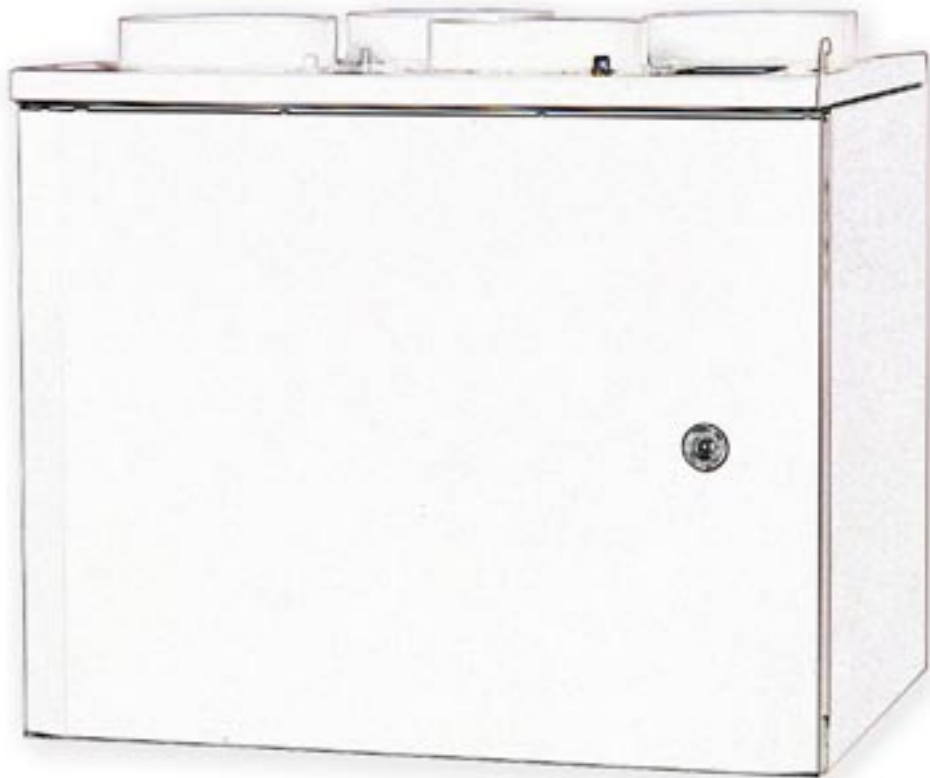


FENIX

PLANNING, INSTALLATION AND OPERATION INSTRUCTIONS



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www.enervent.fi

OVERVIEW

MODEL

Before you begin reading, confirm the model of your appliance.
These instructions cover the following models:

Fenix 60
Fenix 85
Fenix 120




EXPLANATION OF THE MARKS AND NUMBERS

60 Fan efficiency 105 W
85 Fan efficiency 130 W
120 Fan efficiency 185 W

All models are equipped with a built-in electrical heater 1000 W.

On all models the duct connections are Ø 160 mm.

Inside the air handling unit there is a sticker with the model details . Fill in below this data to have it for future reference e.g when you require spare filters.

	ilmastointilaite ventilation unit
TYYPPI/TYPPE: SRJ. NRO/SERIAL NO: W/ V/ HZ/ A:	
 	ENERVENT OY AB PAJATIE 8 06150 PORVOO PUH. *358 (0)19 529700 FAX. *358 (0)19 667814

INTRODUCTION

All Fenix ventilation units have been designed for continuous year round use. In Finland the Enervent appliances have been installed in small premises and detached houses for over 20 years. The popularity of the appliances is increasing year by year. Using knowledge gained over the years, it has been possible to make the Fenix range more and more user-friendly.

The Fenix range is the result of long-term product development. It is extremely versatile and variable.

With the help of this manual it is possible to install the Fenix unit with common functions yourself. We recommend that installation of ventilation units with special functions and extra equipment be carried out by a qualified electrician.

If in doubt, we recommend that a qualified ventilation engineer performs the installation work.

Before any maintenance on the appliance is carried out, please read the warning on the next page!



GUARANTEE

Enervent Oy Ab provides a two (2) year product guarantee on the Fenix range. The guarantee covers the repair work with the necessary spare parts. Repair work will be carried out at the factory premises in Porvoo, Finland or as agreed.

The guarantee is not valid if the unit has been incorrectly installed, poorly maintained or mechanical damage has resulted from improper use. This guarantee does not compensate for losses indirectly caused by the use of the appliance, troubleshooting, reinstallation after the repair or transportation.

Retain the receipt as proof of purchase, and for the start date of the guarantee period.

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WARNING

After opening the service hatch, wait for two (2) minutes before starting any maintenance work! Although the unit's power supply is cut when the hatch is opened, the fans still rotate and the electrical heater is still hot for a while.

There are no user-serviceable parts within the control panel, contact a service technician for service and repairs of this part of the unit.

Check the cause of any fault before restarting the unit!

OPERATING PRINCIPLE

The Fenix ventilation unit is based on recuperative heat recovery. This is achieved with a cross flow plate heat exchanger through which the supply air and the exhaust air flow. Heat from the exhaust air is transferred through an aluminium plate to the supply air.

The efficiency varies from 52 % to 64 %, depending on the proportion and volume of supply air and exhaust air (the heat from the supply air fan is taken into account). Thanks to its high efficiency, the Fenix saves heating energy at the same time as it provides excellent indoor air quality; therefore it pays for itself in a relatively short time.

PLANNING

PLANNING OF THE DUCT SYSTEM

It is recommended that the task of dimensioning the duct system is given to a professional engineer.

The ducts must be large enough, min. Ø 100 mm diameter (approx 4") to allow a sufficiently low air speed. In particular the outside feed and the waste air ducts need to be large. The size of the outside air duct, waste air duct and the outside air grille must be Ø 160 mm diameter (approx 8"). Do not fit an insect net behind the grille.

Use only approved materials, such as galvanised spiral-weld or plastic pipe, for the duct system. Air valves which are suitable for mechanical ventilation must be used. Air valves with a diameter of 100 mm or larger are to be used for supply and exhaust air.

The outside air should be taken, if possible, from the north side of the building or from a shady place where temperature variations are moderately small.

The waste air should be led out about 90 cm above the roof ridge. Use insulated factory made fittings. A cover or cowl must be installed on the end of the waste air duct to prevent rain water from entering the duct system.

To enable duct cleaning, a sufficient number of access hatches should be placed in the duct system. The access hatch locations should be marked, for example on the roof trusses, to make finding them easier.

The exhaust air valves should be placed in the following locations: Toilet, kitchen, washroom, bathroom, en-suite, clothing storage room, cleaning cupboard and utility room.

The supply air valves should be placed in the following locations: bedroom, living room, separate dining recess, hobby room, dressing room and sauna. We recommend that a supply air valve is installed in the innermost corner of the sauna. The air flow from the valve should be directed above the stove.

The air from a room with supply air will flow through gaps under the doors or "free flow" door grilles to areas with exhaust air. Normally a 20 mm gap under the door is sufficient, except in the sauna where a 100 mm gap is required. Additional supply air can be ducted directly to wood-burning fireplaces (in the sauna) from the outside. The duct must be closable.

Garages or workshops must not be connected into the ventilation equipment of the house; they should have their own extractor system or independent heat recovery unit.

The cooker extractor hood should not be connected into the house ventilation system. (Excess steam and grease will cause blockage of the heat exchanger).

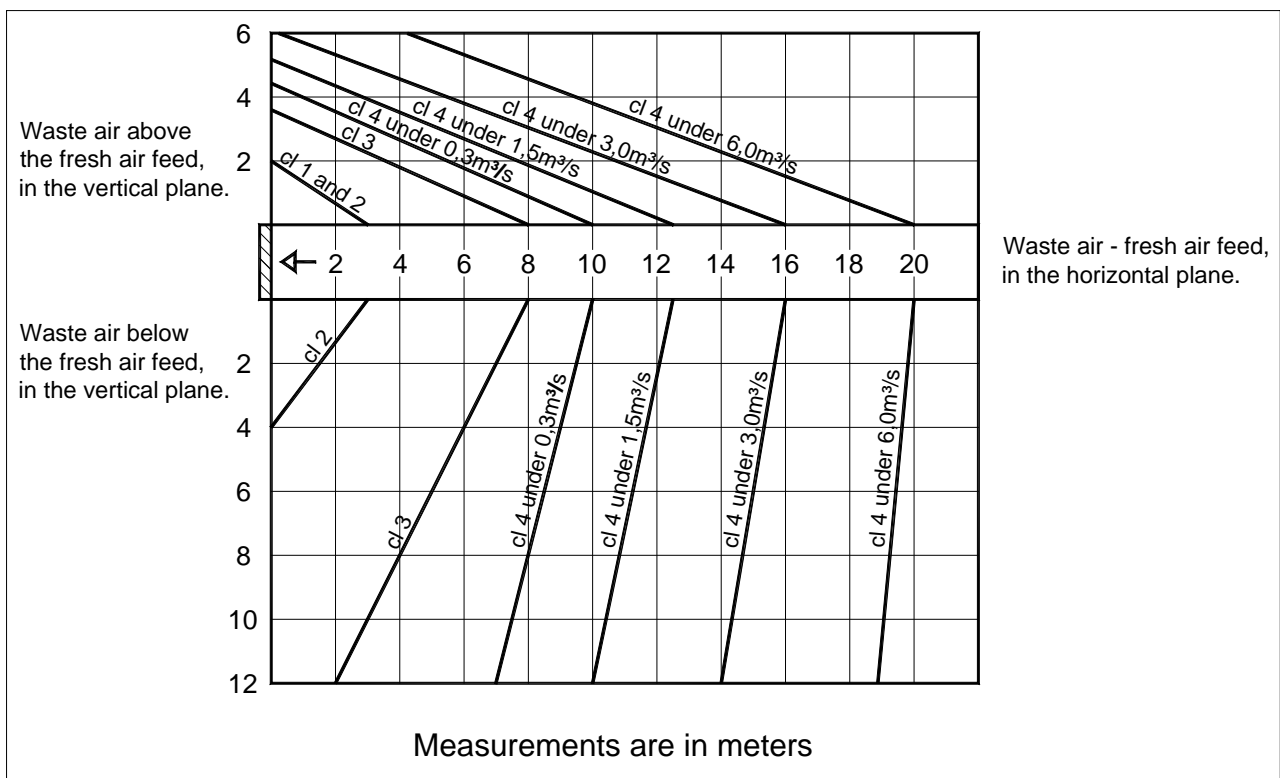
A fan assisted drying cabinet can be connected indirectly to the exhaust valve (drying cabinet - valve attachment) which allows air from both the room and the cabinet to exhaust from the same valve. The volume through the exhaust air valve has to be at least 12 l/s.

Silencers. A silencer 900 mm long is recommended for the exhaust duct, a silencer 600 or 900mm long is recommended for the supply air duct.

Distances between waste air and fresh air openings. Usually fresh air is taken from a north facing wall and the waste air is led out from the roof or opposite wall.

Other methods are acceptable, so long as they fall within the guidelines laid out by the Building Regulations (Example: D2: Finland 2003, extract shown below), or in accordance with your local directives and regulations governing indoor climate and building ventilation.

The diagram shows how to determine the distance between the outside feed into the house and the waste from the house.



EXHAUST AIR CLASSIFICATION OF LIVING AREAS

The leading of waste air from a building is based on the following, exhaust air classification

- Class 1** Exhaust air which contains few impurities. The impurities are mainly from people or structures. Air is suitable for return air and transfer air.
- Class 2** Exhaust air which contains some impurities. The air is not used as return air of other premises but can be lead for example to the toilet and washing room as transfer air.
- Class 3** Exhaust air from premises where high humidity, processes, chemicals and smells essentially lower the quality of exhaust air. The air is not used as return air or transfer air.
- Class 4** Exhaust air which contains ill-smelling or unhealthy impurities considerably more than the acceptable contents of the indoor air. The air is not used as return air or transfer air.

Examples of exhaust air class of living areas

- Class 1** Office rooms and small adjoining storage spaces, customer service and teaching premises, meeting and business premises which are non-odorous.
- Class 2** Living rooms, dining recesses, coffee kitchens, shops, warehouses of office buildings, dressing rooms and restaurant premises where smoking is forbidden.
- Class 3** Toilets, washing rooms, saunas, apartment kitchens, distribution and teaching kitchens, copying premises of drawings.
- Class 4** Professionally used fume cupboards, grilles and target exhaust air from kitchens, car garages and driving tunnels, handling rooms of paints and solvent, dirty wash laundries, store rooms of waste food, chemical laboratories, smoking rooms, hotel and restaurant premises where smoking is permitted.

(Finland's building regulations D2 2003)

TARGET VALUES FOR AIR FLOWS

Target values for air flows in the living areas.

EXTRACT AIR

Kitchen	20	l/s
Bathroom	15 –17	l/s
Toilet	10 –12	l/s
Clothing room	3 –4	l/s
Hobby room	0,7	l/s, m ²
Dressing room	2,0	l/s, m ²
Washroom	15 –17	l/s
Cleaning cupboard	4,0	l/s, m ²
Utility room	15 –17	l/s

SUPPLY AIR

Living room	8 –17 l/s	0,5 l/s, m ²
Bedroom	5 –8 l/s	0,7 l/s, m ²
Sauna	8 –17 l/s	2,0 l/s, m ²
Separate dining recess		0,5 l/s, m ²
Hobby room		0,7 l/s, m ²
Dressing room		2,0 l/s, m ²

KITCHEN VENTILATION

A normal cooker hood is installed over the kitchen stove. The hood should be used only when cooking. It is still necessary to install an extract vent, connected into the general ventilation system. The extract air volume should be 20 l/s. The cooker hood should not be connected to the Fenix ventilation unit.

If needed the cooker hood can be connected to the Fenix ventilation unit exhaust air duct, for instance in high-rise buildings where it is difficult to install a separate duct for the cooker hood. Use of separate cooker hood or a combination of a cooker hood and an extractor is recommended to ensure sufficient suction effect.

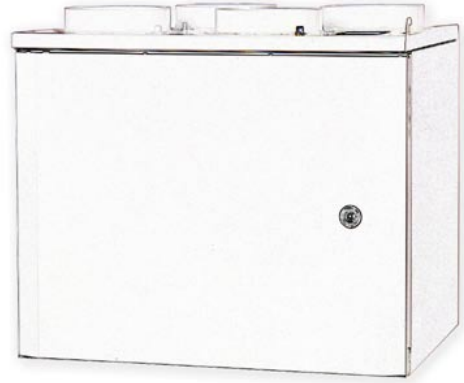
INSTALLATION

INSTALLATION PARTS

STANDARD PARTS

1. Fenix ventilation unit
2. Wall mounting bracket
3. MCC control panel

①



EXTRA EQUIPMENT

4. Spare filter EU5

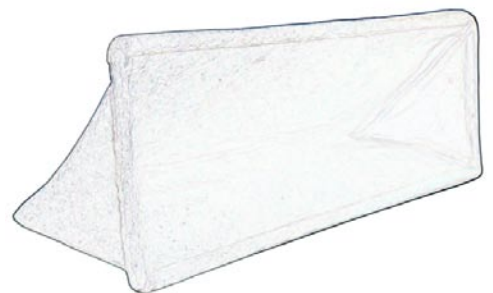
③



ADDITIONAL EQUIPMENT

5. Mounting plate for ceiling installation
6. Fine filter EU7 cassette

④

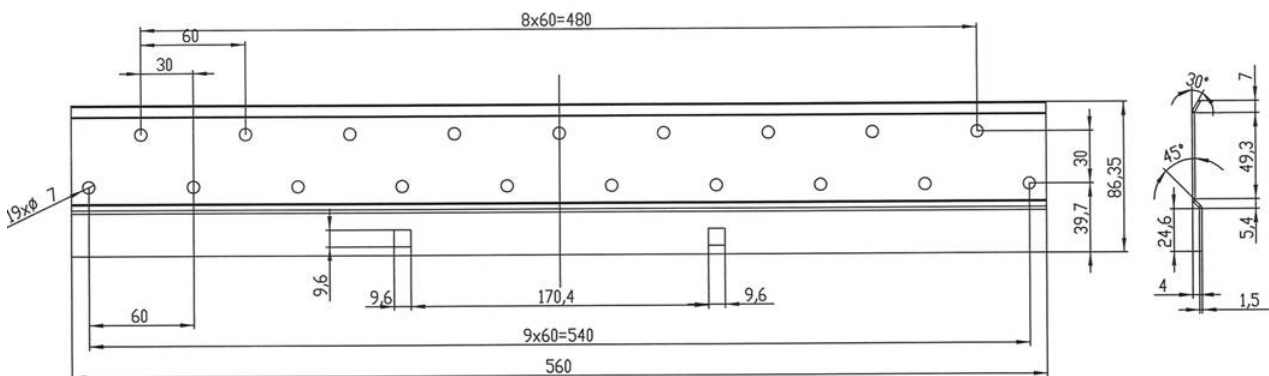


INSTALLATION

The unit should be installed on the wall or in the ceiling of a warm or half warm room (over +5 °C). The location can be for example a scullery or utility room, however, not the garage (a separate fire area). The unit must be drained. There is a drain outlet (1/4" inner thread) in the bottom of the unit. At the time of delivery, the outlet is plugged.

Phases of installation (installation on the wall):

- A1 Mark and cut the holes in the ceiling.
- B1 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.
- C1 Fasten the wall bracket with screws to the wall (picture C1). Install an insulation board between the wall and the unit to reduce the transfer of machine noise or vibration. The insulation also keeps the unit in a vertical position.
- D1 Lift the unit onto the bracket and fasten to the wall with two screws from inside the unit (pictures D1).
- E1 Connect the ducts to the tubes on top of the unit. It is recommended that silencers be installed to the exhaust air and supply air ducts. Silencers, see page 7.
- F1 Drain the unit. Connect a pipe between the drain outlet (1/4" inside thread) and the nearest floor drain or water trap of a sink. Connecting the unit directly into the sewage system is not allowed. The drainage must always be done through a water trap, otherwise the condense water will not be removed when the fans are on.

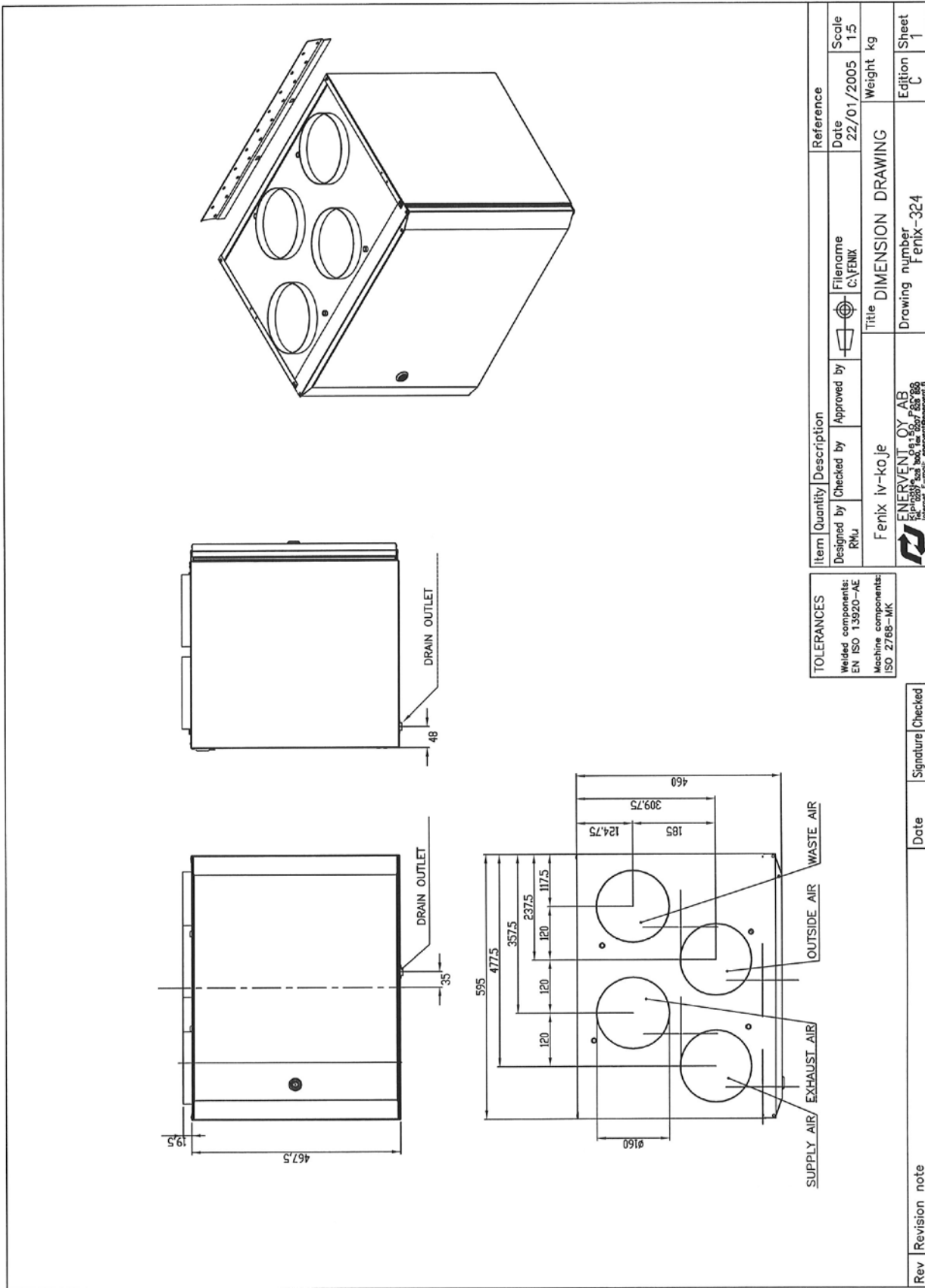


Picture C1. The wall bracket



Pictures D1. Securing the fastening with two screws

Fenix dimension drawing (wall mounting), left handed



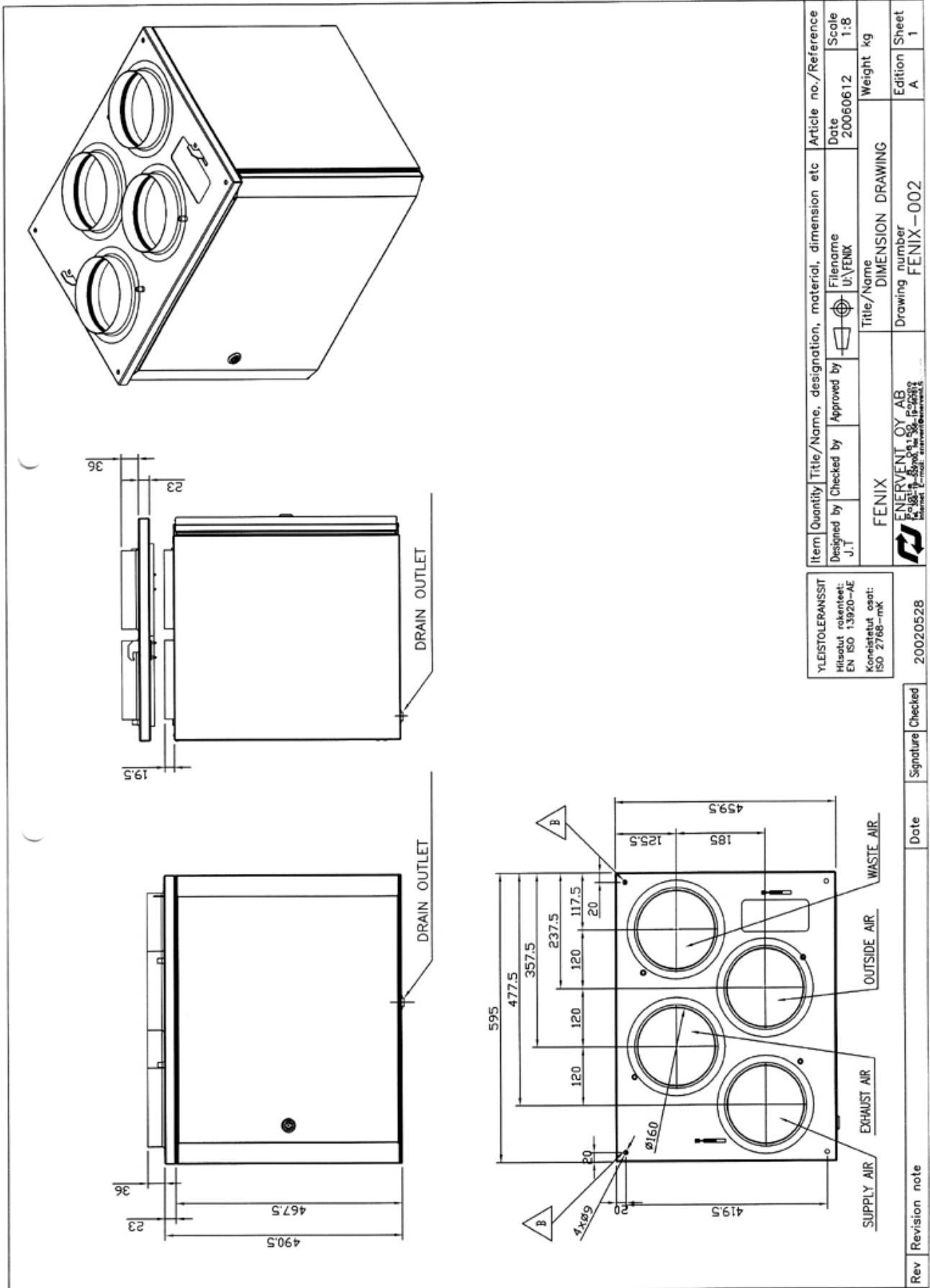
Item	Quantity	Description	Reference
Designed by	RMu	Checked by	Approved by
Fenix iv-ko je			RMu
TOLERANCES Welded components: EN ISO 13920-AE Machine components: ISO 2768-MK			Title DIMENSION DRAWING
Designed by RMu Checked by Approved by File name C:\FENIX			Date 22/01/2005
Designed by RMu Checked by Approved by File name C:\FENIX			Weight kg
Designed by RMu Checked by Approved by File name C:\FENIX			Edition C
Designed by RMu Checked by Approved by File name C:\FENIX			Sheet 1

Rev	Revision note	Date	Signature	Checked

Phases of installation (installation in the ceiling):

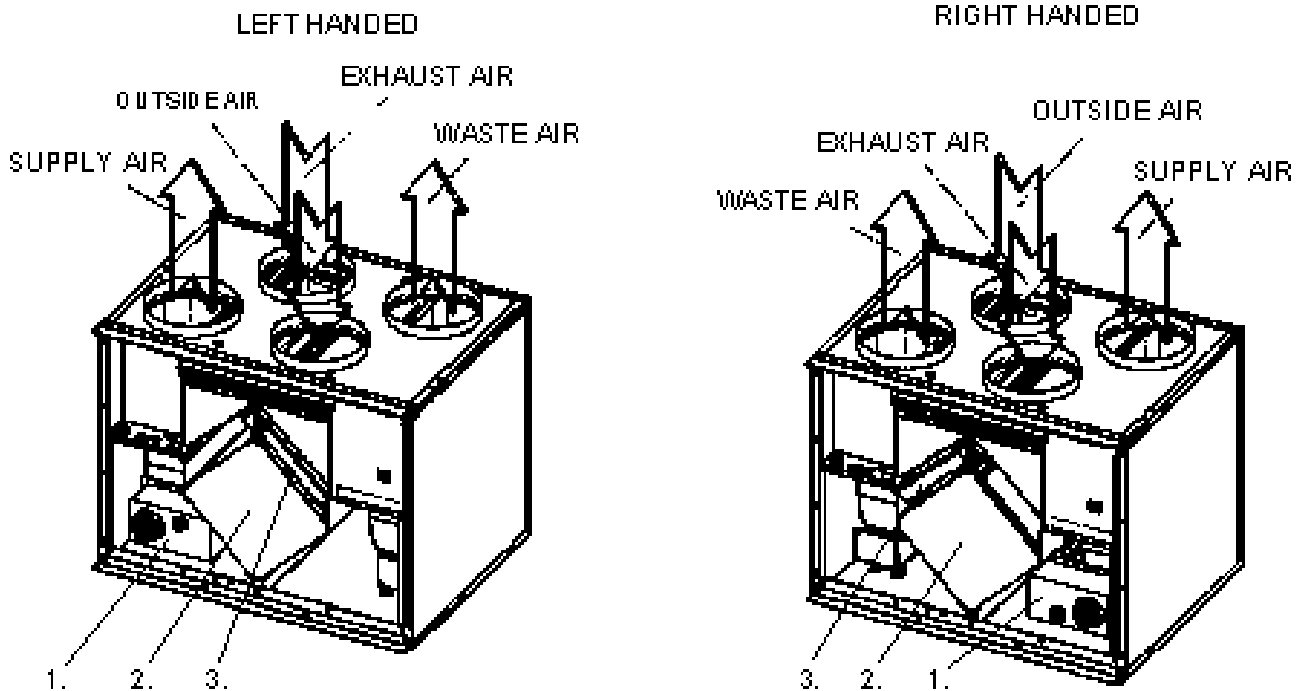
- A. Cut the holes and install supporting rails in the ceiling. Fasten the mounting plate firmly. The steam barrier remains between the mounting plate and the supporting rails.
- B. Draw the ducts to the attic and connect them to the mounting plate.
- C. Lift the unit up to the mounting plate and fasten it with four machine bolts.
- D. It is recommended that silencers be installed to the exhaust air and supply air ducts. Silencers, see page 7.
- E. Drain the unit. Connect a pipe between the drain outlet ($\frac{1}{4}$ " inside thread) and the nearest floor drain or water trap of a sink. Connecting the unit directly into the sewage system is not allowed. The drainage must always be done through a water trap, otherwise the condense water will not be removed when the fans are on.

Fenix dimension drawing (ceiling mounting), left handed



CHANGING THE HANDEDNESS

The unit is delivered left handed from the factory. The handedness can easily be changed. The ceiling mounting plate is the same regardless of the handedness.



1. Moving the electrical heating coil:

The electrical heating coil must always be between the heat recovery and supply air fan.

- Detach the heating coil cable. It is connected with a bayonet socket.
- Unscrew the two fixing screws (crosshead).
- Fasten the heating coil with screws to the supply air fan fixing plate.
- Attach the heating coil cable.

2. Turning the heat exchanger:

In the back of the heat exchanger is a fixed by-pass channel that always must be on the outside air / supply air side.

The by-pass channel is opened by turning the by-pass damper preventing the outside air from flowing through the heat exchanger.

The by-pass channel is shut with the by-pass damper allowing the outside air to flow through the heat exchanger.

- Remove the by-pass damper from the outside air surface of the heat exchanger.
- Pull the heat exchanger out of the unit.
- Turn the heat exchanger 90° (1/4 lap) and push it back into the unit.
- Put the by-pass damper back in its new place.

3. Moving the fine filter:

If the unit is equipped with a F7 fine filter cassette, it needs to be moved to the outside air side when the handedness is changed.

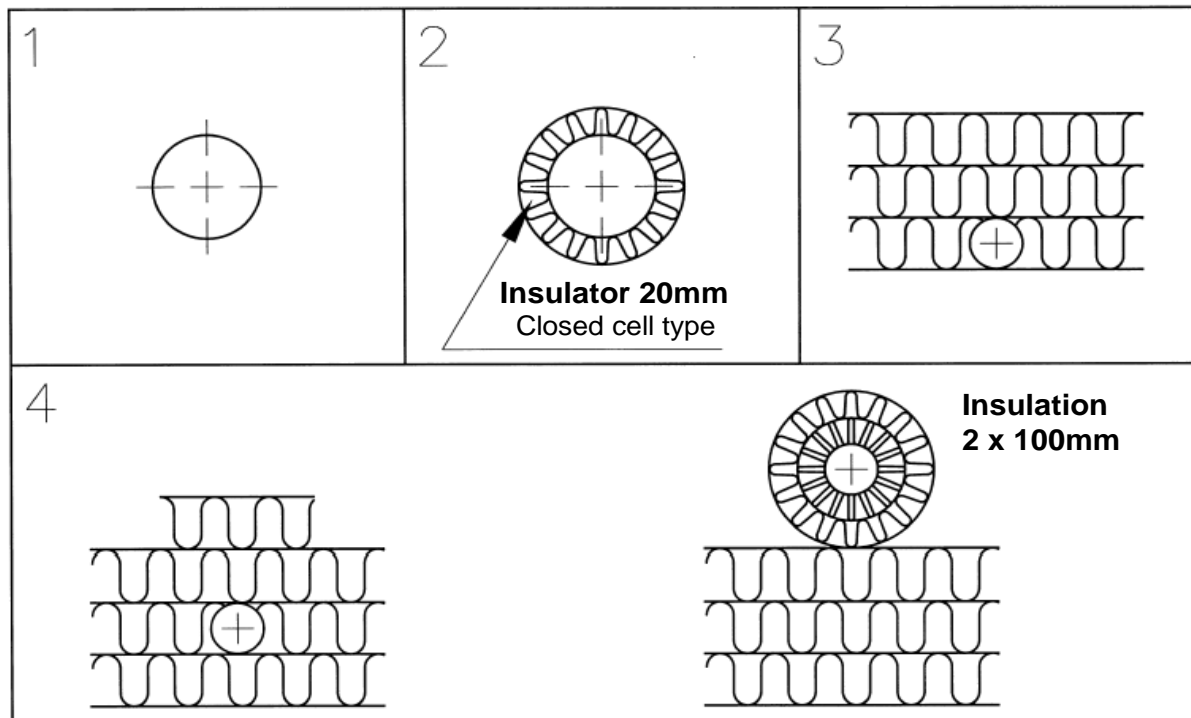
4. The duct connection markings:

Fasten new stickers to the duct connections so that the outside air and exhaust air / supply air and waste air change places.

OUTSIDE AIR ↔ EXHAUST AIR

SUPPLY AIR ↔ WASTE AIR

HEAT INSULATION OF THE DUCT SYSTEM



The figure shows different examples of ductwork insulation.

1. Exhaust air duct in warm state (indoor, no insulation).
2. Waste air duct and fresh air duct in warm state (indoor).
Insulation, for example Armaflex™
3. Exhaust air duct on attic under the insulation but above the steam barrier.
4. All air ducts on a cold attic. The waste or fresh air ducts must not be installed immediately above the steam barrier; there should be a mineral wool insulating layer of at least 100 mm between them.

OPERATION

Fan speed

Always keep the Fenix ventilation unit on and running. Fan speed (efficiency) is regulated with the knob on the control panel. There are four speeds available.

After heating

The supply air is heated after the heat exchanger with an electrical heating coil to the temperature set on the thermostat. The heating coil is equipped with an automatic over heating protector and a manually set off temperature limiter.



MCC control panel

Freeze protection of the heat exchanger

Freezing of the heat exchanger is prevented by limiting the waste air temperature to +2...+5°C. When the waste air temperature drops to +2°C the supply air fan stops, and the waste air temperature starts rising. When the temperature reaches +5°C the supply air fan starts again.

By-pass damper

The summer by-pass is used when heat recovery from the exhaust air is not needed (when the outside temperature is over +12...15°C).

The winter damper is used when heat recovery from the exhaust air is wanted (when the outside temperature is below +12°C).



Winter damper in use (left handed Fenix)



Summer by-pass in use (left handed Fenix)

MAINTENANCE

Fenix does not require any mechanical maintenance, only changing of the filters periodically and cleaning of the heat exchanger and fans (when needed). The power supply to the unit is cut when the service hatch is opened.

The unit has one hinged door in the front

The door can be lifted off the hinges.

Cleaning the heat exchanger. When changing the filters, check the condition of the heat exchanger. If cleaning is required, remove it from the unit and carefully wash through the air channels with a hand shower using a neutral detergent. 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!!

Cleaning the fans. When changing filters, also check the condition of the fans. If cleaning is needed the fans are removed from the device and cleaned with a toothbrush or compressed air.

Changing of filters. The recommended time between F5 filter changes is max six (6) months. The F5 filter can be cleaned between changes by vacuuming, which makes it possible to keep the same filters for up to one year. The F7 filter should be changed every 12 months. Draw the filters from the device and replace with new filters. The F7 filter is installed on the outside air side. Vacuum cleaning the inside of the device is recommended at this point. Close the door carefully.

Regulating the proportion of supply air and exhaust air. The exhaust air flow should be 5 - 10 % greater than the supply air flow. This is performed by accurately measuring the air flow through all of the valves with for example a thermo anemometer and by adjusting them to the correctly calculated values. A correctly balanced system returns a good heat recovery rate and keeps a slight negative pressure in the building. The negative pressure keeps the humidity away from the structures. When an adjustment is made, the filters must be clean and all the valves and outer grilles must be in place. There must not be an insect net over the fresh air grille.

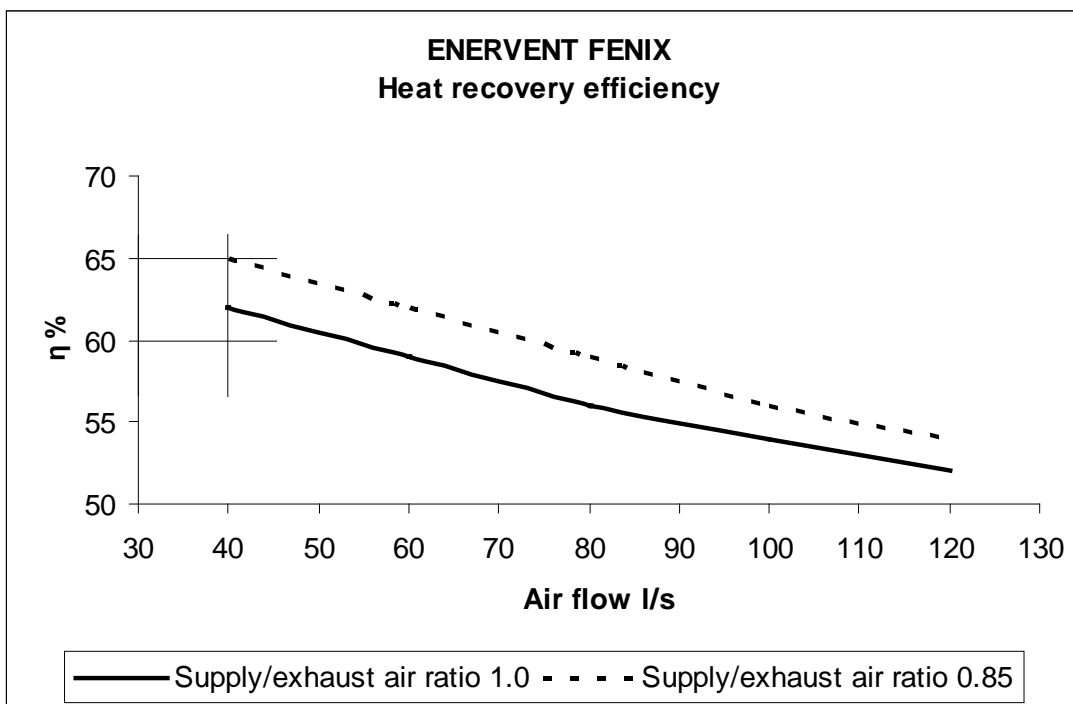
TO BE OBSERVED DURING OPERATION

Always ventilate with a high enough efficiency! Otherwise the indoor humidity will rise too high and condensation will form on for instance cold window surfaces.

The recommended relative humidity for indoor air is 40 ...45 % (room temperature 20...22 °C). At these levels condensation will not form and the humidity is at a healthy level. By monitoring the humidity of the indoor air with a humidity sensor, the ventilation can be increased when the humidity rises over 45%. Alternatively the ventilation can be reduced if the humidity of the indoor air falls below 40%.

Change the filters often enough! During the winter time the extract air filter becomes dirty more quickly than the fresh air filter. In this case the extract air flow will decrease, which then leads to a rise in the humidity, and also the decline of the incoming air temperature.

HEAT RECOVERY EFFICIENCY



FAILURE SEARCH AND TROUBLE SHOOTING

SUPPLY AIR TOO COLD

Reason

- * Supply air temperature set too low
- * The exhaust fan has stopped
- * The exhaust air filter is blocked
- * Exhaust air valves settings incorrect
- * Heat insulation of ducts inadequate

Action

- ☛ Set higher value on the thermostat
- ☛ Contact a service man
- ☛ Change the exhaust air filter
- ☛ Contact a service man
- ☛ Check the insulation thickness of the supply and exhaust air ducts and add insulation if needed.

REDUCED AIR FLOW

Reason

- * Filters are blocked
- * Speed selector switch of the fans has been turned down
- * Blockage in the fresh air grille
- * Fan wings dirty

Action

- ☛ Change the filters
- ☛ Select higher speed
- ☛ Clean the outer grille
- ☛ Clean the fans

INCREASED OPERATING SOUND LEVEL

Reason

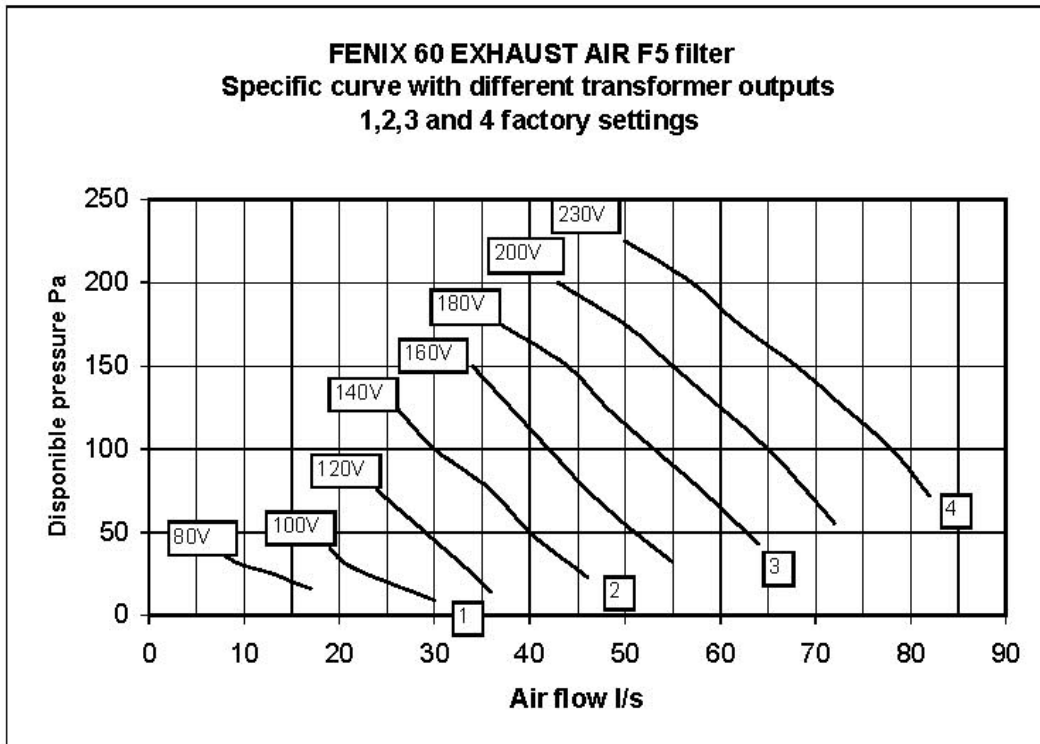
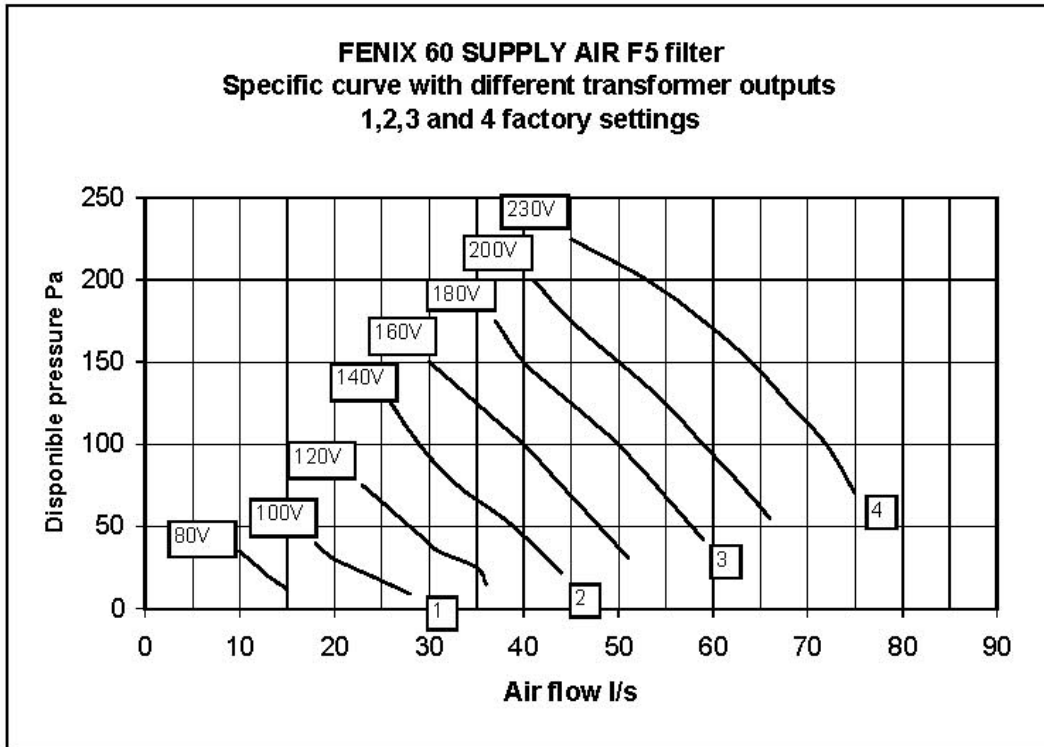
- * Filters blocked
- * Outer grilles are blocked
- * Fan bearings faulty
- * Fan wings dirty

Action

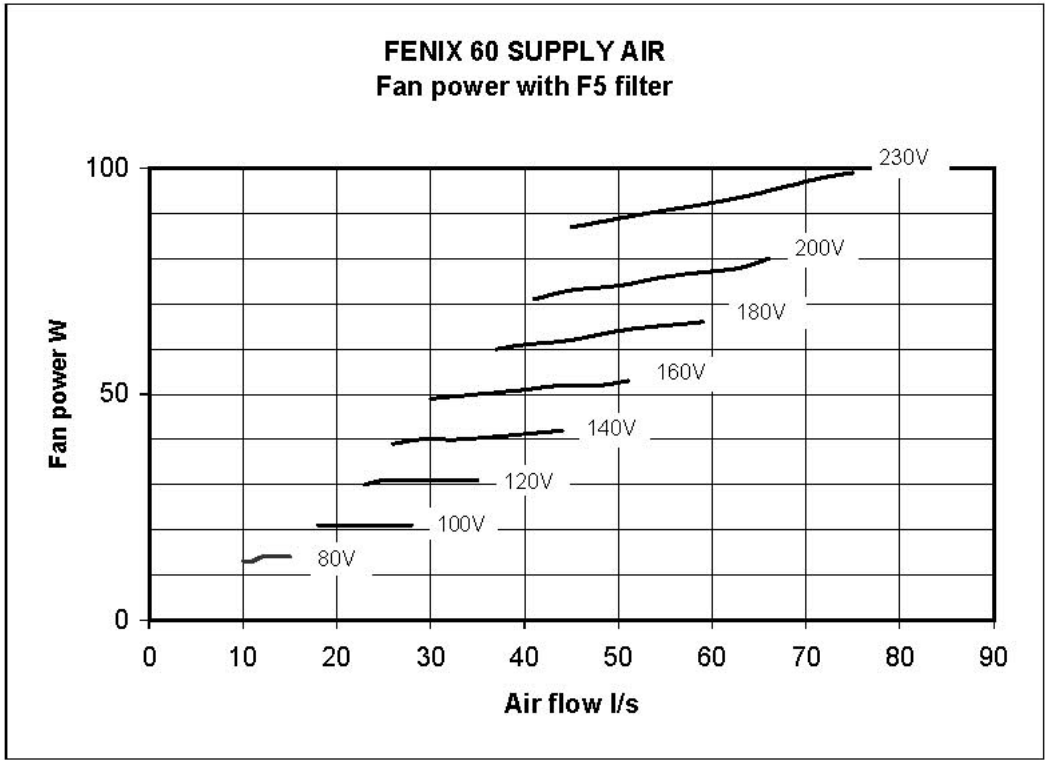
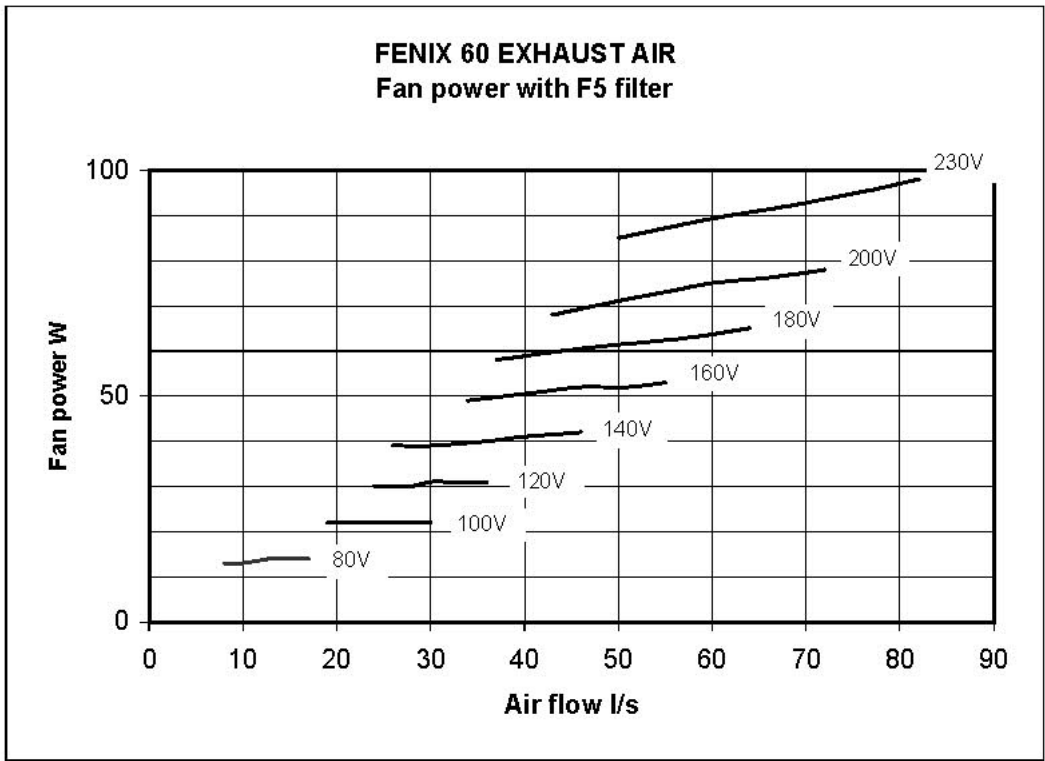
- ☛ Change the filters
- ☛ Clean the outer grille
- ☛ Change bearings / contact service
- ☛ Clean the fans

TECHNICAL DATA

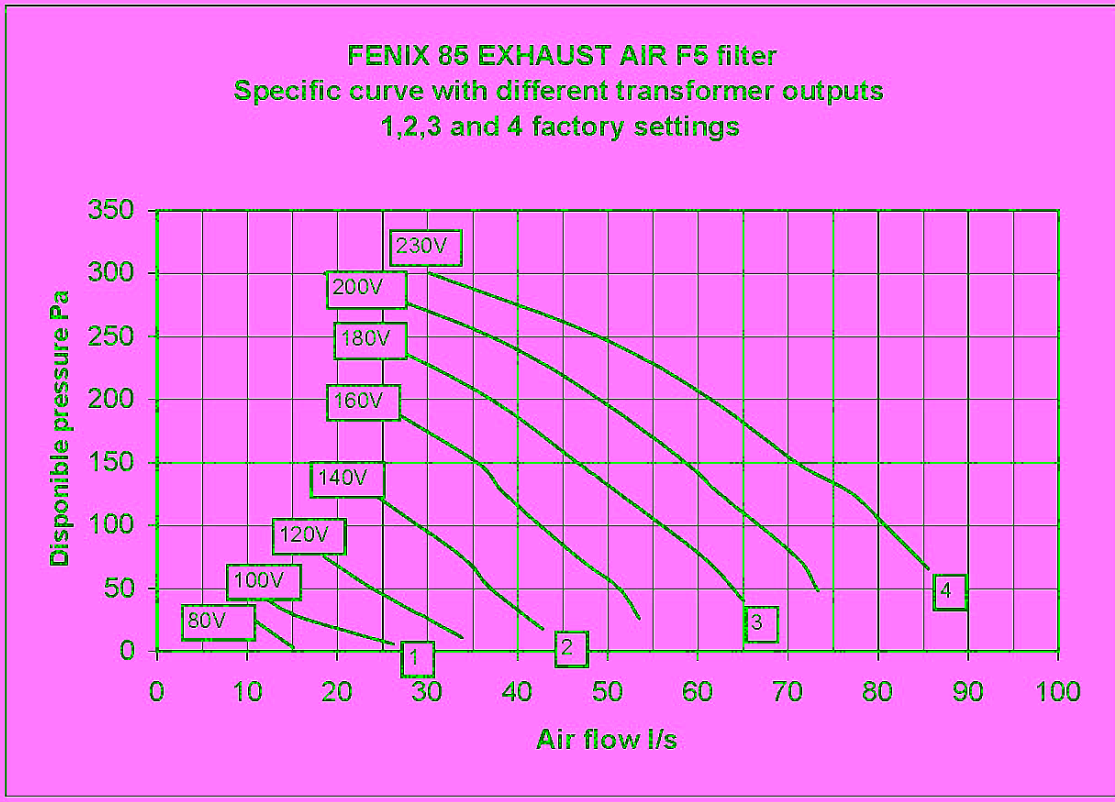
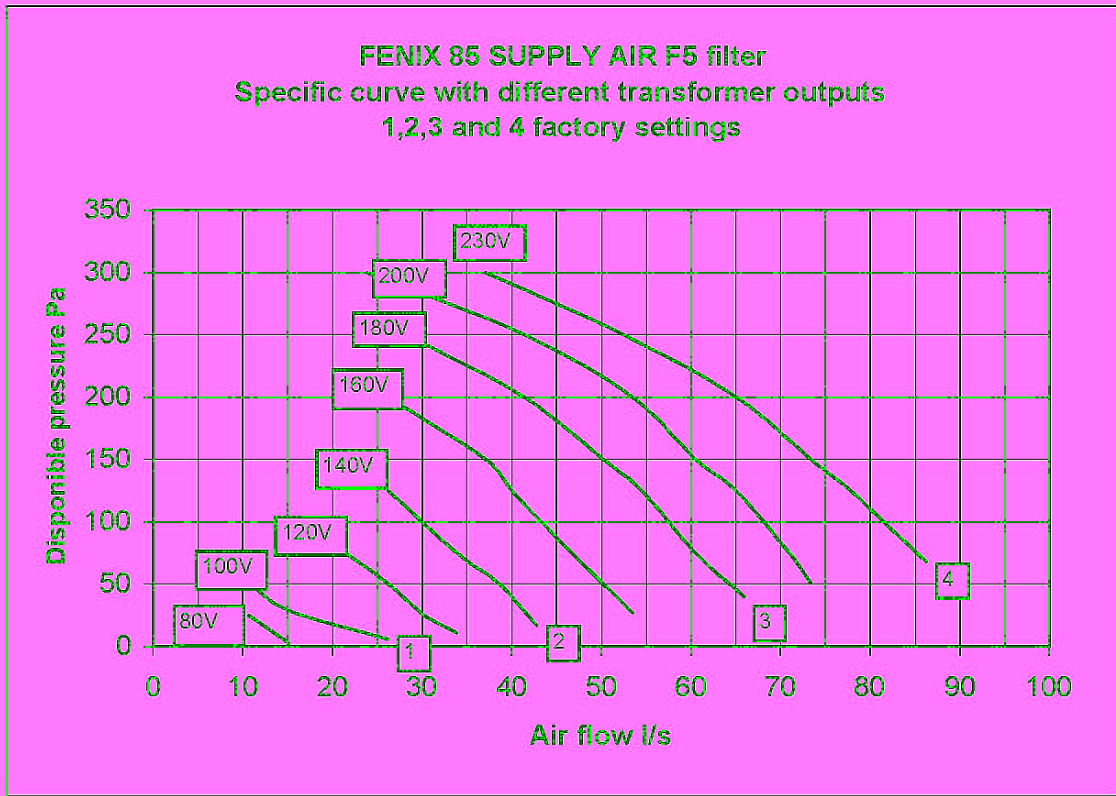
CHARACTERISTICS FENIX 60



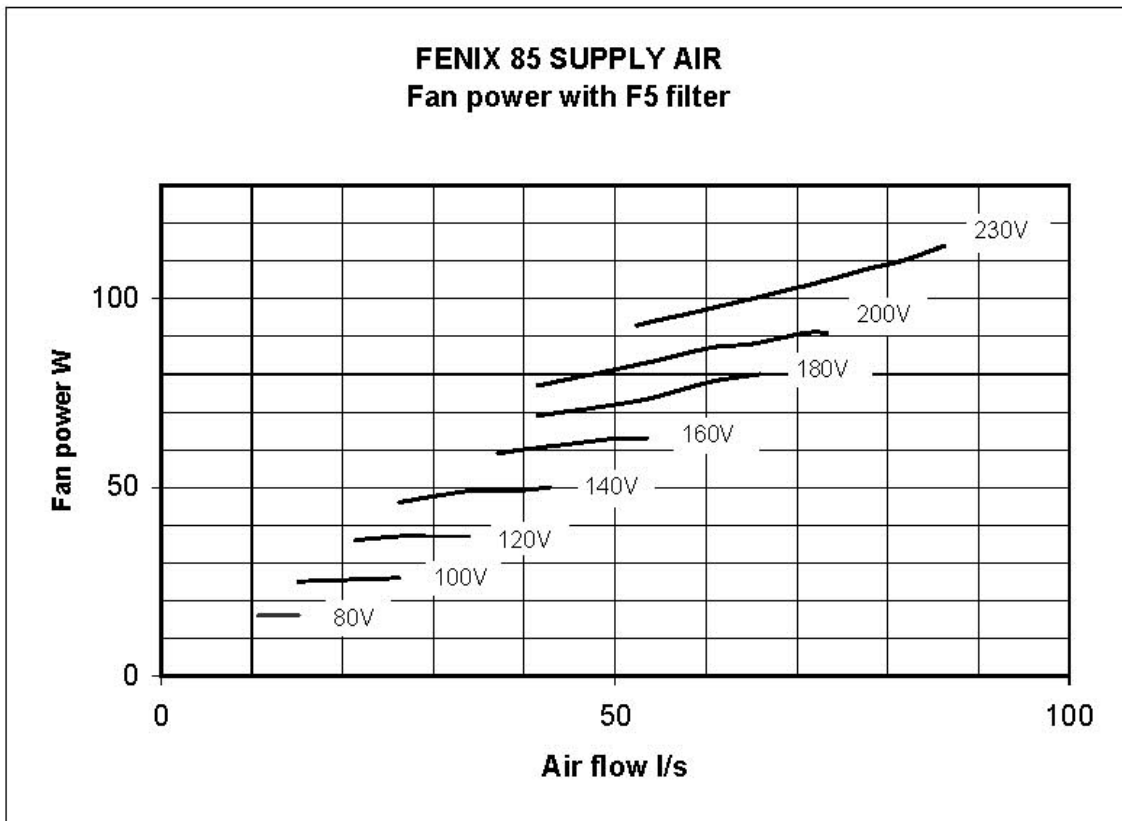
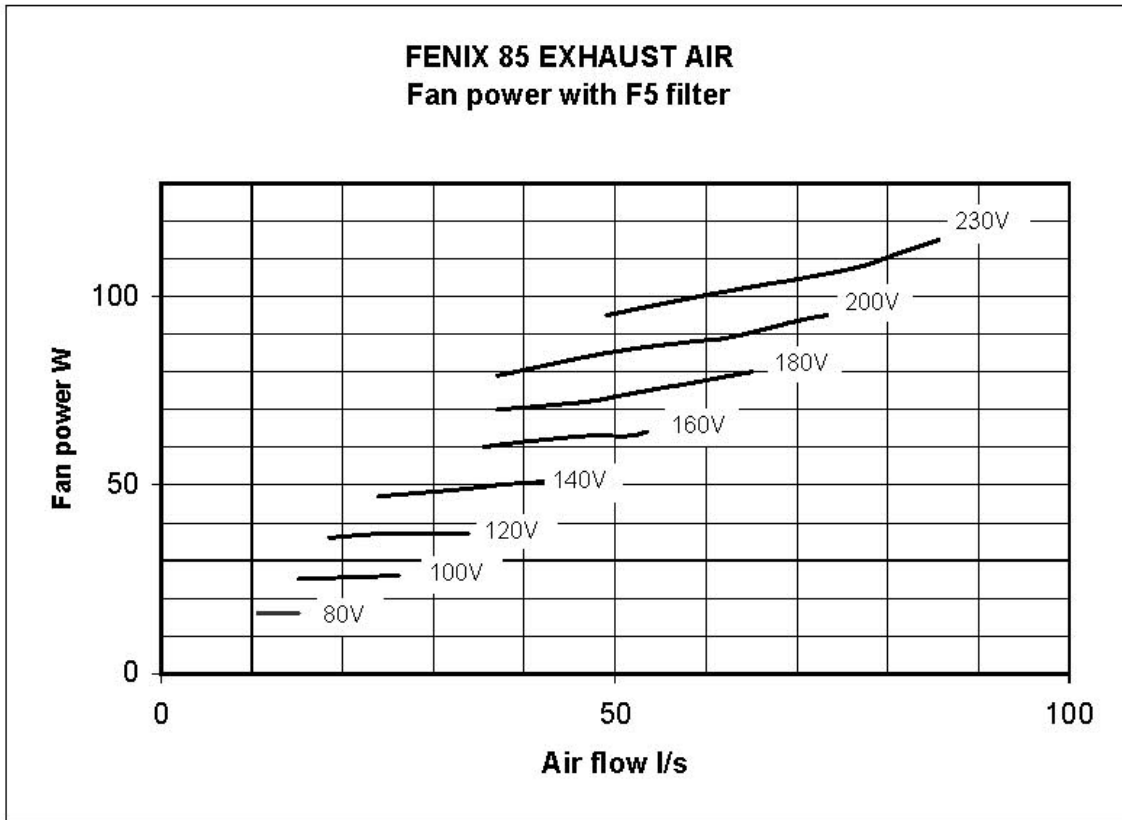
FAN EFFICIENCY RATES FENIX 60



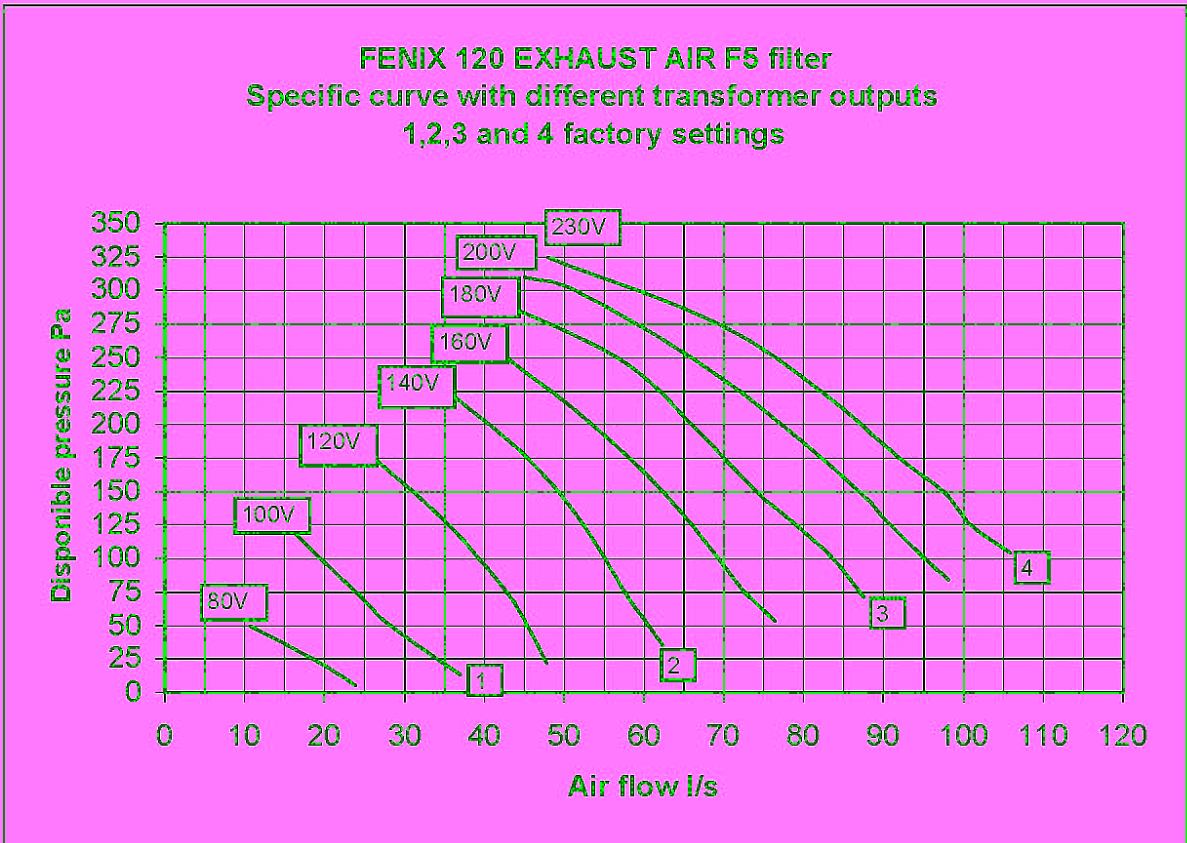
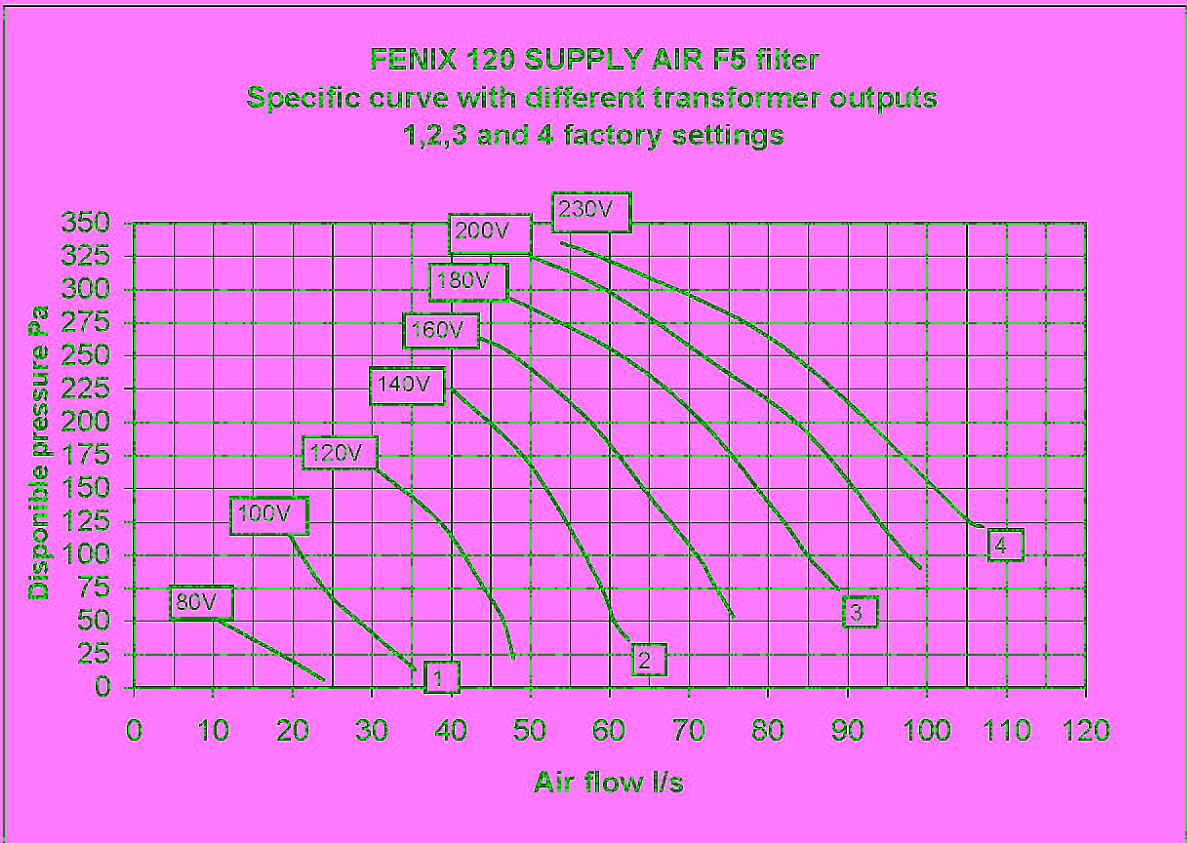
CHARACTERISTICS FENIX 85



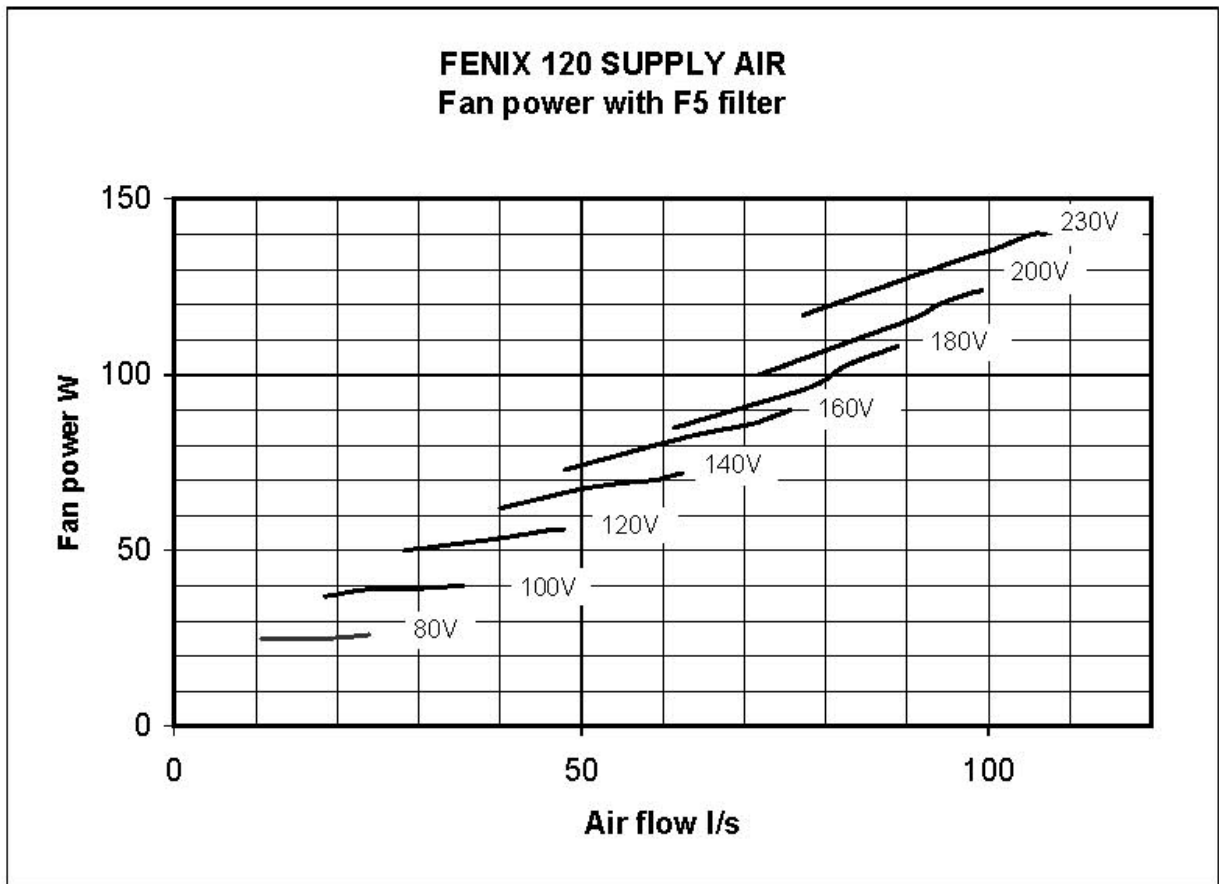
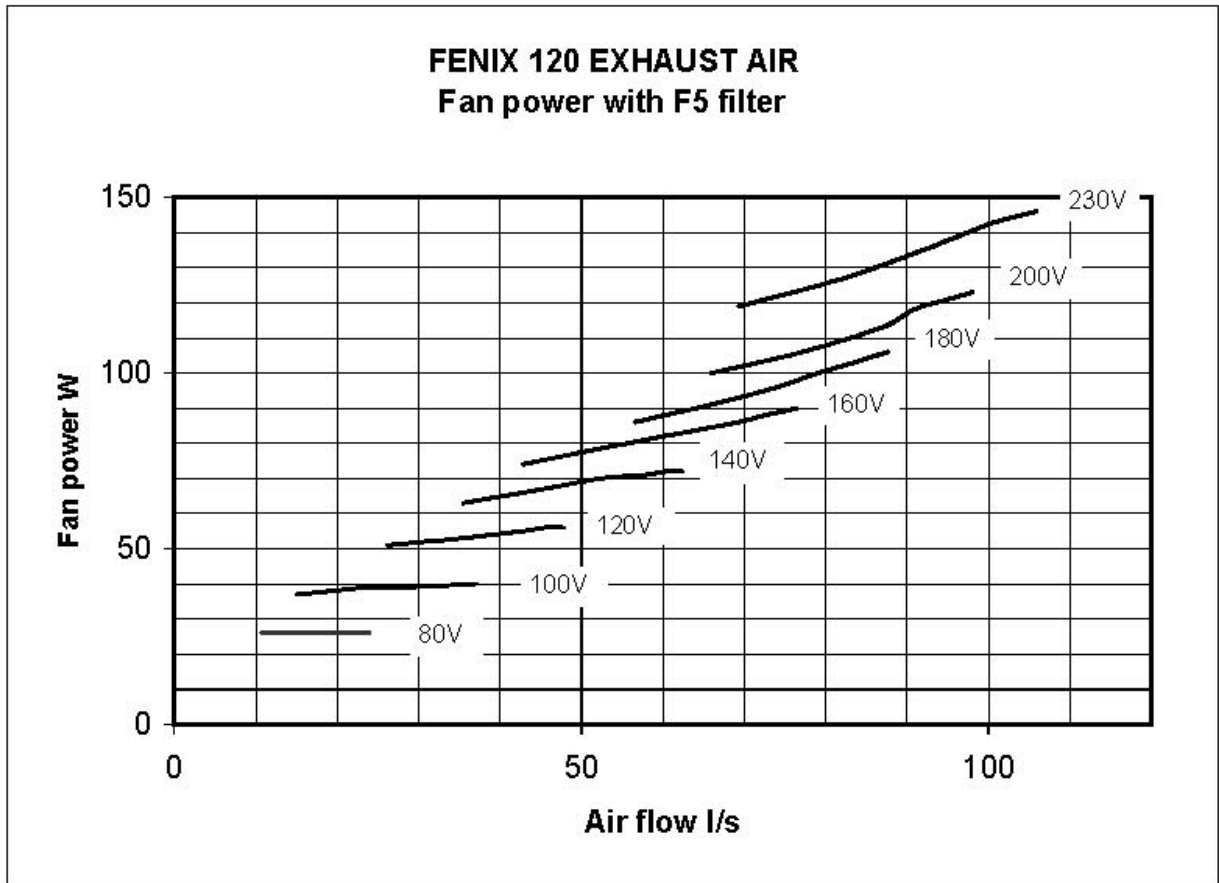
FAN EFFICIENCY RATES FENIX 85



CHARACTERISTICS FENIX 120



FAN EFFICIENCY RATES FENIX 120



TECHNICAL DATA Fenix 60, 85 and 120

Dimensions

Height	468 mm
Width	595 mm
Depth	460 mm

Current

230 V / 50 Hz 1 phase, fuse 10 A, fast

Glass tube

F1	T1,6A	5x20mm (fans, control)
F2	T5A	5x20 mm (electr. heater)

Fans

Exhaust	Model	60	85	120
	Rating	105	130	185 W max.
	Current	0,46	0,57	0,80 A
	Heat protection			
Supply	Model	60	85	120
	Rating	105	130	185 W max.
	Current	0,46	0,57	0,80 A
	Heat protection			

Electrical supply air heater

1000 W

Duct diameter

All models: Ø 160 mm

Drain

(¼" inside thread)

Weight

45 kg

Sound level

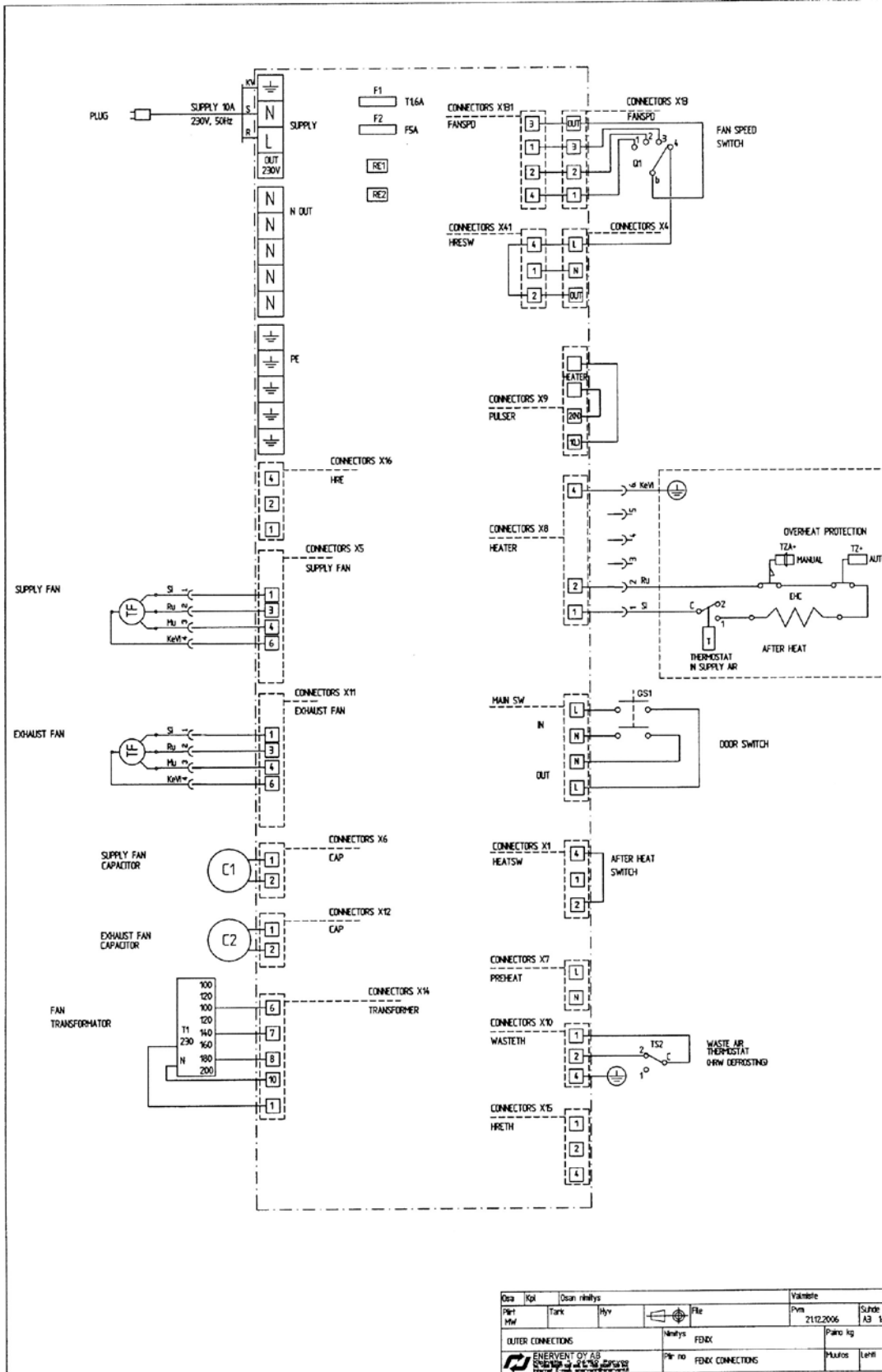
Sound levels from the unit in a room where it is installed. Voice absorption of 10 m².

Fan speed	Fenix 60	Fenix 85	Fenix 120	
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Position 1	24	26	29	dB(A)
Position 2	31	33	34	dB(A)
Position 3	35	37	41	dB(A)
Position 4	40	43	47	dB(A)

WIRING DIAGRAMS

WIRING DIAGRAM



EU DECLARATION OF CONFORMITY

We declare that our products follows the provisions of low voltage directive (LVD) 73/23/EEC, 93/68/EEC, electro magnetic compatibility directive (EMC) 89/336/EEC and machine directive (MD) 98/37/EEC.

Manufacturer: Enervent Oy Ab
Manufacturer's contact: Kipinätie 1, 06150 PORVOO, Finland
Tel +358 207 528 800, fax +358 207 528 844
enervent@enervent.fi, www.enervent.fi

Description of the product: Ventilation unit with heat recovery

Trade name of the product: Enervent Fenix

Representatives for the products in the region of EU:

Entropic Limited
Unit 3 Block F
Maynooth Business Campus
Maynooth Co. Kildare
Ireland
tel +353 (0)1 6106170

The products are in conformity with the following standards:

LVD EN 60 335-1 (1994) +A1 (1996), +A11 (1995), +A12 (1996), +A13 (1998), +A14 (1998)

MD EN 292-1 (1991), EN 292-2 (1991) +A1 (1995)

EMC EN 55014-1 (1997), EN 61 000-3-2 (1995) ja EN 61 000-3-3 (1995)
EN 55014-2 (1997)

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

Product is CE-marked year 2006.

Porvoo 1st January 2006

Enervent Oy Ab

Tom Palmgren / R&D manager