enervent®

Ventilation unit with heat recovery

Planning, installation and operational instructions manual

Before installing and operating this unit,
please read this manual thorougly, and retain it for future reference.

Enervent Piccolo

www.enervent.fi

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QUICK GUIDE TO THE VENTILATION UNIT AND COOKER HOOD

TYPE MARKING

Inside the ventilation unit is a type shield. Fill in the type shields data here to have it easily available when it is needed, e.g. when buying new filters.

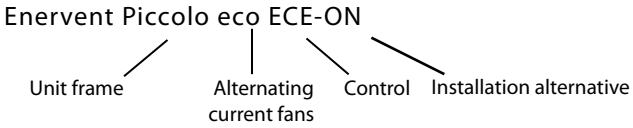
This manual covers the following units:

Enervent Piccolo eco ECE-ON

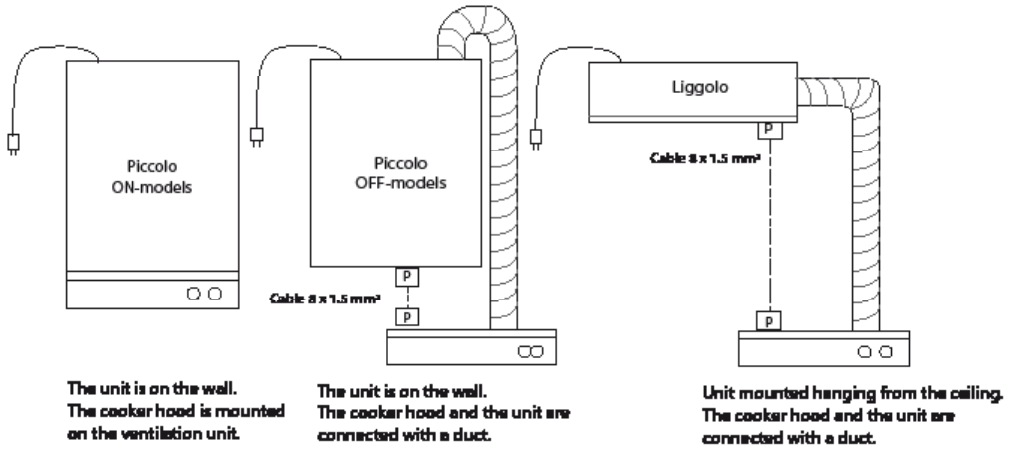
Enervent Piccolo eco ECE-OFF

Enervent Liggolo eco ECE

TYPE DESCRIPTION



Piccolo	The unit is mounted on the wall.
Liggolo	A lying version of Piccolo.
eco	Ventilation unit with direct current fans.
ECE	Ventilation unit with ECC05 control and 800 W electrical after heater.
ON	The cooker hood is mounted directly on the unit.
OFF	The unit and cooker hood are connected with a duct and can hence even be installed in separate spaces.



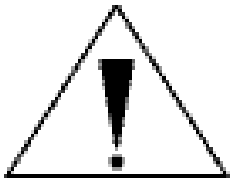
FOREWORD

All Enervent ventilation units are designed and manufactured for use all year round. In Finland the ventilation units have been installed in houses and other spaces for over 20 years and their popularity is increasing each year. Because of the knowledge and experience we have amassed during the years we can now manufacture more energy efficient and user friendly ventilation units. The Enervent gr unit series is the result of a long product development. All unitsin the series are very versatile and flexible.

A unit with basic functions can be installed, by your self, with the help of this manual, but certain special functions and the extra equipment should be connected by an electrician. We recommend that the installation is performed by a qualified ventilation engineer.

WARNING

After opening the maintenance hatch wait two (2) minutes before starting the maintenance work! The fans rotate for a while even after the power is cut and the ECE-model electical heatercan be searing hot. There are no user-serviceable parts inside the control panel or inside the electrical cabinet, leave the service of these parts to a professional. It is important during troubleshooting not to turn on the power to the unit before being assured as to what the problem is.



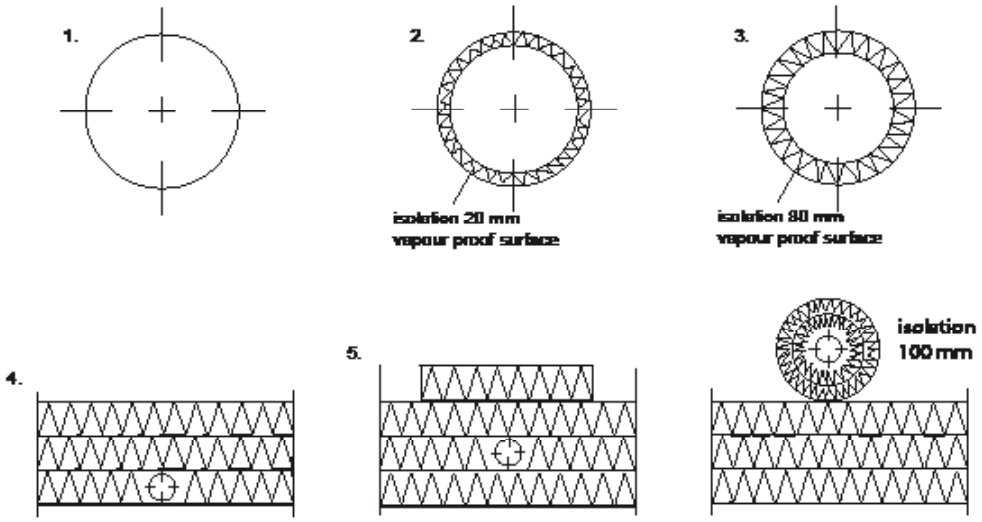
OPERATING PRINCIPLE

The ventilation units are based on regenerative heat recovery. This is achieved with a rotating heat exchanger through which incoming air and exhaust air flow in opposite directions. Aluminium foils within the heat exchanger transfer heat from the exhaust air to the supply air. A characteristic of the regenerative heat exchanger is its high rate of heat recovery (or efficiency).

Enervent Piccolo and Liggolo units are linked with a cooker hood. The cooker hood is linked to the unit either directly or with a duct. The air from the cooker hood is, with the help of the extract air fan, lead past the heat exchanger directly into the exhaust air.

The efficiency varies from 75 % to 85 %, depending on the proportion of supply air and exhaust air (the heat from the supply air fan is taken into account). Thanks to their high efficiency, the units save heating energy at the same time as they provide excellent indoor air quality; therefore they pay themselves back in a relatively short time.

DUCT HEAT INSULATION



Examples of different insulation alternatives:

1. Exhaust air duct in warm spacing (indoors, no insulation).
2. Supply air duct between ventilation unit and terminal equipment.
3. Waste air and outside air duct in warm spacing (indoors).
4. Exhaust air duct in the ceiling insulation.
5. All ducts in a cold attic. Outside air and waste air ducts must not be assembled directly above the steam barrier. Both ducts require an insulation layer of 100 mm thick mineral wool.

KITCHEN VENTILATION

The general ventilation in the kitchen is taken care of with a extract air vent in the ceiling.

EQUIPMENT

The Enervent Piccolo (eco) ECE unit delivery includes:

1. Enervent Piccolo (eco) ECE ventilation unit
2. Attachment brackets for kitchen cabinet integration laminate
3. Standard cooker hood

The Enervent Liggolo (eco) ECE unit delivery includes:

1. Enervent Liggolo (eco) ECE ventilation unit
2. Standard cooker hood

INSTALLATION

PICCOLO-MODELS:

Piccolo must be installed in a warm space (over +5°C) like a utility room or a laundry but not a garage (separate fire area). The unit can also be installed in the kitchen if the cooker hood is fastened in the unit.

If the unit is used to ventilate an area with a swimming pool, the unit must be drained. There is a drain outlet in the bottom of the unit (1/4" inner thread). At the time of delivery, the outlet is plugged.

PHASES OF INSTALLATION:

N.B.! To reduce the weight of the unit you can remove the heat recovery wheel before mounting the unit.

1. Mark and cut the holes into the ceiling.
2. Draw the ducts through the holes to the required height. The gaps between duct and steam barrier are then sealed, with for instance ventilation tape.
3. Attach two suspension screws at an appropriate hight at a distance of 500 mm from each other. The unit has two suspension ears. Make sure the wall material can bear the units weight. NOTE! If the cooker hood is directly attached to the unit, the distance between the grease filter and the stove must be at least 500 mm*.
4. Lift the unit onto the wall and thighten the screws.
5. Connect the ducts to the tubes on top of the unit. It is recommended that silencers be installed to the extract air and supply air ducts.
6. If the unit's condensation drain is to be used, connect a pipe between the drain outlet and the nearest floor drain or water trap of a sink. Connecting the unit directly into the sewage system is not allowed.

** NOTE! Make sure the distance satisfys the stove manufacturers and local authorities demands.*

LiGGOLO-MODELS:

Liggolo must be installed in a warm space (over +5°C) like a utility room or a laundry but not a garage (separate fire area).

If the unit is used to ventilate an area with a swimming pool, the unit must be drained. There is a drain outlet in the bottom of the unit (1/4" inner thread). At the time of delivery, the outlet is plugged.

PHASES OF INSTALLATION:

N.B.! To reduce the weight of the unit you can remove the heat recovery wheel before mounting the unit.

1. Mark and cut the holes into the ceiling.
2. Draw the ducts through the holes to the required height. The gaps between duct and steam barrier are then sealed, with for instance ventilation tape.
3. Attach suspension screws at an appropriate place in the ceiling. The unit has four suspension ears. Make sure the ceiling material can bear the units weight.
4. Lift up the unit to the ceiling and thighten the screws.
5. Connect the ducts to the tubes on top of the unit. It is recommended that silencers be installed to the extract air and supply air ducts.
6. If the unit's condensation drain is to be used, connect a pipe between the drain outlet and the nearest floor drain or water trap of a sink. Connecting the unit directly into the sewage system is not allowed.

THE COOKER HOOD

Removal of the exhaust air from the cooker hood shall be done in accordanc to logal regulations. The exhaust air must not be lead into smoke canals that are used as exhaust of cobustion gases from gas/wood stoves, wood/oil burners.

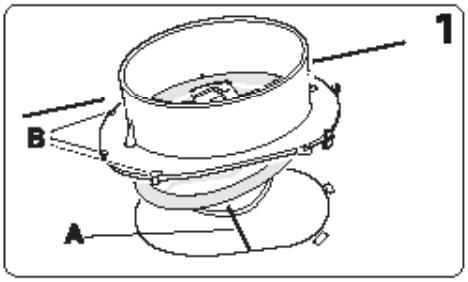
Mounting the connection cuff with damper:

The connection cuff is inside the cooker hood when delivered.

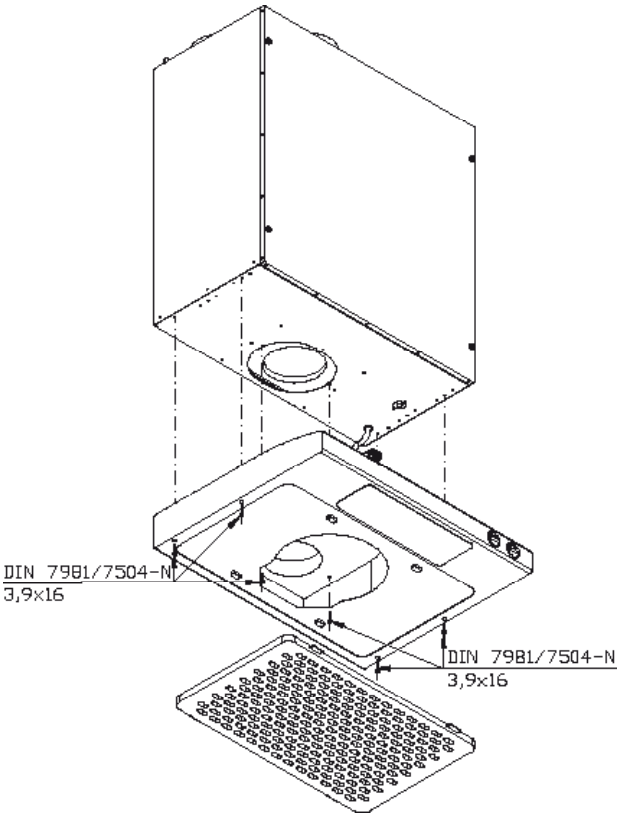
The damper shaft A is put in the loop beneathe the damper lid, **fig 1.**

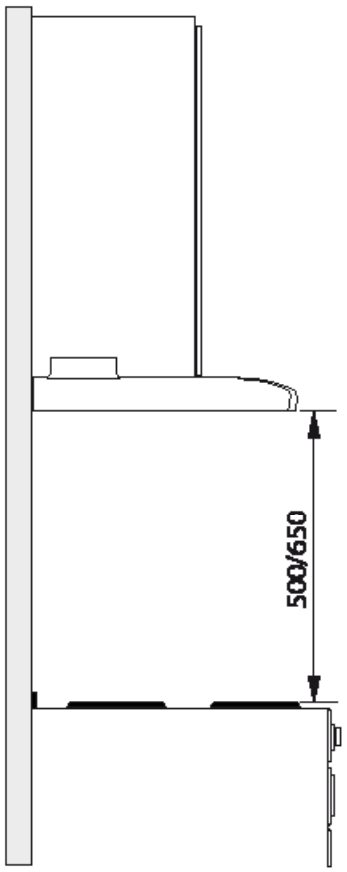
Make sure the clutches get beneath the sheet metal edge.

The cuff will snap in place.

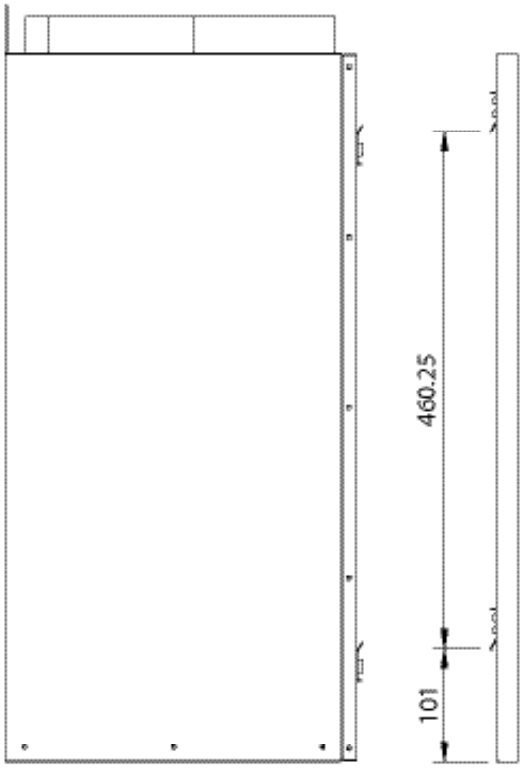


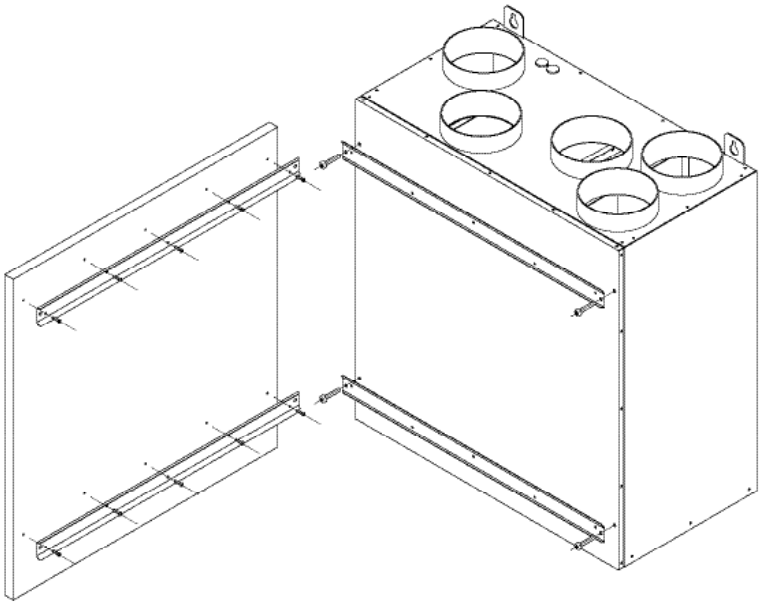
NOTE WHEN YOU INSTALL PICCOLO ON-MODELS:



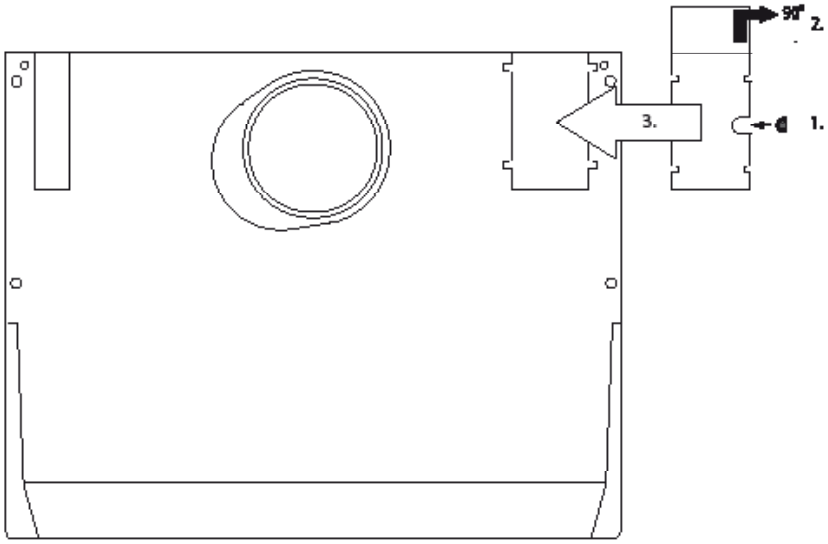


Mounting the cabinet integration laminate:





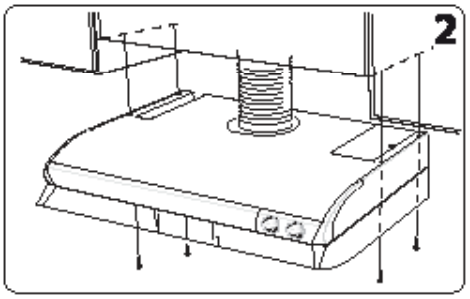
NOTE WHEN YOU INSTALL PICCOLO OFF-MODELS:

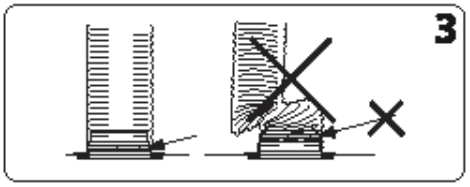


1. Place the rubber lead through in the gap.
2. Bend the cover plate 90° along the perforation.
3. Place the cover plate on the hole in the cooker hood and fasten it with the screws.

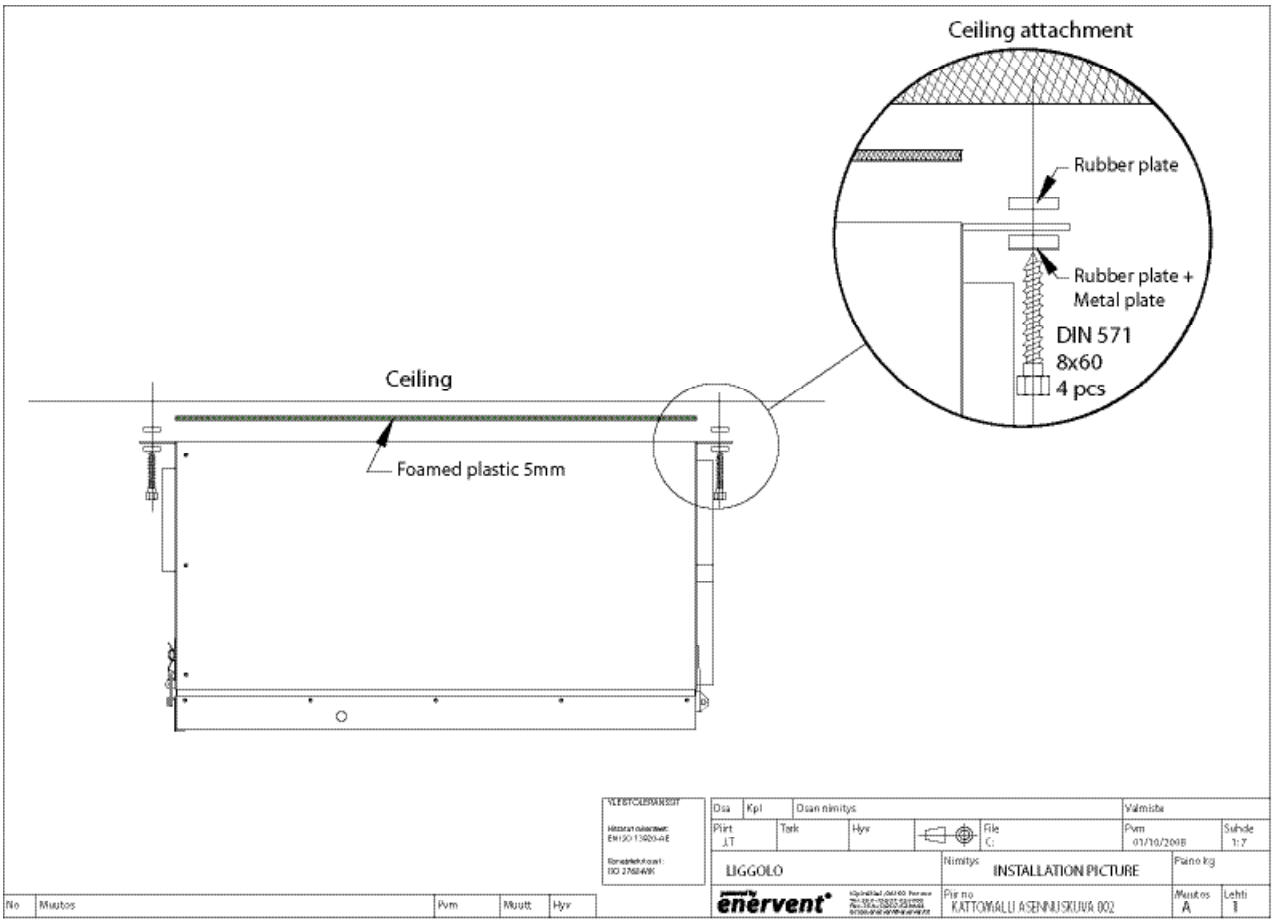
Installing the cooker hood

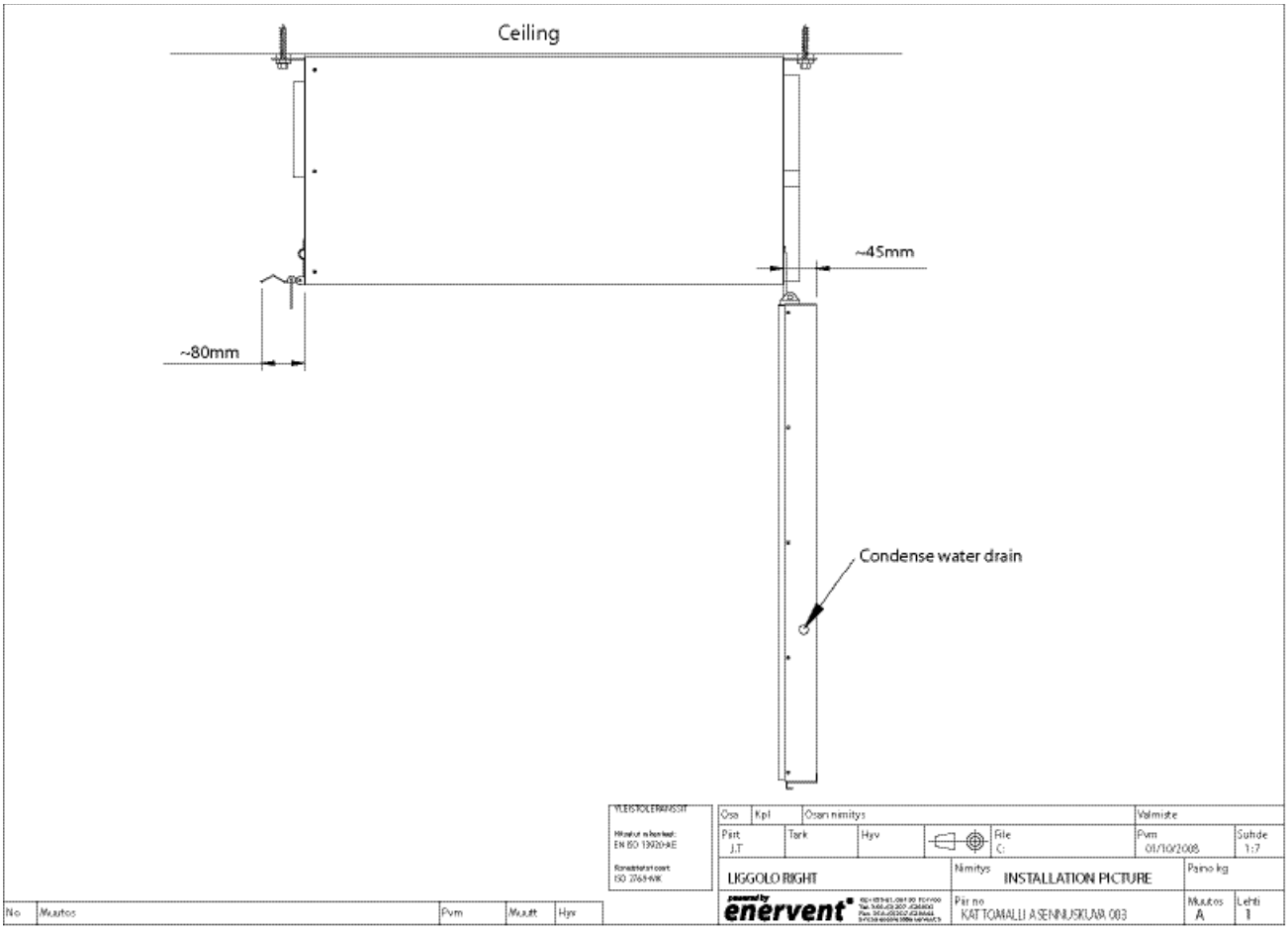
The cooker hood can be placed under the cup boards or embeded, **fig 2**. Connect the cooker hood with a Ø 125 mm duct or hose. NOTE! When using a hose, it must be installed straightened closest to the connection, **fig 3**.





NOTE WHEN YOU INSTALL LIGGOLO MODELS:



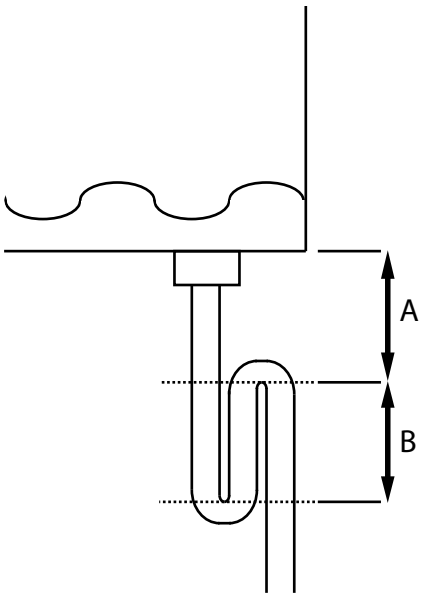


DRAINING THE VENTILATION UNIT

All Enervent Piccolo units must be drained. The condense water drain must not be directly connected to a sewer! The condense water should be led in a falling, at least Ø15 mm pipe, through a water lock to a floor drain or such. The pipe must at all times lie lower than the bottom of the ventilation unit. There must not be any longer horizontal sections on the pipe and there mustn't be more than one water lock. If the unit is equipped with more than one condense water draines, each one must have a water lock of its own.

There is under pressure in the ventilation unit. We recommend a hight difference of (A) 75 mm, or at least the under pressure divided with 10 in millimeters (i.e. 500 Pa under pressure -> 50 mm), between the unit drain and the water lock drain. We recommend that the hight of backwater in the water lock (B) is 50 mm, or at least the under pressure divided with 20 in millimeters (i.e. 500 Pa under pressure -> 25 mm hight of backwater). Over pressure is prevailing in a duct coil. We recommend the hight difference (A) between the duct coil drain and the water lock drain is 25 mm. The water lock hight of backwater (B) must be 75 mm, or at least the under pressure divided wit 10 in millimeters (i.e. 500 Pa under pressure -> 50 mm). The water lock must be filled with water before starting up the unit. The water lock might dry up if water is not accumulated in it. If this happens, ait might get into the pipe and hinder water from entering the water lock, which might result in an irritating "bubbling" sound.

The size of the condense water drain is 1/4" (inner thread) in all Piccolo units.



STARTING THE UNIT

Before the unit is ready for use the following installations should take place:

- Assemble the unit and the cooker hood as stated in the chapter Installation in this manual. Check with a water level to make sure that the unit is level, this is crucial for the drainage to work.
- Connect the drainage outlet with its own hose to an outflow supplied with a water lock.
- Install the ducts (also for the cooker hood) and the silencers.
- Assemble the terminals on to the ducts.
- Provide the outside air duct with an outside air grating (N.B! the grating must not be provided with an insect net because it is difficult to keep clean!)
- Make the roof pass-through. We recommend the use of a factory made, insulated roof pass-through.
- Insulate the ducts as instructed.
- Provide the unit with the appropriate power supply

Open the units maintenance hatch with the key provided when all the above mentioned installation work is done. Check that the unit is clean on the inside, that there are no spare parts inside the unit and that the filters are clean. Close the maintenance hatch carefully.

ABOUT VENTILATION

The ventilation unit should never be switched off. It is important to always ventilate with a high enough effect! If the ventilation is insufficient the humidity indoors becomes too high and condensation can appear on, for instance, all the windows. A relative humidity of 40 - 45 % indoors is recommended (room temperature of 20 - 22°C). At these levels condensation will not form and the humidity will be at a healthy level. The humidity of a room can be measured with a hygrometer. When the humidity rises above 45 % one should increase the ventilation and when the humidity goes lower than 40 % one should lower the ventilation.

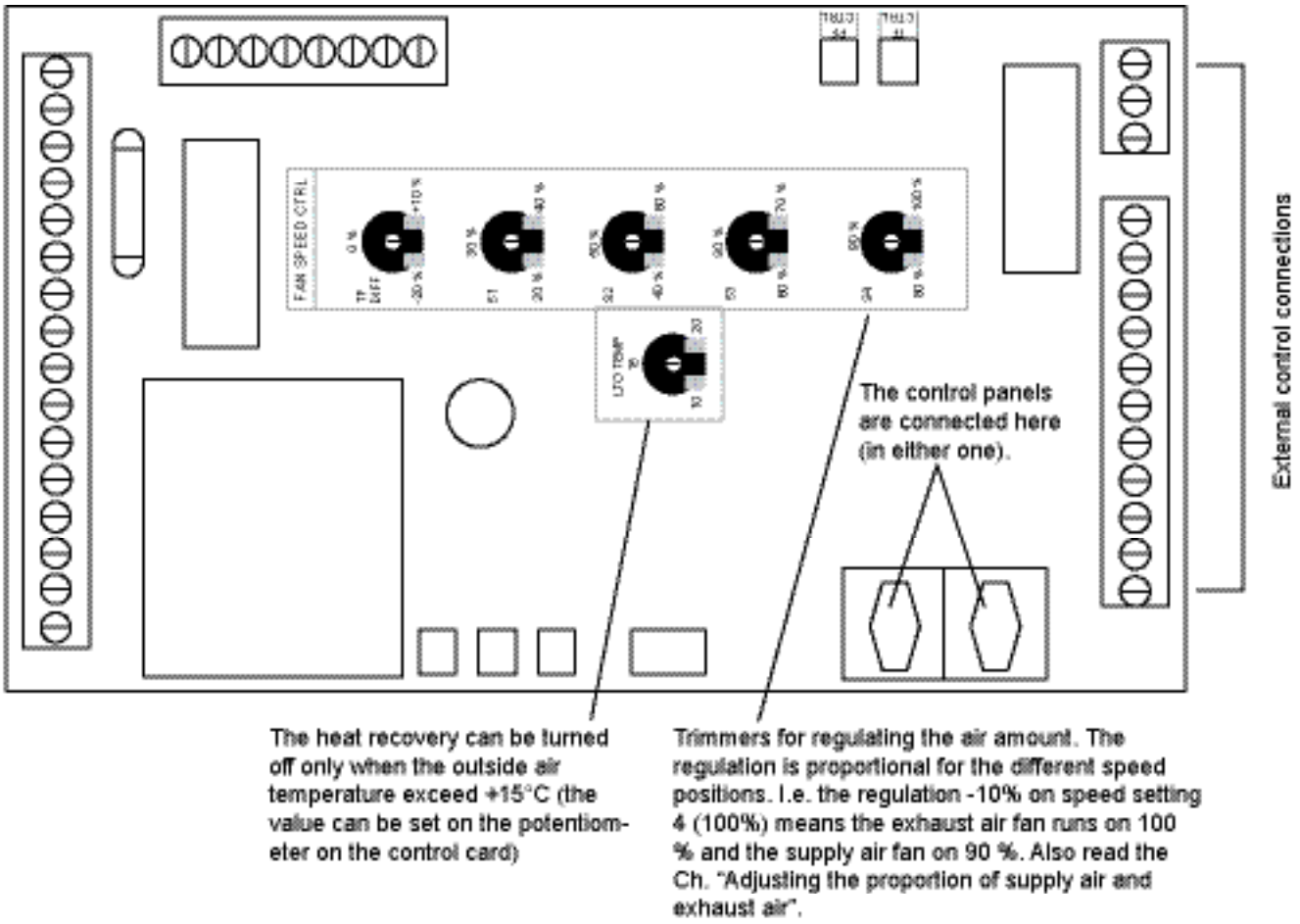
Check regularly that the filters are not dirty! During winter the exhaust filter become dirtier more quickly than the supply air filter. As a result of this the airflow lessens, which leads to lowered humidity indoors. This also leads to lower temperatures. Check the filters each month! At each filter inspection, check that the heat exchanger is functioning correctly, meaning check that it is rotating. Cover both the outside air intake and the waste air outtake if the unit is not to be used for a longer period. This way you stop moist from condensing on e.g. the fans electric motors.

SUPPLY AND EXTRACT AIR CALIBRATION

After the unit has been switched on its airflows must be calibrated to its planned values. When making the calibration all filters should be clean, all supply and extract air valves, the roof pass-through and the outside air grating should be in place. The outside air grating must not be provided with an insect net. The extract air flow should be ca. 5 - 10 % higher than the supply air flow. To achieve optimal values during calibration the airflows should be measured at each duct opening. A suitable measuring instrument would be a thermo anemometer. With the help of registered values the airflow can be regulated to achieve the projected values. A correctly calibrated ventilation unit is quiet and gives a good heat return and it also upholds a small under-pressure in the house. The under-pressure stops humidity from entering the walls and ceiling.

To make it easier to adjust the air amount the speed (-20 %...+10 %) of the supply air fan can be adjusted with the trimmer on the main switch board. The regulation is proportional for the different speed positions. I.e. the regulation -10 % on speed setting 4 (100 %) means the extract air fan runs on 100 % and the supply air fan on 90 %, on speed setting 3 (80 %) it means the exhaust air fan runs on 80 % and the supply air fan on 72 %, on speed setting 2 (60 %) it means the exhaust air fan runs on 60 % and the supply air fan on 54 % and on speed setting 1 (40 %) it means the extract air fan runs on 40 % and the supply air fan on 36 %. When the exhaust and supply air fan run on the same speed the speeds are (1) 40 %, (2) 60 %, (3) 80 % and (4) 100 %. Each of the speeds can be reduced max 20 % with the switch board trimmer. There are totally 5 trimmers on the board.

eco EC(E) units main board



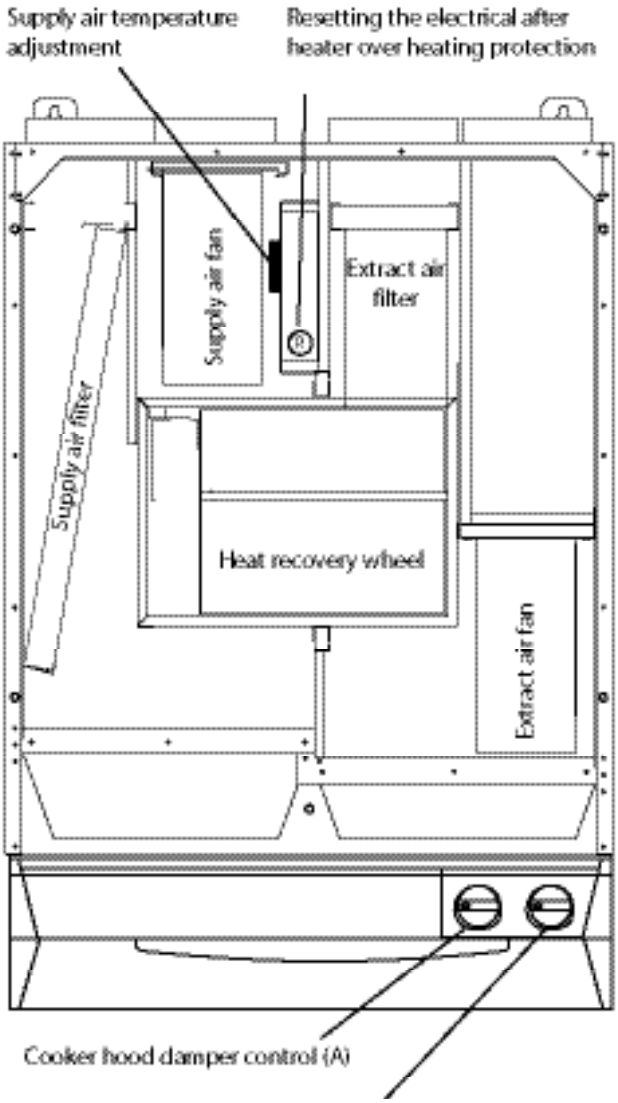
NOTE! MORE DETAILED CIRCUIT DIAGRAMS AT THE END OF THE MANUAL.

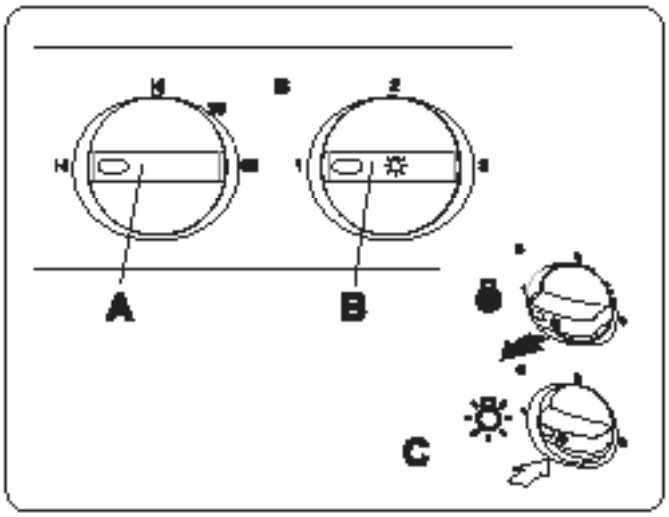
USING AND CONTROLLING THE UNIT

The unit is intenden for continuous use. The unit's air flow is regulated with the right knob on the cooker hood.
The heat recovery is automatically controlled with an outside air thermostat which starts and stops the heat recovery according to the outside air temperature. The factory setting is +15°C. The setting can be changed with the trimmer on the mother board. The heat recovery is on when the temperature is beneath +15°C and off when the temperature is over +15°C.

The electrical after heater is controlled with a supply air thermostat. The factory setting is +18°C. The setting can be changed with the knob on the heater. The heater can not be on if the heat reccovery is off.

On the front of the cooker hood is, besides control of the fan speed, the control for the cooker hood damper. The damper is opened during cooking by turning the left knob (A) on the front of the cooker hood and the desired fan speed is set with the right knob (B). The damper shuts automatically after 60 minutes and the unit resumes normal ventilation. Normal ventilation can also be resumed by manually shutting the damper.



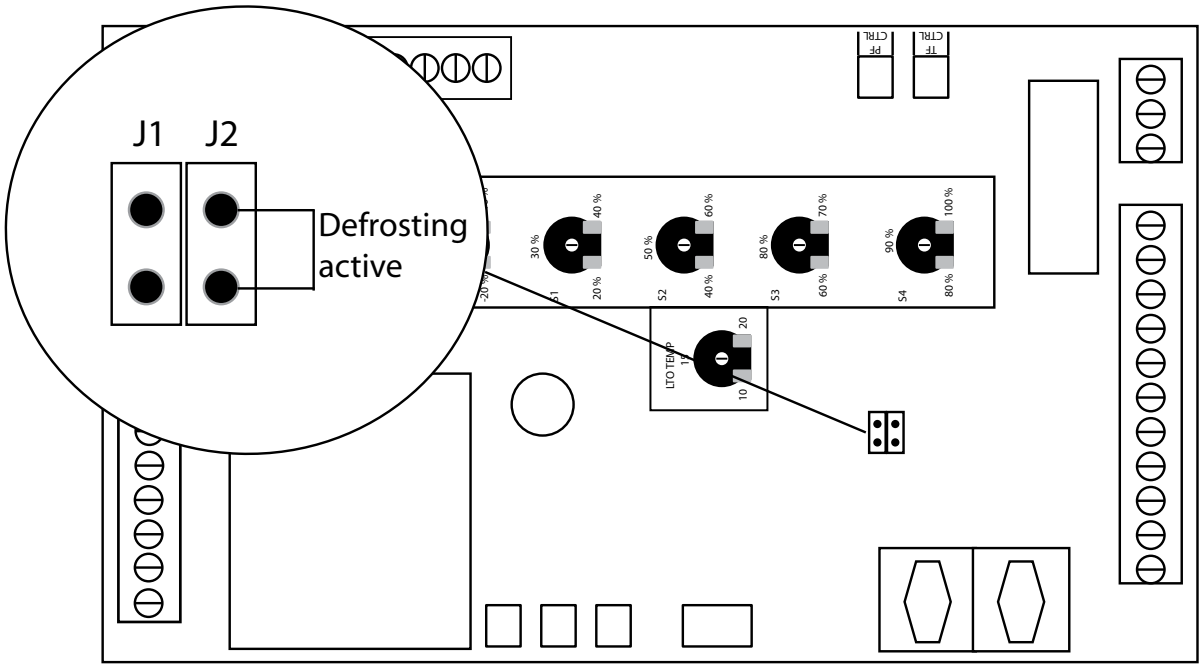


HEAT RECOVERY DEFROSTING FUNCTION

The defrosting of the heat recovery is active when the outside air temperature is lower than -15°C. The temperature is checked every other hour (with 120 minutes interval). The supply air fan stops and the exhaust air fan runs on speed 3 when the defrosting is active. The defrosting is active at the most 8 % of the time. The over pressure function over rides the defrosting function.

The defrosting function is activated by short circuiting the defrosting pins on the main board. The defrosting is in active when the unit leaves the factory.

eco ECC units (with direct current fans):



MAINTENANCE

The ventilation unit does not require any mechanical maintenance, only changing of the filters periodically and cleaning of the heat exchanger and fans (when needed). Cut the power supply to the unit before starting any service work (from the main switch or by removing the service hatch of the LTR-series units). Wait for two (2) minutes before starting the maintenance work! Although the unit's power supply is cut when the hatch is opened, the fans still rotate and the electrical coil in ECE-model is still hot for a while.

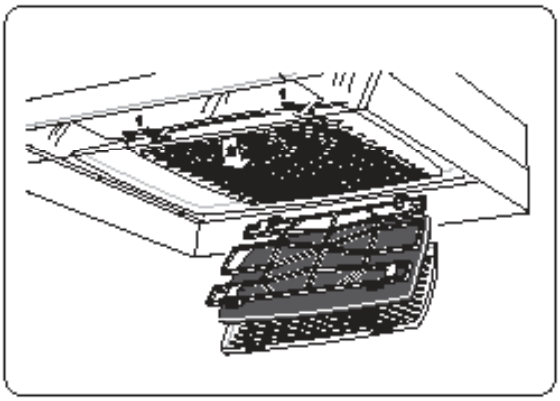
Cleaning the heat exchanger
When changing the filters, check if the heat exchanger is dirty. If cleaning is required, remove it from the unit and carefully wash through the air channels with a hand shower using a mild detergent, taking care not to get the motor wet. The heat exchanger can also be cleaned by blowing through the air channels using compressed air. Do not use a pressure washer and do not submerge the heat exchanger into water!! When restarting the unit after cleaning, check that the heat exchanger wheel can turn freely.

Cleaning the fans
When changing filters, also check the condition of the fans. If cleaning is required the fans can be removed from the unit and cleaned with a toothbrush or compressed air.

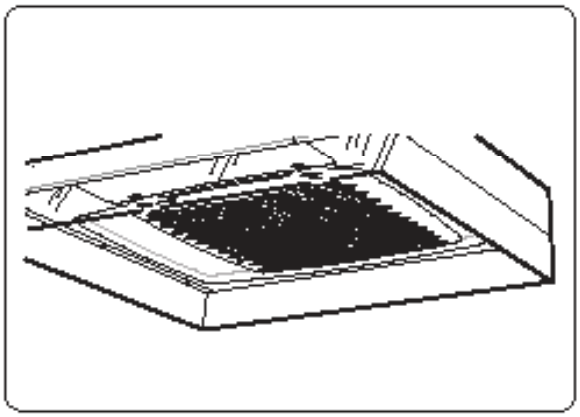
Changing of filters
The recommended time between filters changes for the cassette filter and the bag filter is six (6) months. If class F5 bag-filters are used the time between filter changes can be prolonged to one (1) year, by vacuuming the filters on the inside. Remove the old filter and put in a new one. Vacuum cleaning the inside of the device is recommended at this point. N.B! Make sure to close the service harch carefully!

Cleaning the cooker hood
The cooker hood is wipe with a damp cloth and washing liquid. The filter should be cleaned twice a month if the use is normal. Loosen the filter cartridge by push the lock tags in the front edge. Take the filter apart and remove the filter cloth by loosening the filter holder, picture 1. Soak the filter cloth and filter holder in warm water mixed with washing liquid. The filter cartridge (with the cloth) can also be washed in a dish washer. The cooker hood should be cleaned inside some times per year. Wipe the inside with a damp cloth and washing liquid. Put the filter cartridge back in place so that it locks in place.

Changing the luminescent lamp in the cooker hood
The lamp glas is loosened by push the lock tags in the direction shown by the arrow, picture 2. The luminescent lamp is now accessable for change (luminescent lamp socket G23).

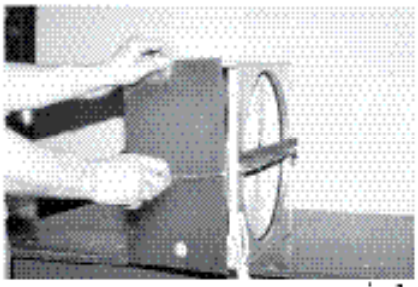


Picture 1



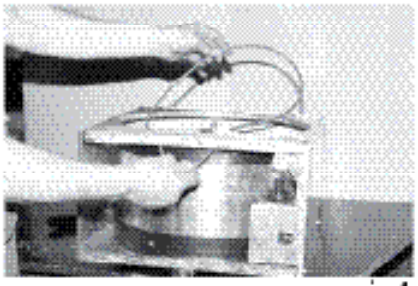
Picture 2

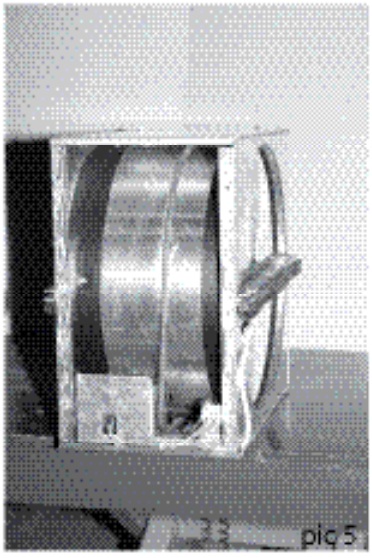
BELT REPLACEMENT


pic 1


pic 2


pic 3


pic 4


pic 5

There is a spare belt in all heat exchangers. The spare belt is fixed to the heat exchanger. In order to take the spare belt into use, unplug the bayonet socket and remove the heat exchanger from the ventilation unit. Open the service hatch (see below) and loosen the spare belt from the holders. Leave the holders in the heat exchanger. Pull the belt on to the belt holder. Close the service hatch . Put the heat exchanger back into the ventilation unit and connect the bayonett socket.

Follow the instructions below if there is no spare belt.
Turn of the ventilation unit by switching off the main power supply, removing the fuse or disconnecting the wall plug.

Open the maintenance hatch.

Unplug the heat exchanger.
Pull out the heat exchanger from the ventilation unit.

Remove the lid by detaching the screws (pic 1).

Turn the heat exchanger on to its side so that the axle is in a vertical position. Remove the sealing strip (pic 2).

Detach the hexagonal screw and the screws in the u-beam.

Remove the u-beam.

Remove the old belt.

Remove any possible dirt from the rotors surface and carefully place the new belt inside the heat exchanger through outer shell and the gasket (pic 3 and 4).

Carefully pull the belt past the gasket and rotate the rotor at the same time. Assemble the u-beam.

Attach the beams screws and the hexagonal screw of the axle.

Put the belt on to the belt wheel and rotate the rotor away from the motor a couple of times (pic 5).

Clean the inside of the heat exchanger.

Close the lid.

Re-assemble the heat exchanger in to the ventilation unit and plug it in.

Turn on the ventilation unit and check that the heat exchanger is rotating.

Close the maintenance hatch.

TROUBLE SHOOTING

SUPPLY AIR TOO COLD

Reason	Action
The heat exchanger switch is tuned off.	Switch it on.
Belt of the heat exchanger broken.	Replace the belt.
Belt greasy, causing slippage.	Contact a service representative.
The exhaust fan has stopped.	Contact a service representative.
The exhaust air filter is blocked.	Change the filters.
Exhaust air valve settings incorrect.	Contact a service representative.
Heat insulation of ducts inadequate.	Check the insulation thickness of the supply and exhaust air ducts and add insulation if needed.
The after heater over heating protection has gone off (ECE-models).	Check what the reason to the problem is and reset the over heating protection.

REDUCED AIR FLOW

Reason	Action
Filters are blocked.	Change the filters.
Too small a fan speed is selected.	Select higher speed.
Blockage in the fresh air grille.	Clean the outer grille.
Fan wings dirty.	Clean the fans.

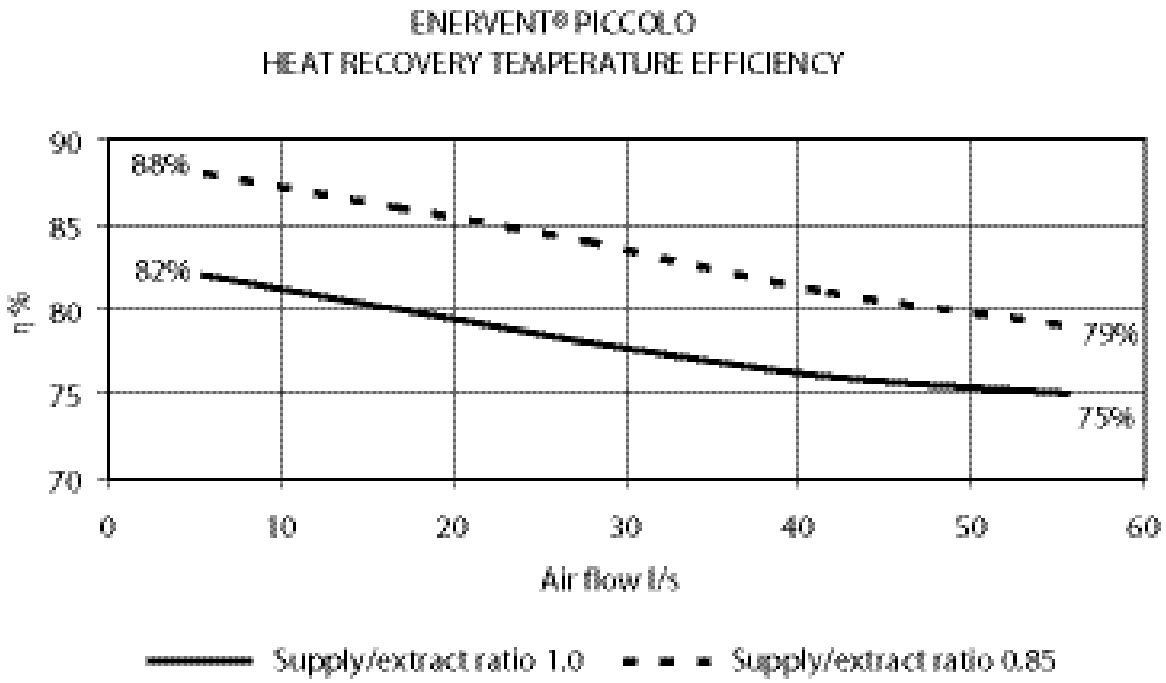
INCREASED OPERATING SOUND LEVEL

Reason	Action
Filters blocked.	Change the filters.
Outer grilles are blocked.	Clean the outer grille .
Fan bearings faulty.	Change bearings / contact service.
Fan wings dirty.	Clean the fans.
Problem with gear/motor of the heat exchanger.	Contact a service representative.

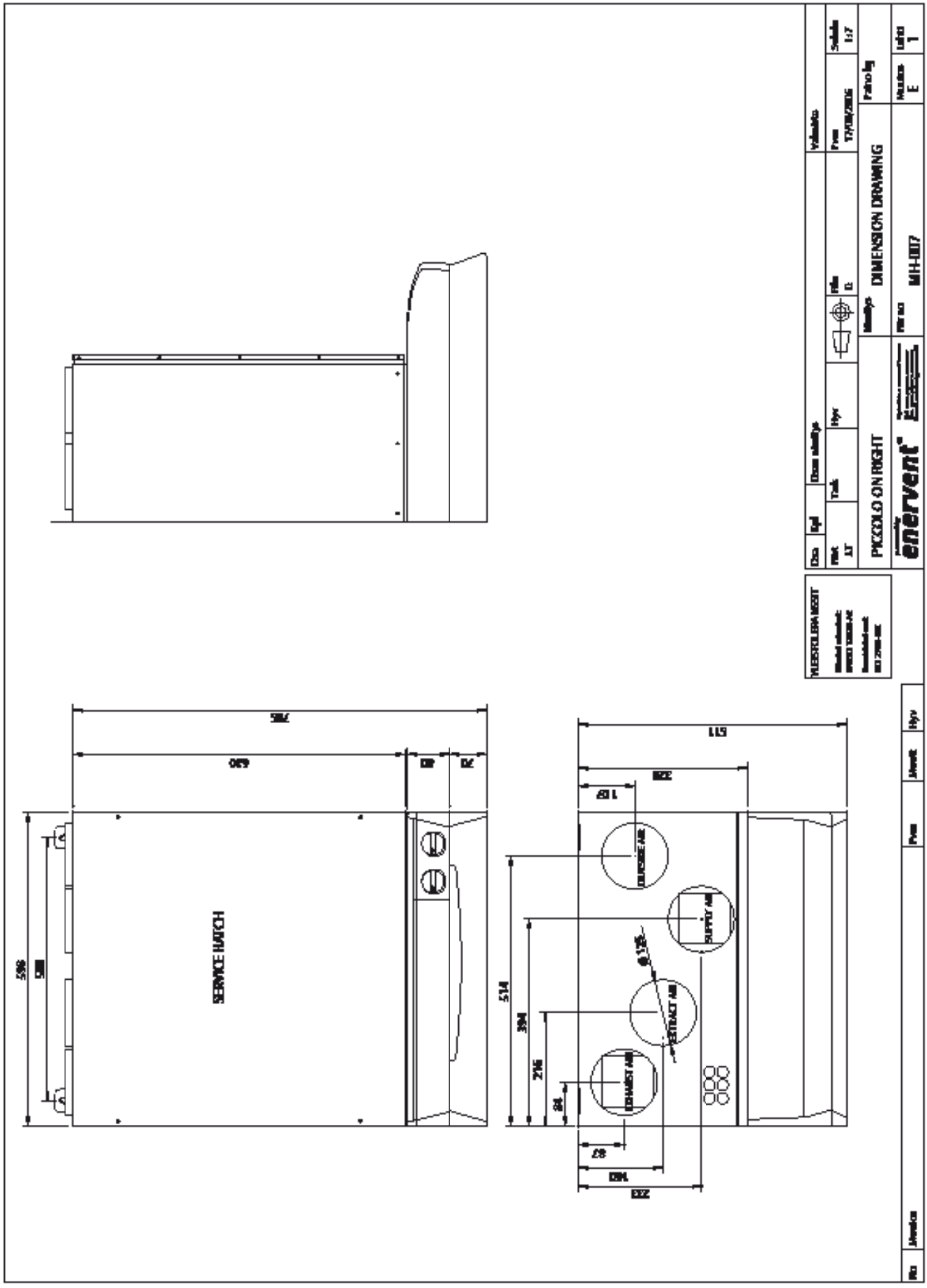
TECHNICAL INFORMATION

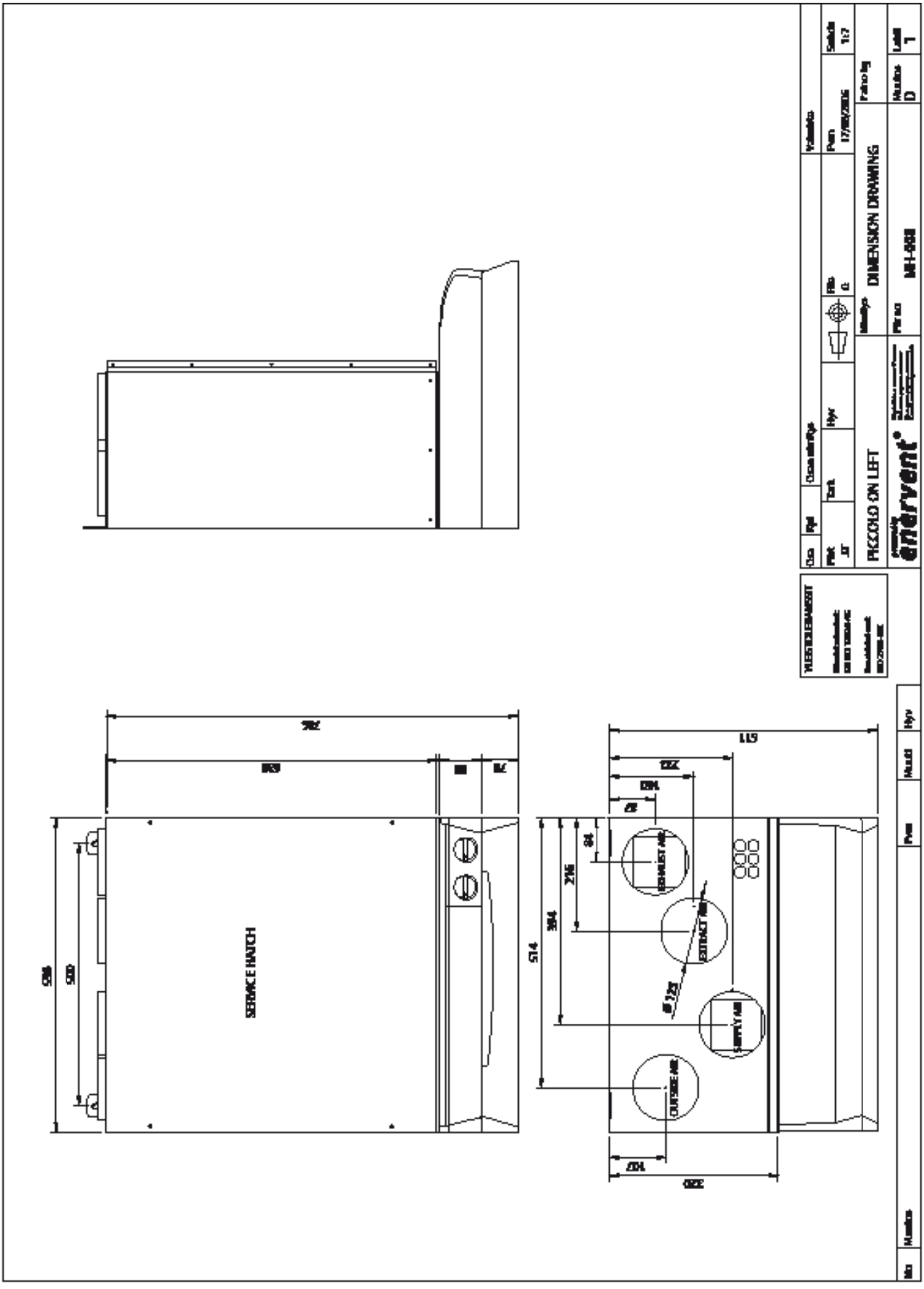
UNIT: (without cooker hood)	PICCOLO eco ECE-ON	PICCOLO eco ECE-OFF	LIGGOLO eco ECE
Width Depth Hight	598 mm 320 mm 630 mm	598 mm 320 mm 700 mm	598 mm 630 mm 350 mm
Weight	46 kg	46 kg	46 kg
Duct size	Ø 125 mm	Ø 125 mm	Ø 125 mm
Fans supply and extract air	119 W 0,9 A	119 W 0,9 A	119 W 0,9 A
Electrical after heater	800 W	800 W	800 W
Current Fuse Main board glas pipe fuse 5x20 mm	230 V~, 50 Hz 10 A quick F1 T6,3 A	230 V~, 50 Hz 10 A quick F1 T6,3 A	230 V~, 50 Hz 10 A quick F1 T6,3 A
Heat exchanger motor	8 W, 0.035 A	8 W, 0.035 A	8 W, 0.035 A

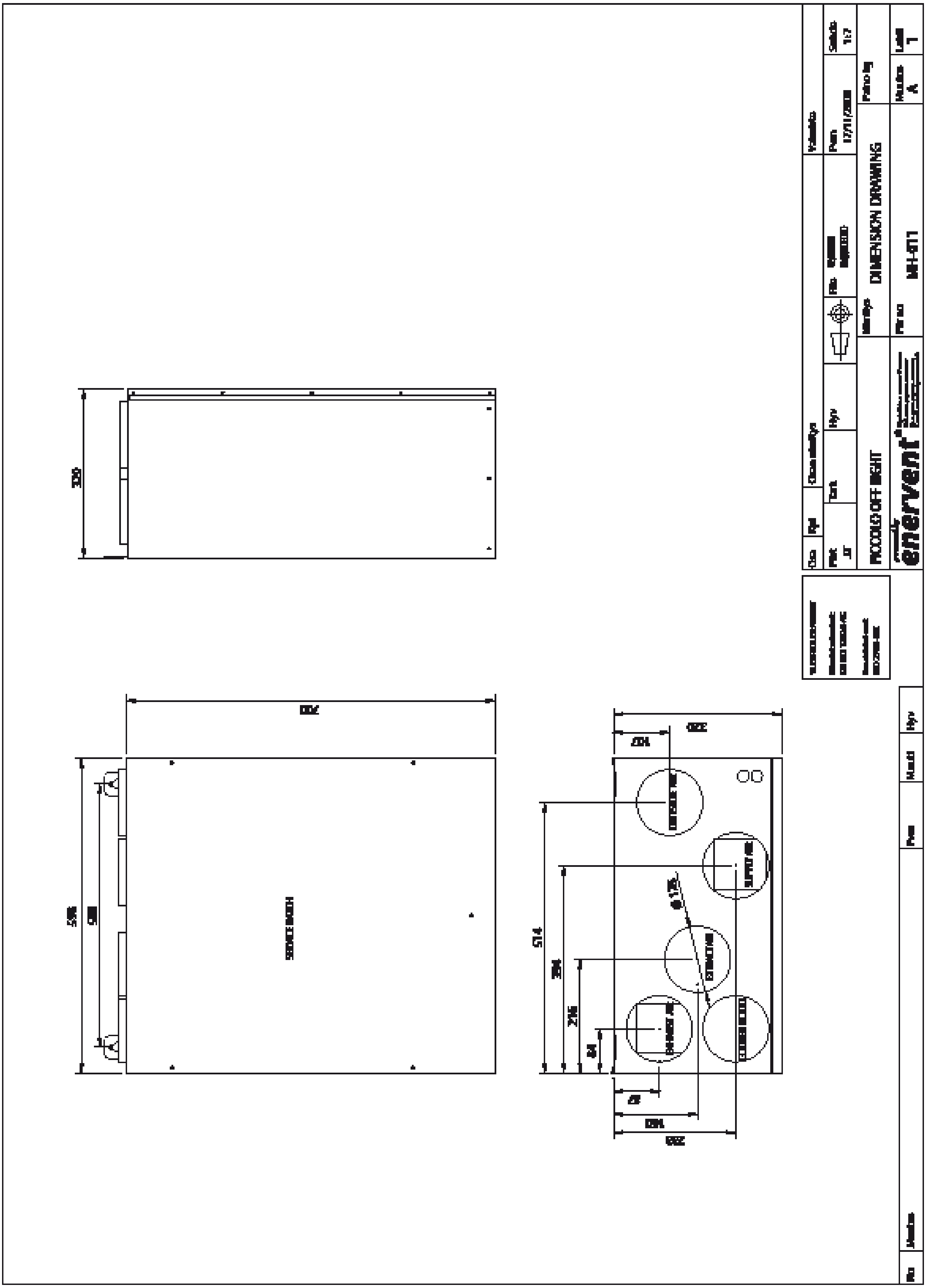
HEAT RECOVERY EFFICIENCY

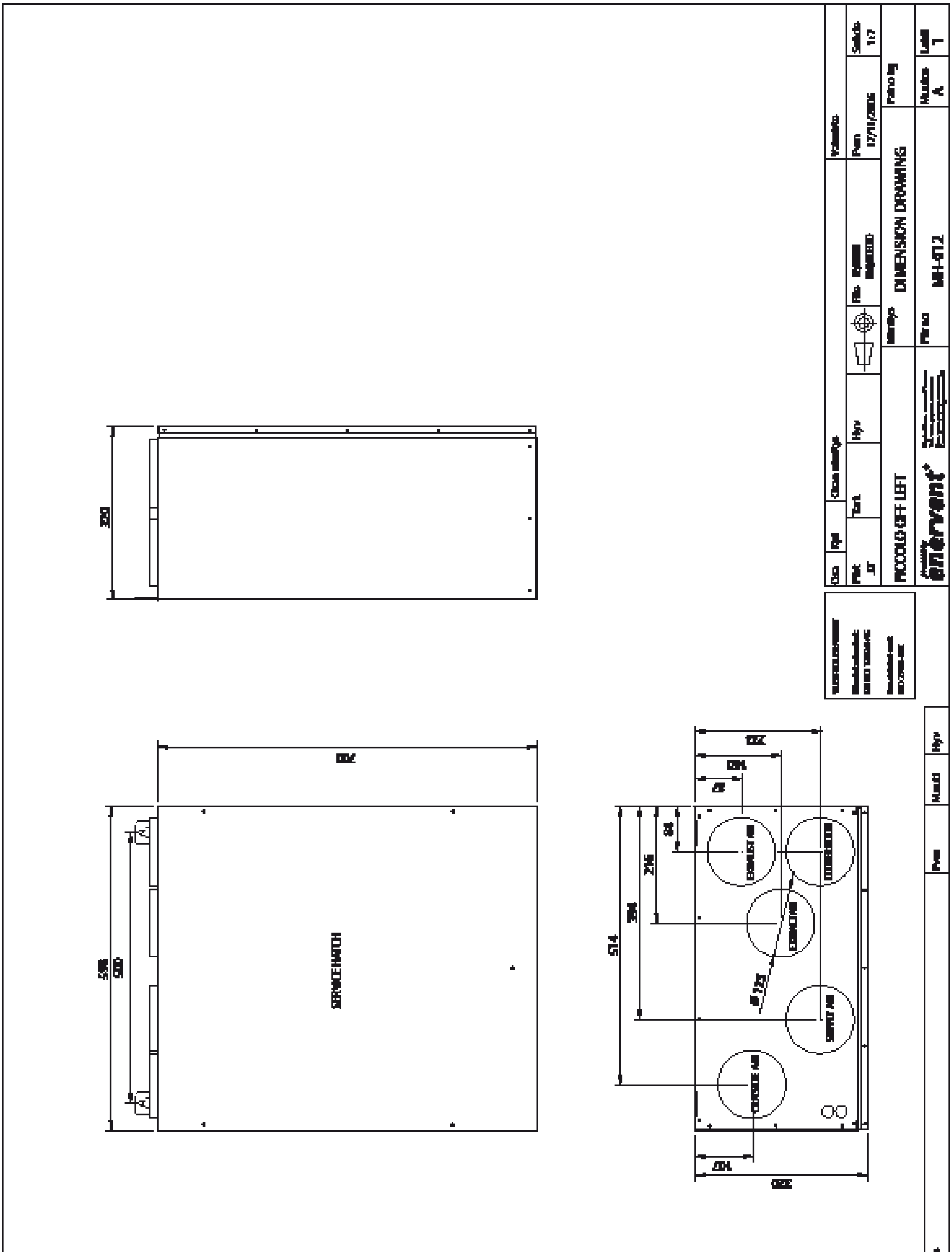


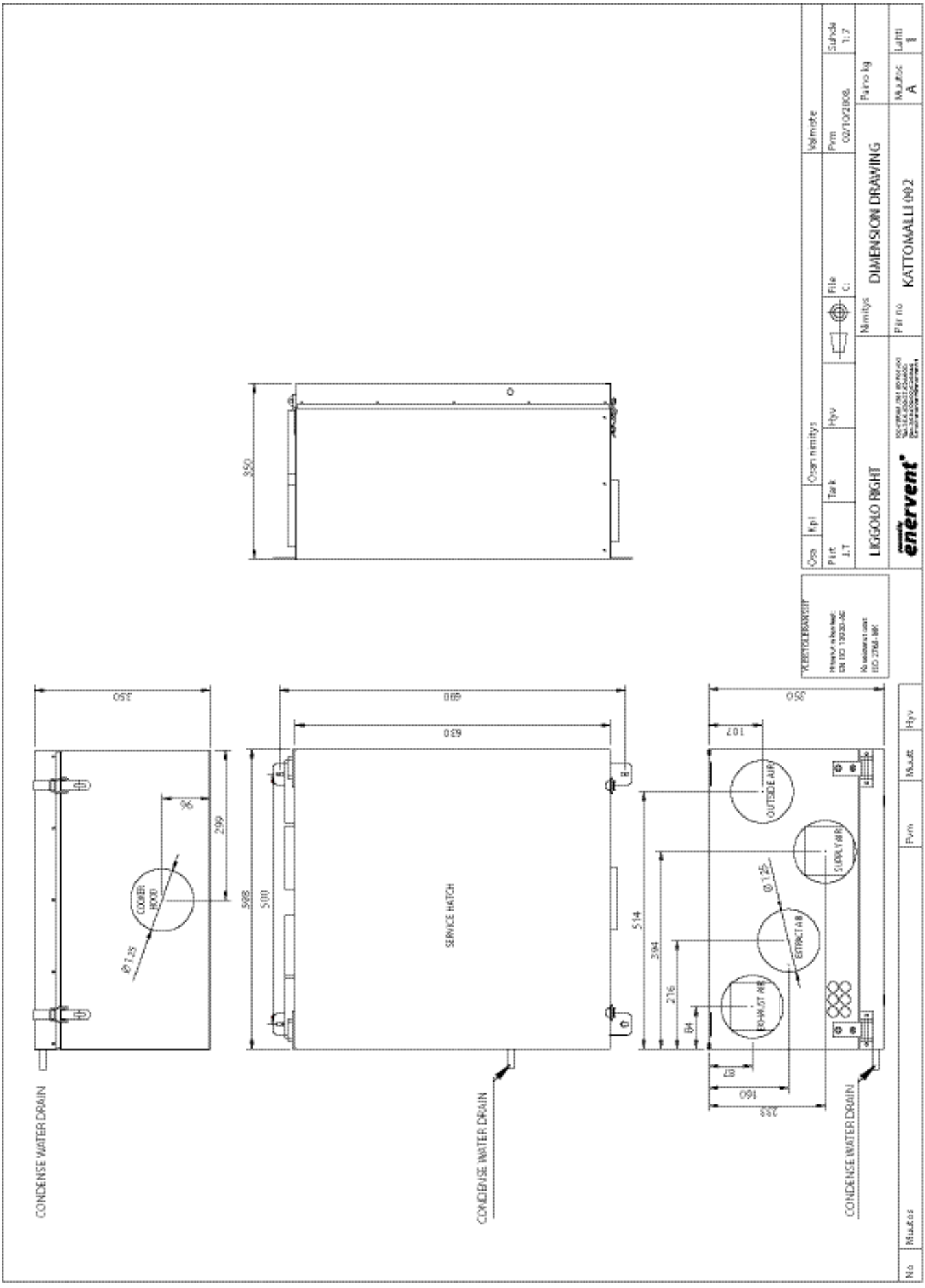
DIMENSION DRAWINGS

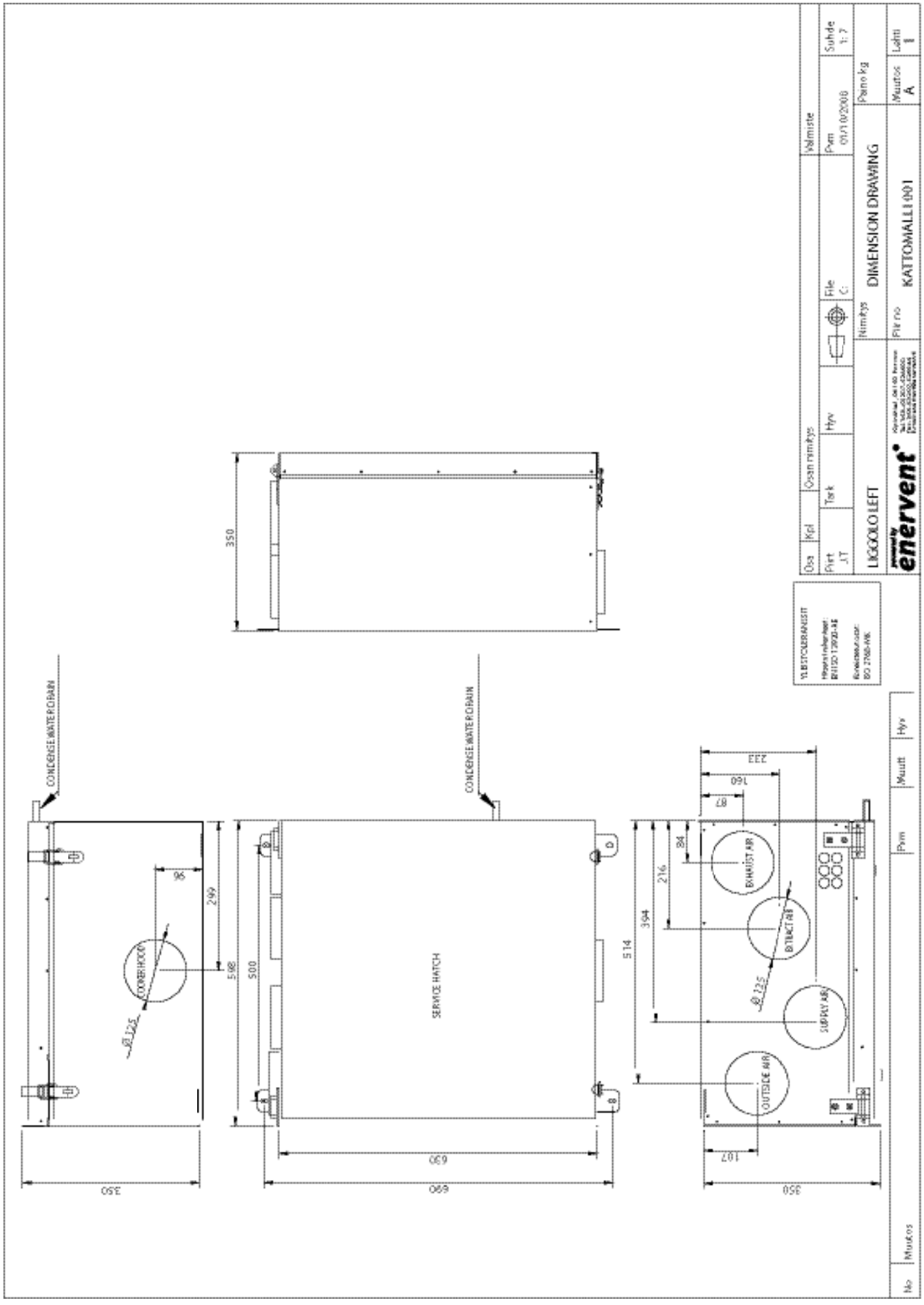


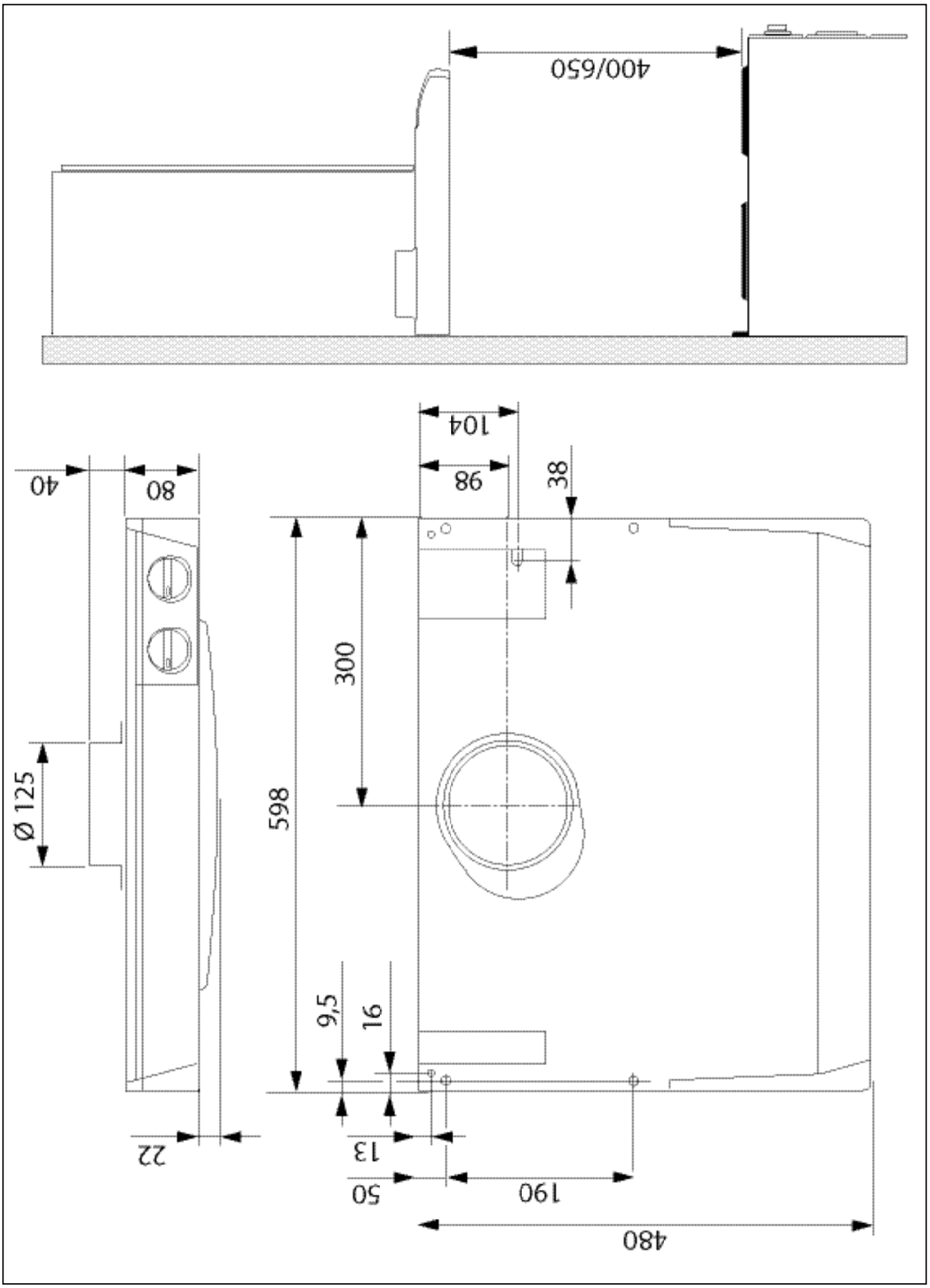

SERVICE HATCH
PICCOLO ON LEFT
DIMENSION DRAWING
MH-651


DIMENSION DRAWING
PICCOLO OFF RIGHT
MH-611
SERVICE HATCH
514
384
216
64
1:7
enervent


SERVICE HATCH
700
320
514
DIMENSION DRAWING
PICCOLO-OFF LEFT

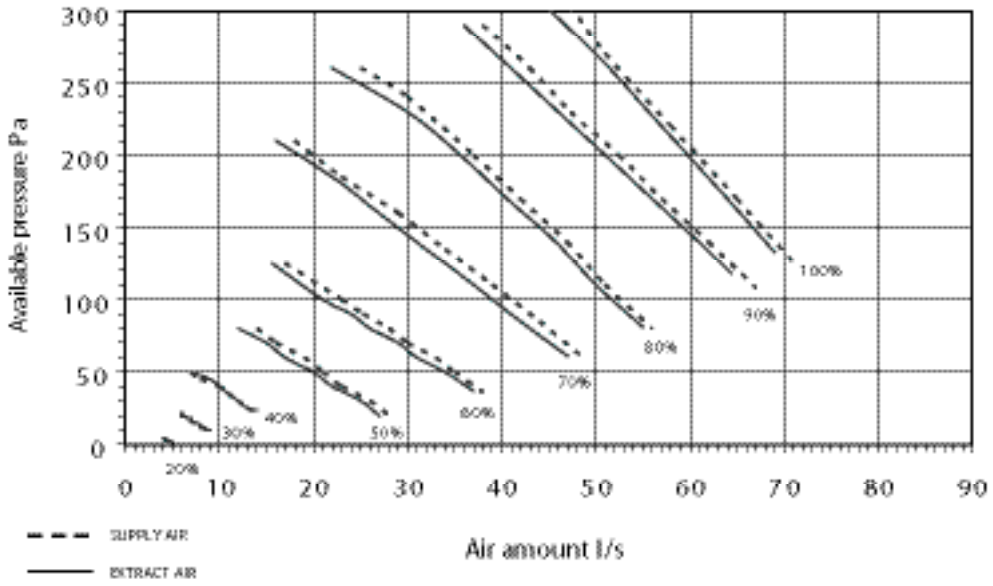

DIMENSION DRAWING
KATTOMALLI 1402
LIGGOLO RIGHT
enervent
CONDENSE WATER DRAIN
COOKER HOOD
Ø125
SERVICE HATCH
OUTSIDE AIR
SUPPLY AIR
EXHAUST AIR
EXTRACT AIR
CONDENSE WATER DRAIN
CONDENSE WATER DRAIN


CONDENSE WATER DRAIN
COMBI HOOD
Ø125
96
299
588
350
SERVICE HATCH
500
630
690
CONDENSE WATER DRAIN
350
233
160
87
84
216
394
514
EXHAUST AIR
EXTRACT AIR
SUPPLY AIR
OUTSIDE AIR
Ø125
107
350
DIMENSION DRAWING
LIGGOLO LEFT
KATTOMALLI 4N1
enervent

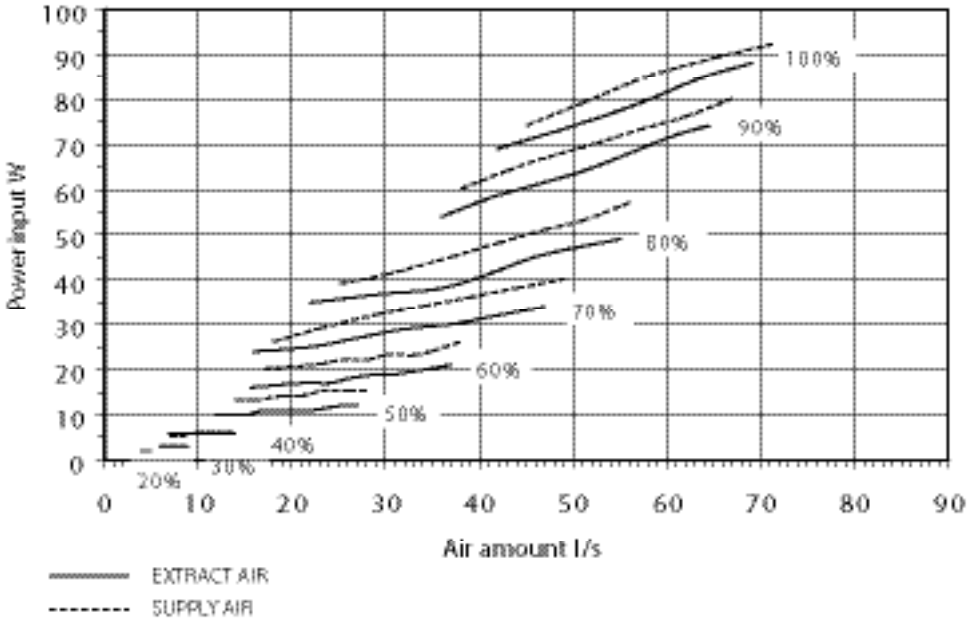

400/650
104
98
38
40
80
300
598
Ø 125
9,5
16
22
13
50
190
480

CHARACTERISTIC CURVES

Piccolo/Liggolo eco ECE supply and extract air characteristic curves with F7/F5 filter



Piccolo/Liggolo eco ECE fan power input with
F7 cassette filter in supply air and F5 bag filter in extract air



PICCOLO SOUND LEVEL IN OUTSIDE AIR DUCT

- Supply air filter F7, 281x436x29 mm (+ 3 mm)
- Extract air filter F5, 275x121-175/5
- Supply and exhaust air fan; Ebm Papst G3G146-ED23-06

Sound level in outside air duct. Heat exchanger rotating.

U(%)	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90%	100 %
q_v (l/s)	4	9	17	28	38	48	55	67	74
L_{W63}, dB	18	25	33	39	44	48	49	52	52
L_{W125}, dB	17	22	31	36	42	47	50	53	54
L_{W250}, dB	20	22	26	32	37	42	46	49	49
L_{W500}, dB	26	29	32	36	40	44	47	50	51
L_{W1000}, dB	13	14	21	25	29	33	36	38	39
L_{W2000}, dB	10	10	10	15	20	25	29	34	35
L_{W4000}, dB	12	12	12	13	16	20	24	27	29
L_{W8000}, dB	17	17	17	17	18	18	18	19	19
L_W, dB	28	32	38	42	47	52	55	57	58
L_{WA}, dB(A)	25	27	30	34	39	43	46	49	49

Character description:

U (%)	Fan speed setting, V
q_V	Air flow, dm^3/s
$L_{W63...8000}$	Unit octave effect band
$_{w63...8000}$	Octave band mid frequency, Hz
L_W	Sound effect level, dB
L_{WA}	A-weighed sound effect level, dB(A)
L_{pA}	A-weighed sound pressure level (10 m^2 sound absorption), dB(A)

PICCOLO SOUND LEVEL IN SUPPLY AIR DUCT

- Supply air filter F7, 281x436x29 mm (+ 3 mm)
- Extract air filter F5, 275x121-175/5
- Supply and exhaust air fan; Ebm Papst G3G146-ED23-06

Sound level in supply air duct. Heat exchanger rotating.

U(%)	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90%	100 %
q_v (l/s)	4	9	17	28	38	48	55	67	74
L_{W63}, dB	29	34	39	44	49	54	55	57	59
L_{W125}, dB	30	35	40	47	52	57	60	63	63
L_{W250}, dB	30	36	41	48	52	57	61	63	64
L_{W500}, dB	31	36	44	49	52	56	59	62	63
L_{W1000}, dB	20	34	44	50	54	57	60	62	63
L_{W2000}, dB	12	27	38	46	52	56	60	62	63
L_{W4000}, dB	14	16	29	38	44	49	53	55	57
L_{W8000}, dB	17	18	18	22	30	37	43	47	48
L_W, dB	36	42	49	55	60	64	67	70	71
L_{WA}, dB(A)	30	38	47	53	58	62	65	67	68

PICCOLO SOUND LEVEL IN EXTRACT AIR DUCT

- Supply air filter F7, 281x436x29 mm (+ 3 mm)
- Extract air filter F5, 275x121-175/5
- Supply and exhaust air fan; Ebm Papst G3G146-ED23-06

Sound level in extract air duct. Heat exchanger rotating.

U(%)	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90%	100 %
q_v (l/s)	4	9	17	28	38	48	55	67	74
L_{W63}, dB	13	18	32	37	40	43	45	46	47
L_{W125}, dB	14	19	33	38	41	44	47	48	49
L_{W250}, dB	13	15	32	37	40	43	47	50	51
L_{W500}, dB	13	16	31	36	40	43	47	49	50
L_{W1000}, dB	14	15	31	35	40	42	45	47	48
L_{W2000}, dB	14	12	19	15	30	34	38	41	41
L_{W4000}, dB	16	14	13	16	21	25	28	31	32
L_{W8000}, dB	19	18	18	18	18	18	23	26	27
L_W, dB	24	25	39	44	47	50	53	55	56
L_{WA}, dB(A)	22	22	34	38	43	45	49	51	52

Character description:

U (%)	Fan speed setting, V
q_V	Air flow, dm^3/s
$L_{W63...8000}$	Unit octave effect band
$_{w63...8000}$	Octave band mid frequency, Hz
L_W	Sound effect level, dB
L_{WA}	A-weighed sound effect level, dB(A)
L_{pA}	A-weighed sound pressure level (10 m^2 sound absorption), dB(A)

PICCOLO SOUND LEVEL IN EXHAUST AIR DUCT

- Supply air filter F7, 281x436x29 mm (+ 3 mm)
- Extract air filter F5, 275x121-175/5
- Supply and exhaust air fan; Ebm Papst G3G146-ED23-06

Sound level in exhaust air duct. Heat exchanger rotating.

U(%)	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90%	100 %
q_v (l/s)	4	9	17	28	38	48	55	67	74
L_{W63}, dB	29	34	39	47	50	52	55	58	59
L_{W125}, dB	30	35	40	45	50	54	56	58	59
L_{W250}, dB	30	34	41	46	51	54	57	59	60
L_{W500}, dB	31	36	44	48	52	56	59	61	62
L_{W1000}, dB	20	35	44	51	55	58	60	62	63
L_{W2000}, dB	12	27	38	45	52	57	60	63	64
L_{W4000}, dB	14	14	29	36	43	47	51	54	55
L_{W8000}, dB	17	18	18	19	26	33	39	43	44
L_W, dB	36	42	49	55	60	64	66	69	70
L_{WA}, dB(A)	30	38	47	53	58	62	65	67	68

PICCOLO SOUND LEVEL IN SURROUNDING

- Supply air filter F7, 281x436x29 mm (+ 3 mm)
- Extract air filter F5, 275x121-175/5
- Supply and exhaust air fan; Ebm Papst G3G146-ED23-06

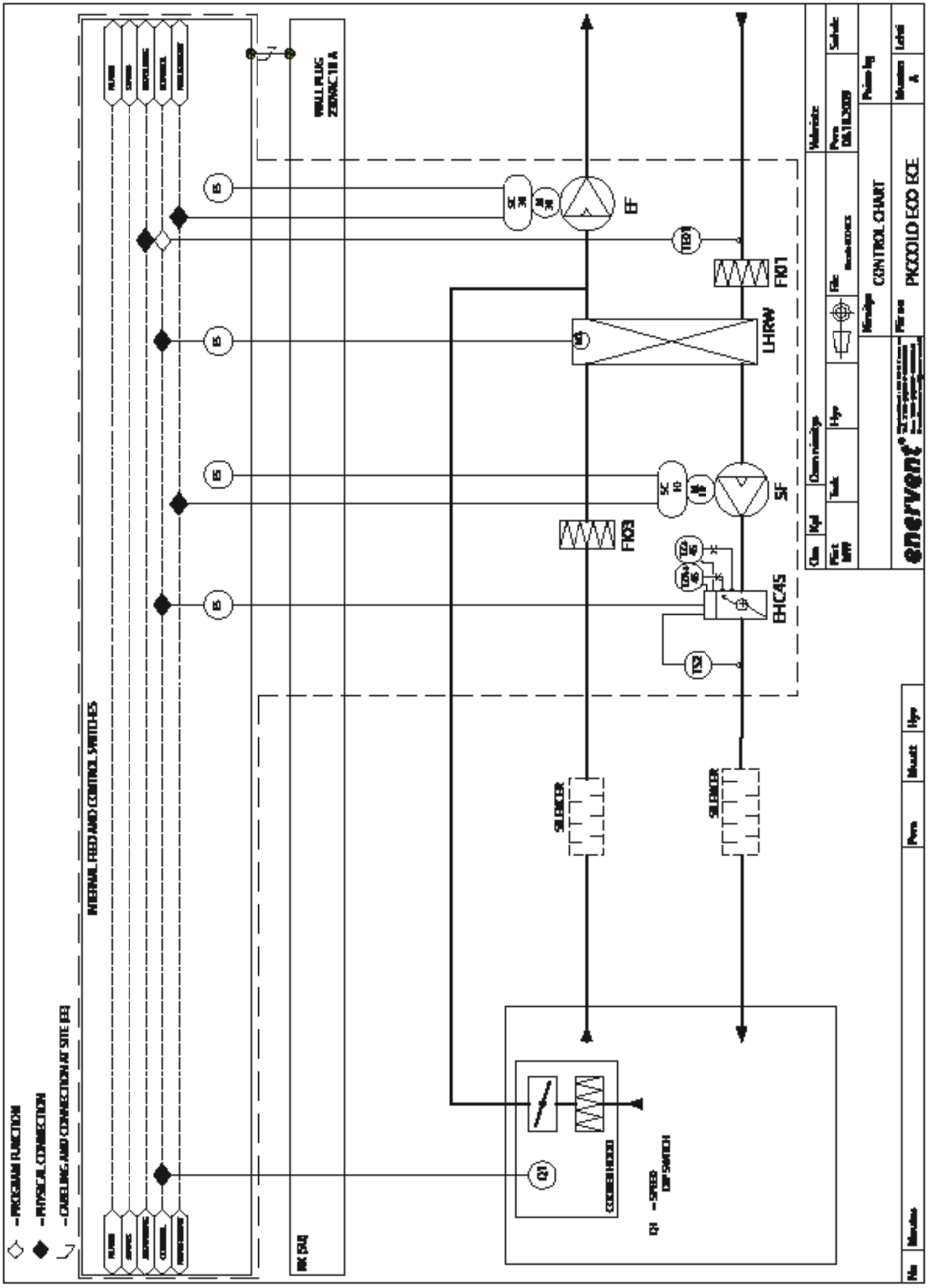
Sound level through casing, with cooker hood attached (damper shut). Heat exchanger is rotating.

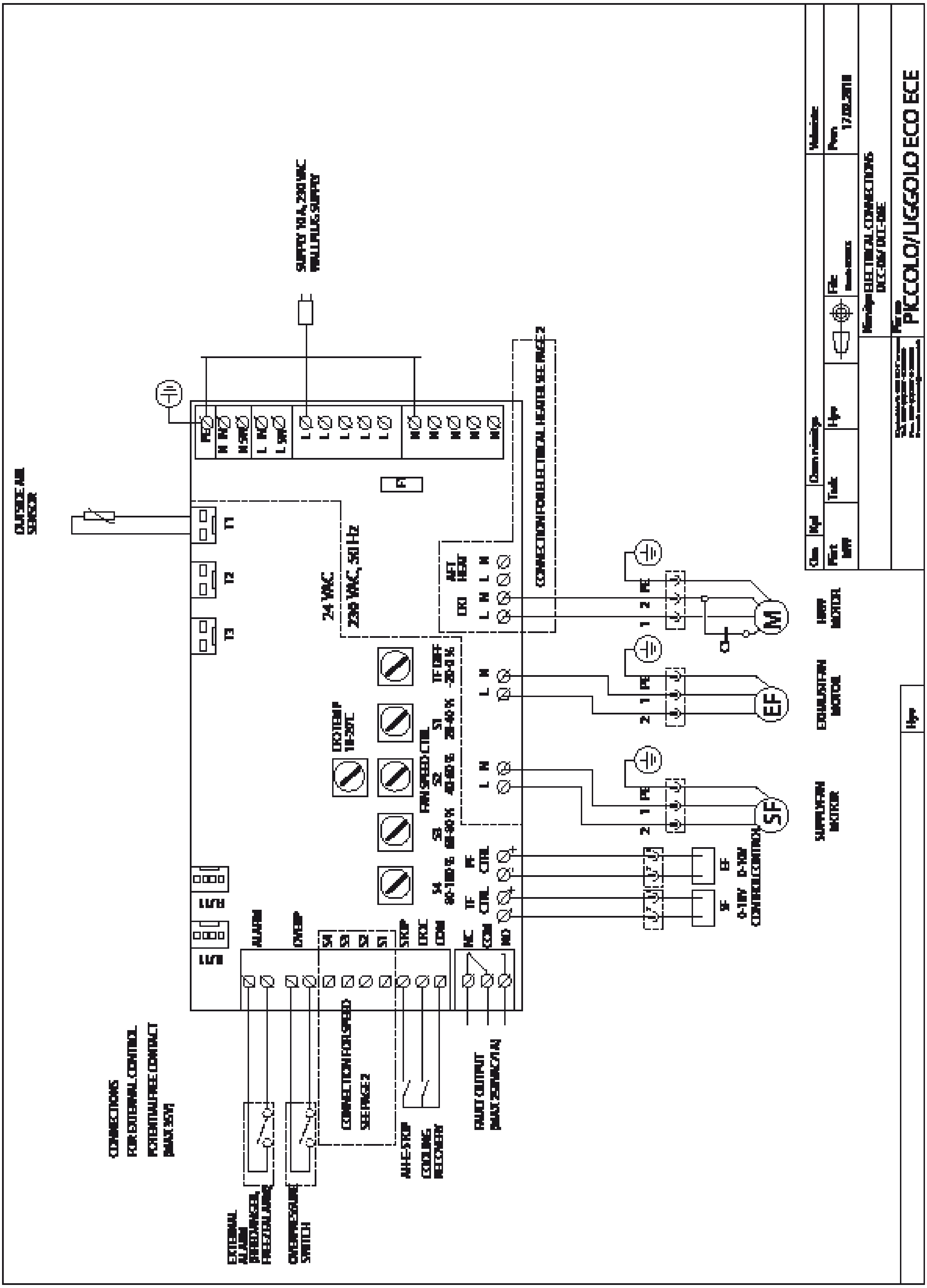
U(%)	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90%	100 %
q_v (l/s)									
Supply air	10	17	25	33	42	47	51	60	64
Extract air	11	19	28	36	46	50	56	65	68
L_{W63}, dB	31	37	42	46	51	52	53	55	57
L_{W125}, dB	33	40	46	52	56	57	60	62	61
L_{W250}, dB	24	30	36	41	44	46	49	52	53
L_{W500}, dB	22	27	32	35	39	40	42	44	45
L_{W1000}, dB	16	21	26	30	33	34	35	38	38
L_{W2000}, dB	10	17	18	21	26	28	29	32	32
L_{W4000}, dB	13	15	15	13	17	18	20	23	24
L_{W8000}, dB	17	18	14	14	17	18	18	20	21
L_W, dB	36	43	48	53	58	59	61	63	63
L_{WA}, dB(A)	24	30	35	39	43	44	47	49	49
L_{pA}, dB(A)	20	26	31	35	39	40	43	45	45

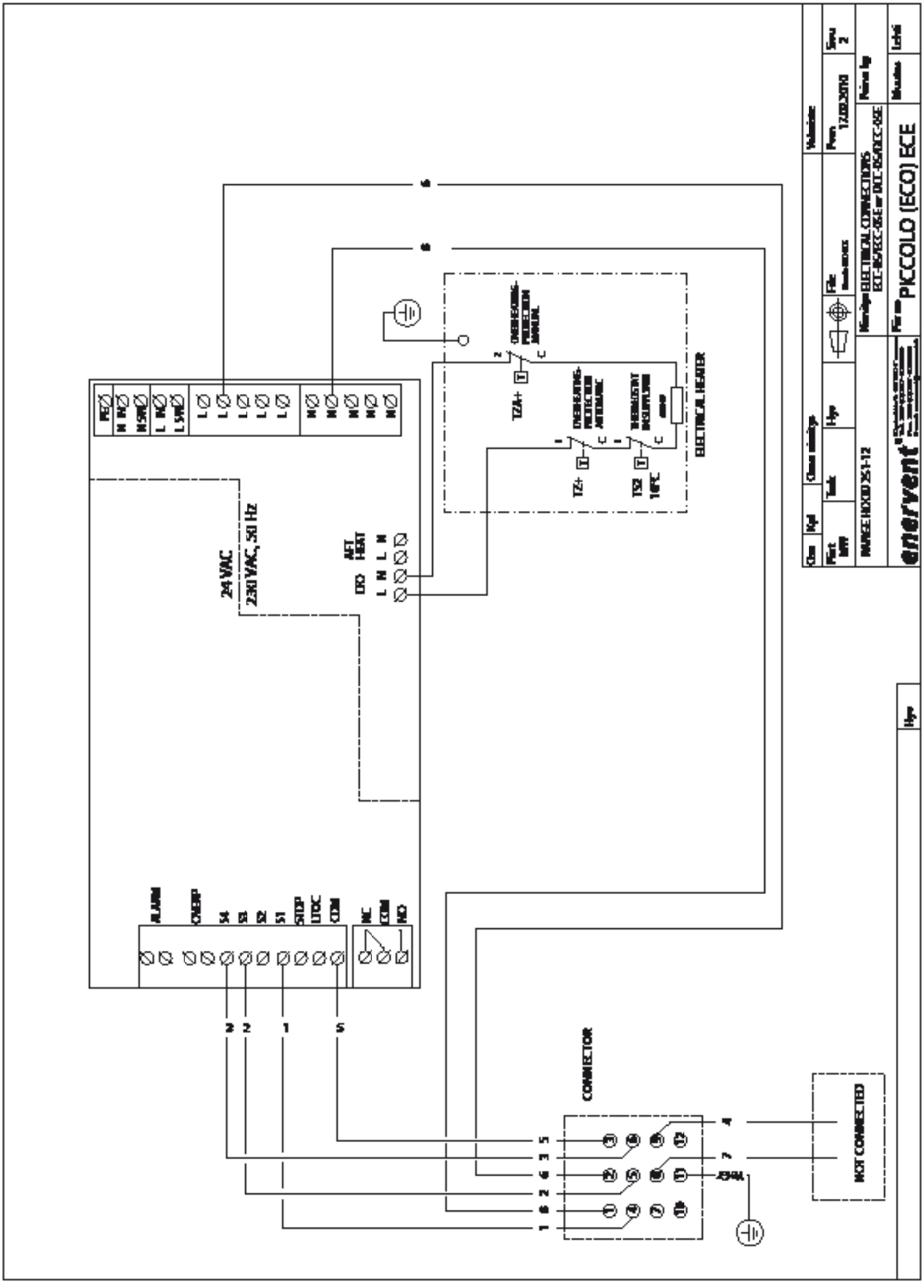
Character description:

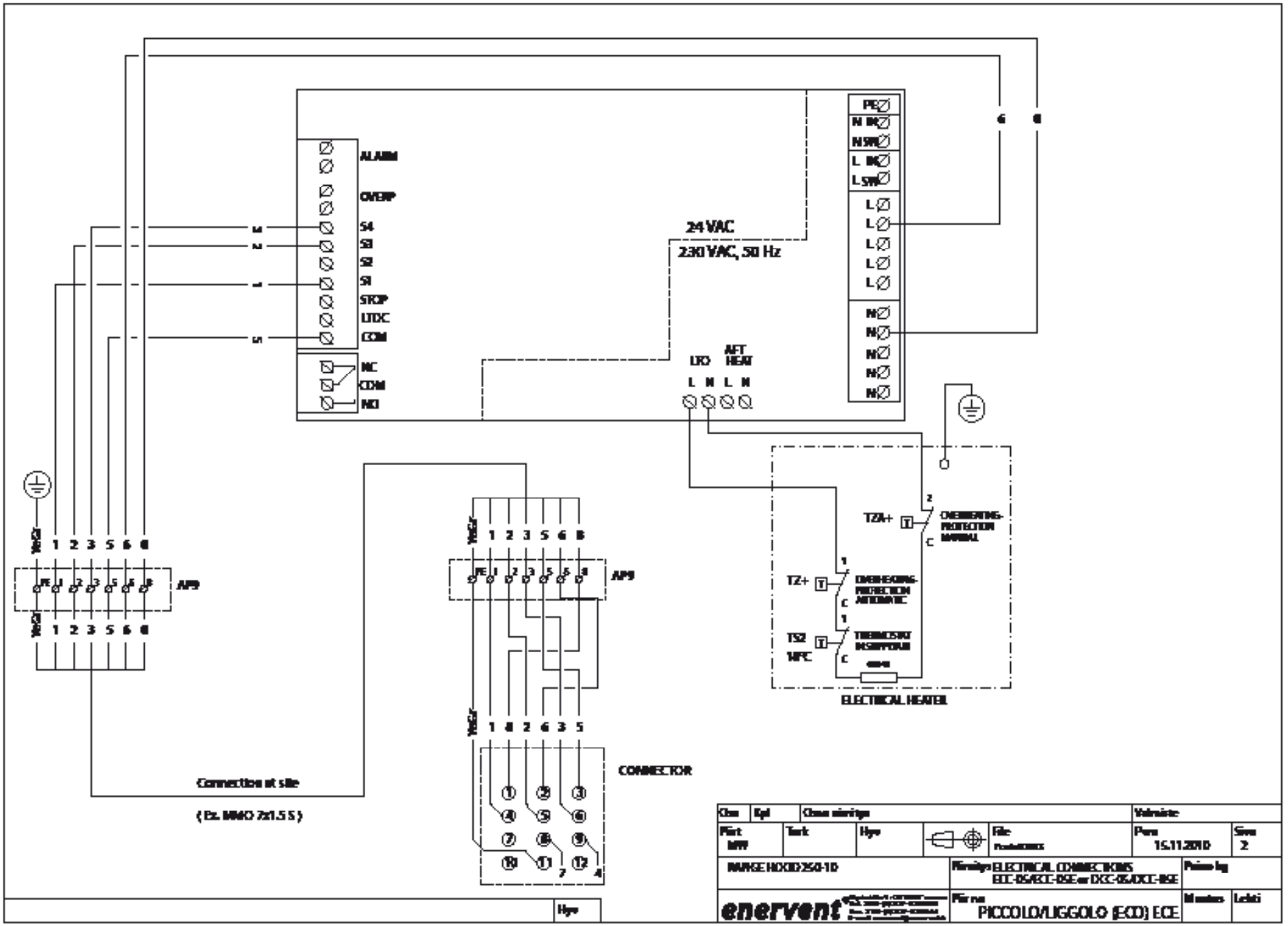
U (%)	Fan speed setting, V
q_V	Air flow, dm^3/s
$L_{W63...8000}$	Unit octave effect band
$_{w63...8000}$	Octave band mid frequency, Hz
L_W	Sound effect level, dB
L_{WA}	A-weighed sound effect level, dB(A)
L_{pA}	A-weighed sound pressure level (10 m^2 sound absorption), dB(A)

CONTROL CHARTS




PICCOLO/LIGGOLO ECO ECE
SUPPLY 10 A, 230 VAC
WALL PLUG SUPPLY
OUTSIDE AIR SENSOR
24 VAC
230 VAC, 50 Hz
CONNECTION FOR ELECTRICAL HEATER SEE PAGE 2
FAN SPEED CTRL
EXHAUST FAN MOTOR
SUPPLY FAN MOTOR
0-10V CONTROL CONTROL
CONNECTION FOR SPEED SEE PAGE 2
FAULT OUTPUT
CONNECTIONS FOR EXTERNAL CONTROL
OVERPRESSURE SWITCH


24 VAC
230 VAC, 50 Hz
ELECTRICAL HEATER
CONNECTOR
NOT CONNECTED
PKCCOLO (ECO) ECE


ALARM
OVERP
S4
S3
S2
S1
STOP
LTDC
COM
NC
COM
NO
24 VAC
230 VAC, 50 Hz
PE
N IN
N SW
L IN
L SW
L
N
LTO
AFT HEAT
TZA+
TZ+
TS2
MFC
ELECTRICAL HEATER
AP9
CONNECTOR
Connection at site
(Ex. MMO 7x1.5 S)
enervent
PICCOLO/UGGOLO (ECO) ECE

DECLARATION OF CONFORMITY

We declare that our products follows the provisions of low voltage directive (LVD) 2006/95/EY, EMC-directive 2004/108/EY and machine directive (MD) 98/37/EY.

Manufacturer:	Enervent Oy
Manufacturer´s contact:	Kipinätie 1, 06150 PORVOO, FINLAND tel +358 (0)207 528 800, fax +358 (0)207 528 844 enervent@enervent.fi, www.enervent.fi
Description of the product:	Ventilation unit with heat recovery
Trade name of the product:	Enervent Piccolo eco ECE Enervent Liggolo eco ECE

Representatives for the products in the region of EU:

Sweden:	Ventener Ab, Örelidsvägen 10, 517 71 OLSFORS, SVERIGE, tel +46 735-62 00 62 Climatprodukter AB, Box 366, 184 24 ÅKERSBERGA, SVERIGE, tel +46 8 540 87515 DeliVent Ab, Markvägen 6, 43091 HÖNÖ, SVERIGE, tel +46 70 204 0809
Norway:	Noram Produkter Ab, Grini Næringspark 4 A, 1361 ØSTERÅS, NORGE, tel +47 33 47 12 45
Estonia:	As Comfort Ae, Jaama 1, 72712 PAIDE, EESTI, tel +372 38 49 430
Irland:	Entropic Ltd., Unit 3, Block F, Maynooth Business Campus, Maynooth, Co. Kildare, IRELAND tel +353 64 349
Germany:	e4 energietechnik gmbh, Burgunderweg 2, 79232 MARCH, GERMANY, tel +49 7665 947 25 33
Austria:	Inocal Wärmetechnik Gesselschaft m.b.H, Friedhofstrasse 4, 4020 LINZ, AUSTRIA, tel +43 732 65 03 910 M-Tec Mittermayr GmbH, 4122 ARNREIT, AUSTRIA, tel +43 7282 7009-0
Poland:	Iglotech S.J., ul. Toruńska 4, 82-500 KWIDZYN, PUOLA, tel +48 55 279 33 43

The products are in conformity with the following standards:

LVD	EN 60 335-1 (2002) +A1 (2004), +A2 (2006), +A11 (2004), +A12 (2006)
MD	EN 292-1 (1991), EN 292-2 (1991) +A1 (1995)
EMC	EN 55014-1 (2006), EN 61 000-3-2 (2006) and EN 61 000-3-3 (1995). EN 55014-2 (1997)+A1 (2002).

The conformity of each manufactured product is taken care according our ISO 9001 quality descriptions.

Porvoo 3.1.2010

Enervent Oy

Tom Palmgren

Technology Manager

MAINTENANCE OF THE VENTILATION UNIT AND COOKER HOOD

The ventilation unit does not require any mechanical maintenance, only changing of the filters periodically and cleaning of the heat exchanger and fans (when needed). Cut the power supply to the unit before starting any service work (from the main switch or by removing the service hatch of the LTR-series units). Wait for two (2) minutes before starting the maintenance work! Although the unit's power supply is cut when the hatch is opened, the fans still rotate and the electrical coil in ECE-model is still hot for a while.

Cleaning the heat exchanger

When changing the filters, check if the heat exchanger is dirty. If cleaning is required, remove it from the unit and carefully wash through the air channels with a hand shower using a mild detergent, taking care not to get the motor wet. The heat exchanger can also be cleaned by blowing through the air channels using compressed air. Do not use a pressure washer and do not submerge the heat exchanger into water!! When restarting the unit after cleaning, check that the heat exchanger wheel can turn freely.

Cleaning the fans

When changing filters, also check the condition of the fans. If cleaning is required the fans can be removed from the unit and cleaned with a toothbrush or compressed air.

Changing of filters

The recommended time between filters changes for the cassette filter and the bag filter is six (6) months. If class F5 bagfilters are used the time between filter changes can be prolonged to one (1) year, by vacuuming the filters on the inside.

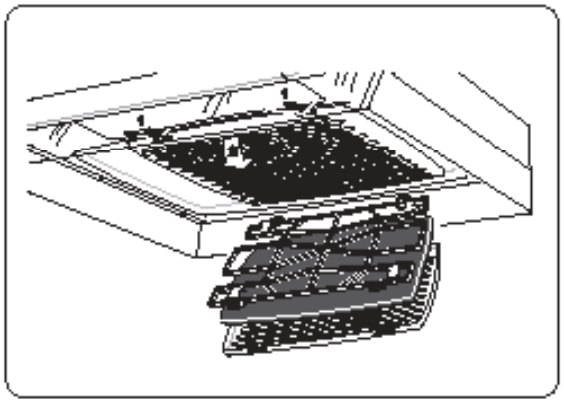
Remove the old filter and put in a new one. Vacuum cleaning the inside of the device is recommended at this point. N.B! Make sure to close the service harch carefully!

Cleaning the cooker hood

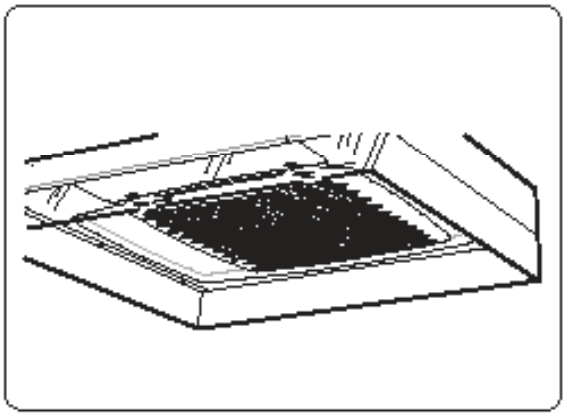
The cooker hood is wipe with a damp cloth and washing liquid. The filter should be cleaned twice a month if the use is normal. Loosen the filter cartridge by push the lock tags in the front edge. Take the filter apart and remove the filter cloth by loosening the filter holder, picture 1. Soak the filter cloth and filter holder in warm water mixed with washing liquid. The filter cartridge (with the cloth) can also be washed in a dish washer. The cooker hood should be cleaned inside some times per year. Wipe the inside with a damp cloth and washing liquid. Put the filter cartridge back in place so that it locks in place.

Changing the luminescent lamp in the cooker hood

The lamp glas is loosened by push the lock tags in the direction shown by the arrow, picture 2. The luminescent lamp is now accessable for change (luminescent lamp socket G23).



Picture 1



Picture 2

You can buy filters as well as other equipment for your Enervent ventilation unit from your local Enervent dealer. Please remember to check what model your ventilation unit is before you order equipment.

QUICK GUIDE TO THE VENTILATION UNIT AND COOKER

GENERAL INFORMATION ABOUT VENTILATION

The basic function of the ventilation unit is to maintain good indoor air quality. When the ventilation is planned the engineer calculates how big the air amounts need to be in order to get sufficient ventilation. The installer specifies the normal fan speed for the unit when he installes the unit and calibrates the air flows at every terminal.

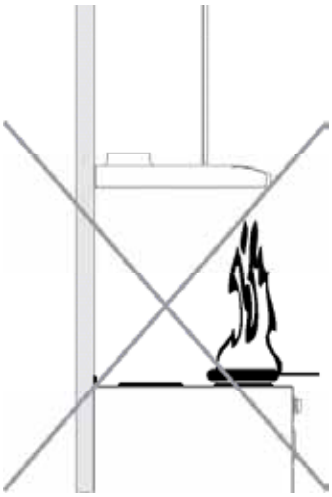
USING THE VENTILATION UNIT

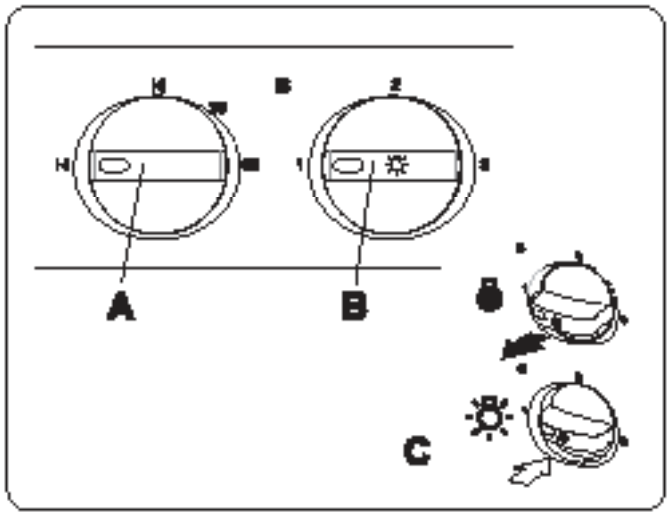
It is very simple to use the ventilation unit. Most of the time it needs no attention. The most important functions are:

The Piccolo (eco) ECC -unit is controlled with the knobs on the cooker hood front.There is a knob for fan speeds (B), the damper (A) and the cooker hood light (C).

There are three speeds available; ***normal speed,*** which is specified by the installer and on which the unit runs most of the time; ***boosting speed*** which is bigger than the normal speed and is used for temporary airing and ***away speed***, which is used when nobody is at home.

The damper is opened during cooking
matically after 60 min and the unit resu
manually.





NOTE! It is forbidden to flambé under the cooking hood .

VENTILATION DICTIONARY

Outside air	The fresh air flow from the outside to the ventilation unit is called outside air.
Supply air	The air flow from the ventilation unit to the rooms is called supply air.
Extract air	The air flow from the rooms to the ventilation unit is called exhaust air.
Exhaust air	The air flow that blows out from the ventilation unit is called waste air.
Heat exchanger	The heat exchanger is a component of the ventilation unit that carries heat energy from the exhaust air flow to the supply air flow. Enervent ventilation units are equipped with a rotating heat exchanger. The rotating heat exchanger is a wheel made of thin metal foil, which stores the heat from the exhaust air and carries it to the supply air. The heat exchanger prevents the warmth from the rooms from escaping with the waste air flow.
After heating	The after heating heats the supply air before it is blown into the rooms. In ECC-units the after heating is realized with an electrical heater. All units are not equip ped with after heating.
ECC	ECC is the ventilation unit's control. ECC is an abbreviation of Electronic Climate Control.