

# OPERATION AND INSTALLATION MANUAL

## ENERGYSTORE



# Table of Contents

<b>Welcome.....</b>	<b>1</b>
<b>1.General Information.....</b>	<b>1</b>
<b>2.Information on the EnergyStores.....</b>	<b>1</b>
2.iBio Prime Overview.....	1
2.iiBio Duo Overview.....	1
2.iiiBio Quattro Overview.....	1
<b>3.Movement, Positioning and Location.....</b>	<b>2</b>
3.iMovement.....	2
3.iiRemoving from pallet.....	2
3.iiiPositioning .....	2
3.ivLocation.....	3
<b>4.Installation.....</b>	<b>3</b>
4.iPressure Test.....	3
4.iiFilling the system.....	3
4.iiiChecking controls and valves.....	4
<b>5.Operation .....</b>	<b>4</b>
<b>6.Technical Specification.....</b>	<b>4</b>
<b>7. Servicing and Maintenance.....</b>	<b>4</b>
<b>8. Data sheet.....</b>	<b>5</b>
8.iCommon data.....	5
8.iiBio Prime.....	6
8.iiiBio Duo.....	8
8.ivBio Quattro.....	10
<b>9.Guarantee and Warranty.....</b>	<b>12</b>
<b>10.Commissioning Checklist.....</b>	<b>13</b>
<b>11.Service log &amp; Changelist.....</b>	<b>16</b>

## Welcome

Thank you for the confidence extended to us by choosing EnergyStore. Our stores are optimised for renewables, are high spec. and yet as solid state as possible. There is very little to go wrong with an Energystore.

Please read this installation and operating manual carefully in order to insure a safe and efficient installation which will prevent potential damages in advance and achieve a faultless functioning of the EnergyStore for many years to come. If in doubt please contact us and we will be pleased to help.

### 1. General Information

The EnergyStore has been designed by Firepower. We have received feedback from our network of installers across the UK to design a tank which optimised for use one biomass systems, is highly efficient, is highly versatile whilst remaining installer friendly.

### 2. Information on the EnergyStores

The three EnergyStore models we supply have been designed to accommodate all heat generating renewable heat sources, however other heat sources such as gas, oil and electric boilers can also be connected

#### 2.i Bio Prime Overview

This store has been designed to facilitate biomass however different types of heat sources can be added in also. With the tank insulation being made of a high density 100mm Polyurethane, the heat losses are minimal. With biomass, the best efficiency is acquired by heating at high temperatures to make the most out of the wood burnt and of course offering you savings on your fuel bills.

#### 2.ii Bio Duo Overview

The Bio Duo has two domestic hot water coils; the preheat coil in the lower half of the tank and the main coil is situated in the top of the tank.

In the middle of the tank there is a stratification baffle which reduces mixing of hot and cold water in the tank. A common option is that the baffle plate can be used to separate heating and domestic hot water with the heating drawn off the part below the baffle, and the top half solely for use as domestic hot water.

#### 2.iii Bio Quattro Overview

The Bio Quattro has everything the Bio Duo does, the advantages with the Bio Quattro are two added coils which have been designed to be used with solar thermal panels. \*One added coil for solar in the 300ltr. One of the coils are situated in the top of the tank, the other in bottom.

Solar thermal panels can directly heat the tank providing you with domestic hot water and contributing to the heating. Biomass is an ideal partner for solar, biomass to be used in the depths of winter and solar thermal in the heat of the summer.

### **3. Movement, Positioning and Location**

Please take care whilst moving and positioning the thermal store. The appropriate lifting equipment must be used where possible must always be taken when moving these EnergyStores. Please ensure that all door openings are of an adequate size to accommodate the delivery of the tank.

#### **3.i Movement**

We have two options when moving the EnergyStore into its final position.

Option 1 - Using a forklift or pallet truck insert the forks under the tank taking care that the weight of the tank is adequately and evenly supported and then move the tank to its desired location.

Option 2 - Using the lifting lug screwed all the way in to the top tapping, make sure appropriate lifting apparatus is used, then move the tank to its desired location

Under no circumstances should any attempt be made to move the tank while it is filled with water.

In some circumstances it is necessary to transport the tank in a horizontal position. When this action is performed please take great care in doing so. We advise that padding be used to protect the copper connection ports and powder-coated casing.

#### **3.ii Removing from pallet**

To remove the EnergyStore from the pallet it is delivered on you simply wind down the legs until lifting the tank up above the pallet, you then simply pull the pallet out. (no lifting of the tank is required during this action).

Please ensure that there is no undue lateral force applied to the legs while moving the tank into position as this may damage them.

#### **3.iii Positioning**

When positioning the tank it is important to think about the system pipe work and which direction the pipe work is coming in from. All connections on the EnergyStore are set on one quadrant of the tank, this means you can back the tank into a corner with no connections being inaccessible.

All connections and pipe work installed onto the EnergyStore must be accessible in the future for maintenance or replacement. Please be aware that there is a connection directly on top of the tank which will need access, 200mm above the tank is an acceptable distance to be left. There is also a connection directly underneath the tank.

### 3.iv Location

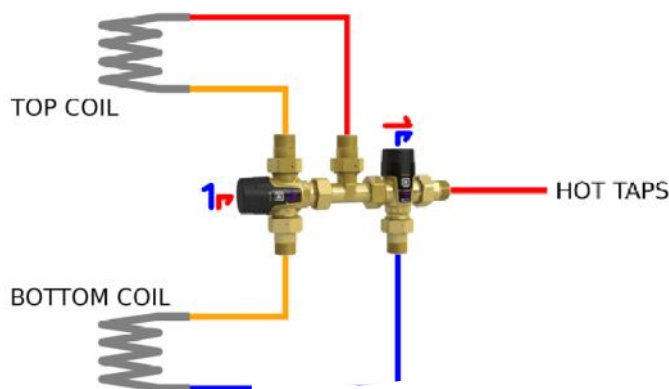
The location of the EnergyStore ideally needs to be installed in a neutral position. A neutral position is where all heat sources, domestic hot water and central heating pipe runs can easily be routed to and from the tank.

The EnergyStore must stand on a solid surface capable of supporting the weight of the tank when filled with water (see data sheet for weights) and any resulting need to reinforce the floor should be taken into consideration.

The feet on the EnergyStore can be adjusted to allow for uneven surfaces or where the necessitated due to height restrictions.

## 4. Installation

It is vitally important that the entire heating and hot water system including the EnergyStore be thoroughly flushed to remove any foreign bodies or debris that may have been introduced during installation. The system should only be filled with clean water and the appropriate inhibitor.



Please make sure all appropriate safety, mixer valves for the heating and domestic hot water are correctly installed.

If installing with the LK 551 DHW HydroKit please use the schematic opposite.

### 4.i Pressure Test

A pressure test on the system at 1½ times the maximum operating pressure must be performed. For more details please refer to BS 8558: 2011.

During the pressure test visually inspect all the accessible pipe work etc. If pressure is lost during this test, then a repair will need to be done on the equipment.

#### 4.ii Filling the system

Slowly fill the system to gradually reach the system pressure. Automatic or manual air vents must be installed at all high points of the system to allow all air to escape.

Once the system is filled and set at operating temperature then tests on the individual heat sources can take place.

#### 4.iii Checking controls and valves

Once the system has been filled to its operating pressure, start individually checking through the heating controls and valves. It is important to check all the safety valves are operational.

### 5. Operation

During handover to the end user, the complete heating system as well as the individual functions must be explained. All installed heat controls ie programmers, room stats etc must be adjusted and the functions explained to the end user.

When the system is not used for long periods, the pressure and safety valves must be checked. In case of temperatures below freezing point, the entire system must be frost-protected. If the system is completely shut down in case of frost risk, it must be completely emptied of water.

### 6. Technical Specification

The EnergyStore range are suitable to hold temperatures in a pressurised heating system of up to 95°C. For all connections, main dimensions and all other data, please see the data sheet in this manual.

The maximum permissible system operation pressure must be limited to 3 bar, typically operating pressure is usually 1.5 bar. The maximum permissible operating temperature of the heat exchange coils are limited to 10 bar, typically operating pressure is usually 3 bar. A pressure regulating valve in some cases is used to obtain the correct pressure.

In order to achieve minimal heat losses in your EnergyStore, we have insulated the tank with 100mm High Density Seamless Polyurethane Insulation around the circumference and on the top. All the connections have a magnetic shroud to cover the joins on each tapping.

### 7. Servicing and Maintenance

To ensure a long and trouble free operation of our EnergyStore it is essential to carry out regular visual inspections, once per year should be adequate.

Important: Details of inspections should be entered in the service log at the back of this

manual detailing the inspection date and signature of the engineer. This information may be required to validate the warranty.

If any leaks or anything else needing repair should be discovered during the inspection, a qualified engineer should be contacted. If for any reason the EnergyStore is drained down for maintenance, adequate system inhibitor should be added. All safety valves must be easily accessible on the tank for regular checks by a competent person, this is usually done on an annual service.

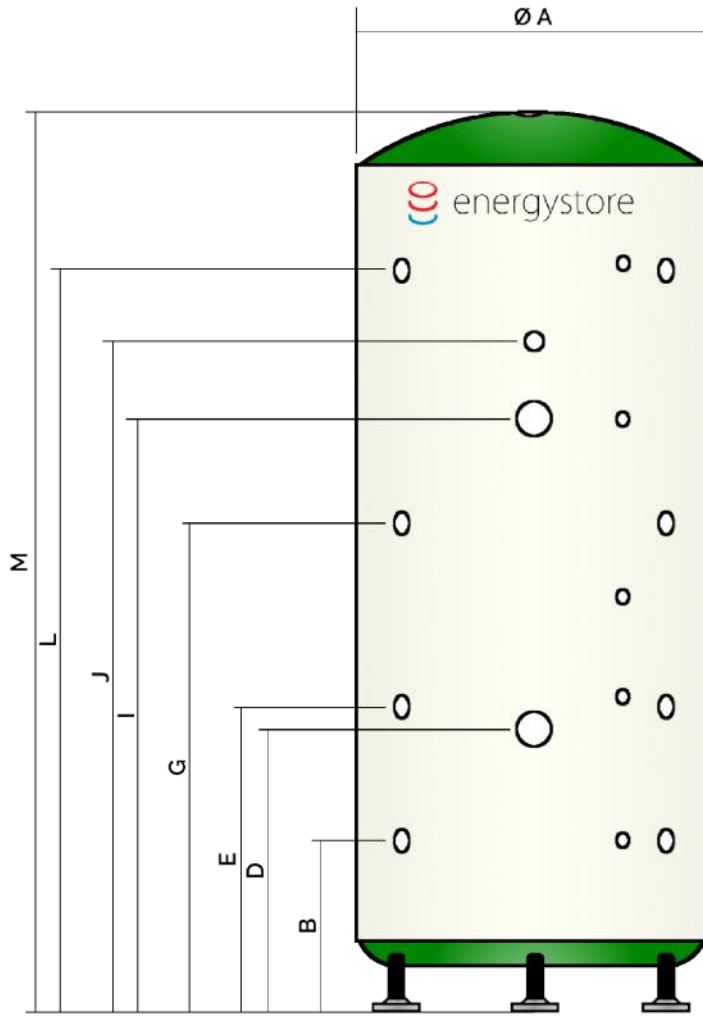
When the system is not used for long periods, the pressure and safety valves must be checked. In case of temperatures below freezing point, the entire system must be frost-protected. If the system is completely shut down in case of frost risk, it must be completely emptied of water.

## 8. Data sheet

### 8.i Common data

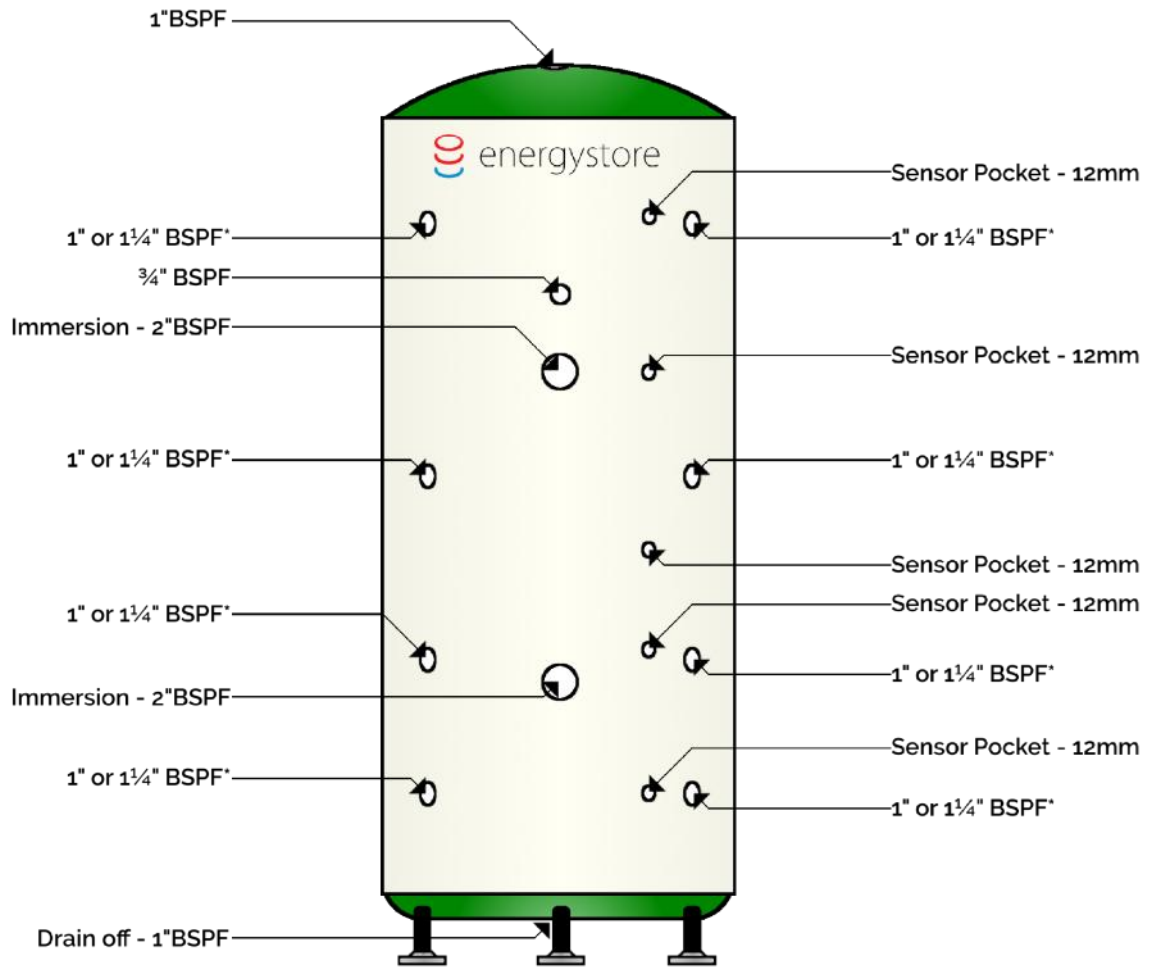
<b>Main cylinder body</b>		
Material	S275JR 3mm structural steel (up to 3,000l)	
Maximum working head	30	meters
<b>Insulation</b>		
Initial thermal K factor	0.023	W/mK
Thickness (standard)	100	mm
Connection ports	Mild steel	
Maximum operating temperature	95	°C
<b>Copper coils</b>		
Material	Finned copper	
Specific surface area	0.263	m <sup>2</sup> /m
Fin height	3.2	mm
Maximum working pressure	10	bar
Coil length	13.1	meters

8.ii Bio Prime



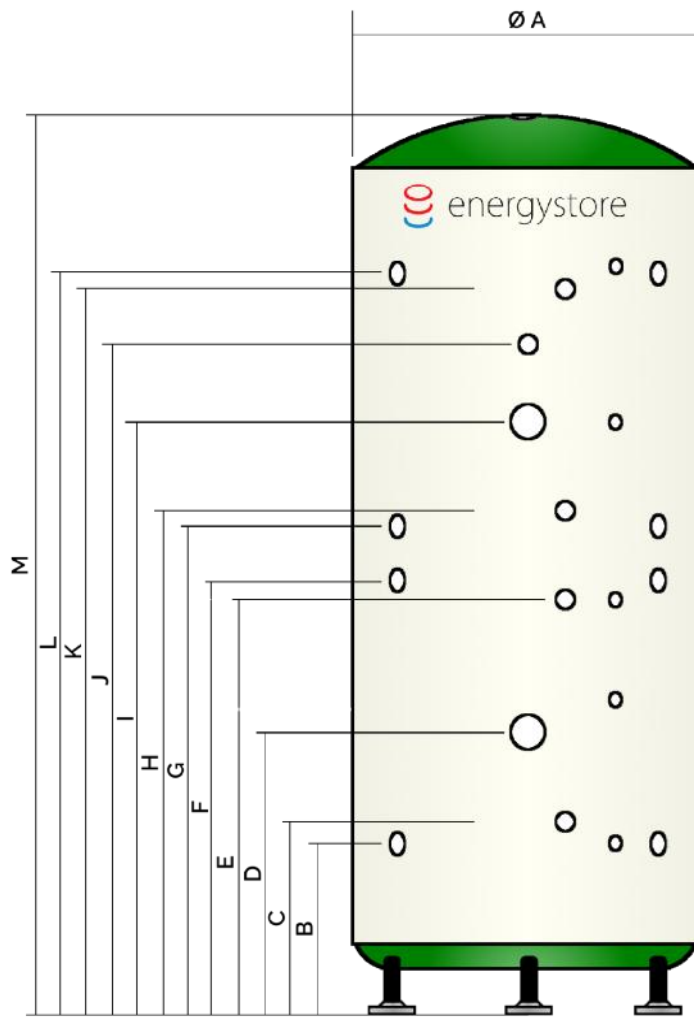
	300l	500l	750l	1,000l	1,500l	2,000l
Ø A (mm)	695	800	950	1050	1,250	1,400
B (mm)	357	376	405	425	450	475
D (mm)	613	632	661	681	706	731
E (mm)	663	682	711	731	756	781
G (mm)	1,078	1,097	1,126	1,146	1,171	1,196
I (mm)	1,313	1,332	1,361	1,381	1,406	1,431
J (mm)	1,487	1,507	1,536	1,555	1,580	1,605
L (mm)	1,649	1,668	1,697	1,717	1,742	1,767
M (mm)	1,975	2,014	2,072	2,111	2,161	2,211
Weight (kg)	135	170	210	230	300	330





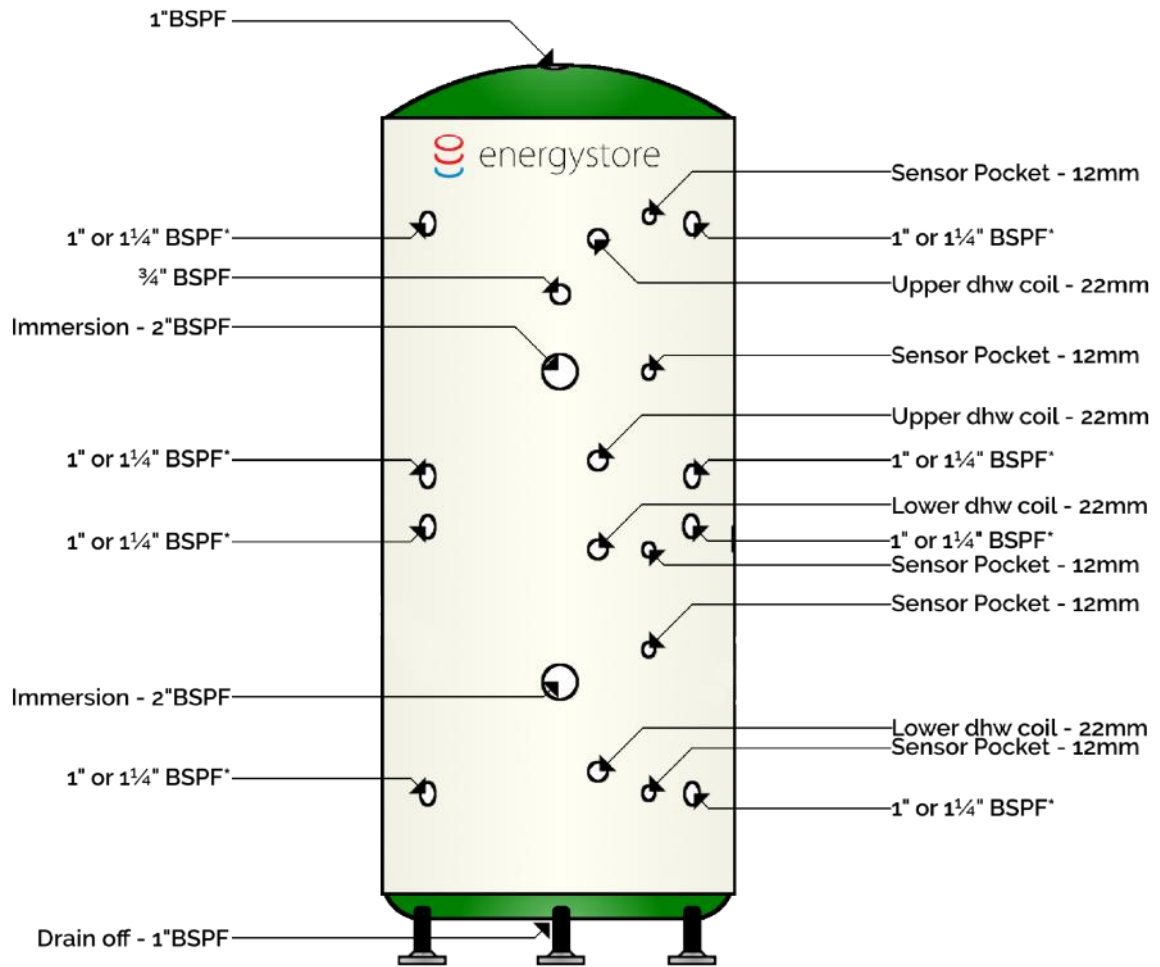
\* 1" up to 1,000l, 1¼" from 1,500l up

	300l	500l	750l	1,000l	1,500l	2,000l
Standing heat loss (W/h)	68	82	92	104	140	159
Energy efficiency class	B	B	B	B	C	C



8.iii Bio Duo

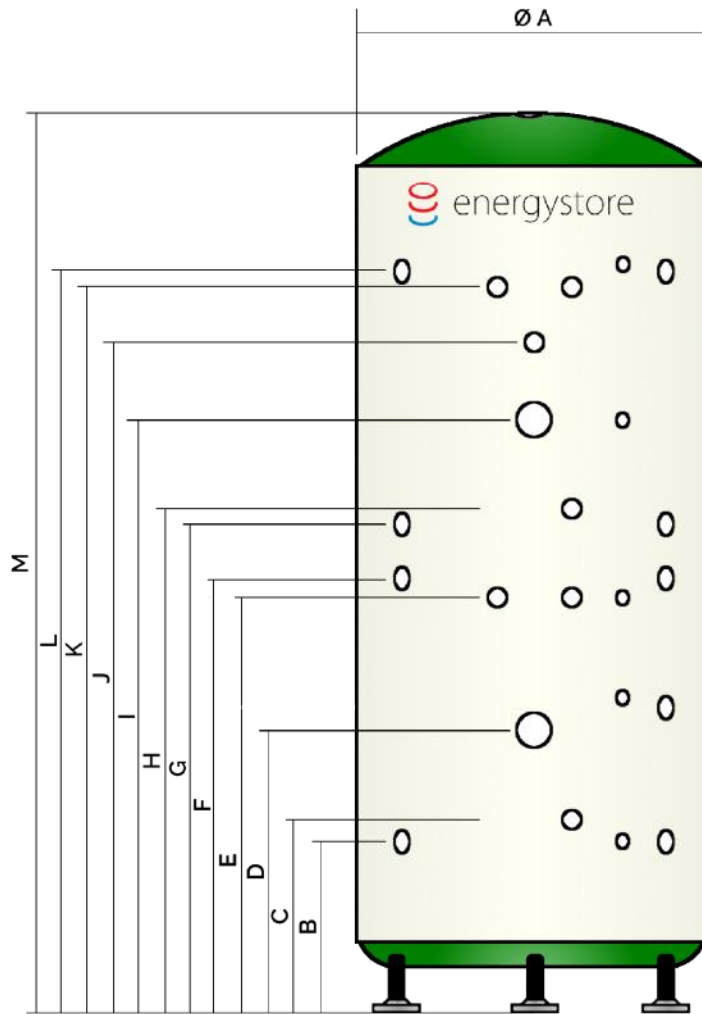
	300l	500l	750l	1,000l	1,500l	2,000l
Ø A (mm)	695	800	950	1,050	1,250	1,400
B (mm)	357	376	405	425	450	475
C (mm)	413	432	461	481	506	531
D (mm)	613	632	661	681	706	731
E (mm)	913	932	961	981	1,006	1,031
F (mm)	938	957	986	1006	1031	1056
G (mm)	1,078	1,097	1,126	1,146	1,171	1,196
H (mm)	1,113	1,132	1,161	1,181	1,206	1,231
I (mm)	1,313	1,332	1,361	1,381	1,406	1,431
J (mm)	1,487	1,507	1,536	1,555	1,580	1,605
K (mm)	1,613	1,632	1,661	1,681	1,706	1,731
L (mm)	1,649	1,668	1,697	1,717	1742	1,767
M (mm)	1,975	2,014	2,072	2,111	2,150	2,211
Weight (kg)	160	195	235	255	325	355



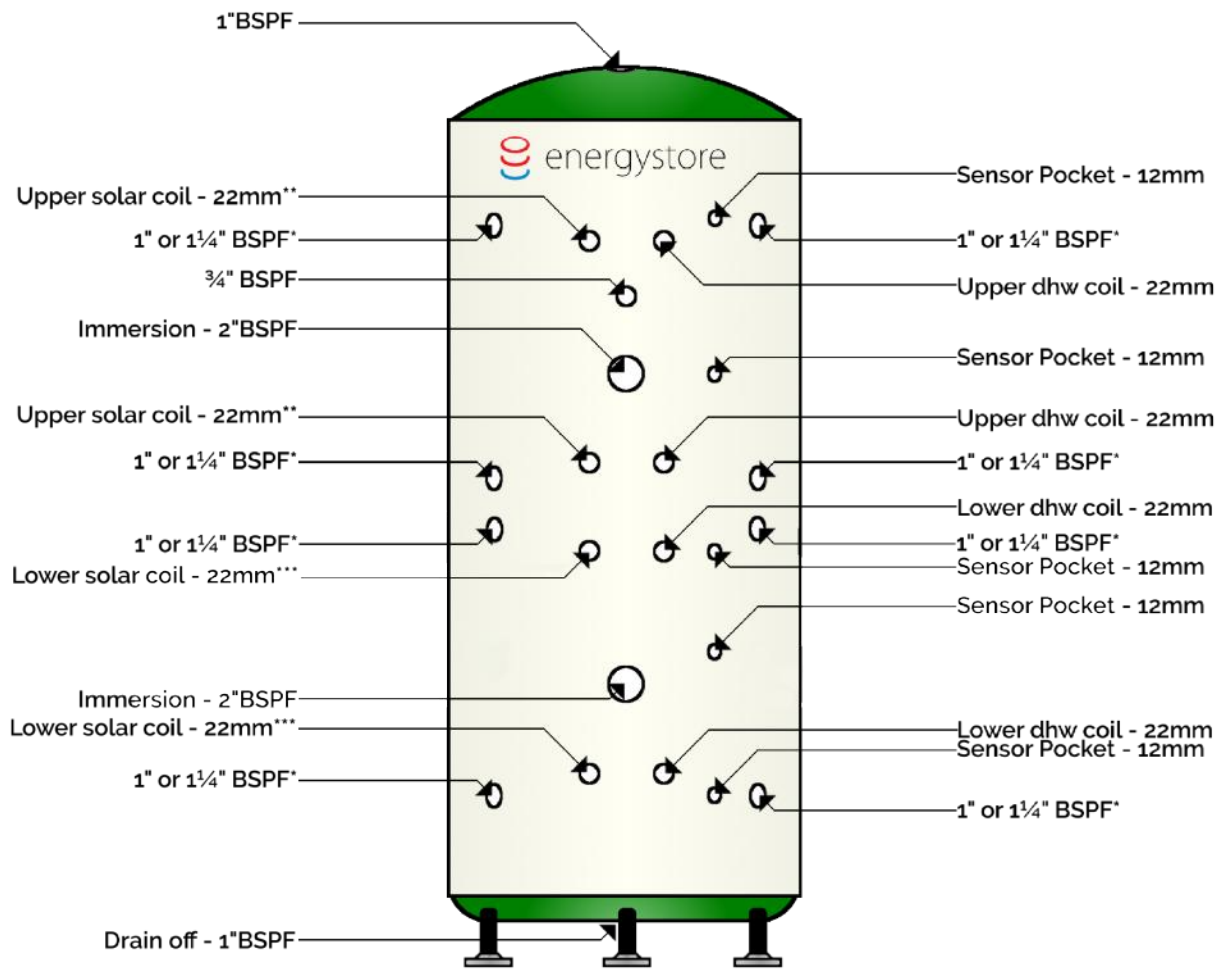
\* 1" up to 1,000l, 1 1/4" from 1,500l up

	300l	500l	750l	1,000l	1,500l	2,000l
Upper dhw coil length (m)	13.1	13.1	13.1	13.1	13.1	13.1
Lower dhw coil length (m)	13.1	13.1	13.1	13.1	13.1	13.1
Standing heat loss (W/h)	68	82	92	104	140	159
Energy efficiency class	B	B	B	B	C	C

8.iv Bio Quattro



	300l	500l	750l	1,000l	1,500l	2,000l
Ø A (mm)	695	800	950	1,050	1,250	1,400
B (mm)	357	376	405	425	450	475
C (mm)	413	432	461	481	506	531
D (mm)	613	632	661	681	706	731
E (mm)	913	932	961	981	1,006	1,031
F (mm)	938	957	986	1006	1031	1056
G (mm)	1,078	1,097	1,126	1,146	1,171	1,196
H (mm)	1,113	1,132	1,161	1,181	1,206	1,231
I (mm)	1,313	1,332	1,361	1,381	1,406	1,431
J (mm)	1,487	1,507	1,536	1,555	1,580	1,605
K (mm)	1,613	1,632	1,661	1,681	1,706	1,731
L (mm)	1,649	1,668	1,697	1,717	1,742	1,767
M (mm)	1,975	2,014	2,072	2,111	2,150	2,211
Weight (kg)	160	200	250	300	345	375



\* 1" up to 1,000l, 1 1/4" from 1,500l up. \* 300Ltr has lower solar coil only.

	300l	500l	750l	1,000l	1,500l	2,000l
Upper dhw coil length (m)	13.1	13.1	13.1	13.1	13.1	13.1
Lower dhw coil length (m)	13.1	13.1	13.1	13.1	13.1	13.1
Upper solar coil length (m)	n/a	13.1	13.1	13.1	13.1	13.1
Lower solar coil length (m)	8	8	13.1	13.1	13.1	13.1
Upper solar coil surface area (m <sup>2</sup> )	n/a	3.45	3.45	3.45	3.45	3.45
Lower solar coil surface area (m <sup>2</sup> )	2.1	2.1	3.45	3.45	3.45	3.45
Standing heat loss (W/h)	68	82	92	104	140	159
Energy efficiency class	B	B	B	B	C	C

## 9. Guarantee and Warranty

All EnergyStore tanks come with a guarantee as outlined below:

- Guarantees begin from the date of purchase.
- The body of the tank including the polyurethane insulation layer is guaranteed against defective material for a period of 2 years.

For the Guarantee and warranty to be validated the following will need to of been applied:

- The EnergyStore must be installed and commissioned by a qualified and competent installer in accordance with current building regulations.
- Maintained and serviced according to our recommendations.
- The installer must follow operating and installation instructions.
- Commissioning form must be completed and returned to the supplier.

## 10. Commissioning Checklist

This Commissioning Checklist is to be completed in full by the competent person who commissioned the thermal store as a means of demonstrating compliance with the appropriate Building Regulations and then handed to the customer to keep for future reference.

Failure to install and commission this equipment to the manufacturer's instructions may invalidate the warranty but does not affect statutory rights.

Please leave the original with the customer, retain a copy and forward a copy to [sales@firepower.co.uk](mailto:sales@firepower.co.uk)

THE CUSTOMER	
Customer's name	
Company name (if applicable)	
Address	
Tel	
Email	

COMISSIONED BY	
Name	
Company	
Company address	
Company tel	
Company email	
Competent person scheme	
Registration number	

<b>THE THERMAL STORE</b>	
Make	Energystore
Model	
Solar enabled?	
Volume	
Serial number	

<b>FOR PRESSURISED SYSTEMS</b>		
Has the expansion vessel or internal air space been checked?	Yes	No
Has the expansion vessel pre-fill pressure been adjusted?	Yes	No
Has the tundish and discharge pipework have been connected and terminated to Part G of the Building Regulations?	Yes	No
Has a combined temperature and pressure relief valve and expansion valve been fitted and discharge tested?	Yes	No
<b>FOR OPEN VENTED SYSTEMS</b>		
Has an appropriately sized feed and expansion tank been fitted?	Yes	No
If a manual woodburning boiler has been fitted is the tank high-temperature rated?	Yes	No
Please confirm there are no shut-off valves on the feed & expansion pipe, nor the vent?	Yes	No
<b>ALL SYSTEMS</b>		
Has the pipe work been insulated up to 1 metre from the tank?	Yes	No
Time and temperature controls have been fitted in compliance with Part L of the Building Regulations?	Yes	No
What is the maximum DHW set temperature?		
If connecting to an existing system has it been flushed and cleaned?	Yes	No
If the heating system is zoned how many zones are there?		
Has a debris collector been fitted?	Yes	No
Has inhibitor been added to the system?	Yes	No
Do all energy sources have a cut out device fitted?	Yes	No
Where is the pressure reducing valve situated (if fitted)?		
What is the pressure reducing valve setting?		
What is the incoming cold water pressure?		
If in a hard water area a scale reducer should be fitted before the heat exchange coils. Please confirm?	Yes	No
Make and model of scale reducer		



<b>CONFIRMATION</b>	
The hot water system complies with the appropriate Building Regulations	
The system has been installed and commissioned in accordance with the manufacturer's instructions	
The system has been brought up to full operating temperature and the controls and fittings tested to confirm their correct operation	
The system controls have been demonstrated to and understood by the customer	
Date	
Commissioning engineer's signature	
Customer's signature	

## 11. Service log & Changelist

		Changes made, notes, recommendations
Date		
Engineer's name		
Company name		
Contact details		

		Changes made, notes, recommendations
Date		
Engineer's name		
Company name		
Contact details		

		Changes made, notes, recommendations
Date		
Engineer's name		
Company name		
Contact details		

		Changes made, notes, recommendations
Date		
Engineer's name		
Company name		
Contact details		

		Changes made, notes, recommendations
Date		
Engineer's name		
Company name		
Contact details		

		Changes made, notes, recommendations
Date		
Engineer's name		
Company name		
Contact details		

		Changes made, notes, recommendations
Date		
Engineer's name		
Company name		
Contact details		

		Changes made, notes, recommendations
Date		
Engineer's name		
Company name		
Contact details		



## Thermal Stores for **Renewables**

by Firepower, Flightway, Dunkeswell, Honiton, Devon EX14 4RD

[www.firepower.co.uk](http://www.firepower.co.uk), +44(0) 844 332 0155, [info@firepower.co.uk](mailto:info@firepower.co.uk)