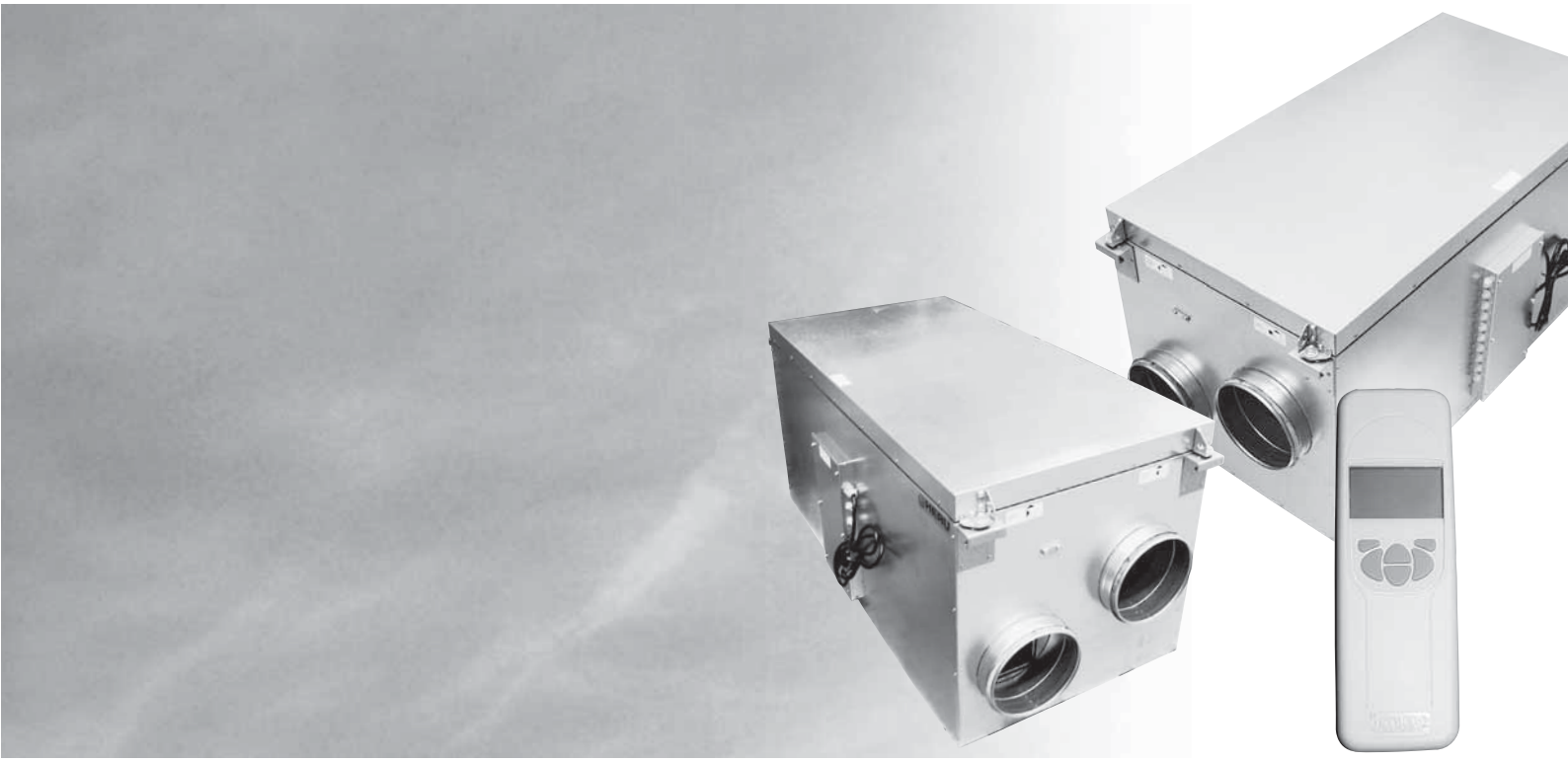
Installation and directions for use

HERU 14 S AC, HERU 19 S AC
HERU 35 S AC, HERU 52 S AC



UL VERSION

ÖSTBERG
HEALTHY INDOOR CLIMATE
WITH ENERGY EFFICIENT VENTILATION

CONTENTS

UNIT DESCRIPTION 3
INSTALLATION AND SECURITY 4
"USE" "SECURITY" "MOUNTING""WARRANTY" 4
"PLACING" "FREE SPACE"
"SCHEMATIC DIAGRAM FOR PLACING" 5
STARTING UP THE UNIT 6
CONTROL DIAGRAMS 7
REGULATION FUNCTIONS 8
OPERATING THE CONTROL UNIT 9
VIEW MODES 1-4 10
MAIN MENU 11
"FAN SPEED" MENU 11
"TEMPERATURE" MENU 11
"BOOST" MENU 11
"OVERPRESSURE" MENU 12
"WEEK TIMER" MENU 12
"UNIT ON/OFF" MENU 13
"ALARMS" MENU 13
"SETTINGS" MENU 14
THE "SERVICE MENU" 14-21
"FILTER MEASUREMENT" "AC FAN SETUP" 15
"DISPLAY CONTRAST" "BOOST" "OVERPRESSURE" . . .16
"ALARM""CO2" 17
"RH" "HEATER" "COOLER" 18
"SUPPLY LIMITS" "REGULATION MODE"
"SUMMER COOLING" 19
"FREEZE PROTECTION"FLOW DIRECTION"
"LOAD/SAVE SETTINGS" "VERSION INFO" 20
"DEVICE PAIRS" 21
OTHER FUNCTIONS 21
SERVICE HERU S **. 22-23**
ACCESSORIES 24
SPARE PARTS 25
ERROR DETECTION DIAGRAM 26-27
ERROR DETECTION 28
INTERNAL SETTINGS 29

TECHNICAL INFORMATION

DIMENSIONS 30
TECHNICAL 31
SOUND DATA 32-33
PRESSURE-FLOW DIAGRAMS 34-35
WIRING DIAGRAMS 36-37

This "Installation and directions for use" contains following products:
HERU 14 S AC, HERU 19 S AC, HERU 35 S AC and HERU 52 S AC.

IMPORTANT! Please read this manual before installing the unit.

UNIT DESCRIPTION

- HERU S is approved according to the standard UL 1812 "Ducted Heat Recovery Ventilators" and CSA-C22.2 No. 113 "Fans and Ventilators".

- HERU S is a heat recovery unit (HRV) or an energy recovery unit (ERV). It is designed for supply and exhaust air ventilation combined with heat and cool recovery.

- HERU S can be used in homes, offices, apartments etc. where there is a need for:
  -clean. filtered and fresh air
  -high temperature efficiency
  -energy saving
  -low sound levels
  -safe operation

- HERU S;
  - has a rotating heat exchanger, of hygroscopic or non-hygroscopic type and is manufactured of aluminium, placed centrally in the unit. The ERV exchanger has a humidity efficiency of up to 85%. The HRV exchanger has a temperature efficiency of up to 85%.
  - has backwardcurved centrifugal fans with maintenance free external rotor motors, which are connected with quick contacts, and are easily to remove for cleaning.
  - has built-in control for heating/cooling.
  - can be fitted with a built-in electric heater.
  - has as standard, disposable bagfilter, class MERV 13.
  - has a wireless remote controller for the operation and monitoring of the unit.
  - has a double skinned galvanised sheet steel casing with intermediate insulation.

- The HERU S can be mounted in either warm or cold space.

- The HERU S is delivered galvanized.

- All HERU S are operated via a wireless remote controller which can operate and to preset the required parameters as well as monitor the unit's status. The operating range is approximately 50 meters/164 feet.
  The antenna which is placed next to the unit can have the range reduced if there are heavy reinforcing bars in the concrete structure and it should then be moved either to a position where the signal is not shielded or nearer to the controller.

WARRANTY

The warranty is only valid under condition that the HERU S unit is installed, adjusted and has been record by a qualified person according to this "Installation and directions for use", and that regular maintenance had been made.

NOTE!

Östberg Americas Inc. reserve the right to make changes without further notice.

INSTALLATION AND SECURITY

USE

- When installing HERU consideration must be given to any approval authority requirements and recommendations concerning siting, accessibility, electrical connections, etc.
- The HERU unit is accessible for the user, according to IEC 60335-2-40, to by themselves do the service and maintenance, according to this Directions for use. But before this work the unit must be currentless.
  With reservation according to IEC 60335-2-7.12 "This appliance is not intended for use by persons (including children) with reduced physical, sensory or metal capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety."
  "Children should be supervised to ensure that they do not play with the appliance."
- The HERU unit should be storage in a sheltered and dry place before installation.
- Dimensioned air flow should not exceed 60% of the unit's maximum capacity.
- Check at regular intervals that supply air and exhaust air works.
- **To avoid condensation in the unit during the cold season, the unit should not be turned off for a longer period.** When installed in warm moisturre environment as e.g. bathroom and utilityroom condense may appear on the outside of the unit at low outside temperatures.

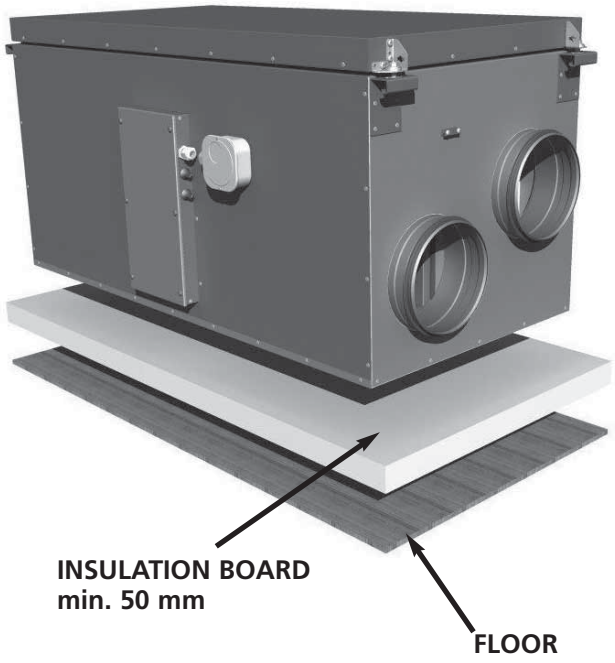
SECURITY

Attention! Do not apply electric power until after completion of the installation. Ensure the installation and wiring is in accordance with CEC, NEC and local electrical codes..

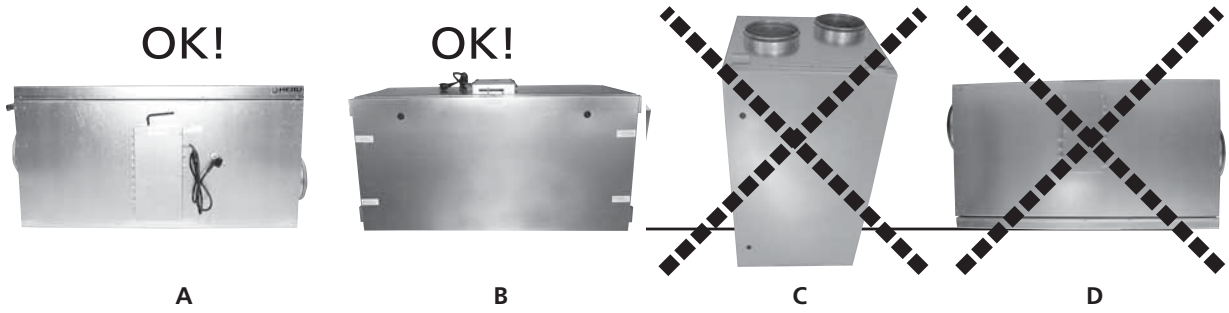
- Attention, look out for sharp edges and corners on the HERU unit and fans.
- Consider the weight of the unit. See page 31.
- Before maintenance work the HERU unit must be currentless. If there is a need of changing or complement any electrical components, it should be done by a qualified person.
- The HERU unit includes rotating parts that could cause serious danger on the occasion of contact. This is why the unit must be duct connected and the lid closed with the screws tightened, before starting up the unit.
- After the current is cut for service and maintenance the electric heater may still be warm.
- Make sure that the access cable is not damage at mounting and installation.
- The HERU S needs a permanent electrical supply. The unit must be connected via a safety switch. Any electrical connections must be made by a qualified electrician.

MOUNTING THE HERU S

- HERU S should be installed according to the assembly instruction, see picture below.
- Place the unit on a high density insulation board, min. 50 mm.
- Supply and extract air must be duct connected on the same side of the unit.
- Acoustic silencer should be planned with the help of sound data and required sound levels.
- Use duct clamp or flange with encompassing insulation when connecting to duct.
- If the supply and the extract air ducts are installed in a cold space they should be insulated. To prevent condensation the supply air duct should also be insulated if installed in warm space at low supply air temperatures.
- The fresh air and exhaust air duct should always be condense insulated.
- The ducts should be insulated all the way towards the unit.
- The duct sensor GT7 should be mounted in the supply air duct, and the antenna on a suitably position beside the unit (not against metal).
- If a heating coil is connected a cut off damper must be mounted in the fresh air duct.
- Cooker hoods must not be connected to the HERU S.



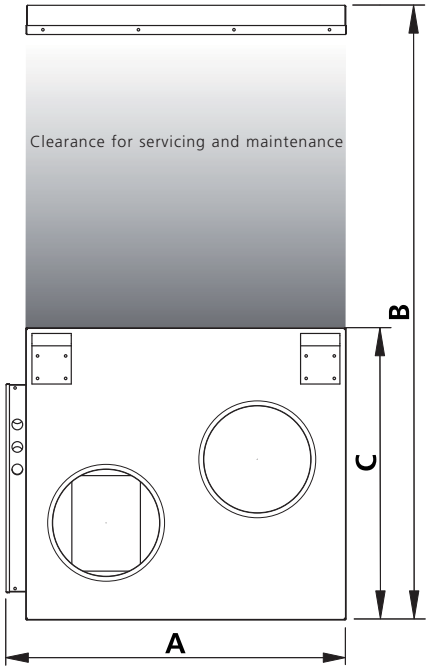
PLACING THE HERU S UNIT



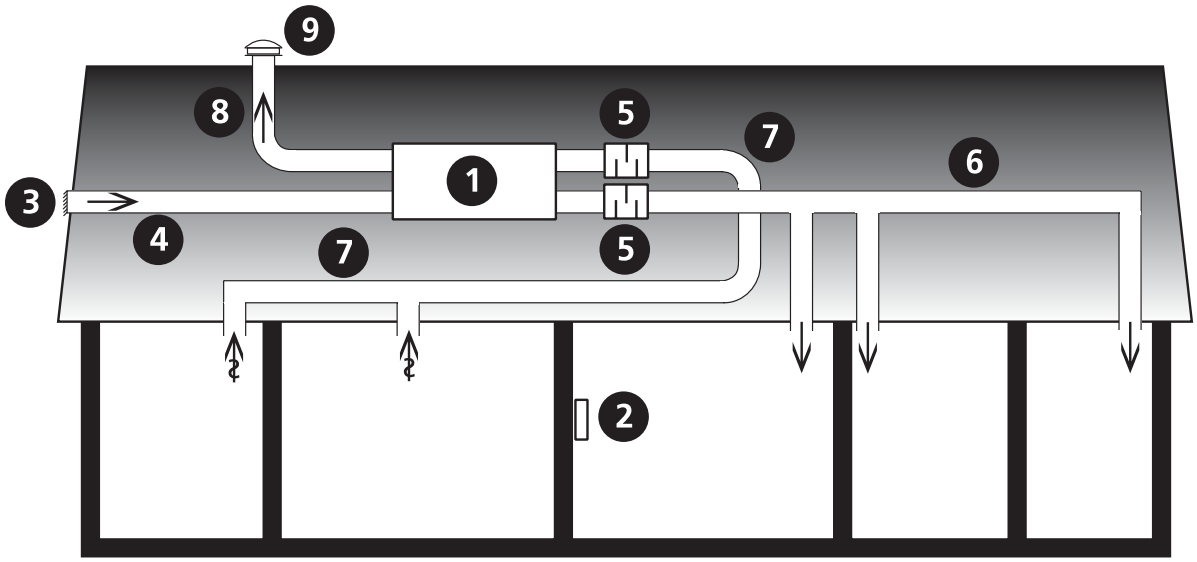
The HERU S should be installed with the lid upwards (**A**) or on the side (**B**). Because of the risk of injury **we do not recommend** installing the unit vertically (**C**) or with the lid downwards (**D**). Allowances must be made to access the unit for servicing or maintenance.

CLEARANCEE FOR SERVICING AND MAINTENANCE

mm	A+D	B	C
H E R U®50 S 2, 75 S 2, 100 S EC	$21^{7/8}$	$31^{1/2}$	16
H E R U®130 S 2, 130 S EC 2	24	$39^{3/8}$	$20^{1/2}$
H E R U®180 S 2, 180 S EC 2	28	48	$24^{7/8}$



SCHEMATIC DIAGRAM FOR HERU S PLACED IN AN ATTIC



1 Heat recovery unit HERU
2 Control unit
3 Intake grille
4 Fresh air duct
5 Silencer
6 Supply air duct
7 Extract air duct
8 Exhaust air duct
9 Roof terminal

STARTING UP THE UNIT Note! Important information before starting!

WARNING!
Improper installation, adjustment, alternation, service or maintenance can cause property damage, personel injury or loss of life.

Installation and service must be performed by a qualified installer or service agency.

Carefully read through the manual before starting up the unit.

- **Note! Always mount the temperature sensor GT7 in the supply air duct.** *See page 7 and 36-37.* **GT7 is connected at the relay card.** The temperature sensor GT7 is placed in the control cabinet when delivered.

- The antenna should be mounted outside the unit. The antenna for HERU S is delivered connected, is placed in the control cabinet.
  Note! The antenna should <u>not</u> be mounted against any metal area or metal items as this will shield the signal.
  The antenna should be mounted as central as possible. This to achieve the best signal all over the house. If neede an extension cord is available as an accessorie.

- Install the 3 AA batteries in the wireless control unit that are placed inside the HERU when delivered.

- HERU S starts automatically (with a few minutes delay) when the power is switched on, or alternative with the wireless control unit. At power outage, always check so the unit is starting up again.

- **HERU S is supplied for right handing application, *see picture below*. If the unit is installed left handed, and no electrical heater is fitted, changes can be made in the "Service Menu" and in the submenu "Flow Direction".** *See page 20.*

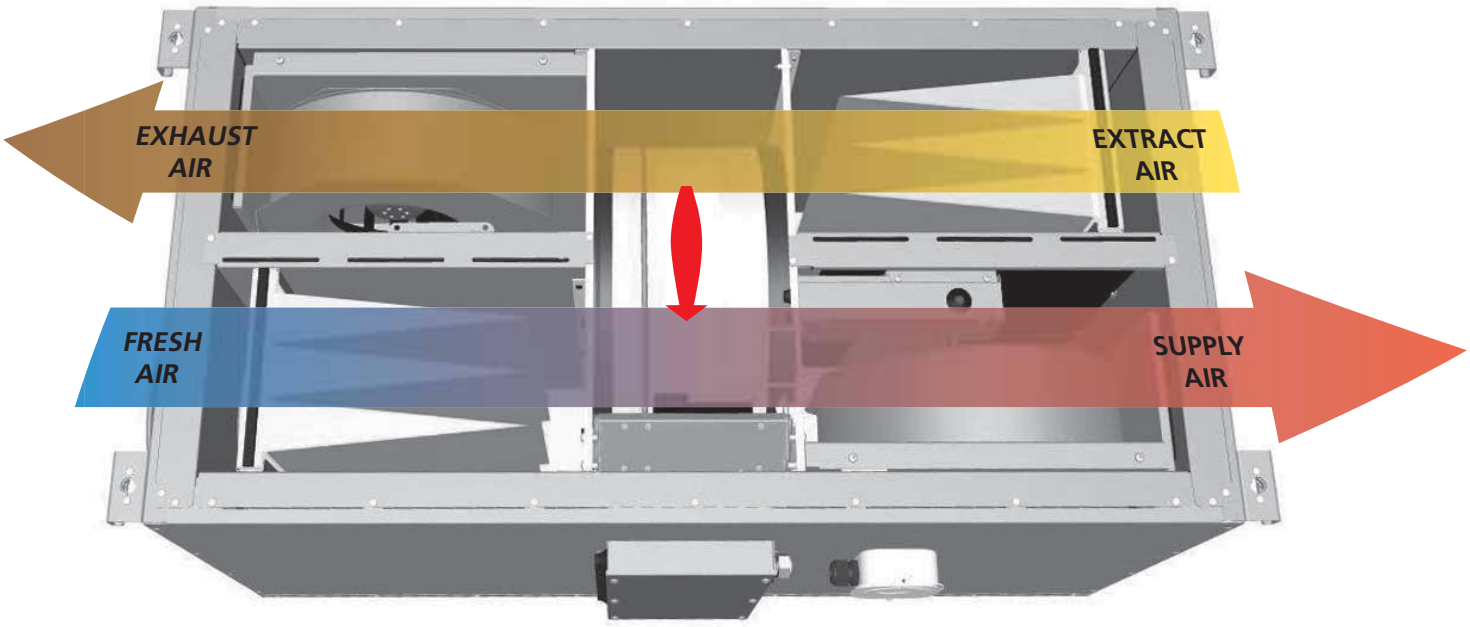
- **Important when adjusting the flow:** Go to Service Menu (password 1199), choose "AC-motor setup". This disable functions such as Summer cooling or Boost during flow adjustment. The preset fan speed is standard. *See page 11.*
  When adjusting the airflow of AC-fans there is a possibility to change the voltage for the different fan speeds via the separate transformers for supply resp. exhaust fan. Normal operation should be done in standard mode. HERU 14 S/19 S has 5-step transformers and HERU 35 S/52 S has 7-step. *See wiring diagrams on pages 36-37.*
  Note! When ajusting fan speed manully, make sure that the speed keeps the sequences.

- All HERU can be fitted with a built-in electric heater. Choose heater "On/Off" according to the instruction on page 18.

- Set the temperature according to the instruction on page 11.

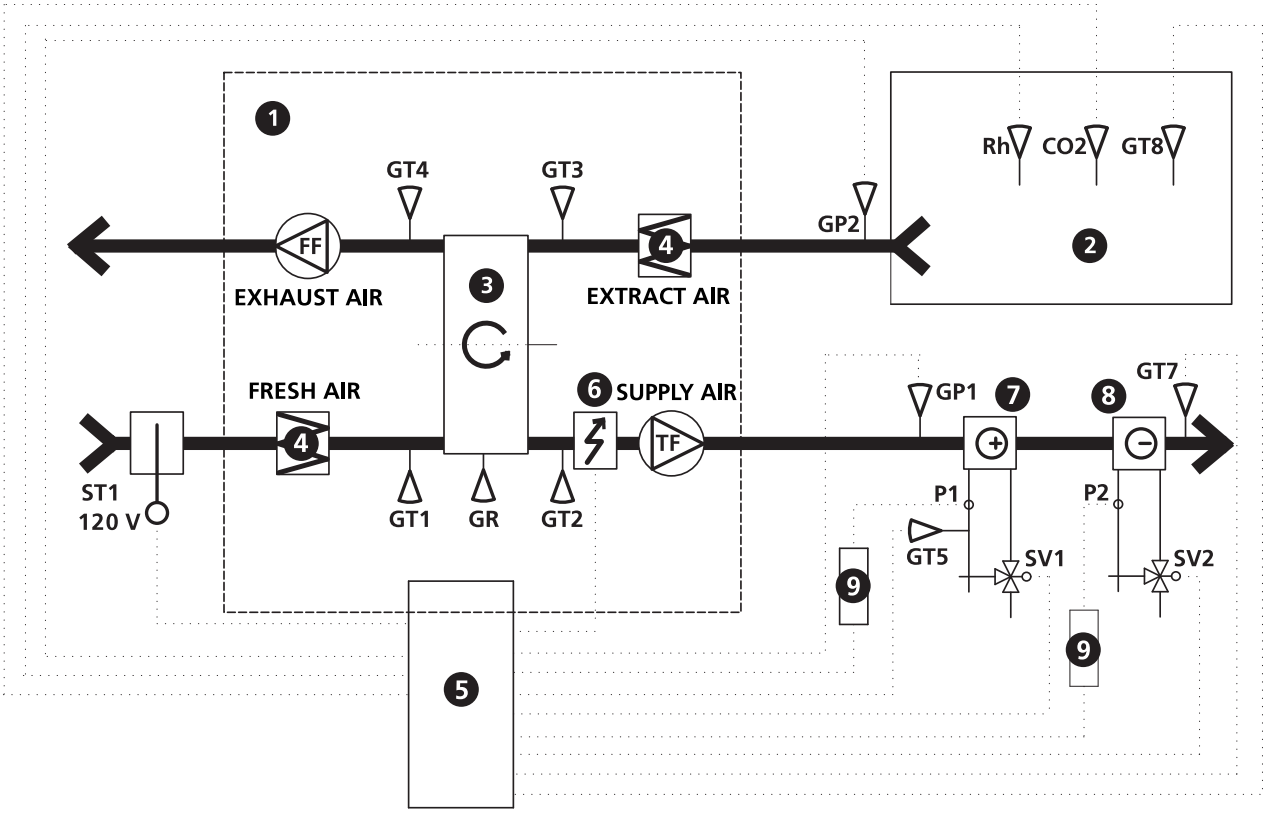
- Save settings according to the instruction on page 20.

- **Note! The unit must not be operating without filter.**



CONTROL CABINET

CONTROL DIAGRAM HERU®S shows all sensors, flow direction right



1 Heat recovery unit HERU
2 Room
3 Rotary heat exchanger
4 Filter
5 Electric control board
6 Electrical heater
7 Heating coil *
8 Cooling coil *
9 Relay *

ST1 Damper motor with pull back spring *
GP1 Pressure sensor supply air *
GP2 Pressure sensor exhaust air *
GR Rotor sensor
GT1 Internal temp. sensor fresh air
GT2 Internal temp. sensor supply air
GT3 Internal temp. sensor extract air
GT4 Internal temp. sensor exhaust air
GT5 Freeze protection sensor
GT7 Temperature duct sensor supply air (min/max)

GT8 Temperature room sensor *
Rh Room sensor, humidity *
CO2 Room sensor, carbon dioxide *
SV1 Valve, heating *
SV2 Valve, cooling *
TF Supply air fan
FF Extract air fan
P1 Circulation pump, hot water *
P2 Circulation pump, cold water *

*Accessories

REGULATION FUNCTIONS

REGULATE THE TEMPERATURE

The air temperature can be regulated either for constant supply air temperature, constant room temperature or constant exhaust air temperature.

For constant room temperature a sensor should be placed in the room for room regulation (this is also suitable when a cooling coil is incorporated in the system).

Exhaust air regulation functions in a similar way but with the difference being that the sensor is placed in the extract air duct.

The temperature can be regulated in 5 sequences:

1. **Cooling recovery + After cooling:** The regulation unit can control a cooling coil (e.g. cooling water from bedrock), when the cooling recovery from the rotor is not enough.
2. **Cooling recovery or regulated fresh air cooling:** The rotary heat exchanger starts if the extract air temperature is lower than outside temperatur.
   Fresh air cooling: The outside temperature is lower than desired room temperature. The rotor regulate the supply air temperature.
3. **Outside temperature = desired temperature:** When the outside temperature is the same as desired supply air temperature the rotor stops.
4. **Heat recovery:** The rotary heat exchanger starts to recover the warmer room temperature.
5. **Heat recovery + heat:** In climate conditions where the rotary heat exchanger, in spite of its high efficiency, is not sufficient to reach the desired supply air temperature, the controller can regulate either the built-in electric duct heater or a heating coil.

FAN CAPACITY

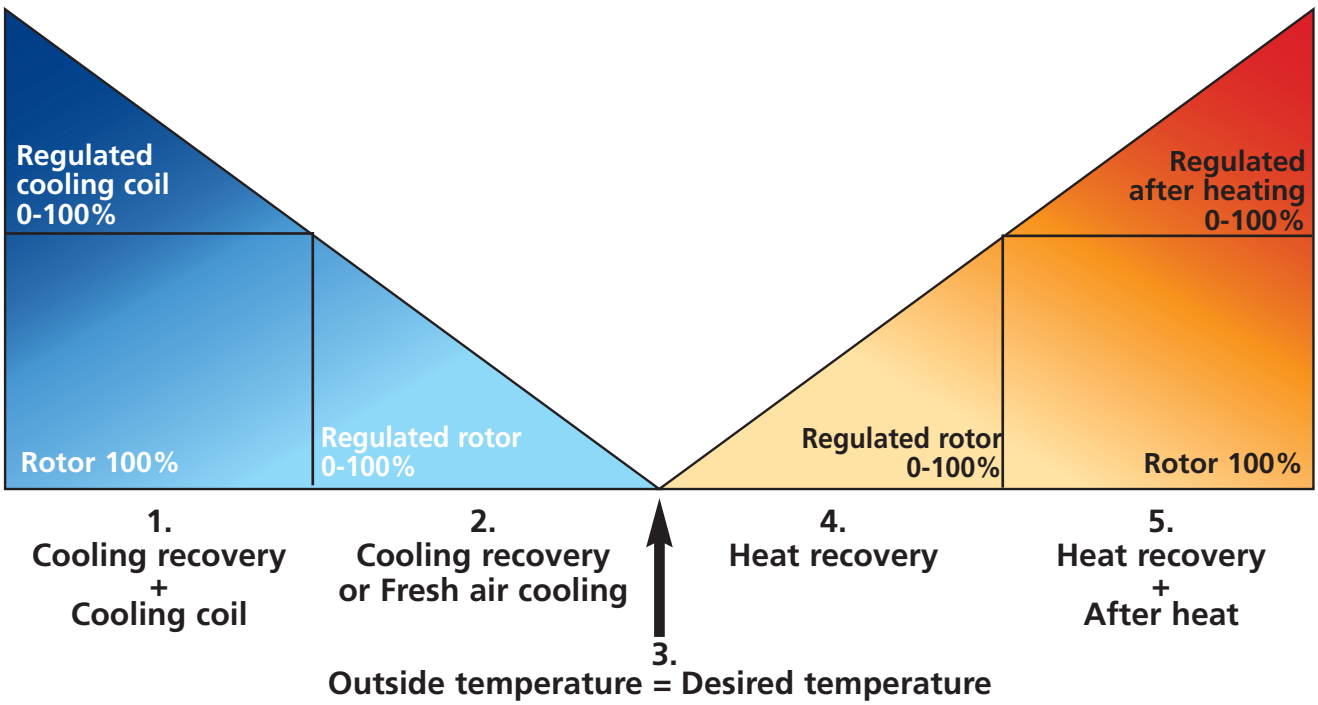
Airflow (fan speed) is regulated via the week timer that can be programmed for specific time points when the fan speed should change from one speed to antoher (e.g. home or away setting). A special feature is that you can pressure compensate when supplementary heating, using an open fire or stove (the exhaust air fan then drops to a lower speed).

The wireless control unit can also manually adjust the fan speed and even boost the airflow for an indicated length of time. The fan speed can also be controlled by a carbon dioxide (CO_2) and humidity (RH) sensor so that the unit gives a higher airflow (boost) when the maximum limit value is reached.

"Summer Cooling" is a function where you can use the cool outside temperature at night, to cool down the inside air. The fan speed is boosted when the ratio between the outside temperature and the exhaust air temperature is within the programmed criteria.

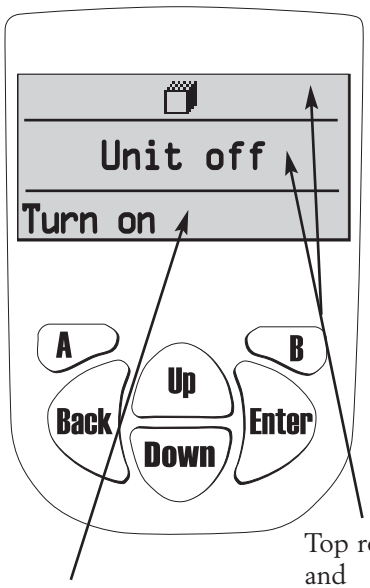
Via the wireless control unit the HERU can be put in an "Off mode", which means that the motors for fans and rotor are "Off" but the unit is "Stand by". If there is a requirement of totally cut off power, a switch must be mounted on the mains.

Boosting the airflow for a specified time can be done via the wireless control, there is also a opportunity to do that via a timer connected to the "0" and "Boost" connection on the PCB. With the connectors closed the boost function will be "On".



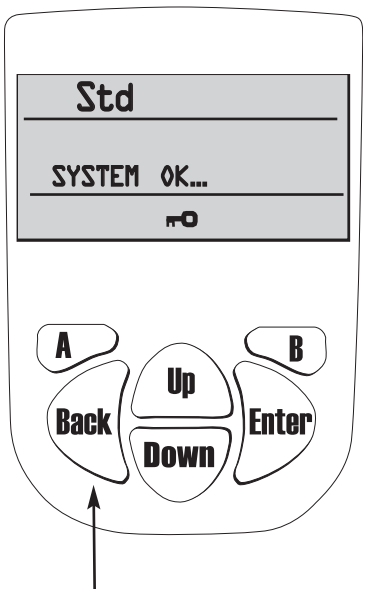
OPERATING THE CONTROL UNIT

Information of the units current status such as temperature, fan speed, the rotor temperature efficiency when operating, heat respectively cooling needs is shown in the **VIEW MODE 1, 2, 3** and **4**. These menus is normally not lit up for battery-saving purposes but is lit up after the first press of the button and is switched off after about 2 minutes of not being in use.
The control unit automatically returns to **VIEW MODE 1** after one minute when one has viewed other submenus.
Note! At new setting a delay of 15 seconds should be taken into consideration.



Bottom row shows the possible choices with key A or B. E.g turn on/off the unit with the A key.

Top row and middle field displays current values and activities.



To activate or disable the keylock; press down the Back key for 3 seconds.

USER INFORMATION FOR RF DEVICE:

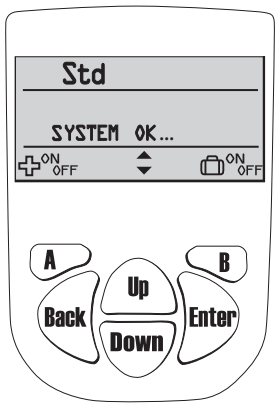
FCC ID: A8W-4020528
This device complies with part 15 of the FCC Rules and RSS-210 of IC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation of the device.

FCC ID: ASW-4020527
This device complies with part 15 of the FCC Rules and RSS-210 of IC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation of the device.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This exuipment has been tested and found to comply with the limits for Class B digital device, pursuant to part 15 of the FCC Rules. These limits are digned to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: -Reorient or relocate the receiving antenna. -Increase the separation between the equipment and receiver. -Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. Consult the dealer or an experienced radio/tv technician for help.

VIEW MODE 1

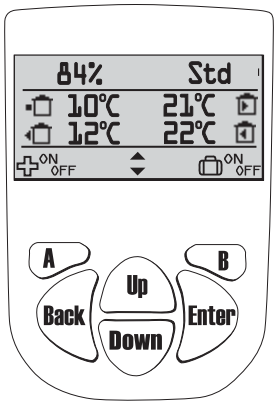


In order to go to view mode 2, 3 or 4 press Up or Down.
In order to return to view mode 1, press Back.

SYMBOLS THAT CAN BE DISPLAYED IN VIEW MODE 1:

- = Indicates that the rotor is operating. + = heat recovery - = cooling recovery
- Std = Fan speed. Choose from min, standard, medium, max.
- = Symbol indicates that the heating coil is on.
- = Summer cooling is active.
- = Week timer is active.
- = Function of A-key. Press A-key to regulate "boost" of supply & extract air flow.
- = Function of B-key. Press B-key to turn off pressure compensation.
- = Function of B-key. Press B-key to choose "Away" on or off.
- = Symbol indicates that the cooling coil is on.
- = Function of keys up and down for view mode 2, 3 and 4.
- = Alarm
- = Indicates Boost is active.
- = Indicates Away is active.
- = Pressure compensation is active.

VIEW MODE 2

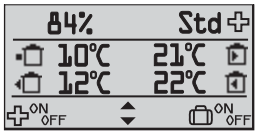


In order to go to view mode 3 or 4 press Up or Down.
In order to return to view mode 1, press Back.

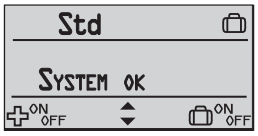
SYMBOLS THAT CAN BE DISPLAYED IN VIEW MODE 2:

- = Indicates that the rotor is operating. + = heat recovery - = cooling recovery
- 84% = Temperature efficiency.
- = Symbol indicates that the heating coil is on.
- = Symbol indicates that the cooling coil is on.
- = Week timer is active.
- = Summer cooling is active.
- = Outside temperature.
- = Exhaust air temperature.
- = Supply air temperature.
- = Extract air temperature.
- CO2 = CO_2 compensation is active.
- = Function of A-key. Press A-key to regulate "boost" of supply & extract air flow
- = Function of B-key. Press B-key to turn off pressure compensation.
- = Function of B-key. Press B-key to choose "Away" on or off.
- = Function of keys up and down for view mode 1, 3 and 4.
- = Alarm
- = Indicates Boost is active.
- = Indicates Away is active.
- = Pressure compensation is active.
- RH = RH compensation is active.

IN VIEW MODE 1 AND 2 BOOST OFF/ON AND AWAY OFF/ON CAN BE CHOOSEN.

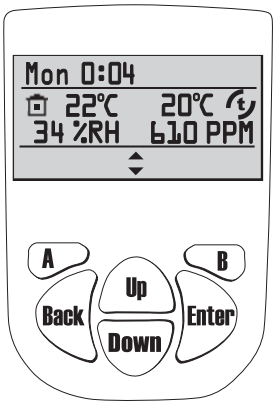


Press A key to choose **Boost off/on** of the supply & extract air flow for a specific time (time and fan speed settings during the boost is made in the Service menu "Boost" page 11). When the "plus"+ symbol is displayed in the right corner, the boost is activated.



Press B key to choose **Away off/on**. When the symbol "suitcase" is displayed in the right corner, the away mode is activated, i.e. the fan speed is minimum.

VIEW MODE 3

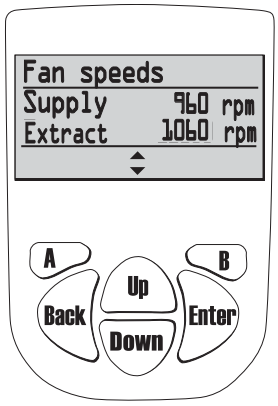


In order to go to view mode 2 or 4 press Up or Down.
In order to return to view mode 1, press Back.

SYMBOLS THAT CAN BE DISPLAYED IN VIEW MODE 3:

- Mon 0:04 = Display weekday and time.
- = Indicates that Summer cooling is active.
- = Indicates that week timer is active.
- = Room temperature. Sensor placed in room.
- 34 %RH = Relative air humidity in per cent.
- 610 PPM = Carbon dioxide level in PPM (part per million).
- 20°C = Supply air temperature after the rotor.
- = Function of keys up and down for view mode 1, 2 and 4.
- = Indicates Boost is active.
- = Pressure compensation is active.
- CO2 = CO_2 compensation is active.
- RH = RH compensation is active..

VIEW MODE 4 (only for HERU®EC)



In order to go to view mode 2 or 3 press Up or Down.
In order to return to view mode 1, press Back.

SYMBOLS THAT CAN BE DISPLAYED IN VIEW MODE 4:

Displayes fan speed of supply and extract air in rpm.
At Constant pressure regulation the max speed, the fan speed and current pressure sensor value is displayed in per cent.

"MAIN MENU"

In order to go forward in the menu from the View mode to the **Main Menu** press Enter.

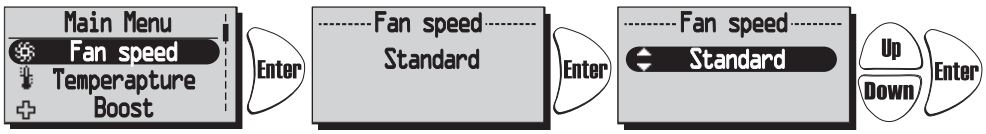
In the **Main Menu** Up/Down is used to select the desired menu, after the choice is made with Enter.

The procedure is the same in the submenu. In order to return to the previous page press Back.

"FAN SPEED" MENU (Only for Heru®AC)

In this menu desired fan speed is chosen. You can choose from 4 speeds: **Min**, **Standard**, **Medium and Max**. Normal operation should be done in standard mode

Press Enter in order to go forward from the Main Menu. Press Enter again and then Up/Down in order to choose the desired **fan speed**. Confirm with Enter.

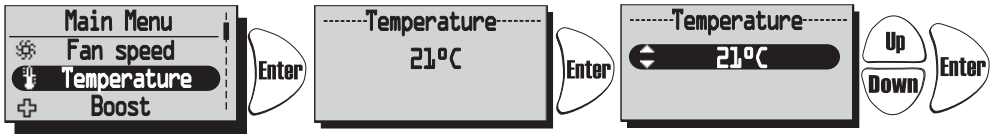


*Made settings is overridden if **Week Timer** is activated.*

"TEMPERATURE" MENU

In this menu desired temperature is chosen (**supply air, extract air** or **room temperature**) depending on what kind of regulation that is choosed, see page 19.

Press Enter in order to go forward from the Main Menu. Press Enter again and then Up/Down in order to choose the desired **temperature** (15°C-30°C); .Confirm with Enter.

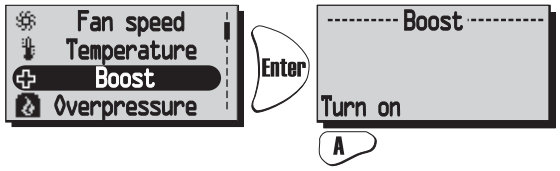


*Made settings is overridden if **Week Timer** is activated.*

"BOOST" MENU

In this menu **Boost On/Off** is chosen. The time has the factory setting of 30 min. and fan speed Medium. To adjust the fan speed and time, see page 16.

Boost is activated/disable (On/Off) with the A key.



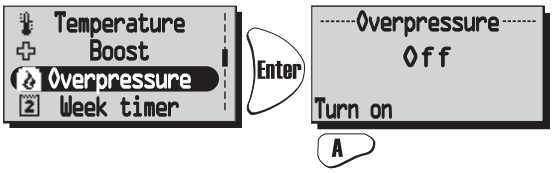
The Boost function can also be activated with an external switch with double pressure or timer. See wiring diagram page 36-37. The Boost is On as long as the breaker is closed.

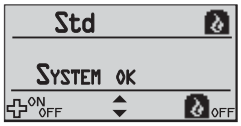
"OVERPRESSURE" MENU

Overpressure is a special feature were you can pressure compensate when supplementary heating using an open fire or stove. The extract air fan then drops to a lower speed during set time.

In this menu **Overpressure On/Off** is chosen. The time has the factory setting of 15 min. To adjust the time, see page 16.

Overpressure is activated/disable (On/Off) with the (A) key.





When pressure compensate is activated the symbol "Away" will be change to the symbol "Overpressure" in View mode 1 and 2.
Than press (B) directly in the View mode to turn off Overpressure.

"WEEK TIMER" MENU

When in normal operation the unit runs with the fan speed that was choosen in the **"Fan Speed" menu** and the temperature that was choosen in the **"Temperature" menu**. A departure from these programmed values that you periodically want to recall is done in this menu. For example if you want to have a lower flow/temperature during the daytime when nobody is at home then there is the possibility to adjust this here.
Week timer. If end time is the same or less than start time the program will end the following day.

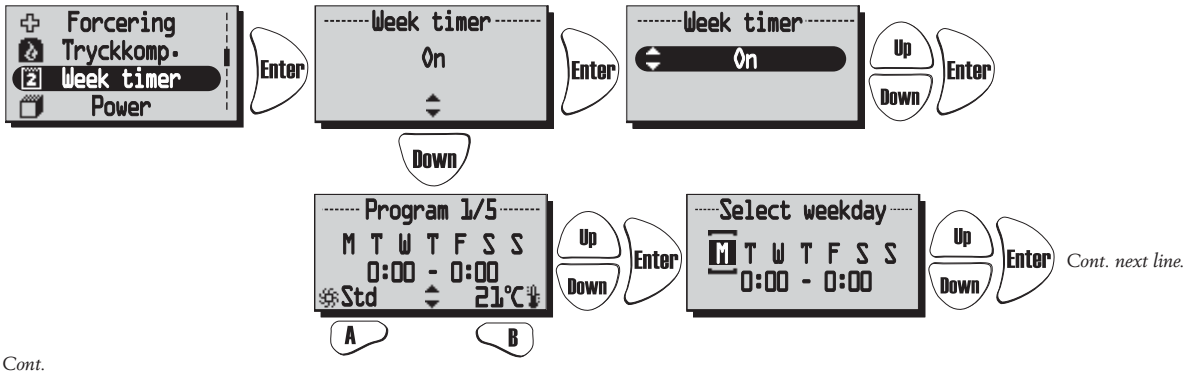
Press Enter in order to go forward from the Main Menu.

Press Enter again and then Up/Down in order to choose **off/on** of the week timer. Confirm with Enter.

Press Down to choose/adjust the desired **program**. There are 5 programs for the adjustment of the fan speed and temperature available. Press Up/Down to choose a **program**.

Press Enter in order to go forward to choose a **weekday, start time, end time, fan speed** and **temperature**.

Use the keys Up/Down to choose the settings of weekday, start time, and end time, fan speed (**Min**, **Standard**, **Medium**, **Max**) and **temperature** (15°C-30°C).



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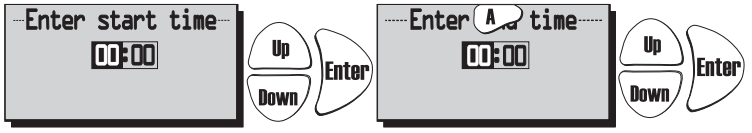

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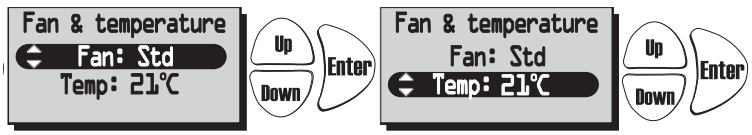
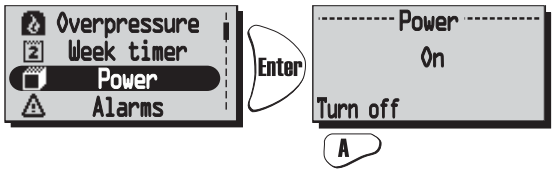


*N.B! The activated **Week Timer** is overridden manuel settings of fan speed and temperature.*

"UNIT ON/OFF" MENU

In the **"Unit On/Off"** Menu you have the possibility of turning off the unit via the wireless control unit.
This will just put the unit in a stand by mode.
NB! The unit must be currentless during service and maintenance.

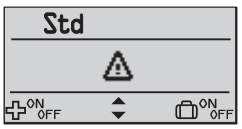
Press Enter in order to go forward from the Main Menu. Press A in order to choose **on/off** of the unit.

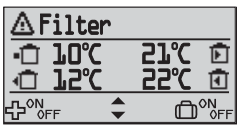


To avoid condensation in the unit during the cold season the unit should not be turned off for a longer period.

"ALARMS" MENU

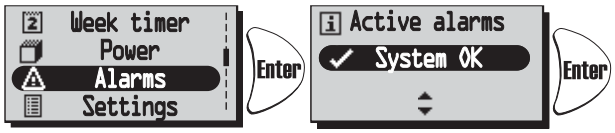
This meny displayes alarms.
View mode 1 shows alarm and
View mode 2 shows what kind of alarm.





Alarms is shown for:
• "Rotor failure" • "Supply temp. low" • "Rotor temp. low" • "Fire alarm" • "Freeze alarm"
• "Sensor open" • "Sensor shorted" • "Overheating" • "Filter alarm" • "Fan failure" • "Filtertimer"

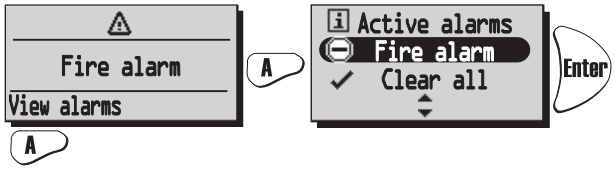
Press Enter in order to go forward from the Main Menu and to view status. If no alarm "System OK" is displayed.

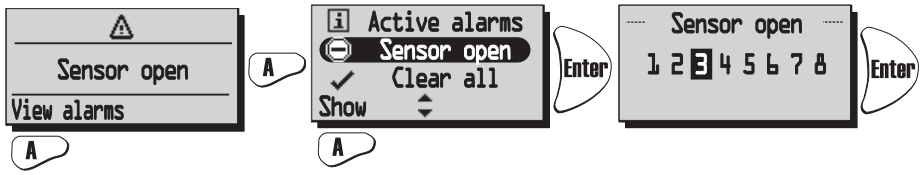


When alerting a dialogue box for the alarm is shown in the Main Menu and the display will flash.
"**View alarms**" is shown and the possibility for equalization is given.

Press A to see the cause of alarm in a submenu. Control the cause and remedy the alarm.

Press Down to "**Clear all**" and than Enter.





Current alarm is viewed. When "Sensor open" and "Sensor shorted" press A "**Show**"
to view which sensor GT 1-8 is alerting.
See Control diagrams on page 7.

In order to return to the previous pages press Back.

When alarm for Filter timer the alarm can equalize with Reset.
A reminder to change filter comes with a seven-day interval.
To restart the timer see "Service Menu Alarm" page 17.

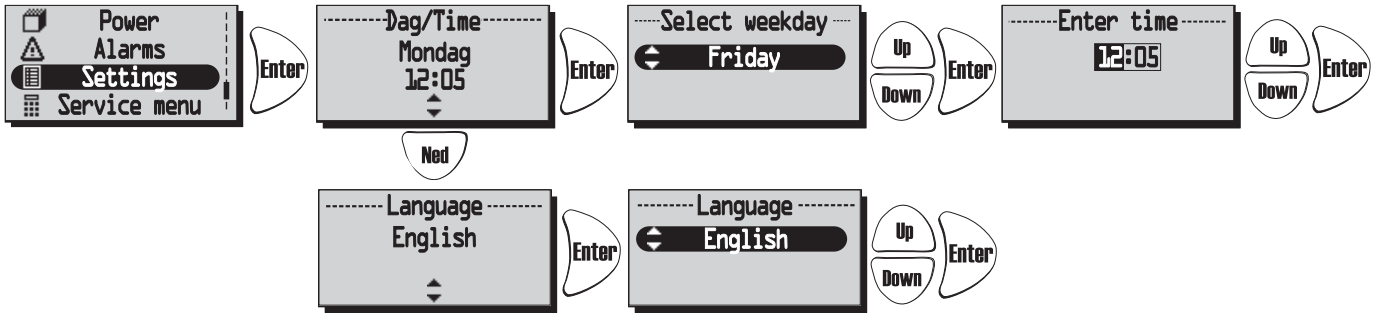
"SETTINGS" MENU

In this menu settings for **weekday**, **time** and what **language** is made.

Press Enter in order to go forward from the Main Menu. Press Enter again and then Up/Down in order to choose **weekday**.

Press Enter again and then Up/Down in order to enter the **time**.

Press Enter and then Up/Down in order to choose a **language**. 4 languages are available: **Swedish, Finnish, Russian** and **English**.



THE "SERVICE MENU"

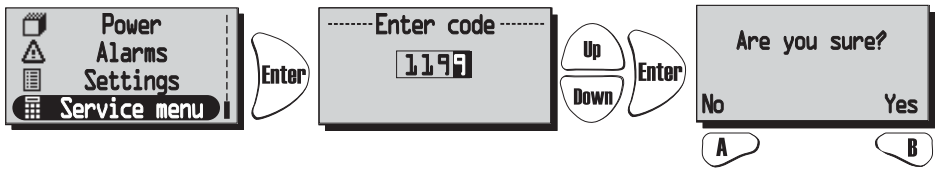
In this menu a password is required in order to make adjustments. **The password is 1199** and it can not be changed.

Press Enter in order to go forward from the Main Menu.

The password is entered with the Up/Down keys and every digit is confirmed with Enter.

After the password 1199 to the Service Menu the question "Are you sure?" will be displayed.

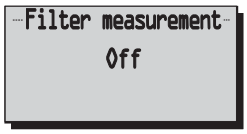
Press A for "No" or B for "Yes".



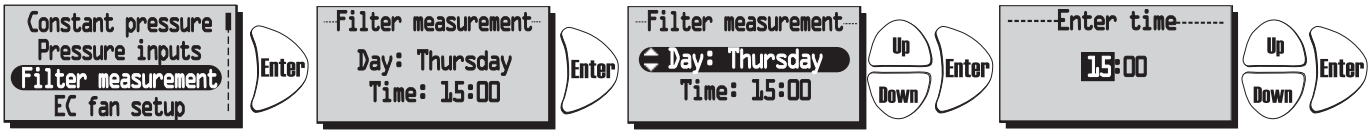
To go further to the different functions in the "Service menu" press Up or Down.

SERVICE MENU: "FILTER MEASUREMENT"

Filter switches or pressure sensors are **not** installed as standard, and this is displayed:

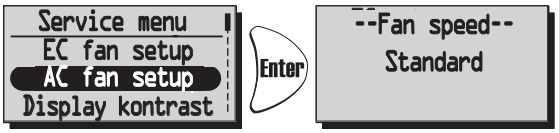


If filter switches are installed and activated, setting for day and time is choosed when the unit should boost to measure increased pressure over supply air filter GP1 and exhaust air filter GP2.



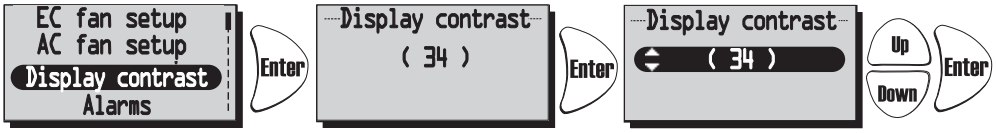
SERVICEMENY: "AC FAN SETUP":

When adjusting the unit, the speed is set to standard and functions that may affect the fan speed, such as "Away" and "Boost", should be inactivated.



SERVICE MENU: "DISPLAY CONTRAST"

Display contrast setting. The contrast can be set between 0-63.



SERVICE MENU: "BOOST":

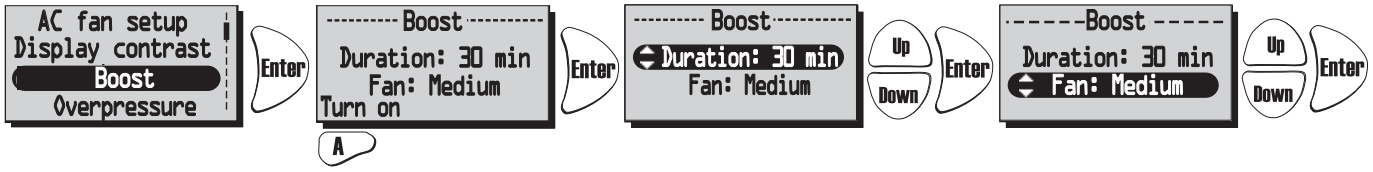
Time settings for **Boost** and **Fan speed**. Boost means that during a specific time increases the air flow. This boost can then be activated at the View mode 1 and 2, and in the Main Menu "Boost".

Press Enter in order to go forward from the Main Menu. Press Enter again and then Up/Down in order to choose the desired **duration**. (**10-240 min.** with the interval of 10 min.)

Press Enter on order to confirm and go forward to fan speed.

Choose the desired **fan speed** with Up/Down (**medium** or **max**) and confirm with Enter .

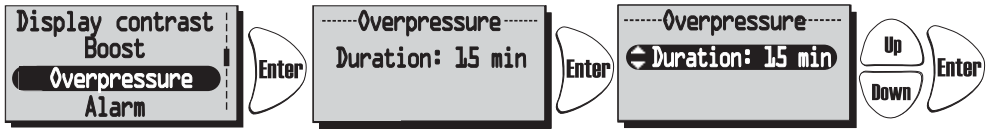
Boost is activated/disable (on/off) with the A key.



SERVICE MENU: "OVERPRESSURE"

Time settings for **Overpressure**. Overpressure compensate is a special feature when supplementary heating using an open fire or stove (the extract air fan drops to a lower speed during a specific time).

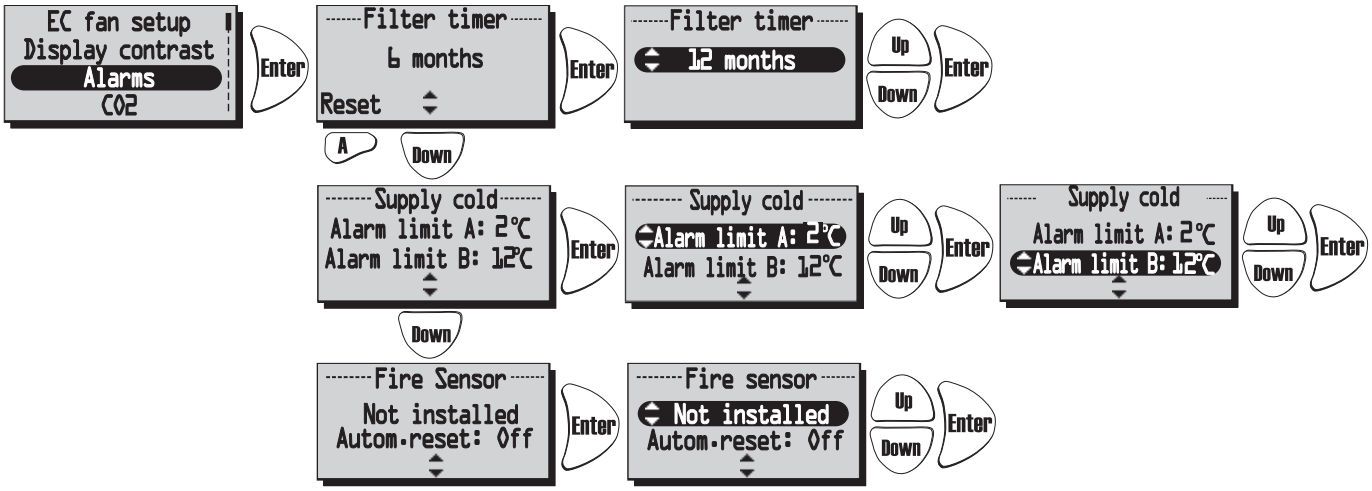
Press Enter in order to go forward from the Main Menu. Press Enter again and then Up/Down in order to choose the desired **duration** (5-60 min.).



SERVICEMENY: "ALARM"

In this menu alarm limits is set for **Filter timer, Low temperature** and setting for **Fire sensor**.

"**Filter timer**" can be set from "**Off**" to "**6-12 months**" and generates alarm for filter change.
Filter timer can not be used in combination with another filter measurement, see page 15.
We recommend filter change at least once a year.



To restart the filter timer press "**Reset**" with the A -key.

Alarm limits for "**Low temperature**".
Alarm limit A: (+2 till +10°C but must be lower than "Alarm limit B")
Alarm for low rotor temperature is displayed when the temperature is lower than set value. Normally nothing needs to be done. If "Rotor Alarm" appairs at the same time as "Rotor temp. Low" the unit is stopped.
Alarm limit B: Supply air flow is reduced with one step when the temperature in supply air duct (GT7) is lower than set value, and the temperature efficiency increases (the temperature can be change from +5 to +12°C but have to be higher than "Alarm limit A").
If the unit operating at Min. speed the extract air increases one step.

In menu "**Fire sensor**" type of installed fire sensor is set.
Choose "Normally open" NO or "Normally closed" NC depending on the type of smoke detector.
Choose "Autom.reset" On/Off.

SERVICEMENY: "CO2" Carbon dioxide level in PPM (part per million).

In this menu settings are made for regulation with installed CO2 sensor.

Press Enter again and then Up/Down in order to choose the **Limit value** (500-1400 PPM).

Press Enter again and then Up/Down in order to choose **Interval** (1-10 min.).

At levels above the limit value the fan speed will increase one step according to the set Interval value.

Current CO2 value is displayed in **View mode 3**, see page 10.

SERVICEMENY: "RH" Relative air humidity in percent

In this menu settings are made for regulation with installed RH sensor.

Press Enter again and then Up/Down in order to choose the **Limit value of boost** (50%-100%).

HERU®AC: Press Enter again and then Up/Down in order to choose **Interval** (1-10 min.).

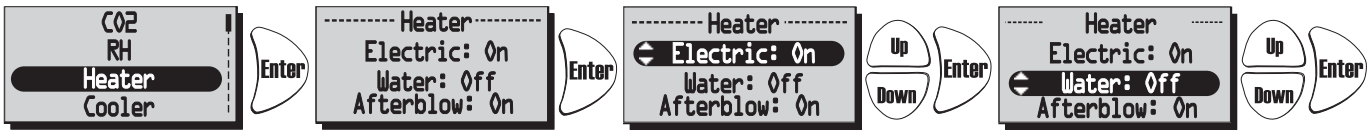
At levels above the limit value the fan speed will increase one step according to the set Interval value.

Current RH value is displayed in **View mode 3**, see page 10.

SERVICEMENY: "HEATER"

In this menu type of Heater is chosen to be activated.
If a heating coil is used a freeze protection sensor (GT5) must be installed, and a damper ST1 must be mounted in the fresh air duct. The GT7 must be mounted after the Heater.

Press Enter again and then Up/Down in order to choose **On** or **Off**.



"Afterblow" function means that the fan continues to run for 2 min. when the unit is put Off, if the heater is On.

SERVICEMENY: "COOLER"

In this menu a cooling coil can be activated if installed.

Press Enter again and then Upp/Ned in order to choose **On** or **Off**.

SERVICEMENY: "SUPPLY LIMITS"

In this menu the upper and lower limit value for the supply air temperature at room or exhaust air regulation is set.

Press Enter again and then Up/Down in order to choose a **minimum limit value** (15°C-19°C).

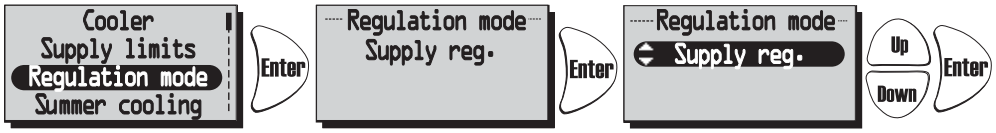
Press Enter again and then Up/Down in order to choose a **maximum limit value** (20°C-40°C).

SERVICEMENY: "REGULATION MODE"

3 different types of regulation modes can be used.

- At a **constant supply air regulation** the temperature sensor (GT7) is placed in the supply air duct and a constant incoming air temperature is obtained.
- At **room regulation** a sensor (GT8) is placed in the room and a sensor (GT7) in the supply air duct (minimum/maximum limitation) and then a constant room temperature is obtained (suitable when a cooling coil is installed).
- The **extract air regulation** works in a similar way as the room regulation with the difference being that the temperature is measured in the extract air duct.

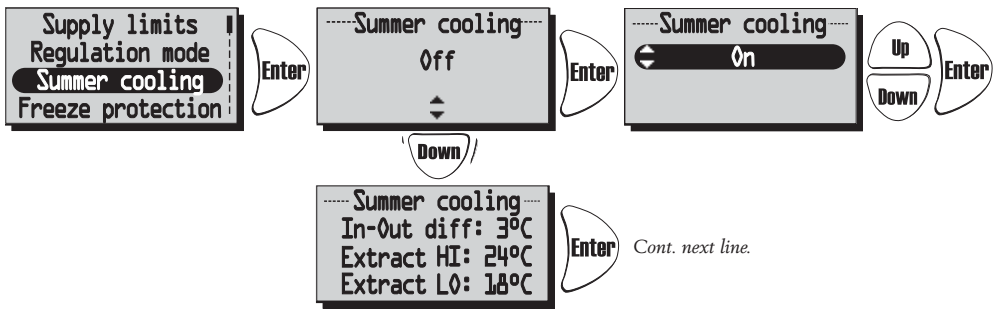
Press Enter again and then Up/Down in order to choose **Supply reg., Extract reg.** or **Room reg.**



SERVICEMENY: "SUMMER COOLING"

If **"Summer Cooling" "On"** is chosen, the Summer cooling is activated when the extract air temperature is higher than "Extract HI" (19°C-26°C) and outside air is colder than "Exhaust - 'In OutDiff' (1°C-10°C difference between the temperature outside and extract air)".
Summer cooling is deactivated when extract air temperature is lower than "Extract LO" (18°C-24°C) or when the outside temperature is warmer than "Extract air - 'InOutDiff + 1,0°C' ".
If Summer Cooling is activated, water cooling is disabled.

Press Enter again and then Up/Down in order to choose **On** or **Off**. In order to go forward in "Summer Cooling" press Down.



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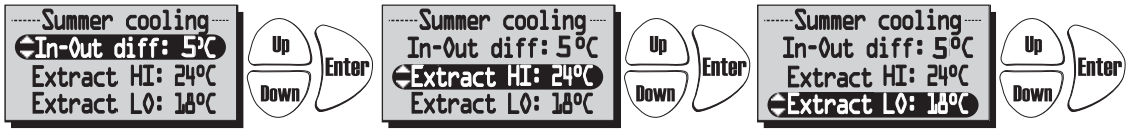
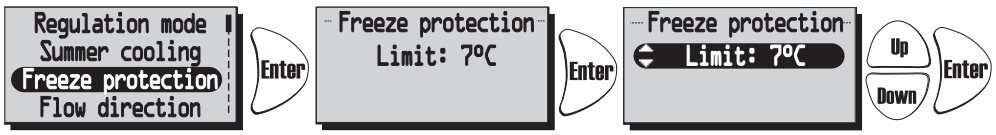


Press Enter again and then Up/Down in order to choose 'InOutDiff': (1°C-10°C), **Extract HI:** (19°C-26°C) and **Extract LO:** (18°C-24°C).

SERVICEMENY: "FREEZE PROTECTION"

Setting of limit value when freeze protection sensor is installed. The sensor (GT5) is installed on the return pipe from the heating coil. When 3°C higher than set point the valve opens completely. If the temperature continues to fall to set point the unit will stop.

Press Enter again and then Up / Down in order to choose **Limit**: (5°C-10°C).



SERVICEMENY: "FLOW DIRECTION"

Make settings if the supply air and extract air are connected on the right or left hand.
Supply air and extract air have to be connected on the same side of the unit.

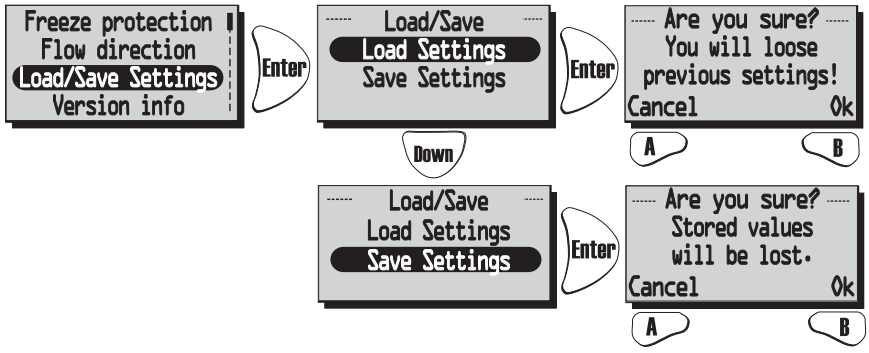
Note! If HERU® is fitted with built-in electrical heater, this can not be done.

Press Enter again and then Up / Down in order to choose **Left** or **Right**.

SERVICEMENY: "LOAD/SAVE SETTINGS"

"Load/Save" gives the installer the opportunity to save the set values in service menu after the installation, alt. load previously saved values.

Press Enter again and then Upp / Ned in order to choose **Load Settings** or **Save settings**.

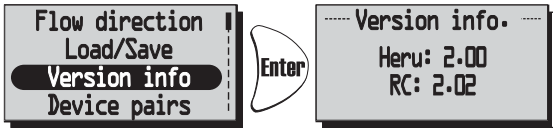


After you have "**load**" or "**Saved**" it may take a minute before the unit re-created connection to the wireless control unit and the right data is displayed.

SERVICEMENY: "VERSION INFO"

Displays the software version of the unit (Heru) and the wireless control (RC).

Press Enter again to see the version.

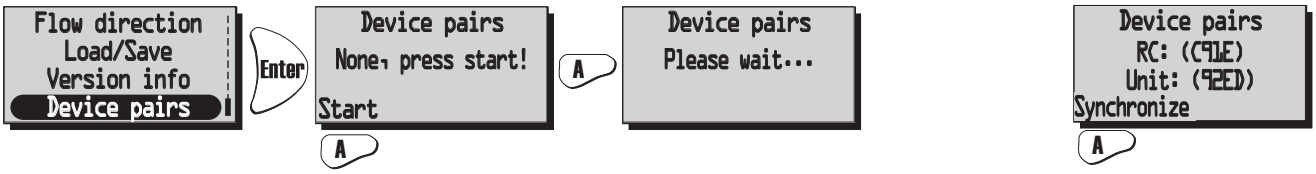


SERVICEMENY: "DEVICE PAIRS"

In this menu, the wireless control unit seeking the frequency that the control unit is using. This procedure has to be used e.g. when a new wireless control unit has obtained.

Connecting a new wireless control unit:
First of all push the Reset button at the back of the antenna.
Use something with a sharp point. See picture.
Than cut the power to the unit and allow it to stand the rejection of an hour. B
efore the unit is connected, press **"Start"** with the (A) key in the "Device pairs" menu, and connect the unit within 20 seconds.
Within seconds you will return to "Service menu" and the wireless control unit is connected.
If you end up in "Device pairs" instead of "Service menu" the connection has failured.
Try one more time.

If the wireless control unit has been used in an assembly earlier, it will say **"Synchronize"** instead of **"Start"**.



"Modbus" is a function for data communcation. A special wireless control unit is required.
Modbus is available on one RS485 port. The baud rate is set from the wireless control unit. Communication uses 1 start bit, 8 data bits, one stop bit and no parity.

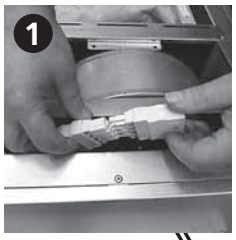
Enabling Modbus: Modbus is enabled when the relay unit is paired with a "modbus enabled" wireless control unit. Normal wireless control units are not "modbus enabled".
Disabling Modbus: Modbus is disabled when the relay unit is paired with a normal wireless control unit.

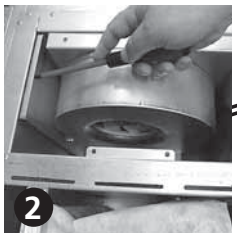
OTHER FUNCTIONS

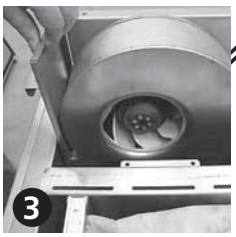
- Function test of rotor motor.
  The rotor runs for three minutes every day at 12.03, if the rotor has not been operate for 24 hours.
- Function test of heating coil valves and cirkulation pumps.
  Once a week (Mondays at 12.09) there is a maintenance program running in order to secure functions of valves and pumps.

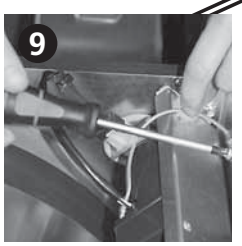
CLEANING/FILTER CHANGE

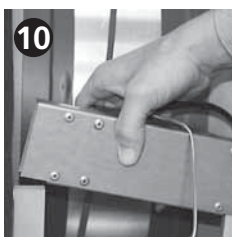
- The filters should be change once a year or at alarm for filter change. When alarm for Filter Change, this should be done as soon as possible; as there otherwise is a risk that the adjusted flow is not obtained.
- Always turn off the electrical supply and ensure that it cannot be turned on.
- Open the lid by removing the four screws 15 in every corner. Do not remove the protective plates that covers the fans and rotor. 16
- The filters are taken out by pulling them straight out from their fastening strips 4 .
  When changing a filter it is also appropriate to check if the fans are dirty.
- Remove the the fans and rotor\s protective plates when the fans have stopped and the heater has cooled. 16
- The fans are taken out, after the quick connectors have been disconnected 1 , removing the screw 2 and pulling it straight out from the unit 3 .
  Dismount the motor plate from the fan house 12 (the outer screws) and lift out the motor with the fan wheel. If necessary the fan wheel and fan housing are wiped clean with a damp cloth. The interior of the unit housing can be wiped when necessary.
- If necessary the rotor 6 can also be dismounted (see Dismounting).

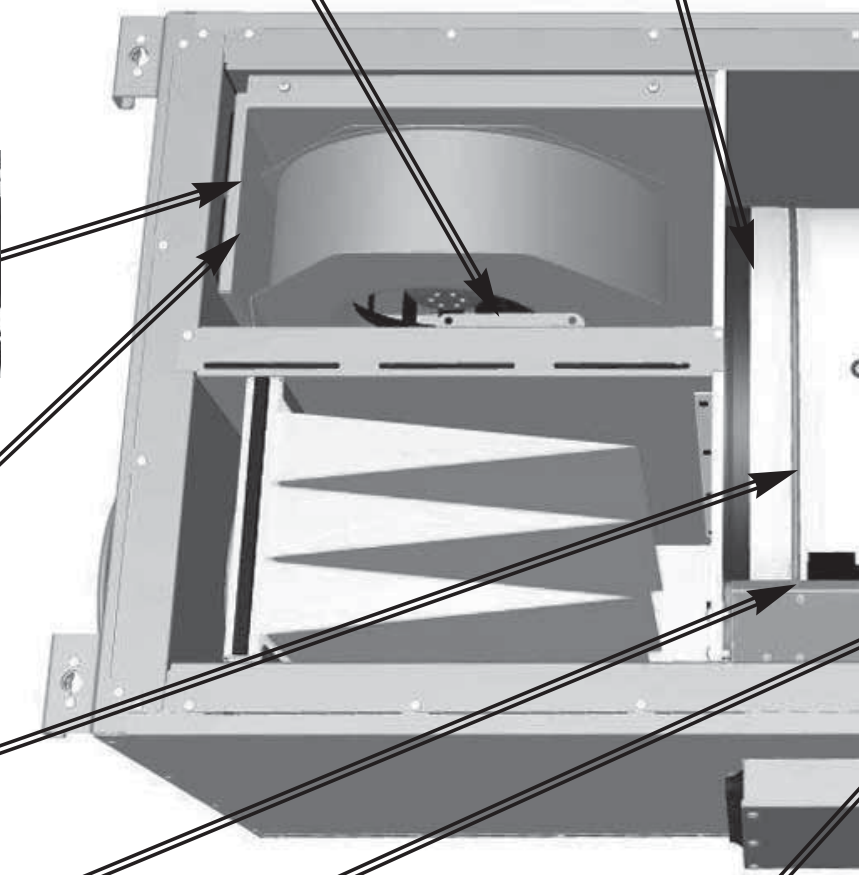


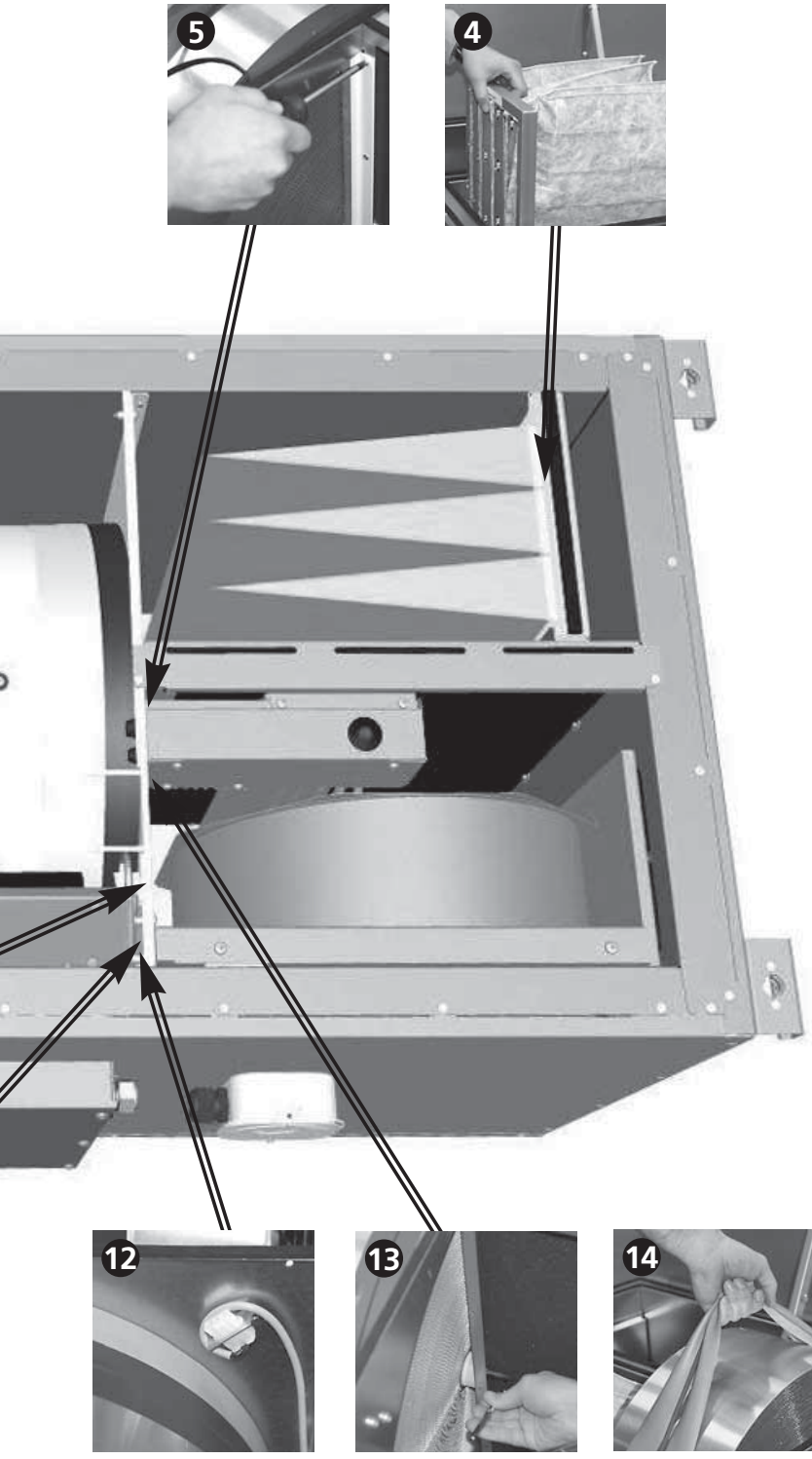












BELT/TIGHTENING MATERIAL CHANGE

EQUIPMENT

- Screwdriver TX20 or screwdriver 1x5 (0,8x4)
- Screwdriver PH 1
- 2 Allen keys 6 mm (preferably with round head)
- Service kit 6000171 for HERU 14 S/19 S.
- Service kit 6000169 for HERU 35 S.
- Service kit 6000170 for HERU 52 S.

DISMOUNTING

1. Loosen electrical socket 1 and screw 2 and carefully pull out fans 3.
2. Pull out the filters 4.
3. Dismount sealing joints 5 both sides of the rotor 5, 2 long and 2 short pieces with a PH1 screwdriver.
4. Remove the tape that keeps the rotor tightening material 6 in place, 2 pieces, and move them in towards the centre of the rotor 14.
5. Lift off belt from the rotor motor 7, disconnect the electrical socket 8 and loosen the ground cable 9.
6. Pull out the rotor motor from the grippers 10 and than dismount them 11.
7. For HERU®130/180 S EC loosen electrical socket with bracket 12 with screwdriver TX20 and hang it over the egde towards the fan.
8. Dismount the Allen screws 13, 2 pieces that hold the rotor. Lift out the rotor 14.

Change the rotor tightenings and the rotor belt.

MOUNTING

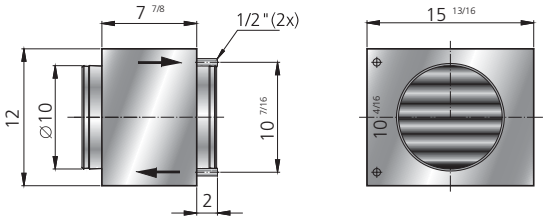
1. Lift the rotor into the box using the new belt.
2. Mount with Allen screws, distancers and tightenings.
3. Push out the rotor tightening material over the edge onto the middle wall. Mount a new tape.
4. Push in the rotor motor in the grippers and lift the rotor belt onto the belt pulley.
5. Mount electrical socket with bracket.
6. Mount the brush seals.
7. Mount filters and fans (carefully so there's no damage to the seal trim).
8. Mount the electrical sockets. Check the function of the fans and rotor before closing the lid.

ACCESSORIES

Room sensor (GT8)	4020310
CO2 Room sensor	4020302
RH Room sensor	4020301
Freeze protection sensor (GT5)	4020309
Extension cord for antenna	6010011
Heating coil, 5 kW	9510101
Cooling coil, 2.5 kW	9510134

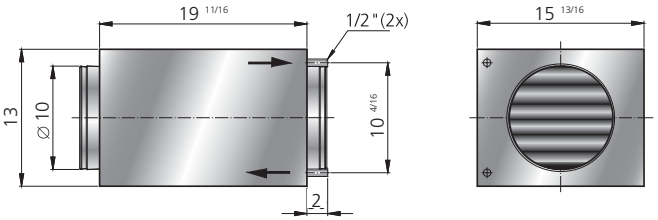
HEATING COIL (5,0 kW)

Air		Hot water	
Flow:	0.20 m³/s	**Flow:**	0.10 l/s
Speed:	2.2 m/s	**Speed:**	0.86 m/s
Temp. in:	10°C	**Temp. supply pipe:**	60°C
Temp. out:	30.5°C	**Temp. return pipe:**	40°C
Capacity:	5.0 kW	**Pressure drop:**	15.0 kPa

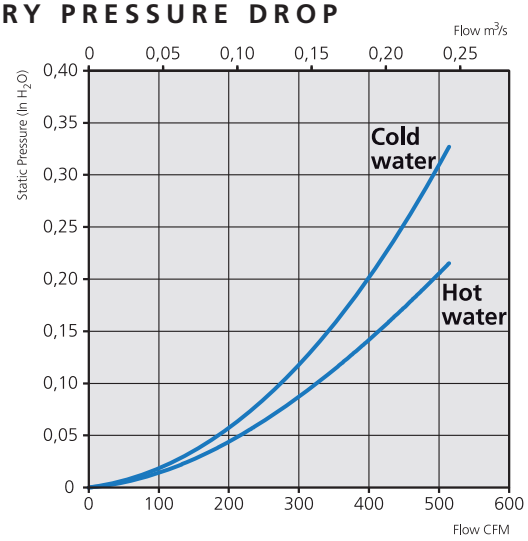


COOLING COIL (2,5 kW)

Air			Cold water		
Flow:	0.20 m³/s	0,15 m³/s	**Flow:**	0.16 l/s	0.13 l/s
Speed:	2.2 m/s	1,7 m/s	**Speed:**	0.8 m/s	0.6 m/s
Temp. in:	25°C, 50% Rh	25°C, 50% Rh	**Temp. supply pipe:**	7°C	7°C
Temp. out:	14.4°C	13.5°C	**Temp. return pipe:**	12°C	12°C
Capacity:	2.5 kW	2.0 kW	**Pressure drop:**	12.4 kPa	8.8 kPa



BATTERY PRESSURE DROP

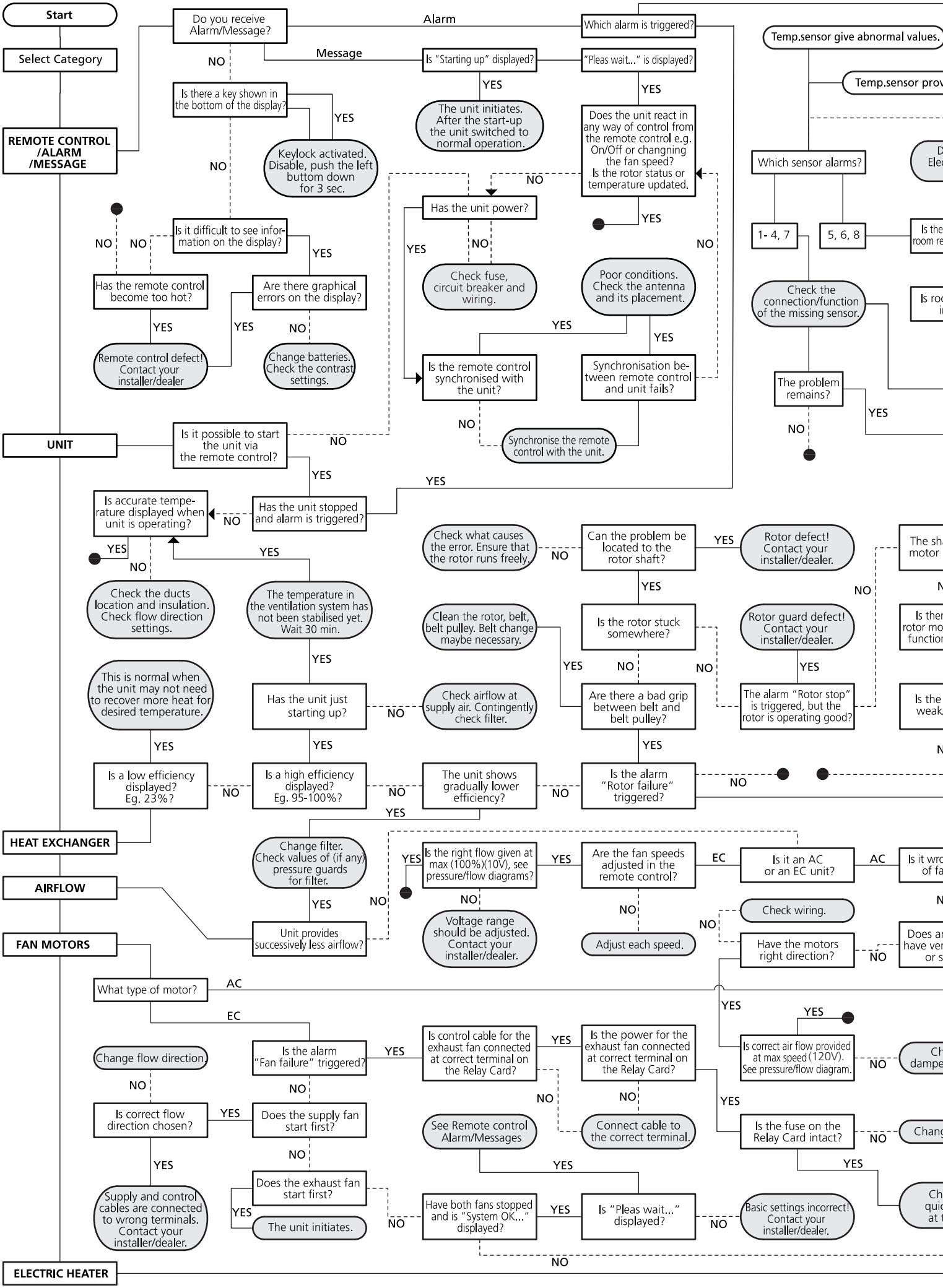


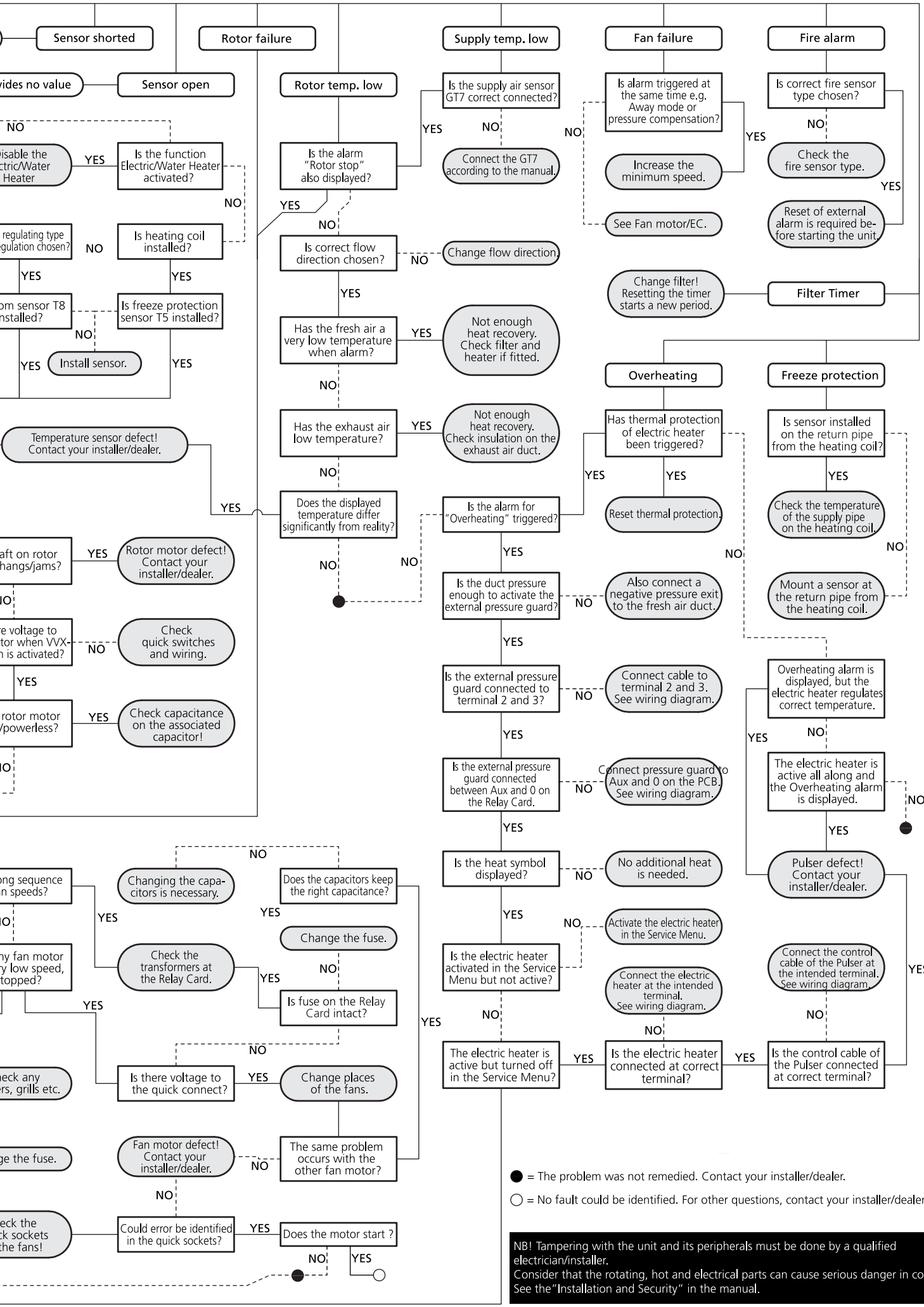
Dimensioning of Cooling/Heating coil should be performed by a qualified person.

SPARE PARTS

Rotor motor, complete, HERU 14 S/19 S	6000066
Rotor motor, complete, HERU 35 S/52 S	6000062
Service kit (belt+tightening), HERU 14 S/19 S	6010171
Service kit (belt+tightening), HERU 35 S	6010169
Service kit (belt+tightening), HERU 52 S	6010170
Bagfilter F7 the same for supply and exhaust air, HERU 14 S/19 S	1250152
Bagfilter F7 the same for supply and exhaust air, HERU 35 S	1250151
Bagfilter F7 the same for supply and exhaust air, HERU 52 S	1250153
Fan, HERU 14 S AC	7710256
Fan, HERU 19 S AC	7710255
Fan, HERU 35 S AC	7710258
Fan, HERU 52 S AC	7710253
Fan, HERU S	7710249
Fan, HERU S	7710250
Fan, HERU S	7710251
Electrical heater, built-in, with triac switch, 1200 W, HERU 14 S/19 S	6010063
Electrical heater, built-in, with triac switch, 1700 W, HERU 35 S	6010061
Electrical heater, built-in, with triac switch, 1700 W, HERU 52 S	6010068
Capacitor HERU 14 S	4030087
Capacitor HERU 19 S	4030086
Capacitor HERU 35 S/52 S	4030088
Duct sensor (GT7)	4020497

Contact your installer/dealer for order.


Start
Select Category
REMOTE CONTROL /ALARM /MESSAGE
UNIT
HEAT EXCHANGER
AIRFLOW
FAN MOTORS
ELECTRIC HEATER
Do you receive Alarm/Message?
Alarm
Message
NO
Which alarm is triggered?
Is "Starting up" displayed?
"Pleas wait..." is displayed?
YES
The unit initiates. After the start-up the unit switched to normal operation.
Does the unit react in any way of control from the remote control e.g. On/Off or changning the fan speed? Is the rotor status or temperature updated.
Is there a key shown in the bottom of the display?
Keylock activated. Disable, push the left buttom down for 3 sec.
Has the unit power?
Check fuse, circuit breaker and wiring.
Poor conditions. Check the antenna and its placement.
Is it difficult to see information on the display?
Has the remote control become too hot?
Are there graphical errors on the display?
Remote control defect! Contact your installer/dealer
Change batteries. Check the contrast settings.
Is the remote control synchronised with the unit?
Synchronisation between remote control and unit fails?
Synchronise the remote control with the unit.
Is it possible to start the unit via the remote control?
Has the unit stopped and alarm is triggered?
Is accurate temperature displayed when unit is operating?
Check the ducts location and insulation. Check flow direction settings.
The temperature in the ventilation system has not been stabilised yet. Wait 30 min.
Has the unit just starting up?
Check airflow at supply air. Contingently check filter.
This is normal when the unit may not need to recover more heat for desired temperature.
Is a low efficiency displayed? Eg. 23%?
Is a high efficiency displayed? Eg. 95-100%?
The unit shows gradually lower efficiency?
Change filter. Check values of (if any) pressure guards for filter.
Unit provides successively less airflow?
Check what causes the error. Ensure that the rotor runs freely.
Can the problem be located to the rotor shaft?
Rotor defect! Contact your installer/dealer.
Clean the rotor, belt, belt pulley. Belt change maybe necessary.
Is the rotor stuck somewhere?
Rotor guard defect! Contact your installer/dealer.
Are there a bad grip between belt and belt pulley?
The alarm "Rotor stop" is triggered, but the rotor is operating good?
Is the alarm "Rotor failure" triggered?
Is the right flow given at max (100%)(10V), see pressure/flow diagrams?
Are the fan speeds adjusted in the remote control?
Is it an AC or an EC unit?
Voltage range should be adjusted. Contact your installer/dealer.
Adjust each speed.
Check wiring.
Have the motors right direction?
What type of motor?
AC
EC
Change flow direction.
Is the alarm "Fan failure" triggered?
Is control cable for the exhaust fan connected at correct terminal on the Relay Card?
Is the power for the exhaust fan connected at correct terminal on the Relay Card?
Is correct air flow provided at max speed (120V). See pressure/flow diagram.
Is correct flow direction chosen?
Does the supply fan start first?
See Remote control Alarm/Messages
Connect cable to the correct terminal.
Is the fuse on the Relay Card intact?
Supply and control cables are connected to wrong terminals. Contact your installer/dealer.
Does the exhaust fan start first?
The unit initiates.
Have both fans stopped and is "System OK..." displayed?
Is "Pleas wait..." displayed?
Basic settings incorrect! Contact your installer/dealer.
Temp.sensor give abnormal values.
Temp.sensor prov
Which sensor alarms?
1- 4, 7
5, 6, 8
Check the connection/function of the missing sensor.
The problem remains?



● = The problem was not remedied. Contact your installer/dealer.

○ = No fault could be identified. For other questions, contact your installer/dealer.

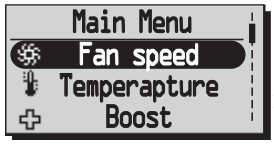
NB! Tampering with the unit and its peripherals must be done by a qualified electrician/installer.
Consider that the rotating, hot and electrical parts can cause serious danger in contact. See the"Installation and Security" in the manual.

ERROR DETECTION

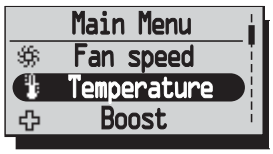
Type of fault	Check...	Remedy
Nothing shows on the display.	...The batteries.	Change the 3 AA batteries.
Can't enter the menus, the keys are locked	...If keylock is activated.	Disable, push the left buttom down Back for 3 seconds.
"Please wait" is displayed.	...That the unit has power. ...The antenna, it should not be mounted against any metal ductwork as this can shield the signal. ...That the wireless control unit is synchronized with the unit.	Wait for 15 minutes. If the message still twinkles, go to next step. Check the fuse, residual current device and connection. Move the antenna. See page 21.
The unit does not start.	...That the unit has power. ...That the unit is "On". ...That the unit is connected correctly. When the electrical supply is turned on the unit starts automatically with a few minutes delay. ...Other alarms.	Check the fuse, residual current device and connecting. See page 13. See page 36-37. See page 13. See below.
The unit has stopped.	...That the unit has power. ...If alarm is triggered. ...That the right flow direction is choosed.	Check the fuse and safety switch. Check why the alarm is on. When caused error is resolved, restore alarm. After alarm reset, check so the rotor motor is rotating and the fans spinning. See page 20.
When starting the unit the wireless control unit displays wrong temperature alt. alarm of to low temperature.	...If the unit is installed left or right handed.	Set the flow direction. See page 20.
Can't activate the filter measurement.	...That pressure sensor is installed.	Activate sensor. See page 15.
<u>Other alarms:</u> Filter. Sensor open. Sensor shorted. Rotor stop. Overheating. Low supply air temperature. Low rotor temperature. Fire alarm. Freeze protection. Motor failure.	 ...If filters are dirty. ...If the set time for filter measurement is reached ...Which sensor is triggered, see page 13. ...The menus for heater and regulation mode. ...Which sensor is triggered, see page 13. ...The Function of rotor, rotor motor, roror sensor and that the rotor belt is intact? ...If the heat protection of the duct heater is triggered. *NB! The unit must be currentless.* ...If filters are dirty. ...If the rotor belt slips. ...If the duct heater works. ...That the right flow direction is choosed. ...If filters are dirty. ...If the rotor belt slips. ...Why the fire alarm is triggered. ...There's enough heat to the heating coil. ...The valve actuator opens as it should. ...Power to the fans and quick connectors. ...That the impeller is not blocked	 Change filter. Change filter. Connection to relay card. If error remains, change broken sensor. Make the right setting for heater and regulation mode. See page 18-19. Connection to relay card. If error remains, change broken sensor. Replace the faulty part. Restore the manual overheating protection and reset the alarm. Change filter. Change rotor belt. Ensure function before startup. See page 20. Change filter. Change rotor belt. Ensure function before startup. Ensure function of the heating coil before startup. Ensure function of the valve actuator before startup. Ensure function and change broken fan before startup. Ensure function before startup.
Supply or exhaust air is missing. or effeciency too high.	...The air intake. ...Supply and exhaust air filters.	Clean intake grille if dirty. Change filter
Effeciency too low.	...If filters are dirty.. ...If extract air temperature is low.	Change filter. Check the installation.
Problem when adjusting the air flow.	...That the function for summer cooling is "Off".	See page 19.
Electric heater is not warm.	...If the heater is correct connected. ...That electric heater is "On" in the Service menu.	See page 36-37. See page 18.

If none of the adjoining information helps to start/clear up the error, then contact your electrician/retailer.

INTERNAL SETTINGS AC



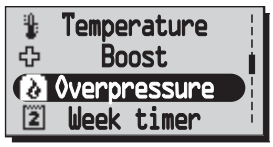
Fan speed:
(min, standard, medium or max.)
Default: Std.



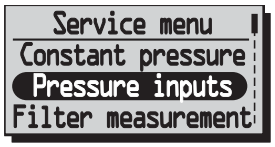
Temperature:
(15°C-40°C)
Default : 20°C

Time:
(10-240 min.) **Default: 30 min.**

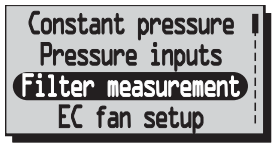
Fan:
(medium or max) **Default: Med.**



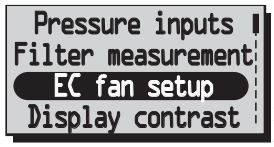
Time:
(5-60 min.)
Default : 15 min.



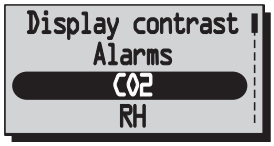
Sensor:
(None, SW, -50/+50, 0/100 Pa)
Default: None.



Filter measurement:
(Off/On) **Default: Off.**

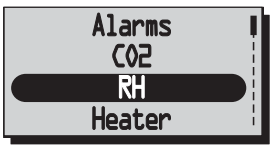


Fan speed:
(Standard, Min, Medium, Max)
Default : Standard 30%, Min 20%, Medium 50%, Max 80%.



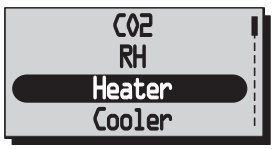
Limit:
(500-1400 PPM) **Default: 900 PPM**

Ramp:
(2-200%/h) **Default: 50%/h.**



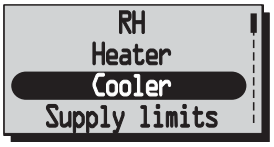
Limit:
(50%-100%) **Default: 70%.**

Ramp:
(2-200%/h) **Default: 5 min.**

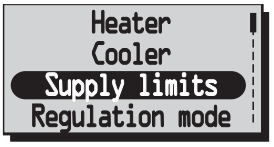


Electric:
(On/Off) **Default: Off.**

Water:
(On/Off) **Default: Off.**

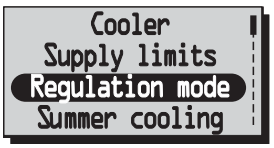


Cooler:
(On/Off) **Default: Off.**

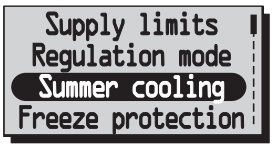


Min:
(15°C-19°C) **Default: 15°C.**

Max:
(20°C-40°C) **Default: 25°C.**



Regulation mode:
(Constant Supply reg./Exhaust reg./Room reg.)
Default : Const. supply reg.



InOutDiff:
(1°C-10°C) **Default: 5°C.**

Extract HI:
(19°C-26°C) **Default: 24°C.**

Extract LO:
(18°C-24°C) **Default: 18°C.**

Limit:
(5°C-10°C)
Default : 10°C.

Flow direction:
(Right/Left)
Default : Right.

FILTER CHANGE: . . . . . .

. . . . . .

. . . . . .

. . . . . .

SERVICE: . . . . . .

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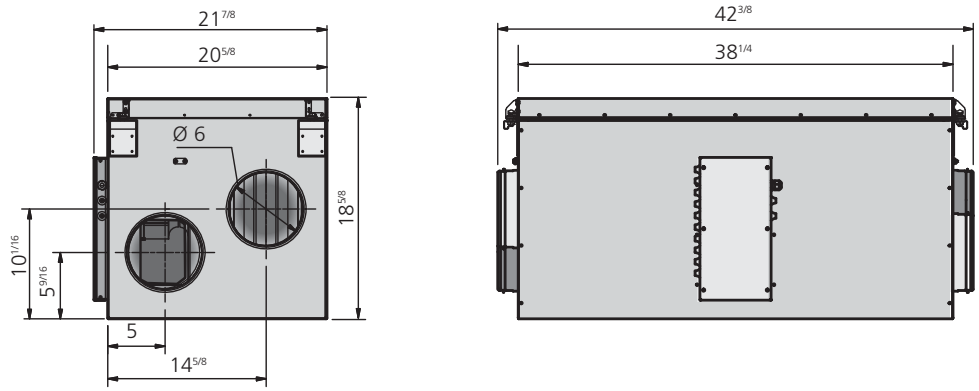
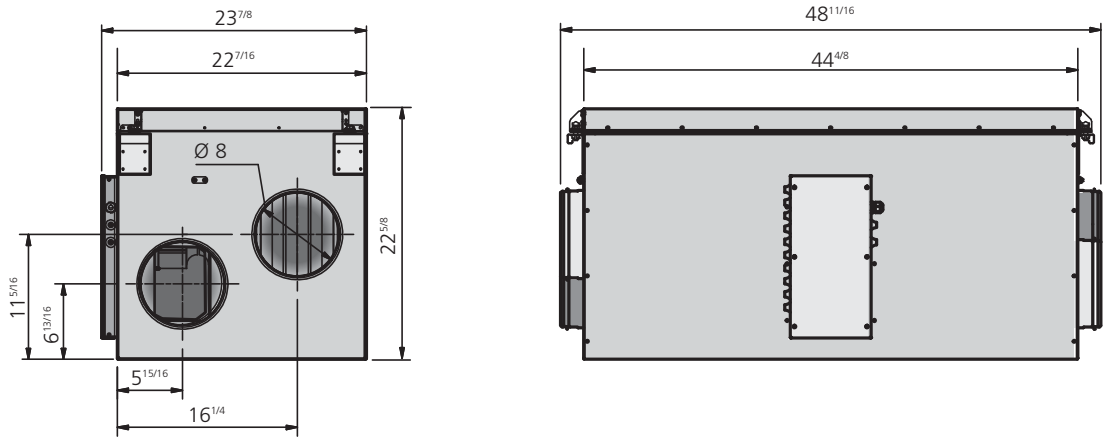
DIMENSIONS (inch)

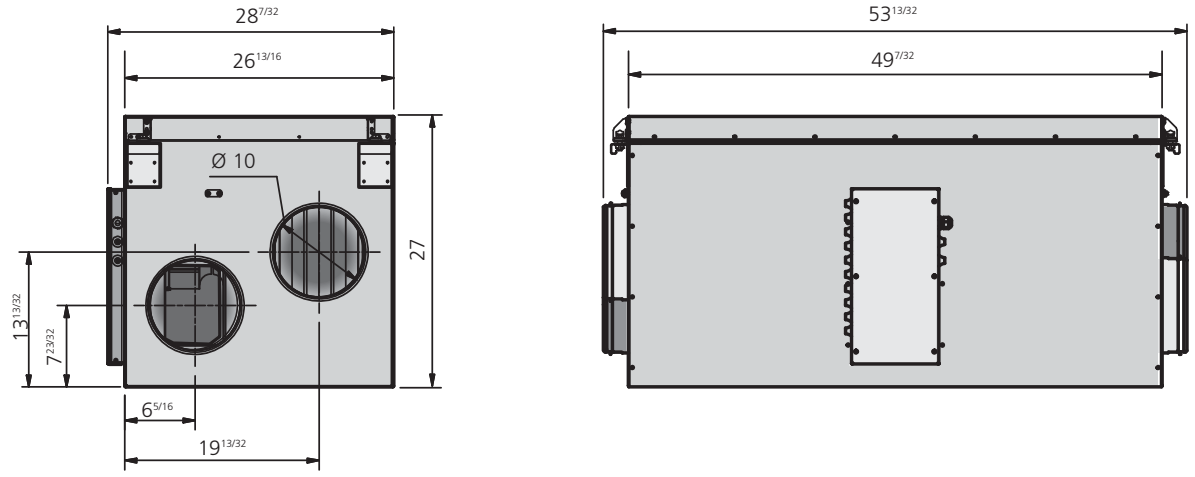
HERU 14 S/ 19 S AC



HERU 35 S AC



HERU 52 S AC



FLOW DIRECTION RIGHT

TECHNICAL DATA

Data stated at 100 Pa external pressure drop. See below for explanation of Sound pressure level.

	HERU 14 S	HERU 19 S	HERU 35 S	HERU 52 S
Voltageg, V/Hz	120/60	120/60	120/60	120/60
Fan Current, A (2 fans)	1,39	2,34	3,67	4,14
Total Current, A	11,5	12,4	17,9	18,4
Fan input, W (2 fans)	162	277	436	494
Total input, W	1389	1504	2163	2221
Current electric heater, A	10,0	10,0	14,2	14,2
Input electric heater, W	1200	1200	1700	1700
Speed, rpm	2610	2680	2830	2470
Weight, lbs	146	146	190	258
Duct connection, inch	Ø6	Ø6	Ø8	Ø10

SOUND DATA

The sound data have been compiled by means of sound measurement methods as follows: Pressure and flow: SS-ISO 5801.Determination of acoustic sound power level in duct: SS-ISO 5136.Determination of acoustic sound power level in reverberation room: SS-EN ISO 3741.

DESIGNATIONS

The table above present the total A-weighted sound power level, L_{wA}, as well as in octave bands in dB(A) (ref 10^{-12}W).
In the "Technical Data", the total sound pressure, L_{pA}, calculated from the total surrounding sound power level, L_{wA}, at 230 V is presented in dB(A) (ref 20 x 10^{-6}Pa).
The relationen between sound pressure and sound power is

$$L_{pA} = L_{wA} + 10 \times \log \left(\frac{Q}{4\pi r^2} + \frac{4}{A_{Ekv}} \right)$$

where Q is the propagation factor, r is the distance from the unit and A_{Ekv} is the equivalent absorbtion area.
When calculationg the L_{pA} it has been assumed that Q=2, r=3 m and A_{Ekv}=20 m^2, which gives L_{pA} » L_{wA} - 7.

Ljuddata har framtagits med följande standarder för ljudmätning:
Tryck och flöde: SS-ISO 5801. Bestämning av ljudeffektnivå i kanal: SS-ISO 5136.
Bestämning av ljudeffektnivå i efterklangsrum: SS-EN ISO 3741.

FÖRKLARINGAR

Tabellen ovan visar total A-vägd ljudeffektnivå, L_{wA}, samt denna uppdelad i oktavband i dB(A) (ref 10^{-12}W). I "Tekniska Data", återfinns total ljudtrycksnivå, L_{pA}, i dB(A) (ref 20 x 10^{-6}Pa) beräknat på den totala ljudeffektnivån för aggregatljud vid 230 V.
Relationen mellan ljudtryck och ljudeffekt är

$$L_{pA} = L_{wA} + 10 \times \log \left(\frac{Q}{4\pi r^2} + \frac{4}{A_{Ekv}} \right)$$

där Q är riktningsfaktor, r är avstånd från aggregatet och A_{Ekv} är ekvivalent absorbtionsarea. Vid beräkning av L_{pA} har det antagits att Q=2, r=3 m och A_{Ekv}=20 m^2, vilket ger att L_{pA} » L_{wA} - 7.

HERU 14 S AC

120 V / 108 CFM 0,96 H_2O	L_{pA}	L_{wA}Total dB	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
Surrounding	41	48	33	44	44	38	34	35	28	27
Supply		71	61	61	66	65	62	58	57	48
Extract		60	42	50	57	55	39	35	27	16

100 V / 102 CFM 0,50 H_2O	L_{pA}	L_{wA}Total dB	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
Surrounding	38	45	32	41	42	34	32	32	26	27
Supply		67	53	57	63	61	57	53	52	41
Extract		57	35	48	55	50	35	30	22	10

80 V / 76 CFM 0,26 H_2O	L_{pA}	L_{wA}Total dB	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
Surrounding	35	42	30	39	36	30	27	29	26	27
Supply		61	49	51	57	54	50	48	45	29
Extract		50	30	43	48	44	30	26	15	6

65 V / 55 CFM 0,12 H_2O	L_{pA}	L_{wA}Total dB	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
Surrounding	32	39	24	36	32	27	23	26	25	27
Supply		54	45	47	48	47	43	40	40	16
Extract		43	27	39	39	36	24	20	11	5

50 V / 38 CFM 0,04 H_2O	L_{pA}	L_{wA}Total dB	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
Surrounding	29	36	24	32	26	24	22	24	25	27
Supply		47	41	41	41	39	36	33	34	10
Extract		37	23	34	32	29	18	17	8	6

HERU 19 S AC

120 V / 153 CFM 1,12 H_2O	L_{pA}	L_{wA}Total dB	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
Surrounding	44	51	38	44	46	46	43	40	36	33
Supply		79	68	68	71	75	71	68	64	54
Extract		64	53	54	57	62	53	42	32	18

100 V / 133 CFM 0,72 H_2O	L_{pA}	L_{wA}Total dB	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
Surrounding	43	50	32	47	43	43	39	36	32	30
Supply		73	58	62	67	68	66	63	59	48
Extract		60	41	52	55	56	49	39	27	15

80 V / 97 CFM 0,43 H_2O	L_{pA}	L_{wA}Total dB	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
Surrounding	39	46	31	44	40	37	34	31	28	28
Supply		67	54	59	61	61	59	55	50	37
Extract		54	35	49	49	50	42	32	20	9

65 V / 70 CFM 0,20 H_2O	L_{pA}	L_{wA}Total dB	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
Surrounding	39	46	26	43	40	33	29	28	27	28
Supply		62	54	56	56	54	52	47	41	28
Extract		50	35	45	45	44	35	25	15	8

50 V / 51 CFM 0,08 H_2O	L_{pA}	L_{wA}Total dB	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
Surrounding	44	51	25	51	34	30	23	23	25	28
Supply		55	45	51	50	47	44	36	33	22
Extract		43	26	40	36	37	27	16	13	11

SOUND DATA

HERU 35 S AC

120 V / 210 CFM 1,45 H_2O	L_{pA}	L_{wA}Total dB	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
Surrounding	53	60	44	53	55	56	46	41	36	32
Supply		85	61	68	77	83	75	72	69	62
Extract		71	49	60	68	66	53	44	34	22

105 V / 212 CFM 0,78 H_2O	L_{pA}	L_{wA}Total dB	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
Surrounding	49	56	39	53	49	50	43	37	32	30
Supply		78	56	65	70	75	70	67	64	57
Extract		66	49	57	62	62	49	39	30	19

95 V / 186 CFM 0,56 H_2O	L_{pA}	L_{wA}Total dB	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
Surrounding	46	53	42	50	46	48	40	34	30	28
Supply		75	55	64	67	72	67	64	61	53
Extract		63	47	55	58	60	46	37	28	18

85 V / 153 CFM 0,38 H_2O	L_{pA}	L_{wA}Total dB	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
Surrounding	43	50	32	47	43	43	37	30	27	26
Supply		71	53	63	64	67	62	60	57	47
Extract		61	46	57	55	55	44	34	27	18

75 V / 136 CFM 0,24 H_2O	L_{pA}	L_{wA}Total dB	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
Surrounding	42	49	32	48	40	38	35	28	27	26
Supply		62	52	54	56	57	52	50	47	34
Extract		56	48	52	49	47	41	31	26	18

65 V / 110 CFM 0,14 H_2O	L_{pA}	L_{wA}Total dB	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
Surrounding	35	42	30	39	35	34	34	26	26	26
Supply		62	52	54	56	57	52	50	47	34
Extract		50	41	44	45	42	41	30	26	18

50 V / 72 CFM 0,06 H_2O	L_{pA}	L_{wA}Total dB	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
Surrounding	32	39	27	34	30	29	33	25	27	26
Supply		56	49	46	50	50	46	43	40	30
Extract		50	41	44	45	42	41	30	26	18

HERU 52 S AC

120 V / 155 CFM 1,20 H_2O	L_{pA}	L_{wA}Total dB	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
Surrounding	44	51	34	42	48	44	39	36	32	26
Supply		77	58	64	67	75	67	67	63	57
Extract		61	47	55	58	54	46	38	28	14

105 V / 155 CFM 0,56 H_2O	L_{pA}	L_{wA}Total dB	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
Surrounding	43	50	34	41	47	43	39	36	31	26
Supply		74	54	60	62	72	65	62	59	51
Extract		59	45	52	54	55	43	34	24	11

95 V / 141 CFM 0,42 H_2O	L_{pA}	L_{wA}Total dB	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
Surrounding	43	50	33	41	48	42	37	34	30	26
Supply		69	53	59	62	65	60	59	56	47
Extract		57	43	50	53	52	40	31	21	13

85 V / 116 CFM 0,30 H_2O	L_{pA}	L_{wA}Total dB	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
Surrounding	41	48	31	39	46	42	35	32	28	25
Supply		65	52	54	59	60	56	56	52	43
Extract		54	43	48	51	44	38	28	18	9

75 V / 96 CFM 0,20 H_2O	L_{pA}	L_{wA}Total dB	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
Surrounding	38	45	28	37	42	38	33	30	27	25
Supply		63	49	51	58	57	53	52	48	37
Extract		52	38	43	51	41	36	25	14	8

65 V / 77 CFM 0,12 H_2O	L_{pA}	L_{wA}Total dB	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
Surrounding	34	41	25	37	34	33	28	25	25	25
Supply		58	47	47	54	53	48	47	42	31
Extract		48	35	40	45	37	35	21	12	8

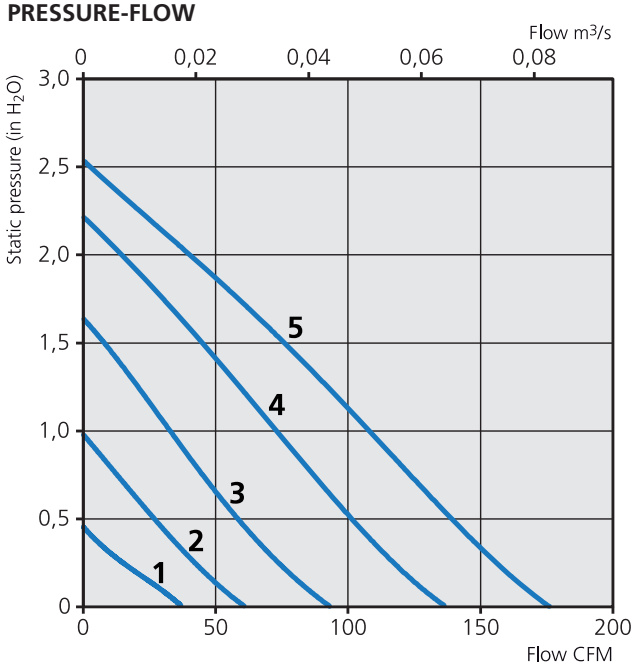
50 V / 57 CFM 0,04 H_2O	L_{pA}	L_{wA}Total dB	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
Surrounding	32	39	22	38	27	27	26	23	25	25
Supply		52	44	45	45	46	41	39	36	23
Extract		42	32	37	36	33	34	17	11	8

PRESSURE-FLOW DIAGRAMS

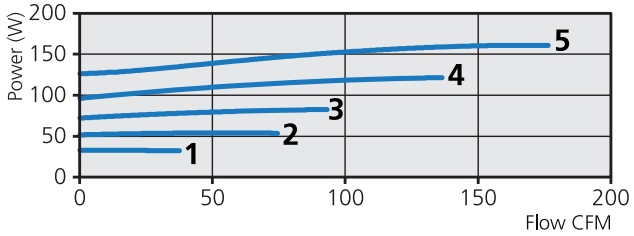
The pressure/flow diagrams applies to both supply and exhaust air. Indicated power applies to both fans together.

HERU 14 S AC

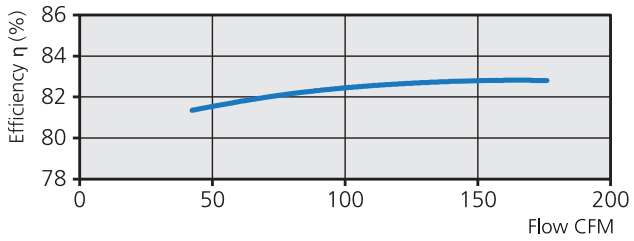
PRESSURE-FLOW



TOTAL FAN POWER-FLOW



TEMPERATURE EFFICIENCY

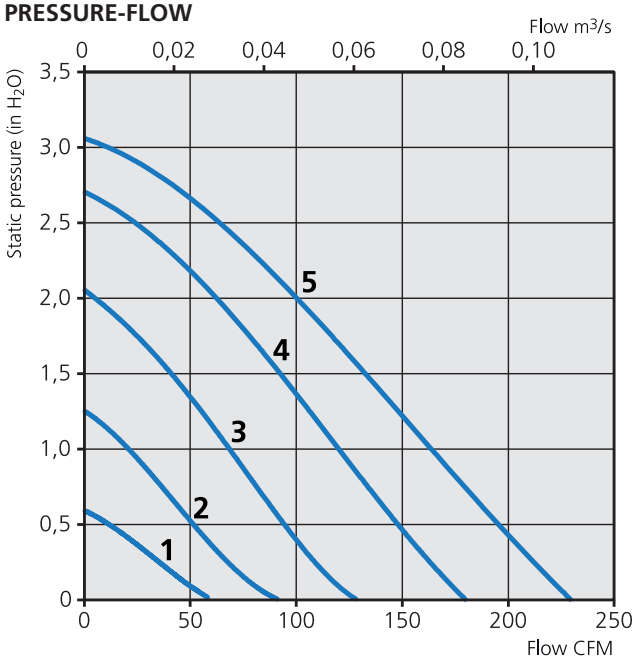


TRANSFORMER STEP

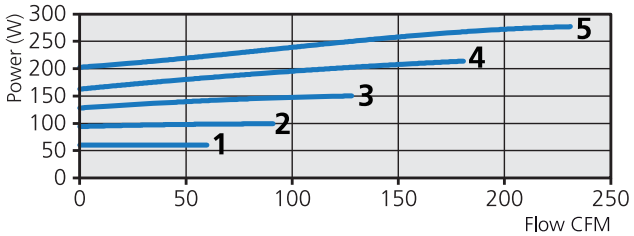
1	2	3	4	5
50 V	65 V	80 V	100 V	120 V

HERU 19 S AC

PRESSURE-FLOW



TOTAL FAN POWER-FLOW



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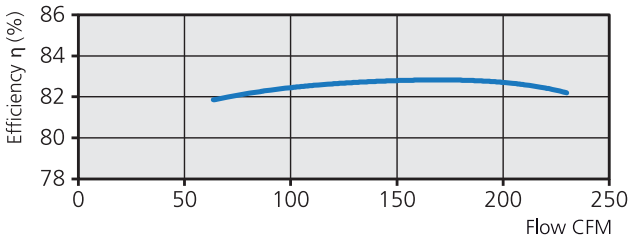


TRANSFORMER STEP

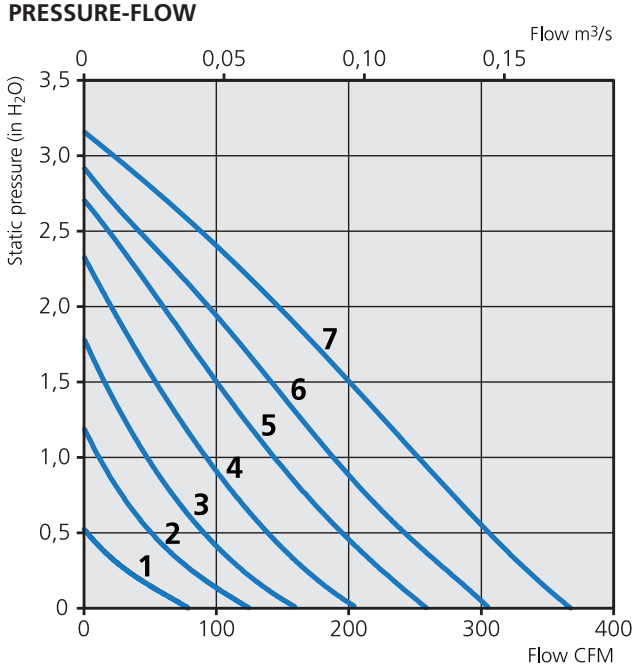
1	2	3	4	5
50 V	65 V	80 V	100 V	120 V

PRESSURE-FLOW DIAGRAMS

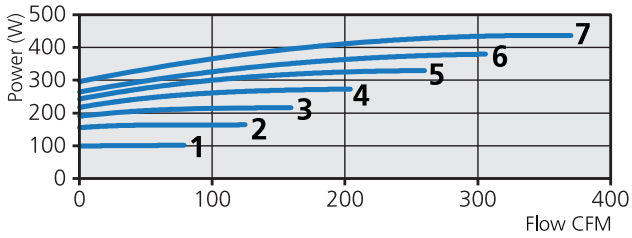
The pressure/flow diagrams applies to both supply and exhaust air. Indicated power applies to both fans together.

HERU 35 S AC

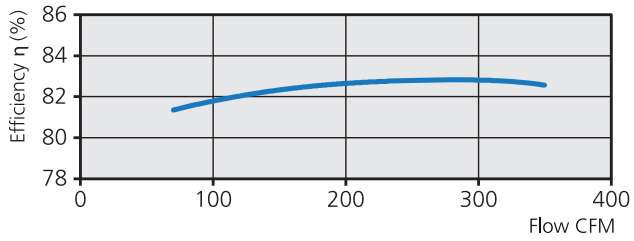
PRESSURE-FLOW



TOTAL FAN POWER-FLOW



TEMPERATURE EFFICIENCY

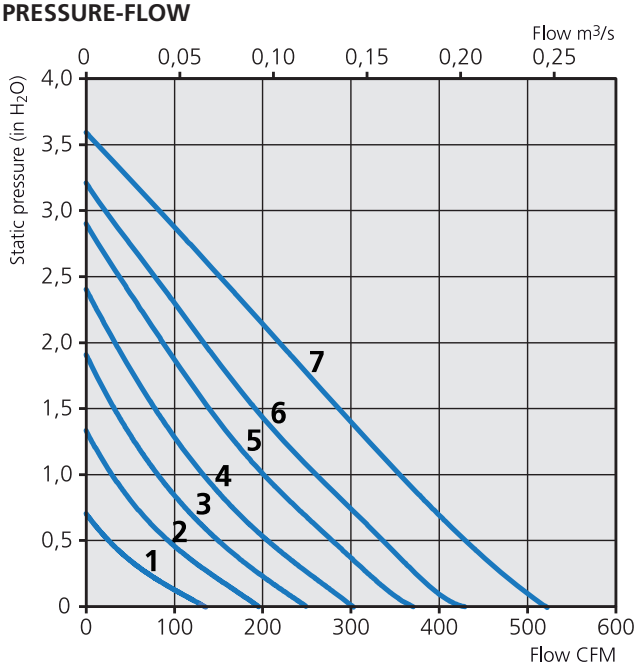


TRANSFORMER STEP / TRANSFORMATORSTEG

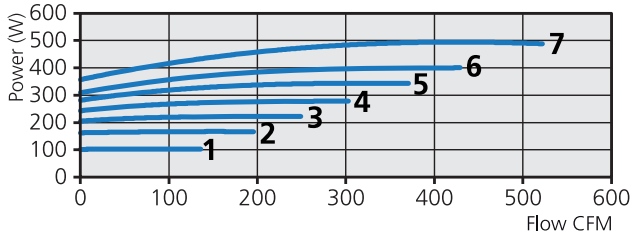
1	2	3	4	5	6	7
50 V	65 V	75 V	85 V	95 V	105V	120 V

HERU 52 S AC

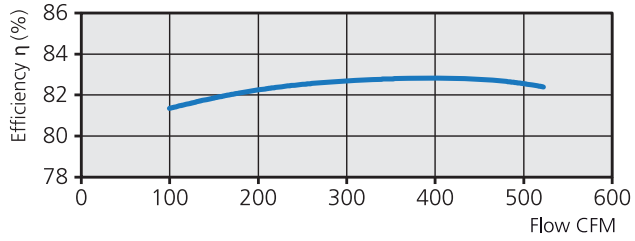
PRESSURE-FLOW



TOTAL FAN POWER-FLOW



TEMPERATURE EFFICIENCY

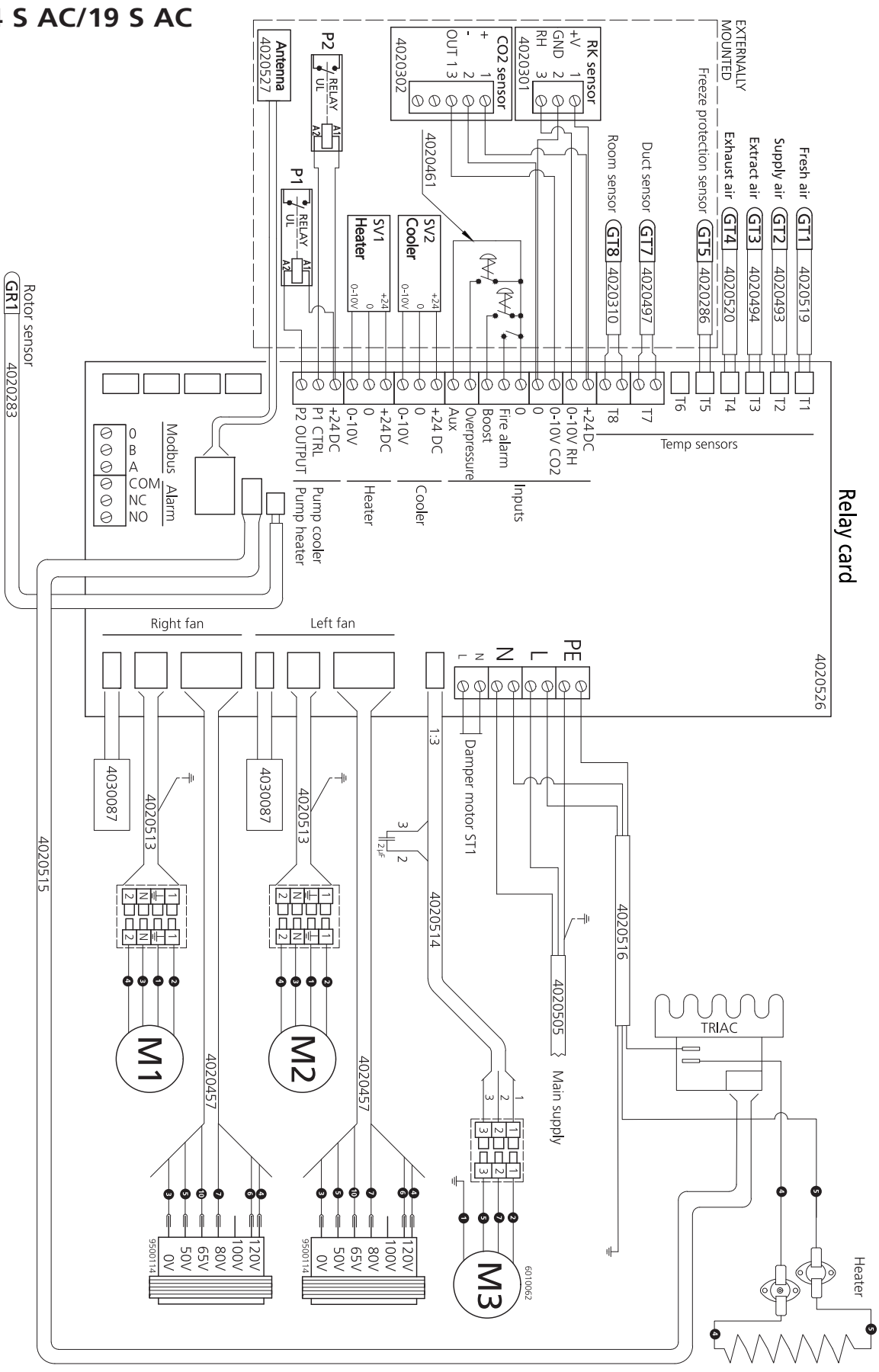


TRANSFORMER STEP / TRANSFORMATORSTEG

1	2	3	4	5	6	7
50 V	65 V	75 V	85 V	95 V	105V	120 V

WIRING DIAGRAM 4040155

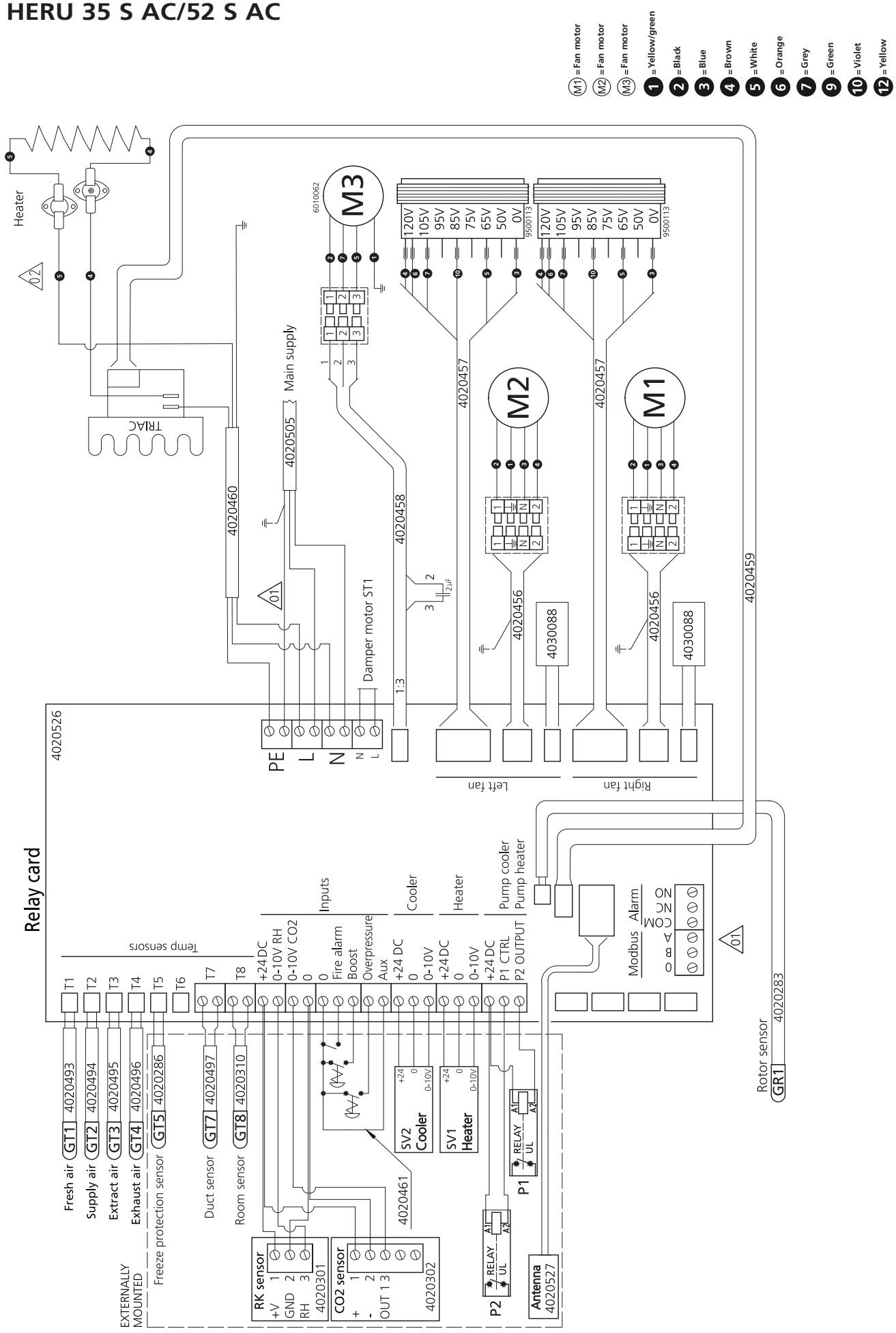
HERU 14 S AC/19 S AC



(M1) = Fan motor
(M2) = Fan motor
(M3) = Fan motor
1 = Yellow/green
2 = Black
3 = Blue
4 = Brown
5 = White
6 = Orange
7 = Grey
9 = Green
10 = Violet
12 = Yellow

WIRING DIAGRAM 4040149

HERU 35 S AC/52 S AC



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