

**SPECIFICATION  
FOR  
LOCAL AND WORKING STANDARDS  
OF  
CAPACITY  
METAL CONTENTS MEASURES**

**(Proving tanks for water)**

In accordance with the provisions of section 4(2) and 5(5) of the Weights and Measures Act 1985, the Secretary of State hereby approves the material and form of local and working standards of the following description for use by inspectors of weights and measures when testing cold-water meters.

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**Department of Trade & Industry**

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**SPECIFICATION FOR STANDARDS OF CAPACITY****METAL CONTENTS MEASURES (Proving tanks for water)****NOMINAL CAPACITIES**

1 The minimum recommended capacity of a proving tank for water meter testing is that it should be of sufficient size to contain either one minute's delivery of 200 times the verification scale interval, whichever is the greater, from the meter(s) under test at the selected flowrate.

2 Preferred sizes are 5 litres, 10 litres and multiples of 10 litres for metric tanks and 1 gallon and multiples of 1 gallon for imperial tanks.

**MATERIAL**

3 Each measure shall be made of mild steel, coated internally with epoxy resin to API Standard 1101, or of stainless steel.

**FORM**

4 Each measure shall be in the form of a vertical cylinder connected at the top and bottom by conical or sloping sections to the neck and sump respectively. To ensure adequate drainage the angle between the curved surface, in the case of a conical form, or the sloping bottom, in any other case, and the horizontal should be approximately 30 degrees. The curved surface of the upper cone or sloping top should not make an angle of less than 20 degrees to the horizontal.

5 Each measure shall be sufficiently robust to withstand normal usage without distortion. It shall be supported by legs or by a framework, or be securely fixed by means of lugs so that the tank is vertical. Means shall be provided to ascertain whether the axis of the tank is vertical. Spirit levels of suitable sensitivity, or datum surfaces to accommodate levels, shall be provided.

6 A measure constructed of mild steel shall have means provided to enable inspection of the interior surface to be made. An inspection cover may be provided or the top cone may be bolted to the cylindrical body. All joints should be metal to metal and may incorporate an "O" ring or other seal. Inspection covers and other features should be designed so that no air can be trapped when filling nor any water be retained upon draining.

7 An adjustment plunger, not exceeding 1% of the volume, may be fitted.

8 Means shall be provided for measuring the temperature of the measure and its contents.

9 The diameter of the neck shall be such that 1 cm on the scale represents between 0.05% and 0.5% of the nominal volume of the measure.

10 A clear glass sight tube and graduated scale shall be arranged parallel to the vertical neck, the graduated scale being in the same plane as the vertical axis of the sight glass tube and within 2 mm of its surface.

11 The lower datum may be formed by lines on a scale against a sight glass set in the sump, a weir or the reference plane in a valve.

12 The graduated scale(s) shall be made of brass or some other rigid and durable material and shall be capable of being locked in position and sealed. It shall be marked with permanent horizontal scale marks of uniform thickness. The scale(s) may be graduated in litres or gallons.

13 The scale(s) shall have a central scale mark corresponding to the nominal volume (and zero if applicable) and extending across the full width of the scale. This mark(s) shall be denominated in full.

14 Major scale marks shall extend across at least half the width of the scale and be numbered. Un-numbered minor scale marks may extend to one third of the width of the scale.

### **SEALING**

15 The scale(s) shall be sealed in position after adjustment. Any other components, such as valves or the adjustment plunger, the alteration or removal of which could materially affect the volume shall also be sealed.

### **CALIBRATION**

16 Where the proving tank for water has the status of a working standard the following must be observed. Prior to testing, the measure must be filled and drained for its specified drainage period. The drainage time will be the total time measured from opening the outlet valve. The measure will be calibrated by a single transfer, or the minimum number of multiple transfers, from a gravimetrically calibrated delivery vessel (NWML 7312 or 7310 applies). The scale will be adjusted so that the top of the central scale mark coincides with the bottom of the meniscus in the sight tube when the measure contains the nominal quantity. The scale graduations will be calibrated by adding or removing known volumes of liquid into the neck.

### **INSCRIPTIONS**

17 The following inscriptions shall be durably and legibly marked on the measure or a plate securely attached to the measure:

- (a) "FOR USE WITH WATER ONLY";
- (b) an identification number
- (c) the nominal capacity
- (d) the total drainage time
- (e) the reference temperature

### **LIMITS OF ERROR**

18 The permissible limits of error in the volume of liquid contained by the measure at 20 degrees Celsius shall not exceed the amount specified in Regulations made under section 4(5) or 5(9) of the Weights and Measures Act 1985.