



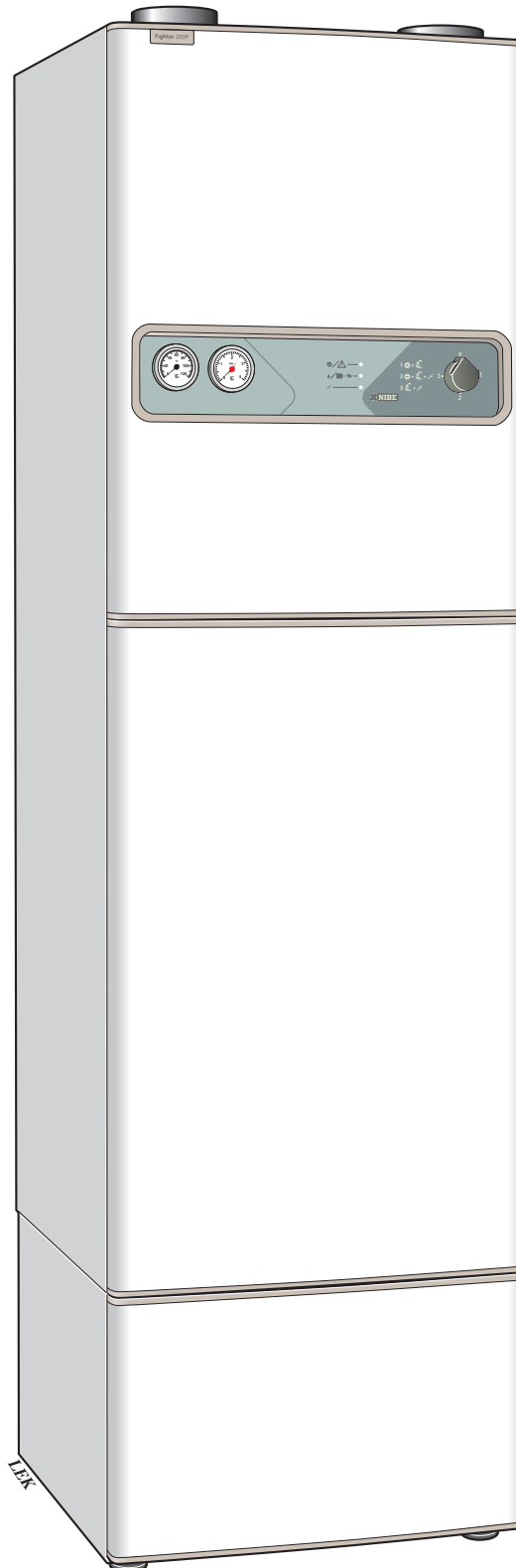
INSTALLATION AND MAINTENANCE INSTRUCTIONS

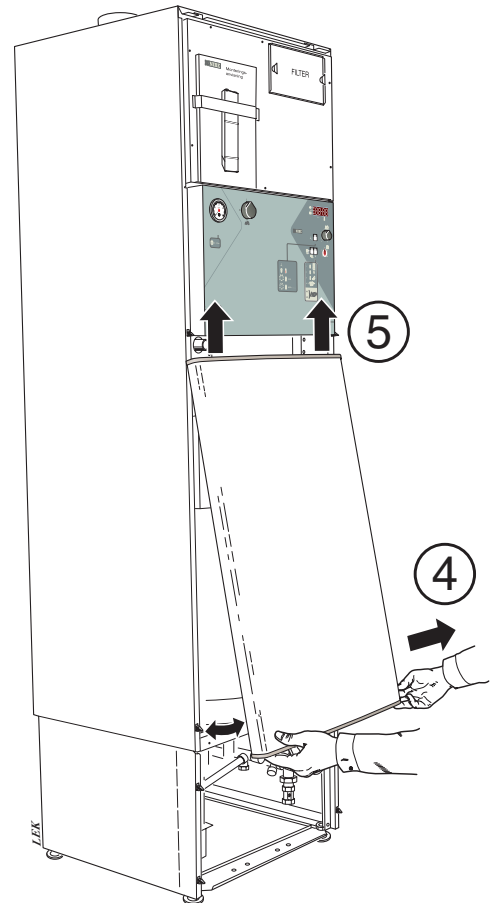
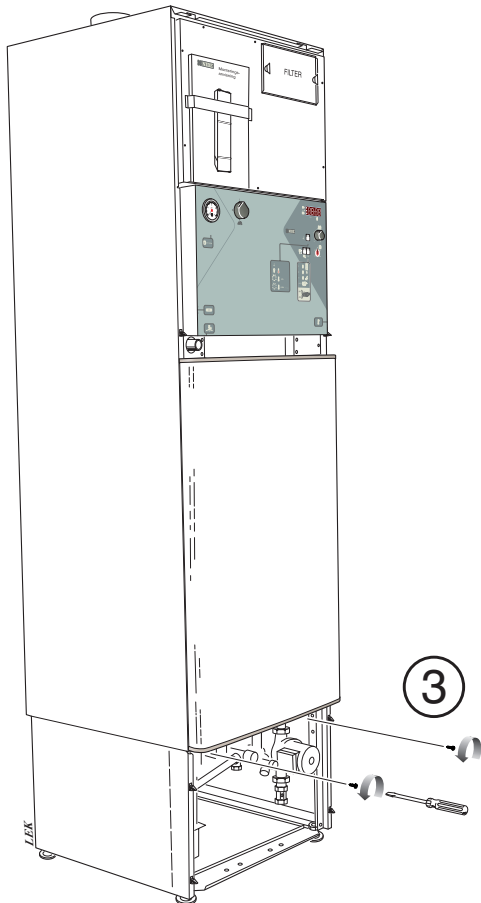
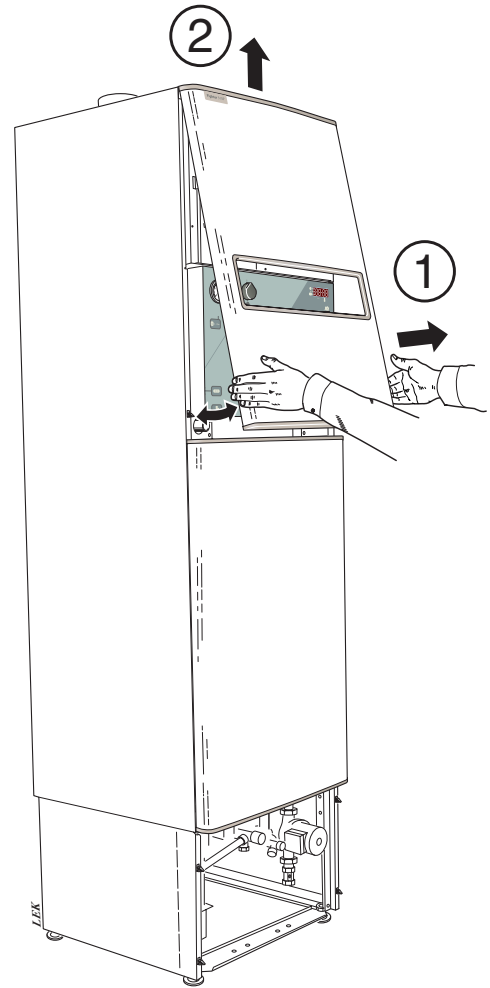
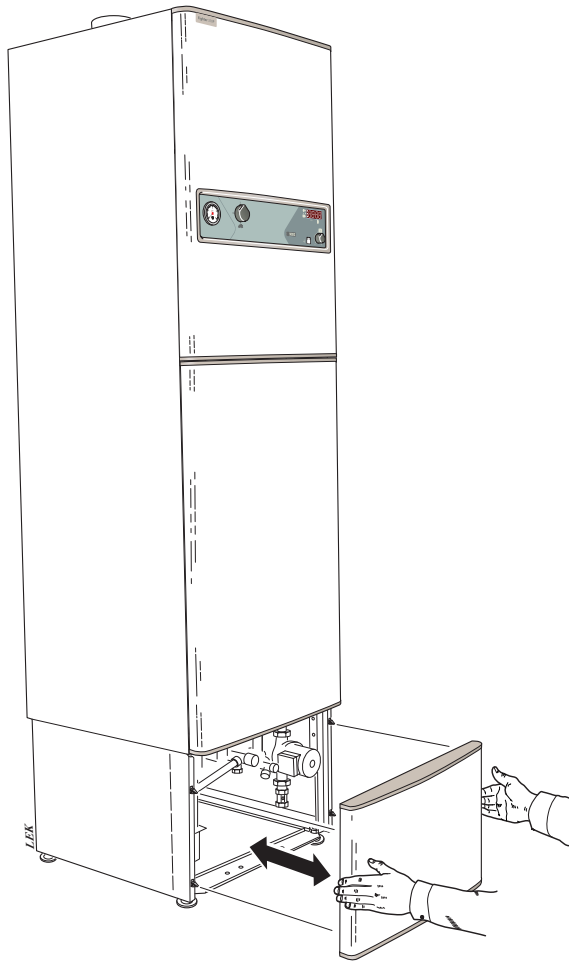
# FIGHTER 200P

Immersion heater 3 kW

MOS GB 0511-1  
FIGHTER 200P

511052





## For Home Owners

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***In order to get the ultimate benefit from your heat pump FIGHTER 200P you should read through the For Home Owners section in this Installation and Maintenance Instruction.***

***FIGHTER 200P is an exhaust air heat pump. This means it utilises energy in ventilation air and uses this energy for hot water and heating the house. A microprocessor ensures that the heat pump always works efficiently.***

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

Manufacturer: NIBE AB Box 14 Järnvägsgatan 40 285 21 MARKARYD SWEDEN	
Maximum water supply pressure	16 bar
Immersion heater	R50 / 3000W / 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
Expansion valve, setting	3,5 bar
Volume, water heater	170 litres
Mass, unit, filled with water	435 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, temperature limiter, immersion heater	88 °C
Set opening, temperature limiter, compressor	88 °C
Test results from following procedures:	
1-50-216	_____
1-50-218	_____
1-50-219	_____
1-50-220	_____
1-50-222	_____
1-50-226	_____
1-50-227	_____

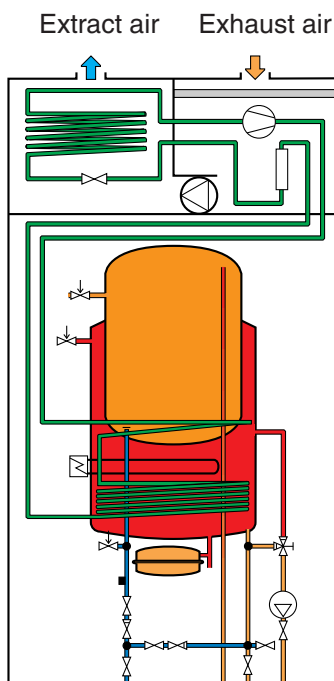
### To be filled in when the heat pump has been installed

If corresponding with NIBE, kindly state the **serial number (103)** of the FIGHTER 200P

089\_ \_ \_ \_ \_

Installation date	Flow water maximum temperature
Selected fan curve	Circulation pump setting
Installation engineers	

## Principle of operation



FIGHTER 200P consists of an electric boiler with copper lined water heater and a heat pump that recovers energy from ventilation air. The recovered energy is supplied to the heat pump. The heat pump must be installed in a ventilation system intended for mechanical exhaust air.

The output of the immersion heater is 3,0 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 air is transferred to the refrigerant.

The refrigerant is then compressed in a compressor, causing the temperature to rise considerably.

The warm refrigerant is led to the condenser. Here the refrigerant gives off its heat to the boiler water, so that the temperature of the the refrigerant drops and its phases changes from gas to liquid. The refrigerant then goes via a filter to the expansion valve, where the pressure drops and the temperature is lowered further.

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

## System diagram

**C**

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

**G**

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

**A**

The warm room air is drawn into the air duct system.

**F**

Air is transported from rooms with outdoor air devices to rooms with exhaust air devices.

**B**

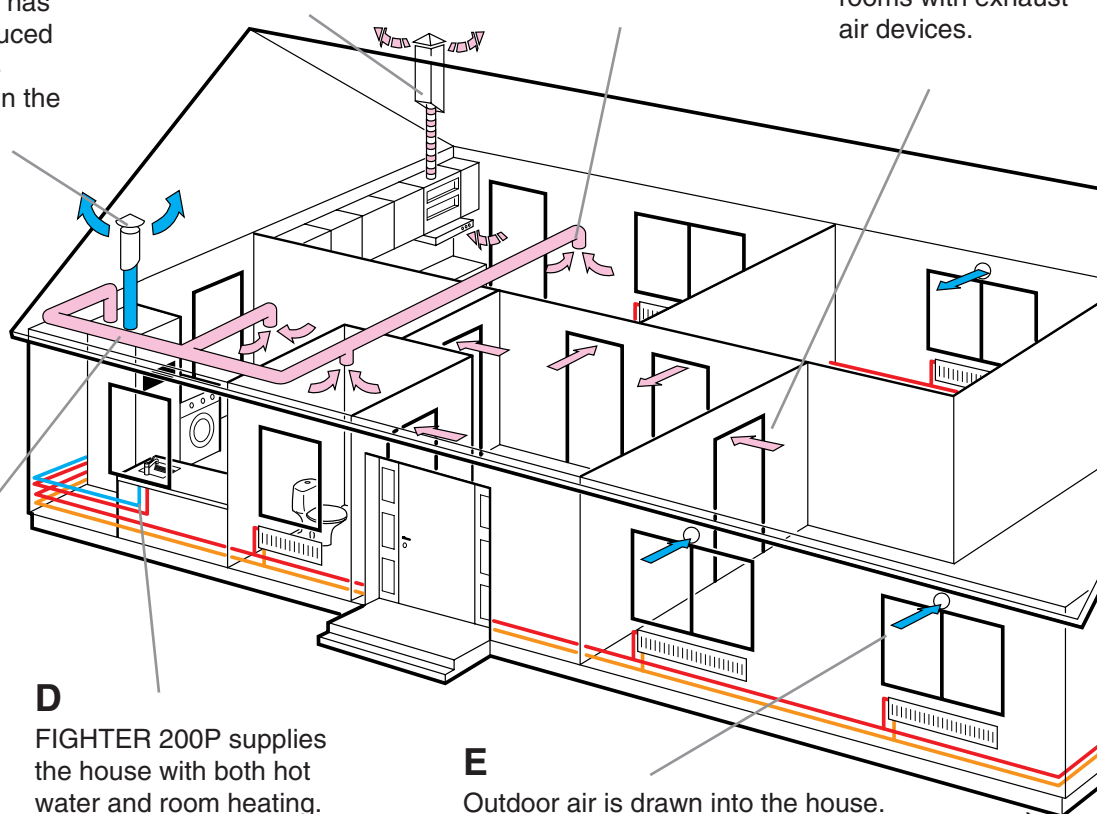
The warm room air is fed to FIGHTER 200P

**D**

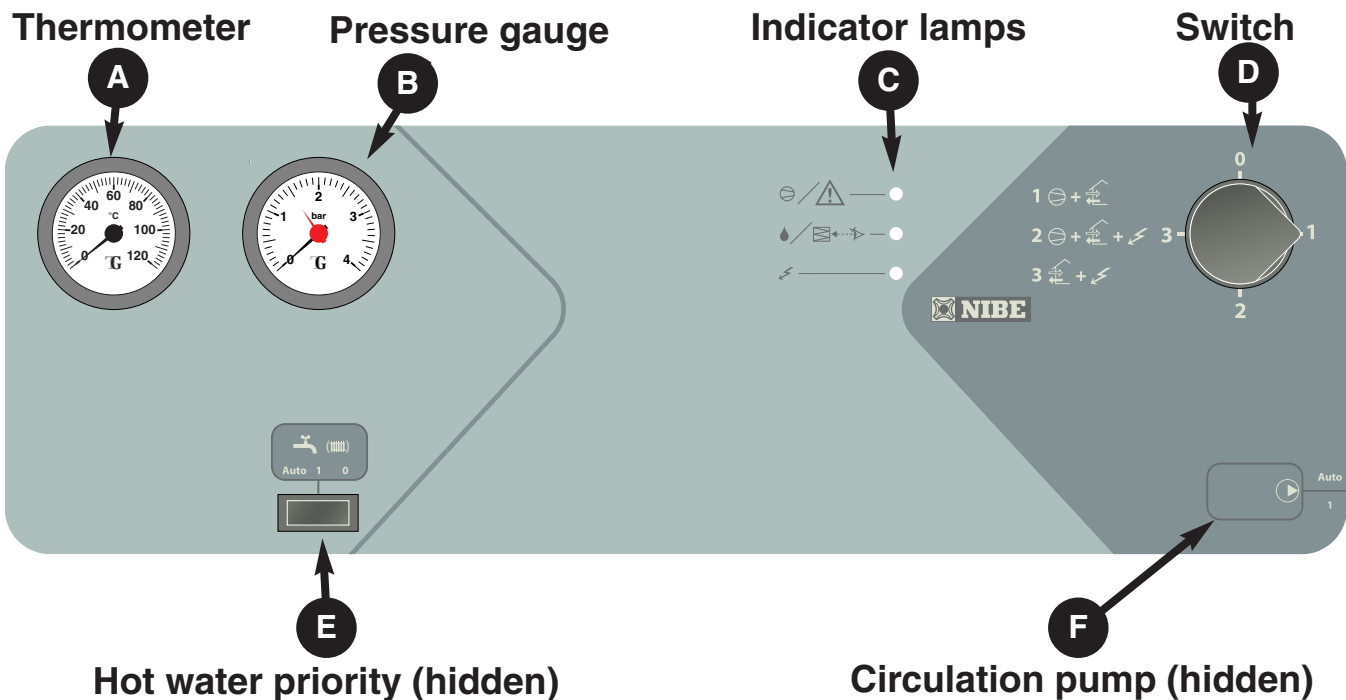
FIGHTER 200P supplies the house with both hot water and room heating.

**E**

Outdoor air is drawn into the house.



## Front panel functions



## Hot water priority (hidden)

## Circulation pump (hidden)

**A Thermometer**

Here the boiler temperature is indicated. The value depends on the cut-out temperature of the immersion heater, the set value for the compressor cut-out temperature and the hot water taps.

**B Pressure gauge**

Here the pressure of the radiator circuit is indicated. The scale marks go from 0 - 4 bars. Normal pressure is 0,5 - 1,5 bar.

**C Indicators lamps****Top lamp**

Lit	Compressor is running.
Flashing	Alarming for tripped pressostates or indicating standby mode (Compressor blocked).

Not lit	Compressor is not running.
---------	----------------------------

**Midmost lamp**

Lit	Defrosting is operational.
Flashing	Air filter to be cleaned.
Not lit	-

**Lower lamp**

Lit	Immersion heater is in operation.
Flashing	-
Not lit	Immersion heater is not in operation.

**D Switch**

with 4 positions 0 - 1 - 2 - 3:

- 0 Heat pump off.
- 1 Fan is operational. Compressor and circulation pump operational on demand.
- 2 Fan is operational. Compressor, immersion heater and circulation pump operational on demand.
- 3 Standby mode. Fan is operational. Compressor is not operational. Immersion heater and circulation pump operational on demand.

**E Hot water prioritising (hidden)**

with 3 positions Auto - On - Off:

- Auto** Hot water prioritising operational
- On** Hot water prioritising operational
- Off** Hot water prioritising not operational

**F Circulation pump (hidden)**

with 2 positions Auto - On:

- Auto** The On and Off of the circulation pump is controlled by the control system.
- On** Circulation pump permanently running

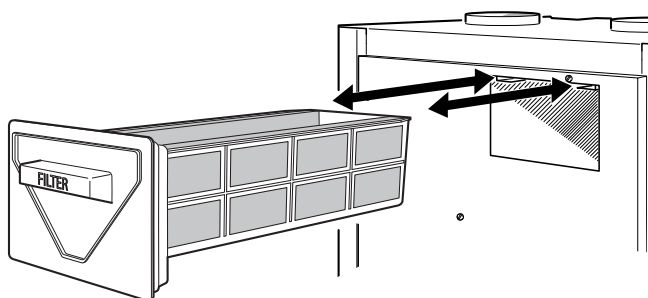
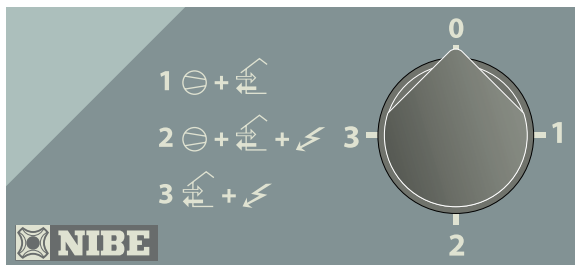
## Automatic heating control system

The heat emission is controlled by means of a room thermostat. On achieving the set temperature, the circulation pump inside FIGHTER 200P will stop.

The heat pump and its ventilation ducting require some regular maintenance when the following points should be checked.

The numbers in brackets refer to the section "Component locations".

## Cleaning the air filter

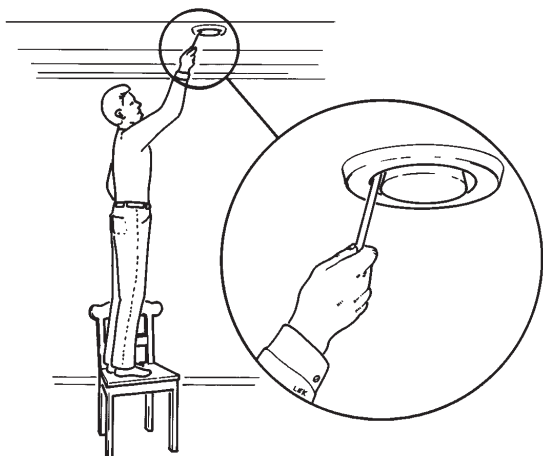


The heat pump air filter (63) should be cleaned regularly, about four times a year.

- Set the switch (8) to "0".
  - The upper service cover is opened by pulling the lower section outwards. The cover can then be lifted off.
  - Pull out the filter cassette (78).
  - Take out the filter and shake off any dirt. (When the filter is very dirty, turn it upside-down and wash it carefully with water.)
- Check that the filter is not damaged. New original filters can be ordered from NIBE.
- Re-assembly takes place in the reverse order.

The cleaning time intervals vary depending on the amount of dust in the exhaust air. Each third month an indicator lamp (31) "Defrosting in progress/Check filter" reminds about cleaning the air filter. Note that the time will be set to zero by setting the switch to "0".

## Cleaning the ventilation devices

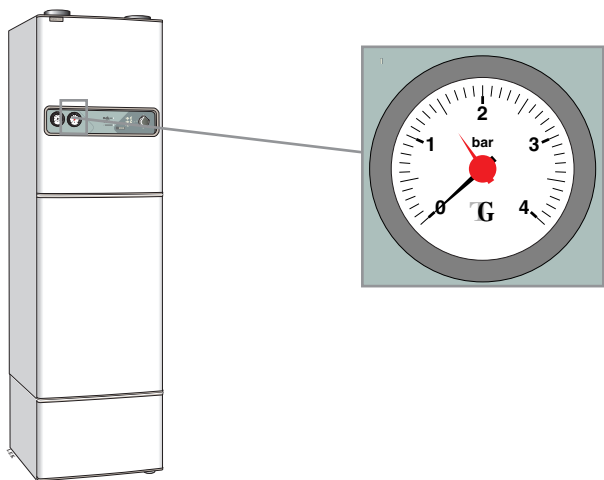


The building's ventilation devices should be cleaned regularly with a small brush to keep the correct ventilation. The device settings must not be changed.

**NOTE!** If you take down more than one ventilation device for cleaning, do not mix them up.

Check that the ventilation opening (84), behind the lower front cover, is not blocked. Clean if necessary.

## Pressure gauge



The pressure gauge reading should be between the initial pressure of the expansion vessel (normally 0.5 bar) and 1.5 bar (15 mvp). See Commissioning and adjusting.

## Checking the safety valves

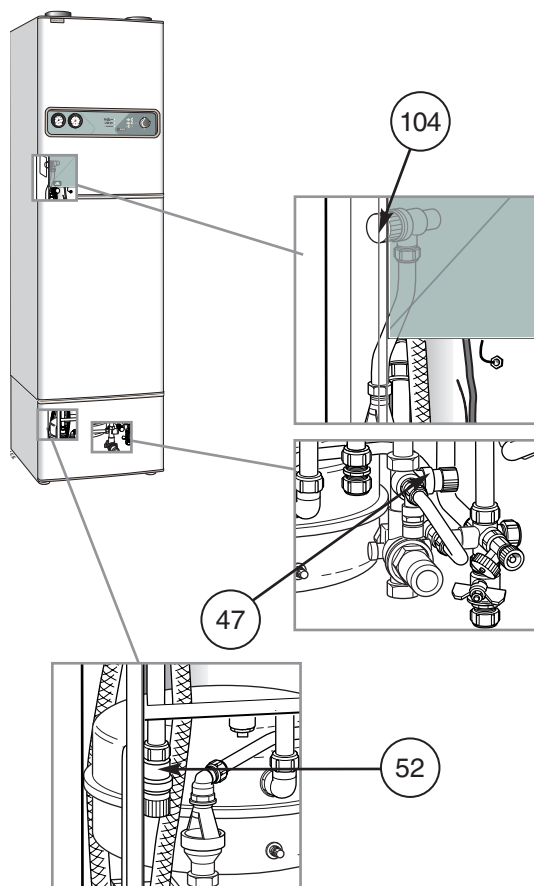
FIGHTER 200P has three safety valves, one for the heating system and two for the water heater.

The heating system safety valve (52) must be completely tight, but the hot water safety valve (47) may release some water after hot water has been used. This is because the cold water which enters the water heater to replace the hot water expands when heated, causing the pressure to rise and the safety valve to open.

Safety valve (104) does not normally release water.

The safety valves must be checked regularly. Check one valve at a time as follows:

- Open the valve.
- Check that water flows through the valve.
- Close the valve.
- The heating system may need to be refilled after checking the safety valve (52), see the section "Commissioning and adjustment" – "Filling the heating system".





**In the event of malfunction or operating disturbances first check the points below:**

### Low temperature or a lack of hot water

- Large amounts of hot water were used.
- Circuit or main MCB tripped.
- Possible earth circuit-breaker tripped.
- Switch (8) set to "0".
- Temperature limiter (6) tripped. Contact service.
- Wrong mode chosen on power switch (8).
- Thermostat (3) for immersion heater set too low.

### Low or a lack of ventilation

- Defrost mode - lamp flashing - see chapter "Lamp indications".
- Filter (63) clogged (possible replace).
- Exhaust air device blocked or throttled down too much.
- Circuit or main MCB tripped.
- RCD (if fitted) tripped.

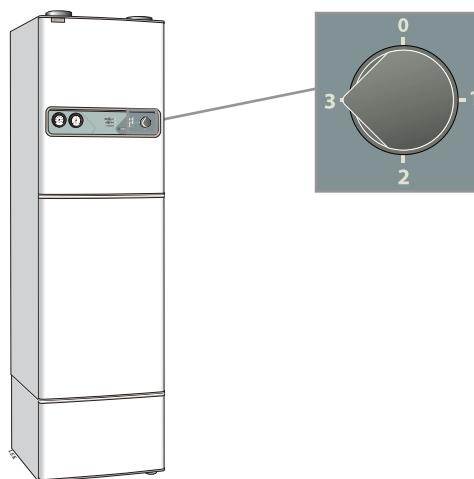
### Low room temperature

- Circuit or main MCB tripped.
- RCD (if fitted) tripped.
- Temperature limiter (6) tripped. Contact service.
- Wrongly set room thermostat.
- Circulation pump (16) stopped. See "Dealing with malfunctions" – "Starting the pump".
- Air in boiler or heating system.
- Valves (44) and (50) in the radiator circuit closed.
- Initial pressure in expansion vessel too low. This will be indicated by low pressure on the pressure gauge (42). Contact the installer.
- Thermostat (3) for immersion heater set too low.

### High room temperature

- Room thermostat setting not correct

### Switch position "3"



When the switch is set to "3", the compressor is not operational. The fan and the immersion heater are operational. Normally the immersion heater lamp is lit in mode "3", when the immersion heater is operational.

A possible fault on the printed circuit card can cause the disappearance of the number display. However, the immersion heater is still operational, if the thermostat has not cut-out the immersion heater.

### Cleaning the fan

The fan needs to be cleaned, if it is noisy. Call your installation engineer.

## NOTE!

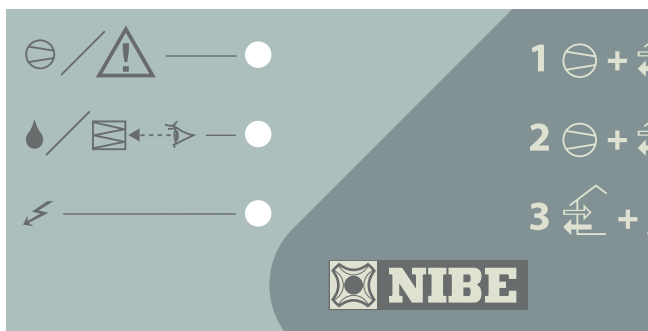
*In all correspondence with NIBE*

*state the serial number*

*089 \_ \_ \_ \_ \_*

**If the operating disturbance cannot be rectified by means of the above an installation engineer should be called. If necessary set the switch to "3".**

### Indications on the display



#### Lamp "Compressor is operational/alarm" is flashing

- A fault has occurred in the cooling circuit. (One of the pressostats has cut-out).
- Mode "3" is set.

When the cause of the fault has been put right, the fault code must be cleared from the display by switching the heat pump off and on again.

#### Lamp "Defrosting is operational/check filter" is flashing

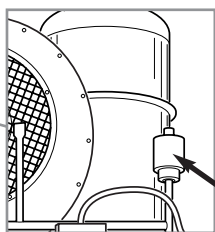
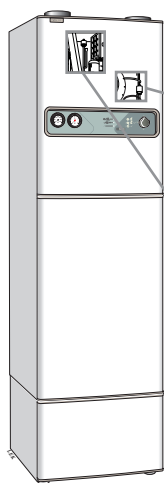
Air filter has to be cleaned (lamp flashing each third month). After cleaning the filter, the fault code must be cleared from the display by switching the heat pump off and on again.

#### Lamp "Defrosting is operational/check filter" is litted

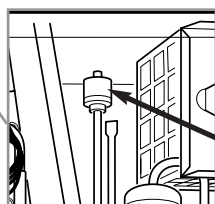
When there is too much ice on the evaporator, defrosting takes place. After this, the compressor starts automatically if heating is needed. Frequent defrosting is a sign of clogged ventilation devices or dirty filters.

See "Maintenance routines" – "Cleaning air filters".

### Resetting the pressostats



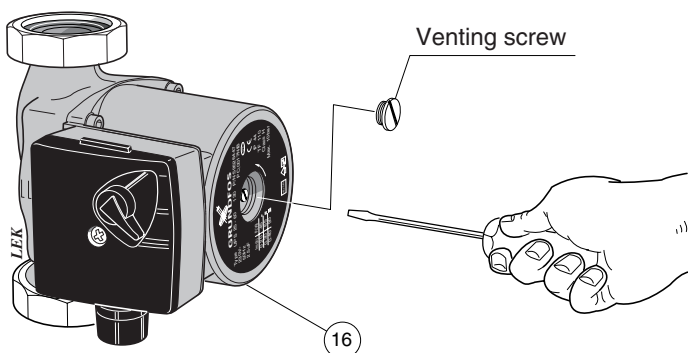
High pressure pressostat



Low pressure pressostat. Normally this pressostat resets automatically, so it does not have a reset button.

To reset a tripped pressostat, press the button on top of it; see figure. The pressostats are within reach by opening the filter box.

### Helping the circulation pump to start



- Shut down FIGHTER 200P by turning the power switch (8) to "0".
- Remove the lower front cover.
- Slacken the venting screw with a screwdriver. Some water may come out, so hold a cloth over the screwdriver blade.
- Push the screwdriver in and turn the pump rotor.
- Tighten the venting screw.
- Start FIGHTER 200P and check whether the circulation pump is working.

It is often easier to start the circulation pump with the FIGHTER 200P running, and the power switch (8) set to "1". If you try to start the circulation pump with the FIGHTER 200P running, be prepared for the screwdriver to "grab" when the pump starts.

## Transport and storage

The heat pump should be transported and stored vertically in the dry.

## Handling



The heat pump contains highly inflammable refrigerant. Special care should be exercised during handling, installation, service, cleaning and scrapping to avoid damage to the refrigerant system and in doing so reduce the risk of leakage.

## Installation

The heat pump should preferably be erected with its back about 10 mm from an outside wall in a utility room or similar, to minimise noise nuisance. If this is not possible, avoid placing it against a wall behind a bedroom or other room where noise may be a problem. Irrespective of the placement the wall should be sound insulated. **NOTE!** The distance between the heat pump and the wall should be at least 10 mm.

Route pipes so they are not fixed to an internal wall that backs on to a bedroom or living room.

An area of approximately 15 cm is required on the left side of the heat pump, at the temperature and pressure valve (104) to enable access to the valve.

**NOTE!** Since a waterfilled FIGHTER 200 weighs roughly 435 kilos, the floor must stand such a weight.

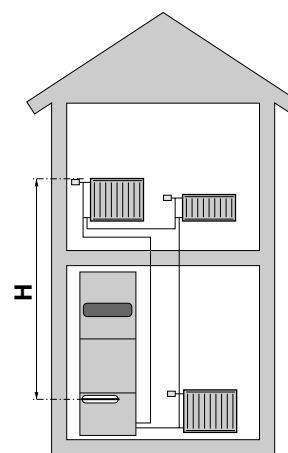
## Hard water areas

Normally it is no problem to install FIGHTER 200P in hard water areas since the maxing working temperature is 60 °C.

## Inspection of the installation

Current regulations require the heating installation to be inspected before it is commissioned. The inspection must be carried out by a suitably qualified person. The above applies to installations with a closed expansion vessel. A new inspection must be made when changing the heat pump or the expansion vessel.

## Maximum boiler and radiator volumes



The volume of the expansion vessel (85) is 12 litres and it is pressurised as standard to 0.5 bar (5 mwp). As a result, the maximum permitted height "H" between the vessel and the highest radiator is 5 metres; see figure. If the standard initial pressure in the pressure vessel is not high enough it can be increased by adding air via the valve in the expansion vessel. The initial pressure of the expansion vessel must be stated in the inspection document.

Any change in the initial pressure affects the ability of the expansion vessel to handle the expansion of the water. The maximum system volume excluding the boiler is 106 litres at the above initial pressure.

## General

Pipe installation must be carried out in accordance with current norms and directives.

The system requires a low-temperature dimensioning of the radiator circuit. At DUT, the highest recommended temperatures are 55 °C on the flow line and 45 °C on the return line.

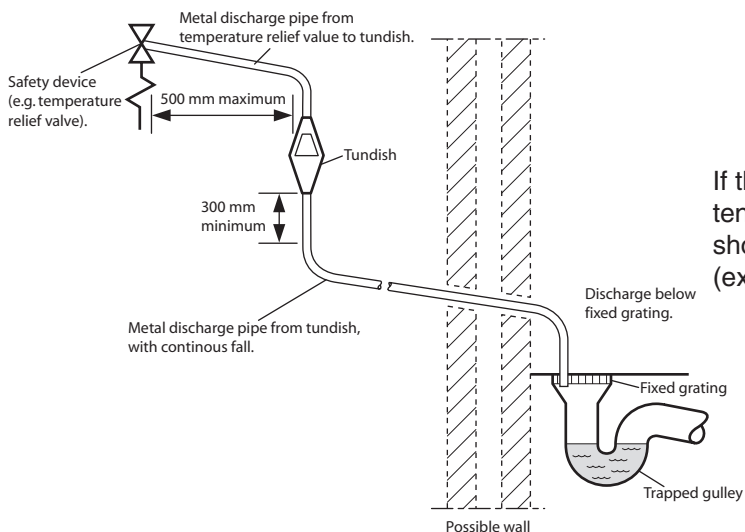
When the circulation pump is running, the flow in the radiator circuit must not be completely stopped.

The total volume is 240 litres, with 170 litres in the water heater and 70 litres in the boiler section.

The pressure vessel in the FIGHTER 200P is approved for max 9.0 bar (0.9 MPa) in the water heater and 2.5 bar (0.25 MPa) in the double shell section.

Overflow water from the evaporator collection tray and safety valves goes via non-pressurised collecting pipes to a drain so that hot water splashes cannot cause injury. These non-pressurised collecting pipes shall not be used for anything else. A discharge pipe from the tundish (108) connected to the expansion relief valve (47) (safety valve) shall also be connected to a drain in the same way.

Discharge pipes from tundishes shall have a vertical section of pipe at least 300 mm long, before any elbows or bends in the pipework. See following picture.

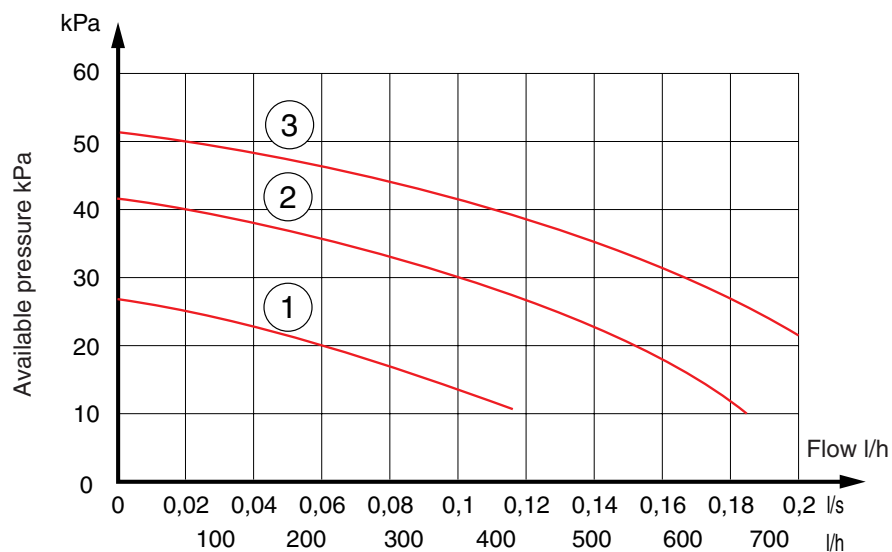


If the vertical distance, 300 mm, is hard to fulfil a heightening console is available as an accessory. No valve should be fitted between the pressure reduction valve (expansion valve) and the storage cylinder.

Table sizing of copper discharge pipe for common temperature relief valve outlet sizes.

Valve outlet size	Minimum size of discharge pipe	Minimum size of discharge pipe from tundish	Maximum resistance allowed, expressed as a length of straight pipe (i.e. no elbows or bends)	Resistance created by each elbow or bend
G1 / 2	15 mm	22 mm	up to 9 m	0,8 m
G1 / 2	15 mm	28 mm	up to 18 m	1,0 m
G1 / 2	15 mm	35 mm	up to 27 m	1,4 m
<G3> / 4	22 mm	28 mm	up to 9 m	1,0 m
<G3> / 4	22 mm	35 mm	up to 18 m	1,4 m
<G3> / 4	22 mm	42 mm	up to 27 m	1,7 m
G1	28 mm	35 mm	up to 9 m	1,4 m
G1	28 mm	42 mm	up to 18 m	1,7 m
G1	28 mm	54 mm	up to 27 m	2,3 m

## Pump and pressure drop diagram



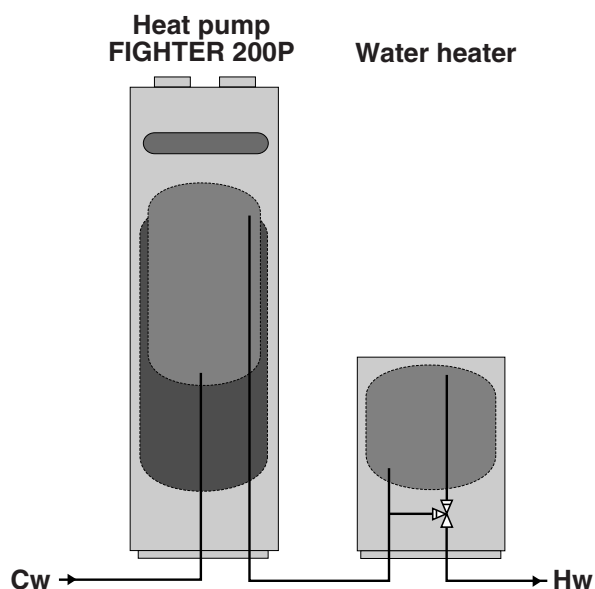
## Tap water connection

Hot and cold water are connected to pos (74) (hot water) and (73) (cold water).

The attendant expansion vessel (107) must be connected to the hot water system.

### NOTE!

*The pipe work must be flushed before the heat pump is connected, so that any contaminants do not damage the components parts.*



The heat pump should be supplemented with an electric water heater if a bubble pool or other significant consumer of hot water is installed.

### Ventilation flow

FIGHTER 200P is connected so that all ventilation air except the kitchen fan passes the evaporator (62) in the heat pump. The lowest ventilation flow according to current standards is 0.35 l/s per m<sup>2</sup> floor area. For optimum heat pump performance this ventilation flow should not be less than 100 m<sup>3</sup>/h. (28 l/s).

FIGHTER 200P is equipped with a ventilation opening in the base. As a result, an air flow of about 5 m<sup>3</sup>/h (1,4 l/s) is taken directly from the room where the heat pump is installed. Changing the ventilation capacity is described under "Electrical connection - Setting the fan capacity". See also "Circuit diagram". The numbering of the curves refers to the terminal block for fanspeed.

### Kitchen duct

The kitchen duct must not be connected to FIGHTER 200P.

### Adjustment

To obtain the necessary air exchange in every room of the house, the exhaust air devices must be correctly positioned and adjusted. An incorrect ventilation installation may lead to reduced heat pump efficiency and thus poorer operating economy, and may result in damage to the house.

### Duct installation

To prevent fan noise being transferred to the exhaust air devices, it may be a good idea to install a silencer in the duct. This is especially important if there are exhaust air devices in bedrooms. Because the heat pump contains a flammable refrigerant in the form of propane (R290), the air ducting system must be earthed. This is done by making a sound electrical connection to the exhaust air duct and extract air duct using the two earthing cables supplied. The cables must then be connected to the earthing studs on top of the top cover.

Duct connections should be made via flexible hoses, which must be installed so that they are easy to replace. The extract air duct is to be insulated using diffusion-proof material along its entire length. Provision must be made for inspection of the duct. The exhaust air duct should be fitted with an adjustment damper. Make sure that there are no reductions of cross-sectional area in the form of creases, tight bends etc, since this will reduce the ventilation capacity. All joins in the ducting must be sealed and pop-riveted to prevent leakage.

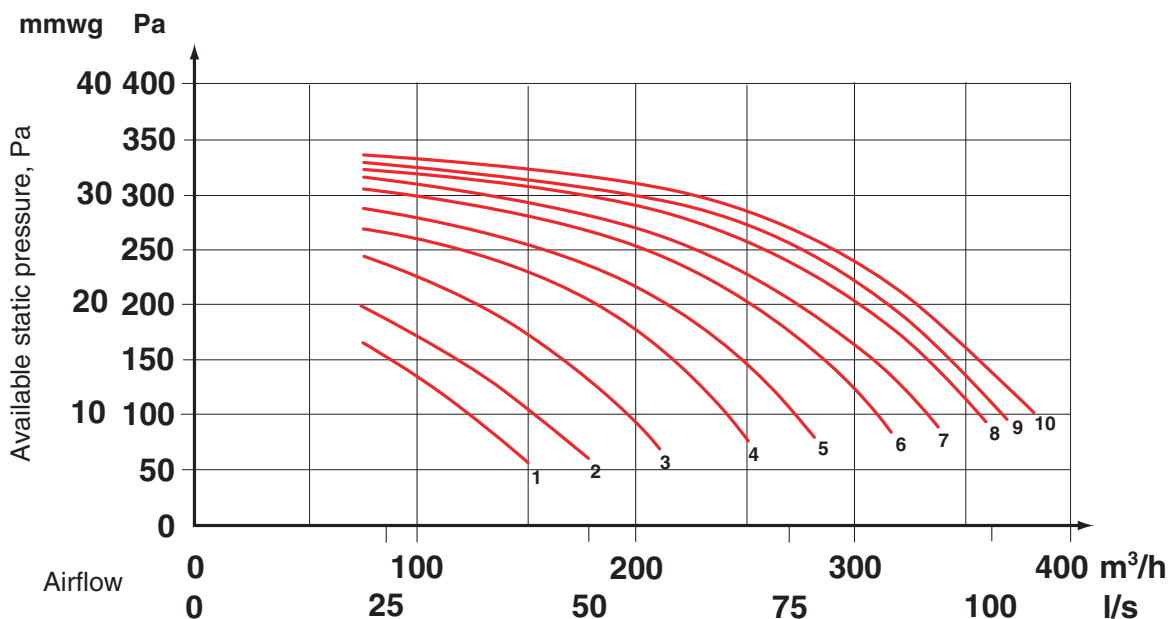
The air duct system should, at a minimum, be of air tightness class B.

## NOTE!

*A duct in a masonry chimney stack must not be used for extract air.*

### Fan diagram

The diagram below shows the available ventilation capacity.



## Connection

Disconnect the heat pump before insulation testing the house wiring.

The supply (230 V~ 1-phase + N) for the heat pump must be connected to terminal (9) via a cable clamp.

The connection of the heat pump must be done under the supervision of a qualified electrician.

### NOTE!

*The switch (8) must not be moved from "0" until the boiler has been filled with water. Otherwise the temperature limiter, thermostat, compressor and the immersion heater can be damaged.*

The heat pump installation implies a contact breaker.

The vinyl-pipe on the right side may be used as cable entry conduit.

The temperature limiter (6) cuts off the supply to the immersion heater if the temperature rises to 88 °C; it can be manually reset by pressing the button on the temperature limiter.

The temperature limiter (7) for the compressor cuts off the supply to the compressor if the temperature rises to 88 °C; it can be manually reset by pressing the button on the temperature limiter.

### NOTE!

*Reset the temperature limiter, it may have tripped during transport.*

### NOTE!

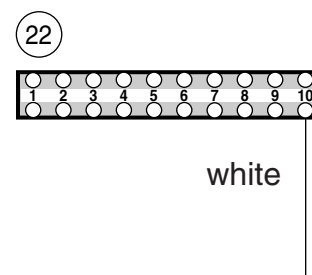
*The electrical installation, wiring and any service work must be done in strict conformity to current regulations under the supervision of a qualified electrician.*

## Setting the fan capacity

Selection of the exhaust fan capacity is done by connecting the white conductor from the exhaust fan to the required connection on the terminal (22). See diagram "Ventilation connection" – "Fan diagram". The connection No. 10 is set at factory.

### Tap Voltage (V)

1	100
2	110
3	125
4	140
5	155
6	170
7	185
8	200
9	215
10	230



## Circulation pump control

Normally a room thermostat is used controlling the starts and stops of the circulation pump. When the set room temperature is reached, the circulation pump is stopped and starts again when the temperature drops. For connection see diagram "Electrical connections" – "Connecting the room thermostat".

The circulation pump can even be operated manually. No room thermostat will be connected. Instead the circulation pump is operated by the switch (18) on the front panel. The mode "Auto" does not permit any operation of the circulation pump if no room thermostat is connected. The switch in position "On" permits permanent operation of the circulation pump.

## Current, fuse

The maximum current is 16,7 Ampere. Therefore a 20 Ampere fuse shall be used. **NOTE!** Relevant electrical standards must be considered.

## Immersion heater

FIGHTER 200P is delivered with a 3 kW immersion heater (1). It is started and stopped via the microprocessor card (34). If a failure occurs there is a temperature limiter (6) (thermal cut-out) that is stopping the immersion heater. An immersion heater without a temperature limiter is not allowed to be mounted.

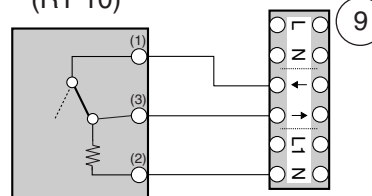


## Connecting the room thermostat

The room thermostat (accessory) which must be designed for 230 V has to be connected on terminal (9) in position "Pil in" and "Pil ut". Position "N" on the same terminal must be used, if the used thermostat requires firm earthed neutral.

Make sure that the switch (18) is set to position "Auto".  
A connection to earthed neutral is normally not required, however, it will result in faster regulations.

Room thermostat  
(RT 10)



The numerals refer to the connection notation in the RT 10. Using another room thermostat the above numerals will not be valid.

## Mounting the room thermostat

Install the room thermostat in a neutral position where the set temperature is required. A suitable place is on a free inner wall in a hall approx. 1.5 m above the floor. However, the sensor must not be prevented from measuring the correct indoor temperature, e.g. by placing in a niche, between shelves, behind a curtain, above or close to a heat source or the like. Also consider any draughts from exterior doors. Neither must the unit be affected by solar incident radiation.



## Preparations

Check that the switch (8) is set to "0".

Check that valves (44) and (50) are fully open and that the temperature limiter (6) has not tripped (press firmly the knob). FIGHTER 200P is supplied with a limiting valve (5) mounted on the outlet pipe. This one allows to set a maximum outlet temperature in order to protect the floor in an existing floor heating system. This valve is adjustable between 38 and 55 °C. The ex works setting is 38 °C. Turn setting knob (19) clockwise to lower the temperature

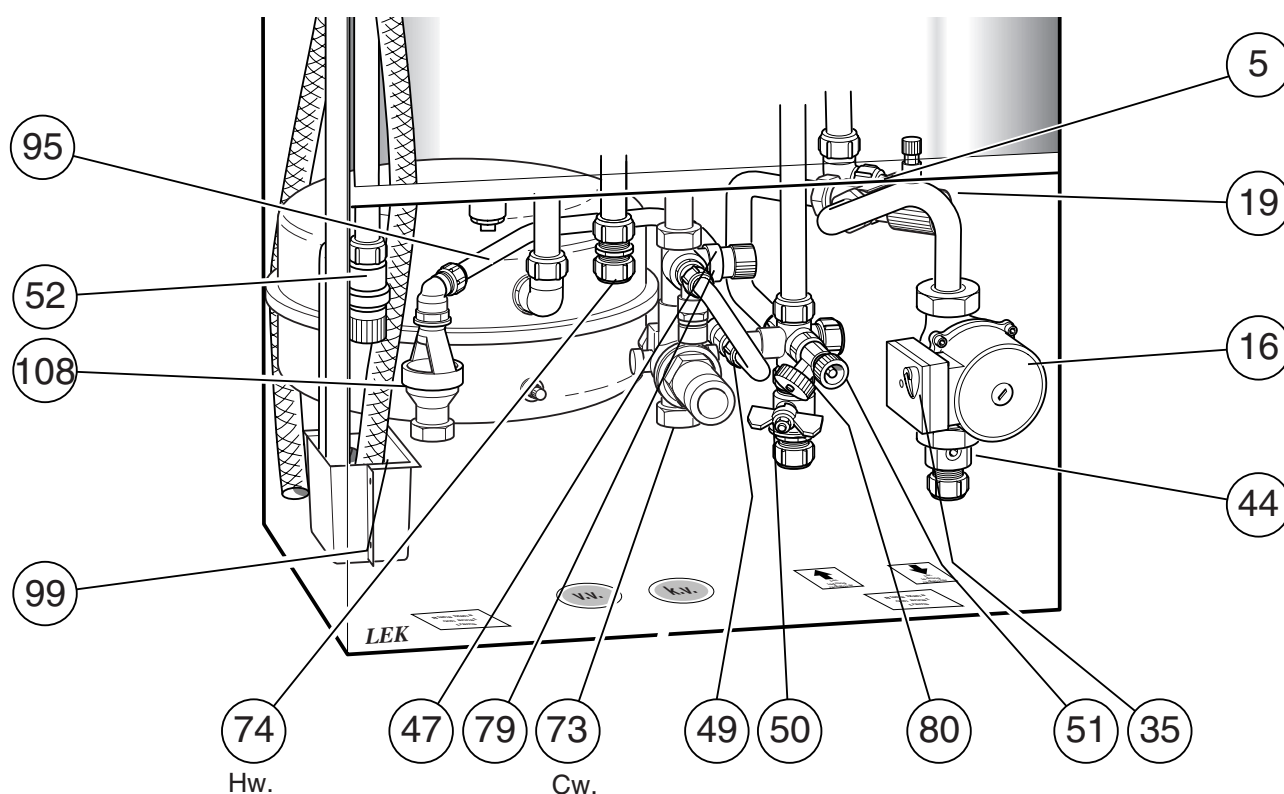
and counter-clockwise to lower the same until desired setting is reached. A quarter turn is equal to 5 °C.

## Filling the heating system

- The water heater is filled through the cold water inlet (73). A hot water tap must be opened. When water comes out of the hot water tap, the same must be closed.
- Open the filling valve (49) to fill the boiler and the radiator system.
- After a while the pressure gauge (42) will show rising pressure. When the pressure has reached about 2.5 bar a mix of air and water starts to emerge from the safety valve (52). Close the filling valve (49).
- Open the safety valve (52) until the pressure in the heating system comes to normal working range (0,5 – 1,5 bar).
- If there exists the risk that frost might burst the pipes, anti-freeze must be added to the water of the heating system. (At a maximum 50 % glycol).

## Venting the heating system

- Vent the electric boiler through the safety valve (52) and the rest of the heating system through the relevant venting valves.
- Keep topping up and venting until all air has been removed and the pressure is correct.



## Starting

- Set the switch (8) to "2" in order to accelerate the heating of the radiator system. NOTE! The compressor has a start delay of about 10 minutes in the start mode.
- Set the designed capacity on the circulation pump using its switch (35). See the section "Pipe connections" – "Pump and pressure drop diagram". Make sure that the switch is not in an intermediate position.

## Setting the ventilation

Ventilation flows and fan transformer settings are given on the ventilation drawings.

- Selection of the exhaust fan capacity is done by connecting the white conductor from the exhaust fan to the required connection on the terminal (22). See diagram "Ventilation connection" – "Fan diagram". To ensure the lowest possible noise level, set the fan for the lowest possible capacity.
- Make sure that all outside air devices are fully open.
- Set correct ventilation flows on the indoor exhaust air devices.

## Readjustment

During the initial running period, air is given off by the heating water, and venting can be necessary. If bubbling sounds can be heard from the heat pump, the entire system requires further venting. NOTE! The safety valve (52) also acts as a manual venting valve. Operate it with care, since it opens quickly.

## Draining the heating system

The hot water can be drained off through the drain valve (51) using an R15 (1/2") hose coupling. Remove the cover (80) from the valve (51). Screw on the hose coupling and open the valve (51). Open the safety valve (52) to let air into the system.

## Draining the water heater

This is how to drain the water heater:

- Disconnect the overflow pipe from the drain connection (79) and connect a hose to a draining pump instead. Where no draining pump is available, the water can be released into the overflow funnel (99).
- Open the drain valve (47).
- Open a hot water tap to let air into the system. If this is not enough, undo the pipe coupling (74) on the hot water side and pull out the pipe.

## Compressor

On delivery the compressor has a set working level signifying the compressor to start when the temperature drops at the compressor sensor (94) to 50° C and to stop when the temperature arrives at 53° C. It is possible to increase these temperatures by two degrees (52 and 55° C respectively) in order to achieve a somewhat higher hot water temperature with the power switch in

mode "1" (immersion heater not operational). This can be done by changing the mode of the switch for No 1 on the microprocessor board (34) to mode "On". However, be aware that this means somewhat adverse working conditions for the compressor, as this affects the economies slightly negative.

## Periodical temperature increase

FIGHTER 200p is equipped with the function for periodical temperature increase. This means that the temperature will be put up to 60° C at regular intervals. This function is not set functional at factory. However, this function will become operational, if the switch No 4 on the printed circuit card will be changed to mode "On" and if the hot water priority is operational. This setting allows a hot water increase once a week. Once a day will be operational, if the switch No. 3 will be set in the mode "On". Note that while this heating is operational, the circulation pump is not operational and the main part of the heating is done by only

immersion heater, which effects the economies slightly negative. Also note that while this heating the immersion heater is operational, although the power switch is set to "1".

**NOTE!**  
*Periodical temperature increase is possible only if the hot water prioritising is operational.*

## Freezing protection and hot water prioritising

If permanent operation of the circulation pump is desired, FIGHTER 200P is even equipped with a switch (18) to alter between permanent and automatic operation, that is when the control system decides if the circulation pump has to be operational or not. See diagram "Electrical connections" - "Circulation pump control".

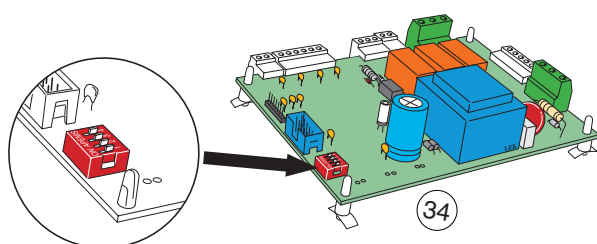
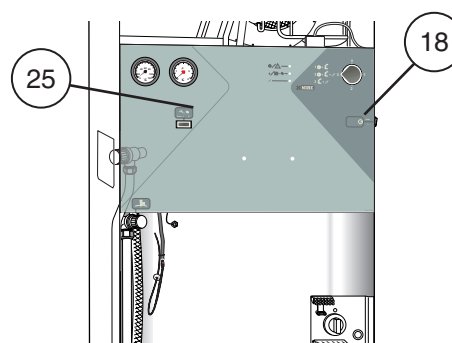
**NOTE! If permanent operation is chosen, the hot water prioritising is not operational as desired. The periodical temperature increase should not be made active.**

If hot water prioritising is operational all energy from the compressor and the immersion heater (if mode "2" is chosen on power switch) is used to heat up the hot water. This happens normally when the temperature at the immersion heater sensor (88) drops to 48° C. The circulation pump will start again when the temperature attains 51° C. These temperatures can be dropped by two degrees (that is 46 and 49° C respectively) in order to retarder the prioritising slightly. This is done by changing switch No 2 on the printed circuit card (34) to mode "On".

FIGHTER 200P is equipped with a three-mode-switch (25) in order to choose proper hot water operation, so-called hot water prioritising.

The following three modes are available:

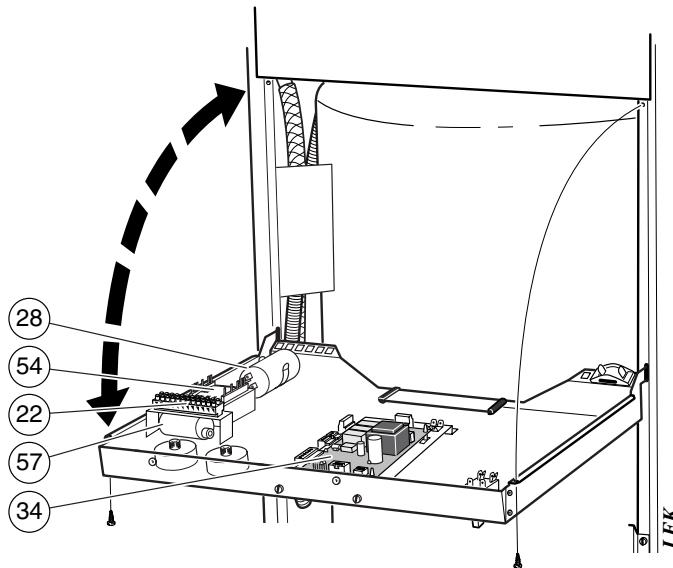
- Off** This means that the hot water prioritising is not operational.
- On** Hot water prioritising is operational.
- Auto** Not used. Same function as mode "On".



## Opening the cover on the distribution box

To lower the front panel, unscrew the two screws at the top of the panel. The panel can then be lowered to

the horizontal position (where it rests on stops on either side of the front panel).

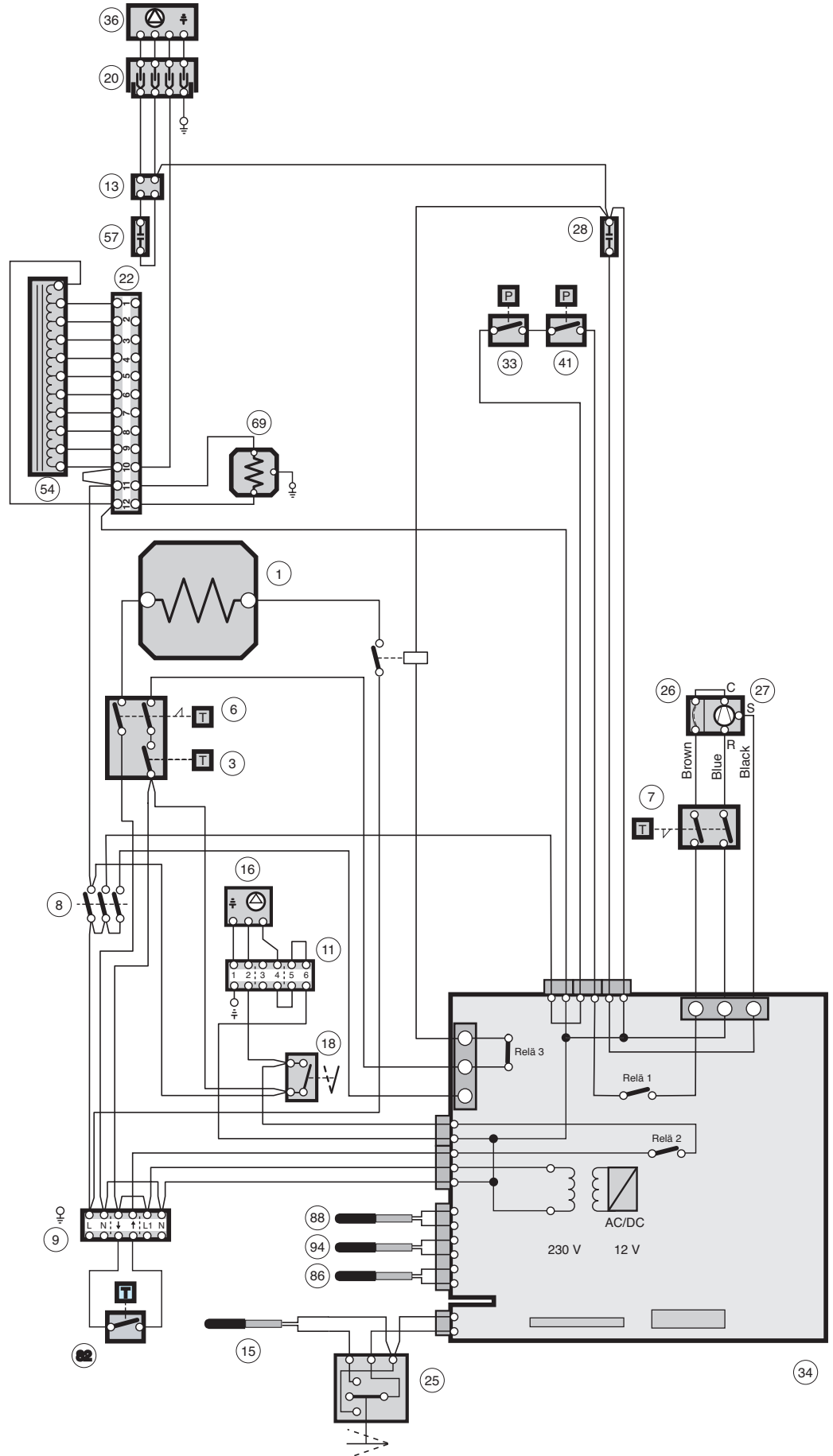
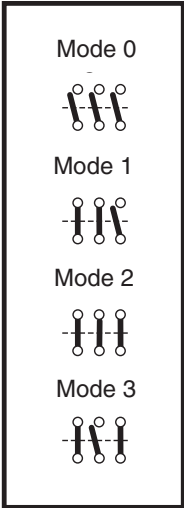


## Refrigerant system

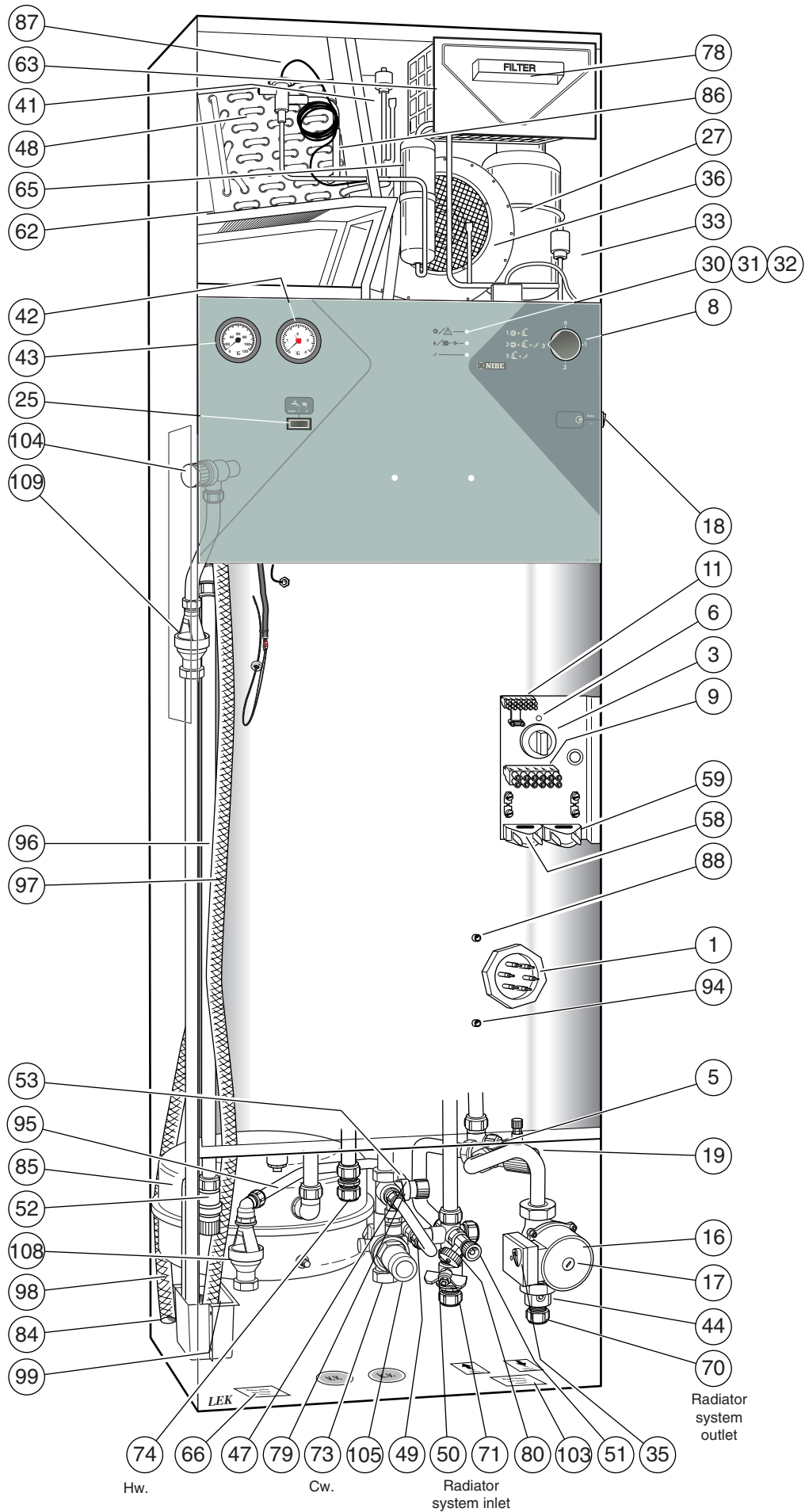


Work on the refrigerant system must be done by authorised personnel in accordance with the relevant legislation on refrigerants, supplemented by additional requirements for flammable gas, for example, product knowledge as well as service instruction on gas systems with flammable gases.

# Electrical circuit diagram



# Components locations



# List of components

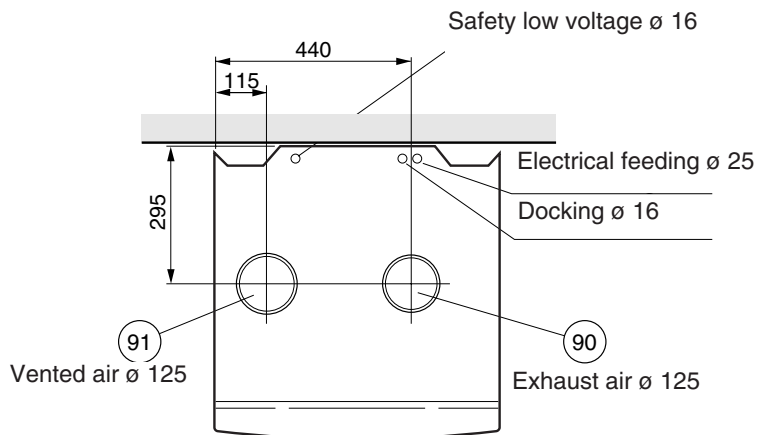
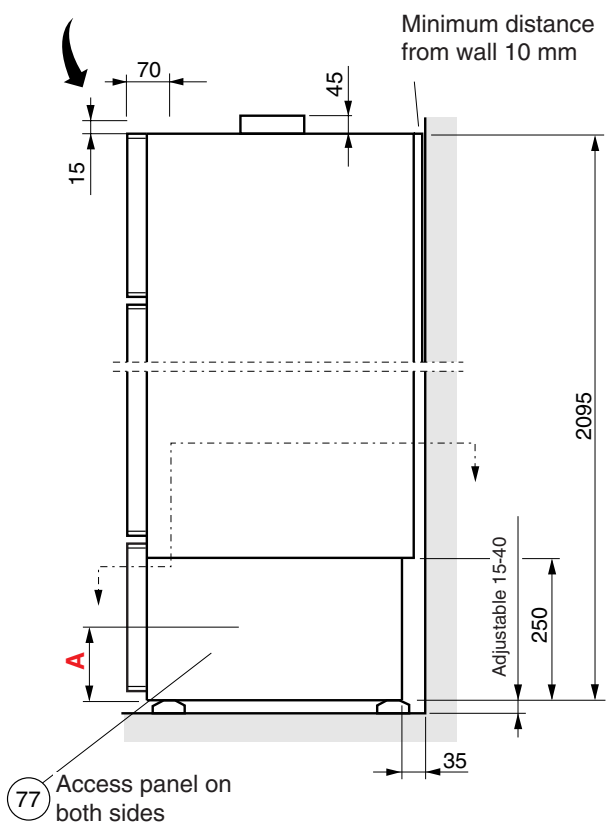
21

- |   |   |
|---|---|
| 1 Immersion heater - 3,0 kW                     | 36 Exhaust air fan  |
| 3 Thermostat for immersion heater               | 41 Low pressure pressostat                                    |
| 5 Limiting valve, heating system                | 42 Boiler pressure gauge                                      |
| 6 Temperature limiter                           | 43 Boiler thermometer   |
| 7 Temperature limiter, compressor               | 44 Shutoff valve for circulation pump & heating system outlet |
| 8 Power switch with mode 0 - 1 - 2 - 3          | 47 Safety valve for water heater                              |
| 9 Feeding terminal and room thermostat          | 48 Expansion valve  |
| 16 Circulation pump                             | 49 Combined filling & non return valve for heating system     |
| 17 Circulation pump vent screw                  | 50 Shutoff valve for heating system inlet (return)            |
| 18 Pushbutton switch for circulation pump       | 51 Drain valve for heating system                             |
| 19 Setting knob for limiting valve              | 52 Safety valve for heating system                            |
| 20 Exhaust air ventilation device               | 53 Vacuum valve (hidden)                                      |
| 22 Connection terminal for fan capacity         | 54 Fan transformer  |
| 25 Pushbutton switch for hot water prioritising | 57 Working capacitor for exhaust air fan                      |
| 26 Motor protection device for compressor       | 58 Tension load stop for feeding conductor                    |
| 27 Compressor                                   | 59 Tension load stop for room thermostat conductor            |
| 28 Working capacitor for compressor             | 62 Evaporator   |
| 30 Indicator lamp "Compressor running/alarm"    | 63 Air filter   |
| 31 Indicator lamp "Defrosting on/check filter"  | 65 Filter drier   |
| 32 Indicator lamp "Immersion heater on"         | 66 Type plate   |
| 33 High pressure pressostat                     | 69 Compressor heater  |
| 34 Microprocessor card with power pack          |   |
| 35 Capacity setting for circulation pump        |   |

	Connection	Setting-out dimensions		
		A	B	C
70 Flow line for heating system .....	Compression ring Ø 22 mm	100 ...	465 .....	90
71 Return line for heating system .....	Compression ring Ø 22 mm	130 ...	465 .....	190
73 Cold water inlet .....	Compression ring Ø 22 mm	180 .	465 .....	290
74 Hot water outlet from water heater .....	Compression ring Ø 22 mm	295 ...	465 .....	345
77 Side access panel to valve connections				
78 Filter box (hidden)				
79 Drain & overflow connection from water heater				
80 Drain connection from heating system .....	R 15 utv			
82 Room thermostat (accessory)				
84 Ventilation opening				
85 Expansion vessel				
86 Temperature sensor from evaporator				
88 Temperature sensor from immersion heater & hot water prioritising				
90 Ventilation connection for exhaust air .....	Ø 125 mm .....	2095 .....	295 .....	160
91 Ventilation connection for vented air .....	Ø 125 mm .....	2095 .....	295 .....	485
94 Temperature sensor for working compressor				
95 Overflow pipe from water heater safety valve				
96 Overflow pipe from heating system safety valve				
97 Condensate drain from fan box				
98 Overflow water discharge .....	PVC-pipe, 32 mm outer diameter			
99 Collecting funnel for overflow water				
103 Serial No. plate				
104 Temperature and pressure valve				
105 Pressure reduction valve				
107 Expansion vessel, tap water				
108 Tundish from safety valve				
109 Tundish from pressure valve				

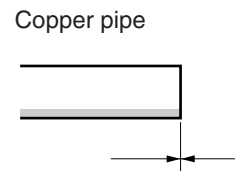
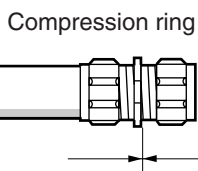
Dimensions and setting-out coordinates

Space required for removal of upper front access panel

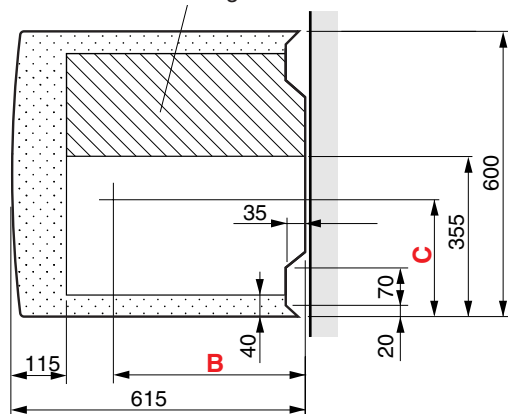


A clear space of 500 mm is needed in front of the heat pump for servicing.

Principle of dimensioning



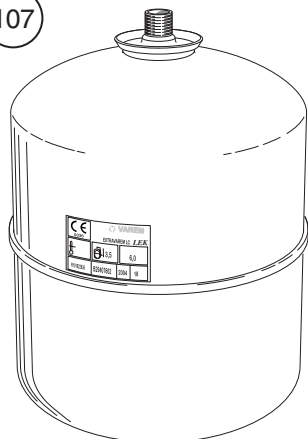
When running pipes in the hatched area to facilitate servicing.



A, B and C: see "Connection" in "Component list".  
Pipes must not be run from the floor in the area indicated by dots.



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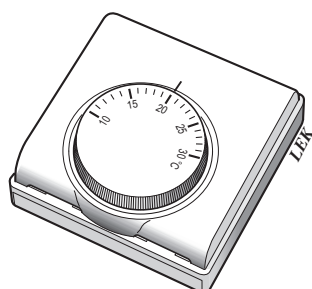


Expansion vessel, tap water (is delivered separately)

## Accessories

### Room thermostat RT 10

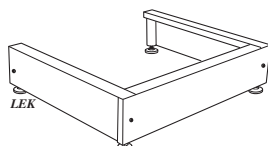
Part no 418 366



### Heightening console

Height: 125 mm

Part no 089195





Height (excl. feet 15-40mm)	2 095 mm
Required ceiling height	2 185 mm
Width	600 mm
Depth	615 mm
Net weight	195 kg
Total volume	240 liter
Volume in double jacket	70 liter
Water heater volume	170 liter
Expansion vessel volume, heating system	12 liter
Expansion vessel volume, tap water	18 liter
Supply voltage	230 V~ 1-phase + N
Max operating current	16,7 A
Immersion heater power rating	3,0 kW
Circulation pump power rating	100 W
Exhaust air fan power rating	170 W
Compressor power rating	550 W
Protection	IP 21
Break pressure for high pressure pressostat	2,45 MPa (24,5 bar)
Break pressure for low pressure pressostat	0,15 MPa (1,5 bar)
Maximum pressure in water heater	0,9 MPa (9 bar)
Maximum pressure in double jacket vessel	0,25 MPa (2,5 bar)
Design pressure in double jacket volume	0,25 MPa (2,5 bar)
Refrigerant quantity	420 g
Refrigerant type	R290 (propane)
Cut-in temperature for compressor	50 °C * (Controlled by a separate sensor)
Cut-out temperature for compressor	53 °C *
Cut-in temperature for immersion heater	49 °C *
Cut-out temperature for immersion heater	52 °C *
Setting area for the limiting valve	38 – 55 °C
Cut-out temperature, thermostat for immersion heater	70 °C
Cut-out temperature, temperature limiter for immersion heater	88 °C
Cut-out temperature, temperature limiter for compressor	88 °C
Sound power level**	46 – 50 dB(A)
Sound level in room where installed***	42 – 46 dB(A)

\* Concerns settings on delivery

\*\* A-weighted sound power level (LWA). The value varies with the selected fan curve.

\*\*\* A-weighted sound pressure level (LpA). The value varies with the damping capacity of the room. These values apply with a damping of 4 dB.





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