

FEB 2024

TELFORD CYLINDERS

A guide to Unvented Hot Water Cylinders



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4 A GUIDE TO HOT WATER CYLINDERS

This page provides an overview of the design and installation requirements for unvented hot water storage systems, as regulated by the Building Regulations 2010, particularly Approved Document G3. It outlines key definitions related to these systems and covers important regulatory requirements, including hot water supply provision, system design, safety considerations, and installer accreditation. The page aims to guide readers through the essential information needed to ensure compliance and safe operation of unvented hot water storage systems.

5-6 UNVENTED STORAGE 90-500L

This page focuses on the design and installation requirements for hot water storage systems, covering key aspects such as system standards, safety devices, and capacity limits. It outlines the necessity of conforming to specific standards and safety regulations, as well as the marking and information requirements for unvented hot water storage systems.

7 UNVENTED STORAGE 500L +

This page explains the requirements of Building Regulation G3 regarding the provision of hot water supply. It outlines the specific facilities that must have access to hot water, including washbasins, bidets, baths, showers, and sinks in certain areas. It also emphasises that the regulations do not mandate hot water provision for all washing facilities.

8-9 DIRECT/INDIRECT VENTED EXAMPLE

These two pages feature visual representations and explanations of plumbing systems. The first page illustrates an open-vented direct plumbing system, showcasing its layout and componentry for heating and distributing water. The second page displays an open-vented indirect plumbing system, offering detailed insights into its components and their collaborative function in providing hot water. Both pages serve as valuable resources for understanding the practical aspects of these plumbing systems, making them useful references for plumbing professionals and enthusiasts alike.

10-11 UNVENTED EXAMPLE WITH PARTS

This page provides a comprehensive overview of unvented cylinders and their integral components. It offers a visual representation and detailed explanation of the various parts that make up an unvented cylinder system. By highlighting the key elements and their functions, this resource serves as a valuable reference for understanding the inner workings of unvented cylinders, making it beneficial for both professionals and those interested in plumbing systems.

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PARTS SUPPLIED (UNVENTED)



A GUIDE TO WATER CONTROL

The design and installation of unvented hot water storage systems are governed by the Building Regulations 2010, specifically Approved Document G3. It is imperative to adhere to these guidelines in conjunction with the installation instructions outlined in the supplied manual for unvented hot water cylinders. To ensure clarity, key considerations are reiterated within this document.

Building Regulations 2010: Sanitation, Hot Water Safety, and Water Efficiency - Approved Document "G" - G3: Hot Water Supply and Systems.

Definitions: -

Hot Water Storage System: A container designed for the storage of heated, potable water or softened, potable hot water for future use.

Hot Water Storage System may also include water used for heating other water, in addition to any supplementary devices described in sections 3.10 and 3.11 of Approved Document G3.

Hot Water Storage System Package: This pertains to a hot water storage system equipped with safety devices described in sections 3.10 and 3.17 of Approved Document G3, factory-installed by the manufacturer. It also includes a kit containing other relevant components, which must be fitted by the installer.

Hot Water Storage Unit: Refers to a hot water storage system with safety devices described in sections 3.10 and 3.17, as well as all other pertinent operating devices factory-fitted by the manufacturer.

Unvented (Sealed) Hot Water Storage System: A container that receives cold water from a supply pipe or dedicated storage cistern (without a vent pipe). It can be heated directly or indirectly. Expansion of water due to heating can be managed either internally or externally. The system incorporates safety mechanisms to prevent water temperatures from exceeding 100°C, along with other relevant operational devices that regulate primary flow, prevent backflow, control working pressure, and accommodate expansion.

Vented (Open) Hot Water Storage System: This refers to a container supplied with cold water from a dedicated storage cistern. The expansion of water when heated is managed through the cold feed pipe. Additionally, a vent pipe connects the top of the container to an open point in the atmosphere above a cold water storage cistern, serving as a safety device.

Definitions: -

Tundish means a device, installed in the discharge pipe from a valve, that provides an air break allowing discharge to be conducted safely to place of termination.

The tundish also provides visible indication of a discharge & functions as a backflow prevention device.

The Requirements- Section G3-Building Regulation 2010

- A hot water system, including any cistern or other vessel that supplies water to or receives expansion water from a hot water system, shall be designed, constructed & installed so as to resist the effects of temperature & pressure that may reasonably be anticipated & must be adequately supported.

- A Hot water system that has a hot water vessel shall incorporate precautions to;

- (a) Prevent the temperature of the hot water stored in the vessel at any time exceeding 100°C, and

- (b) Ensure that any discharge from the safety devices is safely conveyed to where it is visible but will not cause danger to persons in or about the building.

Requirements G3 (3) does not apply to a system which heats or stores water for the purposes only of an industrial process.

In The secretary of Staes view, Requirements G3 (3) will be met for a hot water system that has an unvented vessel fitted if;

- (a) The storage vessel has at least two independent safety devices such as those that release pressure & so prevent the temperature of the stored water at any time exceeding 100°C; in addition to any thermostat; and

- (b) The hot water system has pipework that incorporates a provision for the discharge of hot water safety devices to be visible at some point & safely conveys it to an appropriate place open to the atmosphere where it will cause no danger to persons in or about the building.

3.1 The delivered hot water can considered as heated wholesome water or heated softened wholesome water where ;

- (a) The cold water supply to the hot water system is wholesome or softened wholesome and;

- (b) The installation complies with the requirements of the Water Supply (Water Fittings) Regulations 1999 (SI 1999/1148 as amended)

3.7 Pipe should be designed& installed in such a way as to minimise the transfer time between the hot water storage system & hot water outlets.

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Building Regulation G3 mandates the provision of hot water supply to the following facilities:

- (a) Washbasins associated with sanitary conveniences in compliance with G4(2).

- (b) Washbasins, bidets, fixed baths, or showers in bathrooms within dwellings or residential rooms according to G5.

- (c) Sinks in food preparation areas.

It's important to note that there is no obligation under the Building Regulations to provide hot water to other washing facilities.

Design & Installation of Directly or Indirectly Heated Hot Water Storage Systems:

3.10 Hot water storage systems must be designed and installed in accordance with either BS 6700:2009+A1:2009 or BS EN 12897:2006.

3.11 Hot water storage vessels must conform to the standards outlined in BS 853-1:1996, BS 1566-1:2002, or BS 3196:1981.

Unvented Hot Water Storage Systems - All Systems:

3.17 Unvented hot water systems must include a minimum of two independent safety devices. These devices should be in addition to any thermostat used to control the stored water. The selection of safety devices should consider factors such as the system's location, design configuration, component placement, and performance characteristics.

3.18 An acceptable approach may include:

- (a) A non-self-resetting energy cut-off mechanism to disconnect the heat supply to the storage vessel in case of system overheating.
- (b) A temperature relief valve or a combined temperature and pressure relief valve to safely discharge water in the event of severe overheating. Alternative methods that provide an equivalent level of safety are also acceptable.

3.19 Water heaters with a capacity of 15 liters or less, equipped with appropriate safety devices for temperature and pressure, generally meet the requirements specified in G3(3).

Unvented Hot Water Storage Systems - Systems Up to 500 Litres Capacity & 45kW Input:

In addition to the provisions outlined in section 3.17, the following regulations apply:

3.21 If an indirect heat supply to an unvented hot water storage system incorporates a boiler, the energy cutoff may be located on the boiler.

3.22 Any unvented hot water storage system with a capacity up to 500 liters and less than 45kW input should take the form of a proprietary hot water system unit or package. These packages and components should be suitable for the specific circumstances in which they are employed and must adhere to an appropriate standard to ensure compliance with the regulations G3(2) and G3(3) (such as BSEN12897:2006 or BS6700:2006+A1:2009).

3.23 Any unvented hot water storage system unit or package should have the following information indelibly marked on it:

- Manufacturer's name and contact details
- Model reference
- Rated storage capacity of the storage water heater
- Operating pressure of the system and the operating pressure of the expansion vessel
- Relevant operating data for each of the safety devices installed

- Maximum primary circuit pressure and flow temperature for indirect hot water storage system units or packages.

3.24 Additionally, the following warning should be indelibly marked on the hot water storage unit or package in a manner that remains visible after installation:

WARNING TO USER	
a.	Do not remove or adjust any component part of this unvented water heater: contact the installer.
b.	If this unvented water heater develops a fault, such as a flow of hot water from the discharge pipe, switch the heater off and contact the installer.
WARNING TO INSTALLER	
a.	This installation is subject to the Building Regulations.
b.	Use only appropriate components for installation or maintenance.
Installed By:	
Name	
Address	
Tel. No.	
Completion date	

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In addition to the provisions specified in section 3.17, the following regulations also apply:

3.26 For systems exceeding 500 litres in capacity, they are typically custom-designed for specific projects and, as such, are suitable for approval by a third-party accredited product conformity scheme. In such cases, the unvented hot water storage system should be designed in accordance with the safety requirements outlined in section 3.17.

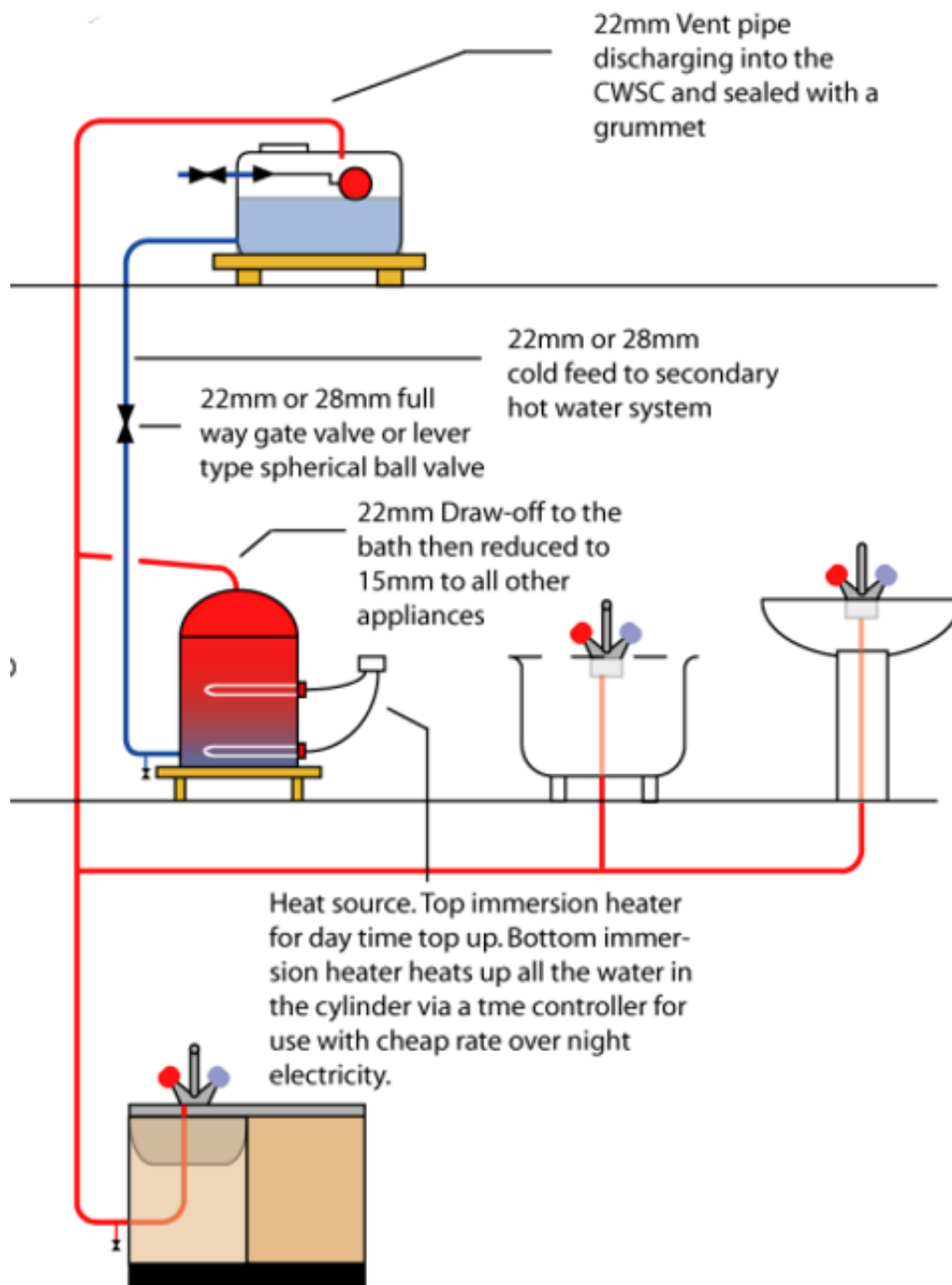
3.27 Any unvented hot water storage system with a power output exceeding 45kW but with a capacity of 500 litres or less should take the form of a proprietary hot water storage unit or package. These packages and components should be suitable for the specific application and must meet the required standard to ensure compliance with regulations G3(2) and G3(3) (such as BSEN12897:2006 or BS6700:2006+A1:2009).

Installers must possess G3 accreditation for unvented cylinders.

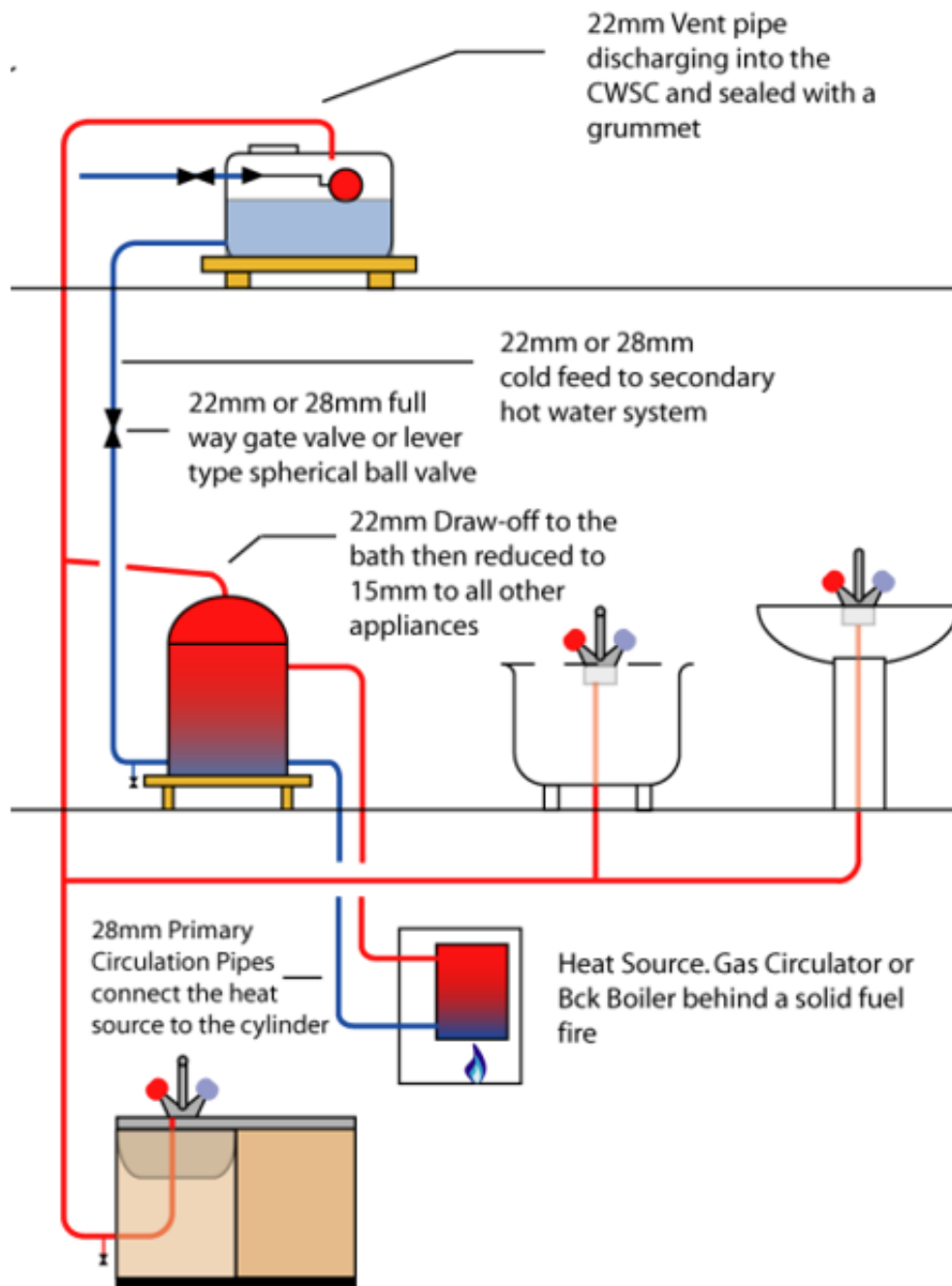
All unvented cylinder installations must adhere to the most current version of G3 Building Regulations, and all work must be carried out by qualified installers.

All unvented cylinders must be equipped with the necessary safety and functional devices by the cylinder manufacturer, as outlined in clauses 3.17, 3.18, 3.21, and 3.26 of section G3 of the Building Regulations 2010.

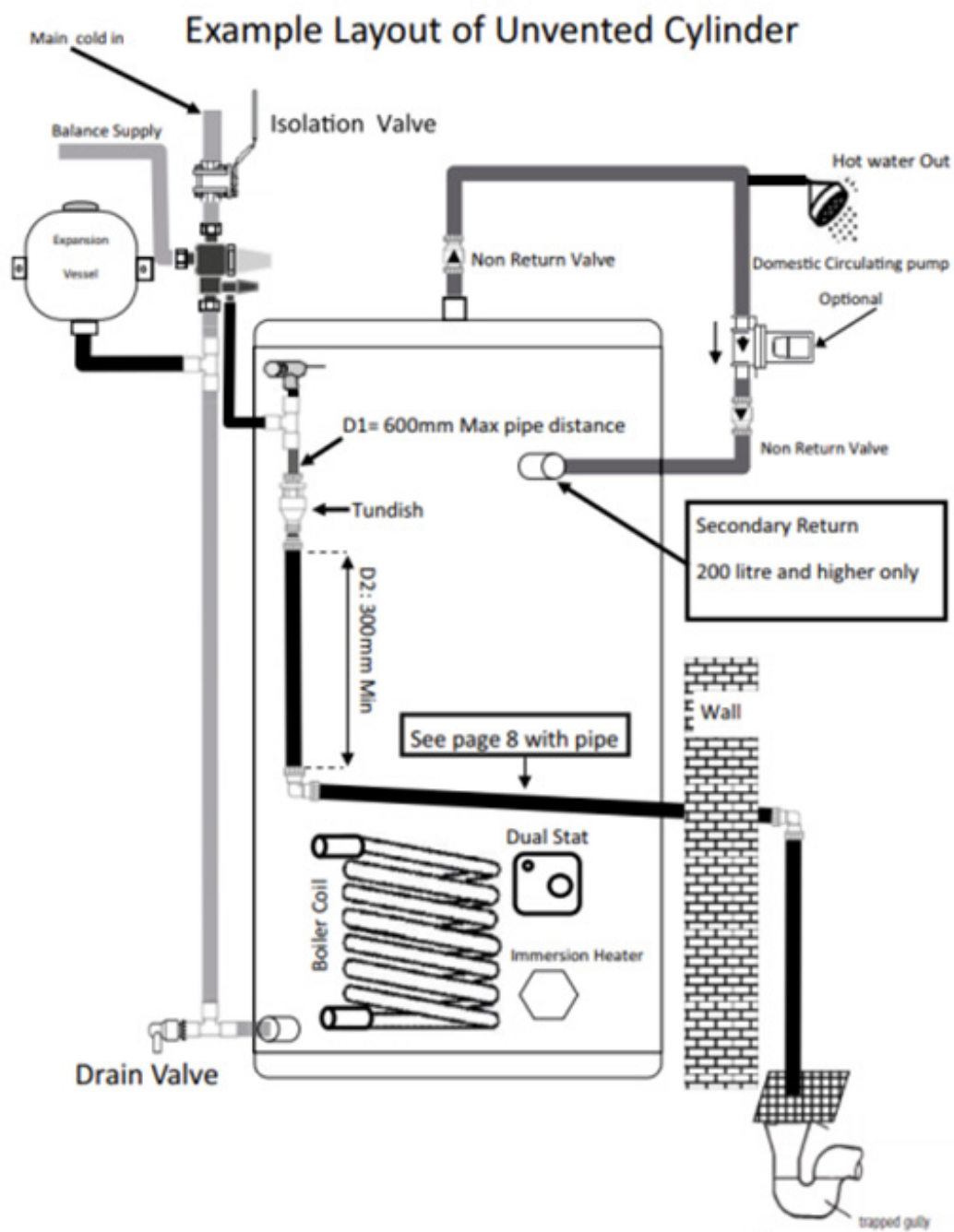
TYPICAL DIRECT SYSTEM



TYPICAL INDIRECT SYSTEM



TYPICAL UNVENTED SYSTEM



FAULT FINDING FLOW CHART

