

BS 6891:2015+A1:2019



BSI Standards Publication

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

Publishing and copyright information

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

© The British Standards Institution 2019

Published by BSI Standards Limited 2019

ISBN 978 0 539 00238 6

ICS 97.140.40

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

Committee reference GSE/30

Drafts for comment 13/30199128 DC; 18/30374580 DC; 19/30390356 DC

Amendments/corrigenda issued since publication

Date	Text affected
31 July 2019	A1: see Foreword

Contents

	Page
Foreword	iii
1 Scope	1
<i>Table 1 — Pipework covered by BS 6891</i>	2
<i>Figure 1 — 2nd family gas installation with an internal meter</i>	2
<i>Figure 2 — 3rd family gas installation with cylinders</i>	3
<i>Figure 3 — 3rd family gas installation with bulk storage vessels</i>	3
<i>Figure 4 — Selection of applicable standard(s) for gas installations</i>	4
2 Normative references	4
3 Terms and definitions	7
4 Competence	11
<i>Table 2 — Approval bodies and statutory regulations by country/territory</i>	12
<i>Table 3 — Competence requirements by country/territory</i>	12
5 Design and planning	13
<i>Figure 5 — Sizing pipework — Design maximum pressure loss for typical installations</i>	14
6 Materials and components	15
7 Jointing	17
8 Installation	19
<i>Figure 6 — Non-contact voltage detector (single pole) — Example</i>	21
<i>Figure 7 — Use of temporary continuity bond</i>	22
<i>Figure 8 — Position of main protective bonding conductor connection</i>	26
<i>Figure 9 — Typical notification where main protective bonding conductor is found not to be present</i>	27
<i>Figure 10 — AECV positions</i>	28
<i>Figure 11 — Typical exterior pipework</i>	30
<i>Table 4 — Maximum interval between pipework supports</i>	32
<i>Figure 12 — Notching and drilling of metal web joists and timber-engineered joists</i>	33
<i>Figure 13 — Limits for notching and drilling of solid timber floor joists</i>	34
<i>Figure 14 — Pipework in concrete compartment floors</i>	38
<i>Figure 15 — Pipework in timber fire compartment floors</i>	39
<i>Figure 16 — Typical examples of pipework installed in solid floors</i>	41
<i>Figure 17 — Typical examples of pipework installed in solid construction walls</i>	44
<i>Figure 18a — Typical examples of pipework installed in timber and light steel-framed construction walls</i>	48
<i>Figure 18b — Typical examples of pipework installed in timber and light steel-framed construction walls</i>	49
<i>Figure 18c — Typical examples of pipework installed in timber and light steel-framed construction walls</i>	50
<i>Figure 19 — Limits for drilling of wall studding</i>	51
<i>Table 5 — Buried external pipework</i>	53
<i>Figure 20 — Buried pipework</i>	54
<i>Table 6 — Free area of ventilation openings</i>	56
<i>Figure 21 — Cross-sectional area of duct</i>	57
<i>Figure 22 — Typical pipework in multi-storey buildings containing flats or maisonettes</i>	58
<i>Figure 23 — Copper and steel pipe in a protected area</i>	60
<i>Figure 24 — Typical method of accommodating movement for pipework passing through a masonry/timber-frame wall</i>	63
9 Installation of flexible hoses, tubing, assemblies and their connections	63
<i>Figure 25 — Identification of hoses, tubing and assemblies for use with LPG</i>	65

10	Commissioning	66
	<i>Table 7 — Operating pressure (LPG)</i>	67
11	Maintenance	69
Annex A	(informative) Guide to sizing pipework installations	70
	<i>Table A.1 — Approximate natural gas pressure loss data (mbar/m) - copper tube</i>	71
	<i>Table A.2 — Approximate natural gas pressure loss data (mbar/m) - steel tube</i>	72
	<i>Table A.3 — Approximate LPG (propane) pressure loss data (mbar/m) - copper tube</i>	73
	<i>Table A.4 — Approximate LPG (propane) pressure loss data (mbar/m) - steel tube</i>	75
	<i>Table A.5 — Typical allowances for pressure loss of fittings</i>	76
	<i>Figure A.1 — Example natural gas installation</i>	77
	<i>Table A.6 — Sizing results</i>	78
Annex B	(informative) Sulfidation of natural gas installations	79
Annex C	(informative) Summary and principal conclusions of the Advantica Research Project, Gas in intermediate floors, Report Number 6699 [28]	80
Annex D	(informative) Protected area	82
Annex E	(normative) LPG Final stage regulator and safety devices	83
	<i>Table E.1 — Pressure characteristics of various regulators (LPG)</i>	84
	<i>Table E.2 — Minimum proximity distances for relief valve vent tips (millimetres)</i>	86
Annex F	(informative) Dangerous Substances and Explosive Atmospheres Regulations [17], [18]	86
	Bibliography	88

Summary of pages

This document comprises a front cover, and inside front cover, pages i to iv, pages 1 to 91, 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+A1:2019 supersedes BS 6891:2015, which is withdrawn.

BS 6891:2015 superseded BS 6891:2005+A2:2008, which has been withdrawn, and partially superseded BS 5482-1:2005, which has been 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.

Text introduced or altered by Amendment No. 1 is indicated in the text by the tags A1 A1. Minor editorial changes are not tagged.

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.