# SPIROZONE INSTALLER MANUAL


systemlink
energy saving solutions

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# INDEX



**V1.5**

This specification relates to the SpiroZone hydronic manifold family. It specifies operating conditions and installation requirements for the manifold assuring correct and safe operation. Systemlink accepts no responsibility for installation and use of SpiroZone equipment unless these requirements are strictly adhered to. Systemlink reserves the right to amend this specification and the SpiroZone product configuration as it sees fit.

# 01 | INTRODUCTION

**SpiroZone** is a fully insulated central heating zoning manifold with an internally integrated controlled by-pass. It is based on the notion of using pumps for zoning distribution for long life and trouble-free use.

SpiroZone is the mechanical distribution manifold system used for zoning of heating circuits, Boiler arrays and Bi-Valent systems. The system design ensures that each heat source and heating zone operates independently of each other. It works with any heat source, it is completely insulated and can be mounted in any orientation.

One of the unique features of SpiroZone is the automatic built in bypass and neutral point.

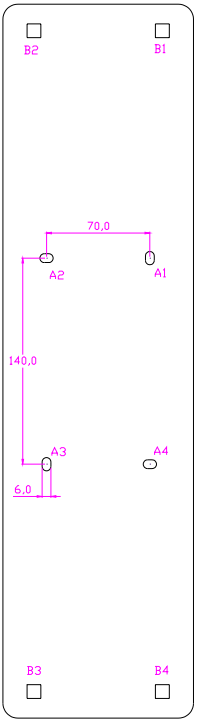
The structural integrity of SpiroZone derives from the use of stock steel pipe with a nominal thickness of 3.8 mm. Large pipework forces are accommodated while bursting pressure exceeds 10 bar. In addition to high heat distribution efficiency, SpiroZone is designed for end-of-life.

# 02 | MOUNTING OF THE SPIROZONE

## Space Considerations

When considering where to mount the SpiroZone, allow adequate space for zone pumps. Dimensions can be found on page 16. The manifold may either be wall mounted using the wall plate and brackets provided or supported by its bracketed connecting pipe-work.

The wall plate should first be mounted to the wall using mounting holes A1, A2, A3, A4. Then the insulation should be appropriately bored to allow the screws for clamping the SpiroZone manifold to pass through. The insulation and SpiroZone can then be clamped to the wall plate at B1, B2, B3, B4 using the clamps and screws provided. See below.

## Noise Considerations

SpiroZone should be installed with adequate support for manifold and pipework such that noise and vibration from pump circulation is minimised.

## Orientation

SpiroZone can be installed in any orientation/direction. There is no “correct way up”, although we do recommend mounting vertically as it can both ease pipework installation and aid in air extraction through the uppermost end connection.

# 03 | PORT CONNECTIONS

Please see the legend below to explain the symbols used to identify the various types of port connections. SpiroZone must be installed according to these symbols to prevent any problems or voiding of warranty.

| Symbol | Definition |
|---|---|
|  | Flow out from SpiroZone to zone or flow in from boiler |
|  | Return from zone to SpiroZone or return to boiler |
|  | Port-pair numbers used for identification and troubleshooting. |

**Examples:**

| | |
|---|---|
|  |  |
| Port-pair showing flow in red port and return in blue port. The number 2 is used again for identification. | Symbols for end caps for blue return (from zone or to boiler) and red flow (to zone or from boiler). These are placed on either end of the SpiroZone. |

SpiroZone hydronic manifolds are available in various sizes from 3-7 connections, unidirectional as indicated by port identification labels.

The maximum permissible flow rate through the manifold is 2.0$m^3$/h. Flow and return ports must be connected as per the labels.

# 04 | General Installation Information

**Non-Return Valves**

Spring loaded *non-return valves* **are required on all** SpiroZone flow/return circuits. These in combination with the controlled by-pass ensure complete independence of all circuits.

**Acceptable Media**

A suitable and approved heating system corrosion inhibitor should be used in accordance with manufacturer's instructions.

SpiroZone manifolds are compatible with water/propelyne glycol solutions in all concentrations however be aware that pump performance can be affected by changes in viscosity. Particulates of greater than 200 microns in size should be excluded; pH should be controlled to the range -3 to 10. Prior to operation SpiroZone hydronic networks must be thoroughly flushed to remove flux residues, particulates and other extraneous material. Mild caustics (pH between 7 and 10) and/or biocides may be used for flushing purposes but must be thoroughly flushed after use.

## Venting Air

**SpiroZone** has been designed so as not to trap air but to move it through the manifold. Therefore zones should be properly vented through the use of, for example, automatic air vents.

**Operating Temperature**

SpiroZone media temps must be in the range of 5 to 90$^{o}$C. The SpiroZone should not be run at negative-pressure due to potential cavitation damage caused by boiling.

**Operating Pressure**

The max permissible service pressure is 4bar gauge. The manifold should not be exposed to water hammer effects or other pressure transients likely to exceed this limit.

**A Note on Pumps**

All circuits attached to the SpiroZone Manifold must have their own circulating pump. Self adapting/regulating pumps should ***not*** be used on heat sources supplying the SpiroZone manifold. If installed on the boiler supply the built-in by-pass would not allow these types of pump to detect changes in pressure drop in the zones. They can however be used on the zones themselves pumping out of the SpiroZone manifold.

**Flow Considerations**

It may sound obvious; however, enough water must be pumped into the manifold from the heat source to supply that which is being pumped out of the manifold to the zones.

In more detail:

The flow *into* the manifold $Q_{PRIM}$ (from the primary heat source) must at least equal the flow *out* of the manifold $Q_{SEC}$ (to the secondary heating/DHW zones) i.e. $Q_{PRIM}$ must at least equal $Q_{SEC}$.

The ideal condition is where the primary heat source flow rate is equal to the secondary zone flow rate, $Q_{SEC}=Q_{PRIM}$. In other words, all of the water being supplied in by the boiler is in turn being supplied out to the zones.

For the condition where $Q_{SEC}<Q_{PRIM}$ there is an excess of hot water being supplied by the boiler to the zones. This is an acceptable situation when the excess of water from the boiler flow travels through the bypass in the manifold to join the water flow returning back to the boiler. Most modern gas boilers will modulate their power output depending on the conditions.

The third possible situation is $Q_{SEC}>Q_{PRIM}$. This is not a desirable situation as it means that the flow of water being supplied to the manifold by the boiler is less than the flow of water required by the heating zones. In this case the shortfall of water flow to the zone results in a flow of cooler zone return water travelling the wrong way through the bypass, thereby cooling the heating zone flow water. In this situation the primary heat source flow remains at high temperature but it is noticeable that the secondary heating zone flow is much cooler.

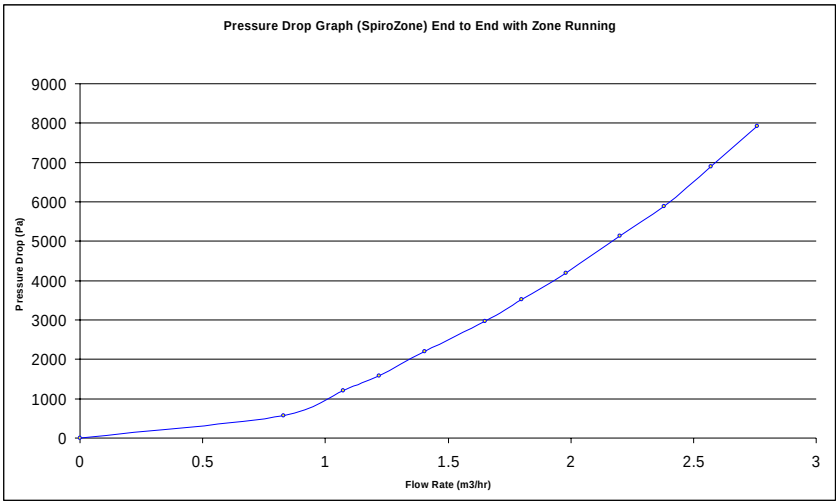



**Figure 1 Pressure Drop Graph SpiroZone**

# 05 | SYSTEM APPLICATIONS

The decision to use an open or sealed system design is entirely at the discretion of the installer as SpiroZone will work equally well with both types of system. The choice of system must, however, be fully compliant with the recommendations of the manufacturer of the particular heat sources to be used.

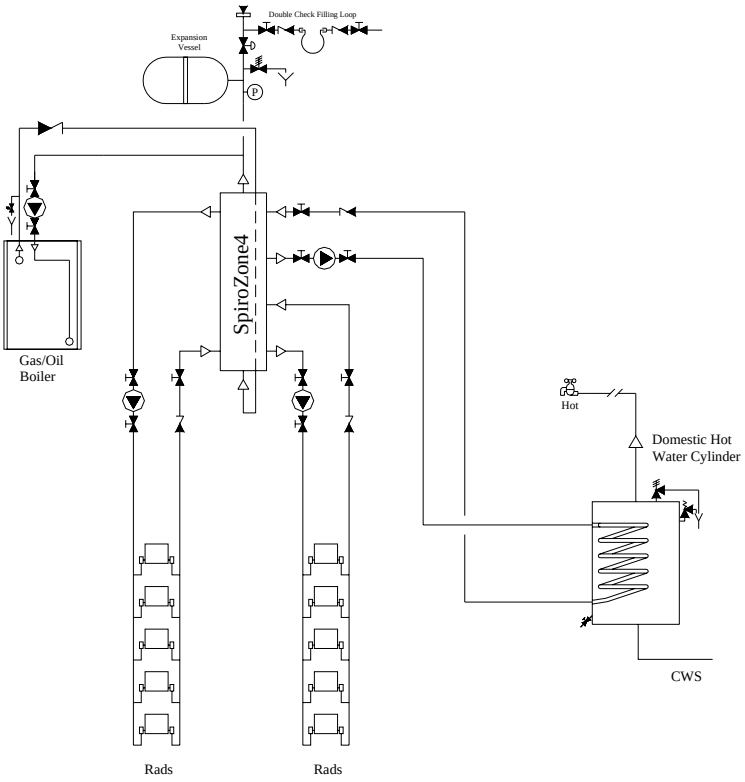



**Figure 2. SpiroZone 4 system comprising Oil Boiler, 2 Radiator Zones & DHW Zone**

Figure 2 shows a typical domestic dwelling heating system based around a SpiroZone 4 manifold. An Oil or Gas Boiler is the heat source with circulating pump

connected to the SpiroZone as shown. There are two heating zones, ground floor and 1st floor with pumps. Finally there is a domestic hot water zone with pump.

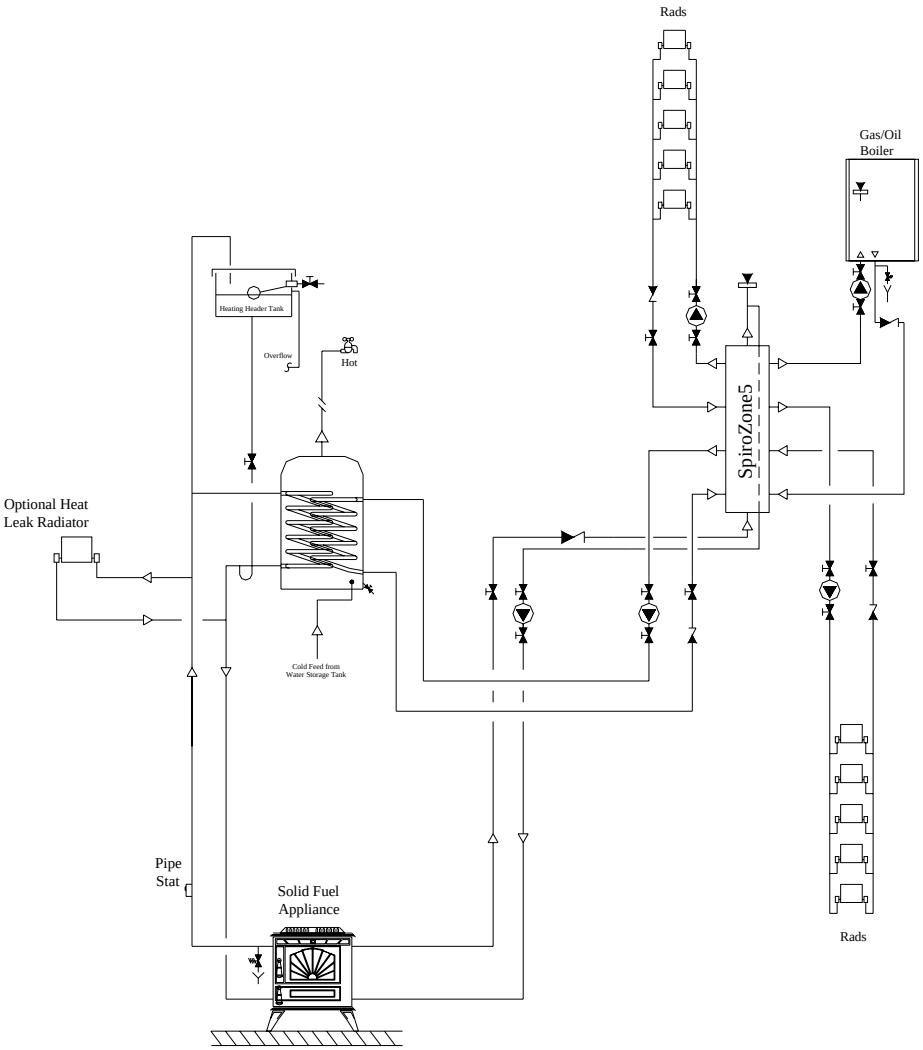



**Figure 3. SpiroZone 5 used to link an Oil Boiler to a Solid Fuel Appliance with 4-pipe system**

Figure 3 is a similar system to Figure 2 with the addition of a Solid Fuel Appliance. It is an open-vented system. When installing a solid fuel appliance always follow the

appliance manufacturers' instructions. The SpiroZone manifold is connected to the heating side of the Solid Fuel Appliance. Figure 3 shows a 4-pipe connection from the Solid Fuel and Figure 4 shows a 2-pipe connection from the Solid Fuel.

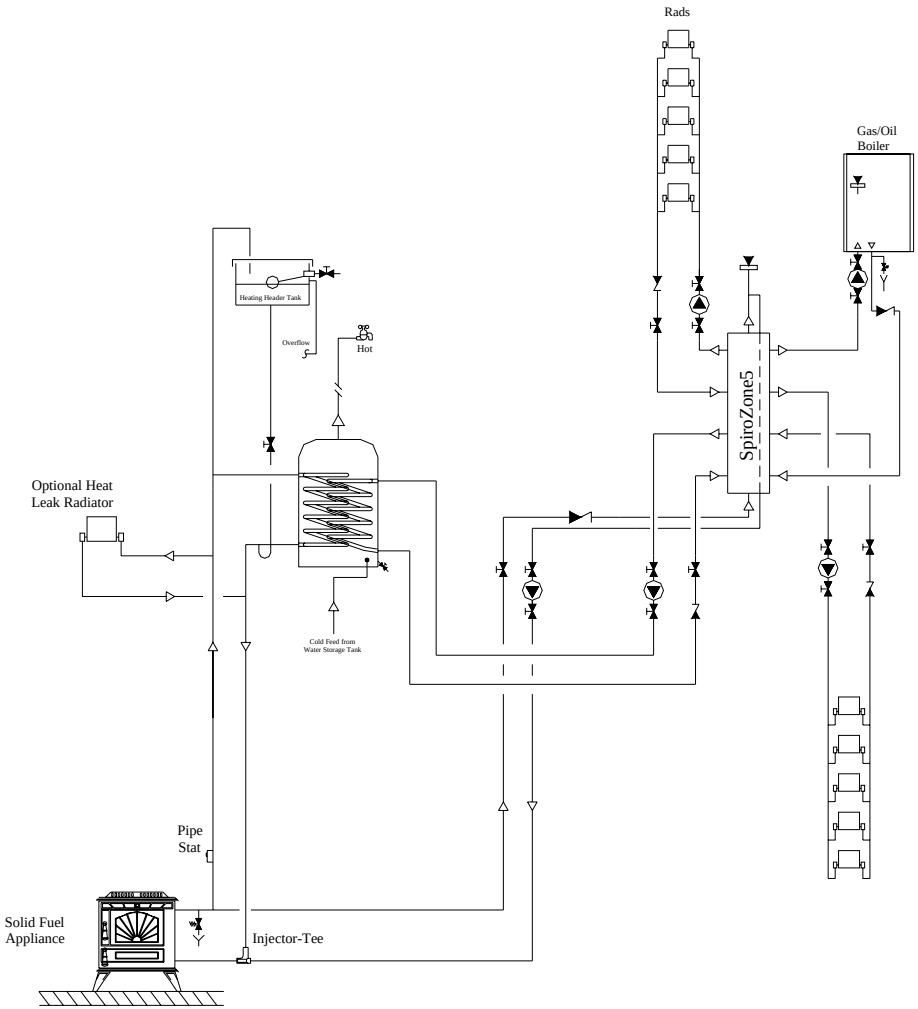



**Figure 4. SpiroZone 5 used to link an Oil Boiler to a Solid Fuel Appliance with 2-pipe system**

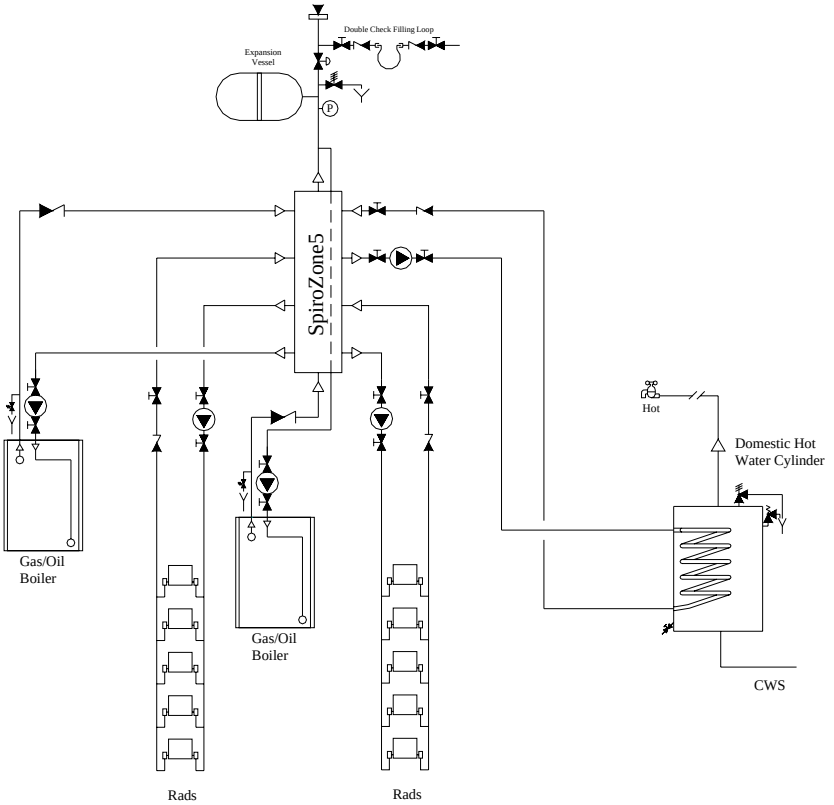



**Figure 5. SpiroZone 5 System linking 2 Boilers with 2 Radiator Zones and DHW Zone**

Figure 5 is a similar system to Figure 2 but using a SpiroZone 5 with the addition of a 2nd Oil or Gas Boiler which should be connected as shown.

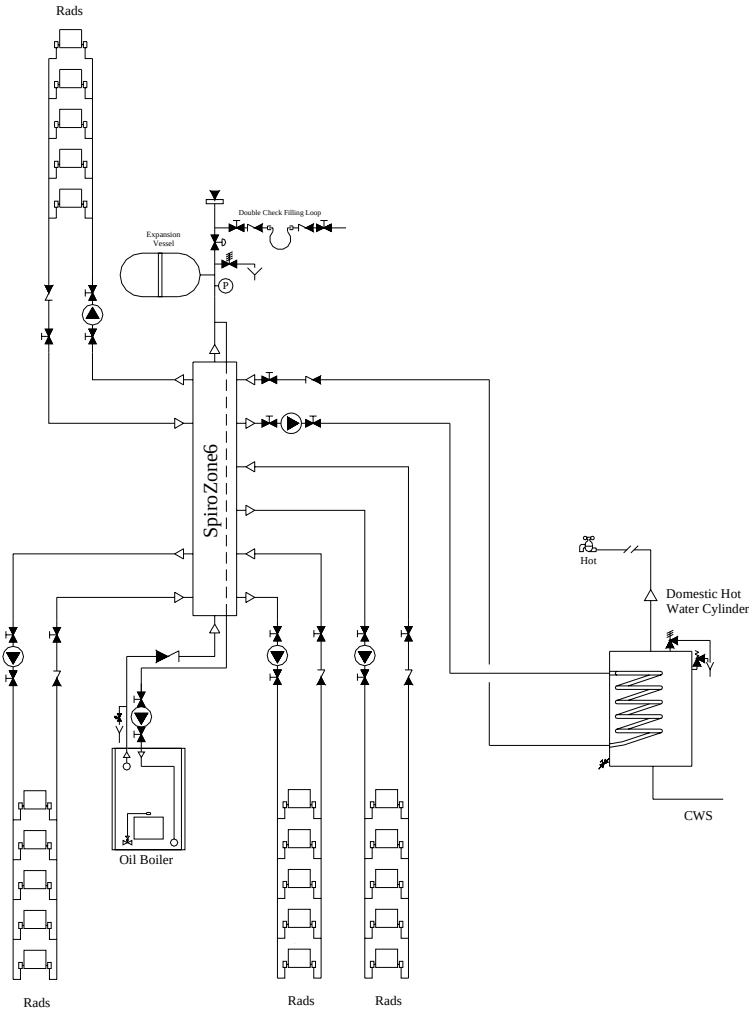



**Figure 6. SpiroZone 6 System comprising 1 Boiler, 4 Radiator Zones, & DHW Zone**

Figure 6 shows a SpiroZone 6 manifold with one heat source, four heating zones and a domestic hot water zone.

**Please note that all ancillary devices such as expansion vessels or air vents may not be shown in these schematics. These schematics are for illustrative purposes only.**

**Table 1 Specifications:**

| Dimensions including Insulation | **SpiroZone** 3 | **SpiroZone** 4/5 | **SpiroZone** 6/7 |
|---|---|---|---|
| Overall Length | 233mm | 390mm | 533mm |
| Height | 76.5mm | 140mm | 140mm |
| Width | 76.5mm | 138mm | 138mm |
| | | | |
| Dimensions of Manifold without Insulation | **SpiroZone** 3 | **SpiroZone** 4/5 | **SpiroZone** 6/7 |
| Length | 233mm | 373mm | 513mm |
| Diameter | 60.5mm | 60.5mm | 60.5mm |
| | | | |
| Weights | 1.7kg | 2.4kg | 3.1kg |
| Distance between Flow/Return Connections on Manifold: | | | 70mm |

Insulation:

- Type: EPP Foam
- Nominal Thickness: 37mm
- Thermal Conductivity at 40$^{o}$C: 0.041 W/mK

Materials: Mild Steel Main Body
Max Permissible Pressure: 4 bar
Maximum Total Permissible Flow Rate through manifold: 2 m$^{3}$/h
End Connections Size and Type: 1" BSP Female Parallel Thread
Body Connections Size and Type: ¾" BSP Female Parallel Thread