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TEST CODE SHEET

1. TYPE OF TEST(S)

Temperature rise in integral cold water cistern.

2. BYELAW REQUIREMENT FOR FITTINGS (SEE APPLICATION LIST BELOW)

Byelaw 30 (1) Every storage cistern for water supplied for domestic purposes shall -

(b) comply with paragraph (2).

(2) Every cistern of a kind mentioned in paragraph (1) shall - (a) be insulated against heat

Byelaw 52 Every water fitting shall be constructed of materials, the nature, the strength and thickness of whichwill prevent, so far as is reasonably practicable, damage from(d) internal temperatures.

3. BRITISH STANDARDS OR WATER SPECIFICATION, DEEMED TO SATISFY BYELAW REQUIREMENTS

3.1 Fittings with 'kitemarks' which are deemed to satisfy the requirements of byelaws are listed in the directory.

4. TEST PROCEDURE

4.1 Tests applicable to the following fittings:-

COMBINATION HOT WATER STORAGE UNITS

- directly heated.

- indirectly heated, double feed.

- indirectly heated, single feed.

DEFINITIONS**Feed Cistern**

The cistern, attached to the hot water storage vessel, for supplying cold water to that vessel to replace the hot water as it is drawn off.

Primary Feed and Expansion Cistern

The cistern for supplying water to the primary circuit and for accommodating the expansion of water there from.

DIRECTLY HEATED COMBINATION HOT WATER STORAGE UNITS (Derived from BS3198)**5. TEST METHOD**

Arrange the test apparatus as shown in Figure 1.

Use a circulator into which a thermostatically controlled 3kW electric immersion heater is screwed. Use sufficient 28mm copper tube and connections to connect the circulator to the combination unit to be tested which shall be positioned with its base not less than 900mm and not more than 1200mm above the floor level. Ensure that the total water content of the circulator and the pipework does not exceed 5 litres.

Use two suitable thermometers, one (thermometer "T") positioned in the water in the feed cistern and the other (thermometer "S") at the hot water draw-off tap "G".

Fill the combination unit to be tested and the whole apparatus with water from the main cold water storage tank. Place the loose cover on the cistern and switch on the immersion heater. Adjust the immersion heater thermostat to give a water temperature not exceeding 80°C on thermometer "S" at the hot water draw-off tap "G". Switch off the immersion heater and drain the complete apparatus of water.

Refill the combination unit, circulator and connecting pipework through the float operated valve, direct from the main cold water storage tank. Leave for a minimum period of 12 hours in a room at a temperature of 20 ± 5°C

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WBS TEST & ACCEPTANCE CRITERIA

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Switch on the immersion heater and at the end of an 8 hour \pm 15 mins. period, agitate the water to render the temperature of the contents of the feed cistern uniform and measure the temperature of the water in the feed cistern by thermometer "T".

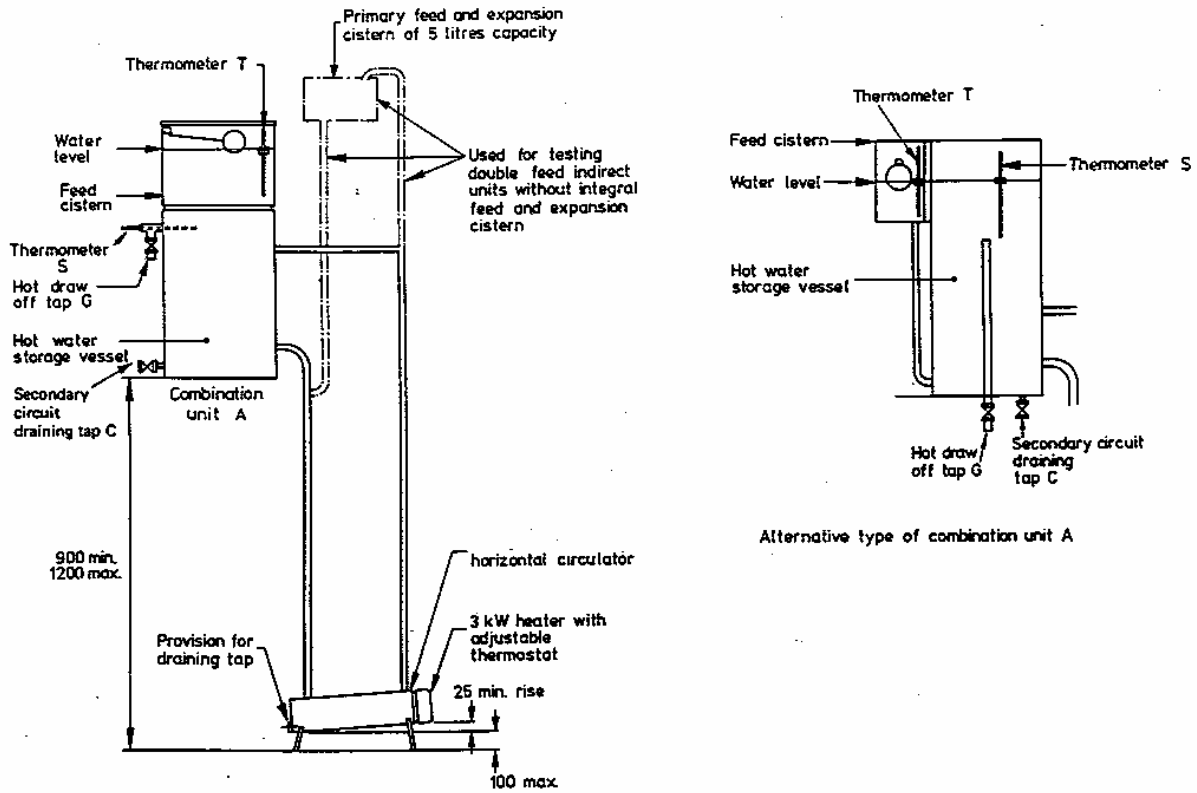
6. CRITERIA

The temperature of the water contained in the feed cistern shall not exceed 38°C.

NOTE Should the combination unit be adjacent to a cistern storing water for domestic purposes, then the temperature within the cistern shall not exceed 25°C for the duration of the test.

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All dimensions are in millimetres.

NOTE: The dotted lines indicate additional apparatus required for testing double feed indirect combination units (see appendix B).

Figure 1. Layout of testing apparatus for direct and double feed indirect combination units

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(B) DOUBLE FEED, INDIRECTLY HEATED COMBINATION HOT WATER STORAGE UNITS
(Derived from BS3198)**5. TEST METHOD**

Arrange the test apparatus as described in (A) previously and as shown in Figure 1, with an additional primary water feed, venting and expansion arrangement for combination units without an integral feed and expansion cistern. (Note: The additional apparatus required is indicated in Figure 1 by dotted lines).

Fill the combination unit to be tested and the whole apparatus with water from the main cold water storage tank. Place the loose cover on the cistern. Where the combination unit to be tested does not have an integral primary feed and expansion cistern, fill the primary system to the bottom of the expansion cistern. Switch on the immersion heater and adjust the thermostat to give a water temperature not exceeding 80°C on thermometer "S". Switch off the immersion heater and drain the complete apparatus of water.

Refill the combination unit and apparatus to the correct water level as described above. Add 4 litres of water to the primary feed and expansion cistern and leave the whole apparatus for a minimum period of 12 hours in a room at a temperature of 20 ± 5°C.

Switch on the immersion heater and at the end of an 8 hour ± 15 mins, period agitate the water to render the temperature of the contents of the feed cistern uniform and measure the temperature of the water in the feed cistern by thermometer "T".

6. CRITERIA

The temperature of the water contained in the feed cistern shall not exceed 38°C.

NOTE Should the combination unit be adjacent to a cistern storing water for domestic purposes, then the temperature within the cistern shall not exceed 25°C for the duration of the test.

(C) SINGLE FEED, INDIRECTLY HEATED COMBINATION HOT WATER STORAGE UNITS
(Derived from BS3198)**5. TEST METHOD**

Arrange the test apparatus as shown in Figure 2. Connect the single feed combination unit "A" to a cylinder "B" by means of 28mm size copper tube to facilitate good thermosiphonic circulation. Provide cylinder "B" with a thermostatically controlled 3KW immersion heater, a thermometer "R" to measure the primary water temperature. Place a thermometer "T" in the feed cistern.

Fill the entire system with cold water from the main cold water storage tank through the feed cistern, ensuring that taps "C", "D" and "G" and valve "E" are closed. Switch on the heater for sufficient time to enable the thermostat in cylinder "B" to be adjusted so that the primary water temperature at the top of the cylinder "B", as indicated by thermometer "R", does not exceed 80°C. Switch off the heater, close the cold water supply to the float operated valve, and drain off the secondary and primary waters through taps "C" and "D" respectively.

After closing taps "C", "D" and "E", refill the system through the float operated valve direct from the main cold water storage tank and ensure that the temperature of the feed water does not exceed 16°C. Leave the apparatus when filled to the correct water level for a minimum period of 12 hours in a room at a temperature of 20 ± 5°C, and then switch on the heater and leave in operation for 8 hours ± 15 mins. Agitate the water to render the temperature of the contents of the feed cistern uniform and measure the temperature of the feed cistern by thermometer "T".

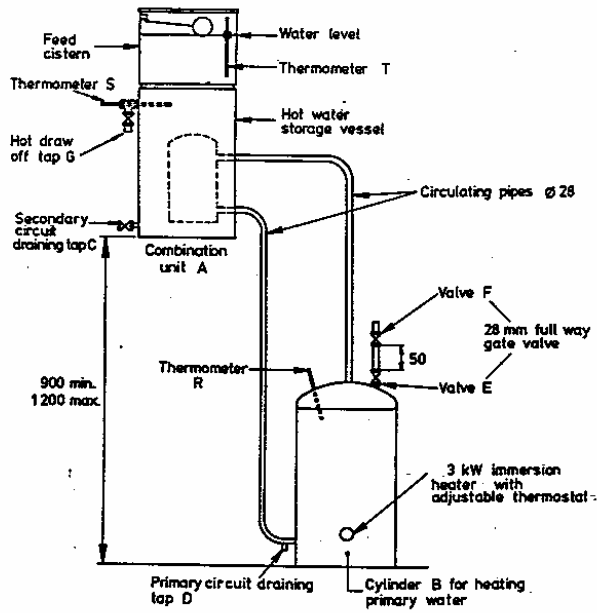
6. CRITERIA

The temperature of the water contained in the feed cistern shall not exceed 38°C.

NOTE Should the combination unit be adjacent to a cistern storing water for domestic purposes, then the temperature within the cistern shall not exceed 25°C for the duration of the test.

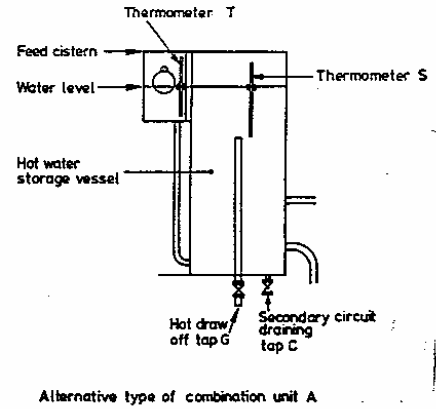
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All dimensions are in millimetres.

Figure 2. Layout of testing apparatus for single feed indirect combination units



Alternative type of combination unit A