MEGAFLO **SHRU**
Installation Instructions
Shower Heat Recovery Unit

Energy saving performance
recognised by SAP

WRAS APPROVED PRODUCT

Leave these instructions with the user for the homes user pack

Contents

Page

1. Introduction

The MEGAFLO **SHRU** (Shower Heat Recovery Unit) is a waste water heat recovery system (WWHRS) that recovers heat from the warm waste water when taking a shower. It relies on the waste water from the shower flowing through a heat exchanger that pre-warms the mains cold water feed to a shower mixing valve and combination boiler or hot water storage cylinder.

The MEGAFLO **SHRU** system consists of a copper heat exchanger, check valve, connection fittings for mains water and 40mm waste water, T-piece with cap insert, and three wall brackets with screws for mounting on a vertical wall. The MEGAFLO **SHRU** has been developed for dwellings with the bathroom on the second or higher floor, so that when taking a shower the waste water flows under natural conditions through the heat exchanger installed on the floor below the bathroom. **Important:** The MEGAFLO **SHRU** has been tested and approved to the UK water regulations and the installation must be carried out in accordance with:

- UK Water Regulations/Water Byelaws (Scotland)/Water supply regulations (Northern Ireland)
- All current Building Regulations
- Health & Safety at Work Act 1974, Approved Code of Practice and Guidance L8 (not applicable to private homes, some landlord owned properties)

Energy Saving Performance Recognised by SAP - The successful operation of the MEGAFLO **SHRU** which is a Waste Water Heat Recovery System (WWHRS) – Instantaneous Shower Heat Recovery Device, depends entirely upon the adherence to these instructions. Additionally, for new-build dwellings within the UK, recognition of the system's energy saving performance within the National Calculation Methodology (NCM) for the energy rating of dwellings, known as the Standard Assessment Procedure (SAP) requires that these instructions are complied with in conjunction with a system design checklist and an installation checklist and certificate of installation, supplied with this document and available at: www.ncm-pcdb.org.uk/sap.

The system should be installed by a suitably qualified plumber, with system design consideration being equally important to a correct installation. For recognition of the MEGAFLO **SHRU** within SAP, a system design checklist and an installation checklist and certificate of installation should be completed and signed, with copies kept for the home user pack (home owner), the installer, and sent to Megaflo at the e-mail address shown on the back page (p.16). Building Control Officers may also request a copy. For the purpose of system identification of product data without SAP, the product will have an NCM (SAP) Identifier label permanently fixed to the SHRU 60 unit, whereby the 'model qualifier' states 'refer to installation certificate, if unknown assume System B'. A second NCM (SAP) Identifier label is also supplied and must be affixed to a nearby boiler or service cupboard (the label must be visible for inspection without disassembly of nearby products or systems) and the 'model qualifier' states 'System A, System B or System C delete as appropriate'.

Note:

1. The unit must be installed vertically and must self drain to the trap downstream.
2. Failure to install this unit correctly to system A, System B or System C configuration diagrams will invalidate the guarantee and may have an adverse effect on its efficiency.
3. Not sending back the completed and signed system design checklist, the installation checklist and certificate of installation to Megaflo will invalidate the guarantee.
4. Manufacturer's instructions must **NOT** be taken in anyway as over-riding statutory obligations.

2. Technical data

2.1 MEGAFLO SHRU - General Data

Description	Unit	Value
Overall length without fittings	mm	2060
Overall length including compression fittings and T-piece with cap insert	mm	2375
Outside diameter of external tube	mm	42
Material internal tube	-	copper
Material external tube	-	copper
Recommended shower flow rate range	L/m	5.8 to 12.5
Max. mains water inlet pressure	bar	10
Min. mains water pressure	bar	0.1
Max. water working temperature		90
Mains water connections	mm	15
Waste water connections (compression fitting)	mm	43
Weight	kg	5
Water content – secondary	Litres	0.5

2.2 MEGAFLO SHRU – Connections

Description:
1) 1½" BSP-ISO adaptor
2) 1½" straight connector multifit x BSP coupling
3) Shower waste water "in" – 43mm solvent weld connection
4) Shower waste water "out" – multifit compression fitting
5) Domestic mains water "out" – 15mm comp x ½" BSP fitting (pre-heated)
6) Domestic mains water "in" – 15mm comp x ½" BSP fitting
7) Check-valve assembly – 15mm compression connections

=

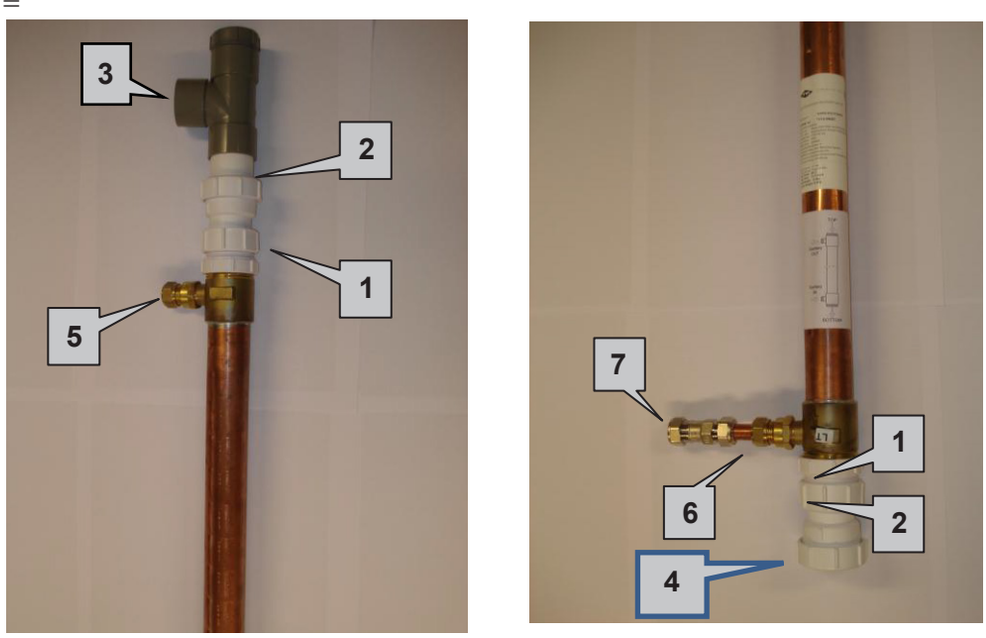


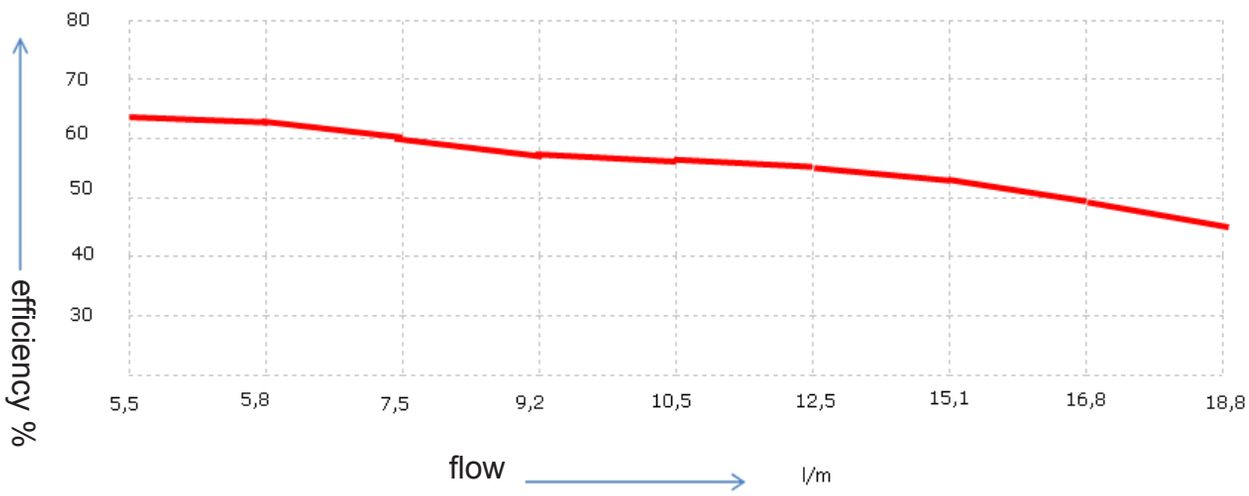
Diagram 1 – Connections

Data:
- Type: MEGAFLO **SHRU**
- Article no : 95 060 005

2.3 MEGAFLO SHRU - Performance

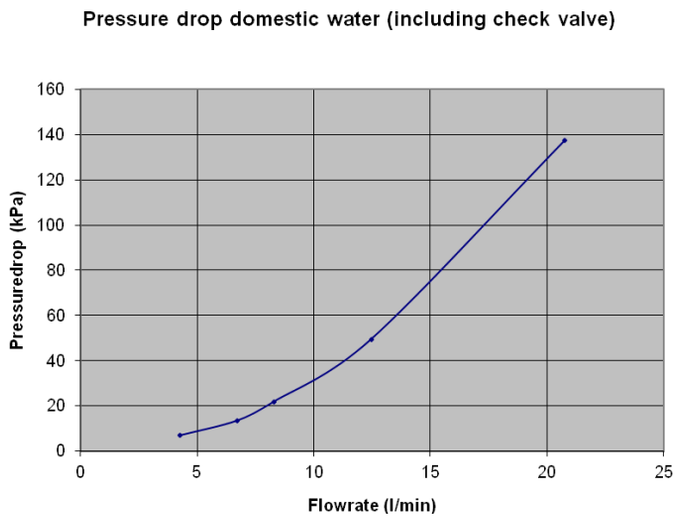
Shower flow rate:		5,5 l/m	5,8 l/m	7,5 l/m	9,2 l/m	10,5 l/m	12,5 l/m	15,1 l/m
T1; cold domestic water in	°C	10	*	10	*	10	*	10
T2; pre-heated domestic water out		29		28,2		27,4		25,2
T3; shower water		40		40		40		40
T4; shower water entry on **SHRU**[1]		40		40		40		40
T5; shower waste water to waste water line		21		22		23		24
Shower energy consumption[2]	kW	11,5		15,7		21,9		31,6
Recovered energy[3]	kW	7,3		9,45		12,7		16,9
Pressure drop domestic water	kPa	9,6		21		35,1		79
Efficiency of recovery unit	%	63	62,4	60	59,3	58	55,2	53
* KIWA-Gastec declaration according to NEN 5128 A1:2009, published 1 May 2009								

2.4 MEGAFLO SHRU – Efficiency



1. Standard test conditions
2. Energy consumption in kW = kg/s * 4,2 * (T3 – T1)
3. Energy recovered kW = shower flow rate kg/s * 4,2 * (T2 – T1)

2.5 MEGAFLO SHRU – Pressure drop – Mains Water Circuit



Note: 100 kPa = 1 bar

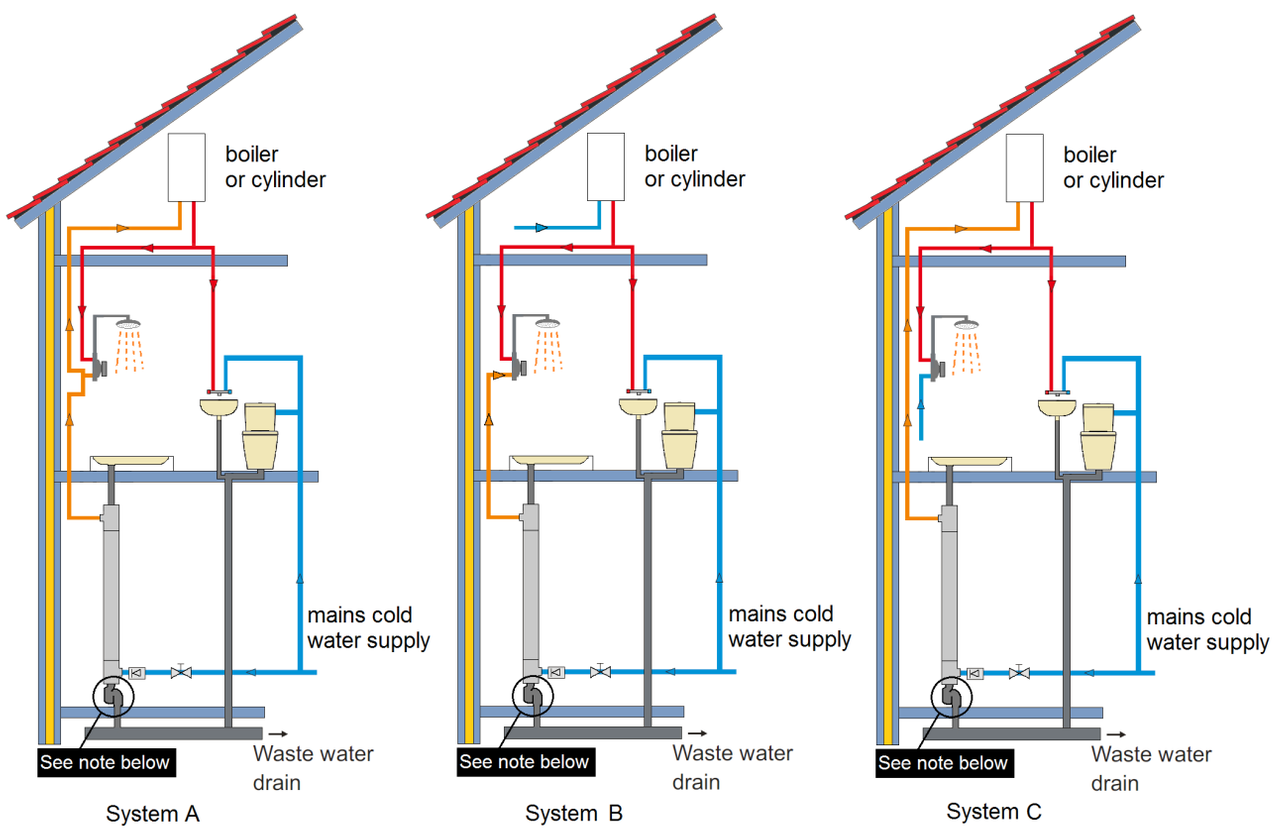
3 Installation preparation

3.1 System principle

The Megaflo Shower Heat Recovery Unit (SHRU) is a waste water heat recovery system (WWHRS) that recovers heat from the warm waste water when taking a shower. It relies on the waste water from the shower flowing through a heat exchanger that pre-warms the mains cold water feed to a shower mixing valve and instantaneous boiler or hot water storage cylinder.

It is recommended that the pre-heated mains water from the unit is connected to both the cold water supply of the shower mixing valve and the combination boiler or hot water cylinder, as shown below (recommended System A configuration). System A configuration will provide a balanced water flow and is the most efficient way to recover the maximum amount of energy. In case of an unbalanced water flow if, for example, only the cold water supply to the shower mixer valve is pre-heated (System B configuration) or the pre-heated mains water from the unit is only connected to the combination boiler or hot water cylinder (System C configuration), the efficiency of the SHRU will decrease by at least 15%.

Installation Configurations



System A	- WWHRS outlet connects to water heater inlet AND shower cold inlet
System B	- WWHRS outlet connects to shower cold inlet ONLY
System C	- WWHRS oulet connects to water heater ONLY

Note: It is **essential** that a trap is installed downstream of the SHRU and that **NO** trap is installed directly underneath the shower tray

3.2 Location and clearances

The MEGAFLO **SHRU** has been developed for dwellings with the bathroom on the second or higher floor, so that when taking a shower the wastewater flows under natural conditions through the heat exchanger installed on the floor below the bathroom. Therefore, the unit must be mounted vertically securely onto a flat wall with the brackets supplied.

It is recommended that the SHRU is installed in a location where all parts of the unit are accessible and routine maintenance such as cleaning can be carried out with reasonable ease. Prevent the MEGAFLO **SHRU** from being heated above 25°C by an external source. Also, the MEGAFLO **SHRU** must not be located where ambient temperatures may be above 25°C.

The preheated water supply inline of the MEGAFLO **SHRU** must be insulated in accordance with the requirements of the 'Building Services Compliance Guide'.

Note: Do not insulate the MEGAFLO **SHRU** itself.

It is required that the distance from the shower tray to the MEGAFLO **SHRU** is kept to within 3 meters to reduce any heat losses and ensure good efficiency is maintained. Minimum clearances of 80mm around the main body should be maintained and adequate clearances must be maintained at the top and bottom to ensure all components are accessible and can be cleaned or replaced, if necessary.

Note: It is recommended the SHRU is fitted with a cleaning tee and blanking cap at the top of the unit to enable the waste water section of the unit to be cleaned.

3.3 Design Flow Chart - Checklist

With reference to the information written above in this chapter, take into account the items in the checklist underneath are required before the MEGAFLO **SHRU** is installed to ensure it is suitable for installation in the dwelling.

Item	Description	Decision (tick as appropriate)
1	Has consideration been given to DHW delivery performance (water pressure and flow rate)?	
2	Is the dwelling hot water system (DHW) a mains pressure system?	
3	Does the water heater accept a preheated water inlet (Max 30°C) (N/A if installed in System B configuration)?	
4	The length of drain pipe between shower and MEGAFLO **SHRU** is less than 3 meter?	
5	Is a trap / s-bend installed?	
6	Is sufficient space for service and cleaning available?	
7	Has a 'System A, B or C' configuration been selected?	
8	Is the plumbing design configured in order to prevent connection of hot water take-off points, such as taps, from the MEGAFLO **SHRU** preheated water outlet?	
9	Is an installation location specified for the MEGAFLO **SHRU** that does not normally exceed 25°C?	
10	Can the MEGAFLO **SHRU** be installed within a tolerance of ±20mm of vertical?	
11	If shut-off valves are specified for MEGAFLO **SHRU** inlet and/or outlet, are they 'full flow' (non-restricting) shut-off valves? (Tick if N/A)	

3.4 Installation Recommendations

a) When showering with the SHRU installed, the cold water inlet temperature will increase slowly because it will be warmed from the heat transferred from the waste water, via the SHRU heat exchanger. If a non-thermostatically controlled showerhead is fitted, continued adjustment of the valve will be required to avoid hotter water temperatures from the shower. Therefore, it is required that a thermostatically controlled showerhead is always fitted.

b) Ensure full flow shut off valves are fitted at both connections of the unit to allow for any replacement of parts (refer to diagram 3)

c) The cold / preheated feed pipe work to the shower from the SHRU must be installed as shown in Diagram 2 ie. the pipe must be plumbed up to the T connection at the thermostatic mixing valve of the shower, and then from this T connection to the cold inlet of the combination boiler or hot water store. This will ensure static water is not held in the line for long periods without being flushed, providing other hot water taps are being used.

d) After installation all domestic water pipe work should be flushed and cleaned. This also applies if a system has been substantially altered. However, this would be required even if a shower heat recovery unit had not been fitted. (Refer Approved COP – L8 for guidance)

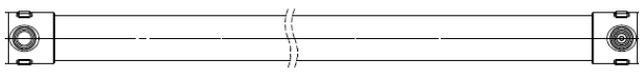
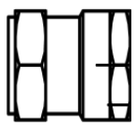
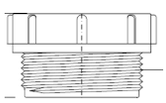
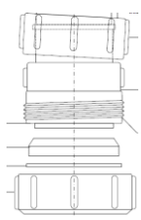
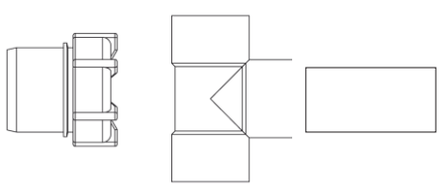
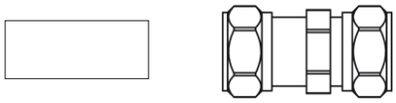
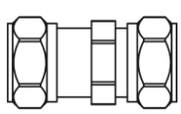
e) Pipework between the WWHRS preheated water outlet and the water heater and /or shower cold water inlet(s) (depending on installation configuration) must be labelled to indicate that no other services can be interconnected.

f) The hot water store or combination boiler must be set to provide and distribute hot water at a temperature of at least 60°C.

4. Installation

4.1 Packing

The MEGAFLO **SHRU** is supplied in one box and the contents is as follows:

Pos.	Qty	Description	Drawing
1	1	MEGAFLO **SHRU** body	
2	2	½" BSP x 15 mm compression fitting & washer	
3	2	1½" BSP –ISO Adaptor and washer	
4	2	1½" Straight Connector Multifit x BSP Coupling	
5	1	T- fitting Ø 43 mm solvent weld (for 43 mm waste pipe) + 43mm Cap and connection tube	
6	3	Wall mounting brackets, screws and 10mm wall plugs	
7	1	15mm Check valve assembly (cold domestic mains water inlet) + 50mm length Ø15mm copper tube	 
8	1	Installation Instructions	

Pos.	Qty	Description	Drawing
9	1	NCM (SAP) Identifier label (to be affixed to a nearby boiler or service cup-board)	
10	1	Design checklist	
11	1	Installation checklist	

In addition to the above it is recommended two full flow 15mm shut off valves are obtained for the installation to enable isolation of the mains water circuit if any replacement is required.

4.2 Location and clearance required

Refer to section 3.2 p.7 before locating the MEGAFLO **SHRU**.

4.3 Installation of the MEGAFLO SHRU

The unit must be installed vertically (tolerance of +/-20mm) on a flat wall that is capable of supporting its weight (refer to section 3.2 p.7). If the unit is not mounted absolutely vertical it could reduce the efficiency performance.

Mount the unit on the wall as follows:

a) Mark and drill in a straight vertical line the three holes, equally divided over a length of 160 cm, for the 10mm wall plugs supplied with the wall brackets (refer Diagram 3)

b) Fit the wall plugs into the holes and install the three mounting brackets (pos 6, 4.1) supplied by screwing into the plugs.

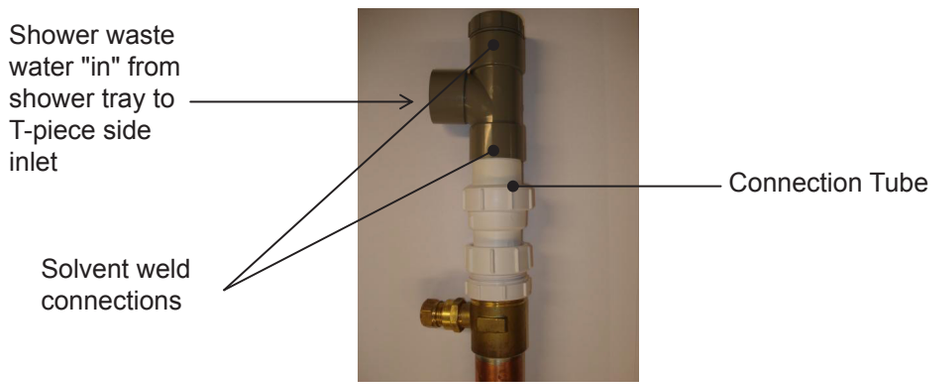
c) Remove one half of the bracket and mount the unit (pos. 1, 4.1) into the brackets securing it with the half bracket removed.

Note: Check that the unit is vertical and the bottom end of the unit is at the lowest position

d) Connect the 1 ½" BSP-ISO adaptors (pos 3, 4.1), using the washers supplied, to both ends of the unit. (Refer 1, diagram 1)

e) Connect the 1 ½” multifit-BSP couplings (pos 4, 4.1) to the adaptors (pos 3, 4.1) at both ends of the unit. (Refer 2, diagram 1)

f) Connect the T-fitting and cap (pos. 5, 4.1) to the 1 ½” multifit connector (pos 4, 4.1) at the top end of the unit, using the 43 mm connection tube supplied. Connect the T-piece, connection tube and cap using suitable solvent cement. (Refer 8, diagram 1 & picture below).



g) Connect the waste water pipe from the shower to the inlet of the T-piece at the top of the SHRU (Refer picture above) using a 43mm solvent weld pipe connection.

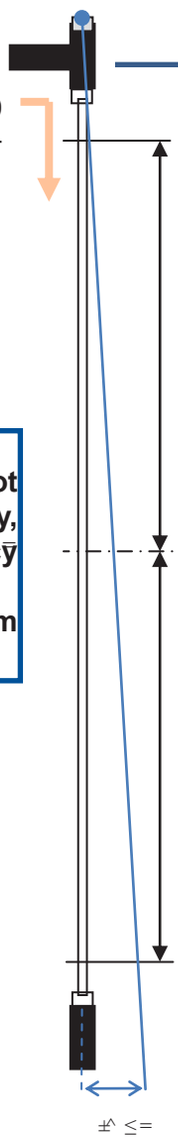
h) Connect the SHRU shower wastewater outlet to the sewer via an s-bend/trap (Refer 4, Diagram 1 & Diagram 2). It is recommended to use compression fittings to establish the connection between the SHRU wastewater out 1 ½” multifit connector and the s-bend/trap.

i) Connect the ½” to 15mm fittings (pos 2, 4.1) to the domestic mains water “in” and “out” of the SHRU connections using the washers supplied (Refer 5 & 6, diagram 1).

j) Connect the 50mm long Ø15mm pipe (pos 7, 4.1) to the domestic mains water “in” 15mm compression fitting at the lower end of the unit. Then, connect the check valve assembly (pos 7, 4.1) to the 15mm pipe as in Diagram 1, no 7. Note: Ensure the check valve assembly is fitted with the arrow pointing in the direction of flow.

k) Connect 15mm pipe between the top of the SHRU unit “out” connection (Diagram 1, no 5) and shower unit/ water heater as detailed in Diagram 2 and section 3.4.C. Then, complete the installation by connecting the mains water supply to the domestic mains water “in” connection at the lower end of the unit (Refer Diagram 1, no7).

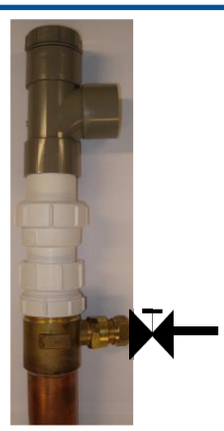
Note: Ensure full flow shut off valves are fitted before both domestic mains water connections of the unit to allow for any replacement of parts or removal of the complete unit (Refer Diagram 3).

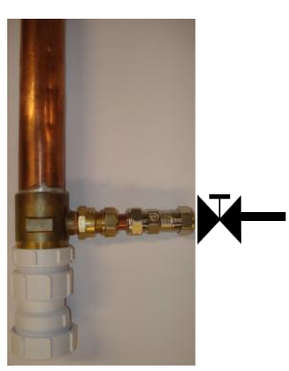


Position wall brackets 800 mm apart and in line vertically as shown

T- connection and cap.

It is recommended full flow shut off valves are fitted at both domestic mains water connections of the unit, as shown below (Not supplied)





Note:
If the MEGAFLO SHRU has not been installed 100% vertically, it could reduce the efficiency performance.
Maximum offset "A" = +/-20 mm

Diagram 3 – Recommended position of wall brackets and mains water shut off valves.

5. Routine inspection and maintenance

To avoid a lower efficiency in the longer term, it is recommended to clean the MEGAFLO SHRU. Over a period of time it is likely that the MEGAFLO SHRU will start to gather residue, to avoid this it is advised that it is flushed with a household drain cleaner.

Periodically, it is recommended to check the installation for leaks etc.

6. Trouble shooting

The efficiency seems to be lower than before:

The inner surface of the SHRU wastewater surface might be dirty/contaminated.
Therefore, clean the device as described in section 5.

7. User Advice

a) If the hot water system is left to stand for 7 days or more without being used then the system should be flushed to drain for some 3 minutes by turning on a hot water tap slowly so as not to create splashing. This would be advised even if a shower heat recovery unit had not been fitted.

b) Any non-domestic users are advised that any showerheads and hoses should be cleaned on a quarterly basis.

Warranty

The MEGAFLO **SHRU** warranty is valid for 2 years after installation date.
The production date is indicated on the type plate.

The warranty does not apply to:

- Disassembly and assembly costs.
- Faults which are, in our opinion, caused by incorrect treatment, negligence or an accident.
- Faults that have been caused by repairs or intended repairs by third parties without our authorisation.
- Faults caused by irregular and / or incompetent maintenance.
- Modification to the appliance.
- Incorrect installation of the appliance.

Should the unit become damaged or malfunction, switch it off, isolating it from the mains supply, and contact Megaflo immediately.

Customer service

Telephone:
01603 420100

E-mail:
itho@heatraesadia.com