



# **JK floorheating | UFH Guide**

For Architects, Engineers & Developers



## UFH GUIDE | For Architects, Engineers & Developers

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### THE COMPANY

JK is a provider of in-ground warm water underfloor heating systems for residential and commercial buildings across Europe. JK serves over 10 countries in Europe and started 20 years ago serving the Dutch and German markets. JKs products are precision engineered to the highest-quality and manufactured in The Netherlands. The installation method is by dustless grinding, quick and precise route into existing screeds with a special designed floor grinder, where the heating pipe is laid into. Renovation and refurbishment projects is JKs core markets since our system is the solution in existing properties due the fact that raising or removing screeds is NO longer necessary. It is also possible to apply the system in situations with timber subfloor constructions. In other words, 99% of all properties are suitable to install an economical, efficient, healthy and comfortable UFH system.

JKs emphasis is on research, development, production and installation of warm water underfloor heating systems. JK has developed a revolutionary method for installing a Low Temperature Heating (LTH) system in existing floor constructions. Using a specially-developed and patented JK Floorgrinder a tightly routed groove is created into which the underfloor heating pipes are laid.

JK is from origin a Dutch company, founded in 1994, and headquartered in the Netherlands. Since 2000 JK adapted an more international outlook by expanding to Germany and starting joint-ventures with partners in Iceland, Austria and Italy. In the past 20 years JK has acquired more than 100,000 references of knowledge and experience in in-ground underfloor heating systems in a rage of countries. These days JK has fully owned subsidiaries in Germany, Belgium, Turkey and the United Kingdom and serves the main markets of Europe. JK invests highly in innovative underfloor heating solutions where the revolutionary installation method and a range of self-developed high-quality products are a great example of. As a result of these innovative products and it is also possible to install JKs underfloor heating system into different floor levels, and even timber subfloors, where dry-construction panels such as gypsum are already in place.

JK has the knowledge, expertise and experience to bring a quality customised solution whether for renovation, refurbishment or starting a new building project in residential or commercial buildings. The installation of the UFH systems is done by highly-skilled employees who are individually hired and trained by JK. JKs core business is the installation of in-ground warm water underfloor heating systems.

**JK understands people, heat and energy**



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### UNDERFLOOR HEATING - THE BENEFITS AT A GLANCE

#### **Safer;**

- No risk of getting burnt by radiators

#### **More economical;**

- Up to 10% savings due to uniform heating in each room
- LTH (low temperature heating) results in an additional 10 to 15% saving compared to conventional (high temperature) systems

#### **Healthier**

- Maintains better levels of humidity
- Reduces dust circulation
- Eliminates dust mites by reducing home moisture

#### **More Comfortable**

- The radiant heat from underfloor heating is generally perceived as more pleasant. Underfloor heating heats the whole floor area resulting in the opposite vertical heat stratification, warm feet and a cool head
- The heat distribution is closest to the ideal heating model
- No problems with air circulation (cold drafts) or the unpleasant smell of burnt dust which can occur with radiators and convector heaters

#### **More practical**

- Using an underfloor heating system in place of radiators presents you with more useable space. You no longer have to arrange your furniture which can cause radiators to be blocked.

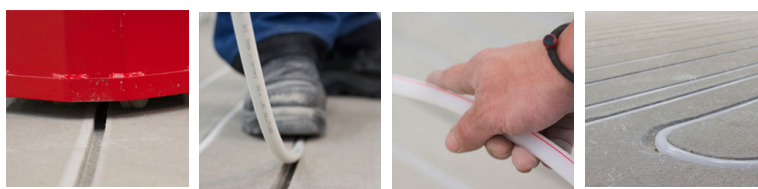
#### **More hygienic**

- No cleaning problems (areas around radiators and convector heaters are often difficult to clean)

#### **More aesthetic**

- No unsightly pipes around radiators, convector heaters or other heating elements





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### BASIC TECHNOLOGY - JK IN-GROUND UFH™

#### System features;

- Single heating system; the only and primary heat source
- Zero build-up; the pipe is embedded 'into' the screed floor
- Bespoke; custom floor cutting on site
- Efficient/Eco-friendly; uses very low water temperatures, saves on your energy bill
- Affordable; no sub-floor work needed
- Quick; installations usually only take one working day
- Dust free; channels are cut in without producing dust
- Responsive; feel the warmth within minutes
- One party; trained in-house engineers fit the entire system

#### JK in-ground UFH™

JK's in-ground UFH™ is a revolutionary underfloor heating system with no build-up height. The top screed is channeled using a specially designed and patented 'JK floorgrinder'. The JK floor grinder dustless creates grooves in the screed into which the heating pipes are laid into. JK's in-ground UFH™ is based on the BS-EN 1264 standards and guidelines, and the related directive ISSO 49 quality floor / wall heating and cooling. Plastic piping systems of PE-RT for floor heating (KOMO) according to the BRL 5602 product certificate K50264. <http://portal.kiwa.info/certificate/Certmain.aspx> and SKZ mark product certificate A519 in accordance with ISSO 10508. <http://www.skz.de/de/index.html>

#### Cutting technology - Grinding method

The JK floor grinder dustless creates grooves in the screed into which the heating pipes are inserted. Since the JK grinding method uses a specially constructed industrial diamond grinding disc it can be applied to 99% of all floor surfaces, making it unnecessary to remove or raise the existing screed floor constructions. Furthermore, it is also possible to install the JK underfloor heating system into different floor levels, or suspended timber floor constructions where dry-construction panels such as gypsum boards are already in place.

#### Zero build-up

Another desirable feature of JK in-ground UFH™ is that it is more comfortable and energy efficient than traditional wet UFH systems, as the heating pipes are installed directly under the surface of the floor. This allows the floor temperature to rise much faster so the room temperature can be controlled more accurately than with traditional underfloor heating systems.



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### Cutting features

The pipe spacing can be adjusted in order to provide the right heat-output for any particular project. However, official heat-output tests are carried out as primary heat source and additional heat source\*.

\*Tested products: JK in-ground UFH; Experimental determination of heat output by Wärmetechnische Prüfgesellschaft WTP, Accredited testing laboratory in accordance to DIN EN SO/IEC 17025.

Thermo-technical audit by test method; DIN EN 1264-2:2013-03. Water based, surface embedded heating and cooling system.

#### Primary heat source

- Living areas; Pipe spacing 125 [mm] / approx. 8 linear metre per sq. m
- Wet rooms; 100 [mm] / approx.. 10 linear metre per sq. m

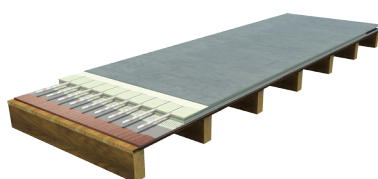
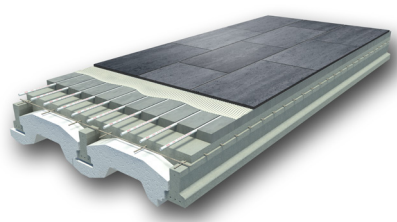
#### Additional heating

- Living areas; Pipe spacing 150 [mm] / approx. 6.5 linear metre per sq. m
- Wet rooms; Wet rooms; 100 [mm] / approx.. 10 linear metre per sq. m

Channels are approx. 15 [mm] \* 16 [mm] in order to embed a 14 [mm] PE-RT pipe, and can be cut into;

### Subfloor construction:

- Type (a); Sand cement screed [thickness min 50 mm] A sand/cement screed is a cement base with sand without aggregates and normally used for domestic purposes. – *liquid screeds min. thickness 35 [mm]* -
- Type (b); Concrete floor construction [thickness min 50 mm] A concrete floor is cement based with aggregates used in industrial premises with no added sand substance. A reinforced floor construction. Non-standard floor construction additional fee applied with T&C.
- Type (c); Dry board KNAUF BRIO23, FERMACELL 2E22 or ULTRA-PRO25 [thickness min 23 mm] A sand/cement screed is a cement base with sand without aggregates and normally used for domestic purposes. Standard floor construction normal pricing applied.







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### Underfloor Heating Pipe: JK Flextube

At the core of the inground underfloor heating JK deliver and installs oxygen-proof Poly-Ethylene or Raised Temperature resistant (PE-RT) tube in accordance with DIN standards. The underfloor heating pipe is made up of five layers, in which the oxygen-proof layer of ethylene-vinyl alcohol (EVOH) is applied as a barrier between two polyethylene layers. The tube meets the German DIN 4726/4721 standards and the Dutch KIWA KOMO norm for BRL 5602 application of underfloor heating/cooling.

### The Advantages

In the past, copper pipes were mainly used in domestic installations. Today, plastic and multi-layer composite pipes are more commonly used. The benefits are obvious: Multi-layer composite pipes feature excellent flow properties and are highly resistant to incrustation, thanks to their superior chemical resistance.

### Down to the last detail

The underfloor heating pipe can be easily bent which reduces or eliminates the need for connections and fittings. The multi-layer composite pipe allows for optimum bend radius. No special tools are required to bend the pipe of a diameter of 14 x 2.0 [mm]. All bends needed for underfloor heating applications can be easily made by hand.





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### MANIFOLD FEATURES

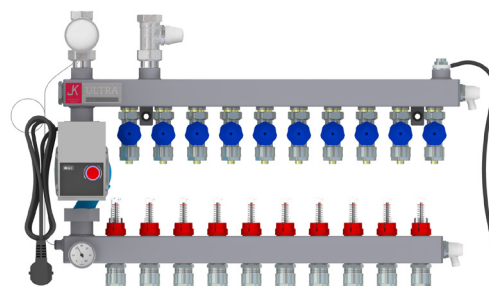
#### JK Manifold

The JK Manifolds are high quality products made from stainless steel and other high quality components. The innovative valve constructing with advanced production techniques and corrosion free materials making the JK water distributors an unique product with sophisticated features and capabilities. The JK manifold is available in three different designs; JK Basic Manifold, JK Ultra Manifold and JK LT Manifold.



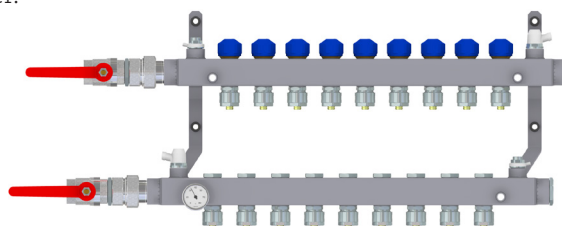
#### JK-Basic & Ultra manifold

With the direct-mounted water pump the manifold is the JK Basic Manifold and JK Ultra Manifold suitable for connecting directly to a hot water source (45-80°C). This is generally a normal gas or electric boiler. The water pump circulates the water and the equipped temperature blending valve mixes the hot water with the cooler return water of the underfloor heating system.



#### JK-LT manifold

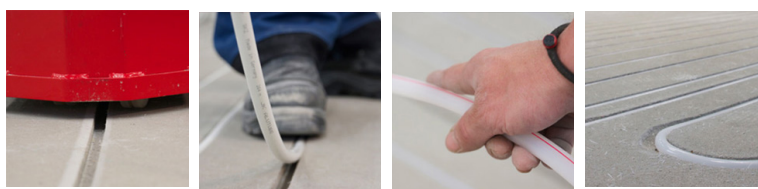
The JK LT Manifold is not fitted with a water pump, which makes the JK LT Manifold ideal for connecting to a low temperature heat source 25-45 [°C]. The water supply is usually provided by remote water pump which is often part of a renewable energy system, such as solar panels, ground-source heat pump or high-efficiency boiler.



#### Maintenance

All working parts of the system are on the manifold ensuring easy maintenance for heating engineers. All components on the system have universal fittings promoting system life span.





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### FLOOR CONSTRUCTION

#### Sub-floor construction

JK in-ground can be installed into a wide variety of sub-floor constructions, and summarised in three categories whereby type (a) also includes liquid, poured and/or levelling latex screeds and type (b) reinforced concrete. JK's in-ground UFH system is a retro-fit warm water underfloor heating system which can be installed into all solid floor constructions without any floor build-up. In case of floor construction (a) Solid floor or (b) Suspended concrete floor; JK's system can be cut directly into the floor construction. In case of (c) Suspended Timber floor, a gypsum-fiber board need to be applied on top and JK's system will be cut into these plain floor boards.

- Type (a); Sand cement screed [thickness min 50 mm]
- Type (b); Concrete floor construction [thickness min 50 mm]
- Type (c); Dry board

#### Heated screed and heat distribution layer

##### *Cement & Concrete screeds*

Concrete floors became more common in the 1950s. The floor is basically a bed of concrete supported by the ground directly beneath it and quite independent from the surrounding walls.

A typical floor from the 1950s might comprise a layer of hardcore (stone or brick), a 100/125 [mm] concrete slab and the floor finish. This is often timber or thermoplastic tiles in bitumen adhesive. From the mid-1960s to the mid-1990s a typical concrete floor comprised a layer of hardcore, a polythene damp proof membrane and a floor screed. Since the mid-1990s the Building Regulations have required insulation in ground floors, a concrete floor can be termed 'cold', i.e. concrete placed below the insulation or 'warm' i.e. the concrete above the insulation.

Furthermore, at low temperatures or for slow hardening cement, the screed must be protected for at least three weeks from drying out and prior to JK's cutting service. For smaller construction projects, this can usually be achieved without taking any special precautions. Weight should not be placed on cement screeds until after three days have passed and heavy weight only after the passing of seven days. Please also pay attention to the manufacturer's requirements.



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### **Dry-board (floating floor system) / Dry, fast and simple!**

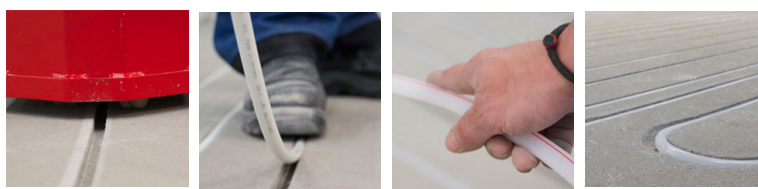
This system is used in suspended timber frame construction and often in refurbishment situations. The use of thin (min 25mm) gypsum based floor elements ensures heat is distributed across the floor. Gypsum fibre boards have been developed to the highest standards of engineering. The boards have a simple homogeneous composition - recycled gypsum, cellulose fibres from post-consumer waste paper, water and no added chemicals. Dry screed boards are fibre-reinforced throughout and are therefore extremely resilient and have particularly good sound-proofing properties. The system does not add significantly to the floor loading.

### **Insulation**

Before explaining the various floor constructions and the impact of floor insulation, it is important to have the right understanding of the (total) heat loss of your home. Heat loss can be split up into 5 separate areas; walls (35%), roof (25%), doors/draughts (15%), floor (15%) and windows (10%). This share-out is partly logically explainable because heat rises and therefore heat loss through roofs and walls are more stringent than those through floors.



The next step is to consider the possibilities of applying insulation. Insulating your loft is perhaps the easiest of all the energy-saving home improvements and it's also within the capability of most DIYers. Walls, windows are the next elements to examine. There are solutions on the market such as double/triple glazing (also noise reduction) and solid or cavity wall insulation products which can be applied either by a DIYer or a specialist. Fourthly; the floor insulation. This might be the trickiest of all because of (a) no space under the floor construction or (b) a significant floor build-up which is not possible or practical. Moreover, the ground floor beneath a house is generally warmer than the air around it and therefore it would be further down on your list of priorities.



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*‘The temperature difference between an internal space to ground is significantly smaller than the temperature difference between the internal space to outside air. In general, recent research (George, Geens & Graham, BFF, Spring 2006) has shown that solid ground floor insulation as an addition to well-insulated walls and roof, contributes very little to the building’s overall thermal performance. The designer should balance the extra benefit(s) attached to installing a new slab with the cost, marginal carbon gains and pragmatics involved’*

Of course, an insulated floor construction is more efficient than an uninsulated floor and will reduce heat-loss. This will have a positive influence on your energy usage. A break-down in costs, examine practicality and potential pay-back time might be helpful by making your decision to invest or not to invest in the floor construction;

1. The cheapest option is to retrofit insulation on top of a solid concrete floor, this will obviously have a significant impact on floor height build-up and may interfere with doors, steps or ceiling height. In the 1990s 50 [mm] was considered as a sufficient insulation thickness, but now 70 [mm] is considered as minimum. Add 60 [mm] of screed and a floor covering and the level rises by close to 150 [mm]. Recommended floor insulation is a layer of 70 [mm] Polyurethane insulation. Polyurethane outperforms Polystyrene and has a greater density.
2. To retrofit insulation under the solid floor; it is only worth digging out the floor if you’re undertaking a major renovation. Set off against the cost – pay-back time - and the energy saving is an important motive. Figures state that insulating under the floor on the ground floor will save about 40GBP - 70GBP a year on energy costs. For many, these figures are not worth it to improve floor constructions, because the investment can be way more effective in another area of the house.
3. Finally, if you are adding extra insulation to your floors, the work will need to comply with the relevant Building Regulations, it is your responsibility to comply. In England and Wales the floor should achieve a U-value of 0.25W/m<sup>2</sup>k or less. The U-value is a measure of how quickly heat will travel through the floor. To achieve this standard, you will normally need at least 70 [mm] of high-performance foam insulation. If you are replacing at least half of a floor, then you must insulate to these standards.



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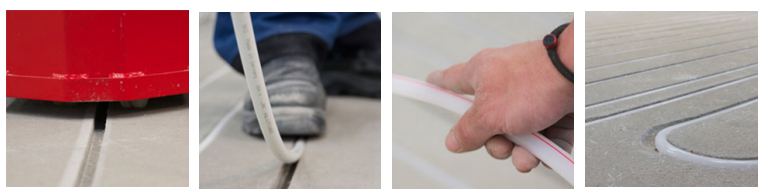
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In summary; houses build before the mid-1990s did not require floor insulation to comply with the Building Regulations. Solid floors became more popular after the 1950s and they are in various configurations, biggest difference; with or without a sand-cement screed on top. It is wiser to apply insulation materials into roof, walls and doors, before investing in the floor construction. After all, still considering improving floor insulation, there are two ways of doing it; on top or underneath. Take in mind; (a) on top: causes a significant floor build-up or (b) underneath: expensive and very messy.



Because the heat loss through the floor counts for a relatively small share of the total loss we recommend focus on the elements which are more cost effective (same investment greater result) as roof and walls. Taking in mind that that actual savings on energy are averagely around 55 pound a year, investing in floor constructions is not attractive considering the pay-back time. Moreover, replacing your radiators with a UFH system counts for a significant saving on its own. Finally, all together we recommend improving insulation fabrics within reason and switch from traditional heating (radiators) to a low-temperature warm water UFH system. In our opinion the best of both worlds!



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### CONTROLS

#### Thermostats & Control

JK's in-ground underfloor heating system is suitable for all brands of heating control systems. Our UFH system can be combined with all type of thermostats whereby we recommend to use a control system which supports overall health, comfort and energy usage. Quality, Reliability and technical excellence are of course aspects to take in consideration by making a decision.

Temperature control systems are basically the brains of a heating system. Since heating and hot water accounting for about 70% to 90% of all energy consumption within a house, it shows the importance of an appropriate control system. Programmable time slots, remote control and 'smart' support enables an excellent house climate at all times. Whether the occupant is at work, on the road, in the tube, in the pub or even on holiday. Control it at any time, in any place.

#### UFH & Zone schedule

Underfloor heating systems are very suitable to be zoned. Controlling different rooms individually is possible with an UFH system since it uses separate circuits. Those circuits can be controlled differently and thus the more zones, the more thermostat controls can be used. It is important to consider 'living areas', such as kitchen, living room, lounge and dining room all separate, to achieve the most from the heating system in both comfort and efficiency. A separate thermostat in every room may sound ideal, however consider that a separate control in a en-suite or toilet may cause full activation of the boiler which can make it costly and decreases the efficiency of the heating system.

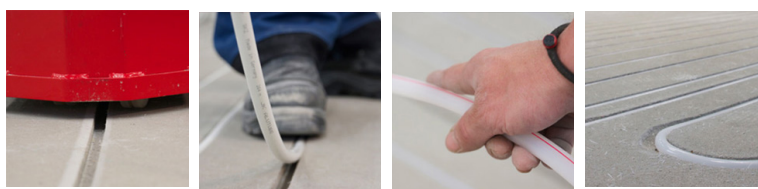
Compare a temperature control system with the electricity control system in a house. Electricity is controlled in a house with many light switches and socket switches to ensure an efficient electricity usage. So in a temperature control system; 'the more controls (thermostats), the more efficient', and more mney is being saved. However, bear in mind that a balance between simpleness and effectiveness will enable to remain in control of comfort levels.

#### Thermostat Features

The biggest advantage is found by combing an eco-friendly underfloor heating system with a smart control system, which achieves genuine heating comfort.

Nowadays thermostats are featured with many functions such as auto schedule, auto away, remote control and hot water control functions. The common purpose of all the re-designed, re-developed and ultra-high technology systems is to control time and temperature more accurately, which is essential to achieve optimisation of energy efficiency.





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Thermostats do generally work with the existing heating systems and can also control the underfloor heating system. There is no need to change your energy supplier, also renewable energy sources are ideal to combine with a LTH system. Below is a brief overview of useful features which may be helpful by choosing the right system.

### Smart Control Devices

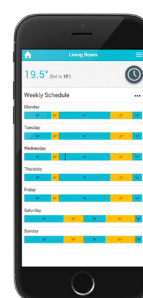
Due to ongoing research and development, thermostats becoming more intelligent, the smart thermostats have proven to save even more on your energy costs by increasing the efficiency of the heat source and time settings in the house. Those new innovative products are also designed to make the thermostats easier to use and it may provide a total heating control solution for both Domestic Hot Water (DHW) and Heating applications. The solution in a house may sometimes be simple, or it can be more sophisticated. For instance, JK's in-ground UFH system can be controlled as a one zone system, however, a complete customised UFH floor plan with a zone schedule which serves the needs of occupants may require a 2, 3 or even a 15 zone channeled system. The more zones, the more important it becomes to have a sufficient control device. A 'smart control device' may be essential in this scenario since they may learn the preferred temperatures and programs itself over a time.

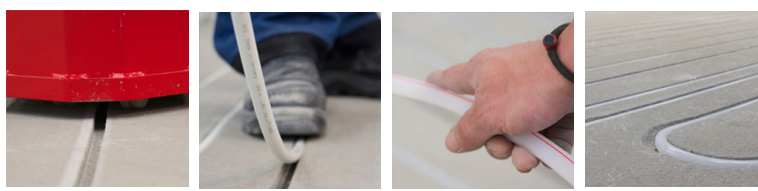
### Remote Control Function

Remote monitoring of heat systems is a recent development which is perceived as convenient, cost saving and improves level of living comfort.

Boilers, heat pumps, solar systems and heating distributors such as radiators and underfloor heating systems can be controlled with an online communication system.

Thermostats with remote control function, can be connected to Wi-Fi and the temperature can be controlled from a distance at any time with a smart phone, tablet or laptop. Some thermostats are even designed with a 'geolocation' service, what means that based on smartphone or online device location, the thermostat sends a reminder to the user to ensure activation of the heating system before coming home. Control systems are supported by Android, Windows and IOS software.





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### Floor Sensor

Floor sensors are a desirable feature in cases where the floor finish is a solid wood, engineered wood or particular types of vinyl flooring are subject to a maximum floor surface temperature.

JK's in-ground underfloor heating system is a Low Temperature Heating (LTH) system which means that the settings are adjustable for all type of floor finishes. However overheating the floor with a few degrees on regular basis may cause damage to the floor finish. A floor sensor which measures the actual floor surface temperature is an ideal way of controlling and monitoring the UFH system and protecting the floor finishing from potential damage.

### Design

Besides features, stylish designs are also trending these days and there is broad variety of systems on the market divided in two categories; Wired, which are mains powered, or Wireless, which are battery powered.

A range of highly sophisticated thermostats which can be used to control JK's in-ground UFH system are from the brands; Danfoss; Heatmiser; Honeywell; Drayton; Aura; British Gas; Horstmann; Vaillant; Nest. All of these brands are manufactured or well represented in the United Kingdom, and majority of plumbers, electricians and building and plumbing suppliers are familiar with these control systems. JK floorheating Ltd. has an official partnership with Heat Genius (ref; Genius Hub).





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### INSTALLATION

The underfloor heating systems of JK are quick, easy and very economical to install. They are carried out by trained in-house JK engineers. The installation is dust free due to the integrated industrial vacuum cleaner. The delivery and installation of the underfloor heating systems ready for connection to a convenient wireless system. Individual rooms, apartments or single-family homes are usually completed in just one day.



#### Installation Conditions

- The room in which the underfloor heating system is to be installed must be free from furniture and other obstacles (i.e. door thresholds).
- The floor must be dry and have hardened, because the underfloor heating system is to be cut into the floor. The floor must consist of a “normal” sand and cement or anhydrite top-screed floor. Tiles, flag stones or concrete floors require extra investigation. Please enquire about these.
- The floor must be flat and level. If the floor requires leveling this must be done before the underfloor heating system is installed (please take into account the drying time for this).
- **At least 2** electrical 230 [V] circuits should be present in the property (with a minimum of a 16 Amp breaker). During grinding for the underfloor heating system no other high consumption domestic appliances are to be used, such as tumble dryers, washing machines, dishwashers, electric ovens, hobs, heaters, boilers, irons, etc.
- It must be possible to grind or drill the floor at the location of the manifold so that the underfloor heating pipes can be laid directly from the manifold.

Full T&C available at; <http://www.jk-gb.com/downloads/installation-terms-and-conditions.pdf>



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## QUOTATIONS

We pride ourselves on our quotation process. Each quotation considers heating requirements, sighting of materials, installation issues and performance. We also can provide details regarding floor finishes that can be cross referenced to the floor temperature, or heat resistance details in the heating requirement table.


### What you have to do

Getting a detailed and quality quotation for your project is simple! Fill out our Free Quotation Form or e-mail your contact details including postal address along with the floor plans. We can design full houses or bigger commercial projects including heat-loss, heat-output, flow-rate and commissions details including manifold locations.

### Recommended Retail Price (RRP)

The RRP pricelist is a helpful tool in order to give quick estimates and allows transparency and honesty to all their sales partners, and end-customers.


Price list 2015



In-ground Underfloor Heating (heating pipe diameter 14 mm)


Groove spacing approx. 125 mm		Recommended Retail Price	
Number of groups	Maximum Area	Price excl. VAT	Price incl. VAT
1	11 m <sup>2</sup> / 118 Sq. Ft.	£ 937.00	£ 1,124.40
2	22 m <sup>2</sup> / 236 Sq. Ft.	£ 1,057.00	£ 1,268.40
3	33 m <sup>2</sup> / 353 Sq. Ft.	£ 1,299.00	£ 1,558.80
4	44 m <sup>2</sup> / 473 Sq. Ft.	£ 1,540.00	£ 1,848.00
5	55 m <sup>2</sup> / 592 Sq. Ft.	£ 1,782.00	£ 2,138.40
6	66 m <sup>2</sup> / 712 Sq. Ft.	£ 2,023.00	£ 2,427.60
7	77 m <sup>2</sup> / 828 Sq. Ft.	£ 2,264.00	£ 2,812.80
8	88 m <sup>2</sup> / 947 Sq. Ft.	£ 2,505.00	£ 3,020.20
9	99 m <sup>2</sup> / 1065 Sq. Ft.	£ 2,828.00	£ 3,393.60
10	110 m <sup>2</sup> / 1184 Sq. Ft.	£ 3,070.00	£ 3,674.00

The Recommended Retail Price (RRP) includes installation of a JK underfloor heating (UFH) system in accordance with the JK installation conditions and the JK Manifold of which three types are available. Please use the guide below to choose the correct manifold.



JK Basic Manifold for 1 to 6 groups and JK Ultra Manifold for 7 to 10 groups

The JK Basic Manifold can be used for UFH systems with a maximum of 6 groups (66m<sup>2</sup>) and the JK Ultra Manifold can be used for UFH systems with a maximum of 10 groups (110m<sup>2</sup>). With the direct mounted water pump the manifold is suitable for connecting directly to a hot water source (80-45°C). This is generally a normal gas or electric boiler.



JK LT Manifold for 1 to 10 groups

The JK LT Manifold is not fitted with a water pump, which makes the JK LT Manifold ideal for connecting to a low temperature heat source (45-25°C). The water supply is usually provided by remote water pump which is often part of a renewable energy system, such as solar panels, ground-source heat pump or high efficiency boiler.

The RRP is primarily based on the number of square metres, however, there are some exceptions whereby the price is based on the number of distribution groups. Please read the explanation below and use the example to ensure that the correct price will be calculated.

Price calculation

The square meter calculation is usually sufficient to obtain the correct price. However, there are situations when this calculation is no longer appropriate, for example due to individual room temperature control requirements or building regulations. The two situations are explained below and an example is provided for situation 2.

Situation 1: if the space to be heated is regarded as one room the total area can be measured and the corresponding area given in the price list can be used for calculating the price.

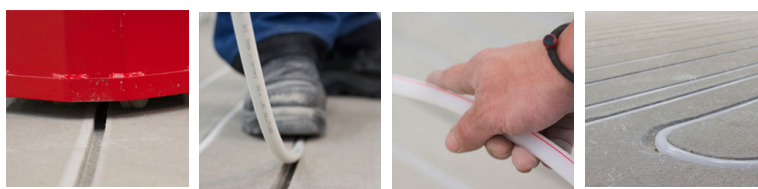
Situation 2: if the space to be heated is regarded as separate rooms (> 6m<sup>2</sup>), the total area of each room must be measured individually and the number of distribution groups needs to be selected on an individual room basis. Finally the correct price can be calculated by adding the number of groups together and referring to the price list.

Example: installation of UFH in three separated rooms

Room 1 - kitchen:	25m <sup>2</sup>	3 groups
Room 2 - living room:	52m <sup>2</sup>	3 groups
Room 3 - study:	18m <sup>2</sup>	2 groups
<b>Total area:</b>	<b>75m<sup>2</sup></b>	<b>8 groups (instead of 7 groups)</b>

This price list is valid from 1 January 2015 - JK has the right to change the RRP without notice - Terms and Conditions apply

Underfloor heating professionals



# UFH GUIDE | For Architects, Engineers & Developers

## GUARANTEE



### JK Flextube 14 [mm] PE-RT

The pipes supplied by JK floorheating Ltd. are manufactured under ISO 9001 Quality Management Systems and are covered by a 50-year insurance backed warranty, which includes consequential 15-year damage cover. Under the performance testing for underfloor heating pipes DIN EN 4726, they are required to show an expected life of 50 years, under high pressures (6 bar) and high temperature (60C).



### JK stainless steel manifold

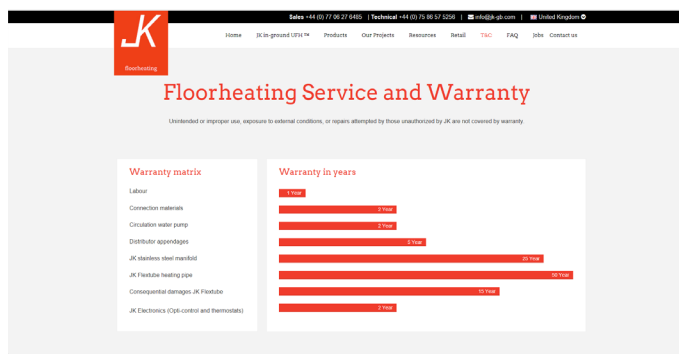
The stainless steel manifold, manufactured and supplied by JK floorheating Ltd. are covered by a 25-year warranty, which includes consequential damage cover.



### Circulation water pump

The WiLo Yonos circulation pump, mounted onto the JK stainless steel manifold, are covered by a 2-year warranty.

Full Service and Warranty at; <http://www.jk-gb.com/service-and-warranty.php>







## UFH GUIDE | For Architects, Engineers & Developers

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### CONTACT



- **International Head Office – The Netherlands**

Fahrenheitstraat 39  
6716 BR Ede  
The Netherlands  
0031 (0) 318 - 636 329  
info@jk-nl.com

*Activities; manufacturing, R&D, technical team, engineering, national sales/site support (The Netherlands), Quotations, Installers*

- **National Head Office – Germany**

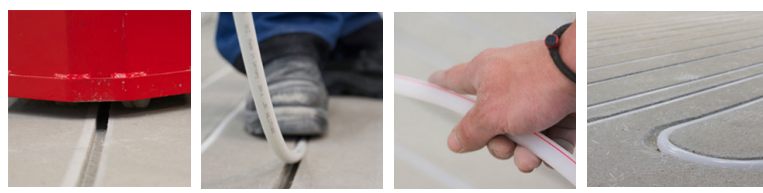
Krablerstrasse 127  
45326 Essen  
0201-81410991  
info@jk-de.com

*Activities; Technical team, National sales/site support, Quotations, Installers*

- **National Head Office – Belgium**

Bosstraat 75 bus 4  
3560 Lummen  
+32 137 850 12  
info@jk-be.com

*Activities; National sales/site support, Quotations, Installers*



## UFH GUIDE | For Architects, Engineers & Developers

- **National Head Office – United Kingdom**

Unit 23, The Bell Centre, Newton Road  
Crawley, West Sussex, RH10 9FZ  
+44 (0) 1293 40 1718  
info@jk-gb.com

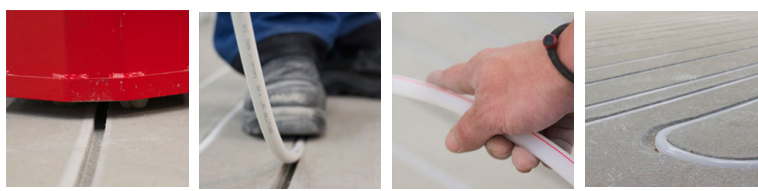
Activities; Technical team, National sales/site support, Quotations, Installers

- **National Head Office – Turkey**

Inkilap Mah. Küçüksu Cad. No: 107 K:1 D:6  
Ümraniye- Istanbul  
0216-5732084  
info@jk-tr.com

Activities; National sales/site support, Quotations, Installers

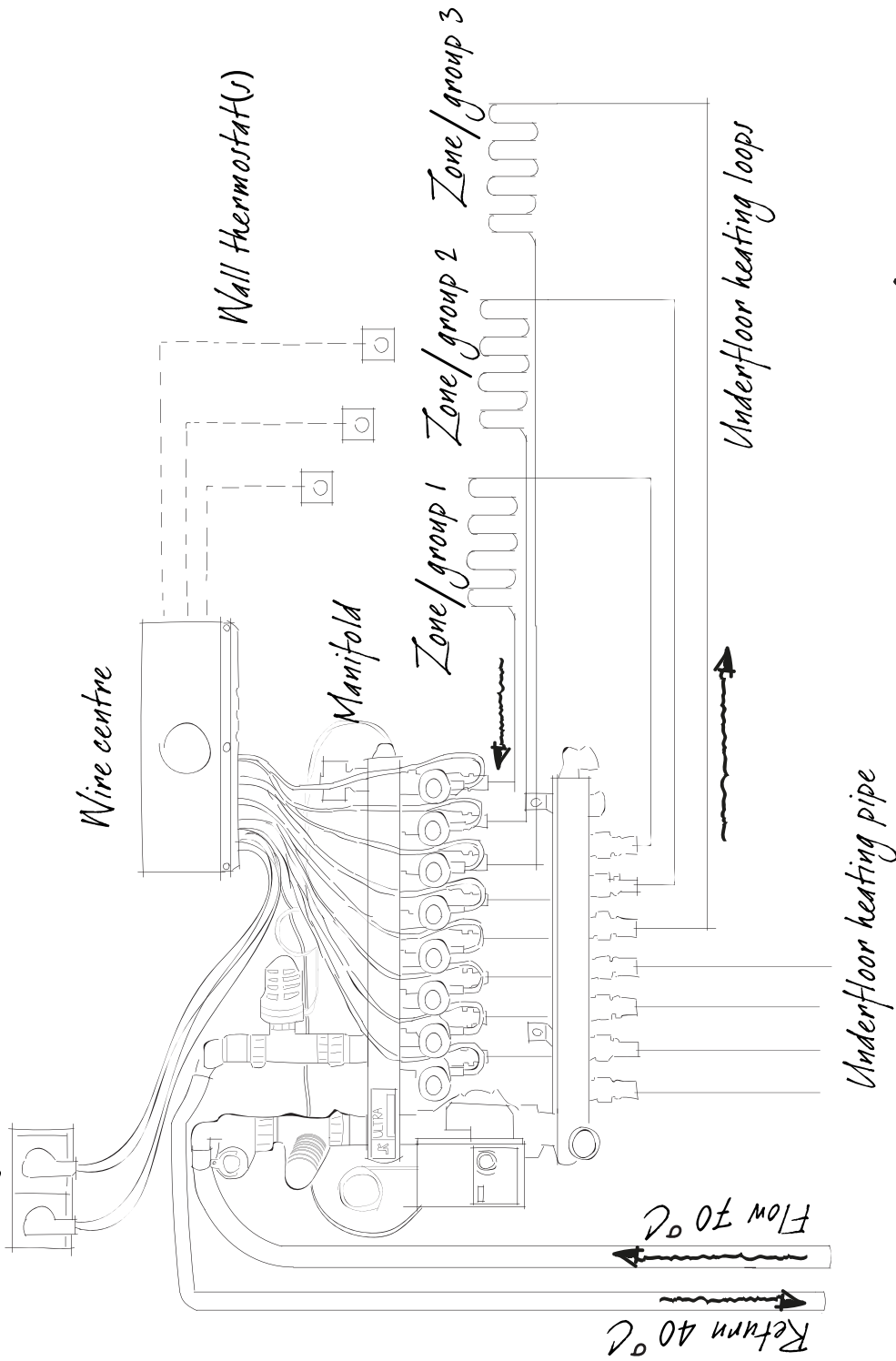




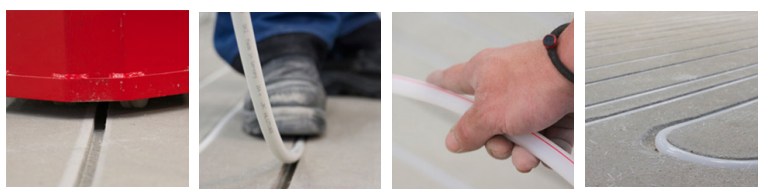
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*Powersupply (230V) for Wire centre and circulation pump*



*JK Floorheating*



floorheating

## UFH GUIDE | For Architects, Engineers & Developers

# TECHNICAL DIMENSION JK IN-GROUND UFH SYSTEM



floorheating

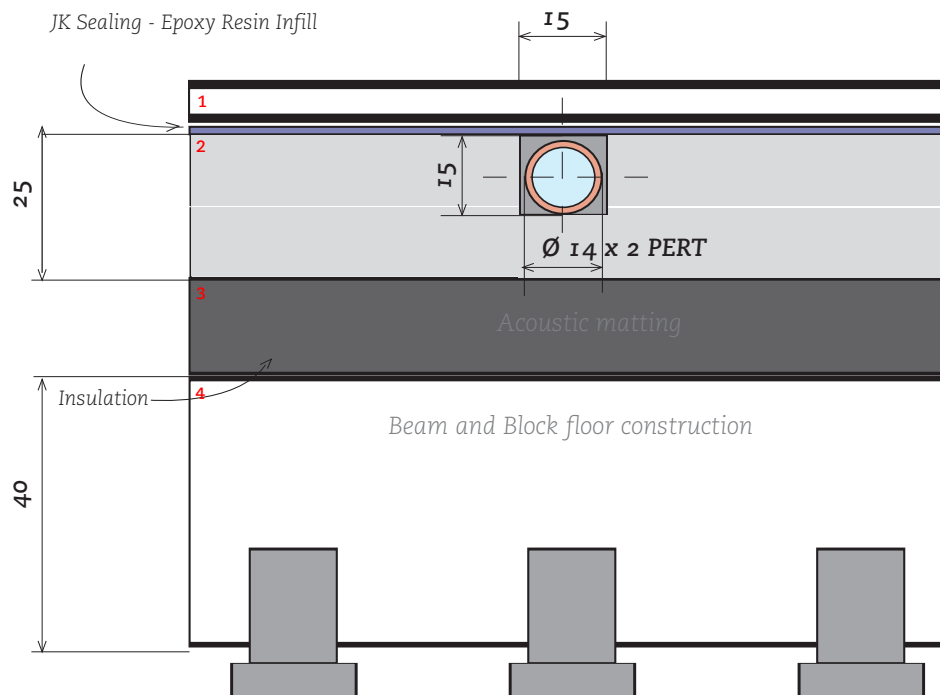
### JK in-ground UFH

- [1] Floor finish (tiles - carpet - vinyl - wood - laminate - seamless)
- [2] Screed | Cement - Gypsum - Sulphate | min 25 [mm] max 100 [mm]
- [3] Acoustic matting
- [4] Beam and block floor with screed



floorheating

### JK in-ground UFH system | SCREED FLOOR





floorheating

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## HEAT OUTPUT 125MM HEAT OUTPUT UFH SYSTEM



floorheating

The tabel under shows the heat output per m2 with heat resistance 0.0 [R], 0.05 [R], 0.10 [R] and 0.15 [R] in accordance to UFH heat norm NEN-EN 1264-1-2011. Limit curve 9K is the indication for living areas with a maximum floor surface temperature of 29 Celcius. Limit curve 15K is the indication for bathrooms & toilets with maximum floor surface temperature of 35 Celcius. Pipe spacing 125 [mm].

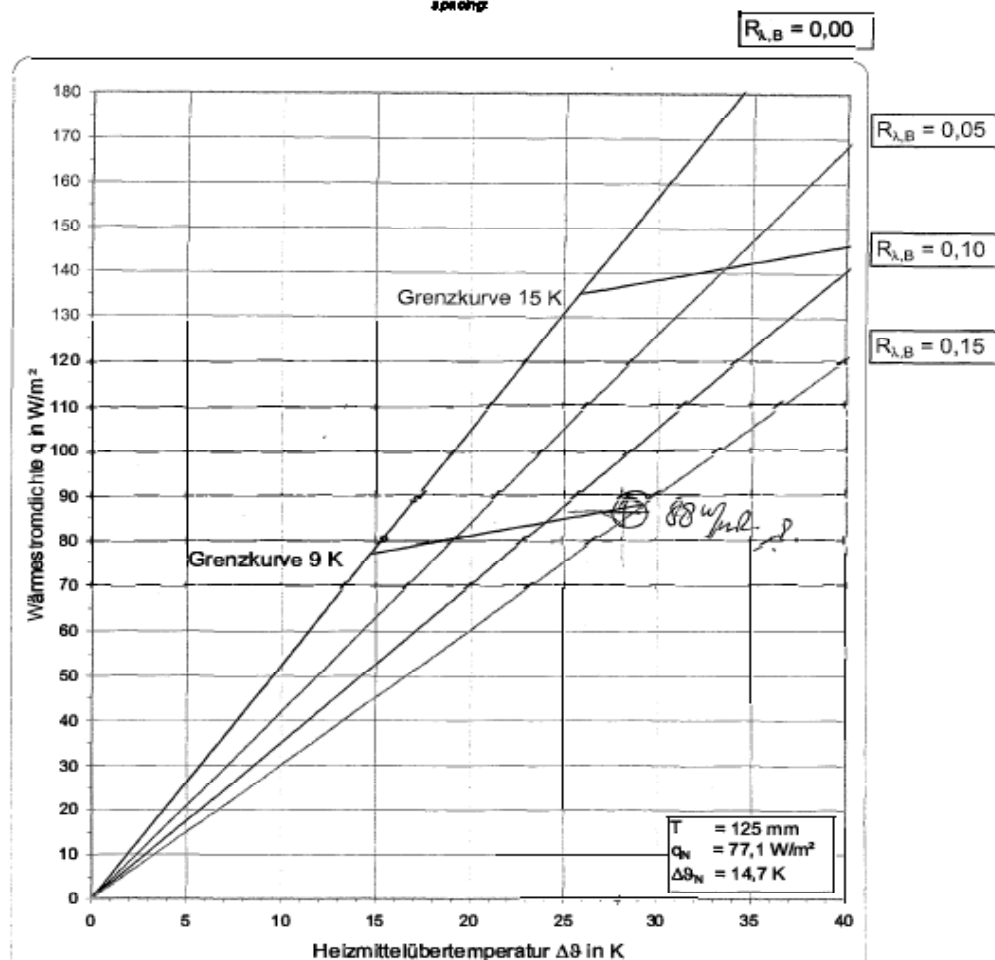
### Wärmestromdichte der Fußbodenheizung

specific thermal output of the floor heating system

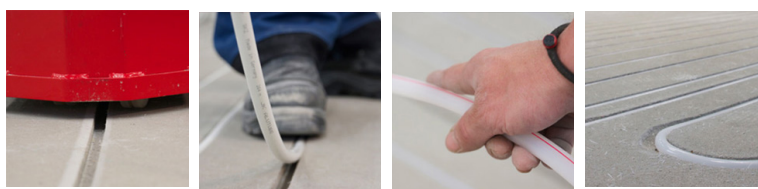
Systembezeichnung: JK Fußbodenheizung mit Zementestrich  
Indepark

Systemrohr: PE-X 14x2mm  
pipe

Rohrteilung: 125 mm  
spacing







floorheating

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## HEAT OUTPUT 100MM HEAT OUTPUT UFH SYSTEM



floorheating

The tabel under shows the heat output per m2 with heat resistance 0.0 [R], 0.05 [R], 0.10 [R] and 0.15 [R] in accordance to UFH heat norm NEN-EN 1264-1-2011. Limit curve 9K is the indication for living areas with a maximum floor surface temperature of 29 Celcius. Limit curve 15K is the indication for bathrooms & toilets with maximum floor surface temperature of 35 Celcius. Pipe spacing 100 [mm].

### Heizleistung der Fußbodenheizung

specific thermal output of the floor heating system

Systembezeichnung: JK Fußbodenheizung mit Zementestrich  
systemmark

Systemrohr: PE-X 14x2mm  
pipe:

Abbildung: 100 mm  
spacing:

$R_{\lambda,B} = 0,00$

