



Commercial Indirect / Multi Energy / Solar Unvented Water Heaters Installation & Maintenance Manual



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IRELAND



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UNITED KINGDOM



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BSS-COM-INS-005-10-2017

Warranty Card

Please register your product online

Please leave this product guide with the user following installation



MUST BE COMPLETED AND THEN REGISTERED ONLINE TO COMPLETE WARRANTY

Homeowner Name

Installer Name

Address

Address

Contact Tel.

Contact Tel.

Contact Email

Contact Email

Product	Product Installed	Serial Number	Installation Date
Cylinder	<input type="radio"/>		Located on cylinder badge

I accept the terms and conditions in the installation manual

BSS Product Warranty Terms & Conditions

Lifetime* Warranty

This Lifetime* Warranty applies in relation to the following BOSS™ Commercial products:

- BOSS™ cylinders
- BOSS™ calorifier

The BOSS™ Commercial Lifetime* Warranty

The BOSS™ Commercial Lifetime* Warranty covers BOSS™ Commercial cylinders and calorifiers installed in non-domestic properties** against corrosion for a period of 25 years from the date of purchase.

All other components, including valves, expansion vessels, immersion heaters, fittings and controls are covered by a two year warranty from the date of purchase of the BOSS™ Commercial product which includes one year's parts and labour and one year parts only.

These warranties are valid provided that

- The BOSS™ product has been installed by a competent installer in accordance with the instructions contained in the installation instructions and in compliance with all relevant laws, guidance, codes of practice and regulations in force at the time of installation.
- The BOSS™ product has not been modified or tampered with in any way, other than by a BSS or BSS Customer Support approved engineer.
- The BOSS™ product has not been subject to damage by scale.
- The BOSS™ product and any part or parts of the BOSS™ product (whether factory fitted or otherwise) have not been repaired or replaced other than by a qualified engineer and any replacement parts used on the BOSS™ product are authorised BOSS™ spare parts.
- The factory fitted temperature and pressure relief valve have not been tampered with or removed.
- The BOSS™ product has not been subject to misuse or neglect.
- The BOSS™ product has only been used for the storage of wholesome water. Should another substance be put through the product, the warranty will be invalid unless it is part of a disinfectant procedure carried out in accordance with BS EN 806.

- The BOSS™ product has not been subjected to frost or freezing temperatures (except for solar collectors which are designed for external installation).
 - The Benchmark™ commissioning checklist service record, included in the BOSS™ installation instructions has been completed.
 - Regular maintenance has been carried out by a competent person, an approved engineer from BSS or any other part of the BSS Group BSS Customer Support approved engineer in accordance with the requirements set out in the maintenance section of the installation instructions.
 - Access is available, at reasonable times and upon reasonable notice, to the BOSS™ product to allow for any inspection repair or replacement.
 - The product is registered within 60 days of purchase. This can be done by telephone, online or by using the registration form provided with the product.
 - Evidence of purchase (for example a receipt or delivery note) and date of supply is submitted when making a claim.
 - The BOSS™ product has not been affected by any cause beyond our reasonable control including, without limitation: an act of God, explosion, flood, fire or accident; war or civil disturbance; strike, industrial action or stoppages of work; any form of government intervention; a third party act or omission including theft or malicious damage; failure by you to give us a correct delivery address or notify us of any change of address.
- If any of the following situations occur, the BOSS™ Commercial Lifetime* Warranty* will not apply:**
- Any wilful or accidental damage caused by your negligence
 - Damage caused as a result of scale.
 - Installation not in line with the installer and user manuals provided,
 - Failure to comply with installation instructions (whether oral or in writing),
 - Misuse of the BOSS™ product or alteration of the BOSS™ product not in accordance with the requirements set out above.
 - Defects which are not reported to us outside of the warranty period

- Any third party repair or replacement costs unless those costs have been agreed and authorised by BSS Customer Support or BSS in writing prior to incurring the costs.
- In relation to the BOSS™ Commercial Lifetime* Warranty only, we will not be liable for any indirect and consequential losses and any loss of earnings, loss of business, or losses in relation to stress and inconvenience, howsoever caused.

Annual service

In non-domestic properties Lifetime is a period of 25 years from the date of purchase by the original owner and is transferable to any new owner of the property.

All BOSS™ warranties are conditional on the installation being carried out in accordance with the installation instructions supplied with the product. These warranties do not affect your statutory rights. Full terms and conditions of these warranty packages are available on request or via www.bssindustrial.co.uk.

Installed by

Installer Name	<input type="text"/>
Address	<input type="text"/>
Contact Tel.	<input type="text"/>
Completion Date	<input type="text"/>

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Introduction

The instructions are an integral part of the appliance and must be given to the end user on completion of the installation in order to comply with the current regulation.

It is important to carefully read the manual to understand all the information to enable safe installation, use and servicing. These instructions consist of details for installation, servicing, fault finding and replacement of parts for the cylinder purchased.

BSS will not accept any liability in the event of damage for not complying with the guidance in this instruction manual.

The instructions for this installation manual apply to the range of **BSS BOSS™ Unvented Cylinders**.

Safety is paramount when installing unvented hot water systems and the following instructions must be adhered to:

- Only certified competent installers can install, commission and service the equipment supplied.
- The cylinder must be used for potable hot water only. Any other applications will be considered incorrect use and BSS will not be held liable for any losses resulting from such use.
- All installation and maintenance instructions must be observed to ensure the correct operation of the equipment.
- The electric immersion must not be switched on unless the cylinder is completely full of water.
- Domestic hot water may be stored at temperatures exceeding 60°C. Preventative measures should be put in place to negate the possibility of scalding.
- A maintenance schedule should be put in place with a competent person to service the equipment annually to comply with the warranty conditions.
- When servicing the system the mains supply to the cylinder should be isolated.
- Only genuine spare parts should be used. A full list of items with relevant codes can be found on page 13.

The installation must be carried out by a person competent to install unvented hot water systems. The installation must be carried out in accordance with the following recommendations:

All current Building Regulations issued by the Department of the Environment, i.e. Building Regulation G3 (England and Wales), Technical Standard P3 (Scotland) or Building Regulation P5 (Northern Ireland) and the Water Fitting Regulations (England and Wales) or Water Byelaws (Scotland). The installation should also be in accordance with the following British Standard Codes of Practice:

BS 5449:1990 Forced circulation hot water systems

BS 5546:2000 Installation of hot water supplies for domestic purposes

BS 5918:1989 Solar heating systems for domestic hot water

BS 6700:2006 Design, installation, testing and maintenance of services supplying water.

Failure to install this appliance correctly could lead to prosecution and will invalidate the guarantee. It is in your own interest and that of safety to ensure that the law is complied with.

Please take care when handling a packaged BSS Commercial cylinder. The unit is heavy and must only be moved manually within safe working practices. If the unit is to be stored before installation, it must be placed on a secure, level surface and in a dry, frost free environment.

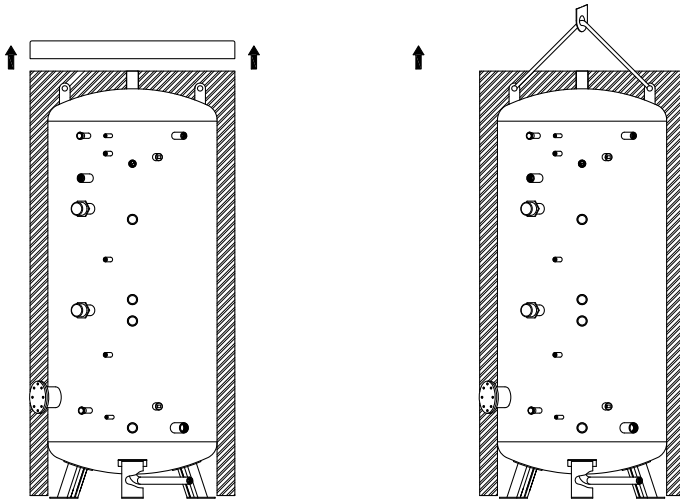
Precautions to be carried out prior to commencement of work

1. Tidy area ensuring there is safe access and egress to installation place, free from trip hazards.
2. Be aware of other people who may be in the area
3. Operate any machinery in accordance with training and operating instructions
4. Visually inspect the equipment prior to use, do not use damaged equipment.
5. Safe working practices are adopted for manual handling of appliances/parts
6. Correct PPE to be worn.

The BOSS™ Commercial cylinder must be vertically floor mounted. It can be placed anywhere convenient provided the discharge pipe(s) from its safety valves can be correctly installed. Areas that are subject to freezing must be avoided. Ensure that the floor is level and of sufficient strength to support the “full” weight of the unit when filled with water. Pipe runs should be kept as short as possible for maximum economy. Access to associated controls, immersion heaters and indirect controls should be possible for servicing and maintenance of the system.

To aid installation, the BOSS™ Commercial cylinder is provided with lifting points located at the top of the unit. To access the lifting eyes please remove the red outlet grommet and the top cover.

Lifting



Handling

Care must be taken when transporting, storing and installing the equipment:

- At least two people should lift the cylinder to prevent injuries.
- The cylinder must be stored in a dry area and must never be set down hard during handling.
- Packaging should only be removed at the installation location.
- The cylinder must be installed on a level or with the required load bearing capability. Installation, servicing, maintenance and repair must be carried out by a competent person.
- All electrical wiring must be carried out by a qualified electrician and be installed in accordance with current I.E.E Wiring Regulations.
- A lack of safety devices can lead to potentially fatal injuries, all necessary safety devices must be installed correctly in the system. The use of an electric immersion may lead to the build up of electrical potential in the water. This can in turn cause corrosion of the immersion. To prevent this, ensure the immersion heater, and the hot and cold pipework are correctly bonded and connected to the earth line.
- If plastic pipes are used they must be approved temperature resistant to 95°C at a pressure of 10bar.

A thermostatic mixer should be installed in the system to prevent the risk of scalding. If there are leaks found in the system, shut off the cold water stop valve from the main supply and contact a competent person immediately.

Please take care when handling a packaged BOSS™ Commercial cylinder. The unit is heavy and must only be moved manually within safe working practices. If the unit is to be stored before installation, it must be placed on a secure, level surface and in a dry, frost free environment.

What Is Benchmark?

Benchmark places responsibilities on both manufacturers and installers. The purpose is to ensure that customers are provided with the correct equipment for their needs, that it is installed, commissioned and serviced in accordance with the manufacturer's instructions by competent persons and that it meets the requirements of the appropriate Building Regulations.

The Benchmark Checklist can be used to demonstrate compliance with Building Regulations and should be provided to the customer for future reference. Installers are required to carry out installation, commissioning and servicing work in accordance with the Benchmark Code of Practice which is available from the Heating and Hot Water Industry Council who manage and promote the scheme.

Visit www.centralheating.co.uk

Water Supply

The performance of any unvented system is only as good as the mains water supply available. To this effect the maximum possible water demand should be assessed, with the knowledge that the mains supplies both hot and cold services simultaneously. The water heater itself operates at a pressure of 3bar or 6bar depending on which model specified, controlled by the inlet control set, and is capable of delivering over 50 litres per minute. The high quality inlet control set has been designed to make the most of the low rates available.

The water supply should be checked to ensure it can meet these requirements. If necessary, consult the local water authority regarding the likely pressure and flow rate availability.

Consideration should be given to upgrading existing 1/2" (15mm) cold mains pipework to a larger size if the recommended minimum pressure / flow rate is not being achieved. BSS recommend that primary pipework used has a minimum diameter of 22mm to ensure low pressure loss.



A high static (no flow) mains pressure is no guarantee of good flow availability. In a commercial installation 1.5bar and 25ltr/min should be regarded as the minimum. The maximum mains pressure that the inlet control set can cope with is 10bar.

Change Of Water Supply

The changing or alternating from one water supply to another can have a detrimental effect on the operation and/or life expectation of the water heater storage cylinder, pressure temperature relief valve and heating unit.

Where there is a changeover from one water supply to another, e.g. a rainwater tank supply, bore water supply, desalinated water supply, public reticulated water supply or water brought in from another supply, then water chemistry information should be sought from the supplier or it should be tested to ensure the water supply meets the requirements given in these guidelines for the BSS warranty to apply.

Water Chemistry

This water heater must be installed in accordance with this advice to be covered by the BSS warranty. This water heater is manufactured to suit the water conditions of most public reticulated water supplies. However, there are some known water chemistries which can have detrimental effects on the water heater and its operation and/or life expectancy. If you are unsure of your water chemistry, you may be able to obtain information from your local water supply authority. We recommend not to use water softener, however if it is used the water is required to be kept at potable standards. This water heater should only be connected to a water supply which complies with these guidelines for the BSS warranty to apply.

Water Chemistry Levels Affecting Warranty

The BSS warranty of this water heater will not cover resultant faults on components including the storage cylinder where water stored in the storage cylinder exceeds at any time any of the following levels:

Components	Maximum Permitted Levels
Total Dissolved Solids	600 mg/litre
Total Hardness	200 mg/litre
Chloride	300 mg/litre
Magnesium	10 mg/litre
Calcium	20 mg/litre
Sodium	150 mg/litre
Iron	1 mg/litre
Maximum pH	9.5
Minimum pH	6.5

Total Dissolved Solids (TDS)

Some water analysis reports may state the conductivity of the water rather than the level of total dissolved solids. Conductivity, measured in microsiemens per centimetre ($\mu\text{S}/\text{cm}$), is directly proportional to the TDS content of the water. TDS, in mg/L, is approximately 70% of the conductivity in $\mu\text{S}/\text{cm}$.

The BSS warranty will not cover resultant faults to the storage cylinder if this water heater is connected at anytime to a water supply where the TDS content of the water exceeds 600 mg/L. In locations where TDS approaches 600 mg/L, e.g. due to sediment, we strongly recommend fitting an appropriate filter to ensure water entering or in the water heater does not exceed this level at any time i.e. due to sediment build up.

Features Of The Unvented Cylinder

- Made from Duplex Stainless Steel for excellent corrosion resistance.
- Strong rust-proofed steel case.
- Insulation is by means of an approved CFC/HCFC free polyurethane foam with an ozone depletion factor of zero.
- Available in a variety of sizes to suit - 300L, 400L, 500L, 800L, 1000L, 1250L and 1500 litres.
- All models including Solar models are available in Twin or Triple versions supplied complete with all the necessary safety and control devices needed to connect to cold water mains
- All safety and control devices are pre-set.
- High quality controls selected that combine high flow rate performance with minimum pressure drop which gives fantastic performance in all areas, with great improvements in areas with poor water pressure.

Spare Parts List



34330841



34331160



34330830



34330863



34330852



34330874
34330885



34331116
34331127



34331137



34331149



34330896
34330904



34330915
34330926



TEMP = 34331182
PRESS = 34331193



34330948
34330937
34330959
34331171



19711233 19711436
19711244 19711266
19711255



19711277
19711288
19711447
19711307

Unvented Kit Checklist

Capacity (ltr)	300	400	500	800	1000	1250	1500
Press. Reducing Valve	34330852			34330874		34330885	
Pressure Relief Valve	8 / 10 bar						
Single Check Valve	1"			1.25"		1.5"	
Expansion Vessel 3bar	1971 1255	1971 1436	1971 1266	1971 1277	1971 1288	19711447	
Expansion Vessel 6bar	1971 1436	1971 1266	1971 1277	1971 1288	1971 1447	19711307	
T&P Valve - Multi Energy	34331127					34331137	
T&P Valve - Indirect	34331127					34331137	
T&P Valve - Solar	34331127					34331137	
Tundish	34330959					34331171	
Temperature Gauge				34331182			
Pressure Gauge				34331193			
Inspection Hatch	Must be specified separately						
Dual Cylinder Stat*	34330830					34330841	
High Limit Stat**				34331160			
2-port Mot. Valve*	34330904					3433 0915	34330926
Drain Valve	Not included as standard						
De-strat Connections	•	•	•	•	•	•	•
De-strat Pump Set	Not included as standard						

* Indirect & Solar models only

** Solar models only

Immersion	Code	Immersion	Code
3kW 1 Phase	34330701	24kW 3 Phase	34330767
6kW 1 Phase	34330712	30kW 3 Phase	34330778
6kW 3 Phase	34330723	36kW 3 Phase	34330789
9kW 3 Phase	34330734	45kW 3 Phase	34330808
12kW 3 Phase	34330745	54kW 3 Phase	34330819
18kW 3 Phase	34330756		

ErP Product Fiche Information

Nominal Capacity (ltr)	300	400	500	600	800	1000	1250	1500
Multi Energy								
Storage volume V in ltr	289.5	391	497	599	766	1097	1231	1410
Standing Loss (W)	92	102	115	119	121	124	135	160
Energy Efficiency Class	C	C	C	C	C	C	C	C

Nominal Capacity (ltr)	300	400	500	600	800	1000	1250	1500
Indirect								
Storage volume V in ltr	283	379	485	587	747	1079	1201	1350
Standing Loss (W)	92	102	115	119	121	124	135	160
Energy Efficiency Class	C	C	C	C	C	C	C	C

Nominal Capacity (ltr)	300	400	500	600	800	1000	1250	1500
Solar								
Storage volume V in ltr	278.5	377	483	574	732	1063	1185	1350
Standing Loss (W)	92	102	115	119	121	124	135	160
Energy Efficiency Class	C	C	C	C	C	C	C	C

Technical Data

Indirect models in conformance with BS EN 12897:2016

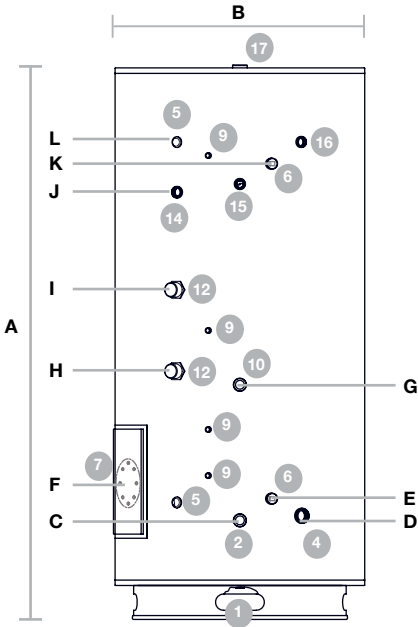
	3bar Kit	6bar Kit
Maximum mains water supply pressure	2.5MPa (25 bar)	
Operating pressure/PRV	0.6MPa (6. bar)	1.0MPa (10 bar)
Expansion vessel pressure	1.0MPa (10 bar max)	1.6MPa (16 bar max)
Expansion relief valve setting	0.6MPa (6 bar)	0.8MPa (8 bar)
Maximum design pressure	0.3MPa (3 bar)	0.6MPa (6 bar)
T&P relief valve setting	0.7MPa/90 °C (7 bar)	1.0MPa/90 °C (10 bar)
Primary coil operating pressure (max)	0.6MPa (6 bar)	0.6MPa (6 bar)
Imm. heater rating (a.c. supply only) 1PH	6kW & 9kW 50/60Hz ~	6kW & 9kW 50/60Hz ~
Imm. heater rating (a.c. supply only) 3PH	12kW - 54kW 50/60Hz ~	12kW - 54kW 50/60Hz ~
Storage weights (empty and full)	See Specification Tables	
Indirect coil ratings	See Specification Tables	
Pressure drop across the indirect coils	See Specification Tables	
Coil surface area	See Specification Tables	



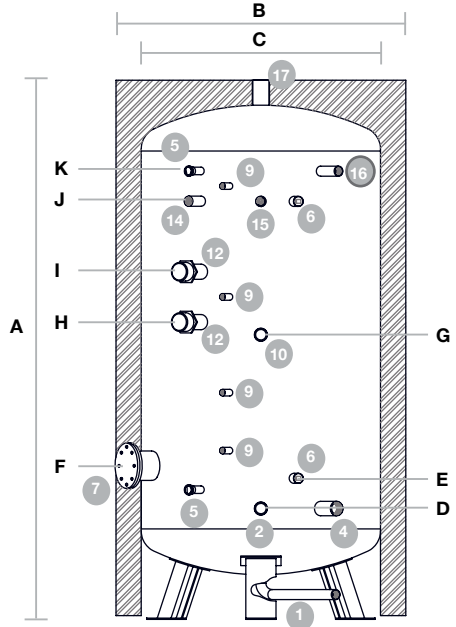
The pre-charge level of expansion vessel supplied must always be checked to ensure it is at the operating pressure of the system (3 or 6 bar)

Indirect Technical Specification

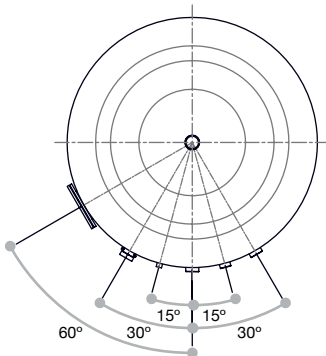
300 - 800 Ltr



1000 - 1500 Ltr



300 - 1500 Ltr



- 1 Drain
- 2 Boiler Return
- 3 Solar Return
- 4 Cold Water Inlet
- 5 Temperature Gauge (fact. fitted)
- 6 Heat Source Flow&Return / D-strat (28mm)
- 7 Inspection Hatch c/w Plastic Cover
- 8 Dry Sensor Pocket
- 9 Aquastat Pocket
- 10 Boiler Flow
- 11 Solar Flow
- 12 Titanium Immersion (fact. fitted)
- 13 Titanium Immersion BOSS™ (blanked)
- 14 Secondary Return
- 15 Pressure Gauge
- 16 T&P Relief Valve
- 17 Hot Water Draw Off



Inspection port must be ordered separately. Only standard on Multi Energy cylinders over 1000L capacity.

Connection Sizes & Safety		300	400	500	600	800	1000	1250	1500
Hot & Cold Conn. Ø BSP F (")		1.5	1.5	1.5	1.5	2	2	2	2
Coil Connection Ø BSP F (")		1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Secondary Return Ø BSP F (")		1.25	1.25	1.25	1.25	1.25	1.25	1.5	1.5
T&P Connection Ø BSP F (")		0.75	0.75	0.75	0.75	0.75	0.75	1	1
3bar	T&P Press. Set. (bar)	7	7	7	7	7	7	7	7
	Exp. Relief Set. (bar)	6	6	6	6	6	6	6	6
6bar	T&P Press. Set. (bar)	10	10	10	10	10	10	10	10
	Exp. Relief Set. (bar)	8	8	8	8	8	8	8	8

Dimensions	300	400	500	600	800	1000	1250	1500
Cylinder Height (A, mm)	1670	1670	2030	2380	2050	2170	2200	2400
Cylinder Diameter (B, mm)	620	710	710	710	920	1100	1150	1150
Connection Height C (mm)	325	340	340	340	395	900	950	950
Connection Height D (mm)	335	350	350	350	415	425	410	360
Connection Height E (mm)	475	440	440	440	520	525	530	480
Connection Height F (mm)	500	490	490	490	560	580	580	530
Connection Height G (mm)	765	750	960	960	890	860	1010	980
Connection Height H (mm)	815	800	1010	1010	955	930	1060	1040
Connection Height I (mm)	995	980	1200	1510	1255	1235	1260	1260
Connection Height J (mm)	1175	1190	1550	1840	1590	1565	1630	1830
Connection Height K (mm)	1285	1300	1660	2000	1695	1700	1755	1950
Connection Height L (mm)	1430	1390	1750	2090	1785	1798	-	-

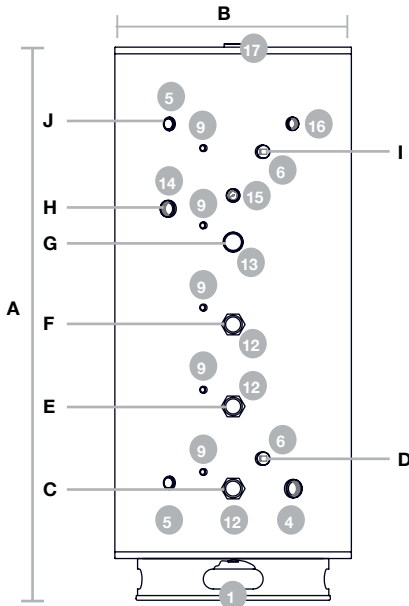
Performance	300	400	500	600	800	1000	1250	1500
Heat Up Time ΔT 50°C (min)*	23	26	30	39	48	62	64	74
Hot Water Capacity (ltr)	244.6	365	471	573	727	1059	1168	1308
1° Re-Heat time (70% draw off) 60L/min	17	20	27	34	31	39	40	51
2° Re-Heat time (70% draw off) 30L/min	24	28	37	44	48	57	61	73
3° Re-Heat time (70% draw off) 15L/min	36	41	54	71	78	88	110	131
Weight Empty (kg)	82	87	104	136	220	230	235	267
Weight Full (kg)	365	466	589	723	967	1309	1436	1617
Prim. Coil Surf. Area (m ²)	1.54	1.97	1.97	1.97	2.86	2.86	4.73	4.73
Prim. Coil Rating @ 60L/min (kW)	49	57	57	57	73	73	98	98
Prim. Coil Rating @ 30L/min (kW)	35.6	42	42	42	50	50	66	66
Prim. Coil Rating @ 15L/min (kW)	23	29	29	29	31	31	35.12	35.12
Prim. Coil Press. Drop @ 15L/hr (mbar)	21	29	29	29	18	18	16	16
Prim. Coil Press. Drop @ 30L/hr (mbar)	32	38	38	38	75	75	55	55
Prim. Coil Press. Drop @ 60L/hr (mbar)	290	310	310	310	430	430	240	240
Cont. Output @ 60°C ΔT 50°C (L/hr)	685	765	765	765	829	829	1015	1015

* Primary flow rates at 30L/m are based on a flow temperature of 80°C ± 2°C

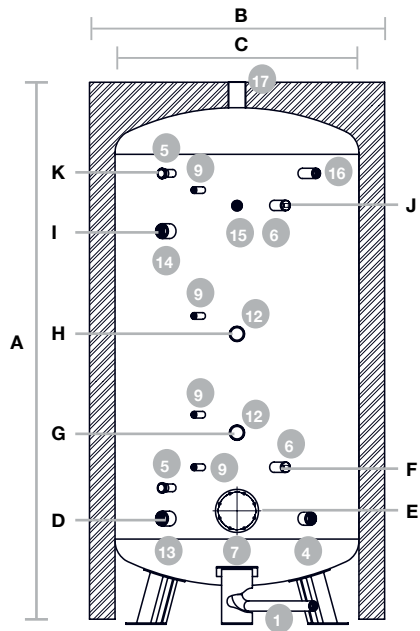
Testing is carried out to BS EN12897:2006

Multi Energy Technical Specification

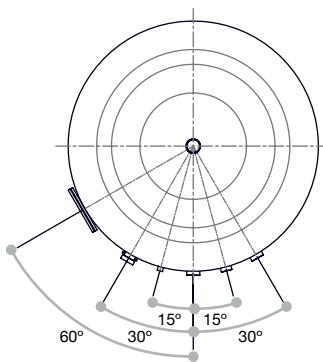
300 - 800 Ltr



1000-1500 Ltr



300 - 1500 Ltr



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Inspection port must be ordered separately. Only standard on Multi Energy cylinders over 1000L capacity.

Connection Sizes & Safety		300	400	500	600	800	1000	1250	1500
Hot & Cold Conn. Ø BSP F (")		1.5	1.5	1.5	1.5	2	2	2	2
Coil Connection Ø BSP F (")		1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Secondary Return Ø BSP F (")		1.25	1.25	1.25	1.25	1.25	1.25	1.5	1.5
T&P Connection Ø BSP F (")		1	1	1	1	1	1.25	1.25	1.25
3bar	T&P Press. Set. (bar)	7	7	7	7	7	7	7	7
	Exp. Relief Set. (bar)	6	6	6	6	6	6	6	6
6bar	T&P Press. Set. (bar)	10	10	10	10	10	10	10	10
	Exp. Relief Set. (bar)	8	8	8	8	8	8	8	8

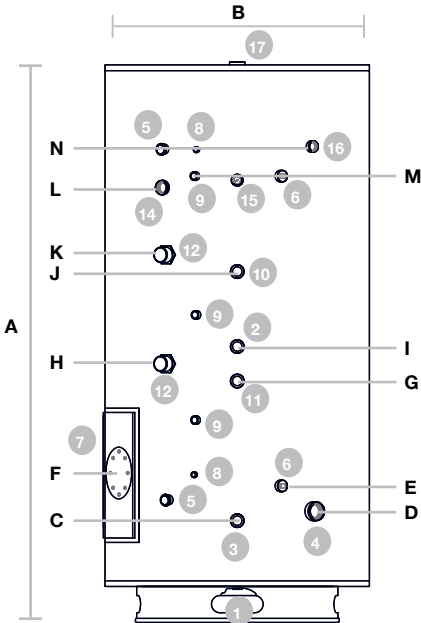
Dimensions	300	400	500	600	800	1000	1250	1500
Cylinder Height (A, mm)	1670	1670	2030	2380	2050	2170	2200	2400
Cylinder Diameter (B, mm)	620	710	710	710	920	1100	1150	1150
Connection Height C (mm)	335	350	350	350	445	900	950	950
Connection Height D (mm)	425	440	440	440	570	515	410	410
Connection Height E (mm)	580	590	665	745	760	625	440	440
Connection Height F (mm)	830	830	975	1335	1070	845	550	550
Connection Height G (mm)	1075	1090	1290	1525	1385	1215	745	745
Connection Height H (mm)	1175	1190	1550	1840	1640	1615	1130	1255
Connection Height I (mm)	1350	1300	1660	2000	1745	1750	1530	1780
Connection Height J (mm)	1430	1390	1750	2090	1845	1850	1630	1880
Connection Height K (mm)	-	-	-	-	-	-	1755	2005

Performance		300	400	500	600	800	1000	1250	1500
Quantity Of Factory Fitted Immersions		3	3	3	3	3	2	2	2
Rating Of Factory Fitted Immersions (kW/V)		6/240	6/240	6/240	6/240	6/240	6/240	6/240	6/240
Factory Fitted Immersion Type		Titanium							
Number Of Immersion BOSS™		4	4	4	4	4	2	2	2
Max. Allowable Power Output Of Imm. (kW)		48	48	48	48	48	78	78	78
Inspection Flange		Optional				Standard			
Heat Up Time (ΔT 50°C)	min	53	71	89	107	143	*		
Fact. Fitted	kW	18	18	18	18	18	12	12	12
Cont. Output - Fact. Fitted	L/hr	281	281	281	281	281	*		
Heat Up Time (ΔT 50°C)	min	21	29	37	44	57	49	55	64
Max. Allowed	kW	48	48	48	48	48	78	78	78
Cont. Output @60°C - Max. Allowed	L/hr	826	826	826	826	826	1342	1342	1342
Weight Empty (kg)		71.5	72	89	121	186	188	191	207
Weight Full (kg)		361	463	586	720	952	1285	1422	1617

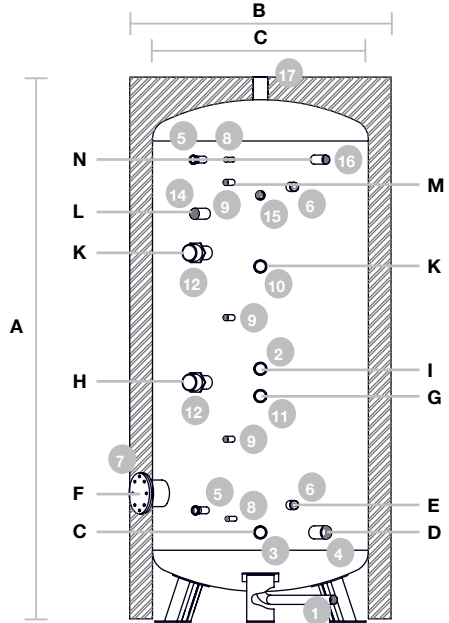
* Based on selected immersion capacity at the time of ordering

Solar Technical Specification

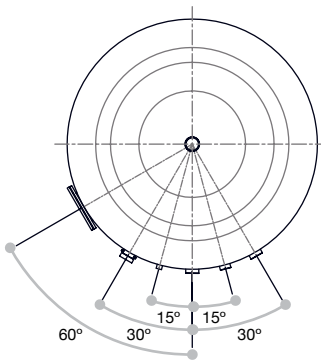
300 - 800 Ltr



1000 - 1500 Ltr



300 - 1500 Ltr



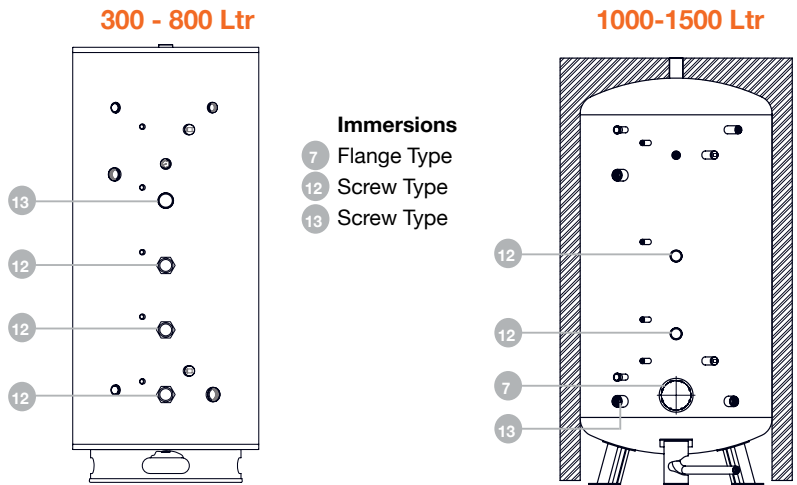
- 1 Drain
- 2 Boiler Return
- 3 Solar Return
- 4 Cold Water Inlet
- 5 Temperature Gauge (fact. fitted)
- 6 Heat Source Flow&Return / D-strat (28mm)
- 7 Inspection Hatch c/w Plastic Cover
- 8 Dry Sensor Pocket
- 9 Aquastat Pocket
- 10 Boiler Flow
- 11 Solar Flow
- 12 Titanium Immersion (fact. fitted)
- 13 Titanium Immersion BOSS™ (blanked)
- 14 Secondary Return
- 15 Pressure Gauge
- 16 T&P Relief Valve
- 17 Hot Water Draw Off



Inspection port must be ordered separately. Only standard on Multi Energy cylinders over 1000L capacity.

Connection Sizes & Safety		300	400	500	600	800	1000	1250	1500
Hot & Cold Conn. Ø BSP F (")		1.5	1.5	1.5	1.5	2	2	2	2
Primary Coil Connection Ø BSP F (")		1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Solar Coil Connection Ø BSP F (")		1	1	1	1	1	1	1	1
Secondary Return Ø BSP F (")		1.25	1.25	1.25	1.25	1.25	1.25	1.5	1.5
T&P Connection Ø BSP F (")		0.75	0.75	0.75	0.75	0.75	0.75	1	1
3bar	T&P Press. Set. (bar)	7	7	7	7	7	7	7	7
	Exp. Relief Set. (bar)	6	6	6	6	6	6	6	6
6bar	T&P Press. Set. (bar)	10	10	10	10	10	10	10	10
	Exp. Relief Set. (bar)	8	8	8	8	8	8	8	8
Dimensions		300	400	500	600	800	1000	1250	1500
Cylinder Height (A, mm)		1670	1670	2030	2380	2050	2170	2200	2400
Cylinder Diameter (B, mm)		620	710	710	710	920	1100	1150	1150
Connection Height C (mm)		335	350	350	350	395	900	950	950
Connection Height D (mm)		335	350	350	350	420	425	410	410
Connection Height E (mm)		425	440	440	440	515	525	530	530
Connection Height F (mm)		475	490	490	490	560	580	580	580
Connection Height G (mm)		665	670	800	1010	845	850	820	1050
Connection Height H (mm)		715	720	860	1070	905	910	880	1110
Connection Height I (mm)		765	770	920	1130	965	970	940	1170
Connection Height J (mm)		1145	1095	1300	1680	1345	1350	1320	1550
Connection Height K (mm)		1195	1145	1360	1730	1405	1410	1380	1610
Connection Height L (mm)		1305	1245	1550	1840	1505	1560	1580	1810
Connection Height M (mm)		1340	1300	1660	2000	1550	1700	1630	1890
Connection Height N (mm)		1430	1390	1730	2090	1655	1800	1750	2010
Performance		300	400	500	600	800	1000	1250	1500
Heat Up Time (ΔT 50°C)		35	46	58	55	71	89	96	115
1° Re-Heat time (70% draw off) 60L/min		11	15	21	26	28	34	38	41
1° Re-Heat time (70% draw off) 30L/min		16	21	29	34	40	48	52	54
1° Re-Heat time (70% draw off) 15L/min		24	38	47	62	71	81	90	104
Weight Empty (kg)		88	89	105.5	141	240	250	268	293
Weight Full (kg)		366.5	466	588	715	972	1313	1453	1643
Prim. Coil Surf. Area (m ²)		1.21	1.21	1.21	1.80	2.86	2.86	4.00	4.00
Prim. Coil Rating @ 60L/min (kW)		46	46	46	55	73	73	95	95
Prim. Coil Rating @ 30L/min (kW)		36.72	36.72	36.72	38	50	50	54.67	54.67
Prim. Coil Rating @ 15L/min (kW)		21	21	21	26	31	31	34	34
Prim. Coil Press. Drop @ 15L/min (mbar)		19	19	19	22	16	16	26	26
Prim. Coil Press. Drop @ 30L/min (mbar)		29	29	29	37	65	65	75	75
Prim. Coil Press. Drop @ 60L/min (mbar)		245	245	245	305	335	335	350	350
Dedicated Solar Volume (ltr)		113.1	153.3	197.9	251.7	307.9	460.8	499	483
Solar Coil Surface Area (m ²)		1.1	1.1	1.1	1.87	2	2	2.5	2.5
Solar Coil Rating @ 60L/min (kW)		43	43	43	54	57	57	68	68
Cont. Output @ 60°C ΔT 50°C (L/hr)		453	453	453	719	1110	1110	1282	1282

M.E. Models - Optional Immersion Allocation



Multi Energy								
Capacity	300	400	500	600	800	1000	1250	1500
6 bar	•	•	•	•	•	•	•	•
3 bar	•	•	•	•	•	•	•	•
Screw Type Imm. Fact. Fitted	3x6kW	3x6kW	3x6kW	3x6kW	3x6kW	2x6kW	2x6kW	2x6kW
Screw Type Imm. Optional	1	1	1	1	1	2	2	2
Imm. Flange	Optional	Optional	Optional	Optional	Optional	Standard	Standard	Standard

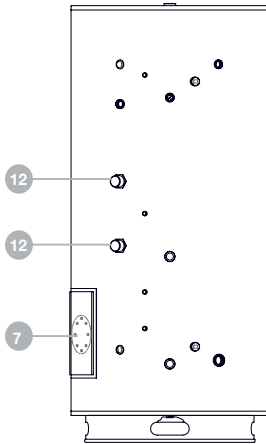
Multi Energy 1000L / 1250L / 1500L - Maximum kW								
Immersion - bottom	9	12	12	12	12			
Immersion - lower middle	9	12	12	12	12	54	54	54
Immersion - upper middle	9	12	12	12	12	6	9	12
Immersion - top	9	6	12	12	12	-	6	12
Max. Total kW Input	36	42	48	51	54	60	69	78

Note: Heating elements are not factory fitted
 Required Immersions must be ordered at the same time as ordering the cylinder

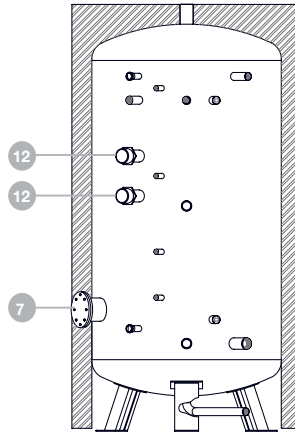
Inspection port must be ordered separately. Only standard on Multi Energy cylinders over 1000L capacity.

Indirect Models - Immersion Allocation

300 - 800 Ltr



1000 - 1500 Ltr



Immersion

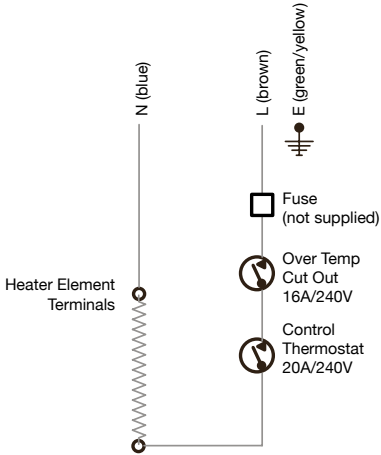
- 7 Flange Type
- 12 Screw Type
- 13 Screw Type

Indirect								
Capacity	300	400	500	600	800	1000	1250	1500
6 bar	•	•	•	•	•	•	•	•
3 bar	•	•	•	•	•	•	•	•
Immersion (230V)	2x3kW	2x3kW	2x3kW	2x3kW	2x3kW	2x3kW	2x3kW	2x3kW
Insp. Flange (not for imm.)	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Twin								
6 bar	•	•	•	•	•	•	•	•
3 bar	•	•	•	•	•	•	•	•
Immersion (230V)	2x3kW	2x3kW	2x3kW	2x3kW	2x3kW	2x3kW	2x3kW	2x3kW
Insp. Flange (not for imm.)	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional

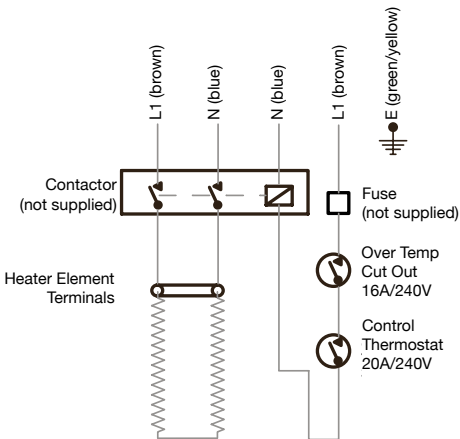
Note: Heating elements are factory fitted

Screw Type Immersion Wiring Diagrams 12 13

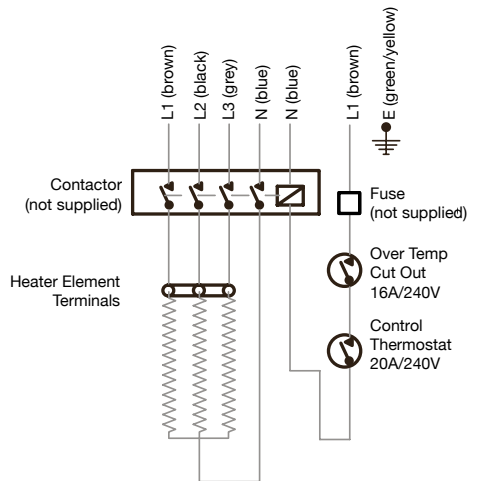
3kW Single Phase



6-9kW Single Phase



9-12kW Three Phase



The external contactor must be approved components certified for 10,000 cycles.

Flange Type Immersion Details

7

Application

The 1RB Series of immersion heaters, depending on specification, are intended to heat water, and are suitable for use in building service and industrial applications. The heaters are suitable for either horizontal or vertical screwed fixing. To avoid localised boiling or air locks, care should be taken to ensure that the cold zone extends beyond any neck piece. Please check that the heater is suitable for your application. Refer to the Data Sheet for the detailed construction, specification and wiring of the heater.

Construction

The metal sheathed heating elements are permanently fixed into the element plate. The flange is to suit a 125mm NB opening, with 8x10mm holes on a 146mm PCD and comes complete with a rubber gasket. The terminal enclosure is an IP55 powder coated Carbon Steel box with lockable hinged cover, complete with removable gland plate for drilling on site. The 1RB series is designed for a maximum operating temperature of 120°C and a maximum operating pressure of 5bar. The heater generally conforms to B.S.7798. The heaters are fitted with an auto reset control thermostat & a manual reset over-temperature master thermostat.

Installation

Mechanical Installation Instructions

- The heater is supplied with a gasket, ready to be bolted to the appropriate flange on the vessel. It is not recommended that sealing compounds are used.
- After fitting the heater into the vessel, the system should be filled with water and a check made for leaks around the joint. The Vessel should be filled according to your standard procedure ensuring that all air pockets are purged from the system.
- Control thermostats should be set to suit site requirements. The Control thermostat is provided to regulate the temperature to the desired setting. Recommended settings are as follows:
Soft water areas up to 82°C, Medium hard water areas up to 71°C, Hard water areas up to 65°C.
- Manual reset master thermostat should be set 15°C above the control thermostat temperature.
- Note: Scald temperature of water is 66°C
- If any cleaning or sterilising solutions are to be 'flushed' through the system prior to commissioning, a check should be made to ensure that the solution will not damage the heater.

Warning : Do not cover the heater terminal enclosure.

Electrical Installation Instructions

All electrical wiring must be carried out by a qualified person and must comply with the current I.E.E Regulations to B.S.7671. We recommend that the insulation of each circuit within the heater is checked prior to installation. The minimum insulation reading between live and earth should not fall below 1MΩ. Refer to the procedure in the Operational Faults section of this leaflet if the insulation is below 1MΩ.

- The immersion heater must be connected to fixed wiring.
- Check all electrical connections to ensure that they are tight.
- After all electrical connections have been made replace the heater terminal enclosure.
- Immersion heaters are designed to operate ONLY when the heating elements are totally immersed in water and must not be switched on when the heating elements are exposed to air.
- The heater will only heat the contents of the tank above the immersion heater.
- Should the vessel be drained at any time and the heater removed, this installation procedure must be repeated before proceeding to switch the heater on.

Warning: This appliance must be earthed

Operational Faults

Always isolate electrical power at the main switch before removing the terminal enclosure.

Heater not Operating

Check :

- a) Main Fuses.
- b) Main Electrical Supply.
- c) If the control or high limit thermostat (if Fitted) has been correctly set.
- d) Control Thermostat for failure in 'open' position.
- e) Wiring to heater (No loose connections).
- f) Element continuity (resistance) - If faulty order a replacement heater (See spare parts section).

Low element insulation

All elements are sealed prior to despatch to prevent any ingress of moisture, however storage conditions after despatch are not always ideal. In particular, if there is a long delay between purchase and commissioning there may be some degree of moisture ingress into the elements. The immersion heater will not be affected by the low insulation readings. However to allow any current control devices to operate it is suggested that the following procedures are carried out:

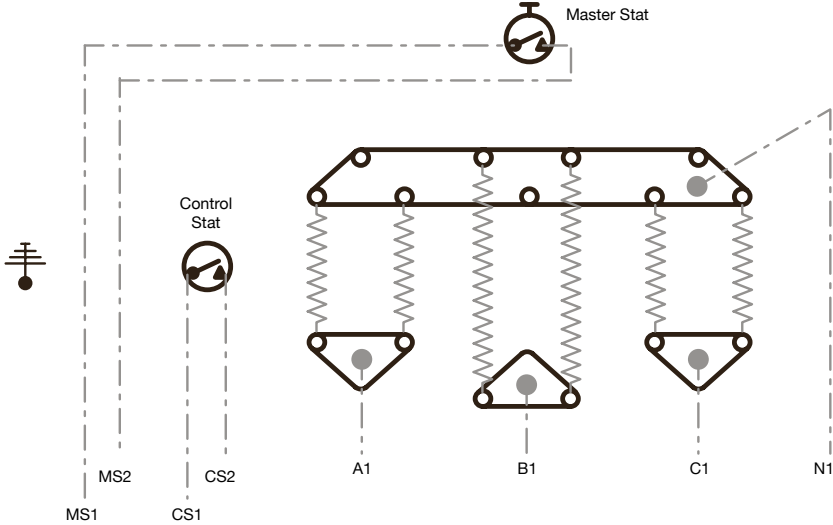
- 1) The terminals on the end of the element can be dried to remove any moisture. e.g. with a hairdryer or similar device.
- 2) When brought into operation, the element will naturally improve in insulation.
- 3) If an RCD is being used this can be disconnected for a short time while the heater is switched on to allow the insulation readings to increase.
- 4) The heater can be placed in an oven at 200-250°C first removing the terminal cover for a period of time to raise the insulation levels. If an oven is not available, the heater can be returned to BSS Ltd.
- 5) To maintain the insulation during periods of low use it is advisable to switch the heater on in the tank, in water, approximately once a month for 48 hours.

Spare Parts & Replacements

All spare parts are to be ordered from BSS Ltd. quoting the cylinder serial number and heater type. Spare part are Rubber Gasket, High Limit Thermostat, Control Thermostat

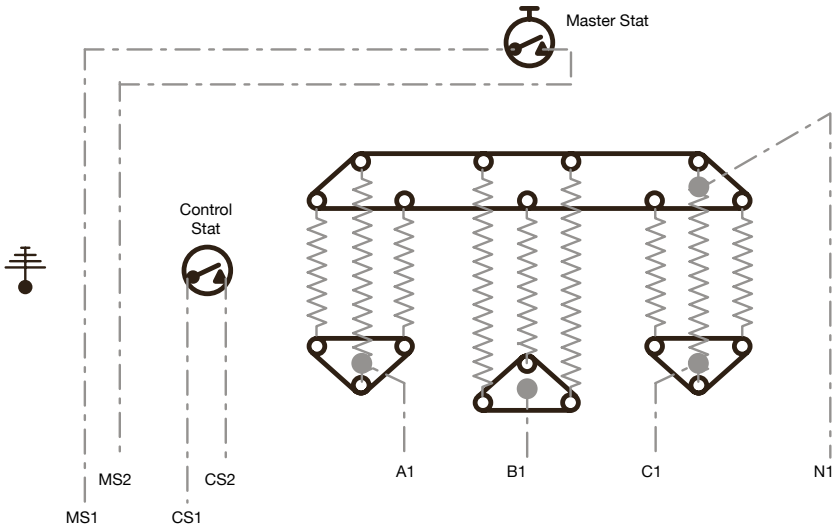
Flange Type Immersion Wiring Diagrams

D.O.C. For 9 Element N1RB



415V/3 Phase 3/4" Wire Supply (Single Stage) - Customers Connections Shown In Dotted Lines

D.O.C. For t6 Element N1RB



415V/3 Phase 3/4" Wire Supply (Single Stage) - Customers Connections Shown In Dotted Lines

Indirect Models

Boiler Selection

The BSS Commercial Indirect models are suitable for use with most gas or oil fired boilers compatible with unvented systems i.e. fitted with a temperature control thermostat and thermal cut-out. If in doubt consult the boiler manufacturer. Solid fuel boilers or any other boiler in which the energy input is not under effective thermostatic control, unless additional and appropriate safety measures are installed, **should not** be used. The boiler used can either be a sealed system or open vented type, maximum primary circuit pressure 6 bar. The primary flow from the boiler **must** be pumped. Gravity circulation will not work due to the special design of the primary heat exchanger.

It is recommended that an air bleed point or automatic air vent is incorporated in the primary return pipe work close to the BSS Commercial unit. The boiler flow temperature should usually be set to 82°C (maximum flow temperature to primary heat exchanger 89°C). The boiler cannot be vented through the BSS Commercial unit.

Indirect Thermal Cut-Out And 2-Port Motorised Valve

To comply with Building Regulations, and to prevent the BSS Commercial from overheating the 2-port motorised valve supplied **must** be fitted to the primary flow to the indirect coil. It must be wired such that in the event of the cylinder over heating it will close the primary circuit.

Wiring

All electrical wiring should be carried out by a competent electrician and be in accordance with the latest I.E.E. Wiring Regulations BS 7671.



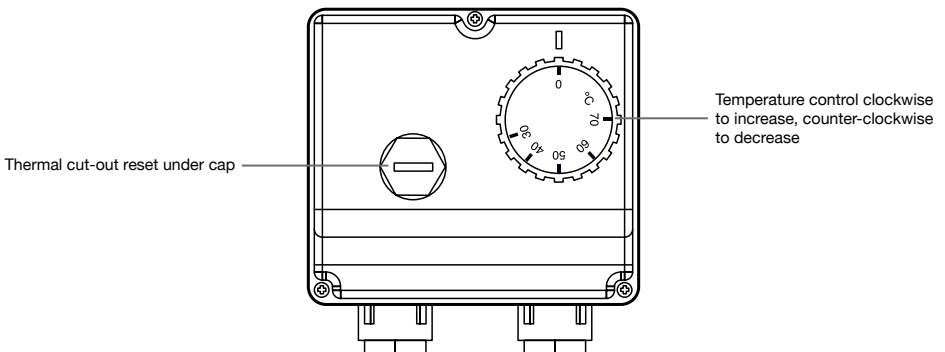
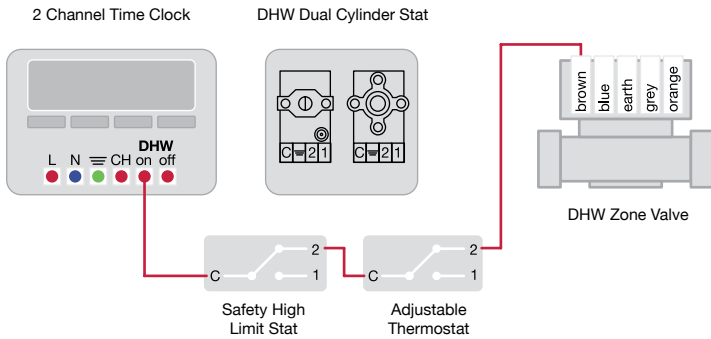
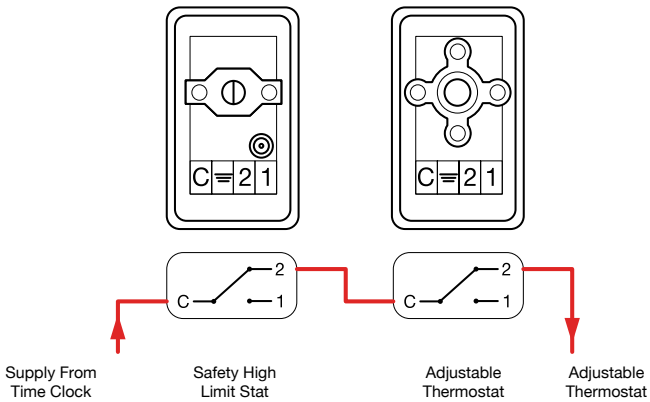
It is recommended that all wiring to the immersion heaters is of a fixed type. Do not operate the immersion heater(s) until the cylinder has been filled with water.

Safety



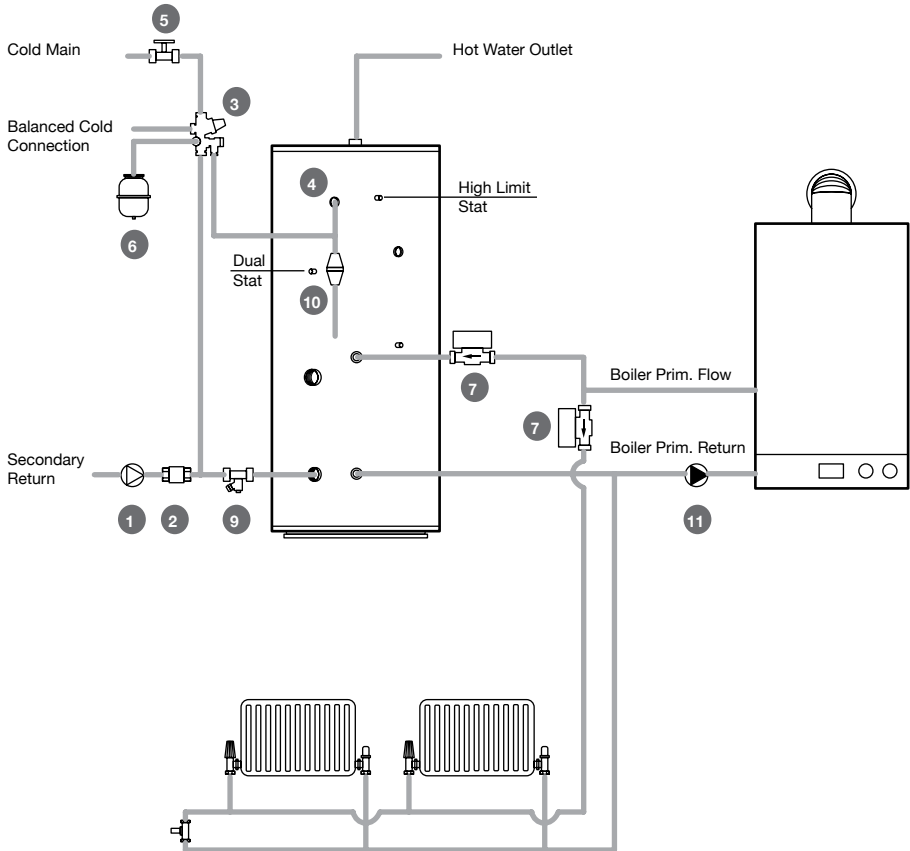
Before resetting the safety cut-out or altering the thermostat setting, isolate electrical supply to the unit before removal of the cover.

Fitting Control Thermostat



Indirect Cylinder Schematic

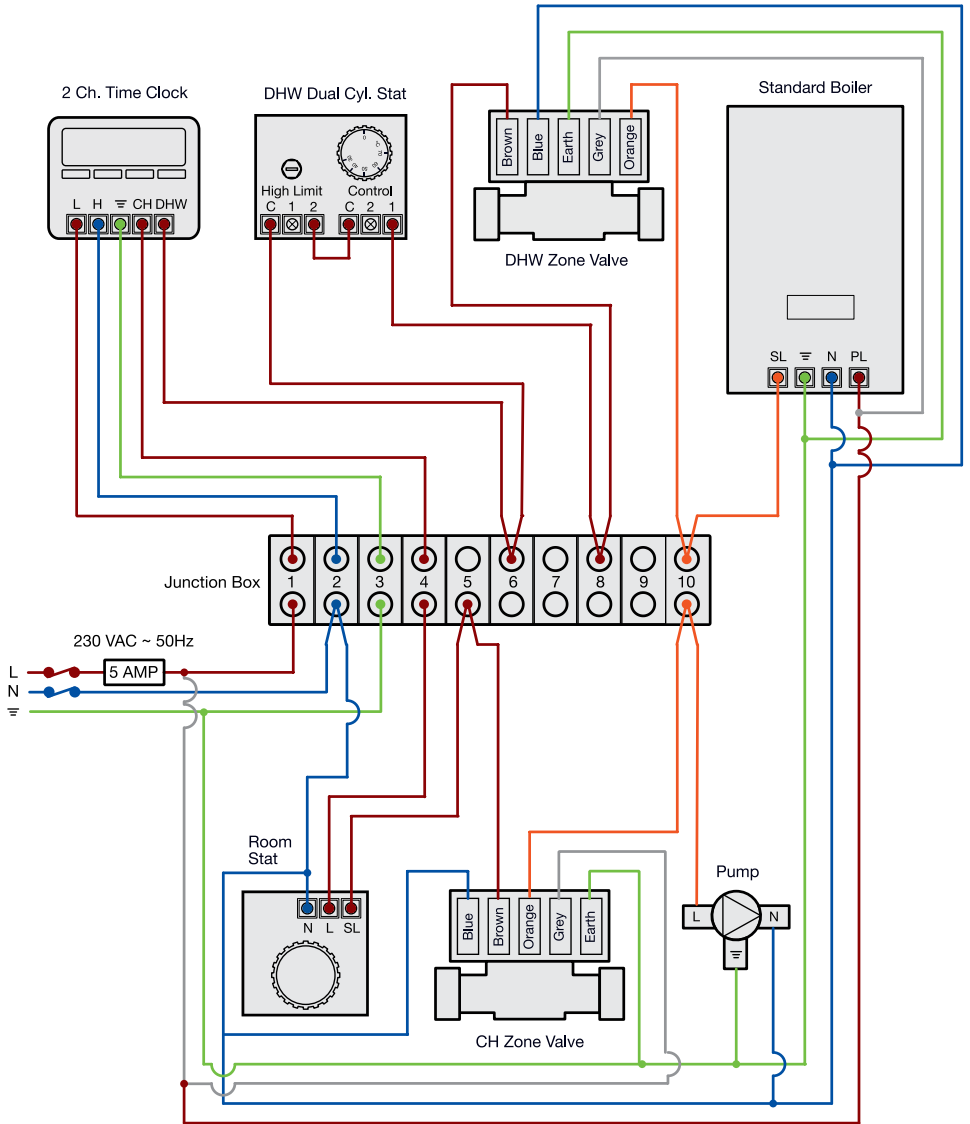
Mechanical Diagram S-Plan



- 1 Bronze Pump (not supplied)
- 2 Non Return Valve (not supplied)
- 3 Inlet Control Group
- 4 Temperature & Pressure Relief Valve
- 5 Isolation Valve (not supplied)
- 6 Exp. Vessel with Wall Bracket
- 7 2-port Zone Valve
- 9 Drain Valve (not supplied)
- 10 Tundish
- 11 Heating Circ. Pump (not supplied, required with heat only boiler)

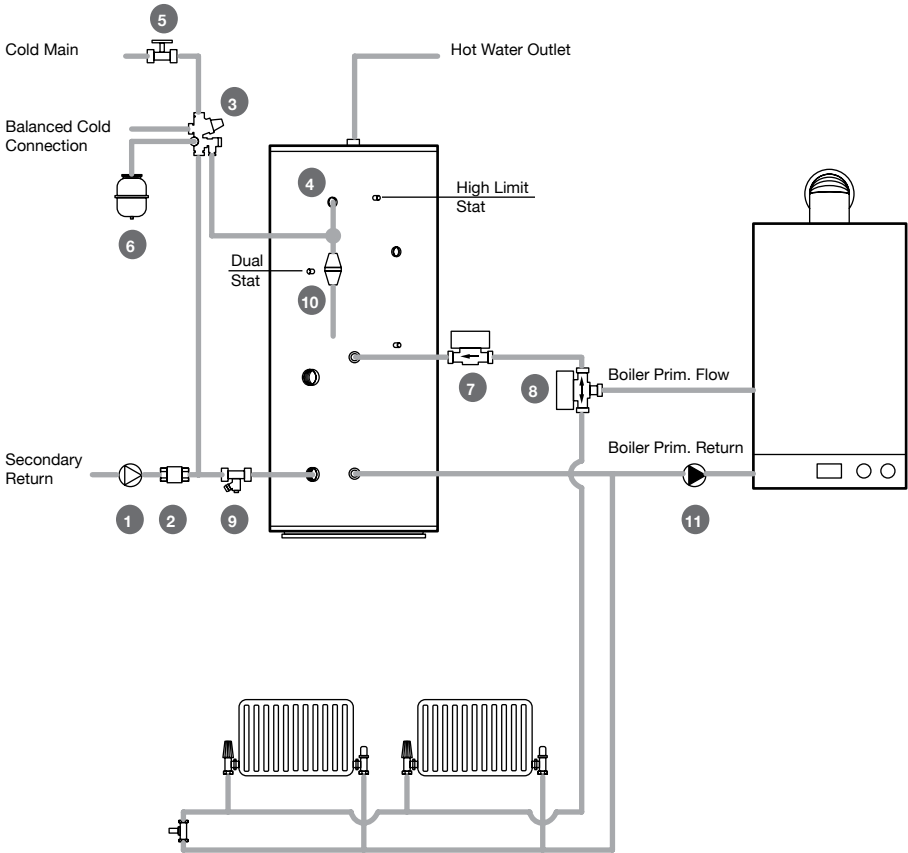
Indirect Cylinder Schematic

Electrical Diagram S-Plan



Indirect Cylinder Schematic

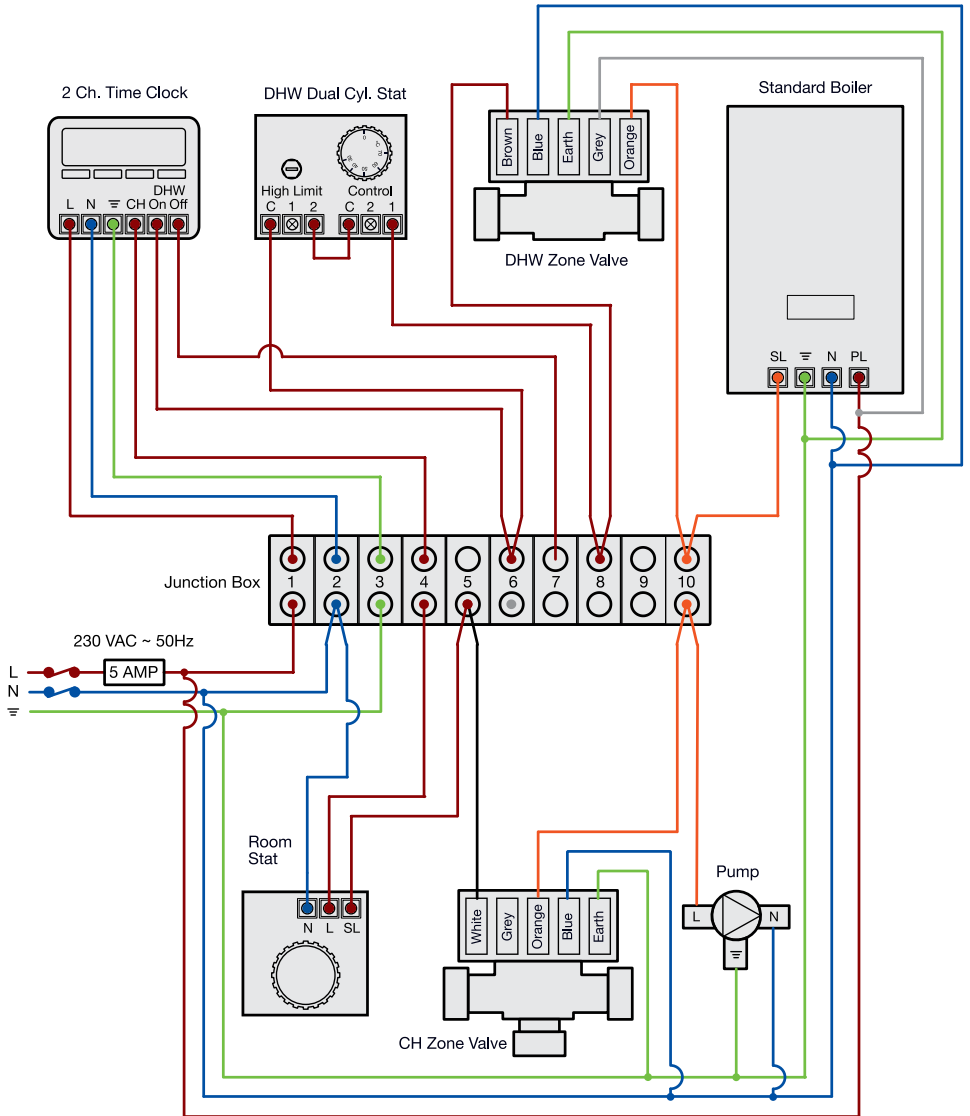
Mechanical Diagram Y-Plan



- 1 Bronze Pump (not supplied)
- 2 Non Return Valve (not supplied)
- 3 Inlet Control Group
- 4 Temperature & Pressure Relief Valve
- 5 Isolation Valve (not supplied)
- 6 Exp. Vessel with Wall Bracket
- 7 2-port Zone Valve
- 8 3-port Valve (not supplied)
- 9 Drain Valve (not supplied)
- 10 Tundish
- 11 Heating Circ. Pump (not supplied, required with heat only boiler)

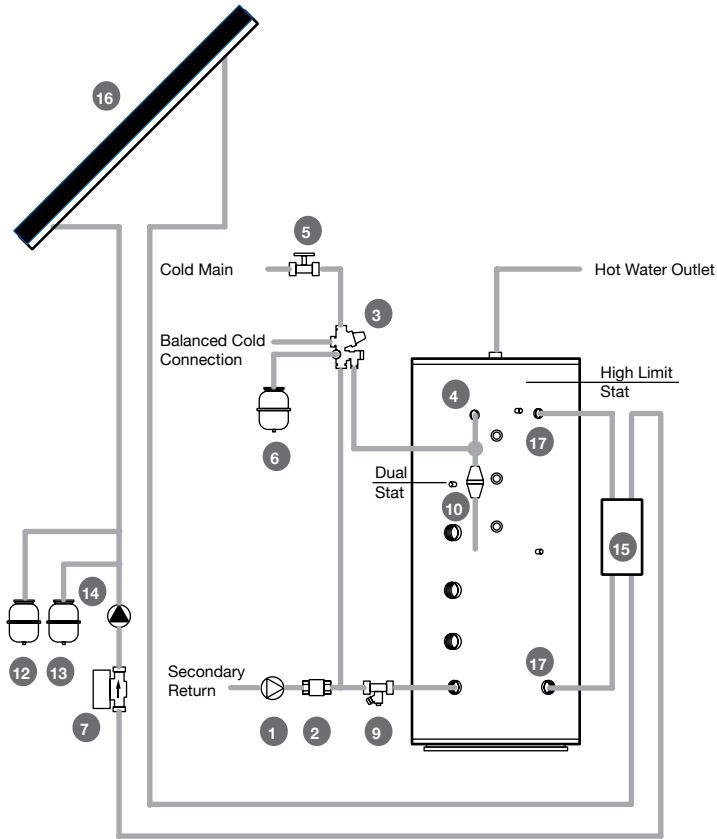
Indirect Cylinder Schematic

Electrical Diagram Y-Plan



Multi Energy Cylinder Schematic

Solar Buffer Hot Water Store



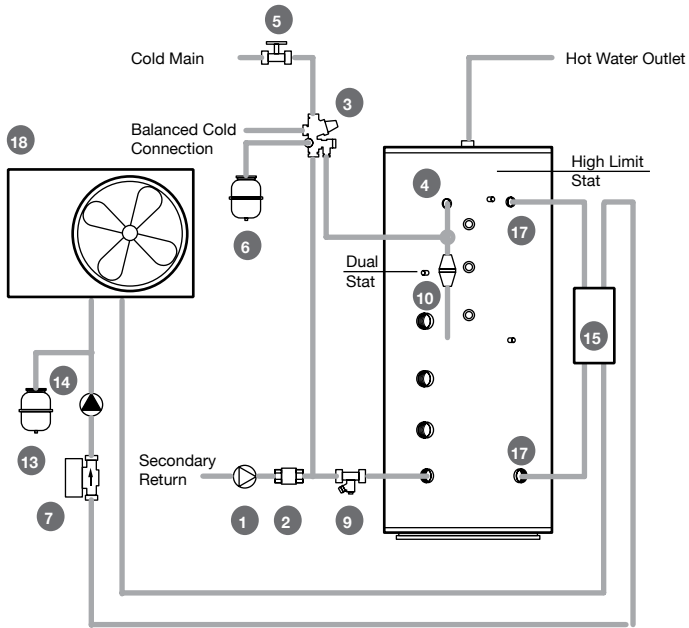
- | | |
|---------------------------------------|---|
| 1 Bronze Pump (not supplied) | 10 Tundish |
| 2 Non Return Valve (not supplied) | 12 Solar Discharge Container (not supplied) |
| 3 Inlet Control Group | 13 Solar Expansion Vessel (not supplied) |
| 4 Temperature & Pressure Relief Valve | 14 Solar Pump Station (not supplied) |
| 5 Isolation Valve (not supplied) | 15 Plate Heat Exchanger (not supplied) |
| 6 Exp. Vessel with Wall Bracket | 16 Solar Panel (not supplied) |
| 7 2-port Zone Valve | 17 Heat Source Flow&Return (28mm) |
| 9 Drain Valve (not supplied) | |



Backup electrical elements may be fitted to these tanks. Alternatively tanks can be fitted without heat source and rely on electrical elements exclusively. Tanks can be fitted vented or unvented.

Multi Energy Cylinder Schematic

Heat Pump Buffer Hot Water Store



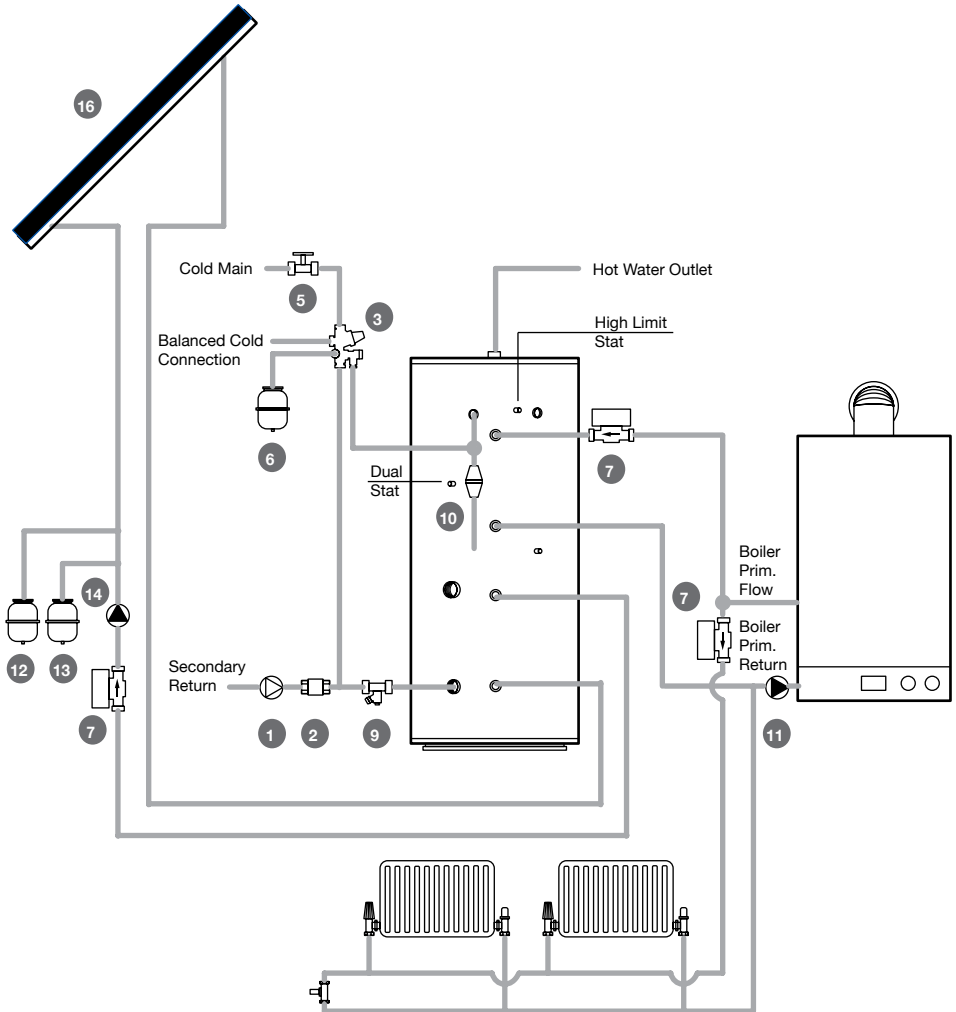
- | | |
|---------------------------------------|--|
| 1 Bronze Pump (not supplied) | 10 Tundish |
| 2 Non Return Valve (not supplied) | 13 Expansion Vessel (not supplied) |
| 3 Inlet Control Group | 14 Solar Pump Station (not supplied) |
| 4 Temperature & Pressure Relief Valve | 15 Plate Heat Exchanger (not supplied) |
| 5 Isolation Valve (not supplied) | 17 Heat Source Flow&Return (28mm) |
| 6 Exp. Vessel with Wall Bracket | 18 Heat Pump (not supplied) |
| 7 2-port Zone Valve | |
| 9 Drain Valve (not supplied) | |



Backup electrical elements may be fitted to these tanks. Alternatively tanks can be fitted without heat source and rely on electrical elements exclusively. Tanks can be fitted vented or unvented.

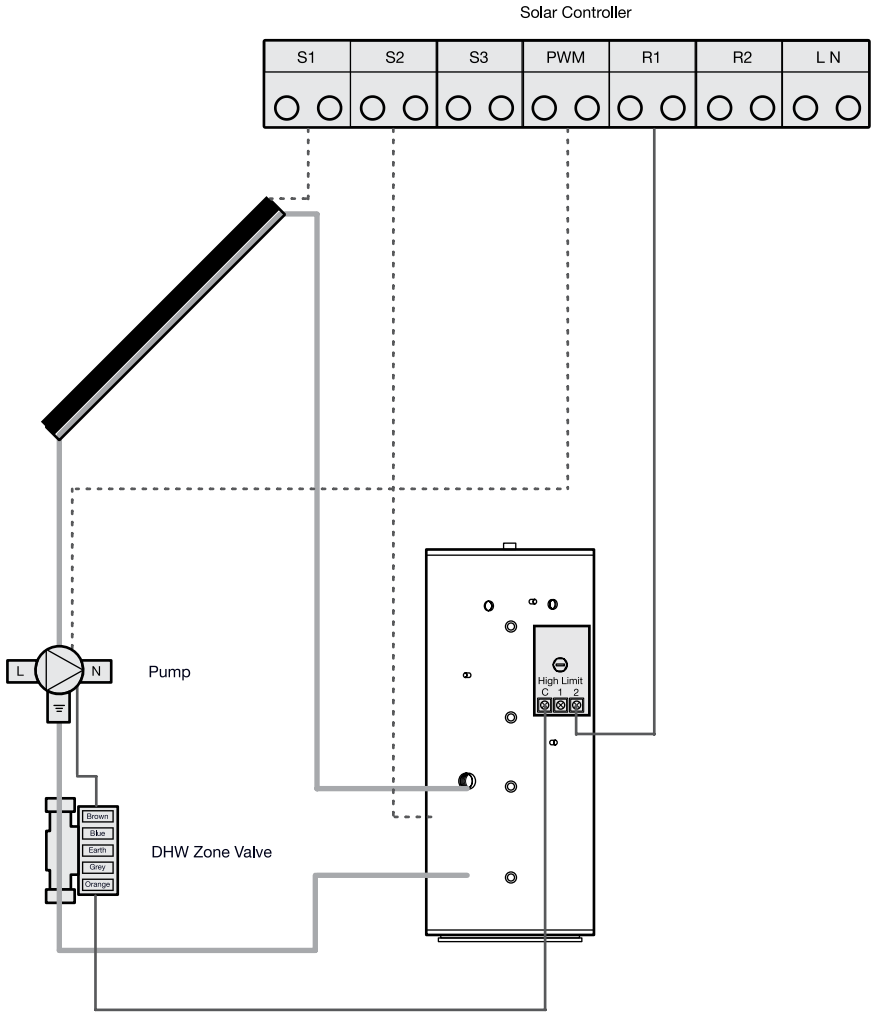
Solar Cylinder Schematic

Mechanical Diagram S-Plan



- | | |
|---------------------------------------|--|
| 1 Bronze Pump (not supplied) | 10 Tundish |
| 2 Non Return Valve (not supplied) | 11 Heating Circ. Pump (not supplied, required with heat only boiler) |
| 3 Inlet Control Group | |
| 4 Temperature & Pressure Relief Valve | |
| 5 Isolation Valve (not supplied) | 12 Solar Discharge Container (not supplied) |
| 6 Exp. Vessel with Wall Bracket | 13 Solar Expansion Vessel (not supplied) |
| 7 2-port Zone Valve | 14 Solar Pump Station (not supplied) |
| 9 Drain Valve (not supplied) | 16 Solar Panel (not supplied) |

Solar Cylinder Schematic



Discharge Arrangement

Discharge Pipework

The inlet control group should be positioned so that the discharge from both safety valves can be combined via a 15mm end feed tee, as in the diagram on page 40. Connect the tundish and route the discharge pipe which must be routed in accordance with Building regulation - Part G3 of schedule 1.

When operating normally water will not be discharged. Water discharge from the two safety valves will only occur under fault conditions. The tundish should be vertical, located in the same space as the unvented hot water storage system and be fitted as close as possible, and lower than the valve, with no more than 600mm between the safety device outlet e.g. the temperature relief valve and the tundish.

The position of the tundish must be that when installed it is visible to the occupants of the premises. When positioning the tundish, the drain valves and motorised valve ensure that these items are positioned away from any electrical devices. The discharge pipe (D2) coming from the tundish should terminate in a safe place where there is no risk to persons in the vicinity of the discharge, be of metal and:

- Be at least one pipe size larger than the nominal outlet size of the safety device unless its total equivalent hydraulic resistance exceeds that of a straight pipe 9m long, i.e. discharge pipes between 9m and 18m equivalent resistance length should be at least two sizes larger than the nominal outlet size of the safety device, between 18 and 27m at least 3 sizes larger, and so on.
- Bends must be taken into account in calculating the flow resistance. Refer to diagram on page 40 and the worked example. An alternative approach for sizing discharge pipes would be to follow BS6700 Specification for design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages.
- Have a vertical section of pipe at least 300mm long, below the tundish before any elbows or bends in the pipework.
- Be installed with a continuous fall.

It is preferable for the discharge to be visible at both the tundish and the final point of discharge. Where this is not possible or practically difficult, there should be clear visibility at one or other of these locations.

Examples Of Acceptable Dischagement Arrangements

Ideally below the fixed grating and above the water seal in a trapped gully.

Downward discharges at a low level; i.e. up to 100mm above external surfaces such as car parks, hard standings, grassed areas etc. are acceptable providing that where children play or otherwise come into contact with discharges, a wire cage or similar guard is positioned to prevent contact whilst maintaining visibility.

Discharges at a high level; e.g. in to metal hopper and metal down pipe with the end of the discharge pipe clearly visible (tundish visible or not) or onto a roof capable of withstanding high temperature discharges of water and 3m from any plastic guttering systems that would collect such discharges (tundish available).

Where a single pipe serves a number of discharges, such as in blocks of flats, the number served should be limited to not more than 6 systems so that any installation can be traced reasonably easily.

The single common discharge pipe should be at least one pipe size larger than the largest individual discharge pipe to be connected. If unvented hot water storage systems are installed where discharges from safety devices may not be apparent, i.e. in dwellings occupied by blind, infirm or disabled people, consideration should be given to the installation of an electronically operated device to warn when discharge takes place.

Worked Example

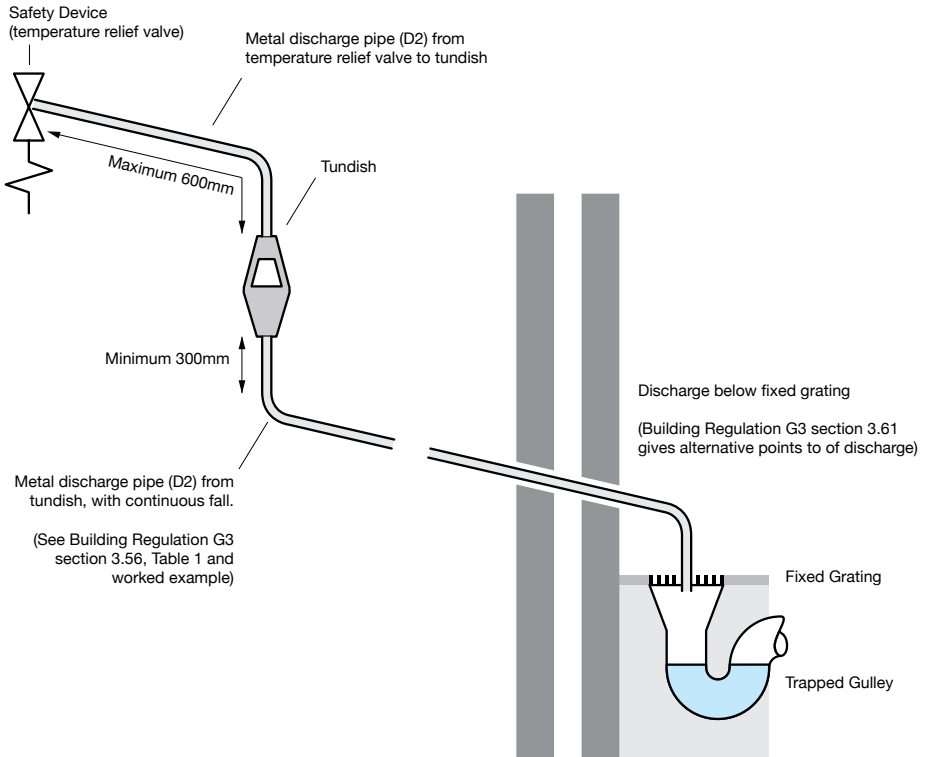
The example on the next page is for G1/2 temperature relief valve with a discharge pipe (D2) having 4 No. elbows and length of 7m from the tundish to the point of discharge.

Maximum resistance allowed for a straight length of 22mm copper discharge pipe (D2) from a G1/2 temperature relief valve is: 9.0m. Subtract the resistance for 4 No. 22mm elbows at 0.8m each = 3.2m. Therefore the maximum permitted length equates to: 5.8m. 5.8m is less than the actual length of 7m, therefore calculate the next largest size.

Maximum resistance allowed for a straight length of 28mm pipe (D2) from a G1/2 temperature relief valve equates to: 14m. As the actual length is 7m, a 28mm (D2) copper pipe will be satisfactory.

	G 1/2			G 3/4			G1		
Min. size of discharge pipe D1	15mm			22mm			28mm		
Min. size of discharge pipework D2 from tundish	22mm	28mm	35mm	28mm	35mm	42mm	35mm	42mm	54mm
Max. length of straight pipe (no bends or elbows)	Up to 9m	Up to 18m	Up to 27m	Up to 9m	Up to 18m	Up to 27m	Up to 9m	Up to 18m	Up to 27m
Deduct the gure below from the maximum length for each bend or elbow in the discharge pipe	0.8m	1.0m	1.4m	1.0m	1.4m	1.7m	1.4m	1.7m	2.3m

Sizing of copper discharge pipe (D2) for a temp. relief valve with a G1/2 outlet size (as supplied)



The discharge will consist of scalding water and steam. Asphalt, roofing felt and non-metallic rainwater goods may be damaged by such discharges.

It is not acceptable to discharge straight into a soil pipe.

Commissioning

Filling

First you must ensure that the pressure in the expansion vessel is the same as the setting of the pressure reducing valve i.e. 3 bar or 6 bar. Check all the connections for water tightness including any factory made connections such as the immersion heater and the temperature and pressure relief valve. Prior to filling, open the air vent on the hot side of the cylinder to expel air. Open the cold main isolation valve and allow the unit to fill.

Once the cylinder has been fully commissioned it should be heated to its normal operating temperature. Draw off secondary hot water to each outlet and allow hot water to flow from each outlet for at least 30 seconds to remove any flux residue from the pipe work within the secondary hot water system. Then fully drain the cylinder and re-fill to ensure that all flux residues is removed from the system.

Indirect Units

Fill the primary circuit according to the boiler manufacturers' commissioning instructions. Any additives used in the heating system water circulating through the cylinder coil must be compatible for use with stainless steel cylinders.

Ensure the lever on the two port valve is set to the filling position. When full, move the lever back. Switch the programmer to Domestic Hot Water (DHW) and allow the unit to start to heat. Adjust the dial of the dual thermostat to between 30°C and 70°C as required.

Storage Temperature

60-65°C is the recommended storage temperature for both Multi Energy and indirect cylinders. In hard water areas consideration should be given to reducing this to 50-55°C. In many healthcare applications the guidance on Legionella control and safe water delivery temperatures will require storing the water at 60-65°C, distributing at 50-55°C and using thermostatic mixing valves to control the final temperature. For details consult the NHS Estates Guidance on safe hot water temperatures.

Maintenance

General

Servicing should only be carried out by competent installers and any spare parts used must be purchased from BSS.



Never bypass any safety devices or operate the unit without them being fully operational

Draining

Switch the electrical power off (important to avoid damage to element). Isolate boiler from the unit. Turn off the cold water supply valve. Open hot water tap. Open the drain valve. The unit will drain.



Water drained off may be very hot!

Annual Maintenance

The water heaters require annual servicing in order to ensure safe working and optimum performance. It is essential that the following checks are performed by a competent installer on an annual basis. This is commonly done at the same time as the annual boiler service.

- Twist the cap of the expansion relief valve on the inlet control set and allow water to flow for 5 seconds. Release and make sure it resets correctly.
- Repeat with the pressure / temperature relief valve. In both cases check that the discharge pipework is carrying the water away adequately. If not, check for blockages etc. and clear.
- Check that any immersion heaters fitted are working correctly and that they are controlling the water at a temperature between 55°C and 65°C.
- Check the pressure in the expansion vessel is charged to 3/6bar. Turn off the water supply to the unit and open a hot tap first. The air valve on expansion vessel is a Schrader (car tyre) type.
- Air or CO₂ may be used to charge the expansion vessel. Unscrew the head on the inlet control set and clean the mesh filter within.

The Service Log Book supplied with this unit should be updated at each service.



Your guarantee may be void if you cannot produce proof of annual servicing immersion heater replacement.

Immersion Heater Replacement

If the thermal cut out on the Immersion heater operates contact a competent installer. If the thermal cut out fault occurs again the immersion will need to be replaced.

Prior to installing the replacement Immersion, ensure the o-ring is correctly positioned on the head of the Immersion and lubricate the threads before fitting.

Thread the Immersion by hand until it is hand tight and then tighten gently to allow the o-rings to create a water tight seal.

Inspection

Where internal inspection of the cylinder is required, all commercial cylinders have the option of being ordered with a dedicated inspection port, where this has not been specified an endoscope can be used. Inspection can be carried out by draining down the cylinder and removing a component that is fitted to a wet connection in the cylinder.

Safety Valve Checks

Discharge from either the temperature/pressure relief valve or the expansion relief valve indicates a problem.

- Check your discharge pipework is free from debris and is carrying water away to waste effectively.
- Next hold both of these safety valves open, allowing as much water as possible to flow through the tundish.
- Release the valves and check that they reseal correctly.



Completion of the Benchmark Checklist on pages 42-43 must be adhered to by the installer

Taking The Cylinder Out Of Use

Shutting Down

- Ensure the cold water supply is isolated and at least two hot water draw off points are open prior to draining the cylinder.
- One of the hot water draw off points should be as close as possible to the height of cylinder in draw off terms.
- Where applicable use the drain valve at the cold water inlet to drain the contents of the cylinder.
- Isolate the coil from the main heating system. If necessary blow out the coil prior to moving the cylinder.

Recycling And Disposal

The cylinder or any of its components must not be disposed of in domestic rubbish. The material in the cylinder, packaging and components contain recyclable materials and they should be disposed of properly and in accordance with national regulations.

Guidance In The Event Of A Problem

In the event of a problem please contact your installer and the contact details in this installation manual.

Log Book

The installer must comply with all of the installation instructions contained within this installation manual. On completion of the initial installation and after each subsequent annual service the Benchmark Log Book must be completed and signed by the competent person who has worked the unit.

The purpose of Benchmark is to ensure that customers have the correct equipment for their requirements installed in accordance with the manufacturer's installation instructions. The equipment must be installed by installers who have completed an accredited competent person's scheme and who install, commission and service the equipment in accordance with the manufacturer's instructions.

All installations must comply with the appropriate Building Regulations and the Benchmark Log Book should be provide to the customer. The Benchmark Log Book can also be used to show that all equipment is installed in accordance with the relevant Building Regulations.

Troubleshooting

Your stainless system is automatic in normal use and requires only annual servicing. You should employ a competent installer to perform the annual servicing. Normally this is timed to coincide with the annual boiler service.



If water is flowing from the safety valves through the tundish this indicates a fault condition and action is needed.

If this water is hot, turn the boiler and/or the immersion heater off. Do not turn off the water until the discharge runs cool. The discharge may also stop.

CALL OUT A COMPETENT PLUMBER TO SERVICE THE UNIT.

Tell them you have a fault on an unvented cylinder. We stock all the spare parts they may need and BSS can be contacted via telephone numbers on back page.

Fault	Possible Cause	Solution
Water escaping from the case unit.	Compression fitting on hot - draw off not sealing.	Check / remake joint sealing paste.
Cold water at hot tops.	Immersion heater not switched on or cutout has triggered.	Check / reset.
	Indirect - Boiler not working.	Check boiler - consult boiler manufactures' instructions.
	Indirect - motorized valve fault.	Check plumbing / wiring motorized valve.
	Indirect - cutout in dual stat has operated.	Check for faults in the thermostat or high limit stat and reset.
Water discharges from expansion relief valve	If continual - pressure reducing valve (part of inlet control set) may not be operating correctly.	Check outlet pressure from inlet control set is 3/6 bar.
	If continual - expansion relief valve seat may be damaged.	Remove cartridge - check seat and renew if necessary.
	If intermittent - expansion vessel charge may have reduced / bladder perished.	Check pressure in expansion vessel. Recharge to 3/6 bar if necessary. If bladder perished replace vessel.
	Unit is being back pressurized.	With cylinder cold check pressure in cylinder. If this is the same as the incoming mains pressure then you are getting backfeed. Install a balanced cold supply.
Water discharges from temperature & pressure relief valve	Unit has overheated - thermal controls have failed.	Switched off power to boiler and immersion heaters. Leave water supply on. Wait until discharge stops. Isolate water supply and replace if faulty.
Milky / cloudy water	Oxygenated Water.	Water from any pressurized system will release oxygen bubbles when flowing. The bubbles will settle out.
No hot water flow	Cold main off.	Check and open stopcock.
	Strainer blocked in pressure reducing valve.	Isolate water supply and clean.
	Inlet control set may be fitted incorrectly.	Check and reset as required.
Noise during hot water draw off - typically worse in the morning	Loose airing cupboard pipework.	Install extra clips.
Hot or warm water from cold tap	If tap runs cold after a minute or so the pipe is picking up heat from heating pipework.	Insulate/re-route.

Benchmark Checklist

This Commissioning Checklist is to be completed in full by the competent person who commissioned the storage system 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.

Customer Name _____ Telephone Number _____

Address _____

Cylinder Make and Model _____

Cylinder Serial Number _____

Commissioned by (print name) _____ Registered Operative ID Number _____

Company Name _____ Telephone Number _____

Company Address _____

Commissioning Date _____

To be completed by the customer on receipt of a Building Regulations Compliance Certificate*:

Building Regulations Notification Number (if applicable) _____

ALL SYSTEMS PRIMARY SETTINGS (indirect heating only)

Is the primary circuit a sealed or open vented system? Sealed Open

What is the maximum primary flow temperature? _____ °C

ALL SYSTEMS

What is the incoming static cold water pressure at the inlet to the system? _____ bar

Has a strainer been cleaned of installation debris (if fitted)? Yes No

Is the installation in a hard water area (above 200ppm)? Yes No

If yes, has a water scale reducer been fitted? Yes No

What type of scale reducer has been fitted? _____

What is the hot water thermostat set temperature? _____ °C

What is the maximum hot water flow rate at set thermostat temperature (measured at high flow outlet)? _____ l/min

Time and temperature controls have been fitted in compliance with Part L of the Building Regulations? Yes

Type of control system (if applicable) Y Plan S Plan Other

Is the cylinder solar (or other renewable) compatible? Yes No

What is the hot water temperature at the nearest outlet? _____ °C

All appropriate pipes have been insulated up to 1 metre or the point where they become concealed? Yes

UNVENTED SYSTEMS ONLY

Where is the pressure reducing valve situated (if fitted)?

What is the pressure reducing valve setting? bar

Has a combined temperature and pressure relief valve and expansion valve been fitted and discharge tested? Yes No

The tundish and discharge pipework have been connected and terminated to Part G of the Building Regulations Yes

Are all energy sources fitted with a cut out device? Yes No

Has the expansion vessel or internal air space been checked? Yes No

THERMAL STORES ONLY

What store temperature is achievable?

°C

What is the maximum hot water temperature?

°C

ALL INSTALLATIONS

The hot water system complies with the appropriate Building Regulations Yes

The system has been installed and commissioned in accordance with the manufacturer's instructions Yes

The system controls have been demonstrated to and understood by the customer Yes

The manufacturer's literature, including Benchmark, Checklist and Service Record, has been explained and left with the customer Yes

Commissioning Engineer's Signature _____

Customer's Signature _____

(To confirm satisfactory demonstration and receipt of manufacturer's literature)

*All installations in England and Wales must be notified to Local Authority Building Control (LABC) either directly or through a Competent Persons Scheme. A Building Regulations Compliance Certificate will then be issued to the customer.

Viesmann - 5366822



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Service Record

It is recommended that your hot water system is serviced regularly and that the appropriate Service Record's completed.

Service Provider

Before completing the appropriate Service Record below, please ensure you have carried out the service as described in the manufacturer's instructions.

Service 1	Date
Engineer Name	
Company Name	
Telephone No	
Comments	
.....	
.....	
Signature	

Service 1	Date
Engineer Name	
Company Name	
Telephone No	
Comments	
.....	
.....	
Signature	

Service 1	Date
Engineer Name	
Company Name	
Telephone No	
Comments	
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Signature	

Service 1	Date
Engineer Name	
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Engineer Name	
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Signature	

Service 1	Date
Engineer Name	
Company Name	
Telephone No	
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Signature	

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