



LINCS BUILDING  
CONSULTANCY

## **Guidance Note No. 50**

### Unvented Hot Water Storage Systems

## **Requirement Part G3 – Hot Water Storage**

**Building Regulations Schedule 1 Part G3 deals with unvented hot water storage systems (UVHWSS) because unless installed correctly the cylinder could explode, or cause danger from hot water discharge.**

### ***What are unvented hot water storage systems?***

These are systems relying on storage cylinders fed directly from cold water mains and which do not incorporate a vent pipe to relieve excess built-up pressure to atmosphere. The pressure for the hot water system is derived from mains pressure supply rather than pressure from a cold-water storage tank.

### ***What are the requirements for the installation?***

A hot water storage system, which does not incorporate a vent pipe to atmosphere, may only be installed by a person competent to do so and precautions shall be made to:

- (a) prevent the temperature of the water at any time exceeding 100°C and,
- (b) 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.

### ***What information do I have to provide when submitting an application?***

Under Regulations 13 and 14 of the Building Regulations 2000 (as amended), persons submitting a Building Notice or Full Plans with a Local Authority must, where the work involves the provision of an UVHWSS provide a statement which specifies:-

- the name, make, model and type of hot water storage system to be installed.
- the name of the body, if any, which has approved or certified that the system is capable of performing in a way which satisfies the requirement of paragraph G3 of Schedule 1 of the Building Regulations.
- the name of the body, if any, which has issued any current registered operative identity card to the installer or proposed installer of the system.

It should be noted that The Water Supply (Water Fittings) Regulations 1999 also apply to such installations.

### ***Who can be considered a competent person?***

“Competent” persons should possess a current Registered Operative identity card for the installation of UVHWSS issued by organisations such as the Institute of Plumbing or the Construction Industry Training Board, following assessment by a recognised training body.

### ***What requirements apply to the water heater?***

UVHWSS should consist of a proprietary package or unit approved by a member body of the European Organisation for Technical Approvals (EOTA) or a certification body having National Accreditation Council for Certification Bodies (NACCB) accreditation and testing or have a proven independent assessment demonstrating compliance with EOTA or NACCB verification and performance.

### ***What safety devices are required?***

The Regulations require the package or unit to be fitted with:-

- a non self-resetting thermal cut-out. Indirect units must be wired to a motorised valve or some other device to shut off the flow to the primary heater (heat exchanger).
- one or more temperature or combined temperature and pressure relief valves. These need to be located directly on the vessel so that stored water does not exceed 100°C in the event of failure of the electrical controls.

**What are the requirements for the installation?**

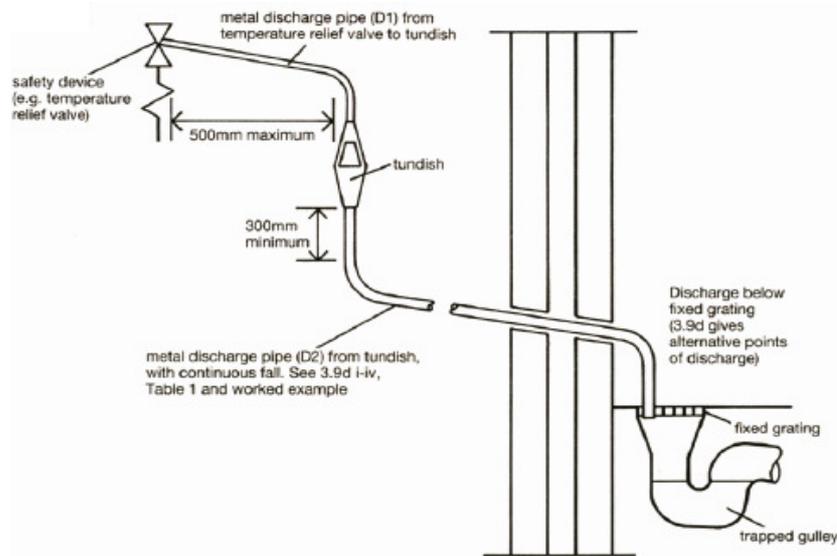
Hot water discharge from safety devices must be conveyed visibly and safely away from the unit without endangering persons in or about the building. The package or unit is normally supplied with a tundish, which provides a visible indication of water discharging from the safety valves. The tundish needs to be within 500mm of the safety valves and in the same compartment as the vessel. The discharge pipe from the tundish should be at least one size larger than the pipe to the tundish and needs to terminate in a safe place without risk to the people near the discharge. Systems with units that do not have an internal air gap must be fitted with an external expansion vessel, preferably on the cold water feed. Diagram 1 below shows typical discharge pipe arrangement and Table 1 below shows minimum dimensions for, and how to size the pipe from the tundish to a safe discharge point.

**How do I integrate this type of system into my heating design?**

UVHWSS can be direct i.e. heated by electric immersion heaters or gas burners, and indirect i.e. heated by a central heating boiler through a heating system. Combination units consisting of a boiler and unvented storage vessel are also available.

**Diagram 1**

please also refer to paragraph 3.9 of Approved Document G



**Table 1 - Sizing of copper discharge pipe "D2" for common temperature relief valve outlet sizes**

\* Refer to paragraphs 3.5, 3.9, and 3.9(a) of Approved Document G

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
G½	15mm	22mm	up to 9m	0.8m
		28mm	up to 18m	1.0m
		35mm	up to 27m	1.4m
G¾	22mm	28mm	up to 9m	1.0m
		35mm	up to 18m	1.4m
		42mm	up to 27m	1.7m
G1	28mm	35mm	up to 9m	1.4m
		42mm	up to 18m	1.7m
		54mm	up to 27m	2.3m

**Worked example:-** This example is for a G temperature relief valve with discharge pipe (D2) having 4 elbows and a length of 7m from the tundish to the point of discharge.

From the table above – maximum resistance allowed for a straight length of 22mm copper discharge pipe (D2) from G½ temperature relief valve is 9.0m.

Subtract the resistance for 4No. 22mm elbows at 0.8m each = 3.2m.

Therefore the maximum permitted length equates to 5.8m (9.0m-3.2m).

5.8m is less than the actual length of 7m so therefore calculate the next largest size.

Max resistance allowed for a straight 28mm pipe (D2) from G½ temperature relief valve equates to 18m.

Subtract the resistance for 4No. 28mm elbows at 1.0m each = 4m.

Therefore the permitted length equates to 14m

As the actual length is 7m, a 28mm (D2) copper pipe will be satisfactory.



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