filter outlet; or
- Connect the outlet to the extraction system.


4.5 Connection to the mains

Connection to the mains applies to ME-42/F1 and ME-42/F2 only.




	CAUTION! Before you carry out service, maintenance and/or repair jobs, fully disconnect the system from the mains (if applicable) or turn off the connected extraction system.
---	--


- Connect the fan to the mains.
- Make sure that the direction of rotation of the motor is correct. An arrow on the fan housing indicates the correct direction.
- If necessary: invert the connection of the phases.

	ATTENTION! A motor starter or control equipment are not included and have to be arranged locally.
--	---

5 USE

	ATTENTION! Use the filter system with full filter package only.
---	---

The MistEliminator operates by activating the integrated or connected extraction fan.

	CAUTION! Always turn off the connected or integrated extraction fan when the machine tool is not in operation. Using the MistEliminator when the machine tool is not in operation will lead to evaporation of the aqueous (water) part of the metal working fluid. As a result, the filters will be clogged by crystallization of the additives that were dissolved in the metal working fluid.
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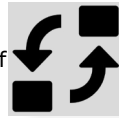
5.1 Oil container

During use, you must check the level of contents in the oil container regularly. The emptying frequency depends on the intensity of use and will be a matter of experience.



- Check the level of contents in the oil container on a regular basis.
- Empty if necessary. Refer to paragraph 6.2.

5.2 Pressure gauges



The differential pressure gauges indicate the level of pollution of each individual filter module. During use, you must check these gauges regularly. When the pressure reaches a certain value, you must replace the filters.

- Check differential pressure gauges on a regular basis.
- Replace filter(s) if necessary. Refer to paragraph 6.3.

6 MAINTENANCE

6.1 Periodic maintenance



The product has been designed to function without problems for a long time with a minimum of maintenance. In order to guarantee this, some simple, regular maintenance activities are required which are described in this chapter.

The indicated maintenance intervals can vary depending on the specific working and ambient conditions. Therefore it is recommended to thoroughly inspect the complete product once every year beside the indicated periodic maintenance. For this purpose contact your supplier.

	WARNING! Always wear face mask and protective gloves during maintenance.
--	--

The maintenance activities in the table below can be carried out by the user.

Component	Action	Frequency: every 6 months
Filter package	Check all filters for damage. Replace if necessary.	X
HydroFilter (impinger)	Clean the filter; refer to paragraph 6.4.	X
Aluminium prefilter	Clean the filter; refer to paragraph 6.4.	X
Air inlet module	Clean the inside.	X
Air tubes inside filter modules	Check the connections. Repair if necessary.	X
Housing	General mechanical check, including sealing.	X

6.2 Oil container



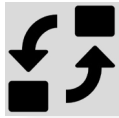
	WARNING! Always wear face mask and protective gloves when you empty the oil container.
--	--

To empty the oil container, do the following.

- Remove the oil container and close it by the supplied cap.
- Empty the container and put it back in place.

	When you empty the container, prevent oil to drip out of the filter unit on the floor.
--	--

6.3 Filter replacement



Differential pressure gauges on each filter module indicate when you must replace the filters. Except for the HydroFilter and the mesh filter, the filters cannot be cleaned.

The table below shows the max. pressure level at which filter replacement is required.

Filter type	Replacement at
Bag filter	500 Pa (2.0 in. WG)
Oil mist filter cassette OC-1	500 Pa (2.0 in. WG)
Oil mist filter cassette OC-2	800 Pa (3.2 in. WG)
HEPA filter	800 Pa (3.2 in. WG)

	WARNING! Always wear face mask and protective gloves when you replace the filters.
	WARNING! Turn off the connected or integrated extraction system before filter replacement.

To replace any filter, do the following.

Fig. 6.1

- Open the door of the filter module in question.
- Pull the straps to unlock the filter.
- Remove the filter.
- Dispose of the used filter in accordance with state or local regulations.
- Clean the inside of the filter housing.
- Install a new filter. Push the strap bars to lock it.
- Close and lock the door.

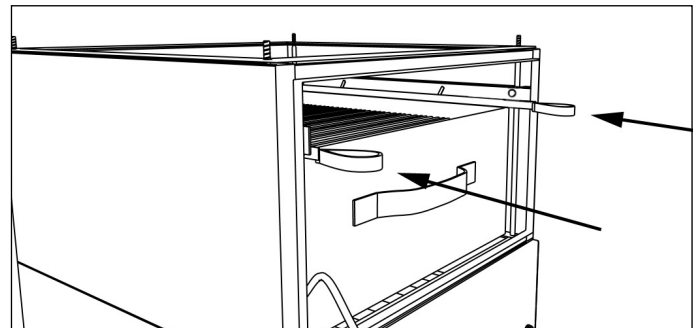
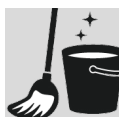


Fig. 6.1 Filter locking device

	ATTENTION! Observe the airflow direction of the filters to be from bottom to top. An arrow indicates the correct airflow direction.
--	---

6.4 Filter cleaning



You must clean the HydroFilter and the aluminium mesh filter on a regular basis (refer to paragraph 6.1).

To clean the filters, do the following.

Fig. 6.2

- Open the door of the lower filter module (B).
- Remove the mesh filter (A) and the HydroFilter (C).
- Clean them with industrial detergent, e.g. Plymovent EFC.
- Install the filters in reverse order and close the filter module.

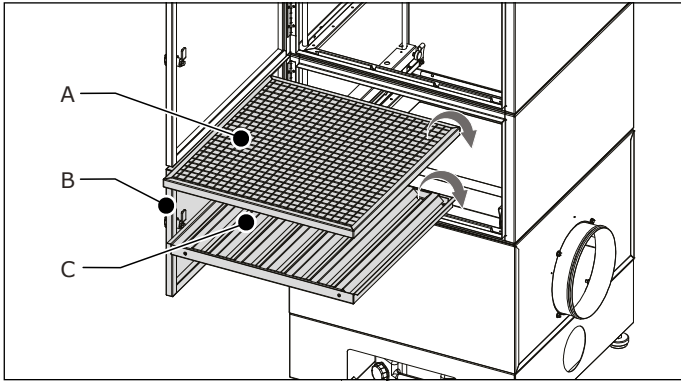


Fig. 6.2 Removal of the filters

7 TROUBLESHOOTING

If the system does not function (correctly), consult the checklist below to see if you can remedy the error yourself. Should this not be possible, contact your supplier.



Symptom	Problem	Possible cause	Solution
Oil leakage inside the filter module	Pollution of the filter housing	Filter(s) placed incorrectly	Install the filter(s) correctly and lock them
		Sealing material of filter(s) is damaged or loose	Replace the filter(s)

8 SPARE PARTS

The following spare parts are available for the product.



8.1 ME-31 / ME-32 (F1 / F2)

Refer to Fig. II on page 9.

8.2 ME-41 / ME-42 (F1 / F2)

Refer to Fig. III on page 10

9 DISPOSAL

After the life of the product, dispose it of in accordance with federal, state or local regulations.



CE DECLARATION

CE declaration of conformity for machinery



We, Plymovent Manufacturing B.V., Koraalstraat 9, 1812 RK Alkmaar, the Netherlands, herewith declare, on our own responsibility, that the products:

- ME-42/F1
- ME-42/F2

which this declaration refers to, are in accordance with the conditions of the following Directives:

- Machine Directive 2006/42 EC

and is/are in conformity with the following harmonized standard(s) and/or other such normative documents + amendments, if any:

- EN ISO 12100-1 (safety of machinery)
- EN ISO 12100-2 (safety of machinery)
- EN ISO 13857 (safety distances)

Alkmaar, the Netherlands, 1st July 2019

M.K. Geus
Product Manager

Fig. I Dimensions

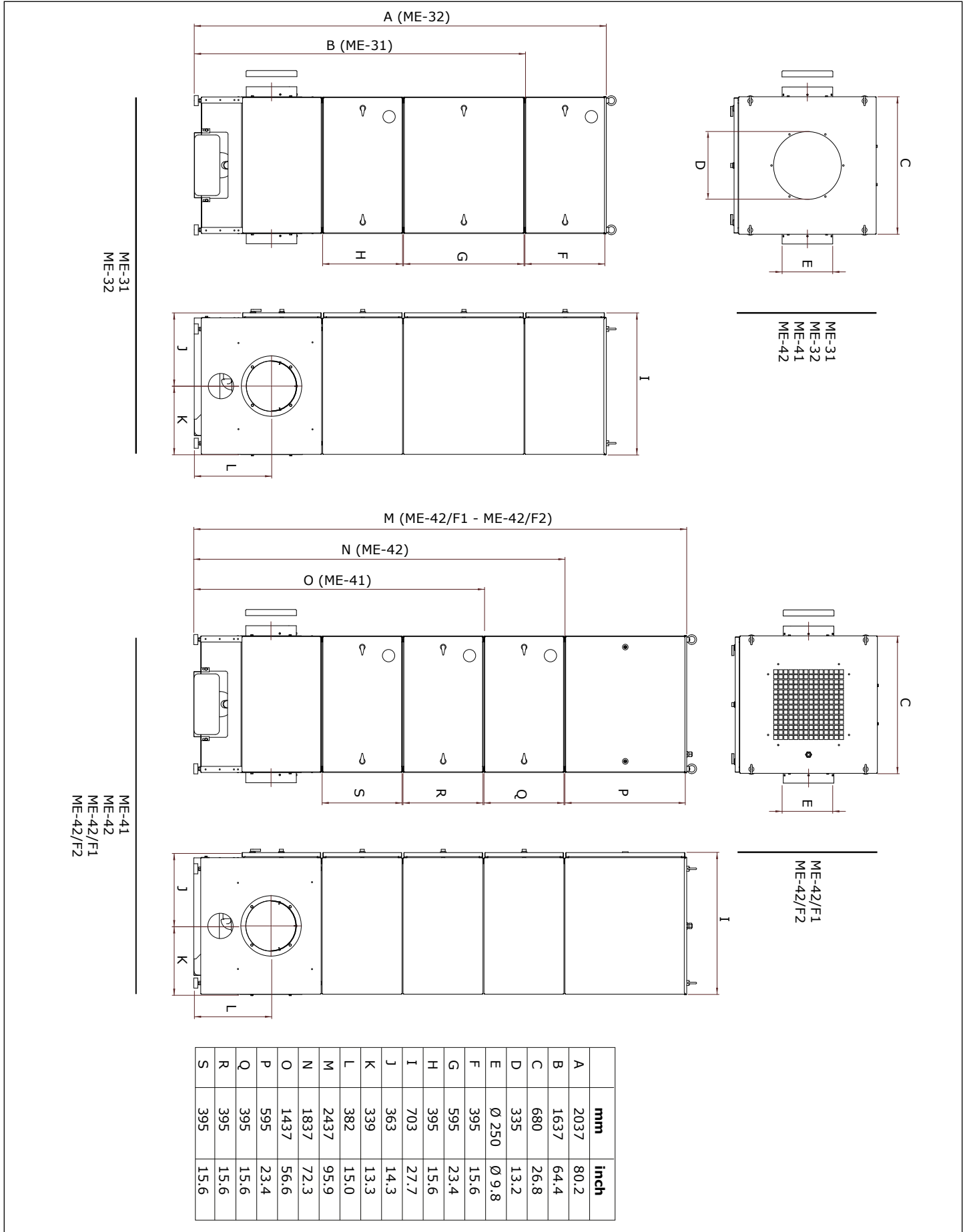
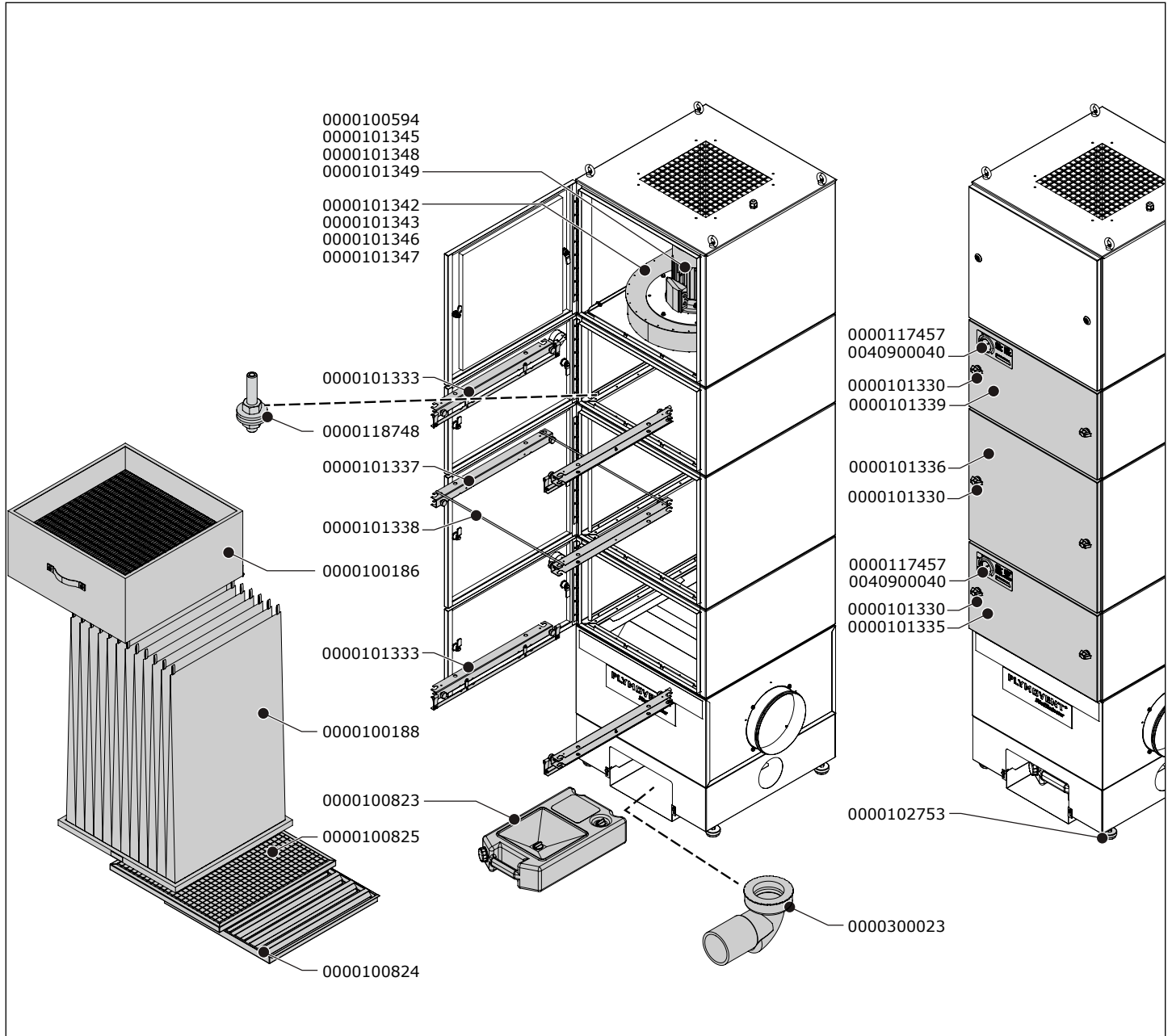


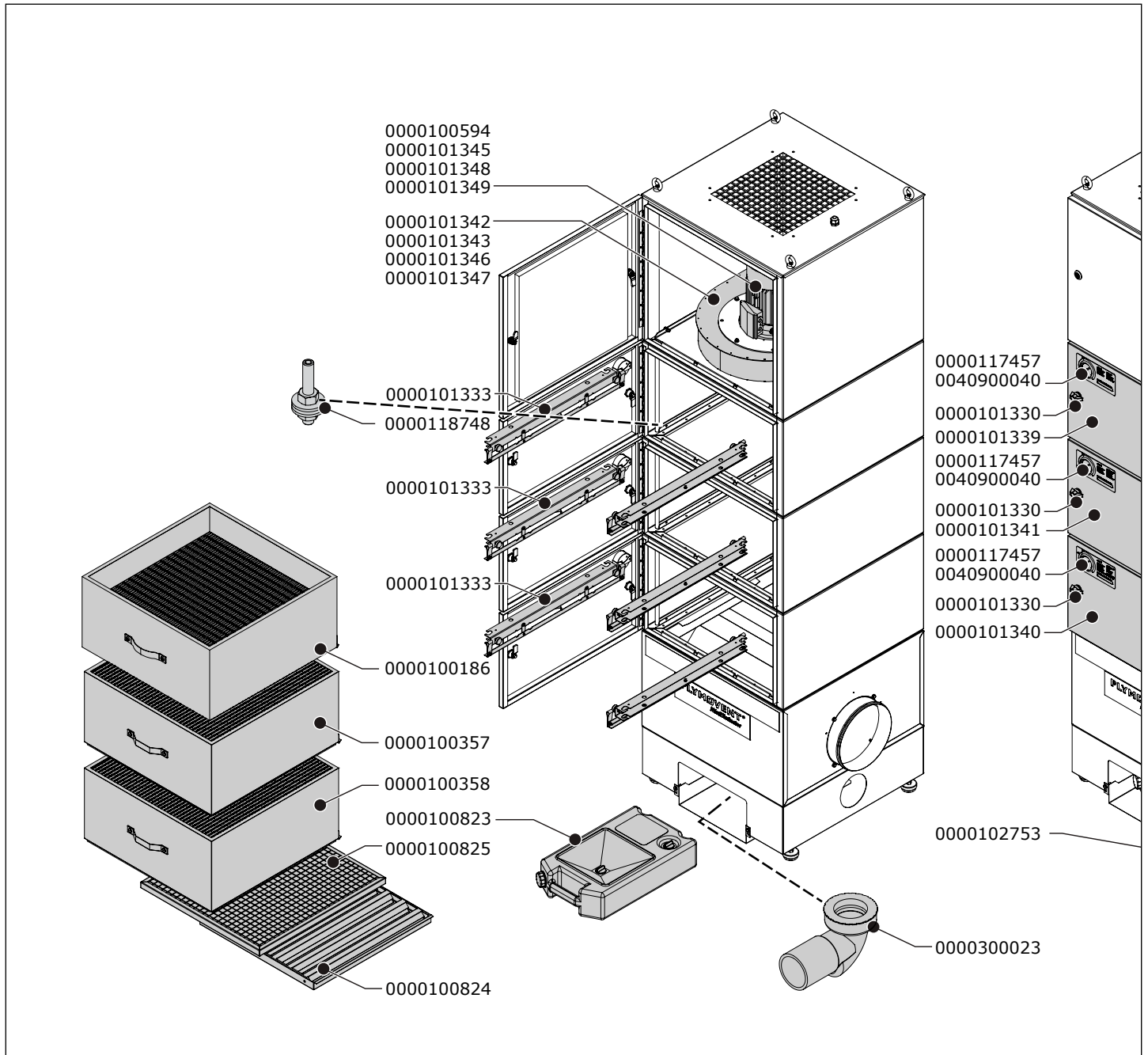
Fig. II Spare parts ME-31 / ME-32 (F1 / F2)



Art. no.	Description
0000100186	HFME-3 / HEPA final filter
0000100188	BFME-31 / Bag filter
0000100594	Motor 1,1 kW; 230-400V/3ph/50Hz
0000100823	Oil container (8 liters)
0000100824	ME-INL/IMP / HydroFilter (impinger)
0000100825	ME-INL/PF / Pre filter
0000101330	Lock with handle (set of 2)
0000101333	Cassette/bag lock (set of 2)
0000101335	Lower door of bag filter module, incl. locks, hinges and sticker
0000101336	Upper door of bag filter module, incl. locks, hinges and sticker
0000101337	Bag filter suspension (set of 2)
0000101338	Aluminium suspension rod Ø 12 mm (set of 2)
0000101339	Door HEPA filter module, incl. locks, hinges and sticker
0000101342	Fan wheel 1,1kW/50Hz

Art. no.	Description
0000101343	Fan wheel 1,1kW/60Hz
0000101345	Motor 1,1 kW; 208-220/460V/3ph/60Hz
0000101346	Fan wheel 2,2kW/50Hz
0000101347	Fan wheel 2,2kW/60Hz
0000101348	Motor 2,2 kW; 230-400V/3ph/50Hz
0000101349	Motor 2,2 kW; 208-220/460V/3ph/60Hz
0000102753	Adjustable foot
0000300023	Siphon
0000117457	Pressure gauge Ø 60 mm (black ring)
0000118748	Threaded tube Ø 6 mm (5 pcs)
0040900040	Pressure gauge Ø 63 mm (metal ring)

Fig. III ME-41 / ME-42 (F1 / F2)



Art. no.	Description
0000100186	HFME-3 / HEPA filter for final filtration
0000100357	OC-2 / Coalescer filter cassette stage 2
0000100358	OC-1 / Coalescer filter cassette stage 1
0000100594	Motor 1,1 kW; 230-400V/3ph/50Hz
0000100823	Oil container (8 liters)
0000100824	ME-INL/IMP / HydroFilter (impinger)
0000100825	ME-INL/PF / Pre filter
0000101330	Lock with handle (set of 2)
0000101333	Cassette/bag lock (set of 2)
0000101339	Door HEPA filter module, incl. locks, hinges and sticker
0000101340	Door filter module OC-1, incl. locks, hinges and sticker
0000101341	Door filter module OC-2, incl. locks, hinges and sticker
0000101342	Fan wheel 1,1kW/50Hz

Art. no.	Description
0000101343	Fan wheel 1,1kW/60Hz
0000101345	Motor 1,1 kW; 208-220/460V/3ph/60Hz
0000101346	Fan wheel 2,2kW/50Hz
0000101347	Fan wheel 2,2kW/60Hz
0000101348	Motor 2,2 kW; 230-400V/3ph/50Hz
0000101349	Motor 2,2 kW; 208-220/460V/3ph/60Hz
0000102753	Adjustable foot
0000117457	Pressure gauge Ø 60 mm (black ring)
0000118748	Threaded tube Ø 6 mm (5 pcs)
0000300023	Siphon
0040900040	Pressure gauge Ø 63 mm (metal ring)

