# SPECIFICATION

# FOR

# LOCAL STANDARDS

# OF

# CAPACITY

## GLASS DELIVERY MEASURES
## (Automatic Pipettes)

In accordance with the provisions of section 4(2) of the Weights and Measures Act 1985, the Secretary of State hereby approves the material and form of local standards of capacity conforming with this specification.

This specification supersedes all earlier dated documents. Equipment conforming to previous specifications may continue to be used.

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# SPECIFICATION FOR LOCAL STANDARDS OF CAPACITY

# GLASS AUTOMATIC PIPETTES

## NOMINAL CAPACITIES

1 The local standard capacity measures specified shall have nominal capacities specified in Table 2.

## MATERIAL

2 The measures shall be constructed of good quality clear glass and shall be well annealed and substantially free from visible defects.

## GENERAL CONSTRUCTION

3 The measures having nominal capacities not greater than ⅔ pint or 250 ml shall generally conform to the design shown in Fig 1, and the general design of the remainder shall be as shown in Fig 2.

4 Measures having nominal capacities exceeding ⅔ pint or 250 ml shall be constructed so that the tube joining the main body with the stopcock and that joining the main body with the weir are of the same diameter for any one pipette size and are of a minimum diameter as given in Table 1.

5 An overflow chamber shall be fitted to the upper tube by a rubber seal to prevent any leakage of water from the chamber. The outlet of the chamber is positioned so that it is below the level of the datum weir, there being an inwardly flanged air hole near the top of the chamber diametrically opposed to the outlet.

6 The datum weir and the delivery jet shall have a gradual taper towards the ends so that there is no sudden constriction of the orifice. The ends shall be ground square with the axis and slightly bevelled on the outside.

7 The stopcock shall be of the double oblique bore type specified in BS 1751 and fitted with a rust free retaining device. When fully opened to the delivery position the measure can be emptied of water in a smooth flow, there being no air trapped in the delivery jet.

8 The rate of leakage of the stopcock, when tested under a 50 cm head of water with the stopcock free from grease, but wet with water, shall not exceed 0.006 ml per minute, with the stopcock in any position.

## DELIVERY TIME

9 The delivery time shall be the time occupied by the outflow of water with the stopcock in the fully open position up to the moment at which the descending water surface apparently comes to rest in the bore of the delivery jet.

The delivery time thus determined shall be within the times specified in Table 2.

## INSCRIPTIONS

10 The following inscriptions shall be permanently and legibly marked on the measure:

(a) The nominal capacity, eg “8 pints” “2 litres” “200 ml”;

(b) EX 20 °C;

(c) Identification number which shall also be marked on the handle of the stopcock.

The maker’s or supplier’s name or mark and the name of the local authority may also be marked on the measure.

## LIMITS OF ERROR

11 The permissible limits of error in the volume of water delivered by the measure at 20 °C after allowing the drainage time shall not exceed the amount specific in Regulations made under section 4(4) of the Weights and Measures Act 1985, as shown in Table 2.

**Table 1**

| Capacity | | Minimum tube diameter (mm) |
|---|---|---|
| Imperial | Metric | |
| 1 pint | 500 ml | 20 |
| 2 pints | 1 litre | 20 |
| 4 pints | 2 litres | 30 |
| | 2.5 litres | 30 |
| 8 pints | 5 litres | 35 |
| | 10 litres | 35 |

## Table 2

## DELIVERY TIMES AND LIMITS OF ERROR

| Capacity | | Delivery time, seconds | | Limits of error ± ml |
|---|---|---|---|---|
| **Imperial** | **Metric** | **Minimum** | **Maximum** | |
| | 5 ml | 10 | 20 | 0.06 |
| | 10 ml | 15 | 30 | 0.08 |
| | 20 ml | 15 | 30 | 0.12 |
| | 25 ml | 20 | 40 | 0.12 |
| | 35 ml | 30 | 60 | 0.15 |
| | 50 ml | 30 | 60 | 0.15 |
| | 70 ml | 30 | 60 | 0.20 |
| | 100 ml | 30 | 60 | 0.20 |
| | 125 ml | 30 | 60 | 0.25 |
| | 150 ml | 30 | 60 | 0.3 |
| | 175 ml | 30 | 60 | 0.35 |
| | 200 ml | 30 | 60 | 0.4 |
| ⅓ pint | 250 ml | 30 | 60 | 0.4 |
| ½ pint | | 30 | 60 | 0.4 |
| ⅔ pint | | 30 | 60 | 0.5 |
| 1 pint | 500 ml | 60 | 100 | 0.5 |
| | 1 litre | 60 | 100 | 1 |
| 2 pints | | 70 | 110 | 1 |
| | 2 litres | 80 | 140 | 1 |
| 4 pints | | 80 | 140 | 1 |
| | 2.5 litres | 80 | 140 | 1.2 |
| 8 pints | | 100 | 150 | 2.5 |
| | 5 litres | 100 | 150 | 2.5 |
| | 10 litres | 120 | 180 | 5 |

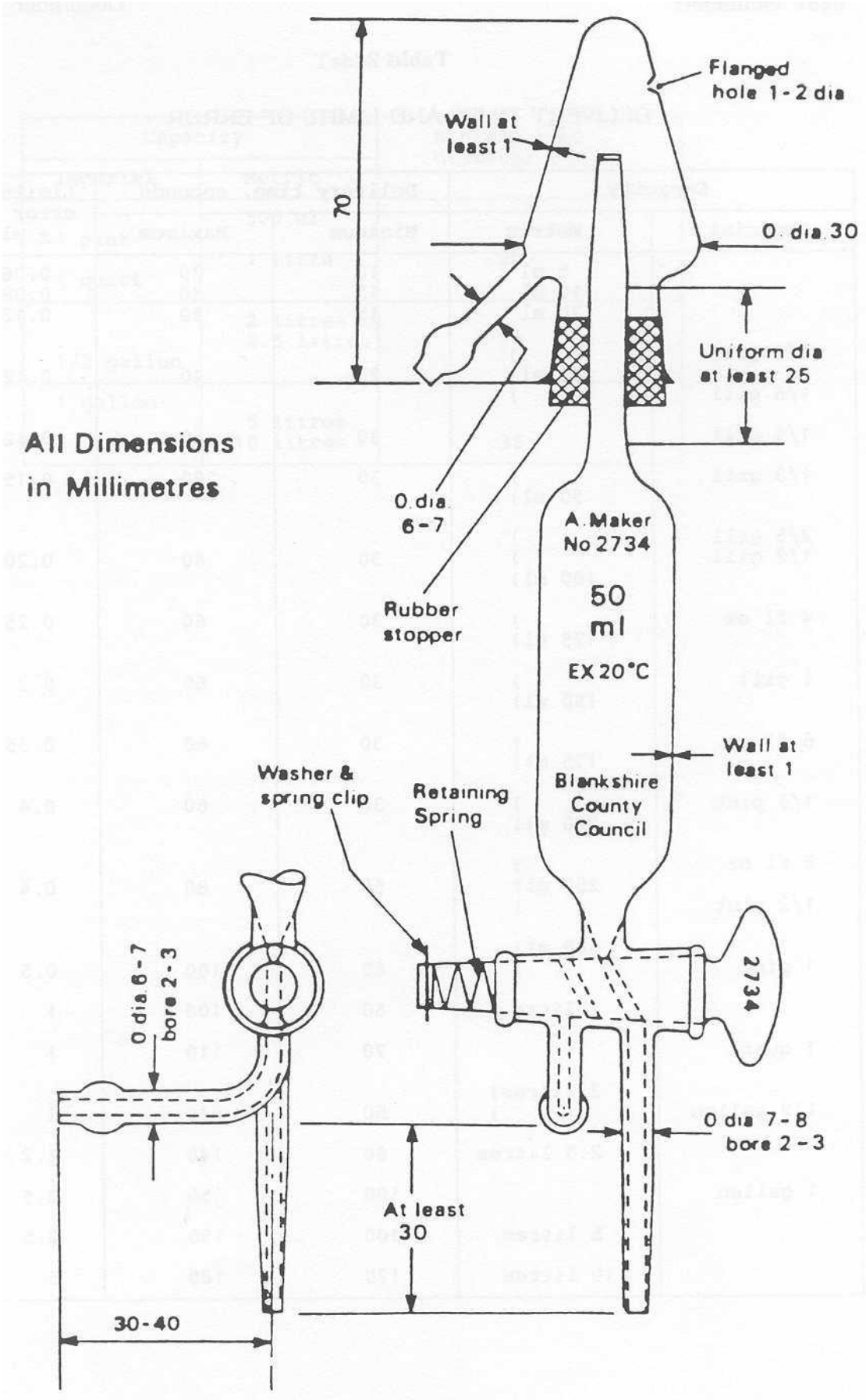
Flanged hole 1-2 dia
Wall at least 1
70
0. dia 30
Uniform dia at least 25
All Dimensions in Millimetres
0. dia 6-7
A. Maker No 2734
50 ml
EX 20°C
Rubber stopper
Wall at least 1
Washer & spring clip
Retaining Spring
Blankshire County Council
2734
0 dia 6-7 bore 2-3
0 dia 7-8 bore 2-3
At least 30
30-40

Fig 1

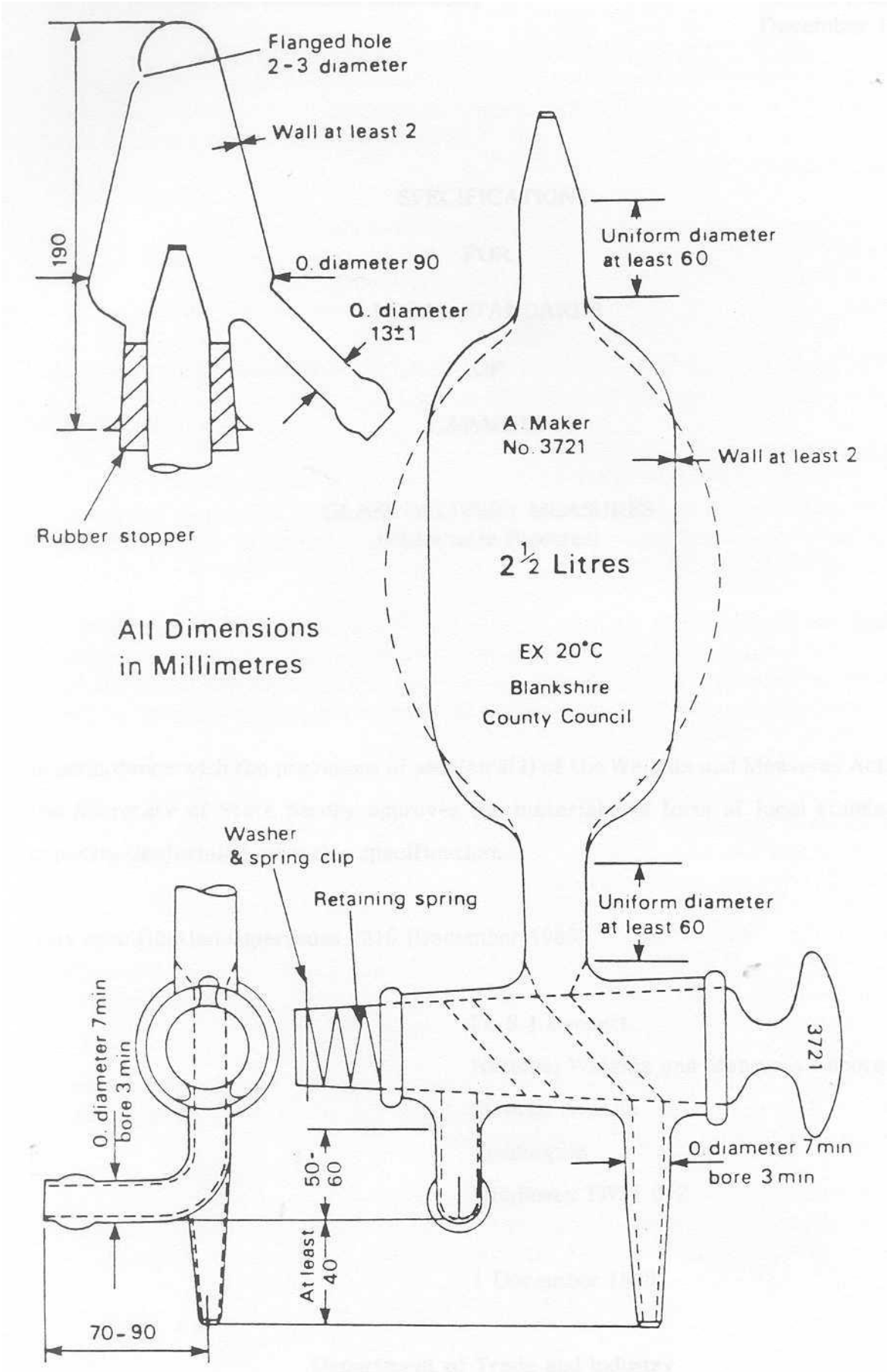
Flanged hole
2-3 diameter
Wall at least 2
190
O. diameter 90
O. diameter
13±1
Rubber stopper
Uniform diameter
at least 60
A. Maker
No. 3721
Wall at least 2
2½ Litres
EX 20°C
Blankshire
County Council
All Dimensions
in Millimetres
Washer
& spring clip
Retaining spring
Uniform diameter
at least 60
O. diameter 7 min
bore 3 min
3721
50-
60
O. diameter 7 min
bore 3 min
At least
40
70-90

Fig 2