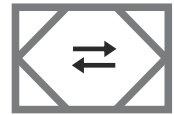


GB

Cold Water Coil

VEX340 CCW

VEX340 CCW-HK



VEX300
R A N G E
COUNTER FLOW
HEAT EXCHANGER

The following accessories are supplied separately

- MCCW Module (Control box for the CCW) and TE22 (Temperature Sensor - Supply Air)
- MVM Valve Kvs _____



Original instructions



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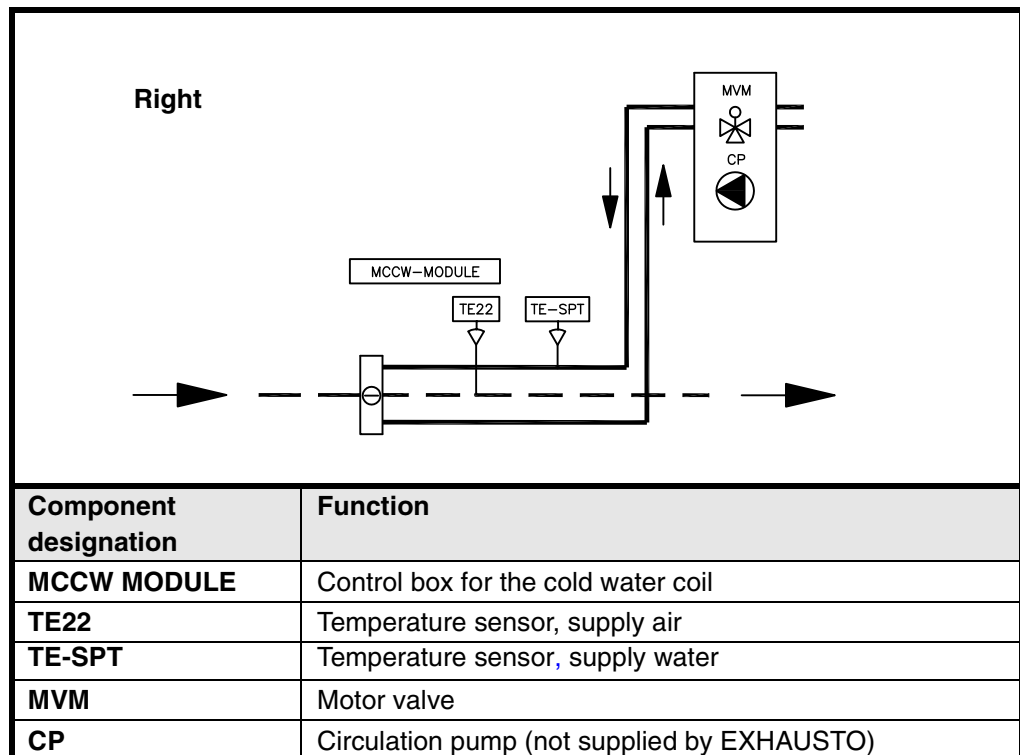


1. Product information

1.1 Usage

The EXHAUSTO cold water coil is available as an accessory to VEX340, and is used for cooling down the supply air. The cold water coil is connected directly to the duct system after the VEX.

Components



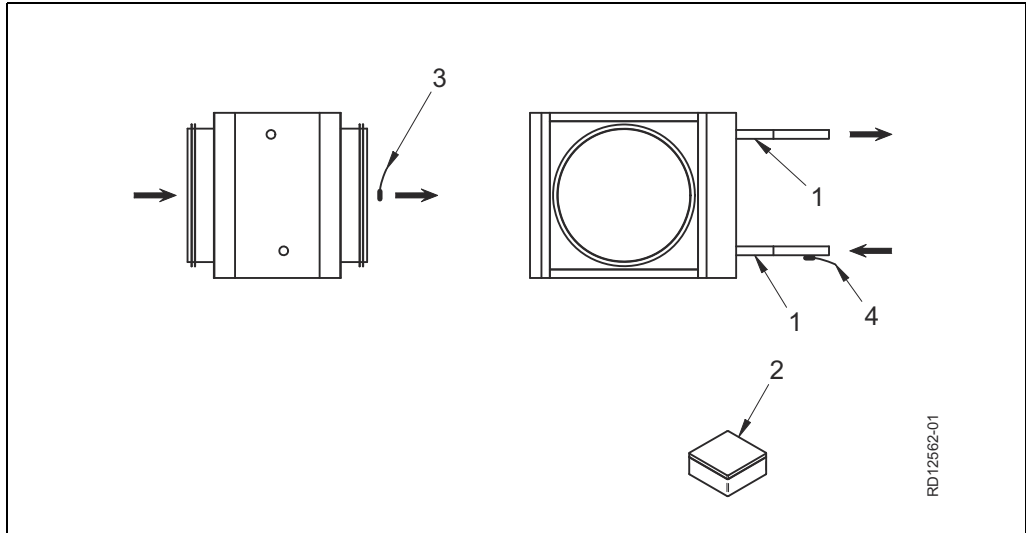
1.2 Description

1.2.1 Design of the cold water coil

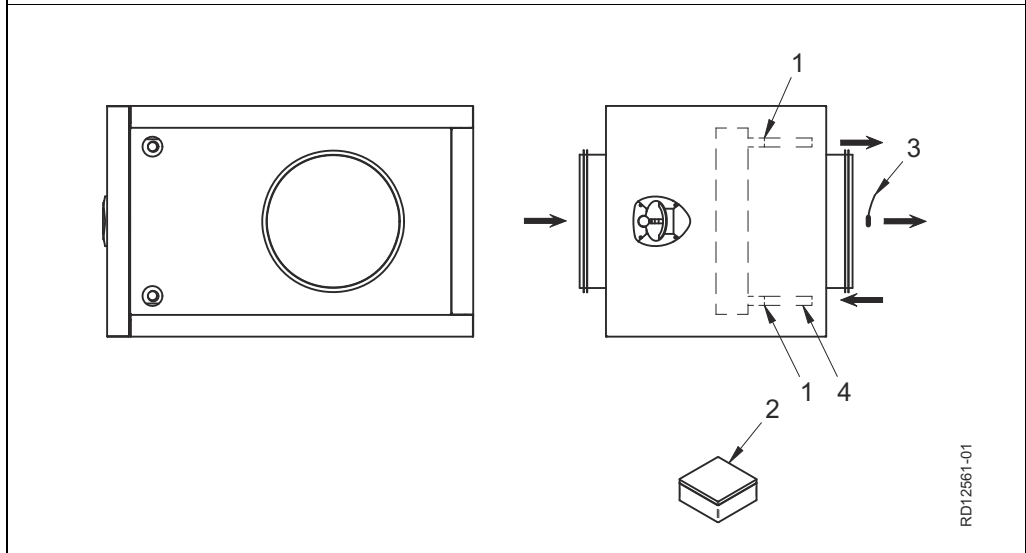
Layout drawing

The diagrams below show the design of the cold water coil:

Uninsulated cold water coil (CCW-HK)



Insulated cold water coil (CCW)

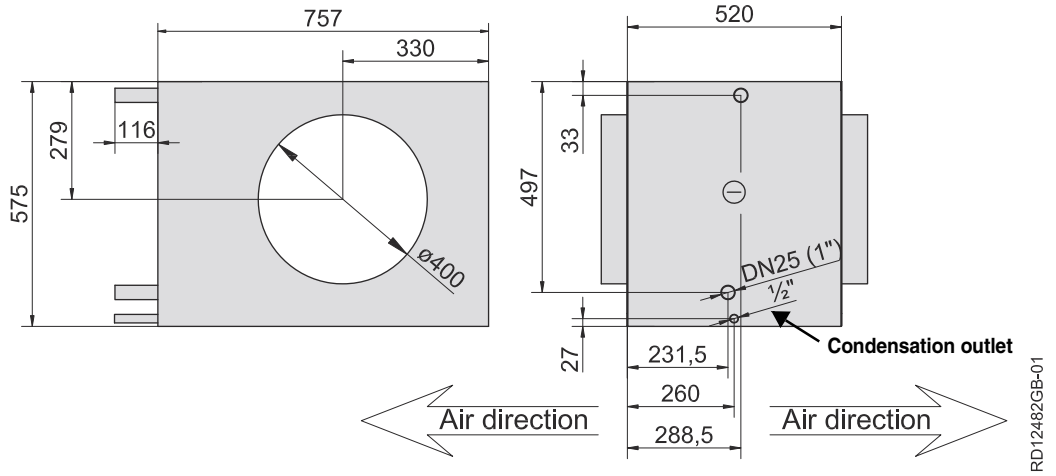


Pos. No.	Part	Function
1	Spigots for connecting water to the system	Water supply to the cold water coil: Return and supply directions are clearly marked on the pipes.
2	Connection box	MCCW connection box for connecting the MVM valve and the temperature sensor, if MVM are chosen.
3	Temperature sensor	Measures the temperature in the supply air duct.
4	TE-SPT; supply water temperature sensor	Measures the temperature of the supply water

1.3 Dimensional sketches

1.3.1 Uninsulated cold water coil (CCW-HK) for VEX340

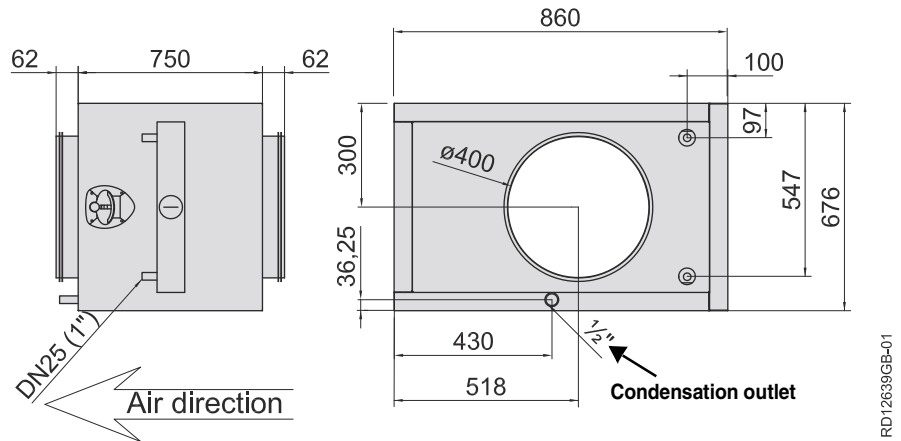
Principal dimensions can be read from the drawing below.



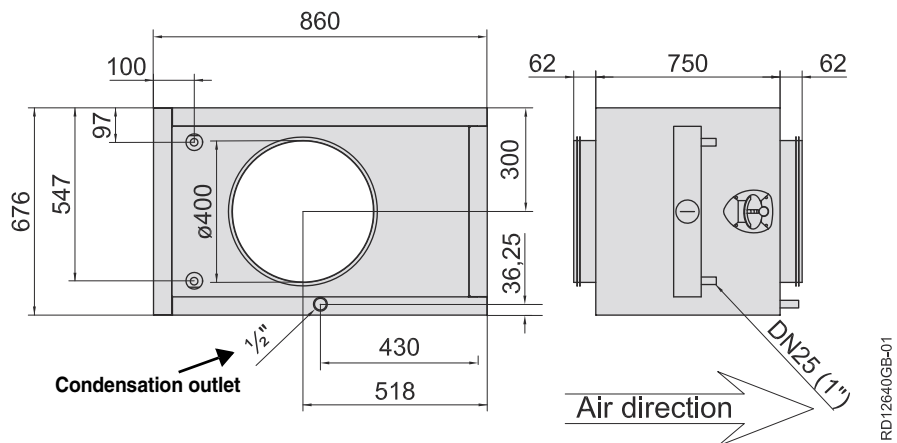
1.3.2 Cold water coil in a cabinet (CCW) for VEX340

Principal dimensions can be read from the drawing below.

VEX340L



VEX340R



For more info on fan positions, see section 2.2, Positioning in relation to the VEX.





2. Mechanical assembly

2.1 Unpacking

The delivered items are:

- CCW cold water coil
- Specified accessories (indicated in the checklist on the front page of the instructions)

2.1.1 Weight

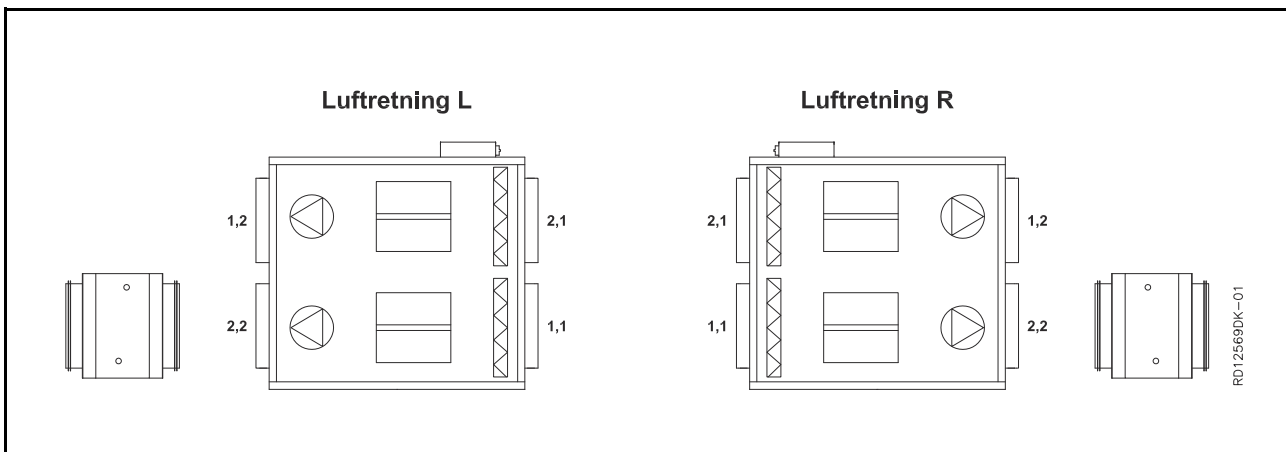
Cold water coil, weight in kg.	Uninsulated	With cabinet
CCW340	39	72

2.2 Positioning in relation to the VEX

2.2.1 Left/Right positioning

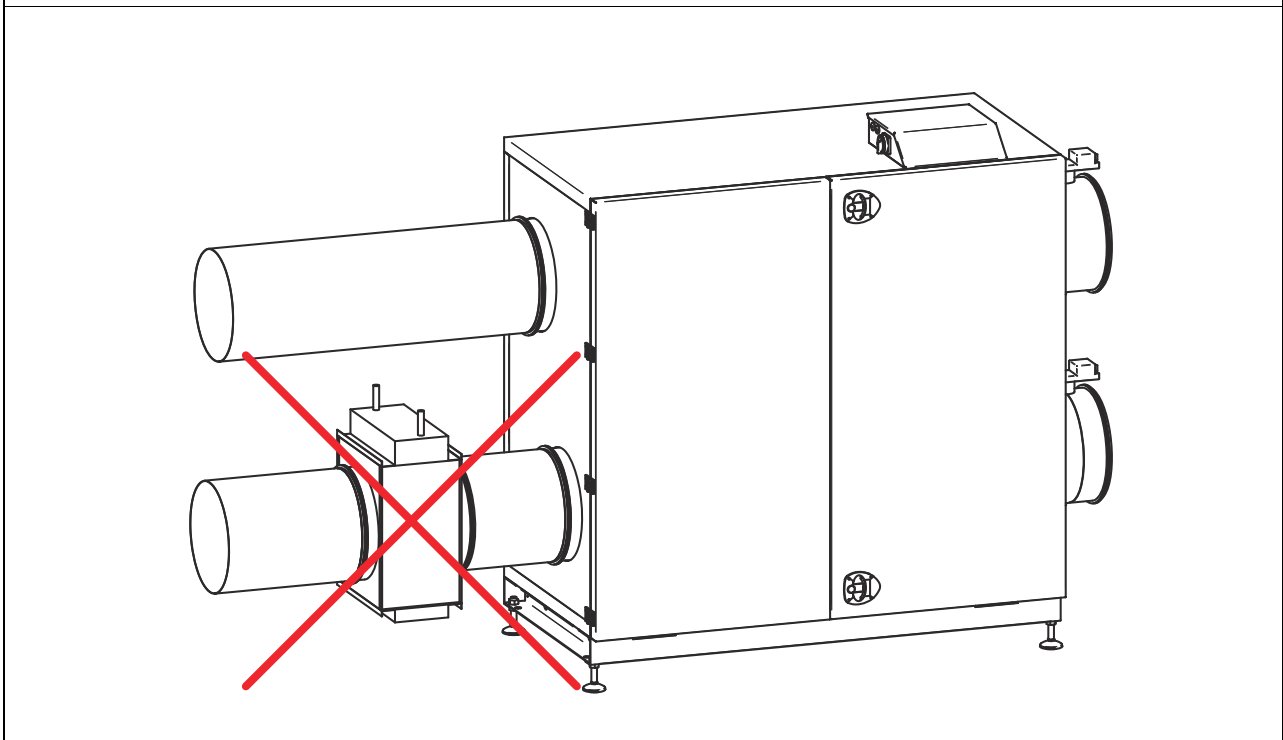
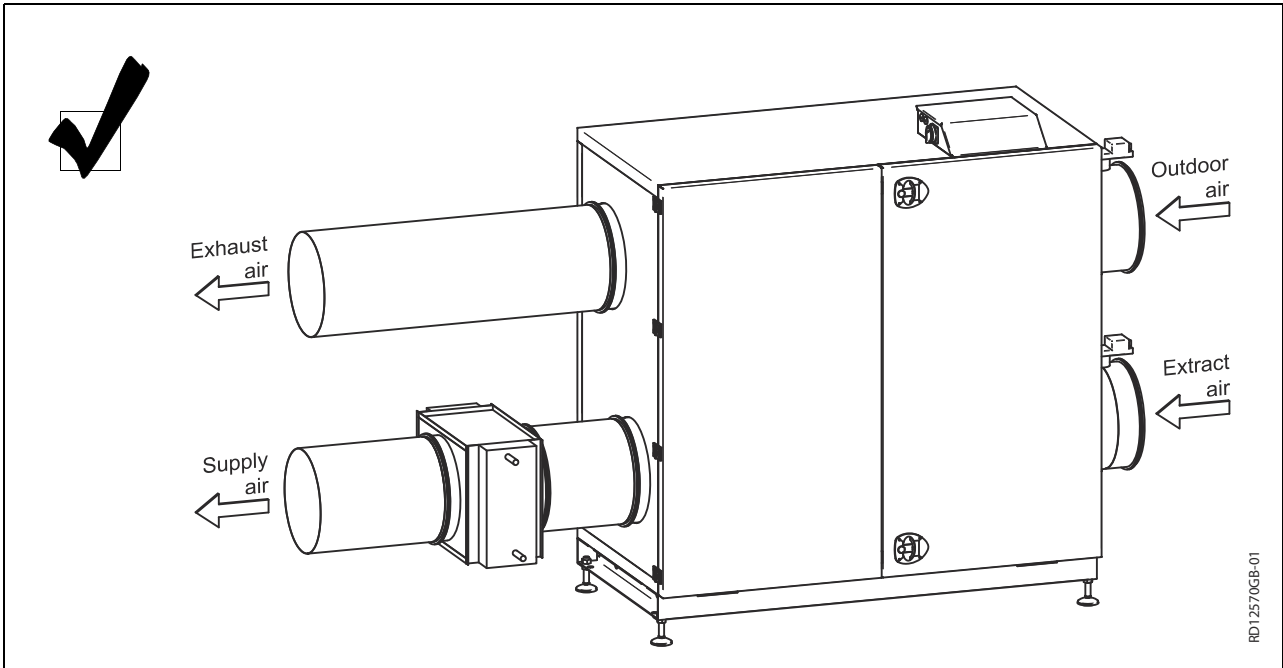
The cold water coil is positioned on the supply air duct as shown below

VEX340



2.2.2 Correct installation in the duct system

Position the cold water coil on the supply air duct or directly on the ventilation unit supply air spigots



- The cold water coil must always be supported – also during assembly (the support fixture is not part of the EXHAUSTO delivery)
- The cold water coil should always be fitted so that the air runs through it horizontally.



- The cold water coil pipe must be horizontal and the connecting manifold vertical, so that the system can be bled and water in the system can be topped up/emptied.

2.2.3 Condensation outlet from cold water coil

Connection



Connect the condensation outlet to a floor-mounted drain or similar. A water trap must be fitted between the condensation outlet and the drain.

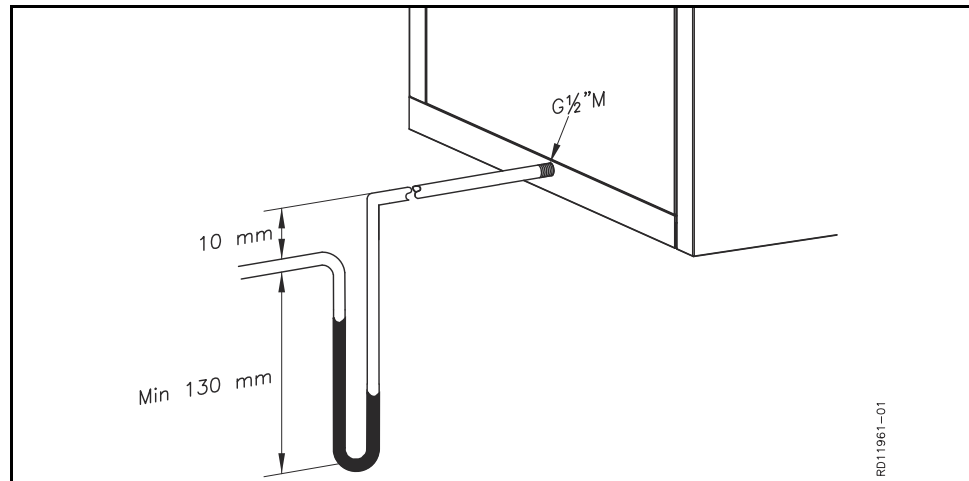
Frost risk



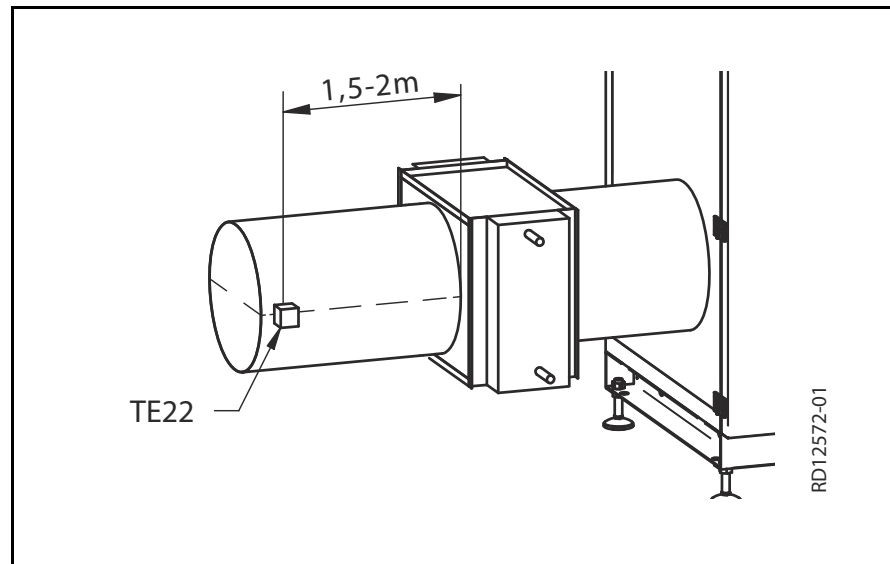
If there is a risk of frost: Insulate the condensation outlet and protect it against frost – if necessary, using a heating cable.

Positioning

The drawing below illustrates the correct positioning of the water trap from the condensation outlet.



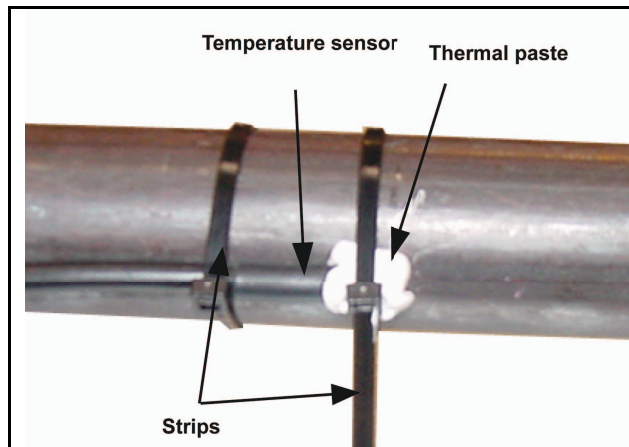
2.2.4 Positioning the temperature sensor (TE22) in the duct



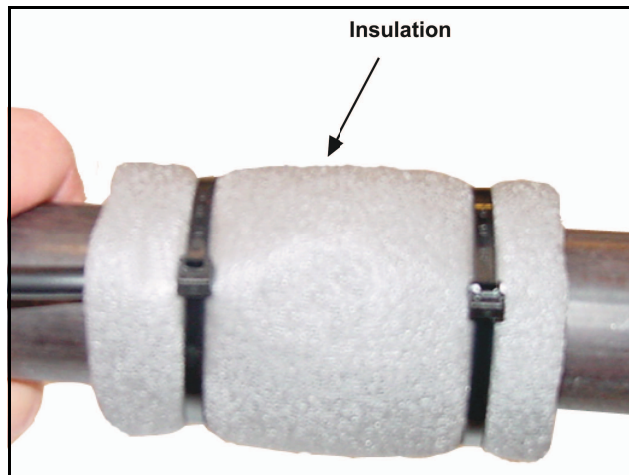
2.2.5 Fitting the supply water temperature sensor

The temperature sensor must be fitted to the pipe to the cold water coil:

1. Use heat paste to ensure good contact between the pipe and the sensor.
Use cable ties to secure the sensor in position



2. Ensure there is sufficient insulation around the sensor



2.3 Cold water coil

2.3.1 Connection of insulated CCW

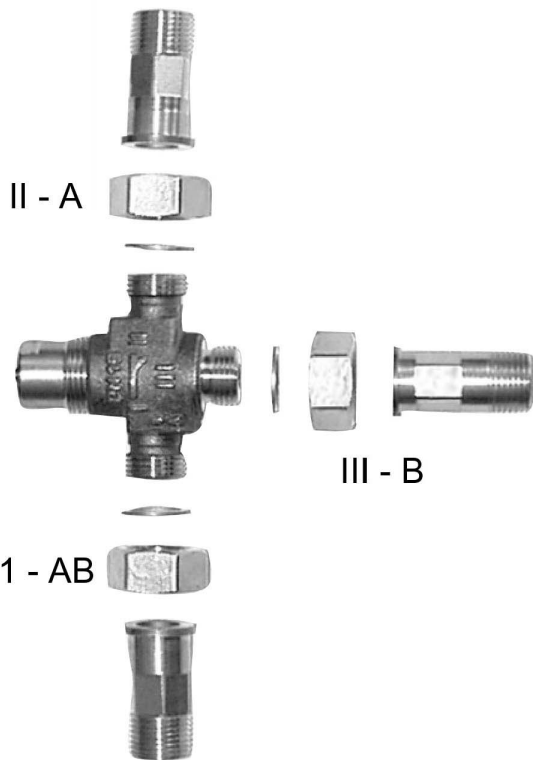
An insulated CCW must be connected using stopcocks and union valves, so that the coil can be easily loosened, extracted and cleaned.




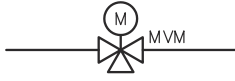


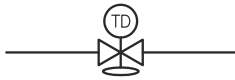

2.3.2 Principles for connecting the cold water coil

Mixing loop

The diagrams below are only simplified. The dimensioning of valves, pipes, etc. and the connection of the cold water coil must always be carried out by authorised fitters, in accordance with applicable regulations and legislation.

Mixing loop	Principle	Simplified diagram
Type 1	Variable flow in the primary circuit (supply) and constant flow in the secondary circuit (VEX)	
Type 2	Constant flow in both primary circuit (supply) and secondary circuits (VEX) a) When there is no cooling requirement, valve adjustment must be based on the required primary circuit water flow	



-  Shut-off valve*
-  Line regulating valve*
-  Non-return valve*
-  Three-way motor valve (MVM)
-  CCW Cold water coil
-  Circulation pump*
-  Pressure difference regulator*
-  Impurity trap*

* Not supplied by EXHAUSTO

RD12912GB-01

2.3.3 Installation requirements

Bleeding

After connecting cold water to the cold water coil, the system should be bled thoroughly.

Fitting the motor valve



The valve must not be fitted with the motor facing down.

Insulate the supply pipe and cold water coil



The pipes and cold water coil must be insulated according to the applicable regulations.

Frost protection



The cold water coil can be protected against frost by mixing 25% ethylene glycol in the water. This provides frost protection down to -13°C.

NB:

Shielding

Shield the valve motor from direct sunlight. For reasons of heat emission, the valve motor must not be encapsulated (max. ambient temperature: 50°C).

Insulating the valve

To avoid condensation forming on the body of the valve, insulate the valve in line with current standards.

Regulating properties

The regulating properties of the valve are best when the differential pressure is in the range 10-50 kPa. Refer to section 7 for more information on K_{VS} value.

If the differential pressure in the cooling water supply exceeds the pressure range mentioned above, a pressure regulator should be fitted.

Operation of circulation pump

The circulation pump is operated by the EXact control system, as described below:

- 1 When no heating required, the MVM valve is at 0%
- 2 The circulation pump runs for another 5 minutes and then stops
- 3 EXact starts the 24-hour timer
- 4 When the 24 hours have passed, the circulation pump runs for 5 minutes
- 5 This cycle repeats once every 24 hours until there is a need for heating

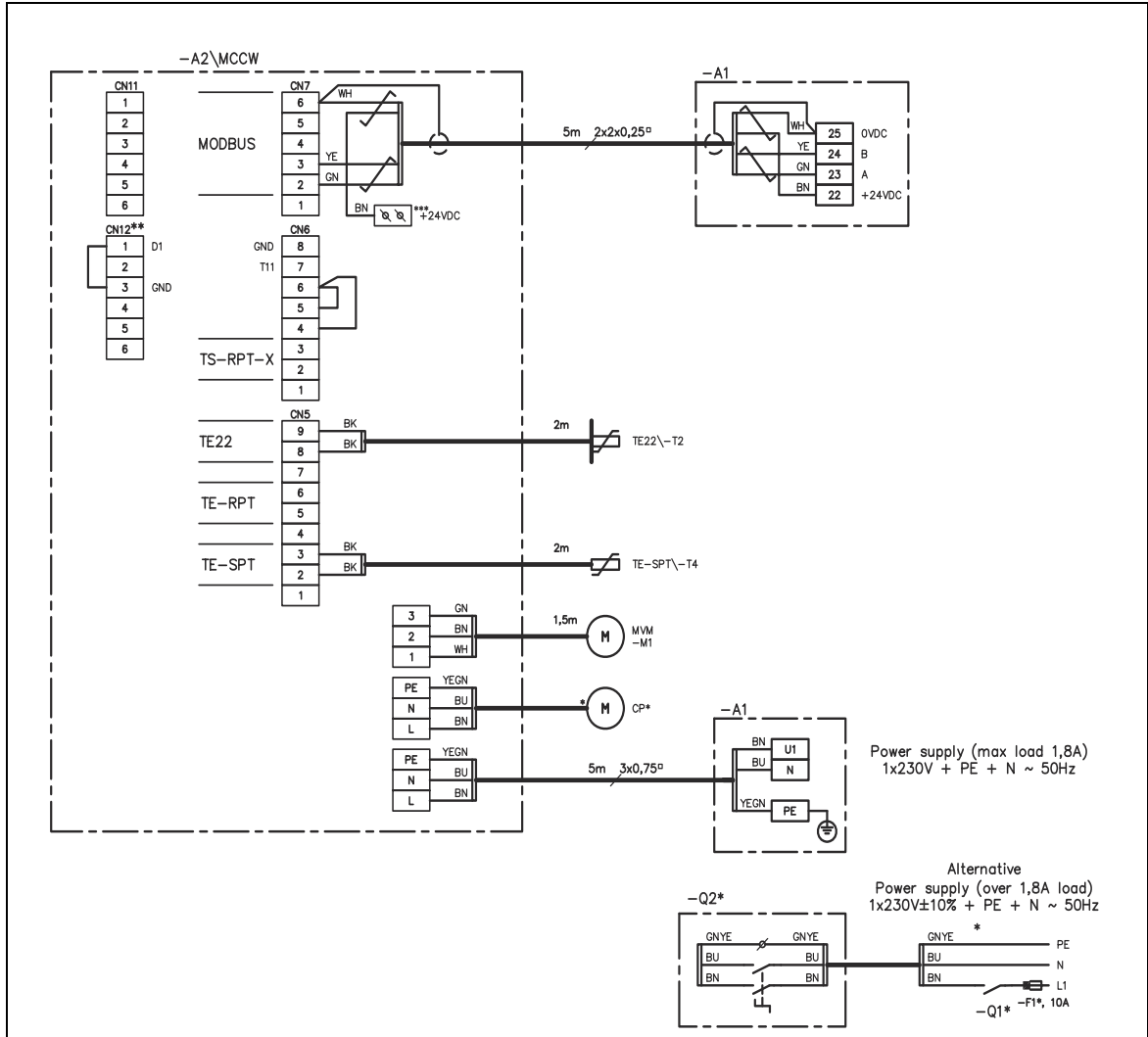


3. Electrical installation

3.1 Connection diagram for supply voltage and connection box

Diagram

The diagram below illustrates the connection of the supply current and the cold water coil connection box.



* Not supplied by EXHAUSTO

**It is possible to invert the control signal to the MVM, i.e. 0V→10V becomes 10V→0V. This is done by fitting a jumper across terminals 1 and 3 of CN12. The change will be registered the next time the unit is powered up.

Max. load: Overall maximum load of terminal in VEX (U1, N) is 1,8 A.

If the connected Modbus unit's maximum current consumption	then
exceeds the maximum load of 1,8 A	establish a separate electrical supply with isolation switch and fuses
does not exceeds the maximum load of 1,8 A	MCCW can be connected to the VEX unit connection box (-A1)

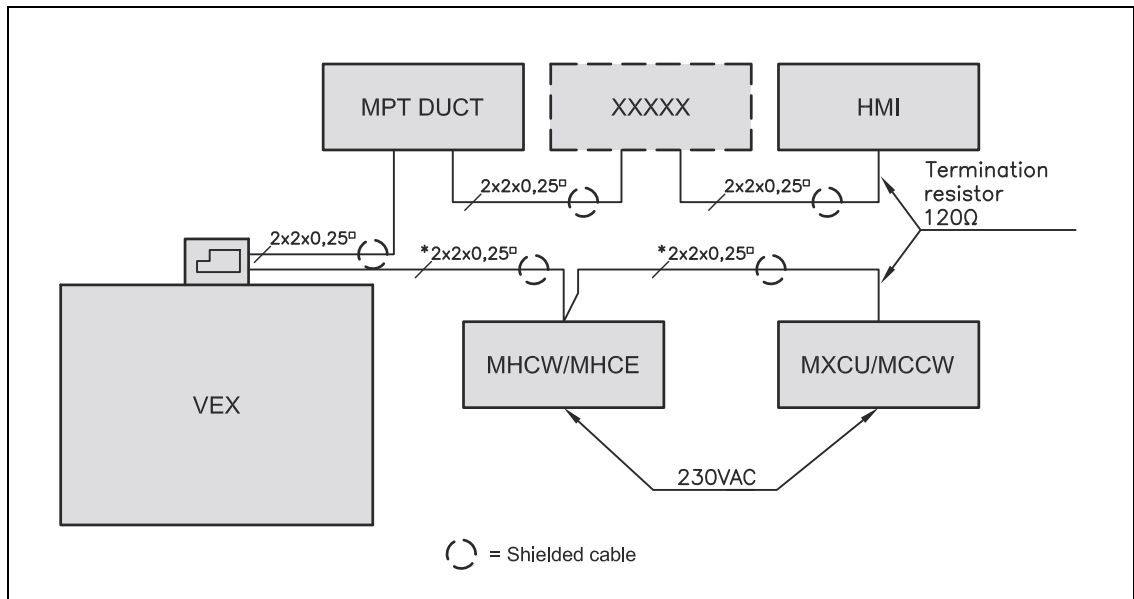
Explanation of diagram

Term	Explanation	Supplied by
-A1	Connection box, VEX	EXHAUSTO
-A2	MCCW module	EXHAUSTO
-F1	Fuse in the distribution board	Customer
-Q1	Group switch on the distribution board	Customer
-Q2	Isolation switch (disconnects all poles)	Customer
-M1	MVM valve	Customer
-T2	TE22 (Temperature sensor supply air)	EXHAUSTO
-T4	TE-SPT (Temperature sensor, supply water)	EXHAUSTO
CP	Circulation pump	Customer

3.2 Connection of Modbus unit

Diagram

Connection must be carried out according to the following diagram. Refer to the Electrical Installation Guide for VEX340 (supplied with the VEX unit) for further details of how to connect standard components to the connection box.



MHCW / MHCE	Control box for heating (water or electric))
MXCU / MCCW	Control box for cooling (external cooling unit or cold water coil)
MPT Duct	Pressure measurement in duct
XXXX	Can be different modules like MIO-modul or an extra MPT Duct
HMI	Display panel

3.2.1 Cable (max. length and termination)

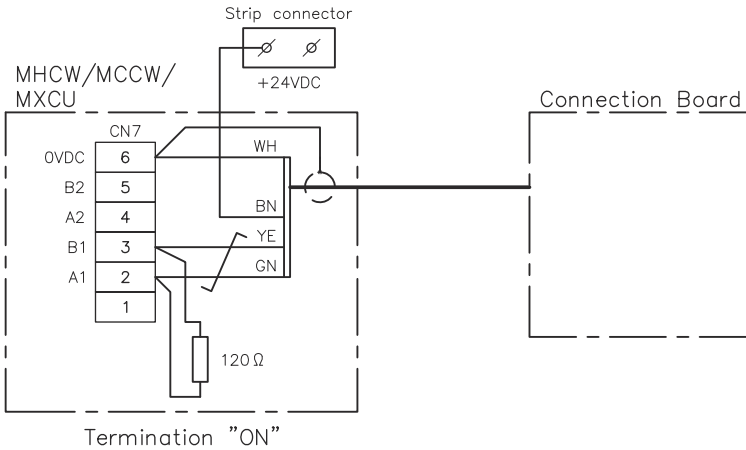
Cable EXHAUSTO recommends using 4-core, twisted pair, shielded cable. To limit voltage drop across the cable, 0.25 mm² cores are recommended.

Max. cable length The overall cable length of a complete installation may not exceed 200 m.

Modbus, termination or daisy chained to next device It is necessary that the first and last device on the bus line is fitted with a 120 Ω terminating resistor. See below.

If	then	See diagram no.
the MCCW is the first or last device on the bus line	a 120 W terminating resistor must be fitted.	1
the MCCW is not the first or last device on the bus line	it is daisy chained to the next device	2

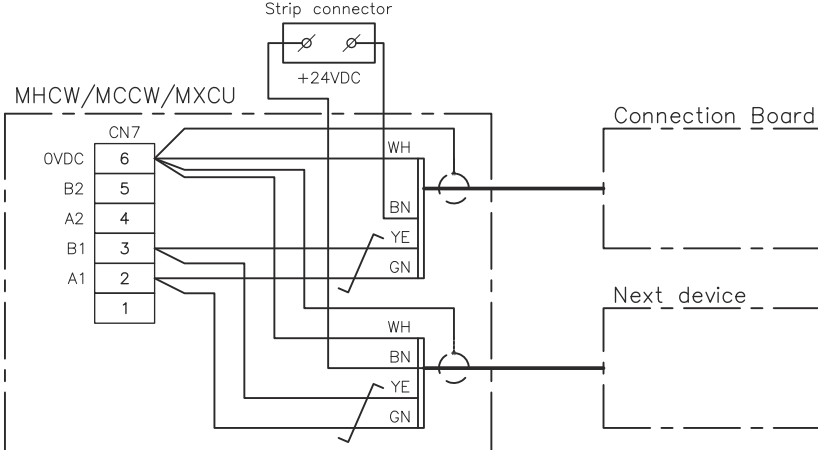
1.



Termination "ON"

RD12502-01

2.



Termination "OFF"

RD12503-01



4. Commissioning and operation



During commissioning, ensure that there is no risk of frost-induced leaks in the cold water coil, and that the pressure conditions and flow of cold water is in line with the data ascertained using the capacity diagrams and the K_{VS} calculations.


For settings and safety features, see EXact Control System Basic Instructions, chapter 3 and menu 7 on the HMI panel.



5. Maintenance

5.1 Cleaning the CCW

How to clean the cold water coil

Step	Action	
	Isolated CCW	Unisolated CCW
1	Switch off the power supply to the unit at the repair switch.	
2	<ul style="list-style-type: none"> Close the stopcocks Loosen the union valves Extract the cold water coil 	
3	Vacuum clean the cold water coil	
4	Check that the fins on the cold water coil are not deformed.  The fins are sharp.	
5	<ul style="list-style-type: none"> Re-establish the connection to the cold water coil Bleed the system 	



6. Troubleshooting

See section "Troubleshooting" in "EXact Control System, Basic instructions".



7. Technical specifications

7.1 Cold water system general data

Weight	Weight (uninsulated, without fluid)	39 kg
	Weight (insulated, without fluid)	72 kg
	Water capacity	3,5 l
Data	Test pressure	3,000 kPa
	Max. operating pressure	1,600 kPa
	Rows of pipes	4
	Circuits	8
	Face area (H x W)	500 x 610 mm
	Pipe connection	DN25 (1")
	Distance between fins	2.8 mm

Circulation pump Load may be max. 5 A with a $\cos \phi$ of 0.97 (inductive load)

Max. load

Overall maximum load of terminal in VEX (U1, N) is 1,8 A

If the connected modbus unit's maximum current consumption exceeds the maximum load, a separate electrical supply with isolation switch and fuses must be established

7.1.1 Motor valve (accessory)

Valve	K _{VS} 0,2 - 4,0	K _{VS} 6,3 - 25
Test pressure	1600 kPa	1600 kPa
Max. differential pressure	100 kPa	200 kPa
NB: The valve will remain permanently open if the differential pressure is greater than..	100 kPa	200 kPa
Permissible liquid temperature	5...110°C	5...110°C
Motor		
Permissible ambient temperature	-30...50°C	-30...50°C
Ingress protection, in accordance with IEC529	IP40	IP40
Time taken to open/close	34 s	30 s
Power supply (50/60 Hz, AC/DC)	24 VAC ±20%, 24 VDC ±20%	24 VAC ±20%, 24 VDC ±20%
Regulation	0-10 VDC	0-10 VDC

7.2 Example of calculated values for the cold water coil

The cooling output for CCW340 is shown in the tables below. The values given in the tables are dependent on the following conditions:

Conditions	Supply water temperature t_F	6°C
	Return water temperature t_R	12°C
	Precision of calculated results	+/- 10%
	Volume flow ratio	1.0
	Cooling recovery	100 %

Obs The output values in the table below are for a glycol content of 25%.

EXselect



We recommend the cold water coil requirements are precisely calculated using the EXselect product selection software tool at our website, which also includes more comprehensive calculation data.

7.2.1 Examples of calculated values

VE340 VEX340 (2000 m³/h) / CCW340 (100 % cooling recovery)

Outdoor temp./ humidity	Room temp./ humidity	Temp./ humidity after exchanger	CCW cooling output	Supply air temp./ humidity	Water flow	Δp CCW	K_{vs}	$\Delta p K_{vs}$	Δp air side
°C/%	°C/%	°C/%	(kW)	°C/%	(l/h)	(kPa)		k(Pa)	Pa
28 / 50	24 / 50	24,7 / 61	9	16,8 / 84	1399	13,5	2,5	31	40
32 / 40	26 / 50	26 / 50	10,6	17,2 / 81	1668	18	2,5	44	40

7.3 Spare parts list and ordering

Production part number When ordering spares, please state the relevant production part number. This will ensure that the correct parts are delivered. The production part number is written on the front page of the instructions supplied with the unit. It is also included on the information plate.

Spare parts list The following parts are stocked as spares for the VEX. Parts not included in the list can be made to order by EXHAUSTO (see the back page of the instructions for contact information).

Spare parts
MCCW module
Motor for motor valve
Valve
Temperature sensor (repair set for 1 x sensor)

EXHAUSTO A/S

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exhausto@exhausto.dk
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