



Installation instructions

## RECOUP Pipe+ HE

Shower Waste Water Heat Recover unit

These instructions are to be left with the user for the homes user pack



## Contents

SECTION	PAGE
<b>1.</b> Introduction	3.
<b>2.</b> Product technical data	4.
<b>a.</b> General Information	
<b>b.</b> Performance & Efficiency	
<b>c.</b> Pressure Drop	
<b>d.</b> Dimensions & Connections	
<b>3.</b> Pre-installation requirements	6 -7.
<b>a.</b> Basic Principle	
<b>b.</b> Installation configurations	
<b>c.</b> Locating the WWHRU	
<b>d.</b> Design/Installation Checklist	
<b>4.</b> Installation	8 – 17.
<b>a.</b> Contents of Packaging	
<b>b.</b> Installation instructions	
<b>5.</b> Safety	18.
<b>a.</b> Double Walled Heat Exchanger	
<b>b.</b> Legionella Risk & Protection	
<b>6.</b> Maintenance	18.
<b>7.</b> Warranty	18.
<b>8.</b> Recoup Energy Solutions company details	19.

# 1. Introduction

The RECOUP Pipe+ HE is a Waste Water Heat Recovery Unit (WWHRU) for shower water, meaning it recovers heat from the warm waste water as it passes through before going to the drainage system for the property.

The heat recovery is possible due to the double walled heat exchanger within the Pipe+ HE being manufactured from copper, which is a very effective material for transferring heat. The double walled exchanger gives full protection against any contamination between the waste water going out and the fresh potable water coming in. This preheated water then supplies the mains cold feed to the shower and either a combination boiler or a hot water storage cylinder.

The reason for doing this is to save money and energy. In an average shower the water will come out of the shower head at 40°C, and the water going down the drain will only be a few degrees cooler than this. This energy has been paid for once, and we believe at Recoup Energy Solutions, that the home owner should get as much benefit from this energy before paying to reheat more water and at the same time reduce the energy consumption and CO<sub>2</sub> emissions of the home.

The RECOUP Pipe+ HE should be installed by a suitably qualified plumber who gives consideration and attention to the system design as well as a correct installation.

The RECOUP Pipe+ HE is a vertical heat exchanger, and is designed to work with showers positioned on the first floor or above. It is very important to follow all the instructions for installation of the RECOUP Pipe+ HE for the product to perform successfully.

IMPORTANT – For recognition of the RECOUP Pipe+ HE energy saving performance within the National Calculation Method (NCM) for the energy rating of a new build dwelling within the UK (also known as the Standard Assessment Procedure (SAP)) it is vital that the following are complied with: -

- a) This Instruction Manual
- b) A system design checklist
- c) Installation checklist
- d) Certificate of installation

b, c & d are supplied as a single document and are attached with this document and also available at: [www.ncm-pcdb.org.uk/sap](http://www.ncm-pcdb.org.uk/sap) – A signed copy of each should: -

1. Be left with the home user pack (for the home owner)
2. Retained by the installer
3. A copy sent to RECOUP Energy Solutions Ltd (See company details on Page 10).  
(Note: Building control officers may also request a copy)

A NCM (SAP) identifier label should be permanently fixed to the RECOUP Pipe+ HE unit and a second label attached to a nearby boiler or service cupboard. The 'model qualifier' section of the first label denotes the system installation configuration (A, B or C) and will state 'Refer to Installation certificate otherwise System B will be assumed'. The actual system configuration will be recorded on the system design checklist, installation checklist/certificate of installation and the second NCM (SAP) identifier label.

## 2. Product technical data

### 2. a. General Information – RECOUP Pipe+ HE

Description	Value	Unit
Overall length (Height) required for installation	2400	mm
Outside diameter of external tube	50	mm
Material – Internal tube	Copper	
Material – External tube	PVC	
Shower flow rate range	5 – 12.5	litres/min
Max. Mains water inlet pressure	10	bar
Min. Mains water inlet pressure	1	bar
Max. Waste water working temp.	85	°C
Mains water connection	½" male	BSP
Waste water connection	50	mm
Weight	7.9	kg
Water volume – mains water	0.3	litres

The mains water and preheat connections are a ½" male BSP connector which can be joined to either a 15mm or 22mm pipe with reducer.

### 2. b. Performance & Efficiency

Shower Flow Rate @ 40°C (Litres/min)	Pipe+ HE efficiency (Recovered energy kWh)		
	System A	System B	System C
9.0	64.2 % (12.1)	49.4% (9.3)	55.5% (10.4)
9.2	63.7 % (12.3)		
11.0	61.5% (14.1)	48.4% (11.1)	52.6% (12.1)
12.5	60.0 % (15.7)		

### 2. c. Pressure drop on main water circuit

Shower Flow Rate @ 40°C (Litres/min)	Pipe+ HE Pressure drop (bar)		
	System A	System B	System C
9.2	0.34	<0.21	
12.5	0.45	<0.27	

2. d

## Dimensions & connections – RECOUP Pipe+ HE

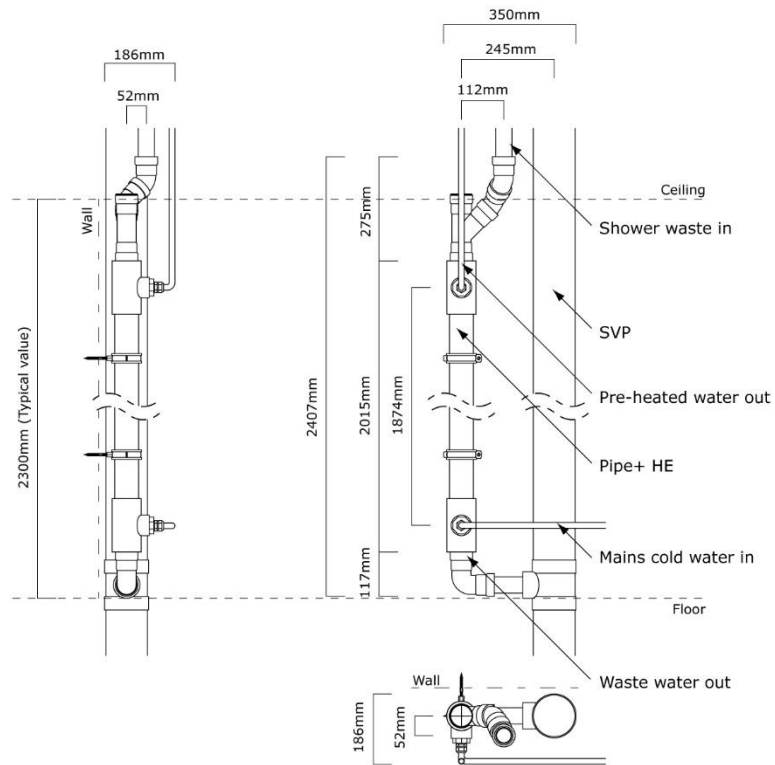


Fig. 1.a. Dimensions & Connections with vertical shower waste

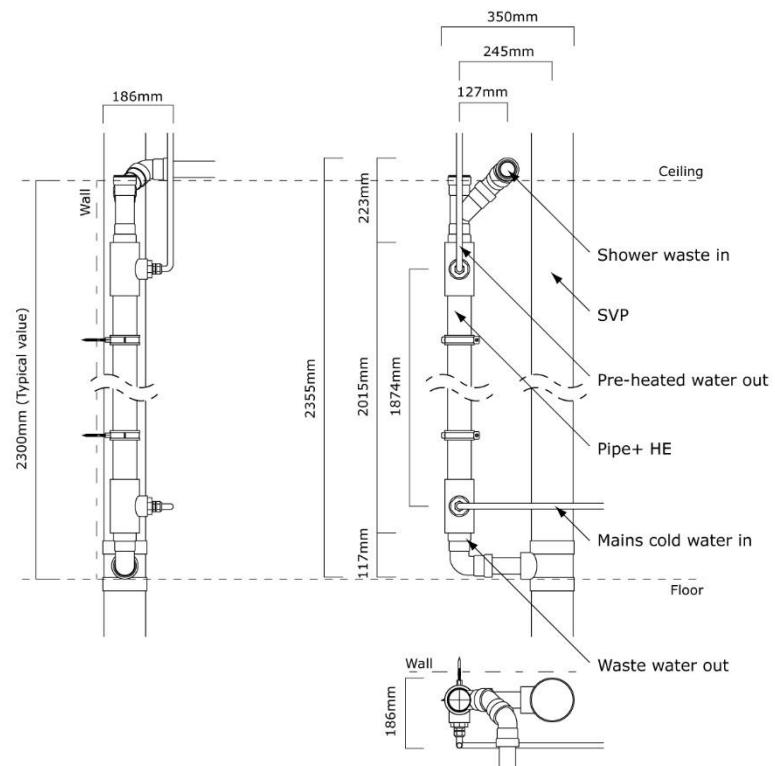


Fig. 1.b. Dimensions & Connections with horizontal shower waste

### 3. Pre-installation requirement

#### 3. a. Basic system principle

The RECOUP Pipe+ HE is a Waste Water Heat Recovery Unit (WWHRU) for shower water, meaning it recovers heat from the warm waste water from a shower as it passes through before going to the drainage system for the property.

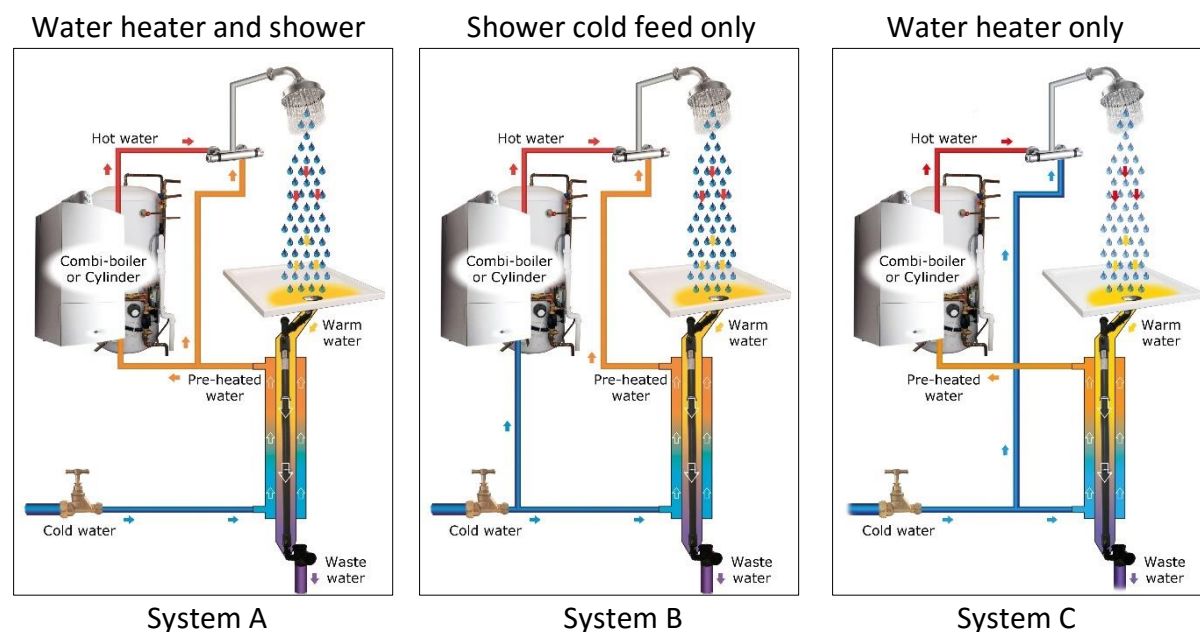
This preheated water then supplies the mains cold feed to the shower and the Domestic Hot Water (DHW) heater or in the case of system configurations System B and System C, the shower or the DHW heater respectively. The DHW heater could be: -

- a) Unvented hot water cylinder
- b) a combination boiler
- c) a thermal store (Mains pressure DHW delivery)
- d) A Heat Interface Unit (HIU) on a district heating scheme (Mains pressure DHW delivery)

**Note: The DHW heater must be a mains pressure system and able to accept preheated cold water.**

#### 3. b. Installation configuration

The inlet for the Recoup Pipe+ HE is connected to the mains water supply, and the outlet (pre-warmed water) can be connected in one of three ways: -



*Fig. 2. System A,B & C Configuration*

SYSTEM A – Preheated water supplied to shower mixer (Cold inlet) and DHW heater.

SYSTEM B – Preheated water supplied to shower mixer (Cold inlet) on the shower only

SYSTEM C – Preheated water supplied to DHW heater only

The performance of Systems A, B & C are all recognised within the SAP Products Characteristics Database (PCDB) for energy saving calculations, but remember that System A will produce the highest efficiencies (see section 2.b. for different system efficiencies).

### 3. c. Locating the RECOUP PIPE+ HE

The RECOUP Pipe+ HE needs to be installed vertically, and therefore, will be situated on the floor below the shower. Installation should take place on a flat wall using the fixings provided (Refer to Section 6 for maintenance and access requirements).

**The RECOUP Pipe+ HE must be located within the heating envelope of the building.**

**The Pipe+ HE must be installed with consideration to the most recent 'Approved document – Part H of the Building Regulations' for preventing the ingress of foul sewer gases.**

### 3. d. Design Checklist

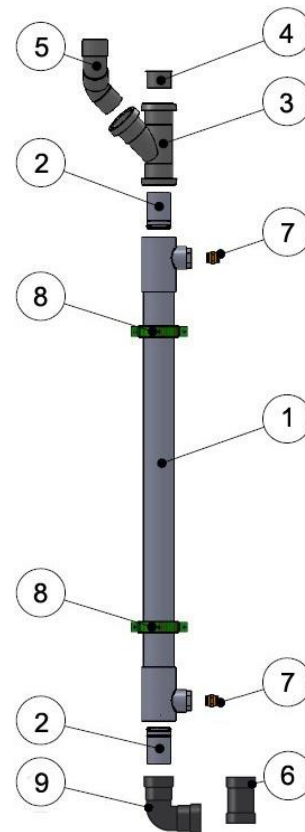
For recognition within the SAP calculations, the following must be complied with:-

- Consideration given to DHW delivery performance (Pressure & Flow rate)
- DHW system must be a mains pressure system
- DHW system must accept preheated water
- The RECOUP Pipe+ HE must be located within the heating envelope of the building.
- The shower must be fitted with a Thermostatic Mixing Valve
- Keep the distance from the shower tray to the RECOUP Pipe+ HE to within 3m to maintain a high level of efficiency by minimising heat losses in the drainage system prior to the WWHRS.
- The **Preheated** water supply from the RECOUP Pipe+ HE to the shower cold water inlet and water heater must be: -
  - Insulated in accordance with the 'Building Services Compliance Guide'.  
DO NOT INSULATE THE ACTUAL RECOUP PIPE+ HE
  - Labelled to prevent any future connection of hot water take-off points (E.g. Taps).
- Prevent the RECOUP Pipe+ HE being heated above 25°C by both external sources and from ambient temperature.
- If shut-off valves are specified they should be 'full-flow (non-restricting) shut-off valves. Approved document – Part H of the Building Regulations has been consulted and an appropriate method for preventing the ingress of foul sewer smells chosen.

## 4. INSTALLATION

### 4. a. Contents of Packages

Box	Part No.	Qty.	Name
1	1	1	RECOUP Pipe+ HE WWHRS unit - Ø 63mm*
2	2	2	Coupling insert - Ø 50mm*
2	3	1	T-piece 45° - Ø 50mm*
2	4	1	Cap (insert) - Ø 50mm*
2	5	2	45° connector - Ø 50mm x 45°
2	6	1	Coupling sleeve - Ø 50mm*- Alternative 90° sleeve also included (No. 9).
2	7	2	Double Pipe Nipple – ½" Male BSP (Connects to either a 15mm or 22mm pipe with reducer)
2	8	2	Mounting bracket - Ø 63mm Wooden plugs - M8 x 80mm
2	9	2	90° connector - Ø 50mm x 90° Alternative to item No. 6
2	10	1	Ø 50mm reducer to Solvent weld 40mm
2	11	1	Installation instructions
2	12	1	NCM (SAP) Identifier label for nearby boiler or service cupboard.
2	13	3	Design checklist
2	13	3	Installation checklist



*Fig. 3. Component arrangement.  
\*All waste pipe fittings are push-fit (50mm O/D). Part No. 10 is supplied to convert these to a UK 40mm solvent weld waste system (O/D 43 mm)*

*Table 1 – Contents of packaging*



*Fig. 4. – Contents of box 2*



#### 4. b. Installation of the RECOUP Pipe+ HE

Check section 3. c. for guidance on locating a suitable area for installation.

The unit must be installed vertically on a suitable flat wall which is capable of holding the weight of the unit. If the mounting is not vertical the efficiency of the unit could be reduced, and installation should always be within a tolerance of +/- 20mm.

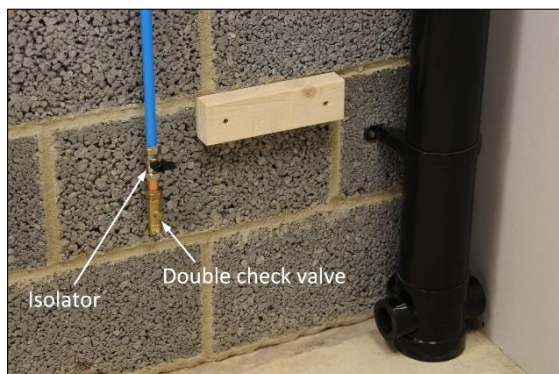
##### Wall mounting the Pipe+ HE unit



1. Identify the main connection location points for the Pipe+ HE within the install area.



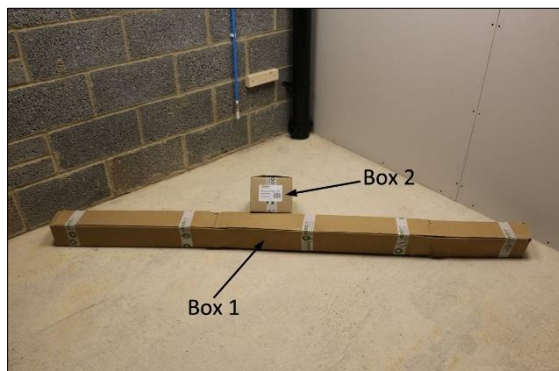
2. If the wall surface is not suitable for direct fixing the Pipe+ HE, then timber battens should be fitted. Allowing for the brackets to be 1500mm apart with suitable clearance top and bottom.



3. It is recommended that an isolator (not supplied) and double check valve (not supplied) is installed onto the mains cold water supply prior to the Pipe+ HE.



4. It is recommended that an isolator (not supplied) is installed on the pipe for the preheated water out.



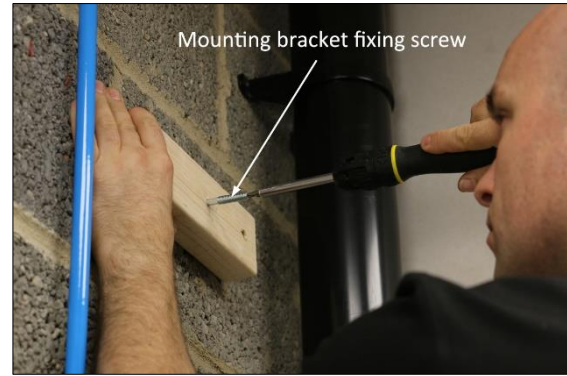
5. There are two product boxes required. Box 1 contains the Pipe+ HE, and Box 2 the installation kit.



6. See Section 4.a. for assistance in identifying the component parts.



7. Mark the wall or battens with the position for the mounting brackets screw fixings (Item 8). Ensure the positions are vertically aligned and 1500mm apart with suitable clearance top and bottom. Drill fixing holes with a suitable size and type of drill bit.



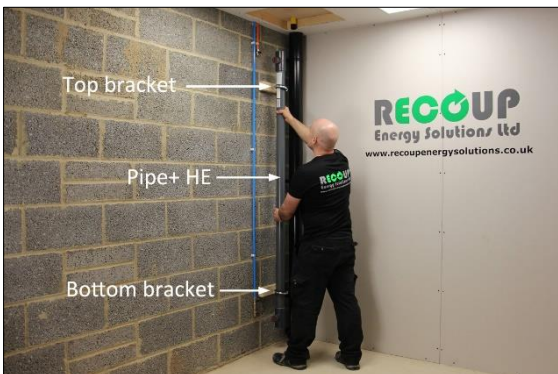
8. Screw the mounting brackets screw fixing (Item 8) into the prepared hole. Repeat the process for the top and bottom brackets and ensure both are inserted to the same depth.



9. Screw the main clamp part of the mounting bracket (Item 8) onto its fixing screw and tighten for both the top and bottom positions.



10. Ensure the mounting brackets are positioned horizontally and the opening part of the clamps face the same direction.



11. Position the Pipe+ HE (Item 1) within the clamps of the mounting brackets so that it is equally positioned top & bottom.



12. Starting with the top clamp and repeating for the bottom clamp, push the tightening screw through the outer clamp arm and tighten until the clamp grips the pipe.



13. Check the position of the mounting brackets from the end of the Pipe+ HE and adjust if required. Should be approximately 250mm top and bottom.



14. Check the pipe has been installed vertically and within a tolerance of +/- 20mm. Once the position is confirmed fully tighten the clamps

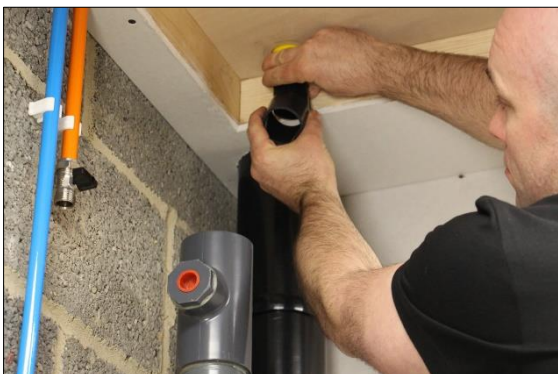
### Connecting the shower waste



15. The shower waste pipe needs to be a  $\varnothing$  50mm push-fit or a  $\varnothing$  43mm O/D solvent weld pipe.



16. A  $\varnothing$  50mm reducer (Item 10) is supplied for use with  $\varnothing$  43mm solvent weld pipe. Apply solvent adhesive on the inside of the reducer.



17. Push the reducer (Item 10) onto the  $\varnothing$  43mm solvent weld pipe and allow adhesive to set.



18. Push a coupling insert (Item 2) into the top of the Pipe+ HE.



19. Push the Cap insert (Item 4) into the top of the straight section of the T-piece (Item 3). The straight position must not be used to connect to the shower waste pipe.



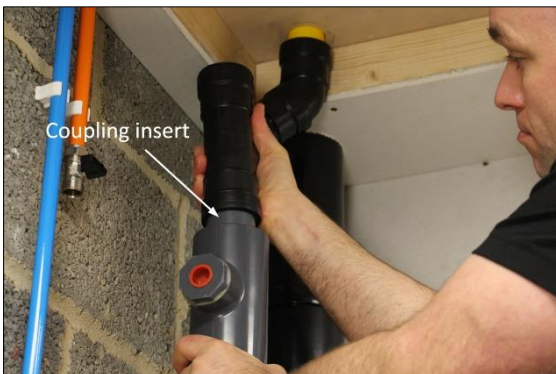
20. Insert one of the 45° connectors (Item 5) into the 45° opening of the T-piece (Item 3).



21. Insert the second 45° connector (Item 5) into the end of the other.



22. Connect the open end of the second 45° connector (Item 5) onto the reducer attached to the shower waste pipe.



23. Connect the bottom of the T-piece (Item 3) onto the top of the Pipe+ HE and the coupling insert (Item 2).



24. The combination of the T-piece and the two 45° connectors allows manipulation of the constructed coupling to achieve multiple positions to connect to the shower waste pipe.



25. If the shower is located further away from the Pipe+ HE position and the shower waste pipe runs horizontally then the constructed coupling can be manipulated to allow for this.



26. The constructed coupling will manipulate to multiple positions either vertical or horizontal but all components must be used in the order shown.

### Connecting to the soil stack



27. The soil stack connection pipe needs to be either a  $\varnothing$  50mm push-fit or a  $\varnothing$  43mm solvent weld pipe. A second  $\varnothing$  50mm reducer (Item 10) is supplied to connect to a  $\varnothing$  43mm solvent weld pipe. Apply solvent adhesive on the inside of the reducer.



28. Push the reducer (Item 10) onto the  $\varnothing$  43mm solvent weld pipe and allow adhesive to set.



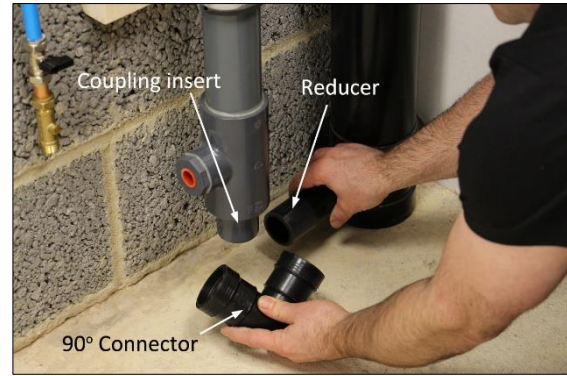
29. Insert the opposite end of the 43mm solvent weld pipe into the rubber bush of the soil stack junction.



30. Push the pipe further into the soil stack than needed to assist with the connecting to the Pipe+ HE.



31. Push a coupling insert (Item 2) into the bottom of the Pipe+ HE.



32. Connect the 90° connector (Item 9) onto the bottom of the Pipe+ HE and the coupling insert.



33. Slide the pipe and reducer out of the soil stack bush and connect to the open end of the 90° connector (Item 9).



34. A straight connector is also supplied (Item 6) for installations where the soil stack connection is below the floor level.

### Connecting to the mains cold water pipe



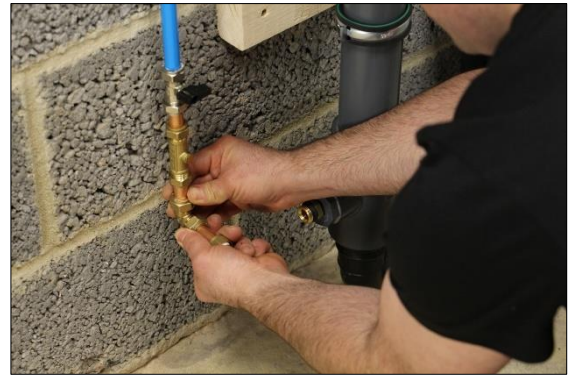
35. Remove the red dust cap from the cold water connection at the bottom of the Pipe+ HE.



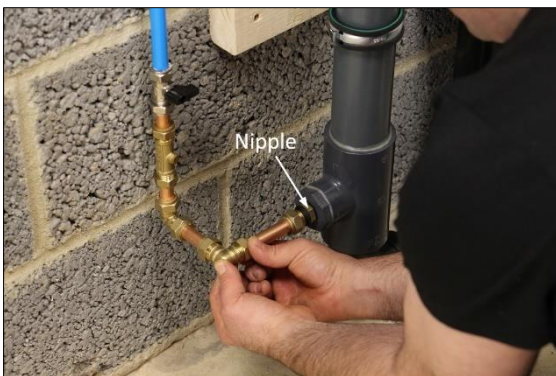
36. Connect one of the 1/2" Male BSP double sided nipples (Item 7) to the bottom of the Pipe+ HE and tighten with a spanner. Take care not to overtighten.



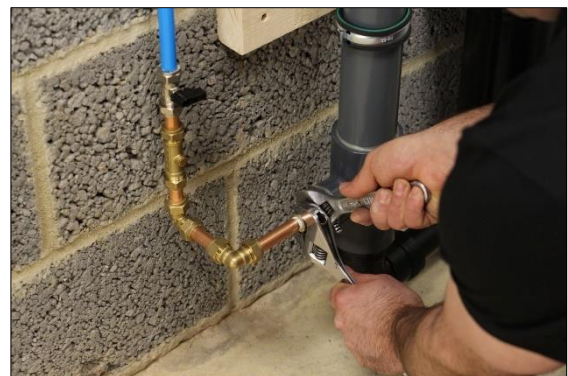
37. Connect compression fittings and copper pipe to the double check valve off the cold mains water feed.



38. Run the pipework and fittings in an appropriate way for your installation to reach the bottom connection of the Pipe+ HE.



39. Connect the copper pipe with a female compression fitting to the 1/2" Male BSP nipple. 15mm or 22mm pipes can connect to the Pipe+ HE, for 22mm pipework a reducer will be required.



40. Ensure that all compression fittings are fully tightened and joints sealed.



41. The Pipe+ HE can be rotated in the clamps and alternative pipe layouts created to suit different installation spaces.



42. PVC connections could be used for connecting the mains cold water feed but copper is considered best practice.

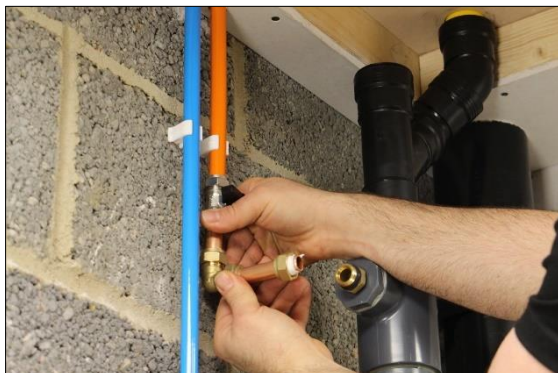
## Connecting to the preheated water pipe



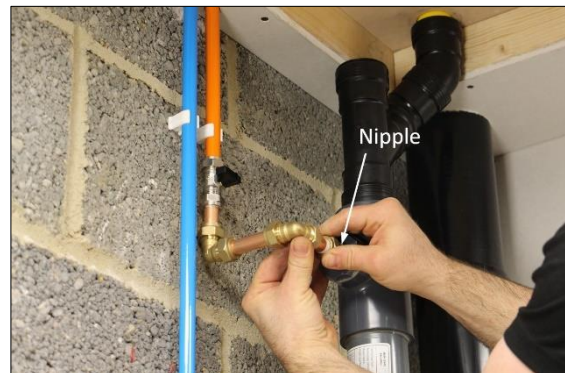
43. Remove the red dust cap from the preheat water connection at the top of the Pipe+ HE.



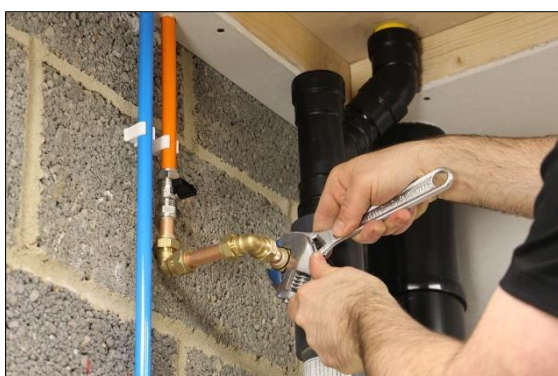
44. Connect the second ½" Male BSP double sided nipple (Item 7) to the top of the Pipe+ HE and tighten with a spanner. Take care not to overtighten.



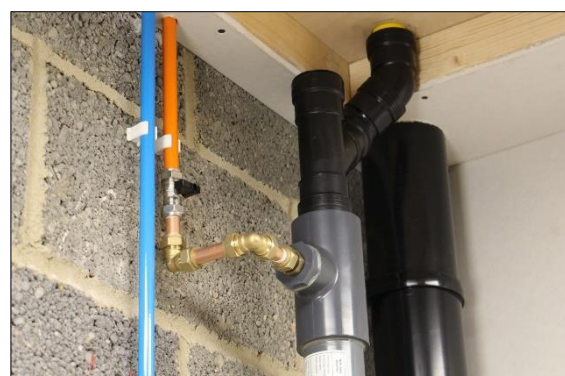
45. Connect compression fittings and copper pipe to the isolator valve off the preheated water pipe. Run the pipework and fittings in an appropriate way for your installation to reach the top of the Pipe+ HE.



46. Connect the copper pipe with a female compression fitting to the ½" Male BSP nipple. 15mm or 22mm pipes can connect to the Pipe+ HE, for 22mm pipework a reducer will be required.

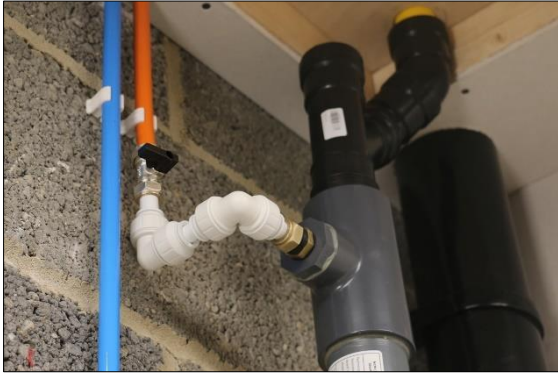


47. Ensure that all compression fittings are fully tightened and joints sealed.



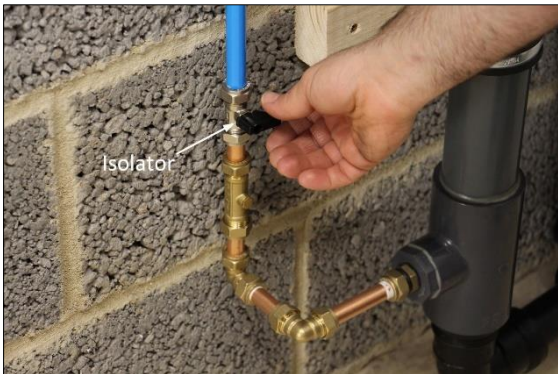
48. Connecting the preheated water pipe completes the installation and the Pipe+ HE is ready to be commissioned.



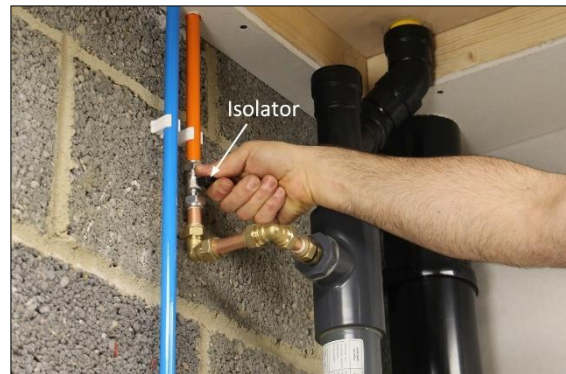


49. PVC connections could be used for connecting the preheat water pipe but copper is considered best practice.

### Commissioning the Pipe+ HE



50. Open the isolator on the cold water feed to start the cold water flow into the Pipe+ HE.



51. Open the isolator on the preheated water pipe to start the flow from the Pipe+ HE to the shower cold feed and/or cylinder/combi-boiler depending on the system installed from section 3.c

52. Check and complete the following: -

- Ensure the preheated water supply is only feeding the DHW water heater and the cold water inlet of the shower's thermostatic mixing valve (System A), the cold inlet of the shower's thermostatic mixing valve only (System B) or the water heater only (System C).
- The preheated water supply from the Pipe+ HE is clearly labelled to avoid future connections of other services. Preheat supply tape is available for this, see Fig.5.
- Pipework between the Pipe+ HE and the water heater and/or cold water inlet of the thermostatic mixing valve is insulated.
- When the complete system is being checked and pressure tested, the Pipe+ HE must be isolated if the system testing is to proceed above 10 bar.
- Ensure the SAP label supplied correctly identifies the System installed and is applied near to the boiler in the property, see Fig.6.
- Complete the three design and installation checklists leaving one with the customer, returning one to us and keeping the third for your records.



Fig.5. Preheat supply tape

53. It is possible to restrict the amount of space required for the installation by minimising the space between the pipework. In this installation spacing was increased for clarity. Through planned orientation the required space and therefore the size of boxing to cover the pipework can be minimised.

<b>NEM (SAP) Identifier</b>	Recoup Pipe + HE	Recoup Energy Solutions Ltd. PO Box 365, Eye, IP22 9BH
Technology type:	Waste Water Heat Recovery System	
Technology category:	Instantaneous Shower Heat Recovery	
Brand name:	RECOUP	
Model qualifier:	System A / System B / System C (Delete as appropriate)	
<small>This dwelling has been fitted with a Waste Water Heat Recovery System for Showers which is recognised by the Government's Standard Assessment Procedure (SAP) for Energy rating of dwellings. Note: One label must be permanently fixed to the WWHRS unit and another to a nearby Boiler or Service Cupboard.</small>		

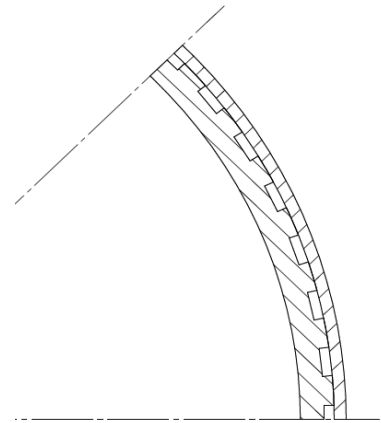
Fig.6. SAP label

## 5. Safety

### 5. a. Double Walled Heat Exchanger

European regulations (NEN 1717) require that double walls must be used to separate drain water and drinking water. In the RECOUP Pipe+ HE, this is accomplished by squeezing two copper pipes against each other. This creates a very sturdy and reliable construction, in which the contact between the pipes does not depend on the water pressure. The design meets all the relevant safety requirements.

The Pipe+ HE should be protected against return flow through a verifiable non-return valve plus shut-off valve. It is permissible to connect the system directly to the sewer system.



*Fig. 6. Double wall exchanger*

### 5. b. Legionella Risk & Protection

Consideration must be given to the potential risks of legionella bacteria growth when installing any hot water system and this includes ALL devices that are used in the production and transportation of hot water in the domestic home or commercial environment. Please refer to the separate sheet provided covering Legionella and ensure that the copy is also left with the home owner pack.

## 6. Maintenance

The maintenance required for the RECOUP Pipe+ HE is very minimal, as in normal circumstances the flow rate of the shower water should not allow any residue to build up. In the unlikely event that residue build up does occur, a soap based cleaning product can be used to flush through the pipe.

Additional access (Through normal use this should not be required) should be obtainable with a pipe cleaning brush either via the shower/bath trap (or by removing the cap, Part 4 in Figure 3, if there is access). Once cleaned rinse through with warm water from the shower.

## 7. Warranty

The Recoup Pipe+ HE comes with a 2 year warranty unless agreed otherwise. This starts from either

1. The date of invoice from Recoup Energy Solutions Ltd  
or
2. The date of installation recorded on the received SAP documentation in line with the SAP Design and Installation Checklist.

This warranty is conditional on the product being installed in accordance with these instructions (Installation and **ALL** requirements for SAP, if product is to be recognised for Energy efficiency calculations), correct plumbing practices and Building Regulations.

**Company contact details:**



Please post completed documents to: -

Recoup Energy Solutions Ltd  
PO Box 365  
EYE  
IP22 9BH

Telephone: 01379 844010  
Email: [info@recoupenergysolutions.co.uk](mailto:info@recoupenergysolutions.co.uk)  
Website: [www.recoupenergysolutions.co.uk](http://www.recoupenergysolutions.co.uk)