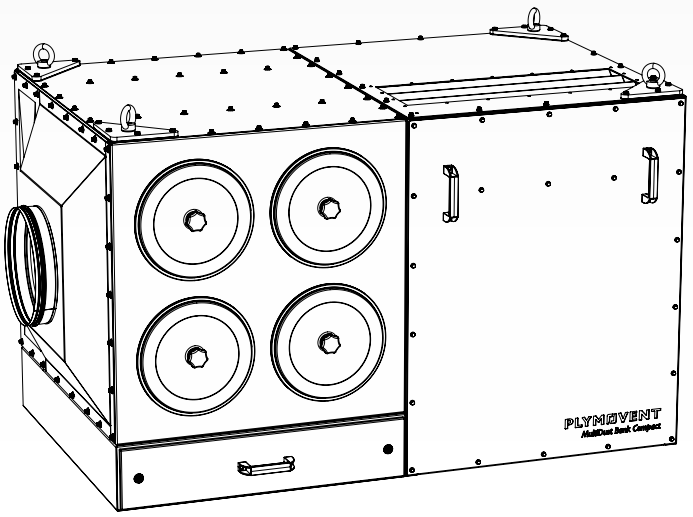
PLYMOVENT®
clean air at work

Central filter system with integrated fan

MDB-COMPACT PRO



EN **Installation and user manual**

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EN | ORIGINAL INSTRUCTION

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.
	**WARNING!** Explosion hazard! Important warning to prevent explosions.
	**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.

Product indications

Product type	Equals to:
MDB-2/Compact PRO	MDB-2/C
MDB-4/Compact PRO	MDB-4/C
MDB-6/Compact PRO	MDB-6/C
The specific product type (4/6/8) corresponds with the number of filter cartridges	

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 MDB-Compact PRO is a filter unit with integrated fan, filter cleaning system and dust drawer for connection to an external device, e.g. a welding robot or a cutting table. The fan is placed in a sound absorbing box; to enhance noise reduction the fan exhaust faces down.

Filter cartridges are not included and must be selected and ordered separately.

1.2.1 Control equipment

The unit is controlled by ControlPro control equipment. ControlPro is an intelligent control panel with separate HMI with extensive feature package for fan/filter control; remote access via network.

For more information, refer to the product data sheet and separate installation manual that is supplied with the ControlPro.

1.3 Product combinations

To operate the unit, selection of filter cartridges is required. The following types are available:

Filter cartridge:		
Type	**Surface**	**Material**
CART-D:		
Premium Plus	15 m² (161 ft²)	BiCo spunbond polyester
Premium	15 m² (161 ft²)	spunbond polyester
Economy	15 m² (161 ft²)	cellulose
CART-C	15 m² (161 ft²)	BiCo spunbond polyester, antistatic
CART-E	15 m² (161 ft²)	BiCo spunbond polyester + PTFE impregnation
CART-PTFE/10	10 m² (108 ft²)	BiCo spunbond polyester + PTFE membrane
CART-PTFE/15	15 m² (161 ft²)	
CART-MB	10,7 m² (115 ft²)	cellulose with polypropylene microfiber overlay, electrostatically charged

The specific product type[1] corresponds with the required number of filter cartridges.

1.3.1 Precoat

To enhance the efficiency and lifespan of the filter cartridges, it is strongly recommended to add precoat material (PRECO-N). This applies to polyester filter cartridges type CART-D, CART-C and CART-E only.
Dosing per filter cartridge: 500 g (1⅛ lbs.).

1. MDB-**2**/C, MDB-**4**/C and MDB-**6**/C

1.4 Options and accessories

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

Type	Description
CAR-KIT	Compressed air regulator
-	Compressed air sensor (kit)
SparkShield	Cyclonic spark arrester
PRECO-N	Precoat material; refer to paragraph 1.3.1
Adapter *)	Adapter from Ø 250 mm to Ø 10 in.
	Adapter from Ø 400 mm to Ø 16 in.
	*) *An adapter from Ø 355 mm to Ø 14 in. is not necessary*
Frequency inverter (refer to paragraph 1.4.1)	VFD-2.2 / Frequency inverter 2,2 kW (3 HP)
	VFD-4 / Frequency inverter 4 kW (5 HP)
	VFD-5.5 / Frequency inverter 5,5 kW (7.5 HP)
	VFD-11 / Frequency inverter 11 kW (15 HP)
Inspection hatch	*To be sourced locally; refer to paragraph 4.9*
Non-return valve	*To be sourced locally; refer to paragraph 4.10*

1.4.1 Frequency inverters

The compact design of the unit, in combination with a high air performance, is achieved by using 60 Hz fan technology. For this reason it is necessary to install a variable frequency inverter for 50 Hz power grids (e.g. in Europe).
For 60 Hz power grids a frequency inverter is optional.

Connection voltage	MDB-2/C	MDB-4/C	MDB-6/C
230V/3ph/60Hz	VFD-4 (required)	VFD-5.5 (required)	VFD-11 (required)
460V/3ph/60Hz	VFD-2.2 (option)	VFD-4 (option)	VFD-7.5 (option)
575V/3ph/60Hz	VFD-2.2 (option)	VFD-4 (option)	VFD-7.5 (option)

1.5 Technical specifications

	General
Fan	
Fan type	radial
Motor design	IEC
Motor protection	by PTC thermistor
Efficiency level	IE-3
Motor speed	max. 3500 rpm
Compressed air system	
Required compressed air quality	dry and oil-free according to ISO 8573-3 class 6
Required pressure	4-5 bar (60-75 PSI)
Compressed air connection	push-in fitting: - in: G ⅜ in. - out: 12 mm
Electrical data	
Connection voltage (fan)	- 230V/3ph/60Hz *) - 460V/3ph/60Hz - 575V/3ph/60Hz *) *The use of a frequency inverter makes the 60 Hz fan suitable to run on a 50 Hz power grid*
Activation of start/ stop device	by 0-24 VDC signal

Filter efficiency			
CART-D/C/E/PTFE	- M according to DIN EN 60335-29 - MERV 11 according to ASHRAE 52.2		
CART-MB	MERV 16 according to ASHRAE 52.2		
Certification			
MDB-Compact with filter cartridges CART-PTFE/10 or CART-PTFE/15	W3 compliant (according to EN-ISO 21904-2:2020)		
	MDB-2/C	**MDB-4/C**	**MDB-6/C**
Compressed air consumption (per pulse)	35 nl (1¼ ft³)	75 nl (2⅝ ft³)	75 nl (2⅝ ft³)
Volume of compressed air tank(s)	11 litres (2⅞ gallon)	22,9 litres (6 gallon)	11 + 22,9 litres (2⅞ + 6 gallon)
Total filter surface with filter cartridges:			
- CART-D	30 m² (323 ft²)	60 m² (646 ft²)	90 m² (969 ft²)
- CART-C	30 m² (323 ft²)	60 m² (646 ft²)	90 m² (969 ft²)
- CART-E	30 m² (323 ft²)	60 m² (646 ft²)	90 m² (969 ft²)
- CART-PTFE/10	20 m² (215 ft²)	40 m² (431 ft²)	60 m² (646 ft²)
- CART-PTFE/15	30 m² (323 ft²)	60 m² (646 ft²)	90 m² (969 ft²)
- CART-MB	21,4 m² (230 ft²)	42,8 m² (461 ft²)	64,2 m² (691 ft²)
Capacity of dust drawer	33 litres (8¾ gallon)	72 litres (19 gallon)	72 litres (19 gallon)
Weight	335 kg (739 lbs.) *Without filter cartridges*	425 kg (937 lbs.)	600 kg (1323 lbs.)
Power (fan)	2,2 kW (3 HP)	4,0 kW (5 HP)	7,5 kW (10 HP)
Current draw at: - 230V - 460V - 575V	 - 6,5 A - 3,25 A - 1,3 A	 - 12,0 A - 6,0 A - 2,4 A	 - 22,6 A - 11,3 A - 4,52 A
Max. airflow	2850 m³/h (1675 cfm) *With new CART-D filter cartridges; free-blowing*	5025 m³/h (2960 cfm)	7180 m³/h (4225 cfm)
Inlet connection	Ø 250 mm (9⅞ in.)	Ø 355 mm (14 in.)	Ø 400 mm (15¾ in.)
Min. duct connection	Ø 250 mm (9⅞ in.)	Ø 355 mm (14 in.)	Ø 400 mm (15¾ in.)
Sound level (nom.)	69 dB(A) *Nominal sound level at 1 m (3 ft) distance @ 1000 m³/h (589 cfm) per filter cartridge*	71 dB(A)	71 dB(A)

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

1.6 Dimensions

Refer to Fig. I on page 16.

1.7 Performance chart

Refer to Fig. II on page 17.

1.8 Ambient and process conditions

Process temperature: - min. - nom. - max.	 5°C (41°F) 20°C (68°F) 70°C (158°F)
Max. relative humidity	80%
Suitable for outdoor use	no

1.9 Transport of the unit

You cannot hold the manufacturer liable for any transportation damage after delivery of the unit. Handle the unit and the accompanying options and/or accessories, if any, with care.

Refer to paragraph 4.3 for lifting instructions.

2 PRODUCT DESCRIPTION

2.1 Components

The MDB-Compact consists of the following main components and elements:

Fig. 2.1
A Corner plate with eye bolt (4)
B Cover plate
C RamAir™ pulse amplifier (filter cleaning system), incl. compressed air tank
D Air inlet module
E Dust drawer
F Filter cartridge (2/4/6)
G Extraction fan
H Air outlet
I ControlPro/Panel
J ControlPro/HMI

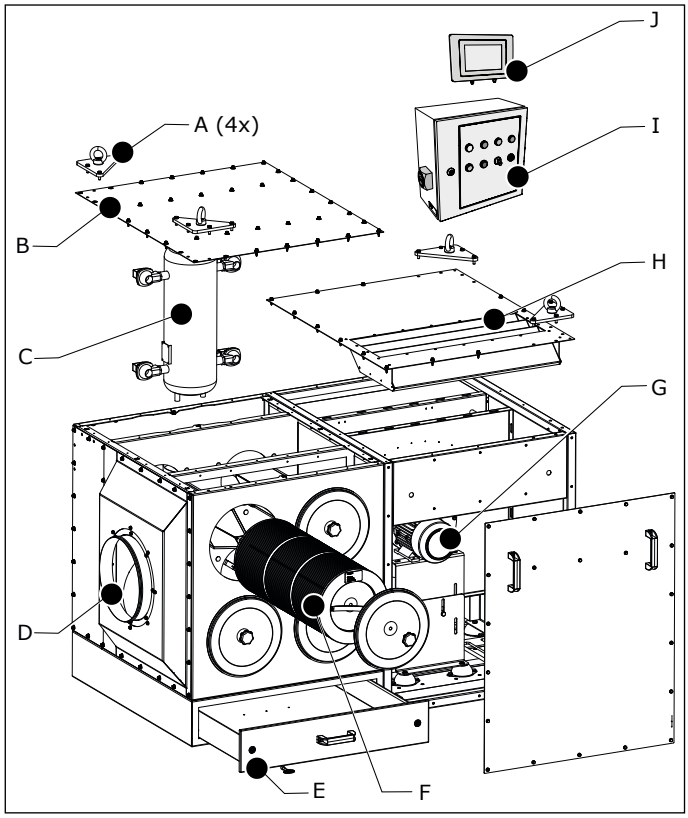


Fig. 2.1 Main components and elements

2.2 Operation

The polluted air from the external device is extracted through the air inlet module on the left[2] side of the unit. The air then passes the filter cartridges inside the housing. The filtered air is blown back into the workshop by the outlet of the fan housing.

The filter cartridges are cleaned individually by compressed air pulses. This system is called the RamAir™ pulse amplifier. The dust and dirt particles are collected in the dust drawer.

Deflector plates behind the air inlet module balance the dust load on the filter cartridges. They operate as spark arresters at the same time.

2.2.1 Control equipment

The MDB-Compact is connected to ControlPro control equipment.

ControlPro is an intelligent platform that controls the filter system as well as the connected extraction fan. It contains an extensive feature package to monitor and arrange the RamAir™ pulse amplifier (filter cleaning system), the required airflow and the corresponding fan speed. By means of the user-friendly HMI you can program all desired parameters. The HMI gives a clear insight into the system status and performance at all times.

ControlPro allows for remote access via a network connection.

3 SAFETY INSTRUCTIONS

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. Obey 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.
- Always keep the manual with the product.

Pictograms and instructions on the product (if present)

- The pictograms, warning and instructions attached to the product are part of the safety features. They must not be covered or removed and must be present and legible during the entire life of the product.
- Immediately replace or repair damaged or illegible pictograms, warnings and instructions.

2. In case of an MDB-4/C and MDB-6/C, it is possible to install the air inlet module on top of the unit

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 use[3]

The product has been designed exclusively for extracting and filtering gases and particles which are released during the most common welding and cutting processes. 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.

Installation

- The installation of this product is exclusively reserved to authorised, trained and qualified engineers.
- The electric connection must be executed in accordance with the local codes and requirements. Ensure compliance with the EMC regulatory arrangements.
- During installation, always use Personal Protective Equipment (PPE) to avoid injury. This also applies to persons who enter the work area during installation.
- Use sufficient climbing gear and safety guards when working on a higher level than 2 metres (6½ ft.) (local restrictions may apply).
- Do not install the product in front of entrances and exits which must be used for emergency services.
- Mind any gas and water pipes and electric cables.
- Make sure that 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.
- Air containing particles such as chromium, nickel, beryllium, cadmium, lead etc., should never be recycled. This air must always be brought outside the working area.

3. "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.

Use

	**WARNING!** Fire hazard! Do **not** use the product for: - polishing applications in combination with grinding, welding or any other application that generate sparks (fibers from polishing or abrasive flap disks are highly flammable and pose a high risk of filter fires when exposed to sparks) - arc-air gouging - 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 - extracting and/or filtering dust particles which are released when welding surfaces treated with primer - sucking cigarettes, cigars, oiled tissues, and other burning particles, objects, and acids
	**WARNING!** Explosion hazard! Do **not** use the product for explosion-hazardous applications, e.g.: - aluminium laser cutting - grinding aluminium and magnesium - explosive environments or explosive substances/ gases
	**WARNING!** Do **not** use the product for: - extraction of hot gases (more than 70°C/158°F continuously) - flame spraying

- 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.
- Make sure that the workshop, in the vicinity of the product, contains sufficient approved fire extinguishers (suitable for fire classes ABC).
- Do not leave any tools or other objects in or on the unit.
- The welding current return circuit between the workpiece and the welding machine has a low resistance. Thus avoid connection between the workpiece and the MDB-Compact, so that there is no possibility of the welding current flowing back to the welding machine via the protective earth conductor of the MDB-Compact.

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.
- Always use Personal Protective Equipment (PPE) to avoid injury. This also applies for persons who enter the work area.
- Make sure the room is sufficiently ventilated.
- Use tools, materials, lubricants and service techniques which have been approved by the manufacturer. Never use worn tools and do not leave any tools in or on the product.
- Safety features which have been removed for service, maintenance or repairs, must be put back immediately after finishing these jobs and it must be checked that they still function properly.

- Use sufficient climbing gear and safety guards when working on a higher level than 2 metres (6½ ft.) (local restrictions may apply).
- Clean the area afterwards.

	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.
	ATTENTION Before you carry out service, maintenance and/or repair jobs: - fully disconnect the unit from the mains - disconnect the compressed air supply - de-energize the connected external device
	Personal protective equipment (PPE) Wear respiratory protection and protective gloves during service, maintenance and repairs.
	WARNING The industrial vacuum cleaner that you use during service and maintenance must meet dust class H according to EN 60335-2-69 or HEPA class (efficiency ≥99.97% at 0.3 µm).

4 INSTALLATION

4.1 Tools and requirements

You need the following tools and requirements to install the unit:
- lifting equipment, e.g. a fork-lift truck or crane
- lifting gear (refer to paragraph 4.3)
- basic tools

4.1.1 To be sourced locally

- Non-return valve (refer to paragraph 4.10)
- Ductwork to connect the unit with the external device
- Connection wires (refer to the installation manual of the ControlPro)
- Compressed air regulator (in case you have not selected a CAR-KIT)
- Compressed air hose Ø 8 mm (L = 3 m/10 ft)

In case of PRECO-N (precoat):
- inspection hatch (refer to paragraph 4.9)

4.2 Unpacking

The air inlet module, the deflector plates and the cover plate of the MDB-4/C and MDB-6/C are supplied separately to allow you to determine the desired inlet position[4]. The inlet position of the MDB-2/C is fixed.

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

	MDB-2/C	MDB-4/C	MDB-6/C
MDB-Compact (fully assembled)	X		
MDB-Compact (semi-assembled)		X	X
- Cover plate (incl. flange screws)		X	X
- Air inlet module (incl. flange screws)		X	X
- Deflector plates		X	X
- SealApplicator (seal assembly lubricant)		X	X
- Blinding plug (8)		X	X
Square key (to lock/unlock the dust drawer)	X	X	X
Screw stud (4) + locknut M10 (4)	X	X	X
ControlPro (control equipment)	X	X	X

4.3 Lifting

You can lift the unit by chains, straps or cables.
Refer to paragraph 1.5 for the weight of the units.

	ATTENTION To safely lift the unit, obey the instructions that follow. - Use all four eye bolts. - Make sure that the lifting gear is correctly attached. - Lift the unit in fully horizontal position. If not level: adjust the chain/strap/cable length. - Angle of chains/straps/cables: max. 45°. - Do not add any additional mass on the unit (e.g. parts, tools). - Do not walk under the suspended load. - Use lifting equipment and procedures that comply with the federal, state or local directives.

- Refer to Fig. III on page 18 for detailed lifting instructions.

4.4 Positioning

Mounting possibilities:
- on the floor
- on a platform
- on a frame

	WARNING Before you install the unit, make sure that the foundation or structure is strong enough. Refer to paragraph 1.5 for the weight of the units.
	To safely install the unit, obey the lifting instructions of paragraph 4.3 and Fig. III on page 18.

- Attach chains, straps or cables to the 4 eye bolts on top of the unit.
- Use a lifting device to bring the unit to the working area.
- Lift the unit to its final position.

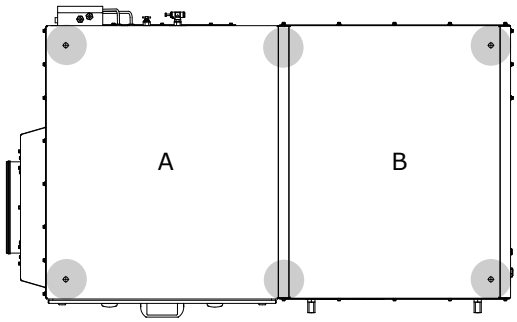
Mounting on the floor

- Make sure that the unit is level.

	If necessary, use shims to make the unit level.

4. Either left or top

ATTENTION
To make the unit level, make sure that you support the angular points as well as the seam between the filter housing (A) and the fan housing (B).



6 support points (bottom view)

Mounting on a platform or frame

If the unit is placed on a platform or frame, it must be attached to this device.

Refer to Fig. IV on page 19 for the hole pattern and external dimensions of the unit.

The package contains 4 screw studs 100 mm (3⅞ in.) with 4 locknuts.

Fig. 4.1
- Insert the 4 screw studs (A) in the bottom of the unit.
- Attach them to the platform or frame with the 4 locknuts (B).
- Make sure that the unit is level.

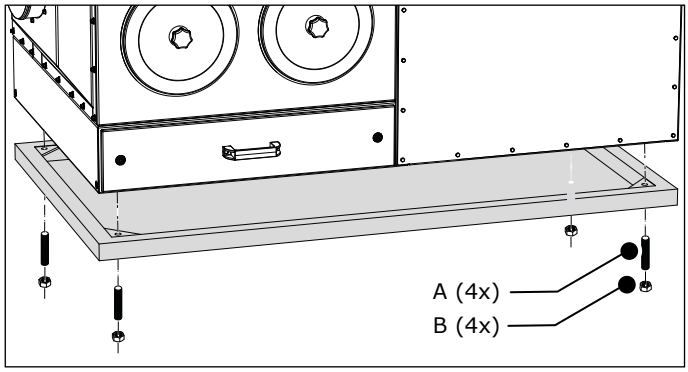


Fig. 4.1 Mounting on platform or frame (image of frame is indicative only)

4.5 Air inlet module and cover plate

MDB-2/C

The air inlet module and the cover plate are pre-installed on a fixed position.

MDB-4/C and MDB-6/C

The air inlet module, the deflector plates and the cover plate are supplied separately. Depending on your specific situation, you can install the air inlet module:

Fig. 4.2
- on the left side of the unit (A); or
- on top of the unit (B)

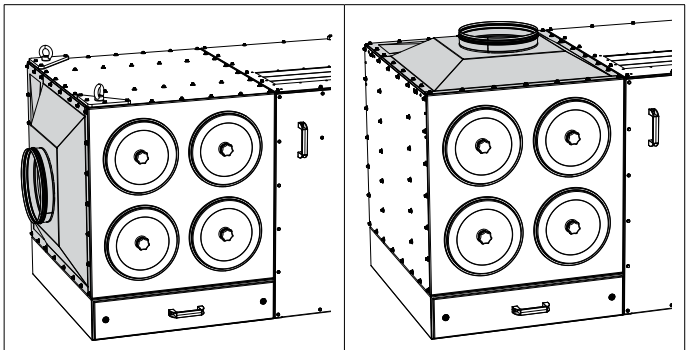


Fig. 4.2 Position of air inlet module

Fig. 4.3
- Disassemble the 2 corner plates with eye bolts on the top left side of the unit.

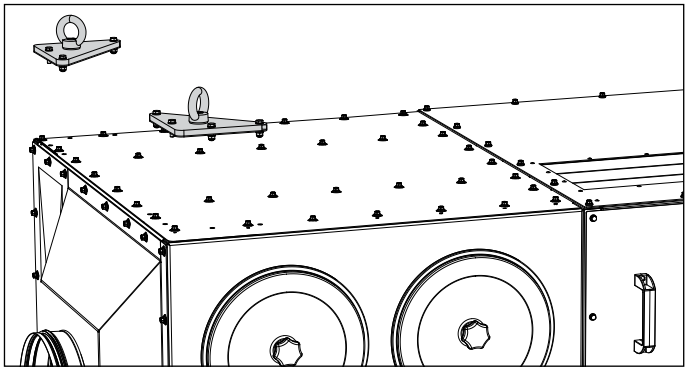


Fig. 4.3 Corner plates with eye bolts

4.5.1 Deflector plates

Fig. 4.4
- Determine the preferred position of the air inlet module (either left or top).
- Install the deflector plates (C) inside the filter module at that position with the flange screws (A) and the bolt (B) with washer and nut.

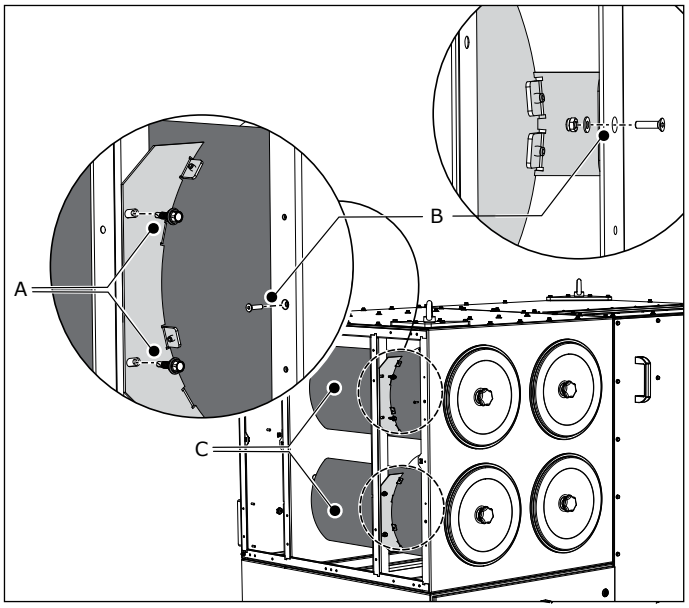


Fig. 4.4 Deflector plates

The open sides of the unit are provided with specially constructed seals to make the unit airtight. You must use SealApplicator (seal assembly lubricant) before you connect any component to the filter module.

	By the use of SealApplicator you can slightly shift the component to get the right position. After approx. 60 seconds the lubricant is dry so you cannot shift anymore.
	How to use SealApplicator:

4.5.2 Cover plate

Fig. 4.5

- (1) Remove the backing material of the seals at the position of cover plate.
- (2) Spray SealApplicator lubricant on the seals.
- (3) Put the cover plate **within 60 seconds** on the filter module.
- (4) Attach the cover plate with the flange screws.

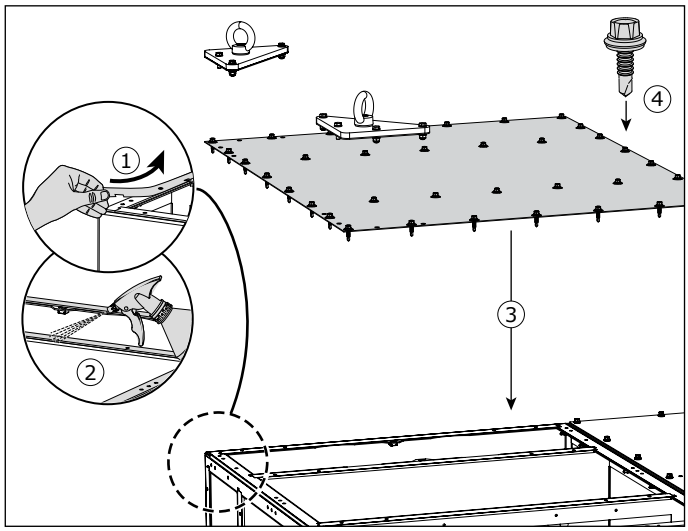


Fig. 4.5 Cover plate

If you have installed the cover plate <u>on top</u>:

- Re-install the 2 corner plates with the eye bolts[5].

Fig. 4.6

If you have installed the cover plate on the <u>left</u>:

- Put blinding plugs (A) in the remaining holes.

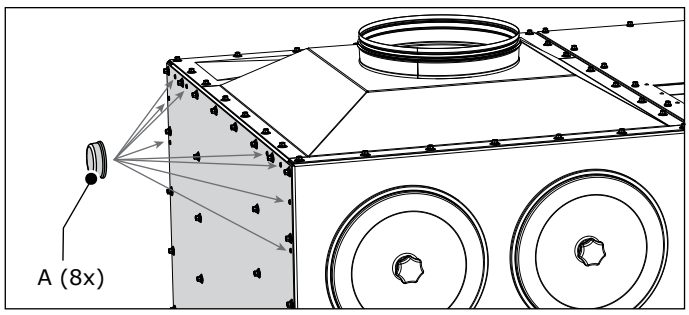


Fig. 4.6 Blinding plugs

5. You must install the corner plates to make the unit airtight

4.5.3 Air inlet module

- Install the air inlet module in the same way as the cover plate (refer to paragraph 4.5.2).

4.6 Filter cartridges

To install the filter cartridges, do the following.

Fig. 4.7

- Loosen the star knob (F) and disassemble the cover plate (E), the nut (D) and the metal washer (C).
- Put the filter cartridge (B) on the cartridge holder (A).
- Install the removed parts in reverse order.

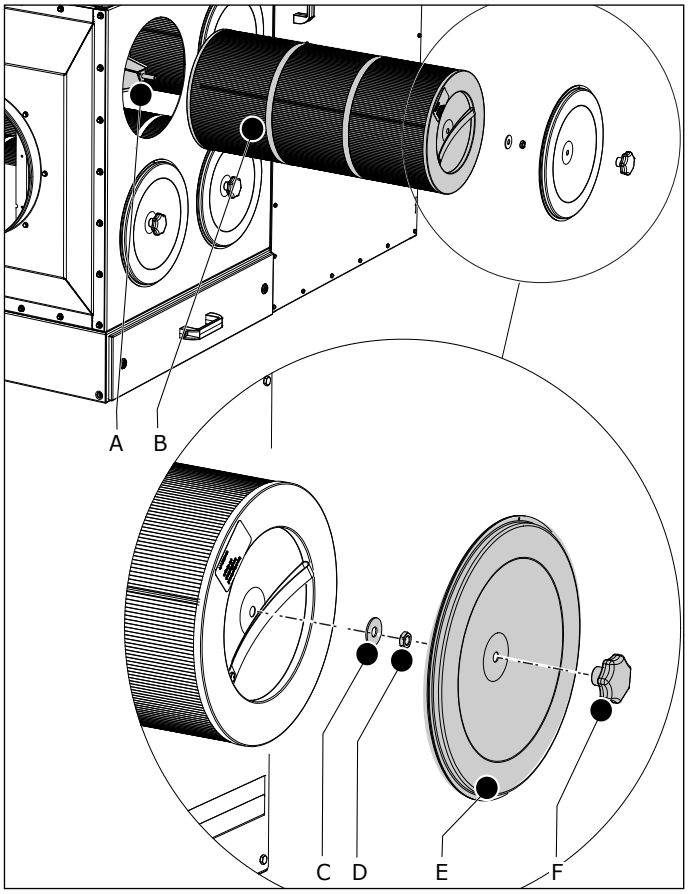
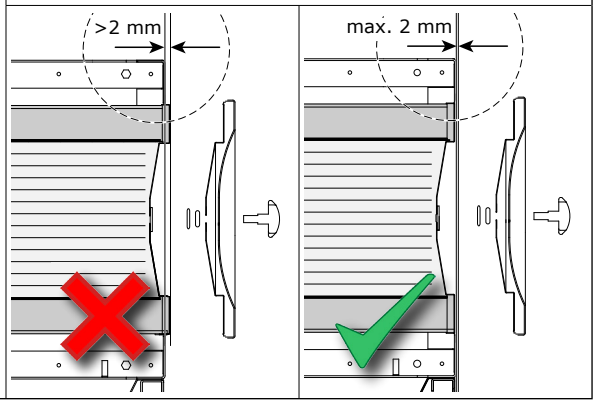


Fig. 4.7 Installation of the filter cartridges

ATTENTION

Make sure that the front of the filter cartridge aligns*) with the filter housing, so that the lid closes well. If this is not the case, the filter cartridge is not positioned correctly. This can cause leakage and less efficient operation of the filter cartridge.

*) tolerance: max. 2 mm (⅛ in.)



- Do the same procedure for the remaining filter cartridge(s).

4.7 Electric connection

For the electric connection of the MDB-Compact, refer to the installation manual of the control equipment **ControlPro** that is supplied with the product.

4.7.1 Frequency inverter

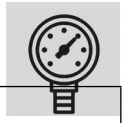
- Refer to paragraph 1.4.1 about the use of a frequency inverter.

ATTENTION
In case of connection voltage 400V/3ph/50Hz:
The use of a frequency inverter makes the 60 Hz fan suitable to run on a 50 Hz power grid.

Setting of frequency inverter:
- input voltage: 400V
- output voltage: 230V
- frequency: max. 60Hz

- Install the frequency inverter, if any, in accordance with the electrical diagram.

4.8 Compressed air connection



ATTENTION
The compressed air must be dry and oil-free according to ISO 8573-3 class 6.

To connect the compressed air, do the following.

Compressed air regulator:
- Option: install a compressed air sensor (kit) or the CAR-KIT on:
  - the fan housing with self-tapping screws; or
  - another suitable position

  in accordance with the electrical diagram.
- Connect a compressed air hose to the compressed air regulator or CAR-KIT.

4.9 Option: precoat (PRECO-N) / CART-D, CART-C and CART-E only

A layer of precoat enhances the efficiency and lifespan of the filter cartridges CART-D, CART-C and CART-E. The other types of filter cartridges do not need precoat material.

To make it easier to apply precoat material (PRECO-N) after filter replacement, we recommend to install an inspection hatch in the duct between the external device and the air inlet module of the unit.
Refer to Fig. V (B) on page 19.

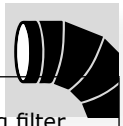

Personal protective equipment (PPE)
Wear respiratory protection and protective gloves when you apply precoat material.

Necessary quantity of precoat:
- MDB-2/C: 1 kg (2¼ lbs.)
- MDB-4/C: 2 kg (4⅜ lbs.)
- MDB-6/C: 3 kg (6⅝ lbs.)

To apply precoat material to the filter cartridges, do the following.

- Disconnect the compressed air supply.
- Put the precoat material in a bucket.
- Start the fan. It must run at full speed.
- Gradually[6] add the precoat material into the inlet of the unit (or into the inspection hatch, if any).
- Stop the fan.

4.10 Duct connection



To prevent the dust to reach the external device by the compressed air pulses during filter cleaning, you must install a non-return valve in the duct between the external device and the MDB-Compact.
Refer to Fig. V (A) on page 19.

Min. duct diameters:
- MDB-2/C: Ø 250 mm (9⅞ in.)
- MDB-4/C: Ø 355 mm (14 in.)
- MDB-6/C: Ø 400 mm (15¾ in.)

If applicable, install an adapter from metric to imperial duct diameter; refer to paragraph 1.4.

- Connect the air inlet module of the unit (ref. Fig. 2.1D) with the outlet of the external device.
- Make sure that all connections are airtight.

ATTENTION
The filtered air is blown back into the workshop by the outlet of the fan housing. Do **not** connect the air outlet (ref. Fig. 2.1H) to any ductwork.

4.11 Commissioning checklist

#	Check	OK
1.	Are all connections airtight?	
2.	Are the filter cartridges installed in the right way? (refer to paragraph 4.6)	
3.	Is the direction of rotation of the fan correct?	
4.	Is compressed air available? Pressure setting 4-5 bar?	

5 USE

WARNING!
Fire hazard! Do **not** use the product for polishing applications in combination with grinding, welding or any other application that generate sparks.
Refer to chapter 3 / Use.

5.1 Control

To control the MDB-Compact, refer to the *Installation manual*, the *Online user manual* and the *Short user manual* of the ControlPro.

6. Dosing speed: approx. 1 kg (2¼ lbs.) per minute

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 and cleaning activities are required which are described in this chapter. If you observe the necessary caution and carry out the maintenance at regular intervals, any problems occurring will be detected and corrected before they lead to a total breakdown.

WARNING
Overdue maintenance can cause fire.

The indicated maintenance intervals can vary depending on the specific working and ambient conditions. Therefore, we recommend to thoroughly inspect the complete unit once every year beside the indicated periodic maintenance. For this purpose contact your supplier.

Component	Action	Frequency: every X months	
		X=3	X=12
Dust drawer	Empty; refer to paragraph 6.2 *)		
Compressed air regulator (option)	Drain	X	
Housing	Make sure that there is no air leakage		X
Compressed air system	Make sure that the connection is correct		X
	Make sure that the pressure is correct (4-5 bar)		X
	Make sure that the valves and membranes are not damaged		X
Dust drawer housing	Clean the inside		X
Filter cartridges	Make sure that the position is correct; refer to paragraph 4.6		X
Bolts	Make sure all bolts are correctly tightened		X
Fan	Make sure that the flexible hose at the inlet is not damaged		X
	Make sure that the vibration dampers are not damaged		X
	Make sure that the fan is in balance		X

*) During use, you must check the level of contents in the dust drawer regularly. The emptying frequency depends on the intensity of use and will be a matter of experience.
In the initial stage, do a check on the level of contents of the dust drawer *two times per week*.

6.2 Emptying the dust drawer

Personal protective equipment (PPE)
Wear respiratory protection and protective gloves when you empty the dust drawer.

ATTENTION
The industrial vacuum cleaner that you use to empty the dust drawer must meet dust class H according to EN 60335-2-69 or HEPA class (efficiency ≥99.97% at 0.3 µm).

WARNING
- Prevent excessive draughts.
- Do **not** open the dust drawer while the fan is running.

To empty the dust drawer, do the following.

Fig. 6.1

- Option: push the black button (FILTER CLEANING) on the ControlPro/Panel to activate an additional cleaning cycle. This will take approx. one minute per filter cartridge.
- Disconnect the compressed air supply.
- Fully disconnect the unit from the mains.
- Unlock the dust drawer (A) with the supplied square key.
- Gradually open the dust drawer and empty it with an industrial vacuum cleaner at the same time[7] [8].
- Close the dust drawer and lock it. Make sure to rotate the key 90°.
- Connect the compressed air.
- Energize the unit.

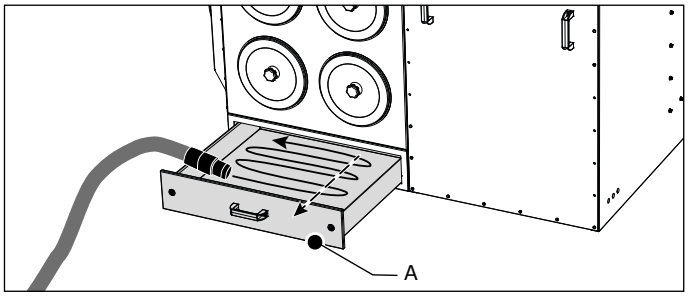


Fig. 6.1 Emptying the dust drawer

6.3 Filter replacement

The ControlPro/HMI indicates when you must replace the filter cartridges. Replace all filter cartridges at the same time.

Personal protective equipment (PPE)
Wear respiratory protection and protective gloves when you replace the filter cartridges.

WARNING
Do **not** replace the filter cartridges while the fan is running.

To replace the filter cartridges, do the following.

Fig. 6.2

- Option: push the black button (FILTER CLEANING) on the ControlPro/Panel to activate an additional cleaning cycle. This will take approx. one minute per filter cartridge.
- Disconnect the compressed air.
- Fully disconnect the unit from the mains.
- Loosen the star knob (F) and disassemble the cover plate (E), the nut (D) and the metal washer (C).
- Remove (one of) the upper filter cartridge(s)[9] (B) and put it in the plastic sack in which the replacement filter cartridge is supplied.

7. The dust drawer has a pull-out protection. To fully remove it: lift the handle and pull out the dust drawer.
8. Do **not** use any liquids to empty or clean the dust drawer; this causes damage to the filter cartridges.
9. Removing the upper filter cartridge(s) first, keeps the release of dust to a minimum.

- Seal the sack securely.
- Put a new filter cartridge on the cartridge holder (A) and attach it with the disassembled parts.
- Do the same procedure for the lower filter cartridge(s).
- Empty the dust drawer with an industrial vacuum cleaner; refer to paragraph 6.2.
- Connect the compressed air.
- Energize the unit.
- Dispose of the used filter cartridges in accordance with federal, state or local regulations.
- Clean the environment of the unit.

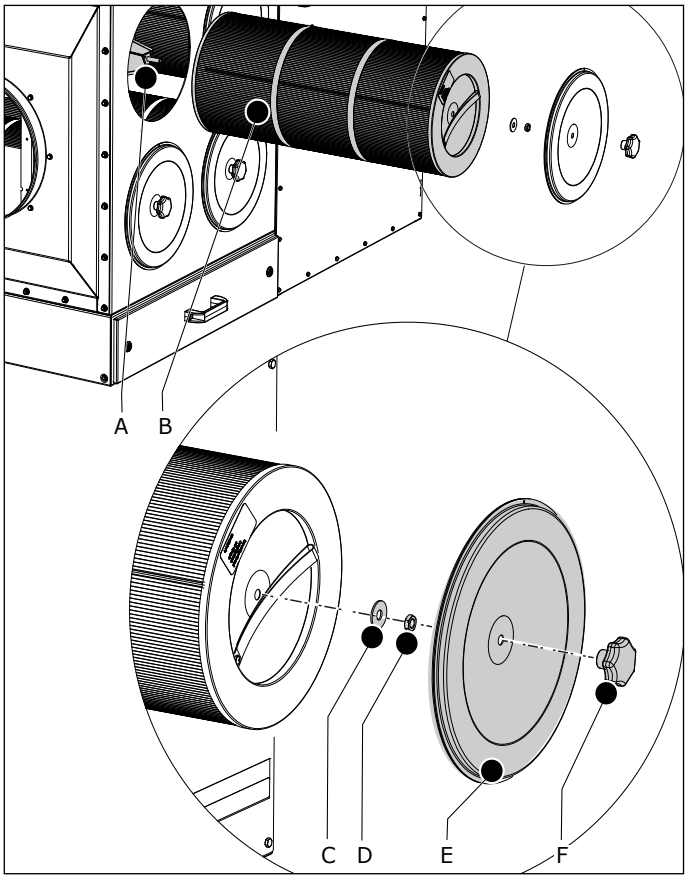
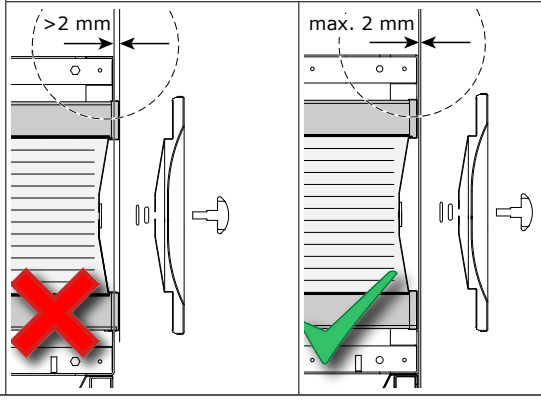


Fig. 6.2 Filter replacement

ATTENTION
Make sure that the front of the filter cartridge aligns*) with the filter housing, so that the cover plate closes well. If this is not the case, the filter cartridge is not positioned correctly. This can cause leakage and less efficient operation of the filter cartridge.
*) tolerance: max. 2 mm (⅛ in.)



6.4 Precoat (PRECO-N) / CART-D, CART-C and CART-E only (option)

- Refer to paragraph 4.9 for the precoat procedure.

7 TROUBLESHOOTING

If the unit 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.

WARNING
Obey the safety regulations that are written in chapter 3 when you carry out the activities below.

Symptom	Problem	Possible cause	Solution
Poor extraction capacity	The system does not function properly	Clogged filter cartridges	Replace the filter cartridges
		Inverted direction of rotation of the fan motor	Change the direction of rotation
	Pollution of the facility	Filter cartridge(s) ripped or placed incorrectly	Replace the filter cartridges(s) or place them correctly (ref. paragraph 6.3)
	No filter cleaning	Loose compressed air connection	Repair the compressed air connection
		No compressed air available or air pressure too low	Repair the compressed air supply
		Membrane valve(s) defective	Replace the membrane valve(s)
	No pressure in the compressed air tank	Drain valve is loose	Tighten the drain valve
		Tank not connected to compressed air supply	Repair the compressed air connection
Hissing sound	No filter cleaning	Membrane valve(s) defective or worn	Replace the membrane valve(s)
		Wrong or damaged wiring	Correct or repair the wiring

8 SPARE PARTS

8.1 MDB-Compact

Refer to the exploded view Fig. VI on page 20 and spare parts list Fig. VII on page 21 for the available spare parts.

8.2 ControlPro

Refer to the installation manual of the ControlPro.

9 ELECTRICAL DIAGRAM

Refer to the separately supplied electrical diagram.

10 DISPOSAL

Dismantling and disposal of the unit must be done by qualified persons.

		**Personal protective equipment (PPE)** Wear respiratory protection and protective gloves when you dismantle and dispose of the unit.

10.1 Dismantling

To safely dismantle the unit, obey the safety instructions that follow.

Before dismantling of the unit:
- disconnect it from the mains
- disconnect it from the compressed air
- clean the outside

During dismantling of the unit:
- make sure that the area is sufficiently ventilated, e.g. by a mobile ventilation unit

After dismantling of the unit:
- clean the dismantling area

10.2 Disposal

Dispose of the pollutants and dust, together with the used filter cartridges, in a professional manner in accordance with federal, state or local regulations.

CE DECLARATION

CE declaration of conformity for machinery

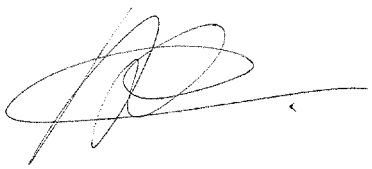
We, Plymovent Manufacturing B.V., Koraalstraat 9, 1812 RK Alkmaar, the Netherlands, herewith declare, on our own responsibility, that the products:

- MDB-2/C PRO
- MDB-4/C PRO
- MDB-6/C PRO

(incl. ControlPro/Panel and ControlPro/HMI)

which this declaration refers to, are in accordance with the conditions of the following Directives:
- Machine Directive 2006/42 EC
- EMC 2014/30 EU
- LVD 2014/35 EU
- ErP Directive 2009/125 EC

Signature:



Name: M.S.J. Ligthart
Position: Product Manager
Date of issue: 1st August 2022

Fig. I Dimensions

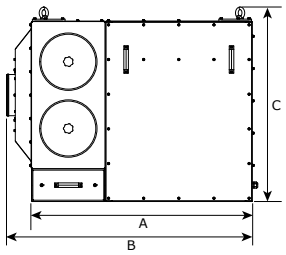
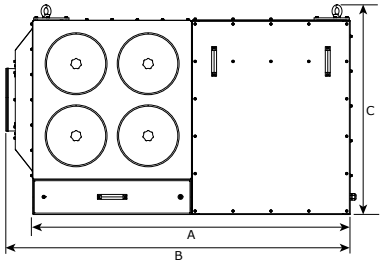
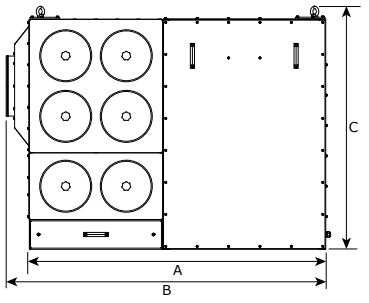
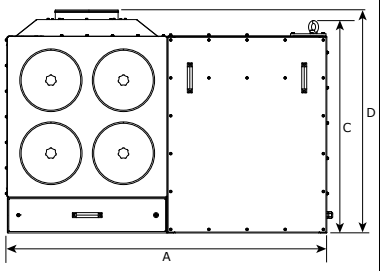
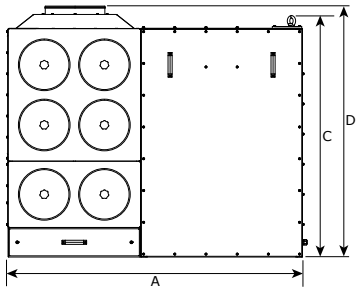
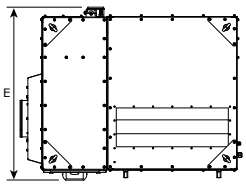
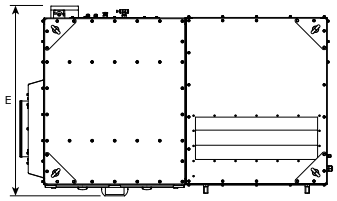
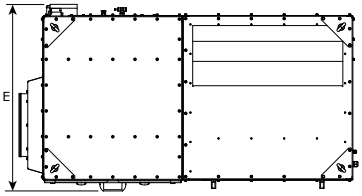
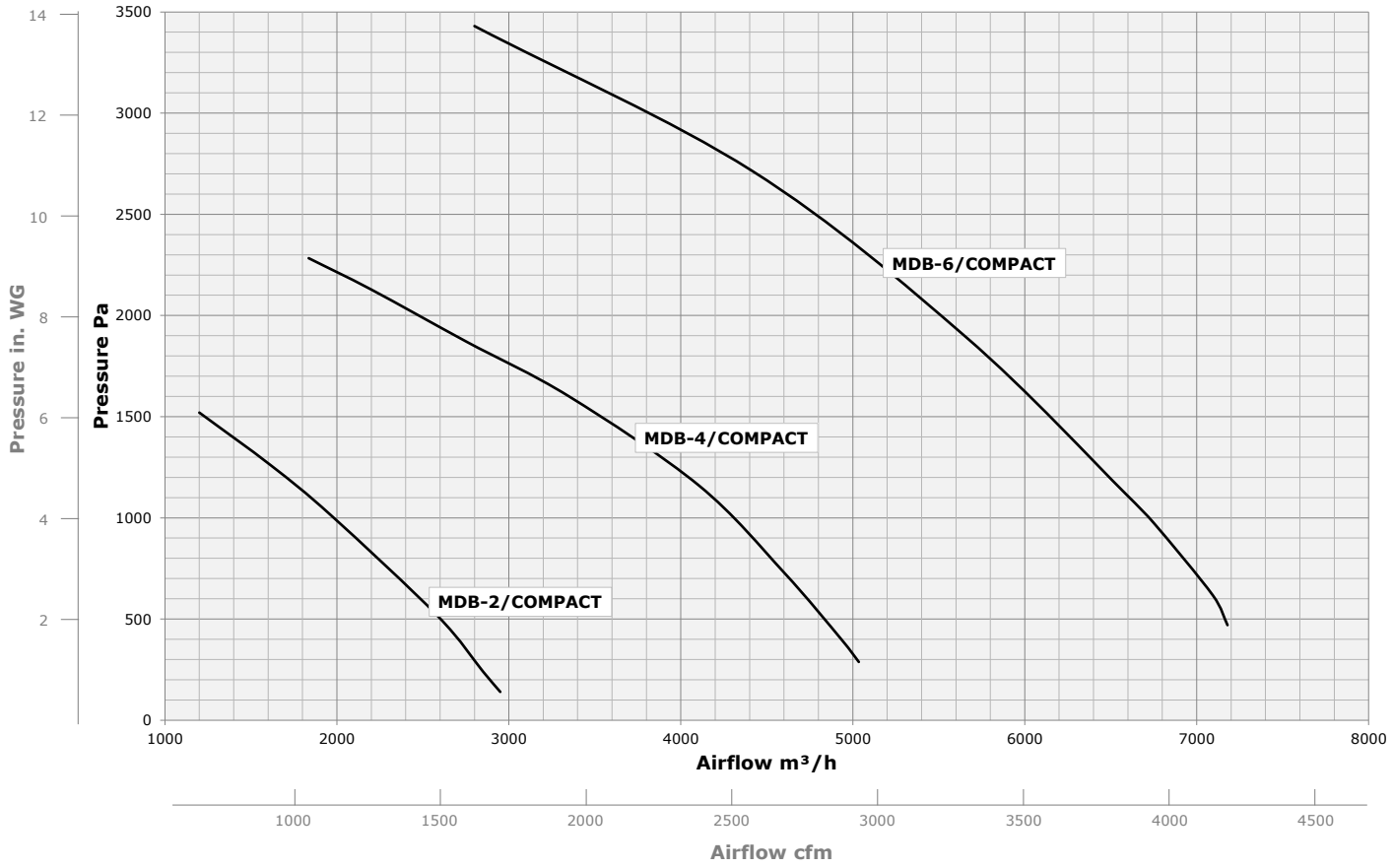
		MDB-2/Compact		**MDB-4/Compact**		**MDB-6/Compact**	
Front view	Inlet **left**						
	Inlet **top**						
		mm	**inch**	**mm**	**inch**	**mm**	**inch**
	A	1348	53⅛	1801	70⅞	2004	78⅞
	B	1540	60⅝	1970	77½	2170	85⅜
	C	1190	46⅞	1190	46⅞	1641	64⅝
	D			1270	50	1720	67¾
Top view							
		mm	**inch**	**mm**	**inch**	**mm**	**inch**
	D	1206	47½	1206	47½	1206	47½

Fig. II Performance chart (60 Hz)



Net extraction capacity at the filter inlet (new/clean filter cartridges)

Fig. III Lifting instructions

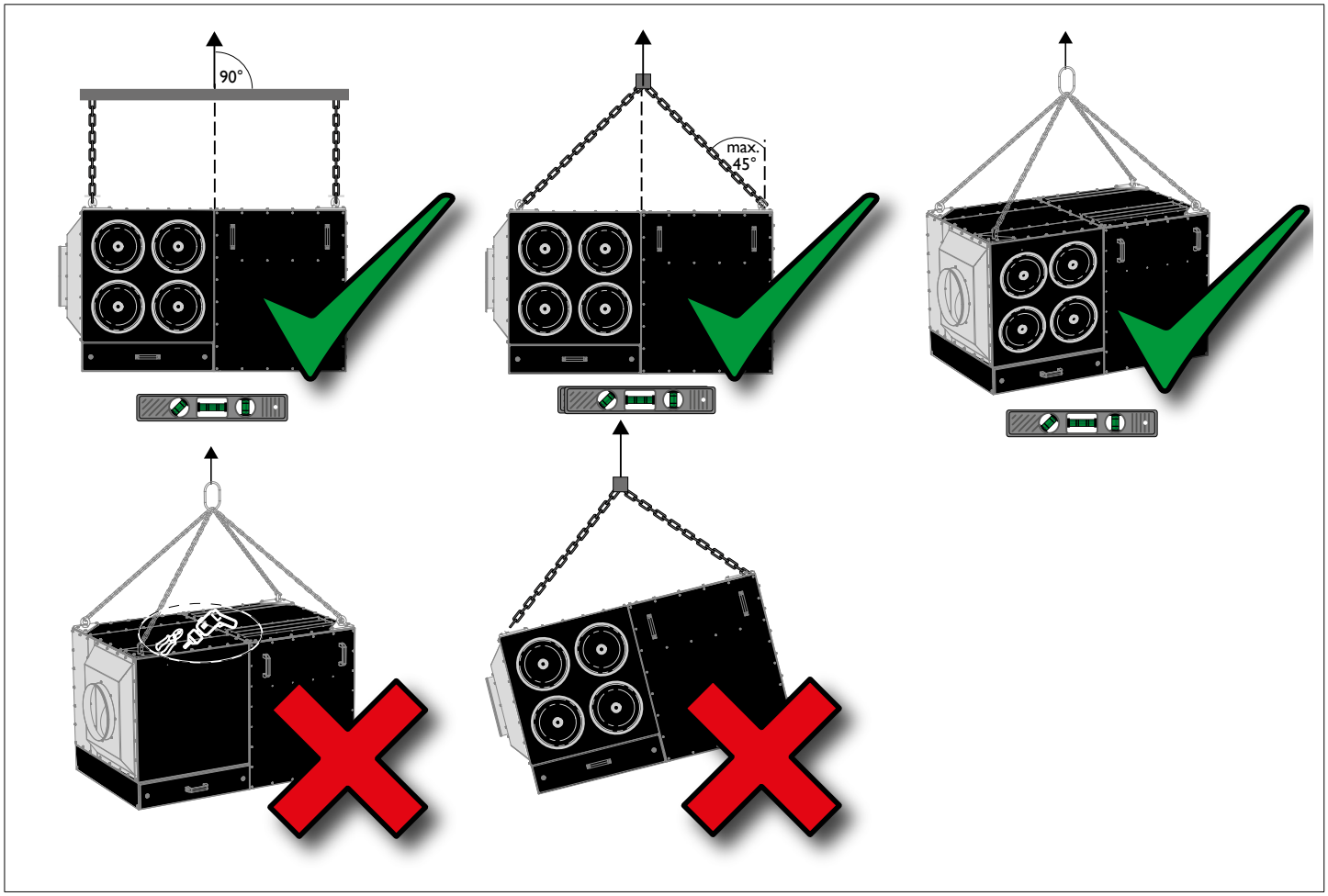
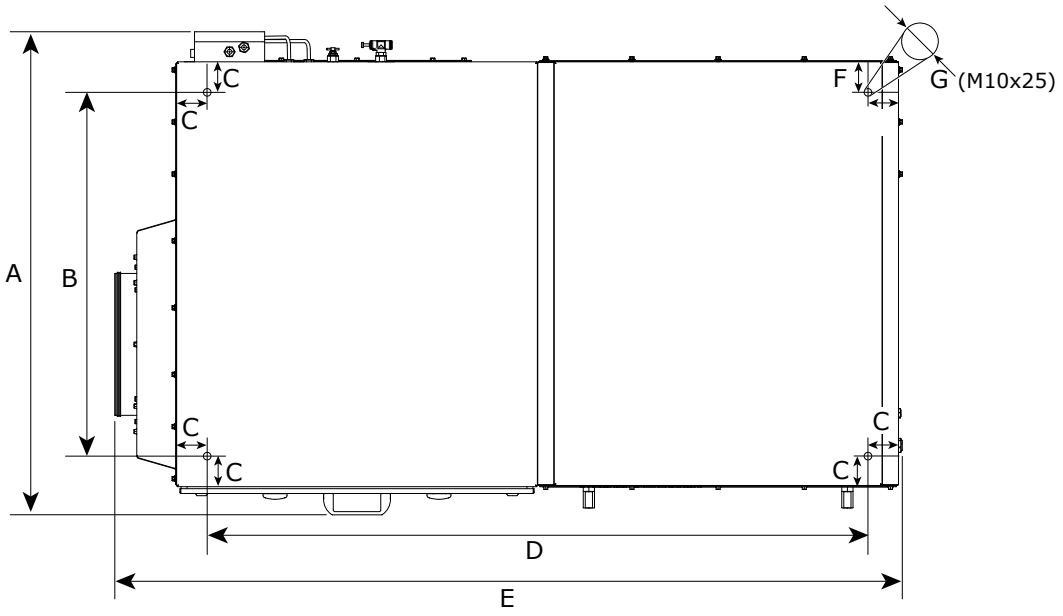


Fig. IV Hole pattern | bottom view



	MDB-2/Compact		MDB-4/Compact		MDB-6/Compact	
	mm	**inch**	**mm**	**inch**	**mm**	**inch**
A	1198	47⅛	1205	47½	1205	47½
B	908	35¾	908	35¾	908	35¾
C	76	3	76	3	76	3
D	1199	47¼	1649	64⅞	1849	72¾
E	1516	59⅝	1965	77⅜	2182	85⅞
F	78	3⅛	78	3⅛	78	3⅛
G	Ø 11	Ø ⅜	Ø 11	Ø ⅜	Ø 11	Ø ⅜

Fig. V Inspection hatch and non-return valve

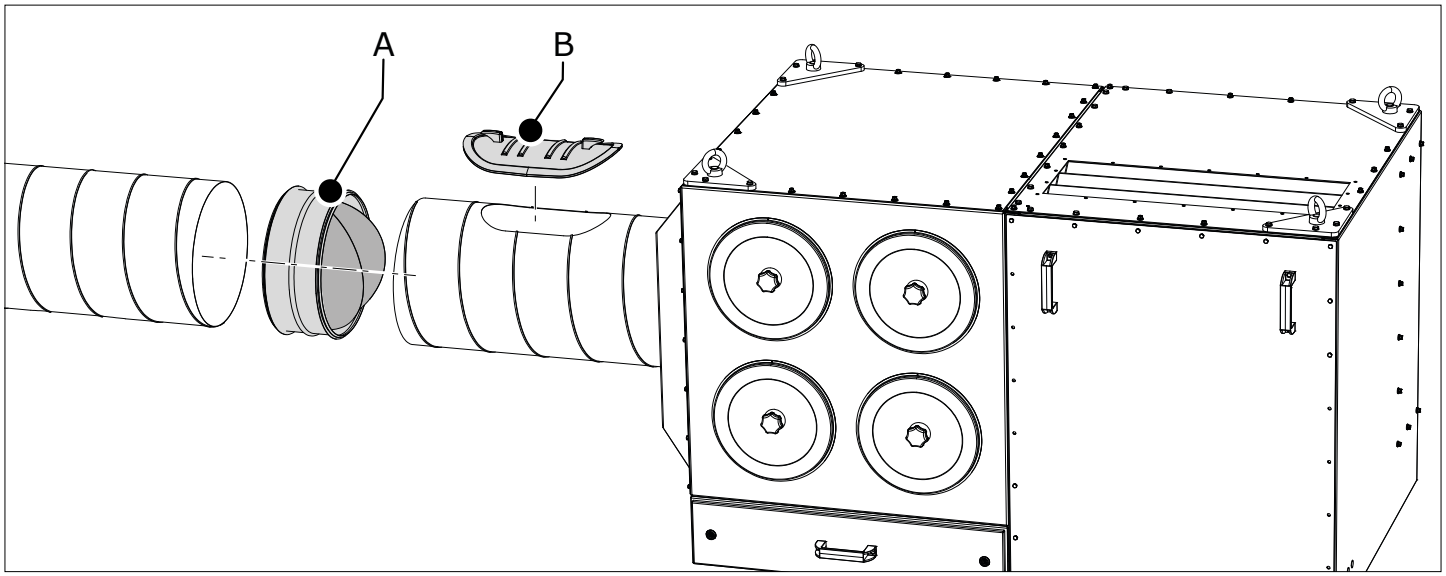


Fig. VI Exploded view MDB-Compact

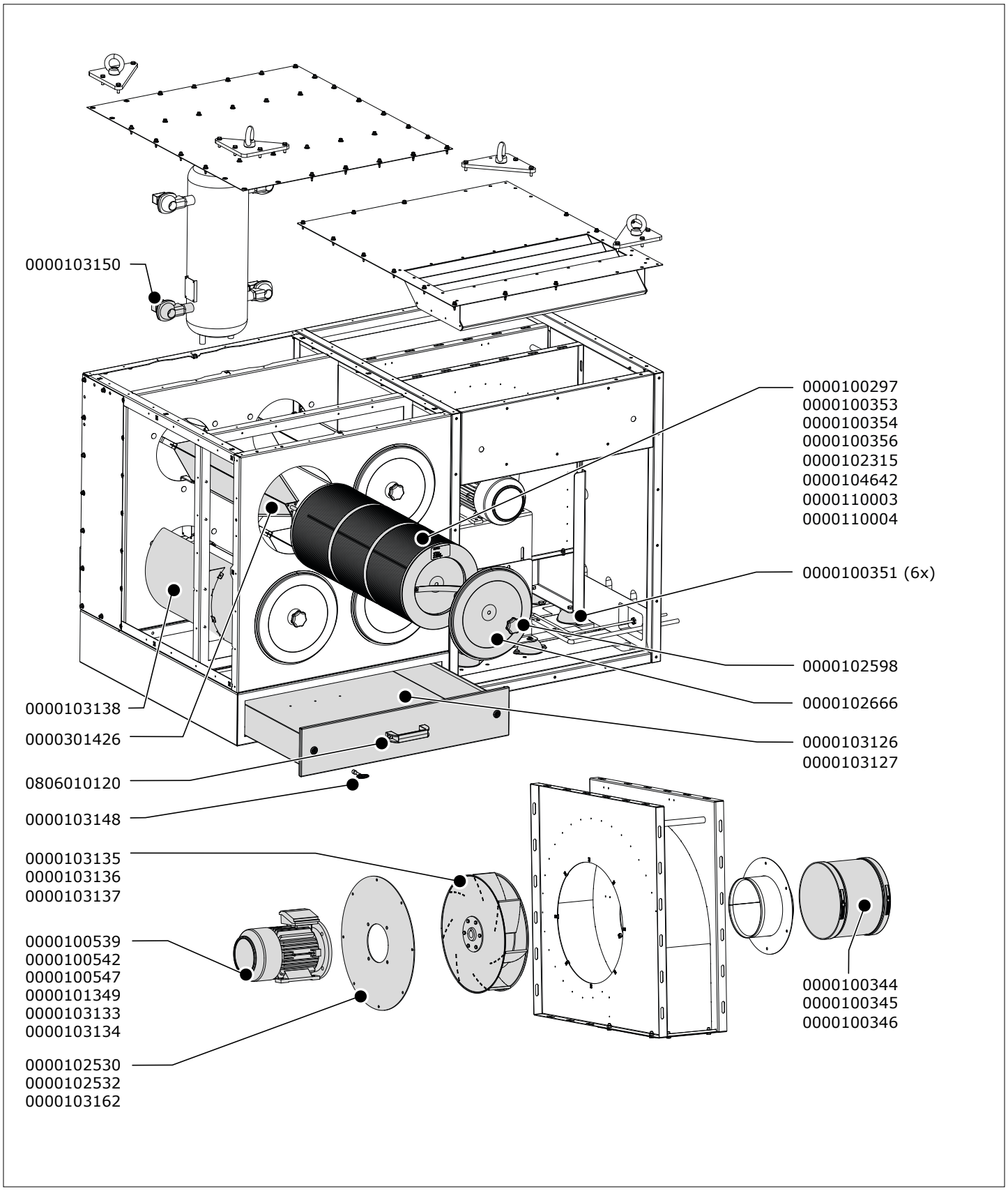


Fig. VII Spare parts MDB-Compact

Article no.	Description
General	
0000100297	CART-PTFE/10 / Filter cartridge
0000100351	TEV-AV/79 / Vibration dampers (6 pcs)
0000100353	CART-C / Filter cartridge
0000100354	CART-E / Filter cartridge
0000100356	CART-D Premium Plus / Filter cartridge
0000101373	PRECO-N (1 kg) / Precoat material
0000102315	CART-MB / Filter cartridge
0000102411	Drain valve ½ inch
0000102584	Lock kit for CART filter cartridge
0000102598	Star knob M12
0000102666	Lid for filter cartridge CART (MDB)
0000103138	Deflector plate
0000103148	Square key
0000103150	Magnetic valve 1 inch, incl. 24V DC coil and 3 m cable
0000104642	CART-PTFE/15 / Filter cartridge
0000110003	CART-D Premium / Filter cartridge
0000110004	CART-D Economy / Filter cartridge
0000117907	Coil 24V DC incl. connector
0000117908	Membrane (square) + spring for magnetic valve
0000301426	Filter cartridge holder MDB
0069002280	PRECO-N (14 kg) / Precoat material
0806010120	Handle black
MDB-2/Compact PRO	
0000100344	SC-200 / Soft connection
0000100539	Motor 2,2 kW; 575V/3ph/60Hz
0000101349	Motor 2,2 kW; 208-230/460V/3ph/60Hz (IEC)
0000103126	Dust drawer W=450 mm
0000103135	Fan wheel 315/110/24
0000103162	Motor plate TEV-3110 (IEC)
MDB-4/Compact PRO	
0000100345	SC-250 / Soft connection
0000100542	Motor 4 kW (5 HP); 575V/3ph/60Hz (IEC)
0000102530	Motor plate TEV-559 (IEC)
0000103127	Dust drawer W=900 mm
0000103133	Motor 4 kW (5 HP); 208-230/460V/3ph/60Hz (IEC)
0000103136	Fan wheel 400/59/28
MDB-4/Compact PRO	
0000100346	SC-315 / Soft connection
0000100547	Motor 7,5 kW (10 HP); 575V/3ph/60Hz (IEC)
0000102532	Motor plate TEV-745 (IEC)
0000103127	Dust drawer W=900 mm
0000103134	Motor 7,5 kW (10 HP); 208-230/460V/3ph/60Hz (IEC)
0000103137	Fan wheel 500/45/38

PLYMOVENT®
clean air at work

0000104046/010922/B MDB-Compact PRO