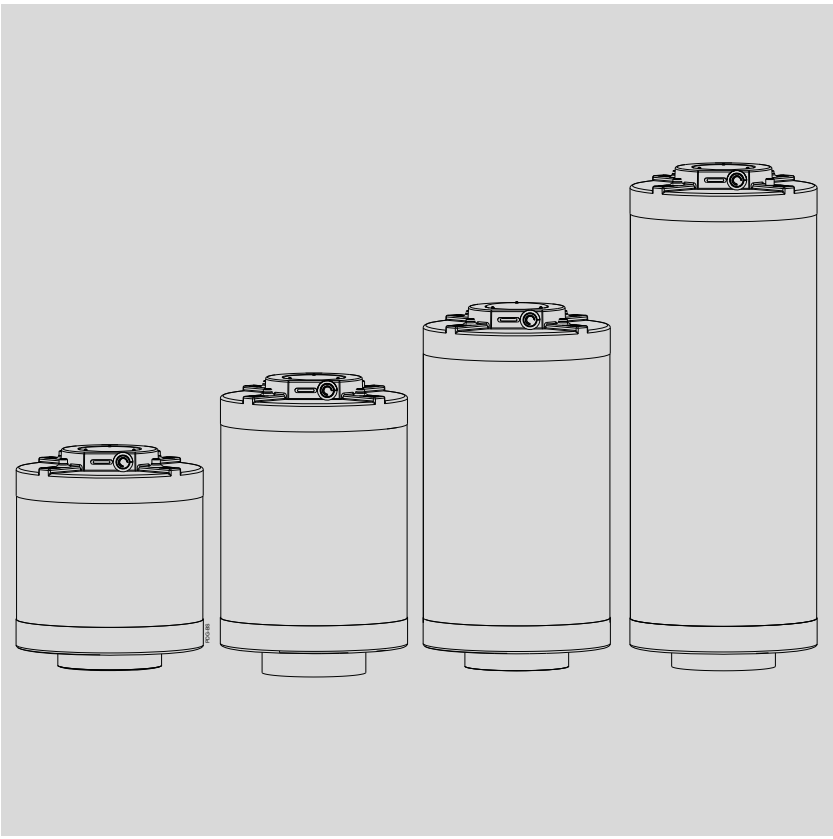
TECHNICAL INSTRUCTIONS



BS

T30.42235.00

CONTENTS

I - SAFETY PRECAUTIONS

1 - SYMBOLS

In this document:

Safety recommendations, warnings and recommendations are by a warning-triangle symbol accompanied by bold text.

2 - SAFETY PRECAUTIONS

2.1 - Fitting, commissioning

- The fitting, the electrical connection and commissioning or any modifications must be carried out by a competent, qualified engineer in accordance with the relevant requirements.

  Respect the electrical connection plan (§ 6.1 - page 13 - chapter IV - INSTALLATION)
- Before installation: make sure the appliance is turned-off at all points. Secure against involuntary re-triggering.
- The domestic hot water tank must only be used to heat water for domestic purposes.

Statutory conditions for installation and maintenance in residential buildings.

- ***Decree of 23 June 1978 and modifying decree of 30 November 2005***

  Heating instructions, hot water supply, layout and safety rules. In particular, ensure that the maximum temperature for distributing hot water is respected.

  A thermostatic mixer must be placed on the domestic hot water distribution to limit the temperature at the drawing point (122°F / 50°C).
- ***Decree from the Ministry of Health relating to protection of water for human consumption.*** In particular, the need to place a disconnection system on the installation's filling system and to use materials and accessories that benefit from a sanitary conformity certificate for domestic water distribution circuits.

-Never place the isolation valve between the pressure safety relief valve and the tank.

-Respect the recommended pressure.

2.2 - Operation

- Respect these installation instructions to ensure flawless operation

Do not block the safety valve's evacuation pipe:

It is normal that the domestic hot water safety box lets a little water escape when heating the hot water tank (water dilation of the tank).

2.3 - Maintenance

- Recommendations for the user:
  - take out an inspection/maintenance contract with an competent and qualified engineer.
  - have the appliance serviced at regular intervals (annually)
  - ensure that the safety and control devices (44 PSI/3 bar safety valve, air bleed, safety control, etc.) are operating properly.
- Respect the safety recommendations of chapter VI - MAINTENANCE - page 16
- Also check that neither the installation nor the domestic hot water tank present any water leaks (leaks may produce a risk for safety and shorten the lifespan).
- Only use original spare parts.

2.4 - User information from the installer

- Inform the user on the operating modes of the appliance and show him how to use the controls.
- Inform the user that he must never undertake any modifications or repairs of the appliance.
- Inform the user of the various possible operating faults and dangers.
- Give the user instructions to the user.
- This appliance must only be operated by a responsible adult who has been instructed in, understands, and is aware of the appliance's operating conditions and effects.
- Children should be supervised to ensure they do not play with the appliance.

II - PRESENTATION

1 - DESCRIPTION

The BS domestic hot water storage tanks are used to produce domestic hot water when the installation contains a boiler that only produces heat.

Under their casing, they have, in thermoformed ABS:

- a stainless steel tank (100/150/200 or 300 litres) comprising:
  - a stainless steel exchanger,
  - an inspection trap,
  - an anode,
  - polystyrene insulation that can be easily removed.
- a domestic hot water temperature setting thermostat,
- a thermometer,
- an elbow and a tube for the domestic cold water intake,
- insulation to be installed in the base under the tank,

The insulation, laid on the top of the tank in the packing, must be fitted to the shell under the tank before the tank is installed.

OPTIONAL:

- Wall support for load-bearing wall is used to attach the BS typ. 25/40 to the wall.
- Wall support for light partition is used to attach the BS typ. 25/40 to a light position.

2 - RANGE

Models	Capacity
BS 25	100 litres
BS 40	150 litres
BS 50	200 litres
BS 80	300 litres

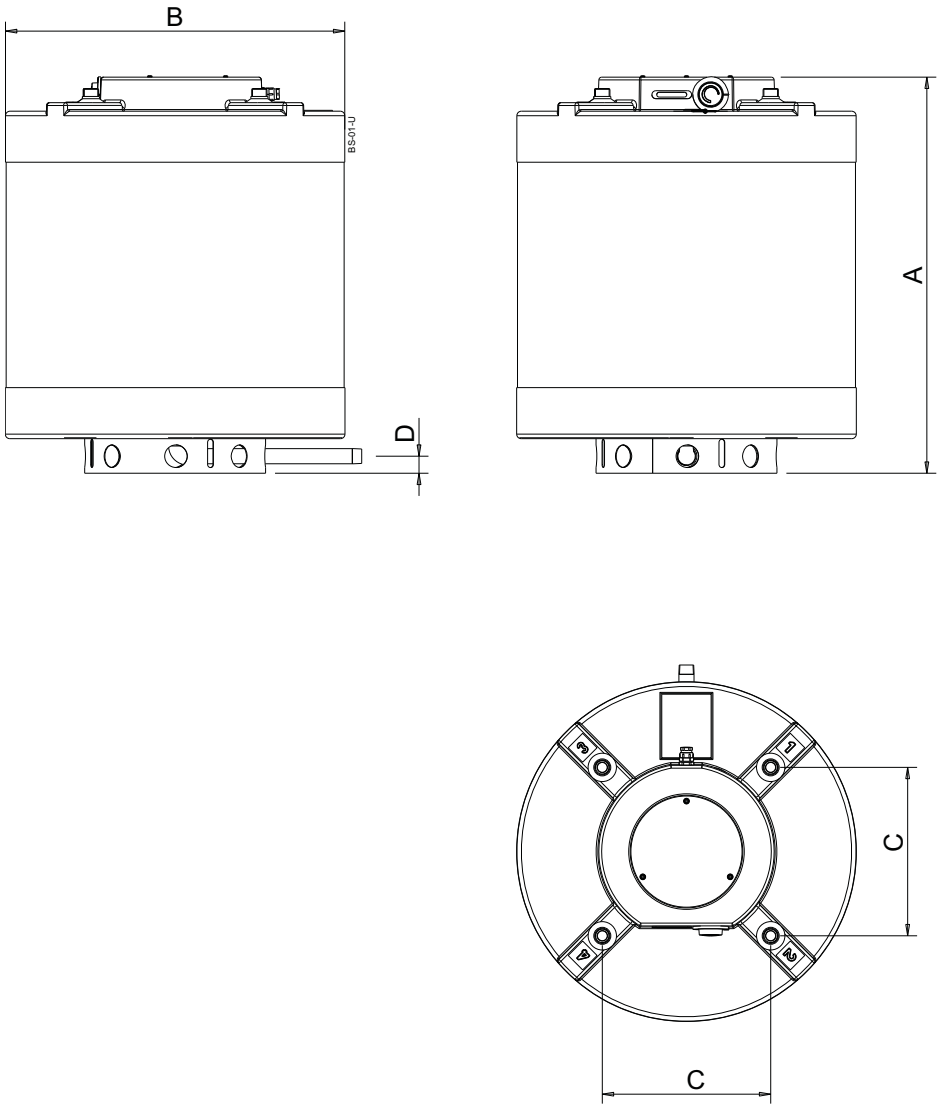
III - TECHNICAL SPECIFICATIONS

1 - CHARACTERISTICS

Models		BS 25	BS 40	BS 50	BS 80
Water capacity	litre gallons	100 26.4	150 39.6	200 52.8	300 79.3
Useful volume	litre gallons	97.7 25.8	147.5 39.0	191.5 50.6	291.1 76.9
Primary capacity (internal exchanger volume)	litre gallons	5,1 1.3	5,2 1.4	10,3 2.7	10,7 2.8
Heat exchanger surface	dm^2 ft^2	95,8 10.3	99,0 10.7	194,8 21.0	201,8 21.7
Max heat exchanger power	kW Btu/h	35 119425	35 119425	60 204728	62 211553
Heat exchanger pressure drop at primary flow rate	mCE IWG	1.2 47.24	1.3 51.18	3.7 145.67	4.1 161.42
Continuous flow rate at 40°C Continuous flow rate at 104°F	l/min gal/min	16.7 4.4	16.7 4.4	28.7 7.6	29.6 7.8
DHW pressure drop at continuous flow rate	mCE IWG	0.030 1.18	0.030 1.18	0.089 3.5	0.094 3.7
Primary flow rate	l/h gal/h	1507 398.1	1507 398.1	2067 546.1	2136 564.3
Maximum domestic hot water storage temperature	°C °F	80 176			
Static tank heat losses (maintenance consumption)	kWh/24h Btu/24h	1.390 4743	1.852 6319	2.331 7954	3.266 11144
Heat losses (tank at 65°C) Heat losses (tank at 149°F)	W Btu/h	58 198	77 263	97 331	136 464
Max service pressure	bar/MPa PSI	10/1 145			
Domestic hot water thermostat range	°C °F	20 to 80 68 to 176			
Thermostat differential	°C °F	6 42,8			
∅ Domestic cold water intake	inch	3/4	3/4	3/4	3/4
∅ Domestic hot water outlet	inch	3/4	3/4	3/4	3/4
∅ Primary inlet	inch	3/4	3/4	3/4	3/4
∅ Primary outlet	inch	3/4	3/4	3/4	3/4
∅ Recycling	inch	3/4	3/4	3/4	3/4
∅ Inspection trap	mm inch	100 3.9			
∅ Heat exchanger pipe	mm inch	25 x 1 0.98 x 0.04			
Empty weight	kg lbs	23 50.7	32.5 71.7	42 92.6	55 121.3
Packed weight	kg lbs	35 77.2	45 99.2	55 121.3	70 154.3

2 - DIMENSIONS

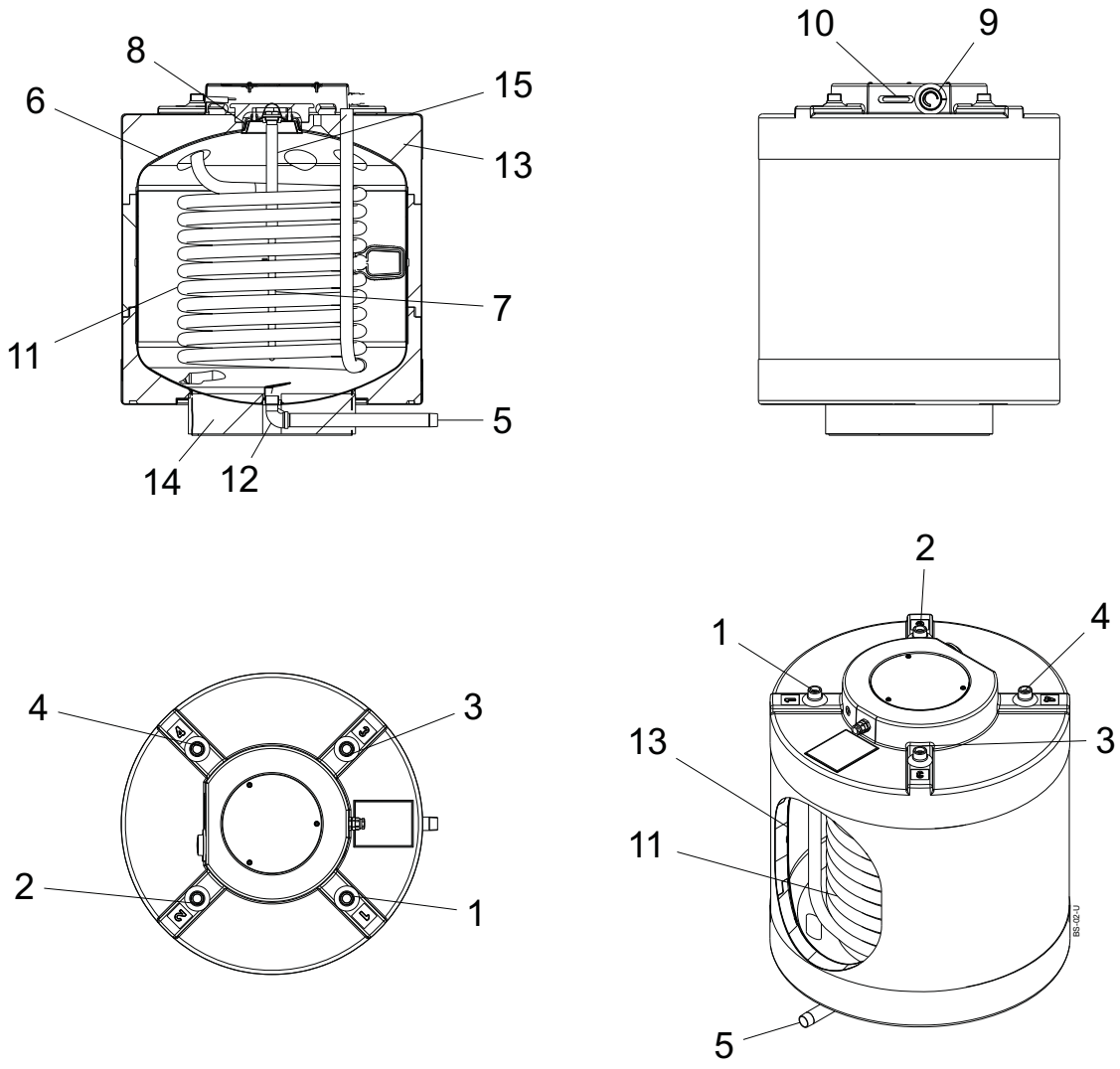
Fig. 1



	A		B		C		D	
Models	**mm**	**inch**	**mm**	**inch**	**mm**	**inch**	**mm**	**inch**
BS 25	700	27.6	600	23.6	297	11.7	30	1.2
BS 40	925	36.4	600	23.6	297	11.7	30	1.2
BS 50	1150	45.3	600	23.6	297	11.7	30	1.2
BS 80	1600	63.0	600	23.6	297	11.7	30	1.2

3 - LIST OF COMPONENTS

Fig. 2



1) *Primary inlet*
2) *Domestic hot water outlet*
3) *Domestic hot water recycling*
4) *Primary outlet*
5) *Domestic cold water inlet*
6) *Hot water tank*
7) *Pocket for domestic hot water setting thermostat bulb*
8) *Inspection trap*
9) *Domestic hot water temperature setting thermostat*
10) *Thermometer*
11) *Stainless steel coiled pipe*
12) *Domestic cold water elbow and tube**
13) *Polystyrene insulation*
14) *Base insulation under tank**
15) *Anode*

* *Accessories to be installed on the tank before it is put in place*

4 - DOMESTIC HOT WATER PRODUCTION BY THE EXCHANGER

	Power exchanged at ΔT 30°K	Continuous flow rate at 40°C	Specific flow rate	Heating time at 60°C (*1)	Load time	Drawable volume at 40°C in 10 min	Drawable volume at 40°C in 1 hour	Drawable volume at 40°C in 10 min	Drawable volume at 40°C in 1 hour
						Storage at 80°C		Storage at 65°C	
	kW	l/min	l/min	min	min	litres	litres	litres	litres
BS 25	35	16.7	22.9	7	13	278	1116	229	1067
BS 40	35	16.7	26.1	11	20	335	1172	261	1098
BS 50	60	28.7	40.8	9	15	504	1940	408	1844
BS 80	62	29.6	48.1	13	22	627	2110	481	1964

	Power exchanged at ΔT 30°K	Continuous flow rate at 104°F	Specific flow rate	Heating time at 140°F (*1)	Load time	Drawable volume at 140°F in 10 min	Drawable volume at 140°F in 1 hour	Drawable volume at 140°F in 10 min	Drawable volume at 140°F in 1 hour
						Storage at 176°F		Storage at 149°F	
	Btu/h	gal/min	gal/min	min	min	gallons	gallons	gallons	gallons
BS 25	119425.0	4.4	6.0	7	13	73	295	60	282
BS 40	119425.0	4.4	6.9	11	20	88	310	69	290
BS 50	204728.5	7.6	10.8	9	15	133	512	108	487
BS 80	211553.0	7.8	12.7	13	22	166	557	127	519

Cold water temperature = 10°C / 50°F
Primary temperature = 80°C / 176°F

Performances obtained with a power generator at least equal to that of the exchanger.

(*1): after 10 mins' drawing.

IV - INSTALLATION

1 - GENERAL

The appliance must be installed and maintained by a qualified professional, according to current statutory and industry standards.

These rules are specific to the buildings where the appliances are installed.

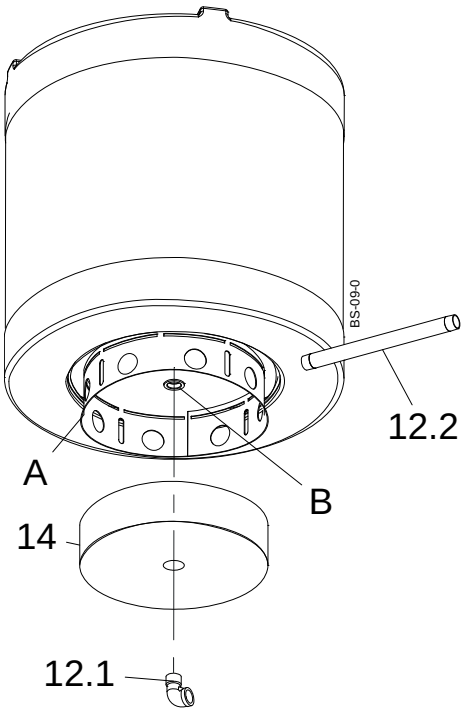
The tanks must be installed by a qualified specialist of unvented system in accordance with local Standards.

The tank must be protected against over pressure with a suitable approved safety relief valve.

2 - ASSEMBLING THE ACCESSORIES DELIVERED WITH THE DOMESTIC HOT WATER STORAGE TANK (ELBOW + TUBE + INSULATION)

- Install the insulation (14) in the base (A),
- fit the elbow (12.1) to the cold water intake weld (B) below the tank (put it in the required position to connect the cold water intake),
- Screw the cold water intake tube (12.2) onto the elbow (12.1) by running it through one of the openings provided for the purpose in the base (A).

Fig. 3



3 - WALL SUPPORT FOR LOAD-BEARING WALL: BS 25/40 (OPTION)

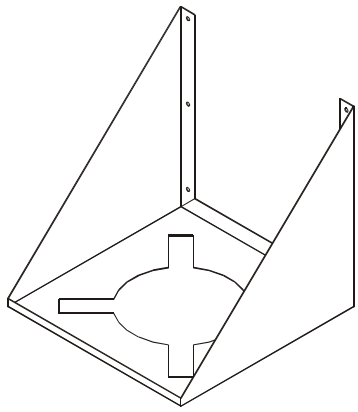
The wall support is used to attach the BS 25/40 domestic hot water storage tanks to the wall.

The hydraulic connection is performed from the top.

Note:

- Check the wall; it must be in perfect condition (breeze blocks, concrete, etc.). If this is not the case, select the support for light partition option (section 4 - page 10 - chapter IV - INSTALLATION) -
- Use the holding screws adapted to the load - (6 screws ∅ 10 minimum).

Fig. 4



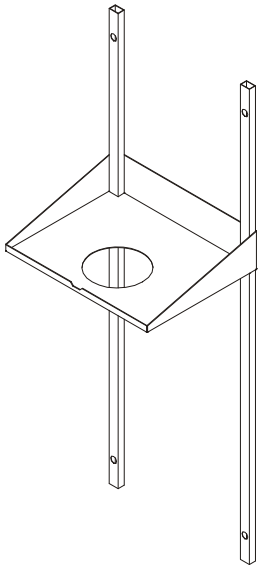
4 - WALL SUPPORT FOR LIGHT PARTITION: BS 25/40 (OPTION)

The wall support is used to attach the BS 25/40 domestic hot water storage tanks to a light position (height adjustable).

The hydraulic connection is performed from the top.

Refer to the support assembly instructions.

Fig. 5



5 - HYDRAULIC CONNECTION

5.1 - Recommendations

Burn risk:

Never place an isolation valve between the pressure safety relief valve and the tank.

Scalding : A thermostatic mixer must be placed on the domestic hot water supply system to limit the temperature at the drawing point (122°F / 50°C).

Check that the primary circuit pressure (exchanger) does not exceed 145 PSI/ 10 bar or the maximum acceptable boiler pressure if this is less than (145 PSI/ 10 bar).

When the domestic hot water storage tank has been selected to provide its maximum performance, check that the boiler's flow rate, primary temperature and power are respected according to those of the tank exchanger.

5.2 - Accessories to connect, install or adjust

- *Pressure safety relief valve :*

  The pressure safety relief valve must be installed:

  - on the domestic cold water inlet, cloth to the tank, to guarantee maximum service pressure for the tank,
  - at the low point (9.8 inch/0.25 m from the ground) to enable the tank to be drained section 2 - page 17 - chapter VI - MAINTENANCE. Otherwise, provide a weld with a tap at the low point.
  - The pressure safety relief valve will be connected to the used water evacuation by a tube on a continuous downward slope located in an area away from frost. This tube must be kept open to the air (funnel with siphon).

  To avoid the pressure falling quickly when drawing hot water leading to the premature aging of the domestic hot water network seals, check:

  - that you correctly size the cold water intake pipe to a diameter greater than or at least equal to that of the hot water distribution,
  - you do not create any major pressure loss on the cold water intake though the installation of various accessories (valves, flap, etc.).

  It is normal for the domestic hot water safety group to let a little water escape when heating the hot water tank. **Never block this escape.**

  However, to avoid this water running from the safety control box and if the cold water pressure exceeds 58 PSI/4 bar, you are recommended to:

  - fit a pressure reducer set to 44 PSI/3 bar, on the cold water inlet and upstream of the safety control box.
  - fit a domestic hot water expansion vessel which will be placed cloth to the tank cold water intake (refer to the vessel's manual for its size and pre-inflation according to the tank value and the cold water pressure).

- *Piping thermal insulation:*

  To limit heat loss to a minimum, insulate the boiler link tubes and the tank's domestic hot water outlet tube.

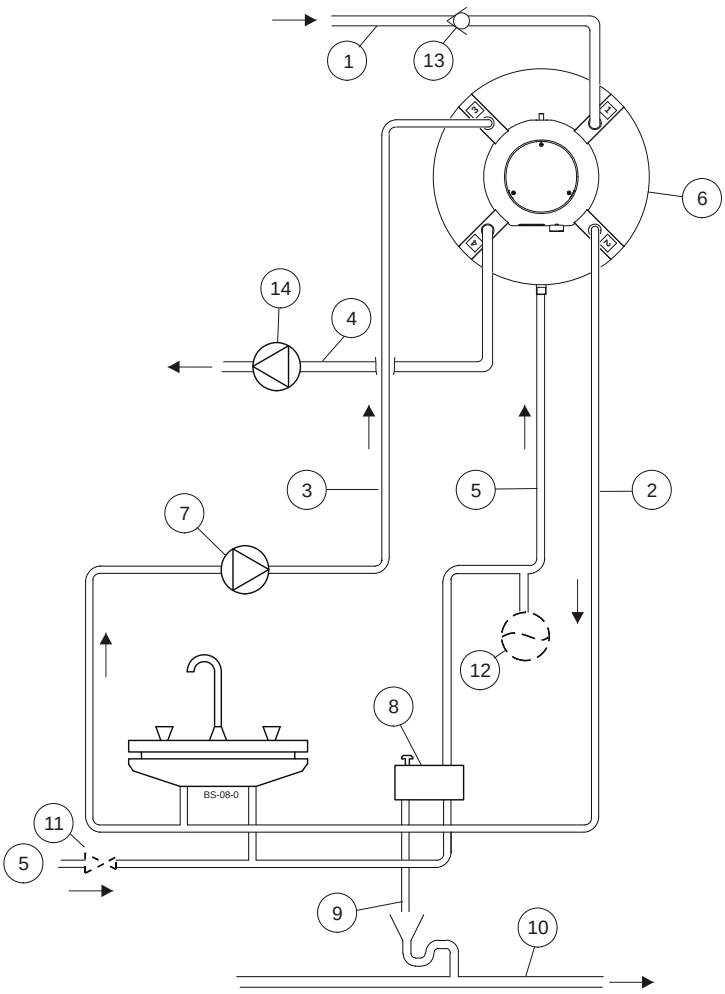
  If domestic hot water recycling is connected, you must thermally insulate the domestic hot water recycling pipes.

- *Inspection trap access:*

  Leave enough room above the tank to enable access to the stainless steel tank inspection trap (scaling check) - (refer to section 1 - page 16 - chapter VI - MAINTENANCE)

5.3 - Hydraulic diagram

Fig. 6



1) Primary inlet (boiler to tank)
2) Domestic hot water outlet
3) Domestic hot water recycling
4) Primary outlet (tank to boiler)
5) Domestic cold water inlet
6) Domestic hot water storage tank
*7) Domestic hot water recycling pump**
*8) Pressure safety relief valve**
9) Pressure relief evacuation
10) Evacuation to drains
*11) Pressure reducer**
12) Domestic hot water expansion vessel
*13) Non-return valve**
14) Domestic hot water load pump

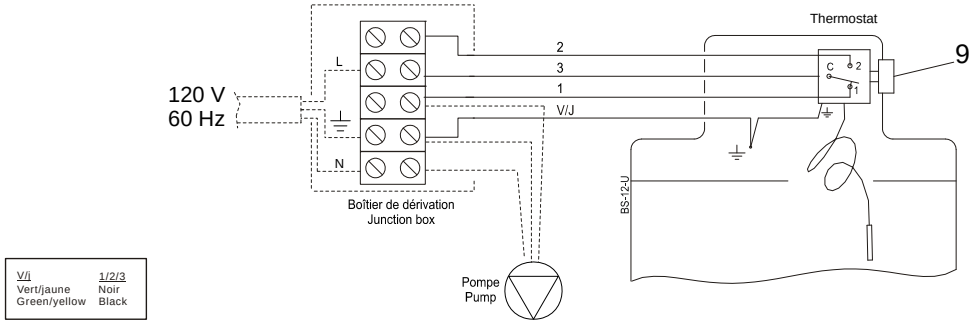
* *accessories not provided*

6 - ELECTRICAL CONNECTION

- The electrical connection and all the equipment used to make this connection must be in conformity with the codes of practise in force (according to the installation standards),
- The place where the electricity connection is installed must be suitable for the domestic hot water storage tank's level of protection IP20,
- Power supply: 120 V - 60 Hz (single phase),
- Earth connection compulsory.
- The electricity supply must contain a circuit breaker, preferably bipolar, with a 6 A trip switch or fuse.
- Respect the Live-Neutral polarities,

6.1 - Electrical diagram

Fig. 7



6.1.1 - Boiler with domestic hot water load pump

The setting thermostat (9, fig. 7) starts up the load pump that supplies the tank's exchanger when there is a request for domestic hot water.

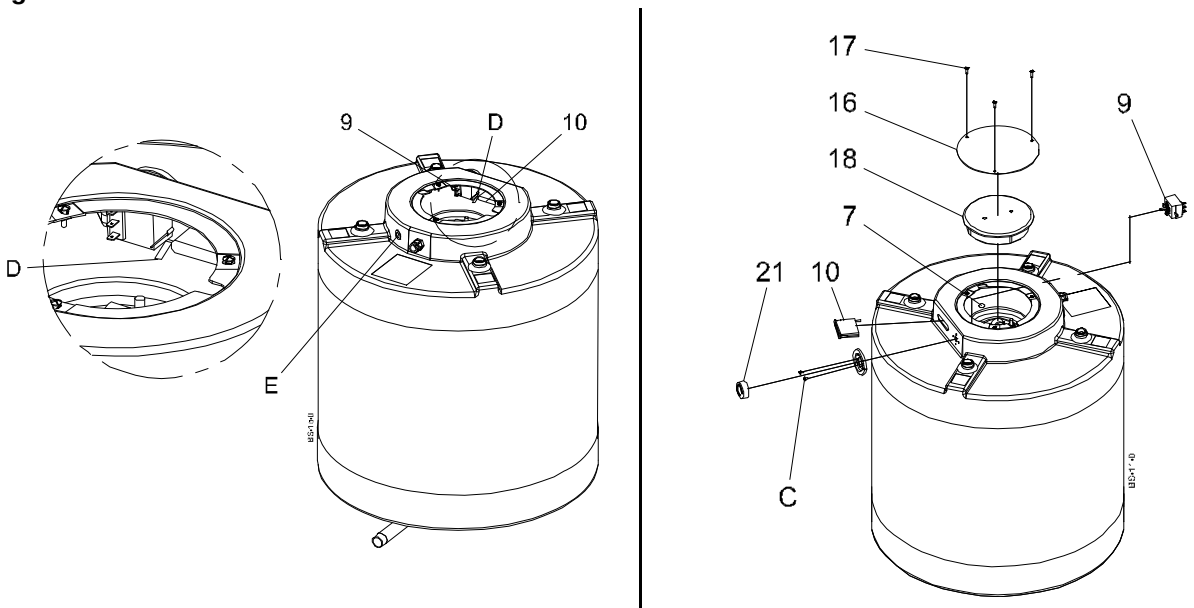
- Connect the domestic hot water load pump as indicated in fig. 7.

6.1.2 - Boiler equipped with electronic regulation

The domestic hot water temperature will be adjusted on the boiler's regulator. (The setting thermostat (9) is not active).

- Extract the bulbs from the thermostat (9) and from the thermometer (10) from the pocket (7) - access from the top of the tank (fig. 8).
- run the domestic hot water sensor bulb delivered with the boiler through the plug (E),
- Push the domestic hot water sensor bulb as far as possible into the pocket (7) to ensure satisfactory thermal contact.
- Reposition the thermometer bulb as far as possible into the pocket (D) planned for this purpose in the polystyrene insulation.

Fig. 8



V - COMMISSIONING

1 - PROTECTION AGAINST CORROSION

The tank and the heat exchanger are made in stainless steel. The magnesium anode is an additional protection against corrosion in the case of particularly aggressive domestic use water (chloride content).

2 - FILLING THE INSTALLATION WITH WATER

- Filling the installation:
  - before you fill, rinse the installation's pipes, except for the tank.

  Refer to the boiler's manual
- Filling the tank:
  - fill the domestic hot water storage tank using the installation's pressure safety relief valve (8, fig. 6 - page 12 - chapter IV - INSTALLATION) taking care to open a hot water tap.
  - After the system is full, check that the tank's inspection trap is tightly shut.
- Drain the tank and the installation thoroughly before filling.

3 - VERIFICATIONS PRIOR TO COMMISSIONING

- Check that the tank inspection trap is tight and waterproof (8, fig. 2 - page 7 - chapter III - TECHNICAL SPECIFICATIONS,
- Check the waterproofing of the various seals and connectors in the installation,
- Check that the primary circuit is drained,
- Check that the electrical connection is correct.
- To guarantee the stated performances, check that the cold water tap is set to obtain a maximum flow rate for the hot water of the value indicated in section 1 - page 5 chapter III - TECHNICAL SPECIFICATIONS).

4 - USER INFORMATION

The installer must train the user in how the appliance works. In particular, the user must be informed of the role and operation of the safety mechanisms and the need to have the appliance maintained regularly by a qualified professional.

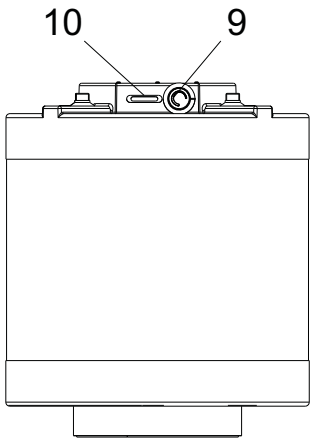
5 - COMMISSIONING

You will see that a few litres of water escape from the pressure safety relief valve as the tank's temperature rises. This is normal.

This evacuation must not be blocked under any circumstances (water expansion).

The quantity of water that escapes depends on the temperature level and the cold water pressure. When this cold water pressure is very high, it may be limited to 44 or 58 PSI (3 or 4 bar) by a pressure reducer places on the tank's cold water inlet upstream of the pressure safety relief valve. (Refer to section 5.2 - page 11 - chapter IV - INSTALLATION).

Fig. 9



9) Domestic hot water temperature setting thermostat

10) Thermometer

- Commissioning the boiler,

5.1 - Boiler with domestic hot water load pump

- Adjust the domestic hot water temperature setting thermostat (9, fig. 9) according to the selected temperature - **Recommended setting 131°F=55°C/ 140°F=60 °C (read on the thermometer (10))**. This setting is used to limit heat loss and scaling while preventing legionella from spreading if the domestic cold water is contaminated. A temperature of less than 140°F/60°C also limits the spread of limescale (refer to section 1 - page 16 - chapter VI - MAINTENANCE)
- Set the boiler's thermostat to a temperature greater than that of the domestic hot water storage tank.

  Always set to a value greater by at least 50°F/ 10°C than the desired storage temperature in the domestic hot water tank, but never to a value of over 185°F/85°C to avoid any unplanned triggering of the thermal safety devices (ideal boiler setting = 167°F/75°C, domestic hot water storage tank = 140°F/ 60°C).

5.2 - Boiler equipped with electronic regulation

- When the boiler is fitted with electronic regulation, the domestic hot water temperature is set on the boiler's regulator (the domestic hot water temperature setting thermostat (9) on the BS tank is not active).

Refer to the Commissioning chapter in the boiler's technical instructions.

VI - MAINTENANCE

An annual inspection of the tank is compulsory. It must be carried out by a qualified professional.

All spare parts will be original parts and must be ordered using the references in chapter VII - PARTS LIST - page 18, specifying the appliance type and serial number.

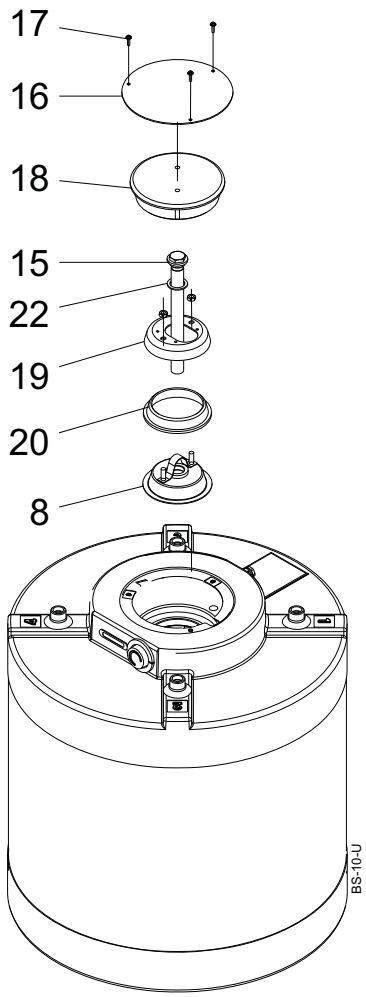
Ensure all electrical supplies are isolated before carrying out any maintenance on the tank.

1 - TANK MAINTENANCE

- In very hard water regions
  (TH > 30) if the tank needs to be cleaned frequently, the ideal solution is to add a water softener to the installation or to install an anti-limescale treatment system on the installation's cold water inlet.

  Adjust the domestic hot water temperature to a value of less than 140°F/60°C. Limescale spreads quicker above 140°F/60°C.
- If the tank is inspected through the inspection trap (8, fig. 10) provided for the purpose:
  - remove the protective plate (16) - remove the 3 screws (17),
  - remove the insulation (18),
  - remove the inspection trap (8), flap flange (19) and seal (20),
  - replace the flap (20) each time it is removed,
  - refit the assembly,
  - after filling:
    . check that the tank is watertight,
    . drain the tank thoroughly.
- The anode (15, fig. 10) must be checked once a year:
  - Cut off the water supply to the system using the stopcock,
  - Drop the pressure inside the hot water tank by opening a hot water tap,
  - Unscrew the anode (15, fig. 10) using a suitable spanner,
  - Check the degree of corrosion on the anode. If it weighs under 0.33 lb/150 g, replace it.
  - Replace the sealing joint (22, fig. 10) and screw the anode in tightly,
  - Open the water supply to the system.

Fig. 10



2 - DRAINING

The hot water tank may be drained by siphoning through the pressure safety relief valve as long as this is installed on the lower part of the tank.

Provide an air inlet by opening a hot water tap.

3 - PRESSURE SAFETY RELIEF VALVE

Check the operation of the pressure safety relief valve every year and rinse it by briefly bleeding it several times.

A safety valve that is not working correctly may cause damage due to excessive pressure.

If necessary, replace it if it stops working correctly or begins to leak (permanent flow through the valve).

4 - CHANGING THE THERMOSTAT OR THE THERMOMETER

4.1 - Bulbs positioned in the pocket (7)

- Domestic hot water temperature setting thermostat (9).
- Thermometer (10)

4.2 - Changing the thermostat or the thermometer

- remove the protective plate (16) - remove the 3 screws (17),
- remove the insulation (18),
- gently take the bulbs out of the pocket (7),

4.2.1 - Thermostat

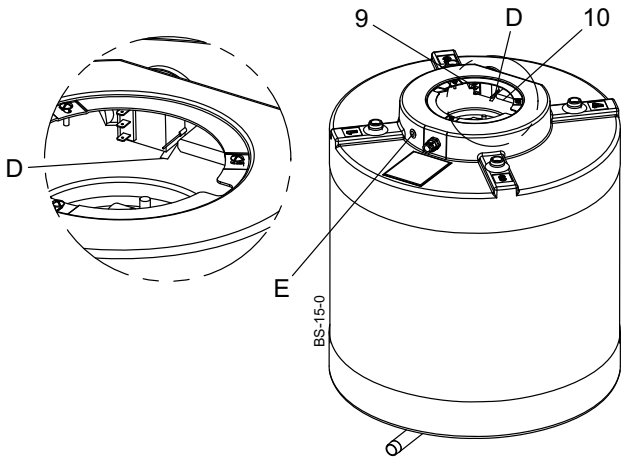
- remove the button (21) from the setting thermostat (9)
- unscrew the 2 attachment screws (C) on the thermostat (9),
- remove the defective thermostat (9) and replace it,
- position the setting thermostat bulb in the pocket (7). Push it as far as possible into the pocket to ensure satisfactory thermal contact.

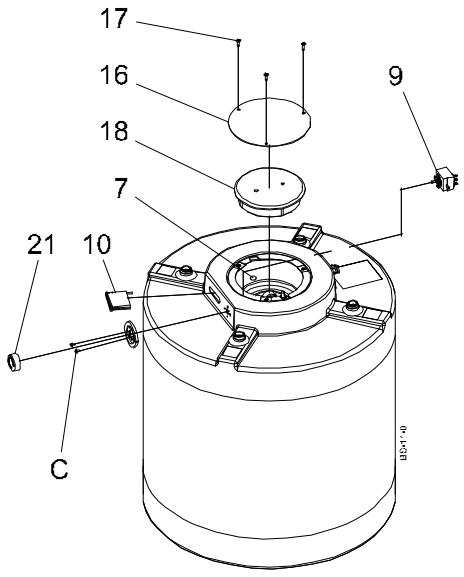
If the tank is heated by a boiler, the setting thermostat bulb will be replace by the domestic hot water sensor bulb in the pocket (7).

4.2.2 - Thermometer

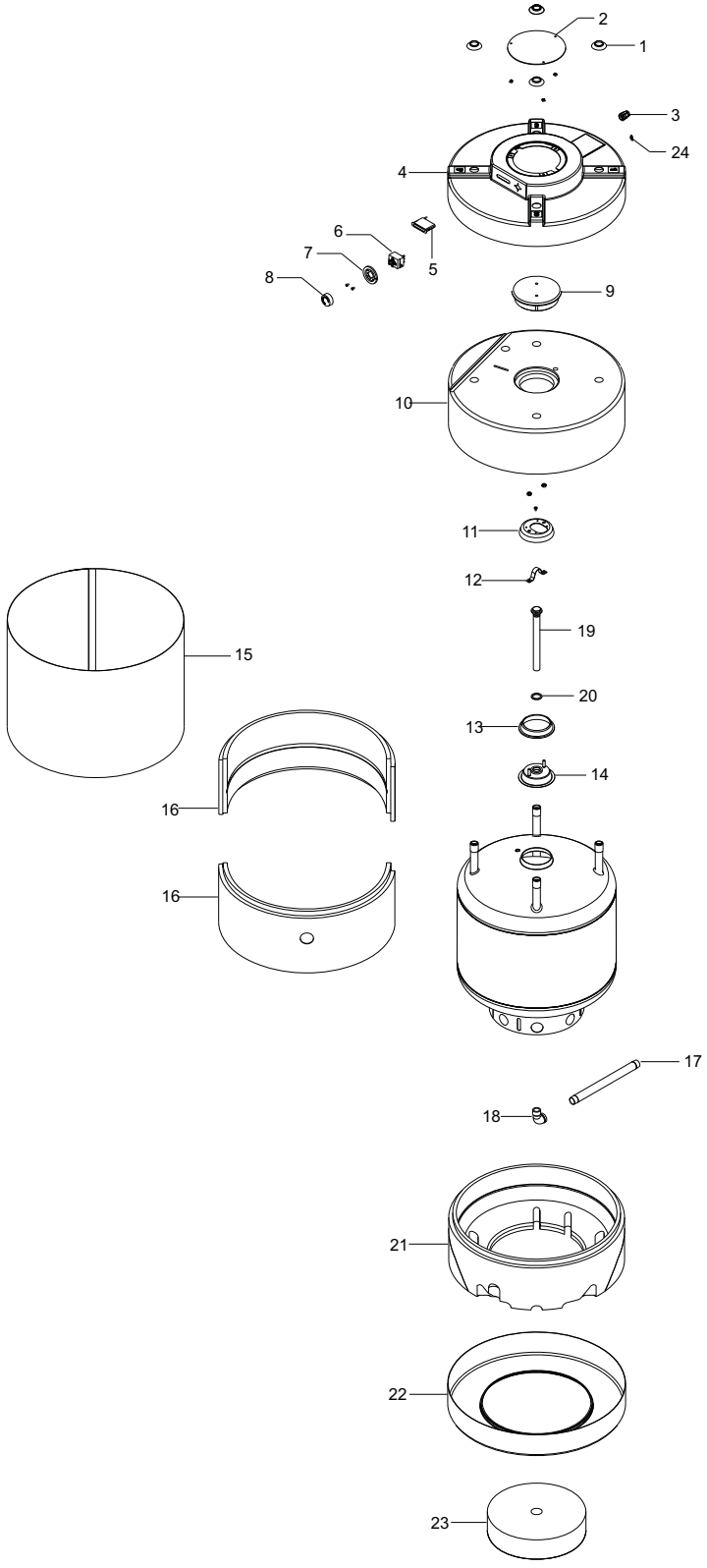
- remove the defective thermometer (10) and replace it,
- position the thermometer bulb in the pocket (D). Push it as far as possible into the pocket to ensure satisfactory thermal contact.

Fig. 11





BS 25/40/50/80



MSS0U962-00

Item.	Reference	Description
1	A00.03749	FLANGE PLASTIC D.27 WHITE
2	A90.40844	BS SUPERIOR HOOD
3	C91.24506	CABLE BUSHING N° 9
4	V49.17660	BS SUPERIOR BOTTOM EQUIPPED
5	L60.01135	THERMOSTAT RECT HORIZ 69X14 LG CAPIL.1500 MM
6	L71.10972	THERMOSTAT 20/80°C
7	L71.16695	BLACK CAP FOR THE THERMOSTAT
8	L71.15349	BLACK THERMOSTAT KNOB
9	D20.34129	PLASTIC STOPPER TANK SERANE THRI
10	D20.15476	UPPER INSULATION PART IN POLYSTYRENE
11	I10.29477	FLANGE FOR CLEANING DOOR
13	E20.10187	SEALING / CLEANING DOOR
14	V90.19984	ANODE CLEANING DOOR
15	A90.16622	ABS SHEET ; EP:0,8 1935X440 (BS100)
15	A90.16623	ABS SHEET; EP:0,8 1935X665 (BS150)
15	A90.16624	ABS SHEET ; EP:0,8 1935X890 (BS200)
15	A90.16625	ABS SHEET ; EP:0,8 1935X1340 (BS300
16	D20.16720	HALF-SHELL INSULATION IN POLYSTYRENE
17	U49.16629	DOMESTIC COLD WATER PIPE LENGTH 310
18	K12.18141	SAINLESS STEEL BEND 90° M3/4-F3/4
19	K50.18085	ANODE + CAP +SEALING 3/4-D.22X230 MAGNESIUM
20	E20.18103	SEALING AFM34 D.36X26X2
21	D20.38765	LOWER CAP DN 535
22	A90.15474	THERMOFORMED
23	V49.19366	BS BASE INSULATION WASHER
24	A00.06219	PLASTIC CAP MALE 10,3 BLACK
*	W49.42241	INTERNAL WIRING BS US

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