FläktGroup

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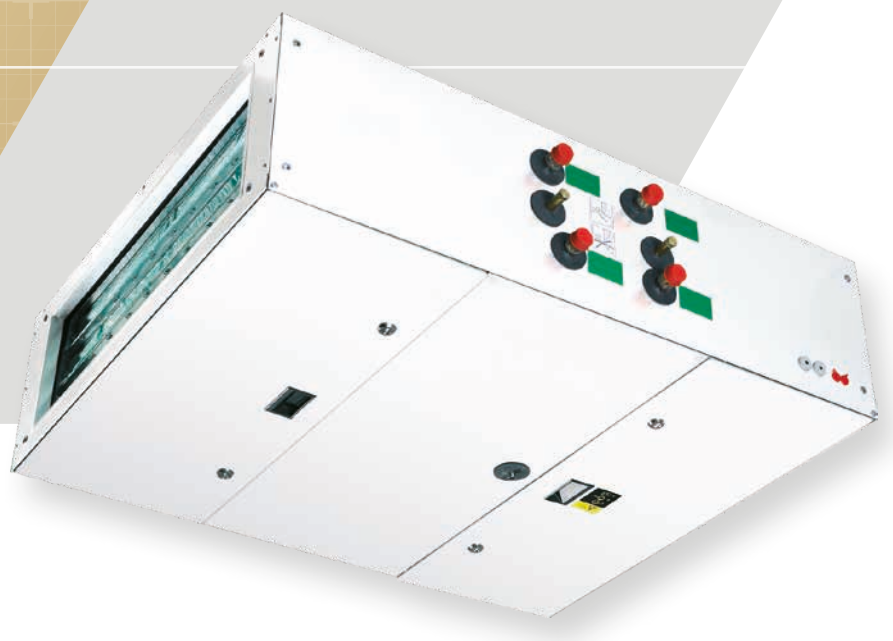
VEKA ver C™ SUPPLY AIR UNIT

IINSTALLATION AND MAINTENANCE



1. SAFETY INSTRUCTIONS

OPERATION OF AIR HANDLING UNITS AND ACCESSORIES

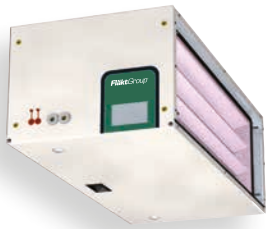
WARNING

Before taking the air handling unit into operation fit any unused connections with protective mesh.

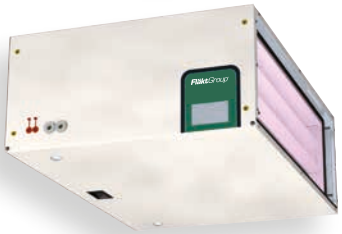
In addition, all electrotechnical and mechanical safety devices must be installed before taking the air handling unit into operation.

- Before opening the unit check that its power has been disconnected.
- Take care when opening the isolating valves for the hot water to the air heater. There is a risk of water hammer or steam discharge.
- When servicing or inspecting the unit, turn off the safety switch before opening the inspection doors. Reset all safety devices before restarting.
- The clearance in front of electric heaters and electrical cabinets shall conform to applicable electrical safety regulations.
- Use the control panel to stop the unit.
- The unit's hatches are fitted with locking handles. Ensure that the unit is always left locked, and that the keys cannot be accessed by unauthorized persons.
- Do not open inspection hatches when the unit is in operation.
- Use protective gloves during installation and service.

Installation may only be carried out by qualified personnel.



Fan and short filter (cc = 12)



Fan and long filter (cc = 13)

Fan, heating or cooling coil and long filter (cc = 14)

Fan, heating and cooling coil and long filter (cc = 15)

2. INSTALLATION

2.1 STORAGE

The unit has to be stored under protective roof. Keep the packaging on.

2.2 LIFT AND TRANSPORT

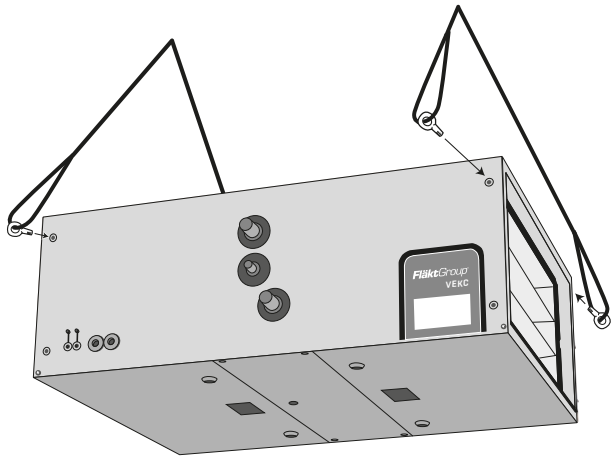


Fig. 1.

Every component part of the unit is supplied with 4 fixing eyes. These can be used for lifting and transport. They are screwed into the corners as illustrated in fig. 1.

2.3 SUSPENSION FROM THE CEILING

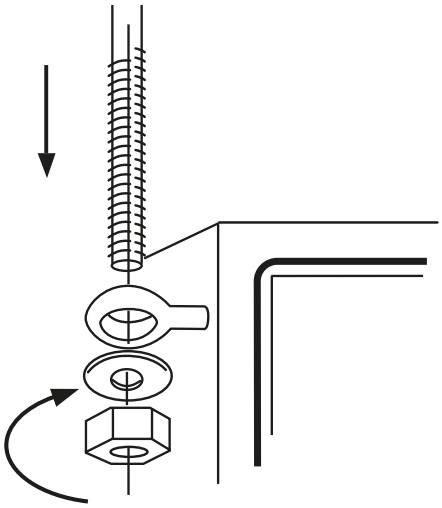


Fig. 2.

The fixing loops referred to above are used by passing hangers through the loops, as illustrated in fig. 2. The hangers are not included in the supply.

Note that the weight of the unit is distributed unevenly in the longitudinal direction.

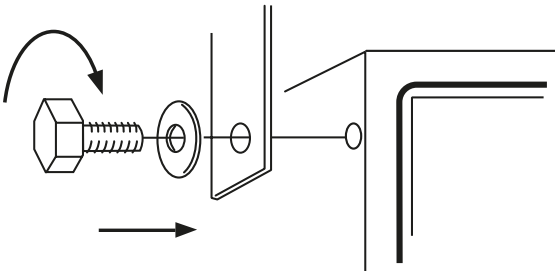


Fig. 3.

Fastening irons of the kind illustrated in fig. 3 can be used instead of hangers. Electrical heater VEEK and Sound attenuator VELD are suspended in the same way as other ducts.

2.4 SUSPENSION ON WALL

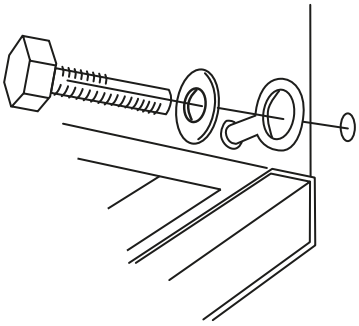


Fig. 4.

Units without an air cooler can be mounted with a vertical airflow. Screw a rail or an angle bracket to the wall to carry the unit. See fig. 4.

2.5 INSTALLATION OF SHUT-OFF DAMPER VEVA

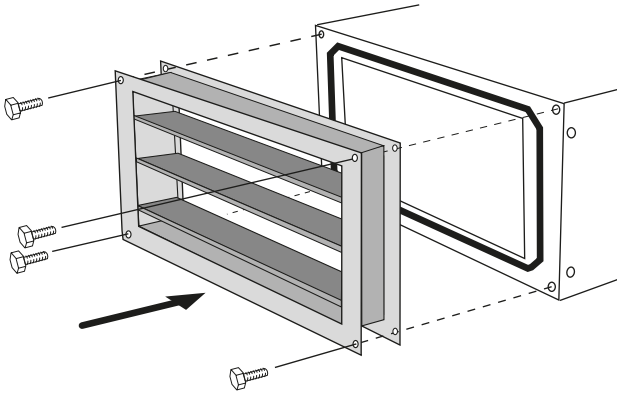


Fig. 5.

Shut-off damper VEKV is installed on the unit part with 4 x M8 screws (not supplied), as illustrated in fig. 5.

If the damper is frame-insulated, the flange of the damper must be made accessible by removing the insulation.

2. INSTALLATION

2.6 CONNECTION TO DUCT

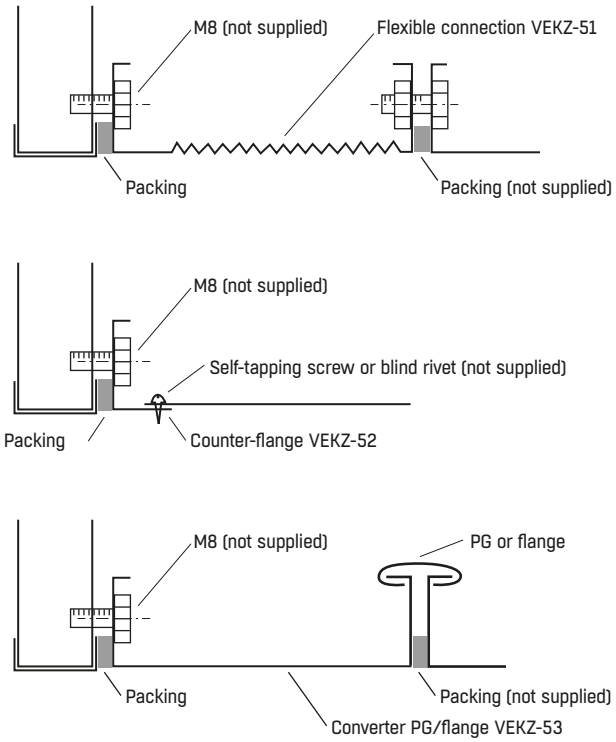


Fig. 6.

Connection to the duct can be made with a Flexible connection VEKZ-51, Counter-flange VEKZ-52 or Converter PG/flange VEKZ-53. See fig. 6.

2.7 WATER CONNECTION OF AIR HEATER/AIR COOLER

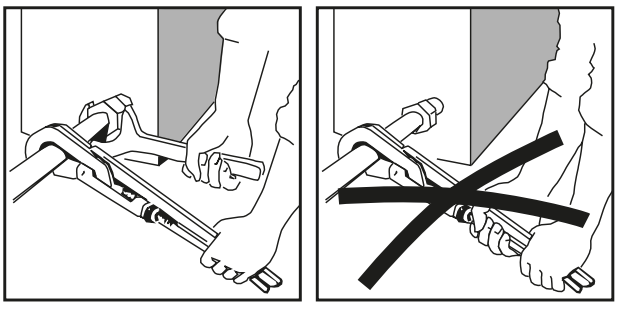


Fig. 7.

The water connection is DN 25 with an external thread.
The inlet and outlet are marked with signs showing the direction of flow.

The air heater is provided with a DN 8 internal thread for a frost protection sensor.

Be careful not to damage the pipes, see fig 7. Pipelines must be located so that venting can take place in the pipe system.

2.8 CONDENSATE DRAINAGE OF AIR COOLER

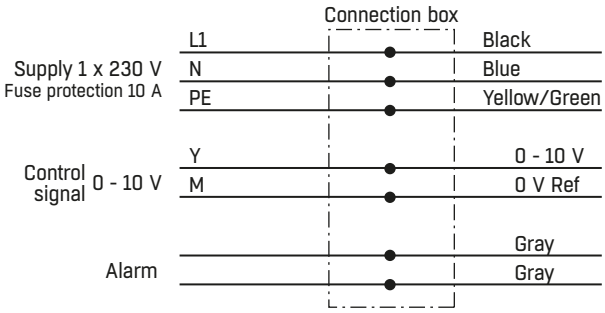
Air cooler drainage connection external Ø 15 mm for connection to a water trap with a height of at least 60 mm.

2.9 ELECTRICAL CONNECTION OF FANS

If the unit is ordered with built-in controlsystem ISYteq Mini, the fans are pre-wired. In other cases the connection is made to the connection box.

MOTOR DATA

Size	Power, kW	Current, A	Voltage, V
20	0,77 kW (0,385 kW x 2)	5 A (2,5 A x 2)	1 x 230 V
30	1,50 kW (0,75 kW x 2)	6,6 A (3,3 A x 2)	1 x 230 V

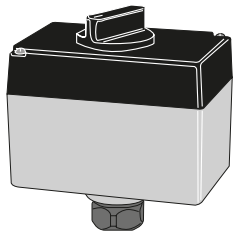


The supply cable must be fitted with an external safety switch located close to the unit.

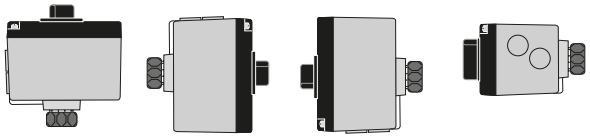
2.10 VALVE AND VALVE ACTUATOR

ACTUATORS FOR HEATING SV1 AND COOLING SV2

Connected to terminal in electrical cabinet. Stroke length 5.5 mm. Intended for assembly on 2-way and 3-way valves of the type VVG44 or VXG44.



ACCEPTED INSTALLATION METHODS



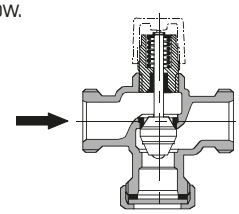
VALVE FOR HEATING AND COOLING

The valve and valve actuator can be easily installed without special tools. A particle filter should be fitted before the valve to extend its service life.

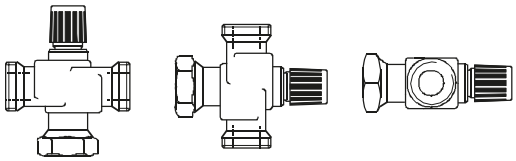
2. INSTALLATION / 3. STARTING / 4. AIR FLOW INDICATOR

2-WAY VALVE VVG

The flow is increased by turning the spindle inwards, the flow is reduced by moving the spindle outwards. Note that the 2-way valve cannot be used as a 3-way valve. The flow direction is indicated by an arrow.

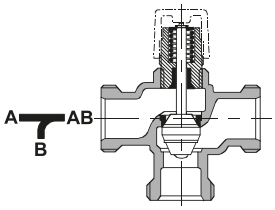


ACCEPTED INSTALLATION METHODS

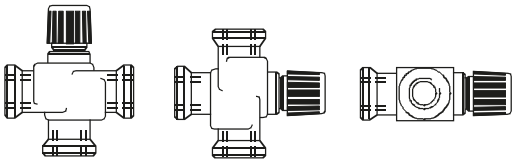


3-WAY VALVE VXG

The bypass is closed by turning the spindle inwards, the bypass is opened by turning the spindle outwards.



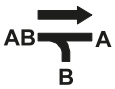
ACCEPTED INSTALLATION METHODS



When installing a 3-way valve check as follows:

Mixture from A/B to AB

Splitting from AB to A/B



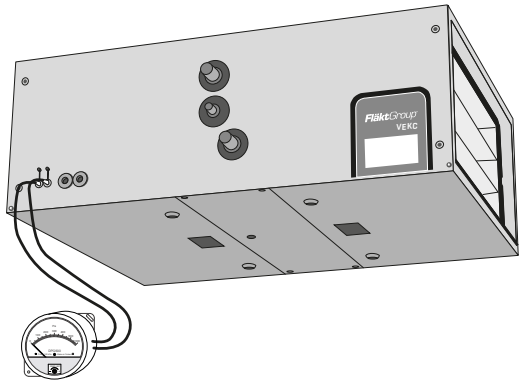
2.11 CHECKS BEFORE START UP

- Check that the fan outlet is provided with the necessary outlet protection.
- Check that a qualified electrician has given his approval for starting.
- Check that the impeller wheel rotates freely and that no foreign objects are present which may be sucked in and damage the fan.

3 START UP

After electrical wiring and connection of external components, the unit is ready to be started. The unit must not be started with the shut-off dampers closed.

4. AIR FLOW INDICATOR VEKZ-27



The measuring accuracy of the Flow indicator is ± 10%, if installed according to installation instructions. The measured pressure drop ΔPm (Pa) combined with a constant k, gives the airflow q (l/s) according to the formula:

$$q = \frac{1000}{k} \cdot \sqrt{\Delta p_m} \quad l/s$$

k = 34,6

INSTALLATION

Install the indicator vertically on a wall or on the side of the unit with the screws supplied.

ZEROPOINT CALIBRATION

Adjust the zero point with the screw on the indicator front.

HOSE CONNECTION

Cut the supplied hoses to a suitable length and connect them between the nipples on the unit side and the indicator. Secure the hoses so that they are not damaged or squeezed.

TEMPERATURE CORRECTION

The pressure scale on the indicator applies to air at a temperature of +20° C. At other air temperatures, the pressure must be corrected with the formula:

$$p = p_{20} \cdot \sqrt{\frac{(273 + t)}{293}} \quad m^3/s$$

where; p = the actual pressure in Pa
p_{20} = the indicated pressure in Pa
t = prevailing temperature in °C.

5. ELECTRICAL HEATER VEEK

5.1 INSTALLATION

1. The VEEK duct heater is connected to the pressure side of the VEKA hot air unit.
2. The air flow direction through the electrical heater must be as indicated by the arrow on the cover of the heater.
3. VEEK can be mounted in a horizontal or vertical duct. NOTE: Mounting with the connection box. NOTE: Mounting with the connection box facing upwards or downwards is not permitted.
4. The distance from or to a duct elbow, damper, filter or the like should be at least the distance corresponding to the diagonal dimension of the heater, i.e. from corner to corner in the duct part of the heater. There is otherwise a risk of the air flow through the heater becoming uneven, with the risk of the overheating protection tripping. For a duct section with the dimensions 800 x 400 mm, for example, the distance to a duct elbow, damper, filter or the like should be at least approximately 900 mm.
5. The heater must be insulated. The insulation must be executed in an incombustible insulating material. The insulation must not conceal the cover, because the rating plate must be visible and the cover must be capable of being removed.
6. The VEKA unit should be equipped with a filter.
7. The electrical heater should be installed so that cleaning is possible after the system has been taken into service.

   An inspection hatch should be installed in the duct immediately after the electrical heater.
8. A flexible sleeve VEKZ-51 must not be connected directly to the electrical heater.
9. The position of the electrical heater must be marked.
10. NOTE. Fit the equalization plate ahead of the fan opening on the VEKA unit, so that the air flow is distributed over the electrical rods.
11. The air flow through the heater must be at least 0.21-0.23 m^3/s (VEEK-20), 0.3-0.34 m3/s (VEEK-30).
12. The maximum permissible output air temperature is +40° C, and the ambient temperature of the heater must not exceed +30° C.

5.2 CONNECTION

1. Installation may only be carried out by a qualified installer. General regulations must be observed in conjunction with installation and connection.
2. The electrical heater is made for 3-phase alternating current.

   See the electrical wiring diagram for the heater concerned.
3. The VEEK electrical heater is controlled with 0-10 V and a start signal. VEEK emits an alarm signal when the manual overheating protector trips.
4. The current to the elements must not be capable of being switched on unless the associated fan is started beforehand or simultaneously.
5. The current to the associated fan must not be capable of being switched off unless the current to the elements is interrupted beforehand or simultaneously. The fan should continue to run for approximately 5 minutes after the current to the electrical battery is switched off.
6. A permanently installed electrical heater should be provided with a safety switch.
7. The electrical heater is provided with two overheating protectors (of which one is reset manually), intended to prevent overheating at an excessively low air flow and to prevent overheating in the event of a fault in the system.
8. Before using the electrical heater, test operation should be performed after the electrical installation is complete. Tripping of the manual overheating protection indicates the presence of a fault in the installation, which must be corrected immediately. Only then should the protection be reset.

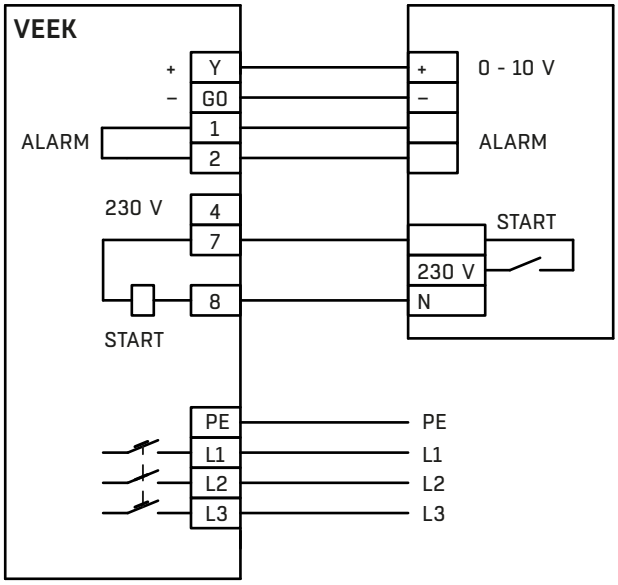
The VEEK electrical heater conforms to the safety requirements according to SEMKO 111 FA-1982 and is approved under European EMC standards EN 50081-1 and EN 50082-1.

VEEK-aa-bb-c-d-3

Size aa	Output version bb	Connection mm	Power output kW	External dimension mm (B x H x L)	Weight kg	Min. air flow m^3/s	Max. power consumption at 400V AC, A
20	11	600x250	9	769x288x800	30	0,225	13
20	12	600x250	15	769x288x800	35	0,225	22
20	13	600x250	21	769x288x800	40	0,225	30
30	23	900x250	24	1069x288x800	48	0,338	35

5. ELECTRICAL HEATER VEEK

5.2 CONNECTION, CONT.



If the unit is ordered with built-in control system ISYteq Mini, see separate instruction.

ELECTRICAL DATA

Size[1)]	Power, kW	Current, A	Voltage, V
20	9	13	3 x 400 V
20	15	22	3 x 400 V
20	21	30	3 x 400 V
30	24	35	3 x 400 V

[1)] Electrical heater has separate power supply.

5.3 OVERHEATING

Proceed as follows if the overheating protection with manual resetting trips:

1. Intervention in the electrical heater, such as removing the cover, must only be performed by an authorized installer.
2. Disconnect the current
3. Carefully investigate the reason for tripping of the overheating protection.
4. Once the fault has been corrected, the overheating protection can be reset.

Check the following:

1. Is the filter dirty or blocked?
2. Has any fire damper tripped?
3. Is the automatic system (damper function, time relays, etc.) functioning as expected?
4. Is the fan working?

6. MAINTENANCE

6.1 FILTER

The VEKA unit requires regular service of the filter in order to function without problems. A contaminated filter can cause tripping of the overheating protection. See service chart, section 6.3.

For all air handling units placed on the european market after 1st January 2018 the EU regulation 1253/2014 states that they must be equipped with a visual signal or signal to the control system for filter change. All FläktGroup AHU with integrated controls is equipped with alarm or monitoring of filter pressure drop. For units without FläktGroup AHU controller this must be arranged by the installer.

6.2 FANS

MAINTENANCE

Make an inspection and if necessary clean the fan according to Service Schedule, section 6.3.

CLEANING

Important! Turn off the safety switch and wait for the impeller to stop before inspection and service.

The best way to clean the impeller is to use a vacuum cleaner attached with a soft dusting brush. To prevent imbalance, clean all fan blades carefully. After the cleaning check that the fan runs without vibrations.

PRECAUTIONS BEFORE STARTUP

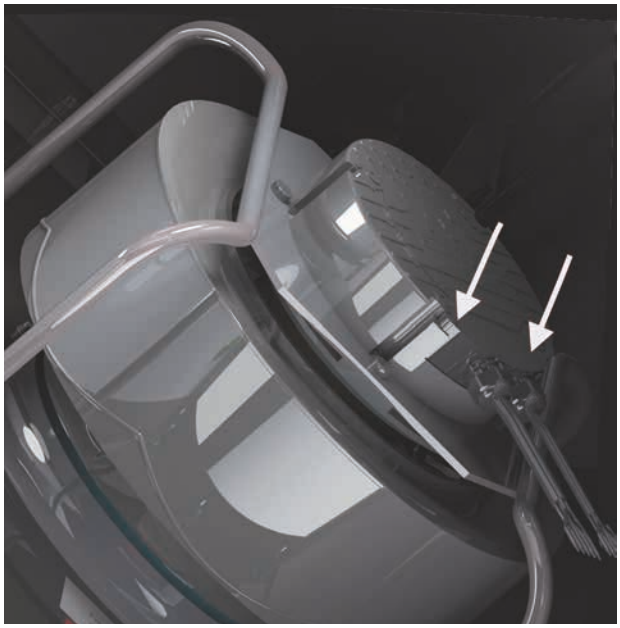
Before startup, check that the impeller rotates freely and that there are no foreign objects which could be drawn into and damage the fan.

LUBRICATING THE FAN MOTOR

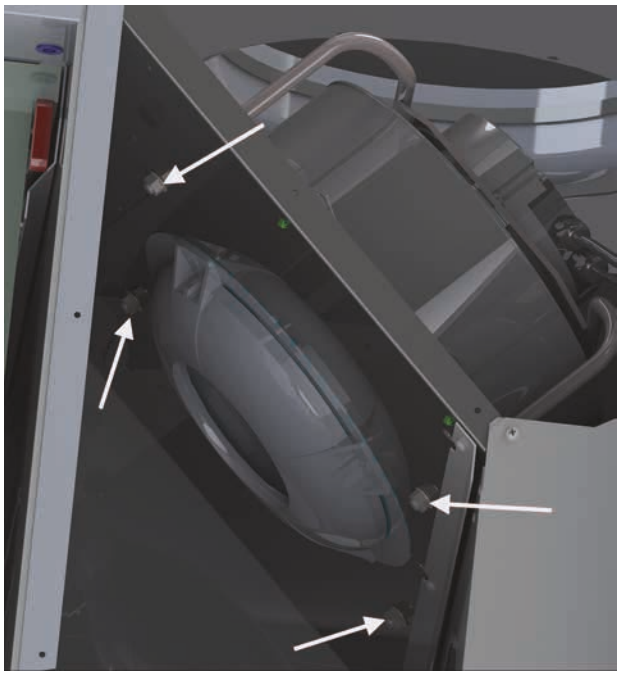
The fan motor bearings are factory lubricated and maintenance free.

REMOVAL OF FAN

1. Disconnect the control cable with fittings.



2. Remove the nuts from the fan.



3. Remove the fan.

6. MAINTENANCE

6.3 SERVICE CHART

INSPECTION INTERVALS

The service chart includes the service and inspection operations to be performed on functional components that may be part of an air handling unit. The unit contains one or more of these functional components. Any components that are not relevant may be deleted from the service chart.

The chart shall be dated and signed each time servicing is carried out. The length of the service interval is estimated at 2000 operating hours over a 12-month period and for an installation providing a normal comfort level.

In environments with a high level of dust in the supply air or exhaust air, inspection of the air handling unit shall be performed at more frequent intervals.

Follow the service chart below and fill in operations carried out.

Replacement material

1. Damper
   - Gasket
2. Filter
   - Gasket
   - Filter cassette
3. General
   - Fuses
   - Top up manometer fluid as required.

Applies from 20 .... to 20 ....

Symbol	3-month/9-month service			6-month service		12-month service	
	Action	Month	Date/ Signed	Action	Date/ Signed	Action	Date/ Signed
Air Handling unit 	Cleaning	3		Cleaning		Cleaning	
		9					
Filter 	Checking pressure drop and any filter replacement .	3		Checking pressure drop and any filter replacement .		Checking pressure drop and any filter replacement .	
		9					
Fan 	General service	3		General service		Cleaning impeller, casing, unit casing. Checking bearings.	
		9					
Damper 	Checking operation and gasket. Replace gasket if necessary.	3		Checking operation and gasket. Replace gasket if necessary.		Checking operation and gasket. Replace gasket if necessary.	
		9					
Air heater Air cooler 	General service	3		Cleaning heat exchanger and electric heating rods.		Cleaning heat exchanger, electric heating rods, drainage tray and casing.	
		9					
Silencer 	Cleaning as necessary	3		Cleaning as necessar		Cleaning as necessar	
		9					
Casing						Check door seals. Internal cleaning as necessary.	

7. DECLARATION OF INCORPORATION OF PARTLY COMPLETED MACHINERY

ENCLOSURE II A

Försäkran om maskinens överenstämmelse
Declaration of Conformity

med EG:s Maskindirektiv / *with the EU Directive for Machinery*, **2006/42/EC**
EG:s EMC Direktiv / *with the (EMC) Directive*, **2014/30/EU**
EG:s Direktiv för energirelaterade produkter /
EU Directive for Energy related Products **ErP 2009/125/EC**

Tillverkaren
Manufacturer

FläktGroup Sweden AB
Fläktgatan 1
551 84 Jönköping

Försäkrar härmed att: / *Herewith declares that*:

Produkten
Product

Typ / *Type*: Ventilationsaggregat / Ventilation Unit
Fabrikat / *Manufacturer:* FläktGroup Sweden AB
Varunamn / *Commercial name:* **VEKA**

Maskinen är konstruerad och tillverkad i enlighet med följande standarder, i tillämpliga delar:
The machine is designed and manufactured in accordance with the following standards, in relevant parts.

EN ISO 12100	Maskinsäkerhet – Allmänna konstruktionsprinciper – Riskbedömning och riskreducering *Safety of machinery – General principles for design- Risk assessment and risk reduction*
EN 60204-1	Maskinsäkerhet – Maskiners elutrustning, Del 1: allmänna fordringar *Safety of machinery; electrical equipment of machines; general requirements*
EN 61000-6-2	Elektromagnetisk kompatibilitet (EMC) - Del 6-2: Generella fordringar - Immunitet hos utrustning i industrimiljö *Electromagnetic compability (EMC) - Part 6-2: Generic standards – Immunity standard for industrial environments.*
EN 61000-6-3	Elektromagnetisk kompatibilitet (EMC) - Del 6-3: Generella fordringar - Emission från utrustning i bostäder, kontor, butiker och liknande miljöer. *Emission standard for residential, commercial and light-industrial environments.*

För produkten har riskanalys upprättats enligt krav i Maskindirektivet. /
A risk analysis has been made according to requirements of the Directive for Machinery.

Behörig
Authorized

Att sammanställa teknisk dokumentation:
To prepare technical documentation:
Anders Jacobsson – R&D Director
FläktGroup Sweden AB
Fläktgatan 1
551 84 Jönköping

Försäkran gäller endast om installation av aggregatet skett enligt FläktGroups instruktioner och förutsatt att inga ändringar gjorts på aggregatet.
The declaration applies only to the installation made according to FläktGroups instructions and assuming no changes made to the unit.

Jönköping 2019.01.01

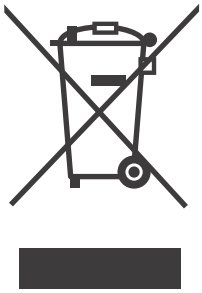
Björn Norling, Quality Manager, FläktGroup Sweden AB, Jönköping

FläktGroup Sweden AB

Postal Address	Street Address	Telephone	Telefax	Reg. no:
FläkGroup Sweden AB	Fläktgatan 1	Nat 036 - 19 30 00	Nat 036 - 19 31 40	556239-2463
S-551 84	Jönköping	Int +46 36 19 30 00	Int +46 36 19 31 40	Reg. office:
Sweden				Jönköping

9967SE_GB_VEKC_ Declaration of Conformity(2A)201705.docx

8. DISPOSAL OF PRODUCT AND PACKAGING MATERIALS



Recycling should be made in accordance with local regulations. When the product is scrapped the following parts/components/materials shall be sorted. Depending on what product it is may not all parts/components/materials be represented.

– Printed circuit boards, cables, batteries, motors, sensors etc.
- Filters, except made of pure metal (in cooker hoods).
- Packaging materials, such as cardboard, plastic and styrofoam.
- The units casing may contain condense- or mineral wool insulation sandwiched between the inner and outer shell.
- The remaining parts shall be sorted as metallic.
- Lamps and fluorescent lights.

See www.flaktgroup.com for recycling instructions.

FläktGroup®

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EXCELLENCE IN SOLUTIONS

FläktGroup is the European market leader for smart and energy efficient Indoor Air and Critical Air solutions to support every application area. We offer our customers innovative technologies, high quality and outstanding performance supported by more than a century of accumulated industry experience. The widest product range in the market, and strong market presence in 65 countries worldwide, guarantee that we are always by your side, ready to deliver Excellence in Solutions.

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