

**BS 6891:2015**



**BSI Standards Publication**

**Specification for the  
installation and maintenance  
of low pressure gas  
installation pipework of up  
to 35 mm (R1¼) on premises**

**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 66861 6

ICS 91.140.40

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

Committee reference GSE/30

Draft for comment 13/30199128 DC

**Publication history**

First published February 1988

Second edition, April 1998

Third edition, April 2005

Fourth (present) edition, November 2015

**Amendments issued since publication**

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

---

## Contents

Foreword *iii*

1	Scope	1
2	Normative references	4
3	Terms and definitions	7
4	Competence	12
5	Design and planning	13
6	Materials and components	16
7	Jointing	18
8	Installation	20
9	Installation of flexible hoses, tubing, assemblies and their connections	66
10	Commissioning	69
11	Maintenance	72

### Annexes

Annex A (informative)	Guide to sizing pipework installations	73
Annex B (informative)	Sulfidation of natural gas installations	81
Annex C (informative)	Summary and principal conclusions of the Advantica Research Project, <i>Gas in intermediate floors</i> , Report Number 6699 [28]	82
Annex D (informative)	Protected area	84
Annex E (normative)	LPG Final stage regulator and safety devices	85
Annex F (informative)	Dangerous Substances and Explosive Atmospheres Regulations [17], [18]	88

Bibliography 90

### List of figures

Figure 1	– 2nd family gas installation with an internal meter	2
Figure 2	– 3rd family gas installation with cylinders	3
Figure 3	– 3rd family gas installation with bulk storage vessels	3
Figure 4	– Selection of applicable standard(s) for gas installations	4
Figure 5	– Sizing pipework – Design maximum pressure loss for typical installations	15
Figure 6	– Non-contact voltage detector (single pole) – Example	22
Figure 7	– Use of temporary continuity bond	23
Figure 8	– Position of main protective bonding conductor connection	26
Figure 9	– Typical notification where main protective bonding conductor is found not to be present	27
Figure 10	– AECV positions	28
Figure 11	– Typical exterior pipework	31
Figure 12	– Notching and drilling of metal web joists and timber-engineered joists	34
Figure 13	– Limits for notching and drilling of solid timber floor joists	35
Figure 14	– Pipework in concrete compartment floors	38
Figure 15	– Pipework in timber fire compartment floors	39
Figure 16	– Typical examples of pipework installed in solid floors	42
Figure 17	– Typical examples of pipework installed in solid construction walls	46
Figure 18	– Typical examples of pipework installed in timber and light steel-framed construction walls	50
Figure 19	– Limits for drilling of wall studding	53
Figure 20	– Buried pipework	56
Figure 21	– Cross-sectional area of duct	59
Figure 22	– Typical pipework in multi-storey buildings containing flats or maisonettes	60
Figure 23	– Copper and steel pipe in a protected area	62
Figure 24	– Typical method of accommodating movement for pipework passing through a masonry/timber-frame wall	65
Figure 25	– Identification of hoses, tubing and assemblies for use with LPG	67

Figure A.1 – Example natural gas installation 79

**List of tables**

Table 1 – Pipework covered by BS 6891 2

Table 2 – Approval bodies and statutory regulations by country/territory 12

Table 3 – Competence requirements by country/territory 13

Table 4 – Maximum interval between pipework supports 32

Table 5 – Buried external pipework 55

Table 6 – Free area of ventilation openings 58

Table 7 – Operating pressure (LPG) 70

Table A.1 – Approximate natural gas pressure loss data (mbar/m) – copper tube 75

Table A.2 – Approximate natural gas pressure loss data (mbar/m) – steel tube 76

Table A.3 – Approximate LPG (propane) pressure loss data (mbar/m) – copper tube 77

Table A.4 – Approximate LPG (propane) pressure loss data (mbar/m) – steel tube 78

Table A.5 – Typical allowances for pressure loss of fittings 79

Table A.6 – Sizing results 80

Table E.1 – Pressure characteristics of various regulators (LPG) 86

Table E.2 – Minimum proximity distances for relief valve vent tips (millimetres) 88

**Summary of pages**

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 94, 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 November 2015. It was prepared by Panel GSE/30/-/3, *Domestic installation pipes*, under the authority of Technical Committee GSE/30, *Gas Installations (1st, 2nd and 3rd family gases)*. A list of organizations represented on this committee can be obtained on request to its secretary.

*NOTE 1 The standard now covers the main installation requirements for 3rd family gas installations that were previously covered by BS 5482-1.*

*NOTE 2 The general installation requirements for 3rd family gas installations specified in this standard also apply to gas installations supplied with LPG/air mixtures used in the Channel Islands or the Isle of Man, provided:*

- *any gas equipment being installed has been appropriately converted and is suitable for the gas being supplied; and*
- *the requirements of the standard do not conflict with local regulations or authorized local custom and practice.*

### Supersession

BS 6891:2015 supersedes BS 6891:2005+A2:2008, which is withdrawn, and partially supersedes BS 5482-1:2005, which is partially withdrawn.

### Information about this document

In this revision, the layout of the standard has been modified to follow the systematic approach adopted in other gas installation standards. The revision provides an update of the previous edition and has been updated to reflect changes in installation practice and legislation, and align with other appropriate standards. A number of other safety initiatives have also been included that have not previously been covered elsewhere in detail. The opportunity has also been taken to combine the pipework requirements for 2nd and 3rd family gas (natural gas and LPG) installations into a single standard for use by the gas industry.

### Use of this document

It has been assumed in the preparation of this British Standard that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

Users of this British Standard are advised to consider the desirability of selecting products for which independent quality assurance certification against the appropriate product manufacture standard has been obtained.

### Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is "shall".

*Commentary, explanation and general informative material is presented in notes 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 this British Standard cannot confer immunity from legal obligations.**

Attention is drawn to the following statutory regulations:

- The Gas Safety (Installation and Use) Regulations 1998 [1];
- The Gas Safety (Installation and Use) (Northern Ireland) Regulations 2004 [2];
- The Gas Safety (Installation and Use) Regulations 1994, as amended and applied by the Gas Safety (Application) (Isle of Man) Order 1996 [3];
- The Health and Safety (Gas) (Guernsey) Ordinance 2006 [4];
- The Building Regulations 2010 (England and Wales), as amended [5];
- The Building Regulations (Northern Ireland) 2012 [6];
- The Building (Scotland) Regulations 2004, as amended [7];
- The Gas Safety (Management) Regulations 1996 [8];
- The Gas Safety (Management) Regulations (Northern Ireland) 1997 [9].

# 1 Scope

This British Standard specifies the design, installation, commissioning and maintenance of gas installation pipework carrying 2nd and 3rd family gas of up to 35 mm (R 1¼) on premises, including residential park homes (2nd and 3rd family gas) and caravan holiday homes (2nd family gas) (see Table 1 and examples in Figure 1 to Figure 3; see also Figure 4).

*NOTE 1 The principles of the standard can also be applied to the design, installation, commissioning and maintenance of gas installation pipework carrying 1st family gas.*

*NOTE 2 Annex A gives a method for calculating pipe sizes. Annex B discusses the sulfidation of natural gas installations, while Annex C summarizes the conclusions of a report on gas in intermediate floors. Guidance on determining whether an area can be deemed a "protected area" is given in Annex D. Requirements for LPG final stage regulator and safety devices are specified in Annex E. Annex F discusses the need for gas pipework design and installation for commercial installations to satisfy regulatory requirements regarding explosive atmospheres.*

This British Standard is not applicable to:

- a) service pipework and distribution systems;
- b) pipework contained within an appliance;
- c) bulk storage vessels;
- d) LPG pipework installed in leisure accommodation vehicles and for accommodation purposes in vehicles in accordance with BS EN 1949;
- e) boats, yachts and other vessels;
- f) gas pipework supplying or within appliances having their own gas supply, such as mobile heaters; or
- g) gas pipework supplying or within catering establishments covered by BS 6173.