



LoProLite® OneZone®

installation manual for floating floors





working with you
**before,
during
& after**
your project

**Nu-Heat
Know-How**

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System Ref: _____

Installation manual – Nu-Heat OneZone® for floating floors with warm water underfloor heating

Congratulations on buying a Nu-Heat OneZone® underfloor heating system, which has been designed to make installation as simple as possible. Please read this manual fully before fitting. It assumes a basic knowledge of plumbing and electrical work, and of common terms used. If you are unsure you should consult Nu-Heat's Technical Support team or a qualified tradesperson.

Attention to the advice given in this manual will help to ensure a trouble-free and effective installation.

The requirements of the relevant British Standards, Water By-laws and other Regulations should always be met

In line with the company policy of product development, Nu-Heat reserves the right to supply different components to those shown.

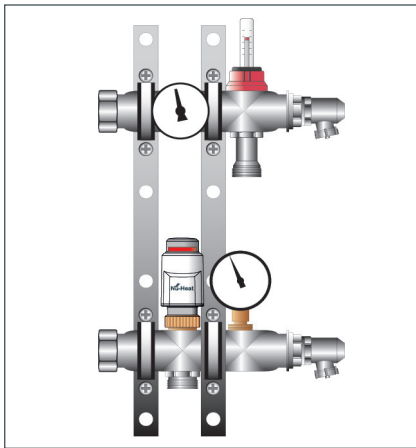
Please ensure that this manual remains with the homeowner when installation is complete.

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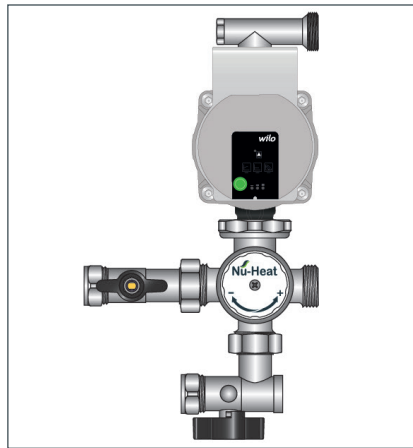
TAKING DELIVERY

Please check your delivery contents against the delivery note and report any discrepancies within 7 days of receipt.

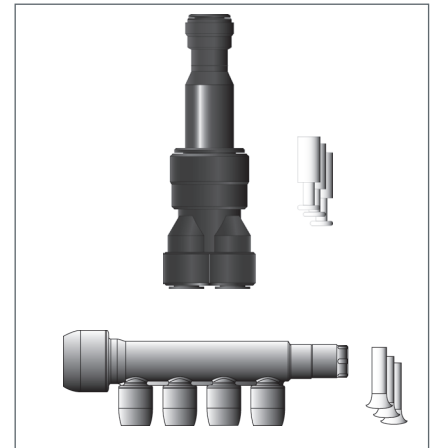
System components



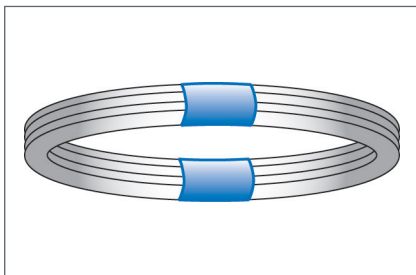
OneZone® manifold



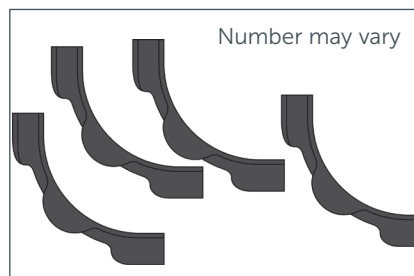
Pump and blending valve assembly



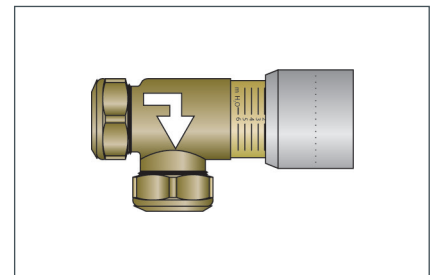
Distributors and blanking plugs



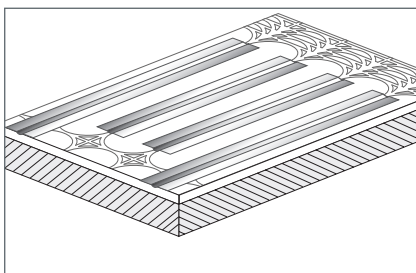
10mm Fastflo® floor heating pipe



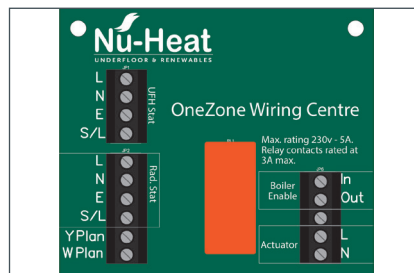
Pipe guide curves (<35m² kits)



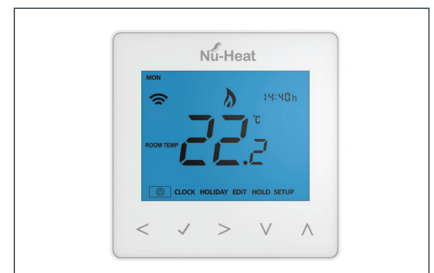
Automatic bypass valve



LoProLite® panel with metal heat diffuser plates



OneZone® wiring centre



Programmable thermostat or wireless programmable thermostat

Preparation

Some preparation works are required before starting, to ensure a successful installation

BOILER SIZING

A LoProLite® OneZone® system produces a heat output up to 82W/m². You must ensure your boiler has enough spare capacity for the additional heating load.

It is likely that the existing domestic heating boiler will have sufficient capacity to cover the extra load the floor heating zone requires. As a general rule-of-thumb the maximum heat input equates to 100 watts per m² of floor area; for example, a 20m² room would require 2000 watts (2kW) of heat from the boiler. If in doubt, a heating engineer should be able to check heat losses for the property and calculate spare boiler capacity.

Before installation of the OneZone® it is the responsibility of the homeowner/installer to check the heat loss of the room in order to confirm that the UFH will meet the heating requirement taking into account the chosen floor finish and flow temperature.

OneZone® FLOATING FLOOR HEAT OUTPUT TABLE

Flow water temperature	Carpet & underlay – 2 tog	Engineered hardwood	Tiles
40 °C	22 W/m ²	29 W/m ²	41 W/m ²
45 °C	29 W/m ²	38 W/m ²	54 W/m ²
50 °C	37 W/m ²	48 W/m ²	68 W/m ²
55 °C	44 W/m ²	57 W/m ²	81 W/m ²

FLOOR HEIGHTS

Check that the subfloor has sufficient height above it to incorporate the underfloor heating plus any floor covering. Consideration should also be made as to how the transition from the existing floor covering to the new floor covering will be made.

Insulation in retrofit

Depending on the age of the property, there may be some insulation below the floor structure: between the joists of a suspended timber floor or below the existing concrete slab. Traditional floating floors will always incorporate an insulation layer below the T&G chipboard deck. Where insulation is already in-situ, your OneZone® system can be laid directly on top of the existing floor.

SOLID GROUND FLOORS WITH NO INSULATION

Due to the thermal characteristics of a solid sub-floor, downward heat loss is limited to between 6% and 10% of the total heat output which represents a small percentage of the annual heating costs for the property. The energy-saving features of underfloor heating help to cancel out this small additional downward heat loss. Room temperatures can be set approximately 1 °C lower than with traditional radiators and lower water temperatures mean that condensing boilers can operate more efficiently,

There is no economic justification for replacing an existing floor slab that is in good repair to add a layer of insulation.

SUSPENDED TIMBER GROUND FLOORS WITH NO INSULATION

The heat loss characteristics of a suspended timber ground floor are very different to those of a solid floor. The low ambient temperature in the void below the floor, plus air movement and draughts caused by air bricks, means that the suspended timber sub-floor provides little resistance to downward heat transfer and must be insulated to prevent excessive heat loss. This can be achieved quite easily and economically using one of the following methods.



Option 1

Space Blanket can be used to insulate between joists. Access to the void below the floor can usually be made between the floor joists, and the crawl space below can be used to fit the insulation to the underside of the floor.



Option 2

Where floor deck is being removed or replaced use Netlon and mineral wool to insulate between floor joists.



Option 3

Lay 80mm of rigid insulation over the existing floor deck with an 18mm structural T&G floor deck over before fitting the underfloor heating layer.

FIRST FLOORS

New buildings will have insulation to the required levels and will not require any additional insulation before your Nu-Heat OneZone® system is installed. Existing properties would benefit from insulation if the floor is above unheated areas. The insulation should be installed to building regulations, the same applies to areas above another property that is not your own. In all instances building regulations apply when installing insulation in domestic properties.

Floor Condition

Floors should be flat and as level as possible to ensure a good finish. If installing over a wooden subfloor then the floorboards should be securely fastened to the joists below to stop movement. A concrete floor should be free from defects; any damage to the floor should be repaired with a levelling compound, and any laitance should be removed with a hammer and bolster chisel.

First fix system configuration

There are different ways to connect OneZone® to your existing heating system. Decide which is right for your installation before commencing work.

A – Connection to the radiator circuit

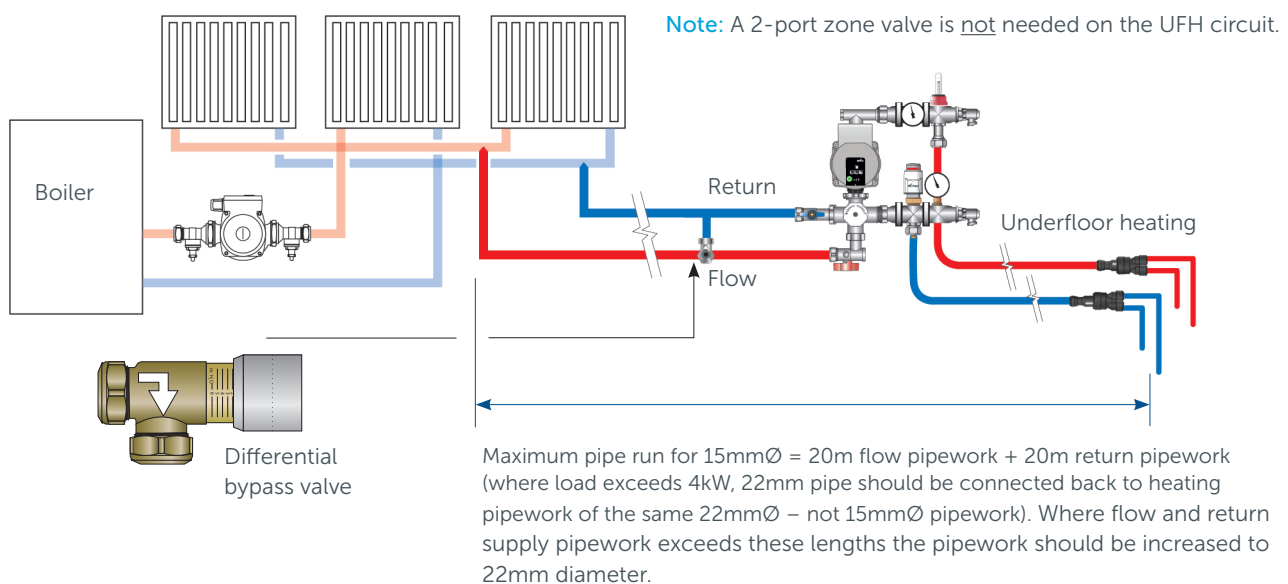
New pipework to OneZone® is connected at a convenient point in the radiator circuit. This means that heating times for OneZone® must correspond to those for the radiator circuit. Heating times for the whole system may have to be altered to allow for the longer warm-up time of underfloor heating compared to radiators and set-back operation will not be possible.



Refer below for plumbing connections.

No direct control of the boiler

A – RADIATOR CIRCUIT CONNECTION – NO DIRECT CONTROL OF THE BOILER



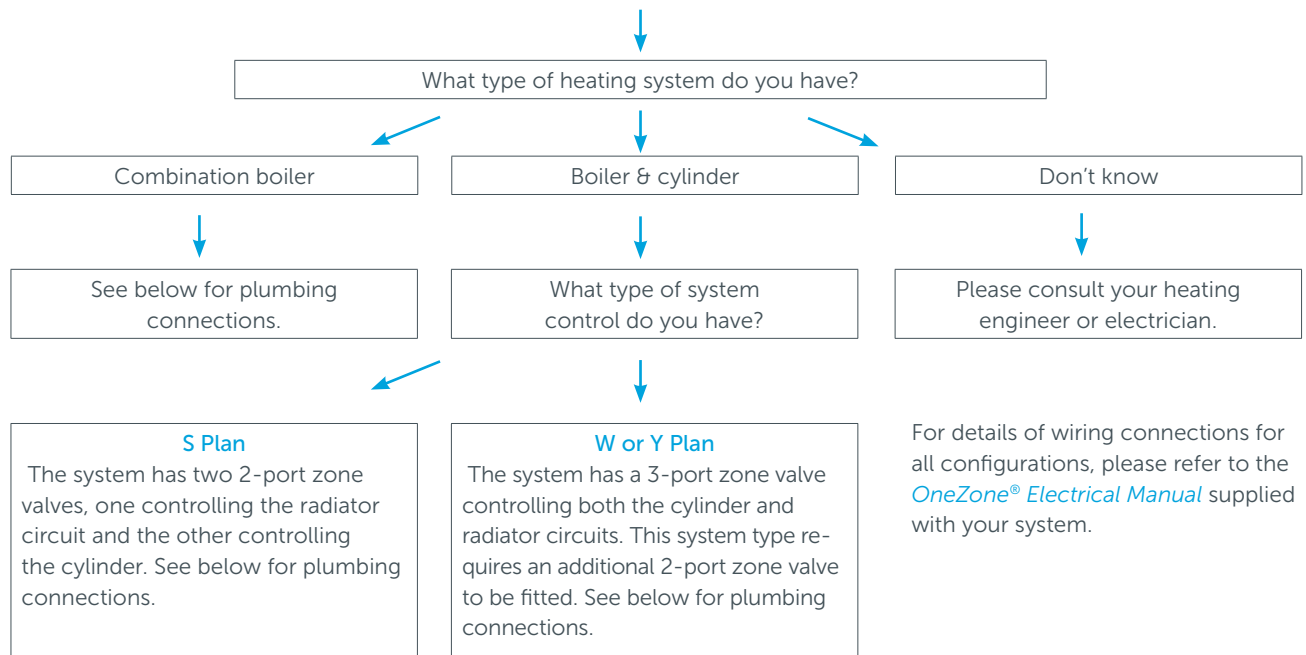
DIFFERENTIAL BYPASS VALVE

The differential bypass valve should be fitted between the flow and return supply pipes, before the pump and blending valve assembly and as close as possible to it. It should be set to 0.5 bar (marked 5 on valve).

Note: The direction arrow must point from flow to return.

B – Connection at the boiler

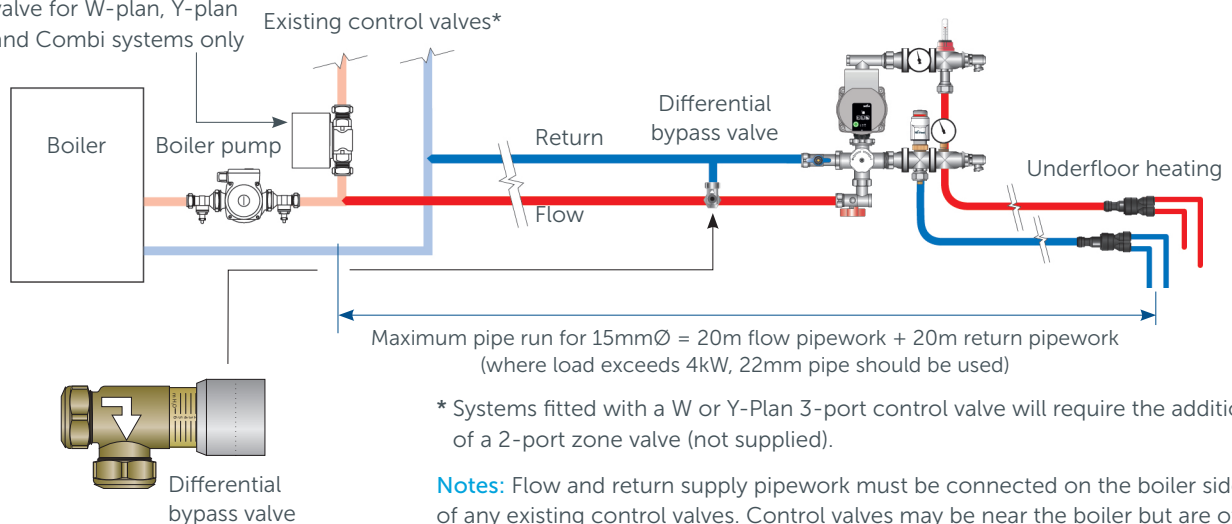
This arrangement gives optimum performance. It allows time and temperature settings for OneZone® to be independent of other areas of the home. It also enables use of a set-back temperature to reduce warm-up times. Pipework is connected on the boiler side of any control valves.



Direct control of the boiler

B – DIRECT BOILER CONNECTION – DIRECT CONTROL OF THE BOILER

Supplementary 2-port valve for W-plan, Y-plan and Combi systems only



DIFFERENTIAL BYPASS VALVE

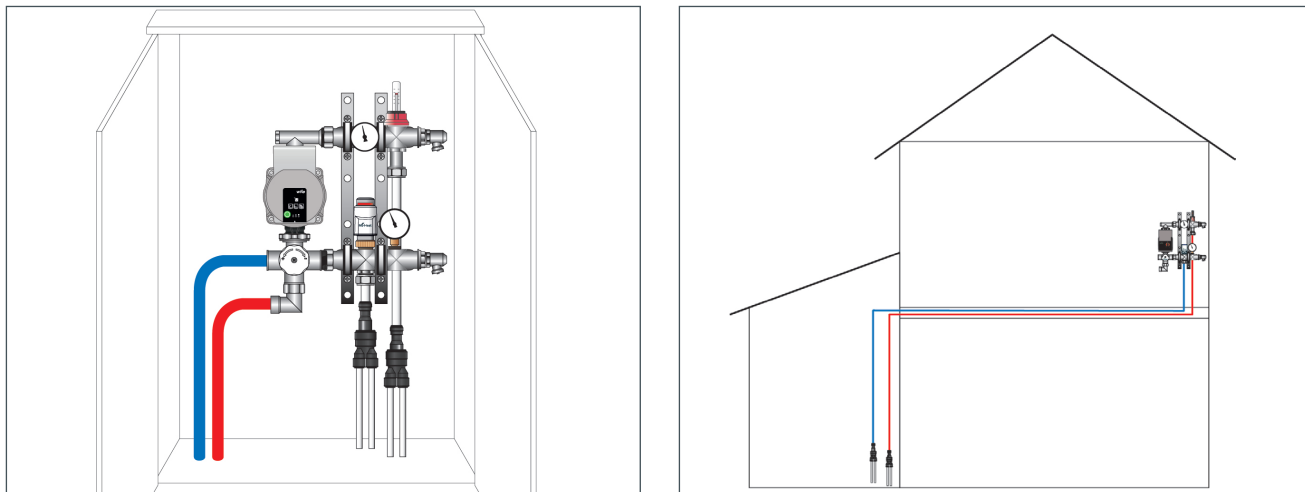
The differential bypass valve should be fitted between the flow and return supply pipes, before the pump and blending valve assembly and as close as possible. It should be set to 0.5 bar (marked 5 on valve).

Note: The direction arrow must point from flow to return.

The manifold

POSITIONING

The manifold assembly can be installed in or near the room in which you are installing the underfloor heating, or remotely in a position that suits your property. The pump and manifold assembly have been designed to be low in profile and as small and compact as possible, this enables installation into tight spaces.



Internal cupboard dimensions (mm) should be no less than 450 wide x 600 high x 150 deep.

The OneZone® Pump Module will need to be connected to the flow and return central heating pipes, either off an existing radiator system or directly from the boiler prior to the existing control valves and this should be taken into account when considering position. The electrical control box should preferably be positioned near existing heating control equipment for 'direct boiler control' setup or next to the pump for the 'no direct boiler control' option.

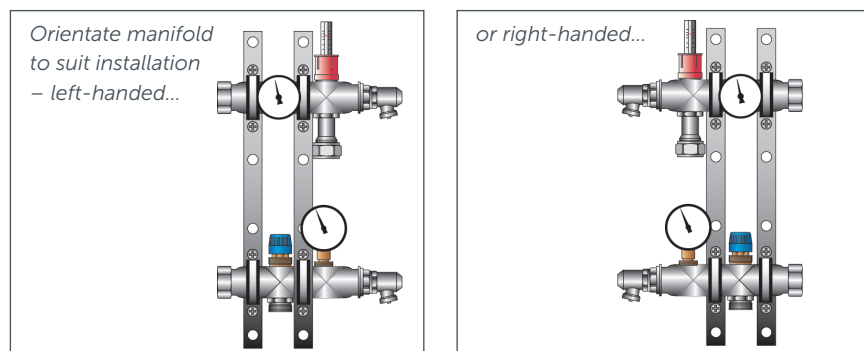
When fitted vertically the manifold assembly should be fixed a minimum of 500mm off the floor. The assembly can be placed in an adjacent room if more convenient, and tube passed through the wall or floor; however the distance should not exceed 1 metre from the distributors to the room to ensure you have sufficient 10mm Fastflo® tube to complete the installation.

Note: The manifold brackets are designed such that one rail is offset for the pipes to pass behind it – the brackets should be orientated to take account of the direction of the pipes. The supply (flow) manifold must be the rail with the flow gauges.

The manifold is fed from the pump module and is connected to the captive nuts using the washers supplied to give a watertight seal. A proprietary sealing compound can be used in addition.

MANIFOLD ORIENTATION

OneZone® manifolds are supplied boxed and ready assembled, except for the temperature gauge, which must be pushed into the pocket on the flow manifold. However you may require to change the handing of the manifold.

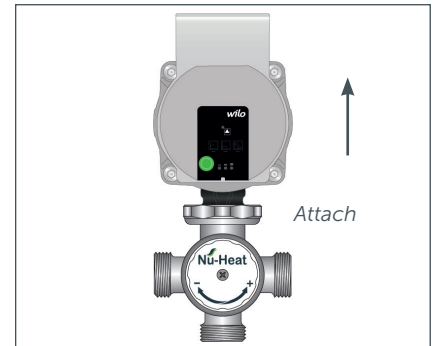


- 1 Unscrew the manifold-rail mounting clamps, turn the manifold to the correct orientation and re-fit the mounting clamps.
- 2 Remove the temperature gauge (this is a press fit), unscrew the boss, and the blanking screw on the reverse.
- 3 Refit the boss on the front of the rail, and the blanking screw on the back. Refit the temperature gauge.

Assembling the pump module

The pump module can be assembled left- or right-handed to suit the project.

The pump module is supplied unassembled, however the packaging has been designed such that components are in their relative positions for connection to the left hand side of the manifold, in an exploded view style.

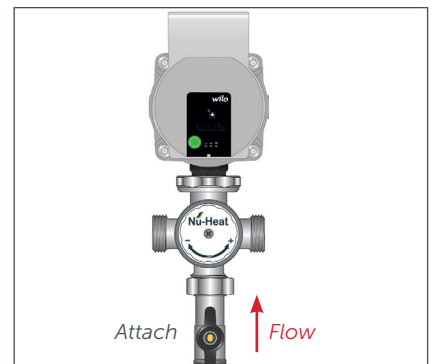
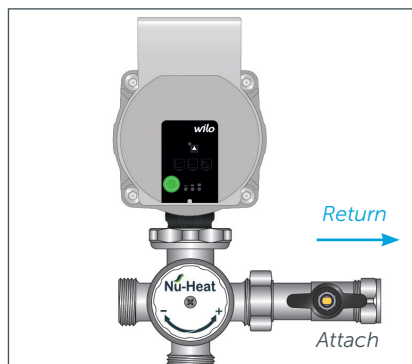
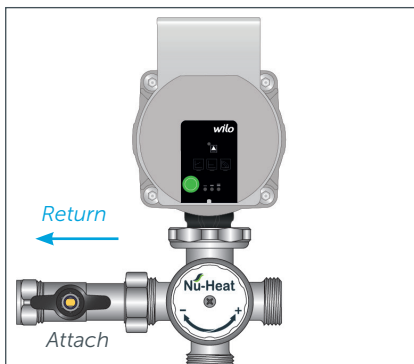


The first steps in the assembly of the pump module are independent of manifold orientation.

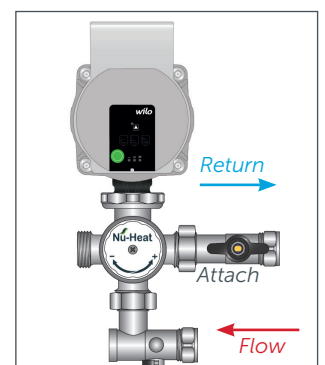
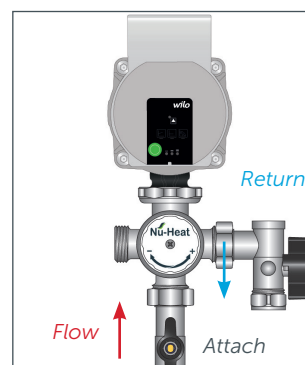
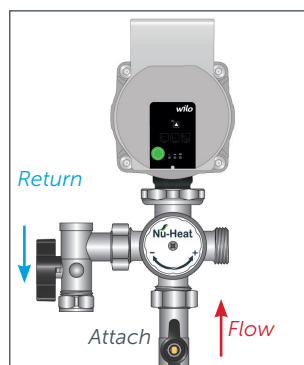
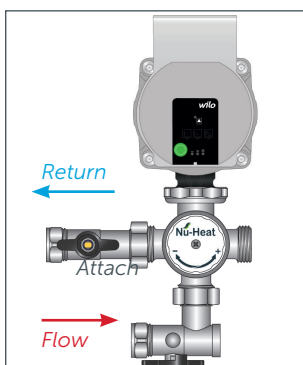
- 1 Note the direction of flow on the pump, indicated by an arrow on the cast body.

- 2 Attach the temperature blending valve to the input of the circulation pump using the valve's integral captive nut and the rubber washer.

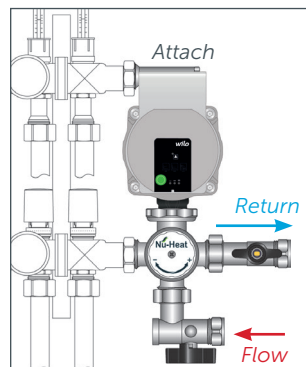
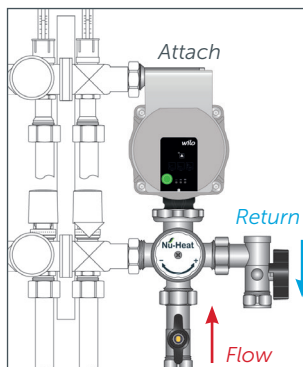
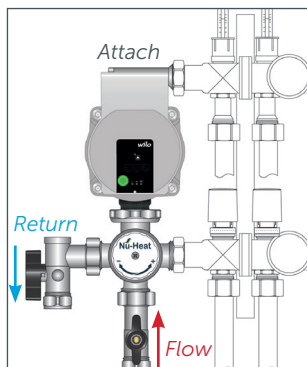
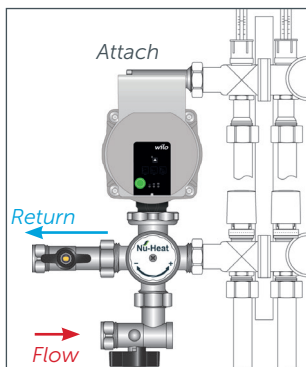
Alternative connection options for pipework



- 3 Take the straight isolating valve and attach to the left-, right-hand side or bottom of the blending valve as required.

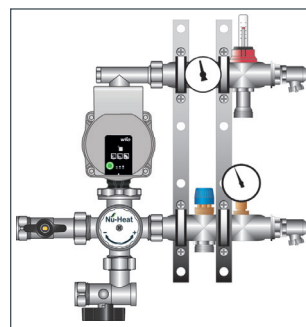


- 4 To the bottom of the temperature blending valve attach the elbowed isolating valve, using the attached captive nut and rubber washer provided. Note that the final position must be pointing the same direction as the previous straight valve.



- 5 Take the elbowed pump connector and attach this to the top of the pump with the free end pointing towards the opposite direction of the isolating valves.
- 6 Attach the manifold to the pump module making sure that the supplied washers are fitted. A proprietary sealant may be used in addition to this.

The isolation valves terminate in 22mm compression fittings to connect the flow and return pipes from the heat source.



Distributors

POSITIONING

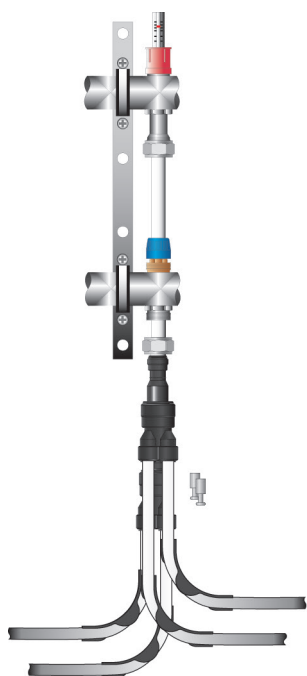
Distributors can be fitted directly to the manifold assembly or positioned in, or very near to, the room being heated. The distance from the distributors to the room should not exceed 1 metre to ensure there is sufficient 10mm Fastflo® pipe to complete the installation.

DISTRIBUTORS CONNECTED DIRECTLY ONTO THE PUMP MODULE

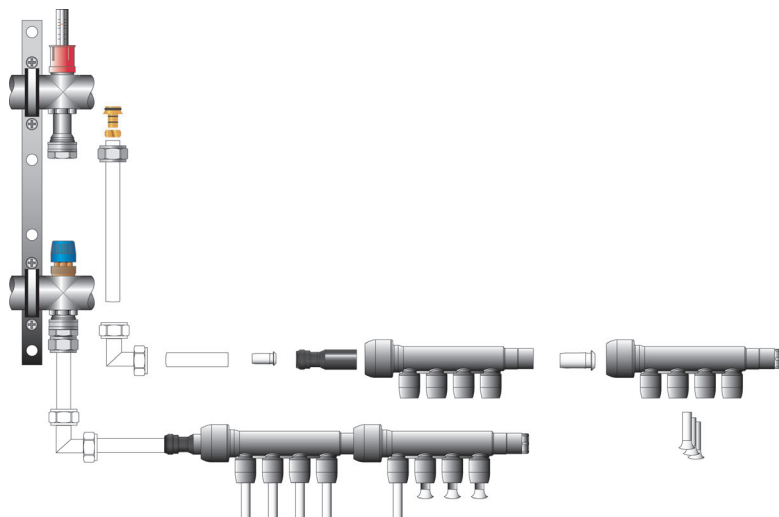
There are two ways of connecting Fastflo® to the Optiflo manifold.

- For OneZones® less than 35m², 4-port 'rocket' distributors are supplied for the 10mm pipe. Assembly instructions are in the following section.
- OneZones® of 35m² or over are supplied with 4-port 'in-line' distributors that join to make an 8-port assembly, as shown. Use either 15mm or 22mm plastic pipe and elbows instead (not supplied). In very large areas, positioning distributors centrally on a wall will make pipe connections easier.

OneZone® with 1-4 pipes



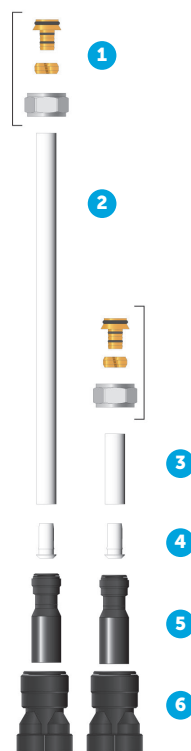
OneZone® with 5 or more pipes



ASSEMBLY

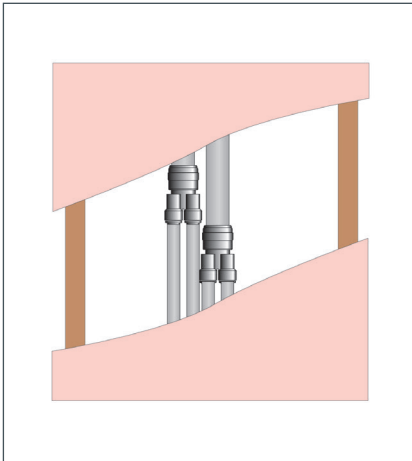
Distributors are 4-port as standard. The number of ports can be reduced with the blanking plugs supplied. To remove blanking plugs, push the surrounding collar into the distributor and pull the plug out. In large zones requiring more than 4 ports the system will be supplied with distributors that can be fitted in-line using an insert as on following page.

- 1 15mm eurokonus fitting
- 2 15mm pipe 280mm long
- 3 15mm pipe 53mm long
- 4 15mm pipe insert
- 5 22mm x 15mm adaptor
- 6 Port splitter (4-way) 22mm x 10mm

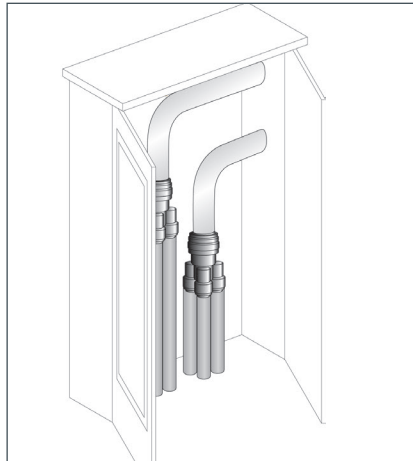


Distributors may be positioned in a variety of places such as:

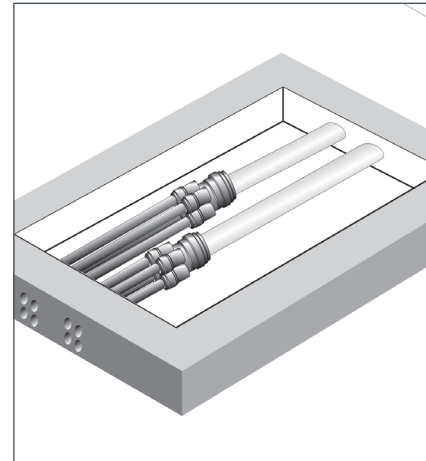
- In a studwork wall or other void such as a floor cavity,
- In an adjacent room, (in a cupboard, wall, or joisted floor cavity),
- In a cupboard.



Distributors can be placed in a studwork wall or other void with an access panel, ...

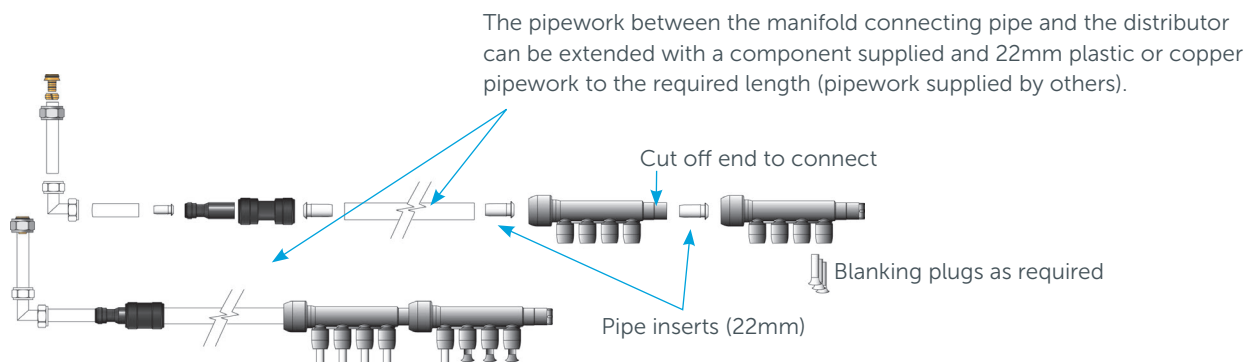


... in a cupboard ...



... or in a cavity constructed in the floor.

Note: The maximum distances and pipe sizing is given on pages 9 and 10.

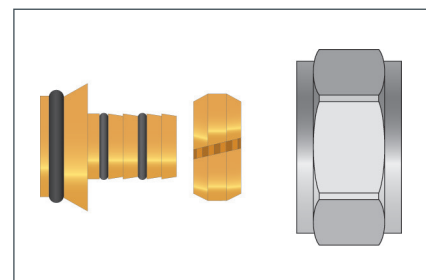


When mounting the distributors remotely and extending with 15 x 2mm pipe*, this is connected using the Eurokonus fitting supplied (see opposite).

If extending with 22mm pipe*, there is a fitting supplied with kits of 35m² and over to connect from the 15mm pipe stubs supplied to 22mm.

*Supplied by others

Note: In very large areas, positioning in-line distributors centrally on a wall will make pipe connections easier.



Eurokonus fitting supplied

Fastflo[®] – tube trimming chart

Installation of the pipe is done a coil at a time and it must be done with the length of pipe in mind. We have supplied lengths of pipe at pre-cut lengths, your system may require less pipe to cover your specific room area.

Please work out your actual room area in m² and refer to the table below for the required trim length for each coil.

Actual room area/kit size (m ²)		Amount of tube required (m)	Number of coils supplied	Trim each coil to: (m)	Actual room area/kit size (m ²)		Amount of tube required (m)	Number of coils supplied	Trim each coil to: (m)
1	10	6.7	2 x 35m; use 1	6.7	36	40	240.0	7 x 40m	34.3
2	10	13.4	2 x 35m; use 1	13.4	37	40	246.7	7 x 40m	35.3
3	10	20.0	2 x 35m; use 1	20.0	38	40	253.4	7 x 40m	36.2
4	10	26.7	2 x 35m; use 1	26.7	39	40	260.0	7 x 40m	37.2
5	10	33.4	2 x 35m; use 1	33.4	40	40	266.7	7 x 40m	38.1
6	10	40.0	2 x 35m	20.0	41	45	273.4	6 x 50m	45.6
7	10	46.7	2 x 35m	23.4	42	45	280.0	6 x 50m	46.7
8	10	53.4	2 x 35m	26.7	43	45	286.7	6 x 50m	47.8
9	10	60.0	2 x 35m	30.0	44	45	293.4	6 x 50m	48.9
10	10	66.7	2 x 35m	33.4	45	45	300.0	6 x 50m	50.0
11	15	73.4	4 x 30m	18.4	46	50	306.7	7 x 50m	43.9
12	15	80.0	4 x 30m	20.0	47	50	313.4	7 x 50m	44.8
13	15	86.7	4 x 30m	21.7	48	50	320.0	7 x 50m	45.8
14	15	93.4	4 x 30m	23.4	49	50	326.7	7 x 50m	46.7
15	15	100.0	4 x 30m	25.0	50	50	333.4	7 x 50m	47.7
16	20	106.7	4 x 35m	26.7	51	55	340.0	8 x 50m	42.5
17	20	113.4	4 x 35m	28.4	52	55	346.7	8 x 50m	43.4
18	20	120.0	4 x 35m	30.0	53	55	353.4	8 x 50m	44.2
19	20	126.7	4 x 35m	31.7	54	55	360.0	8 x 50m	45.0
20	20	133.4	4 x 35m	33.4	55	55	366.7	8 x 50m	45.9
21	25	140.0	4 x 45m	35.0	56	60	373.4	8 x 50m	46.7
22	25	146.7	4 x 45m	36.7	57	60	380.0	8 x 50m	47.5
23	25	153.4	4 x 45m	38.4	58	60	386.7	8 x 50m	48.4
24	25	160.0	4 x 45m	40.0	59	60	393.4	8 x 50m	49.2
25	25	166.7	4 x 45m	41.7	60	60	400.0	8 x 50m	50.0
26	30	173.4	4 x 50m	43.4	61	65	406.7	8 x 55m	50.9
27	30	180.0	4 x 50m	45.0	62	65	413.4	8 x 55m	51.7
28	30	186.7	4 x 50m	46.7	63	65	420.0	8 x 55m	52.5
29	30	193.4	4 x 50m	48.4	64	65	426.7	8 x 55m	53.4
30	30	200.0	4 x 50m	50.0	65	65	433.4	8 x 55m	54.2
31	35	206.7	6 x 40m	34.5	66	70	440.0	8 x 60m	55.0
32	35	213.4	6 x 40m	35.6	67	70	446.7	8 x 60m	55.9
33	35	220.0	6 x 40m	36.7	68	70	453.4	8 x 60m	56.7
34	35	226.7	6 x 40m	37.8	69	70	460.0	8 x 60m	57.5
35	35	233.4	6 x 40m	38.9	70	70	466.7	8 x 60m	58.4

Example: a 3m wide by 4m length room has area of 12m². The table above shows a cut length of 20m per coil, but the 4 coils of pipe supplied in your 15m² kit are 30m in length. In this case you would have 10m excess per pipe run that will need to be cut off following the installation.

Notes:

- Do not cut off the excess pipe until the floor installation is complete, instead mark the pipe with tape or a pen and adjust and cut the pipes once all coils have been laid.
- It is not always possible to get the pipe runs equal. The final length of cut pipes may vary by up to 25% without compromising the heat output.

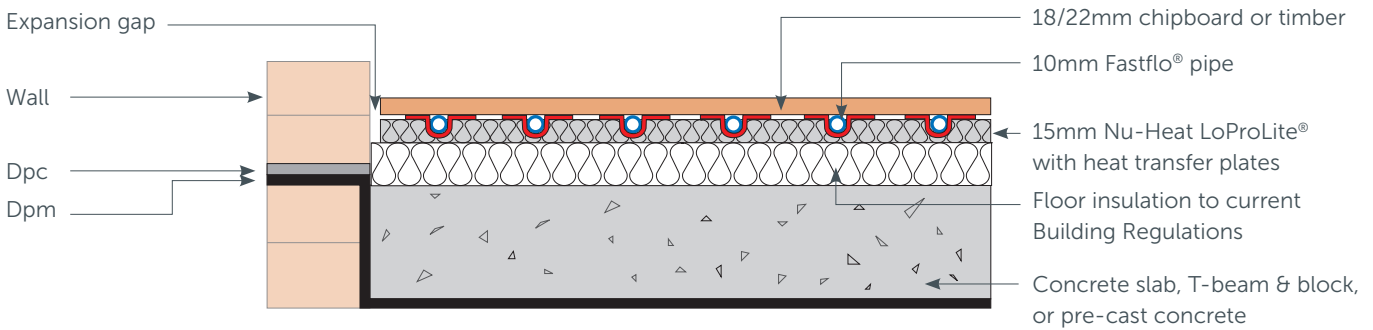
Floating floors – cross-sections

Floor preparation

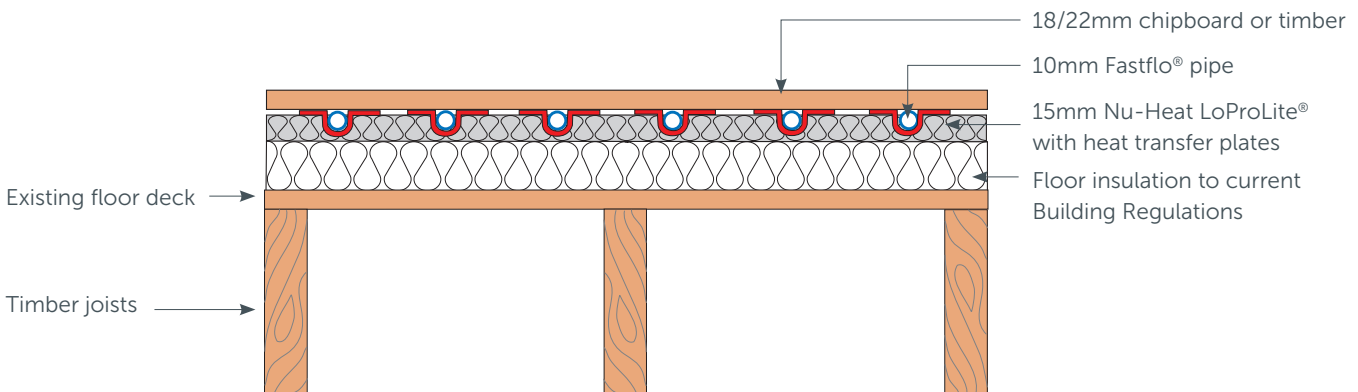
The underlying substrate should be flat and level to at least SR2 standard (5mm deviation over 3 metres) so that deflection is minimised. This is particularly important if the floor is to be tiled.

Where OneZone® panels are laid over insulation it is important to consider the compressive strength to minimise deflection, especially with rigid floor coverings such as tiles.

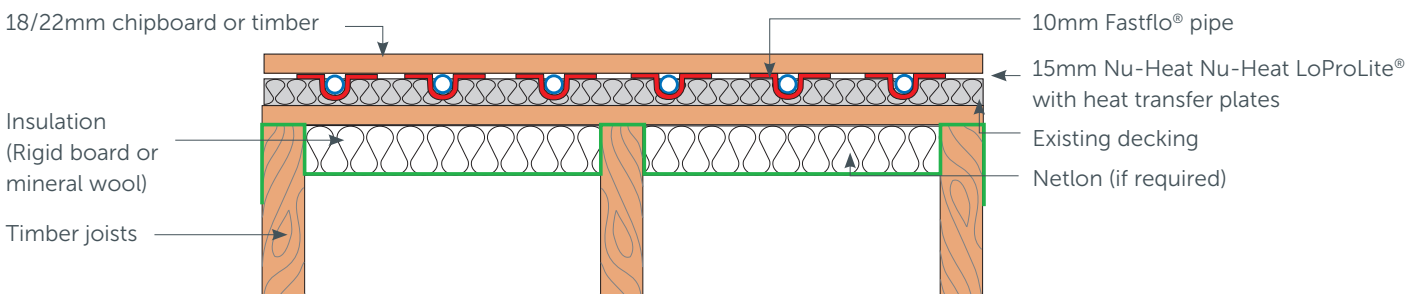
LoProLite® on a concrete or beam and block base



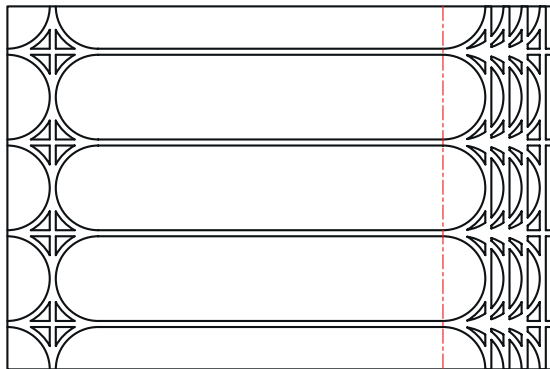
LoProLite® on a timber deck



Alternative LoProLite® on a timber deck with insulation between joists (low height build-up)



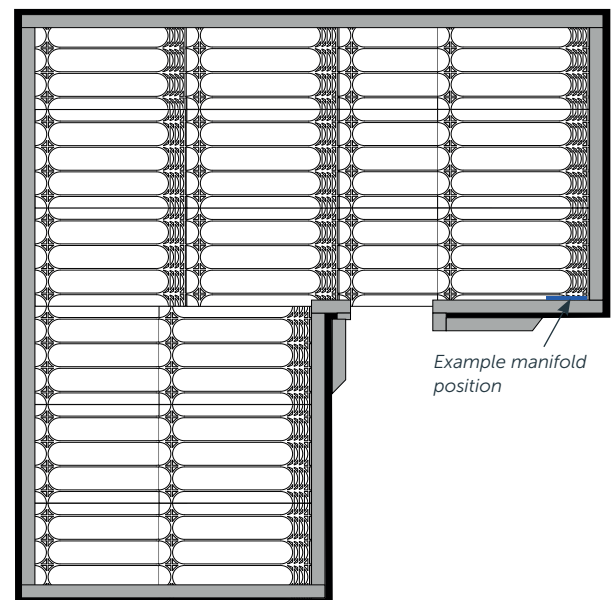
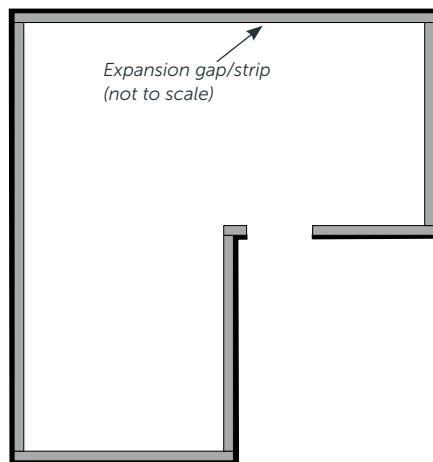
LoProLite® panel



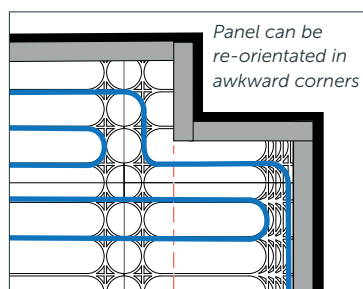
Up to 4 pipes closely spaced at edge of room.

LoProLite® panel is a combined straights and turns panel, that can be used for straight runs or orientated to make use of the multi-turns end where multiple pipes need to run along the edge of a room at close spacing.

Installing the LoProLite® panel



- 1 Lay a base layer of insulation if required (not supplied).
- 2 An expansion strip can also be fitted if applicable (not supplied).
- 3 If an expansion strip is not fitted, allow a 10mm expansion gap around all sides of the room.



- 4 Starting along one wall, lay the LoPro®Lite combined straights/turns panel to fit against the expansion strip, if fitted, or leave a 10mm expansion gap.

It does not matter which orientation is used, as long as the panel is parallel to the wall.

Double-sided tape is provided for areas where the panel may lift; this could be at turns, where small off-cuts are used or at the edge of the room.

Continue across the floor until the space is filled. the panel can be easily cut with a Stanley knife or small hand saw.

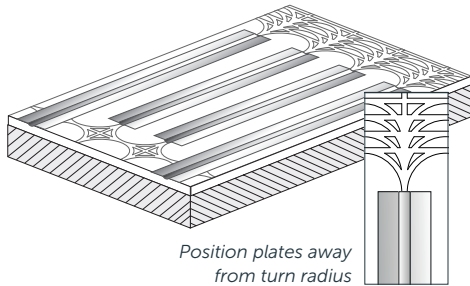
In awkward corners, cut panel down and re-orientate it so that turns can be lined up with adjacent panels.

Floating floors

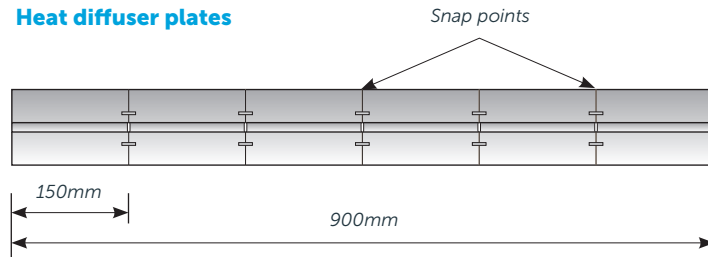
Notes:

- When used on ground floors or over an unheated area, the total insulation must comply with current building regulations.
- It is unlikely that the panel widths will fit a room exactly; use trimmed LoPro®Lite panels to fill any gaps.
- To avoid injury always wear gloves when handling plates.

INSTALLING THE METAL HEAT DIFFUSER PLATES



Heat diffuser plates

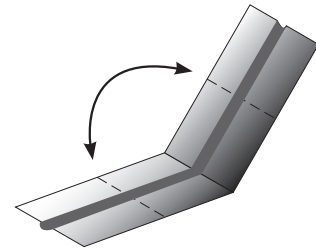


- 5** Install the heat transfer plates firmly into the LoPro®Lite panel leaving a small gap between plates and stopping the plates just short of where the UFH pipe will turn.

The plates have snap points that allow them to be trimmed to length.

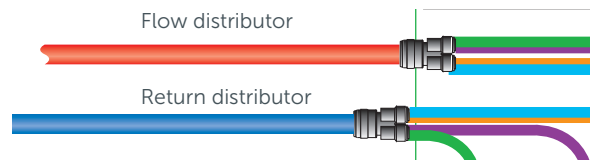
Note: To avoid injury always wear gloves when handling heat diffuser plates.

Take care when snapping the plates not to leave a burr as this could cause damage to the heating tube when installed.

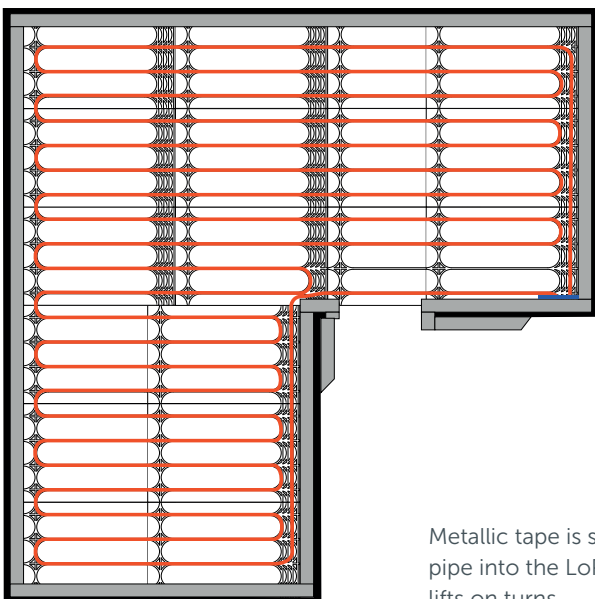


DETAIL OF PIPE CONFIGURATION AT THE DISTRIBUTOR CONNECTIONS

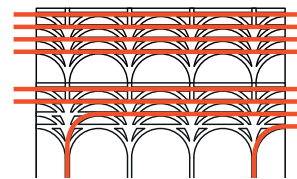
With all pipe installed and connected back to the distributors, the layout will look similar to that shown.



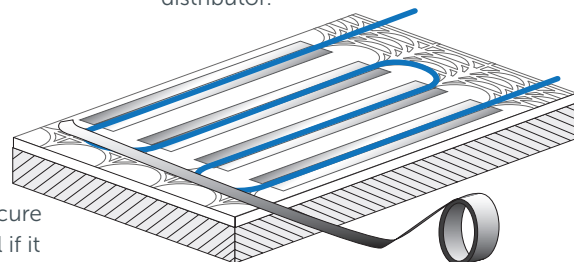
TYPICAL LAYOUT SHOWING USE OF LOPROLITE® AND FASTFLO® PIPE



Metallic tape is supplied to secure pipe into the LoPro®Lite panel if it lifts on turns.



Note: the turns end of the panel can be cut off for use in areas that need extra channels to run back towards the door/distributor.



Connecting 10mm Fastflo® to the distributors

If the distributors are to be remote from the pump module, then it does not matter whether the supply pipework or the 10mm Fastflo® tube is connected to the distributors first.

1 At the distributors, take one end of the floor heating tube and blow down it to make sure you have identified its other end correctly.

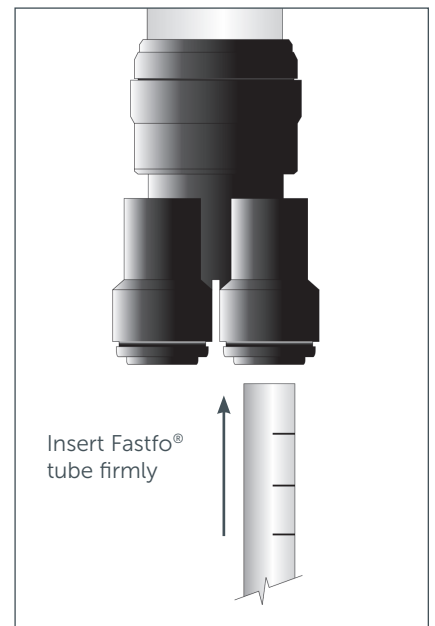
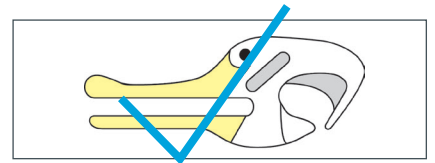
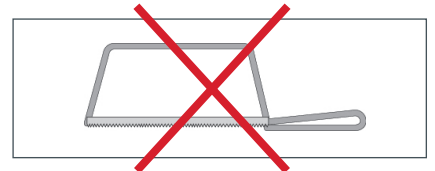
2 The Fastflo® tube should be cut squarely using pipe cutters and ensuring the tube is free from score marks.

Note: If the tube has to be re-fitted for any reason, cut back the pipe to a clean, smooth surface. Never use a hacksaw to cut the tube.

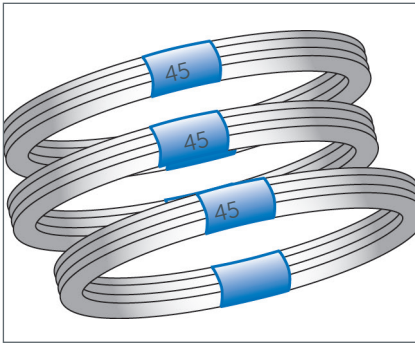
3 Push the Fastflo® tube firmly into the distributor connection. The pipe is marked every 25mm – if it is cut at one of the marks it should push into the distributor as far as the next mark.

4 Repeat steps 2 – 3 for the other end of the tube and connect to the return distributor.

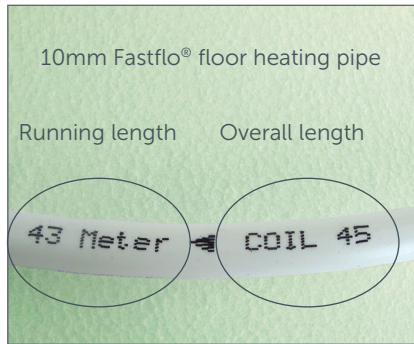
Note: Only flow or return pipes can be fitted to a single distributor, not both.



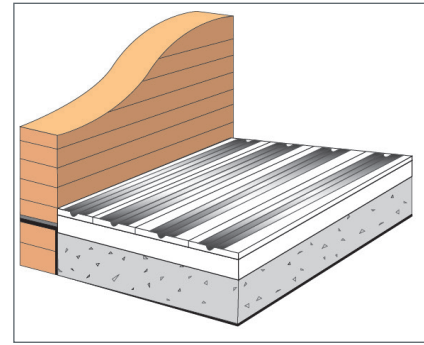
Installing 10mm Fastflo® tube



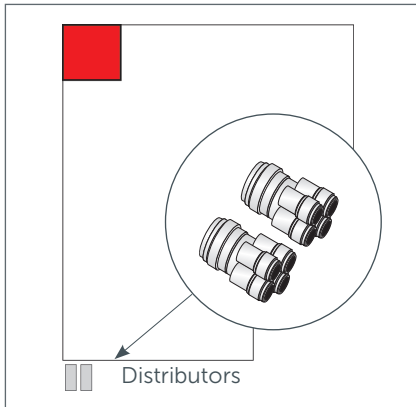
1 Check the *Delivery Note* to establish the correct number and lengths of the Fastflo® tube coils for the room.



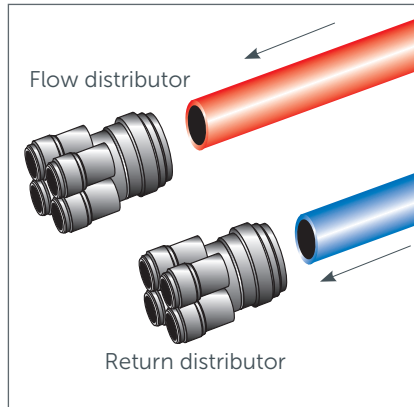
2 Each coil is marked every metre with its overall length and actual running length counting down to 0m. **Note:** The *Tube Trimming Chart* on page 15 gives the correct coil lengths for your room.



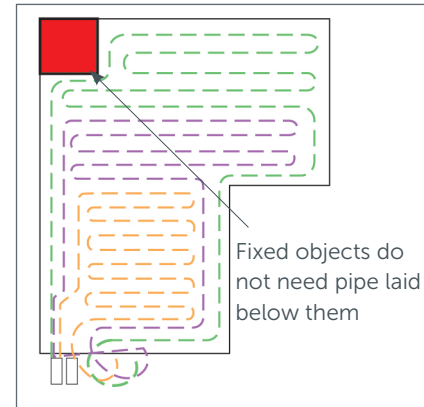
3 Nu-Heat LoPro® Lite panel should be combined with sufficient insulation to meet current Building Regulations. Insulation is laid below the LoProLite® panel.



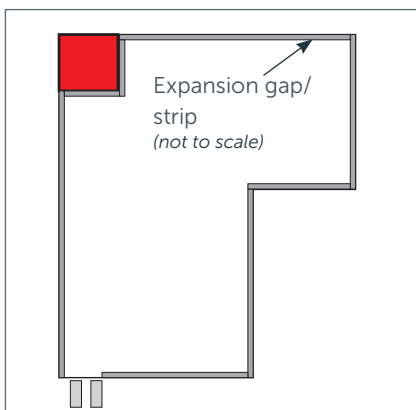
4 Place the distributors in a convenient position by the pump or in the wall as described on page 13. **Note:** insulation can be channelled to recess the distributor if they are placed in the floor.



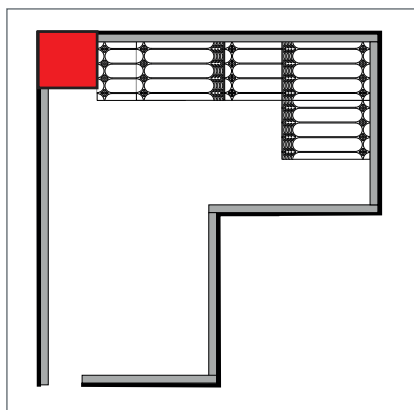
5 If the distributors are mounted remotely from the pump module then the flow and return pipe should be connected to the distributors. It is important to remember which distributor is flow and which return.



6 Plan the best layout for the floor heating tube before starting. The tubing is fitted in a serpentine pattern to fill the floor space.



7 Fit the expansion strip (not supplied), or allow a 10mm expansion gap.

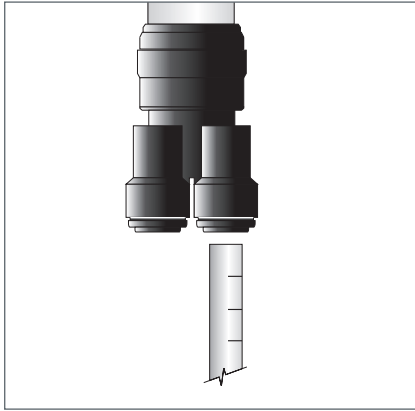


8 When the best layout has been determined, start laying the panels. Lay one width of panel along the edge of a wall in the most appropriate orientation.

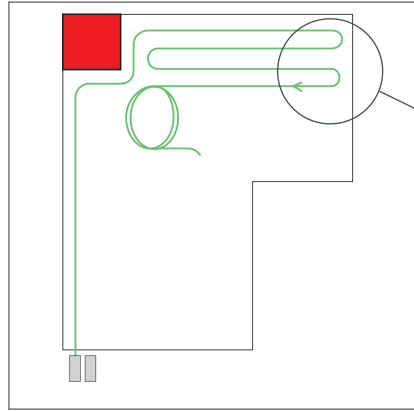
9 Continue to lay panels across the rest of the floor. **Note:** Take care to align panels accurately.



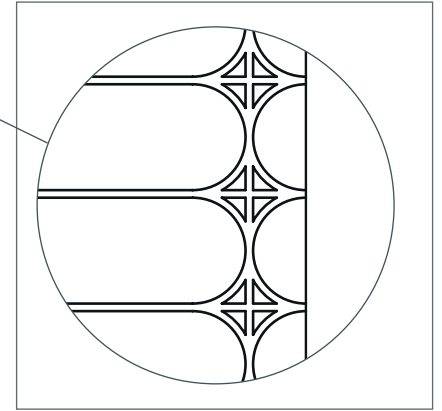
10 Fit the metal heat diffuser plates as on page 18. Roll out the tube pushing it into the plates. Do not kink the tube by trying to make a very tight turn. Unroll tube hand over hand to avoid twisting.



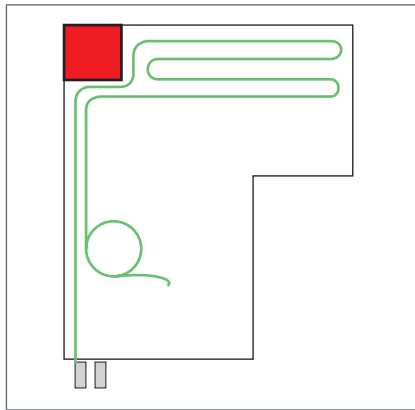
11 Insert one end of the 10mm tube firmly into the flow distributor (the one with the gauge).



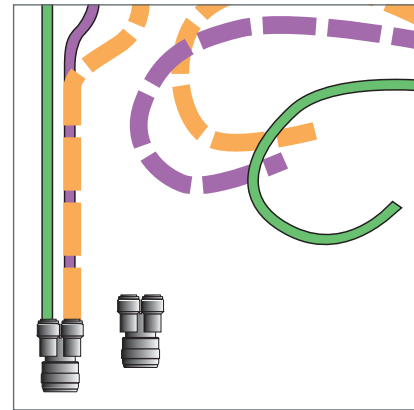
12 The tube should then be doubled back on itself filling the area at the correct spacing of 150mm as determined by the plates.



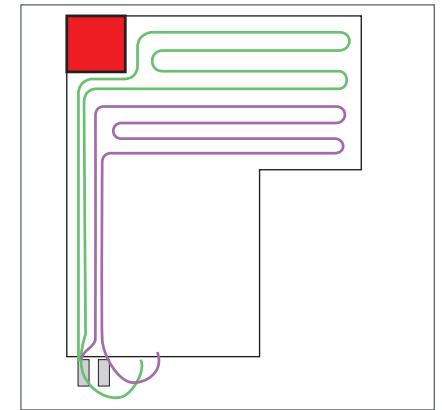
13 The LoPro® Lite panel is designed to accommodate turns.



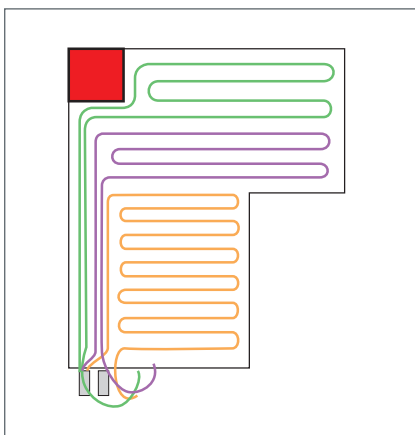
14 When there is just enough left, turn back and run the tube back to the return distributor. Any excess or shortfall can be adjusted at the turn-back point.



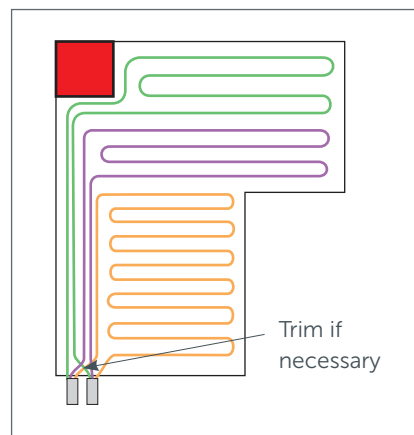
15 Exit the flow distributor with the second coil at a spacing to suit the connections.



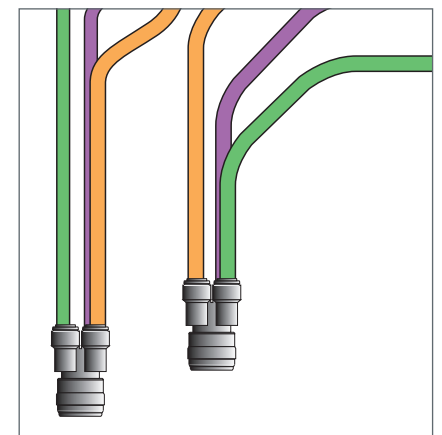
16 Use the same method as for the first coil of pipe.



17 Complete the installation using the same method for the remaining coils of tube.



18 Use the correct length of tube as detailed in the *Tube Trimming Chart* on page 15. If there is an excess, a maximum of 25% of the coil length can be cut off, (e.g. 10m cut from a 40m coil).



19 With all the tubing laid, trim to the correct length and insert the tubes firmly into the return distributor as shown in diagram 10.

Continue with the *Filling, flushing & pressure testing* as described on pages 22–23.

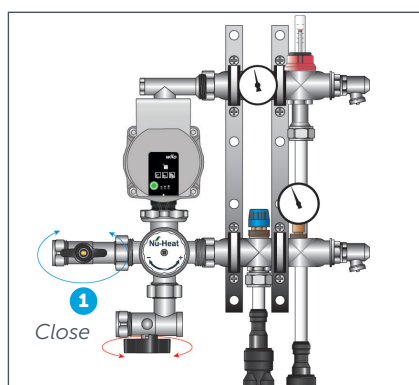
Filling, flushing & pressure testing floor heating tube

WHEN PUMP & BLENDING VALVE ASSEMBLY IS CONNECTED DIRECTLY TO THE DISTRIBUTOR ASSEMBLY

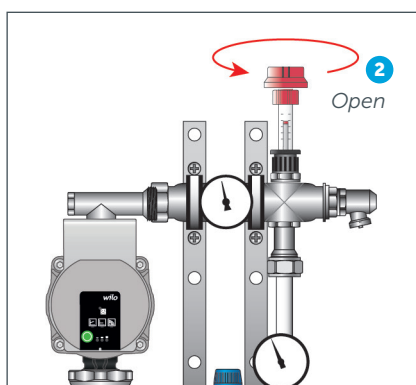
If the pump is not in the correct orientation then it must be changed now before filling the system with water, see pages 11 for details of how to change the pump orientation.

It is essential to remove all air from the pipework or the floor heating pump will not circulate water through the Fastflo® tube. This could take up to 2 hours. It must be flushed and pressure tested prior to laying the floor deck.

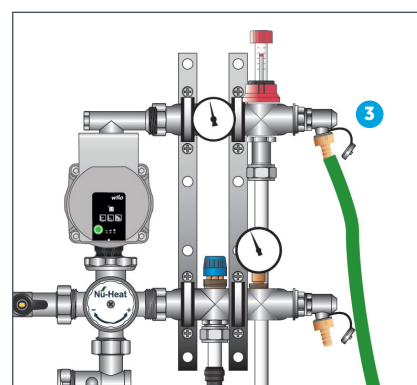
Note: Ensure all joints are tight before filling and flushing.



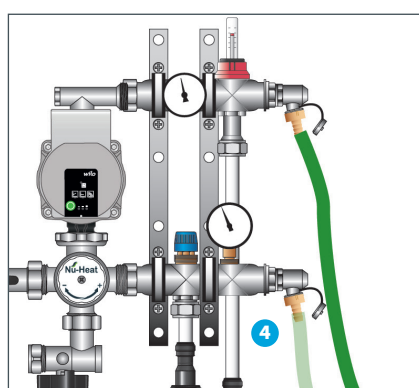
- 1 Close the isolating ball valves that are connected directly to the blending valve.



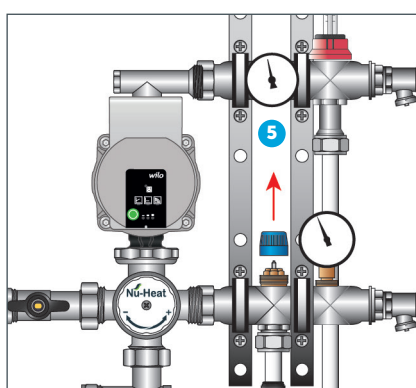
- 2 Open the flow adjuster fully on the supply (top) manifold by **a** lift the red collar, **b** undo the black locking nut **c** turn the red adjustment key fully anti-clockwise **d** tighten the black locking nut **e** replace the red collar.



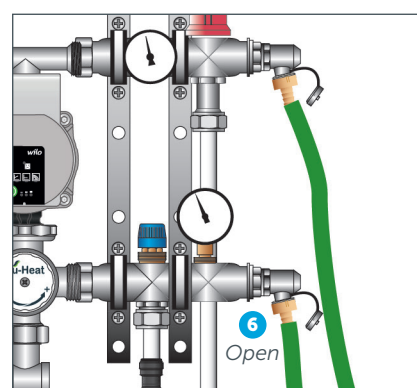
- 3 Remove the blanking cap from the filling valve on the flow (upper) manifold. Fit the connection nozzle and connect a suitable hose from the mains water supply. Open the filling valve using the key on the blanking cap.



- 4 Similarly fix a suitable hose to the drain valve on the return (lower) manifold.

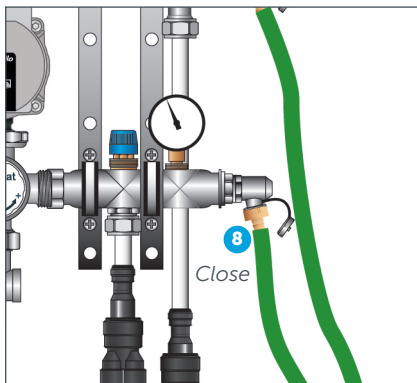


- 5 Fully loosen or remove the blue protection cap from the return (bottom) manifold.

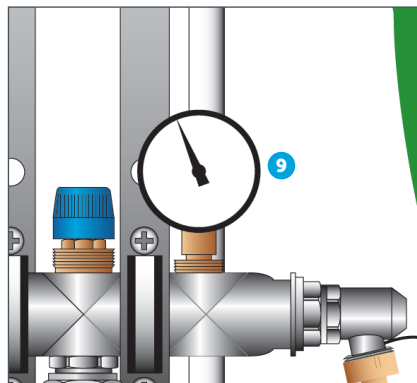


- 6 Open the tap on the mains water supply and open the drain valve on the return (lower) manifold using the key on the blanking cap.
- 7 Run the water until all air is expelled from the pipe.

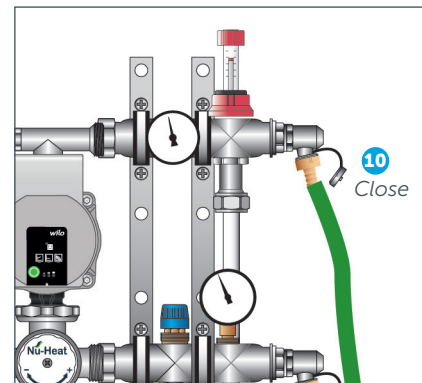
Tip: If the outflow is run into a bucket then air bubbles will be detectable.



- 8** Close the drain valve on the return (lower) manifold.

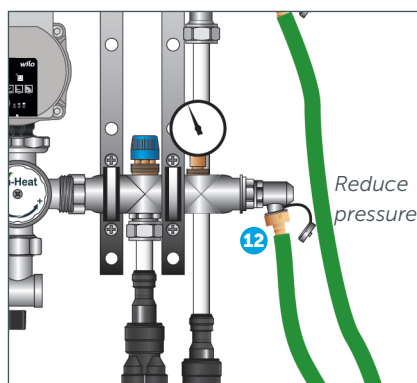


- 9** Allow the pressure to rise to a maximum of 6 bar.

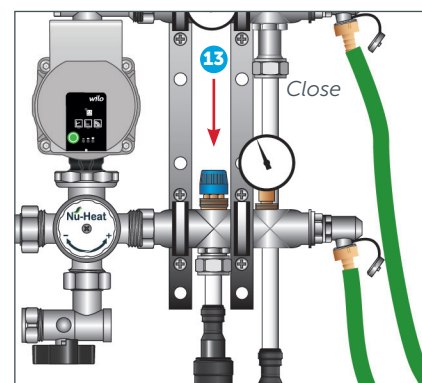


- 10** When the correct pressure is reached, close the filling valve.

- 11** All of the UFH pipework is now fully pressurised and should be left for at least 8 hours. Due to expansion and air temperature variations, a pressure drop of up to approx. 0.5 bar may occur. If greater pressure drops are experienced, thoroughly check all pipes and joints for evidence of water loss. If none is found, there may still be air in the system and the filling and flushing procedure should be repeated.



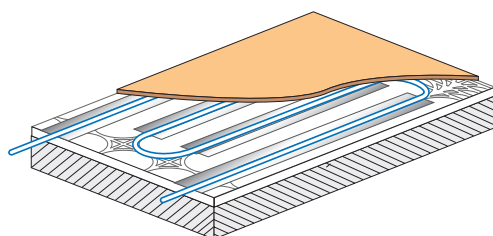
- 12** After testing, reduce the pressure to 1 bar-static by releasing the water from the drain valve on the return (lower) manifold.



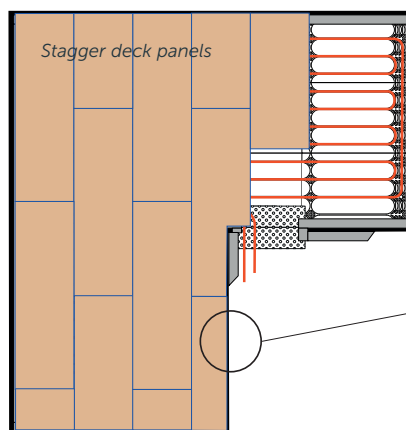
- 13** Close the blue protection cap and flow gauge to prevent air getting into the system.

Note: The floor heating tube must be left under pressure whilst floor deck is laid. 1 bar is sufficient.

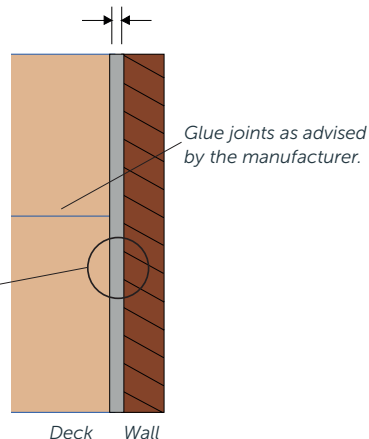
Installing a chipboard or cement board deck



- 1** The deck (18 or 22mm chipboard or 12mm cement board) should be installed with the joints staggered and glued. Leave a 10mm expansion gap between the deck and the wall.



Leave a 10mm expansion gap between the deck and wall



FLOOR SENSOR POSITIONING

Some suppliers recommend a maximum floor surface temperature for heat-sensitive floor coverings such as engineered timber and vinyl. Nu-Heat can supply a room thermostat that helps to control floor temperature via a sensor installed in the floor.

Positioning

When choosing floor coverings always follow the manufacturer's instructions and check that it is suitable for use with underfloor heating.

The thermostat's remote sensor helps to top-limit the floor temperature. The remote sensor is fitted with 3m of 2-core low voltage flex, extendable up to 20m.

To enable increased comfort levels in bathrooms, wetrooms and en-suites the floor must be allowed to reach higher than usual temperatures. For safety reasons thermostats for bathrooms, shower rooms and en-suites are always supplied with a remote AIR sensor.

Setup

Please check with the manufacturer of the floor covering for the temperature limit required and follow the instructions in the Nu-Heat A3 electrical sheet, *Setting up the Control System* on how to change the floor limit temperature.

Installation

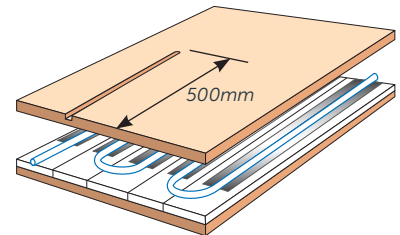
The sensor should be installed in the chipboard deck immediately below the floor covering. Form a recess in the deck midway between heating tubes before laying the final floor covering. The tip of the sensor should be at least 500mm from the wall. Secure the cable in place with adhesive or tape.

For engineered timber with no deck, form the recess on the underside of the plank.



Thermostat & floor temperature sensor

Route channel for sensor 8mm deep, using an 8mm diameter bit parallel to the heating tube midway between plates.



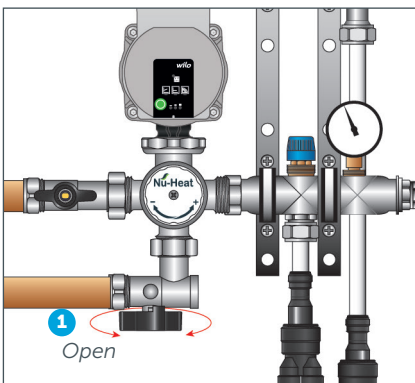
Route the sensor into the chipboard deck below final floor covering.

Filling the boiler and heating system pipework

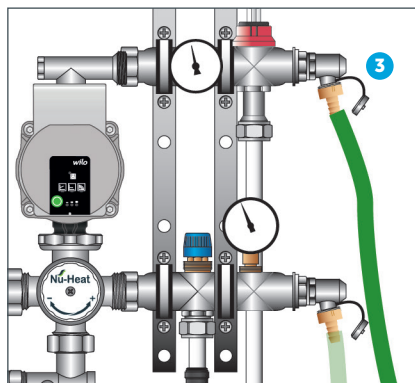
FILLING THE BOILER

Fill the boiler via the boiler filling loop whilst venting the system and following the boiler manufacturer's instructions. The system should be cleansed and flushed in accordance with BS7593:1992 to remove all flux residue and other debris.

If connecting to an existing heating system it is important that this is cleansed and flushed to the same standard. If there are ferrous components in the system, Nu-Heat recommends that a magnetic filter should be installed.

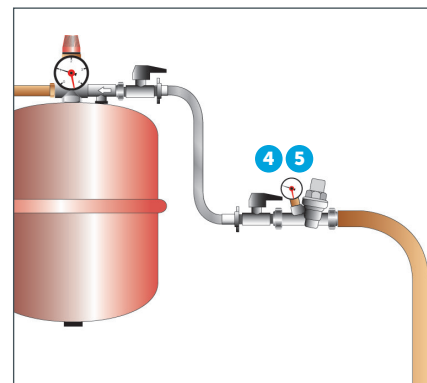


1 Open the flow isolation valve.



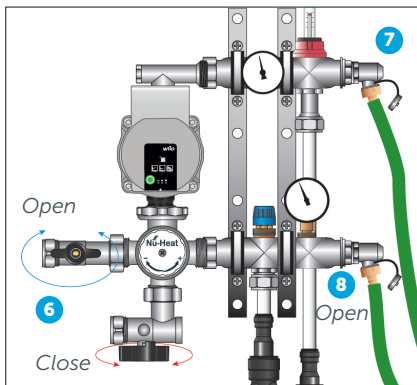
2 Find the hose tails from the tools and accessories pack and connect to the fill and flush hoses.

3 Use the cap end to open the drain cock on the flow (upper) manifold.

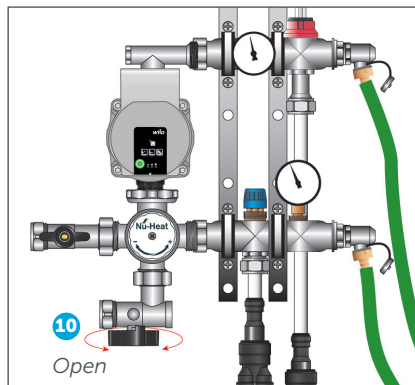


4 Fill the system via the boiler filling loop and run water through until the flow from the drain hose is free from air bubbles.

5 Close the boiler filling loop and drain cock.



- 6** Close the flow isolation valve and open the return valve.
- 7** Remove the hose from the upper drain cock and connect it to the return (lower) drain cock.
- 8** Use the cap end to open the drain cock on the return (lower) manifold.

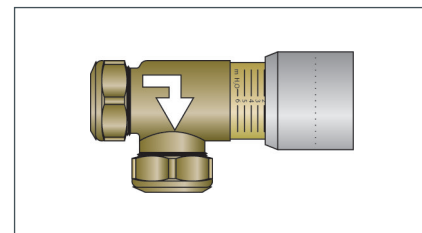


- 9** Repeat steps 4 and 5.
- 10** Open the flow isolation valve.
- 11** The temperature control valve on the pump module should be set to minimum.

Note: The system cold working pressure is 1.0 bar. When the system pressure has been set, isolate the filling loop and disconnect in accordance with water regulations.

AUTOMATIC BYPASS VALVE

Setting the bypass valve is a required to prevent the blending valve from being overloaded. The bypass is adjusted between 0.1–0.6 bar using the grey knob. 0.5 bar (marked 5 on valve) is the recommended setting. Check that the arrow on the valve points from flow to return.



Setting flow rates and commissioning

Before starting check that:

- 1** The heating and hot water system is fully operational and the boiler has been commissioned.
- 2** The floor deck has been fitted over the underfloor heating layer.
- 3** The manifold has been filled, flushed and pressure tested. See pages 22–23.
- 4** The boiler and primary flow and return have been filled, flushed, cleansed and vented. See page 24.
- 5** All electrical work associated with the heating system is complete (please refer to the [OneZone® Electrical Manual](#)) and the actuator head has been fitted.
- 6** The system static pressure is set at 1 bar when cold or approximately 1.5 bar when hot.
- 7** The manifold isolating valves are open.
- 8** The pump has been wired. See the page 11 for installation and page 26 for setting the pump mode.

Setting the pump mode

Press button to cycle to Constant Pressure 3. This corresponds to a 7m head.

Electrical connection

The pump is supplied with a separate, pre-terminated, 1-metre, 3-core lead ready for connection to the Optiflo UFH wiring centre. Ensure that the pump is filled and vented, use the controls to call for heat and then select the correct pump setting.

Setting the control mode

To select the control mode and set the desired delivery head/constant speed, press the button to cycle through the 9 options:

Variable differential pressure ($\Delta p-v$): **DO NOT USE**

Constant differential pressure ($\Delta p-c$): **USE THIS SETTING, CURVE III**

Constant speed (I, II, III): **DO NOT USE**

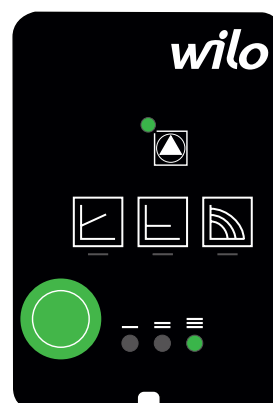
Reset to factory settings (Constant speed 3) by holding the button and removing power, release button and the next operation of the pump will be in factory default setting.

NOTE: All settings are retained if the mains supply is interrupted.

Venting

Press and hold the green button for 3 seconds to purge air from the pump, the pump returns to normal operation after 10 minutes and the purge program can be cancelled by pressing the button for 3 seconds.

The LED indicator light.



Variable pressure
DO NOT USE



Constant pressure
USE THIS SETTING



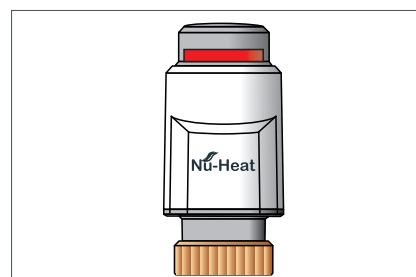
Constant speed III
DO NOT USE

LED	Fault	Cause	Remedy
Lights up red	Blocking	Rotor blocked	Activate manual restart or contact Nu-Heat Technical Support.
	Contacting/winding	Defective winding	
Flashes red	Under/over-voltage	Mains power supply too low/high	Check mains voltage and operating conditions and contact Nu-Heat Technical Support.
	Pump overheating	Pump interior too warm	
	Short-circuit	Motor current too high	
Flashes red/green	Generator operation	Water is flowing through the pump hydraulics but there is no mains voltage at the pump.	Check the mains voltage, water quantity/pressure and the ambient conditions.
	Dry run	Air in the pump	
	Overload	Sluggish motor, pump is operated outside of its specification (e.g. high pump temperature). The speed is lower than during normal operation.	

Fitting the actuator

The Nu-Heat supplied actuator comes as shown. The metal slip ring below the body of the actuator attaches the actuator to the manifold.

If the manifold is to be fitted upside down, and the actuator inverted, please contact Nu-Heat for details.



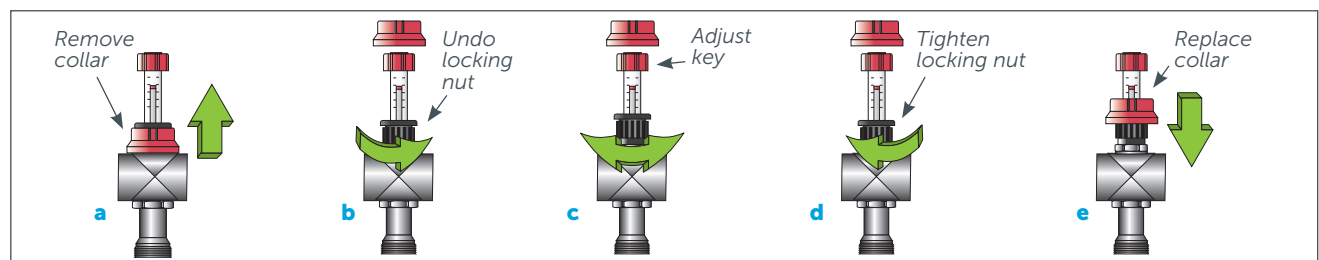
Flow and temperature settings

OneZone® LoPro® Lite floor heat output table

Flow water temperature	Carpet & underlay – 2 tog	Engineered hardwood	Tiles
40 °C	35 W/m ²	39 W/m ²	42 W/m ²
45 °C	46 W/m ²	52 W/m ²	54 W/m ²
50 °C	58 W/m ²	65 W/m ²	69 W/m ²
55 °C	70 W/m ²	78 W/m ²	82 W/m ²

When all of the components have been set up the temperature of the water going into the floor heating tube can be set by adjusting the blending valve below the pump. Floor temperatures are linked directly to the temperature of the water flowing through the Fastflo® tube and controlled by the setting of the blending valve. Increasing the temperature setting will result in increased heat output from the floor. As a rule, the floor should feel no warmer than the palm of the hand and a maximum of 29 °C.

- To adjust flow rates on the flow gauge (see diagrams below):
 - Remove red collar
 - Undo the black locking nut
 - Adjust the flow rate as required, by turning the gauge with the red 'key'
 - Re-tighten the black locking nut
 - Replace red collar
- Adjust flow temperature as per the table above and as required to satisfy the demand of the room you are heating. The settings on the valve should be used as a guide and the thermostat and heating system should be working to allow the correct setting of the flow temperature.



Example: A 3m wide by 4m length room has an area of 12m² and using a heat loss tool, it has been determined that the heat loss of the room is 738 Watts.

Divide the heat loss by room area to determine the required setting of the valve. $738/12=61.5$ Watts/m². The room has engineered hardwood floors and so selecting 50°C would adequately heat the room with an output of 65 Watts/m².

FLOW BALANCING

For installation without boiler control (i.e. when connected connected onto the existing radiator circuit) it may be necessary to adjust the radiator lockshield valves to balance the system. The OneZone® pump speed may be reduced to prevent excess flow being drawn, or else the manifold flow gauge can be used to restrict the flow on the UFH.

SYSTEM INHIBITOR

Once the OneZone® installation and commissioning are complete the central heating inhibitor levels should be checked and fresh inhibitor added if necessary. This should be checked in line with the boiler manufacturer's advice.

Floor finishes

Installation recommendations

Always follow the flooring manufacturer's instructions.

CERAMIC AND STONE FINISHES

The underfloor heating system should be turned off while tiling and remain off until adhesives and grouts have fully cured (see manufacturer's recommendations). Check before use that the colour of the adhesive does not cause staining or discolouration of light coloured or translucent tiles.

When installing large format tiles, the tile association recommends using a category C2 FTE S1 or S2 (where applicable) adhesive and a suitable de-coupling membrane.

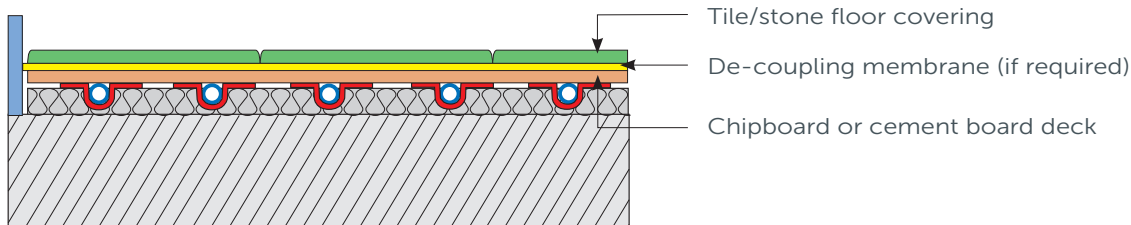
Note: In all cases manufacturer's recommendations should be followed.

If using soft or vulnerable natural stone products (e.g. travertine, marble, etc.) always install on a deck and follow specific supplier recommendations.

Adhesives

To install the decoupling membrane and tiles a flexible tiling adhesive suitable for underfloor heating should be used. The Tile Association recommends using a category C2.

Installation over a deck – recommended for all floor coverings



- 1** Fit the chipboard or cement board deck over the LoPro®Lite in a brick-bond pattern at right angles to the plates as shown on page 23.
- 2** Fit a de-coupling membrane if recommended.
- 3** Lay the tiles using flexible adhesive and flexible grout.
- 4** Allow the adhesive and grout to dry fully before using the underfloor heating.

ENGINEERED TIMBER

- The recommended thickness of engineered hardwood is 15–18mm and a maximum of 22mm.
- Always use a good quality engineered board and check with the manufacturer that it is suitable for use with UFH.
- The timber flooring should have been kiln dried to have a moisture content of 6–9% and should not be stored in damp conditions prior to fitting. Refer also to manufacturer's instructions.
- Allow the timber to acclimatise before fitting, in accordance with supplier advice.
- Engineered timber flooring can be glued and butt-jointed and then free-floated on top of the chipboard deck to allow for expansion and contraction; alternatively it can be glued to the surface of the deck using adhesive recommended by the manufacturer.
- Where engineered timber is to be fitted directly on top of the LoPro®Lite panel, a 2mm foam underlay is recommended. If underlay is used between a chipboard deck and engineered timber 2mm is the maximum thickness.
- Flooring manufacturers often recommend a floor temperature sensor for sensitive coverings such as engineered timber – these can be supplied by Nu-Heat. Sensors should be fitted in a channel routed in the underside of the plank midway between metal plates.
- Always leave an expansion gap around the edge of the room; typically 10mm. This will allow the floor to expand and contract with atmospheric changes.
- Where possible, fit planks at right angles to the underlying UFH pipe.
- T&G joints must be glued using an adhesive recommended by the supplier.



Engineered timber floors can be free-floated over LoPro®Lite panels or fitted on top of an intermediate chipboard deck.

CARPET

Install over a chipboard or cement board deck. The combined value of the carpet and underlay should not exceed 2.5 tog. Use nail-less gripper with gripfill when fitting carpets, do NOT use gripper with nails as this could damage the underfloor heating pipe.

OTHER FLOOR FINISHES

Always install the following floor finishes on an 18mm / 22mm chipboard or a 12mm cement board deck.

- | | | |
|---------------------------------|---|---|
| • Parquet timber | • Travertine / reconstituted stone | • Vinyl |
| • Mosaic tiles | • Bamboo / coir | • Linoleum, Amtico, Karndean, Marmoleum, etc. |
| • Ceramic tiles / natural stone | • Carpet & underlay (max. 2.5 tog combined) | • Rubber |

Always follow the flooring supplier's installation instructions.

Problem solving – UFH

Room thermostat calling for heat, but no response from the floor

- A** Check that the room thermostat is calling for heat; the flame symbol should be showing. See separate [Electrical Installation Manual & User Guide](#) for programming instructions.
- B** Check the zone valve actuator head is open with the red indicator out; check wiring if necessary. Be aware that the actuator operates with a 1–3 minute time lag.
- C** Check that the floor heating pump is running and the boiler is on and producing heat; check wiring, bleed air from pump.
- D** Check the floor heating water temperature control valve is set appropriately (usually about 50 °C); adjust if necessary.
- E** Check that all the isolating valves are open to allow water flow through the floor and around the pump and blending valve assembly.
- F** Check that the flow gauge is fully open.

No heat to floor heating distributors

- A** Follow the sequence of checks on left; if they are unsuccessful, repeat the filling and flushing procedure on pages 22–23 of this manual to remove any airlocks which may prevent water circulating correctly through the floor heating pipework.
- B** If the problem persists, please telephone Nu-Heat Technical.

Room temperature low; poor heating performance

- A** Check the time and temperature settings on the room thermostat and adjust if necessary.
- B** Check that the flow gauge is fully open.
- C** Increase the temperature of the water in the floor heating tube by 5 °C increments until the room is comfortable. See section on System Commissioning.
- D** The floor temperature limiting via the floor sensor (where fitted) could be set too low. Increase the floor temperature settings by 1 °C until desired temperature is reached. Leave at least 24 hours between each increase to allow time for the effects to be felt.

For sensitive floor coverings, always follow manufacturer's guidance.

Boiler noise/boiler lockout

- A** Check the system is free of air and warm water is flowing through all of the floor heating tube. If not, drain, re-fill and re-flush the system as described on pages 22–23.
- B** Check that the differential bypass valve is set to 0.5 bar with the arrow pointing from flow to return. This prevents a closed circuit between the boiler and floor heating controls.

Thermostat E0, E1 or E2 message flashing

- A** If a floor or remote sensor has been fitted then check wiring termination in the thermostat.
- B** If a floor or remote sensor is not required then the thermostat will need reprogramming. See separate [Electrical Installation Manual & User Guide](#) for programming instructions.
- C** E0 message means the thermostat is faulty and requires replacement, please telephone Nu-Heat Technical.

Warranty Certificate – Nu-Heat Fastflo® tube

Nu-Heat Fastflo® tube (PE-Xc, PE-RT, and multi-layer composite tube) is manufactured to ISO9002 quality control standards.

- Fastflo® tube is guaranteed (third-party, insurance-backed for up to €1million per claim) against failure in Nu-Heat floor heating systems for full reinstatement for a period of ten (10) years from the date of delivery. The sum insured is combined for the General Third Party Liability Insurance and the Products Liability Insurance.
- Fastflo® tube is guaranteed for a further forty (40) years against defects in material and workmanship. This guarantee shall be limited to the replacement of the defective tube, at the sole discretion of Nu-Heat. It shall not extend to installation reinstatement or consequential loss of any kind.

APPLICATION

This warranty shall apply provided that the heating system in which the Fastflo® tube is used has been installed, pressure-tested and commissioned in compliance with the procedures set out in this Nu-Heat installation manual.

EXCLUSIONS AND LIMITATIONS

The warranty shall not apply where:

- A – The tube has not been installed and pressure-tested in accordance with the procedures set out in this installation manual.
- B – Damage has occurred due to slip or heave in the concrete slab.
- C – The material has been subjected to misuse, neglect, abnormal conditions or physical damage.
- D – The tube has been used to carry or been subject to contact with incompatible heat-transfer fluids such as petroleum-based oils.

CLAIMS

In the event of a problem arising with this product, the warranty holder should first notify Nu-Heat in writing within 30 days. After receiving such notification and after the verification of warranty cover, the warranty shall be effected (as stated above).

Please note that the initial 10-year insurance backed warranty of Fastflo® tubing is provided directly by the manufacturer (underwritten by their appointed insurers), and not by Nu-Heat itself.

Reduced statute of limitations: the period of limitations for any cause of action arising out of, based upon, or relating to defects in the product purchased hereunder is hereby reduced to and shall be for a period of ninety (90) days after such cause of action occurs.

This warranty does not affect the purchaser's statutory rights. This warranty remains valid irrespective of ownership of the property in which the Fastflo® tubing has been installed but may only be enforced by a subsequent owner if Nu-Heat has been notified of the change of ownership within three (3) months of the change.

WARRANTY ISSUED IN THE NAME OF:

DATE OF PURCHASE:



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www.nu-heat.co.uk



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www.nu-heat.co.uk



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