

***IGEM/GM/6 Edition 2
Communication 1750***

Non-domestic meter installations. Standard designs



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



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SECTION 1 : INTRODUCTION

1.1 This Standard supersedes IGE/GM/6 Edition 1, Communication 1635, which is obsolete.

1.2 This Standard has been drafted by an Institution of Gas Engineers and Managers (IGEM) Panel, appointed by IGEM's Gas Measurement Committee, and has been approved by IGEM's Technical Co-ordinating Committee on behalf of the Council of IGEM.

1.3 This Standard covers standard design gas supply meter installations (hereafter referred to as standard designs) with meters of badged capacity exceeding $6 \text{ m}^3 \text{ h}^{-1}$ and not exceeding $1076 \text{ m}^3 \text{ h}^{-1}$, with maximum operating pressure (upstream) (MOP_u) not exceeding 75 mbar (see also Sub-Section 2.5, Note 2).

Note: In some installations, the capacity of the standard design is less than the badged capacity.

By following IGE/GM/6, it will be possible to select, construct, install and maintain an appropriate meter installation, as defined by IGE/G/1, incorporating either a diaphragm or a rotary displacement (RD) meter.

Note: There are no recognised standard designs for turbine meters.

1.4 Where a standard design is not appropriate, IGE/GM/8 or IGE/GM/4 may be applied as appropriate.

Note 1: For MOP_u not exceeding 38 bar, IGE/GM/8 applies.

Note 2: For MOP_u exceeding 38 bar, IGE/GM/4 applies.

1.5 This Standard applies to new gas supply meter installations only. It is not retrospective. However, where work needs to be undertaken on a meter installation complying with IGE/GM/6 Edition 1, it is recommended that such an installation be brought into line with this Standard. Note that, in particular, IGE/GM/6 Edition 2 does not address by-passes. Such installations are dealt with in IGE/GM/8.

1.6 Significant amendments have been made to this edition. These include:

- an additional safety check to ensure that the pressure at the outlet of the meter installation remains at or above 15 mbar when the inlet pressure is at 19 mbar. Standard designs are still based on 25 mbar at the inlet to the installation under normal operating conditions.
- updated installation capacities
- the removal of installations incorporating by-passes from the scope
- clarification on the requirements for modules and IGE/GM/6 designs
- clarification on the requirements for flexible connections
- revised commissioning flow rates
- new information on notices and labels
- updating of numerous references to legislation and Standards
- revised and updated Standard design drawings and component lists.

1.7 The de-regulation of the metering market has led to the need for new sets of Standards and guidance. This has been addressed by the Office of Gas and Electricity Markets (Ofgem) Meter Asset Managers Code of Practice (the MAMCoP), developed to cover whole life management of gas supply meter installations. The Office of Gas Supply (OFGAS, now Ofgem) CoPs 1/a, 1/b and 1/c, which cover installing only, continue to apply. Businesses installing gas supply meter installations are required to be an Ofgem Approved Meter Installer (OAMI).

Notwithstanding Sub-Section 1.12, total compliance with IGEN/GM/6 is necessary for meter installations that have to comply with the Ofgem MAMCoP (Category 3) installations or with OFGAS CoP 1/b.

- 1.8 New terms such as “maximum operating pressure” (MOP) have been introduced to reflect gas pressure terminology used in European standards. These terms will arise in all relevant IGEN Standards in future and, possibly, in other standards. Other new terms have been introduced to assist in recognition of design information to be transferred between interested parties.

Note: Appendix 6 provides an explanation of the pressure terms used by setting out the definitions of the terms, explaining the suffixes, the relationship between the terms, and their significance.

- 1.9 This Standard makes use of the terms “should”, “shall” and “must” when prescribing particular requirements. Notwithstanding Sub-Section 1.12:
- the term “must” identifies a requirement by law in Great Britain (GB) at the time of publication
 - the term “shall” prescribes a procedure which, it is intended, will be complied with in full and without deviation
 - the term “should” prescribes a procedure 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 Code of Practice (ACoPs) or guidance, and reference needs to be made to such statutory legislation or official guidance for information on legal obligations.

- 1.10 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:
- have done everything to ensure, so far as it is reasonably practicable, that “responsible engineers” have the skills, training, experience and personal qualities necessary for the proper exercise of professional judgement
 - have systems and procedures in place to ensure that the exercise of professional judgement by “responsible engineers” is subject to appropriate monitoring and review
 - 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.

- 1.11 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 in the sense that actions by people initiated or contributed to the accidents, or people might have acted in a more appropriate manner to avert them.

It is therefore necessary to give proper consideration to the management of these human factors and the control of risk. To assist in this, it is recommended that due regard be paid to HSG48.

- 1.12 Notwithstanding Sub-Section 1.9, 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 should be adopted without waiting for modification to this Standard. Amendments to this Standard will be issued when necessary, and their publication will be announced in IGEM's Journal and other publications as appropriate.
- 1.13 Requests for interpretation of this Standard in relation to matters within its scope, but not precisely covered by the current text, should be addressed in writing to Technical Services, IGEM, IGEM House, High Street, Kegworth, Derbyshire, DE74 2DA 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 relieve the responsible engineer of any of his or her obligations.
- 1.14 This Standard was published in March 2011.

SECTION 2 : SCOPE

2.1 This Standard applies to standard designs of new, on-shore, gas supply meter installations (hereinafter referred to as "installations") supplied from a Network pipeline (service) supplying Natural Gas and having:

- design maximum incidental pressure (DMIP_u) not exceeding 200 mbar
- MOP_u not exceeding 75 mbar
- lowest operating pressure (LOP_u) not less than 25 mbar
- design minimum pressure (DmP_u) not less than 19 mbar.

Note 1: Natural Gas is a 2nd family gas as defined by BS EN 437.

Note 2: Experience has shown that 25 mbar is a reasonable inlet pressure (LOP_u) to be used for sizing meter installations for use on networks of MOP ≤ 75 mbar and designed in accordance with IGE/GL/1.

Note 3: For meter installations of 75 mbar < MOP_u ≤ 38 bar and all installations of MOP_u ≤ 75 mbar that are not standard designs, IGE/GM/8 applies.

Note 4: For meter installations of MOP_u > 38 bar, IGE/GM/4 applies and IGE/TD/13 may be used with respect to the regulation of pressure.

Note 5: IGEM/GM/6 has been produced for primary meters. However, its principles may be applied for other meters, for example appliance check meters and departmental charging meters, etc. when certain requirements may not apply.

2.2 Standard designs incorporate either a diaphragm or RD meter of maximum badged capacity exceeding 6 m³ h⁻¹ but not exceeding 1076 m³ h⁻¹ and delivering a nominal metering pressure of 21 mbar.

Note 1: The installation design capacity will be less than 1076 m³ h⁻¹.

Note 2: For meter installations of badged capacity ≤ 6 m³ h⁻¹, intended to carry Natural Gas, BS 6400-1 or BS 6400-2 apply, as appropriate for MOP_u.

2.3 The standard designs fall into two categories:

- IGEM/GM/6 designs - conforming to the drawings and component lists in Appendix 5

Note: Normally, the IGEM/GM/6 designs are sourced as a kit of components.

- manufacturer-designed pre-assembled modules complying with the requirements of IGEM/GM/6.

Note: Normally, the modules are supplied as a pre-assembled and tested unit. However, there is no reason why a module may not be dismantled and re-assembled on site, provided it is appropriately tested and is not modified in any way.

2.4 This Standard covers meter installations that are wholly downstream of the outlet of the emergency control valve (ECV), as recommended in IGEM/G/1, that is, the installation is not part of a network.

Note 1: IGEM/GM/6 does not address the Network pipeline (see IGEM/TD/1, IGE/TD/3, IGE/TD/4 and IGE/G/5, as appropriate), neither does it address requirements for a pressure regulating installation (PRI) installed in a Network pipeline (when IGE/TD/13 applies).

Note 2: In addition to defining requirements for the meter installation, this standard defines requirements for associated considerations such as its location, housing and notices and labels.

This Standard covers only meter installations that are connected directly to the ECV and which are adjacent to the ECV.

- 2.5 This Standard applies to meter installations that supply a consumer's downstream installation that complies with IGEM/UP/2 and which contains:
- pipework and standard appliances (see Note 2), or
 - pipework and appliances that may be standard appliances (see Note 2) and/or appliances that are not standard appliances but that will operate satisfactorily at the limits of supplied gas pressure as given in this Standard.

Note 1: A pressure drop of 1 mbar as specified by IGEM/UP/2 has been assumed for the consumer's installation.

Note 2: Standard IGEM/GM/6 designs have a metering pressure of 21 mbar and provided components are selected appropriately will ensure a suitable pressure to standard appliances. It has been established that standard appliances have the following characteristics (see also Appendix 5 and 6):

<i>STP</i>	\geq	<i>50 mbar</i>
<i>P_{max}</i>	=	<i>25 mbar</i>
<i>OP</i>	=	<i>20 mbar</i>
<i>P_{min}</i>	=	<i>17 mbar</i>
<i>P_{ign}</i>	=	<i>14 mbar (70% OP).</i>

- 2.6 This Standard does not apply to installations incorporating a standby regulator stream or installations that incorporate a by-pass. Where twin streams are incorporated (see Figure 44), it is simply to achieve desired capacity i.e. shared load.

Note: Continuity of supply, while not always an essential requirement, may be desirable in some circumstances, in particular where there is risk to life or property; for example to enable a hospital or a system requiring gas for a continuous process to take gas during maintenance or in the event of a fault. IGE/GM/8 would then need to be used for the design of the installation.

- 2.7 All references to gas pressure are gauge pressure unless otherwise stated.

- 2.8 Italicised text is informative and does not represent formal requirements.

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