

- Safe and Comfortable
- Silent & Energy Efficient
- Design Freedom
- Low Maintenance & Reliable
- A Cleaner, Greener Environment



INSTALLATION GUIDE

TOWELRADS 2-PORT SINGLE ROOM UNDERFLOOR HEATING PACKS

20m² *floor size* | 30m² *floor size* | 40m² *floor size*



VIDEOS



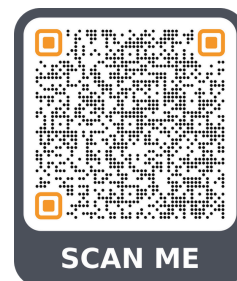
SCAN ME



CONTENTS

- 2 Before you start
- 3 Preparing your floor
- 4 Installing manifold
- 5 Laying underfloor heating circuits
- 6 Connecting pipes
- 7 Connecting heating system
- 8 Heating system wiring
- 9 Pump & blending valve
- 13 Filling your underfloor heating system
- 14 Pressure Testing
- 15 Post system set-up recommendations

VIDEOS



! IMPORTANT

Towelrads recommend all plumbing works are carried out by professional plumbing engineers. All electrical installation work must be carried out by competent people who have the knowledge, skill and experience needed to avoid any danger to themselves and others.

Towelrads strongly recommend that you use a registered electrician to do any electrical installation work needed.





BEFORE YOU START

Check the contents of your room pack according to pack size purchased. Each pack contains the following equipment in the quantities stated:

KEY:  20m² Pack  30m² Pack  40m² Pack



WT Staple (52mm)
(Box Qty = 300)

Qty

 1

 2

 3



TR 50m Edge Foam
Insulation (Self Adhesive)

Qty

 1

 1

 1



PX Pe-RT 5 Layer 16 x 2mm UFH Pipe
100m (20m² / 40m²) ***150m** (30m²)

Qty

 1

 *1

 2



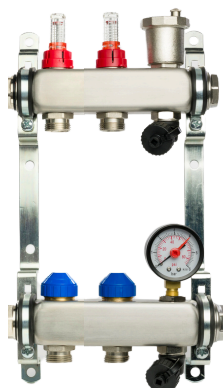
Underfloor Heating Pump
Station and Blending Valve

Qty

 1

 1

 1



TR 2 Port S/Steel Manifold c/w
AAV Fill/Drain & Pressure Gauge

Qty

 1

 1

 1



Pair of TR Red Flow - Blue Return
Ball Valves c/w temp gauge

Qty

 1

 1

 1



Plastic Pipe 90 degree
bend formers 14-18mm Pipe

Qty

 2

 4

 4



Euroconus 16mm flow/return
Manifold Pipe Connectors

Qty

 2

 4

 4



Euroconus Blanking Cap
(20m² pack only)

Qty

 2



White 230v Hardwired
Kinetic Wifi Thermostat

Qty

 1

 1

 1

If any parts are damaged or missing then
please contact us on:



underfloor@towelrads.com



01628 625 367



PREPARING YOUR FLOOR

In accordance with **Part 'L'** of the current Building Regulations, a suitable layer of insulation material should be included within the floor construction. It is the responsibility of the Architect or Builder to ensure compliance.

Insulation must be installed directly beneath the underfloor heating pipework to minimise any downward heat losses in accordance with **BS EN 1264**.

Fix edge insulation continuously around all internal and external wall edges, using the adhesive backing. When installed correctly a polythene skirt will be facing towards the center of the room. Note: Once screed has dried and cured, this strip can be trimmed down. **(A)**

Ensure all joints are taped to prevent screed passing down between insulation boards which may create a thermal bridge. Commonly a 500 gauge polythene sheet may be used as a slip membrane. **(B)** *(see separate data sheet)*

! Ensure floor is clean and tidy.



Edge perimeter foam insulation.



Tape all floor insulation joints.

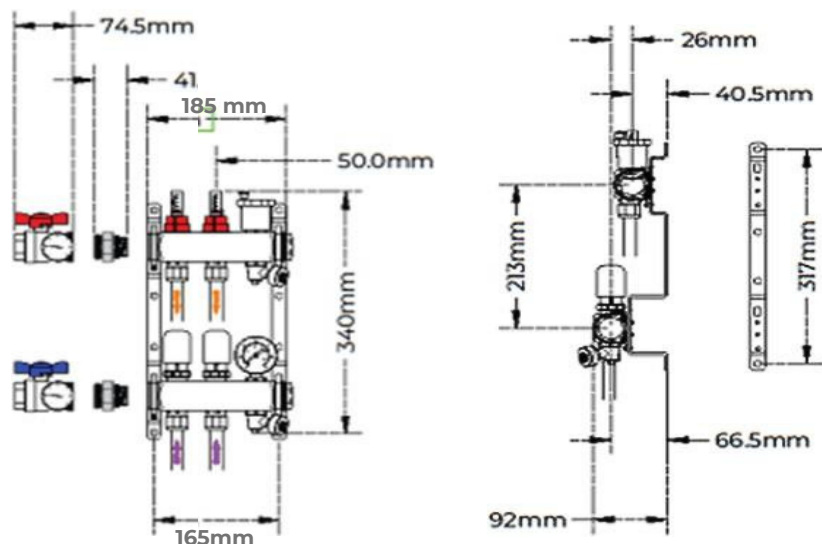




INSTALLING THE MANIFOLD

Fix the manifold to required position ensuring sufficient room is allowed for all connections, flow/return pipework and pump packs. We recommend a minimum height of 250mm from finished floor level. In situations where the pump pack is required on the right hand side of the manifold please loosen brackets, remove and spin bars through 180 degrees before re-fixing brackets.

Where a manifold is mounted to a brick, block or masonry wall, we recommend the use of wooden battens or similar behind brackets. This will result in the manifold being easier to install and maintain, and may also reduce the effects of any potential noise or vibration.



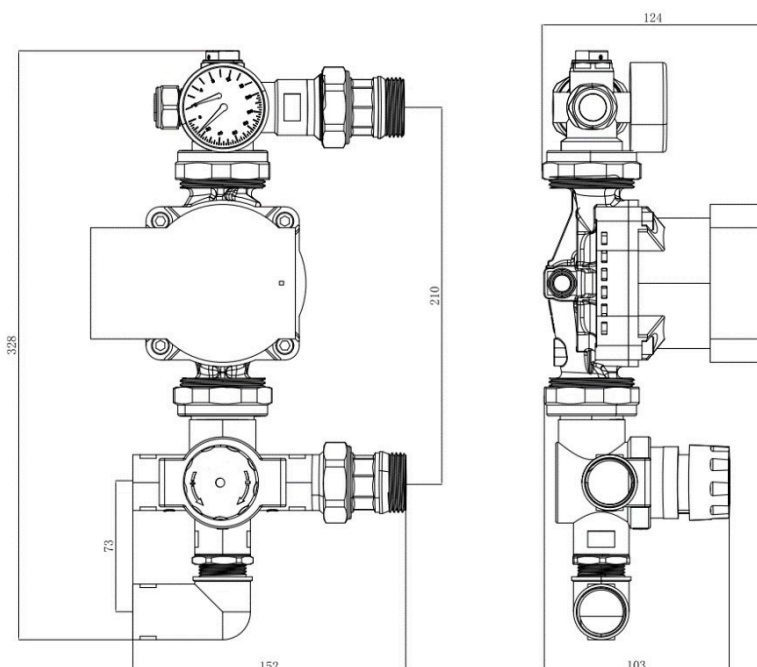
Wooden Mounting Board



Notes

Manifolds should be easily accessible to allow for future servicing and commissioning.

Towelrads recommend minimum clearances to be at least 250mm between finished floor level and underside of the manifold, with 75mm clearance above & 50mm at either side from any fittings.





LAYING UNDERFLOOR HEATING CIRCUITS

All room packs are designed for new build extensions and pipe centres of 200mm, with a flow temperature of 45°C. If using packs for areas of high heat loss such as conservatories, garden rooms, rooms with a high level of glazing or for lower flow temperatures please note that it may be advisable to install the Underfloor Heating pipework at a closer spacing, such as 150mm or 100mm. This will decrease the area of floor heated by the pipe loop. **Please contact Towelrads Underfloor Heating Systems for more information.**

Lay underfloor heating pipe ensuring pipes do not cross. Sufficient staples are provided to allow appropriate fixing of pipe. Towelrads recommend using one staple per 600mm of linear pipe run and using several staples to each bend.

Staples maybe pushed in by hand, however we recommend the use of a staple gun **(sold separately)**.

Transitional pipework should be kept to a minimum. Where possible pipework maybe taken directly through partition walls into their respective rooms.

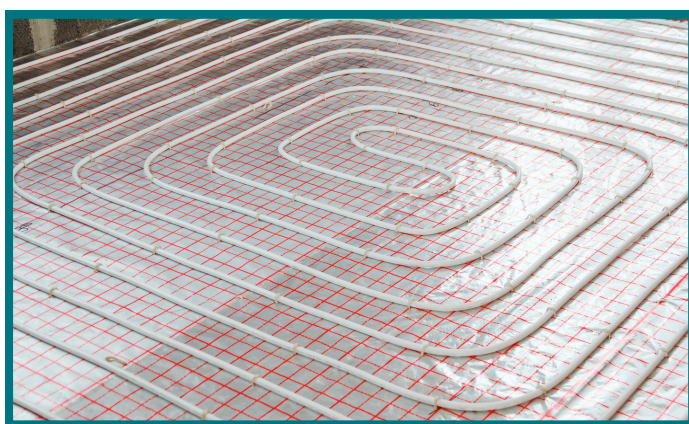
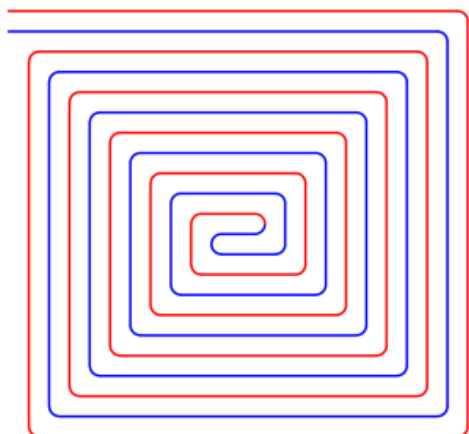
It is important to ensure pipework does not cross any sharp ledges or areas without appropriate protection, such as sleeving with conduit or similar **(not supplied)**.

Lay one circuit at a time ensuring pipework is a minimum of 100mm from perimeter of the heated area. Fix flow pipework around the outside of the room first before laying your chosen pattern/method.

Where possible in screeded applications Towelrads recommend the use of the spiral method to aid in uniform heat distribution. In this situation double the required pipe centres until you reach the middle of the room and then return. eg. for a spiral method with 200mm centres, install the underfloor heating pipework at 400mm centres to the centre of the heated zone, then return the pipe to the manifold between the supply pipework, consequently creating an 200mm pipe centre layout.

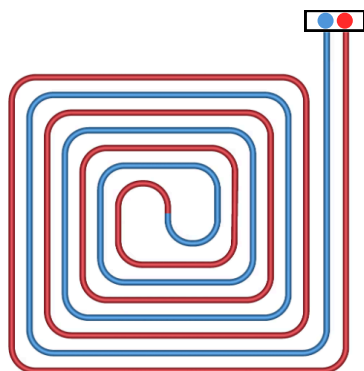
Recommended Pipe Layout

Using a Spiral pattern aids with even heat distribution. Preferred with Screeds.

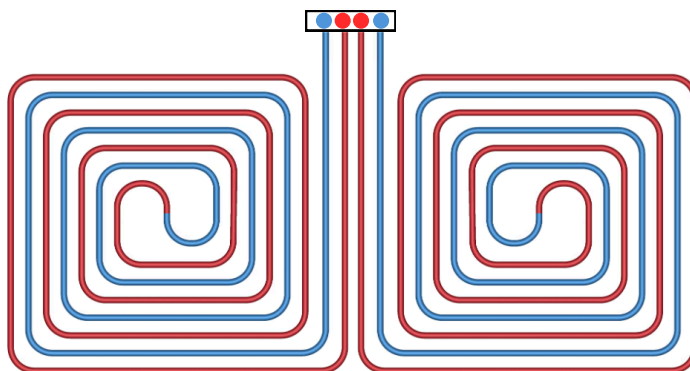




LAYING UNDERFLOOR HEATING CIRCUITS



Rooms up to 20m² – One loop

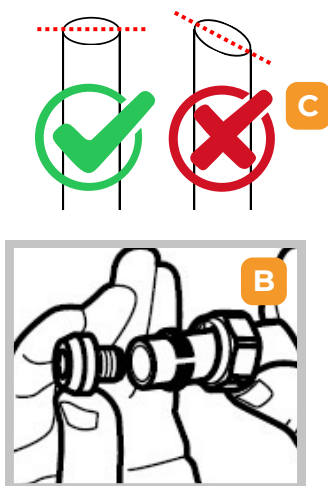


Rooms over 20m² – Two loops

CONNECTING UNDERFLOOR HEATING PIPES

Use the supplied bend formers (A) to create a 90 degree bend from the floor to the manifold connections. This will minimize any stress on the manifold connections. Connect pipe to manifold using compression fittings supplied (B).

Always cut pipe at right angles using appropriate pipe cutters (C). For the larger packs (30m² - 40m²) where 2 circuits are required, use orange identity tag to identify each circuit & fix to manifold using cable tie provided (D).



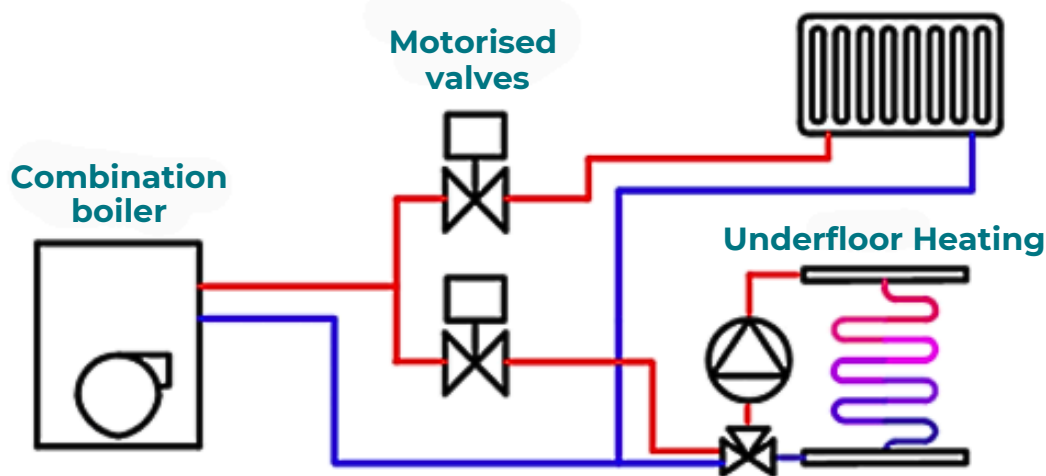
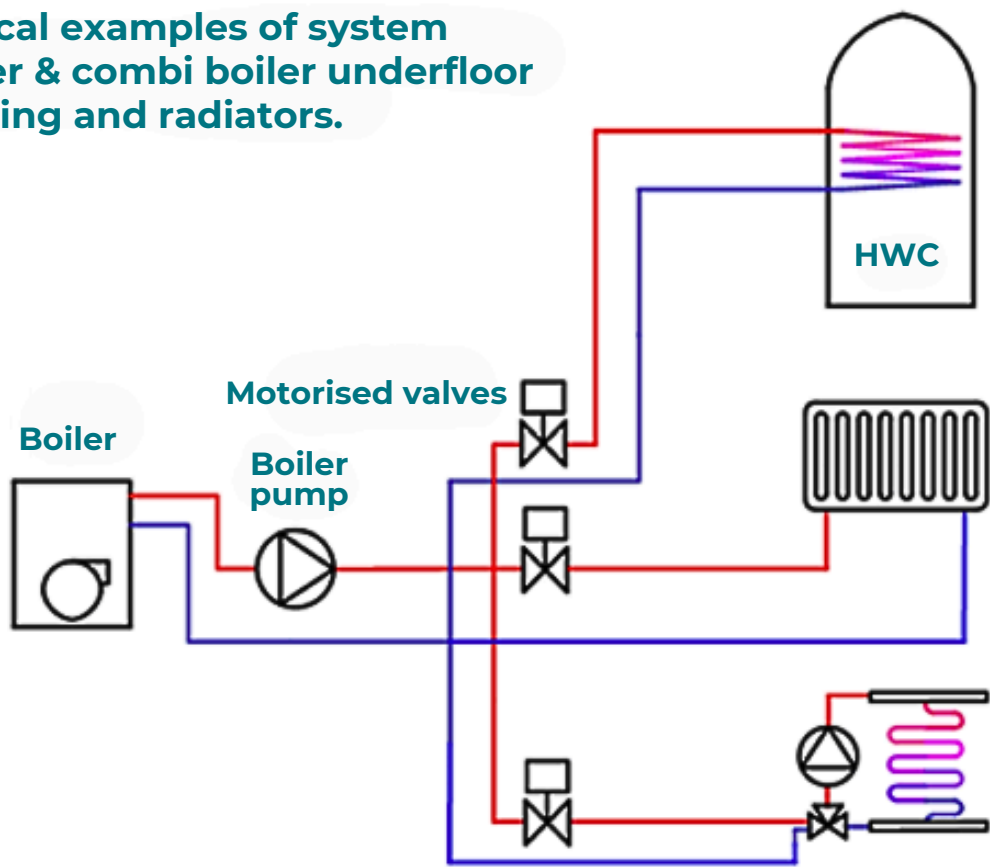
(30m² - 40m² Packs Only)



CONNECTING HEATING SYSTEM

Your underfloor heating system should work independently from any other part of the system including radiators & hot water cylinders. Below is a typical example of a system boiler set-up with radiators, hot water cylinder and wet underfloor heating.

Typical examples of system boiler & combi boiler underfloor heating and radiators.



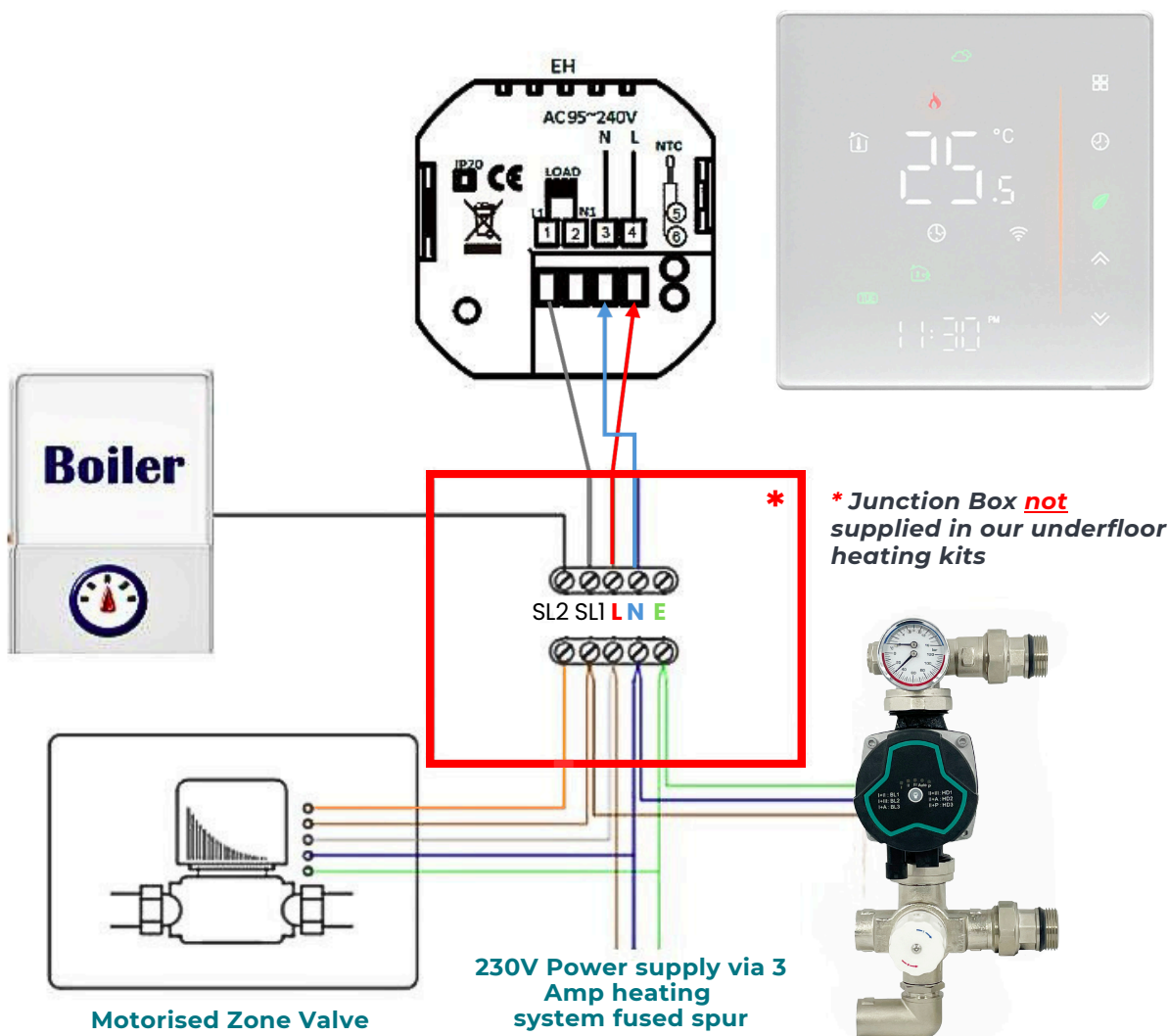


HEATING SYSTEM WIRING

Underfloor heating systems must be separated from any other part of the system using motorised zone valves as can be seen on the previous page. **Motorised zone valves are not supplied in our underfloor heating pack.**

Ensure any motorised zone valves and pumps are correctly installed to provide adequate flow to all parts of the central heating system.

For single rooms Towelrads recommend the switched live (*demand*) signal from your room thermostat is used to energise both the underfloor heating pump & the heat generator. A motorised valve with boiler switching may be used to energise the heat generator if required.





ZL-2536RP-6/7.5

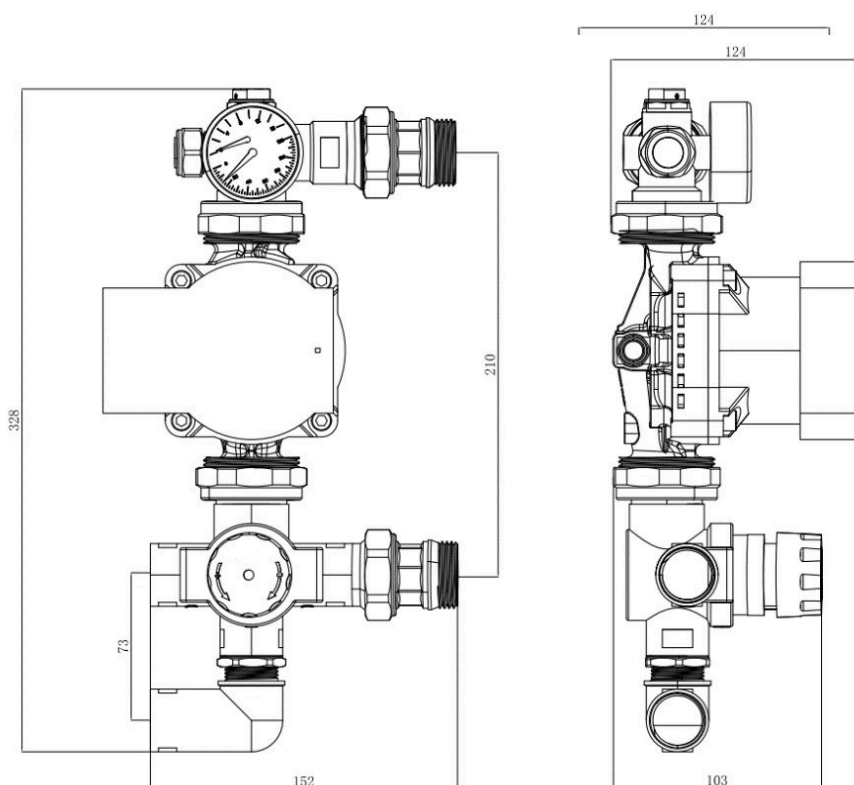
Blending Valve with 6/7.5 Meter Pump Datasheet

Designed to work with manifolds of all types, on 210mm centers. The thermostatic blending valve is a bolt on unit providing a quick and simple system to install.

The thermostatic blending valve is the core of the control system. It is used with flow and return manifolds to control the flow temperature of water to the underfloor heating pipework. It mixes the hot water from the boiler and supplies the water back to the underfloor heating pipe at the correct temperature. The mixing valve operates at a lower temperature than the radiator system, between 35°C and 60°C depending on the floor construction. The water supply temperature can be adjusted according to the structure of the floor.

Maximum static pressure	10 bar
Maximum temperature	85°C
Adjustable control range	35°C to 60°C
Factory pre-set	45°C (<i>Control knob is in the adjustable position</i>)

Dimensions





ZL-2536RP-6/7.5

Blending Valve with 6/7.5 Meter Pump

Components

PLEASE CHECK CONTENTS OF PACK BEFORE INSTALLATION.



1. Water supply system components

(1½"F*1 M)

2. Flat gasket

(45*33*3)

3. Bastion Pump

(6/7.5 Meter)

4. Flat gasket

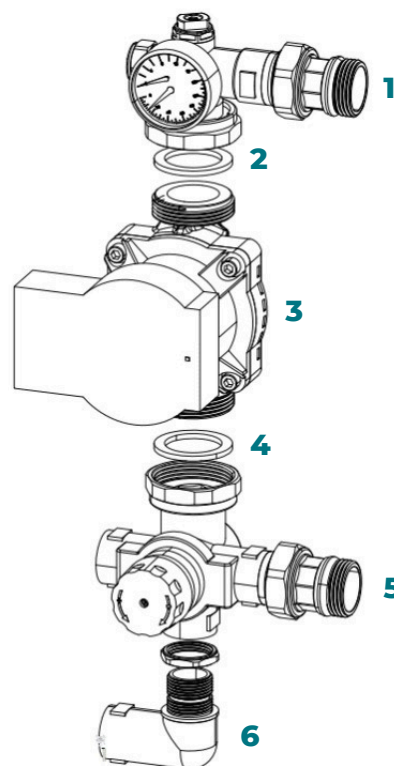
(45*33*3)

5. Mixed water system components

(1½"F x 1"M x 3/4"F)

6. Connection elbow

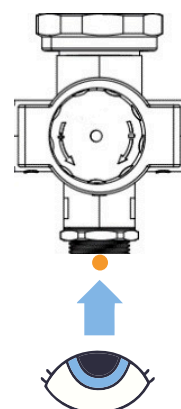
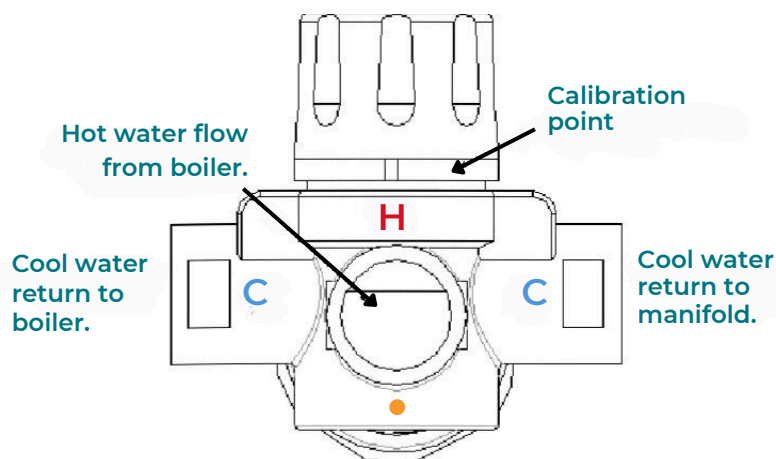
(3/4"F*3/4M)



Note

If the primary circuit serving the underfloor heating is not fitted with an automatic bypass valve, it is recommended that one is installed across the flow and return pipes to improve system efficiency.

Note: Blending valve - viewed from underneath.





ZL-2536RP-6/7.5

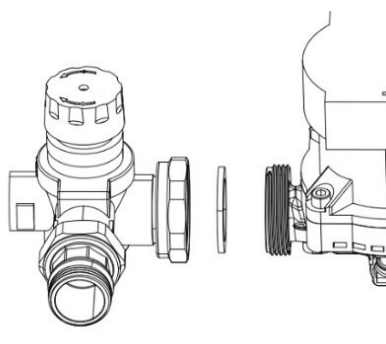
Blending Valve with 6/7.5 Meter Pump

Installation

Firstly, firmly fix the distribution manifolds to the wall leaving enough room beside the manifold to fit the control pack. Before beginning the installation of the underfloor heating Control Pack, identify all of the components in the pack.

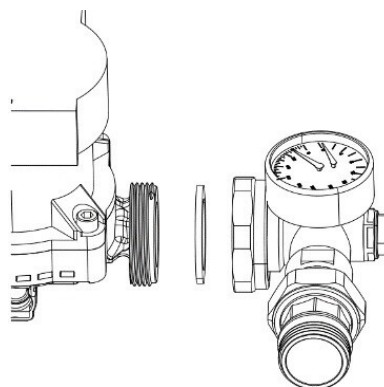
Step 1

Install the flat gasket into the connecting nut of the water-mixing system component, and then match the connecting nut with the external thread of the water pump and tighten it. Ensure that the mixing system components, flat gaskets and pumps are in a seal fit state. *(note the direction arrow on the pump body).*



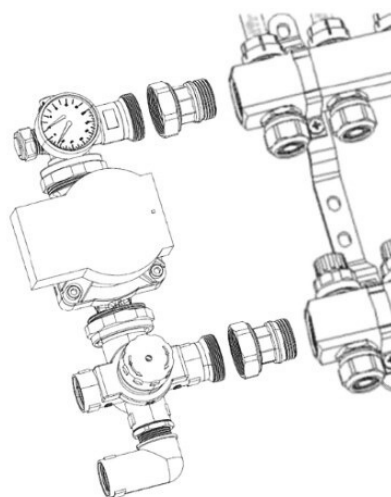
Step 2

Install the gasket into the connecting nut of the water supply system component, and then match the connecting nut with the external thread of the water pump and tighten it. Ensure that water supply system components, gaskets and pumps are in a sealed fit.



Step 3

Swivel out the male unions of the mixing system and supply system, rotate its 1" male threads into the main bar or 1" female threads of the other control unit. Use the cone ring or other sealing winding belt of the tubes to tighten and seal, then re-rotate the free nut of the union into the mixing system and supply system correctly to avoiding leaking.





ZL-2536RP-6/7.5

Blending Valve with 6/7.5 Meter Pump

Pump controls, modes and functions

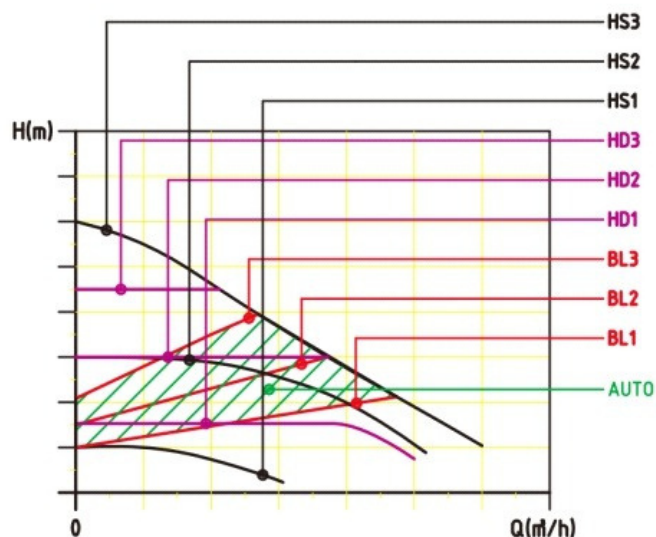
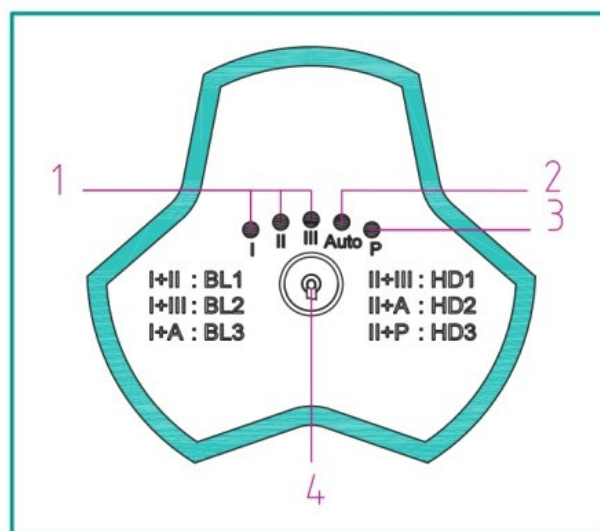


Diagram key

- 1 The pump I, II, III gear display.
- 2 The pump automatic gearshift display (AUTO).
- 3 The pump PWM gear display.
- 4 The pump gear shifting button.

Notes

If **I** and **II** display at the same time, means BL1.
If **I** and **III** display at the same time, means BL2.
If **I** and **Auto** display at the same time means BL3.

If **II** and **III** display at the same time, means HD1.
If **II** and **Auto** display at the same time, means HD2.
If **II** and **P** display at the same time means HD3.

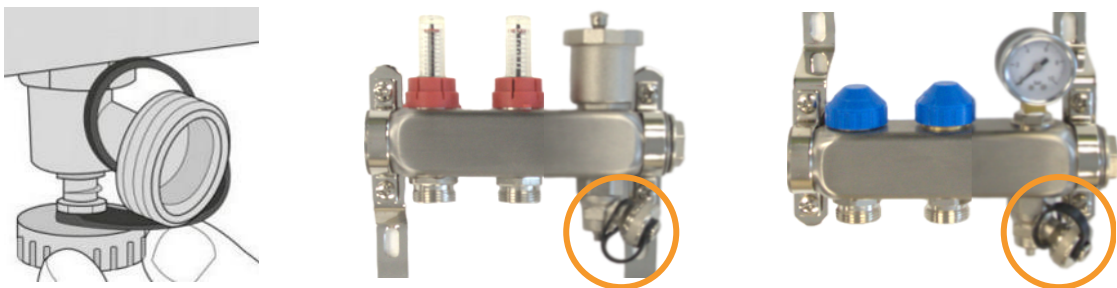


FILLING YOUR UNDERFLOOR HEATING SYSTEM

With all pipe circuits connected, the system is ready to be hydraulically filled. Ensure both flow and return primary manifold isolating valves are fully closed. Remove the metal caps on the filling/drain valves on the top and bottom arms of the manifold.

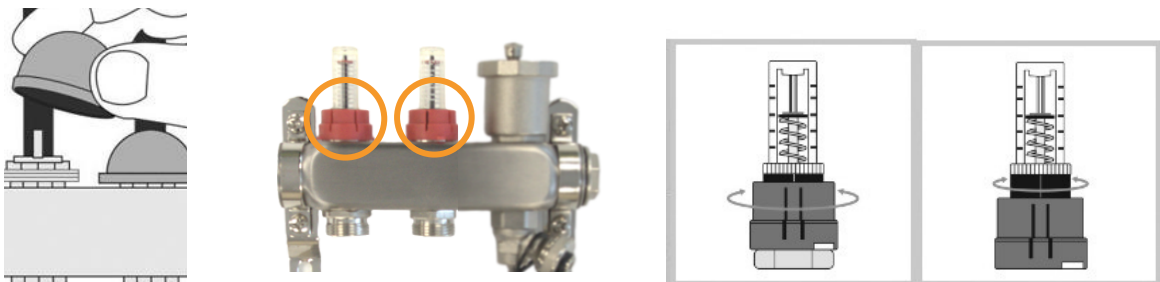
Connect a supply hose to the top valve and a drain hose to the bottom valve using suitable fittings. Direct the drain hose into a suitable bucket, keeping the pipe end below the waterline to see all air is expelled. Open both valves fully anticlockwise with the square key located on the caps.

Step 1



Fill one circuit at a time by unscrewing the blue cap on the return arm of the manifold for the circuit you wish to fill. Keep remaining cap screwed down and firmly in place .

Step 2



Open the corresponding flow meter to the circuit you want to fill by turning red-collar anti-clockwise by hand until fully open. Please note this can also be done by removing red collar (lifts off) and turning body of flow meter by black base.

Fill the manifold and the open circuit, letting the water run for a **minimum of 5 minutes per circuit** until no air bubbles are exiting from drain pipe in the bucket. If the filling and drain hoses are the wrong way round the water will bypass the circuit and air will be trapped in the underfloor heating system. Continue until both circuits are filled at which time a pressure test must be undertaken.



PRESSURE TESTING YOUR UNDERFLOOR HEATING SYSTEM

Pressure test should be carried out by a suitably qualified person, following all current safety guidelines and rules.

Pressure test the system before any screed or coverings are laid over the pipe.

The test pressure should be maintained whilst screeding takes place and cures.

Circuits can be individually pressure tested if required but the system must be fully tested and recorded with all the underfloor heating pipes connected to the manifold and the system is filled and purged of air.

Antifreeze/Inhibitor: If there is a risk of freezing, remove all water from the underfloor heating pipework, using compressed air at maximum 1 bar. If this is not possible, protect the new underfloor heating system by either applying catering quality polypropylene glycol antifreeze fluid in the appropriate quantity.

- Close ball valves.
- Remove cap(s) fitted on the lower return arm of the manifold and ensure the circuit isolator valves / flow meters all are fully open on the upper flow arm. This is done by turning the red collars anti clockwise by hand until fully open.
- Connect a pressure test pump to the fill valve on the flow (upper) arm of the manifold. Once connected open the valve fully anticlockwise using the square key on the cap.



- Vent the system of any residual air then increase the pressure to between 4-6 bar. Allow a 10–15-minute stabilisation period and, if required, increase back to 4 bar and maintain this pressure for a further 60 minutes. If the pressure has not dropped, and has remained constant after this 60 minutes, the pressure test can be deemed to be successful.
- If the pressure has dropped examine the pipework and manifold for possible leaks. It may be necessary to pressure test individual circuits to determine if there has been damage to a pipe. Resolve where necessary & repeat the pressure test.



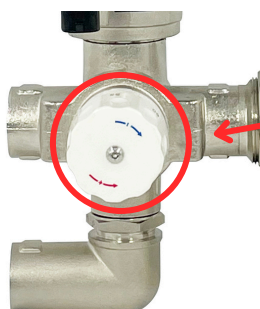
POST SYSTEM SET-UP RECOMMENDATIONS

- Ensure the screed is installed in accordance with BS 8204 Part 1 (2001) - concrete, or Part 7 (2003) - flowing screeds. Always follow the requirements of the screed manufacturer.
- Lay light gauge polythene sheet over the screed and leave in position for at least seven days to cure concrete screeds. Ensure the new screed remains covered with polythene and remains suitably protected from frost, direct sunlight, winds, draughts, and other trades. Keep floor traffic free for three days, after which foot traffic can be permitted, but only if suitable surface protection is provided.
- No loads exceeding 20% of the design load can be permitted until the screed is twenty- eight days old. The structural consultant must first validate any greater load stresses proposed. All new screeds shall be preheated using the underfloor heating pipework prior to laying floor coverings, see BS EN 1264 Part 4. Heat up must not take place for twenty-one days after laying cement screeds, or after seven days for anhydrite screeds, in accordance with the manufacturer's instructions.
- Monitor and confirm that the design screed moisture content has been achieved. This is usually 0.5% to 3% by the carbide method. Tests for screed moisture, as required by BS 8203:2001 + A1:2009, must be successfully passed before installation of any floor finishes.



NEVER USE THE UNDERFLOOR HEATING TO DRY THE FLOOR SCREED

- Initial heating up shall begin with a water temperature of 25°C for a period of three days, see BS EN 1264 Part 4. After this the water flow temperature may be raised by 2°C per day to the design water temperature. Maintain the design water temperature for another 4 days until the design screed equilibrium moisture content is achieved. The maximum flow temperature should be no higher than 55°C.
- The thermostatic blending valve is the core of the control system. It is used with flow and return manifolds to control the flow temperature of water to the underfloor heating pipework. It mixes the hot water from the boiler and supplies the water back to the underfloor heating pipe at the correct temperature. The mixing valve operates at a lower temperature than the radiator system, between 35°C and 60°C depending on the floor construction. The water supply temperature can be adjusted according to the structure of the floor.



Blending valve

- Safe and Comfortable.
- Silent and Energy Efficient.
- Design Freedom.
- Low Maintenance and Reliable.
- A Cleaner, Greener Environment.



OUR MISSION

We promise to support you with all your underfloor heating installation needs by providing premium product kits that offer exceptional value for money.

We supply a combination of quality, sustainability and efficiency which will have a positive impact on your energy bills, as well as the planet.



Queensgate House, Cookham Road, Bracknell, Berkshire RG12 1RB

■ Telephone: 01628 625 367 ■ Email: underfloor@towelrads.com