

***Recommendations on Transmission and  
Distribution Practice  
IGE/TD/4 Edition 4  
Communication 1725***

***PE and steel gas services and service  
pipework***



*Founded 1863  
Royal Charter 1929  
Patron: Her Majesty the Queen*



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## INTRODUCTION

I.1 Recommendations on steel gas service pipes were first published by the Institution of Gas Engineers (IGE) in 1959 as Communication 563.

Recommendations superseding Communication 563 were published progressively in 1973 (Communication 879) as IGE/TD/4 Edition 1, in 1981 as Edition 2 (Communication 1180), and in 1994 as Edition 3 to include polyethylene (PE) and extraction and insertion renewal techniques (Communication 1562).

IGE/TD/4 Edition 4 supersedes IGE/TD/4 Edition 3 which is obsolete.

I.2 These Recommendations have 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 published by the authority of the Council of the Institution.

I.3 These Recommendations apply to the design, construction, inspection, testing, operation, maintenance and alteration of gas services and service pipework designed after the date of publication. Hence, all new services and service pipework and diversions, as well as modifications of existing services and service pipework, should be in accordance with this edition.

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

I.4 Significant amendments have been made in this edition compared to Edition 3, including revised proximity details, the deletion of copper from the scope, and the extension of the scope to maximum operating pressure (MOP) not exceeding 16 bar and pipe diameter up to the largest commercially available.

It has been recognised that these extensions to the scope add a significant number of recommendations that are addressed solely for the relatively few larger/higher pressure services and service pipework. Consequently, the Recommendations are now provided in four parts, as follows:

- Part 1 General. These recommendations apply to all services and service pipework, irrespective of MOP (limited to 16 bar (steel); 10 bar (PE)) or the pipe diameter
- Part 2 These recommendations are additional to those contained in Part 1 for services and service pipework of MOP  $\leq$  2 bar **and** diameter  $\leq$  63 mm **and** MOP  $\leq$  2 bar, for example those supplying domestic and small commercial and industrial premises
- Part 3 These recommendations are additional to those contained in Part 1 and are either additional to, or replace, those in Part 2 for services and service pipework of 2 bar  $<$  MOP  $\leq$  7 bar of any diameter **or** of MOP  $>$  2 bar **and** diameter  $>$  63 mm
- Part 4 These recommendations are additional to those contained in Part 1 and are either additional to, or replace those in Parts 2 and 3, as appropriate for services and service pipework of 7 bar  $<$  MOP  $\leq$  16 bar.

I.5 Engineering recommendations are set out in accordance with current knowledge.

These Recommendations are 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.

I.6 These Recommendations are 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, massive special attachments or thermal forces other than seasonal.

I.7 These Recommendations make use of the terms "should" and "must". Notwithstanding Sub-Section I.8:

- the term "must" identifies a requirement by law in Great Britain (GB) at the time of publication
- the term "should" prescribes an action which, it is intended, will be complied with unless, after prior consideration, deviation is considered to be acceptable.

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.

I.8 These Recommendations do 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 should be adopted without waiting for modification of these Recommendations. Amendments to these Recommendations will be issued when necessary and their publication will be announced in the Journal of the Institution and other publications as appropriate.

I.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 must:

- (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.

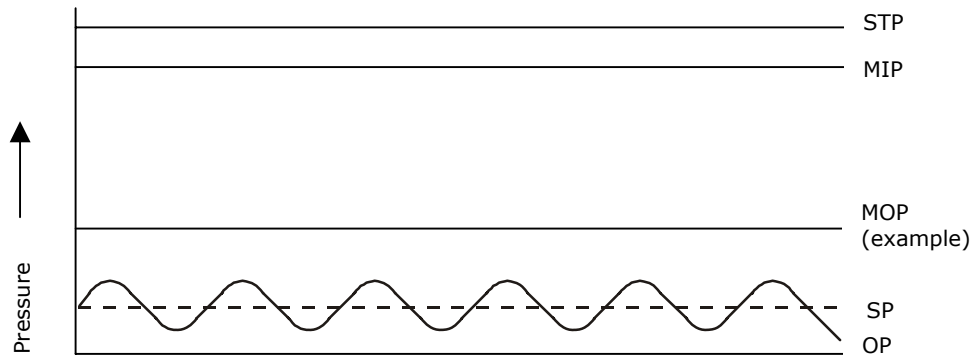
I.10 Materials and the techniques of construction and operation are constantly being improved and it is intended to keep these Recommendations under review.

I.11 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 cognisance should be taken of HS(G)48.

I.12 Requests for interpretation of these Recommendations in relation to matters within their scope, but not precisely covered by the current text, may be addressed to Technical Services, IGEM, Charnwood Wing, Ashby Road, Loughborough, Leicestershire, LE11 3GH; email [technical@igem.org.uk](mailto:technical@igem.org.uk) and will be submitted to the relevant Committee for consideration and advice, but in the context that the final responsibility is that of the engineer concerned. If any advice is given by or on behalf of IGEM, this does not imply acceptance of any liability for the consequences and does not relieve the responsible engineer of any of his or her obligations.

I.13 IGEM has adopted the terms and definitions used in European standards for pressure i.e. MOP, operating pressure (OP), maximum incidental pressure (MIP) and strength test pressure (STP). Figure 1 explains these terms. Further guidance can be found in IGE/TD/13.



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

*Note: This is extracted from IGE/TD/13 and simplified for the purposes of IGE/TD/4.*

**FIGURE 1 - RELATIVE PRESSURE LEVELS**

## SCOPE

S.1 These Recommendations address Natural Gas services and Liquefied Petroleum Gas (LPG) service pipework. For the purposes of these Recommendations, the term "service" is used throughout and any recommendations unique for LPG are identified by reference to LPG and not to "service pipework".

S.2 These Recommendations cover the design, construction, inspection, testing, operation, maintenance and alteration of steel and PE services for the provision of 2<sup>nd</sup> and 3<sup>rd</sup> family gases as defined in BS EN 437; mainly dry Natural Gas (predominantly methane) with or without odourisation and LPG.

*Note 1: For services within flats and other multi-dwelling buildings, further procedures for Natural Gas are given in IGE/G/5. Many of the principles therein will equally apply for LPG.*

*Note 2: For services within framed buildings, further procedures for Natural Gas are given in IGE/UP/7. Many of the principles therein will equally apply for LPG.*

*Note 3: For services to emergency control valves (ECVs) for permanently moored boats, caravans, holiday homes and residential park homes, further procedures are given in IGE/UP/8.*

S.3 For Natural Gas, these Recommendations cover services (see S7) of MOP not exceeding 10 bar for PE and not exceeding 16 bar for steel and at a temperature between 0°C and 20°C inclusive for PE and -25°C to 40°C inclusive for steel. For LPG, the Recommendations limit MOP to 2 bar in the vapour phase.

*Note 1: Consistent with European Standards, IGEM now 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 IGE/TD/4 will apply between the "distribution main" (Natural Gas) or "bulk storage tank" (LPG) as covered by IGE/TD/3, and the ECV denoting the end of the gas Network.*

*Note 2: These Recommendations do not specifically cover the construction of services of other materials.*

*Note 3: Standard polyvinyl chloride (PVC) is brittle and can fail catastrophically and is a non-preferred material not covered by these Recommendations.*

*Note 4: When any new material, for example ductile PVC, cross linked polyethylene (PEX), reinforced thermoplastic pipe materials, etc. is to be used, a structured methodology is required to establish that its use is acceptable. Engineers may consider alternatives brought about by advances in technology and proven concepts (see I.8).*

*Note 5: IGE/TD/4 Edition 3 related the pressure range to maximum permissible operating pressure and not MOP as in Edition 4 (there may be a difference).*

*Note 6: IGE/TD/3 does not address entry into buildings. Where a pipe entering a building would, normally, be defined as a distribution main, IGE/TD/4 is considered to contain appropriate recommendations for the entry of a main into a building. For entry into flats and other multi-dwelling buildings, IGE/G/5 additionally applies for Natural Gas (see also Note 1 to S.2).*

*Note 7: Steel pipelines for Natural Gas transmission of 16 bar < MOP ≤ 100 bar are covered in IGE/TD/1 and steel and PE pipelines for Natural Gas and LPG distribution (MOP ≤ 16 bar) are covered in IGE/TD/3.*

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

S.4 These Recommendations are presented in four parts:

- Part 1 General. All gas services
- Part 2 Services of MOP ≤ 2 bar and diameter ≤ 63 mm

- Part 3
  - Services of  $2 \text{ bar} < \text{MOP} \leq 7 \text{ bar}$  and any pipe diameter
  - Services of  $\text{MOP} \leq 2 \text{ bar}$  and pipe diameter  $> 63 \text{ mm}$
- Part 4 Services of  $7 \text{ bar} < \text{MOP} \leq 16 \text{ bar}$ .

S.5 All references to gas pressure are gauge pressure, unless otherwise stated.

S.6 Italicised text is informative and does not represent formal Recommendations.

S.7 Appendices are informative and do not represent formal Recommendations unless specifically referenced in the main sections via the prescriptive terms "should" or "must".

S.8 Recent gas safety legislation refers to the terms "gas service" (Natural Gas), "gas service pipework" (LPG), and "distribution mains". The difference between a "service" and a "main" frequently gives rise to diverse interpretation. In recognition of the existence of such legislation, these Recommendations continue to refer to a "service". However, in engineering terms, IGEM does not (in general) recognise any relevance in differences in definitions for a length of pipeline serving a primary meter. Hence, for the purposes of these Recommendations, IGEM makes no reference to, for example, a pipeline being termed a "service" or a "main" dependent upon how many primary meters it serves. It is recognised that the interpretation of the definitions may be relevant in terms of "non-gas safety legislation" and pipeline operators will need to establish the status of such a pipeline in terms of other legislation.