94210E-03
2005-10

FLEXIT L4 X W
L7 X W

E

User Manual

Air Handling Unit
Loft Models with
water-based heating

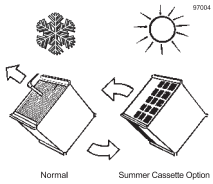
Contents

Symbols Used

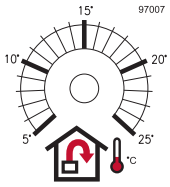
This product has a number of symbols that are used to label the product itself and in the installation and user documentation. Here is an explanation of some of the commonest symbols.

SUPPLY AIR

EXTRACT AIR



EXCHANGER/SUMMER CASSETTE



HEATING THERMOSTAT

DANGER! ELECTRICITY

DANGER! DO NOT TOUCH

EXHAUST AIR

OUTDOOR AIR

Symbols for units/water-based heating

SUPPLY AIR TRANSFORMER ADJUSTMENT - Normal speed

SUPPLY AIR TRANSFORMER ADJUSTMENT - Max. speed

EXTRACT AIR TRANSFORMER ADJUSTMENT - Normal speed

EXTRACT AIR TRANSFORMER ADJUSTMENT - Max. speed

Our products are subject to continuous development and we therefore reserve the right to make changes. We also disclaim liability for any printing errors that may occur.

1 Important Safety Instructions

To reduce the risk of fire, electric shock or injury, read all the safety instructions and warning texts before using the unit.

- This unit is only designed to handle ventilation air in buildings.
- It must not be used to extract combustible or flammable gases.
- Remove the power plug before commencing any service and maintenance work.
- Before you open the door, the unit must be dead and the fans must be given time to stop (min. 2 minutes).
- The unit contains heating elements that must not be touched when they are hot.
- The unit must not be operated without the filters being in place.
- Follow the user manual precisely.

To maintain a good indoor climate, comply with regulations and avoid condensation damage, the unit must never be stopped apart from during service/maintenance or in connection with an accident.

2. Functional Description

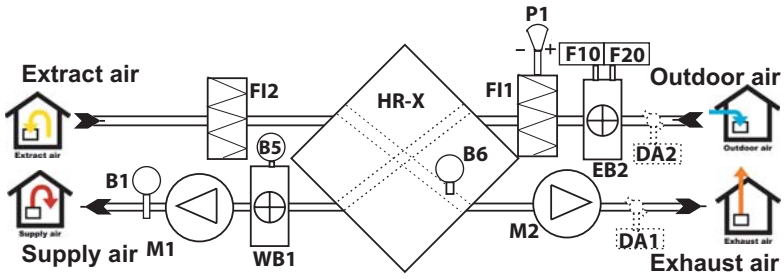
In the heat exchanger cassette **HR-X**, the cold outdoor air and the warm extract air "cross" each other without coming into direct contact with each other. With this principle, 60-70% of the heat in the extract air will be transferred to the supply air. In addition, a thermostat-controlled heating element **WB1** will ensure that the supply air has the desired temperature. This supply air is passed via ducts and valves to living rooms and bedrooms. The extract air is extracted either from the same room or via door gaps/overflow gratings to toilets and wet rooms. The used air is passed via a duct system back to the unit, emits heat as stated above and is blown out of the building via a roof hat or wall grating.

Heating Elements

The electric heating element is protected against overheating by an overheating thermostat **F20**, which switches off at 65°C. As an additional safety measure, the overheating thermostat **F10** switches off at 80°C. The overheating thermostats can be reset manually by pressing the white button. They are located at the front on the top of the unit. They are accessible by opening the doors and removing the plastic cover that covers the access opening. See the label. The RESET button is located on the innermost panel a little way inside the opening.

This is purely a ventilation system and not a heating system. The home must be heated in the normal manner. The heat gained from heat recovery must be seen in relation to a situation in which the extract air is blown right out of the home without recovery.

System Drawing



B1	SUPPLY AIR TEMPERATURE SENSOR
B5	TEMPERATURE SENSOR, WATER BATTERY
B6	THERMOGUARD
P1	PRESSURE GUARD, SUPPLY AIR FILTER
F10	OVERHEATING THERMOSTAT
F20	OVERHEATING THERMOSTAT
FI1	SUPPLY AIR FILTER
FI2	EXTRACT AIR FILTER
WB1	WATER BATTERY
EB2	PREHEATING ELEMENT
HR-X	HEAT EXCHANGER CASSETTE
M1	SUPPLY AIR FAN
M2	EXTRACT AIR FAN
DA1	DAMPER, EXHAUST AIR
DA2	DAMPER, OUTDOOR AIR

Frost Protection

The unit is fitted with a special thermoguard for maximum utilisation of the heat recovery function and maintenance of balanced ventilation.

The thermoguard has a sensor rod **B6** with a dual function. This is located in the exchanger cassette's extract air duct and has an NTC element to check the temperature and an indicator to register condensation water.

If the extract air is dry, the thermoguard will ensure that the unit works normally down to an outdoor temperature of approximately -15°C. At lower temperatures, it will produce an impulse to activate the frost protection function. This function will be repeated periodically until the exchanger cassette's temperature is sufficient to prevent freezing. If the extract air is damp, this function will start at an outdoor temperature of approximately - 8°C. The frost protection function operates as follows:

- The preheating element **EB2** is activated.
- When this does not produce sufficient frost protection, the speed of the supply air fan **M1** is reduced.

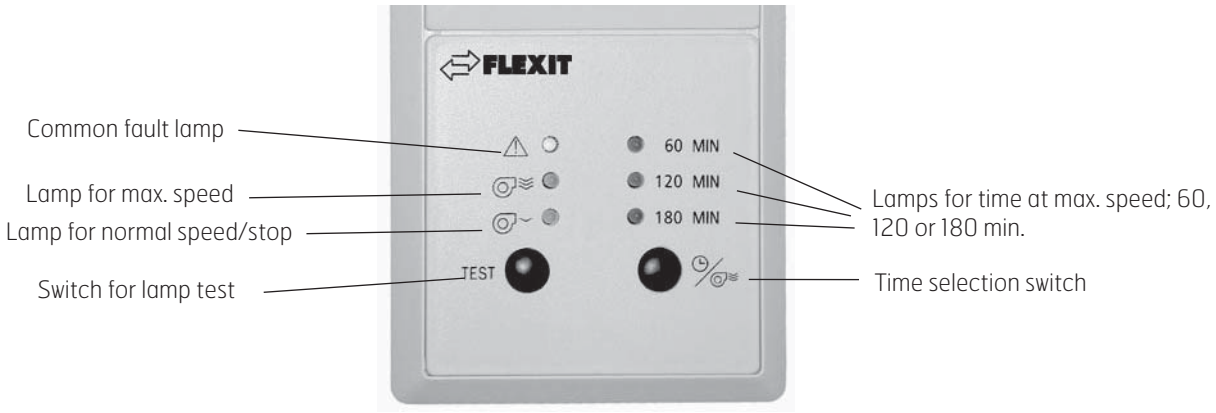
3 Operation – Control

The speed of the fans in the unit is controlled from a separately mounted SP40 control panel. Depending on the operating situation, the fan speed is set to the desired level.

NORMAL stage: Normal operating ventilation. This is the position for daily operation.

MAX stage: Used when increased ventilation is required in wet rooms or throughout the flat. Must be used during and for a while after showering and clothes drying, for example, to avoid condensation in the ducts.

3.1 SP40 Control Panel



The common fault lamp provides the following information

Green light:	Normal state
Red light, slow flash:	Filter must be replaced (provided that a pressure guard is installed)
Red light, fast flash:	Overheating thermostat triggered or thermoguard not connected/frost alarm triggered, water battery
Red light, permanently on:	Both above faults have occurred

Normal speed/stop

Choose between having normal speed or stop using microswitch no. 2 on the control card.
NB: Home units must not be stopped.

Max. speed

High forced speed is achieved by pressing the switch until the lamp for the desired forcing time lights up (60, 120 or 180 minutes). The fans will automatically revert to Normal speed when the time selected has expired.

When the TEST switch is pressed, all 6 lamps must light up.

4 Troubleshooting

FAULT	DO THE FOLLOWING
If the fans are not working or cannot be adjusted	• Check that the power plug is correctly inserted in the power point. • Check that the fuses in the electrical cabinet are switched on. • The overheating thermostat(s) (item no. 7/ Chap. 6 General Drawings) may have been triggered. Remove the white plastic cover and press in the white reset button. • Check that the thermoguard (item no. 3) is connected.
If the supply air feels too cold	• Check that a summer cassette is not loaded. • The heating thermostat (item no. 4) can be set to a higher temperature. • Check that the thermoguard (item no. 3) is connected. • The overheating thermostat(s) (item no. 7) may have been triggered. Remove the white plastic cover and press in the white reset button. • Check that the water-based heating system is working • If the temperature of the hot water in the heating battery (item no. 6) decreases and the temperature sensor B5 senses a temperature lower than 8 °C, the fans will stop and the extract air and outdoor air dampers will close to ensure that the water battery does not freeze. The warning lamp on the SP40 will then flash fast red. It will then not be possible to start the unit again before the temperature has risen to 11 °C. The system must also be reset using the reset button on the control card.
If the air flow rate has been seriously reduced	• The filters (item nos. 1, 2) may be clogged by dirt. Clean or replace them. See under “Cleaning - Maintenance”. • The grille in the outdoor air cap may be clogged. See under “Cleaning - Maintenance”.

If none of this helps, please contact your supplier for service. Please state the serial number on the rating plate inside the unit (open the door).

5 Cleaning – Maintenance

Before opening the door of the heat recovery system, switch off the heat, let the fans continue for three minutes to remove hot air, remove the power from the unit and wait 2 minutes before opening the doors.

5.1 Filters

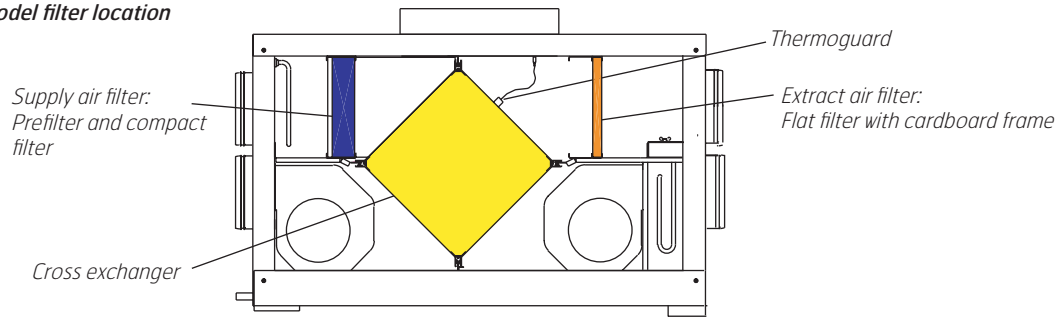
Why change the filters?

Clean, filtered air is essential to ensure that your ventilation system contributes to a healthy indoor environment. Therefore, the unit is fitted with replaceable filters. It is very important to change them when they become clogged. Otherwise, the system may be damaged.

When should the filters be changed?

In general, the filters need to be changed once a year, preferably in the autumn (after the pollen season). In areas with a lot of dust and contamination, the filters should be changed in the spring and autumn.

Loft model filter location



How?

1. Switch off the unit as explained at the top of the page.
2. Pull the extract air filter (1), which consists of an F3 prefilter (coarse filter) and an F7 compact filter (fine filter), straight out of the rail. Insert a new filter in the same place
3. Pull the supply air filter (2), which is a flat filter with a cardboard frame, out of the rail and insert a new filter in the same place. The supply air filter is an F3 filter (coarse filter).
   The filter set must be installed in the following order, from the outside: steel grille – prefilter – compact filter.
   The supply air filter is a bag filter on the L7.

Order no. for a complete set of filters: L4 X W- 12318, L7 X W- 12313

5.2 Other Maintenance

Exchanger cassette: Should be checked roughly once a year for dust and dirt in the air ducts. First remove the thermoguard (3) and carefully pull the cross exchanger (10) out. If cleaning is required, place it in a bowl with warm soapy water (NB! not soda) and finally flush it through with warm water. Clean the thermoguard separately with a dry cloth. When removing/installing the exchanger cassette, it is important to ensure that both the cassette and the sensor rod are located correctly and that the cable plug is inserted in the contact. The thermoguard must be located 6 cm from the top of the exchanger cassette and in the centre of the exchanger cassette. Located on the side facing the extract air filter.

Valves and duct system: The valves should be cleaned at least once a year.
The duct system should be cleaned at least every 10 years.

Outdoor air intake: Check once a year that the grille is not clogged with leaves, dust and dirt.

Roof hat: Check once a year that the drainage gap at the bottom is not clogged with leaves. This applies only if the system has a roof hat.

Summer operation: During the warm part of the year (outside the heating season), there is no need to recover heat. The exchanger cassette can be replaced with a summer cassette that is available as an accessory. This is pushed into place where the cross exchanger (10) is located. This allows the outdoor air to enter the building directly without heat recovery taking place. The thermoguard (3) must then be transferred to the summer cassette. Its location is shown on the label. NB! Heating must be switched off at the same time.

Remember to reverse this again in the autumn.

Drainage: At the base of the unit there is a condensation water drain (13) that conducts condensation water to the waste water drain. It is important that this drain is always open, in good condition and well insulated where it is exposed to frost. It is also recommended that you keep an eye on the drainage system to avoid any leaks occurring.

Fans: Item nos. 8 and 9/Chap. 6. General Drawings. The fans normally do not need to be inspected.
If necessary, they can be cleaned with a small brush and compressed air, if possible.
NB! Do not use water. Disassemble the fans as follows:

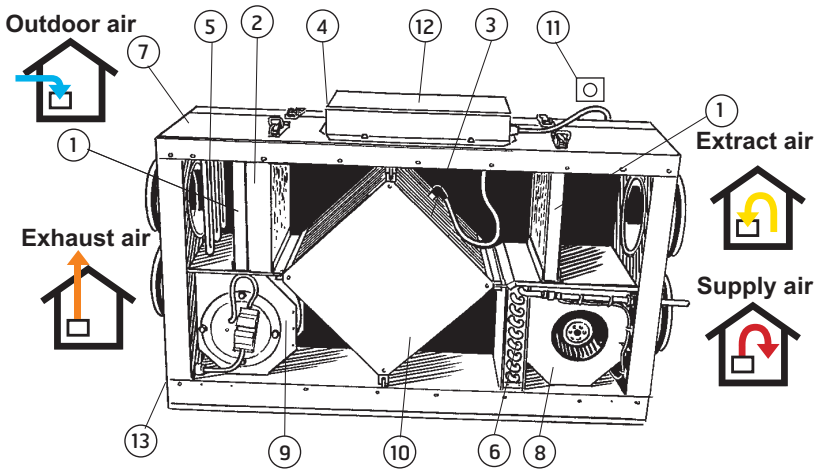
L4 X W: Pull out the quick-release contacts. The fan with the visible quick-release contact is loosened by unscrewing the 4 screws in the round motor plate and carefully pulling the motor out of the motor housing. For the fan with the visible intake opening, the screw for the rail in the side wall must be removed and the rail pushed down as far as possible. The entire fan housing can then be released and turned around. The fan can then be released with 4 screws, like the first fan.

L7 X W: The fan with the visible quick-release contact is loosened by unscrewing the 3 screws in the end of the fan housing and carefully pulling the fan out. For the fan on which the screws are on the opposite side, the entire fan housing must be loosened by unscrewing the mounting rails (2 screws) on each side of the fan, thus releasing it. The fan can then be released with 3 screws, like the first fan. The fan can be disassembled most easily if the exchanger cassette is removed first.

Lack of cleaning as prescribed will increase the risk of fire in the event of an accident.

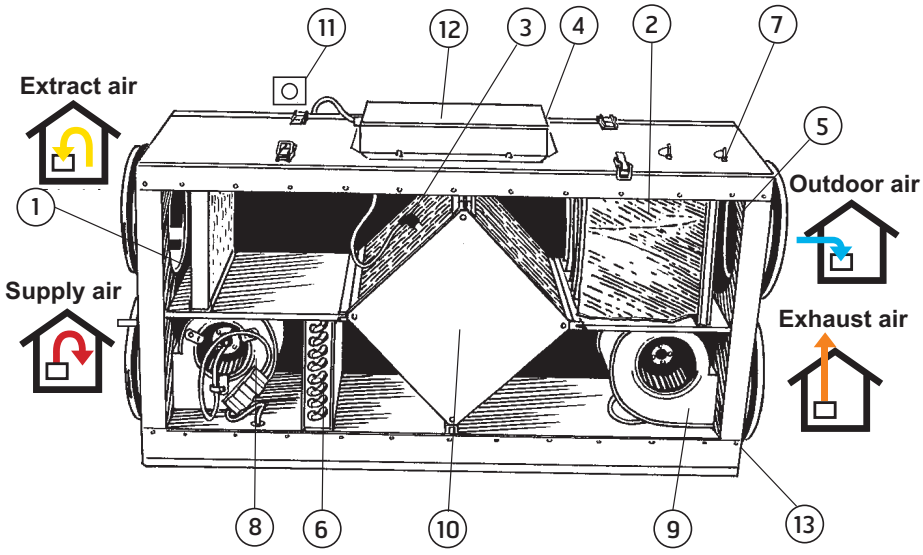
6 Overview Drawings

6.1 Overview Drawing, L4 X W



Item no.	Part
1	G3 extract air filter
2	G3 + F7 supply air filter
3	Thermoguard
4	Heating adjustment
5	Preheater
6	Water battery (Reset)
7	Preheating overheating thermostat (Reset)
8	Supply air fan
9	Extract air fan
10	Cross exchanger, L4
11	Control switch
12	Control unit
13	Drainage outlet

6.2 Overview Drawing, L7 X W



Item no.	Part
1	G3 extract air filter
2	F7 supply air filter
3	Thermoguard
4	Heating adjustment
5	Preheater
6	Water battery (Reset)
7	Preheating overheating thermostat
8	Supply air fan
9	Extract air fan
10	Cross exchanger, L7
11	Control switch
12	Control unit
13	Drainage outlet

7 Technical Data

7.1 Technical Data, L4 X W

Rated voltage	230 V/50 Hz
Fuse	10 A
Rated current, total	5.7 A
Rated power, total	1305 W
Rated power, fans	2 x 165 W
Rated preheating power	975 W
Fan type	F-wheel
Fan motor control	Transformer
Max. fan speed	2230 RPM
Standard automatic control	SP40
Filter type (SUP/EXTR)	F7/G3
Filter dimensions, SUP (WxHxD)	255x220x50 mm
Filter dimensions, EXTR (WxHxD)	255x220x20 mm
Weight	36 kg
Duct connection	Dia. 160 mm
Height	605 mm
Width	1000 mm
Depth	350 mm

7.2 Technical Data, L7 X W

Rated voltage	230 V/50 Hz
Fuse	10 A
Rated current, total	6.4 A
Rated power, total	1460 W
Rated power, fans	2 x 230 W
Rated preheating power	1000 W
Fan type	F-wheel
Fan motor control	Transformer
Max. fan speed	2120 RPM
Standard automatic control	SP40
Filter type (SUP/EXTR)	F7/G3
Filter dimensions, SUP (WxHxD)	394x223x250 mm
Filter dimensions, EXTR (WxHxD)	394x223x20 mm
Weight	66 kg
Duct connection	Dia. 250 mm
Height	625 mm
Width	1170 mm
Depth	465 mm

7.3 Water Battery, L4 X W

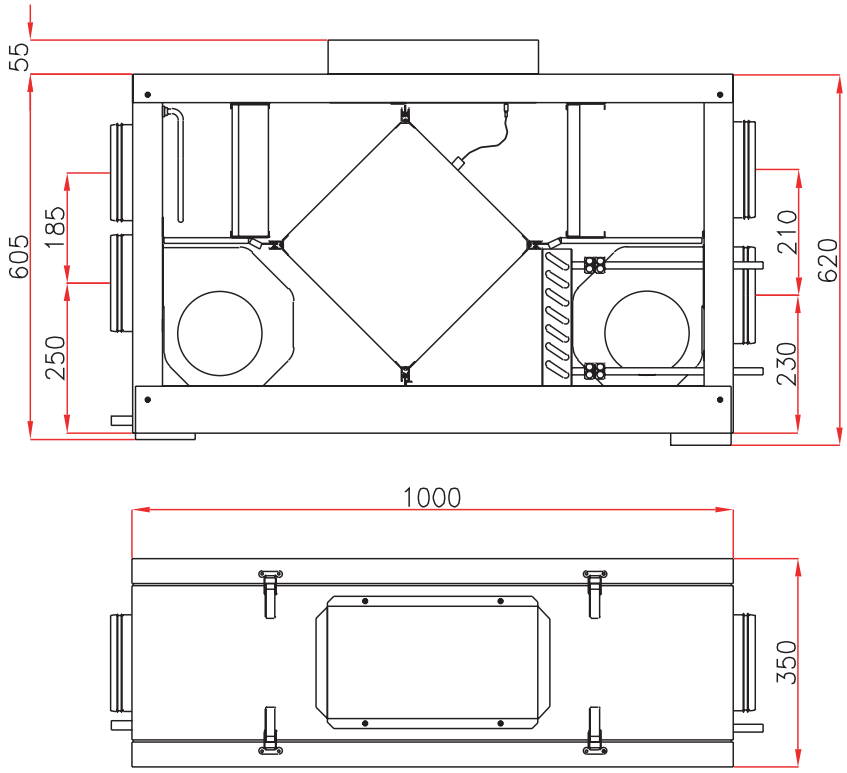
Water side					
Water temperature, in °C	80.0	70.0	60.0	50.0	40.0
Water temperature, out °C	60.0	50.0	40.0	30.0	30.0
Water flow rate l/s	0.05	0.04	0.03	0.02	0.05
Pressure drop, water side kPa	7.1	5.3	3.7	2.3	7.4
Capacity					
Battery capacity kW	4.56	3.81	3.06	2.30	2.18
Temperature increase °C	38.4	32.1	25.8	19.4	18.4
Physical dimensions					
Pipe union, dia. mm	12	12	12	12	12

7.4 Water Battery, L7 X W

Water side					
Water temperature, in °C	80.0	70.0	60.0	50.0	40.0
Water temperature, out °C	60.0	50.0	40.0	30.0	30.0
Water flow rate l/s	0.07	0.05	0.04	0.07	0.08
Pressure drop, water side kPa	12.4	9.4	6.7	13.6	17.8
Capacity					
Battery capacity kW	5.87	4.94	4.01	3.61	2.93
Temperature increase °C	28.8	24.3	19.8	17.8	14.5
Physical dimensions					
Pipe union, dia. mm	12	12	12	12	12

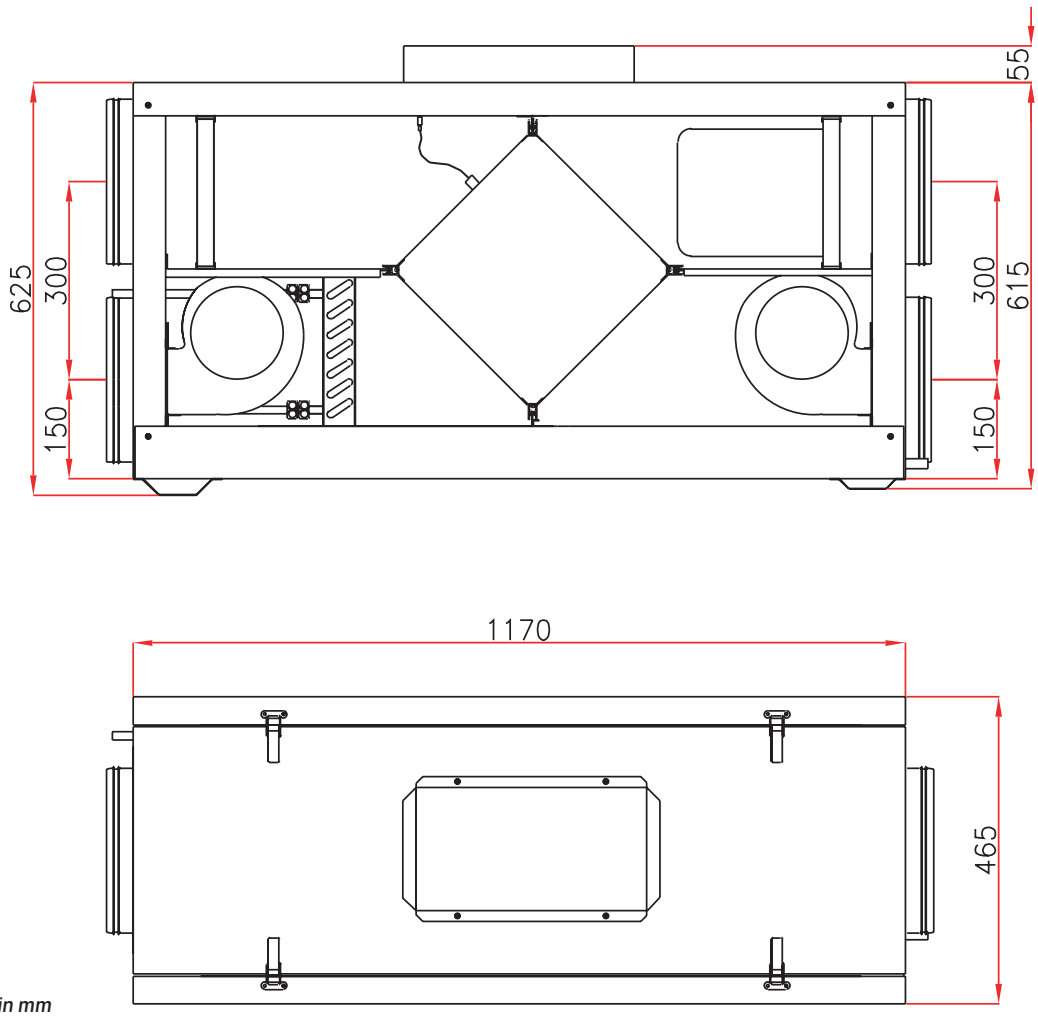
8 Dimensioned Drawings

L4 X W



**All measures in mm*

L7 X W



**All measures in mm*

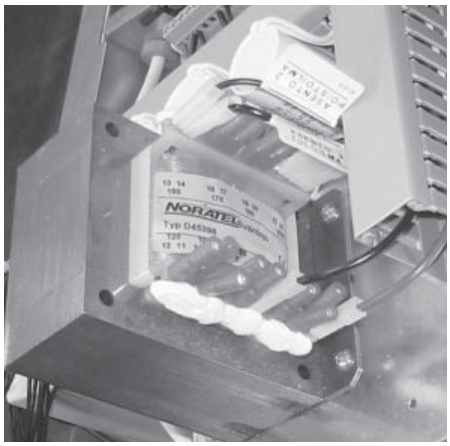
9 Adjusting the Unit

Before opening the door of the heat recovery system, remove the power from the unit and wait 2 minutes before opening the doors.

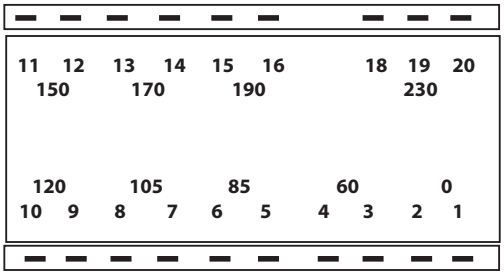
9.1 Adjustment

The speed of the unit at the normal stage must be set to the voltage specified in the "Documentation of Ventilation Data" form that is enclosed with the ventilation drawings from the company responsible for project planning. Open the door and unscrew and remove the cover of the automatic control compartment. The transformer is then visible (see picture below) and the cables marked ~ (as shown on page 2) can be switched over to the specified voltage level.

	Extract air	Supply air
L4 X W/L7 X W: The automatic control compartment is behind the cover at the bottom of the unit. Factory setting	150 V	170 V



Transformer

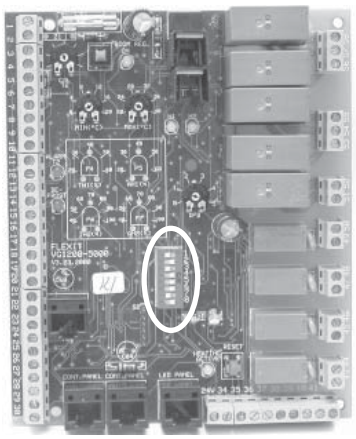


Connection alternatives on the transformer (label/connection points)

9.2 Control Card Adjustment Options

Dipswitch no.	OFF	ON
1	**Water battery**	Electrical battery
2	**No function**	Fan stops with nighttime temperature reduction
3	**No function**	Supply air temperature reduced by 3 °C with night-time temperature reduction
4	No function	**Speed reduced to LOW with night-time temperature reduction**
5	**No function**	Fan speed reduced with low supply air temperature
6	**Preheater**	Rotor/bypass
7	**No function**	Step-switched electrical battery
8	**Thermoguard with ISDN contact**	Thermoguard with phono plug/ rotor unit

***Bold type** shows the standard factory setting*



Dipswitch location on control card (the settings vary from unit to unit)

10 CE Declaration of Conformity

This declaration confirms that the products meet the requirements in the following Council Directives and standards:
89/336/EEC Electromagnetic compatibility (EMC)
73/23/EEC Low-voltage Directive (LVD)
NEK EN 60335-1 :94 + A11:95 + A1:96 + A1:96 + A12:96
54014:93, EN 61000-3-2/-3:95, EN 55014-2:97

Manufacturer:	FLEXIT AS, Televeien 15, N-1870 Ørje
Equipment group:	Ventilation units for installation in ducts
Type:	**VG 400: 1997** **VG 700: 1997**
The product is CE-marked:	Shown in the list above

FLEXIT AS 02/05/2001

Pål J. Martinsen
General Manager

The right to give notice of lack of conformity applies to this product in accordance with the existing terms of sale, ***provided that the product is correctly used and maintained.*** *Filters are consumables.*

The symbol on the product or on its packaging indicates that this product may not be treated as household waste. Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment.
By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human healthe, which could otherwisw be caused by inappropriate waste handeling of this product. For more detailed information, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

Notice of lack of conformity as a result of incorrect or defective installation must be submitted to the installation company responsible.
The right to give notice of lack of conformity may lapse if the system is used incorrectly or maintenance is grossly neglected.

Flexit AS, Televeien 15, N-1870 Ørje **www.flexit.no**