

Glass Lined Buffers

10 bar, 2"-2.5"

8 bar



Important

Please read & understand all these instructions before commencing installation.
This buffer range does not incorporate an internal heat exchanger.
Please leave this manual with the customer for future reference

Contents

Product Specification

Introduction	3
General requirements	3
Installation standards	3
Storage and handling	4
Before Installation	4
ErP data information	4
8 bar Buffer dimensions	5
10 bar Buffer dimensions	8
Weights	11
Standing Heatloss	11
Limitations	12

Installation & Commissioning

General Installation	12
Cold Water Supply	12
Secondary circulation and De-Stratification	13
Discharge Pipe work	15
Commissioning	19

Maintenance & Servicing

Maintenance requirements	19
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Warranty

Warranty Terms and Conditions	20
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Product specification

Introduction

Congratulations on your purchase of an Andrews buffer vessel. The Andrews buffer products are manufactured from top quality materials and meet all the latest relevant safety and constructional standards.

General Requirements

IMPORTANT: Please read and understand this product guide before installing the Andrews buffer vessel. Incorrect installation may invalidate the warranty*.

The Andrews buffer vessel must be Installed, Commissioned and Maintained by a competent installer in accordance with 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).

* **See Terms and Conditions of warranty**

THIS APPLIANCE CAN BE USED BY CHILDREN AGED FROM 8 YEARS AND ABOVE AND PERSONS WITH REDUCED PHYSICAL, SENSORY OR MENTAL CAPABILITIES OR LACK OF EXPERIENCE AND KNOWLEDGE IF THEY HAVE BEEN GIVEN SUPERVISION OR INSTRUCTION CONCERNING USE OF THE APPLIANCE IN A SAFE WAY AND UNDERSTAND THE HAZARDS INVOLVED. CHILDREN SHALL NOT PLAY WITH THE APPLIANCE. CLEANING AND USER MAINTENANCE SHALL NOT BE MADE BY CHILDREN WITHOUT SUPERVISION

WARNING: Do not use if there is a possibility that the water in the buffer vessel is frozen.

Important Notice:

When installed with a KIWA approved unvented kit the Andrews buffer vessels are approved as meeting current water regulations.

To satisfy these regulations when the kit is not supplied it will be required that the installer ensures that all of the system components meet the required standards.

BS 6700 : Design, Installation, Testing and Maintenance for Domestic use within Buildings and their Curtilages.

BS 7206 : Specification for Unvented Hot Water Storage Units and Packages.

BS EN 806 : Specifications for Installations inside Buildings Conveying Water for Human Consumption.

BS EN 12897 : Specification for Indirectly Heated Unvented Storage.

Storage and Handling

Please take care when handling a packaged Andrews buffer vessel. 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 Andrews buffer vessel unit must be vertically floor mounted. 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 and indirect controls should be possible for servicing and maintenance of the system.

ErP data

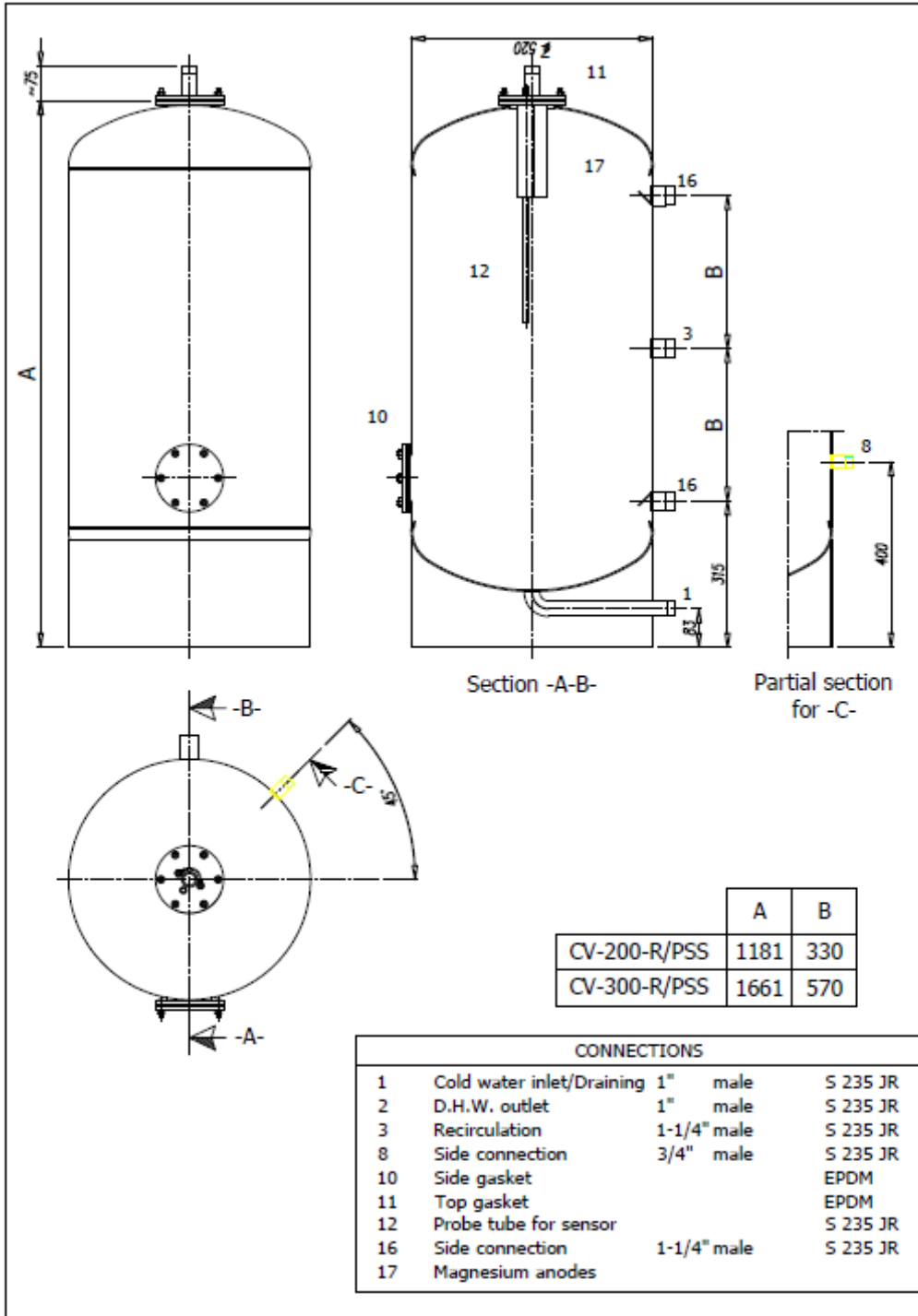
Model(s)	200	300	500	800	1000
Energy efficiency class	B	B	C	B	C
Standing loss (kWh/24h)	1.34	1.61	2.23	2.14	2.76
Storage volume V in Litres	197	292	490	780	970

Table 3: ErP Data Information

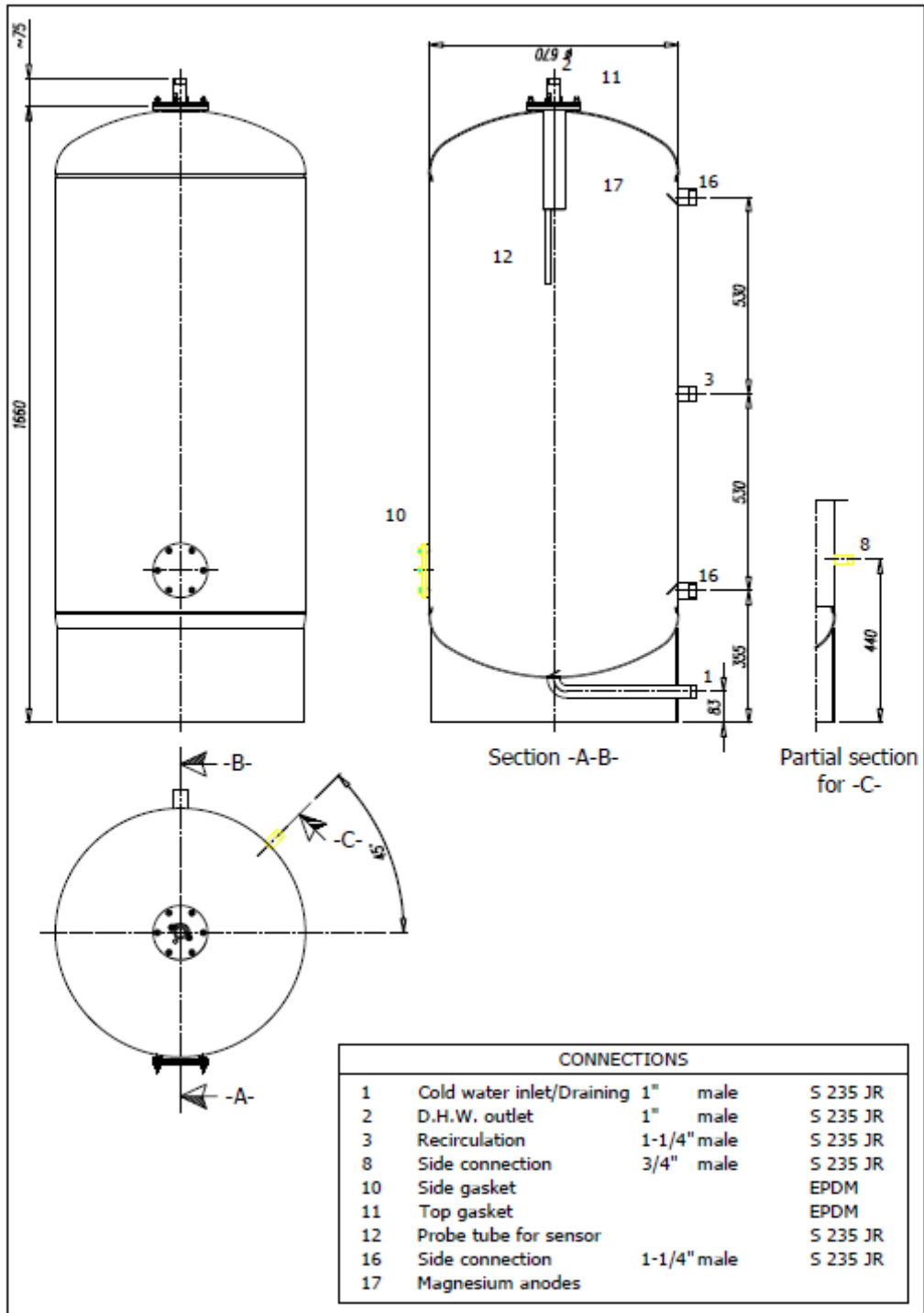
Technical parameters in accordance with European Commission regulations 814/2013 and 812/2013

8 bar Glass Lined Buffers

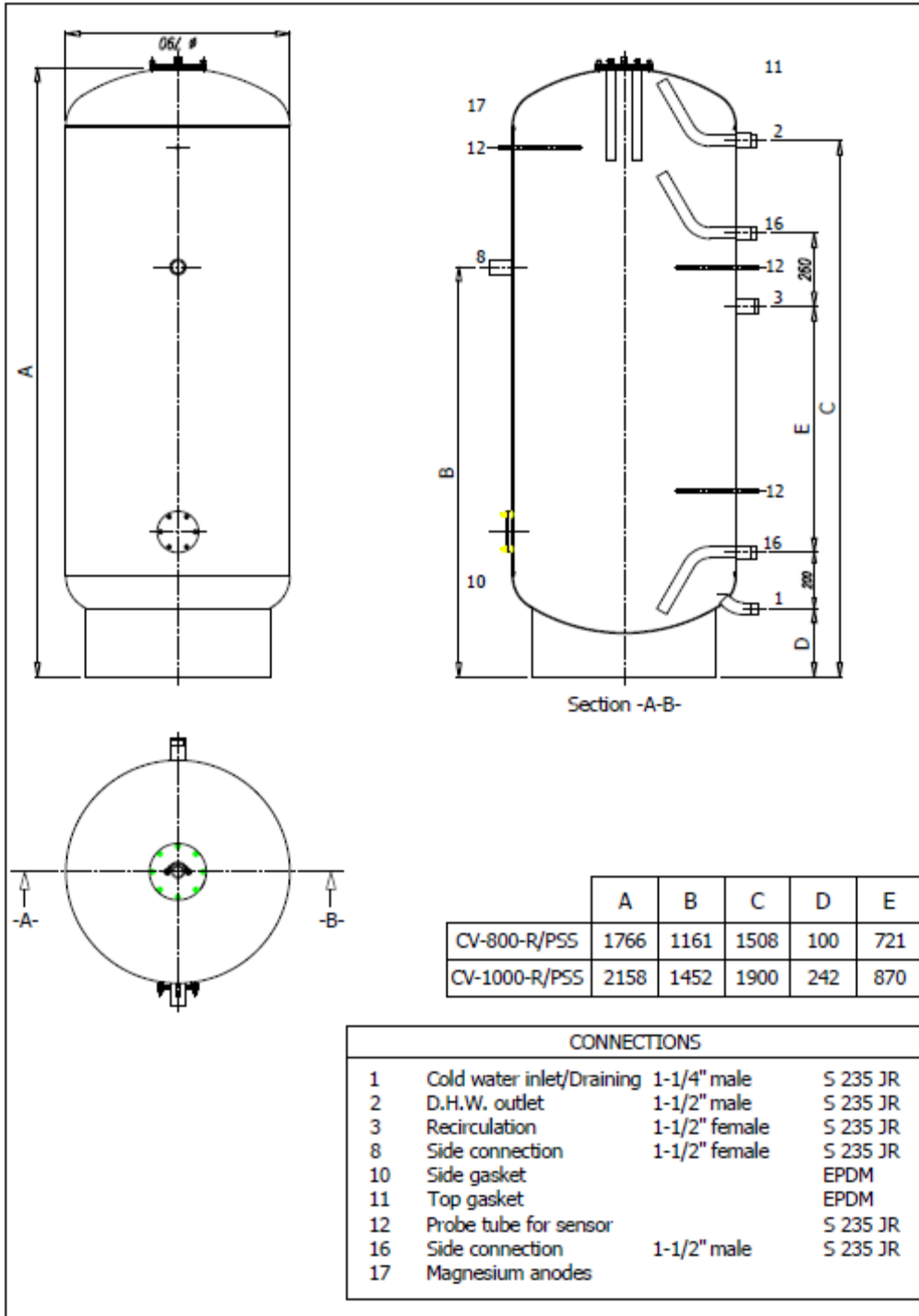
200 & 300 Ltr



500 Ltr

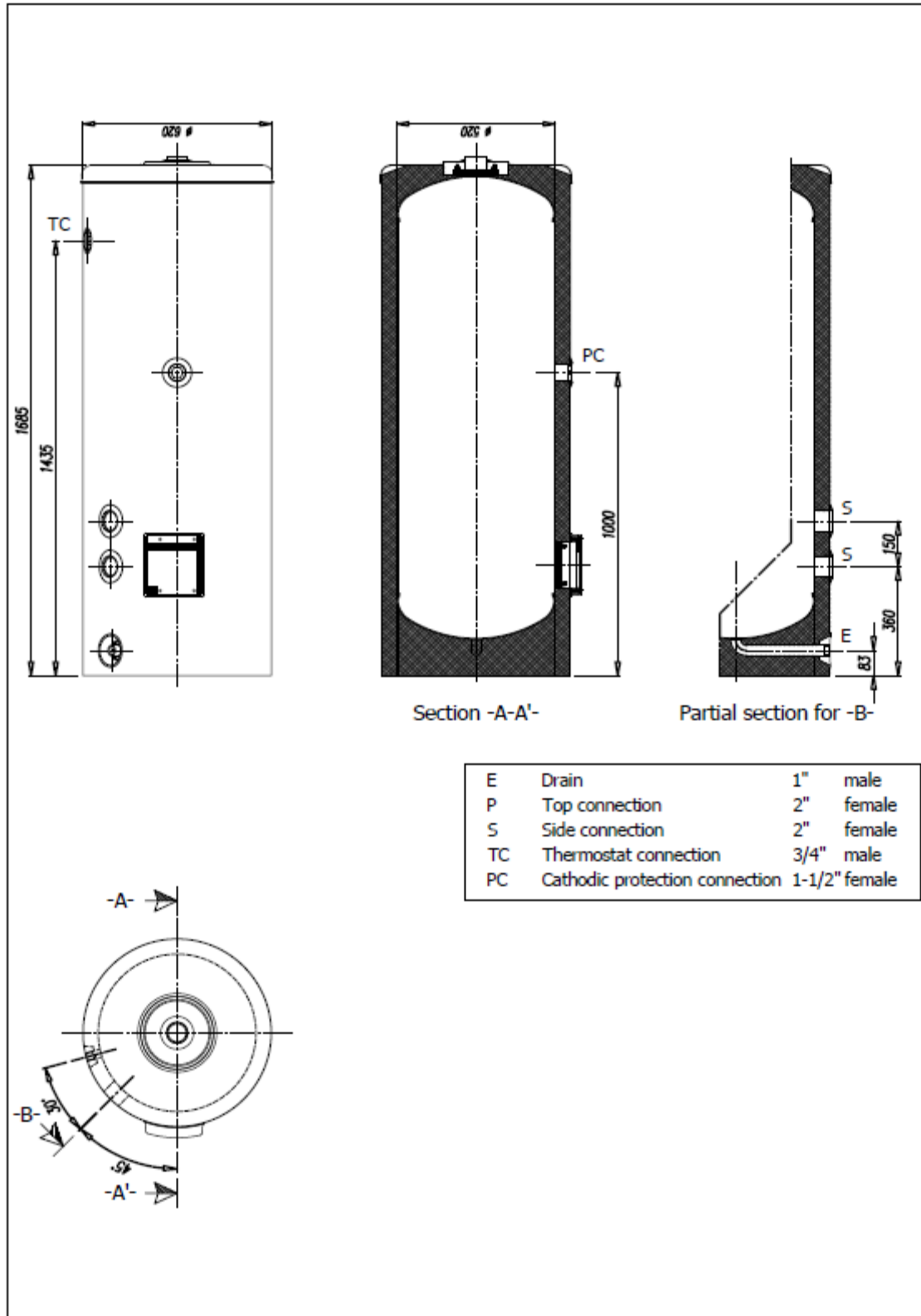


800 & 1000 Ltr

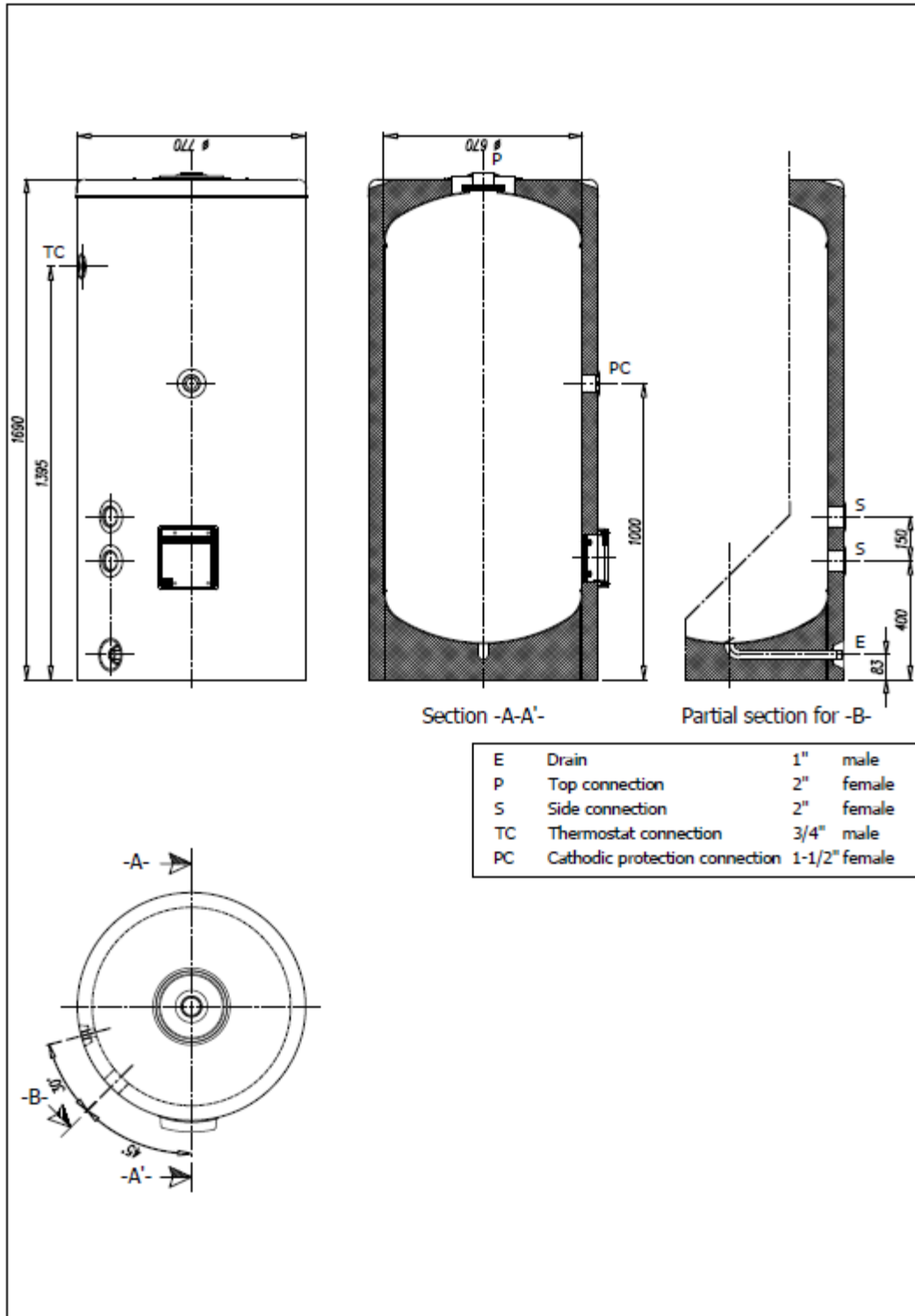


10 bar Glass Lined Buffers

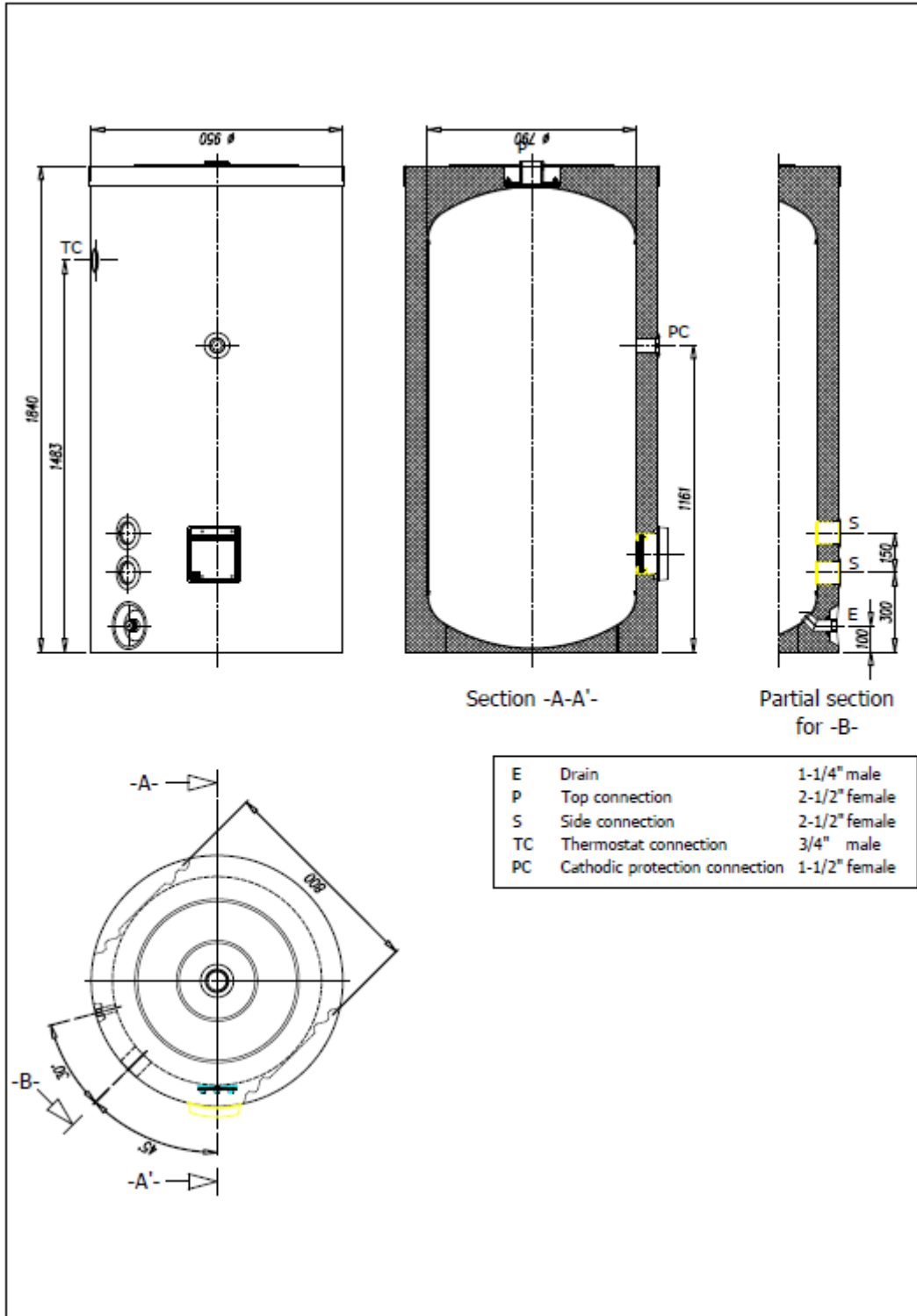
300 Ltr



500 Ltr



800 Ltr



N o m i n a l Capacity (Litres)	Unit Weight (kg)	
	Empty	Full
200	61	261
300	77	377
500	125	625
800	168	968
1000	198	1198

Table 5: Weights

N o m i n a l Capacity (Litres)	Per Day (kWh/24h)	Per Year (kWh/24h)
200	1.34	489
300	1.61	587
500	2.23	813
800	2.14	781
1000	2.76	1007

Table 6: Standing heat-loss

Testing is carried out to BS EN12897

Limitations

- The Andrews buffer vessel should not be used in any of the following instances:
- 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.
- Gravity circulation primaries.
- Steam heating plant unless additional and appropriate safety devices are installed.
- Ascending spray type bidets or any other Class 5 back syphonage risk requiring that a Type AA, AB, AD or AG air gap be employed.
- Water supplies that have either inadequate pressure or where the supply may be intermittent.
- Situations where it is not possible to safely pipe away any discharge from the safety valves.
- Areas where the water consistently contains a high proportion of solids, eg. suspended matter that could block the strainer, unless adequate filtration can be ensured.
- The installation must be carried out in accordance with the relevant requirements of the appropriate Building Regulations: either The Building Regulations (England), The Building Regulations (Scotland) or Building Regulations (Northern Ireland), The Water Fittings Regulations (England and Wales) or Water Byelaws (Scotland).

Installation & Commissioning

General installation

Pipe fittings

All pipe connections to the Andrews buffer are made via BSP threaded pipe connection directly to the unit.

Installation

Flush supply pipe work before connection to remove all flux and debris prior to fitting the inlet controls. Failure to do this may result in irreparable damage to the buffer and will invalidate the warranty.

Secondary Circulation

If a secondary circulation system is required it is recommended that it be connected to the Andrews buffer similar to Figure 9. The secondary return pipe should be in 28mm pipe and incorporate a check valve to prevent back flow, smaller pipe diameters can be used but may have a reduced flow. A suitable WRAS approved circulation pump will be required. On large systems, due to the increase in system water content, it may be necessary to fit additional expansion volume to the secondary system by fitting an external expansion vessel to the circuit. This should be done if the capacity of the secondary circuit exceeds 10 litres.

De-stratification kits

The correct size of de-stratification kit must be used with your buffer to ensure the volume can be circulated in 1 hour. The pump instructions will need to be reviewed for information on the correct setting. Please follow the installation schematic (Figure 9) for guidance. When the system circulates it needs to be specified by the installer to ensure water is not drawn off during the de-stratification process. If a hot water demand is required during this period cold water may be discharged from the hot outlet. It is recommended that a check valve be installed before the pump to stop any risk of cold water draw off through the pump when it is not in use. For guidance on installation please refer to Figure 9.

Unvented systems

If the cylinder is being used for storage of domestic hot water on an unvented system additional Temperature and Pressure valve must be fitted to the cylinder hot outlet connection with the use of a T-piece and ensuring the probe from the Temperature and Pressure valve is fully immersed in water in the top of the cylinder.

Pipe capacities (copper)

22mm o/d = 0.38 litres per metre run (10 litres = 26m)
28mm o/d = 0.55 litres per metre run (10 litres = 18m)
35mm o/d = 0.83 litres per metre run (10 litres = 12m)
42mm o/d = 1.23 litres per meter run (10 litres = 8m)

The following extract is taken from latest G3 Regulations

Discharge pipes from safety

Devices Discharge pipe D1

3.50 Safety devices such as *temperature relief valves or combined temperature and pressure relief valves* (see paragraphs 3.13 or 3.18) should discharge either directly or by way of a manifold via a short length of metal pipe (D1) to a *tundish*.

3.51 The diameter of discharge pipe (D1) should be not less than the nominal outlet size of the safety device, e.g. *temperature relief valve*.

3.52 Where a manifold is used it should be sized to accept and discharge the total discharge from the discharge pipes connected to it.

3.53 Where valves other than a *temperature and pressure relief valve* from a single unvented hot water system discharge by way of the same manifold that is used by the safety devices, the manifold should be factory fitted as part of the *hot water storage system unit* or package.

Tundish

3.54 The *tundish* should be vertical, located in the same space as the unvented *hot water storage system* and be fitted as close as possible to, and lower than, the safety device, with no more than 600mm of pipe between the valve outlet and the *tundish* (see Diagram 1).

Note: To comply with the Water Supply (Water Fittings) Regulations, the tundish should incorporate a suitable air gap.

3.55 Any discharge should be visible at the tundish. In addition, where discharges from safety devices may not be apparent, e.g. in dwellings occupied by people with impaired vision or mobility, consideration should be given to the installation of a suitable safety device to warn when discharge takes place, e.g. electronically operated.

Discharge pipe D2

3.56 The discharge pipe (D2) from the *tundish* should:

- a. have a vertical section of pipe at least 300mm long below the tundish before any elbows or bends in the pipework (see Diagram 1); and
- b. be installed with a continuous fall of at least 1 in 200 thereafter.

3.57 The discharge pipe (D2) should be made of:

- a. metal; or
- b. other material that has been demonstrated to be capable of safely withstanding temperatures of the water discharged and is clearly and permanently marked to identify the product and performance standard (e.g. as specified in the relevant part of BS 7291-1:2006 Thermostatic pipes and fittings for hot and cold water for domestic purposes and heating installations in buildings. General requirements).

3.58 The discharge pipe D2 should 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. for discharge pipes between 9m and 18m the 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. See Diagram 1, Table 3.1 and the worked example.

Note: An alternative approach for sizing discharge pipes would be to follow Annex D, section D.2 of BS 6700:2006 + A1:2009 Specification for design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages.

3.59 Where a single common discharge pipe serves more than one system, it should be at least one pipe size larger than the largest individual discharge pipe (D2) to be connected.

3.60 The discharge pipe should not be connected to a soil discharge stack unless it can be demonstrated that the soil discharge stack is capable of safely withstanding temperatures of the water discharged, in which case, it should:

- a. contain a mechanical seal, not incorporating a water trap, which allows water into the branch pipe without allowing foul air from the drain to be ventilated through the **tundish**;
- b. be a separate branch pipe with no **sanitary appliances** connected to it;
- c. if plastic pipes are used as branch pipes carrying discharge from a safety device, they should be either polybutalene (PB) or crosslinked polyethylene (PE-X) complying with national standards such as Class S of BS 7291-2:2006 or Class S of BS 7291-3:2006 respectively; and
- d. be continuously marked with a warning that no **sanitary appliances** should be connected to the pipe.

Notes:

1. Plastic pipes should be joined and assembled with fittings appropriate to the circumstances in which they are used as set out in BS EN ISO 1043-1:2002 Plastics. Symbols and abbreviated terms. Basic polymers and their special characteristics.
2. Where pipes cannot be connected to the stack it may be possible to route a dedicated pipe alongside or in close proximity to the discharge stack.

Termination of discharge pipe

3.61 The discharge pipe (D2) from the tundish should terminate in a safe place where there is no risk to persons in the vicinity of the discharge.

3.62 Examples of acceptable discharge arrangements are:

- a. to a trapped gully with the end of the pipe below a fixed grating and above the water seal;
- b. downward discharges at low level; i.e. up to 100mm above external surfaces such as car parks, hard standings, grassed areas etc. are acceptable providing that a wire cage or similar guard is positioned to prevent contact, whilst maintaining visibility; and,
- c. discharges at high level: e.g. into a metal hopper and metal downpipe with the end of the discharge pipe clearly visible or onto a roof capable of withstanding high temperature discharges of water and 3 m from any plastic guttering system that would collect such discharges.

3.63 The discharge would consist of high temperature water and steam. Asphalt, roofing felt and

Non-metallic rainwater goods may be damaged by such discharges.

Discharge Pipe work

It is a requirement of Building Regulations that any discharge from an unvented system is conveyed to where it is visible, but will not cause danger to persons in or about the building. The tundish and discharge pipes should be fitted in accordance with the requirements and guidance notes of Building Regulations. Building Regulation G3 Requirements and Guidance section 2 (page 17) are reproduced in the previous sections.

For discharge pipe arrangements not covered by G3 Guidance advice should be sought from your local Building Control Officer. Any discharge pipe connected to the pressure relief devices (Expansion Valve and Temperature / Pressure Relief Valve) must be installed in a continuously downward direction and in a frost free environment.

The water may drip from the discharge pipe of the pressure relief device and that this pipe must be left open to the atmosphere. The pressure relief device is to be operated regularly to remove lime deposits and to verify that it is not blocked.

G3 Requirement

“...there shall be precautions...to ensure that the hot water discharged from safety devices is safely conveyed to where it is visible but will not cause danger to persons in or about the building”.

Worked example of discharge pipe sizing (Taken from Building Regulations 2000, G3, 2010 edition)

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

From Table 5:

Maximum resistance allowed for a straight length of 35mm copper discharge pipe (D2) from a G1” temperature relief valve is 9m.

Subtract the resistance for 4 No. 35mm elbows at 1.4m each =

5.6m Therefore the permitted length equates to: 3.4m

3.4m is less than the actual length of 7m therefore calculate the next largest size.

Maximum resistance allowed for a straight length of 42mm pipe (D2) from a G1” temperature relief valve equates to 18m.

Subtract the resistance of 4 No. 42mm elbows at 1.7m each =

6.8m Therefore the maximum permitted length equates to: 11.2m

As the actual length is 7m, a 42mm (D2) copper pipe will be satisfactory.

Notes:

- 1) Discharge pipe-work D2 can now be a plastic pipe but only pipes that have been tested to a minimum 110°C must be used.
- 2) Discharge pipe D2 can now be plumbed in the soil stack but only soil stacks that can handle temperatures of 99°C or greater should be used.

VALVE OUTLET SIZE	MINIMUM SIZE OF DISCHARGE PIPE D1	MINIMUM SIZE OF DISCHARGE PIPE D2 FROM TUNDISH	MAXIMUM RESISTANCE ALLOWED, EXPRESSED AS A LENGTH OF STRAIGHT PIPE (I.E. NO ELBOWS OR BENDS)	RESISTANCE CREATED BY EACH ELBOW OR BEND
G 1/2	15mm	22mm 28mm 35mm	UP TO 9m UP TO 18m UP TO 27m	0.8m 1.0m 1.4m
G 3/4	22mm	28mm 35mm 42mm	UP TO 9m UP TO 18m UP TO 27m	1.0m 1.4m 1.7m
G 1	28mm	35mm 42mm 54mm	UP TO 9m UP TO 18m UP TO 27m	1.4m 1.7m 2.3m

Table 10 Sizing of copper discharge pipe “D2” for common T&P Relief Valve sizes.

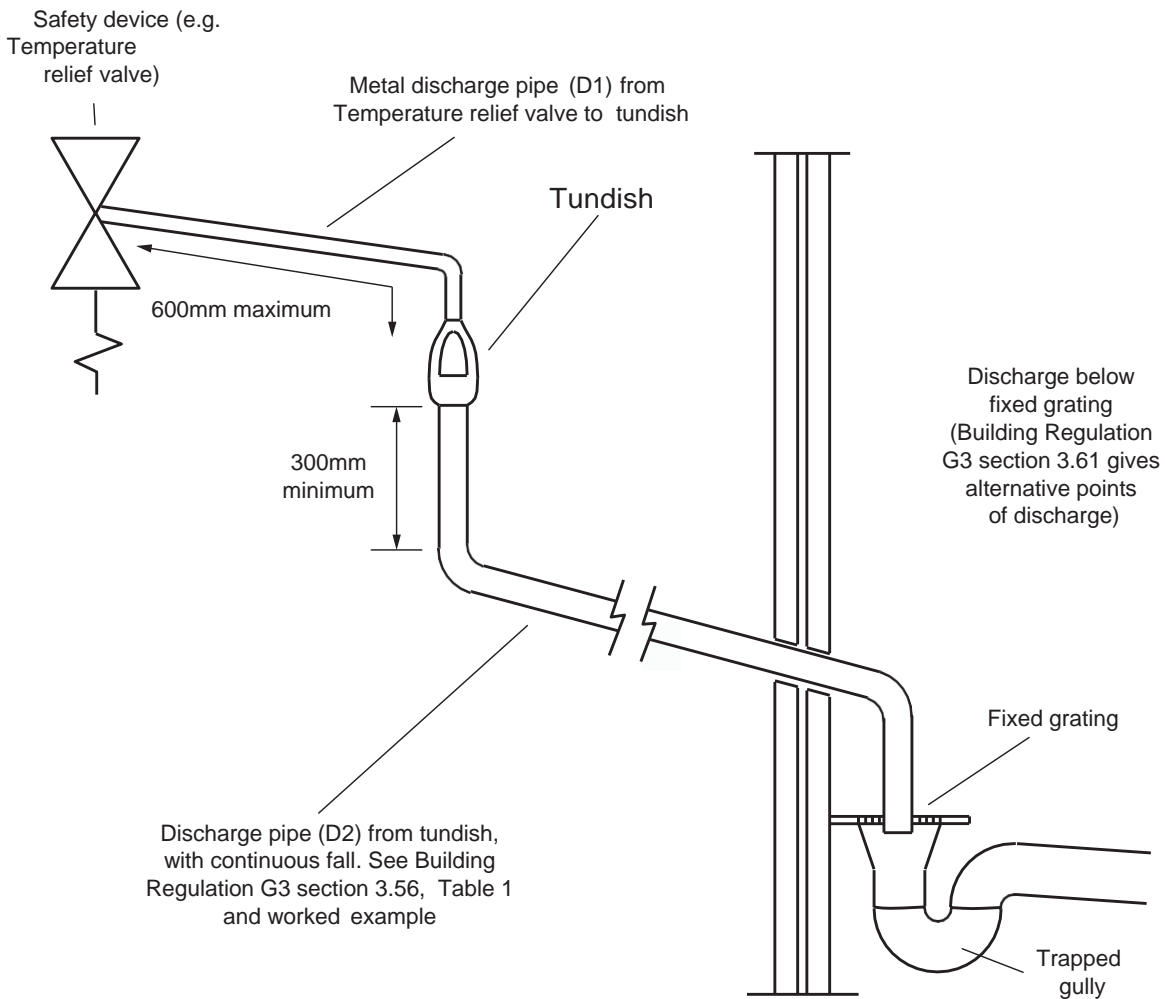


Figure 10: Typical discharge pipe arrangement (Extract from Building Regulations G3 Guidance section 3.5 to 3.63)

Commissioning

NOTE: The water discharged may be very hot.

Primary Heat source (when fitted)

Connect up primary heat source as per manufacturers instructions. Fill up primary and secondary circuits, bleeding any air that may be trapped and check for leaks. The Andrews range of buffers do not have an internal heat ex- changer. Take care that the Primary Heat source can handle the working pressure of the cylinder.

Maintenance & Servicing

Maintenance requirements

To ensure the continued optimum performance of the Andrews buffer it should be regularly maintained. This is of particular importance in hard water areas or where the water supply contains particulate matter. Maintenance should be carried out by a competent person and any replacement parts used should be authorised Andrews buffer spare parts. It is recommended that maintenance is carried out every 12 months and includes the checks detailed below.

In hard water areas consideration should be given to periodically descaling the immersion heater elements. To do this the Andrews buffer unit will need to be drained.

NOTE: The water discharged may be very hot.

Draining the Buffer

Switch off the electrical supply to the primary heat source. Turn off the water supply to the unit. Attach a hosepipe to the drain valve having sufficient length to take water to a suitable discharge point below the level of the unit, at least one metre below the unit is recommended. Open drain valve. If water fails to drain from the Andrews buffer vent the unit by a suitable point on the system.

Refilling system

DO NOT switch on the primary heat source until the system has been completely refilled.

Close the drain valve, refill the system, and vent from suitable purge points on the system. When water flows from the purge points allow to flow for a short while to purge air and to flush through any disturbed particles. Close vent points and then open successive vents in system to purge any air. The electrical supply can now be switched on.

Servicing

Important

- i) Servicing should only be carried by an authorised Engineer, Agents or by installers competent in the installation and maintenance of heating and hot water systems.
- ii) Any spare parts used **MUST** be authorised Andrews buffer parts.
- iii) **NEVER** bypass any thermal controls or operate system without the necessary safety valves.
- iv) Water contained in the Andrews buffer unit may be very hot, especially following a thermal control failure. Caution must be taken when drawing water from the unit.

User Guide

Terms and Conditions

Warranty Terms

Andrews commercial guarantees the product against faulty manufacture or materials for a period of one year from the date of purchase including parts and labour.

These guarantees are valid provided that:

- ˘ The Andrews buffer has been installed by a competent engineer and as per the instructions contained in the installation manual and all relevant Codes of Practice and Regulations in force at the time of installation.
- ˘ Any disinfection has been carried out in accordance with BS EN 806.
- ˘ The Andrews water heater unit has not been modified in anyway other than by approved engineers.
- ˘ The Andrews water heater has not been subjected to excessive pressure beyond the guidelines detailed in the installation instructions.
- ˘ The Andrews water heater has not been subjected to frost, nor has it been tampered with or been subject to misuse or neglect.
- ˘ No factory fitted parts have been removed for unauthorised repair or replacement
- ˘ Regular maintenance has been carried out by a competent person in accordance with the requirements set in the maintenance section of the installation manual and any replacement parts used should be approved spare parts.
- ˘ The original warranty period will apply to any parts replaced

The warranty does NOT cover:

Any consequential damages or profit loss which may arise from a defect.

Warranty claims have no delaying effect on the payment dates and other demands

Your Andrews Commercial warranty covers you for a direct replacement and labour in the event that the unit fails prematurely as a result of a proved manufacturing defect.

Andrews is not responsible for any damage that has been caused by incorrect or defective installation, commissioning, water treatment, service or maintenance. Our current technical documentation can be taken as the basis for this.

In order that this can be achieved, full access to replace the unit is essential. If it is found that access can not be achieved the warranty will be limited to the replacement of the unit only and subsequent labour charges would not be met under the warranty.

The Environment

This product is made from many recyclable materials, therefore at the end of its useful should be disposed of at a local authority recycling centre in order to realise the full. Environmental benefits. Insulation is by means of an approved: Rigid mould-injected. PU (CFC/HCFC-free, 0.025 W/m²K).



Register now to activate your warranty www.andrewswaterheaters.co.uk/warranty. Please make sure you attach proof of purchase for your warranty to be monitored.

All descriptions and illustrations provided in this document have been carefully prepared but we reserve the right to make changes and improvements in our products which may affect the accuracy of the information contained in this leaflet. All goods are sold subject to our standard Conditions of Sale which are available on request.

Customer support

8am-5pm, Monday-Friday

Tel 0345 070 1055

Web andrewswaterheaters.co.uk

 [linkedin.com/company/andrews-water-heaters](https://www.linkedin.com/company/andrews-water-heaters)

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