

**IGEM/GM/8 Part 2 Edition 2
Communication 1796**

Non-domestic meter installations
Part 2 : Location, housings and compounds



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

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SECTION 1 : INTRODUCTION

- 1.1 This Standard supersedes IGE/GM/8 Part 2, Communication 1707, which is obsolete.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 subsequently approved by that Committee, and has been approved by IGEM's Technical Co-ordinating Committee on behalf of the Council of IGEM.
- 1.3 IGE/GM/8 is published in 5 parts:
- Part 1 covering design
 - Part 2 covering locations, housings and compounds
 - Part 3 covering installation and commissioning
 - Part 4 covering operation and maintenance
 - Part 5 covering notices and labels.

- 1.4 This Standard covers the design of gas supply meter installations (see Sub-Section 2.1) of capacity exceeding $6 \text{ m}^3 \text{ h}^{-1}$ and maximum operating pressure (upstream) (MOP_u) not exceeding 38 bar.

With the exception of the few installations of MOP_u exceeding 38 bar, the majority of industrial and commercial meter installations can be designed by following IGE/GM/6 (for MOP_u not exceeding 100 mbar only) and/or IGE/GM/8.

Note: IGE Standards use pressure breaks as adopted in European standards. However, in the UK, the actual limit of pressure for IGE/GM/6 designs is 75 mbar. In practice, it is rare for a meter installation to have MOP_u lying between 75 mbar and 100 mbar, in the UK.

It is the intention that IGE/GM/6 be used for the largest proportion of installations that can be covered by "standard designs" for MOP_u not exceeding 100 mbar.

For $100 \text{ mbar} < \text{MOP}_u \leq 38 \text{ bar}$ or where an installation is not a "standard design" as specified in IGE/GM/6, IGE/GM/8 applies (see also Note 4 to Sub-Section 2.1).

For a turbine meter installation of MOP_u not exceeding 100 mbar, there are no recognised standard designs i.e. IGE/GM/6 does not apply. It is recommended that IGE/GM/8 be used for all such installations.

For any meter installation of MOP_u exceeding 38 bar, IGE/GM/4 applies.

- 1.5 This Standard applies to new, onshore, gas supply installations only. It is not retrospective. However, where work needs to be undertaken on a meter installation, it is recommended that such an installation be brought into line with this Standard. In particular, any unregulated by-pass needs to be removed or a regulator installed in the by-pass.

When re-engineering or replacing legacy meter installations, consideration is to be given to bringing them in line with the standard arrangements within IGE/G/1. Unless all involved parties are in agreement to continue the legacy arrangement, it is expected that if reasonably practicable such existing systems will be modified to meet the recommended approach.

Irrespective of whether an emergency control valve (ECV) is fitted to the inlet of the meter installation, it is recommended that modification work be undertaken in line with this Standard.

Over recent years ownership and responsibility for new installations covered by this Standard has been liberalised from gas transporters (GTs) to Meter Asset Managers (MAMs) and consumers. The Regulation Authority, the Office of Gas Supply (OFGAS), and later the Office of Gas and Electricity Markets (Ofgem) have required that MAMs and installers are separately accredited for the work they carry out. Approved MAMs have operational and management responsibility while Ofgem Approved Meter Installers (currently OAMIs) carry out meter work, installation, modification, repair, maintenance and removal activities, both work to the relevant Supply Point Administration Agreement (SPAA)/Ofgem Codes of Practice:

- SPAA Meter Asset Managers Code of Practice (MAMCoP)
- Ofgem Codes of Practice for Meter Installations (CoP/1a, CoP/1b and CoP/1c).

At the same time, new licence conditions have made gas suppliers responsible for co-ordinating the provision of metering services and have placed responsibilities on GTs to underpin the overall safety of the gas supply system from the distribution main to the outlet of the meter installation.

Note: Under these arrangements, a SPAA approved MAM does not have to be an OAMI, but has an obligation to use an OAMI to carry out work on a meter installation.

Notwithstanding Sub-Section 1.11, total compliance with IGEN/GM/8 is necessary for installations and modules where the meter installation has to comply with MAMCoP.

- 1.6 This Standard does not detail the management processes required for compliance with the Pressure Systems Safety Regulations (PSSR), such guidance is provided by IGEN/GL/5. It is intended that work carried out in accordance with this Standard and IGEN/GL/5 will conform to the requirements of the PSSR.
- 1.7 Terms such as “maximum operating pressure” (MOP), “maximum incidental pressure” (MIP) and “operating pressure” (OP) are used to reflect gas pressure terminology used in European standards. These terms are used in all relevant IGEN standards and, possibly, in other standards. Other terms have been introduced to assist in recognition of design information to be transferred between interested parties.
- 1.8 This Standard makes use of the terms “must”, “shall” and “should” when prescribing particular procedures. Notwithstanding Sub-Section 1.11:
- 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.

- 1.9 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:

- 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 are 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 are to refer the matter for higher review.

1.10 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.

1.11 Notwithstanding Sub-Section 1.8, 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 are to 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 the Journal of the Institution and elsewhere as appropriate.

1.12 Requests for interpretation of this Standard in relation to matters within their scope, but not precisely covered by the current text, should be addressed in writing to Technical Services, The Institution of Gas Engineers and Managers, IGEM House, High Street, Kegworth, Derbyshire DE74 2DA, or emailed to 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 relieve the responsible engineer of any of his or her obligations.

1.13 This Standard was published in September 2016.

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SECTION 2 : SCOPE

- 2.1 This Standard applies to new locations, housings and compounds for gas supply meter installations (hereafter referred to as "installations" (and defined in IGE/G/1)) of flow rate (capacity) exceeding $6 \text{ m}^3 \text{ h}^{-1}$ and MOP_u upstream (MOP_u) not exceeding 38 bar.

Note 1: For installations of capacity not exceeding $6 \text{ m}^3 \text{ h}^{-1}$, intended to carry Natural Gas (NG), BS 6400-1 or BS 6400-2 apply, as appropriate for MOP_u. For non-domestic premises there are additional legal requirements that may have to be met, e.g. DSEAR.

The requirements of this document may be applied to installations of capacity not exceeding $6 \text{ m}^3 \text{ h}^{-1}$ and MOP_u exceeding 2 bar.

Note 2: For installations of MOP_u exceeding 38 bar, IGE/GM/4 applies and IGE/GM/8 Part 2 may be additionally applied.

Note 3: Principally IGE/GM/8 has been produced for primary meters and other meters used for billing purposes. However, its principles may be applied for other meters, for example, appliance check meters or departmental charging meters, when certain requirements may not apply.

Note 4: IGE/GM/6 provides procedures for "standard" installations of MOP_u not exceeding 100 mbar. For other, "non-standard" installations of MOP_u not exceeding 100 mbar, IGE/GM/8 applies. See also the note within Sub-Section 1.4.

- 2.2 This Standard applies to locations, housings and compounds for installations intended to carry NG (a 2nd family gas as defined by BS EN 437).

Note: The Gas Safety (Installation and Use) Regulations (GS(I&U)R) define "gas" to include 1st, 2nd and 3rd family gases as well as other gases. The principles of IGE/GM/8 may be used for gases other than NG but suitable adjustments to parameters and requirements will need to be considered by a competent person.

- 2.3 This Part 2 of IGE/GM/8 deals with the selection of location and the design of bases, housings and compounds for relevant installations.

- 2.4 All pressures are gauge pressures unless otherwise stated.

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

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

SECTION 3 : LEGAL AND ALLIED CONSIDERATIONS

3.1 GENERAL

- 3.1.1 This Standard is set out against a background of Legislation in force in GB at the time of publication. The devolution of power to the Scottish, Welsh and Northern Ireland Assemblies means that there may be variations to the Legislation described below for each of them and consideration of their particular requirements must be made. Similar considerations are likely to apply in other countries where reference to appropriate national legislation is necessary.

All relevant legislation must be applied and relevant ACoPs, official Guidance Notes and referenced codes, standards, etc. shall be taken into account.

Note: Appendix 2 is relevant in this respect.

Where British Standards, etc. are quoted, equivalent national or international standards, etc. equally may be appropriate.

- 3.1.2 Persons who design meter installations must have a knowledge and understanding of the standards and regulations that apply to ensure that the completed plans will produce a safe and satisfactory installation.

Persons who install or maintain meter installations must be competent to do so and compliance with GS(I&U)R must be achieved where those Regulations apply.

At the time of publication, the body with HSE approval to operate and maintain a register of businesses who are "members of a class of persons" is Gas Safe Register. Therefore, all businesses or self-employed gas fitters working on meter installations must be registered with Gas Safe Register where GS(I&U)R apply.

Persons deemed competent to carry out gas work are those who hold a current certificate of competence in the type of activity to be conducted, issued by a certification body accredited by the United Kingdom Accreditation Service (UKAS). UKAS issue certificates of competence under the National Accredited Scheme for Individual Gas Fitting Operatives (ACS).

Compliance shall be achieved with the MAMCoP.

3.2 BUILDING REGULATIONS

3.2.1 England and Wales (as Amended)

Building Regulations are Statutory Instruments that are to be followed when engaged in any building work. They are written in a format of broad Regulations, setting out simple requirements in a separate Schedule. Suggested ways of complying with these Regulations are contained in Approved Documents.

The Approved Documents that apply to gas work with respect to this Standard are:

- A (Structure)
- B (Safety in Fire)
- F (Ventilation).

3.2.2 Building Standards (Scotland) Regulations and Amendments

The Building Standards (Scotland) are written directly as Regulations within the Statutory Instrument. The Regulations can be satisfied by:

- compliance with Technical Standards published by the Scottish Government
- conforming with the provisions of “deemed to satisfy” documents, for example British Standards
- other equivalent means.

3.3 **CONFINED SPACES REGULATIONS**

These Regulations apply to a whole range of confined spaces. The supplier or designer of an enclosure and equipment within it is required to perform a risk assessment of the enclosure with respect to safe access and egress and to give clear instructions to operators on access/egress as well as to what actions to take in the event of a gas alarm occurring. Employers and the self-employed are required to prevent entry into confined spaces unless avoidance is not reasonably practicable and unless there is a system of work which renders the work safe. They are also required to have specific emergency arrangements in place.

3.4 **CONSTRUCTION (DESIGN AND MANAGEMENT) REGULATIONS (CDM)**

3.4.1 These Regulations impose duties on designers, clients (and their agents), developers, principal designer and principal contractors.

Further information is given in L153, which sets out the principles duty holders are required to use in their approach to identifying the measures they need to take to control the risks to health and safety in a particular project.

The general principles of prevention are to:

- avoid risks where possible
- evaluate those risks that cannot be avoided, and
- put in place proportionate measures that control them at source.

Construction includes the alterations, repair, re-decoration, maintenance, de-commissioning or demolition of a structure. It also covers installation, commissioning, maintenance or removal of gas services.

3.5 **CONTROL OF ASBESTOS AT WORK REGULATIONS**

3.5.1 These Regulations set out standards for the identification, monitoring and assessment of work that may expose workers to asbestos and the measures needed to control the risk.

3.5.2 Employers are required not to carry out any work that exposes, or is likely to expose, employees to asbestos unless an assessment of that exposure has been made. Employers have to set out steps to be taken to prevent, or reduce to the lowest level reasonably practicable, that exposure. Employers have to carry out medical surveillance of employees if they work over a certain time limit.

3.5.3 The Regulations impose a duty on those with responsibilities for the repair and maintenance of non-domestic premises to find out if there are, or may be, asbestos containing materials within them; to record the location and condition of such materials and assess and manage any risk from them, including passing of any information about their location and condition to anyone likely to disturb them.

3.5.4 Further information is available in HSG227. Other AcoPs associated with these Regulations are L27 and L28.

3.6 **CONTROL OF SUBSTANCES HAZARDOUS TO HEALTH REGULATIONS (COSHH)**

3.6.1 These Regulations, which reinforce existing statutory obligations under HSWA, impose a duty on employers to protect employees against risks to health, whether immediate or delayed, arising from exposure to substances hazardous to health, either used or encountered, as a result of a work activity. They also impose certain duties on employees.

3.6.2 Under COSHH, work is not to be carried out which is liable to expose employees to hazardous substances unless the employer has made a suitable and sufficient assessment of the risk created by the work and the steps that need to be taken to comply with the Regulations. After assessing the risk, it is necessary to inform employees of the risks and to carry out the appropriate training and instruction to ensure the risks are minimised. In certain cases, control measures such as ventilation or personal protective equipment may be necessary and, where provided, they are required to be used.

3.7 **DANGEROUS SUBSTANCES AND EXPLOSIVE ATMOSPHERES REGULATIONS (DSEAR)**

These Regulations are concerned with protection against risks from fire, explosion and similar events arising from dangerous substances used or present in the workplace. The Regulations require that risks from dangerous substances are assessed, eliminated or reduced. They contain specific requirements to be applied where an explosive atmosphere may be present and require the provision of arrangements to deal with accidents, emergencies etc. and provision of information, training and use of dangerous substances. The Regulations also require the identification of pipelines and containers containing hazardous substances.

The following publications contain details of the Regulations and their application:

- L138
- INDG 370.

3.8 **ELECTRICITY AT WORK REGULATIONS**

These Regulations apply to a wide range of electrical work, from overhead power lines to the use of office computers and batteries and include work on gas equipment using electrical energy.

They are concerned with the prevention of danger from electric shock, electric burn, electrical explosion or arcing, or from fire or explosion initiated by electrical energy.

They impose duties on every employer, employee and self-employed person and require that persons engaged in electrical work be competent or be supervised by competent persons.

Note: A "Memorandum of Guidance on the Electricity at Work Regulations, 1989" is available from HMSO and gives useful information on the Regulations. Further advice is contained in HSR25.

3.9 **GAS ACT**

This Act defines the circumstances under which the location, housing and design are subject to GT authorisation.

3.10 **GAS SAFETY (INSTALLATION AND USE) REGULATIONS (GS(I&U)R)**

3.10.1 GS(I&U)R are relevant statutory provisions of HSWA setting out general and detailed requirements dealing with the safe installation, maintenance and use of gas systems, including gas fittings, appliances and flues.

3.10.2 GS(I&U)R define the gas supplier for NG and L56 provides guidance on those definitions.

3.10.3 GS(I&U)R define the type of work that requires persons carrying out such work, or their employers, to be an "approved class of person", for example to be on the Gas Safe Register.

3.10.4 The installer is required to check the safety of any meter installation they install or work on and take appropriate action where they find faults. Where the premises are let or hired out, the landlord or hirer has special responsibilities to ensure that any installer they use for the gas fitting, service or maintenance is a member of an approved class of persons (see clause 3.4.3) and is competent to carry out such work. If any serious fault is found, the installer is required to inform both the landlord/hirer, as well as the user, so that such faults can be rectified before further use.

3.11 **HEALTH AND SAFETY AT WORK ETC. ACT (HSWA)**

HSWA applies to all persons involved with work activities, including employers, the self-employed, employees, designers, manufacturers, suppliers etc. as well as the owners of premises. It places general duties on such people to ensure, so far as is reasonably practicable, the health, safety and welfare of employees and the health and safety of other persons such as members of the public who may be affected by the work activity.

3.12 **LIFTING OPERATIONS AND LIFTING EQUIPMENT REGULATIONS (LOLER)**

These Regulations build on Provision and Use of Work Equipment Regulations (PUWER) (see Sub-Section 3.12).

Practical guidance on these Regulations is given in L113.

3.13 **MANAGEMENT OF HEALTH AND SAFETY AT WORK REGULATIONS (MHSWR)**

In addition to specific duties under GS(I&U)R (see Sub-Section 3.4) MHSWR impose a duty on employers and the self-employed to make assessments of risks to the health and safety of employees, and non-employees affected by their work. They also require effective planning and review of protective measures.

3.14 **MANUAL HANDLING OPERATIONS REGULATIONS**

These Regulations seek to reduce the very large incidence of injury and ill-health arising from the manual handling of loads at work. More than 1 in 4 of all reportable injuries are caused by manual handling. These accidents do not include cumulative injuries, particularly to the back which can lead to physical impediment or even permanent disablement.

These Regulations place duties upon employers in respect of their own employees. Identical duties are placed on the self-employed in respect of their own safety.

3.15 **PROVISION AND USE OF WORK EQUIPMENT REGULATIONS (PUWER)**

- 3.15.1 Work equipment has a wide meaning and includes tools such as hammers, laboratory apparatus, for example Bunsen burners, ladders, photocopiers, lifting equipment and machinery for use at work.
- 3.15.2 These Regulations place duties on employers in relation to selection, suitability, maintenance, inspection, installation, instruction and training, prevention of danger and control of equipment.
- 3.15.3 More information on these Regulations can be found in L22 and free leaflets include INDG 291 and INDG 229.

3.16 **REPORTING OF INJURIES, DISEASES AND DANGEROUS OCCURRENCES REGULATIONS (RIDDOR)**

- 3.16.1 RIDDOR require employers, self-employed people or those in control of work premises to report certain work related accidents, diseases and dangerous occurrences.

- 3.16.2 Other people have duties to report certain gas incidents which may not appear to be work related:

- death, major injury, lost consciousness, or being taken to hospital for treatment to an injury arising out of the distribution, filling, import or supply of NG are to be reported by the conveyor
- dangerous gas fittings (as defined in RIDDOR) is required to be reported by a "member of a class of persons".

- 3.16.3 Major injuries, death and dangerous occurrences are required to be notified immediately, for example by telephone, to the enforcing authority by the "responsible person" as defined by RIDDOR. Reports can be made to the Incident Contact Centre:

- For fatal and major injuries only, telephone on 0845 300 9923 (opening hours Monday to Friday 8.30 am to 5 pm) and complete appropriate online form
- all other reports at HSE website www.hse.gov.uk.

Complete the appropriate online report form listed below:

- report an injury
- report of a dangerous occurrence
- report of an injury offshore
- report of a dangerous occurrence offshore
- report of a case of disease
- report of a flammable gas incident
- report of a dangerous gas fitting.

The form will then be submitted directly to the RIDDOR database and a copy issued to the person making the report.

Online written reports are to be submitted within the required timescale (10 days, or 14 days for dangerous gas fittings). Other reports need to be made as soon as practicable and within 10 days of the incident.

- 3.16.4 INDG 453 contains detailed guidance on RIDDOR, including a full list of injuries etc. that need reporting.

- 3.16.5 IGEM/GL/8 provides guidance on the reporting and investigation of gas-related incidents.

SECTION 4 : OBJECTIVES AND PRINCIPLES

4.1 OBJECTIVES

The primary objectives when designing any housing or compound shall be to ensure, as far as possible:

- safety of persons and plant
- the optimisation of the asset life of the installation
- reliability of operation, including the required level of security of the gas supply
- security and protection against vandalism and mechanical damage
- sufficient space for general access and adequate provision for safe maintenance
- due allowance for the accommodation of equipment that may be installed in addition to the meter installation, for example a volume converter, other instrumentation, etc.
- a suitable location for the GT's ECV.

4.2 PRINCIPLES

4.2.1 The selection of the location and the design of the housing/compound depend upon individual circumstances of the site and the equipment used. They shall take into account such factors as security, adequate access for maintenance and meter reading, weather protection, noise, other local conditions and constraints imposed by the consumer, e.g. any hazardous area identified by the consumer that may affect the location of the installation.

Note: The installation may be:

- in a main building
- in a pre-fabricated housing delivered to, and installed on site
- in a purpose-designed and built housing, on site
- in a suitably converted existing building
- if suitable, outdoors and protected by a perimeter fence.

4.2.2 The design of any housing shall take into account the need for handling of the housing, or part of the housing, during installation/construction and maintenance of the meter installation.

Note: Such handling may be either by mechanical or manual means, as appropriate to the size of the housing.

4.2.3 Due account shall be taken of any local Planning Department's requirements and restrictions.

SECTION 5 : EXCHANGE OF INFORMATION

5.1 GENERAL

- 5.1.1 The location of the installation shall be agreed between the consumer, supplier, GT and installer.
- 5.1.2 Any constraints, imposed by the consumer, which may affect safety, shall be determined, for example any hazardous area which may affect the location of the installation.
- 5.1.3 In consultation with the consumer, it shall be determined which party will provide the housing, and what type of housing is to be used.
- 5.1.4 Where the consumer will provide the housing:
- the MAM should advise the consumer of their requirements for a satisfactory housing and location, and
 - the consumer shall be advised to obtain GT authorisation if necessary (see Section 6).
- 5.1.5 Ownership and responsibility for ongoing maintenance of the housing and compound should be established and documented.

5.2 MATERIALS AND CONSTRUCTION

Where housing construction (other than for a pre-fabricated GRP housing) is contracted to a builder, the builder shall provide, to the project management company (which may be the MAM, consumer, etc.) details of all materials to be used. This should include details of the roof construction, including the fixing method. Such details shall be submitted on a suitable specification form.

Details of any specific requirements for bricks, tiles etc. shall be included on the specification form, by the project manager.

Note: This applies, for example, where a specific colour, type and manufacture of brick is required.

5.3 FORMAL DOCUMENTATION

- 5.3.1 The following documents shall be produced, as appropriate:
- planning application, including drawings
 - site layout drawing
 - general arrangement drawing
 - detailed fabrication and construction drawings and specifications
 - as-built drawings
 - design calculations.
- 5.3.2 Planning application drawings, whether for a “full planning permission” or approval of a “permitted development” application, are required to show the proposal and should contain sufficient information to demonstrate the general appearance of the housing/compound upon completion. The drawing should contain a location plan, site plan and at least two elevations.
- 5.3.3 Site layout drawings may also be required for site construction works. These should show sufficient detail to identify the site location, orientation and boundaries, as well as the exact position of any housing/compound to be located on the site.