

Supply air unit VEKA

Installation & Maintenance



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FlaktWoods

Safety instructions

Operating the air treatment unit and accessory components

WARNING



Before the air treatment unit is taken into service, any free connections must be provided with protective nets.



The air treatment unit must also not be taken out of service until all electrical and mechanical safety devices have been fitted.

If any interventions are required, check that the voltage supply to the unit is interrupted. Note that any electrical air heaters have a separate electrical supply, which is not interrupted via the air treatment unit's main switch.

Great care must be taken when opening the venting connections for heating water to an air heater. Risk of fluid hammering.

In conjunction with service or inspection, the main switch of the unit must be turned off before opening the inspection doors. Before restarting, all safety devices must be refitted.

A free space (safety distance) must be maintained in front of electrical heaters and electrical control cabinets according to the applicable electrical safety regulations.

Use the control display to stop the unit.

The unit's hatches are provided with a locking handle. Ensure that the unit is always left in the locked position.

Inspection hatches on filter/fan parts must not be opened when the unit is running, in view of the major risk of overloading the fan motor. There is also a risk of personal injury or damage to the fan due to objects being sucked in.

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.

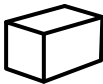





In environments with a high level of dust in the supply air or exhaust air, inspection of the air handling unit shall be performed at more frequent intervals.

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

Replacement material

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

Applicable from. 20..... to 20.....

Symbol	3-month-service / 9-month-service			6-month-service		12-month-service	
	Operation	Mon.	Date Sign.	Operation	Date Sign.	Operation	Date Sign.
Air treatment unit 	Cleaning	3		Cleaning		Cleaning	
		9					
Filter 	Check pressure drop and need for filter replacement.	3		Check pressure drop and need for filter replacement.		Check pressure drop and need for filter replacement.	
		9					
Fan 	General inspection.	3		General inspection.		Clean impeller wheel cover and unit casing. Check bearings.	
		9					
Damper 	Check function and gasket. Replace gasket if required.	3		Check function and gasket. Replace gasket if required.		Check function and gasket. Replace gasket if required.	
		9					
Air heater Air cooler 	General inspection	3		Clean finned body.		Clean finned body drainage box and casing.	
		9					
Sound attenuator 	Cleaning as required.	3		Cleaning as required.		Cleaning as required.	
		9					
Casing						Check door packings. Inside cleaning as required.	

Installation/Care

Lifting and transport

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.

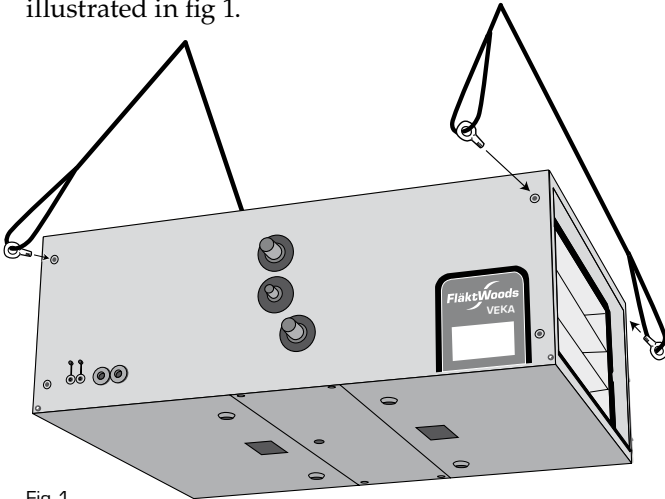


Fig 1

Suspension from the ceiling

The fixing eyes referred to above are used by passing hangers through the eyes, 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.

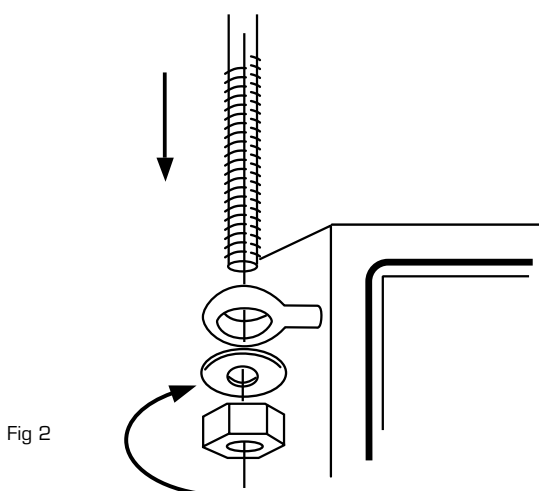


Fig 2

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.

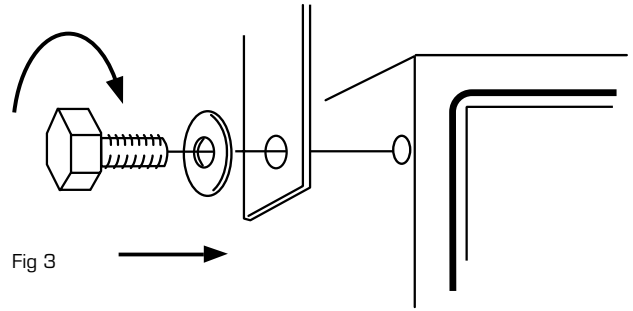


Fig 3

Suspension on a wall

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.

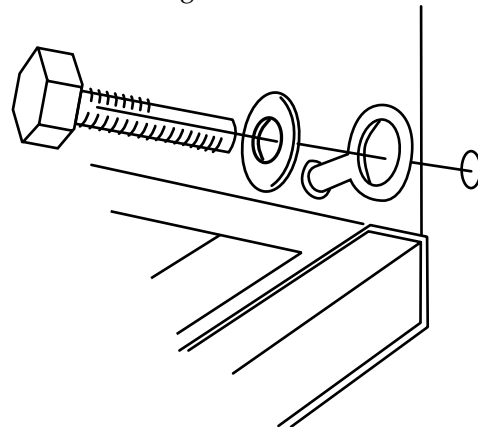


Fig 4

Installation/Care

Installation of cut-off damper VEKV.

Cut-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.

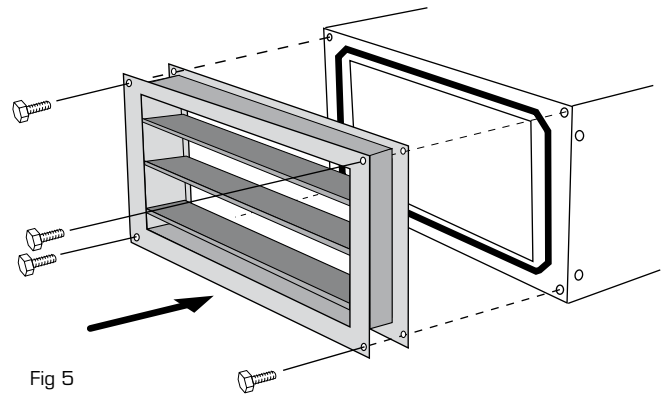


Fig 5

Connection to duct

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

Water connection of air heater and air cooler.

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.

When connecting the pipes, account must be taken of the risk of rupture damage; see fig 7.

Pipelines must be laid so that venting can take place in the pipe system.

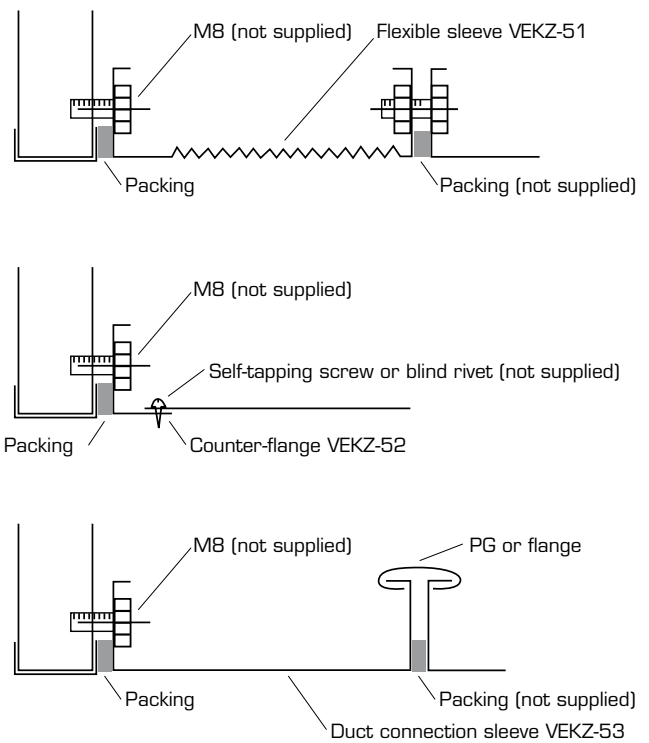


Fig 6

Installation/Care

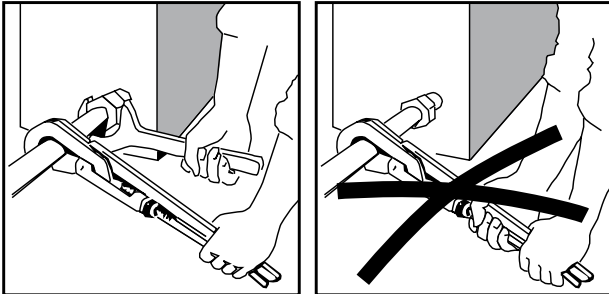


Fig 7.

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.

Connection of fan to electricity mains supply

Electrical connection must be carried out by a qualified electrician.

Cable penetrations are provided in the side panel of the unit.

The cable must be rubber insulated and must not be stretched so that motor vibrations are transmitted to the casing.

A safety switch is positioned in the vicinity of the fan and must always be used to interrupt the current before opening the inspection hatch.

Checks before starting

- 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.

Starting

The fan must not be started with the dampers closed on the suction side or the pressure side.

Brief operation to determine the direction of rotation of the wheel can be performed with a hatch open.

Storage before installation

The storage space must not be subjected to vibrations that may give rise to storage damage from the surroundings.

If the storage period exceeds 3 months, the impeller wheels should be rotated by hand at regular intervals.

Care

In order for the unit to function reliably year after year, it must be given correct and continuous care.

The following recommended service chart is based on approximately 2000 operating hours per year.

Function	Every 3/9 months	Every 6 months	Every 12 months
Filter	Check pressure drop.	Kontroll av tryckfall.	Kontroll av tryckfall
	Filter replacement, if required	Filter replacement, if required	Filter replacement, if required
Water battery	General inspection	Cleaning of finned body	Cleaning of finned body and drain trough.
Fan	General inspection	General inspection	Cleaning of impeller wheel, cover and unit case. General functional inspection.

Electrical heater VEEK

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 cut-off damper should be provided with a mechanically closing damper motor (spring-assisted return) if a water battery is present in the unit.
12. The air flow through the heater must be at least 0.21-0.23 m³/s (VEEK-20), 0.3-0.34 m³/s (VEEK-30).

13. The maximum permissible output air temperature is +40 °C, and the ambient temperature of the heater must not exceed +30 °C.

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-e-4

Size aa	Output variant bb	Connection mm	Power output (1-stage), kW	External dimension mm (BxHxL) kg	Weight m ² /s	Min air flow	Max power consumption at 400V AC
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

Electrical heater VEEK

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:

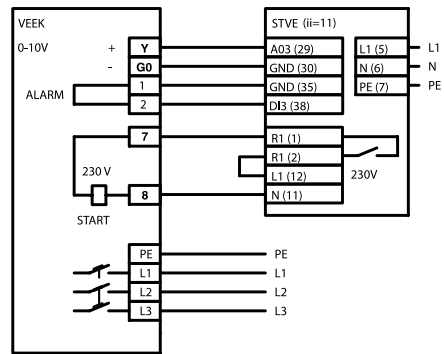
1. Is the filter dirty or blocked?
2. Has any fire damper tripped?
3. Is the automatic system (damper function, time relays, etc.) functioning as expected?
4. Is the fan working?

Filter service

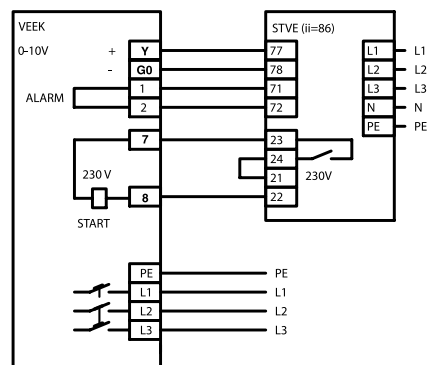
The VEKA unit with an electrical heater requires regular servicing of the filter in order to function without problems.

A contaminated filter can cause tripping of the overheating protection. See the care instructions for the VEKA unit under the point "Replacement of filter". The electrical heater element is of the rod type, which reduces the risk of contamination. The unit should be cleaned internally, therefore, in conjunction with filter replacement or every six months.

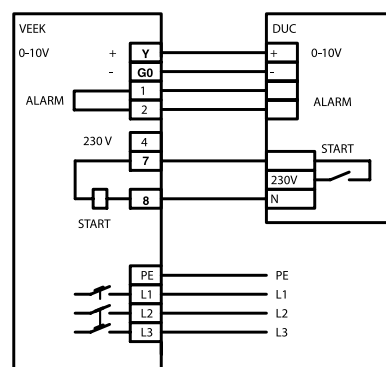
Integrated control STVE (ii=11)



Separate control unit STVE (ii=86)



DDC-control



Electric wiring of 3-phase motor

Connection for fixed max speed

With this wiring method, the motor runs at maximum speed (direct mains connection). Control via, for example, a clock or manual switch. The motor has a thermal contact which acts as an overheating cut-out between the internal connections T1 and T2. The thermal contact ought to be connected to the start contact's control circuit. See diagram 1.

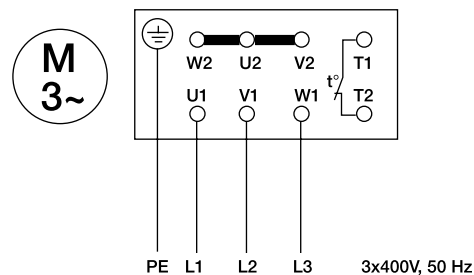


Diagram 1. Connection for max speed

Electric wiring of 3-phase motor

By straight connecting of the motor it runs with maximum speed. The thermal overload relay needs to be connected to the control circuit of the starting relay. If the safety switch STVZ-66-2-1 is factory mounted the connection is done according to diagram 2.

The start up of the unit

The unit is equipped with a sensor and manometer connections for air volume measuring. The pressure difference has to be measured and the corresponding air flow is shown in the diagram. The motor should not be overloaded by running air volume which are outside the allowed range shown in the fan chart see VEKA catalogue.

At max. speed the nominall current value stamped on the motor plate may not be exceeded.

Please notice instructions shown in the installation instructions and the brochure.

Guarantee terms do not cover damages caused by neglections of instructions.

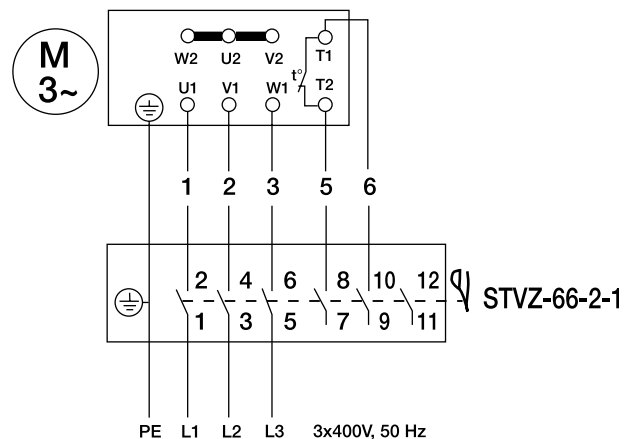


Diagram 2. Connection of 3-phase motor

Connecting the frequency inverter STRF

VEKA-20 and 30 with 3-phase motors can be speed controlled with the loose supplied frequency inverter STRF. The connection strap in the motor's connection box should be set out as in diagram 3 before the frequency inverter is connected. The connection of the frequency inverter is then made as set out in the same diagram. The frequency inverter should be connected to 230 V 1-phase.

Thermal Cut-out/Alarm

The fan motors in the VEKA-20 and 30 are equipped with an integrated thermal cut-out, which is connected so that the fan stops when overheating. The cut-out should also give an alarm. To be used in cases when the fans are not controlled with frequency inverter.

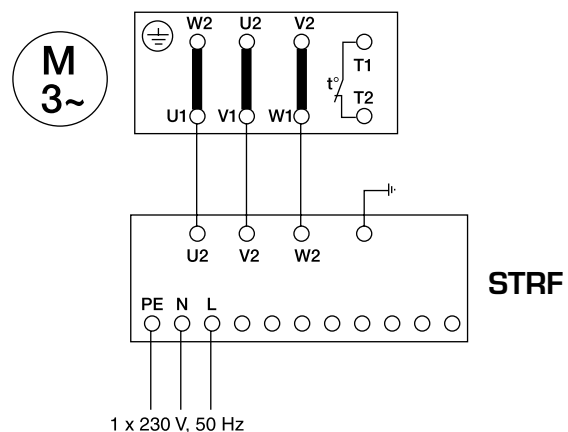


Diagram 3. Connection of frequency inverter STRF

Flow indicator VEKZ-27-1

Flow indicator systematic error is +/- 10%, on condition that the installation and care instructions are observed.

Flow indicator indicates a pressure drop in Pa. A sign with a conversion to m³/s is supplied separately.

Installation

Install the indicator vertically on a wall or on the side of the unit with the screws supplied. Adjust the indicator in the horizontal sense.

Filling with liquid

Follow the instructions supplied in the indicator carton.

Hose connection

Cut the supplied hoses to a suitable length and install them between the nipples on the unit side and the indicator. Clip the hoses securely in place so that they are not damaged or kinked.

Temperature correction

The pressure scale on the indicator does not apply to air at a temperature of +20°C. At other air temperatures, the pressure must be corrected with the formula:

$$p = p_{20} \cdot \sqrt{\frac{[273 + t]}{293}} \text{ m}^3/\text{s}$$

where p = the actual pressure, p₂₀ = the indicated pressure and t = prevailing temperature in °C.

