

# Specification for installation of domestic-sized gas meters maximum rated capacity not exceeding 6 m<sup>3</sup>/h (2<sup>nd</sup> and 3<sup>rd</sup> family gases) —

## Part 1: Low pressure (2<sup>nd</sup> family gases)

ICS 91.140.40

# Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee GSE/30, Gas Installations (1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> family gases), upon which the following bodies were represented:

- Boiler and Radiator Manufacturers' Association Limited
- British Flue and Chimney Manufacturers' Association
- Centrica plc
- Combustion Engineering Association
- Consumer Policy Committee of BSI
- Department of the Environment Transport and Roads (represented by the Building Research Establishment)
- Department of Trade and Industry (Consumer Safety Unit)
- Health and Safety Executive
- Heating and Ventilating Contractors' Association
- Institute of Domestic Heating and Environmental Engineers
- Institution of Gas Engineers and Managers
- Liquid Petroleum Gas Association
- Society of British Gas Industries

The following were represented on the drafting panel:

- Advantica Technologies Ltd.
- Association of Independent Public Gas Transporters
- OFGEM Technical Directorate
- Transco plc

This British Standard, having been prepared under the direction of the Engineering Sector Policy and Strategy Committee, was published under the authority of the Standards Sector Policy and Strategy Committee on 20 September 2002

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## Amendments issued since publication

| Amd. No. | Date | Comments |
|----------|------|----------|
|          |      |          |
|          |      |          |
|          |      |          |
|          |      |          |
|          |      |          |

The following BSI references relate to work on this standard:  
Committee reference GSE/30  
Draft for comment 00/713805 DC

ISBN 0 580 40273 8

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## Foreword

This British Standard has been prepared by Technical Committee GSE/30. It partially supersedes BS 6400:1997, which will be withdrawn upon publication of all three Parts of BS 6400. A period of three months has been allowed for user's of the old standard to convert to the new standard.

This revision provides an update of the standard to reflect changes in the structure and practices in the gas industry. It has been extended to provide additional information on gas meter installations not exceeding 6 m<sup>3</sup>/h supplied from medium pressure 2<sup>nd</sup> and 3<sup>rd</sup> family gas supplies.

The standard comprises of three Parts:

- *Part 1: Low pressure 2<sup>nd</sup> family gases;*
- *Part 2: Medium pressure 2<sup>nd</sup> family gases;*
- *Part 3: Low and medium pressure 3<sup>rd</sup> family gases.*

Part 1 provides details of relevant technical product specifications for the meter regulator and semi-rigid meter connection and includes information on the maximum operating pressure and maximum incidental pressure for low pressure gas networks within Great Britain.

NOTE 1 This standard has been written in the form of a specification. To comply with this specification, the user has to comply with all its requirements. Users may, at their own responsibility, depart from the recommendations given in "Commentary and Recommendations", but should have good reasons for doing so.

NOTE 2 It is essential that the appropriate specifications/codes of practice are referred to. In particular, attention is drawn to the following:

- a) The Gas Safety (Installation and Use) Regulations 1998 SI 2451 [1].
- b) The Gas Meters (Information on Connection and Disconnection) Regulations 1996 SI 450 [2].
- c) The Gas Safety (Management) Regulations 1996, SI 551 [3].
- d) The Gas (Meters) Regulations 1983, SI 1521, as (amended) [4].
- e) The Building Regulations 2000, SI 2531 (as amended) [5].
- f) The Building Standards (Scotland) Regulations 1990, SI 2179 (as amended) [6].
- g) The Building Regulations (Northern Ireland), 1994, SI 243 (as amended) [7].
- h) The Gas Safety (Application) Order 1996 (Isle of Man) [8].

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 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 21 and a back cover.

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## 1 Scope

The standard is applicable to the installation, exchange, relocation and removal of low pressure installations for primary and secondary meters not exceeding a flow rate of 6 m<sup>3</sup>/h and covers installations that incorporate diaphragm (up to G4/U6) and electronic (E6) meters. Low pressure gas networks in Great Britain operate with a maximum operating pressure of less than 75 mbar and a maximum incidental pressure of 200 mbar.

Requirements for service pipes (including the first emergency control valve) are dealt with in the Institution of Gas Engineers and Managers Recommendations IGE/TD/4 Gas Services [9].

The installation of pipework is specified in BS 6891.

An installation, to this standard, provides a zone 2 hazardous area as defined in BS EN 60079-10.

NOTE 1 Attention is drawn to the fact that the installation of gas meters is covered by the Gas Safety (Installations and Use) Regulations 1998 [1] and persons using this standard should therefore be fully conversant with those regulations.

Where this standard is used for the installation of a primary meter, reference should be made to the Ofgas Code of Practice COP/1a [10].

NOTE 2 All pressures quoted in this standard are gauge pressures unless otherwise specified.

## 2 Normative references

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

BS EN 437, *Specification for test gases, test pressures and categories of appliance, for gas appliances*.

BS 476-7, *Fire tests on building materials and structures — Part 7: Method of test to determine the classification of the surface spread of flame of products*.

BS 746:1987, *Specification for gas meter unions and adaptors*.

BS 4161, *Gas meters*.

BS 6501, *Flexible metallic hose assemblies*.

BS 6501-1:1991, *Specification for corrugated hose assemblies*.

BS 6891:1998, *Specification for installation of low pressure gas work of up to 28 mm (RI) in domestic premises*.

BS EN 1254, *Copper and copper alloys — Plumbing fittings*.

BS EN 1254-1:1998, *Part 1: Fittings with ends for capillary soldering or capillary brazing to copper tubes*.

BS EN 1254-2:1998, *Part 2: Fittings with compression ends for use with copper tubes*.

BS EN 1254-4:1998, *Part 4: Fittings combining other end connections with capillary or compression ends*.

BS EN 1254-5:1998, *Part 5: Fittings with short ends for capillary brazing to copper tubes*.

BS EN 1359:1999, *Gas meters — Diaphragm gas meters*.

BS EN 10242:1995, *Threaded pipe fittings in malleable cast iron*.

BS EN 60079, *Electrical apparatus for explosive areas*.

BS EN 60079-10:1996, *Part 10: Classification of hazardous areas*.

ENV 14236, *Ultrasonic domestic gas meters*.

### 3 Terms and definitions

For the purposes of this British Standard, the following terms and definitions apply.

#### 3.1

##### **electrical insulator**

gas fitting, having high electrical resistance, to minimize the flow of any stray electrical current

#### 3.2

##### **emergency control valve**

valve for shutting off the gas supply in an emergency, being a valve intended for use by a consumer of gas

##### COMMENTARY AND RECOMMENDATIONS ON 3.2

*The outlet is the end of the gas distribution network and may be referred to as the first emergency control valve.*

*(The Pipeline Safety Regulations 1996: 3 (4) [11]: “A pipeline for supplying gas to premises shall be deemed not to include anything downstream of an emergency control”. The Gas Safety (Management) Regulations 1996 [3] use the emergency control valve to define the end of the gas network).*

#### 3.3

##### **equipotential bond**

electrical connection maintaining various conductive parts at substantially the same electrical potential

#### 3.4

##### **gas fitting**

gas pipework, valve, regulator, meter, fitting or apparatus

#### 3.5

##### **gas tightness test**

adherence to a minimum leakage rate in an approved test procedure (see 8.10)

#### 3.6

##### **index**

series of dials or rows of figures for ascertaining the volume of gas that has passed through the meter

#### 3.7

##### **installation pipework**

pipework or fitting from the first fitting or joint after the primary meter outlet union connection to points at which appliances are to be connected

##### COMMENTARY AND RECOMMENDATIONS ON 3.7

*This definition varies from that given in the Gas Safety (Installation and Use) Regulations 1998: 2 (10) [1], where the term includes the primary meter installation.*

#### 3.8

##### **low pressure**

maximum operating pressure of the gas supply at the inlet of the regulator of less than 75 mbar

##### COMMENTARY AND RECOMMENDATIONS ON 3.8

*This definition is consistent with the Gas Safety (Installation and Use) Regulations 1998: 14 [1].*

#### 3.9

##### **maximum incidental pressure (MIP)**

maximum pressure, which a system is subjected to under fault conditions, limited by safety devices. In the case of a low pressure supply the MIP is 200 mbar

**3.10****maximum operating pressure (MOP)**

maximum pressure at which a system can be operated continuously under normal operating conditions. In the case of a low pressure supply the MOP is 75 mbar

**3.11****medium pressure**

gas pressure to the inlet of meter installation of not less than 75 mbar but not exceeding 2 bar

**COMMENTARY AND RECOMMENDATIONS ON 3.11**

*This definition is consistent with the Gas Safety (Installation and Use) Regulations 1998: 14(1) [1].*

**3.12****meter**

NOTE In the following definitions the meaning of meter is an instrument for measuring the volume of gas that has passed through it, without interrupting the flow of gas.

**3.12.1****credit meter**

meter used to calculate a consumer's periodic account

**3.12.2****diaphragm meter**

positive displacement meter in which the measuring chambers have deformable walls, e.g. a U6 or G4 gas meter

**3.12.3****electronic (ultrasonic) meter**

meter that measures indirectly the volume of gas passing through it, e.g. an E6 electronic gas meter

**3.12.4****positive displacement meter**

meter that directly measures the volume of gas passing through it, e.g. a diaphragm gas meter

**3.12.5****prepayment meter**

meter fitted with a mechanism that, on the insertion of a coin, mechanical token or smartcard, permits the passage of a predetermined volume of gas

**3.12.6****primary meter**

meter nearest to and downstream of a service pipe for ascertaining the volume of gas supplied through that pipe by a gas supplier

**3.12.7****secondary meter**

meter other than a primary meter, for ascertaining the quantity of gas provided by a person for use by another person

**3.12.8****semi-concealed meter**

meter designed and manufactured for use in a semi-concealed meter box

**3.13****meter box**

receptacle or compartment designed and constructed to contain a meter with its associated fittings

**3.14****meter bracket**

purpose made support incorporating a means of securing meter unions from which a meter can be suspended

**3.15**

**meter compound**

area or room designed and constructed to contain one or more meters with their associated gas fittings

**3.16**

**meter control valve**

valve fitted upstream of, and adjacent to, a meter to shut off the supply of gas to it

NOTE In many cases, the meter control valve acts as the emergency control valve required by the Gas Safety (Installation and Use) Regulations 1998 : 9 [1].

**3.17**

**meter exchange**

situation where a meter on an existing installation is replaced with another of similar capacity without modification to the associated gas fittings

**3.18**

**meter filter**

device fitted upstream of the meter regulator to capture particles in the gas stream

**3.19**

**meter housing**

meter box or meter compound, external to the building

NOTE The meter housing is not part of the meter installation.

**3.20**

**semi-concealed meter box**

meter box intended to be installed partially below ground level

**3.21**

**meter installation**

apparatus commencing at the outlet of the emergency control valve (the end of the gas distribution network) and includes pipework (e.g. semi-rigid connector), any associated valves, filter, regulator, meter, pressure test point and meter support. The meter installation terminates at either:

- the outlet connection of the meter; or
- in the case of a semi-concealed meter with a semi-rigid connector downstream of the meter, the outlet of the meter box outlet adaptor.

NOTE The meter housing is not part of the meter installation.

**3.22**

**meter rating (primary meter)**

maximum volumetric rate of flow at which the performance of a meter is stamped as being within statutory requirements

NOTE The rating is indicated on the index.

**3.23**

**meter rating (secondary meter)**

maximum volumetric flow rate specified by the meter manufacturer

**3.24**

**meter regulator**

device, which controls the pressure at its outlet within, predetermined parameters and which is fitted upstream of a meter and normally adjacent to a meter

**3.25**

**non-return valve**

device to prevent the reverse flow of gas, air or other extraneous gas

**3.26**

**OAMI**

Ofgem Approved Meter Installer