FläktWoods

AIR COMFORT

AIR TREATMENT

ENERGY RECOVERY

eCO PREMIUM™ ENERGY RECOVERY UNIT

» INSTALLATION AND MAINTENANCE MANUAL

CONTENTS

SAFETY, GENERAL, MAINTENANCE REGULATIONS, OTHER RISKS, WARNING LABELS

1. SAFETY STANDARDS AND "CE" MARKING

In-line with our policy of continuous improvement, we are constantly striving to deliver more efficient products that comply with current safety standards. The standards and guidance contained within this documentation therefore reflect compliance with these safety standards and regulations. In addition to the advice given within this document, we strongly recommend that all personnel, who may be exposed to risks during the installation, use or maintenance of our equipment, should ensure that they comply with all relevant safety regulations that are in force within their respective countries.

The CE mark and associated declaration of conformity demonstrates that our products comply with applicable community regulations.

However, Fläkt Woods does not accept responsibility for personal injury or damage caused to property resulting from non-compliance with these safety standards or as a result of any non-approved product modifications. Should any other non-CE marked products be used within an installation then these must be certified by the purchaser who shall have the total responsibility for certifying conformity of the whole plant.

Products are manufactured in accordance with the following applicable directives:

Machinery directive 2006/42/EC

Low voltage directive EEC 2006/95

Electromagnetic compatibility directive 2004/108/EC

In addition, products are manufactured in accordance with the following harmonized standards: EN 12100-1: 2003; EN 12100-2: 2003; EN 60204-1:2006.

2. GENERAL

IIt is recommended that safety protection devices shall not be removed. However, if such a device needs to be removed temporarily (for a specific reason), then suitable measures must be taken immediately to point out possible dangers. In addition, it is strongly recommended that the protection device is re-fitted as soon as it is practical.

All maintenance procedures (either routine or extraordinary) shall only be carried out whilst the product is isolated from electrical or pneumatic supplies. In order to minimise the risk of a fan/motor unit being started accidentally during maintenance it is recommended that central control panels / switchboards are clearly marked with a suitable warning sign, such as "Caution: Ensure mains electrical supply is disconnected before performing maintenance".

In addition, before connecting an electrical supply cable to any terminal board, please ensure that the line voltage matches that stated on the product label. Should product labels become illegible over time it is recommended that these be replaced.

WARNING!

All internal cabling is situated within the top panel of the unit and therefore no drilling into this panel is permissible. Any such action may results in an electric shock and for the unit to malfunction. This also applies to the control panel and controls area.

3. MAINTENANCE REGULATIONS

Personnel responsible for maintenance must work in accordance with any accident prevention (safety) regulations that are in force. In particular the following recommendations should be complied with:

- wear suitable safety clothing and protection to minimise the accident risk.
- ensure that a safety interlock is used, so that the machine may not be started by non-authorized personnel.

4. OTHER RISKS

Product risks have been analysed in accordance with Machinery Directive 2006/42/CE. The associated directive handbook contains information and advice for all responsible personnel and is designed to minimise possible risks of personal injury or damage to property.

WARNING LABELS

The machine can have a number of different warning labels or symbols affixed to it, which should not be removed.

5. WARNING LABELS

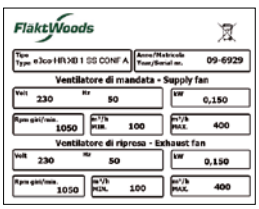
The machine can have a number of different warning labels or symbols affixed to it, which should not be removed.

DANGER LABELS:

These denote the presence of parts under voltage within the enclosure, on which the plate is provided.

IDENTIFICATION LABELS:

Serial number plate: it states the product data and the manufacturer address.



NOTE: other warning labels may be added to the product according to the analysis of additional/other risks.

GOODS RECEIPT, HANDLING, EQUIPMENT START-UP, DIS- AND RE-ASSEMBLY, DISPOSAL

6. GOODS RECEIPT

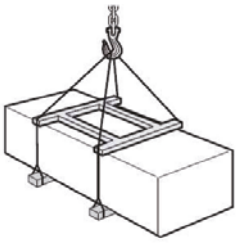
Each product is carefully inspected before shipping. On receipt of goods, it is recommended that products are checked to confirm that they have not suffered damage during transport. If damage is found, then please report this issue to the transport forwarding agent, who is responsible for any damage incurred during transport. The usual method of packing is for products to be loaded onto pallets and then fastened to them by means of straps. A protective film is also generally added to minimise water ingress.

Alternatively, product may sometimes be contained with a self-supporting cardboard carton, which is again fastened securely to a pallet.

HANDLING AND OFF-LOADING

Before off-loading products, please ensure that the means of transport/ lifting is suitable to accommodate to the required weight and size capacity. It is recommended that where product is shipped on a pallet, a forklift truck should be used.

In accordance with the 89/391/CEE standard (and associated updates), manual lifting is only admissible up to a maximum weight of 20 Kg, between floor and shoulder level.



Lift unit into position using spreaders, ensuring you have the appropriately rated equipment for the weight of the unit.

7. EQUIPMENT START-UP

Before operating our product, the following checks must be made:

- Ensure that product inlet/outlet connections are free from obstruction
- Check that all product components are securely fastened in their associated sealing gaskets
- Manually rotate each fan impeller to ensure that it does not rub or bind onto the fan scroll
- Ensure that any inspection or access doors are closed.

***CAUTION*:**

If fan inlets or discharges are not connected to duct work, please ensure that suitable protection guards are fitted before the unit is started. Check that electrical connections have been made correctly, especially the earth connection.

IMPORTANT:

Electrical connections must be made by qualified personnel.

8. DISASSEMBLY AND RE-ASSEMBLY

Before starting any disassembly or re-assembly operation, please ensure that the product is isolated from its mains electrical supply, in order to ensure that fans cannot be run. As disassembly and re-assembly are not part of routine maintenance, these should be carried out by qualified personnel.

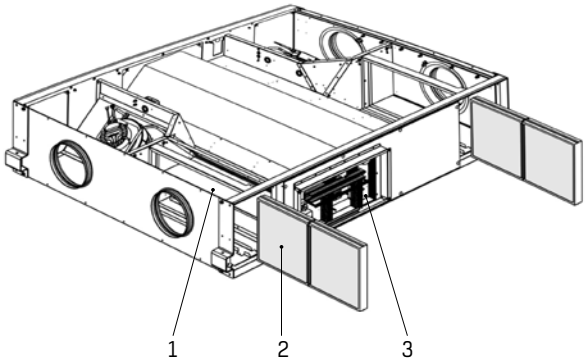
9. DISPOSAL

Please ensure that products are dismantled and disposed of by qualified personnel in an environmentally friendly way, in accordance with all relevant local and national regulations in force.

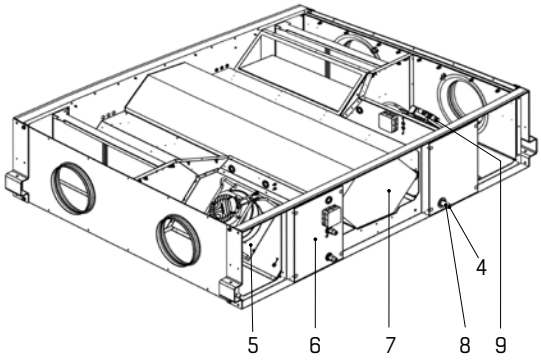
eCO PREMIUM UNIT LAYOUTS, CEILING INSTALLATION

10. eCO PREMIUM™ UNIT LAYOUTS

SERVICES SIDE VIEW

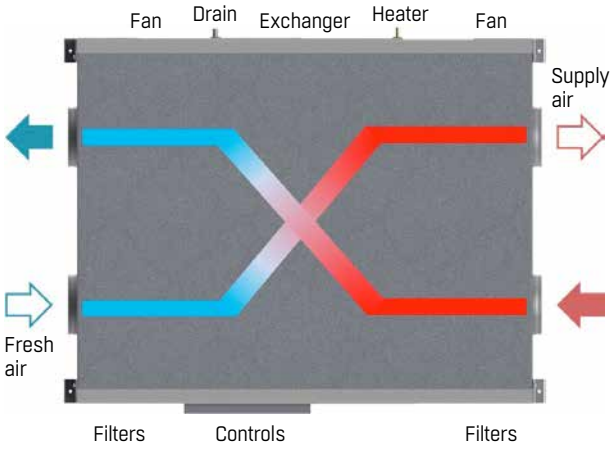


MAINTENANCE SIDE VIEW



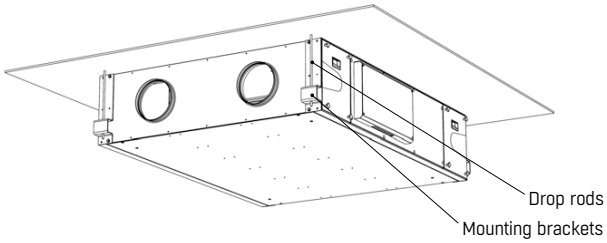
1. 100% By Pass Damper
2. Filters
3. Control Box
4. Connection Water trap
5. Supply Fan
6. Post Heater (Enhanced and Elite Version)
7. Counter flow plate heat exchanger
8. Drainage Tray
9. Exhaust Fan

UNIT OUTLINE



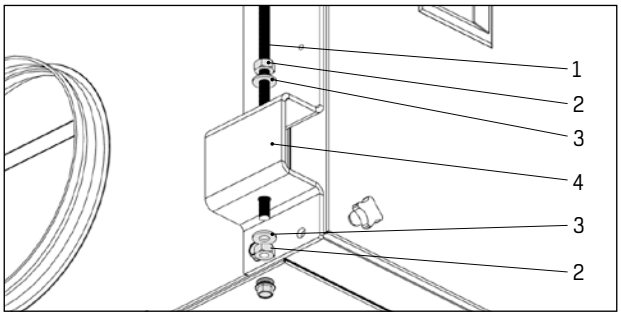
See page 32 for minimum maintenance and service space.

11. CEILING INSTALLATION SIZES 1 - 4



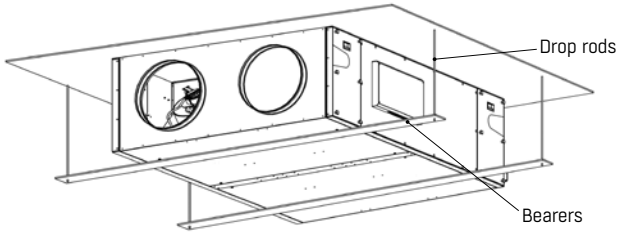
The eCO PREMIUM™ energy recovery unit is equipped with four mounting brackets, which can be used in conjunction with threaded drop rods or suspension chains, in order to facilitate ceiling fastening and levelling. We recommend that the unit is fitted and fastened into its correct position before making connections to ductwork, condensate discharge pipe work (on the exhaust air side) or electrical connections.

Attached duct work should be supported independent of the unit. Connections to the mains electrical supply should be made via the terminal block within the unit control panel.



1. Drop rod (not supplied)
2. M10 Nut (not supplied)
3. M10 Shake Proof Washer (not supplied)
4. Mounting Bracket (supplied)

12. CEILING INSTALLATION SIZES 5 - 6.



It is not recommended that unit sizes 5 & 6 are to suspended from a ceiling. If it is required to do so then it must be supported from underneath using bearers and drop rods ensuring that they are capable of taking the weight of the unit. Consideration must be given when supporting the unit that access is still available for maintenance purposes and removal of filters.

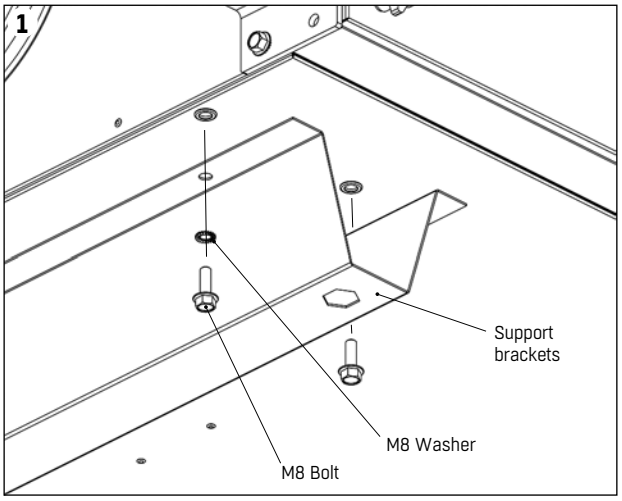
MOUNTING FEET INSTALLATION

13. MOUNTING FEET INSTALLATION

All units are supplied as standard with bottom panel support brackets, these can be removed if the unit is to be installed into a ceiling void or if there is any kind of height restriction.

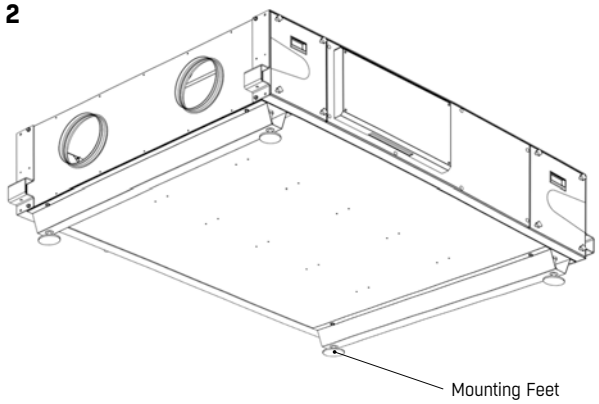
The support brackets can be removed by unbolting 4 x M8 bolts at each corner of the bracket.

1



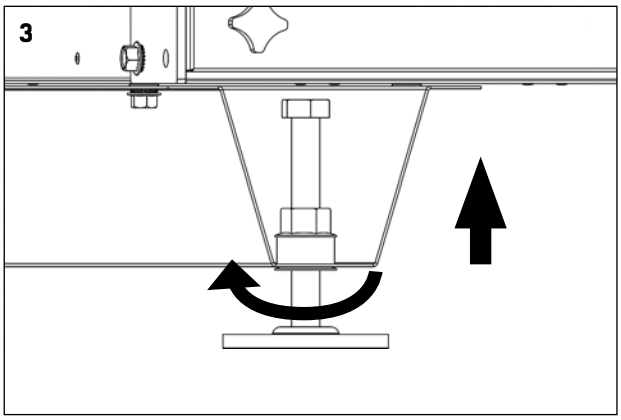
The unit can be levelled by using four mounting feet (six for sizes 5 & 6) that attach to the bottom panel support brackets.

2

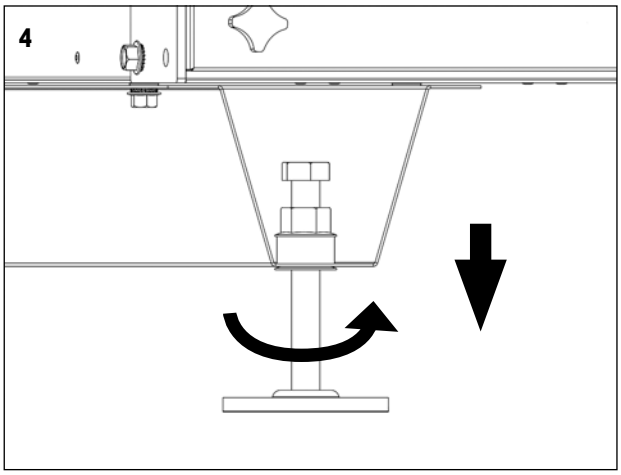


By rotating the bolt within the mounting feet the corner of the unit can be raised or lowered. By doing this the unit can be adjusted so that it is level.

3



4



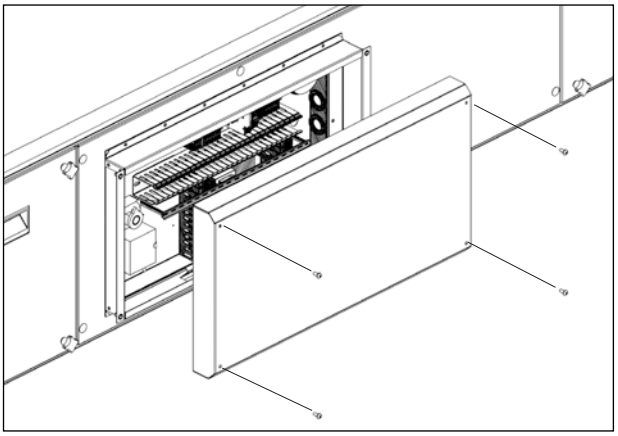
14. CONTROLS

ELECTRICAL CONNECTION

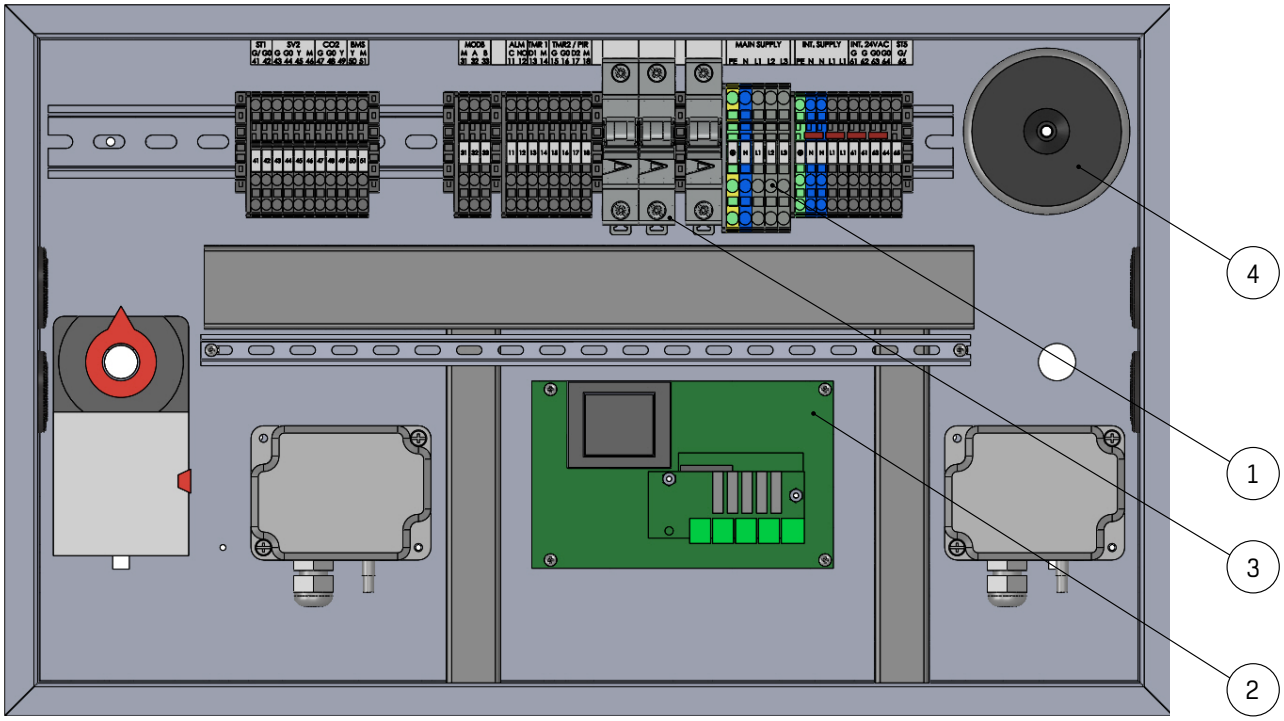
Electrical connection is made to the terminals in the electrical cabinet. A separate switch -disconnector must be used, e. g. REDZ-39.

- The electric supply must be fully isolated before attempting any work on this unit;
- All the electrical connections to the unit must be carried out by a competent electrician;
- It is the customers responsibility to supply earth fault protection through the building installation device and a dedicated, isolated power supply with overload protection;
- Do not connect the unit to an electrical supply voltage outside of the specification.

Locate electrical connection panel on the service side of the unit.



Unscrew four fixings and remove electrical panel.



1. Connection incoming supply
2. Control card
3. Fuses
4. Transformer, 230 V/24 V

EXTERNAL COMPONENTS

Cables to external components are secured in the electrical cabinet using the tie-rail with a cable tie, for example.. The cable is then placed against the cellular plastic strip on the unit (see figure 1).

When all cables are connected to terminals and the cables are secured on the tie rail, the cover is positioned on the electrical cabinet and secured using the appropriate screws (see figure 2).

The cellular plastic, which is semi-elastic, will slowly adapt to the shape of the cables and in doing so the lead-through will seal (see figure 3).

Information about how the different sensors and accessories should be fitted and connected is provided in the following section.

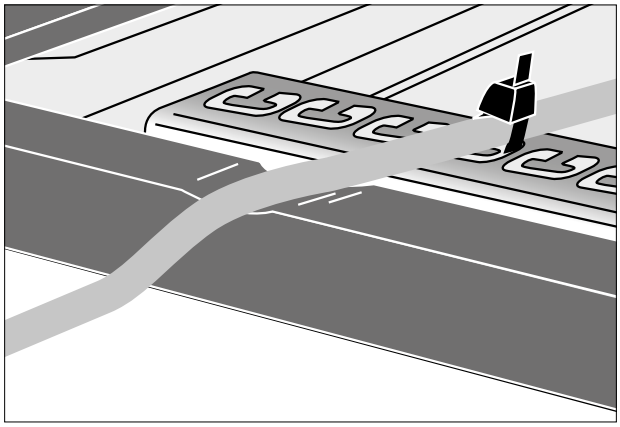


Figure 1. The cables are secured on the tie rail using a cable tie and placed against the cellular plastic strip on the unit.

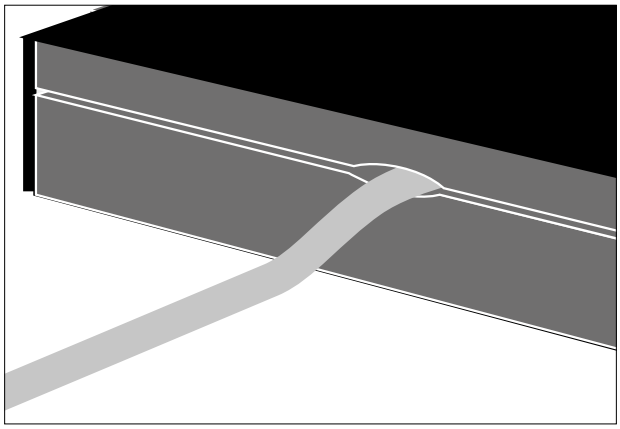


Figure 2. When the cables are connected to the terminals and then secured to the tie rail, the cover is fitted on the electrical cabinet.

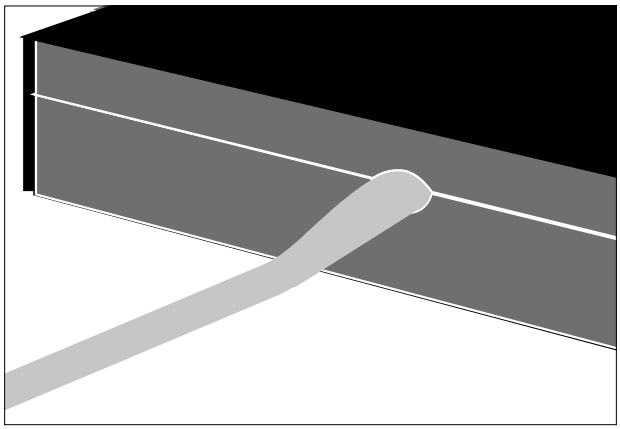
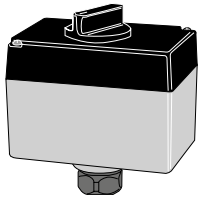


Figure 3. The semi-elastic cellular plastic slowly adapts itself to the shape of the cables and the lead-through seals.

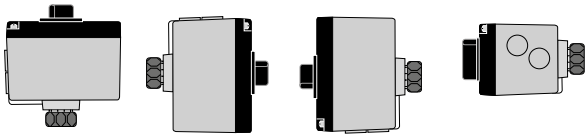
VALVES AND ACTUATORS

VALVE ACTUATOR FOR HEATING SV1 AND COOLING SV2

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



ACCEPTED INSTALLATION METHOD

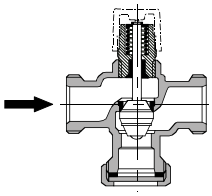


VALVE FOR HEATING AND COOLING

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.

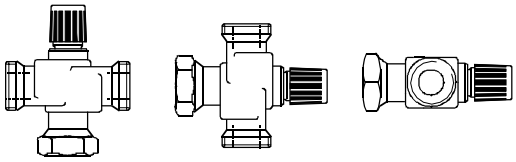
2-WAY VALVE

The flow is increased by turning the spindle inwards, the flow is reduced by moving the spindle outwards. Note that the two-way valve cannot be used as a three-way valve.



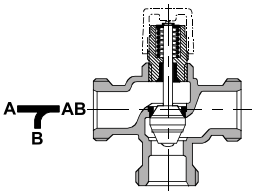
The flow direction in the valve is indicated by the arrow.

ACCEPTED INSTALLATION METHOD

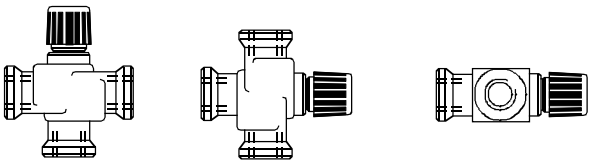


3-WAY VALVE

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



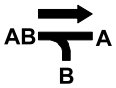
ACCEPTED INSTALLATION METHOD



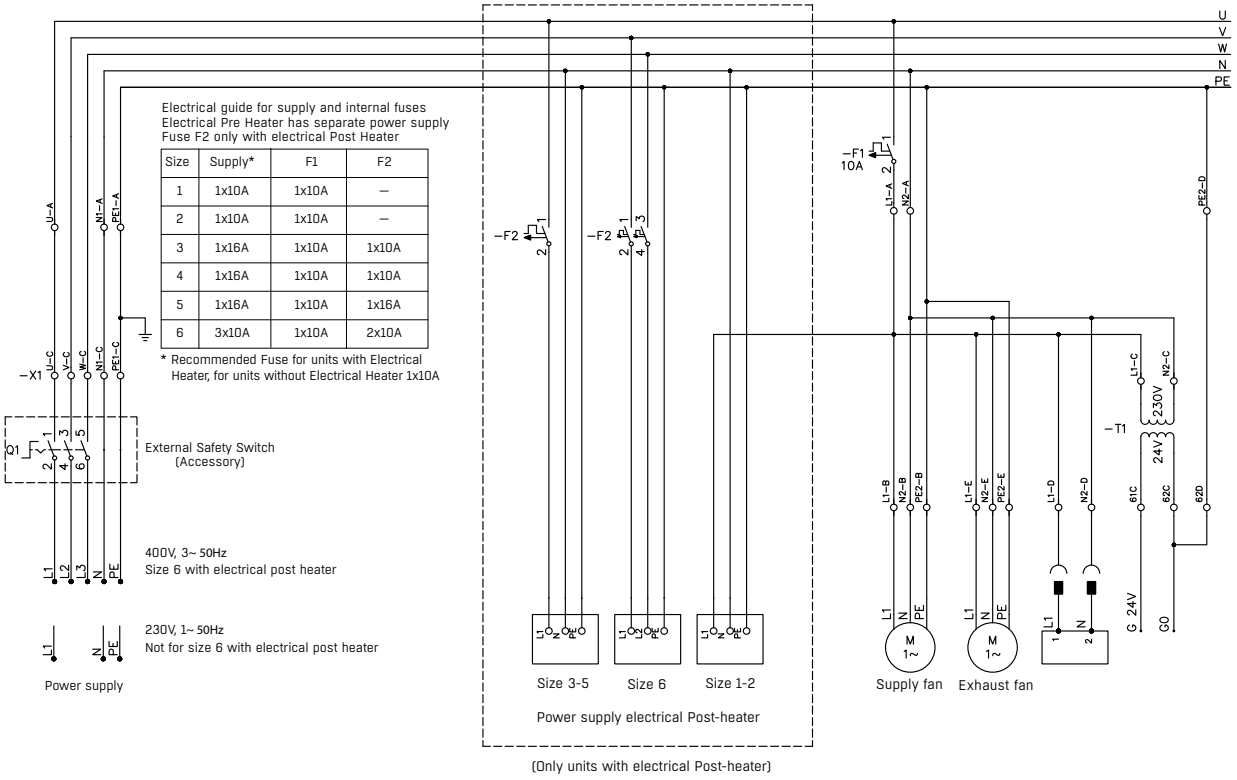
When installing a 3-port valve check as follows:

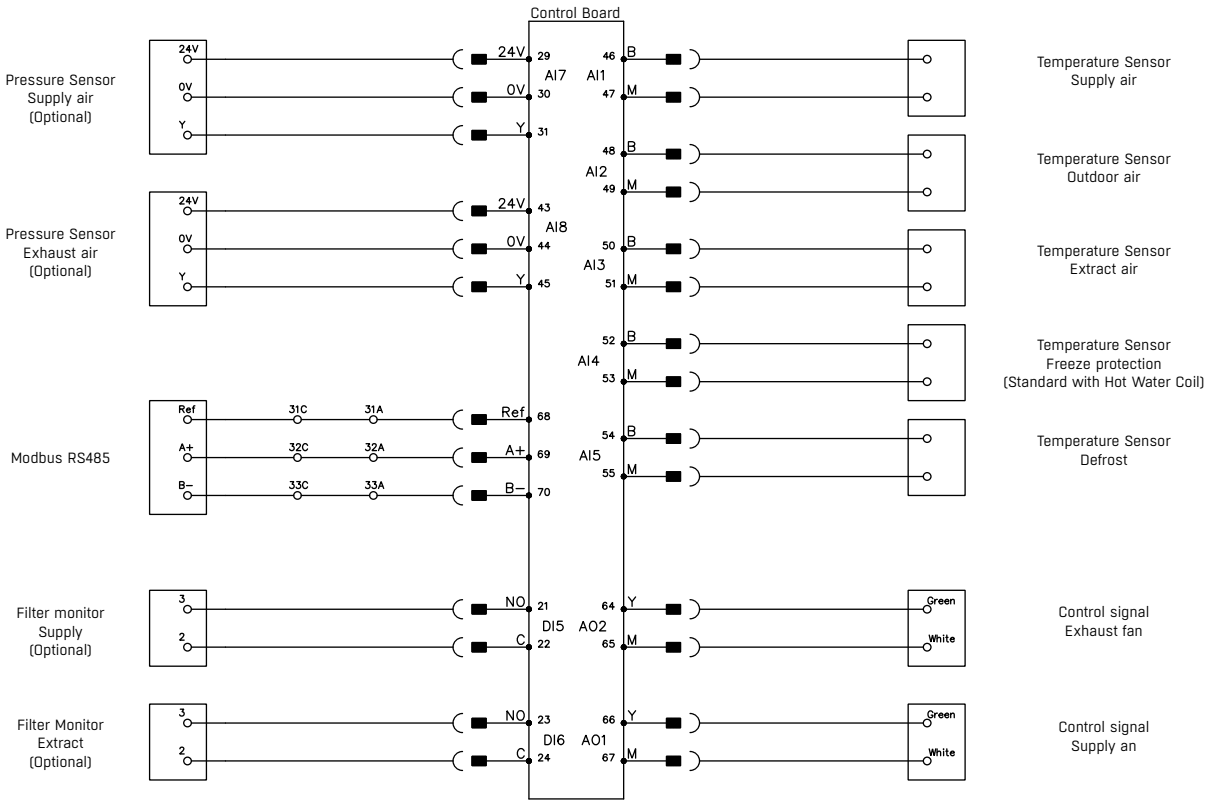
Mixture from A/B to AB

Distribution from AB to A/B

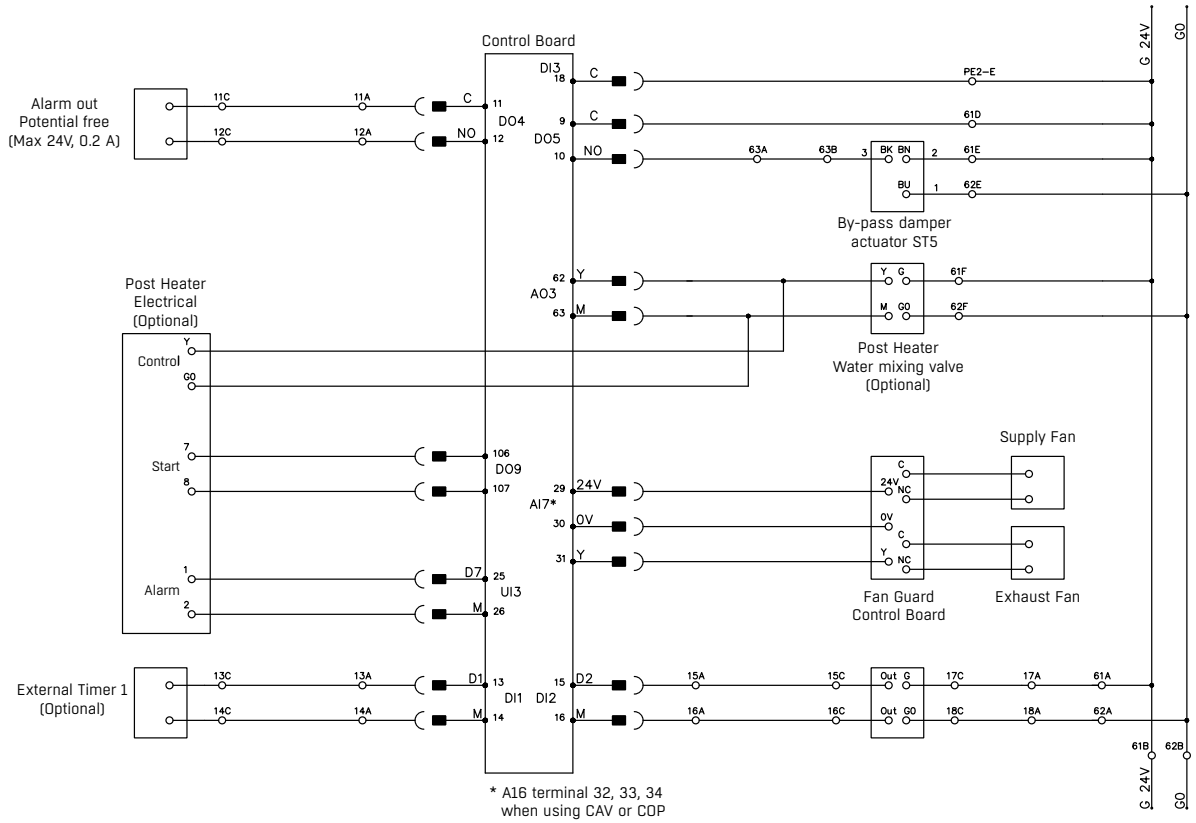


WIRING DIAGRAM

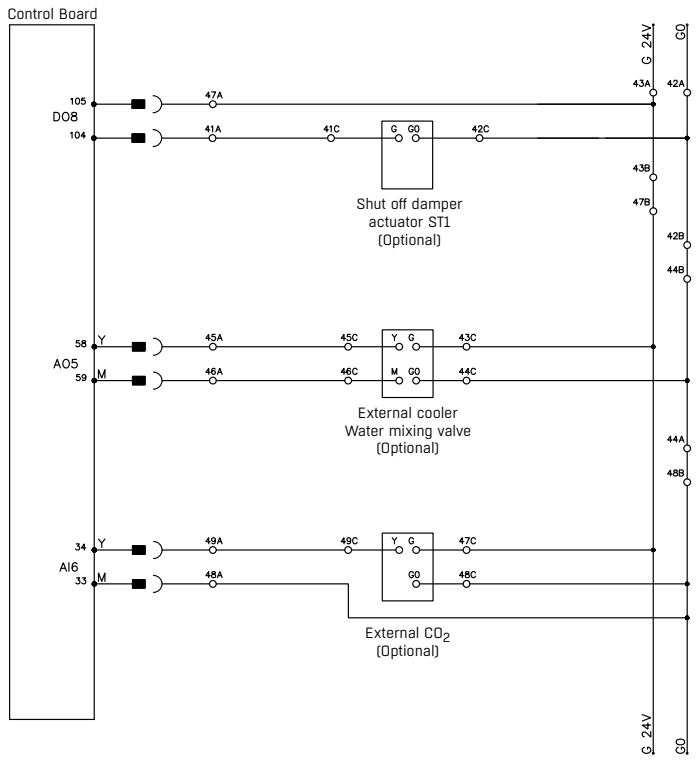




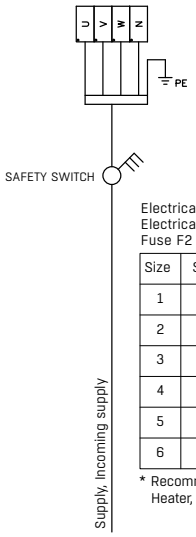
WIRING DIAGRAM, CONT.



EXTENDED FUNCTIONS
VIA TERMINAL 41 TO 49



EXTERNAL CONNECTION



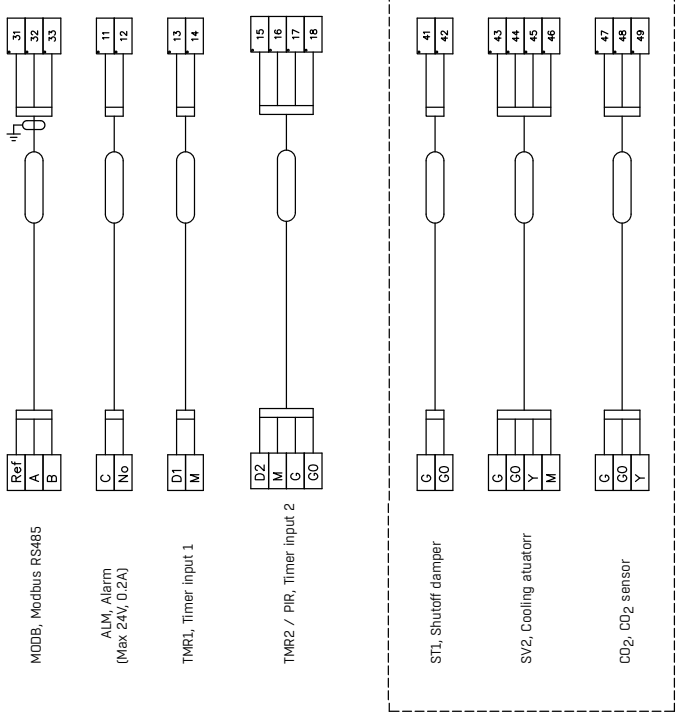
Electrical guide for supply and internal fuses
Electrical Pre Heater has separate power supply
Fuse F2 only with electrical Post Heater

Size	Supply*	F1	F2
1	1x10A	1x10A	–
2	1x10A	1x10A	–
3	1x16A	1x10A	1x10A
4	1x16A	1x10A	1x10A
5	1x16A	1x10A	1x16A
6	3x10A	1x10A	2x10A

* Recommended Fuse for units with Electrical Heater, for units without Electrical Heater 1x10A

400V, 3~ 50Hz
Size 6 with electrical post heater

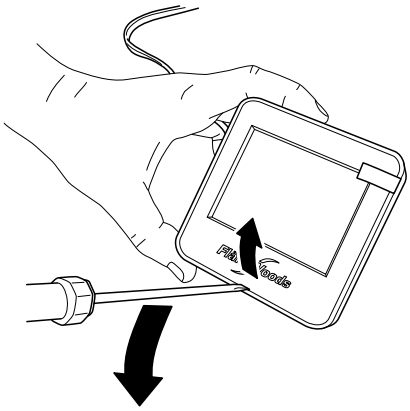
230V, 1~ 50Hz
Not for size 6 with electrical post heater



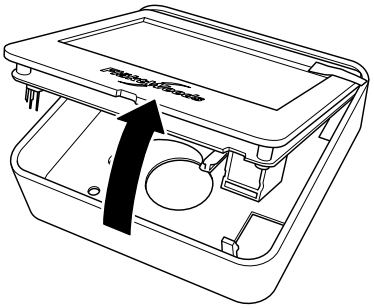
NOTE! SV1, Hot Water actuator (Accessory) connects

NOTE! When cooling, the supply temperature

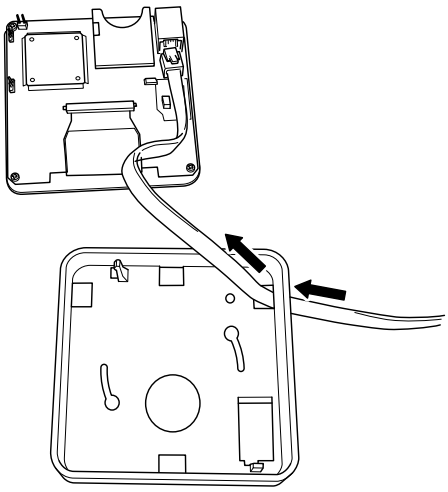
INSTALLATION & CONNECTION OF CONTROL PANEL CURO® TOUCH



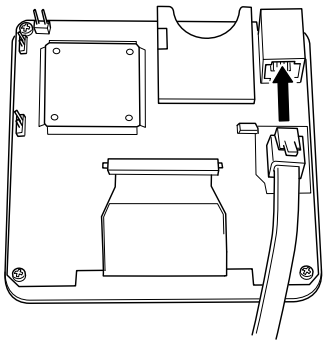
1. Open the control panel using a screwdriver



2. Lift the display out of the enclosure.



3. Push the connection cable through a suitable hole and if needed make an outlet for the cable on side of the cover. Mount the enclosure directly on the wall or using screws in a junction box.



4. Connect the cable to the back of the display as shown above.
   Note. Please do not touch the electronics.

5. Push back the display in the enclosure.

INTRODUCTION, CONVENTIONS, BASIC OPERATIONS

INTRODUCTION

HMI

This section provides an introduction to the touchscreen LCD control panel, also known as the 'Human Machine Interface', or simply, HMI.

The HMI serves two main purposes: To provide information about the current operational state of the unit. To allow the unit to be setup and configured.

TOUCH SCREEN TIPS

To select an item, touch the center of the icon or option. Do not press too hard, the touch screen is sensitive enough to pick up light, firm touches. Use the tip of your finger or the back of a pencil to touch the required option. Be careful not to touch any other options.

CLEANING THE SCREEN

Disconnect the power cord. Gently wipe the screen with a soft, dry non-abrasive cloth. If the marks remain, moisten the cloth slightly with a detergent that is designed for LCD or mobile screens and wipe the screen gently from top to bottom. Never use detergents, as these may contain ammonia or other additives.

IMPORTANT:

- Never spray, or pour liquids directly on to the screen.
- Do not clean the screen while the system is on.

CONVENTIONS USED WITHIN THIS MANUAL

The following buttons and symbols are universal and available on many menu pages.

Home key, to return to the Home Screen.

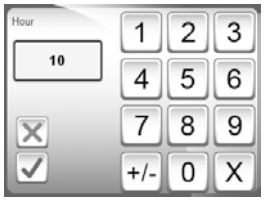
Back button, to cancel and return to the previous page.

Confirm button to confirm and proceed.

Changing a value:

Option 1: Press the arrow keys to increase or decrease the value.

Option 2: Press the displayed number to numerically adjust the value.



Use the number buttons to enter a value.

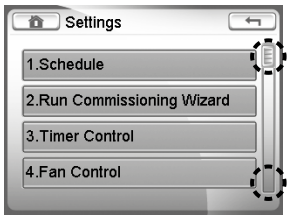
Confirm with ✓ or cancel with ✗.

850

Values that can only be read, but not written, are displayed without a surrounding window.

1000

Values that can be both read and written, are displayed with a surrounding window.



Some submenus has several pages. Touch the upper or the lower part of the scroll list to navigate between pages.

USING THE UNIT

POWERING ON

Each time power is applied, the unit will run through a series of internal system tests which take approximately 20 seconds to complete.

Once the internal system tests have been completed, the HMI will always display the Home screen. The unit will be in Manual Mode the first time that power is applied.

HOME SCREEN

The unit always powers up in the Home screen. From the Home screen it is possible to determine how the unit is operating as well as navigating to further screens to configure the unit to suit the demands of the end system.

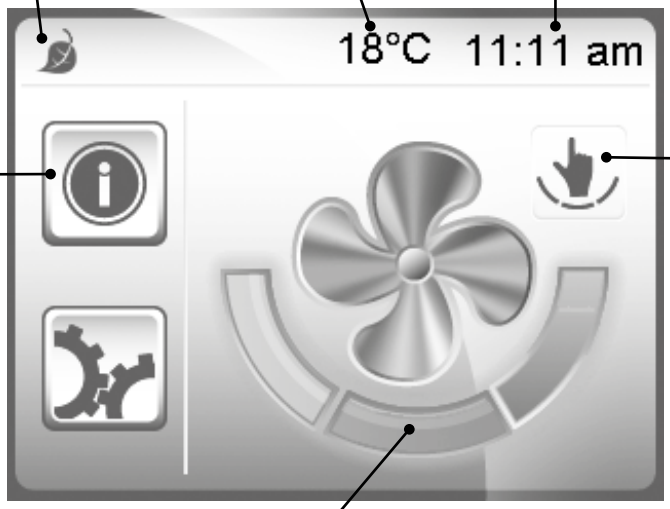
From the Home Screen, it is possible to:
Navigate to further configuration screens to setup system parameters.

- Manually adjust the fan speed.
- Determine the operating status of the product.
- Interrogate and acknowledge system alarms.

HOME SCREEN OVERVIEW

STATUS LINE

- Heat recovery active
- Post-heater active
- Cooling active
- Defrosting in progress



ALARM

- No alarm
- Alarm B
- Alarm A

OPERATING STATUS

- Manual mode
- CO_2 regulation
- Automatic mode
- COP Constant pressure
- CAV Constant Air Volume
- T1 Timer 1
- T2 Timer 2
- T1/T2 Timer 1/Timer 2

OPERATING MODES

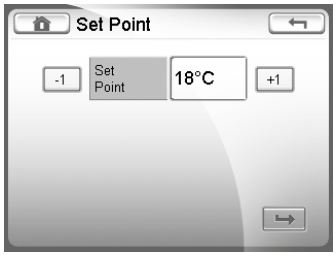

Trickle or low speed


Normal or medium speed

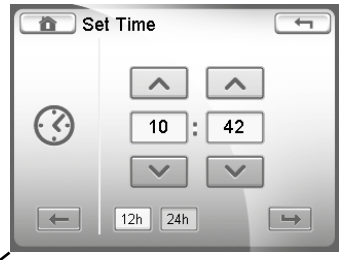

Boost or high speed

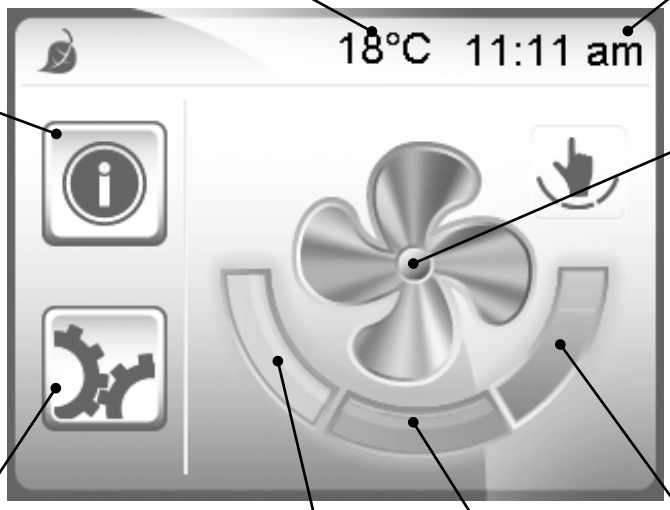
BASIC OPERATION OVERVIEW

SHORTCUT TO SET THE TEMPERATURE SET POINT



SHORTCUT TO SET THE TIME AND DATE





ALARM

See page 17.

SELECT OPERATING MODE

See page 17.

USER SETTINGS

See page 17.

TRICKLE OR LOW SPEED

NORMAL OR MEDIUM SPEED

BOOST OR HIGH SPEED

Press each field to select the operating mode.
Only active in Manual Mode.

OPERATING MODES, ALARMS & USER SETTINGS

OPERATING MODES

The operating status icon present on the Home Screen displays the current operating mode. To change the operating mode, press the large fan icon located on the Home Screen.

The unit has three operating modes selectable through the Operating Modes screen:

Stop Mode: In this mode, the unit will stop both the supply and the extract fans.

Manual Mode: In this mode, the unit can be manually adjusted on the Home Screen to run at three different speeds.

Automatic Mode: In this mode, the unit will be automatically controlled using internal schedules and timers, CO_2 demand control, PIR sensors, etc.

ALARM SCREEN

The alarm icon on the Home Screen indicates the status of any alarms:

No alarm

Alarm B

Alarm type B are deemed non-critical and do not stop the unit ventilation.

Alarm A

Alarm type A are deemed critical and will cause the unit to stop ventilating.

Example 1: No alarm

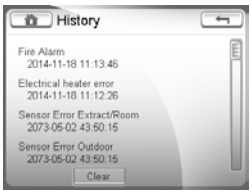
Example 2: Active alarms

CLEARING ALARMS

To clear an individual alarm, press the Ack button. To clear all the Alarms press the Ack All button on top of the screen.

It may not always be possible to clear the status of an alarm as the source of the alarm may immediately trigger the status to return. For example, it will not be possible to clear a faulty temperature sensor alarm until the sensor itself has been repaired or replaced.

ALARM HISTORY



USER SETTINGS

TEMPERATURE STATUS

The temperature set point is used to determine when the post-heater (if fitted) starts to warm the supply air entering the property. The temperature set point can be adjusted to any temperature between 15° C and 35° C, factory setting is 18° C.

Temperatures and output signals are read only values.

FAN STATUS

From the Fan Control Status screen it will be possible to view parameters such as supply and extract fan speeds, %, off, pressures and flow rates.

AIR QUALITY

CO_2 value and CO_2 set point (if activated).

SYSTEM OVERVIEW

Version Control Panel	IP Octet 1
Bootloader Control Panel	IP Octet 2
Version Control Card	IP Octet 3
Bootloader Control Card	IP Octet 4
Unit type	

SCHEDULES

Read only. For more information see section "Schedules" on page 21.

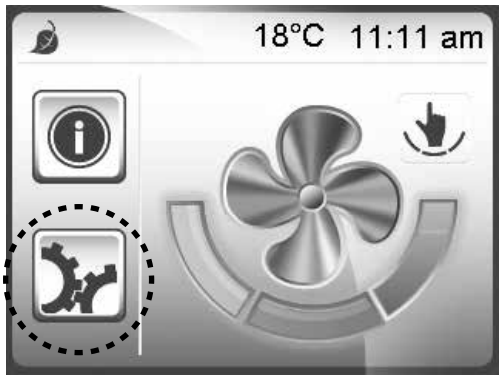
ADVANCED SETTINGS

See section "Advanced settings" on page 19.

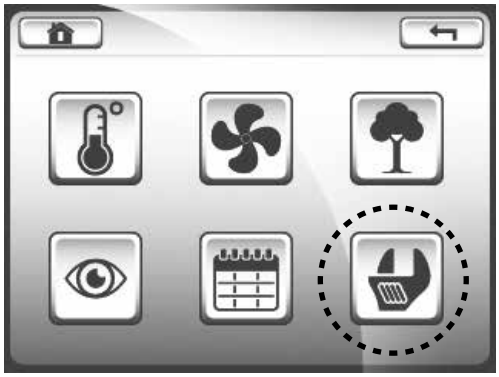
CONFIGURING LANGUAGE, TIME & DATE

SETTINGS

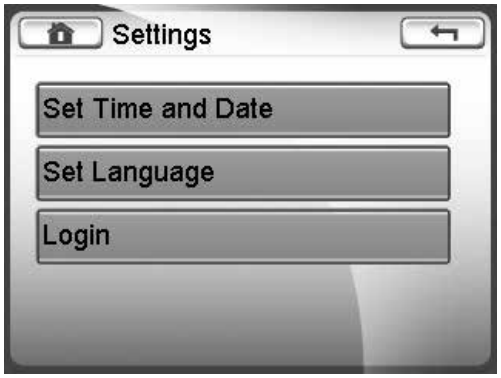
To enter the settings menu:



1. Push on the gear cog button.

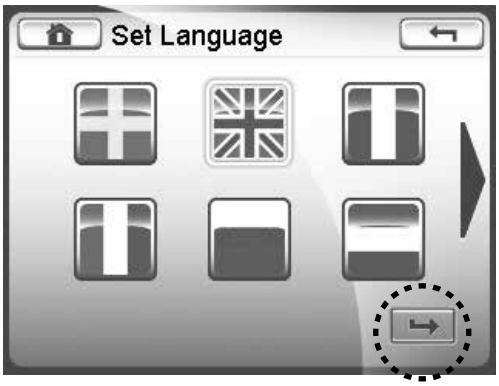


2. Push the spanner button.



3. In this menu you set the date, time and language. It is also possible for installers and service personnel to log in and access additional parameters.

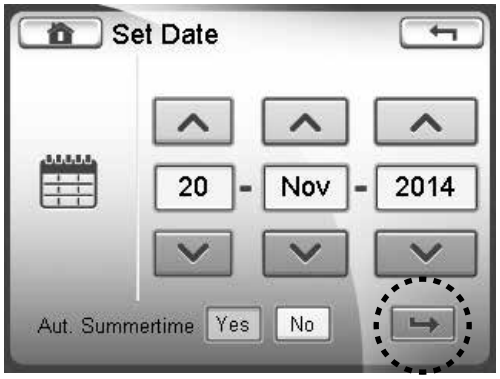
CHOOSE LANGUAGE



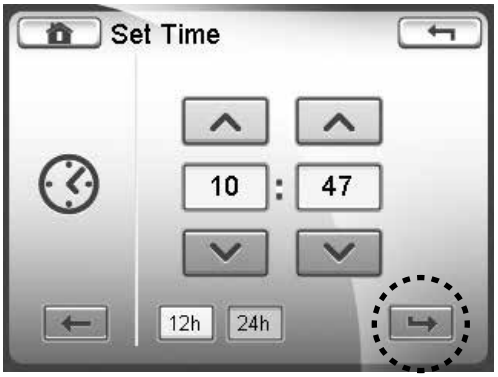
1. Choose the appropriate language flag and press the Confirm button.

Note, further language flags are available after pressing the right arrow icon.

DATE/TIME



1. Set the date and press the Confirm button.



2 Set the time and press the Confirm button

ADVANCED SETTINGS

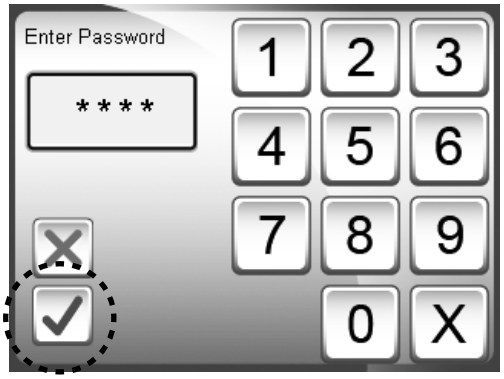
This section provides an overview to the more advanced operations that are available from the Home Screen via the passcode protected Advanced Settings option.

Numerous system parameters can be adjusted through the Settings Screen; however, only those that are relevant and appropriate to the scope of the HMI User Manual will be described. It is strongly recommended to avoid the adjustment of any system parameters not outline within this section.

Access to the Settings Screen is passcode protected to prevent system critical parameters from being accidentally adjusted to values that could compromise the correct operation of the unit. Therefore, extreme caution should be observed when adjusting Advanced Settings parameters.

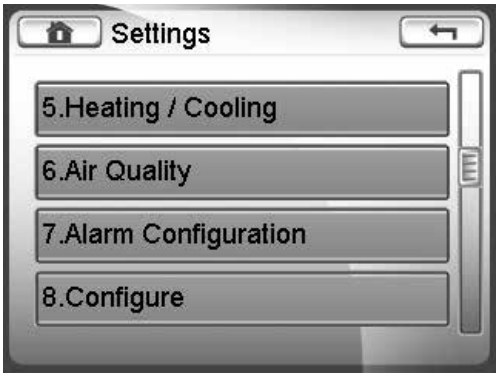
LOGIN

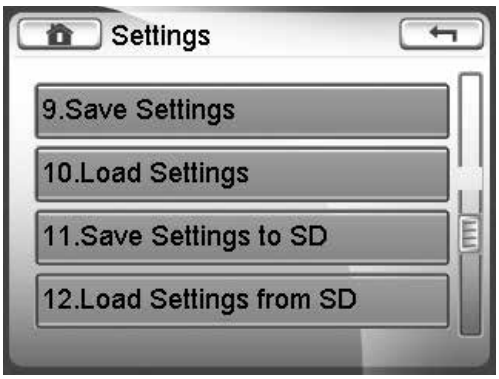
Advanced settings requires the Login passcode, **0000**, to be entered.

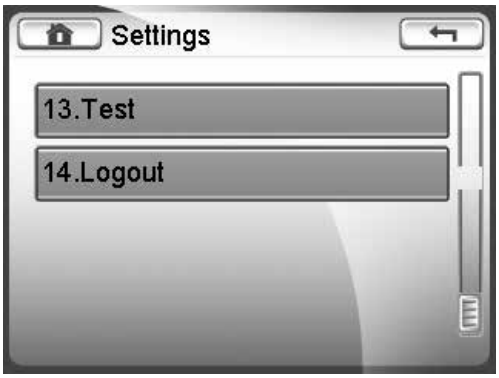


1. Enter the correct passcode and press the Confirm button.

SETTINGS FOR INSTALLER AND SERVICE PERSONNEL



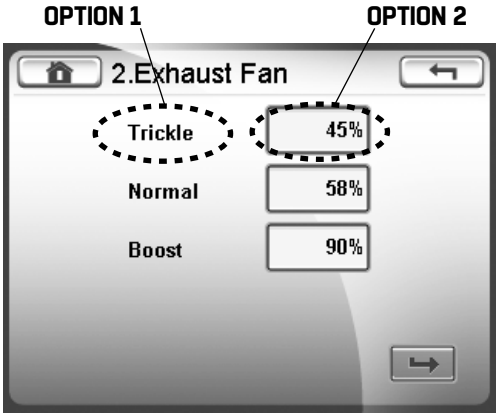




COMMISSIONING WIZARD

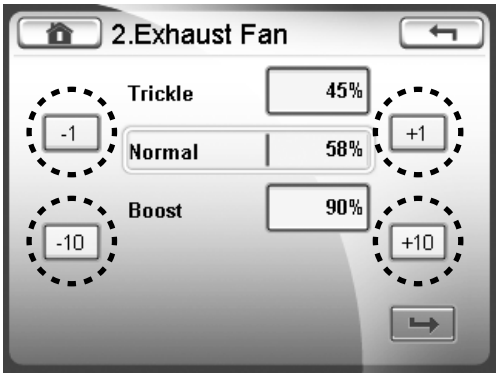
The Commissioning Wizard allows the basic unit settings to be configured in a simple and intuitive manner.

The Commissioning Wizard is accessed by selection the "Run Commissioning Wizard" option from the advanced settings screen. The speeds for each operation mode can be changed in two ways:

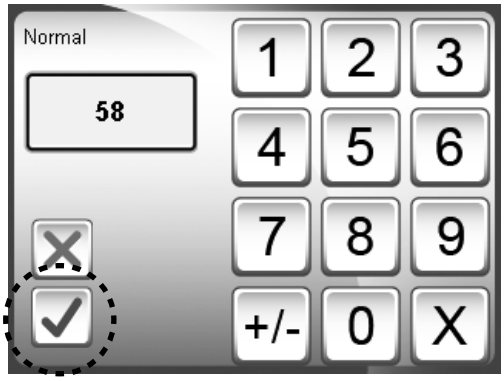


OPTION 1 - Press Trickle, Normal, Boost, then use the ±1 or ±10 buttons.

OPTION 2 - Press the values within the boxes adjacent to Trickle, Normal, or Boost, then use the numerical keypad.

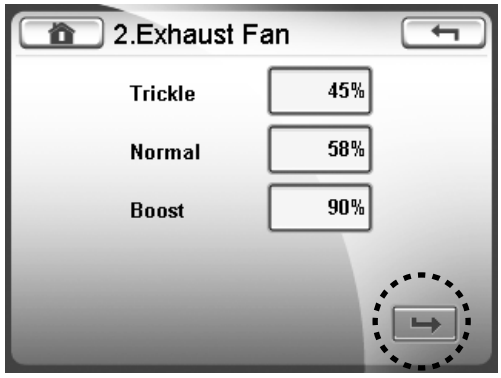


OPTION 1

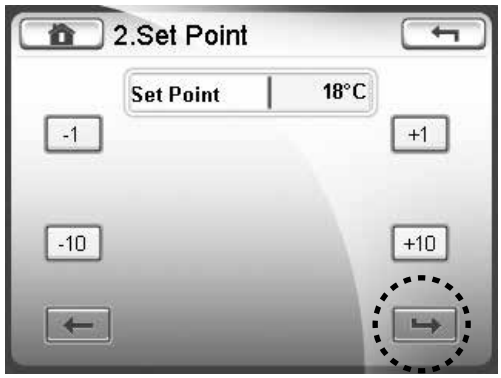


OPTION 2

When completed, press the Confirm button to proceed to the supply fan.



Make the appropriate settings for the supply fan and press the Confirm button.



Adjust the supply air temperature set point in ° C and press the Confirm button to complete the Commissioning Wizard.

Note, whilst in the Commissiong Wizard, the Back button can be pressed at any time to access the previous page of settings.

SCHEDULES

SCHEDULES

Using schedules, it is possible to fully automate the unit to provide specific levels of ventilation at specific times of the day, week or year and to activate the post-heater at a given temperature set point.

To activate schedules, the unit has to be in Automatic mode. Each schedule also needs to be activated by pressing the grey tick button.

WEEKLY (1-8)

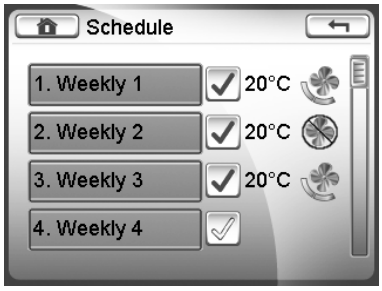
Pressing this option selects the Weekly Schedule adjustment screen to create a timed schedule to run daily in a week.

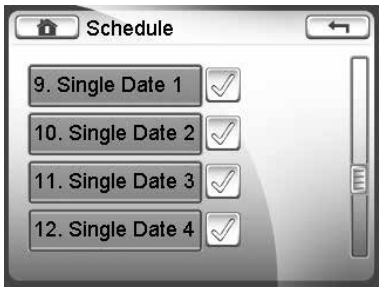
SINGLE DATE (1-4)

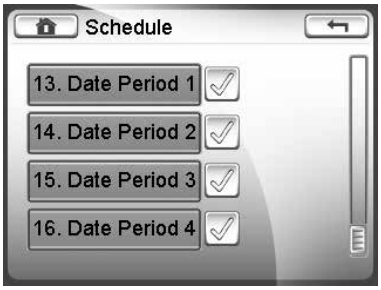
Pressing this option selects the Single Date Schedule adjustment screen to create a timed schedule to run for 24 hours on any single date.

DATE PERIOD (1-4)

Pressing this option selects the Date Period Schedule adjustment screen to create a timed schedule to run from any date to any other date.







WEEKLY SCHEDULE

A weekly schedule is defined as a schedule that automatically runs from a given time to a given time on specified days.

During a weekly schedule, the fans can be set to run at any of the available speeds: Stop, trickle, normal or Boost.

The eight individual weekly schedules are prioritized to remove the potential for time periods to clash with each other. Weekly 8 Schedule has the highest priority and Weekly 1 Schedule the lowest priority. If two or more weekly schedules have start and end times that clash with each other, only the schedule with the highest priority will be used, the other(s) will be ignored.

The supply and extract fans will run at the same speed when set-up through a weekly schedule.

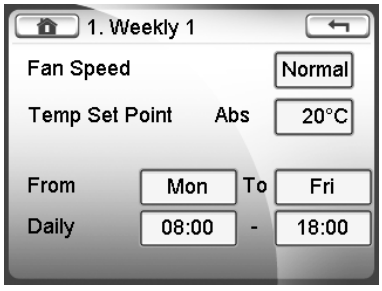
Remember to activate the desired schedules by pressing

EXAMPLE 1 - WEEKLY SCHEDULE

Below is an example of a weekly schedule configured to run the fans at normal speed from 08:00 to 18:00 Monday to Friday. At all other times, the fans are turned off.

If a post heater has been fitted, this will maintain the supply air temperature at 20°C.

Day	Time	Fan Speed	Temp Setpoint
Monday	8-18	Normal	20 °C
Tuesday	8-18	Normal	20 °C
Wednesday	8-18	Normal	20 °C
Thursday	8-18	Normal	20 °C
Friday	8-18	Normal	20 °C
Other time		Stop	



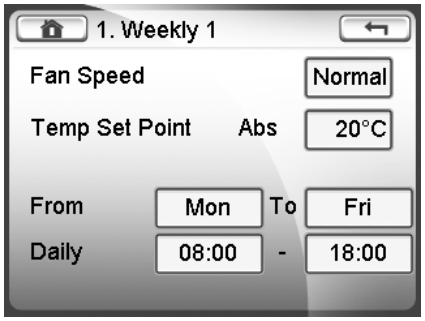
SCHEDULES (CONT)

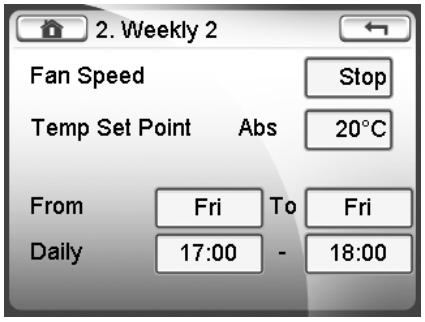
EXAMPLE 2 - WEEKLY SCHEDULE

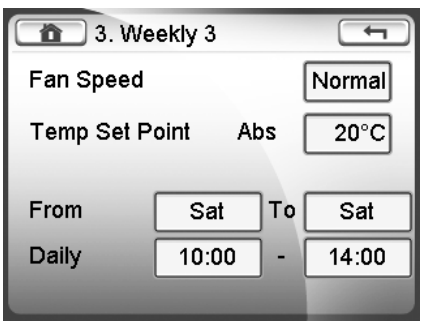
Below is an example of a weekly schedule configured to run the fans at normal speed from 08:00 to 18:00 Monday to Thursday, from 08:00 to 17:00 on Friday and 10:00 to 14:00 on Saturday. At all other times, the fans are turned off.

If a post heater has been fitted, this will maintain the supply air temperature at 20°C.

Day	Time	Fan Speed	Temp Setpoint
Monday	8-18	Normal	20 °C
Tuesday	8-18	Normal	20 °C
Wednesday	8-18	Normal	20 °C
Thursday	8-18	Normal	20 °C
Friday	8-17	Normal	20 °C
Saturday	10-14	Normal	20 °C
Other time		Stop	





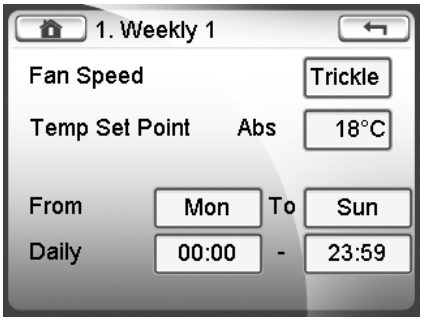


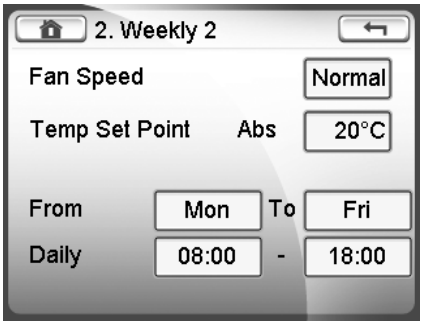
EXAMPLE 3 - WEEKLY SCHEDULE

Below is an example of a weekly schedule configured to run the fans at normal speed from 08:00 to 18:00 Monday to Friday. At all other times, the fans are configured to run at trickle speed. Note, this schedule uses the higher priority of Weekly 2 schedule to over-ride Weekly 1 schedule during the Monday to Friday normal speed periods.

If a post heater has been fitted, this will maintain the supply air temperature at 20°C from 08:00 to 18:00 Monday to Friday and at 18°C at all other times.

Day	Time	Fan Speed	Temp Setpoint
Monday	8-18	Normal	20 °C
Tuesday	8-18	Normal	20 °C
Wednesday	8-18	Normal	20 °C
Thursday	8-18	Normal	20 °C
Friday	8-18	Normal	20 °C
Other time		Trickle (Low)	18 °C





SCHEDULES (CONT) & TIMER FUNCTION

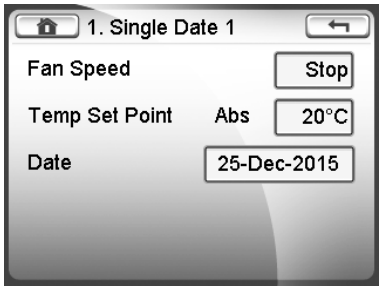
SINGLE DATE SCHEDULE

A single date schedule is defined as a one-off schedule that automatically starts and finishes on the same date and runs for the whole day, i e, from 00:00:00 to 23:59:59.

During a single date schedule, the fans can be set to run at any of the available speeds: Stop, trickle, normal or Boost.

The four individual single date schedules are prioritized to remove the potential for time periods to clash with each other. Single Date 4 Schedule has the highest priority and Single Date 1 Schedule the lowest priority. If two or more single date schedules have start and end times that clash with each other, only the schedule with the highest priority will be used, the other(s) will be ignored.

The supply and extract fans will run at the same speed when setup through a single date schedule.



A single date schedule can be cancelled by setting the schedule date to any date earlier than the current date.

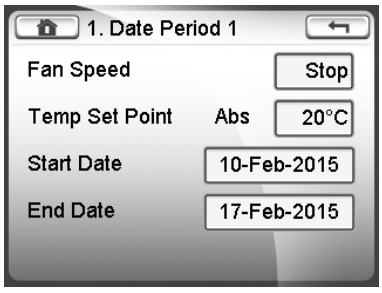
DATE PERIOD SCHEDULE

A date period schedule is defined as a one-off schedule that is configured to run between any to dates, staring at 00:00:00 on the first date and finishing at 23:59:59 on a second date.

During a weekly schedule, the fans can be set to run at any of the available speeds: Stop, trickle, normal or Boost.

The four individual date period schedules are prioritized to remove the potential for time periods to clash with each other. Date Period 4 Schedule has the highest priority and Date Period 1 Schedule the lowest priority. If two or more date period schedules have start and end times that clash with each other, only the schedule with the highest priority will be used, the other(s) will be ignored.

The supply and extract fans will run at the same speed when setup through a date period schedule.

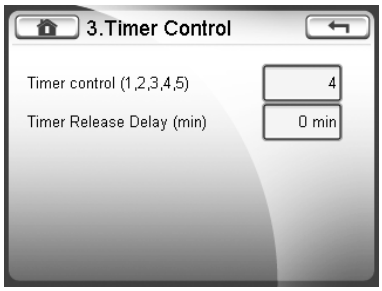


A single date period schedule can be cancelled by setting both the From and To schedule dates to any date earlier than the current date.

TIMER CONTROL

The Timer Control setting determines what speed the fans will run at when up to two external, volt-free switches are applied to the TM1 and PIR terminals - refer to page 12 for customer wiring options.

A '0' in the tables below indicates a volt-free open-circuit input and '1' indicates a volt-free short-circuit input.



TIMER FUNCTION 1

	Timer 1	Timer 2
Manual/Automatic Mode	0	0
Trickle	1	0
Normal	0	1
Boost	1	1

TIMER FUNCTION 2

	Timer 1	Timer 2
Manual/Automatic Mode	0	0
Trickle	1	0
Boost	0	1
Stop	1	1

TIMER FUNCTION 3

	Timer 1	Timer 2
Manual/Automatic Mode	0	0
Normal	1	0
Boost	0	1
Stop	1	1

TIMER FUNCTION 4 (DEFAULT)

	Timer 1	Timer 2
Stop	0	0
Manual/Automatic Mode	1	0
Stop	0	1
Boost	1	1

TIMER FUNCTION 5

	Timer 1	Timer 2
Stop	0	0
Manual/Automatic Mode	1	0
Stop	0	1
Normal	1	1

CONTROL FUNCTIONS

1. HEAT RECOVERY, HEATING AND COOLING

The unit is configured differently with regard to heat recovery, heat recovery and cooling, see below.

HEAT RECOVERY

- Counterflow Plate Heat Exchanger with Thermo Ice® defrosting and 100% bypass

CHOICE OF HEATING FUNCTION

- No heater
- Electric heater
- A water heater with frost-guard function

CHOICE OF COOLING

- No cooling
- Water-cooling
- DX cooling, 1-stage

CONTROL FUNCTION

The control function works as follows:
Regardless of control mode the unit tries to achieve the desired setpoint.

This is done by the unit depending on the needs, demand for heat recovery, heating or cooling. Built into the system is also a dead zone. The dead zone function (usually 2°C) acts as a temperature zone between heat recovery and cooling unit where neither calls for heat recovery or cooling.

The reason for having a dead zone, is that the temperature will be slightly lower in winter, and slightly higher in summer. This is energy-efficient and in practice even more convenient for people staying in the room.

2. TEMPERATURE CONTROLS

The unit has three temperature control options, supply air, extract air control and room control.

Room control and extract air control is the same control type with the difference that in combination with room control an external room sensor is needed (separate ordering code). In addition it is possible to use outdoor temperature compensation. This control mode cannot be combined with extract air control or room control.

The unit is configured for supply air control as standard. To obtain other control modes, first the controller must be changed from standard mode to cascade mode. Then control mode is selected by changing the cascade reference to extract air control/room control (0) or outdoor temperature compensation (1). Below is a description of the different control modes.

SUPPLY AIR CONTROL

To maintain a constant supply air temperature, the controller works from a fixed setpoint and the supply air temperature. Based on these parameters, the controller controls the current heating and cooling sequences.

EXTRACT AIR CONTROL

The extract air temperature gives a good average value of the temperature in different rooms. Using this the unit controls the supply air temperature to maintain the extract temperature at a desired level.

This method is suitable for ventilation systems that supply a number of similar rooms. In cases where different rooms have different heating requirements, this method should not be used. This is because the unit cannot detect the varying heating needs, but can only read an average temperature.

The limits on the supply air temperature (min. temp. / max. temp.) ensure that the supply air temperature is maintained within the set range.

DEFAULT PARAMETERS FOR EXTRACT AIR CONTROL

1. Controller = 2	Selects cascade control
2. Cascade reference = 0	Selects extract air control
3. Cascade A = 0.5	When the sensor gets colder than given setpoint value
4. Cascade B = –0.5	When the sensor gets hotter than given setpoint value
5. Min. temp. = 15°C	Sets lowest supply air temperature
6. Max. temp. = 25°C	Sets highest supply air temperature

EXAMPLE

1. Setpoint = 18°C
2. Extract air temperature = 16°C

This means that the new calculated setpoint for the supply air controller is:

Calculated setpoint = setpoint + (setpoint – exhaust air temperature) x cascade A = 18 + (18-16) x 0.5 = 19 ° C.

ROOM CONTROL

Room control gives the best control of temperature in a specific room and is used when only one unit serves this room. This method works best for larger premises.

CONTROL FUNCTIONS (CONT.)

By replacing the extract temperature sensor with a room temperature sensor placed in the room in question, a good room temperature value is achieved.

This enables the unit to regulate the supply air temperature in a way that maintains the room temperature at a desired level.

Limitation of the supply air temperature (min. temp. and max. temp.) ensures that the supply air temperature is maintained within the set range.

DEFAULT PARAMETERS FOR ROOM CONTROL

1. Controller = 2	Selects cascade control
2. Cascade reference = 0	Selects room control
3. Cascade A = 0.5	When the sensor gets colder than given setpoint value
4. Cascade B = –0.5	When the sensor gets hotter than given setpoint value
5. Min. temp. = 15°C	Sets lowest supply air temperature
6. Max. temp. = 25°C	Sets highest supply air temperature

EXAMPLE

1. Setpoint = 18°C
2. Room temperature = 22°

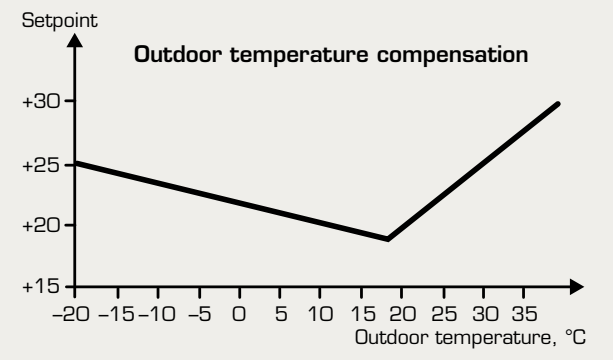
This means that the new calculated setpoint for the supply air controller is: Calculated setpoint = setpoint + (setpoint – room air temperature) x cascade B = 18 – (18 – 22) x (–0.5) = 16°C.

OUTDOOR TEMPERATURE COMPENSATION

The setpoint temperature for supply air can be adjusted up or down depending on the outdoor temperature. By setting a higher set point value both on cold winter days and hot summer days indoors comfort is improved.
In summer, this will increase energy savings. Outdoor temperature compensation can not be combined with extract air control or room control.

DEFAULT PARAMETERS FOR OUTDOOR TEMPERATURE COMPENSATION

1. Controller = 2	Selects cascade control.
2. Cascade reference = 1	Selects outdoor temperature compensation.
3. Cascade A = 0,05	When the sensor gets colder than given setpoint value.
4. Cascade B = 0.03	When the sensor gets hotter than given setpoint value.
5. Min. temp. = 15°C	Sets lowest supply air temperature.
6. Max. temp. = 25°C	Sets highest supply air temperature.



EXAMPLE 1

1. Setpoint = 18°C
2. Outdoor air temperature = –2°C

This means that the new calculated setpoint for the supply air controller is:
Calculated setpoint = setpoint + (setpoint – outdoor air temperature) x cascade A = 18 + (18 –(-2)) x 0.05 = 19°C

EXAMPLE 2

1. Setpoint = 18°C
2. Outdoor air temperature = 28°C

This means that the new calculated setpoint for the supply air controller is:
Calculated setpoint = setpoint + (setpoint – outdoor air temperature) x cascade B = 18 – (18 – 28)) x 0.30 = 21°C.

3. FROST PROTECTION

Warning! Do not change these parameters unless it is absolutely necessary. If the unit is misconfigured the water coil can freeze and cause water damage to property.

Frost protection is used during low outdoor temperatures to prevent the coil from freezing. When the unit is stopped, the temperature in the water coil is maintained at the setpoint to keep the unit warm. If there is a risk of freezing in the water coil the motorized valve is controlled to open.

If the temperature drops below the adjustable limit value an A-alarm is obtained, which then stops the unit.

4. DEFROST FUNCTION (THERMO ICE)

During cold periods when frost appears, the defrost function takes care of defrosting and the supply air fan stops.

The defrost function does not start until it´s needed, which means when a major part of the counterflow heat exchanger is covered with frost. This function keeps the heat recovery as high as possible in each moment. The defrost function makes a difference by frost and condence. The defrost cycle works for 15 minutes.

CONTROL FUNCTIONS (CONT.)

5. COOLING RECOVERY

Cooling recovery is activated if the outdoor temperature is 2° C higher than the extract air temperature and the unit is operating in "summer mode", and the bypass damper will close.

6. NIGHT COOLING

Night cooling is used in summertime to reduce cooling load at unit start-up and to limit the maximum temperature during non-working hours. This is done by making use of cold outside air during cool summer nights.

6.1. STARTING CONDITIONS

Parameters	Value (exemple)	Comment
Night cooling activated	Yes	Activated night cooling
Room setpoint	22ºC	Room setpoint night cooling
Delta	5ºC	Min difference room temp.
Hysteresis	2ºC	Hysteresis for night cooling
Test time, start	kl. 22.00	Start time for night cooling test
Test time, off	kl.22.15	Stop time for night cooling test
Max time	540 minutes	Maximal activation time for night cooling

a. Night cooling activated
b. Auto mode enabled
c. The unit is in the stop position as scheduled

6.2. TEST PERIOD AND EVALUATION

a. The unit is started at. 22.00 and then operates at normal speed
b. At 22.15 it is determined whether night cooling is needed or not. The following conditions must be met:
   1. The unit is in "Summer mode" .
   2.Outdoor temperature < Extract temperature – Delta.
   3. Extract temperature > Room setpoint + Hysteresis.
c. If the above conditions are met the night cooling starts.

6.3. THE FOLLOWING TAKE PLACE DURING NIGHT COOLING

a. Bypass damper will open, post heater and any cooling is blocked.
b. The fans are switched to the high speed setting.

6.4. NIGHT COOLING TAKES PLACE AS LONG AS THE FOLLOWING CONDITIONS ARE FULFILLED:

a. Unit is in "Summer mode".
b. Outdoor temperature < Extract temperature – Delta.
c. Extract temperature > Room setpoint.
d. Function's maximum activation time is not reached.

7. PRESSURE OR FLOW CONTROL PRESSURE CONTROL (COP (ACCESSORY))

Control principle in which the unit maintains a constant duct pressure. Normally used in variable flow systems (VAV).

Pressure sensor is supplied as a loose accessory. Pressure control regulates air pressure in index duct (duct with a maximum pressure drop, and where the static pressure is lowest). The pressure sensor (GP3) is placed at the beginning of this duct. The extract sensor (GP4) is placed in the extract duct at a suitable location with representative pressure. For settings see the Parameter list.

CONSTANT FLOW CONTROL (CAV)

Control principle in which the unit maintains a constant duct flow. Using a measurement pressure Δp_m in Pa and a constant k, the airflow q in l/s is calculated with the following formula:

$$q = \frac{1000}{k} \times \sqrt{\Delta p_m}$$

The measuring pressure, Δp_m, is the difference between the pressure in the empty section at the fan inlet and the pressure inside the inlet cone.
The pressure sensor is connected via two externally placed measuring nipples. Value of the constant (k) is shown in the table below. For settings see the parameter list.

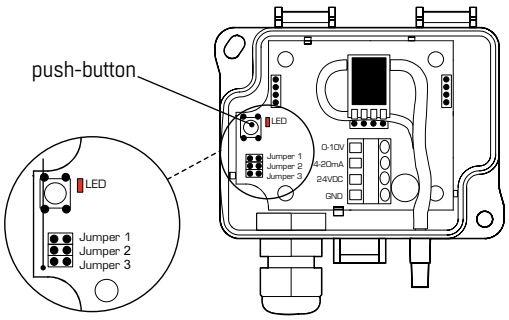
Size	1	2	3	4	5	6
k-value extract air fan	123.2	80.3	59.5	44.4	29.1	28.8
k-value supply air fan	123.2	80.3	59.5	44.4	29.1	28.8

CONNECTION OF PRESSURE SENSORS

The pressure sensor shall be set to the working range of 0–500 Pa.

Location	Terminal	Connection	No.	Pressure sensor
Supply air duct	GP3	Y	31	0–10 V
		G0	30	GND
		G	29	24 V DC
Extract air duct	GP4	Y	45	0–10 V
		G0	44	GND
		G	43	24 V DC

ZERO POINT-CALIBRATION



The sensors must be zeroed during commissioning. They should then be zeroed annually. The sensors should have been energized for approximately one hour before calibration is carried out. After that, remove the hoses from the sensors. To start calibration press the push-button next to the pressure range jumpers. The red LED lights up and goes out after about a second. Reassemble the air hoses. Done!

PARAMETER LIST

Some parameters and functions have a more detailed explanation after the parameter list. The Curo ™ Touch control panel has a wide range of applications. Only relevant parameters are listed below. It is strongly recommended to avoid the adjustment of any system parameters that are not outlined in this section.

TEMPERATURE STATUS

Parameter	Type of value[1)]	Range	Unit	Default value	Comments
Supply air sensor	R	–40-100	°C	–	
Outdoor air sensor	R	–40-100	°C	–	
Extract/Room air sensor	R	–40-100	°C	–	
Frost protection sensor	R	–40-100	°C	–	For unit with Hot Water Coil
Defrost sensor	R	–40-100	°C	–	
Set point	R/W	15-35	°C	19	
Summer / Winter mode	R	Summer / Winter	–	–	
Output signal, Post Heater	R	0-100	%	–	
Output signal, Pre Heater	R	0-100	%	–	Not for eCO PREMIUM™
Output signal, Heat Recovery	R	0-100	%	–	Not for eCO PREMIUM™
Output signal, Cooling	R	0-100	%	–	
Control mode / Calculated Set point	R	15-35	°C	–	

FAN STATUS

Parameter	Type of value[1)]	Range	Unit	Default value	Comments
Supply Fan, speed	R	0 or 30-100	%	–	
Extract Fan, speed	R	0 or 30-100	%	–	
Pressure Supply air	R	0-2000	Pa	–	For unit with COP
Pressure Extract air	R	0-2000	Pa	–	For unit with COP
Suppy air pressure set point	R	0-2000	Pa	–	For unit with COP
Extract air pressure set point	R	0-2000	Pa	–	For unit with COP
Air flow, Supply air	R	0-9999	Pa	–	For unit with CAV
Air flow, Extract air	R	0-9999	Pa	–	For unit with CAV
Supply air flow, Set point	R	0-9999	Pa	–	For unit with CAV
Extract air flow, Set point	R	0-9999	Pa	–	For unit with CAV

AIR QUALITY

Parameter	Type of value[1)]	Range	Unit	Default value	Comments
CO_2 value	R	0-2000	ppm	–	In extract air
CO_2, Set point	R	0-2000	ppm	800	

SYSTEM OVERWIEV

Parameter	Type of value[1)]	Range	Unit	Default value	Comments
Software version, Control panel	R	–	–	–	
Bootloader version, Control panel	R	–	–	–	
Software version, Control board	R	–	–	–	
Bootloader version, Control board	R	–	–	–	
Unit type	R	–	–	Ecostar	Also for eCO PREMIUM™
IP Octet 1	R	0-255	–	–	IP–address, accessory
IP Octet 2	R	0-255	–	–	
IP Octet 3	R	0-255	–	–	
IP Octet 4	R	0-255	–	–	

SCHEDULES

Parameter	Type of value[1)]	Range	Unit	Default value	Comments
Schedule	R	–	–	–	Active schedules only, read only

[1)] R/W = Read and write value, R = Read only value

PARAMETER LIST, CONT.

SETTINGS

Parameter	Type of value[1)]	Range	Unit	Default value	Comments
Set Date and Time	R/W	–	–	–	
Set Language	R/W	–	–	Swedish	
Login	R/W	0000-9999	–	0000	For installers and Service personnel
Settings					***For installers and Service personnel***
1. Schedule					See page 21.
2. Commissioning Wizard					See page 20.
3. Timer Control					See page 21.
Timer control	R/W	1-6	–	4	
Timer Release Delay	R/W	0-9999	min	0	
4. Fan Control					
4.1 Fan Settings					
Boost Running Timer	R/W	Yes / No	–	No	
Boost Running Time	R/W	0-9999	min	120	
Startup Time	R/W	0-32767	s	15	Extract Fan starts directly, Supply Fan after selected time
Shut Down Time	R/W	0-32767	s	0	180 sec for unit with Electrical heater
4.2 COP / CAV					Constant pressure / Constant air volume. For units ordered with Pressure sensors
Pressure Control Supply air	R/W	Yes/No		Yes	
Pressure Control Extract air	R/W	Yes/No		Yes	
Airflow Control Supply	R/W	Yes/No		Yes	
Airflow Control Extract	R/W	Yes/No		Yes	
Only Supply, Extract as slave	R/W	Yes/No		No	
Ratio Supply/Extract	R/W	0-200	%	100	
Supply air pressure Set point	R/W	0-2000	Pa	150	
Extract air pressure Set point	R/W	0-2000	Pa	150	
Supply, Trickle Airflow Set point	R/W	0-9999	l/s	-	
Supply, Normal Airflow Set point	R/W	0-9999	l/s	-	
Supply, Boost Airflow Set point	R/W	0-9999	l/s	-	
Extract, Trickle Airflow Set point	R/W	0-9999	l/s	-	
Extract, Normal Airflow Set point	R/W	0-9999	l/s	-	
Extract, Boost Airflow Set point	R/W	0-9999	l/s	-	
5. Heating / Cooling					
5.1 Pre Heater					Pre Heater (accessory, stand alone) not connected to ERU
Pre Heater	R/W	Yes/No	-	No	
Warming Filter	R/W	Yes/No	-	No	
5.2 Heating/Cooling					See page 24.
Control mode	R/W	1-2		1	1 = Standard, supply air control 2 = Cascade control
Minimum Supply temp	R/W	15-35	°C	15	
Maximum Supply temp	R/W	15-35	°C	25	
Cooling	R/W	Yes/No		No	
Cooling DX	R/W	Yes/No		No	
Dead zone Cooling	R/W	Yes/No		Yes	
Dead zone	R/W	0-25	°C	2	
Block cooling in Winter	R/W	Yes/No		Yes	
Block heating in Summer	R/W	Yes/No		Yes	
Post Heater	R/W	On/Off		On	
Cascade reference	R/W	0-1		0	0 = Extract air control 1 = Outdoor air compensation
Cascade A	R/W	–10-10	°C	0,5	
Cascade B	R/W	–10-10	°C	–0,5	
Relative absolute temperature	R/W	rel/abs		abs	Relative or absolute temperatures in Schedule

[1)] R/W = Read and write value, R = Read only value

PARAMETER LIST, CONT.

Parameter	Type of value[1)]	Range	Unit	Default value	Comments
5.3 Night Cooling					See page 26.
Night Cooling	R/W	Yes/No		No	Choose YES to activate
Room Set point	R/W	15-50	°C	20	
Test period start	R/W	19:00-04:00	–	22:00	
Test preiod stop	R/W	19:00-04:00	–	22:15	
Delta	R/W	0-20	°C	5	
Hysteresis	R/W	0-20	°C	2	
Maximum running time	R/W	1-720	min	540	
5.4 Defrosting					See page 25.
5.5 Cooling Recovery					
Cooling Recovery	R/W	Yes/No	–	Yes	
Temperature difference (outdoor-extract)	R/W	0-15	°C	2	
5.6 Summer/Winter mode					
Current season mode	R	Summer/Winter	–	–	
Automatic/Manual mode	R/W	Auto/Manual	–	Auto	
Force to	R/W	Summer/Winter	–	Winter	
5.7 Frost Protection					Se page 25.
Pump stop	R/W	Yes/No	–	Yes	No = Pumps always running
Pump Stop mode	R/W	Summer/Winter Heating/Cooling		Heating / Cooling	Heating/Cooling = Pumps are running when needed. Summer/Winter = Heat pump runs when Winter, Cooling pump runs when Summer. Pump Motion every day 12:00-12:05.
Constant temp Hot Water Coil	R/W	0-50	°C	25	
Low limit running temp	R/W	0-50	°C	15	
Frost Protection Alarm, Set Point	R/W	0-50	°C	7	
6. Air Quality					
6.1 CO_2					
CO_2	R/W	Yes/No	–	No	
CO_2 Set point	R/W	0-2000	ppm	800	
P-band	R/W	0-2000	ppm	800	
I-time	R/W	0-9999	s	600	
ppm at 0V	R/W	0-9999	ppm	0	
ppm at 10V	R/W	0-9999	ppm	2000	
CO_2 Low Limit	R/W	Trickle / Normal	–	Normal	
7. Alarm Configuration					
7.1 Alarm Settings					
Dirty Filter alarm time	R/W	0-600	days	0	Not for eCO PREMIUM™
A and B on first Relay	R/W	Yes/No	–	Yes	
Enable temperature alarm	R/W	Yes/No	–	Yes	
Temperature alarm	R/W	-10 - +10	°C	5	
7.2 Alarm categories					
Fire Alarm	R/W	A/B	–	A	External function
Sensor Error Supply	R/W	A/B	–	A	
Sensor Error Outdoor	R/W	A/B	–	A	
Sensor Error Extract / Room	R/W	A/B	–	A	
Sensor Error Frost Protection	R/W	A/B	–	A	For unit with Hot Water Coil
Sensor Error Defrost	R/W	A/B	–	A	
Sensor Error AI10	R/W	A/B	–	B	Not for eCO PREMIUM™
Dirty Filter Alarm	R/W	A/B	–	B	Not for eCO PREMIUM™
Supply Fan Error	R/W	A/B	–	A	
Extract Fan Error	R/W	A/B	–	A	
Defrost Alarm	R/W	A/B	–	B	Not for eCO PREMIUM™
RHE Failure	R/W	A/B	–	B	Not for eCO PREMIUM™
Filter Alarm Supply	R/W	A/B	–	B	
Filter Alarm Extract	R/W	A/B	–	B	
Electrical Heater Error	R/W	A/B	–	A	
Pump Heater Malfunction	R/W	A/B	–	A	

[1)] R/W = Read and write value, R = Read only value

PARAMETER LIST, CONT.

Parameter	Type of value[1)]	Range	Unit	Default value	Comments
7.2 Alarm categories, cont.					
Frost Protection	R/W	A/B	–	A	
Alarm Cooling	R/W	A/B	–	B	
Pump Cooling Malfunction	R/W	A/B	–	B	
Temperature alarm	R/W	A/B	–	A	
RHE Belt Alarm	R/W	A/B	–	B	Not for eCO PREMIUM™
7.3 Alarm Delays					
Fire Alarm	R/W	0-9999	s	2	External function
Sensor Error Supply	R/W	0-9999	s	5	
Sensor Error Outdoor	R/W	0-9999	s	5	
Sensor Error Extract / Room	R/W	0-9999	s	5	
Sensor Error Frost Protection	R/W	0-9999	s	5	For unit with Hot Water Coil
Sensor Error Defrost	R/W	0-9999	s	5	
Sensor Error AI10	R/W	0-9999	s	5	Not for eCO PREMIUM™
Supply Fan Error	R/W	0-9999	s	60	
Extract Fan Error	R/W	0-9999	s	60	
RHE Failure	R/W	0-9999	s	5	Not for eCO PREMIUM™
Filter Alarm Supply	R/W	0-9999	s	60	
Filter Alarm Extract	R/W	0-9999	s	60	
Electrical Heater Error	R/W	0-9999	s	2	
Pump Heater Malfunction	R/W	0-9999	s	2	
Frost Protection	R/W	0-9999	s	2	
Alarm Cooling	R/W	0-9999	s	2	
Pump Cooling Malfunction	R/W	0-9999	s	2	
Temperature alarm	R/W	0-9999	min	10	
RHE Belt Alarm	R/W	0-9999	s	120	Not for eCO PREMIUM™
7.4 Contact functions NO/NC					
DI1 Timer 1	R/W	NO/NC	–	NO	
DI2 Timer 2	R/W	NO/NC	–	NO	
DI3 RHE Rotation Guard	R/W	NO/NC	–	NO	Not for eCO PREMIUM™
DI4 Defrost pressure switch	R/W	NO/NC	–	NO	Not for eCO PREMIUM™
DI5 Filter Alarm Supply	R/W	NO/NC	–	NO	
DI6 Filter Alarm Extract	R/W	NO/NC	–	NO	
DI8 Fire Alarm	R/W	NO/NC	–	NC	
DI9 Cooker Hood	R/W	NO/NC	–	NO	Not for eCO PREMIUM™
DI7 Alarm Heater	R/W	NO/NC	–	NO	NC with Electrical Heater
DI10 Alarm cooling	R/W	NO/NC	–	NO	
8. Configure					
8.1 IP Address					
Static / Dynamic	R/W	Static/Dynamic	–	Dynamic	Static = Manual Dynamic = Automatic via DHCP
IP Address	R/W	–	–	–	
Subnet Mask	R/W	–	–	–	
8.2 Menu Configure					
Log to USB	R/W	Yes/No	–	No	For Service Personnel
Unit Type	L	–	–	Ecostar	Also for eCO PREMIUM™
Auto logout time	R/W	0-32767	min	10	
Threshold Heater	R/W	0-100	%	0	For Service Personnel
Threshold Cooling	R/W	0-100	%	0	For Service Personnel
Threshold Heat Exchanger	R/W	0-100	%	0	For Service Personnel
Threshold External Fan	R/W	0-100	%	5	For Service Personnel
8.3 Screensaver					
Screensaver	R/W	On/Off	–	On	
Timeout	R/W	–	min	10	
8.4 Modbus BMS					
Modbus Slave Address	R/W	0-255	–	2	
Baudrate	R/W	9.6, 19.2, 38.4	–	19,2	
Parity	R/W	None, Even, Odd	–	None	
Data bits	R/W	7,8	–	8	
Stop bits	R/W	1,2	–	1	

[1)] R/W = Read and write value, R = Read only value

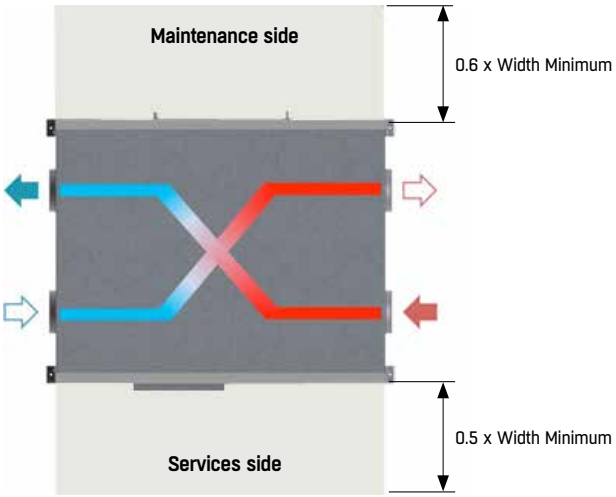
PARAMETER LIST, CONT.

Parameter	Type of value[1)]	Range	Unit	Default value	Comments
8.5 Mac address					
Mac address	R	–	–	–	
8.7 Login Settings					
Auto Logout	R/W	Yes/No	–	Yes	
Set Password	R/W	–	–	–	To change Password
8.8 About					
Software Version Control Panel	R	–	–	–	
Software Version Control Board	R	–	–	–	
Bootloader version Control Board	R	–	–	–	
9. Save Settings					
Slot 1	–	–	–	–	
Slot 2	–	–	–	–	
Slot 3	–	–	–	–	
Slot 4	–	–	–	–	
Slot 5	–	–	–	–	
10. Load Settings					
Slot 1	–	–	–	–	
Slot 2	–	–	–		
Slot 3	–	–	–	–	
Slot 4	–	–	–	–	
Slot 5	–	–	–	–	
11. Save Settings to SD					
Slot 1	–	–	–	–	
Slot 2	–	–	–	–	
Slot 3	–	–	–	–	
Slot 4	–	–	–	–	
Slot 5	–	–	–	–	
12. Load Settings from SD					
Slot 1	–	–	–	–	
Slot 2	–	–	–	–	
Slot 3	–	–	–	–	
Slot 4	–	–	–	–	
Slot 5	–	–	–	–	
13. Test					For Service Personnel
13.1 Inputs	–	–	–	–	
13.2 Outputs	–	–	–	–	
14. Logout					

[1)] R/W = Read and write value, R = Read only value

MINIMUM MAINTENANCE SPACE, CONDENSATION REMOVAL AND DRAIN TRAP

15. MINIMUM SPACE REQUIRED FOR THE MAINTENANCE

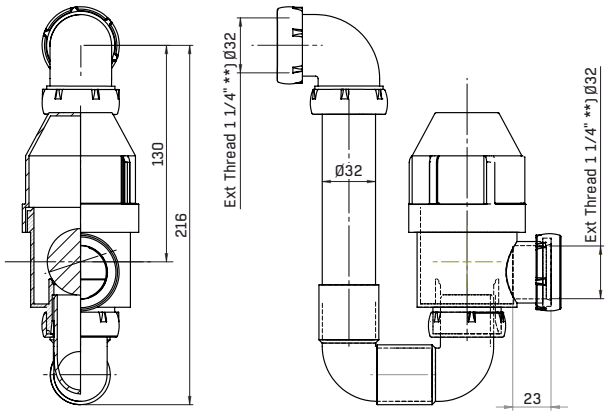


Unit Size	Unit Width (mm)
1	1220
2	1220
3	1520
4	1520
5	1720
6	1720

16. CONDENSATION REMOVAL AND DRAIN TRAP

The unit is equipped with a condensate drainage point to which a drain trap should be attached, to ensure effective evacuation of water during normal operation. Any drain trap should be as detailed below and should have a minimum slope of 3°.

Use of a drain trap is essential for the proper functioning of the energy recovery unit, in order to prevent air being sucked in and also to promote the natural flow of condensate. A drain trap is available as an accessory.



INSTALLATION, FITTING AND MAINTENANCE INSTRUCTIONS FOR DUCTED ELECTRIC PRE-HEATER

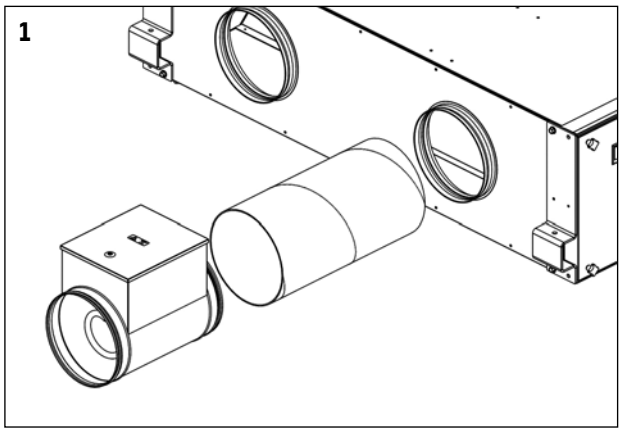
17. INSTALLATION AND FITTING INSTRUCTIONS FOR DUCTED ELECTRIC PRE-HEATER

The electric pre-heater is to prevent frost damage to the heat exchanger and to bring the temperature up to its minimum operating level.

FITTING

This is a ducted pre-heater that is fitted to connecting duct work and is connected to the supply inlet spigot using appropriate number of tek screws. The air flow through the heater must be in the direction of the arrow located on the side of the heater close to the connection box. The heater can be fitted in either horizontal or vertical ducting but can only be fitted in ducts that are made of incombustible, hot and cold resistant material.

1



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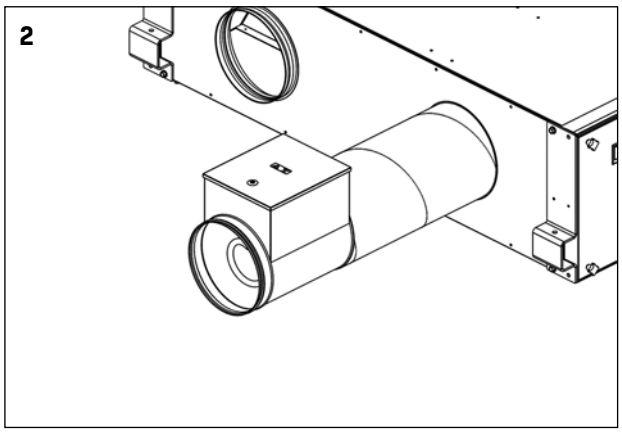
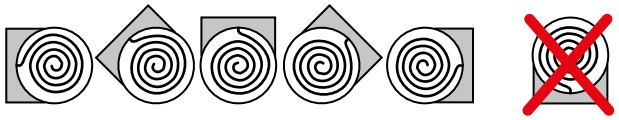
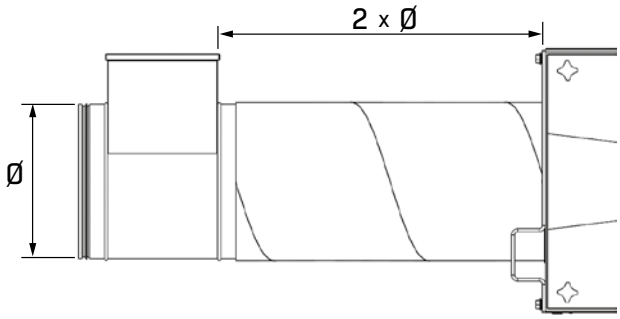


The electrical connection cabinet can be freely placed facing upwards or sideways to a maximum angle of 90°. Fitting with the box facing downwards is **NOT** allowed.
The pre-heater is a stand alone device without connection to the Curo® Control System.

The access opening in the heater must be equipped with a fixed mesh or an intake air device which makes it impossible to touch the element intake.



The distance from the heater to a duct bend, valve, filter, etc., should correspond to at least twice the duct diameter, otherwise there is a risk that the airflow through the heater is uneven which can cause activation of the overheating cut-out.



The heater may be insulated in accordance with valid regulations for ventilation ducting. However, the insulation material must be incombustible. The cover of the heater must be free from insulation so that the name plate is visible and the cover can be removed.

The area where the heater is installed must be kept accessible to allow replacement and servicing. The distance from the heater's metal casing to any wood or other combustible material must **NOT** be less than 30mm.

MAINTENANCE

No maintenance is required except a periodic functional test.

OVERHEATING

When the overheating cut-out with manual reset has been activated, the following actions should be taken: The heater must not be interfered with in any way, such as removal of the cover, except by an authorised electrical fitter. Turn off the mains power and investigate carefully the reason for activation of the cut-out. When the fault has been eliminated then the cut-out can be reset.

MAINTENANCE FOR HOT WATER POST-HEATER CONNECTIONS

18. MAINTENANCE FOR HOT WATER POST-HEATER CONNECTIONS

The pipe couplings of the heater must not be forced to carry the dead weight of the external piping system. The pipes must be relieved of the expansion forces exerted by the piping system. The connections must be protected against impacts, external loads and mechanical stress. Any mechanical loads and impacts may damage the manifold header.

PROTECTION AGAINST FROST EXPANSION

When there is a risk of freezing and consequent tube damage, one of the two following measures must be taken:

The coil must be filled with a suitable antifreeze medium. The liquid volume of the coil is stated on the rating plate which is located on the side of the coil with the connections.

All the water must be drained from the pipes and the coil. The plugs on the coil should not be fitted until the system is again re-filled with water. Compressed air should be blown into the coil to ensure it is properly emptied from water.

HIGH TEMPERATURES

On installation and maintenance of the coil where the liquid medium is water and the water temperature can exceed 100°C, great care must be exercised when opening vent valves and stop-cocks in the system. Serious personal injury can be caused by hot liquid or steam discharge.

Flakt Woods is not responsible for the connection of the heater to the heating system or damage that can occur due to incorrect planning, installation or maintenance of this system. Piping, valves, etc. must be appropriately dimensioned with regard to pressure drop and function and not based on the coil connection dimension.

FILLING, VENTING AND DRAINING

The water coil collection pipes are equipped with an air venting nipple and a draining nipple. The air must be properly vented from the system to ensure good functioning. To ensure that the heater is completely drained, compressed air should be blown through the tubes of the heater.

Heaters for heat recovery are completely drainable but in this case antifreeze must always be used. Recommended way of filling heaters in recovery systems is by using vacuum.

NOTE!

Any liquids potentially harmful to the environment must be collected in suitable containers and sent for disposal or recycling. The heater must not be lifted before it has been emptied of all liquid.

MAINTENANCE

Regular inspections of the mountings should be made to make sure no load bearing screws or threads are damaged. The fin structure should be checked that it is clean and undamaged.

CLEANING

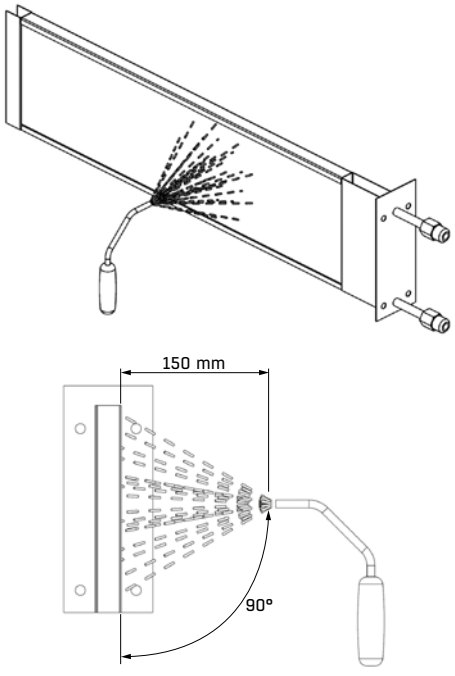
Any coating of dust on the heater surfaces will hinder the passage of air and slow down the transfer of heat. Therefore, the coils must be kept clean, and any one of the following methods (or a combination of several) is appropriate:

- Vacuum cleaning.
- Cleaning with compressed air.
- Cleaning with steam.
- Flushing or rinsing with water. With grease covered hot surfaces first spray the entire heater with environmentally friendly solvent at a low pressure. High pressure wash with water after 10-12 minutes.

Cleaning should be done against the normal direction of air flow.

NOTE!

It is important to keep the nozzle square to the fin surface and no closer than 150mm to prevent damage to the fins.



Fins that have been deformed can be straightened with a fin comb. The finned-tube body must not contain any traces of solvent after cleaning as remaining solvent will bind new dust. After cleaning, remove all fallen dust before starting the fan.

MAINTENANCE AND FITTING INSTRUCTIONS

19. MAINTENANCE FOR ELECTRICAL POST-HEATER

MAINTENANCE

No specific maintenance is required. However, a periodic functional check is recommended. Any work on the heater should only be carried out when the main electrical supply has been turned off.

OVERHEATING

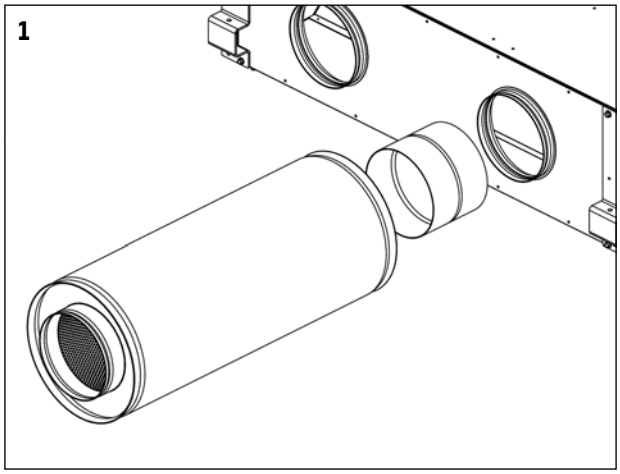
When the overheat protection with manual reset is activated, the following procedure should be followed:

- All work must be carried out by an authorised electrician.
- Switch off the power supply.
- Carefully investigate the reason(s) why the overheat protection is activated.
- When the fault that caused the problem has been resolved, reset the protection manually using the button on the cover of the heater.

20. FITTING INSTRUCTIONS FOR CYLINDRICAL DUCT SILENCER

Attach cylindrical duct silencer by sliding connector over rubber seals on spigot and silencer spigot into connector. Use tek screws to secure in place. Any attached silencer should be supported independent to the unit.

1



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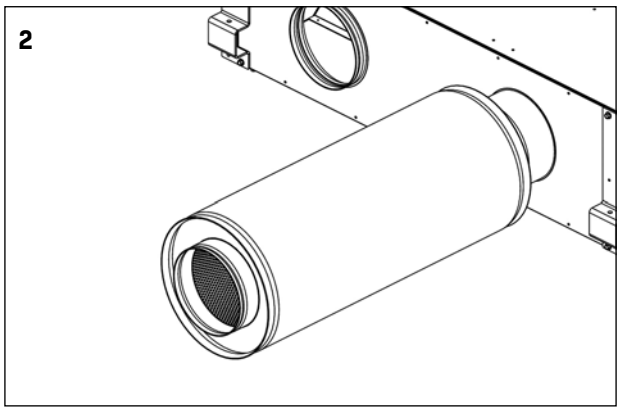
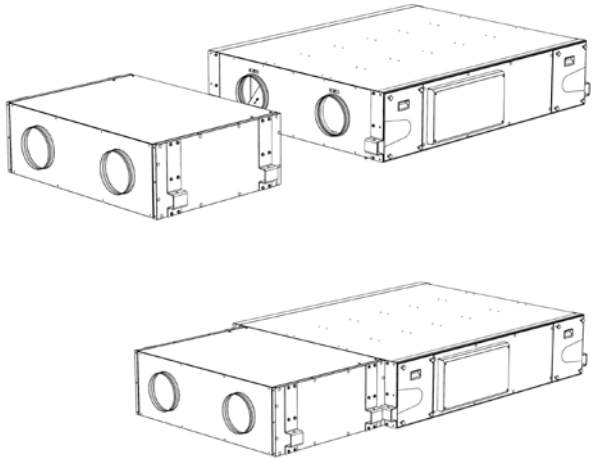


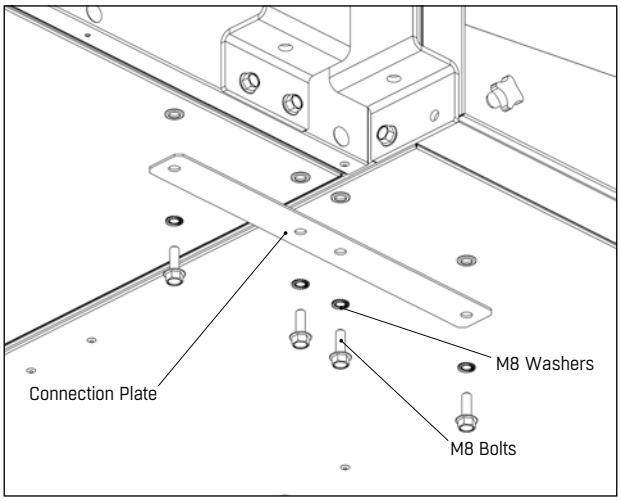
INSTALLATION AND FITTING INSTRUCTIONS

21. FITTING INSTRUCTIONS FOR RECTANGULAR DUCT SILENCER

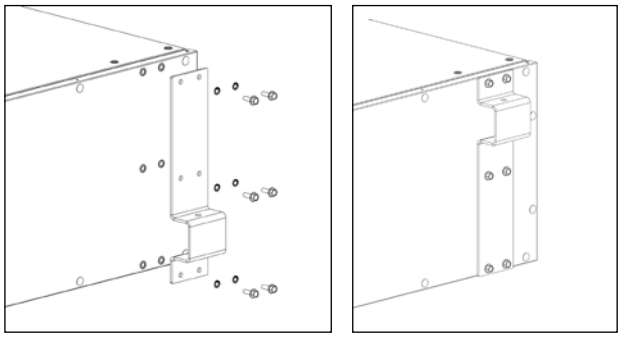
Custom designed silencers can be attached to unit sizes 1 to 4. These silencers have female spigots on one side and male spigots on the other. Fit the female spigots over the male spigots on the units and make sure that there are no gaps between the unit and the silencer. There are labels on the silencer to define which spigots are extract and which are supply to the unit; make sure that these correspond to the airflow direction of the unit



When the unit is in place use the connection plates and fixings supplied to secure the silencer to the unit. The silencer must be supported independent to the unit.



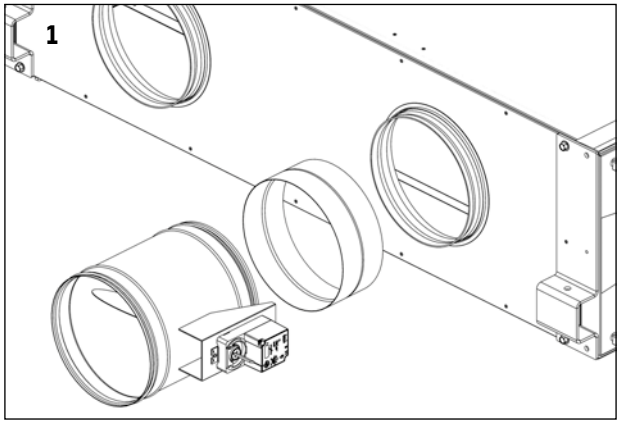
The mounting brackets attached to the silencer can be rotated if required. This is relevant is there are silencers at each end of the unit as they need to be turn upside down to attach the correct spigot on the silencer to the correct spigot on the unit.

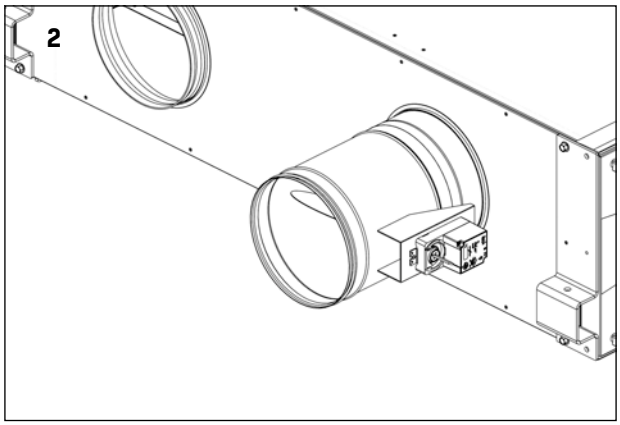


INSTALLATION AND FITTING INSTRUCTIONS

22. FITTING INSTRUCTIONS FOR EXTERNAL SHUT OFF DAMPER WITH ACTUATOR

Attach the external shut off damper with actuator by sliding connector over rubber seals on unit spigot and damper spigot. Use tek screws to secure in place. Any attached damper should be supported independent to the unit. If damper is to be connected away from the unit in the duct work then connect in a similar manner sliding the ducting over the damper spigot seals and secure using tek screws. Note that the damper cables will need to be extended if installed some distance from the unit.





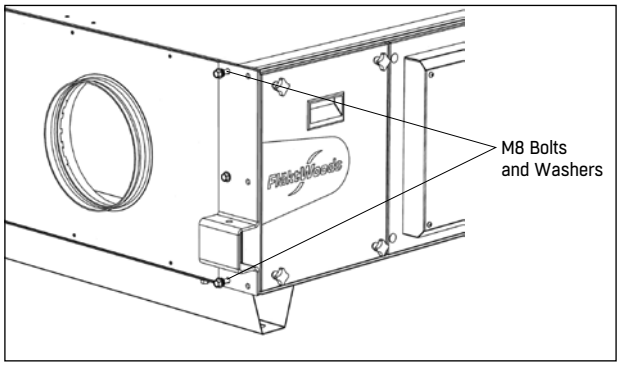
To connect damper actuator to the unit controls first make sure the unit is fully isolated. Remove electrical panel as described in chapter 14 connect cables to extended function terminal # 41 and # 42. (ST1). The wiring diagram for this function can be found in the controls section of this document.

INSTALLATION AND FITTING INSTRUCTIONS

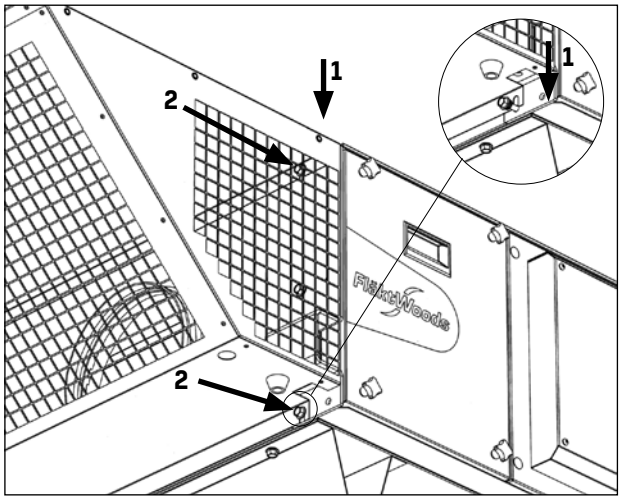
23. INSTALLATION OF WEATHER PROTECTIVE ROOF

Where units are to be installed outside, the unit must be fitted with our weather cover roof and weather cowl. The weather roof is none structural and should not be loaded by any external objects. It is recommended that the installation of the weather cover roof and weather cowl should be carried out by at least 2 people due to the weight and size of the parts.

The weather cover roof can be installed without the need of having a weather cowl, but if a weather cowl is required then this must be attached before attaching the weather cover roof.

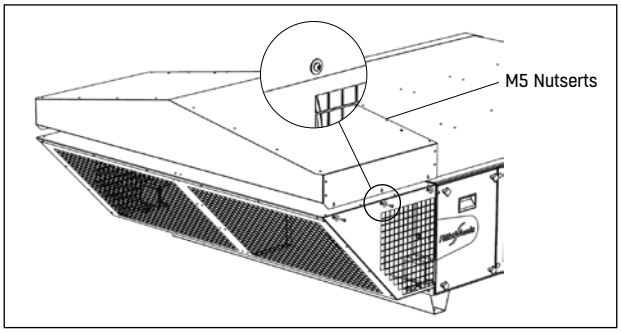


Lift the weather cowl into position as shown below making sure that the slots in the sheet metal locate where the M8 bolt are. Lower the weather cowl and tighten the M8 bolt to secure.

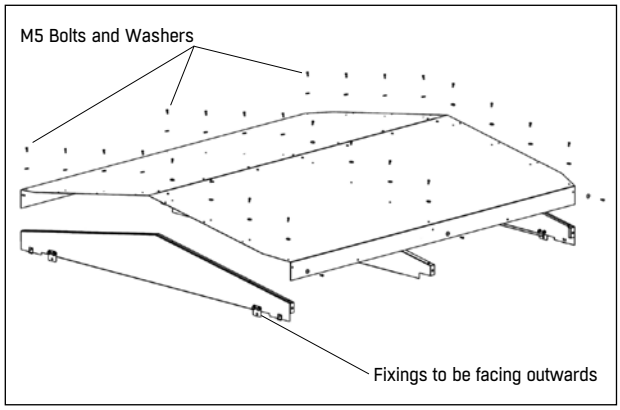


Lower the weather cowl roof onto the weather cowl making sure that the set of M5 nutserts are at the unit end of the roof.

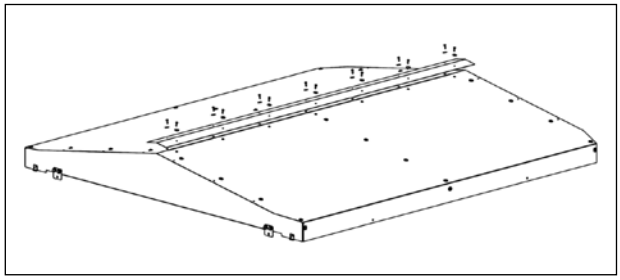
Secure the weather cowl roof to the weather cowl using M5 bolts and washers provided.



The weather cover roof requires assembling as well as being attached to the unit. Attach both roof sides to the out-side and middle panels using M5 bolts and washers (3 rows x 8 pcs.) provided. Make sure that the fixings on the end panels are facing outwards when fixing the roof together.

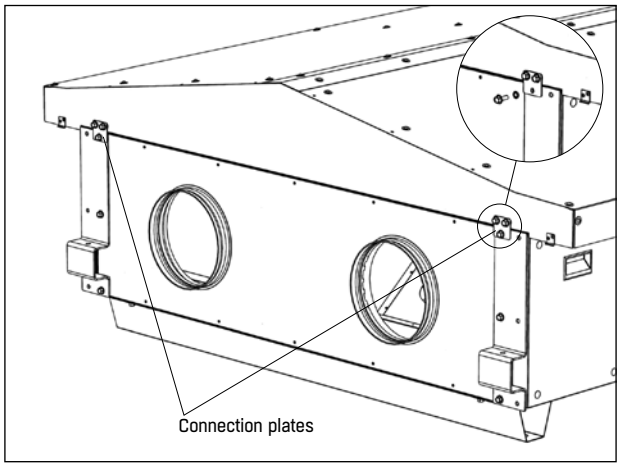


Attach the central connection plate to the top of the weather cover roof using M5 bolts and washers (14 pcs.) provided.

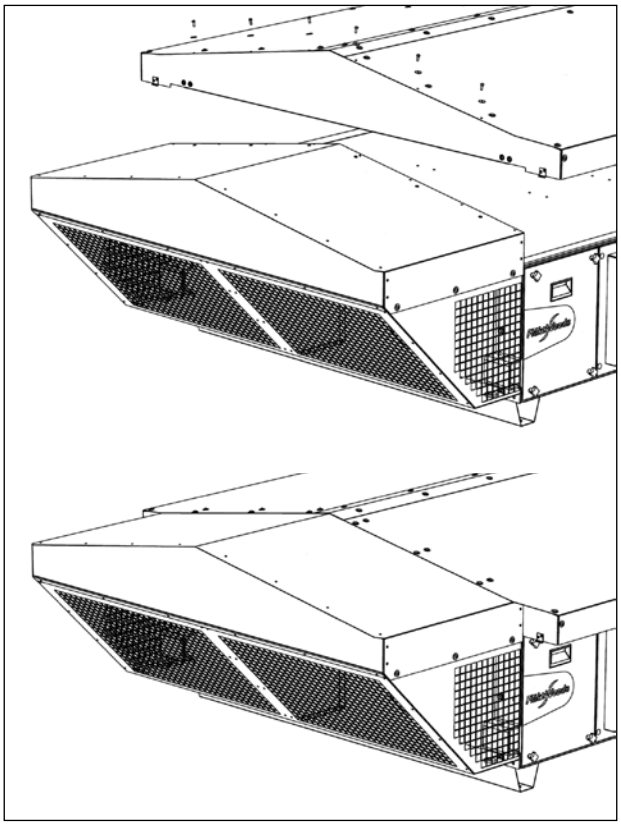


INSTALLATION AND FITTING INSTRUCTIONS

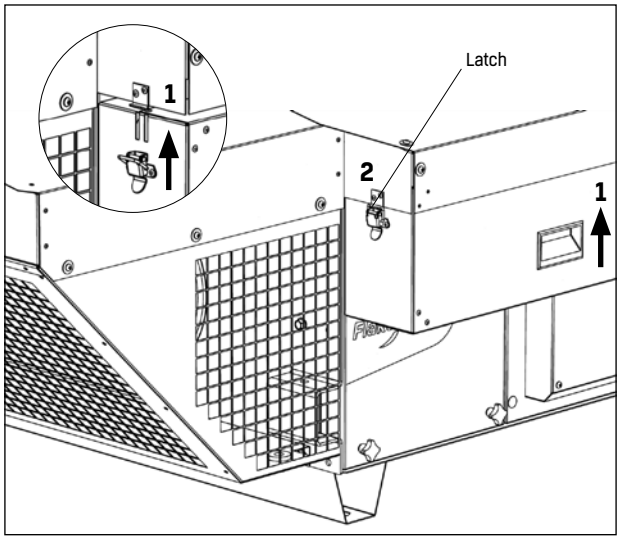
For connecting the weather cover roof without the weather cowl simply remove the top M8 fixings on the spigot panel and lower the roof onto the unit. Re-attach the M8 fixings through the connection plate on the roof and into the spigot panel. If the weather cowl is present then the connection plates and fixings on the side to connected to the weather cowl should be removed from the weather roof.



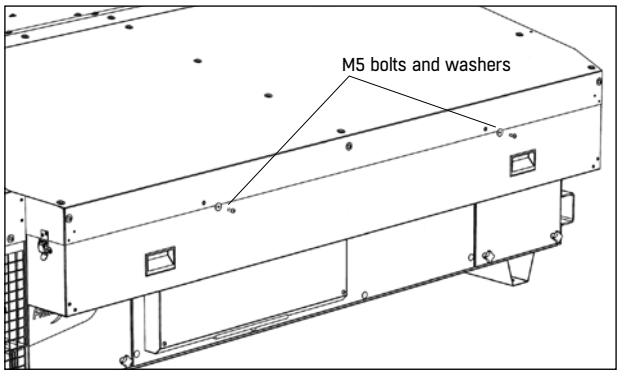
When weather cowl is present then lower the weather cover roof onto of the weather cowl and secure using M5 bolts and washers provided.



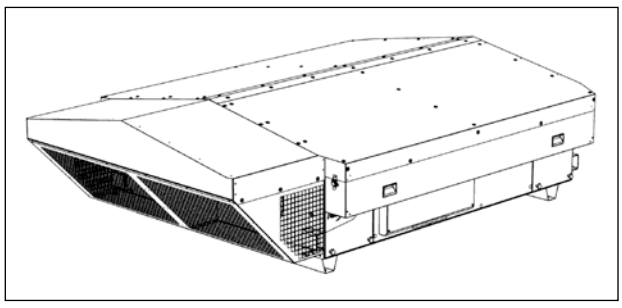
The final step to complete is to attach the side hatches to the weather cover roof. These hatches are there to provide cover to the side of the unit and shall be removed when access to the filters, controls, fans and heat exchanger is required. Position the hatch to the side of the unit and below the weather cover roof. Lift the hatch so that it slides under the weather cover roof. Use the latches provided to secure the hatch.



Attach the side of the hatch to the side of the weather cover roof using M5 bolts and washers provided.



The assembly of weather cover roof and weather cowl is now complete.



MAINTENANCE

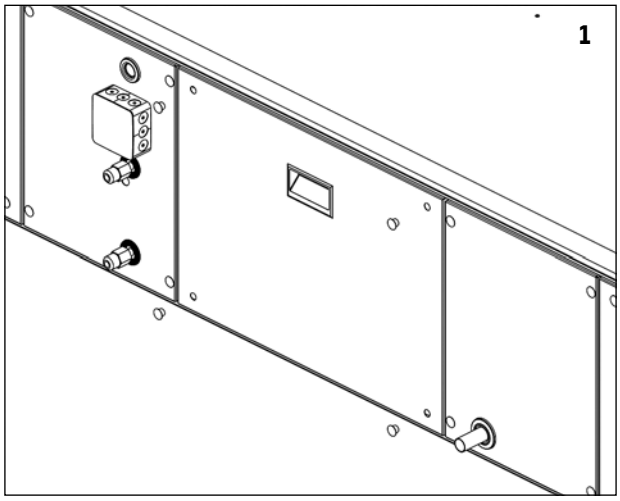
24. MAINTENANCE – HEAT EXCHANGER CLEANING (SIDE ACCESS)

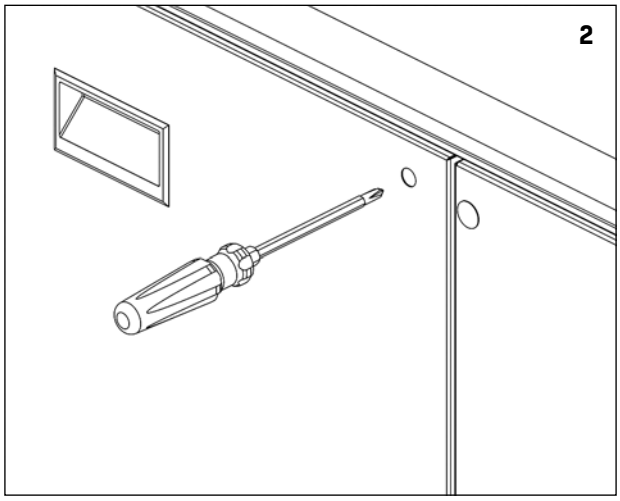
To remove the heat exchanger for cleaning, remove the plastic caps on the heat exchanger panel. Use a cross head screw driver to undo the screws contained within the panel.
These screws are captive and will not be required to be removed completely from the panel.

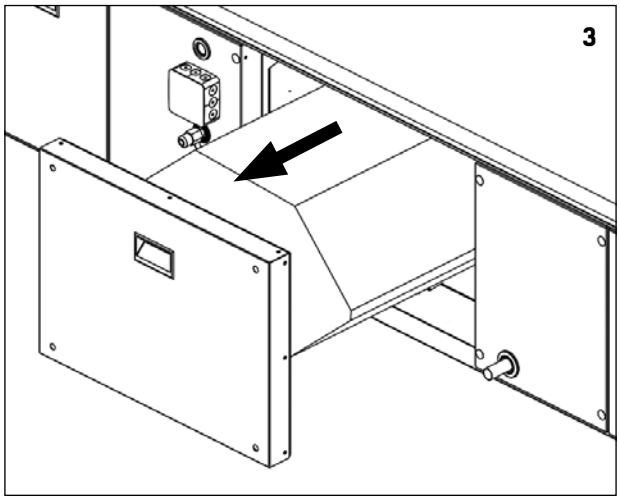
Remove to panel from the unit casing and then retract the heat exchanger. The heat exchange will be in 2 units and both units should be removed for cleaning. Make sure not to handle the heat exchangers by touching the thins as these will deform.

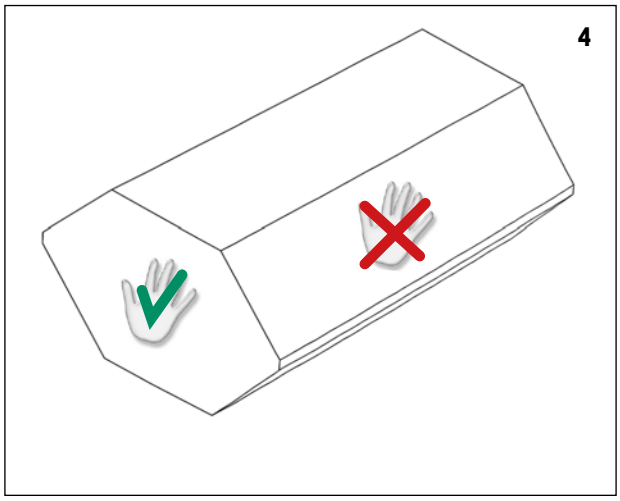
For normal ventilation applications, it is mostly satisfactory to clean the inlet and outlet with a brush or to clean them by using hot water and, if needed, some mild detergent. For more dirty applications, compressed air or high pressure water flushing can be used provided maximum flushing pressure with a flat flushing nozzle is kept below 100 bar. Please observe that high pressure flushing must not be made directly against the plates!

When maintenance is complete reinsert heat exchanger and replace panel. Ensure that all bolts are tightened to a torque value of 25 Nm.









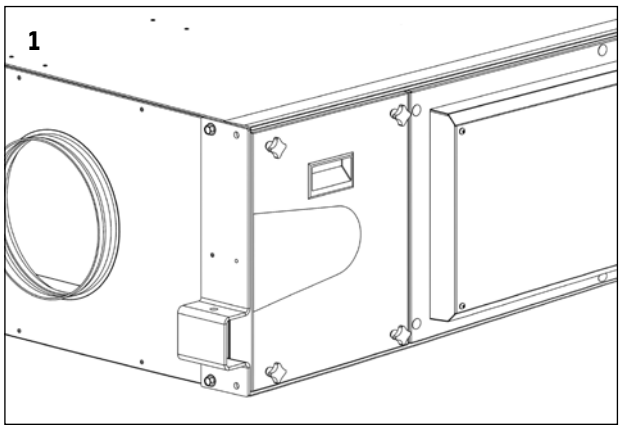
RECOMMENDED MAINTENANCE INTERVALS

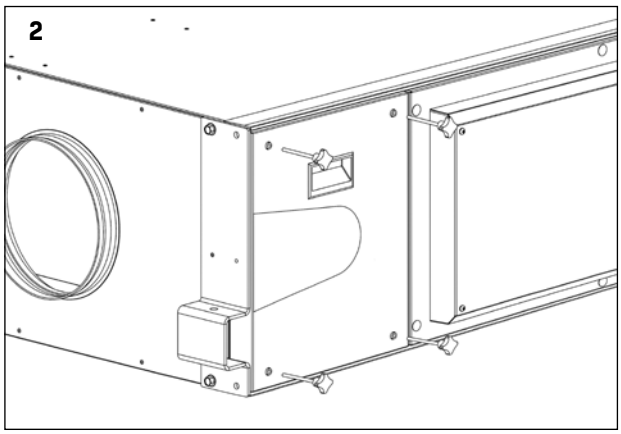
Exchanger cleaning: Once per operating season (typical)

MAINTENANCE, CONT.

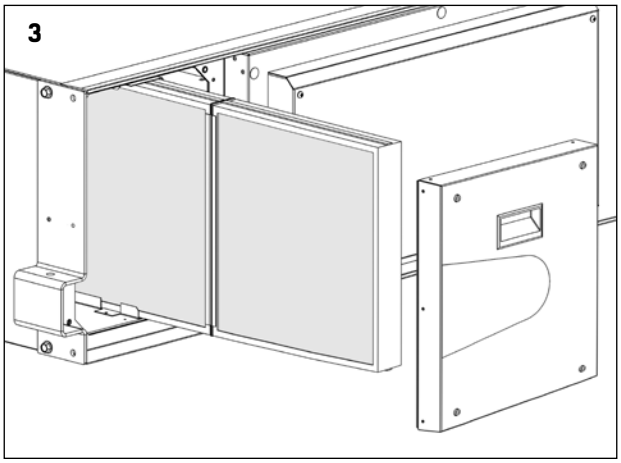
25. MAINTENANCE: FILTER REPLACEMENT (SIDE ACCESS)

To remove the filters for replacement unscrew by hand the thumb screws in the filter panels. Remove these screws from the panel and use the plastic handle to lift the panel away from the unit casing.





The filters used in sizes 1 & 2 are one piece filters where as for the other sizes they are split into 2 parts.



When new filters have been installed, replace the panel and tighten the thumb screws.

RECOMMENDED MAINTENANCE INTERVALS

Replace filters after build commissioning
Filter replacement: variable dependent on environnemental air pollution (dust, fume, etc.)

TROUBLE SHOOTING

26. TROUBLE SHOOTING (GENERAL)

Fault	Possible Cause	Suggested Action
Unit is difficult to start	Reduced supply voltage	Ensure voltage is consistent with motor name plate data
Insufficient air capacity	Clogged ductwork and/or extract points	Clean ductwork and suction point
Insufficient pressure	Clogged impeller	Clean impeller
	Dirty filter	Clean or replace filter media. Note: always use original media type to guarantee unit performance.
	Insufficient rotation speed	Check Supply Voltage and if necessary, correct.
	Clogged heat exchanger	Clean heat exchanger block
Airflow Performance drops after a period of acceptable operation. (See above)	Air leak before and/or after the fan	Check connections and unit casing and restore to original "as installed" condition.
	Damaged impeller	Check impeller. If necessary, replace with an original spare part
Heat Exchanger Discharge air temperature too low	External air lower than –5° C	Employ a post heating device
Insufficient Heat Exchanger performance	Build up of dirt on Heat Exchange fins	Clean Heat exchanger
Frost formation on Heat Exchanger	External air inferior to -5°C	Employ a pre heating device (frost protection heater)
Airflow hunting	Clogged or wrong ductwork connection	Modify the ductwork and/or replace fan.
		Clean and/or replace the suction duct

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With over a century of innovation and expertise to share with our customers, Fläkt Woods is a global leader in Air Technology products and solutions. We specialize in the design and manufacturing of a wide range of products and solutions for Air Movement, Air Treatment, Air Distribution, Air Management and Air Diffusion with focus on two major benefits – **Air Comfort** and **Fire Safety**. With market presence in 65 countries we are in a unique position to be a local supplier and an international partner in our customer's projects.

Our product brands such as SEMCO®, eQ®, eQ Prime®, JM Aerofoil®, Econet®, Veloduct®, Optivent®, Optimix®, Econovent® and Clean-vent® are well-known and trusted by customers all over the world to deliver high quality and energy efficient solutions.

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