



Installation instructions

RECOUP Retrofit+

Shower Waste Water Heat Recover unit

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

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1. Introduction

The RECOUP Retrofit+ 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 copper heat exchanger within the Retrofit+, which is a very effective material for transferring heat. The 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 CO₂ emissions of the home.

The RECOUP Retrofit+ 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 Retrofit+ is a horizontal heat exchanger, and is designed to work with showers either over a bath or shower tray. It is very important to follow all the instructions for installation of the RECOUP Retrofit+ for the product to perform successfully.

IMPORTANT – For recognition of the RECOUP Retrofit+ energy saving performance within the National Calculation Method (NCM) for the energy rating of a new build dwelling within the UK, using 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.sap-appendixq.org.uk – 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 Retrofit+ 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 Retrofit+

Description	Value	Unit
Minimum depth required for installation	85	mm
Overall Length/Width required for installation	630/375	mm
Material – Heat exchanger	Copper	
Shower flow rate range	5 – 12.5	L/m
Max. Mains water inlet pressure	16	bar
Min. Mains water inlet pressure	1	bar
Max. Waste water working temp.	80	°C
Mains water connection	15	mm
Waste water connection	40	mm
Weight	2	kg
Water volume – mains water	0.27	Litres

2. b. Performance & Efficiency

Shower Flow Rate @ 40°C (Litres/min)	Retrofit+ efficiency (Recovered energy kWh)		
	System A	System B	System C
9.0	19.9 (3.75)	17.1 (3.22)	19.1 (3.60)
9.2	19.7 % (3.79)		
11.0	18.4 % (4.23)	16.2 % (3.72)	17.6 % (4.05)
12.5	17.7 % (4.63)		

2. c. Pressure drop on main water circuit

Shower Flow Rate @ 40°C (Litres/min)	Retrofit+ Pressure drop (bar)		
	System A	System B	System C
5.5	0.14	<0.08	
7.5	0.20	<0.12	
9.2	0.24	<0.14	
12.5	0.36	<0.21	

2. d.

Dimensions & connections – RECOUP Retrofit+

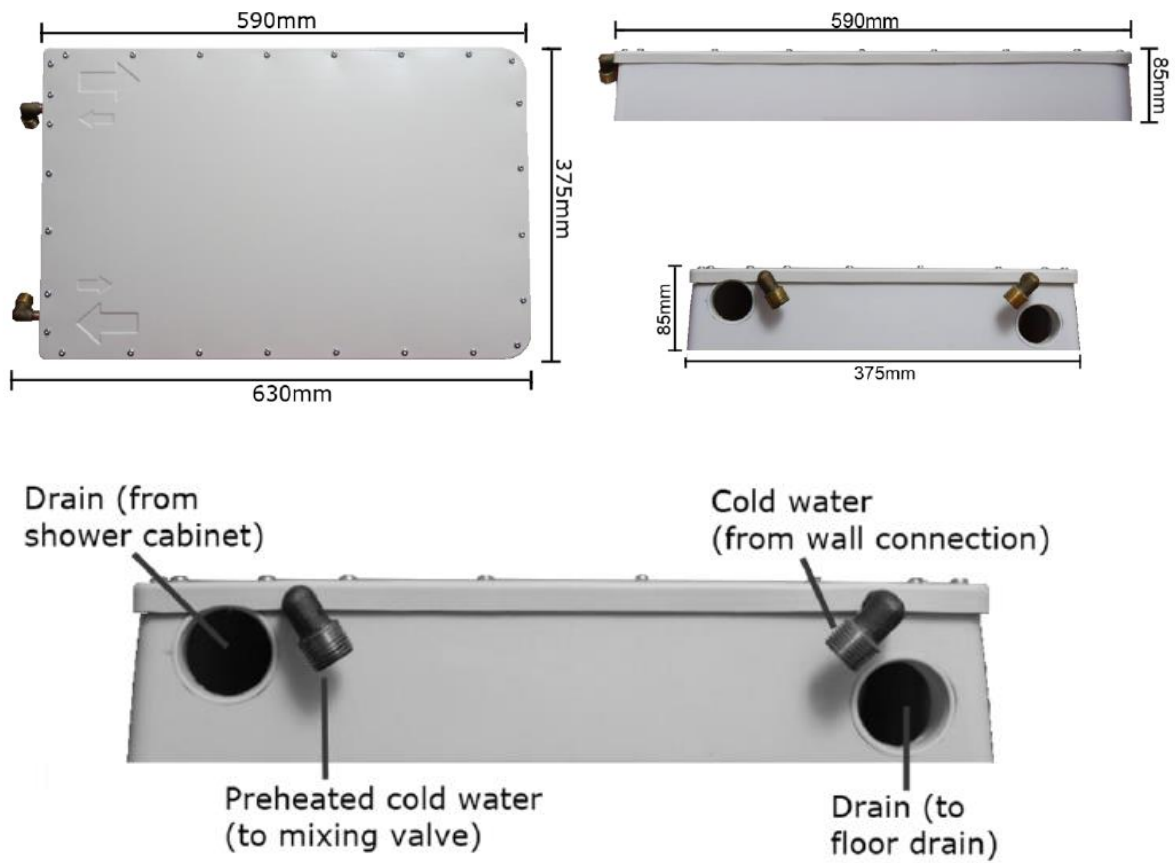


Fig. 1. Dimensions & Connections

3. Pre-installation requirement

3. a. Basic system principle

The RECOUP Retrofit+ 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 Retrofit+ is connected to the mains water supply, and the outlet (pre-warmed water) can be connected in one of three ways: -

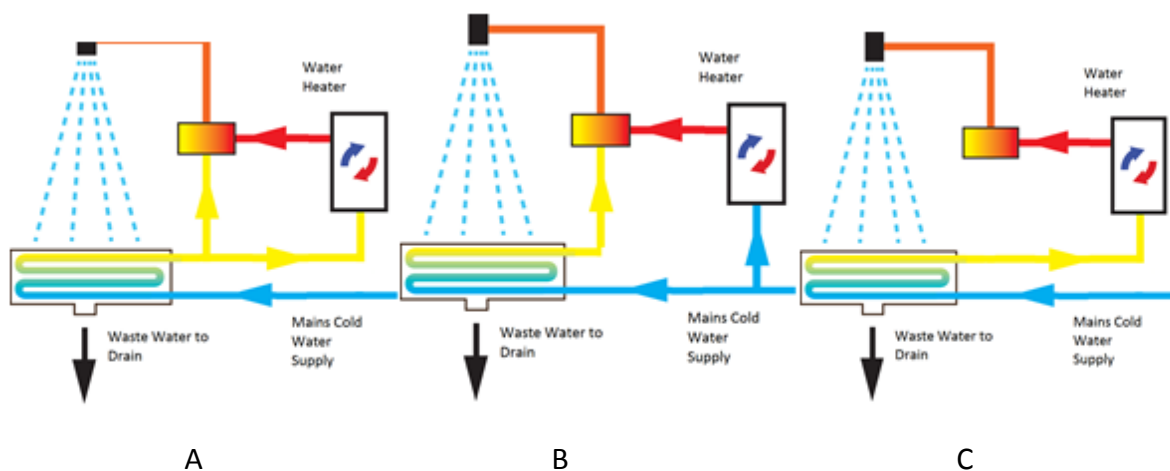


Fig. 2. System A,B & C Configuration

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 RETROFIT+

The RECOUP Retrofit+ needs to be installed horizontal. Installation should take place on a flat base capable of supporting the WWHRU using the fixings provided, and should allow for access to all parts and allow routine maintenance (E.g. Cleaning) to be carried out with relative ease.

The RECOUP Retrofit+ must be located within the heating envelope of the building.

The Retrofit+ 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 Retrofit+ 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+ to within 3m to maintain a high level of efficiency by minimising heat losses in the drainage system prior to the WWHRU.
- The **Preheated** water supply from the RECOUP Retrofit+ 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 RETROFIT+
 - Labelled to prevent any future connection of hot water take-off points (E.g. Taps).
- Prevent the RECOUP Retrofit+ 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 Retrofit+ WWHRS unit –
1	2	2	Pre-cut foam to support flexible hose (If used instead of copper pipe)
1	3	1	Installation instructions
1	4	1	NCM (SAP) Identifier label for nearby boiler or service cupboard.
1	5	3	Design checklist
1	5	3	Installation checklist




Table 1 – Contents of packaging

NOT SUPPLIED: -

- 2x flexible hoses (PEX) of suitable length (typically ca. 2m) for cold water supply (1x if cold water hose from cabinet can be used).
- 2x flexible and/or extendable hose for drain water (1x if drain hose from cabinet can be used)

Note: Flexible hoses will make installation easier, but copper pipe could be used instead for the drain water to ensure angle of pipe work.

4. b. Installation of the RECOUP Retrofit+

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

The unit must be installed horizontally on a suitable flat surface which is capable of holding the weight of the unit. If the mounting is not horizontal the efficiency of the unit could be reduced, and installation should always be within a tolerance of +/- 2mm.

Prior to installation: -

Check the following:

- Ensure that there is enough space for the Recoup Retrofit+
- Recommended to be installed in room with floor drain

To install the unit: -

1. Connect to the water supply; Remember the ½" connection with the small arrow pointing in to the Retrofit+ is the cold water inlet, and the ½" connection with the small arrow pointing out is the preheated water to be connected to the shower's cold water inlet and/or water heater (Depending on installation configuration).
Note: Depending on the type of installation (E.g. Shower cabinet), flexible hoses (PEX) could be used to make installation easier.
2. A check valve with full flow shut off (Not supplied) should to be installed on the mains water supply prior to the WWHR unit (It is recommended that an additional check valve (Not supplied) is installed close to the connection for the pre-heated water leaving the WWHRU to facilitate in any replacement of parts. Make sure that the Non-return valves are accessible.
3. Connect the shower waste outlet from the shower to the waste connection on the Retrofit+ (40mm Ø with large arrow pointing into the Retrofit+), and connect the 40mm Ø connection with the large arrow pointing out of the Retrofit+ to the sewer/floor drain.
Note: Again, flexible drain hose could be used to make installation easier, but in this case the installer must insure that the drain flexible hoses have a gradual fall or lay horizontally, no dips or bending upwards. Use cut-out pieces of supplied foam material to support hoses, if necessary.
4. Check that the unit is in a horizontal position.
5. Check and complete the following: -
 - a. 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).
 - b. The preheated water supply from the Tray+ is clearly labelled to avoid future connections of other services.
 - c. Pipework between the Tray+ and the water heater and/or cold water inlet of the thermostatic mixing valve is insulated.
6. The Recoup Retrofit+ is a single walled exchanger, and therefore the shower trap should be installed after the unit to form an air break, or alternatively a HepVO valve can be installed.

5. 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 Retrofit+ is very minimal, however, it is recommended to clean the unit periodically to avoid any reduction in efficiency. This cleaning will remove any build-up of soap and dirt residue on the inside of the copper pipe where the waste water passes.

The following maintenance procedure is suggested:

Verify that the cabinet drain has a hair filter that reduces the amount of hair getting into the Retrofit+. If it's not there, it is strongly recommended to add one.

Every 2 months:

Use 1-2 litres of hot water up to 70°C (re-use waste water from boiling potatoes or pasta to save energy) and apply into the cabinet drain in 2 stages, with circa 5 minutes between (This helps dissolve soap residues on the copper pipes in the Retrofit+). Use shower shortly after to make sure debris is flushed away.

Every 1-2 years:

If practically possible, remove the Retrofit+ from under the cabinet, unscrew the lid and mechanically clean (with a brush or scouring pad). Re-apply lid, use moderate force on the screws. Stop screwing when resistance is encountered. Do not use power tool for this!

If no maintenance is carried out, the Retrofit+ will still work, but the efficiency may decrease over time.

7. Warranty

The Recoup Retrofit+ comes with a 2 year warranty, which starts from the date of invoice from Recoup Energy Solutions Ltd.

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.