



Standards of training in gas work

***Criteria and guidance in the development and delivery of
training programmes in gas work***

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of training programmes in gas work

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FOREWORD

There were several reviews of health and safety commissioned by the UK Government in 2009 named: Common Sense, Common Safety; Good Health and Safety Good for Everyone; and Reclaiming health and safety for all (led by Professor Löfstedt). Approved Code of Practice 'Standards of training in safe gas installation' CoP 20 was withdrawn by HSE following a review of 'Safety in the installation and use of gas systems and appliances' L56 and 'Standards of training in safe gas installation' CoP 20 in 2012/13. The main clauses 8, 13 and 14 from CoP 20 were amended and inserted into L56 to embed the requirement for training into the revised Approved Code of Practice 3(1).

This gas industry document 'Standards of training in gas work', referenced in L56 paragraph 87 has been prepared by a Working Group which included representatives from the Strategic Management Board (SMB) and Standards Consultation Forum facilitated by the Institution of Gas Engineers and Managers (IGEM) and Energy & Utility Skills with industry stakeholder support.

The document has been approved by the SMB and IGEM's Technical Coordinating Committee and published after consultation with industry, Gas Safe Register and the Health and Safety Executive (HSE).

This gas industry document provides criteria and guidance to training providers, trainee gas engineers and employers on the scope, standards and quality of training required to enable a gas engineer to achieve competence. The training provider is required to design and develop training programmes to meet the needs of the trainee, taking account of their level of skill, knowledge and experience of gas work.

The objective of the document is to provide the gas industry with an agreed structure for those entering and continuing to work in the industry, along with those providing training, a clear, robust route to achieve well trained and knowledgeable persons able to undertake safe gas work.

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1. INTRODUCTION

This document provides for the application of standards of training for the gas industry under the Health and Safety at Work Act 1974 and Regulation 3(1)-(2) of the Gas Safety (Installation and Use) Regulations 1998 (GS(I&U)R), as detailed in the supporting Safety in the installation and use of gas systems and appliances; Approved Code of Practice and Guidance L56.

In the context of this document the term “shall” identifies a requirement by law in Great Britain (GB) at the time of publication and the term “should” identifies a requirement of this document intended to be complied with in full.

2. LEGISLATION, APPROVED CODE OF PRACTICE AND GUIDANCE

2.1 Health and Safety at Work etc. Act 1974 (HSWA)

The Act states:

2(1) It shall be the duty of every employer to ensure, so far as is reasonably practicable, the health, safety and welfare at work of all his employees.

3(1) It shall be the duty of every employer to conduct his undertaking in such a way as to ensure, so far as is reasonably practicable, that persons not in his employment who may be affected thereby are not thereby exposed to risks to their health or safety.

3(2) It shall be the duty of every self-employed person to conduct his undertaking in such a way as to ensure, so far as is reasonably practicable, that he and other persons (not being his employees) who may be affected thereby are not thereby exposed to risks to their health or safety.

The matters to which the duty in Section 2(1) extends include in particular:

2(2)(c) the provision of such information, instruction, training and supervision as is necessary to ensure, so far as is reasonably practicable, the health and safety at work of his employees.

2.2 The Gas Safety (Installation and Use) Regulations 1998 (GS(I&U)R)

There is a requirement in these Regulations for work to be carried out only by competent persons.

The Regulations state:

3(1) No person shall carry out any work in relation to a gas fitting or gas storage vessel unless he is competent to do so.

3(2) *The employer of any person carrying out such work for that employer, every other employer and self-employed person who has control to any extent of such work and every employer and self-employed person who has required such work to be carried out at any place of work under his control shall ensure that paragraph (1) above is complied with in relation to such work.*

2.3 **Safety in the installation and use of gas systems and appliances; Approved Code of Practice and guidance L56; ACOP 3(1) paragraphs 80 and 81 state:**

80 *Gas work should only be undertaken:*

- (a) by a person, who has successfully completed an industry-recognised training course followed by assessment of competence. Training that leads to assessment of competence in safe gas work should be recognised by the industry's standards setting body, or*
- (b) in the case of a currently or previously registered person, where they have proved competence through a certification scheme; or*
- (c) for those working at premises that fall outside the scope of the Regulations (see regulation 2(4) and associated guidance), by a person who has successfully completed an appropriate full training course followed by assessment of competence.*

81 *Training should be of a standard to enable a gas engineer to achieve competence in the safe installation, purging, commissioning, testing, servicing, maintenance, repair, disconnection, modification and dismantling of the gas systems, fittings and appliances with which they are working. This should include an adequate knowledge of:*

- (a) relevant associated services such as water and electricity; and*
- (b) the potential exposure to asbestos; and*
- (c) the dangers they may give rise to; and*
- (d) the precautions to take.*

2.4 Employers of gas engineers are not complying with their duties under sections 2(1), 2(2)(c) and 3(1) of the Health and Safety at Work etc Act 1974 (HSWA) or with Regulation 3 of the Gas Safety (Installation and Use) Regulations 1998 if the gas engineer is not competent. Similarly, a self-employed gas engineer will not be complying with their duty under section 3(2) of the HSWA or with Regulation 3 of the 1998 Regulations if they are not competent. An employee or a person working on their own behalf (viz D.I.Y) are not complying with Regulation 3 of the 1998 Regulations if they are not competent.

2.5 Competence is a combination of practical skill, training, knowledge and experience to carry out the job in hand safely, and ensuring the installation is left in a safe condition for use. Knowledge needs to be kept up to date with changes in law, technology and safe working practice (see L56 paragraph 84).

2.6 Related legislation and guidance is listed by Gas Safe Register on their website www.gassaferegister.co.uk/Normativedocumentlist in the Legislative, normative and

informative document list. Guidance on other related legislation may be obtained from HSE at www.hse.gov.uk/gas.

3. SCOPE

3.1 This document sets out the requirements for training in gas work for; new entrants to the gas industry working under the scope of the Gas Safety (Installation and Use) Regulations; those persons currently or previously registered seeking re-registration as a 'class of persons' (or have a relevant gas qualification) and; those persons working at premises or on equipment outside the scope of GS(I&U)R.

Note 1: In the context of this document the words gas engineer means any person who installs, purges, commissions, tests, services, maintains, repairs, disconnects, modifies or dismantles gas systems whether they are an employee, self-employed or working on their own behalf. Gas installation means all or any of the activities listed in the previous sentence. Gas system means all gas installation pipework, fittings and appliances as well as the provision of ventilation and chimney/flueing systems.

Note 2: For 'class of persons' see Appendix 2.

Note 3: For 'persons working outside the scope of GS(I&U)R' see Appendix 2.

3.2 The Standards Setting Body is required to recognise all training for developers/providers wishing to provide training for new entrants working under the GS(I&U)R and for training providers wishing to become recognised to offer training for those working outside the scope of GS(I&U)R.

3.3 This document does not specify the content of specific training programmes but provides guidance for the development of training specification/programmes, see Sections 4 and 5.

3.4 The gas work, for which this document sets out training standards covers Natural Gas (NG), liquefied petroleum gas (LPG), methane from coal mines, landfill gas etc. when these products are stored, supplied or used in situations within the scope of GS(I&U)R. Insofar as this document gives practical guidance with regard to section 2(1), 2(2)(c), 3(1) and 3(2) of the HSWA it applies to portable or mobile LPG appliances as well as to piped gas appliances. Portable or mobile LPG installations do not normally need installing but need competent gas engineers to service, maintain and repair them.

4. STANDARDS OF TRAINING

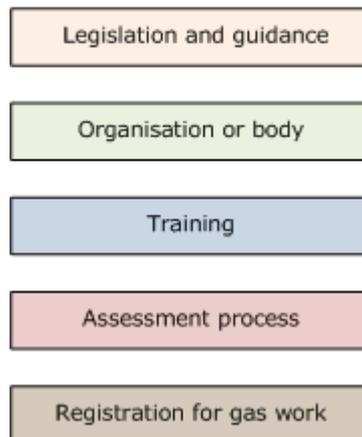
4.1 This section details the requirements for training providers who deliver training programmes for the following categories detailed in the Safety in the installation and use of gas systems and appliances L56 Approved Code of Practice 3 (1) paragraphs 80 and 81.

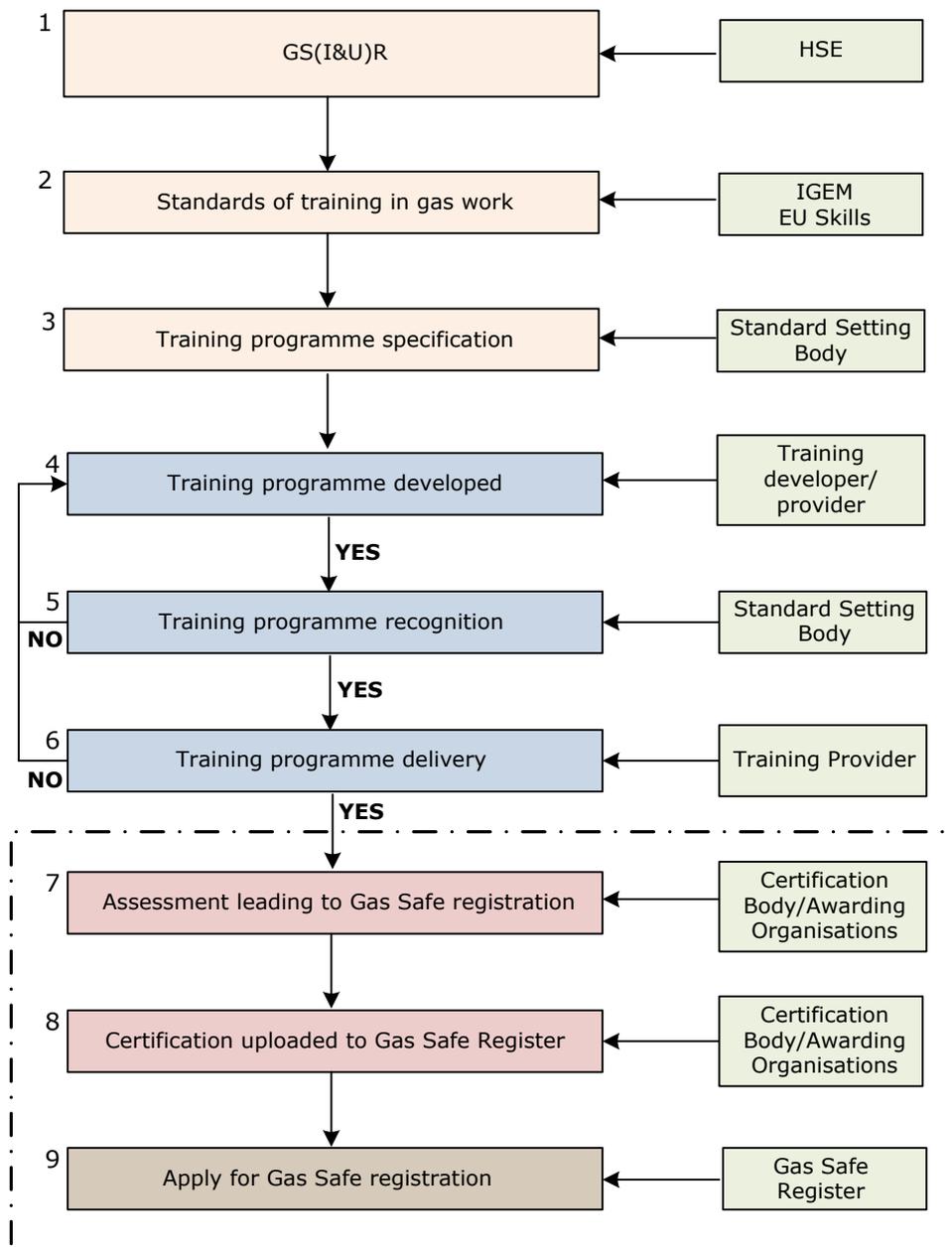
- a) new entrants into the gas industry wishing to become a ‘class of persons’ (paragraph 80(a))
- b) persons currently or previously registered as a ‘class of persons’ (or have a relevant gas qualification) (paragraph 80(b))
- c) persons working outside the scope of GS(I&U)R (paragraph 80(c)).

4.2 Training programmes are to include sufficient theoretical and practical training and where appropriate be supplemented by relevant on-the-job supervised practice under the direct supervision of a competent and/or registered gas engineer. The training needs to be relevant to the scope of the work to be undertaken.

The flowcharts (see Figures 1, 2 and 3) and associated notes provide the requirements necessary to develop and deliver training programmes.

Key to Figures 1, 2 and 3





Note: See the associated Notes on the next page.

FIGURE 1 – STANDARDS OF TRAINING FOR NEW ENTRANTS (WISHING TO WORK WITHIN THE SCOPE OF GS(I&U)R) AND ROUTE TO GAS SAFE REGISTRATION

NOTES RELATING TO STANDARDS OF TRAINING OF NEW ENTRANTS (WISHING TO WORK WITHIN THE SCOPE OF GS(I&U)R) (FIGURE 1) (1-6) AND ROUTE TO GAS SAFE REGISTRATION (7-9)

TRAINING OF NEW ENTRANTS

1 **GS(I&U)R Approved codes of practice and guidance L56 Safety in the installation and use of gas systems and appliances.**

The reference for this document is under Regulation 3(1) and 3(2) the Approved Code of Practice 3(1) paragraphs 80(a) and 81.

2 **Standards of training in gas work**

This document details the requirements necessary for training providers to develop and deliver training via approved programmes in gas work for new entrants to the gas industry that are required to be Gas Safe registered.

3 **Training programme specification**

Produced by the Standards Setting Body, the specification outlines the criteria to which the training developer/provider should develop their training programme. The specification should be aligned to National Occupational Standards or equivalent competency criteria and should provide a clear scope required to provide the learners with the required practical skills, knowledge, on-site experience and understanding to carry out safe gas work.

4 **Training programme developed**

The training developer/provider should develop their training programme against the appropriate specification and should be submitted to the Standards Setting Body for recognition in line with the structure listed in Appendix 3 of this document.

5 **Training programme recognition**

The training programme should be reviewed against the specification for the scope of work. Once recognised the training programme is registered by the Standard Setting Body. Training developer/providers can run their recognised programme at more than one training centre subject to verification and audit requirements, see Appendix 3.

6 **Training programme delivery**

Training providers should deliver their programme to the appropriate specification and be subject to audit and verification requirements. All training programmes should include an evaluation of the effectiveness of learning. Records of training should be kept by the training provider for a minimum of six years.

ROUTE TO GAS SAFE REGISTRATION

7 **Assessment leading to Gas Safe registration**

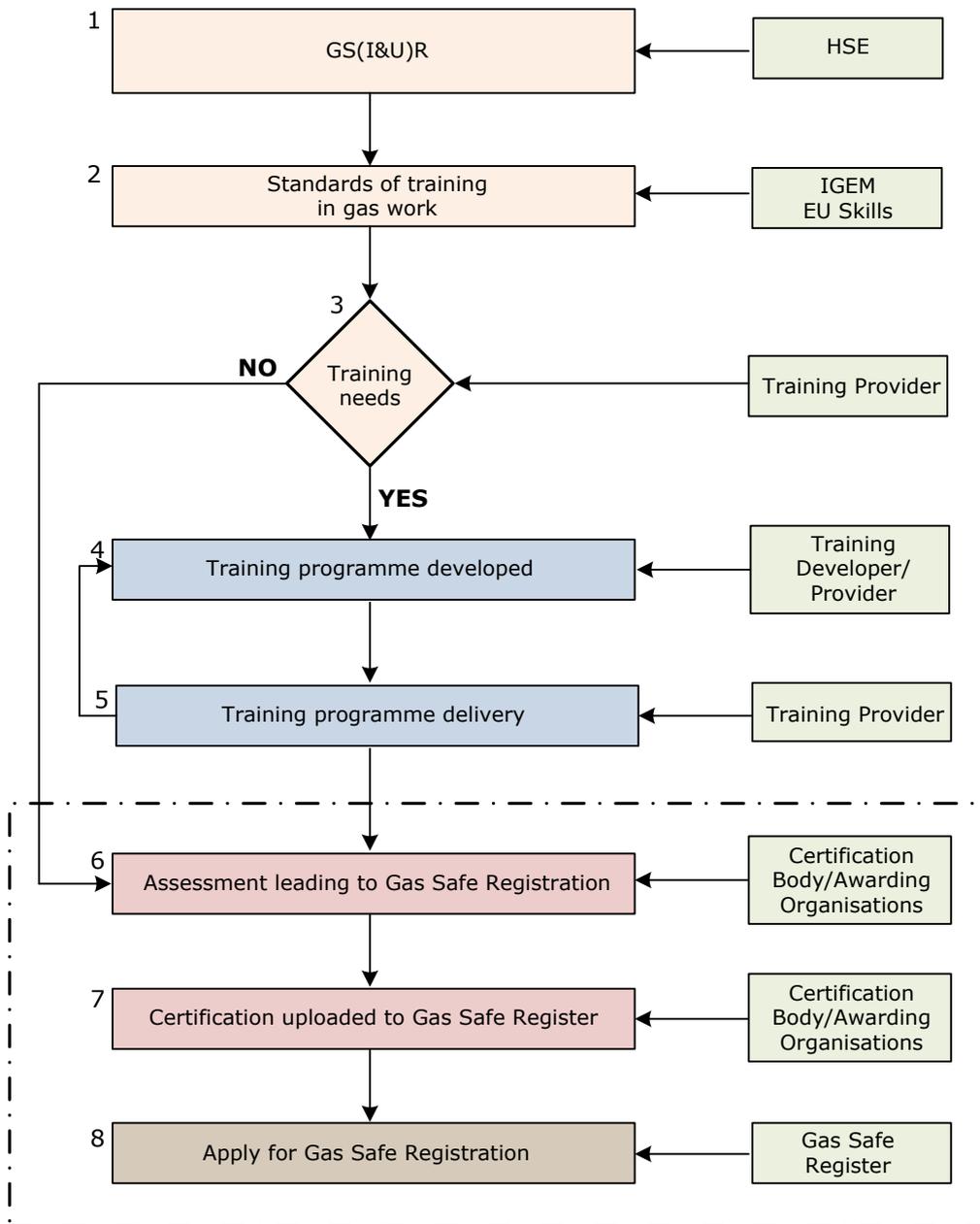
On completion of training, all trainees should be subject to assessment and should only be accepted if they hold a recognised training certificate (listed by the Standards Setting Body). Training providers who offer programmes to new entrants whose scope of work is not covered by either Qualifications and Credit Framework (QCF) or National Accredited Certification Scheme for Individual Gas Fitting Operatives (ACS) assessments should be required to provide the trainee with a specific training and assessment programme delivered to the requirements detailed in this document and provide a certificate of competence.

8 **Certification uploaded to Gas Safe Register**

Certification Bodies/Awarding Organisations should issue a certificate when they are satisfied that the trainee has demonstrated competence in the area of gas work covered by that certificate. Details of this certificate of competence should be uploaded to Gas Safe Register.

9 **Apply for Gas Safe registration**

For the holder of a certificate of competence to undertake gas work legally within the scope of GS(I&U)R, they need to apply to Gas Safe Register to be registered as a 'class of persons'.



Note: See the associated Notes on the next page.

FIGURE 2 – TRAINING OF PERSONS CURRENTLY OR PREVIOUSLY REGISTERED AS A ‘CLASS OF PERSONS’ (OR HAVE A RELEVANT GAS QUALIFICATION) AND ROUTE TO GAS SAFE REGISTRATION

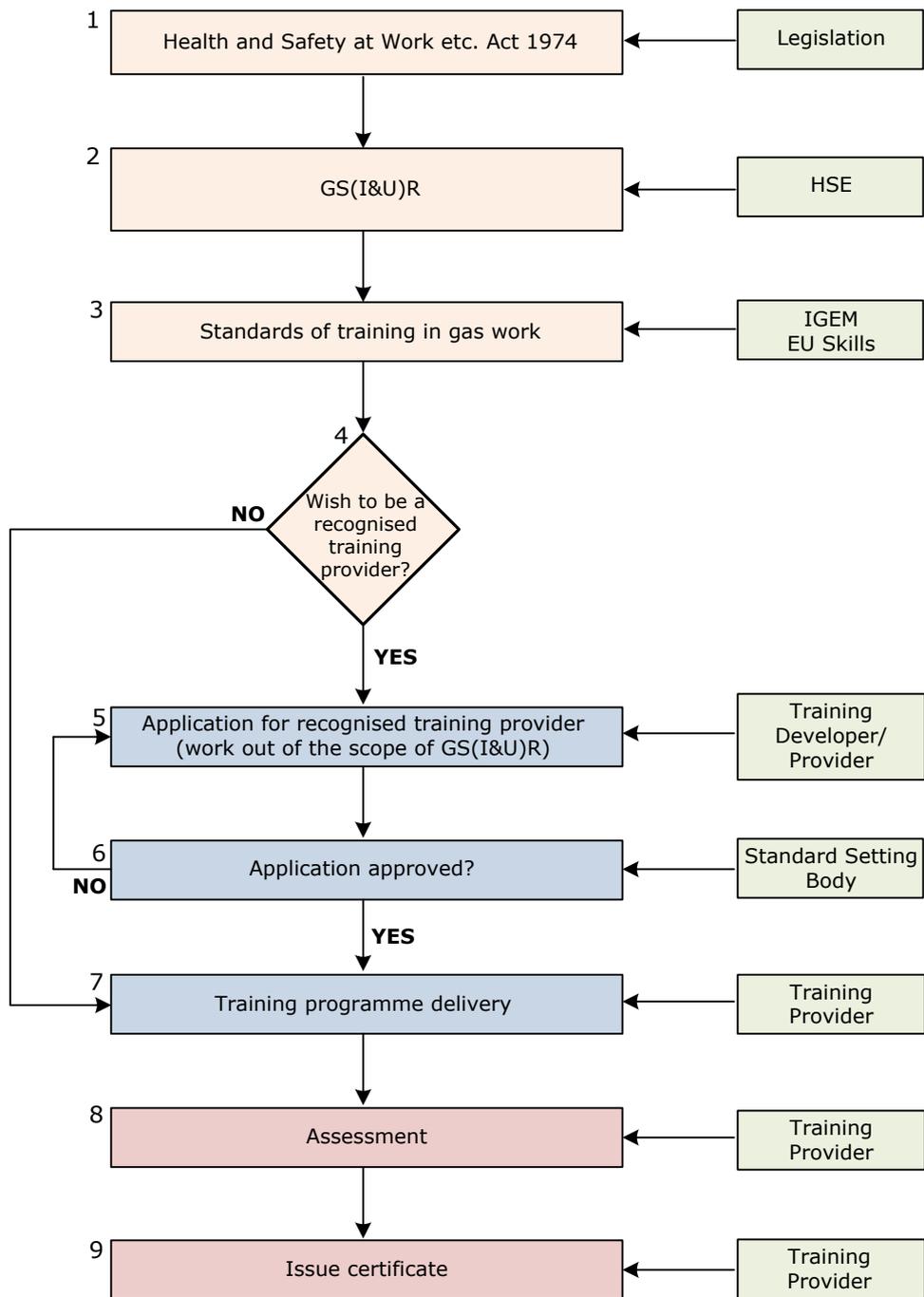
NOTES RELATING TO TRAINING OF PERSONS, CURRENTLY OR PREVIOUSLY REGISTERED AS A 'CLASS OF PERSONS' (OR HAVE A RELEVANT GAS QUALIFICATION) (FIGURE 2) (1-5) AND ROUTE TO GAS SAFE REGISTRATION (6-8)

TRAINING OF PERSONS CURRENTLY OR PREVIOUSLY REGISTERED AS A 'CLASS OF PERSONS'

- 1 **GS(I&U)R Approved codes of practice and guidance L56 Safety in the installation and use of gas systems and appliances.**
The reference for this document is under Regulation 3(1) and 3(2) the Approved Code of Practice 3(1) paragraphs 80(b) and 81.
- 2 **Standards of training in gas work**
This document details the requirements necessary for training providers to develop and deliver training programmes in gas work for those persons who are currently or were previously registered or have a relevant gas qualification. They are not required to take further recognised training.
- 3 **Training needs**
If the individual or employer request training or is seeking a change to the scope of the work, then the training provider should establish their training needs.
- 4 **Training programme developed**
The training provider should develop a training programme based upon the guidance in Section 5 and Appendix 5 and that is suitable for the needs of the person.
- 5 **Training programme delivery**
Training providers should deliver their programme in line with the needs of the person. All training programmes should include an evaluation of the effectiveness of learning. Records of training should be kept by the training provider for a minimum of six years.

ROUTE TO GAS SAFE REGISTRATION

- 6 **Assessment leading to Gas Safe registration**
All persons should prove their competence through an assessment. Training providers who offer programmes to persons whose scope of work is not covered by existing assessment criteria are be required to provide them with a specific training and assessment programme delivered to the requirements detailed in this document.
- 7 **Certification uploaded to Gas Safe Register**
The details of a certificate of competence should be uploaded to Gas Safe Register when the person has demonstrated competence in the area of gas work covered by that certificate.
- 8 **Apply for Gas Safe registration**
For the holder of a certificate of competence to undertake gas work legally within the scope of GS(I&U)R, they need to apply to Gas Safe Register to be registered as a 'class of persons'.



Note: See the associated Notes on the next page.

FIGURE 3 – TRAINING OF PERSONS WORKING OUTSIDE THE SCOPE OF GS(I&U)R

NOTES RELATING TO TRAINING OF PERSONS WORKING OUTSIDE THE SCOPE OF GS(I&U)R (FIGURE 3)

- 1 ***Health and Safety at Work Act etc.***
Employers of gas engineers and self employed persons shall comply with their duties under sections 2(1), 2(2)(c), 3(1) and 3(2) of the Health and Safety at Work etc Act 1974 (HSW Act) and Regulation 9 of the Provision and Use of Work Equipment Regulations 1998 (PUWER).
- 2 ***GS(I&U)R Approved codes of practice and guidance L56 Safety in the installation and use of gas systems and appliances.***
The reference for this document is under Regulation 3(1) and 3(2) the Approved Code of Practice 3(1) paragraphs 80(c) and 81.
- 3 ***Standards of training in gas work***
This document details the requirements necessary for training providers to develop and deliver training and assessment programmes in gas work for those persons who operate outside the scope of the GS(I&U)R, see Appendix 6.
- 4 ***Wish to be a recognised training provider?***
The training provider needs to decide whether they wish to be a recognised training provider.

Note: Training Providers that are recognised by the Standards Setting Body either directly or through an authorised Body has their organisation listed as such by the Standards Setting Body and IGEM.
- 5 ***Application for recognised training provider***
Training providers who wish to become a recognised training provider should apply to the Standards Setting Body for recognition (see Appendix 2). This recognition allows the provider to design and deliver any number of training and assessment programmes for this category, and not require approval for each individual programme.
- 6 ***Application approved?***
The training provider should submit samples of training/assessment programmes for recognition and be subject to verification and audit requirements at regular intervals.
- 7 ***Training programme delivery***
Training providers should deliver their programme to meet the needs of the person. All training programmes should include an evaluation of the effectiveness of learning.
- 8 ***Assessment***
The training provider should provide an assessment process to enable those persons to prove their competence in the scope of work on which they have received the training.
- 9 ***Issue certificate***
The training provider should provide a certificate of competence to those persons who have successfully completed a training and assessment programme. Records of all certificates should be kept by the training provider for a minimum of six years.

5. ELEMENTS OF STANDARDS OF TRAINING

The following elements of standards of training provide guidance for the development of the training specification/programmes. However, it is recognised that not all the elements are applicable to the scope of work being carried out by the gas engineer.

5.1 Gas and the technology for its combustion and use

5.1.1 Trainees should have adequate knowledge of the nature of the gas with which they are working and of the technology relating to its combustion and use.

5.1.2 The training should provide and test an adequate understanding of:

- (a) the properties of fuel gases;
- (b) combustion;
- (c) flame characteristics;
- (d) the control and measurement of fuel gases;
- (e) gas pressure and flow;
- (f) the construction and operation of burners; and
- (g) the operation of flues and ventilation.

5.2 Installation of systems

5.2.1 Trainees should fully understand safe methods for installing the type of gas system with which they are working. They should be able to carry out the installation safely and leave it safe to use.

5.2.2 The training should instruct and include:

- (a) where and how gas pipes and fittings, including valves, meters, regulators and gas appliances should be safely installed, and the relevant aspects of building construction;
- (b) how to site and install the gas system safely with particular attention to safe ventilation, combustion and flueing;
- (c) associated electrical work, safe isolation, safe working procedures including overcurrent and shock protection from electrical circuits, protection against the environment, earthing and bonding;
- (d) electrical and other controls of the types appropriate to the systems being worked on and how to apply controls safely;
- (e) when and how to check the whole system adequately before it is commissioned;
- (f) testing of gas pipework, appliances and associated controls; and
- (g) how to commission the system, leaving it safe for use.

5.3 **Installation of appliances**

5.3.1 Trainees should fully understand how the various types of gas appliances, plant and equipment with which they are working should be safely installed, safely used, and safely maintained. They should be trained to the standard appropriate for the type of appliance with which they are working.

5.3.2 The training programme should instruct and include:

- (a) safety considerations in specifying suitable appliances for specific domestic and non-domestic installations, if they intend to carry out such work;
- (b) how to install and commission, safely and correctly, the appliances that have to be installed, leaving them safe for use, with particular attention to the ventilation, combustion and flueing appropriate for the particular appliance and the location;
- (c) that unsuitable appliances should not be installed;
- (d) that used appliances should be examined to verify that they are in a safe condition for further use;
- (e) the basic design and construction criteria of appliances they are working with;
- (f) the importance of the manufacturers' instructions;
- (g) an understanding sufficient for the purposes of safe gas installation.
- (h) relevant electrical aspects, where necessary, including:
 - i. basic electrical theory
 - ii. control circuits
 - iii. schematic and wiring diagrams
 - iv. the safe use of appropriate test instruments to measure insulation resistance and voltage
 - v. controls and control systems;
- (i) the dangers of electrical equipment;
- (j) how to avoid danger from electrical equipment.

5.4 **Servicing, maintenance, repair, disconnection and reconnection**

5.4.1 Trainees should be able to service, maintain, repair, disconnect and reconnect the appliances with which they are working safely, with due regard to good working practice, leaving them safe to use.

5.4.2 The training should be such as to instruct and include:

- (a) knowledge of servicing techniques for the gas appliances the gas engineer is dealing with;
- (b) knowledge of their maintenance requirements;
- (c) skill at putting these techniques into practice;
- (d) knowledge of the basic steps of fault-finding, including the location of faults, determination and removal of the cause, and checks on repairs and systems; and

(e) the ability to follow manufacturers' instructions, fault diagnosis charts and wiring diagrams.

5.4.3 The trainees should also be trained to inform the consumer of the need for regular maintenance and servicing.

5.5 **Recognising danger**

5.5.1 Trainees should know how to recognise, examine and test for conditions associated with the gas system which might cause danger and take appropriate remedial action, if necessary, on site and be aware, at all times, of the paramount need to work safely. They should be trained to show consumers how to use any equipment that has been installed or modified and how in an emergency to shut off the gas supply. They should also be aware of the importance of alerting consumers to the dangers of:

- inadequate ventilation
- poor combustion
- damage and blockage of flues
- carbon monoxide
- gas escapes
- the need for regular maintenance and servicing and
- non-gas related risks e.g exposure to asbestos, electrical faults etc.

5.5.2 Training to meet this standard should develop and test the ability to use gas testing equipment effectively, as well as the adequate knowledge and understanding of the properties and effects of combustion of gases set out in Sub-Section 5.1 and identifying and assessing unsafe situations, in accordance with the Gas Industry Unsafe Situations Procedures (GIUSP).

5.6 **Law, codes of practice, industry standards and guidance**

5.6.1 Trainees shall be aware of the relevant current legal requirements, codes of practice, industry standards and guidance documents.

5.6.2 Training shall be such that the gas engineer knows and is able to comply with the relevant Regulations and other statutory requirements together with Codes of Practice, British, IGEM and other industry Standards and guidance documents which are relevant to the installation, purging, commissioning, testing, servicing, maintenance, repair, disconnection, modification and dismantling of the gas systems, fittings and appliances with which they are working. A summary of current and relevant legislation is listed by Gas Safe Register on their 'Legislative, normative and informative document list'.

5.7 **Updating and refresher courses**

In order to remain up to date, a gas engineer should be re-assessed on their own range of work. If necessary, they need to attend refresher courses which should include any changes in law, technology or safe working practice.

APPENDIX 1 : SOURCES OF INFORMATION

Further information can be obtained from:

Energy & Utility Skills Limited
Friars Gate,
1011 Stratford Road,
Shirley,
Solihull,
B90 4BN
E-mail: enquiries@euskills.co.uk
Tel: 0845 077 99 22

Institution of Gas Engineers and Managers (IGEM)
IGEM House,
High Street,
Kegworth,
Derbyshire,
DE74 2DA
E-mail: general@igem.org.uk
Tel: 0844 375 4436

HSE

Website: <http://www.hse.gov.uk/gas> or

telephone the Advisory Team on 0300 003 1747 during office hours – 8.30 am to 5.00 pm, Monday to Friday.

However, please note HSE does not operate a telephone helpline for general health and safety information.

Gas Safe Register
PO Box 6804,
Basingstoke.
RG24 4NB
E-mail: enquiries@gassaferegister.co.uk
Tel: 0800 408 5500

Gas Safety Advice
Tel: 0800 300 363

APPENDIX 2 : GLOSSARY, ACRONYMS AND ABBREVIATIONS

A2.1 GLOSSARY

awarding organisation

are recognised by Ofqual, SQA and Welsh Government (Qualification Wales) to provide specific qualification types e.g. from GCSEs and A levels to specialised vocational qualifications. All awarding organisations have to comply with the General Conditions of Recognition which ensures:

- they have the staff and money to be able to design, deliver and award their qualifications
- their qualifications are fit for purpose and meet the needs of those who will be using them.

certification body

accredited by UKAS following ongoing assessment against internationally recognised standards to demonstrate their competence, impartiality and performance capability to provide an accreditation scheme in accordance with the National Accredited Certification Scheme for Individual Gas Fitting Operatives.

class of persons

all gas engineering businesses, including self-employed gas engineers, are (subject to the limited exceptions in regulation 3(4)) required to be in membership of a class of persons approved by HSE, whether they carry out such work as their main or part activity. Gas engineers who are employed by a member of an approved class of persons but who do separate work on their own behalf need to be in membership of such class of persons, e.g. Gas Safe registered, in their own right. This definition is an extract from GS(I&U)R.

gas engineer

any person who installs, purges, commissions, tests, services, maintains; repairs, disconnects, modifies and dismantles gas systems, fittings and appliances whether they are an employee, self-employed or working on their own behalf.

gas work

all or any of the activities listed that the gas engineer works on or carries out (see 'gas engineer' definition).

gas system	all gas installation pipework, fittings, meters and appliances as well as the ventilation and chimney/flueing systems.
new entrant	a person wishing to achieve a recognised industry qualification to undertake gas work, see clause 4.1.
persons working outside the scope of GS(I&U)R	<p>save for Regulations 37, 38 and 41 and subject to Regulation 3(8), these Regulations shall not apply in relation to the supply of gas to, or anything done in respect of a gas fitting at, the following premises, that is to say –</p> <p>(a) (i) a mine within the meaning of the Mines and Quarries Act 1954 or any place deemed to form part of a mine for the purposes of that Act, or</p> <p>(ii) a quarry within the meaning of the Quarries Regulations 1999 or any place deemed to form part of a quarry for the purposes of those Regulations(a)</p> <p>(b) a factory within the meaning of the Factories Act 1961(b) or any place to which any provisions of the said Act apply by virtue of sections 123 to 126 of that Act;</p> <p>(c) agricultural premises, being agricultural land, including land being or forming part of a market garden, and any building thereon which is used in connection with agricultural operations;</p> <p>(d) temporary installations used in connection with any construction work within the meaning assigned to that phrase by regulation 2(1) of the Construction (Design and Management) Regulations 2007(c);</p> <p>(e) premises used for the testing of gas fittings; or</p> <p>(f) premises used for the treatment of sewage, but they shall apply in relation to such premises or part thereof used for domestic or residential purposes or as sleeping accommodation.</p> <p>This definition is an extract from GS(I&U)R.</p>
Ofqual	regulator of qualifications, examinations and assessments in England and vocational qualifications in Northern Ireland.
Scottish Qualification Authority Scotland	regulator of qualifications, examinations and assessments in Scotland.

Standards Setting Body	approved by HSE to develop and maintain the gas safety competence criteria for the proof of competence that leads to Gas Safe registration. Currently Energy and Utility Skills Ltd.
Standards Consultation Forum	ensures that employers and stakeholders allied to the gas industry are appropriately consulted as an integral part of the process of competence standard setting arising from proposals to amend or introduce new assessment mechanisms and associated aspects for businesses seeking registration on the Gas Safe Register. For membership details contact Energy and Utility Skills Ltd.
Strategic Management Board	ensures that the mechanisms and processes established for the production, maintenance and implementation of competence criteria and associated assessment specifications, operate in an effective and efficient manner to align fully with the Legislative requirements of the Gas Safety (Installation and Use) Regulations 1998 and subsequent Registration requirements for consumer safety. For details contact Energy and Utility Skills Ltd.
training developer	organisation responsible for the development of training programmes meeting the requirements of this document.
training provider	organisation responsible for delivery of training programmes.
Welsh Government (Qualification Wales)	is the regulator of qualifications, examinations and assessments in Wales.

A2.2

ACRONYMS AND ABBREVIATIONS

ACoP	Approved Code of Practice
ACS	National Accredited Certification Scheme for Individual Gas Fitting Operatives
CoP	Code of Practice
DIY	do it yourself
FIMS	functional identified maintenance systems
GCSE	General Certificate of Secondary Education
GIUSP	Gas Industry Unsafe Situations Procedures

GS(I&U)R	Gas Safety (Installation and Use) Regulations
GB	Great Britain
HSE	Health and Safety Executive
HSWA	Health and Safety at Work Act
IGEM	Institution of Gas Engineers and Managers
LPG	liquefied petroleum gas
NG	Natural Gas
NOS	National Occupational Standards
PUWER	Provision and Use of Work Equipment Regulations
QCF	Qualifications and Credit Framework
SMB	Strategic Management Board
SQA	Scottish Qualification Authority
UKAS	United Kingdom Accreditation Service
UK	United Kingdom.

APPENDIX 3 : REFERENCES

This document is set out against a background of legislation in force in GB at the time of publication. Similar considerations are likely to apply in other countries and reference to the appropriate national legislation will be necessary. The following list is not exhaustive.

All relevant legislation must be complied with and relevant Approved Codes of Practice (ACoPs), official Guidance Notes and referenced codes, standards, etc. shall be taken into account.

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

Care needs to be taken to ensure that the latest editions of the relevant documents are used.

A3.1 PRIMARY LEGISLATION

- Health and Safety at Work etc. Act 1974.

A3.2 SECONDARY LEGISLATION

- Gas Safety (Installation and Use) Regulations 1998
- Provision and Use of Equipment Regulations 1998.

A3.3 APPROVED CODES OF PRACTICE AND GUIDANCE

- L22 Safe use of work equipment. ACoP and Guidance
- L56 Safety in the installation and use of gas systems and appliances. ACoP and Guidance
- CoP 20 Standards of training in safe gas installation (withdrawn by HSE).

APPENDIX 4 : TRAINING PROGRAMME AND TRAINING PROVIDER RECOGNITION PROCESS

A.4.1 RECOGNITION OF TRAINING PROGRAMMES FOR NEW ENTRANTS

A4.1.1 All training programmes for new entrants (see clause 3.1) to the gas industry are required to be set against the appropriate industry specification held by the Standard Setting Body (also see Figure 1).

A4.1.2 To enable the training programmes to be recognised the following information has to be submitted and recognised as being fit for purpose by the Standards Setting Body:

An indication of the areas assessed, as part of the process are listed below:

- **Organisational Leadership**
 - leadership demonstrate a clear and ambitious strategy, which is focussed around improving the quality and performance of provision
 - leadership take steps to evaluate the quality of the provision, taking into account stakeholder requirements and acting on the findings in a sustainable and valuable manner
 - leadership demonstrate a commitment to their staff, ensuring continued and relevant professional development
 - leadership implement successful working practices which meet the needs of the learner and promote equality and diversity. Equality and Diversity are promoted adequately with no significant deviations in learner achievement.
- **Engagement**
 - provider ensures quality and accessible information, advice and guidance is available to current and potential learners
 - provider makes an attempt to understand the needs of their stakeholders in order to maximise the benefit provided
 - provider regularly assesses performance against stakeholder requirements, using the findings in a valuable manner
 - provider engages with the market, forging relationship with key partners that will support development and delivery of provision.
- **Resourcing**
 - provider uses a robust workforce planning model to ensure current and future resource requirements, for staff involved in training and development, can be met
 - provider is effective in recruiting, and selecting the right quality of staff
 - provider continually and effectively develops staff involved in training delivery, regularly reviewing and confirming their competence
 - roles, responsibilities, authorities and accountabilities of the delivery, evaluation and verification teams are clearly defined, allocated and understood by those involved.

- **Training Development & Delivery**
 - provider ensures the sufficiency, adequacy and accessibility of facilities and equipment required for, and in support of, training delivery
 - provider promotes equality and diversity in learning
 - provider uses the expertise within the business to plan, develop and deliver programmes which meet learner needs
 - provider uses varied and suitable delivery methodologies when developing and delivering provision
 - provider ensures programmes developed and delivered align with own and relevant third party business objectives
 - assessments, and supporting processes, promote effective learning and align with programme aims and objectives where necessary.
- **Internal Systems**
 - provider uses appropriate, secure and auditable systems for the storage and retrieval of records relating to the administration, management and audit of learning programmes
 - provider ensures relevant information and supporting documentation relating to a programme is managed, developed and distributed in an effective manner.
- **Monitoring & Continuous Improvement**
 - programmes and services offered by the provider meet the needs of relevant stakeholders. Stakeholders include the learner, employer and other relevant organisations or bodies (e.g. placement holders)
 - provider uses appropriate performance management processes and communicates the outcomes to relevant parties. Measures include, although are not limited to, achievement, retention and satisfaction rates, link to relevant demographic etc
 - provider regularly monitors and reports on performance against internal strategic objectives
 - provider follows a clearly defined verification process for assuring the on-going quality of programmes and those delivering them
 - provider is responsive to internal and external drivers and is able to manage any changes, updates or continuous improvements in a flexible and effective way
 - provider sustains continuous improvement through self-evaluation and reviews activities with those involved in the process.

A4.1.3 The training programme submission is to be reviewed by the Standards Setting Body against the specification for the scope of work.

A4.1.4 If the review is unsatisfactory then the issues raised are to be addressed and arrangements made to re-submit the training programme see Figure 1.

A4.1.5 Following initial recognition, the training provider is subject to an on-site audit to ensure the programme is being delivered in accordance with the recognised material.

- A4.1.6 Subject to satisfactory audit, the training programme receives full recognition and is posted on-line at an appropriate location with the appropriate guidance notes.
- A4.1.7 If the audit is unsatisfactory then the issues raised are to be addressed and arrangements made to re-audit the training centre see Figure 1.
- A4.1.8 On-going recognition of training programmes are to be maintained through a regular audit of the training provider.
- A4.1.9 Training developer/providers can run their recognised training programmes at more than one training centre subject to verification and audit requirements. The training programmes are to be submitted to the Standards Setting Body for initial recognition as A4.1.1 to A4.1.7 with on-site audits taking place at the designated centres through a sampling process.
- A4.1.10 Subject to agreement with the Standards Setting Body, training developer/providers who run their training programmes though more than one centre are responsible to ensure that training delivery in all the training establishments is consistent and meets the specification.
- A4.2 **RECOGNITION OF TRAINING PROVIDORS FOR PERSONS WORKING OUTSIDE THE SCOPE OF GS(I&U)R**
- A4.2.1 Training providers training those persons working outside the scope of GS(I&U)R wishing to be recognised by the Standards Setting Body need to follow the process outlined above in A4.1.2 to A4.1.8. The training provider gains recognition through validation of a sample of training programmes rather than each individual training programme (see Figure 3).
- A4.3 **AGREEMENT FOR ORGANISATIONS TO RECOGNISE TRAINING PROVIDERS ON BEHALF OF THE STANDARDS SETTING BODY**
- A4.3.1 To enable additional organisations to recognise training providers, who offer training to those persons working outside the scope of GS(I&U)R an agreement with the Standard Setting Body is required. This is based upon the process outlined A4.1.2 to A4.1.8.

APPENDIX 5 : SUGGESTED COURSE CONTENT FOR NEW ENTRANT TRAINING PROGRAMMES

This appendix provides the structure for the current and relevant National Occupational Standards and knowledge units for gas industry, metering, emergency, domestic and non-domestic installation and maintenance sub sectors. These occupational standards and knowledge units, which include core gas safety are to form the foundation for the individual specifications determined by the Standards Setting Body for the industry recognised training courses required for new entrants into gas industry (see Figure 1).

Each of the NOS listed contains the skills, knowledge and understanding requirements for each activity, and may be accessed via the National NOS database via the link: www.ukstandards.org.uk

The core Gas Knowledge requirements are available from EU Skills

- Install Domestic Gas Cookers, Tumble Dryers and Leisure Appliances
- Maintain Domestic Gas Cookers, Tumble Dryers and Leisure Appliances
- Install Gas Water Heating and Wet Central Heating Appliances
- Maintain Gas Water Heating and Wet Central Heating Appliances
- Install Gas Pipework up to 35mm BS6891
- Gas Tightness Testing and Direct Purging- IGE/UP/1B
- Install Domestic Gas Space Heating Appliances
- Maintain Domestic Gas Space Heating Appliances
- Electrical Fault Finding on Domestic Gas Appliances
- Install Gas Warm Air Central Heating Systems and Appliances
- Maintain Gas Warm Air Central Heating Systems and Appliances
- Install Gas Meters and Regulators 2.5 to 16.0 m³/hr
- Install Gas Meters and Regulators 2.5 to 1076 m³/hr
- Install Gas Meters and Regulators above 1076 m³/hr
- Dealing with Reported Gas Upstream Emergencies
- Dealing with Reported Gas Downstream Emergencies
- Strength Testing, Gas Tightness Testing and Direct Purging- IGE/UP/1A
- Understanding Health and Safety in Gas Utilisation
- Understanding Scientific Principles in Gas Utilisation
- Understanding Combustion and Properties of Gas
- Understanding Buildings, Services and Structures
- Understanding Gas Safety.

Additional core requirements for LPG and non-domestic gas systems are to be delivered as required by the Standards Setting Body.

APPENDIX 6 : SUGGESTED COURSE CONTENT FOR A TRAINING PROGRAMME FOR PERSONS, CURRENTLY OR PREVIOUSLY REGISTERED AS A 'CLASS OF PERSONS' (OR HAVE A RELEVANT GAS QUALIFICATION) OR THOSE PERSONS WORKING OUTSIDE THE SCOPE OF GS(I&U)R

This appendix provides the guidance, for the production of the training specifications for use by training providers (see Figure 2 and 3).

Not all aspects of each of the following elements need to be covered in equal depth and it is recognised that not all the elements are applicable to the scope of work being carried out by the gas engineer.

A6.1 Safety legislation and basic safety

Health and Safety at Work Act etc and as appropriate that listed by Gas Safe Register on their Legislative, Normative and Information document list

Accident prevention and risk control

Ladders, steps and lightweight stagings

Manual handling

Asbestos

Protection of eyes

Fire precautions to prevent fire

Gas escape procedures

Action to be taken in the event of fire

Safety and information signs

Hazards from electricity

Electric shock cause and treatment

Methods of artificial resuscitation

Safety clothing and personal protection

Other services such as water and electricity

A6.2 Combustion and its control

Properties of gas

Combustion

Flames

Burners

Measurement of gas

Gas controls

Fault diagnosis

Safety devices

A6.3 Flues and ventilation

Glossary of terms

Regulations and codes of practice

The need for and operating principles of a flue and factors affecting its performance

Flue sizing

Materials and construction

Individual open flue natural draught systems

- Individual open flue fanned draught systems
- Individual room sealed systems
- Shared room sealed natural draught systems (Se-ducts and U-ducts)
- Shared open flue fanned draught systems
- Testing and Commissioning
- Shared open flue natural draught systems
- Flue efficiency
- Fire precautions
- Air supply requirements

A6.4 **Pressure and Flow**

- Pressure
- Measurement of pressure
- Gas pressure
- Control of pressure
- Testing for soundness
- Purging procedures

A6.5 **Domestic pipework installation**

- Glossary of terms
- Building construction
- Building regulations
- Gas services into buildings
- Jointing of pipes
- Internal installation
- Gas installations in timber frame housing
- Meters
- Governors and filters
- Testing and commissioning

A6.6 **Electricity and its control**

- Codes of practice
- Basic electrical theory
- Electrical hazards
- Safe working practice
- Use of multi-range meters
- Electrical control devices (switches and thermostats)
- Electrical protection
- Bonding and earthing
- Relays and contactors
- Solenoid valves
- Pumps
- Clock controllers and programmers
- Transformers
- Rectifiers
- Capacitors
- Circuits and diagrams

- Electrical power supply circuits
- Motorised valves
- Ignition systems
- Thermocouple
- Fans
- Practical electrical control systems
- Manufacturers' controls

A6.7 Control system

- Primary control systems
- Secondary controls
- Fault diagnosis

A6.8 Design, heat loss and comfort conditions

- Comfort conditions
- Heat transfer
- Calculation of heat losses
- Sizing the system

A6.9 Domestic central heating wet systems

- Heating categories
- Circulating systems
- Boilers
- Heat emitters
- Cylinders
- Pumps
- Feed and expansion cistern
- Unvented hot water systems
- Testing, commissioning and servicing
- Fault diagnosis

A6.10 Domestic central heating dry systems and warm air heating

- General principals
- Warm air heaters
- Duct systems
- Distribution of warm air
- Controls
- Testing, commissioning and servicing
- Fault diagnosis

A6.11 Domestic cookers

- Glossary of terms
- Design and construction
- Installing gas cookers
- Testing, commissioning and servicing
- Fault diagnosis

A6.12 Domestic space heaters

Glossary of terms
Appliance sizing
Types of gas space heaters
Radiant gas fires
Radiant convector fires
Convector heaters

A6.13 Domestic hot water heaters

Glossary of terms
Types of gas water heaters
Testing, commissioning and servicing
Instantaneous appliances
Storage appliances

A6.14 Fault diagnosis, service and maintenance

Six basic steps to fault finding
Algorithms
Functional flow wiring diagram (schematics)
Sub-division techniques
Symptom - fault charts
Functional identified maintenance systems (FIMS)
Manufacturers' instructions

A6.15 Liquefied petroleum gas

External

Safety and relevant legislation
Vapour pressure and temperature relationship
Flow and combustion
Fire precautions and procedures
Bulk vessel and cylinder safety requirements
Bulk vessel safe siting
System design and pressure control
Pipework including metal and polyethylene
Pressure and leak testing
Commissioning and decommissioning

Internal

Safety and relevant legislation
Vapour pressure and temperature relationship
Flow and combustion and its control pipework
Appliances
Comparison with natural gas
Flues and ventilation
Fault diagnosis

A6.16 Industrial and commercial

Industrial health and safety legislation
Large pipework installations
Purging and testing procedures
Non-domestic gas meters installations
Industrial processes and plant
Industrial gas burner systems and controls
Flame protection systems
Commercial catering
Incineration
Steam-raising boilers
Overhead heating
Air conditioning
Large scale heating and hot water systems



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