Installation and EN **VEX400** maintenance manual aldes www.aldes.com



1.	RECOMMENDATIONS AND SAFETY INSTRUCTIONS	4
	1.1. Personal safety	4
	1.2. Precautions for installation and maintenance	4
ი		5
2		5
	2.1. General information	5
	2.2. Transport on site	5
	2.3. Parts supplied with the unit	6
	2.3.1. Water coll option	6
	2.4. Installation of the unit	0
	2.4.1. General Information	٥
	2.4.2. Exterior version	0 7
	2.5.1 Right-hand version	1 7
	2.5.2 Left-hand version	1
	2.6. Installation of the temperature probe (air supply sensor)	7
	2.7. Fitting of options/accessories	8
	2.7.1. Installation of adapters	9
	2.7.2. Installation of hoods	9
	2.7.3. Installation of air inlet/outlet damper	9
	2.7.4. Connection of standard flexible sleeves	.11
	2.7.5. Connection of the CO2 sensor	.11
	2.7.6. Internal water coil option	.12
	2.7.7. Constant pressure option	.13
	2.8. Hydraulic connection	.14
	2.8.1. Connecting condensates general	.14
	2.8.2. Connecting condensates heat exchanger	.14
	2.9. Connection to the electrical supply	.15
	2.9.1. Control - Power principle	.15
	2.9.2. Electrical cable connections - power or control	.16
	2.9.3. General power connection (single-phase) of the unit	.16
	2.9.4. Detrosting coll or neating coll power connection (optional)	. /
	2.10.1 Eiter replacement following timer	.17
	2.10.2. Filter replacement following clogging indicator	. 17
	2.10.2. The replacement onowing clogging indicator	. 17 19
	2 11 1 Remote control use	18

3. DIMENSIONS	19
3.1. Unit dimensions	19
3.2. Outside accessory dimensions	
3.2.1. Roof cowl	
3.2.2. Rain hoods	
3.2.3. Shut-off dampers	
3.2.4. Adapter drawings	
3.2.5. Flexible sleeve drawings	21
4. CONTROL OPTIONS	22

1. RECOMMENDATIONS AND SAFETY INSTRUCTIONS

Read the manual carefully before starting to install the equipment and keep it in good condition near the equipment throughout its lifetime.

1.1. Personal safety

- This device may be used by children at least eight years old and by persons with impaired physical, sensory or mental capacities, or with no experience or previous knowledge, on the condition that they are correctly supervised or that they have received instructions on the safe operation of the device and if the potential risks have been understood.
- Children should not be permitted to play with the device. User cleaning and servicing tasks should not be done by children without suitable supervision.

1.2. Precautions for installation and maintenance

- Installing a VEX unit can be risky due to live components or moving mechanical parts. This equipment must be installed, commissioned and repaired by qualified, trained personnel, in compliance with the standards in force and best practices.
- Any servicing or maintenance operation that necessitates opening the access doors or removing components from the unit must be carried out by a qualified professional without fail.
- Electrical connections must be made by a qualified professional according to the rules of French standard NF C 15-100.
- In particular, a circuit breaker device with an opening distance of at least 3 mm on each pole, as well as a protective relay with a suitable current rating, must be installed in the fixed ducts (circuit breaker). The copper conductor sections are defined in Sections 2.9.3 and 2.9.4 of the installation manual.
- The product's power supplies must be switched off before any maintenance or cleaning operation.
- Make sure that the unit cannot start running accidentally.
- If one of the power supply cords is damaged, it must be replaced by the professional who installed the product or similarly qualified persons to avoid danger.
- Overheating of the motor will reduce its modulation in linear fashion. When it exceeds its maximum permitted inside temperature, the controller stops
 the motor and restarts automatically after cooling. Should the motor fail (signal fault in the motor's built-in circuit, phase breakdown, motor blocked,
 short circuit at the earth or internal short circuit, intermediate and network under-voltage or over-voltage, peak current fault), an alarm triggers the
 stopping of the unit. Switch off the power supply (circuit breaker on electrical switchboard), check that nothing is hindering the operation of the unit
 (for example, blocking, rubbing, fouling of the wheel, abnormal noise, etc.).
- If the problem persists, contact your installer or vendor.
- Only use genuine replacement parts supplied by the manufacturer.
- For units fitted with an electrical heating coil: where there are multiple failures of the electrical coil control and if the air supply compartment overheats (ambient temperature > 80°C), a thermostat with automatic reset will trigger the stopping of the electrical coil. The electrical coil is fitted, moreover, with a thermostat with manual reset activating at 120°C located in a thimble, between the resistors.
- The equipment must not be modified in any way to avoid invalidating the warranty.
- Service the equipment regularly to ensure its smooth operation.



2.1. General information

Caution: the purpose of this document is to guide the installation of the unit. For a fully-compliant installation, refer to the legislation in force in the country of installation (e.g. NF DTU 68-3 part 1.1.4).



The unit's rating plate is duplicated. One plate is located on the back of the quick access hatch and another on the side panel. The unit is packed in plastic film, protected with cardboard corners. All accessories ordered with the unit are supplied unfitted. See Section 0 for the fitting of accessories.

Caution: do not drill into the panel between the two access doors or the floors as they carry cable networks!

2.2. Transport on site

The unit is mounted on cross bars. When using a forklift truck for transport, make sure that the forks are long enough to support all the side rails. Make sure you do not damage the cross bars when inserting the forks under the unit (plan for a gap of at least 200 mm).



Handling with slings: use handling bars placed in the cross bars. The rigidity at the sag of bars must be adapted to the weight of the crate. Place the sling buckles around the handling bars and place spreaders above the unit to avoid damaging the structure. See diagram below. mounted. See Section 0 for the fitting of accessories.

Caution: if a water coil is fitted, condensates are discharged in the air intake leg! Make sure the hose is not damaged when inserting the bars.



Space required for servicing: it must be possible to open the two side doors at least 90° so that filters can be replaced.

2.3. Parts supplied with the unit

A box is placed in the unit containing a water trap with diaphragm to evacuate condensates from the heat exchanger. Depending on the options chosen, a 3-way valve and a servomotor and a water trap with diaphragm for condensate evacuation from cold coils are all supplied. Depending on the options chosen, probes, transparent tubes and pressure taps are pre-connected, on stand-by in the side rail air supply side.

All the notices for the use of the unit are behind the new air filter access door. An SD board with USB adapter, containing the software setting and configuration, is provided in one of the pockets.

A water trap with diaphragm is placed in the box and must be installed after the heat exchanger condensate evacuation hose. See Section 2.8.1.

An air intake probe is connected to the control board, placed on stand-by in the side rail air intake side. See Section 2.6 for the installation.

2.3.1. Water coil option

2.4. Installation of the unit

2.4.1. General information

Mount the unit's legs on a flat, stable surface (flat ground for condensates).

It is advisable to install an anti-vibration device between the unit's legs and the frame (e.g. studs or carpet) and between the connections and the aeraulic ductwork (e.g. flexible sleeve).

When installing the unit and connecting ducts and electric cables, make sure not to obstruct the access points so that the internal functional components can be extracted easily and the unit can be connected electrically.



2.4.2. Exterior version

The VEX400 units are protected against spraying water IP24 excluding connections. Units intended for outside use are fitted with a roof. To protect the internal compartments of the unit from rain, a rain hood (sold as option) must be installed on the air inlets and outlets if they have no duct fitted. We also recommend installing, in outside version, shut-off dampers on the air inlet and outlet openings in order to isolate the unit.

Caution: A roof installation must comply with the DTU 43.1, Chap. 5.4. The unit is larger with the hood and the roof! See Section 2.7.2 for the hood installation and Section 3 for the dimensions.

2.5. Airflow direction

There is a right-hand and a left-hand version

2.5.1. Right-hand version



Fresh airflow towards the right

2.5.2. Left-hand version



Fresh airflow towards the left

2.6. Installation of the temperature probe (air supply sensor)

The air supply temperature probe is supplied connected to the electronic board, in stand-by in the side rail air intake side. It must be positioned in the air supply duct. The probe is held along a metal rod passing through a cable gland PG 9, which is itself fixed to a metal bracket, ensuring that the duct is leaktight. Two self-tapping screws are delivered with the unit to fix this plate.

7



See the diagram below for the position of the air supply probe in a right-hand machine version (fresh air flow directed towards the right):



Caution: When the system has a hot (water or electric), cold or changeover coil, the probe must be positioned at least 1.5 metres after these heating components - to guarantee a uniform temperature in the section.

Drill a hole between Ø21 mm and Ø30 mm in the duct so that the probe and gland can be threaded through. Apply a bead of mastic to the metal plate around the gland to make the duct leaktight. Insert the two self-tapping screws to fix the plate to the duct.

2.7. Fitting of options/accessories

The two side panels are fitted with M8 inserts at each corner of the opening frame to accommodate the external accessories (adapters - hoods).



2.7.1. Installation of adapters



The adapters are supplied with four screws M8 to install them on the unit. Glue the seal 10x20, supplied with the unit, to the connection between the inserts M8 and the opening to keep the unit leaktight (air and water) between the adapter and the unit. Then screw each adapter into the frame inserts. Circular ducts must be fitted with a seal to connect them. See the diameters per machine in Section 3.3.

Isolate the ducts and shape parts in accordance with the standards and regulations in force.

2.7.2. Installation of hoods



The hoods are supplied with screws M8 and a self-adhesive seal of section 10/20 mm in EPDM. Glue the seal to the hood flange to keep the structure leaktight.

The hoods protect the unit from water ingress. They can be fixed to the opening frame, a damper or a rectangular duct.

Caution: To avoid recirculation of discharged air towards fresh air, plan for at least 4 mm between the air inlet and outlet (see DTU 68-3 part 1-1-4 for residential buildings). For service buildings, the RSDT makes it mandatory for "the extract air from premises must be discharged at least eight metres from any window or fresh air intake".

See Section 3.2.2 for hood dimensions.

2.7.3 Installation of air inlet/outlet damper



2.7.3.1. Fixing of dampers

The dampers are supplied with pre-cables, fitted servomotors, an "RG" connecting cable (be there one or two dampers), a junction box, self-tapping screws and screws M8. Make the structure leaktight and screw each damper into the inserts on the opening frame.

2.7.3.2. Electrical connection of air inlet-outlet dampers

Thread the "RG" cable into the side rail through the cable gland provided for this purpose and bring the cable out on the side panel on the side of the shut-off dampers (fresh air/discharged air side). Fix the junction box to this side panel, between the two dampers, with self-tapping screws. Thread the "RG" cable through one of the glands in the junction box.

The junction box is used to connect the damper's servomotor cable to the "RG" connecting cable. When there are two dampers (air inlet and outlet), the two servomotor cables are connected in parallel. Wire the equipment (see diagram below) according to the configuration - one or two dampers.



Once this wiring has been completed, shut-off damper side, wire the equipment electronic board side. To ensure that the junction box is leaktight, thread the "RG" cable through one of the right-hand cable glands PG9, located under the junction box. Connect the two "red and black" strands in the "RG" cable to the two terminals of connector "1". See diagram below:

Caution: the strand me must be connected to the +24V and the strand me to the earth.



See Section 3.2.3 for shut-off damper dimensions.

2.7.4. Connection of standard flexible sleeves



The flexible sleeve is a layer of glass fibre, fire class M0, supplied with four screws M8, eight washers and four nuts. This sleeve can be fixed to a damper or directly to the opening frames. See Section 3.4. for sleeve dimensions.

Screw each flexible sleeve into the inserts on the opening frame or to the shut-off dampers, assembling washer, screw and nut at each assembly corner. Isolate the ducts in accordance with the standards and regulations in force.

The kit includes two cables RJ12, a split RJ12 (two female inlets > one female outlet) and a module "OJ Air" LON". The assembly is pre-wired and factory-fitted at the connection terminal block.

Connect the cable RJ12 labelled "R11", on stand-by in the side rail, to one of the two female sockets RJ12 available on the LON module. The LonWorks network cable must be connected to the module "OJ Air2 LON" via the two-point PTR connector on the module.

2.7.5. Connection of the CO₂ sensor

The "SENS" CO2 probe, ref. 11017090, is supplied as a an accessory. It must be connected to terminals 3 and 4 on the board as per the drawing below:



2.7.6. Internal water coil option

The internal water coils are supplied with a motorised, pre-wired 3-way valve, a "Water Bat" control cable and a "TAG" temperature probe (to measure the temperature of the fluid circulating in the coil and prevent the water circuit from potentially icing up).

The "Water Bat" cable and the temperature probe are connected to one side on the electronic board. On the other side, they are on stand-by in the side rail, air supply side, ready to be connected by the fitter.

Connect the 3-way valve and the coil collectors hydraulically.

Connect the male connector of the "Water Bat" cable to the female connector on the servomotor.

Caution: the electrical connections on outside equipment or equipment located in a moist environment must be watertight. It is recommended to protect the connections between the servomotor cable and the "Water Bat" cable by at least class IPX5 protection.



Position the temperature probe in the 3-way valve on the internal coil, reverse water flow side, with a plastic collar. To increase the accuracy of the fluid temperature measurement, isolate the probe and the 3-way valve (see wiring diagram below)



2.7.7. Constant pressure option

In constant pressure option, the unit is going to maintain a constant pressure in the network (at beginning of network - unit outlet air supply side and at end of network - unit inlet extraction side). To achieve this, the unit must measure the differential static pressure between the network airflow and the ambient air in each flow. These two pressure sensors are located in the electrical box. On each sensor, one of the two pressure taps is free (measurement of the static atmospheric pressure) and the other is connected to a transparent capillary tube, on stand-by in the side rail air supply side. These two capillary tubes are equipped with pressure taps and identified by a "pression insufflation/supply pressure" label to measure the air supply pressure and "pression extraction/extract pressure" to measure the extraction pressure.

Please the pressure tap of the hose marked "supply pressure" on the air supply duct.



Please the pressure tap of the hose marked "extract pressure" on the extraction duct.





Caution: to obtain more accurate measurements, the pressure must be measured where there is the least risk of turbulence, i.e. on a straight section of the duct. The minimum distance to be respected from any disturbance is at least twice the diagonal of a rectangular section and at least twice the diameter of a circular section.

2.8. Hydraulic connection

2.8.1. Connecting condensates general

All condensate evacuations must be connected without fail to a water trap (plate heat exchanger and cold coil optional). These water traps are delivered with every unit, in a box placed in the unit. The water traps with diaphragm are used to combat the negative pressure prevailing in the equipment, so



that condensates can be evacuated or to prevent air leaking from the unit.

Watch out for the risk of frost in winter, plan to insulate the water trap and the evacuation manifold if they are in an unheated atmosphere.

2.8.2. Connecting condensates heat exchanger

Our condensate trays are equipped with an evacuation pipe crossing the floor. This comprises a plughole and a PVC hose Ø32. The water trap with diaphragm is delivered in the box of separate parts. Connect the water trap with diaphragm to the evacuation hose.



2.9. Connection to the electrical supply

Caution: electrical connections must be made by a qualified electrician, wearing the appropriate Personal Protection Equipment. Never work on a live unit. The electrical connection will be in compliance with NF-C 15-100. Each supply network must be protected by an omnipolar circuit breaker with an opening distance of 3 mm per contact. For a single-phase supply, used a leak current differential circuit breaker type A. For a three-phase supply use a leak current differential circuit breaker type B. We recommended a sensitivity of 300 mA for the differential for both these types of supply. The amperage draw recommended for each circuit breaker, according to the sizes of units, is defined in Sections 2.9.3 and 2.9.4. Maximum recommended ambient temperature < 45°C. Do not forget to connect the earth.

2.9.1. Control - Power principle

Every unit has an electrical connection box on the front panel. This box gives access to the electrical power and control components (disconnect switches, cut-off supply, electronic control board, etc.). The unit has a general supply electrical circuit and, depending on the options, an electrical coil circuit (defrosting and heating).

The electrical components are accessed via a hatch equipped with hexagonal recessed head screws M6.



2.9.2. Electrical cable connections - power or control

Loosen the four recessed head screws M6 Torx t30 on the connection box access hatch. Thread the power cables through the cable glands to make the equipment leaktight.

The power cable conductors that are rigid or fitted with end pieces are screwed in the fixed body of each switch.

2.9.3. General power connection (single-phase) of the unit

Thread the power cable through the left-hand cable gland and connect the general power cable to the corresponding switch, according to the wiring diagram below:



2.9.4. Defrosting coil or heating coil power connection (optional)

Thread the coil power cable through one of the cable glands in the middle and connect the coil power cable to the corresponding switch to the wiring diagram below:



Caution: Each coil is run by a static relay, which is likely to generate interference. Using mains filters can prove necessary when the user must meet the EMC requirements (EN/IEC standard).

2.10. Servicing filters

Caution: Filters must be serviced by a person with electrical accreditation, with the machine switched off (live LV conductor).

Filters can be replaced according to a basic available timer or a clogging indicator sold as an option (filter fouling).

2.10.1. Filter replacement following timer

This timer, according to the factory setting, will trigger after three months (the user can configure this value, see configuration guide). We advise changing the filters according to the use and environmental conditions every:

- Filters G4: ISO coarse 60%): Three months
- Filters M5: ISO ePM10 50%): Three months
- Filters F7 Plan only (ISO ePM1 60%): Three months
- G4+ F7 filters: Three months for G4, six months for F7

2.10.2. Filter replacement following clogging indicator

This indicator is produced by a pressure sensor (sold as an option) which, depending on the factory setting, will trigger at the following recommended final head losses:

Filters G4 (ISO coarse 60%): 150 Pa ECO – 200 Pa MAX Filters M5 (ISO ePM10 50%): 200 Pa ECO – 300 Pa MAX Filters F7 Plan (ISO ePM1 60%): 200 Pa ECO – 300 Pa MAX G4+ F7 combination: 350 Pa ECO – 500 Pa MAX

2.11. Remote control communication

2.11.1. Filter replacement following timer

The remote control is fitted with a display, a confirm button, two navigation buttons (+ or -) and eight indication LED. Please refer to the configuration guide to configure the machine when installing it or for any technical intervention.





3.1. Unit dimensions



Model	A (mm)	B (mm)	C (mm)	H (mm)	"Connection between centres fixing F x G (mm)"	Weight (kg)
VEX410	1505	578	628	904	440 x 240	160
VEX420	1822	578	628	1157	440 x 340	205
VEX430	1825	910	954	1157	740 x 340	291
VEX440	2166	910	954	1468	640 x 440	366

3.2. Outside accessory dimensions

3.2.1. Roof cowl



3.2.2. Rain hoods





	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (°)
VEX 410	255	452	240	440	360	35
VEX 420	355	452	340	440	360	25
VEX 430	355	752	340	740	360	25
VEX 440	455	652	440	640	405	25

3.2.3. Shut-off dampers





	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)
VEX 410	270	470	240	440	210	410
VEX 420	370	470	340	440	310	410
VEX 430	370	770	340	740	310	710
VEX 440	470	670	440	640	410	610

3.2.4. Adapter drawings





	A (mm)	B (mm)	C (mm)	D (mm)	ØE (mm)
VEX 410	308	478	240	440	250
VEX 420	418	478	340	440	315
VEX 430	418	778	340	740	355
VEX 440	518	618	440	640	450

3.2.5. Flexible sleeve drawings





	A (mm)	B (mm)	C (mm)	D (mm)	ØE (mm)
VEX 410	270	470	240	440	250
VEX 420	370	470	340	440	315
VEX 430	370	770	340	740	355
VEX 440	470	670	440	640	500

4. CONTROL OPTIONS

Caution: Options must be connected by a person with electrical accreditation, with the machine switched off (live LV conductor).

Several control options are available on the electronic board in the connection box.

To keep the unit watertight and prevent dust from accumulating (which could damage the electrical board or even catch fire in an explosive atmosphere), thread the control cables for the options through the right-hand cable glands, under the connection box. See the option connection diagram on the following electronic board diagram:



- Shut-off damper: see Section 2.7.3.2. + terminal block 1 of the connection diagram below.

- Ventilation control.

- 0-10 V (control of the fan speed according to an external setpoint 0-10 V), see terminal block 4 of the connection diagram above and configuration guide.
- CO₂ probe (control of the fan speed according to the CO₂ concentration level in the room to be treated), see terminal block 4 of the connection diagram above and configuration guide.

- Boost input - digital input.

- If contact is closed: start the third speed during the associated timeout (this can be configured via the MMI) > terminal block 4 of the connection diagram above and configuration guide.
- Fire input digital input. If contact is closed: stop the unit) > terminal block 4 of the connection diagram above and configuration guide.
- Hot/Cold input for changeover water coil option digital input. Water regime change setpoint on the changeover coil:
- If contact open = hot water circuit/Contact closed = cold water circuit > terminal block 4 of the connection diagram above and configuration guide.
- Configurable relay outputs 1 and 2. Configurable relays: Boost started/filter fouled/Blocking alarm type A or non-blocking type B started/Bypass open terminal block 5 of the connection diagram above and configuration guide.

NOTES	

