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Specification for

Spray taps

UDC 621.646.6:628.156:696.117

Cooperating organizations

The Sanitary Appliances Standards Committee, under whose supervision this British Standard was prepared, consists of representatives from the following Government departments and scientific and industrial organizations:

British Bath Manufacturers' Association*
British Plastics Federation*
Council of British Ceramic Sanitaryware Manufacturers*
Department of the Environment*
Environmental Health Officers' Association
Greater London Council*
Institute of Plumbing*
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Institution of Production Engineers
Institution of Water Engineers and Scientists
National Association of Plumbing, Heating and Mechanical Services Contractors
Society of British Gas Industries
South London Consortium
Thames Water Authority — Metropolitan Water Division
Individual experts

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The following BSI references relate to the work on this standard:
Committee reference SAB/2
Draft for comment 74/0492 DC

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Contents

Foreword

This British Standard has been prepared under the authority of the Sanitary Appliances Standards Committee and at the request of the Department of the Environment and The Building Research Establishment.

Spray taps provide a quick, hygienic method of washing under running water. The use of spray taps appreciably reduces the total amount of water used for handwashing.

Spray "mixing" taps, which incorporate a mixing function operated by the user, are not specified in this standard, but it is intended to prepare a separate British Standard dealing with them. They possess characteristics similar to those of spray taps but they are also able to accept hot and cold water supplies and mix them for delivery at a temperature to suit the user.

The factors governing the use of spray taps, and their associated plumbing systems, are numerous. Pending the inclusion of a statement on design considerations in the relevant British Standard codes of practice, and the issue of British Standard specifications for special wash basins and troughs for spray taps, Appendix E and Appendix F to this present standard set out some basic considerations.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 8, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Section 1. General

1 Scope

This British Standard specifies requirements for the materials, design, construction, dimensions and testing of two forms of spray taps: pillar spray taps and bib spray taps.

2 References

The titles of the publications referred to in this standard are listed on the inside back cover.

3 Definitions

For the purposes of this British Standard the following definitions apply. Reference should be made to BS 4118, (from which definitions **3.1** and **3.2** are taken) for other definitions.

3.1
spray tap

a tap supplied with water at a predetermined temperature which it delivers, at a restricted rate of flow, in the form of a spray

NOTE A bib spray tap is supplied with water through a horizontal inlet and a pillar spray tap is supplied with water through a vertical inlet.

3.2
dead-leg

a length of hot water pipe leading to a draw-off point and not forming part of a circuit

3.3
flow restrictor

that component of a spray tap, not being the spray outlet, which governs or restricts the rate of discharge

3.4
spray outlet

a fitting that is attached to the outlet of a tap and causes water passing through it to break up into a spray

3.5
tap platform

a flat horizontal part of a wash basin provided for the mounting of a tap

4 Nominal size

The nominal size of spray taps with both rising and non-rising spindles shall be ½ nominal size.

5 Marking

5.1 Spray taps. Spray taps shall be legibly and permanently marked with the following information:

a) the manufacturer's name or mark;

b) the number of this British Standard, i.e. BS 5388.

Additional markings are not precluded (e.g. BS 1010-1 or BS 1010-2 or performance standards, when published (see clause **6**).

5.2 Non-adjustable flow restrictors. Non-adjustable flow restrictors shall be legibly marked with the flow restrictor number (see Table 1).

Section 2. Dimensions, design and construction

6 General

The design and construction of spray taps shall be as specified in BS 1010-1 or BS 1010-2 or in BS 5412, BS 5413-1 and BS 5413-3 (in course of preparation) except for those features specified in section 2 of this standard.

7 Dimensions

7.1 Pillar spray taps. Pillar spray taps shall have the dimensional features shown in Figure 1.

7.2 Bib spray taps. Bib spray taps shall have the dimensional features shown in Figure 2.

8 Materials

8.1 General. Component parts of spray taps, other than those specified in **8.2** and **8.3**, shall be made of any of the materials specified in BS 1010-2 for comparable parts. The materials used in the construction of spray taps and which are in contact with the supply water shall not constitute a toxic hazard and shall not foster microbiological growth or give rise to taste, odour, cloudiness or discoloration of the water. Attention is drawn to National Water Council requirements in this respect.

8.2 Spray outlets. Spray outlets shall be made of one or more of the following materials:

a) one of the non-ferrous metals specified in BS 1010-2;

b) stainless steel as specified in BS 970-4, grades 302 S25, 304 S15, 303 S21;

c) acetal, polypropylene, high density polyethylene, acrylonitrile butadiene styrene (ABS), polytetrafluoroethylene (PTFE) or not less suitable material.

8.3 Flow restrictors. Flow restrictors shall be made of one of the materials, or a combination of the materials, specified in a) and b) of **8.2**, or of rubber as specified in clause **6** of BS 3457:1973.

9 Spray outlet

The spray tap shall be provided with a spray outlet capable of causing the water to assume the shape of a diverging spray. The cone shall not diverge to an extent greater than that shown in Figure 5 when the tap is fully opened.

Every waterway in the outlet shall be capable of accepting a 1 mm nominal diameter steel probe and the steel shall comply with the requirements of BS 1407.

The spray outlet device shall be capable of being removed for cleaning but only by the use of a special tool.

10 Flow restrictor

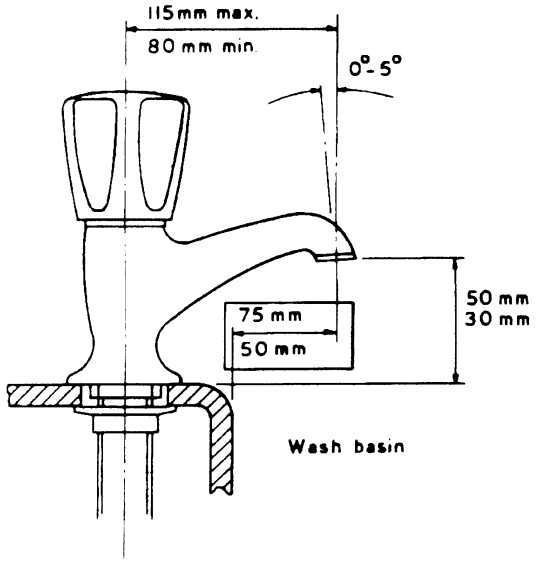
A flow restrictor shall be provided in the spray tap. The flow restrictor may be either adjustable or one of the three fixed flow types, the pressure limits for which are specified in Table 1. Self adjusting flow restrictors may also be used provided that not more than two patterns are required to satisfy the requirements of **12.2** over the whole range of working pressures set out in Table 1.

The flow restrictor shall be in a form so that it can be adjusted or changed without removing the tap from the wash basin, but cannot be so adjusted without the use of a special tool.

Table 1 — Working pressure ranges and test pressures for fixed flow restrictors

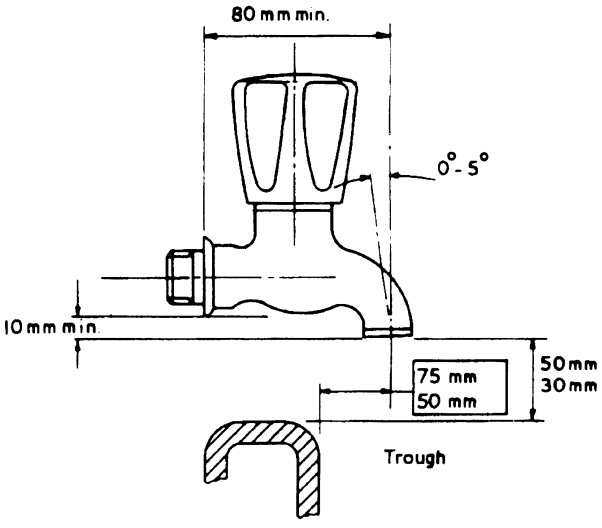
BS flow restrictor number	Working pressure range		Test flow pressure
	min.	max.	
	bar[a]		bar
1	0.27	0.60	0.40
2	0.60	1.35	0.90
3	1.35	3.00	2.00

[a] 1 bar = 10^5 N/m^2 = 100 kPa.



NOTE 1 Drawing is diagrammatic only.
NOTE 2 Dimensions in "box" are given for guidance only.

Figure 1 — Installation and dimensional features of pillar spray taps



NOTE 1 Drawing is diagrammatic only.
NOTE 2 Dimensions in "box" are given for guidance only.

Figure 2 — Installation and dimensional features of bib spray taps

Section 3. Testing

11 General

Spray taps shall be capable of passing the tests specified in **1.7.1** of BS 1010-2:1973. In addition they shall be capable of meeting the test requirements specified in section 3 of this standard.

12 Rate of flow test

12.1 Spray taps with fixed flow restrictors. When tested by the method specified in Appendix B, spray taps with fixed flow restrictors shall deliver water at a rate of not less than 0.03 litre/s and not more than 0.05 litre/s when the spray tap is opened through 180° from the commencement of flow. When the spray tap is fully open the flow shall not increase by more than 10 % from the flow obtained at 180° of opening.

12.2 Spray taps with adjustable flow restrictors. When tested by the method specified in Appendix C, spray taps fitted with adjustable flow restrictors shall, when the restrictor is suitably adjusted and when the spray tap is opened through 180° from the commencement of flow, deliver water at a rate of not less than 0.03 litre/s and not more than 0.05 litre/s. When the spray tap is fully open, the flow shall not increase by more than 10 % from the flow obtained at 180° of opening.

13 Test for divergence of the spray

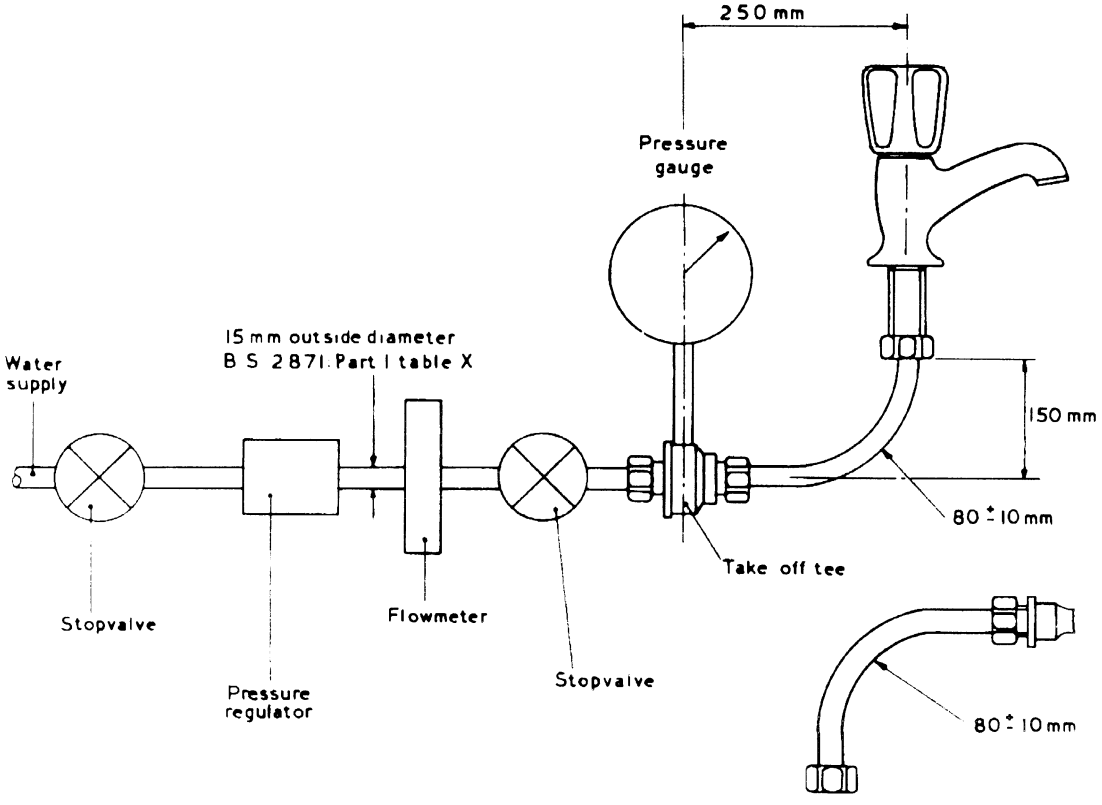
When tested by the method specified in Appendix D, for flow rates of 0.03 litre/s and 0.05 litre/s, spray taps shall produce a spray of water the whole of which shall enter the gauge, as follows (see Figure 5).

a) No water shall enter the outer annulus.

b) Not less than 10 % and not more than 90 % shall enter the inner annulus.

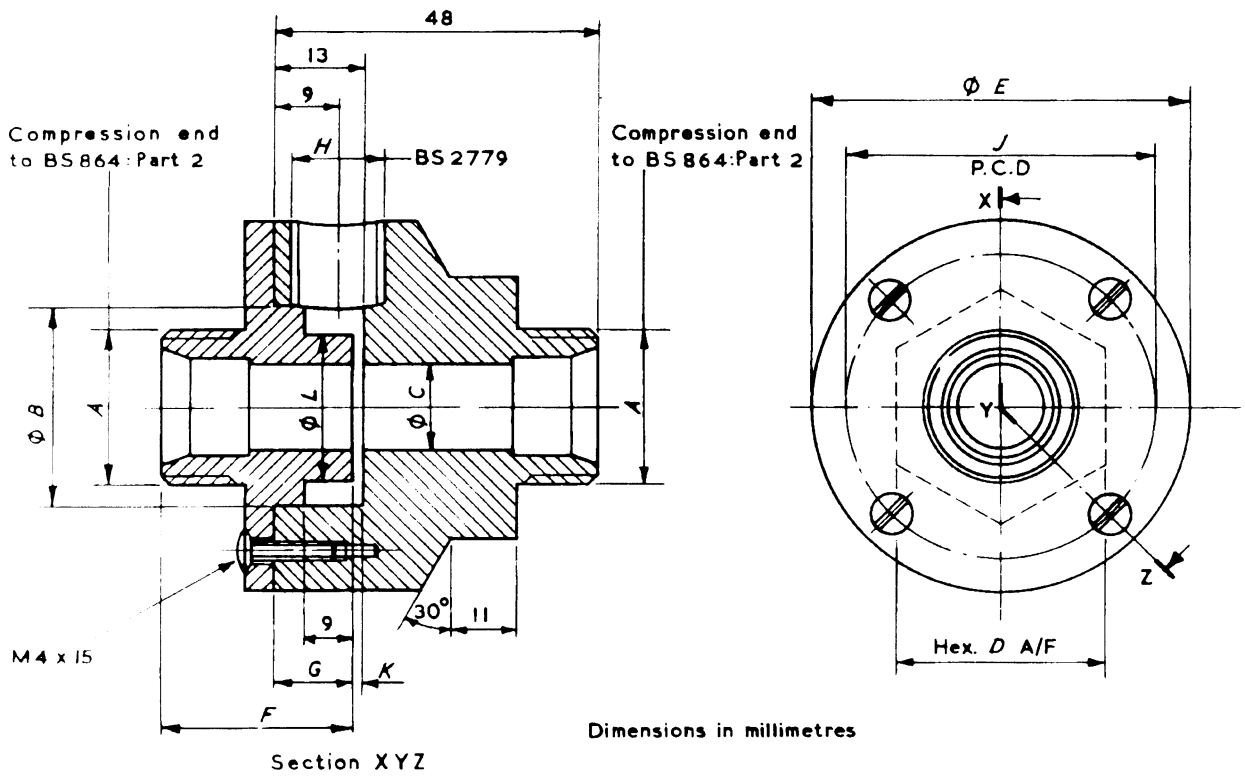
c) The remainder shall enter the centre cylinder.

The inner annulus is evenly divided into four sections each with its own separate take-off point. Each of the four inner annulus take-off points shall collect between 15 % and 30 % of the water flowing into the inner annulus.



NOTE Drawing is diagrammatic only.

Figure 3 — Diagram of rate of flow test apparatus

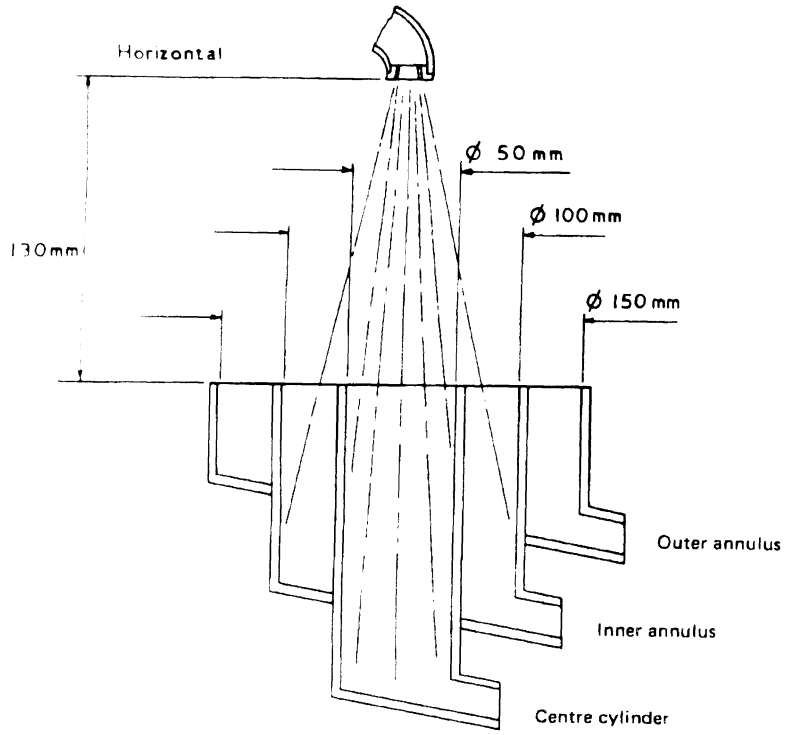


NOTE Drawing is diagrammatic only

Figure 4 — Details of pressure take-off tee

Table 2 — Dimensions of pressure take-off tee

Size	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*J*	*K*	*L*
½	15	31	12.7	33	55	27	12.5	G¼	43	0.5	21
NOTE All dimensions are in millimetres.											



NOTE 1 Walls of annular gauge to be not more than 1 mm thick.
NOTE 2 Drawing is diagrammatic only.

Figure 5 — Sectional diagram of spray, spray outlet and annular gauge

Appendix A Information to be supplied by the purchaser

The purchaser shall supply the following information when making an enquiry or placing an order:

a) the nominal size of the spray tap, i.e. ½ nominal size;

b) whether a bib type mounting or a pillar type mounting is required;

c) whether a rising or non-rising spindle is required;

d) the working pressure (bar) to which the spray tap will be subjected (see Table 1);

e) the type of flow restrictor.

Appendix B Method of measuring the rate of flow through spray taps fitted with a fixed flow restrictor

B.1 Object

The object of the test is to determine whether or not the specimen spray tap will deliver water at the specified rates.

B.2 Apparatus

The following are required.

B.2.1 *A water supply* having a minimum pressure of 4.50 bar and a minimum rate of flow, when the supply pipe is open to atmosphere, of 0.10 litre/s.

B.2.2 *A stopvalve*

B.2.3 *A pressure regulator* capable of reducing the supply pressure to the test pressures required.

B.2.4 *A flowmeter*, graduated in ml/s and accurate to ± 2 %.

B.2.5 *A pressure gauge*, graduated in bar and accurate to ± 2 %.

B.2.6 *A copper tube* of 15 mm outside diameter in accordance with BS 2871-1.

B.2.7 *Fittings* necessary to complete the test apparatus shown in Figure 3. The bore of any fitting shall be at least equal to the bore of the copper tube (see **B.2.6**) used in the apparatus to avoid constriction of the waterway.

B.3 Procedure

Connect the apparatus to the water supply. Install the number 1 restrictor in the spray tap. Connect the spray tap to the test apparatus.

With the stopvalve fully open, and the spray tap closed, adjust the supply pressure to the test pressure specified in Table 1 for number 1 flow restrictors. Open the spray tap by rotating its hand control through 180° from the commencement of flow. Record the rate of flow. Open the spray tap fully. Record the rate of flow.

Repeat the procedure with number 2 and number 3 flow restrictors installed in the spray tap and using the appropriate test pressures specified in Table 1.

B.4 Recording

Record whether or not each combination of spray tap and fixed restrictor will deliver water at the specified rates.

Appendix C Method of measuring the rate of flow through spray taps fitted with an adjustable or self adjusting flow restrictor

C.1 Object

The object of the test is to determine whether or not the specimen spray tap will deliver water at the specified rates.

C.2 Apparatus

The apparatus shall be as specified in **B.2**.

C.3 Procedure

Connect the apparatus to the water supply. Connect the spray tap to the apparatus.

With the stopvalve fully open, and the spray tap closed, adjust the pressure regulator to give a supply pressure of 0.27 bar. Open the spray tap by rotating its hand control 180° from the commencement of flow.

Adjust the flow restrictor until the rate of flow specified in **12.2** is achieved. Record the rate of flow. Open spray tap fully. Record the rate of flow.

Repeat the above procedure using a supply pressure of 3 bar.

C.4 Recording

Record whether or not the spray tap, with the adjusted restrictor, will deliver water at the specified rates.

Appendix D Method of measuring the divergence of the spray

D.1 Object

The object of the test is to determine whether or not the specimen spray tap will deliver a spray of specified requirements.

D.2 Apparatus

The apparatus shall be as specified in **B.2**, together with a gauge as shown in Figure 5.

D.3 Procedure

Connect the rate of flow test apparatus to the water supply. Connect the spray tap to the rate of flow test apparatus.

Open the spray tap by rotating the hand control 180° from the commencement of flow. Adjust the stopvalve to give a steady rate of flow of 0.03 litre/s. Place the gauge as shown in Figure 5. Centralize as required. Allow the water to flow for a minimum of 60 s before commencing observations.

Repeat the procedure using a rate of flow of 0.05 litre/s.

D.4 Recording

Record the volume of water that has entered the outer annulus, the four sections of the inner annulus and the central cylinder.

Appendix E Design considerations for wash basins and troughs fitted with spray taps

E.1 Pending the issue of a British Standard for wash basins and troughs for spray washing the recommendations in this appendix are given for guidance.

E.2 Attention is drawn to Model Water Byelaw 52 which requires that wash basins and troughs used in association with spray taps shall be fitted with a plug waste except where a spray tap is so designed and arranged that it cannot deliver water at a rate exceeding 5 pints/min in which case they may be fitted with a waste that will not accept a plug. Such appliances do not require an overflow.

E.3 The discharge from properly adjusted spray taps should be contained within the sanitary appliances that they serve.

E.4 It should be possible to place the hands in the water spray without obstruction or without requiring undue manipulation of the hands.

Appendix F Notes on the installation of spray taps

F.1 Spray taps should normally be fed with water at a temperature between 38 °C and 43 °C. For special circumstances, this range may need to be varied.

F.2 It is desirable that a strainer be installed in the supply pipe to each single tap or group of taps.

F.3 It should be accepted that the spray outlet will need cleaning at intervals, the length of the intervals depending on the water supply.

F.4 The blended water circulating system should be taken close to the spray tap, and the diameter and length of dead legs kept to an absolute minimum.

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Publications referred to

BS 864, *Capillary and compression tube fittings of copper and copper alloys.*
BS 864-2, *Metric units.*
BS 970, *Wrought steels in the form of blooms, billets, bars and forgings.*
BS 970-4, *Stainless, heat resisting and valve steels.*
BS 1010, *Draw-off taps and stopvalves for water services (screwdown pattern).*
BS 1010-1, *Imperial units.*
BS 1010-2, *Draw-off taps and above ground stopvalves.*
BS 1407, *High carbon bright steel (silver steel).*
BS 2779, *Pipe threads where pressure-tight joints are not made on the threads.*
BS 2871, *Copper and copper alloys. Tubes.*
BS 2871-1, *Copper tubes for water, gas and sanitation.*
BS 3457, *Materials for water tap and stopvalve seat washers.*
BS 4118, *Glossary of sanitation terms.*
BS 5412, *Specification for the performance of draw-off taps with metal bodies for water services*[1)].
BS 5412-1, *Dimensional and design characteristics.*

[1)] In course of preparation. Because of the similarity in requirements for the BS 5412 and BS 5413 series, these standards are published under one cover, i.e. BS 5412-1 and BS 5413-1 comprise one publication, and similarly for the other Parts.

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