

## Nordic floor heating panels for 12 – 16 – 20 mm heating pipes

### Installation of Nordic Floor Heating Panels



New underfloor heating panels from Nordic Fos  
– short response time, quick installation, significant energy savings

*In recent years, the development of underfloor heating has gone from heating pipes cast in concrete to lightweight underfloor heating panels that quickly distribute heat. This helps reduce energy consumption and offers the consumer lower heating costs.*

*The new floor heating panels from NORDIC can regulate the floor temperature in just 30 minutes. Not only do they save energy, but they are also easy, fast and more inexpensive to install.*

#### **Developed by Nordic universities**

The new floor heating panels from Nordic have been developed in close collaboration with technical universities. A team of experts was tasked with developing the optimal underfloor heating system, both in terms of energy consumption and installation. The new range of floor heating panels has therefore been designed to regulate temperature quickly – allowing for lower temperatures at night and continuous adjustment, resulting in much lower heating costs. The development work includes heating pipes that are close to the new floor, with less distance between them and a smaller dimension than before.

#### **Response time of just 30 minutes**

Older underfloor heating systems based on heating pipes cast in concrete often have a response time of 24 hours. The new Nordic systems cut response time down to just 30 minutes. Therefore, a room thermostat can easily regulate heat consumption on a continuous basis – e.g. when the sun offers natural heat during the day. Or when there are a lot of people in the room. The thermostat can regulate heat consumption continuously, offering savings on heating costs and providing a much better indoor climate.

#### **One panel does it all**

Nordic's new underfloor heating panel has aluminium heat distribution across the entire panel, as well as a u-shaped return track integrated in all panels. This means you now only need one type of panel. The panels are suitable for heating pipe diameters of 12, 16 and 20 mm. They measure 1200 x 600 mm (0.72 m<sup>2</sup>), come folded in a handy 600 x 600 mm size and weigh less than 1 kg. This all means that the installation work is easier and faster than before.

### Can be used for all floor types

Nordic underfloor heating panels are produced in XPS 500, which has a high compressive strength of 50 t/m<sup>2</sup>. As a result, you can install all kinds of floors directly on top of the heating panels, e.g. tiles, natural stone, parquet and laminate flooring. Herringbone parquet glued to a floor panel,

– Yes, even thin concrete can be cast as a raw and fashionable New York-style floor. If you want vinyl or carpet, a chipboard flooring or min. 8 mm floor screed must be laid as an underlay on the Nordic Underfloor Heating Panel.

### Extra thin version for renovations

For renovations in older homes, installation height is often a significant challenge. Special NORDIC floor heating panels that are only a few mm thicker than the heating pipes themselves are available for this type of work – i.e. 16 mm in height for 12 mm heating pipes, and 19 mm in height for 16 mm heating pipes.

### Suitable for all forms of energy, including low energy

Unique to NORDIC is the ability of the underfloor heating panels to utilise the heat from low-energy systems such as geothermal, solar and heat pump systems, where the flow temperature can be kept as low as 30-32°C compared to 50-60°C in traditional radiator systems.

### *The fast response time increases comfort while minimising energy consumption*

#### Underfloor heating of the future – Energy saving

In underfloor heating systems of the future, the flow temperature requirement will be a decisive factor in energy consumption. A low water temperature can offer savings on the heating bill.

For underfloor heating cast in concrete, the supply water must be at least 37°C. Regulation is slow, and there are large fluctuations in room temperature. Night reduction is difficult and will typically be deselected due to the long response time.

#### Underfloor heating with Nordic underfloor heating panels

Here, the water temperature should only be 30-32°C. Quick regulation with small fluctuations in room temperature. Night reduction is possible and can lead to even better savings. **Energy savings compared to concrete underfloor heating 14%** (increasing the flow temperature by 1°C increases energy consumption by 2%). The system has a fast response time and meets the requirements of DS-469 regarding light constructions, so the system can be used as the only heat source.

#### Installation instructions

The subfloor must be load-bearing, firm, level and stable before installation begins. If the floor is uneven, this should be corrected by using levelling screed prior to installation. The underfloor heating panels for 16 mm heating pipes are available in 2 heights, 19 mm and 25 mm. 16 mm underfloor heating pipe is used for home renovations and new builds, and provides the best heat distribution. The panels for 20 mm pipes are primarily for rooms  $\geq 100$  m<sup>2</sup>. Always use 5-layer heating pipes. This gives the best result and prevents the floor from creaking.

**NOTE! When installing Nordic Underfloor Heating Panels, always use an acid-free adhesive.**

The properties specified by the flooring supplier may vary in terms of strength classes, moisture and substrate tolerances. Nordic Floor Screed is classified as CT-C25-F6, and with peel strength on concrete according to EN 13813  $> 1.5$ N/mm<sup>2</sup>.

#### Circuit size recommendations for renovations:

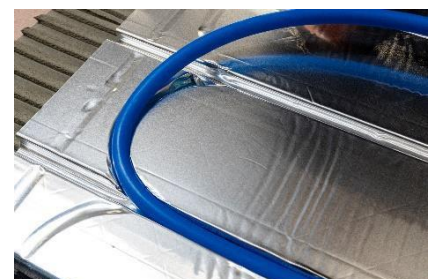
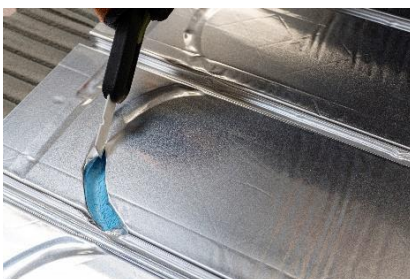
12 mm pipes = 9 m<sup>2</sup> = 90 m

16 mm pipes = 15 m<sup>2</sup> = 120 m

20 mm pipes = 24 m<sup>2</sup> = 160 m

In highly insulated homes, the circuit length can be significantly increased

*Illustration 1*



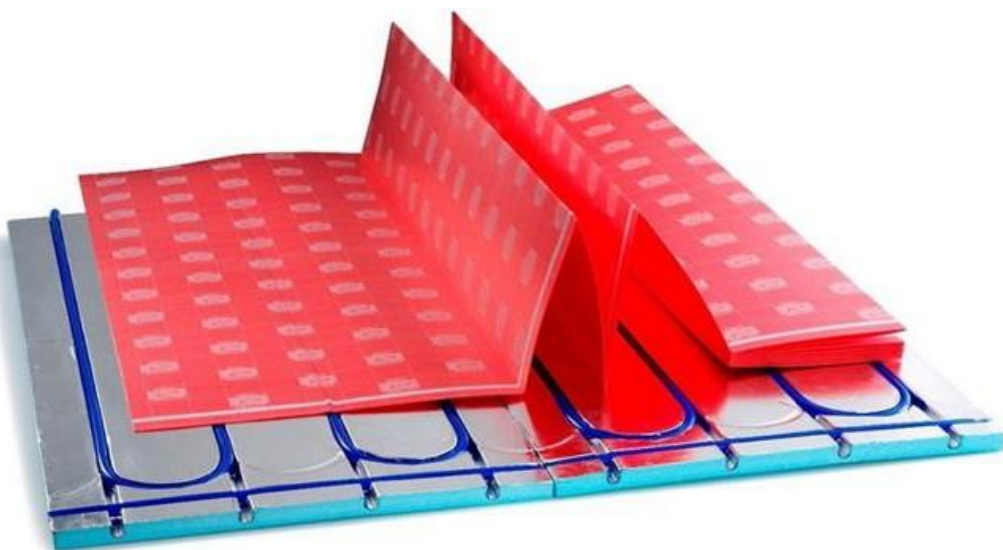
## **A:** Installation of Nordic Fos floor heating panels with floating flooring:

1. Floating floors are laid crosswise to the underfloor heating pipes.
2. The subfloor must be stable and completely level. If necessary, use Nordic Fos floor screed.
3. The panels can easily be adjusted with a Stanley knife and any excess used after the turning track in the next row.
4. Nordic Fos floor Heating Panels are laid out loose, but can be glued in place with either Nordic Tile Adhesive, Nordic Parquet Glue or other acid-free installation adhesive.  
NOTE! It is recommended that the 19 mm panel (161941) and the panel for 20 mm pipes (202531) are fixed to the substrate.
5. On full wood/sheet wood substrate, the panels can be screwed in place with self-tapping chipboard screws. 20 pcs. 4.5 x 40 mm, per panel.
6. Nordic Fos underfloor heating pipes are installed in the panels. Tracks in Nordic Fos floor heating panels have a helpful  $\Omega$  shape and hold the underfloor heating pipe in place after a light tap. Tracks for return piping are found on all panels and are easily prepared with a Stanley knife (*see illustration 1*).
7. NordicFlex or other floor underlay must be installed to dampen impact sound before laying the floor.

NOTE! When using 20 mm pipe (202531), it is recommended that for all floors under 15 mm, an intermediate layer or Nordic Floor Screed is laid between the underfloor heating panels and the floor.

- If additional insulation is required, a layer of pressure-resistant insulation ( $\geq 200$  kPa) can be laid in the desired thickness according to point 2. *See accessories.*

- If you want LVT, vinyl, carpeting or other soft flooring, 12 mm chipboard flooring or min. 10 mm Nordic Floor screed must be laid on the Nordic Fos floor heating panel.



*To achieve better acoustics with parquet and laminate flooring, we recommend a floor underlay (see NordicFlex).*

## **B: Installation of Nordic Fos floor heating panels with a full-surface glued floor:**

1. The subfloor must be stable and completely level. If necessary, use Nordic Floor Screed.
2. In case of a full wood substrate/sheet wood flooring, screw the panels in place with chipboard screws. 20 pcs. 4.5 x 40 mm per panel or glue it down with Nordic Parquet Glue.
3. For concrete floors, prime with a standard primer and glue the Nordic Fos floor heating panels in place using Nordic Tile Adhesive with 10-12 mm notched trowel or Nordic Parquet Glue.
4. The panels can easily be adjusted with a Stanley knife and any excess used after the turning track in the next row.
5. Lay the Nordic Fos floor heating pipes in the panels. Tracks in Nordic Fos floor heating panels have a helpful  $\Omega$  shape and hold the underfloor heating pipe in place. Tracks for return piping are found in all panels and are easily prepared with a Stanley knife (see illustration 1).
6. Once the panels and pipes have been laid, clean the surface of the Nordic Fos floor Heating Panel with a cotton cloth.
7. The flooring is then glued on. Use Nordic Parquet Glue.

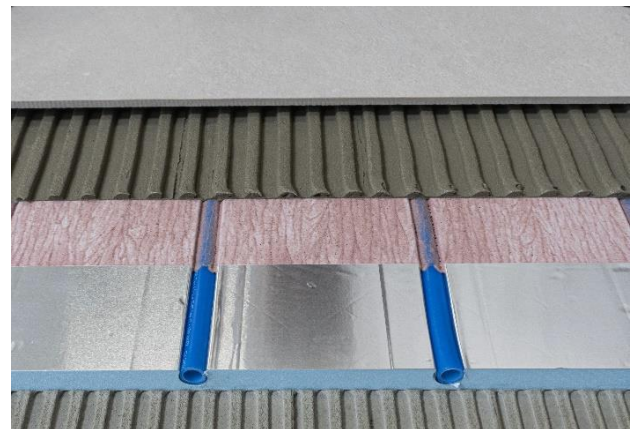
- For Herringbone parquet, full-surface glue a 12 mm woodchip panel with Nordic Parquet Glue or fill with min. 8 mm Nordic Floor Screed. If floor screed is used, prime the aluminium first with Nordic Primer.  
NOTE! Follow the flooring manufacturer's instructions.



### C: Installation of underfloor heating panels with tiles on concrete and in wet rooms:

1. The concrete must be stable and completely level. If necessary, use Nordic Floor Screed.
2. Nordic Fos floor heating panels are glued in place with Nordic Tile Adhesive using 10-12 mm notched trowel.
3. The panels can easily be adjusted with a Stanley knife and any excess used after the turning track in the next row.
4. Nordic Fos floor heating pipes are installed in the panels. Tracks in Nordic Fos floor heating panels have a helpful  $\Omega$  shape and hold the floor heating pipe in place after a light tap. Tracks for return piping are found on all panels and are easily prepared with a Stanley knife (*see illustration 1*).
5. Once the panels and pipes have been laid, clean the surface of the Nordic Fos Panel with a cotton cloth.
6. The panels are primed with Nordic Primer.
7. The tiles can now be installed.

**NOTE!** For wet rooms, before tiling, apply either a membrane solution directly onto the Nordic Fos panel or a screed layer of min. 8 mm Nordic Floor Screed. In this floor alignment process, a slope can be made towards the drain. Follow the manufacturer's instructions.



## **D: Installation of underfloor heating panels with tiles on wooden structures and in wet rooms:**

1. The substrate must be stable, level and not springy. It is recommended that the joist distance does not exceed a maximum of 30 cm.
2. Nordic Fos underfloor heating panels are fixed with acid-free installation adhesive and 25 self-tapping chipboard screws per panel. 4.5 x 40 mm.
3. The panels can easily be adjusted with a Stanley knife and any excess used after the turning track in the next row.
4. Nordic Fos Underfloor heating pipes are installed in the panels. Tracks in Nordic Fos underfloor heating panels have a helpful  $\Omega$  shape and hold the underfloor heating pipe in place after light pressure is applied. Tracks for return piping are found on all panels and are easily prepared with a Stanley knife.
5. Once the panels and pipes have been laid, clean the surface of the Nordic Fos Panel with a cotton cloth.
6. The tiles are primed with Nordic Primer and, once dry, the tiles are installed.

NOTE! For wet rooms, apply either membrane solution or at least 8 mm Nordic Floor Screed before tiling. In this floor alignment process, a slope can be made towards the drain. Follow the manufacturer's instructions. As an alternative to a traditional liquid waterproofing membrane, you can use our Membra solution, which is a self-adhesive membrane system. This can be installed directly on Nordic Fos underfloor heating panels and tiles can be mounted directly on it.

*Always follow current building regulations*

## **E: Installation of Nordic Fos floor heating panels for Design floor / New York-style floor on concrete:**

1. The concrete must be stable and completely level. If necessary, use Nordic Floor Screed.
2. The substrate is primed with a standard primer.
3. Nordic Fos floor Heating Panels are glued in place with Nordic Tile Adhesive.
4. The panels can easily be adjusted with a Stanley knife and any excess used after the turning track in the next row.
5. Nordic Fos Underfloor heating pipes are installed in the panels. Tracks in Nordic underfloor heating panels have a helpful  $\Omega$  shape and hold the underfloor heating pipe in place after a light tap. Tracks for return piping are found on all panels and are easily prepared with a Stanley knife.
6. Once the panels and pipes have been laid, clean the surface of the Nordic Fos Panel with a cotton cloth.
7. The panels are primed with Nordic Primer.
8. Apply a minimum of 10 mm. Nordic Floor Screed. Use fibreglass mesh for reinforcement to prevent cracking.  
*NOTE! Follow the supplier's instructions.*
9. Microcement, Design floor / New Yorker floor can be laid on top.



## F: Installing underfloor heating panels with Design flooring / New Yorker flooring on a wooden substrate:

1. The substrate must be stable, level and not springy. It is recommended that the joist distance does not exceed a maximum of 30 cm.
2. Nordic Fos Underfloor heating panels are fixed with an acid-free installation adhesive and 25 self-tapping chipboard screws per panel. 4.5 x 40 mm. The panels can easily be adjusted with a Stanley knife and any excess used after the turning track in the next row.
3. Nordic Fos Underfloor heating pipes are installed in the panels. Tracks in Nordic underfloor heating panels have a helpful  $\Omega$  shape and hold the underfloor heating pipe in place after a light tap. Tracks for return piping are found on all panels and are easily prepared with a Stanley knife (*see illustration 1*).
4. Once the panels and pipes have been laid, clean the surface of the Nordic Fos Underfloor Heating Panel with a cotton cloth.
5. The panels are primed with Nordic Primer.
6. Apply a minimum of 10 mm. Nordic Floor Screed. Use fibreglass mesh for reinforcement to prevent cracking.  
*NOTE! Follow the supplier's instructions.*
7. Microcement, Design floor / New Yorker floor can be laid on top.

**Remember!** Underfloor heating panels are installed on the entire floor, but do not install pipes under kitchen cabinets and other fixed cabinets and installations.

### Adjustment.

If you need to run pipes between rooms or need extra tracks for routing, new tracks can easily be milled using a router and a groove cutter. Groove cutters for 16 and 20 mm pipe can be ordered with the panels.



### Important information.

Nordic Fos floor heating panels are the latest floor heating system with an ALL-IN-ONE solution. That means you only need one panel to complete your floor heating work. The panel includes  $\Omega$ -shaped tracks for turning the pipes + additional tracks for supply flow, as well as an aluminium coating to distribute the heat across the entire panel. The extra high compressive strength allows almost all types of floors to be installed on top: wooden flooring, laminate, tile, etc.

The work must be carried out by, or in consultation with, a responsible plumber. Temperature resistance:  $-20^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$ . During the entire installation (until the entire floor is finished), the panels must have a temperature of at least  $+10^{\circ}\text{C}$ . Nordic floor heating panels can be installed on virtually any type of load-bearing floor structure that has an even and uniform surface. The maximum fluctuation in the level of the subfloor should be 1-2 mm per metre. If the subfloor is covered by vinyl, tiles or PVC, it must first be approved as a substrate by a floor installer. If Nordic floor heating panels are to be placed on an existing tile floor, it must be scrubbed and primed to provide optimal adhesion. When gluing, always use acid-free glue.

Always ensure that the substrate is completely clean and free of oil, grease, wax, etc. It must be firm and without any loose plaster, cement slurry or cracks. If the substrate is very absorbent, we recommend using a primer. Priming should be applied in all cases where it is deemed necessary to achieve the best possible adhesion to the load-bearing substrate, such as old concrete, plasterboard and wood substrates.

## Accessories

### **NordicFlex underlay:** Art. no. 14316 6 m<sup>2</sup>

Impact noise damping, designed for installation on top of the floor heating system. With integrated vapour barrier and smart cutting lines that make installation extra easy. Folding system with self-adhesive overlap strip. Easy and quick to install.

Impact noise insulation: 19 dB. Improvement in ambient noise: 14%

Thickness: 1.6 mm Width: 1.18 m. Length: 5.1 m. = 6 m<sup>2</sup>



### **XPS 500:** Insulating panel with high compressive strength.

Can be used as a substrate for Nordic Underfloor Heating

Panels Available in 16, 19, 25 and 50 mm

Insulation value  $\lambda$  W/m K 0.034 / Lambda 34



### **Nordic Fos floor Heating Pipes.**

Nordic Fos floor heating pipes meet all the requirements for an underfloor heating pipe. The pipe is flexible and easy to work with, even in cold weather. Nordic Fos underfloor heating pipe is a 5-layer PE-RT pipe with EVOH, which means that the oxygen barrier is located inside the pipe, ensuring that it does not contribute to squeaking noises when used in metallic heat transfer panels.

Nordic 16 mm and 20 mm pipes are classified for use with high and low temperature radiators in addition to underfloor heating pipes.

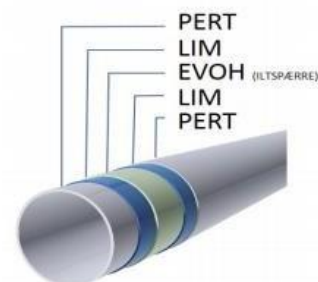
Nordic PE-RT 12x2 – 5-layer underfloor heating pipe 10 bar

Nordic PE-RT 16x2 – 5-layer underfloor heating pipe 6 bar

Nordic PE-RT 20x2 – 5-layer underfloor heating pipe 6 bar

Class of application according to ISO 10508. Class 4 Underfloor heating and low temperature radiators. Class 5 High temperature radiators.

Manufactured according to ISO 22319/ ISO 24033/ ISO 21003. Production and product monitoring by Institut KIWA N.V. Certificates: KIWA KOMO, DIN CERTCO, CE-ETA, SKZ.



# NORDIC FOS A/S

A. P. Møllers Allé 55 2791 Dragør. Denmark.

[info@nordicfos.com](mailto:info@nordicfos.com) +45 44240111