



Oil mist separator filter
HOUPC

Maintenance manual (EN)

V1.0-2021

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1. Introduction

This manual cannot be reproduced, even partially, without prior written consent by Formula Air Group. Every step of the filter range has been deeply analyzed by Formula Air Group in the expected area during the design, construction, and user manual creation. However, it is understood that nothing can replace the experience, training and good sense of those professionals who work with the device.

Ignoring the cautions and warning from the present user manual, using improperly parts or the whole device supplied, using unauthorized spare parts, manipulating the device by non-qualified personnel, violation of any safety norm regarding design, construction and use expected by the supplier, exempt Formula Air Group from all responsibility in case of damages to people or properties.

Formula Air Group does not take any responsibility for the non-observance of the user about the preventive safety measures presented in this user manual.

Failure to comply with the requirements of the user manual or incorrect use of the filter during operation can lead to the damage of the filter and improper functioning of the filter itself. This will result in termination of the warranty on the item and will release the manufacturer from any liability.

Warranty

Regarding to the device's warranty, see the sales general condition.

Attention !

All drawings and references contained within this user manual are non-contractual and are subject to change without prior notice at the discretion of the Formula Air Group and its partners.

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1.1. EC- declaration of incorporation

EC-Declaration of Incorporation for Partly Completed Machinery

Machinery Directive 2006/42/EC Annex IIB

The undersigned manufacturer and authorized for the elaboration of technical documentation for partly completed machinery and by due request hand over the technical dossier to the national authorities :

Manufacturer: v.Aa.Gram A/S
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Tel.:+45 74 52 30 75, Fax:+45 74 53 01 64

The undersigned hereby declare that:

Partly completed machinery: Oil Mist Separator with fan
Name: Gram
Type: HOUPC 510/VL 750 (0,75kW)
HOUPC 1010/VL 1100 (1.1kW)

was manufactured in conformity with the provisions of the Machinery Directive (Directive 2006/42/EC) and with national implementing legislation under special reference to Annex I of the Directive on essential safety and health requirements relating to the design and construction of machinery and safety components.

EMC-Directive 2014/30/EU
Low Voltage Directive 2014/35/EU
EN 12100
EN ISO 12499
EN ISO 13857
ISO 14694
ISO 3746
ISO 5801
EN 60204-1
IEC 60034-(1)-(2-1)-(5)-(9)-(14)-(30-1)

Position : XX
Name : XX
Company : V.Aa.Gram A/S

Date : XX.XX.XXXX XXX

(Signature)

2. General description

The oil mist separator type HOUPC with fan is used for separation of oil-containing air.

The oil mist separator type HOUPC with fan may not be used in connection with ATEX-zones.

The oil mist separator is powder enamelled for indoor mounting.

3. Function

Process air is led into the connection on the right side and out on the left side of the unit.

Air cleaning takes place in 4 stages:

Stage 1: On the right side of the oil mist separator, the air is sucked into the pre-separating chamber for air distribution and densification.

Stage 2: The accumulated particles are led on to the washable pore filter PPI35 that separates dust and accumulated liquid with up to 50% higher efficiency than aluminum grease filter (Pore filter 35).

Stage 3: Air is then filtered in the filter cartridge (type G104A).

Stage 4: The air is sucked through the fan, and forced out through the final chamber, where a HEPA-filter is placed.

4. Daily maintenance

At reduced extraction capacity the filter must be exchanged (see section : Maintenance)

Oil must daily be drained off at ball valve (drain cock).

If sound level changes, the unit must be checked for possible defects.

Repairs may only be carried out by professional trained personnel with proper individual protection devices..

5. Unit condition during operation

Doors and ball valve must be closed during operation.

Type	Diameter
HOUPC 510	200
HOUPC 1010	250

Special outlet module must be used.

6. Intentional/Unintentional application

The Oil mist separator HOUPC may only be used for oil-containing air without sparks. The unit with fan may not be used in ATEX environments.

7. Mounting

The oil mist separators type HOUPC are standard delivered completely mounted on a pallet.

Remove the oil mist separators type HOUPC 510/1010 from the pallet/wrapping and place the unit on the floor or on the machine. Make sure that the surface is uniform and stable.

Do not forget to ensure that drain cock is open, so the filtered material can be externally collected for filtering and be reused.

7.1. Electrical connection

For the oil mist separator type HOUPC with fan ; the electro-motor is connected to 3x400V and earth through motor protection, which must be correctly adjusted. A supply breaker must be installed or use during repairs and maintenance.

The local Power Code must be respected when making the electric connections.

The oil mist separator type HOUPC may not be used without this connection.

System guard type L may not be connected to the same power source.



The sense of rotation must be checked. Verify the motor cooling impeller sense of rotation which must be in accordance with the arrow on the cooling plate.

BEFORE start-up the fan wheel must be rotated manually by hand to check, whether it runs freely and does not hit the cabinet.

If fan wheel hits the cabinet, it can be due to fan damages or motor has moved during transport. If it is due to damages, please contact us for rectification.

Fan type	Installed power (kW)	Working current consumption (A)	Start-up current consumption (A)
VL750	0,75	1,67	10,02
VL1100	1,1	2,44	14,64

At operation with frequency converter the electro motor must be equipped with 1 piece PTC or PTO.

7.2. Ducting connection

The ducting connection must be made with approved ventilation pipes.

Note that all pipe elements need to be airtight and fully welded to avoid leakage.

7.3. Adjustments

Every filter unit is dimensioned for a certain workload which may not be exceeded as it would result in an improper function of the unit or a premature lifespan.

The unit is dimensioned following the following criteria's :

_____ Maximum air volume
 _____ Type of liquid

Type of fan :

Type of cartridges : xx cartridges G1 xx

Total surface area: xx m²

8. Noise level

Filter type	Fan	dB(A)
HOUPC 510	VL 750	76
HOUPC 1010	VL 1100	75

9. Fan technical data

Fan technical data according to ERP 2013 and 2015 (327/2011) as well as ISO 5801

Fan	Achieved efficiency	Measured Category	Efficiency category	Efficiency grade	VSD	Prod. Year	Manuf.
VL 750	50,1	D	Total	□	NO	CE-mark	8.1
VL 1100	52,0	D	Total	□	NO	CE-mark	8.1

Fan	Rated motor data			Rpm	Spec. ratio	Disposal	Environment	Mount. Meas.
	kW	M ³ /h	Pa					
VL 750	0,84	930	1600	2887	1,02	12	8.2	8.3
VL 1100	1,07	1435	1370	2902	1,02	12	8.2	8.3

■ Not approved according to EU327/2011 ERP 2015. May be mounted on clean air side of a filter units as transport fan according to EU 327/2011 and EN 13349/2010

Minimize environmental impact as well as ensuring optimal life expectancy as regards installation, use and maintenance

To obtain optimal conditions for the fan the following is important :

9.1. Vibrations

- Ensure that no unusual vibrations occur,
- Ensure optimal vibration isolation of fans,
- Ensure that fan wheel is without dirt and in balance.

9.2. Noise

Mechanical noise and channel noise should be reduced to a minimum in order not to have an impact on the surroundings.

To dimension the optimum noise reduction, exact frequency band measurements can be stated regarding the mechanical noise and channel noise of the fan. This information can be requested by mail for the operational point in question.

Unwanted noise can easily occur in channel connections and flexible connections - especially at leakages. This should be reduced to a minimum.

9.3. Energy consumption

It is very important only to extract the necessary air volume at the necessary vacuum to reduce the energy consumption. This can be regulated with a regulating damper, but more optimal with the use of frequency converters with PID-regulation.

Leakage in piping as well as pollution in piping will always cause increased energy consumption as well as possible noise.

Electro motor surface must all times be kept clean, and cooling air access may not be hindered, since this will increase the energy consumption.

Extracted air from a heated room may not exceed the necessary air flow, as well as the use of a heat exchanger can reduce the energy consumption of the complete unit.

9.4. Laboratory measurement mounting

Measurement mounting according to ISO 5801 type D with instruments with the required classifications.

Please contact us for further information regarding measurement.

10. Maintenance

Filter unit must be done 1 to 2 times a year to operate optimally.

While there is current in the unit, check the fan for vibrations and unusual noise.

Check currently the pressure drop over the filters in order for you to change these in time.

Color code	Stage 2 Pore filter [Pa]	Stage 3 Cartridge filter [Pa]	Stage 4 HEPA-filter [Pa]
Green	0 - 150	0 - 1000	0 - 250
Yellow	Up to 200	Up to 1300	Up to 300
Red	More than 200	Approx. 1300	Approx. 300

Fan set for max. 2,500 Pa :



With disconnected power check filters for airtightness. Door seals are checked and changed if necessary.

Defect filters are changed. Do not forget correct size and quality.

Suitable protection mask, eye protectors and protection gloves must be used (dependent on dust type equipment is selected).

10.1. Filter element replacement

Every electric supply must be disconnected.

Filter stage 1: Pore filter is changed in the right-side door.

To exchange filter stage 2 the front door is opened, where after thread bar with check-nut is loosened, and filter can be exchanged.

Filter stage 4 is changed through the left side door.

At insertion of new HEPA-filter, check seals.

10.2. Fan maintenance and repair

At service maintenance personnel must be aware of hot surfaces – especially the electro motor.

At service take care that fan impeller does not rotate (check motor cooling impeller), even though power is cut off.

Fan maintenance personnel must be aware of the dangers with fan service and those substances that the fan possibly transports.

During service you must be aware of the fact that the fan impeller can be very sharp and can rotate in connection to motor.

Fan is placed behind the left side door.

10.3. Fan service check

At service please check the following:

- Whether fan wheel rotates correctly according to rotation arrow marking,
- Whether fan wheel is in balance during operation,
- Check whether fan wheel is dirty (this can cause unbalance), if yes :
- Remove it through washing, brushing or scraping. Be careful: do not damage wheel,
- Check whether electrical connection is intact.

10.4. Exchange of motor or fan wheel on fan

At disassembling you must take care that fan impeller is not rotating (check motor cooling impeller) and that current is disconnected and dismantled.

Personnel that disassembles fans must be aware of the dangers at fan disassembling, where dangerous substances or gases can be present in fan housing.

Motor flange, motor and impeller are taken off fan housing. Impeller locking screw is loosened. Fan impeller can be pulled off and replaced by new original impeller.

If motor must be changed, it is loosened from motor flange. Electro motor may only be exchanged with similar type. After ended service all bolts and washers must be mounted again and tightened up.

Always use suitable lifting gear, hand gloves and suitable personal protection.

10.5. Irregularities

In case of unbalanced fan impeller we recommend that you send the impeller (motor + motor flange and fan impeller as complete unit) to our factory for balancing. Do not forget to inform us that you request us to balance the fan impeller. Submitting requires a case number, before we can handle the case.

Irregularities can normally be found through changed noise picture and changed pressure. Changed pressure can be seen directly as alarm on statutory control device (valid for Denmark) for process ventilation units.

11. After maintenance

After the maintenance operations are completed, make sure that all components are locked back in place.

Test and control the filter unit before operation.



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