

PE and steel gas services and service pipework

IGEM/TD/4 Edition 5
Communication 1867





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Royal Charter 1929*



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SECTION 1 : INTRODUCTION

- 1.1 This Standard IGEN/TD/4 Edition 5 supersedes IGEN/TD/4 Edition 4 which is obsolete.

This Standard has been drafted by a Panel appointed by the Institution of Gas Engineers and Managers' (IGEM's) Gas Transmission and Distribution Committee, subsequently approved by that Committee and has been approved by IGEN's Technical Coordinating Committee on behalf of the Council of the Institution.

- 1.2 This Standard applies to the design, construction, inspection, testing, operation, maintenance and alteration of gas services and service pipework designed after the date of publication. All new services and service pipework and diversions as well as modifications of existing services and service pipework, will be in accordance with this edition.

Existing services and service pipework that comply with IGE/TD/4 Editions 1, 2, 3 or 4 may continue to be operated in accordance with the respective edition although surveillance, inspection and maintenance may be undertaken in accordance with Edition 5. Operating conditions are not allowed to pass outside the limits of Edition 1, 2, 3 or 4, as appropriate unless the new conditions are consistent with Edition 5.

- 1.3 Engineering requirements are set out in accordance with current knowledge.

This Standard is intended to protect from possible hazards, members of the public and those who work with gas services and service pipework as well as the environment, so far as is reasonably practicable. They are also intended to ensure that the security of gas supply is maintained.

- 1.4 This Standard is applicable to conditions normally encountered in the provision of gas through services and service pipework. Additional design considerations may be necessary where unusual conditions are encountered for example unstable ground (including the possibility of mining subsidence), mechanical or sonic vibrations, long self-supported spans or thermal forces other than seasonal.

- 1.5 Compliance with this Standard cannot confer immunity from statutory legal obligations.

- 1.6 IGEN Standards make use of the terms "must", "shall" and "should". Notwithstanding Sub-Section 1.8:

- the term "must" identifies a requirement by law in Great Britain (GB) at the time of publication
- the term "shall" prescribes a requirement which, it is intended, will be complied with in full and without deviation
- the term "should" prescribes an action which, it is intended, will be complied with unless, after prior consideration, deviation is considered to be acceptable.

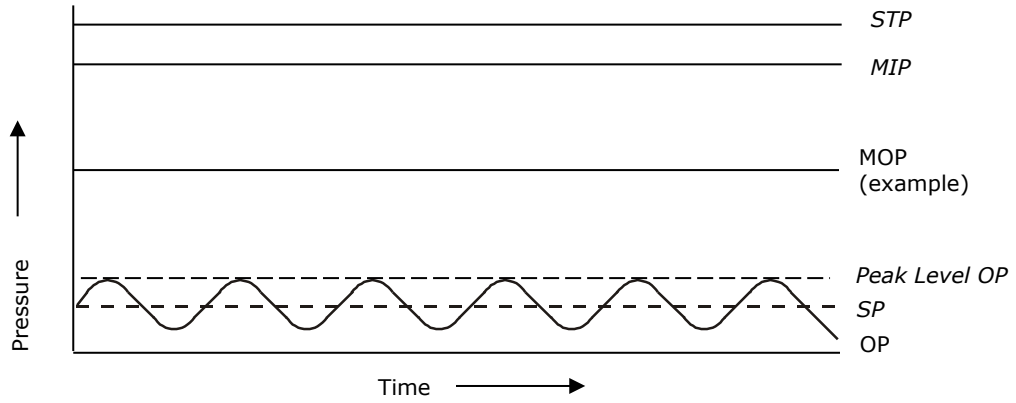
Note: The phrase "prior consideration" means that a suitable and sufficient risk assessment will be completed and documented to show that the alternative method delivers the same, or better level of protection.

Such terms may have different meanings when used in legislation, or Health and Safety Executive (HSE) Approved Codes of Practice (ACoPs) or Guidance, and reference needs to be made to such statutory legislation or official guidance for information on legal obligations.

- 1.7 It is now widely accepted that the majority of accidents in industry generally are in some measure attributable to human as well as technical factors. People who initiated actions that caused or contributed to accidents might have acted in a more appropriate manner to prevent them.

To assist in the control of risk and proper management of these human factors, due regard should be taken of HSG48 and HSG65.

- 1.8 Notwithstanding Sub-Section 1.5, this Standard does not attempt to make the use of any method or specification obligatory against the judgement of the responsible engineer. Where new and better techniques are developed and proved, they may be adopted without waiting for modification of this Standard. Amendments to this Standard will be issued when necessary and their publication will be announced in the Journal of the Institution and other publications as appropriate.
- 1.9 The primary responsibility for compliance with legal duties rests with the employer. The fact that certain employees, for example "responsible engineers", are allowed to exercise their professional judgement does not allow employers to abrogate their primary responsibilities. Employers are required to:
- (a) have done everything to ensure, so far as is reasonably practicable, that there are no better protective measures that can be taken other than relying on the exercise of professional judgement by "responsible engineers".
 - (b) have done everything to ensure, so far as is reasonably practicable, that "responsible engineers" have the skills, training, experience and personal qualities necessary for the proper exercise of professional judgement.
 - (c) have systems and procedures in place to ensure that the exercise of professional judgement by "responsible engineers" is subject to appropriate monitoring and review.
 - (d) not require "responsible engineers" to undertake tasks which would necessitate the exercise of professional judgement that is not within their competence. There should be written procedures defining the extent to which "responsible engineers" can exercise their professional judgement. When "responsible engineers" are asked to undertake tasks which deviate from this they should refer the matter for higher review.
- 1.10 Requests for interpretation of this Standard in relation to matters within their scope, but not precisely covered by the current text, are to be either:
- addressed to Technical Services, IGEM, IGEM House, 26 & 28 High Street, Kegworth, Derbyshire, DE74 2DA; or
 - emailed to technical@igem.org.uk.
- 1.11 IGEM has adopted the terms and definitions used in European standards for pressure i.e., maximum operating pressure (MOP), operating pressure (OP), maximum incidental pressure (MIP) and strength test pressure (STP). Figure 1 explains these terms. Further guidance can be found in IGEM/TD/13.



- STP = Strength test pressure
- MIP = Maximum incidental pressure
- MOP = Maximum operating pressure
- OP = Operating pressure
- SP = Set point of the regulator.

Note: This is extracted from IGEM/TD/13 and simplified for the purposes of IGEM/TD/4 Edition 5.

FIGURE 1 – PRESSURE TERMINOLOGY

1.12 This Standard was published in December 2022.

SECTION 2 : SCOPE

- 2.1 This Standard addresses Natural Gas (NG) services and Liquefied Petroleum Gas (LPG) service pipework. For the purposes of this Standard, the term "service" is used throughout and any requirements unique for LPG are identified by reference to LPG and not to "service pipework".

Note 1: The European Standard BS EN 12007-5 describes the specific functional requirements for service lines in addition to the general functional requirements of EN 12007-1 for:
 a) a maximum operating pressure (MOP) up to and including 16 bar;
 b) an operating temperature between -20 °C and +40 °C.

It applies to their design, construction, commissioning, decommissioning, operation, maintenance, extension and other associated works. The service line is the physical asset comprising of pipework from the gas main branch saddle or top tee to the outlet of the distribution system operator's nominated point(s) of delivery (for example: isolation valve, regulator, meter connection or combination of regulator and isolation valve).

- 2.2 This Standard covers the design, construction, commissioning, decommissioning, inspection, testing, operation, maintenance and alteration of metallic and PE services for the provision of 2nd and 3rd family gases as defined in BS EN 437; mainly dry NG (predominantly methane) with or without odourisation and LPG.

All pipework laid in a highway outside of the property being supplied other than this predictable route shall be laid in accordance with IGEM/TD/3.

Note 1: The service line is the physical asset comprising of pipework from the gas main connection point to the outlet of the distribution system as defined in IGEM/G/1. It is recommended that service lines be routed as near perpendicular from the building as practicable from the point of entry of the property to the connection point and be located to minimise the risk of damage.

Note 2: For services within flats and other multi dwelling buildings, further procedures for NG are given in IGEM/G/5. Many of the principles therein will equally apply for LPG.

Note 3: For services within framed buildings, further procedures for NG are given in IGE/UP/7. Many of the principles therein will equally apply for LPG.

Note 4: For services to emergency control valves (ECVs) for permanently moored boats, caravans, holiday homes and residential park homes, further procedures are given in IGEM/G/6.

- 2.3 For NG, this Standard covers services of MOP not exceeding 7 bar and LPG not exceeding 2 bar in the vapour phase with operating temperatures of:

- Polyethylene (PE100) between 0°C and 40°C
- Polyethylene (PE80) between -20°C and 40°C
- steel between -25°C and 40°C.

Note 1: Consistent with European Standards, IGEM defines pressure regimes by specific pressure limits, rather than using such terms as "high, intermediate, medium and low pressure". In general, it also strives to avoid using the terms "main" and "service" but, in the United Kingdom (UK), these are terms still in common use.

In most cases, this will mean IGEM/TD/4 will apply between the "distribution main" (NG) or "bulk storage tank" (LPG) as covered by IGEM/TD/3, and the ECV denoting the end of the gas Network (see IGEM/G/1).

Note 2: This Standard does not specifically cover the construction of services of other materials. Engineers may consider alternatives brought about by advances in technology and proven concepts (see clause 1.8).

Note 3: NG pressure regulating installations (PRIs) for Networks are covered in IGEM/TD/13 and for meter installations in BS 6400-1, BS 6400-2, IGEM/GM/6 and IGEM/GM/8 respectively. Domestic LPG meter installations are covered in BS 6400-3.

- 2.4 This standard covers service pipes of diameters up to and including 2"/63 mm. Service pipes larger than 2"/63 mm diameter are to be laid in accordance with IGEM/TD/3.

2.5 Where service pipes are laid in excess of 2" / 63 mm diameter, this standard does cover building entries.

Note: IGEM/TD/3 does not address entry into buildings. Where a service pipe entering a building is designed and constructed in accordance with IGEM/TD/3, IGEM/TD/4 is considered to contain the appropriate requirements for the entry of that service pipe into that building. For entry into flats and other multi dwelling buildings, IGEM/G/5 additionally applies for NG (see also Note 2 to clause 2.2).

2.6 Pressures quoted are gauge pressures unless otherwise stated.

2.7 Italicised text is informative and does not represent formal requirements.

2.8 Appendices are informative and do not represent formal requirements unless specifically referenced in the main sections via the prescriptive terms "shall" or "should".