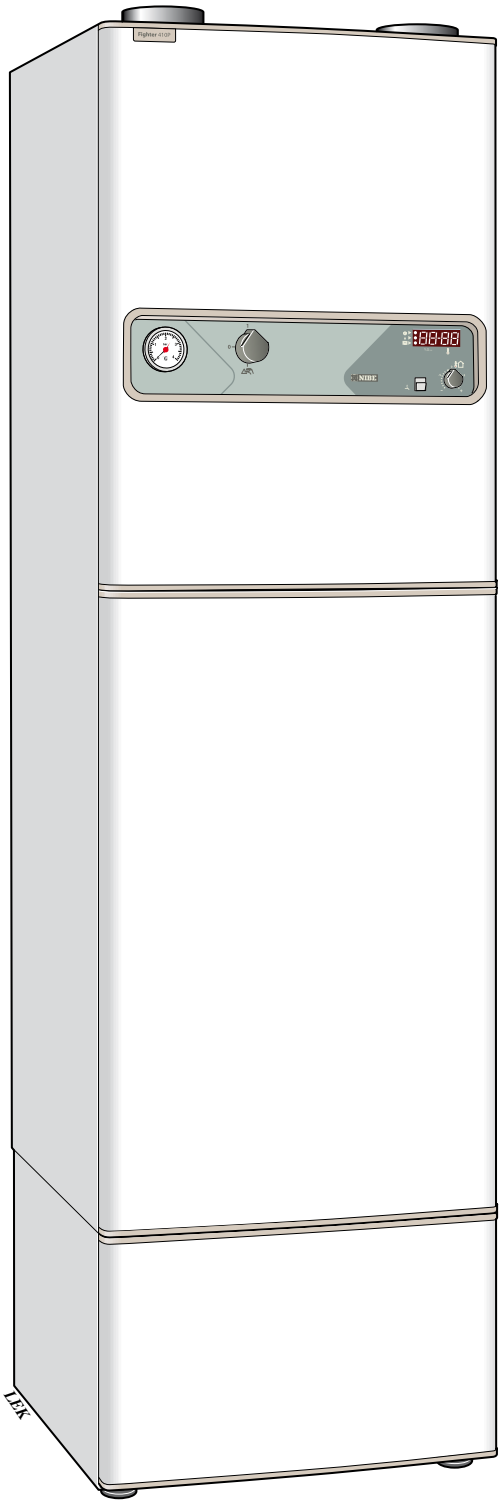
MOS GB 0846-3
FIGHTER 410P
511379

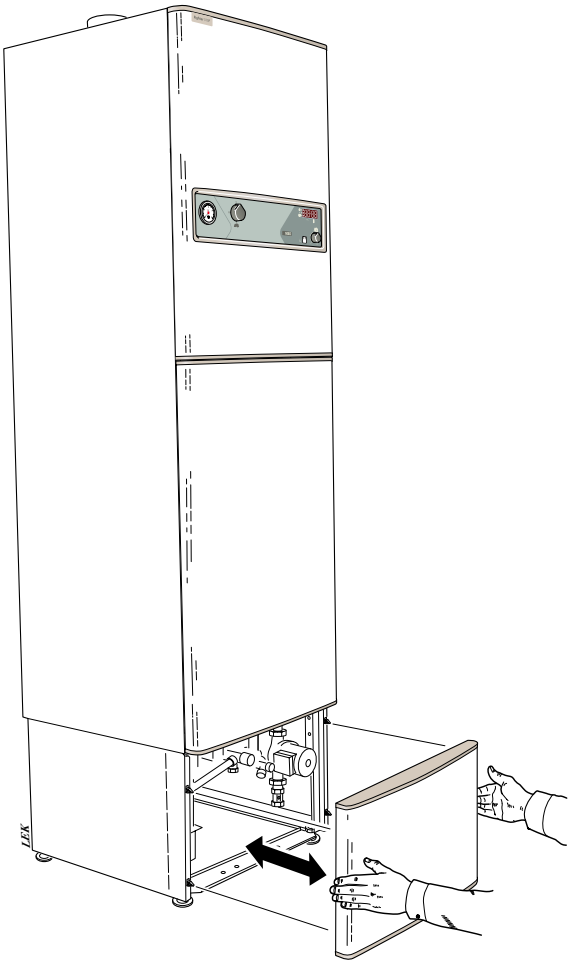
INSTALLATION AND MAINTENANCE INSTRUCTION

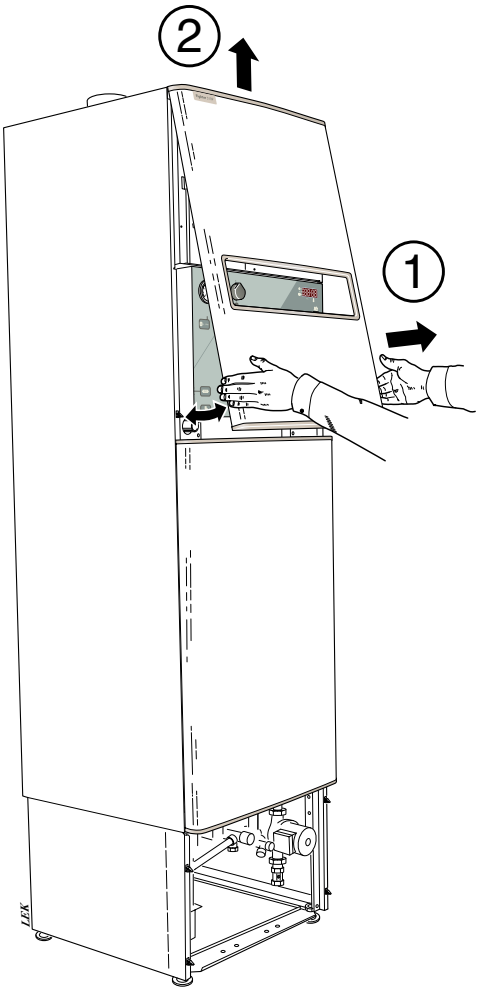
FIGHTER 410P

230V



NIBE

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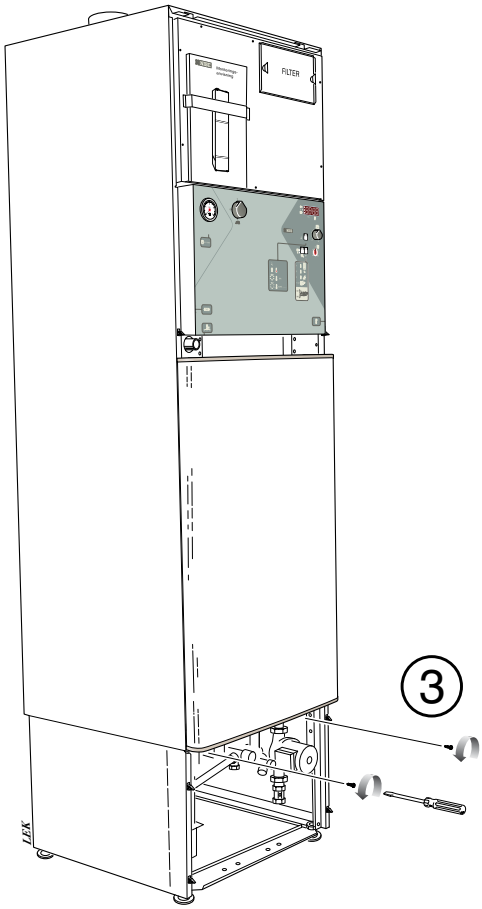
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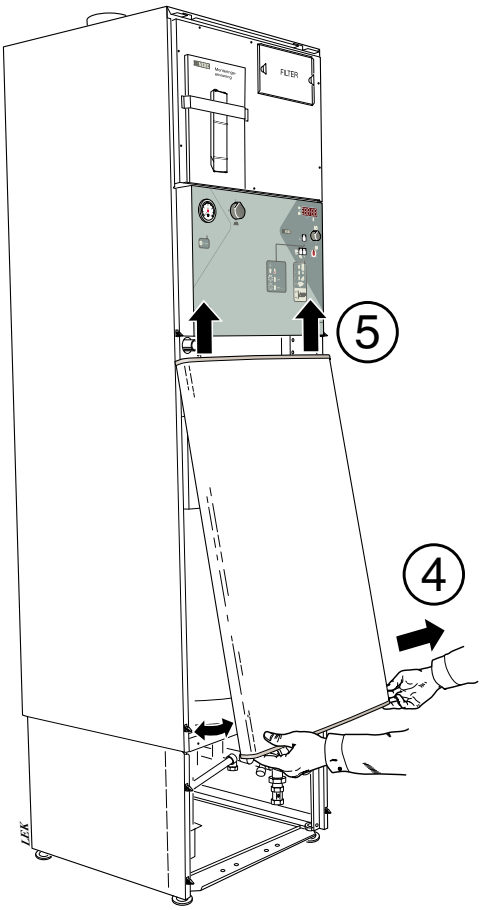
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For Home Owners

For the Installer

2 General

In order to get the ultimate benefit from your heat pump FIGHTER 410P you should read through the For Home Owners section in this Installation and Maintenance Instruction.

FIGHTER 410P is an exhaust air heat pump with preheated supply air . This means that it collects the energy in the ventilation air and uses it for hot water and room heating.

A microprocessor ensures that the heat pump always works efficiently.

FIGHTER 410P is a Swedish-made quality product which will last a long time and run reliably without unpleasant surprises.

For the installation engineer: Please, hand over to the home owner his manual after finalised installation.

To be filled in when the heat pump has been installed

The serial number (103), should always be stated with all correspondence with NIBE. _ _ _ _ _ _ _ _ _ _ _ _ _ _		
Installation date		
Installer		
Chosen output, immersion heater		
Circulation pump setting		
Setting, trim valve		
Fan rating		
Switch	Selected position on terminal block (22) for this cable (1 – 10)	Measured total exhaust air flow □l/s □m³/h
Position A (reduced)	Black cable 094 (supply air) White cable 095 (exhaust air)	Supply air Exhaust air
Position B (normal)	Black cable 096 (supply air) White cable 097 (exhaust air)	Supply air Exhaust air
Position C (forced)	Black cable 098 (supply air) White cable 099 (exhaust air)	Supply air Exhaust air
Setting damper (where applicable)		
Setting Heating curve selection		
Setting Offset heating curve		
Date_____ Signed_____		

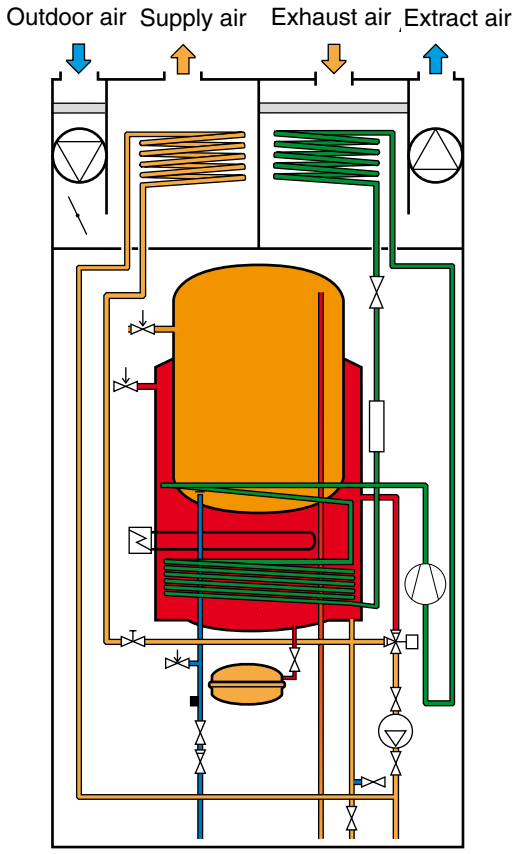
Manufacter: NIBE AB Box 14 Järnvägsgatan 40 285 21 MARKARYD SWEDEN	
Maxiumum water supply pressure	16 bar
Immersion heater	R50 / 8000W / 230 V
Operating pressure, tap water	6 bar
Expansion vessel, tap water, charge pressure	3,5 bar
Expansion vessel, heating water, charge pressure	0,5 bar
Pressure reduction valve, setting	3,5 bar
Volume, water heater	170 litres
Mass, unit, filled with water	440 kg
Maximum primary working pressure (heating side)	2,5 bar
Set opening pressure of temperature and pressure valve	7 bar
Set opening pressure relief valve	6 bar
Set opening, temerature limiter, immersion heater	88 °C
Set opening, temerature limiter, compressor	88 °C
Heating up time from 15 °C to stop temperature for compressor	5 h 41 min
Re-heating time, 70 % of total volume (only compressor working)	3 h 46 min

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the appliance.

System description 3

Principle of operation



FIGHTER 410P comprises an electric boiler with a copper lined water heater and a heat pump which recovers energy from the ventilation air. The recovered energy is supplied to the boiler. The heat pump must be installed in a ventilation system intended for mechanical exhaust and supply air.

The output of the immersion heater is max 8.0 kW (Supplied output of 6.0 kW).

When the exhaust air at room temperature passes through the evaporator, the refrigerant evaporates because of its low boiling point. In this way the heat in the room air is transferred to the refrigerant. The refrigerant is then compressed in a compressor, causing the temperature to rise considerably. The warm refrigerant is fed to the condenser, which is in the boiler water. Here the refrigerant gives off its heat to the boiler water, so that the temperature of the refrigerant drops and the refrigerant changes state from gas to liquid. The refrigerant then goes via filters to the expansion valve, where the pressure and temperature are further reduced.

The refrigerant has now completed its circulation and returns to the evaporator.

A frost protection damper precedes the supply air side's heating battery. This closes automatically when the supply air temperature after the battery drops below +5 °C

System diagram

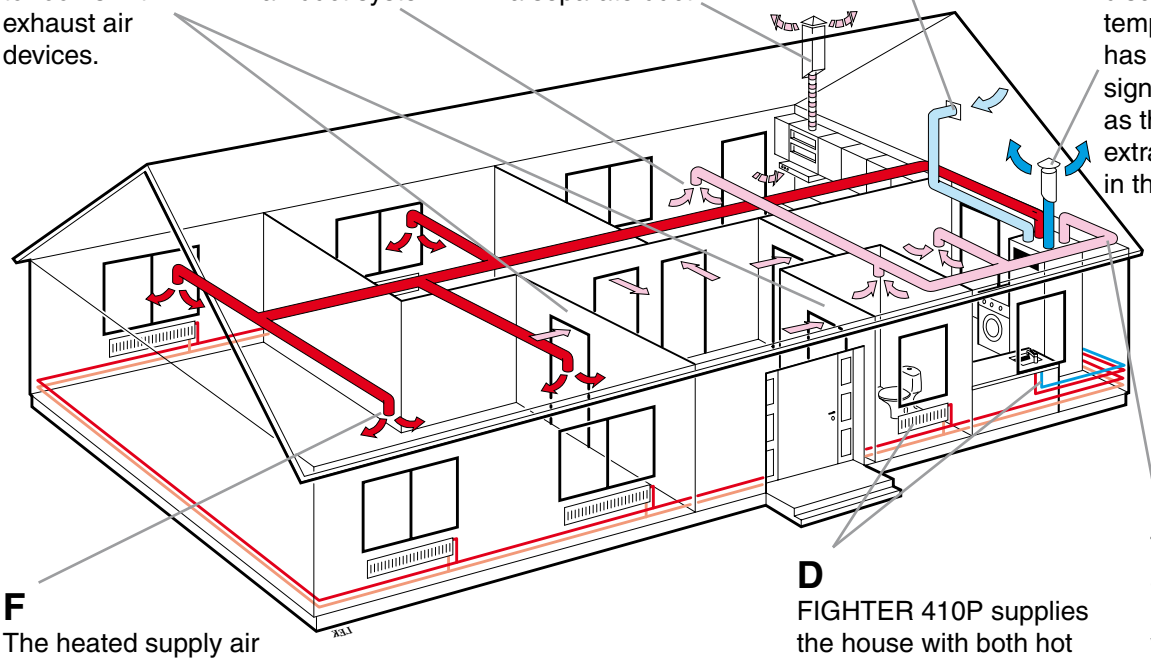
G
Air is transported from rooms with supply air devices to rooms with exhaust air devices.

A
The heated room air is drawn into the air duct system.

H
The air from the kitchen fan goes directly out into a separate duct.

E
The outdoor air is taken into FIGHTER 410P where it is heated.

C
When the room air has passed through the heat pump it is discharged. The temperature of the air has then been significantly reduced as the heat pump has extracted the energy in the room air.



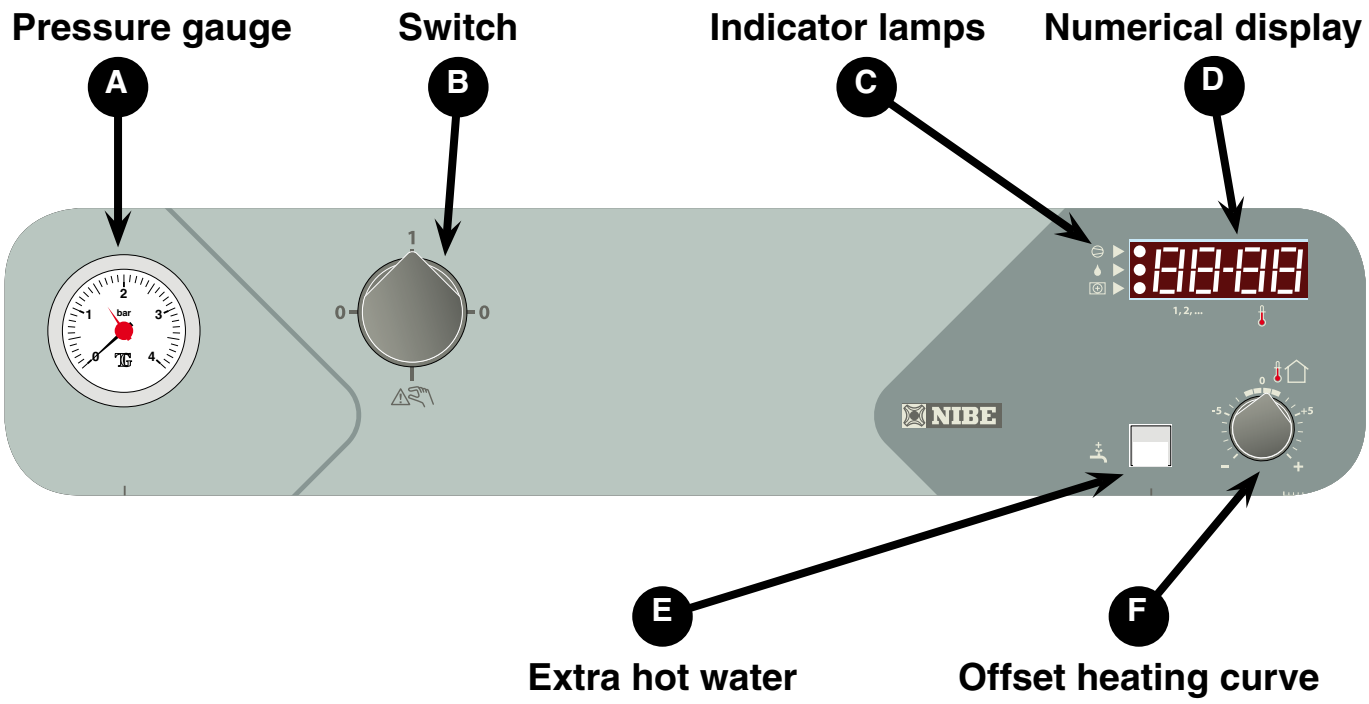
F
The heated supply air enters the room

D
FIGHTER 410P supplies the house with both hot water and room heating.

B
The warm room air is fed to FIGHTER 410P where the energy is recovered.

4 Front panel

Upper (visible) part of the front panel



Front panel 5

Visible functions

A Pressure gauge

The radiator circuit pressure is displayed here. Gauge graduation is 0 – 4 bar. Normal pressure is 0.5 – 1.5 bar.

B Switch

with 3 positions 0 - 1 - ⚠ :

0 The heat pump completely switched off.

1 Normal mode. All control functions connected.

⚠ Standby mode. This mode is used during start up and with any operating disruptions.

C Indicator lamps

Upper lamp

Lit	Compressor is operational.
Flashing	–
Not lit	Compressor is not operational.

Centre lamp

Lit	Automatic defrosting.
Flashing	–
Not lit	Normal mode.

Lower lamp

Lit	Immersion heater is operational.
Flashing	Parts of the immersion heater are disabled by external controllers (load monitor, etc).
Not lit	Immersion heater is not operational.

D Numerical display

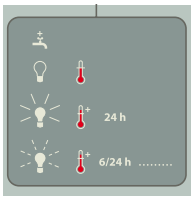
In normal mode the boiler temperature is displayed here. The two digits on the left indicate the channel number and the two on the right the reading/setting of that channel.

In the event of a malfunction, an error message is displayed alternately with channel number and value. See Dealing with malfunctions – Indications on the numerical display.

NOTE! When switching from Standby mode "⚠" to normal mode "1" the numerical display can remain dimmed for a brief period. This can also occur at extremely low outdoor temperatures.

E Extra hot water

Pressing the Extra hot water button raises the boiler temperature to about 60 °C, giving increased water capacity for about 24 hours. In this mode, the built-in lamp is constantly lit.



Pressing the button again gives a permanent function, which raises temperature of the hot water during 6 hours / day. The integrated lamp flashes in this mode,

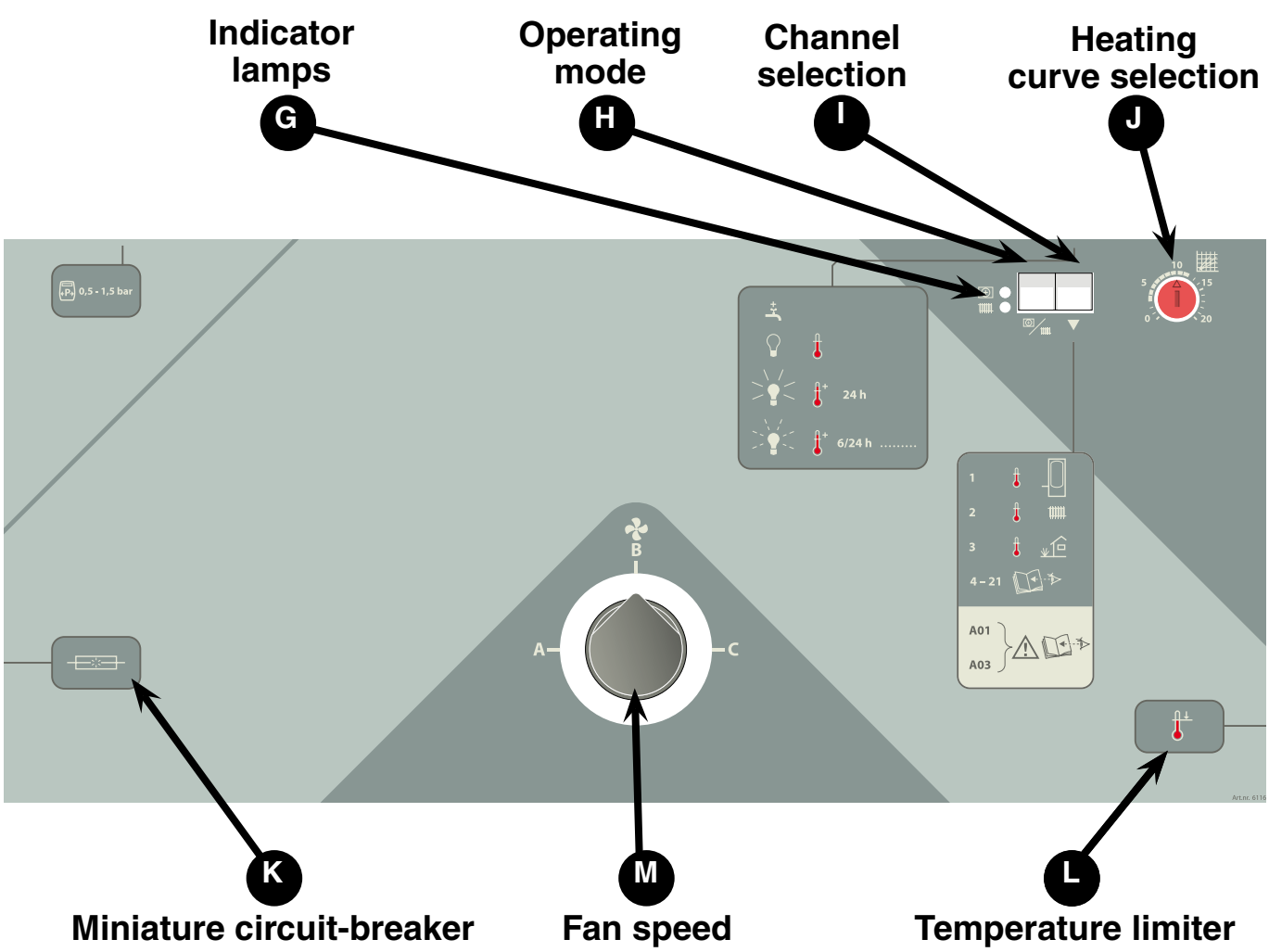
Pressing the button again resets the above functions.

F Heating curve offset

With the Heating curve offset button you can change the offset of the heating curve and thus the room temperature.

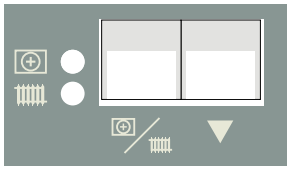
6 Front panel

Lower (hidden) part of the front panel



Hidden functions

G Operating mode indications



The two lamps next to the operating mode selector indicate the selected operating mode. This should not be confused with the indicating lamps in the numerical display.

Uppermost lamp — Immersion heater

Lit	The immersion heater may be connected if necessary, i.e. when the compressor cannot single handed cover the heating requirement.
Not lit	The immersion heater is disabled.

Bottom lamp — Circulation pump

Lit	The circulation pump is operational.
Not lit	The circulation pump is not operational. The shunt valve is also closed in this position.

H Operating mode

When the heat pump is started, all functions (immersion heater, circulation pump and automatic heating control system) are running.

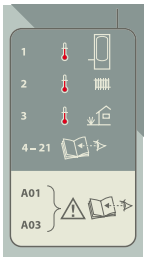
Pressing the Operating mode button once disables the immersion heater. Pressing it once more stops the circulation pump as well. Only hot water production is then obtained.

Pressing it yet again reconnects the immersion heater and the circulation pump.

I Channel selection

Use the Channel selection button to browse forward through the display window channels to see the required reading or setting.

Available readings/settings include:



1 Boiler temperature
2 Supply temperature
3 Outside temperature
5 Extract air temperature

Normally the display always shows channel **1**. When you have browsed through the channels; channel **1** returns after a while.

J Heating curve selection

Use the Heating curve selection knob to set the automatic heating control system; see under Room temperature.

K Miniature circuit-breaker

Resetting the miniature circuit breakers.

L Temperature limiter

Resetting the temperature limiter.

M Fan speed

This switch is used for changing the fan speed.

It is possible to switch between three different speeds:

Position A: Reduced ventilation

Position B: Normal ventilation

Position C: Forced ventilation

Position B is normally used.

Position A is used on occasions when a lower ventilation flow is acceptable in the house, for example, when no one is in the house. This position should not be used over long periods. Otherwise there is a risk of an inferior indoor climate as well as damage due to dampness in the house.

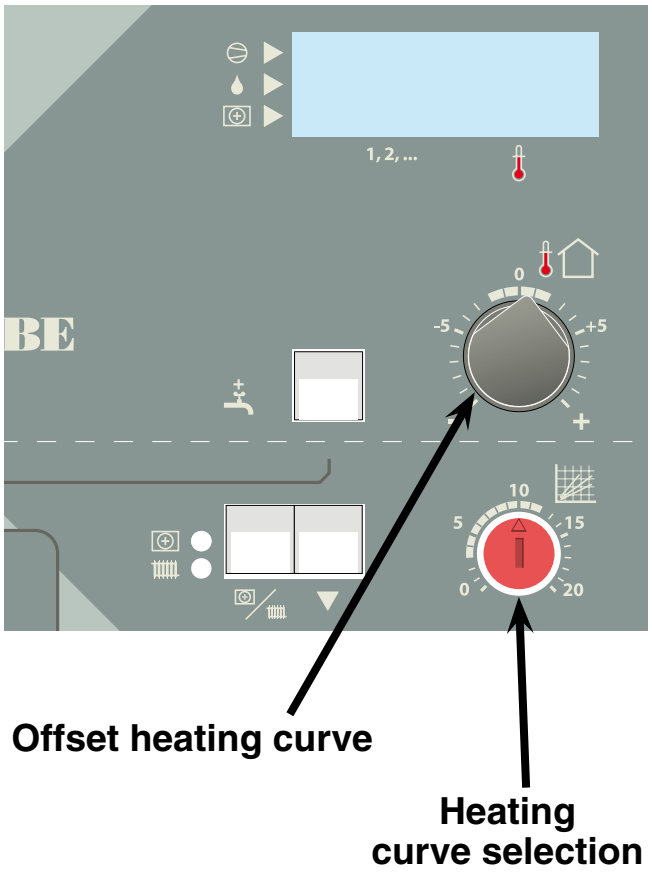
Position C is used on occasions when a higher ventilation flow is sought in the house, for example, when there are many people in the house. This position should not be used over long periods. Otherwise this will increase energy consumption and with that operating costs.

8 Room temperature

Automatic heating control system

The indoor temperature depends on several factors. During the hot season, solar radiation and heat given off by people and equipment are sufficient to keep the house warm. When it gets colder outside, the heating system must be started. The colder it is outside the warmer the water circulating in the heating system must be.

This adjustment is made automatically, however the basic settings must first be made on the boiler, see the section Room temperature — Default setting.



Default setting

The basic heating is set with the Heating curve selection knob and with the Heating curve offset knob.

If you do not know the correct settings use the basic data from the map opposite.

If the required room temperature is not obtained, readjustment may be necessary.

NOTE! Wait one day between settings so that the temperatures have time to stabilise.

Readjustment of basic settings.

Cold weather conditions

If the room temperature is low, increase the heating curve selection setting by one step.

If the room temperature is high, reduce the heating curve selection setting by one step.

Warm weather conditions

If the room temperature is low, increase the heating curve offset setting by one step.

If the room temperature is high, reduce the heating curve offset setting by one step.

Changing the room temperature

Changing the room temperature manually.

If you want to temporarily or permanently lower or raise the indoor temperature relative to the previously set temperature, turn the Heating curve offset knob anticlockwise or clockwise. One line approximately represents a 1 degree change in room temperature.

NOTE! An increase in the room temperature may be inhibited by the radiator or floor heating thermostats, if so these must be turned up.