



## STRONG AS A VIKING.

- Optimal annual heating factor thanks to the inverter controlled compressor.
- Integrated active cooling function.
- Integrated condensation water trough that together with condensation water pipe KVR 10 prevents icing.
- F2040 can also be docked to one of NIBE's indoor modules VVM 310, VVM 320 or VVM 500 (accessory).
- VVM 310, VVM 320 and VVM 500 contains all controls and consists of a water heater and additional heater in the form of an immersion heater. F2040 together with VVM 310, VVM 320 or VVM 500 make up a complete heating installation.
- F2040 can be controlled from one of NIBE's specially designed controllers, SMO. These connect and disconnect the additional heat and control switching between room heating and hot water heating.
- The material has a long service life and is designed to withstand the Nordic outdoor conditions.
- Optimized operating costs. The speed of the compressor is adjusted according to the demand.

### **NIBE F2040**

NIBE™ F2040 is an air/water heat pump, specially designed for the Nordic climate. F2040 utilises the outside air so there is no need for bore holes or coils in the ground. F2040 is designed to be docked to water borne heating systems.

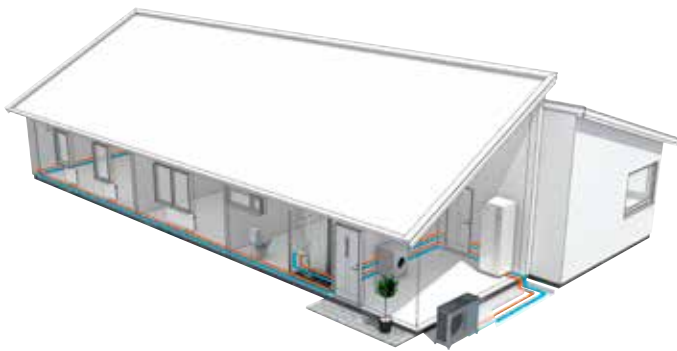
Please visit [www.nibe.eu](http://www.nibe.eu) for further information.

# GOOD TO KNOW ABOUT NIBE™ F2040

## Principle of operation

This is a simplified version of how it works. The outdoor air is drawn into the heat pump and meets a closed system. The system contains a refrigerant with the capacity to turn into gas at a very low temperature.

Under high pressure, a compressor considerably increases the temperature of the refrigerant, which is now gaseous. Using a condenser, the heat is transferred to the house's heating system, while at the same time the refrigerant reverts to liquid form, ready to turn into gas once more and collect new heat energy.



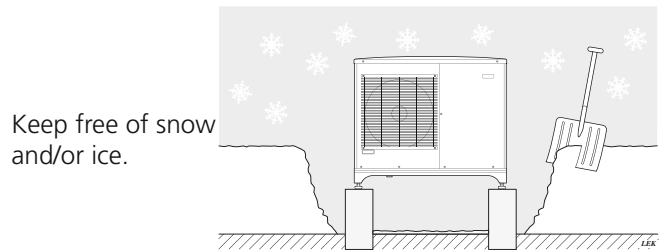
## Maintenance

F2040 is equipped with control and monitoring equipment, however some exterior maintenance is still necessary. Make regular checks throughout the year that the grilles are not clogged by leaves, snow or anything else.

Strong wind combined with heavy snowfall can block the intake and exhaust air grilles. Make sure that there is no snow on the grilles.

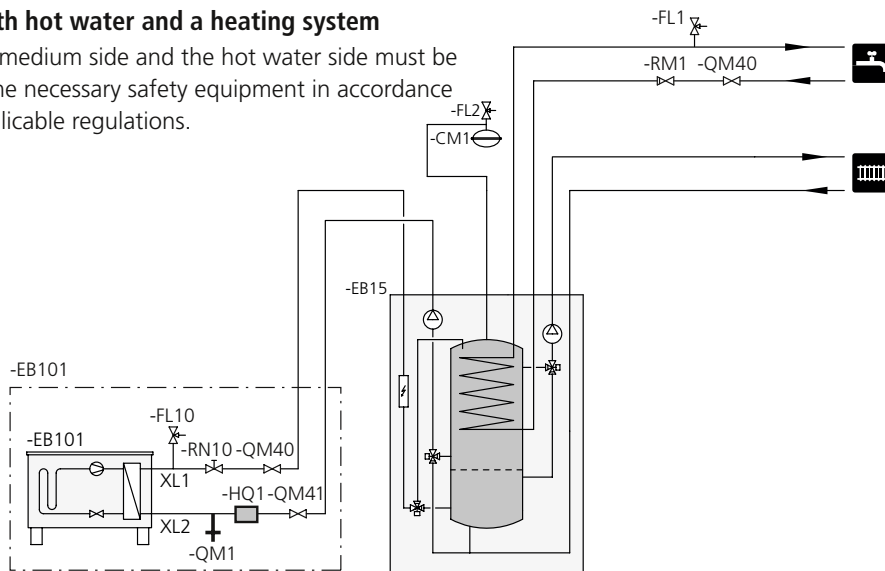
The condensation drain pan and condensation water/drain pipe may require cleaning from leaves or similar during the year. If necessary the outer casing can be cleaned using a damp cloth.

Care must be exercised so that the heat pump is not scratched when cleaning. Avoid spraying water into the grille or the sides so that water penetrates into F2040. Prevent F2040 coming into contact with alkaline cleaning agents.



## Docking with hot water and a heating system

The heating medium side and the hot water side must be fitted with the necessary safety equipment in accordance with the applicable regulations.



## Abbreviations

**EB15 Indoor module (VVM 310)**

**EB101 Heat pump (F2040) (included)**

- FL10 Safety valve, heat pump
- HQ1 Particle filter (included)
- QM1 Drain valve, heating medium
- QM40 Shut-off valve
- QM41 Shut-off valve
- RN10 Trim valve

## Other information

- CM1 Expansion vessel closed, heating medium
- EB1 Electric heater
- FL1 Safety valve, hot water
- FL2 Safety valve, heating medium
- QM40 Shut-off valve
- RM1 Non-return valve

## GOOD TO KNOW ABOUT NIBE™ F2040

### Transport and storage

F2040 should be transported and stored vertically.

### Control

F2040 is inverter controlled. Connected indoor module manages all functions that are necessary for heat pump operation. Accordingly, defrosting, stop at max/min temperature, connection of the compressor heater, enabling the heater for the drip pan, monitoring of motor protection and pressure switches are controlled by the indoor module. The inverter controller is set during installation and can be used during a service. Under normal operating conditions the home owner does not need to have access to the controller.

### Sound pressure levels

F2040 is usually placed next to a house wall, this gives directed sound distribution which should be considered. Accordingly, you should always attempt to find a placement on the side that faces the least sound sensitive neighbouring area. The sound pressure levels are further affected by walls, bricks, differences in ground level, etc and should therefore only be seen as guide values.

F2040 adjusts the fan speed depending on the ambient temperature and evaporation temperature.

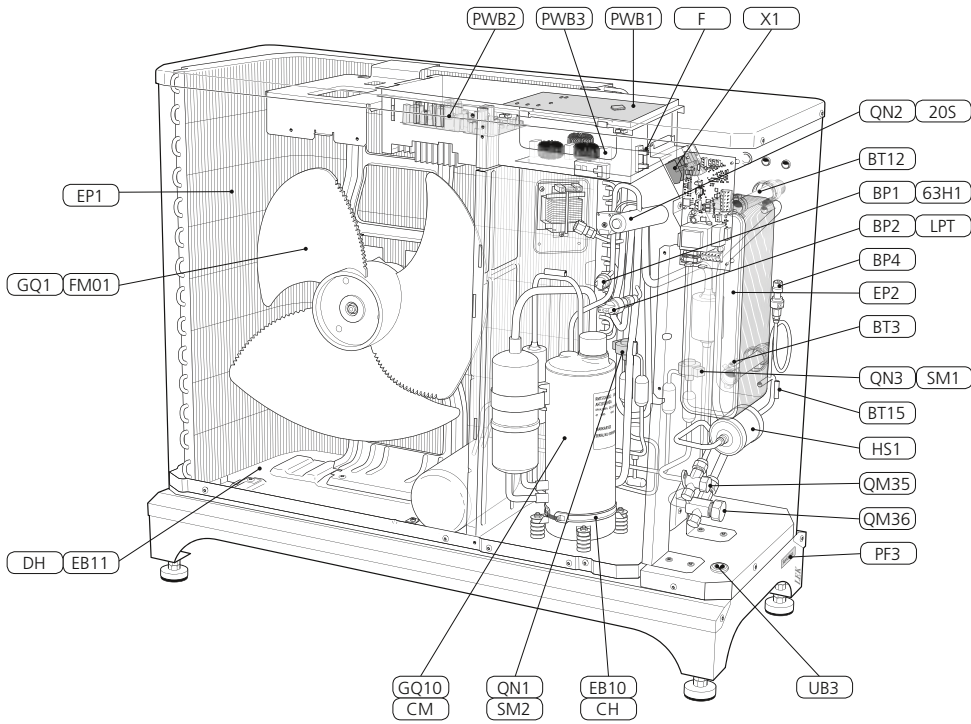


Type		F2040-8	F2040-12	F2040-16
Sound power level, according to EN12102 at 7/45	Lw(A)	54	57	68
<b>Fan speed</b>				
Max sound pressure level at 2 m*	dB(A)	40	43	54
Max sound pressure level at 6 m*	dB(A)	30,5	33,5	44,5
Max sound pressure level at 10 m*	dB(A)	26	29	40

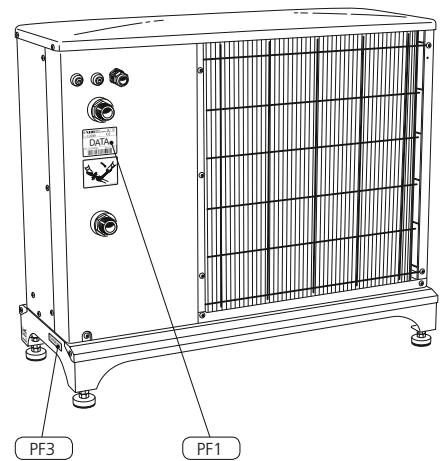
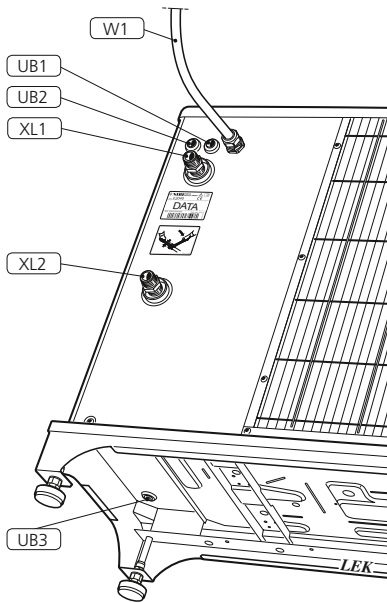
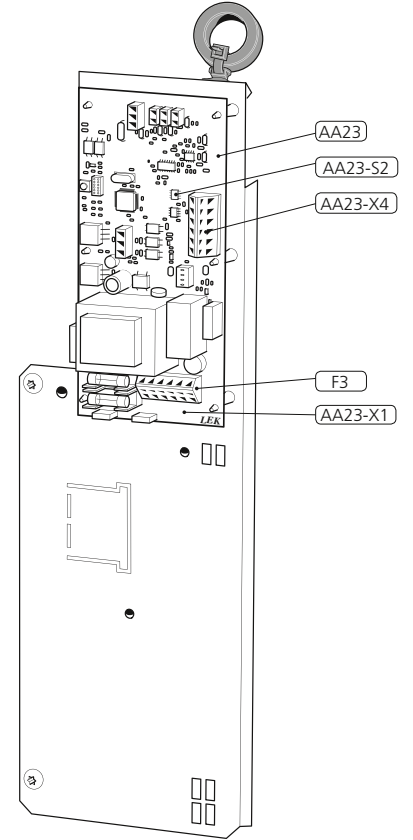
\* Free field

# GOOD TO KNOW ABOUT NIBE™ F2040

## Equipment 2040-8



## Electrical components F2040-8



## GOOD TO KNOW ABOUT NIBE™ F2040-8, -12, -16

### List of components

#### Pipe connections

QM35	Service valve, liquid side
QM36	Service valve, gas side
XL1	Connector, heating medium out of F2040, G3/4" (Q22 mm)
XL2	Connector, heating medium in to F2040, G3/4" (Q22 mm)

#### Sensors etc.

BP1 (63H1)	High pressure switch
BT 3	Temperature sensor, heating medium return line
BT 12	Temperature sensor, condenser supply line
BT 15	Temperature sensor, fluid pipe
BP2 (LPT)	Low pressure sensor
BP4	High pressure sensor

#### Electrical components

AA23	Communication board
AA23-X1	Terminal block, incoming supply
AA23-X4	Terminal block, communication
EB10 (CH)	Compressor heater
EB11 (DH)	Drip tray heater
F	Main fuse, compressor unit
F3	Fuse for external heating cable (250 mA), max 45 W
GQ1 (FM01)	Fan
PWB1	Control board
PWB2	Inverter board
PWB3	Filter board
TB	Terminal block, electricity and communication
X1	Terminal block, incoming

### Cooling components

QN2 (20S)	4-way valve
GQ10 (CM)	Compressor
QN3 (EEV-C)	Expansion valve, cooling
QN1 (EEV-H)	Expansion valve, heating
EP1	Evaporator
EP2	Condenser
HS1	Drying filter

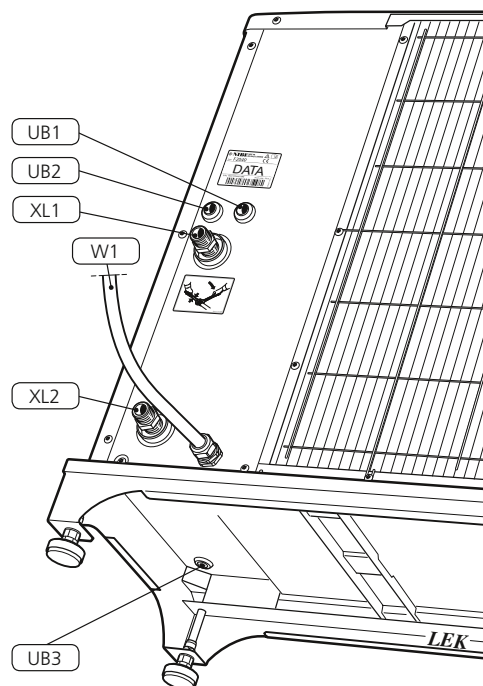
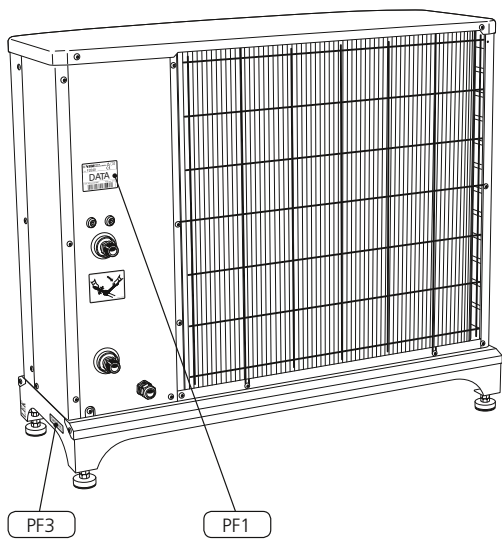
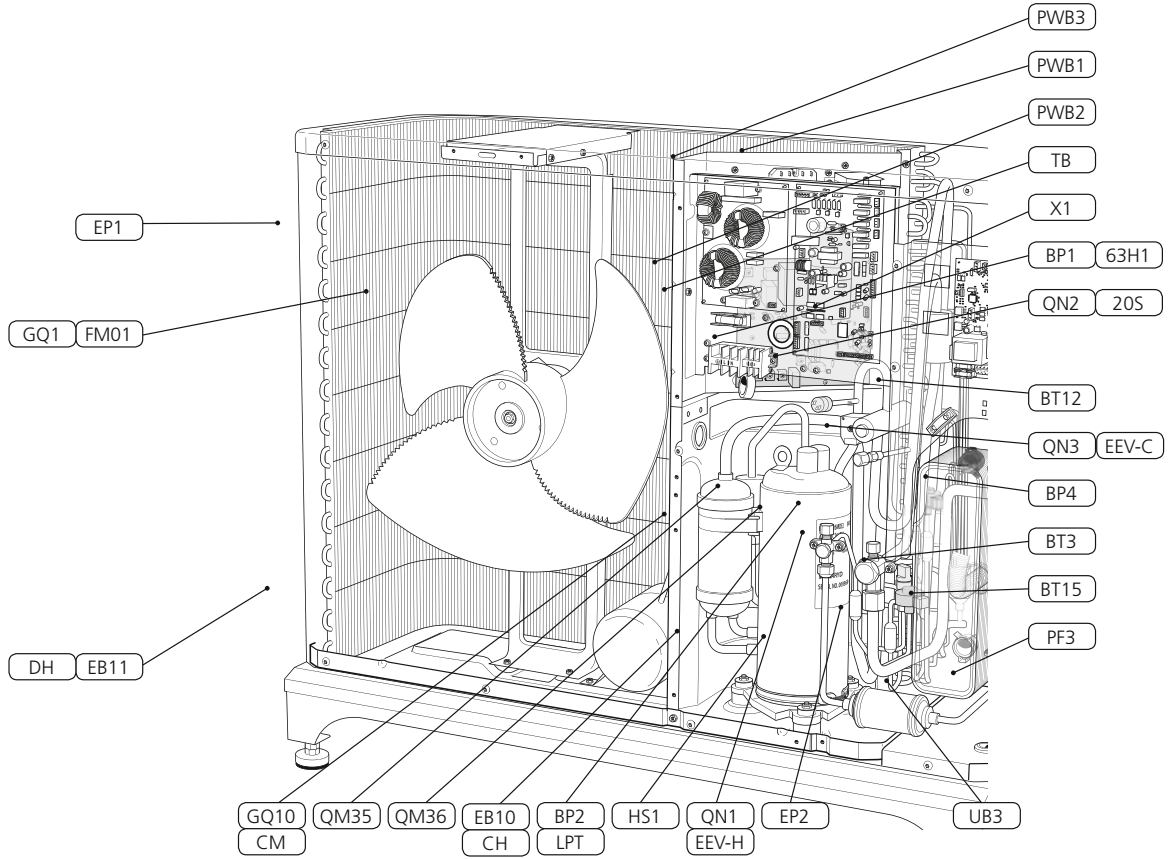
### Other information

PF 1	Type plate
PF 3	Serial number
UB 1	Cable gland, incoming supply
UB 2	Cable grommet, communication
UB 3	Cable grommet, heating cable (EB14)
W1	Cable, incoming supply

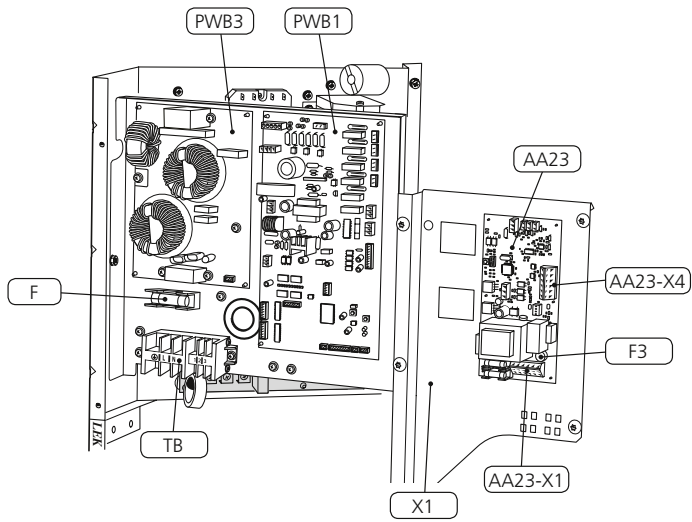
Designations in component locations according to standard IEC 81346-1 and 81346-2.

# GOOD TO KNOW ABOUT NIBE™ F2040

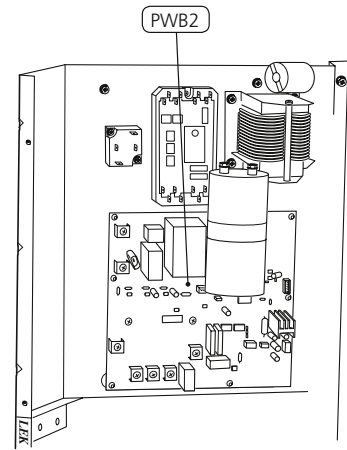
## Equipment 2040-12



Front el F2040-12

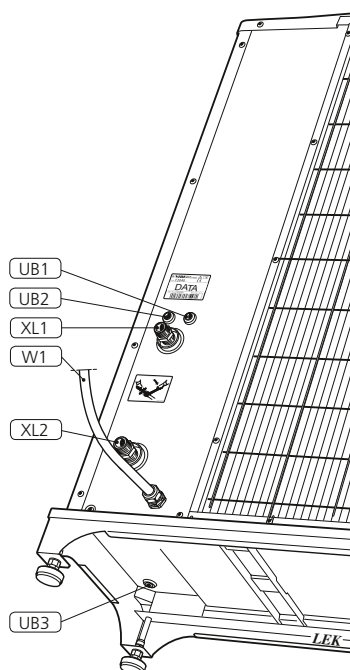
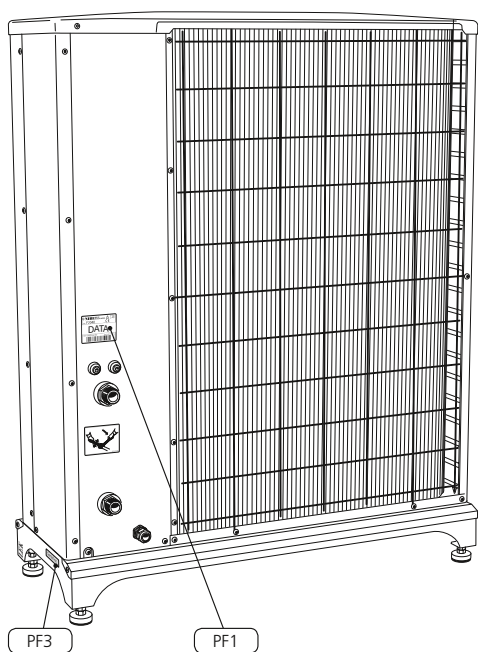
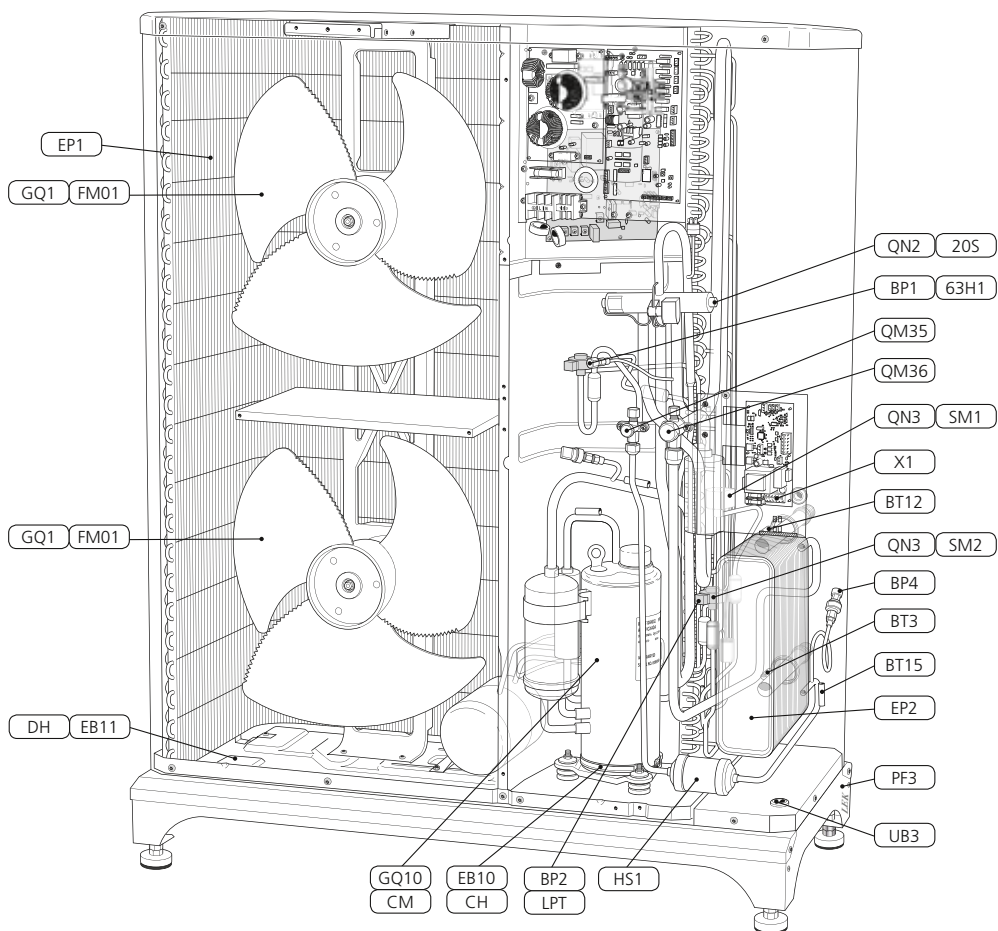


Rear el F2040-12



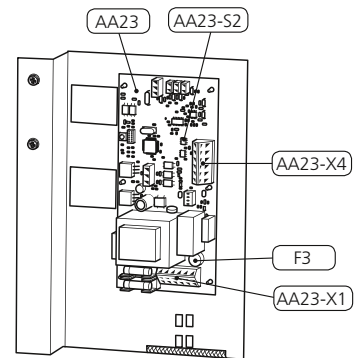
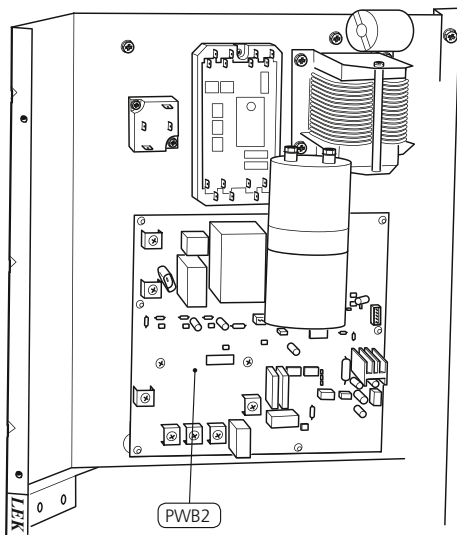
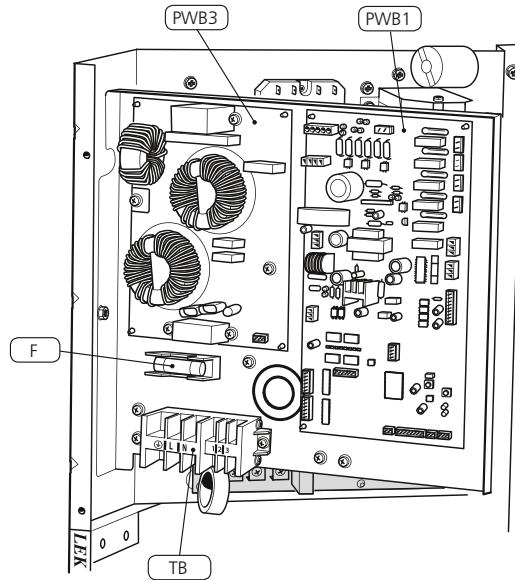
# GOOD TO KNOW ABOUT NIBE™ F2040

## Equipment 2040-16



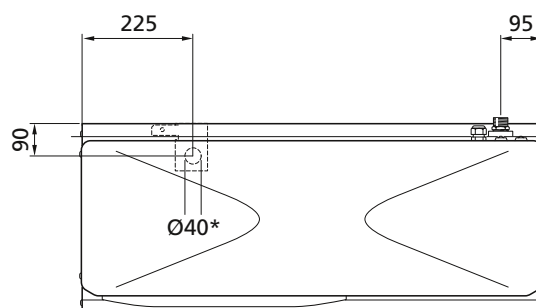
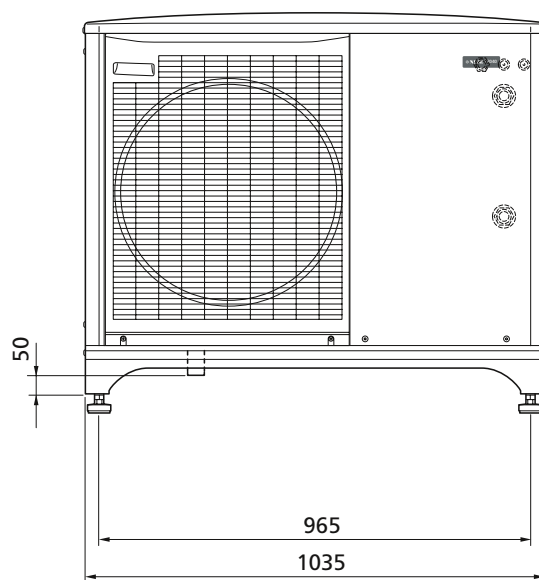
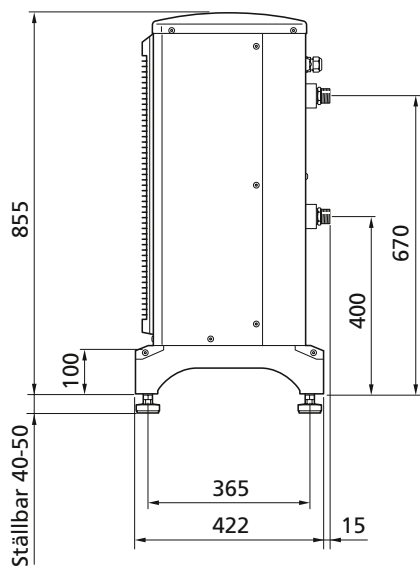


# Electrical components F2040-16

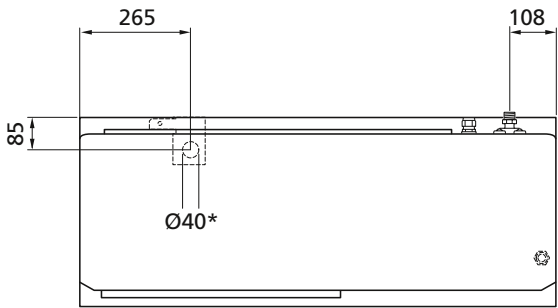
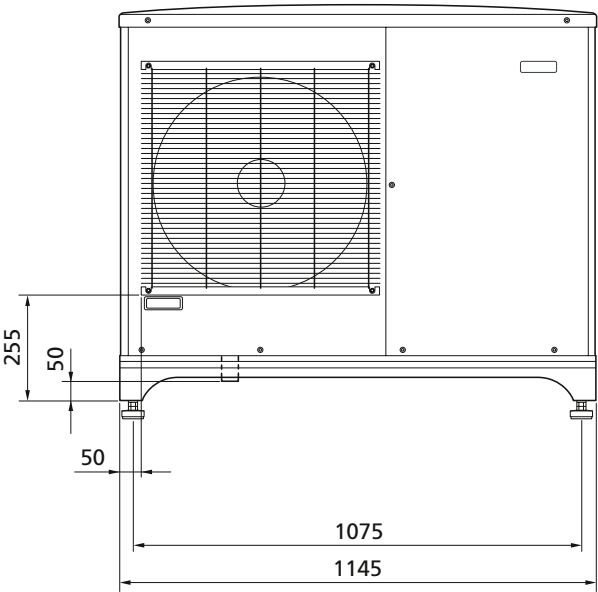
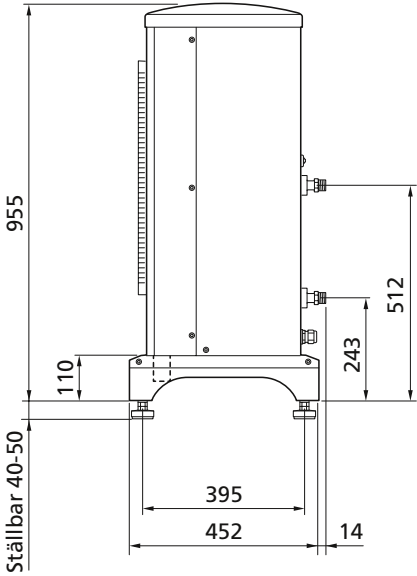


# GOOD TO KNOW ABOUT NIBE™ F2040

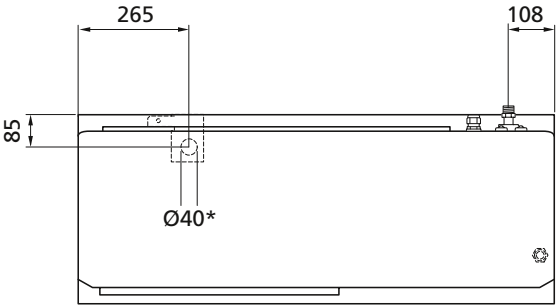
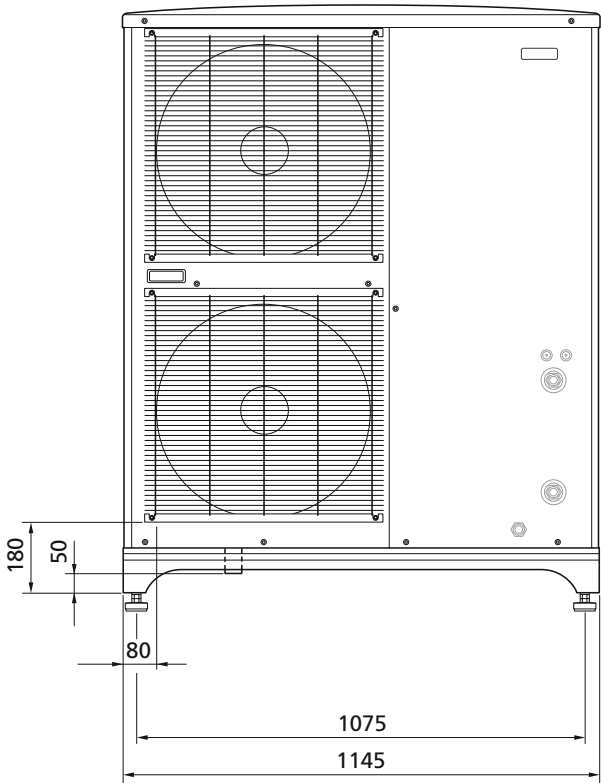
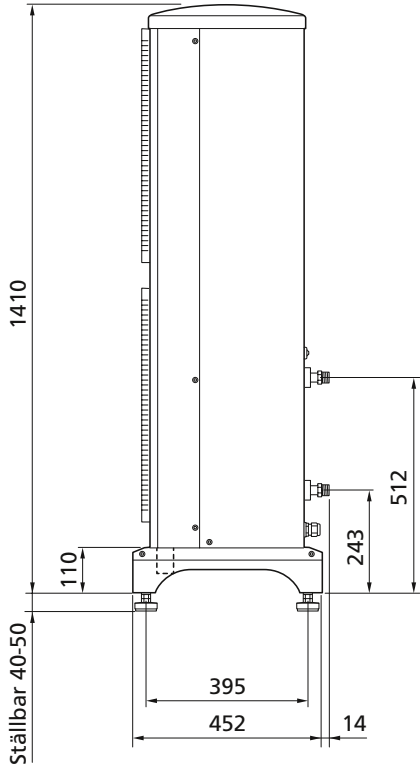
## Dimensions F2040-8



Dimensions F2040-12



Dimensions F2040-16



# INSTALLATION

F2040 can be connected in several ways. The necessary safety equipment must be installed in accordance with current regulations for all docking options.

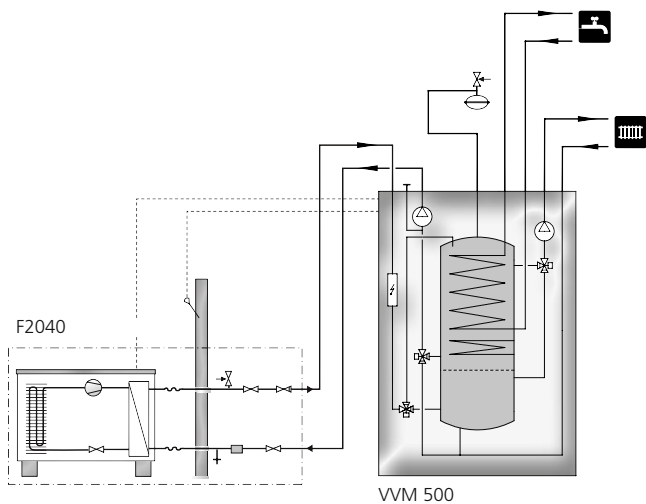
## Inspection of the installation

Current regulations require the heating installation to be inspected before it is commissioned. The inspection must be carried out by a suitably qualified person and should be documented. The above applies to closed heating systems. If the heat pump is replaced, the installation must be inspected again.

## NIBE F2300 + NIBE VVM 310/VVM320\*/VVM500

F2040, together with VVM 310, VVM 320\* or VVM 500, creates a complete heating and hot water installation. VVM 310, VVM 320 and VVM 500 are equipped with a control box that currently makes them the most economical operators, both for the integrated immersion heaters (max 12/9 kW) and compressor operation in F2040.

VVM 310, VVM 320 and VVM 500 come complete with automatic heating, reversing valve, circulation pump, speed controlled charge pump and safety equipment. With VVM 310, VVM 320 or VVM 500, pool heating is possible as well as extra shunt groups, i.e. two heating systems with different supply temperatures. VVM 310, VVM 320 and VVM 500 are designed for simple connection to F2040.

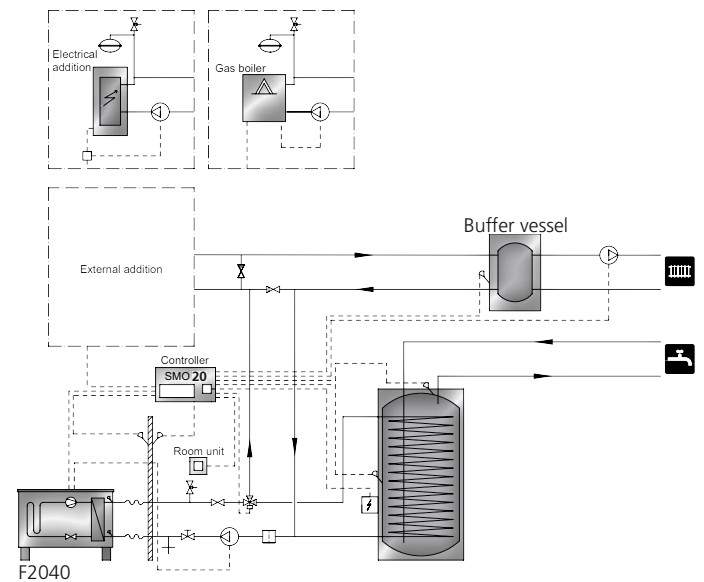


## NIBE F2300 + NIBE SMO 20 system

SMO 20 is an intelligent control module that, together with, F2040 and existing heating and hot water equipment, creates a complete unit. SMO 20 manages compressor operation in F2040 and, if necessary, the additional power from any type of existing equipment that may be required. SMO 20 also manages circulation pumps, reversing valves and sensors.

## NIBE F2300 + NIBE SMO 40 system

SMO 40 is an intelligent control module that, together with, F2040 and existing heating and hot water equipment, creates a complete unit. SMO 40 manages compressor operation in F2040 and, if necessary, the additional power from any type of existing equipment that may be required. SMO 40 also manages automatic by-passes, load guards, circulation pumps, reversing valves and sensors. With SMO 40, pool heating is possible as well as up to three extra shunt groups, i.e. four heating systems with different supply temperatures.

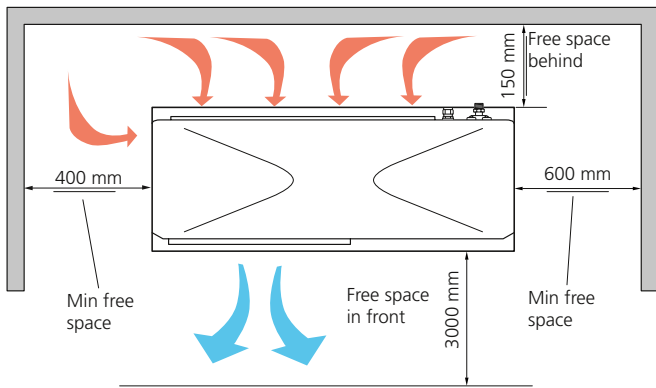


\*F2040-8 and F2040-12 (not F2040-16) can be connected to VVM 320.

# INSTALLATION

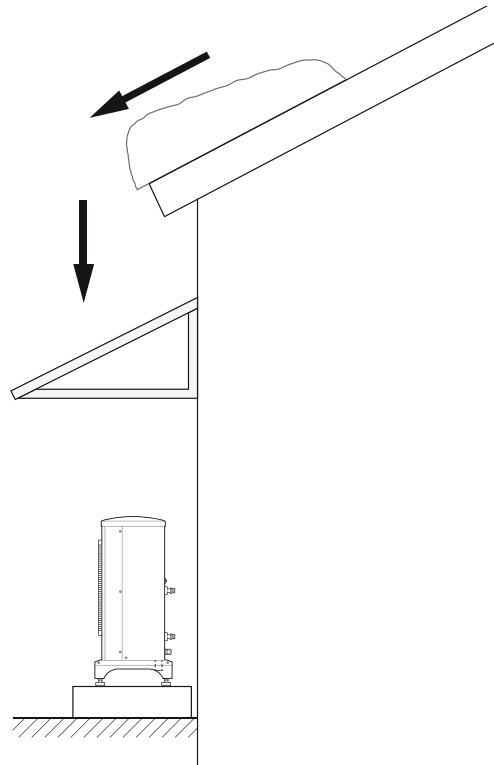
## Installation area

The distance between F2040 and the house wall must be at least 150 mm. Leave a space of about 600 mm to the right of the heat pump for servicing. Clearance above F2040 must be at least one metre. A clear space of 3 m is needed in front of the heat pump.



Do not place F2040 directly on the lawn or other non solid surface.

If there is a risk of roof slides a protective roof or similar should be installed over the heat pump, pipes and wiring.



## Installation and positioning

- Position F2040 outdoors on a firm and level surface that can take the weight, preferably a concrete foundation. If concrete slabs are used these should lie on tarmac or gravel.
- The concrete foundation or slabs must be positioned so that the lower edge of the evaporator is at the level of the average local snow depth, although a minimum of 300 mm.
- F2040 should not be positioned next to sensitive walls, for example, next to a bedroom.
- Also ensure that the placement does not inconvenience the neighbours.
- F2040 must not be placed so that recirculation of outdoor air can occur. This causes lower output and impaired efficiency.
- The evaporator should be sheltered from direct wind.
- Place F2040 so that the evaporator is protected from wind. Condensation water as well as melt water from defrosting can be produced in large amounts. Condensation water must be led off to a drain or similar. Care must be exercised so that the heat pump is not scratched during installation.

# INSTALLATION

## Pipe installation

Pipe installation must be carried out in accordance with current norms and directives. F2040 can only operate up to a return temperature of about 55 °C and an outgoing temperature of about 58 °C from the heat pump. Because F2040 is not equipped with shut off valves these must be installed outside the heat pump to facilitate any future servicing.

## Pipe connection (heating medium)

- F2040 can be connected to the heating system see the section "Docking" or according to one of the system solutions that can be downloaded from NIBE's website [www.nibe.se/docking](http://www.nibe.se/docking).
- The heat pump must be vented by the upper connection (QM20) using the venting nipple on the enclosed flexible hose.
- The supplied particle filter must be installed before the inlet, i.e. the lower connection (XL2, HM in) on F2040.
- All outdoor pipes must be thermally insulated with at least 19 mm thick pipe insulation.
- The charge pump must be operational, even if F2040 is not running, to prevent damage due to freezing.
- Shutoff and drain valves are fitted so that F2040 can be emptied in the event of prolonged power failures.

## Condensation water collection

The integrated condensation water trough is used to collect and lead away most of the condensation water from the heat pump.

The condensation water (up to 50 litres/24 hrs) collected in the trough should be routed via a pipe (KVR 10 F2040) to an appropriate drain, it is recommended that the shortest outdoor stretch possible is used.

The KVR 10 F2040 accessory should be used to guarantee function.

The part of the pipe (KVR 10 F2040) that is not frost protected must be heated by the heating cable to prevent freezing.

Route the pipe (KVR 10 F2040) downward from F2040.

The drain of the condensation water pipe must be positioned at frost free depth or indoors (subject to local rules and regulations).

The installation must be equipped with a water seal where air circulation can occur in the condensation water pipe.

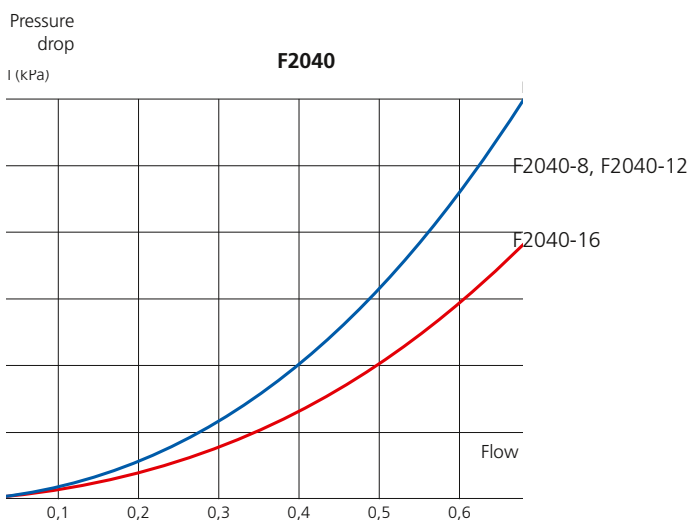
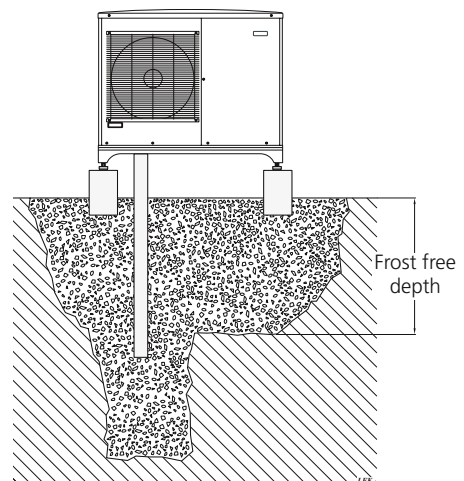


## Recommended alternatives

### Stone caisson

If the house has a cellar the stone caisson must be positioned so that condensation water does not affect the house. Otherwise the stone caisson can be positioned directly under the heat pump.

The outlet of the condensation water pipe must be at frost free depth.



# INSTALLATION

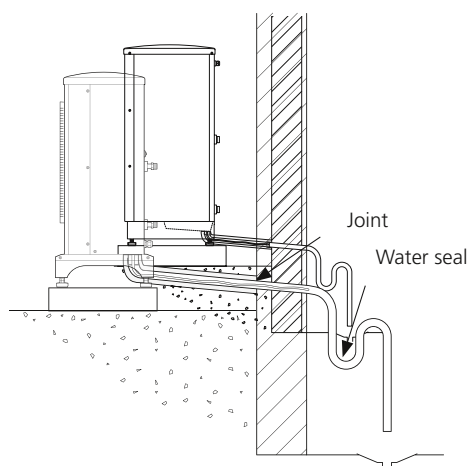
## Recommended alternatives

### Drain indoors

Condensation water is routed to an indoor drain (subject to local rules and regulations).

Route the pipe downward from F2040.

The condensation water pipe must have a water seal to prevent air circulation in the pipe.

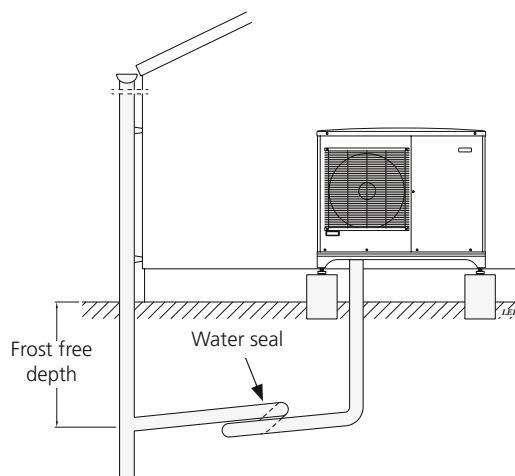


### Gutter drainage

The outlet of the condensation water pipe must be at frost free depth.

Route the pipe downward from F2040.

The condensation water pipe must have a water seal to prevent air circulation in the pipe.





# INSTALLATION

## Electrical installation

Incoming feed cable (W1) is supplied and factory connected to terminal block (X1). Approx. 1.8 m cable is accessible outside the heat pump.

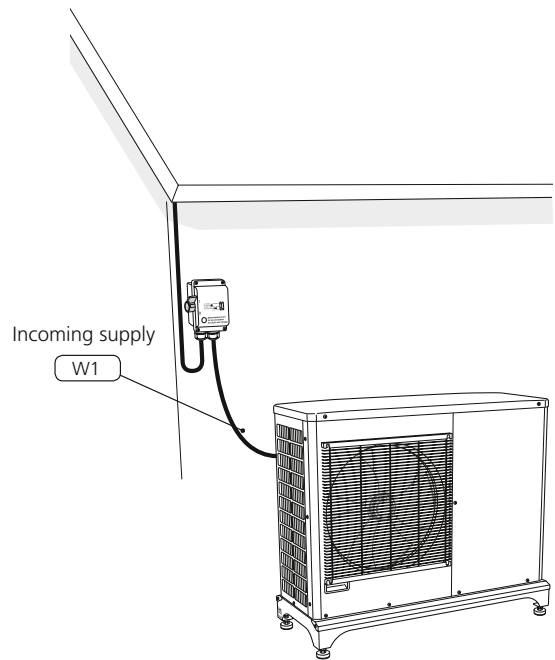
Connect communication cable (W2) (provided by installer) to terminal block (AA23-X4).

For connection of accessory KVR 10, heating cable (EB14) is connected via cable grommet (UB3).

F2040 does not include a circuit breaker on the incoming power supply. The heat pump's supply cable must be connected to a circuit-breaker with at least a 3 mm breaking gap. When the building is equipped with an earth-fault breaker the heat pump should be equipped with a separate one.

Incoming supply must be 230 V 50Hz via distribution boards with fuses.

**NOTE!** The electrical installation and service must be carried out under the supervision of a qualified electrician. Electrical installation and wiring must be carried out in accordance with the stipulations in force.



# TECHNICAL SPECIFICATIONS



Air-water heat pump		F2040-8	F2040-12	F2040-16
<b>Heating</b>	Outd. temp: / Supply temp.	Nominal	Nominal	Nominal
<b>Output data according to EN14511 ΔT5K</b> Rated output / Supplied output / COP (kW/kW/-)	7/35 °C (floor)	3,85/0,84/4,60	5,12/1,08/4,74	7,22/1,55/4,66
	2/35 °C (floor)	6,03/1,59/3,79	6,77/1,74/3,89	9,58/2,53/3,78
	-7/35 °C (floor)	5,91/2,08/2,84	7,95/2,69/2,96	10,79/3,76/2,87
	2/55 °C	4,35/2,03/2,14	5,88/2,69/2,19	7,35/3,73/1,97
	7/45 °C	3,58/1,03/3,47	4,99/1,36/3,66	6,64/1,85/3,59
	2/45 °C	5,11/1,81/2,82	6,47/2,20/2,94	9,02/3,17/2,84
	-7/45 °C	5,61/2,27/2,47	7,78/3,14/2,48	10,98/4,52/2,43
	-15/45 °C	4,99/2,56/1,95	7,83/4,03/1,94	9,25/4,89/1,89
	7/55 °C	3,46/1,11/3,11	4,71/1,52/3,10	5,97/2,05/2,91
	-7/55 °C	4,58/2,36/1,94	6,02/2,98/2,02	8,06/4,05/1,99

<b>Cooling</b>	Outd. temp: / Supply temp.	Max	Max	Max
<b>Output data according to EN14511 ΔT5K</b> Specified/supplied power/EER	27/7 °C	7,52/2,37/3,17	9,87/3,16/3,13	13,30/3,99/3,33
	27/18 °C	11,20/3,20/3,50	11,70/3,32/3,52	17,70/4,52/3,91
	35/7 °C	7,10/2,65/2,68	9,45/3,41/2,77	13,04/4,53/2,88
	35/18 °C	9,19/2,98/3,08	11,20/3,58/3,12	15,70/5,04/3,12

## Electrical data

Rated voltage		230V 50 Hz, 230V 2AC 50Hz		
Max operating current, heat pump	$A_{rms}$	16	23	25
Max operating current, compressor	$A_{rms}$	15	22	24
Start current	$A_{rms}$	5	5	5
Max permitted impedance at connection point <sup>1)</sup>	Ohm	-	-	-
Nominal output, fan (low/high)	W	86	86	2 x 86
Fuse <sup>2)</sup>	$A_{rms}$	16	25	25

## Refrigerant circuit

Type of refrigerant		R410A		
Type of compressor		Twin Rotary		
Compressor oil		M-MA68		
Volume	kg	2,55	2,9	4,0
Cut-out value pressostat HP	MPa (bar)	4,15 (41,5)		
Cut-out value pressostat LP	MPa (bar)	0,079 (0,79)		

## Brine

Airflow	m <sup>3</sup> /h	3000	4380	6000
Max/Min air temp	°C	-20/43		
Defrosting system		reverse cycle		

### Heating medium

Min/Max system pressure heating medium	MPa (bar)	0,05/0,25 (0,5/2,5)		
Min volume, climate system, heating/cooling	l	50	80	150
Min volume, climate system, under floor cooling	l	80	100	150
Max flow, climate system	l/s	0,38	0,57	0,79
Min flow, climate system, at 100% circulation pump speed (defrosting flow)	l/s	0,19	0,29	0,39
Min flow, heating	l/s	0,12	0,15	0,25
Min flow, cooling	l/s	0,15	0,20	0,32
Max/Min heating medium temp continuous operation	°C	58/25		
Connection heating medium male thread		G1"		

### Air-water heat pump

**F2040-8****F2040-12****F2040-16**

#### Dimensions and weight

Width	mm	1035	1145	1145
Depth	mm	422	452	452
Height with stand	mm	895 (+50/-0)	995 (+50/-0)	1450 (+50/-0)
Weight (excl. packaging)	kg	90	105	135

#### Other information

Enclosure class	IP 24
Colour	dark grey

We reserve the right to make changes in design and dimensions without prior notice.

<sup>1)</sup> Max. permitted impedance in the mains connected point in accordance with EN 61000-3-11. Start currents can cause short voltage dips that could affect other equipment in unfavourable conditions. If the impedance in the mains connection point is higher than that stated it is possible that interference will occur. If the impedance in the mains connection point is higher than that stated check with the power supplier before purchasing the equipment.

<sup>2)</sup> Specified output is limited with lower fusing.

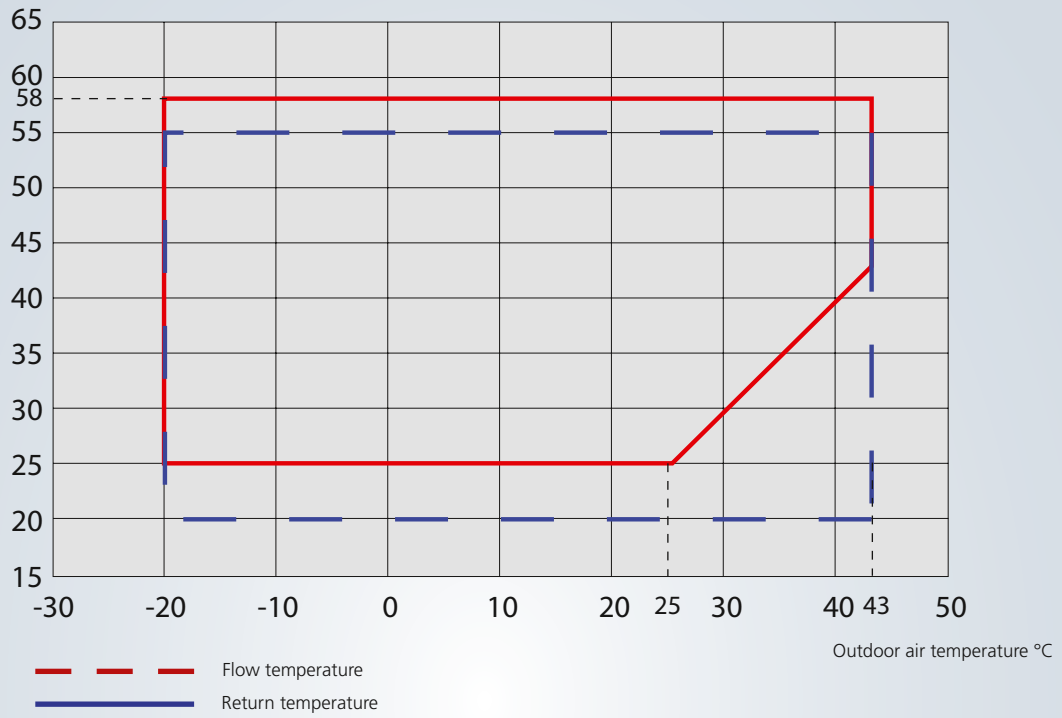
We reserve the right to make changes in design and dimensions without prior notice.



# TECHNICAL SPECIFICATIONS

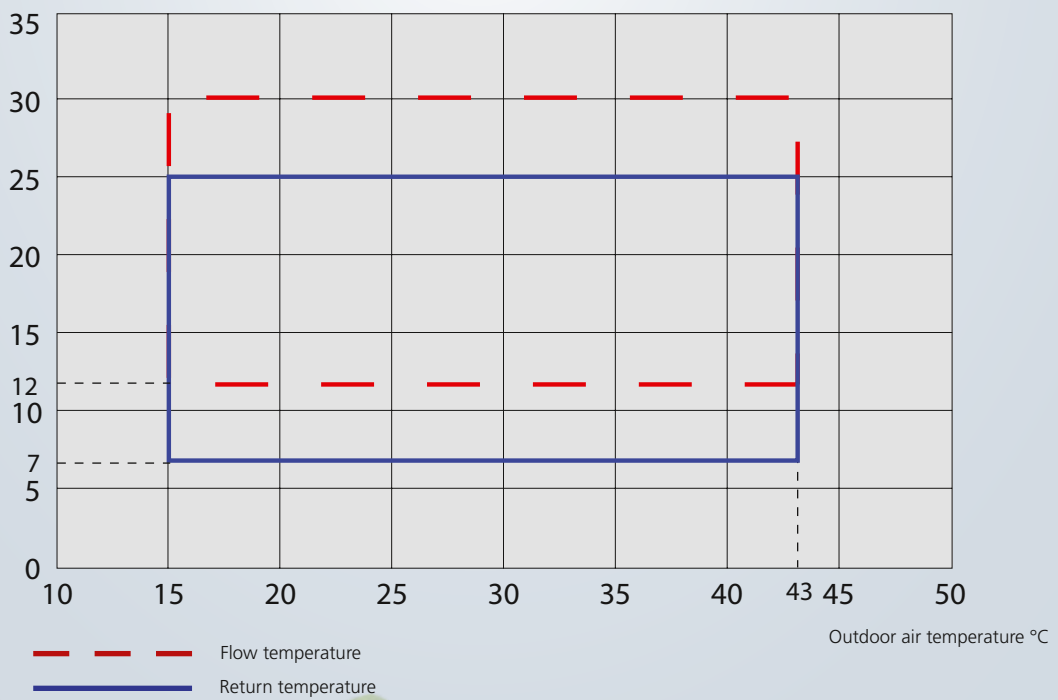
## Working range, compressor operation - heating

Water temperature °C

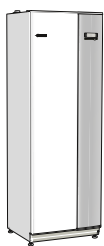


## Working range, compressor operation - cooling

Water temperature °C

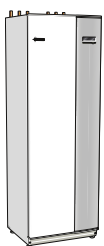


## ACCESSORIES



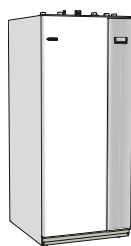
### VVM 310

Flexible indoor module with system for F2030, F2040 and F2300



### VVM 320

Flexible indoor module with system for F2030-7/F2030-9 F2040-8/F2040-12



### VVM 500

Flexible indoor module with system for F2030, F2040 and F2300



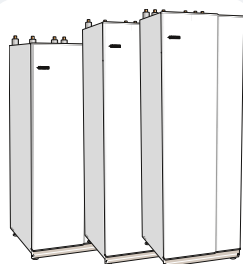
### VPA

Double-jacketed hot water cylinder  
VPA 300/200  
VPA 450/300  
VPAS 300/450



### VPB

Water heater with charge coil  
VPB 500  
VPB 750-2  
VPB 1000



### VPB 200 VPB 300 VPBS 300

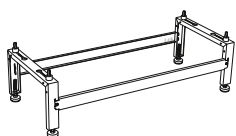
Water heater with charge coil



### KVR 10 F2040

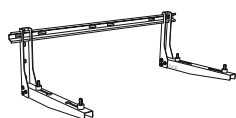
Condensation water pipe, different lengths.  
Earth circuit breaker 1-phase.

**KVR 10-10 F2040**, 1 m  
**KVR 10-30 F2040**, 2.5 m  
**KVR 10-60 F2040**, 5 m



### Ground stand F2040

F2040-8  
F2040-12/-16



### Wall mounting F2040

F2040-8/-12



### SMO20

Control module



### SMO40

Control module



NIBE is ISO-certified:  
SS-EN ISO 9001:2000  
SS-EN ISO 14001:2004

This brochure is a publication from NIBE. All product illustrations, facts and specifications are based on current information at the time of the publication's approval. NIBE makes reservations for any factual or printing errors in this brochure.  
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NIBE Energy Systems AB  
Box 14  
285 21 Markaryd  
SWEDEN  
Tel. +46 433 - 73 000  
[www.nibe.eu](http://www.nibe.eu)