

## User and maintenance manual

# DEH Negative pressure units





## PREFACE

### General

Congratulations with your purchase of a Dehaco negative pressure unit. You are now in the possession of a machine that uses the latest techniques and that you will be able to use free from failures for many years to come.

The DEH negative pressure unit can be used for controlling the air flow in an enclosed work area.

This user manual, the type plate and the safety stickers applied to the machine contain important safety information and as such are an integral part of the delivery.

The primary specifications of the DEH negative pressure unit are stated on the type plate. The type plate also states the manufacturer's address data. It is strictly prohibited to remove the type plate or attach it to another machine. When the type plate is lost or gets damaged, the user must contact Dehaco or a recognised Dehaco dealer for a new type plate.



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Dealer

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## EC DECLARATION OF CONFORMITY



In accordance with annex IIA of EU Machinery Directive 2006/42/EC

We, Dehaco B.V., hereby declare that the products mentioned below comply with the essential requirements of the above-mentioned European Directive and the following harmonised standards:

**Product:** DEH Negative Pressure Unit

**Make** Dehaco

**Type indication:** DEH500/DEH750/DEH2000/DEH5000  
DEH7500/DEH10000/DEH30000

**Manufacturer:** Dehaco B.V.  
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<b>Directives:</b>	Machinery Directive	2006/42/EC
	Low Voltage Directive	2014/35/EU
	EMC Directive	2014/30/EU

<b>Standard(s)</b>	NEN-EN-ISO 12100	Risk reduction
	NEN-EN-IEC 60204-1:2018	
	NEN-EN-1822-1:2019	High efficiency air filters
	ISO 14644-3 ISO 14644-3:2019	Cleanrooms and associated controlled environments

**Place and date:** Lissersbroek, 04-11-2020

**Managing Director:** Jeroen Korporaal

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## 1. INTRODUCTION

Congratulations with your purchase of a Dehaco DEH negative pressure unit. You are now in the possession of a machine that uses the latest techniques and that you will be able to use free from failures for many years to come.

We expressly recommend that you carefully read the safety and user instructions prior to using the Dehaco DEH negative pressure unit for the first time.

- Carefully observe all instructions in this user and maintenance manual. Carefully store this document.
- Everyone involved with the transportation, installation, operation, maintenance, repair, storage or removal/disposal of the Dehaco DEH negative pressure unit must have read and understood this user and maintenance manual.



This user and maintenance manual is an integral part of the Dehaco DEH negative pressure unit. Keep the manual during your ownership of this machine. Any changes in the manual must be made correctly and must be saved properly. When lending, letting or selling the machine, you must provide the user and maintenance manual to the future owner or user.

All safety instructions included in this user and maintenance manual meet the legal requirements of the European Union. Also always observe national or other applicable regulations.

Using the Dehaco DEH negative pressure unit outside the European Union falls under the legal rules and regulations of the country where it is being used. In case of different applicable regulations and statutory rules, observe the most strict regulations and rules.

### 1.1 Warning indications

The warning indications Danger, Warning, Caution and Beware are used as follows in this user manual.

#### ▲ DANGER!

Indicates a dangerous situation that could lead to severe or fatal injury

#### ▲ WARNING!

Indicates a dangerous situation that could potentially lead to severe or fatal injury

#### ▲ CAUTION!

Indicates a dangerous situation that could potentially lead to injury

#### NOTE

The warning indication 'Beware!' is used to refer to situations that do not lead to injury, but could lead to material damage.

### 1.2 Intended use

Dehaco DEH negative pressure units were developed for the purpose of:

- Creating negative pressure, refreshing air and filtering dust particles in an enclosed space (containment).

Naturally, the capacity of the fan and the filter used must be adjusted to the use.

For this, do take note of local regulations.

Ambient conditions:

- The machine must be placed on a hardened vibration-free floor/foundation.
- The machine may only be used in covered areas.
- The machine must remain dry.
- Suitable temperature range from -5°C to +40°C.

#### ▲ BEWARE!

- The machine is not suitable for filtering combustible gases or substances.

The machine may only be used as intended. Any other use than described above shall exclude DEHACO from any liability!

#### ▲ WARNING!

- The machine has only been tested with original HEPA filters. In order to ensure the machine's operational reliability, only use original Dehaco filters. If this is not observed, the operational reliability of the machine cannot be guaranteed. This could lead to a situation where hazardous substances that cannot be controlled accidentally end up in the environment due to overloading of the filter (leakage loss, tear in filter, etc.).

### 1.3 Safety

#### ▲ WARNING!

Almost all accidents are the result of:

- loss of concentration, carelessness, negligence or misjudged situations! Do not rush your work and stay concentrated.

#### ▲ BEWARE!

- Under all occurring circumstances you must

also observe the local safety instructions.

## ▲ WARNING!

The instructions described in this user manual relate to the Dehaco DEH negative pressure unit. You should also make yourself familiar with the PPE requirements in your specific work situation!

All persons involved with assembly, commissioning, operation, maintenance and repair must:

- have the level of know-how and qualifications required for their task.
- have read and understood this user manual.
- observe all indicated safety instructions.
- 

In order to ensure safety when using the system, the following should absolutely be observed!

- The negative pressure unit are not suitable for filtering condensing, corrosive, flammable and explosive air.
- Maintenance, including removing and changing the filter, may only be performed by persons authorised to do so, while wearing suitable personal protective equipment.
- In case of repair and maintenance work, the appliance should be fully disconnected from the electric mains.
- The safety provisions and protective provisions should be kept in an impeccable condition.

In order to be able to guarantee safety, it is not permitted to make changes to the appliance yourself. In order to prevent damage, the appliance should never be used without the incorporated filter.

Without a pre-filter, the HEPA filter is directly accessible. Do NOT touch the HEPA filter! The HEPA filter may only be replaced by a dealer or authorised person.

The machine is supplied with a transit plate that closes the front of the (contaminated) filters during transport. When the machine has been used, this plate may only be removed under controlled circumstances.

## 1.4 Dangers

### ▲ DANGER!

Touching a defective connection to the electric mains could lead to severe or even fatal injuries.

- Do not damage the power cable.
- Regularly check the power cable for damage.
- Have a defective power cable replaced by Dehaco or a professional electrical engineer before continuing to use the appliance.

## ▲ BEWARE!

The appliance could get damaged when connected to an unsuitable mains voltage.

- Check that the voltage indicated on the type plate corresponds with the local mains voltage.

## ▲ WARNING!

The following materials may not be filtered:

- Hot materials (glowing cigarettes, hot ash, etc.)
- Combustible, explosive, aggressive materials and substances.

## ▲ WARNING!

Contaminated filter:

Changing the filter may only be performed by persons authorised to do so, while wearing suitable personal protective equipment.

- Filters must be processed as waste, as legally prescribed.

## 1.5 Warranty

Dehaco B.V. provides a 12 month warranty with observance of Dehaco's General Terms of Delivery. These terms can be found on Dehaco's website: [www.dehaco.nl](http://www.dehaco.nl). Upon request, the General Terms of Delivery can be sent to you.

The pre-filters and HEPA filters used in the DEH negative pressure unit are consumables. These filters do not fall under Dehaco's warranty conditions.

## 2. OVERVIEW

### 2.1 General description

This equipment is used in work areas where the air flow must be controlled. This is the case during work whereby hazardous or inconvenient dust particles are released, such as asbestos, chromium 6 and ceramic fibres. With the aid of the air mover, a negative pressure is created within the guarded work area, preventing contaminated air from leaving the work area. In addition, the concentration of particles in the air is reduced and the contaminated air is filtered by means of a HEPA filter.

### 2.2 Scope of delivery

The delivery of a Dehaco negative pressure unit consists of:

- the machine
- a user manual
- A power cable (not for the DEH30000)

Immediately at delivery, check that the machine is complete and undamaged. Please contact your supplier if parts are missing or in case of transport damage.

## 3. TRANSPORT AND STORAGE

### 3.1 Transport

DEH negative pressure units are relatively light-weight and are provided with castors -with brakes- and handles.

The large DEH 30.000 can be subdivided into two parts, to make transport easier

Always properly fasten the machine when transporting it.

#### ▲ BEWARE!

If the Dehaco negative pressure unit must be transported in contaminated condition:

- Apply tape all around the transit plate, making sure it is closed air tight
- Make yourself familiar with applicable legislation regarding the transport of hazardous substances

### 3.2 Storage

In case of longer decommissioning, it is recommended to perform the following actions:

- Clean the DEH negative pressure unit.
- Perform maintenance.
- Store the machine in a dry, ventilated and frost-free room.



### ⚠ BEWARE!

Depending on the type used, the tape could become loose under the influence of temperatures that are too cold or too hot.

## 4. SPECIFICATIONS

### 4.1 Technical specifications of DEH negative pressure units

### ⚠ WARNING!

Use hearing protection when working in the direct vicinity of the machine.

		DEH500	DEH750	DEH2000	DEH5000	DEH10000	DEH30000
Capacity	m <sup>3</sup> /uur	500	750	2000	5000	10000	30000
Voltage	V	230			230		
Current	A	2	2	7	14	12	21
Plug	CEE	10A/2P+A	10A/2P+A	16A/2P+A	16A/2P+A	16A/2P+A	16A/5P+A
Gauge	Pa	0 - 1000	0 - 1000	0 - 1000	0 - 1000	0 - 1000	0 - 3000
Material		Polypropylene, black					
Weight	kg	15	19	40	80	150	300
Dim. (l x w x h)	mm	300x385x385	383x500x480	875x505x575	1035x740x840	1238x750x1143	1530x1410x1560
Noise	dBA	68	70	76	79	73	79
Stepless	%	Nee	30 - 100	30 - 100	20 - 100	30 - 100	33 - 100
Exhaust side		Bottom	Sideways	Rear	Rear	Rear	Rear
Spigot size	cm	12x34	16 Ø	30 Ø	40 Ø	45 Ø	3 x 45 Ø
Pre-filter classe		G4	G4	G4	G4	G4	G4
Pre-filter dim. (l x w x h)	mm	290x290x45	290x290x45	375x375x95	595x595x95	910x610x95	595x595x95
Pre-filter per machine		1	1	1	1	1	4
HEPA classe		H13 @ MPPS	H13 @ MPPS	H13 @ MPPS	H13 @ MPPS	H13 @ MPPS	H13 @ MPPS
HEPA dim. (l x w x h)	mm	290x290x69	305x305x69	381x381x292	610x610x292	910x610x400	610x610x292
HEPA per machine		1	1	1	1	1	4
HEPA change at	Pa	960	700	500	625	700	1420
Type protection		IP-51	IP-51	IP-51	IP-51	IP-51	IP-51



**DEH500**



**DEH750**



**DEH2000**



**DEH10000**



**DEH30000**

1. On and Off button
2. Speed control
3. Manometer
4. Hour counter
5. Signal led "too little power"
6. Reset button after power interruption

DEH500



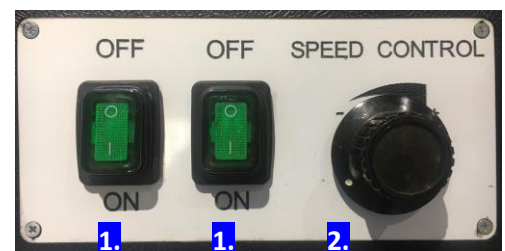
DEH750



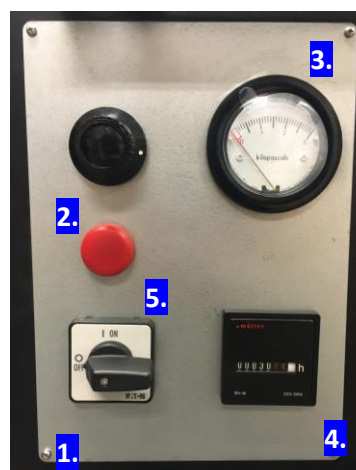
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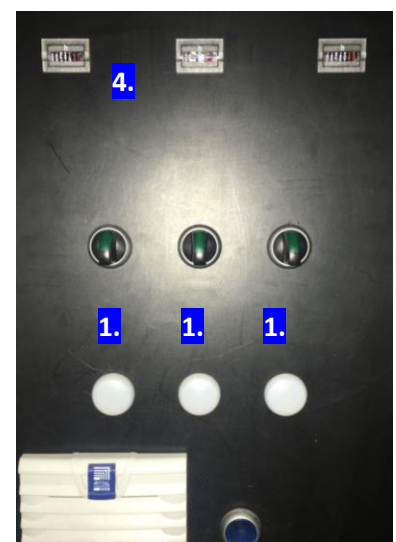
DEH5000



DEH10000



DEH30000

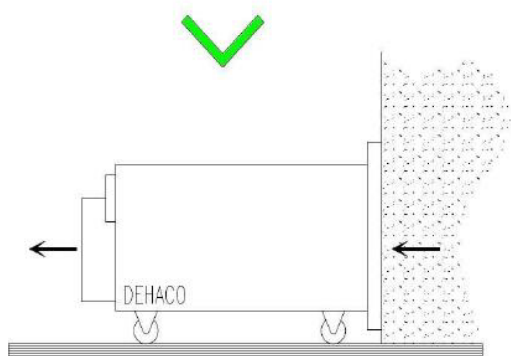
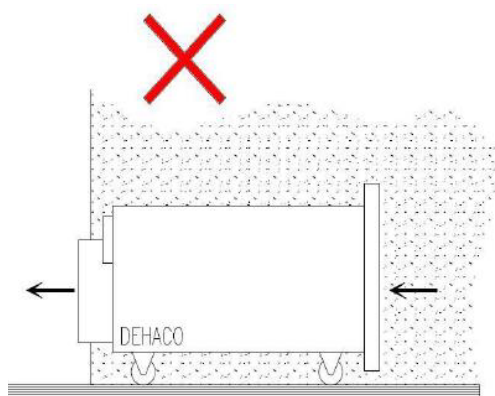


### 6. COMMISSIONING

#### 6.1 Placing and installing the machine

First check that the switch is in the "off" position. If the negative pressure unit was stopped the last time by removing the cable, the machine immediately starts when the plug is inserted.

The machine must be placed outside the contaminated zone. Under no circumstances is it permitted to place the machine within the zone. In case of doubt, first consult the person who is responsible for the technical aspects of the machine. The machine should be fixed to the zone air tight, using suitable tape. This connection should be perfect, as the zone is brought under negative pressure, creating a lot of force on these connections.



The exhaust side of the machine generates a lot of noise. This can be reduced by using a discharge hose. In the direct vicinity in the clean zone, hearing protection must be used.



- 1) Check that the machine is placed correctly.
- 2) Check that the clean air discharge hose is properly connected and does not cause obstruction.
- 3) Visually check the enclosed zone for leakage.
- 4) Check that the on/off switch is in the off position.
- 5) Connect the power cable to the machine.
- 6) Start the machine with a low RPM using the on/off switch.
- 7) Check that the machine is actually working.

#### ▲ BEWARE!

- 8) Enter the zone with full personal protective equipment and cut a hole in the plastic at the same height as the machine. This hole should be smaller than the filter.
- 9) Remove the transit plate.
- 10) Remove any remaining glue residues on the inside of the filter opening.
- 11) Apply the foil air tight to the inside of the machine's filter opening using duct tape.
- 12) Check that the pre-filter is mounted correctly.
- 13) Use the rotary knob to set the required negative pressure in conformity with the standard prescribed by the authorities.

If the imposed negative pressure cannot be achieved: first check the structure of the zone and the lock. Also check that the required volume of air is removed from the zone. You can increase the number of negative pressure units until the correct negative pressure is achieved and maintained. These can be electrically connected via an automatic start system.

#### 6.2 Use

The negative pressure can be checked during use by means of a monitor. (Dehaco has various monitors in its delivery programme). The negative pressure in the enclosed zone should remain below the value prescribed by the -local- authorities.

If the negative pressure drops in relation to the start value, the pre-filter could be contaminated and should be replaced. (see section 10.b) If, after replacing the pre-filter, the manometer indicates more than, see table with technical data, Pascal, the HEPA filter should be replaced.

#### ▲ WARNING!

The HEPA filter may only be replaced by an authorised

person! For this, please contact your supplier or Dehaco.

## 6.3 Switching off

### ▲ WARNING!

The instructions described here only relate to the machine. Stopping is only allowed after permission from local authorities. Additional instructions from local authorities and provisions for the benefit of personal protection are required.

Enter the contaminated zone in conformity with the applicable rules and regulations.

1. Remove the contaminated pre-filter. Treat it as contaminated waste.
2. Remove all contamination visible on the inside of the machine by means of a vacuum cleaner or duster.
3. Do not place a new pre-filter.
4. Place the transit plate on the machine.
5. Apply tape to the joints to make them air tight all around.
6. Switch off the machine using the on/off switch.
7. Remove the power cable.

## 7. MAINTENANCE

### 7.1 General

#### ▲ BEWARE!

Regular preventive maintenance reduces the risk of malfunctions during work.  
Repair established damages or deviations prior to starting work in order to avoid greater damage.

Daily check that the guard of the fan is present and undamaged.

- Daily check that the power cables are not damaged and are placed in such a way that the energy supply cannot easily be interrupted.
- Keep the machine clean and dry. If the machine is clean, there can be no confusion as to whether the machine is contaminated or not.
- Regularly change the pre-filter. The frequency is determined by the manometer and through visual inspection.
- Regularly check the machine housing for damages, tears, etc.
- 

### 7.2 Inspection and maintenance diagram

Have the machine inspected and certified by an authorised institution on an annual basis. For this, please contact your supplier or Dehaco.

### 7.3 Changing the pre-filter

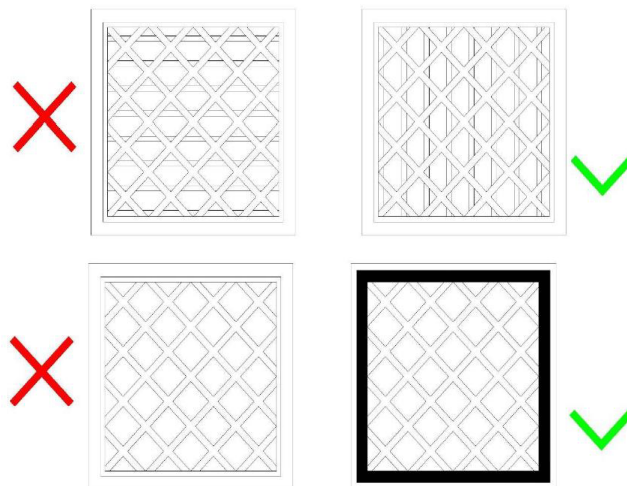
Replacing the pre-filter

#### ▲ BEWARE!

The pre-filter is regarded as contaminated material and should be treated as such.

The pre-filter may only be replaced when the machine is connected to a contaminated zone on a site.

1. Check that the machine is located in a suitable area.
2. Check that the machine is "on".
3. Remove the transit plate, if still present.
4. Remove the contaminated pre-filter. Treat it as contaminated waste.
5. Remove all contamination visible on the inside of the machine by means of a vacuum cleaner or duster
6. Place a new pre-filter in the machine. Make sure the folds are vertical!
7. Apply suitable tape to the joints all around.
8. The machine can now be used again.





### 8. MALFUNCTIONS

#### **The fan does not rotate:**

1. Check that the power cable is connected and is not damaged.
2. Check that the on/off switch is in the "on" position.
3. The machine has a technical problem, please contact the dealer.

#### **Fan does rotate, but negative pressure is not achieved:**

1. The transit plate is still in front of the filter. Remove the transit plate.
2. The pre-filter is contaminated/blocked. Replace the pre-filter.
3. The HEPA filter is contaminated/blocked. Have the HEPA filter replaced by the dealer or an authorised person.

#### ***The machine fails and starts again and signal led is on (DEH10000):***

1. Use an extension cord that is not too long, due to power loss
2. Use an extension cord that is not too thin, due to power loss
3. Make sure there is not too much connected to the group

#### **The machine has stopped due to a power interruption and no longer starts (DEH30000):**

1. Press the reset button for restarting the DEH30000

### 9. END OF LIFE SPAN

Electrical tools, accessories and packagings must be reused in an environmentally sound way. Never dispose electric tools as domestic waste! According to European Directive 2002/96/EC on waste electrical and electronic equipment and the transposition of the Directive into national law, electrical tools that are no longer usable must be collected separately and recycled in an environmentally sound way.

When, after having been used for a long period of time, the negative pressure unit has reached the end of its technical life span, the final HEPA filter must be removed by an authorised person. Consult with him concerning the current situation of legal arrangements for recycling discarded machines.





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