

COMBINATION VALVE

COLD MAINS-IN

EXPANSION VESSEL

THE GUIDE TO MAINS PRESSURE UNVENTED WATER HEATING

PRESSURE + TEMPERATURE

HOT SUPPLY

EXPANSION RELIEF PIPE

SECONDARY RETURN

TUNDISH

ZONE VALVE

FLOW

DRAIN

RETURN



MAX. 100mm





What are Mains Pressure Unvented Water Heating Systems?

These systems comprise unvented cylinders, which are storage water heaters that are connected directly to the mains water supply. This dispenses with the need for water storage tanks in the roof space and results in high pressure hot and cold water to all outlets, including showers, without the need for a pump.

What is MODUS?

MODUS - Manufacturers Of Domestic Unvented Systems. It is an association of companies that produce/market mains pressure (unvented) hot water systems or associated controls/products. The objective of MODUS is to encourage the use of such systems within the United Kingdom. The long-term aim of MODUS is for these systems to become the standard for UK domestic hot water production as in most other countries throughout the world.

History

Originally formed in 1976 as MODUSSE, the Association was instrumental in persuading Government departments, Water Authorities and other regulatory bodies in the UK to recognise the advantages of mains pressure hot water systems.

This led to changes in Building Regulations and Water Regulations/By-laws that have allowed the adoption of this technology.

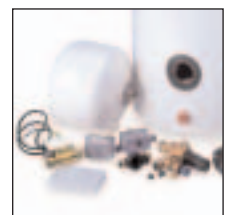
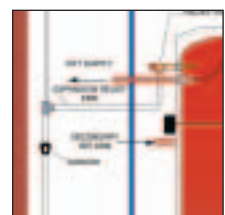
Services

MODUS will achieve its objective by offering the following:

- Information: From an explanation on how mains pressure hot water systems work, to updates on the latest industry developments.
- Advice: From technical queries to guidance on the Building Regulations/By-laws.
- Expertise: Using the combined knowledge of member companies, MODUS offers unrivalled expertise within the sector. It is represented on all appropriate technical bodies, standards committees and works closely with Government to influence future legislation.

The Guide

This document is your personal guide to mains pressure systems and their use in the United Kingdom. It outlines the advantages, approvals, method of sizing, installation best practice and maintenance. In short, all the information you need when selecting a mains pressure water heating system.

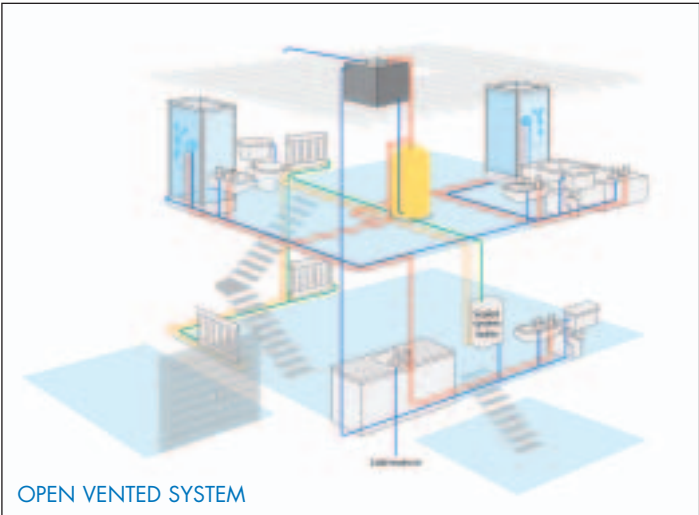


THE SMART CHOICE

Open Vented Systems

Historically a domestic hot water storage system used in the UK was required to have an open vent pipe. This ran from the hot water storage vessel back to the cistern predominantly in the roof space. This brought with it a number of disadvantages:

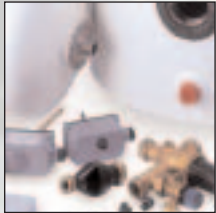
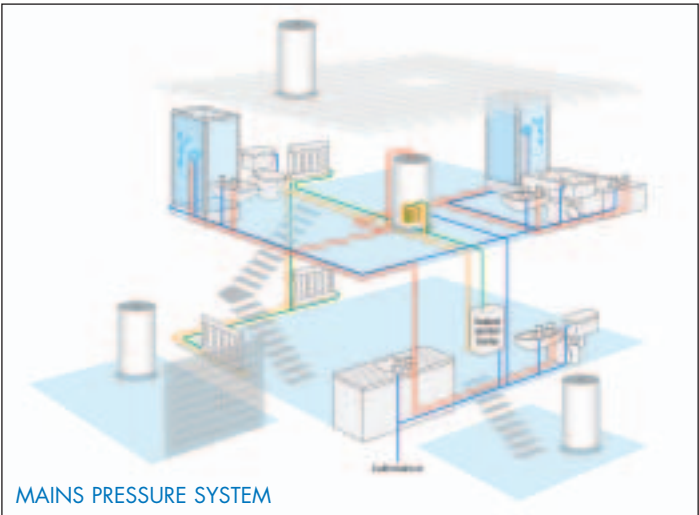
- Poor shower performance
- Noisy cistern filling
- Potential freezing hazard
- Possible water contamination
- Fixed system design and limited positioning options
- Likelihood of unbalanced hot and cold water supplies



Mains Pressure Systems

Today most new homes have mains pressure systems installed as standard. A mains pressure unvented hot water storage system is a hot water cylinder, where the water contained within it is held at some pressure above atmospheric. It is normally supplied direct from the mains and the system is sealed to the atmosphere (therefore not needing a vent pipe). This system offers the following advantages:

- Hot and cold water supply to all outlets at high pressure
- Balanced hot and cold water supply pressures throughout the system - wider choice of taps and mixers
- High performance showers without the need for pumps
- No cistern in the loft
 - no risk of water stagnation
 - no risk of frost damage to pipework
 - no noise of filling cisterns
- Allows greater system design flexibility
- Cylinder can be sited almost anywhere within the property
- Simple plumbing system
 - less pipework
 - less time
 - less cost



SYSTEM TYPES

There are two types of mains pressure storage systems:

Indirectly Heated

Indirectly heated cylinders are designed to be run in conjunction with an external heat source, normally a central heating boiler. They are often supplied with an immersion heater as back-up. This is the most commonly used type of mains pressure hot water storage installation.

Directly Heated

There are directly heated units fuelled by gas, oil or, most commonly, by electric immersion heater. These units are typically supplied with two or more immersion heaters and can take advantage of "economy tariff" electricity. These stand alone units are highly versatile requiring only mains water and adequate electrical supply for installation almost anywhere in a property.

These units are most often found in new build apartments, student accommodation, loft conversions and housing extensions where other forms of heating cannot be brought in, as well as smaller shops and offices.

Cylinder Size

Both direct and indirect mains pressure cylinders are available in various sizes for most applications. For guidance on sizing, please consult the individual manufacturers.

Installation Criteria

When choosing a mains fed system, it is fundamental that the cold mains supply has adequate pressure and flow rate to meet the maximum flow demand for both hot and cold water outlets.

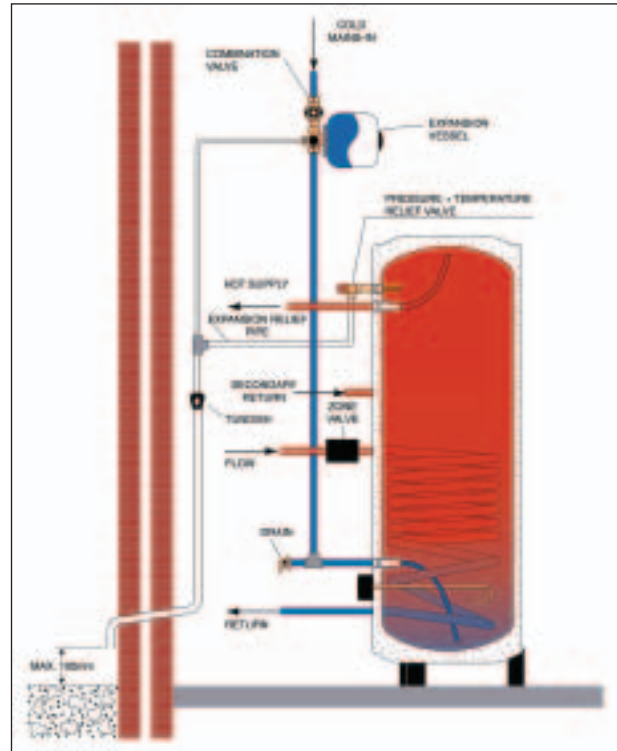
Flow rate: amount of water carried in the pipework.

Pressure: the force of water delivered.

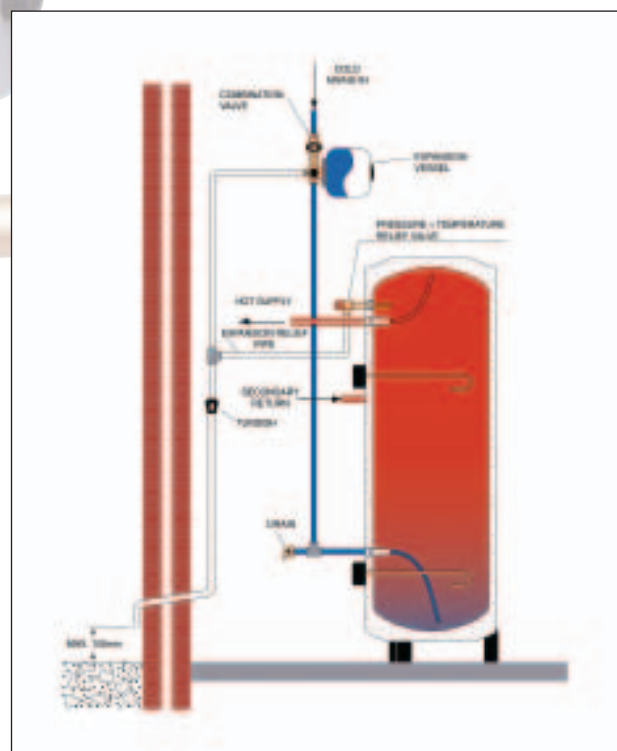
It is always recommended that the minimum size cold mains pipe is between 22-25mm with mains pressure of 1.5 bar and 20 litres/m flow rate. If this is not the case, consult the manufacturer's instructions for further information.

Controls

Unvented systems have a number of controls built into their design to prevent an uncontrolled supply of heat to the stored water. As with the water supply controls, the safety controls are built into each approved unvented system by manufacturers.



INDIRECTLY HEATED SCHEMATIC



DIRECTLY HEATED SCHEMATIC

INSTALLATION BEST PRACTICE AND MAINTENANCE

Installers must comply with all current relevant Regulations and manufacturers' instructions. Only approved systems/equipment must be installed, which should be approved to current water, building and electrical regulations. If in doubt refer to the manufacturers instructions.

A summary of the relevant Regulations and Bye-laws pertinent to mains pressure storage systems can be found on the MODUS website (www.modus-uk.org).

Any unvented mains pressure storage system over 15 litres should be installed by a "competent person", as defined by Building Regulations G3 (England), Technical Standards P3 (Scotland) and Building Regulations P5 (Northern Ireland).

Under most installation conditions the following points should be considered:

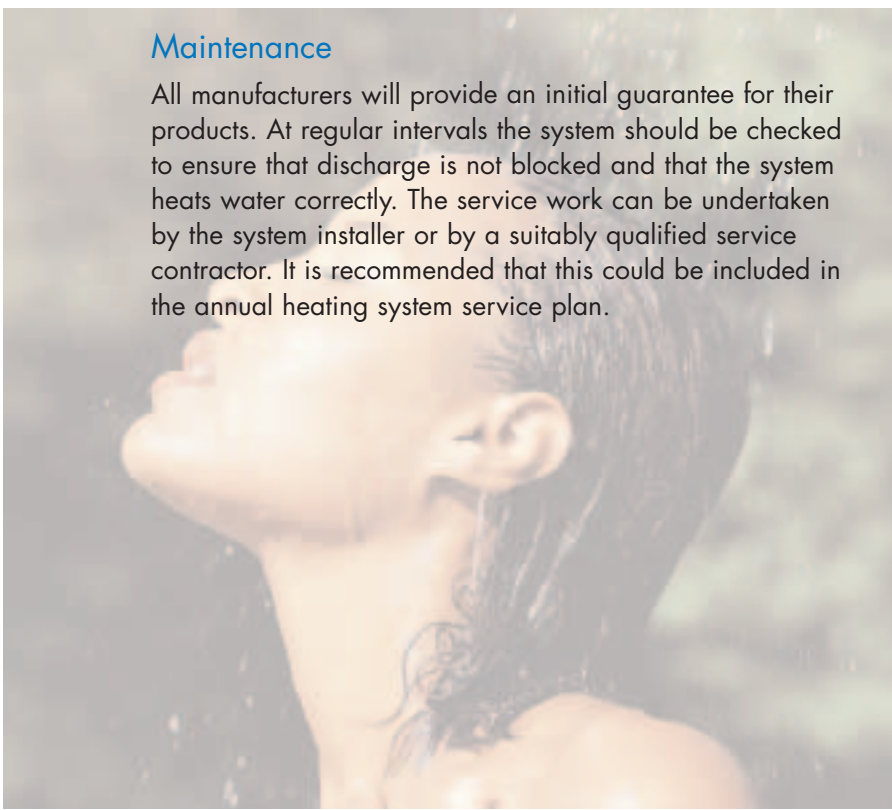
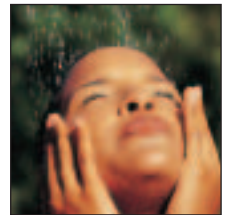
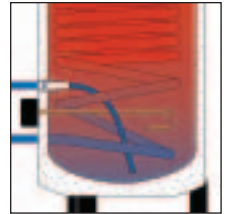
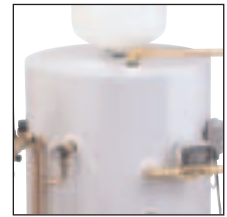
- Pressure and Flow test
- Adequate water supply
- Adequate power supply
- Siting considerations
- Discharge requirements
- Access for future service and maintenance
- Adequate storage capacity

Discharge Pipework

On opening of either the temperature and pressure relief valve or the expansion relief valve, water will be discharged. It is necessary that this water is conveyed safely to waste, as defined by Building Regulations G3 (England), Technical Standards P3 (Scotland) and Building Regulations P5 (Northern Ireland).

Maintenance

All manufacturers will provide an initial guarantee for their products. At regular intervals the system should be checked to ensure that discharge is not blocked and that the system heats water correctly. The service work can be undertaken by the system installer or by a suitably qualified service contractor. It is recommended that this could be included in the annual heating system service plan.



FREQUENTLY ASKED QUESTIONS

Below are answers to some of the most commonly asked questions concerning unvented hot water systems.

Q. What is the difference between flow rate and pressure?

A. *Flow rate* is the time taken for a volume of water to pass through a terminal fitting. To measure the flow rate, simply open the tap and time the filling of a fixed capacity vessel, where a volume of water is known e.g. a bucket.

Pressure is the force with which water exits the terminal fitting.

Q. What is Static Pressure?

A. When pressure is measured in a closed pipe with no water being drawn off.

Q. What is Dynamic Pressure?

A. The pressure when water is flowing through a pipe which is actually delivering water at a specified flow rate.

NB. For measurement of performance always use dynamic pressure!

Q. Why is an expansion system necessary?

A. When water is heated it expands and needs a means to take up expansion.

Q. Why notify the local Building Control?

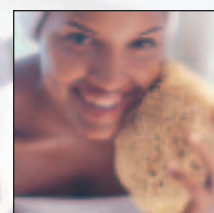
A. Under the Building Regulations it is necessary to give notice that an unvented cylinder is being installed.

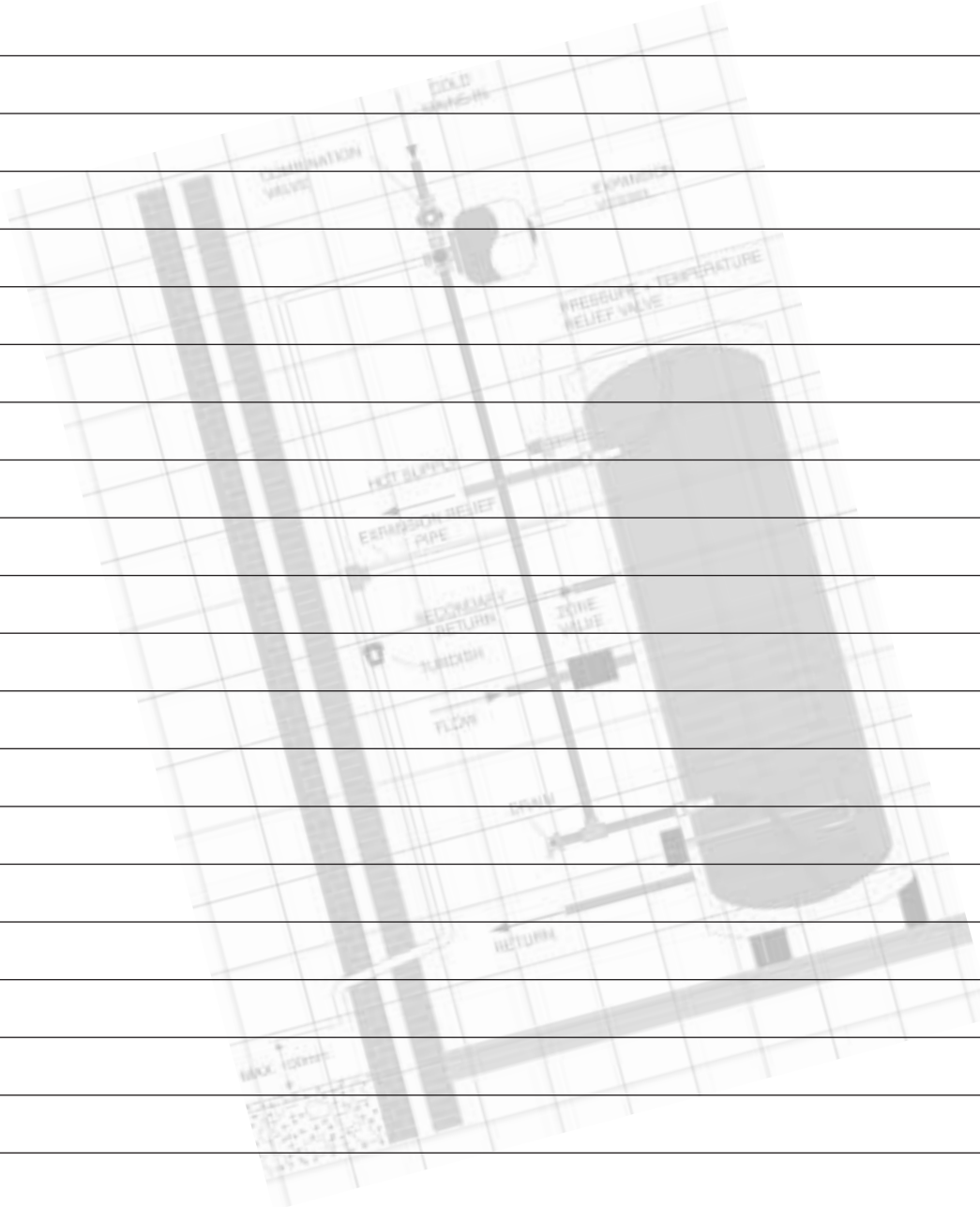
Q. Is any training needed to carry out Unvented Installations?

A. Yes. There are several courses available mainly through bodies such as CITB and NIC. These courses are available at colleges nationwide and at all manufacturers' training facilities. (See MODUS Web site)

Q. Can different controls be used to those supplied with the unvented cylinder?

A. No. The controls supplied are dedicated to the cylinder and designed to provide maximum safety so these must be used to comply to with Building Regulations and Water Regulations.





System Manufacturers/Suppliers			
Company	Telephone No.	Fax No.	Website
 ACV UK Limited	01383 820 100	01383 820 180	www.acv.com
 Ariston	01494 755 600	01494 459 775	www.ariston.co.uk
 Flamco	01744 818 100	01744 830 400	www.flamco.co.uk
 Dual Stream	01394 421 160	01394 421 170	www.gah.co.uk
 Heatrae Sadia	01603 420 100	01603 420 219	www.heatraesadia.com
 Range Cylinders	01924 376026	01924 385015	www.rangecylinders.co.uk
 OSO Hot Water UK Ltd.	0191 482 0800	0191 491 3655	www.oso-hotwater.com
 Vaillant	01773 824141	01773 820569	www.vaillantgroup.com
 Albion Water Heaters	0121 585 5151	0121 501 3826	www.albionwaterheaters.com

Controls			
Company	Telephone No.	Fax No.	Website
 Altecnic	01889 207 200	01889 270 577	www.altecnic.co.uk
 Honeywell	01344 656 000	01344 656 454	www.honeywelluk.com
 Reliance Water Controls	0800 389 5931	0800 389 5932	www.rwc.co.uk
 Sunvic	01698 812 944	01698 813 637	www.sunvic.co.uk

Affiliates			
Company	Telephone No.	Fax No.	Website
 British Gas	0845 600 9400	0845 604 0304	www.house.co.uk



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