NIBE™ F2040
AIR/WATER HEAT PUMP

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 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.

**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.

**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.

**Abbreviations**
- **EB15** Indoor module (VVM 310)
- **EB101** Heat pump (F2040) (included)
- **FL1** Safety valve, hot water
- **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, hot water
- **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.

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

* 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
Electrical components F2040-16
GOOD TO KNOW ABOUT NIBE™ F2040

Dimensions F2040-8
Dimensions F2040-16
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.

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.

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

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.
- 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**

### Heating

<table>
<thead>
<tr>
<th>Outd. temp / Supply temp.</th>
<th>Nominal</th>
<th>Nominal</th>
<th>Nominal</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/35 °C (floor)</td>
<td>3,85/0,84/4,60</td>
<td>5,12/1,08/4,74</td>
<td>7,22/1,55/4,66</td>
</tr>
<tr>
<td>2/35 °C (floor)</td>
<td>6,03/1,59/3,79</td>
<td>6,77/1,74/3,89</td>
<td>9,58/2,53/3,78</td>
</tr>
<tr>
<td>-7/35 °C (floor)</td>
<td>5,91/2,08/2,84</td>
<td>7,95/2,69/2,96</td>
<td>10,79/3,76/2,87</td>
</tr>
<tr>
<td>2/55 °C</td>
<td>4,35/0,32/2,14</td>
<td>5,88/2,69/2,19</td>
<td>7,35/3,73/1,97</td>
</tr>
<tr>
<td>7/45 °C</td>
<td>3,58/1,03/3,47</td>
<td>4,99/1,36/3,66</td>
<td>6,64/1,85/3,59</td>
</tr>
<tr>
<td>2/45 °C</td>
<td>5,11/1,81/2,82</td>
<td>6,47/2,20/2,94</td>
<td>9,02/3,17/2,84</td>
</tr>
<tr>
<td>-7/45 °C</td>
<td>5,61/2,27/2,47</td>
<td>7,78/3,14/2,48</td>
<td>10,98/4,52/2,43</td>
</tr>
<tr>
<td>-7/55 °C</td>
<td>4,99/2,56/1,95</td>
<td>7,83/4,03/1,94</td>
<td>9,25/4,89/1,89</td>
</tr>
<tr>
<td>7/55 °C</td>
<td>3,46/1,11/3,11</td>
<td>4,71/1,52/3,10</td>
<td>5,97/2,05/2,91</td>
</tr>
<tr>
<td>-7/55 °C</td>
<td>4,58/2,36/1,94</td>
<td>6,02/2,98/2,02</td>
<td>8,06/4,05/1,99</td>
</tr>
</tbody>
</table>

### Cooling

<table>
<thead>
<tr>
<th>Outd. temp / Supply temp.</th>
<th>Max</th>
<th>Max</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>27/7 °C</td>
<td>7,52/2,37/3,17</td>
<td>9,87/3,16/3,13</td>
<td>13,30/3,99/3,33</td>
</tr>
<tr>
<td>27/18 °C</td>
<td>11,20/3,20/3,50</td>
<td>11,70/3,32/3,52</td>
<td>17,70/4,52/3,91</td>
</tr>
<tr>
<td>35/7 °C</td>
<td>7,10/2,65/2,68</td>
<td>9,45/3,41/2,77</td>
<td>13,04/4,53/2,88</td>
</tr>
<tr>
<td>35/18 °C</td>
<td>9,19/2,98/3,08</td>
<td>11,20/3,58/3,12</td>
<td>15,70/5,04/3,12</td>
</tr>
</tbody>
</table>

### Electrical data

<table>
<thead>
<tr>
<th>Rated voltage</th>
<th>230V 50 Hz, 230V 2AC 50Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max operating current, heat pump</td>
<td>A&lt;sub&gt;rms&lt;/sub&gt;</td>
</tr>
<tr>
<td>Max operating current, compressor</td>
<td>A&lt;sub&gt;rms&lt;/sub&gt;</td>
</tr>
<tr>
<td>Start current</td>
<td>A&lt;sub&gt;rms&lt;/sub&gt;</td>
</tr>
<tr>
<td>Max permitted impedance at connection point&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Ohm</td>
</tr>
<tr>
<td>Nominal output, fan (low/high)</td>
<td>W</td>
</tr>
<tr>
<td>Fuse&lt;sup&gt;2&lt;/sup&gt;</td>
<td>A&lt;sub&gt;rms&lt;/sub&gt;</td>
</tr>
</tbody>
</table>

### Refrigerant circuit

<table>
<thead>
<tr>
<th>Type of refrigerant</th>
<th>R410A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of compressor</td>
<td>Twin Rotary</td>
</tr>
<tr>
<td>Compressor oil</td>
<td>M-MA68</td>
</tr>
<tr>
<td>Volume</td>
<td>kg</td>
</tr>
<tr>
<td>Cut-out value pressostat HP</td>
<td>MPa (bar)</td>
</tr>
<tr>
<td>Cut-out value pressostat LP</td>
<td>MPa (bar)</td>
</tr>
</tbody>
</table>

### Brine

<table>
<thead>
<tr>
<th>Airflow</th>
<th>m³/h</th>
<th>3000</th>
<th>4380</th>
<th>6000</th>
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</thead>
<tbody>
<tr>
<td>Max/Min air temp</td>
<td>°C</td>
<td>-20/43</td>
<td>reverse cycle</td>
<td>reverse cycle</td>
</tr>
</tbody>
</table>

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<sup>1</sup> Connection point to the electrical installation.

<sup>2</sup> Fuse must only be replaced by a fuse of the same type and rating.
### Heating medium

<table>
<thead>
<tr>
<th>Min/Max system pressure heating medium</th>
<th>MPa (bar)</th>
<th>0,05/0,25 (0,5/2,5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min volume, climate system, heating/cooling</td>
<td>l</td>
<td>50</td>
</tr>
<tr>
<td>Min volume, climate system, under floor cooling</td>
<td>l</td>
<td>80</td>
</tr>
<tr>
<td>Max flow, climate system</td>
<td>l/s</td>
<td>0,38</td>
</tr>
<tr>
<td>Min flow, climate system, at 100% circulation pump speed (defrosting flow)</td>
<td>l/s</td>
<td>0,19</td>
</tr>
<tr>
<td>Min flow, heating</td>
<td>l/s</td>
<td>0,12</td>
</tr>
<tr>
<td>Min flow, cooling</td>
<td>l/s</td>
<td>0,15</td>
</tr>
<tr>
<td>Max/Min heating medium temp continuous operation</td>
<td>°C</td>
<td>58/25</td>
</tr>
<tr>
<td>Connection heating medium male thread</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Air-water heat pump

<table>
<thead>
<tr>
<th></th>
<th>F2040-8</th>
<th>F2040-12</th>
<th>F2040-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions and weight</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Width</td>
<td>mm</td>
<td>1035</td>
<td>1145</td>
</tr>
<tr>
<td>Depth</td>
<td>mm</td>
<td>422</td>
<td>452</td>
</tr>
<tr>
<td>Height with stand</td>
<td>mm</td>
<td>895 (+50/-0)</td>
<td>995 (+50/-0)</td>
</tr>
<tr>
<td>Weight (excl. packaging)</td>
<td>kg</td>
<td>90</td>
<td>105</td>
</tr>
<tr>
<td>Other information</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enclosure class</td>
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<td>IP 24</td>
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</tr>
<tr>
<td>Colour</td>
<td></td>
<td>dark grey</td>
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</table>

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

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1) 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.

2) Specified output is limited with lower fusing.
TECHNICAL SPECIFICATIONS

Working range, compressor operation - heating

Water temperature °C

-30 -20 -10 0 10 20 25 30 40 43 50

Outdoor air temperature °C

Flow temperature
Return temperature

Working range, compressor operation - cooling

Water temperature °C

10 15 20 25 30 35 40 43 45 50

Outdoor air temperature °C

Flow temperature
Return temperature
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
VPA 300/450

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

VPB 200
VPB 300
VPB 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
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.