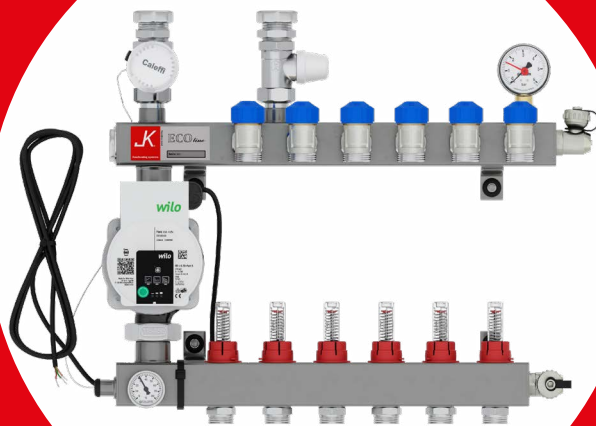
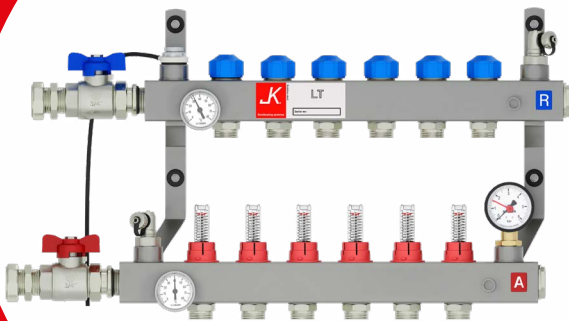


Underfloor Heating System

Quick Start Guide





03

Underfloor Heating Start-up

<u>Introduction</u>	03
<u>Commissioning your JK Manifold</u>	04
<u>The Commissioning Process</u>	05
<u>Bringing the system up to temperature</u>	06

07

Zoning and Control

<u>Actuators</u>	09
<u>Thermal cut out feature</u>	09

10

Heating the home with Underfloor Heating

<u>Underfloor Heating as Primary Heating System with Supplementary heating</u>	10
--	----

11

Additional Information

<u>Frequently Asked Questions</u>	11
<u>Troubleshooting</u>	12
<u>Manifold Label Sheet</u>	12



SCAN FOR ONLINE
VERSION OF THIS
GUIDE

Setting up the JK underfloor heating system for the first time is made simple with this guide. This guide is best viewed in full colour print or on either on a phone, PC or tablet. Crucial details on images may be lost if printed in low quality or black and white.

Your JK installation team will leave your manifold pressure tested and filled, so there is no need to fill or pressure test the manifold again if this is the first-time setup. You may want to refer back to this guide whenever the heating has been off for a prolonged period, such as when you are turning the system on for the first time coming up to winter.

Once the manifold has been connected to the heat source - with the primary flow and return pipework to the manifold pre-filled – commissioning of the system can begin. It is best to have the control system fully installed prior to commissioning, as this guide assumes your controls are in place.

To prevent damage, the final floor finish should be laid as soon as possible after the system has been installed. The system should not be run until a floor finish has been applied on top of the pipework, leaving the pipework pressurised will make a leak obvious if someone accidentally punctures a pipe.

If the pipe is punctured by performing other jobs before the floor finish is laid, do not panic. Call your local operations manager and they will arrange for a repair to be made, or to relay that loop. JK repairs are guaranteed and maintain the warranty on your system..

For the Plumber:

- S-plan or S-plan+ plumbing should be utilised when connecting the underfloor heating to the heat source. If dealing with an older heating system, then the plumbing will need to be altered to change any existing 3-port valves for new 2-port valves.
- Each manifold should have its own feed from the heat source and a 2-port valve.
- The feed for the underfloor heating should be teed off **after the primary pump, but before the first radiator**. The manifold pump is a circulator and will not pull from the heat source.
- If you are using low-loss headers / buffer vessels, you will need a shunt pump on the flow to the manifold after the header, in addition to your primary pump.
- ***IMPORTANT NOTE* an auto bypass valve must be installed on the primary pipework to the UFH manifold to maintain circulation in the primary system when the demand for hot water fluctuates on the UFH system.**
- Some boilers have an internal bypass, this is not sufficient and a separate bypass should be installed for the UFH manifold, there should be one per manifold, installed before the manifold's 2 port valve.
- Purge the primary flow/return to the manifold prior to commissioning the system to avoid introducing large amounts of air to the system, This can also be done by opening the boiler filling loop and the primary flow and return valves on the manifold in turn, allowing the air and water to travel from flow to return. the valves on the right hand side of the manifold can be opened to allow water and air out at this point.

Look at the placard above the pump to identify whether you have an Ecoline or LT Manifold.
Ecoline only steps are noted in red. LT Manifold only steps are noted in blue.

STEPS FOR THE PLUMBER TO COMPLETE PRIOR TO COMMISSIONING:

(Steps 1-6 below should be completed by a plumber before commissioning your JK manifold)



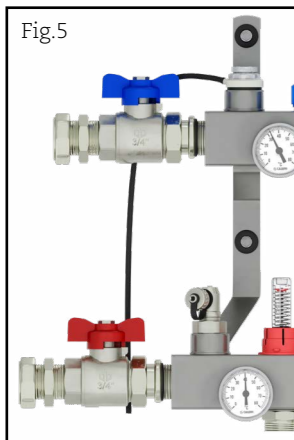
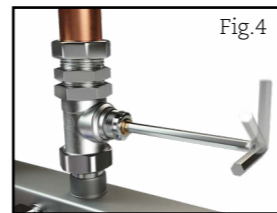
1 Run primary flow and return pipework to the manifold from the heat source, installing a 2-port valve on the primary flow to give an "s-plan" setup.
Ecoline additional step: Install the auto-bypass valve (ABV) (Fig.1) between the primary flow and return pipework to the manifold, preferably before the 2 port valve. Set the ABV to 0.1Bar initially.



Ecoline only: Remove the white cap on the primary flow valve.
 Replace the cap with the Caleffi Thermostatic head set to 35°C (Fig.2). **2**



Ecoline only: Remove the white cap on the primary return valve (Fig.3).
3 Open the screw (anti-clockwise) under the white cap using a 5mm hex key, 2.5 turns from fully closed (Fig.4).



LT Manifold Only: Open the 2x isolation valves (Fig.5) on the manifold primary flow and return connections. **4**

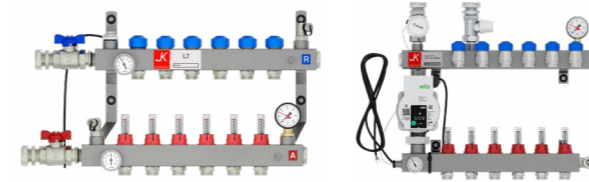
5 **Ecoline Manifold:** Unplug the connector on the back of the pump.
LT Manifold: Make sure the first loop on the manifold is open.

Open the 2 port valve manually.

Fill the primary pipework using the filling loop on the heat source, flushing any air out of the primary feeds. If you have followed the steps above water should be able to pass through the manifold from flow to return as required.

Close the 2 port valve manually. The system is now ready to be commissioned with its electronic control system fully installed and functional.

6

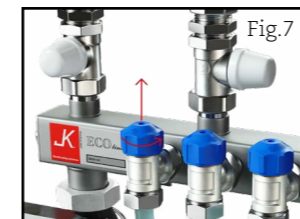


The Ecoline manifold can be commissioned by any competent person. The LT manifold should be commissioned by the heating engineer.

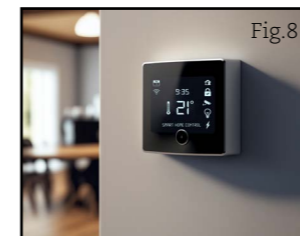


Remove the red protective caps off the flow meters on the bottom bar of the manifold (Fig.6). **7**

The flow meters should have been left open by the installers, you should see the thread between the black locking nut and the silver nut underneath.



8 Unscrew the blue manual caps on the top bar of the manifold to open the return valves (Fig.7).
 Actuators will be used to replace the blue caps for a multizone system.



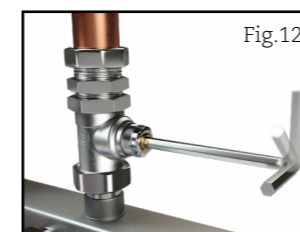
9 Make a call for heat with one of the thermostats (Fig.8). This will cause the 2 port valve to open, and the heat source to fire. **If you have an Ecoline**, the pump should also run.



10A **STEP 10: Ecoline only. For LT Manifold, skip to STEP 11.**
 Check the pump is on the correct setting (Constant pressure, speed 2) (Fig.9).

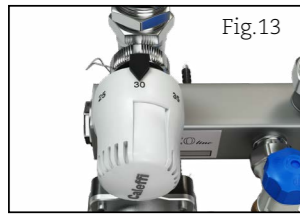


10B Set the thermostatic head to 35°C (Fig.10).
 Allow the system to run for 10 minutes, observing the temperature gauge under the pump (Fig.11).



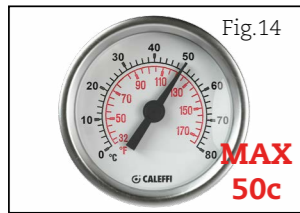
10C Open/close the primary return valve (Fig.12) using a hex key as required (opening further anti-clockwise will increase temp, adjust ¼ turn at a time).

The Commissioning Process (cont'd)



When the gauge settles at 30-35°C, leave the return valve as it is. Adjust the thermostatic head (Fig.13) first to 40°C, checking that the temp gauge reflects this adjustment within 15 minutes, then down to 30°C and check the same. The Ecoline manifold is now balanced. Allow the system to run for a few hours on minimum.

10_D



11

You can now start increasing the flow temperature of the manifold from minimum (20°C) by 5°C every other day, up to your operating temperature. This is typically 40-45°C with 50°C being the maximum (Fig.14). **Ecoline manifolds** flow temperature is controlled by the thermostatic head. **LT manifolds** flow temperature is set by the heat source.

LT only: now that the manifold is operational and up to temperature. Your heating engineer may want to balance the flow rates using the flow meters to achieve their desired temperature differential (typically 5-10°C). The LT manifold has 2x temperature gauges to enable them to fine-tune the temperature differential on a loop-by-loop basis.

12



Bring the system up to temperature



Start on the lowest temp of 20°C, increase by 5°C every other day.

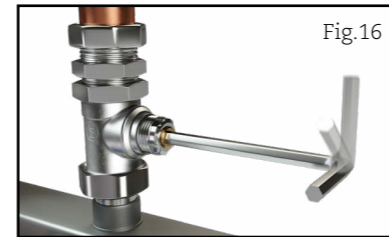
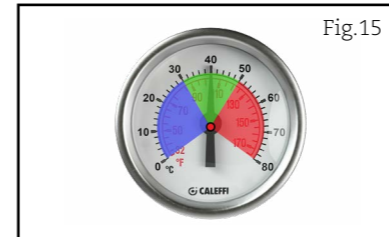


Most people operate at 40-45°C, 50°C is the maximum.

To bring the system up to temperature, first make sure you have balanced the flow temperature in line with the above instructions, then make a call for heat on your system and ensure all loops are open, make sure the thermostatic head is at the lowest temperature setting.

You can now increase the temperature set on the thermostatic head every other day by a maximum of 5°C until the operating temperature is reached. This is typically 45°C, however, you may wish to set this lower or higher (up to a maximum of 50°C) based on your property's requirements.

If you have a sensitive floor finish such as wood that risks warping if force dried, you may wish to stop this process at 30-35°C for a week to allow the wood to acclimatise, before continuing to raise the temperature further.



Depending on your floor finish and heat losses, you may heat the room with as low as 30-35°C water temperature, if you find the rooms to be adequately heated at this temperature, you can stop here, you do not have to increase the TRV head all the way to 40-50°C (Fig.15) to complete commissioning in this instance.

You may need to adjust the return valve further (Fig.16) to achieve the flow temperature that has been set on the thermostatic head as you bring the system up to operating temperatures. After every increase on the thermostatic head, make sure to leave the system running for a while before making any adjustments.

If the dial shows a temperature up to 5°C cooler than set on the head, this is acceptable, if it is showing a temperature hotter than the head, then adjust the grub screw to bring the temperature down.

After this, if you experience thermal cutout (this is when the pump should be on but there are no lights on the pump face), check the "thermal cutout feature" section of this document (Page 10) for advice. This is not a fault; it is a safety precaution.



Zoning and Control

The JK system is compatible with all major control systems that are suitable for underfloor heating. JK does not sell controls, as this allows the end user to choose the control system that is best suited to their needs.

If you have had your system designed as a multizone system – where rooms are controlled independently of each other with separate thermostats, you will need a wiring centre to manage the signals sent by the thermostats to the manifold. Each manifold that has more than 1 thermostat controlling it will need a wiring centre.

You can also set underfloor heating up as a "single zone" system, which means all loops are controlled by a single thermostat. This may be suitable if a manifold is supplying a single room or a large open-plan area.

One wiring centre can only control one manifold, even if you have a multizone and single zone manifold right next to each other, the wiring centre can only control the multizone manifold, the single zone manifold will need to have its own control relationship with its thermostat. Each manifold needs to be treated as its own separate, isolated system from the other manifolds/radiators etc.

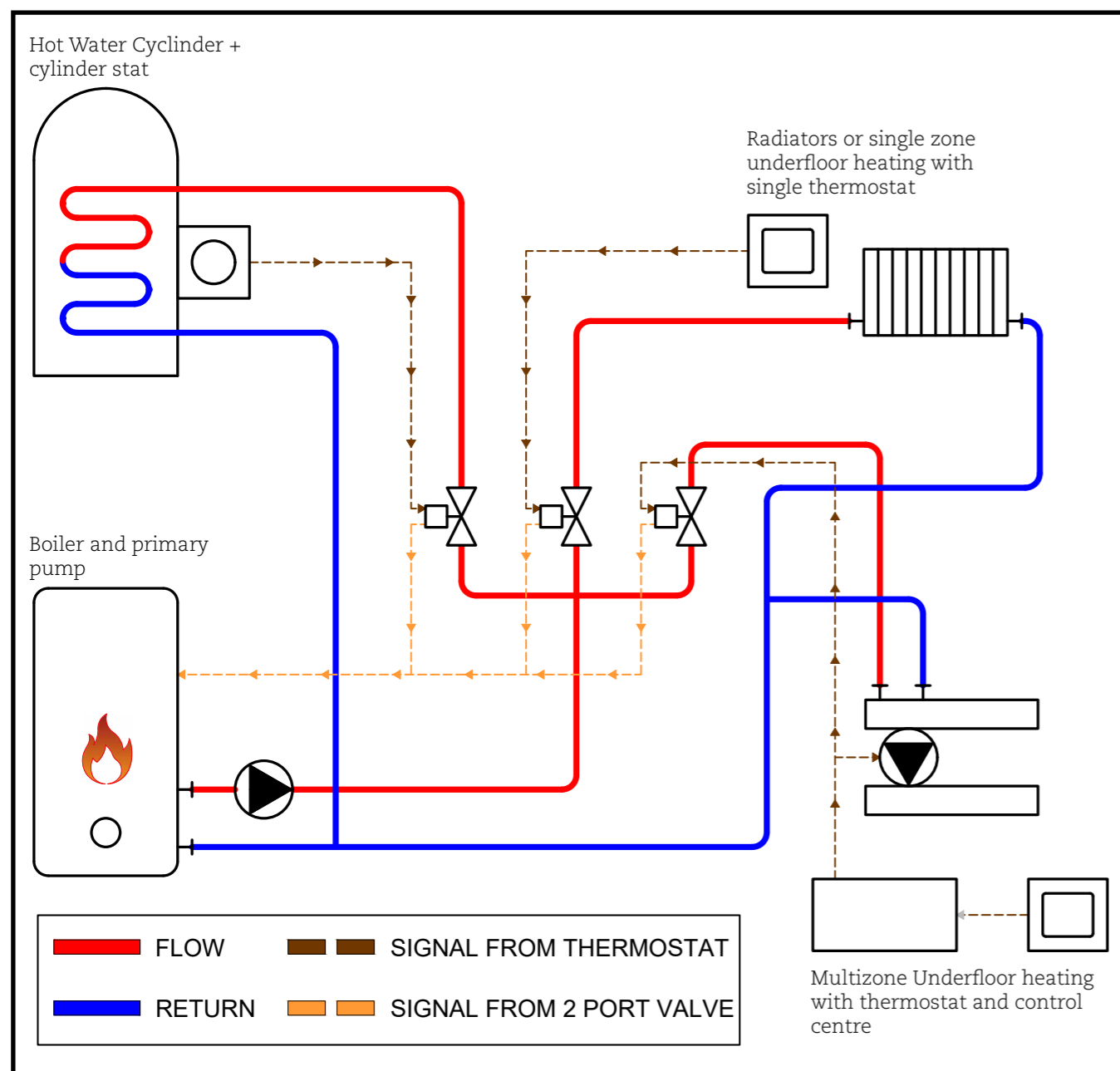




Below you can see a simplified illustration showing the control relationship with underfloor heating. The brown lines show a signal going from a thermostat to a 2 port valve for the radiator, then a signal going from a thermostat to a pump **and** a 2 port valve for the manifold. There is also a manifold with 2 thermostats sending a signal to a control centre, the control centre is then sending a signal to the pump and 2 port valve, as well as opening the appropriate actuators on the manifold.

The orange lines show that all 3 2-port valves then send a signal to the boiler, so when any system is on, the boiler will fire, but will only be able to send hot water to the systems that have asked for it, because only those 2 port valves will be open.

This illustration is not meant as a guide on how to wire the system, but rather to give an understanding of how the relationship works, you should always refer to the control manufacturer's instructions.



You should discuss the control situation with your heating engineer/electrician to make sure the control system provided has the features and capabilities you are looking for.

The manifold can be fitted with actuators to create a multizone system. The actuators control the flow of water around the loops and can be opened and closed independently of each other.

The JK manifold is designed to work with a normally closed actuator with an M30 thread. JK can supply actuators designed to work with our manifold. These actuators have a clear indicator of when they are open or closed.

When closed, the black disc will sit flush with the top of the actuator head, when open, the black disc will pop up. This is a visual and tactile indicator – most basic actuators have a similar style indicator.



Closed actuator head



Open actuator head

Thermal cut out feature

JK Ecoline manifold pumps have a temperature sensor built into the power cable. This sensor will cut power to the pump if it senses that the water temperature has exceeded safe operating temperatures.

This feature protects the UFH system from prolonged overheating and is a fail-safe should the mixing valve fail – or should the system be commissioned incorrectly and the temperature is not properly balanced – there is information on balancing the flow temperature in this document (Pages 4-7).

You can tell that the thermal cut out has tripped by looking at the pump. If the pump should be on (you have a call for heat, actuators are open if you have them) but there are no lights on the face of the pump, then the most likely answer is thermal cut out. You can also look at the temperature dial underneath the pump, it may not show excessively hot temperatures, but if it's showing temperatures above 40°C and the pump is not on, it's likely that the pump has cut out and is in the process of cooling down.

To check for thermal cut out, cancel all calls for heat for 30 minutes, look at the temperature dial underneath the pump and make sure that it is at ambient temperature (around 20°C, but could be cooler). Once everything has cooled down, make a call for heat and watch the manifold pump. Within 5 minutes the pump should come on, depending on your control system and relationship. If the pump trips again, you are experiencing thermal cutout.

To resolve this, you should first follow the instructions in this guide on balancing the flow temperature. If you are still experiencing thermal cutout, take a look at our troubleshooting guide, or call technical support.



The JK system is capable of outputting 2-3x the heat requirement of modern homes built to the latest standards, more than sufficient to act as the primary heating system.

You may find some floor finishes need to be limited to approximately 27°C to protect them, and we recommend that no floor should be warmer than 29°C, in order to maintain a safe, healthy and comfortable environment. This also complies with **ISO 7730**. Floor temperatures should be limited by the use of floor probes on your control system. You should not rely on water temperature to limit floor temperature.

The JK system can be used on its own in every room, or it can be used in conjunction with other heating systems throughout the home – for example, you may wish to have radiators upstairs and the JK system downstairs.

Homes with high heat losses may opt to use supplementary heating. You may choose to have radiators or a log burner in the same room as underfloor heating, to provide additional output. While the system can work in this configuration, we would always recommend that you insulate the home to reduce heat losses so that underfloor heating can heat the space on its own, rather than introducing supplementary heating systems.

Reducing heat loss can often be more affordable than a secondary heating system, and will pay for itself quite quickly as it will reduce the total energy needed to keep the home at a comfortable temperature.

With the latest part L guidelines, most new properties and heating systems should be designed to heat the space using low temperature (<55°C) water with only a few exceptions being made, so it is advisable to reduce heat loss rather than increase output. This is something you should discuss with your heating engineer to determine the best course of action.

If you will be using supplementary heating – or using underfloor heating as the supplementary system, we have some advice below.

Underfloor Heating as Primary Heating System with Supplementary Heating

When the underfloor heating is utilised as the primary heating system for the property, most or all of the heating requirements of the zones should be provided by the underfloor heating system. You should only need to adjust the water flow temperature on the manifold, and the room temperature set by the wall thermostat(s).

If supplementary heat is present, such as the heat from a log burner or even that of solar gain, once the room reaches the temperature specified by the room stat, the underfloor heating will stop sending hot water to the floor. However, you may find the room continues to heat due to the energy stored in the subfloor and the energy provided by the supplementary heat sources.

If the underfloor heating is used as a primary heat distribution system, and the primary heat source either does not have bypass valves or the radiators are fully closed, this may cause the heat source to fault, as it cannot dissipate sufficient heat. This is typical in older properties where a single radiator (such as the one in the hallway) is acting as a bypass and has been removed. In this case, we recommend an auto-bypass valve should be installed as previously recommended.

Q: My UFH is on but my floor is only luke-warm?

A: During the heating process the floor may feel cooler than you would expect as the air heats up. This is because room temperature and floor temperature rise in relation to one another when the system is on. Cooler air means the floor is able to radiate more heat into the space. As the air heats, the floor will start to feel warmer while the system is working.

Q: My room is at a comfortable temperature but my floor is stone cold?

A: The primary purpose of the UFH system is to heat the room, and warm floors are an enjoyable side effect. A cool floor but a room at temperature (~20°C air temp) would suggest a system is working perfectly. If the purpose of your system is to heat the floor and not the room, such as around an indoor pool, discuss this with your electrician who may want to consult with our technical team to achieve this.

Q: Does the manifold heat up the water?

A: The manifold needs to be connected to a heat source such as a boiler or heat pump, it does not heat the water by itself.

Q: Can I turn my UFH system off completely?

A: Underfloor heating is a “low and slow” system, meaning it shouldn’t be allowed to cool down too much, as it takes a while to heat up. Once it’s warm, it is efficient to maintain the heat in a room. Ideally, you should operate on “comfort” and “setback” temperatures.

When you are in a room, you want to set a **comfortable** temperature, typically 20°C, and you typically want it to start heating to this temperature 1-3 hours before you will be in the room. This complies with BS EN 1264 AND ISO 7730.

When you are not using the space, utilise a **“setback temperature”**, typically 17-19°C, so that the room does not cool too much, keeping a quick heat up time. Setting a setback temperature lower will reduce energy consumption if the room is often unoccupied, but will increase the amount of time it takes to heat to your comfort temperature.

This method of operation is particularly important in the colder winter months. In the warmer summer months you can operate your system in a more “on/off” fashion as heat demand is less and you have the benefit of more solar gain.

Q: where should i put my thermostats?

A: Speak with your electrician to determine a suitable location for your thermostats - considerations need to be made for appropriate height and power requirements.

Thermostats should not be placed close to a heat source, in direct sunlight, or where it is draughty, as this will prevent the thermostat from getting a true reading of the room temperature.

Q: My plumber has told me I dont need a bypass valve for my ecoline manifold as there is one already present in the boiler.

A: a local bypass valve is always required with ecoline manifolds to enable proper mixing - it should be installed going from flow to return. Please have your plumber call the JK technical team to discuss if they still believe a local bypass is not required.



Troubleshooting

JK have modernised our methods of troubleshooting and now have an interactive troubleshooting guide.

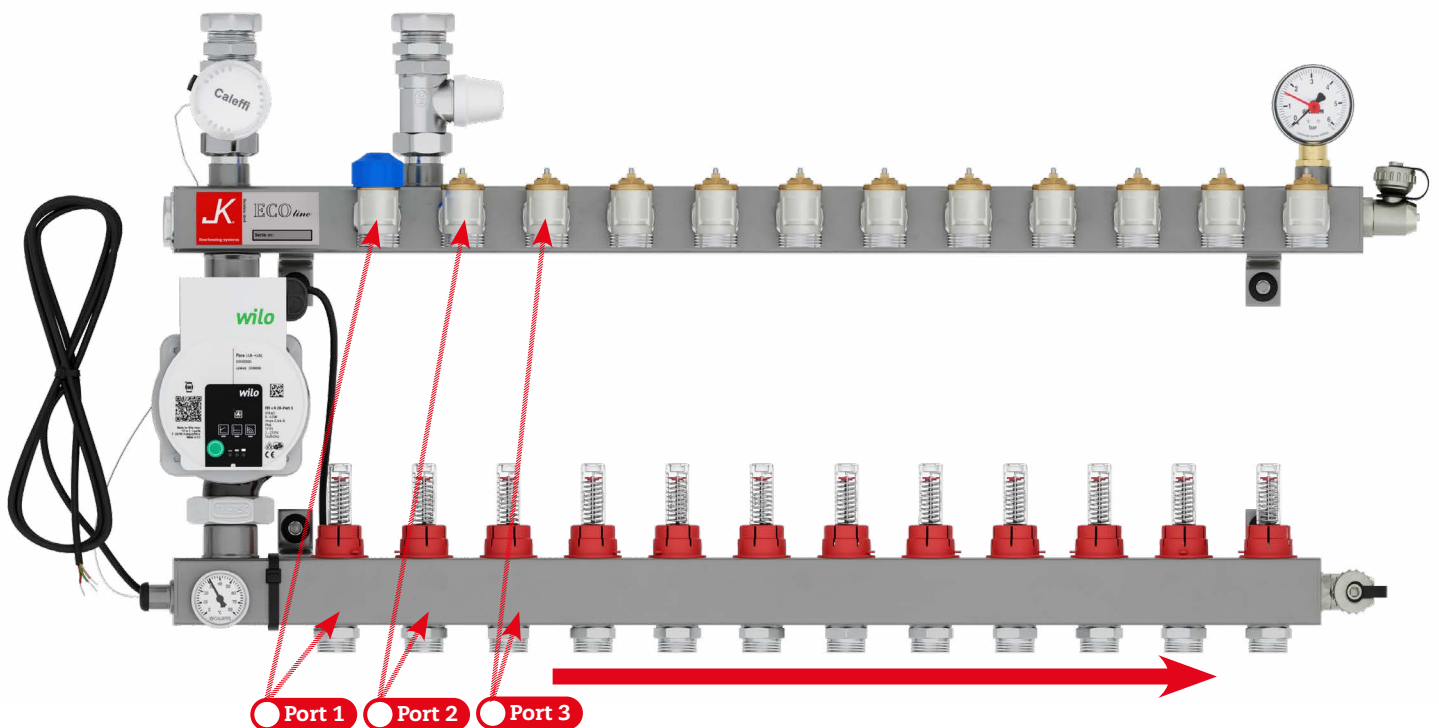
Our technical support team are available to help Monday-Friday 8am-5pm. For 24 hour, instant support, our interactive guide can be used to resolve most issues or help you to better inform our technical team with more in-depth information about your system.

Upon completing the guide, if your problem has not been solved, the technical team will be notified, review the steps that have been taken, and contact you with further troubleshooting guidance, taking over where the guide left off.



You can access the guide by scanning the QR code on this page, or by visiting:
<https://support822964.typeform.com/JKITSG>

Manifold Label Sheet



Manifold Name:												
Port	1	2	3	4	5	6	7	8	9	10	11	12
Room Name												