



GEOVENT

INSTRUCTION MANUAL



ATEX HIGH VACUUM UNIT

HVUX 300, 350, 450, 550 and 700



Geovent HVU in ATEX execution

The Geovent HVUX is a High Vacuum Unit series, based on our standard "Non-ATEX" units called HVU. In most ways the units are identical, but the differences are highlighted in these first two pages, in regards to the risk assessment.

The HVUX can in the ATEX series as standard not be classified for installation in zones with risk of explosion, Zone 21 and 22. This is due to the high vacuum pump. Upon request, the High vacuum pump can be supplied in an ATEX approved execution with ATEX certificate on the vacuum pump & control panel, but please note, that this is not standard in the HVUX series. The placement of HVUX is therefore in NON ATEX zone as standard.

On the interior side (dirty side of the filter), the standard HVUX can handle an explosive dust-filled atmosphere, zone 21 or 22. After the police filter and to the vacuum pump, it is classified as NON ATEX. The Vacuum pump has an extra protection, since the police filter insures the pump, in case of leakage in the main filter, why it can be classified as "Non ATEX".

Plant Description

A HVUX, high vacuum unit consists of a container (cyclone) with explosion relief panel and safety switch (ATEX components), anti-static filter unit, compressed air cleaning system (ATEX component), police filter as leakage security (in case of leakage in main filter), side channel blower and control panel are as standard NON ATEX.

The HVUX are in each case customized to fit the specific task in the sense, that the control panel is customized and the explosion hatch is calculated from the actual dust KST value & Pmax given by the customer.

Construction

The Unit is constructed after the Directive 2014/30/EU, EN 13463-1 & 13463-5, Safe construction, in regards to elimination of source of ignition & those that cannot be eliminated, is made inactive.

Marking

Units, that are to be place within the EX area, will be CE- & Ex marked according to the respective placement zones.

Units, which has to handle explosive atmosphere internally is CE-marked and the EX-part is described in the manual. There can be customers who require that the unit is internally marked for an EX-atmosphere & in those cases the unit will be marked based on the same requirements as the external marking.

ATEX certificates for the various ATEX components can be found in the back of this manual.

SAFETY REVIEW According to EN 13463-1

Potential source of source				
Normal operation	Expected unormal operation	Rarely abnormal operations	Applied precautions to prevent source of ignition from being effective	Applied protection against ignition
Static electricity	Static electricity		Anti-static filter media, which is internal eliminated. Symmetry point on the device with the description in the manual.	DS/CLC/TR 50404
Electrical Components	Electrical Components		Electrical components are for the respective zone or better, both internally and externally.	Directiv 2014/30/EU
Mechanical Components	Mechanical Components		<p>The units do not have any own source of ignition.</p> <p>The Vacuum pump is a standard pump, which is protected by a police filter for use in internal explosive atmosphere.</p> <p>When applied in an explosive atmosphere, the vacuum pump will be constructed for the actual zone.</p>	<p>Directiv 98/37/EF</p> <p>Directive 2014/30/EU</p>

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1.0 Introduction

This manual is made and designed in order to facilitate the best and most secure interaction with the product. The manual is relevant for people involved in transportation, stocking, installation, using, maintaining and all other thinkable interaction with the product.

The manual must be read in full and understood before interacting with the product.

When the manual has been read and understood in full, the table of contents can be used to find the relevant information in each case.

The product is manufactured by:

Geovent A/S
Hovedgaden 86
DK-8861 Løgstrup
DENMARK

Tel.: (+45) 86 64 22 11
E-mail: salg@geovent.dk
www.geovent.com

This manual is to be used for all interactions with the product including: Transportation, stocking, installation, operation and maintenance.

This product is marked with: (example)

Type: 03-840 · HVUX 300 Komplet unit

S/N: 01-722

20.12.2024

Made in Denmark



HOVEDGADEN 86 • DK-8831 LØGSTRUP

Tlf. (+45) 8664 2211 • salg@geovent.dk

Units intended for being placed within an ATEX Zone will be CE and Ex marked in accordance with the relevant zone classifications. Units (only cyklon) designed to handle an explosive atmosphere internally will be CE-marked, and the EX-specific details will be provided in this manual.

2.0 Safety

2.1 General safety

Carefully read this manual before use and observe the safety instructions in order to avoid injuries! Keep this manual in a safe place!

Secure that all users of the product have read this manual and that they follow the instructions as described. Observe all instructions marked on the product! Observe the indications of the manufacturer. Never use the product if you are in doubt about how it works or what you should do.

When doing maintenance follow the instructions in chapter 7.0.

Do not modify the product or use spare parts from other suppliers than Geovent, as this may hamper the product and the function.

2.2 Danger

The cyclone of this unit is an Atex unit, and therefore, rules and regulations from Atex directive 2014/34/ EU must be followed.

You must wear safety gloves when handling or using the product to protect your hands from scratches etc.

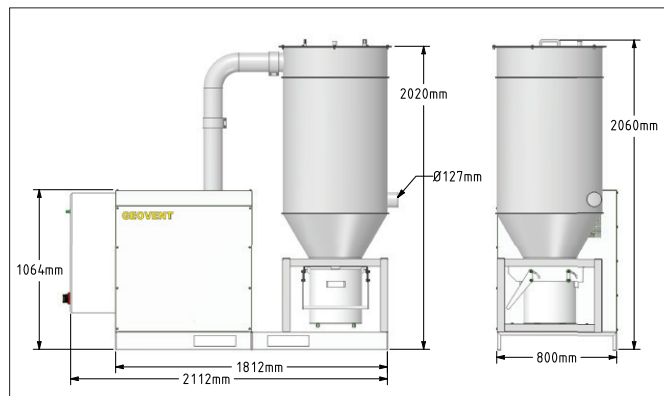
Be aware that the product may tilt when you move it. You must handle the product with care and tie it safely to the truck or the fork lift when it is in transport.

Filter medium: Spark proof aluminium-coated polyester filter AluTex® with a 99.9% filtration efficiency. Expected life for normal operation: 4,000-8,000 hours.

Motor/side channel blower: IP-54 standard motor with bypass fan in cast aluminium. Expected life for normal operation: 20,000 hours.

Automatics: Control panel of ABS-plastic IP-55.

3.3.2 Technical data



Drawing without poilefilter

Dimensions

Model	Power [kW]	Power consumption 100% load	Maximum air flow [m³/h]
HVUX 300	7,5	15,5A	562
HVUX 350	7,5	15,5A	562
HVUX 450	5,5	11,1A	663
HVUX 550	9,2	17,8A	782
HVUX 700	11	21,6A	939

Model	Max vacuum [kPa]	Filter surface area [m²]	Filtration level acc. to BIA-test
HVUX 300	25	12	99,9%
HVUX 350	30	12	99,9%
HVUX 450	21	12	99,9%
HVUX 550	30	12	99,9%
HVUX 700	30	12	99,9%

Model	Sound pressure level ISO 3744	Compressed air tank 1" connection	Collection bucket
HVUX 300	74,8 dBA	4 Liter	34 Liter
HVUX 350	72,1 dBA	4 Liter	34 Liter
HVUX 450	77,1 dBA	4 Liter	34 Liter
HVUX 550	77,4 dBA	4 Liter	34 Liter
HVUX 700	78 dBA	4 Liter	34 Liter

Model	Cabinet + cyclone ø700	Corrosion class	Weight
HVUX 300	Powder coated	II	210
HVUX 350	Powder coated	II	215
HVUX 450	Powder coated	II	215
HVUX 550	Powder coated	II	225
HVUX 700	Powder coated	II	245

Temperature

We recommend the filter unit to be used within the following temperature ranges:

Exhausted air:	0 to 60°C
Surroundings:	-15 to 40°C
Control panel:	0 to 40°C

If the filter unit is used in surroundings with a temperature lower than 0°C there may be a risk of condensation inside the filter unit. In this case we recommend that the filter unit and the pipes connected to it are insulated.

If the filter unit is used in surroundings with a temperature lower than 0°C there may be some irregularities with the electronics, which will be normalised when the temperature rises about 0°C.

The filter unit cannot be used if the temperature of the surroundings is less than -25°C due to the functionality of the burst censor.

The sound level depends on several factors; For example where the High Vacuum Unit is placed (indoors/outdoors), the size of the room, the temperature of the surroundings, the acoustics and also the connection (hose>pipe) of the unit has an effect on the sound level.

4.0 Transport, handling and storage

During transport in a truck or in another means of transportation the product must be securely packed in a box or a pallet and covered with a water proff material.

The product must be securely stowed in the truck so that it will neither tilt nor shift during transport.

During transport over a short distance e.g. in a stock or a factory, the product can be moved by means of a fork-lift or a stabeler.

When moved it must be secured that the product does not tilt or shift. And it must be secured that the limitations of the means of transportation is not exceeded.

The product must be placed in a dry place and covered securely, in order to secure that moist, metal parts or other substances do not damage the product.

It is not allowed to place anything on top of the product.

5.0 Assembly, installation and start of operation

5.1 Location

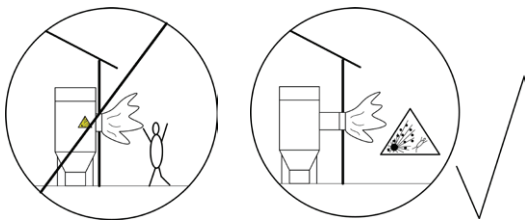
We recommend that the filter unit is placed indoor. Out-doors placing can give problems with condensation or water coming into the filter unit (due to the vacuum in the filter unit). Further there may be a problem with the electronics (we recommend installing the control panel indoors).

If the filter unit is placed out-doors, anyway, we suggest that the filter unit is placed under a protective roof or in a shelter to shield the filter from rain. Adding a thermal insulation will reduce the risk for condensation.

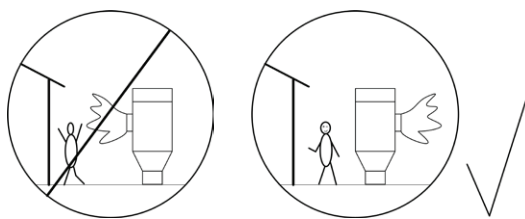
Before installation, the optimal location must be found: Is there enough space to properly install and service the product?

Have the risks of an explosion been taken into account? For example, in which direction the explosion membrane opens. Are there optimal connection options for piping and automation?

Safety distance



If the filter unit is placed indoors, it must be ensured that a possible explosion is led out of the building. In this connection, it must be ensured that persons or objects cannot be injured in the event of an explosion. The safety area must be established in accordance with the ATEX directive.



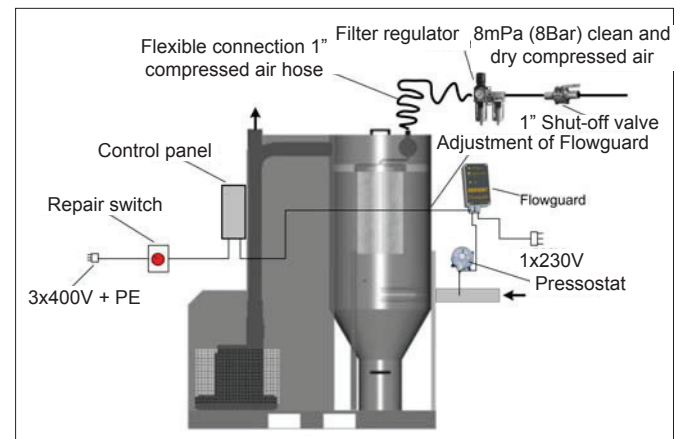
If the filter unit is placed outdoors, the explosion panel must point away from the building and it must be ensured that people and objects cannot be injured in the event of an explosion. The safety area must be established according to the ATEX directive.

5.2 Installation

The following installation should only be carried out by a trained installer.

5.2.1 Installation

Installation example

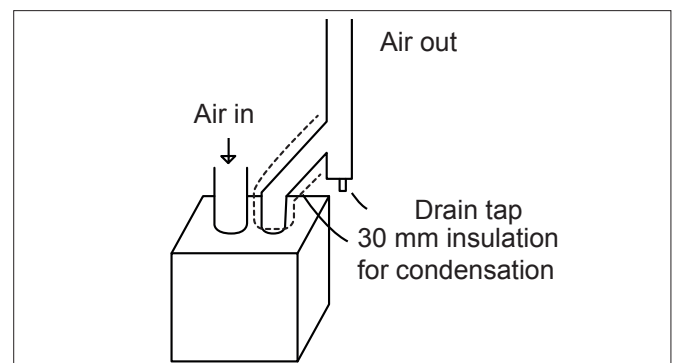


Procedure:

1. Place the HVUX on a solid foundation (e.g. a concrete floor) where there is no possibility for vibrations to be transmitted. In addition, allowance shall be made for filter changes (i.e. minimum headroom of 800 mm).
2. The piping is connected to the HVUX. On the inlet side the pipe can be fixed e.g. by means of a snap lock system. Remember to seal the joint with sealant and/or tape!
3. To ensure free mixing, the discharge should be directed two meters above the roof ridge towards the atmosphere with a discharge velocity of at least 8 m/s.
4. The entire system/piping should always be thoroughly inspected for leaks. Leaks must be sealed. The system must not be used for the following 24 hours.

Important

It is important to install the product so that it is not possible for rainwater to penetrate. An example of a well-functioning installation is shown in this drawing.



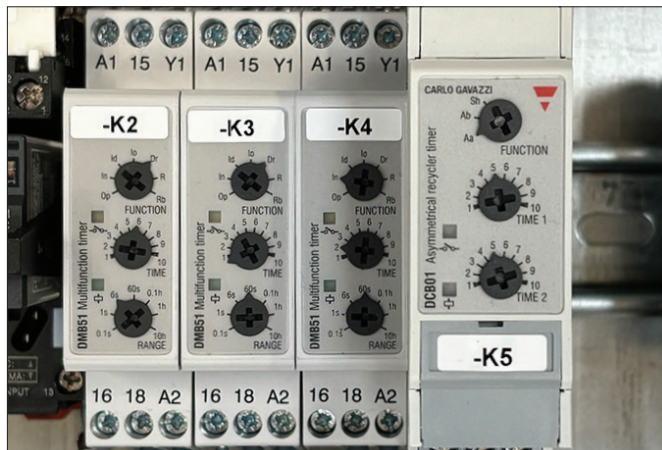
Penetrating rainwater can cause the side channel blower to jam and be destroyed.

Electrical connection

1. The connection of the electrical components of the HVUX Lite should only be carried out by an authorized electrician.

- For connection options, see separate panel documentation (located in the panel).

Setting up cleaning cycle



Cleaning cycle adjustment

Max cleaning time (K4)	2 min
T1 Pulse (K5)	0.1 second
T2 Break (K5)	1-10 seconds

Mounting of frequency inverter

It is possible for us to deliver with frequency inverter and / or pressure control. See for external manual pressure control.

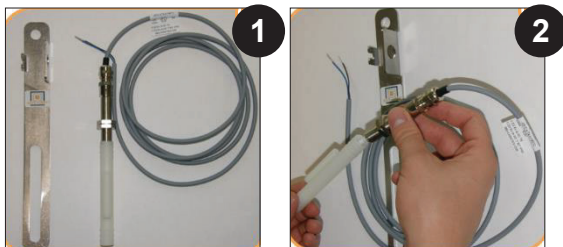
For setting options for external frequency inverter, please refer to the supplied, separate manual.

Automatic start/stop

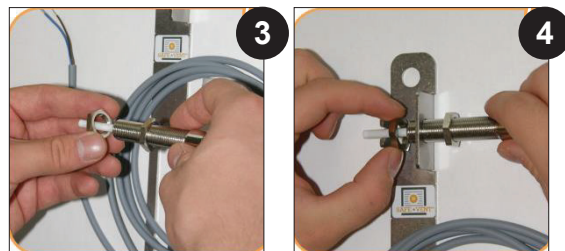
External start/stop (e.g. micro switch by the quick-action coupling/connection or on/off-button on the Energy Arm) When the HVUX is in manual mode, there is a timer, which turns the HVUX switch off automatically after 30 minutes.

5.2.3 Installation of burst sensor

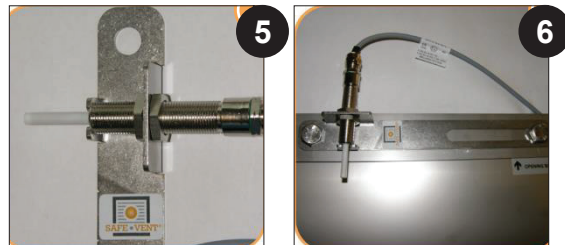
The burst sensor is installed with the metal housing with the help of the two nuts into the mobile part (frame) of the bursting pane.



- Unpack the burst sensor.
- Remove protective cap.



- Remove the outer nut
- Install burst sensor on the bracket



- Tighten the nuts. The starting of max. 10Nm may not be exceeded by fastening the burst-sensor!
- Attach the bracket on the explosion panel. When mounting the sensor you must make sure that the PT-FE-ampoule will be destroyed safely on releasing the bursting pane.

Attention: The protection cap is only for transport security and has to be removed carefully by left-hand rotation on installation at the latest.

5.3. Control and test of the security system

When the installation has been completed, please check whether there is any vibration or noise nuisance from the HVUX. Please control that the complete plant is totally tight. If any creaking noises are emitted, please locate the leakage and seal it with filler.

Furthermore, we recommend checking whether the HVUX supplies the volume of air, for which the equipment has been dimensioned. Measure the air volume and ensure that it does not exceed the amperage of the engine.

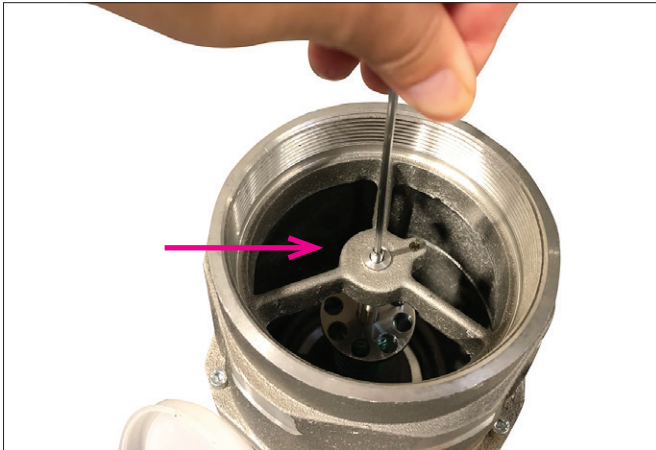
Vacuum safety valve

The vacuum safety valve is adjusted from factory, but must be adjusted subsequently when testing the unit.



Adjusting the relief valve

Adjust so that the relief valve does not open during normal operation, but opens when blocked.



Adjust to loosen or tighten the spring.

6.0 Commissioning

6.1 After installation

Check the installation according to chapter 5.3.

The HVUX may not be in operation for longer periods of time (20 min.) without opening the connections in the Channel Duct System, since otherwise the pump will overheat and break down. Optionally, use the built-in start/stop function.

7.0 Control, test and maintenance

7.1 Control

Check the installation according to chapter 5.3.

7.2 Maintenance

At least annually, the HVUX and the system should be inspected by an authorised fitter.

Periodic maintenance:

- Check filter, flow and usage.
- All electric parts should be checked annually.
- In principle, the side channel blower is maintenance-free due to the factory-mounted completely closed special ball bearings, which do not require any maintenance. Exchange of worn bearings should only be carried out by an authorised electro-company.

7.3 Replacing filter and emptying of bucket

7.3.1 Emptying of bucket

The collection bucket should be emptied when approx. two thirds of it is full, since otherwise it may further load the filter medium.

Procedure:

1. Disconnect the unit on the repair switch. Please ensure that the switch cannot be activated during the service operation.
2. Disconnect the compressed air connection.
3. Wait 5 min for the dust to settle in the bucket.
4. Before emptying the bucket, it is important that the service technician is equipped with the necessary personal safety outfit, i.e. breathing mask and gloves, which comply with the rules of the local rules and regulations.
5. The collection bucket is removed by using the handel to lower the bucket. Now, with care the bucket may be taken out. The contents of the bucket is now to be destroyed in an environmentally sound manner in accordance with the local regulations.
6. The bucket is returned and fixed by pushing down the handel to secure the bucket under the cyclone.

7.3.2 Exchange of filter cartridges

The filter medium should be exchanged after approx. 4,000-8,000 hours of operation or max. 4 years. Partly, this depends on the load on the filter, for example which application it has been used for.

Procedure:

1. Disconnect the unit on the repair switch. Please ensure that the switch cannot be activated during the service operation.
2. Disconnect the compressed air connection.
3. Wait 5 min for the dust to settle in the cyclone.
4. The top/lid of the cyclone is dismantled by unscrewing the bolts. Afterwards the lid with the compressed air tank is removed. Make sure first to disconnect the power supply and not to damage the compressed air tank, when it is put aside.
5. Subsequently, with a 17 mm spanner remove the three M10 nut, which attach the filter medium to the unit.
6. The polluted filter medium is carefully lifted up and placed in a rubbish bag, which is then properly sealed.
7. The new filter medium is inserted and fixed to the unit with three 10 mm nut.
8. The top/lid is carefully returned and fixed with the screws. (Remember to connect to power and compressed air again!).

9. Subsequently, the polluted filter medium is disposed of according to local regulations.

8.0 Cleaning

The outside of the product is cleaned with a vacuum cleaner or a cloth.

9.0 Troubleshooting

In case of problems with reduced pressure or volume of air, the instructions below could help:

The volume of air or the pressure has fallen to below the indicated volume/pressure

- Wrong direction of rotation of the wheel of the side channel blower. May be caused by wrong electrical installation. Please double check the direction of rotation. Change two phases.
- Leaky duct system.
- The channel system is not air tight. Seal it.
- Poor inlet/outlet options close to the vacuum pump may reduce the capacity (e.g. 90° bend just before the inlet).
- Damaged side channel blower. Exchange the side channel blower.
- The rate of rotation has been set to a too low level.
- If the temperature deviates substantially from the laboratory measurements, where the temperature was 20°C with an atmospheric pressure of 101.4 kPa.
- The dampers have not been properly adjusted.

Vibrations and noise

- The foundation is not level/stable.
- Elements coming from outside have penetrated the unit/duct system.
- Damaged vacuum pump or motor.
- Vacuum pump out of balance.
- The vacuum pump is running in the wrong direction.
- Loose bolts or screws.

The motor is overloaded

- The cabling of the motor is wrong.
- Defective motor.

10.0 Dismantling, disabling and scrapping

Deactivate the product by disconnection the electrical mains. Dismantle compressed air pipes and other pipes or wires etc. and dispose of it according to local regulations.

Clean the collection bucket and remove the filter cartridges as described in chapter 7.3.

Before dismantling the product it is important that the service technician wears the necessary personal safety measures, such as respiratory protection and gloves that comply with the relevant regulations for working with contaminated dust.

The inside of the product must be cleaned by means of a vacuum cleaner with a filter which suits the purpose.

Dismantle the metallic parts by unscrewing screws and bolts. Afterwards cut the larger pieces into smaller pieces and dispose of it according to local regulation.

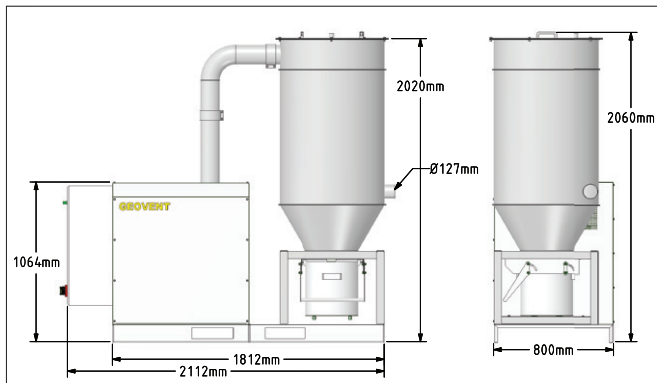
Dismantle plastic parts and dispose of it according to local regulations.

Dismantle the electronics, wires and cables and put these into a suitable bag. Afterwards dispose of it according to local regulations.

The packing material must be sorted according to local regulations in order to be able to reuse the material.

11.0 Dimensions

HVUX



12.0 Liability

Warranty

Geovent A/S grants a warranty for products, which are defective, when it can be proved that the defects are due to poor manufacture or materials on the part of Geovent. The warranty comprises remedial action (reparation or exchange) until one year after the date of shipment.

No claims can be made against Geovent A/S in relation to loss of earnings or consequential loss as a result of defects on products from Geovent.

Wear on parts such as filter cartridges and hose is not included in the warranty.

User liability

In order for Geovent to be capable of granting the declared warranty, the user/fitter must follow this instruction manual in all respects.

Under no circumstances may the products be changed in any way, without prior written agreement with Geovent A/S.

Please refer to the current sales and delivery conditions at www.geovent.com

13.0 Declaration of conformity

The manufacturer: GEOVENT A/S
HOVEDGADEN 86
DK-8831 LØGSTRUP

hereby declares that:

The product: HVUX
Models: HVUX 300, HVUX 350, HVUX 450,
HVUX 550 and HVUX 700

have been manufactured in compliance with the
directions of the

Directive Council of 2006/42/EF of 17. may 2006 regard-
ing machines.

Directive 2014/34/EU of 26 of February concerning
equipment and protective systems intended for use in
potentially explosive atmospheres.


This declaration is no more valid if changes are made to
the product by others than the manufacturer.

Authorized to collect the technical file:

Lise Cramer

Date: 22.03.2023

Position: Director
Name: Thomas Molsen



Signature:



14.0 Spare parts list

Art. No.	Description
92-211	Breaker switch 16A
03-260	Replacement cartridge ø225 for HVUX - 5 m ²
16-503-s	Burst sensor for explosion membrane
16-505	EX-Membran
13-700A	MultiBox IV HV 0-40 kPa
13-727	AirBox Lite HV



GEOVENT

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