

BS 8558:2015



BSI Standards Publication

**Guide to the design,
installation, testing and
maintenance of services
supplying water for
domestic use within
buildings and their
curtilages – Complementary
guidance to BS EN 806**

bsi.

...making excellence a habit.™

Publishing and copyright information

The BSI copyright notice displayed in this document indicates when the document was last issued.

© The British Standards Institution 2015

Published by BSI Standards Limited 2015

ISBN 978 0 580 86314 1

ICS 91.140.60

The following BSI references relate to the work on this document:

Committee reference B/504/2

Draft for comment 15/30299694 DC

Publication history

First published as BS 6700 April 1987

Second edition, April 1997

Third edition, December 2006

First published as BS 8558, December 2011

Second (present) edition as BS 8558, September 2015

Amendments issued since publication

Date	Text affected
-------------	----------------------

Contents

Foreword *iii*

0 Introduction 1

- 1 Scope 3
- 2 Normative references 3
- 3 Terms and definitions 7
- 4 Guidance on BS EN 806-2 13
- 5 Guidance on BS EN 806-4 54
- 6 Guidance on BS EN 806-5 67

Annexes

- Annex A (informative) Examples of pumped systems 71
- Annex B (informative) Guidance on the calculation of hot water storage capacity 76
- Annex C (informative) Pipe sizing calculations 79

List of figures

- Figure 1 – Example of service pipe 10
- Figure 2 – Example of pipework for installation of domestic water softener 21
- Figure 3 – Locations of stopvalves in blocks of flats with separate supply pipes to each flat 25
- Figure 4 – Locations of stopvalves in blocks of flats supplied from a common supply pipe 26
- Figure 5 – Example of a pre-assembled external meter installation 28
- Figure 6 – Schematic example of a direct (vented) hot water system 31
- Figure 7 – Schematic example of an indirect (vented) hot water system 32
- Figure 8 – Schematic example of an indirect unvented (vented primary) hot water system 33
- Figure 9 – Schematic example of an indirect unvented (sealed primary) hot water system 34
- Figure 10 – Schematic example of a vented primary circuit with close coupled feed and open vent 35
- Figure 11 – Typical examples of pipes entering buildings 43
- Figure 12 – Accessibility of pipework 47
- Figure 12 – Accessibility of pipework 48
- Figure 13 – Clear space needed above cisterns 50
- Figure 14 – Limits for notching and drilling of solid timber floor joists 61
- Figure 14 – Limits for notching and drilling of solid timber floor joists 62
- Figure 15 – Directions of thrusts developed in a pipeline due to internal pressure 65
- Figure 16 – Cutting off redundant pipes 70
- Figure A.1 – Indirect boosting from break cistern to storage cistern 72
- Figure A.2 – Indirect boosting with hydraulic accumulator 73
- Figure A.2 – Indirect boosting with hydraulic accumulator 74
- Figure A.3 – Direct boosting 75
- Figure C.1 – Conversion of loading units to design flow rate 81
- Figure C.2 – Determination of pipe diameter – Water at 10 °C 83
- Figure C.3 – Head loss through stopvalves 86
- Figure C.4 – Head loss through float-operated valves 87

List of tables

- Table 1 – Cross references to the BS EN 806 series and this British Standard 1
- Table 2 – Drawing symbols for BS 8558 12
- Table 3 – British Standards for stopvalves 24

Table 4 – Sizes of open vent pipes	30
Table 5 – Pipe design flow rates for outlet fittings and appliances ^{A), B)}	38
Table 6 – Calculated minimum thickness of thermal insulation to protect copper pipes fixed inside premises for domestic cold water systems	44
Table 7 – Calculated minimum thickness of thermal insulation to protect copper pipes fixed inside premises against freezing for commercial and institutional applications	45
Table 8 – Examples of insulating materials	45
Table 9 – Jointing of copper tube and stainless steel tube	56
Table 10 – Thrust per bar internal pressure	65
Table 11 – Bearing capacity of soils	65
Table B.1 – Minimum sizes of storage vessel for Case 1	78
Table B.2 – Minimum sizes of storage vessel for Case 2	78
Table C.1 – Loading unit: Hot or cold supply	80
Table C.2 – Typical equivalent pipe lengths (copper, plastics and stainless steel)	84
Table C.3 – Typical loss of pressure through UK low resistance taps and equivalent pipe lengths	84

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 92, an inside back cover and a back cover.

Foreword

Publishing information

This British Standard is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 30 September 2015. It was prepared by Sub-committee B/504/2, *Internal systems and components*, under the direction of Technical Committee B/504, *Water Supply*. A list of organizations represented on these committees can be obtained on request to their secretary.

Supersession

This British Standard supersedes BS 8558:2011, which is withdrawn.

Information about this document

The content of this British Standard was originally taken from BS 6700:2006+A1:2009, which was withdrawn on publication of BS EN 806 (all parts). This is a full revision of the standard to keep it up to date.

Figure 12f) is reproduced by permission of the Water Regulations Advisory Scheme (WRAS). Copyright is claimed on these figures. Copyright holders are WRAS, Willow Road, Pen y Fan Industrial Estate, Crumlin, Gwent NP11 4EG.

Figure 15 is reproduced by permission of the Chartered Institute of Plumbing and Heating Engineering (CIPHE). Copyright is claimed on these figures. Copyright holders are CIPHE, 64 Station Lane, Hornchurch, Essex RM12 6NB, United Kingdom.

Presentational conventions

The guidance in this standard is presented in roman (i.e. upright) type. Any recommendations are expressed in sentences in which the principal auxiliary verb is "should".

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

In particular, attention is drawn to the following statutory regulations which may be amended from time to time.

- The Water Industry Act 1981 [1];
- The Water and Sewerage Services (Northern Ireland) Order 2006, as amended [2];
- The Water (Scotland) Act 1980, as amended [3];
- The Workplace (Health, Safety and Welfare) Regulations 1992 [4];
- The Electricity Safety, Quality and Continuity Regulations 2002, as amended [5];
- The Electricity Safety, Quality and Continuity Regulations (Northern Ireland) 2012 [6];
- The Control of Asbestos at Work Regulations 2002 [7];
- The Control of Asbestos at Work Regulations (Northern Ireland) 2003 [8];

- The Water Industry Act 1999 [9];
- The Health and Safety at Work etc. Act 1974 [10];
- The “Water Quality Regulations”, which set out provisions for the quality of drinking water provided by a public water supplier (water undertaker):
 - The Water Supply (Water Quality) Regulations 2000, as amended, in England [11];
 - The Water Supply (Water Quality) Regulations 2010, as amended, in Wales [12];
 - The Water Supply (Water Quality) Regulations (Northern Ireland) 2007, as amended, in Northern Ireland [13];
 - The Public Supply Water Supplies (Scotland) Regulations 2014, in Scotland [14];
- The “Private Water Supplies Regulations”, which set out provisions for the quality of water from a private supply:
 - The Private Water Supplies Regulations 2009, as amended, in England [15];
 - The Private Water Supplies (Wales) Regulations 2010, as amended, in Wales [16];
 - The Private Water Supplies (Scotland) Regulations 2006, in Scotland [17];
 - The Private Water Supplies (Northern Ireland) Regulations 2009, as amended, in Northern Ireland [18];
- The “Water Fittings Regulations”, which set out provisions for plumbing systems in premises to which a supply of public mains water has been provided:
 - The Water Supply (Water Fittings) Regulations 1999, in England and Wales [19];
 - The Water Supply (Water Fittings) (Scotland) Byelaws 2014, in Scotland [20];
 - The Water Supply (Water Fittings) Regulations (Northern Ireland) 2009, in Northern Ireland [21];
- The “Building Regulations”:
 - The Building Regulations 2010 [22];
 - The Building (Scotland) Regulations 2004, as amended [23];
 - The Building Regulations (Northern Ireland) 2012, as amended [24].

0 Introduction

Table 1 provides cross references to the BS EN 806 series and this British Standard.

Table 1 Cross references to the BS EN 806 series and this British Standard (1 of 3)

BS EN 806 part and clause	BS 8558 clause
BS EN 806-1:2000+A1:2002	
Scope, Clause 1	No additional guidance
Normative references, Clause 2	No additional guidance
Objectives, Clause 3	No additional guidance
Competence and duties for design, construction and operation, Clause 4	No additional guidance
Terms and definitions, Clause 5	
distributing pipe, 5.3.4	3.1.13
service pipe, 5.3.1	3.1.28
service stopvalve, 5.4.2	3.1.29
supply pipe, 5.3.2	3.1.36
supply stopvalve, 5.4.3	3.1.37
Graphic symbols and abbreviations, Clause 6	No additional guidance
Examples for the use of graphic symbols, Annex A	No additional guidance
BS EN 806-2:2005	
Scope, Clause 1	No additional guidance
Normative references, Clause 2	No additional guidance
General requirements, Clause 3	No additional guidance
Private water supplies, Clause 4	No additional guidance
Acceptable materials, Clause 5	4.2.1 and 4.2.3
Choice of material, 5.1	4.2.2
Components, Clause 6	No additional guidance
Pipework inside buildings, Clause 7	No additional guidance
Cold potable water services, Clause 8	No additional guidance
Hot water systems, Clause 9	No additional guidance
Prevention of bursting, Clause 10	
Discharge pipes, 10.2.5	4.2.3
Guidelines for water meter installations, Clause 11	No additional guidance
Water conditioning, Clause 12	No additional guidance
Acoustics, Clause 13	No additional guidance
Protection of systems against temperatures external to pipes, fittings and appliances, Clause 14	No additional guidance
Boosting, Clause 15	No additional guidance
Pressure reducing valves, Clause 16	No additional guidance
Combined drinking water and fire fighting services, Clause 17	No additional guidance
Prevention of corrosion damage, Clause 18	No additional guidance
Additional requirements for vented cold and hot water systems, Clause 19	No additional guidance
List of acceptable materials (non-exhaustive), Annex A	No additional guidance
Aspects for water conditioning, Annex B	No additional guidance
Supplementary guidance	4.3

Table 1 Cross references to the BS EN 806 series and this British Standard (2 of 3)

BS EN 806 part and clause	BS 8558 clause
BS EN 806-3:2006	
Scope, Clause 1	No additional guidance
Normative references, Clause 2	No additional guidance
Terms, symbols and units, Clause 3	No additional guidance
Principles of pipe sizing calculations, Clause 4	No additional guidance
Simplified method of pipe sizing, Clause 5	4.3.30 and Annex C
Special-installations, Clause 6	No additional guidance
Example for the determination of pipe sizes for standard installations, Annex A	No additional guidance
Design flow rates in relation to total flow rates, Annex B	No additional guidance
List of national pipe sizing methods, Annex C	No additional guidance
BS EN 806-4:2010	
Scope, Clause 1	No additional guidance
Normative references, Clause 2	No additional guidance
Terms and definitions, Clause 3	No additional guidance
Work on site, Clause 4	
General, 4.1	5.1.1
General, 4.4.1	5.1.2
Pipe materials and jointing methods, 4.4.2	5.1.3
Underground pipe laying, 4.6	5.2.1
Allowances for thermal movement and prevention of noise, 4.7.1	5.1.4
Fixings for insulated piping, 4.7.2.6	5.1.5
Piping passing through structures, 4.7.4	5.1.6
Valves and taps, 4.8	5.1.7
Record of installation, 4.9.3	5.1.8
Dissimilar metals, Clause 5	No additional guidance
Commissioning, Clause 6	
General, 6.1.1	5.1.9
Pipe system material specifications, jointing procedures and pipe installation for different types of materials, Annex A	No additional guidance
Calculation and compensation for thermal effects of pipes, Annex B	No additional guidance
Recommended maximum spacings of fixings for metal pipes, Annex C	No additional guidance
Supplementary guidance	5.2
BS EN 806-5:2012	
Scope, Clause 1	No additional guidance
Normative references, Clause 2	No additional guidance
Terms and definitions, Clause 3	No additional guidance
General, Clause 4	6.1.1 and 6.1.2
Documentation, Clause 5	No additional guidance
Operation, Clause 6	6.1.2 and 6.1.3
Interruptions to operation and disconnection, Clause 7	No additional guidance
Resumption of supply, Clause 8	No additional guidance
Damage and faults, Clause 9	
Change in water quality, 9.1	6.1.4
Alterations, extensions and refurbishment, Clause 10	No additional guidance
Accessibility of fittings, Clause 11	No additional guidance
Maintenance, Clause 12	No additional guidance

Table 1 Cross references to the BS EN 806 series and this British Standard (3 of 3)

BS EN 806 part and clause	BS 8558 clause
Additional requirements for vented systems, Clause 13	
Cisterns, 13.1	6.1.5
Inspection and maintenance, Clause 14	No additional guidance
Recommended frequencies for inspection and maintenance of components for drinking water installations, Annex A	No additional guidance
Inspection and maintenance procedures, Annex B	
Pipework, B.22	6.1.6
Specific inspection and maintenance procedures for water conditioning devices, Annex C	No additional guidance
Supplementary guidance	6.2

1 Scope

This British Standard provides complementary guidance to BS EN 806. It is a guide to the design, installation, alteration, testing, operation and maintenance of services supplying water for domestic use within buildings and their curtilages.

BS EN 806 does not cover underground pipework, but this British Standard gives guidance on underground pipework within the curtilage of a building.

This British Standard does not cover:

- a) the detailed methods of chemical treatment and maintenance of water distribution systems;
- b) workmanship; or
- c) space heating systems.

NOTE Annex A gives examples of pumped systems. Annex B provides guidance on the calculation of hot water storage systems, while Annex C provides calculations for pipe sizing.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 1010-2, *Specification for draw-off taps and stopvalves for water services (screw-down pattern) – Part 2: Draw-off taps and above-ground stopvalves*¹⁾

BS 1710, *Specification for identification of pipelines and services*

BS 2456, *Specification for floats (plastics) for float operated valves for cold water services*

BS 2580, *Specification for underground plug cocks for cold water services*¹⁾

BS 3251, *Specification – Indicator plates for fire hydrants and emergency water supplies*

BS 4991, *Specification for propylene copolymer pressure pipe*

¹⁾ Withdrawn.