



Domestic Natural Gas training specification

Utilisation sector



***IGEM/IG/1 Edition 2 Supplement 2
Communication 1846***

Domestic Natural Gas training specification



Price Code: C3S
© The Institution of Gas Engineers and Managers
IGEM House
26-28 High Street
Kegworth
Derbyshire, DE74 2DA
Tel: 01509 678150
Email: technical@igem.org

Copyright © 2022, IGEM. All rights reserved
Registered charity number 214011

All content in this publication is, unless stated otherwise, the property of IGEM. Copyright laws protect this publication. Reproduction or retransmission in whole or in part, in any manner, without the prior written consent of the copyright holder, is a violation of copyright law.

ISBN 978 1 8384490 2 5

Published by the Institution of Gas Engineers and Managers

For information on other IGEM Standards please visit our website, www.igem.org.uk

CONTENTS

SECTION		PAGE
1	Introduction	1
2	Scope	2
3	Training and evaluation	3
APPENDIX		
1	Off-site training (core competencies)	5
2	Off-site training (appliances)	14
3	On-site requirements	17
4	Equipment list	27
5	Further guidance	31
6	References, glossary, acronyms and abbreviations	32
TABLE		
1	Minimum guided learning hours for domestic core competencies	5
2	Minimum guided learning hours for appliances	14
3	Assessment codes	17

SECTION 1: INTRODUCTION

1.1 This Specification supersedes the Specification entitled Domestic Natural Gas Training Specification previously issued by Energy and Utility Skills (E&US).

1.2 This domestic Natural Gas training Specification relates to **new entrants** into the gas industry wishing to join the 'class of persons'. These new entrants are required to undertake **an industry recognised** training programme before being able to take an assessment to include the relevant matters of gas safety criteria to become Gas Safe registered.

Note: These include the following recognised routes to registration, which are:

- *The National Accredited Certification Scheme for individual gas fitting operatives (ACS)*
- *Framework qualifications*
- *Apprenticeship Standards.*

1.3 This Specification has been facilitated by IGEM and E&US and has been approved by IGEM's Gas Utilisation Committee, Gas Measurement Committee and IGEM's Technical Coordinating Committee and published by the authority of the Council of IGEM.. The Specification has also been approved by the Standards Consultation Forum (SCF) and the Strategic Management Board (SMB).

This Specification is a supplement to the IGEM/IG/1 Standards of training in gas work document and recognised as required in Approved Code of Practice (ACoP) L56.

1.4 The relevant parts of this Specification are also applicable to persons wishing to extend range or scope (as defined in Guidance Note 8 (GN8)).

1.5 This Standard makes use of the terms "shall" and "should" when prescribing requirements:

- the term "shall" prescribes a requirement which, it is intended will be complied with in full and without deviation
- the term "should" prescribes a requirement which, it is intended will be complied with unless, after prior consideration deviation is considered to be acceptable.

1.6 Requests for interpretation of this Standard in relation to matters within their scope, but not precisely covered by the current text, are to be either:

- addressed to Technical Services, IGEM, IGEM House, 26 & 28 High Street, Kegworth, Derbyshire, DE74 2DA; or
- emailed to technical@igem.org.uk.

These will be submitted to the relevant Committee for consideration and advice.

1.7 This Specification was published in February 2022.

SECTION 2: SCOPE

- 2.1 This training Specification covers training for:
- new entrants to the gas industry wishing to work in the domestic Natural Gas (NG) utilisation sector within the scope of the Gas Safety (Installation & Use) Regulations (GS(I&UR)).
 - those persons currently or previously registered seeking re-certification (optional)
 - those persons wishing to extend their range (including blends of up to 100% hydrogen) or scope (refer to GN8 for onsite experience requirements).
- 2.2 This Specification is designed to cover the breadth of the industry, including the legal requirements, knowledge and understanding, performance criteria and 'on the job' work experience that will be undertaken in a work placement supervised by a mentor, related to domestic gas installations and appliances.
- 2.3 The requirements include the minimum time spent on each subject along with the specific activities that are required to be undertaken. The minimum overall programme duration is six months and the maximum time spent to complete the programme is expected to be two years.
- Note: There may be exceptions where programmes have been designed for longer than two years.*
- 2.4 Italicised text is informative and does not represent formal requirements.
- 2.5 Appendices are informative and do not represent formal requirements unless specifically referenced in the main sections via the prescriptive terms "should", or "shall".

SECTION 3: TRAINING AND EVALUATION

'Off-site' training is that which the new entrant is trained in a classroom environment for theory input and practical workshop areas (which simulate the on-site environment) for demonstration and skills practice. The balance between theory and practical work will be dependent on the content of the subject.

'On-site' training and experience is to be gained from work undertaken under the direct supervision of a mentor. 'On-site training is to cover the scope and range of the technical specification. Records of the work carried out, the methods undertaken and any other relevant information is to be retained to build a portfolio of evidence to be verified by the training provider.

3.1 Arrangements shall be in place to ensure that the new entrant and the mentor know what is expected of them.

3.2 The marking scheme for the evaluation shall be open and transparent to the new entrant and the trainer.

3.3 Arrangements shall be in place for moderation and an independent review.

3.4 TRAINING

3.4.1 Minimum Off-site duration

The minimum guided learning hours for the core competencies shall be 266 hours. For the purpose of minimum guided learning hours, for consecutive learning days:

- each day shall be no longer than 7.5 hours
- each week shall be no longer 37.5 hours
- in the instance of day release, each day shall be no longer than a maximum a maximum of 10 hours.

The subjects covered in the core unit are detailed in Table 1 Appendix 1 and the training is to cover both the theoretical and practical aspects of the work.

The minimum guided learning hours for appliances shall be as per Table 2 in Appendix 2 and the subjects covered in appliance training shall be as detailed in Appendix 2.

Note: Where a candidate provides verifiable evidence of prior learning (matching the requirements in Appendix 1 and Appendix 2), then a reduction in learning hours may be applied. The prior learning is to be cross referenced to the qualification held and the learning hours reduced accordingly. The candidate is to undertake a 'documented technical review' to confirm their current knowledge level prior to any reduction being applied. Results of the technical review are to be retained in the candidate's file along with details of the subjects not covered within the programme due to the prior learning. Any reduction in learning hours is to be agreed with the Recogniser of Training.

3.4.2 Minimum on-site tasks and duration

The portfolio of on-site experience shall provide evidence representative of a minimum of 18 weeks (based on 37.5 hours per week) industry experience and be relevant to the elements in the training/technical specification Appendix 1, 2 or 3, as appropriate.

Evidence recorded shall meet the requirements of Appendix 3 and is to be:

- work completed by the learner unassisted
- observed and endorsed by the mentor
- cross referenced to an evidence matrix to indicate where within the portfolio specific activities have been successfully completed on the required number of occasions.

Evidence of the work carried out by the new entrant shall include the following information:

- Site address
- Postcode
- Date of work
- Description of work and sufficient supplementary evidence to allow the work to be verified.

The new entrants should also document the time spent supporting the mentor or witnessing the mentor undertaking work relevant to the training/technical specification. This may include any activities relevant to Appendix 1, 2 or 3.

Note: It is accepted that not all of the time spent by the new entrant gaining experience will be directly related to 'gas work' but will assist the new entrant in gaining 'whole job' competencies.

3.5 **EVALUATION OF LEARNING**

3.5.1 The training provider shall undertake an evaluation of the learning.

3.5.2 The evaluation of the learning at the training centre shall be a mixture of verbal, written and practical tests that need to be conducted during and/or at the end of the training.

3.5.3 The evaluation shall confirm that new entrants have a full understanding of all matters of gas safety (relating to the competency being undertaken) prior to a certificate being issued.

3.5.4 The evaluation shall include a review of the portfolio evidence that the new entrant has submitted to establish that they have undertaken the required tasks (under direct supervision).

3.6 **CERTIFICATE**

A certificate shall be presented to each successful new entrant. Detailing, as a minimum:

- name of the new entrant
- name of the training provider, and their unique Gas Safe Register Training Centre Code
- National Insurance number (or unique identification number)
- title of the training programme, listing the range and scope undertaken
- date the certificate was awarded
- name of the organisation issuing the certificate.

APPENDIX 1: OFF-SITE TRAINING (CORE COMPETENCIES)

Domestic Utilisation (Subjects)

The minimum guided learning hours assigned to each subject are detailed below:

DOMESTIC CORE COMPETENCIES	MINIMUM GUIDED LEARNING HOURS
Safety, Legislation and Standards	14
Gas Emergency Actions and Procedures	14
Products and Characteristics of Combustion	28
Ventilation for Domestic Gas Burning Appliances	21
Installation of Pipework and Fittings	35
Tightness Testing and Purging	21
Checking and/or Setting Meter Regulators	14
Unsafe Situations, Emergency Notices and Warning Labels	21
Operation and Positioning of Emergency Isolation Controls and Valves	7
Checking and Setting Appliance Operating Pressures and Heat Inputs	14
Operation and Checking of Appliance Gas Safety Devices and Controls	21
Chimney and Flues	14
Chimney Installation, Inspection and Testing	21
Re-establish Existing Gas Supply and Re-light Appliances	14
Basic Electrical Safety	7
Total:	266

TABLE 1 - MINIMUM GUIDED LEARNING HOURS FOR DOMESTIC CORE COMPETENCIES

A1.1 SAFETY, LEGISLATION AND STANDARDS

A1.1.1 Performance Criteria

In relation to electrical supplies, tools and components you will need to be able to:

P1 Visually inspect electrical power tools for safe condition before use.

A1.1.2 Knowledge and Understanding

In relation to working on downstream domestic gas installations you will need to know and understand:

K1 Application of the GS(I&U)R

K2 Building Regulations or their equivalents in the devolved administrations including but not limited to:

- Gas supplies and appliances in high risk buildings
- Notifications.

K3 Safety precautions when other hazardous materials (COSHH) are encountered whilst working in the downstream gas industry.

K4 Your responsibilities regarding health, safety and the environment

This should include an adequate knowledge of:

- relevant associated services such as water and electricity
- the potential for exposure to asbestos
- the dangers these may give rise to
- the precautions to take.

K5 Equipotential bonding

K6 Use of personal protective equipment

K7 Information available to Gas Safe registered operatives:

- Legislative Normative and Informative Document List
- Industry Standard Updates
- Safety Alerts
- Technical Bulletins.

K8 Also have an awareness of the following information available on the Health and Safety Executive (HSE) website:

- Health and Safety at Work etc. Act (HSWA)
- Manual Handling Operations Regulations
- Work at Height Regulations
- Risk assessment-controlling the risks in the workplace
- First aid awareness at work : Safety information and signs
- Fire precautions and actions to be taken in the event of a fire
- Fire safety in construction (HSG168)
- The Provision and Use of Work Equipment Regulations (PUWER).

A1.2 **GAS EMERGENCY ACTIONS AND PROCEDURES**

A1.2.1 **Knowledge and Understanding**

In relation to emergency actions, you will need to know and understand:

- K1 Legislation & Standards applicable to this subject area
- K2 Priorities and actions when dealing with gas escapes and incidents
- K3 The advice to be given to customers/general public (to include where to find the emergency telephone number and how to isolate in the event of a gas escape)
- K4 The role of the gas emergency service provider
- K5 Properties of Natural Gas.

A1.3 **PRODUCTS AND CHARACTERISTICS OF COMBUSTION**

A1.3.1 **Performance Criteria**

In relation to complete and incomplete combustion, you will need to be able to:

- P1 Identify correct flame pictures
- P2 Identify signs of incomplete combustion within and in the locality of an appliance installation

In relation to combustion performance analysis, you will need to be able to:

- P3 Undertake combustion performance analysis on a range of appliances.

A1.3.2 **Knowledge and Understanding**

In relation to complete and incomplete combustion, you will need to know and understand:

- K1 Legislation & Standards applicable to this subject area (including IGEM/G/11 Supplement 1)
- K2 Characteristics and combustion of gases
- K3 Combustion equations for complete and incomplete combustion
- K4 Air requirements for complete combustion
- K5 Causes of incomplete combustion.

In relation to carbon monoxide (CO) detectors and indicators, you will need to know and understand:

- K6 CO poisoning and detection
- K7 The different types of CO detectors and their installation requirements
- K8 Symptoms of CO poisoning
- K9 Sources of CO
- K10 Migration of CO.

In relation to combustion performance analysis, you will need to know and understand:

- K11 Actions to take when a satisfactory combustion performance analysis reading cannot be obtained

In relation to combustion and its controls, you will need to know and understand:

- K12 Effects of CO and carbon dioxide (CO₂) in the atmosphere
- K13 Flame characteristics
- K14 Burner types
- K15 Fault diagnosis.

A1.4 **VENTILATION FOR DOMESTIC GAS BURNING APPLIANCES**

A1.4.1 **Performance Criteria**

In relation to providing ventilation for domestic gas burning appliances, you will need to be able to:

- P1 Measure the free area of a range of different types of air vents and grilles
- P2 Identify correct ventilation provision.

A1.4.2 **Knowledge and Understanding**

In relation to providing ventilation for domestic gas burning appliances, you will need to know and understand:

- K1 Legislation & Standards applicable to this subject area
- K2 Factors affecting ventilation
- K3 Design, materials and types of ventilation provision
- K4 Calculating ventilation requirements
- K5 Ventilation labels and notices
- K6 Air supply requirements for cooling and combustion
- K7 Mechanical ventilation and extraction
- K8 Free area and position
- K9 Route
- K10 Maintenance.

A1.5 **INSTALLATION OF PIPEWORK AND FITTINGS**

A1.5.1 **Performance Criteria**

In relation to the installation of domestic pipework and fittings, you will need to be able to:

- P1 Join pipework (as appropriate to the types included in the list below) using soldered, threaded, washer, union and mechanical fittings;
 - a. Copper
 - b. Steel
 - c. Corrugated Stainless Steel Tubing (CSST).
- P2 Form copper pipework
- P3 De-commission metered gas installations, tee into existing copper pipework and re-commission installation on completion
- P4 Demonstrate correct use of a temporary continuity bond.

A1.5.2 **Knowledge and Understanding**

In relation to the installation of domestic pipework and fittings, you will need to know and understand:

- K1 Legislation & Standards applicable to this subject area
- K2 Pipework design, installation and maintenance
- K3 Copper, mild steel, CSST, medium density polyethylene pipe and fittings Standards, suitability and use
- K4 Jointing and cleaning agents for jointing copper and threaded pipework fittings
- K5 Restrictions on use of mechanical fittings
- K6 Requirements for supporting and clipping gas installation pipework
- K7 Pipework protection, fire stopping, sleeving and sheathing requirements

- K8 Pipe sizing
- K9 Connecting to Medium Pressure (MP) fed gas supplies
- K10 Installations in timber framed buildings
- K11 Hot working and when to use alternative methods
- K12 The effects of flux on pipework
- K13 Pipework in ducts.

A1.6 **TIGHTNESS TESTING AND PURGING**

A1.6.1 **Performance Criteria**

In relation to testing and purging domestic NG installations, you will need to be able to:

- P1 Test domestic low pressure (LP) gas installations for tightness using air
- P2 Test domestic LP gas installations for tightness using gas
- P3 Purge domestic LP gas installations
- P4 Trace and repair a gas escape
- P5 Test existing domestic NG installations for tightness with an MP fed gas supply without a meter inlet valve
- P6 Test existing domestic NG installations for tightness with an MP fed gas supply with a meter inlet valve.

A1.6.2 **Knowledge and Understanding**

In relation to testing and purging domestic NG installations, you will need to know and understand:

- K1 Legislation & Standards applicable to this subject area
- K2 Types of pressure gauge and perceptible movement
- K3 Application of permissible pressure loss
- K4 Electronic token meter tamper devices
- K5 Dealing with let by
- K6 Actions to take when a smell of gas persists after a satisfactory test or after the Emergency Control Valve (ECV) has been turned off
- K7 Calculating installation and purge volumes
- K8 Testing before working on an installation.

A1.7 **CHECKING AND/OR SETTING METER REGULATORS**

A1.7.1 **Performance Criteria**

In relation to checking domestic meter regulators on NG installations, you will need to be able to:

- P1 Measure and record the standing pressure at the outlet of the meter
- P2 Measure and record the meter outlet working pressure
- P3 Determine if the meter outlet working pressure is correct or incorrect
- P4 State the actions to take if the working pressure at the outlet of the meter is incorrect.

A1.7.2 Knowledge and Understanding

In relation to checking domestic meter regulators on NG installations, you will need to know and understand:

- K1 Legislation & Standards applicable to this subject area
- K2 The effects of low and high flow rates on a meter regulator
- K3 The effects of pressure absorption across primary meter installation
- K4 The operation of a gas meter regulator
- K5 Identification of an MP meter/regulator installation
- K6 Meter types and design
- K7 Meter box and enclosures
- K8 Safety notices and labels
- K9 The different pressure tiers
- K10 Suitable meter locations
- K11 Meter installations.

A1.8 UNSAFE SITUATIONS, EMERGENCY NOTICES AND WARNING LABELS

A1.8.1 Performance Criteria

In relation to unsafe situations, emergency notices and warning labels, you will need to be able to:

- P1 Identify and classify different categories of unsafe situations
- P2 Demonstrate the procedure to follow for each classification of unsafe situation
- P3 Complete, explain and issue appropriate warning labels and notices
- P4 Identify signs of spillage / leaking products of combustion.

A1.8.2 Knowledge and Understanding

In relation to unsafe situations, emergency notices and warning labels, you will need to know and understand:

- K1 Legislation & Standards applicable to this subject area
- K2 Gas Industry Unsafe Situation Procedure (GIUSP) (IGEM/G/11)
- K3 Situations reportable under Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR)
- K4 Situations reportable to Gas Safe Register and/or HSE which are not RIDDOR reportable
- K5 Correct use of notices and labels
- K6 In relation to re-establishing an existing domestic gas supply and re-lighting the appliances, you will need to know and understand:
 - a. Actions to take when an un-commissioned appliance is identified.
 - b. Actions to take if pipework and appliance(s) are not tested (commissioned) when the gas supply is re-established.

A1.9 OPERATION AND POSITIONING OF EMERGENCY CONTROLS AND VALVES

A1.9.1 Performance Criteria

In relation to the operation and positioning of ECVs, you will need to be able to:

- P1 Identify correctly positioned ECVs
- P1 Identify the correct labels to attached ECVs.

A1.9.2 Knowledge and Understanding

In relation to the operation and positioning of ECVs, you will need to know and understand:

- K1 Legislation & Standards applicable to this subject area
- K2 Inside and outside meter positions
- K3 Multi-occupancy building installations
- K4 Additional ECVs
- K5 Services into buildings
- K6 How to deal with incorrectly positioned ECVs.

A1.10 CHECKING AND SETTING APPLIANCE OPERATING PRESSURES AND HEAT INPUTS

A1.10.1 Performance Criteria

In relation to checking and setting appliance operating pressures and heat inputs, you will need to be able to:

- P1 Measure an appliance operating pressure.
- P2 Measure an appliance heat input.

A1.10.2 Knowledge and Understanding

In relation to checking and setting appliance operating pressures and gas rates, you will need to know and understand:

- K1 Legislation & Standards applicable to this subject area
- K2 Requirements for range rated appliances
- K3 Requirements for variable-rated appliances
- K4 Causes and effects of pressure loss
- K5 Use of types and range of pressure gauges
- K6 Measuring heat inputs where a smart meter is fitted.

A1.11 OPERATION AND CHECKING OF APPLIANCE GAS SAFETY DEVICES AND CONTROLS

A1.11.1 Performance Criteria

In relation to gas safety devices and controls you will need to be able to:

- P1 Identify gas safety devices and controls
- P2 Check gas safety devices and controls for correct operation and carry out any corrective action where necessary
- P3 Explain the operation of gas safety devices and controls.

A1.11.2 Knowledge and Understanding

In relation to gas safety devices and controls you will need to know and understand:

- K1 Legislation & Standards applicable to this subject area
- K2 The principles of operation of gas safety devices and controls
- K3 The sequence of operation of gas safety devices and controls
- K4 Information required for spare part identification.

A1.12 CHIMNEYS AND FLUES

A1.12.1 Knowledge and Understanding

In relation to chimneys you will need to know the operating principles of chimney systems and factors affecting their performance, including the requirements for installing gas appliances to the following chimney systems:

- K1 Legislation & Standards applicable to this subject area
- K2 Existing solid fuel chimney
- K3 Pre-cast chimneys
- K4 Individual natural draft open flue chimneys
- K5 Fanned draft open flue chimneys
- K6 Shared open flue chimneys
- K7 Room sealed natural draft chimneys
- K8 Room sealed fanned draft chimneys
- K9 Balanced compartments for open flue appliances
- K10 Communal flue systems (CFS)
- K11 Chimneys systems for condensing appliances
- K12 Vertex flue systems

For all of the chimney systems above, it includes, where appropriate:

- K13 Chimney sizing and design
- K14 Materials, construction and route
- K15 Securing and supporting
- K16 Termination & terminal guards
- K17 Plume management
- K18 Fire precautions
- K19 Safety devices (interlocks).

A1.13 CHIMNEY INSTALLATION, INSPECTION AND TESTING

A1.13.1 Performance Criteria

In relation to chimney testing you will need to be able to:

- P1 Visually inspect chimney systems to confirm correct and incorrect installation (including securing and supporting where appropriate).
- P2 Perform a flue flow test on an open flue system
- P3 Perform a spillage test on an appliance connected to an open flue system
- P4 Perform a combustion case seal test on a room sealed fan assisted positive pressure appliance
- P5 Inspect a concealed fan assisted chimney installation.

A1.13.2 Knowledge and Understanding:

In relation to chimney installation inspection and testing you will need to know and understand:

- K1 Legislation & Standards applicable to this subject area
- K2 Causes of leakage of combustion products from room sealed positive combustion chamber pressure appliances
- K3 Installation and testing appliances when Manufacturer's Instructions (MIs) are not available
- K4 Actions to take when inspection hatches are not available for flues in voids
- K5 Chimney information requirements
- K6 Chimneys/Flues in voids, testing, commissioning and maintenance
- K7 The requirement to inspect chimneys throughout their length (including in lofts)
- K8 Responsibilities for checking shared flues.

A1.14 RE-ESTABLISH EXISTING GAS SUPPLY AND RE-LIGHT APPLIANCES

A1.14.1 Performance Criteria

In relation to re-establishing an existing domestic gas supply and re-lighting the appliances, you will need to be able to:

- P1 Check the installation is gas tight
- P2 Purge the installation and appliances of air
- P3 Establish a stable flame on each appliance
- P4 Visually inspect each appliance and identify any unsafe situations
- P5 Confirm satisfactory operation of user controls.

A1.15 BASIC ELECTRICAL SAFETY

A1.15.1 Performance Criteria

In relation to electrical testing you will need to be able to:

- P1 Carry out the safe to touch procedure
- P2 Carry out safe electrical isolation.

A1.15.2 Knowledge and Understanding

In relation to electrical testing you will need to know and understand:

- K1 The Electricity at Work Regulations
- K2 Basic electrical principles:
 - Voltage
 - Current
 - Resistance
 - Ohm's law.
- K3 The safe to touch procedure
- K4 Safe electrical isolation
- K5 The risks associated with 'dual supplies' and pump overruns.

APPENDIX 2 - OFF SITE TRAINING (APPLIANCES)

The minimum guided learning hours assigned to each subject are detailed below:

APPLIANCE COMPETENCIES (At least one appliance to be selected)	MINIMUM GUIDED LEARNING HOURS
Central Heating Boilers, Systems and Controls	35
Ducted Air Heaters	7
Water Heaters (Mandatory for candidates undertaking Central Heating Boilers)	7
Fires and Wall Heaters	7
Cookers	7
Laundry Appliances	7
LP Domestic Gas Meters and Regulators	7
<i>Note: Training on appliances cannot be delivered unless an appliance is available for installation, commissioning and servicing.</i>	

TABLE 2 – MINIMUM GUIDED LEARNING HOURS FOR APPLIANCES

A2.1 DOMESTIC APPLIANCES GENERIC REQUIREMENTS

A2.1.1 Performance Criteria

In relation to domestic gas appliances, for each appliance you will need to be able to:

- P1 Install the appliance to a prepared point and to MIs
- P2 Commission the appliance to MIs
- P3 Service the appliance to MIs
- P4 Confirm correct operation of safety devices and controls
- P5 Undertake combustion performance analysis (where applicable)
- P6 Where applicable, check the air/gas ratio valve is set correctly at high and low limits in accordance with MIs and adjust if permitted.

A2.1.2 Knowledge and Understanding

In relation to domestic gas appliances, for each appliance you will need to know and understand:

- K1 The differences (if any) between the variation of appliances
- K2 How to identify and diagnose gas safety faults
- K3 Suitable and unsuitable room/space locations
- K4 Clearances– proximity of combustible materials – fire proofing of compartments
- K5 Operation of gas safety control devices
- K6 Condensate removal and disposal (where applicable)
- K7 When to carry out combustion performance analysis
- K8 Chimney requirements for the appliance
- K9 Ventilation, cooling and combustion requirements for the appliance
- K10 The principle of adjustment of air/gas ratio valves, where applicable

- K11 The information included on the appliance data badge
- K12 Legislations and Standards applicable to appliance types.

A2.2 **CENTRAL HEATING BOILERS, SYSTEMS AND CONTROLS**

In addition to the appliance generic requirements

A2.2.1 **Performance Criteria**

In relation to central heating controls, you will need to be able to:

- P1 Measure and interpret resistance readings to ensure that it is safe to establish/re-establish the electrical supply
- P2 Measure and interpret voltage readings to ensure safe electrical operation
- P3 Wire a complete central heating system including the following components:
 - Motorised valves
 - Room thermostats
 - Time and temperature controls
 - Pump over-run requirements (where appropriate).

Note 1: This may be carried out on a 'wiring board'.

Note 2: This does not give candidates the ability to install new wiring in a customer's property.

A2.2.2 **Knowledge and Understanding**

In relation to central heating system design, you will need to know and understand:

- K1 The component parts of an open vented system
- K2 Awareness of 'One pipe' systems
- K3 The component parts of a sealed system
- K4 System plans including 2 port and 3 port valves
- K5 Pump over-run requirements including safety precautions
- K6 Energy efficiency requirements relating to boiler installations
- K7 'Boiler Plus' requirements
- K8 Building regulation requirements (part L) in England or their equivalents in the devolved administrations) affecting boiler installations
- K9 Cylinder types e.g., direct, indirect, twin coil – possibly connected to solar thermal
- K10 Unvented hot water systems
 - Component part
 - Maintenance tasks (that can be carried out without certification).
- K11 System water cleansing, flushing and treatment including draining and refilling systems
- K12 Design, heat loss and comfort conditions including:
 - Comfort conditions (occupancy, desired usage patterns, room temperatures)
 - Calculation of heat losses
 - Heat transfer/ emitters
 - Sizing the system (including system pipework, any intermittent heating allowance, pump duty)
 - Thermostatic Radiator Valves (TRVs)
 - System bypass
 - Low temperature systems
 - Low carbon heating systems – interactions with gas boilers.

K13 Commissioning the system including:

- Hydronic Balancing
- Benchmark.

K14 Fault diagnosis relating to manufacturers flowchart.

A2.3 **DUCTED AIR HEATERS**

In addition to the generic appliance criteria

A2.3.1 **Knowledge and Understanding**

K1 Different types of Ducted air Heaters available

K2 Design, heat loss and comfort conditions including:

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

A2.4 **FIRES AND WALL HEATERS**

In addition to the generic appliance criteria

A2.4.1 **Performance Criteria**

P1 Install inset gas fire

P2 Install outset gas fire.

A2.5 **COOKERS**

In addition to the generic appliance criteria

A2.5.1 **Performance Criteria**

P1 Install a free-standing cooker

P2 Install a hob.

A2.5.2 **Knowledge and Understanding**

K1 Dealing with a cooker in a kitchen with a window into a conservatory.

A2.6 **LP DOMESTIC GAS METERS AND REGULATORS**

A2.6.1 **Performance Criteria**

In relation to domestic gas meters and regulators you will need to be able to:

P1 Install a domestic gas meter and regulator

P2 Commission a domestic meter installation incorporating a domestic low-pressure regulator.

A2.6.2 **Knowledge and Understanding**

In relation to domestic gas meters and regulators you will need to know and understand:

K1 Factors to consider when installing a domestic meter

K2 Legislation & Standards applying to LP domestic meters

K3 Safety notices and labels

K4 Identification of MP installations

K5 Types of meter housing suitable for meter installations

K6 Sealing meter regulators

K7 Terms and acronyms.

APPENDIX 3: ON-SITE REQUIREMENTS

This Appendix outlines the on-site requirements that are to be assessed through performance. Evidence is gathered through activities carried out by the New Entrant (under the observation of a mentor) for a customer at their premises (see Table 3).

COLOR CODE	DESCRIPTION	CODES FOR ASSESSMENT
Green	Directly observed	DOC – Directly observed simulated realistic activity in centre
Orange	Observation on-site with a mentor	<p>RAS – Reflective Account Site from site with supporting evidence. Suggest that this is the preferred option for Managed Learning Programme portfolios</p> <p>RAC – Reflective Account Centre from simulated centre with supporting evidence</p>

TABLE 3 – ASSESSMENT CODES

EXEMPLAR - INSTALL, SERVICE AND FAULT FIND DOMESTIC GAS COOKERS*, TUMBLE DRYERS* AND LEISURE APPLIANCES*				
*As appropriate to the competency being applied for				
New entrants are to be observed on the minimum amount of occasions identified below.				
The candidate has covered necessary training/mentoring required prior to the observation.				
Mentor signature	D. Trainer	Date	25.06.2033	
Candidate signature	A. Candidate	Date	25.06.2033	
Portfolio Evidence Requirements				
Total – 14 observations for installation, service and fault finding		<i>Install & Commission</i>	<i>Service</i>	<i>Fault Finding</i>
Assessment1	Directly Observed All three may be DO in centre	<i>DOC</i>	<i>DOC</i>	<i>DOC</i>
Observation2	Reflective Account Reflective Account All 3 accounts are to come from site	<i>RAS</i>	<i>RAS</i>	<i>RAS</i>
Observation3	Reflective Account Minimum of 2 accounts are to come from site 1 account may be simulated	<i>RAS</i>	<i>RAC</i>	<i>RAS</i>
Observation4	Reflective Account Minimum of 2 accounts are to come from site 1 account may be simulated	<i>RAS</i>	<i>RAC</i>	<i>RAS</i>
Observation5	Reflective Account Minimum of 1 account is to come from site 1 account may be simulated	<i>RAS</i>	<i>RAC</i>	
Observation to include				
<ul style="list-style-type: none"> • Installation of appliance • Full service of an appliance • Fault find on appliance • Completion of associated documentation. 				
Range:				
<ul style="list-style-type: none"> • Free Standing Cooker • Hob • Flexible Connection • Rigid Connection • Tumble dryer service and fault find only. 				

INSTALL, SERVICE AND FAULT FIND DOMESTIC GAS COOKERS, TUMBLE DRYERS AND LEISURE APPLIANCES AS APPROPRIATE TO THE COMPETENCY BEING APPLIED FOR				
New entrants are to be observed on the minimum amount of occasions identified below.				
<i>Note*: The observations are only to be simulated where it has not been possible for the observation to be obtained on-site.</i>				
The candidate has covered necessary training/mentoring required prior to the observation.				
Mentor signature		Date		
Candidate signature		Date		
Observation Requirements				
Total – 14 observations for installation, service and fault finding	Install & Commission	Service	Safety check / Fault Finding	
Assessment 1	Directly Observed All three may be DO in centre			
Observation 2	Reflective Account All 3 accounts are to come from site *			
Observation 3	Reflective Account Minimum of 2 accounts are to come from site 1 account may be simulated*			
Observation 4	Reflective Account Minimum of 2 accounts are to come from site 1 account may be simulated*			
Observation 5	Reflective Account Minimum of 1 account is to come from site 1 account may be simulated*			
Observation to include <ul style="list-style-type: none"> Installation of appliance Full service of an appliance Safety check/fault find on appliance Completion of associated documentation. 				
Range: <ul style="list-style-type: none"> Free Standing Cooker Hob Flexible Connection Rigid Connection Tumble dryer installation to be simulated. 				

INSTALL, SERVICE AND FAULT FIND GAS WATER HEATING AND WET CENTRAL HEATING APPLIANCES			
Candidates are to be observed on the minimum amount of occasions and range as identified below. <i>Note*: The observations are only to be simulated where it has not been possible for the observation to be obtained on-site.</i>			
The candidate has covered necessary training/mentoring required prior to the observation.			
Mentor signature		Date	
Candidate signature		Date	
Observation Requirements			
Total – 14 observations for installation, service and fault finding	Install & Commission	Service	Fault finding
Observation 1	Directly Observed All three may be DO in centre		
Observation 2	Reflective Account All 3 accounts are to come from site		
Observation 3	Reflective Account Minimum of 2 accounts are to come from site 1 account may be simulated*		
Observation 4	Reflective Account Minimum of 2 accounts are to come from site 1 account may be simulated*		
Observation 5	Reflective Account Minimum of 1 account is to come from site 1 account may be simulated*		
Observation to include <ul style="list-style-type: none"> • New or replacement appliance • Associated pipework connections • Associated flueing • Commission, handover and completion of relevant documentation. 			
Range – The types of appliances below are to be covered <ul style="list-style-type: none"> • Traditional Boiler (open flued and/or room sealed) ** • System Boiler • Combination Boiler **Service and maintenance only			

INSTALL, MAINTAIN AND REPAIR DOMESTIC GAS SPACE HEATING APPLIANCES				
Candidates are to be observed on the minimum amount of occasions and range as identified below.				
<i>Note*:</i> The observations are only to be simulated where it has not been possible for the observation to be obtained on-site.				
The candidate has covered necessary training/mentoring required prior to the observation				
Mentor signature			Date	
Candidate signature			Date	
Observation Requirements				
Total – 14 observations for installation, service and fault finding		Install & Commission	Service	Safety Check /Fault finding
Assessment 1	Directly Observed All three may be DO in centre			
Observation 2	Reflective Account All 3 accounts are to come from site			
Observation 3	Reflective Account Minimum of 2 accounts are to come from site 1 account may be simulated*			
Observation 4	Reflective Account Minimum of 2 accounts are to come from site 1 account may be simulated*			
Observation 5	Reflective Account Minimum of 1 account is to come from site 1 account may be simulated*			
Observation to include <ul style="list-style-type: none"> • New or replacement appliance • Associated pipework connections • Associated flueing • Commission, handover and completion of relevant documentation. 				
Range – at least two of the following <ul style="list-style-type: none"> • Outset Gas Fire • Inset Live Fuel Effect Gas Fire • Decorative Fuel Effect Appliance • Convector Heater • Flueless Gas Fire. 				

INSTALL, SERVICE AND FAULT FIND GAS DUCTED AIR HEATER SYSTEMS AND APPLIANCES				
Candidates are to be observed on the minimum amount of occasions and range as identified below.				
<i>Note*:</i> The observations are only to be simulated where it has not been possible for the observation to be obtained on-site.				
The candidate has covered necessary training/mentoring required prior to the observation.				
Mentor signature		Date		
Candidate signature		Date		
Observation Requirements				
Total – 11 observations for installation, service and fault finding of a gas fired ducted air heater		<i>Install & Commission</i>	<i>Service</i>	<i>Fault Finding</i>
Assessment 1	Directly Observed All three may be DO in centre			
Observation 2	All two may be DO in centre			
Observation 3	All two may be DO in centre			
Observation 4	Reflective Account Minimum of 1 account is to come from site 1 account may be simulated*			
Observation 5	Reflective Account Minimum of 1 account is to come from site 1 account may be simulated*			
Observation to include <ul style="list-style-type: none"> • New or replacement appliance • Associated pipework connections • Associated flueing • Commission, handover and completion of relevant documentation. 				
Range – Installation to include one of the below: <ul style="list-style-type: none"> • Ducted Air Heater <ul style="list-style-type: none"> • Open-Flued Natural Draught Appliance • Room Sealed Fanned Draught Appliance • Compartment Installation • Positive Return Air Duct. 				

INSTALLATION OF GAS PIPEWORK (≤ 35 mm)			
Candidates are to be observed on the minimum amount of occasions and range as identified below.			
The candidate has covered necessary training/mentoring required prior to the observation.			
Mentor signature		Date	
Candidate signature		Date	
Observation Requirements			
Total - 5 observations for installation gas pipework; these may be related directly to the installation requirements of an appliance			
Observation 1	Reflective Account From site		
Observation 2	Reflective Account From site		
Observation 3	Reflective Account From site		
Observation 4	Reflective Account from site		
Observation 5	Reflective Account from site		
Installation to include			
<ul style="list-style-type: none"> • New or replacement pipework • Associated pipework fixings and joints. 			
Range		Secondary Range – at least two of the following	
<ul style="list-style-type: none"> • Copper Tube 		<ul style="list-style-type: none"> • Capillary Joints** • Compression Joints • Fabricated bending using mechanical tools. ** mandatory	

GAS TIGHTNESS TESTING, DIRECT PURGING (IGEM/UP/1B) AND RELIGHTING APPLIANCES			
Candidates are to be observed on the minimum amount of occasions and range as identified below.			
The candidate has covered necessary training/mentoring required prior to the observation.			
Mentor signature		Date	
Candidate signature		Date	
Observation Requirements			
Total - 5 observations for tightness testing, purging and relighting of gas installations and appliances			
Observation 1	Reflective Account From site		
Observation 2	Reflective Account From site		
Observation 3	Reflective Account From site		
Observation 4	Reflective Account From site		
Observation 5	Reflective Account From site		
Observation to include			
<ul style="list-style-type: none"> • Tightness test • Purge • Relight appliances. 			

INSTALLATION OF LP DOMESTIC GAS METERS			
<i>Note: This task can be carried out after the disconnection of a meter for hot working.</i>			
Candidates are to be observed on the minimum amount of occasions and range as identified below.			
The candidate has covered necessary training/mentoring required prior to the observation.			
Mentor signature		Date	
Candidate signature		Date	
Observation Requirements			
Total - 5 observations for installation of LP domestic gas meter			
Observation 1	Reflective Account From site		
Observation 2	Reflective Account From site		
Observation 3	Reflective Account From site		
Observation 4	Reflective Account From site		
Observation 5	Reflective Account From site		
Observation to include			
<ul style="list-style-type: none"> • Installation of a LP domestic gas meter • Associated meter installation checks. 			

OPPORTUNITY FOR IDENTIFICATION OF UNSAFE SITUATIONS			
Candidates may use this section to record any unsafe situations encountered.			
Mentor signature		Date	
Candidate signature		Date	
Observations			
Observations – Unsafe situations			
Observation 1	Reflective Account		
	From site		
Observation 2	Reflective Account		
	From site		
Observation 3	Reflective Account		
	From site		
Observation 4	Reflective Account		
	From site		
Observation 5	Reflective Account		
	From site		
Observations may include Gas appliances/installations classified as either: <ul style="list-style-type: none"> • Immediately Dangerous (ID), or • At Risk (AR). 			

APPENDIX 4: EQUIPMENT LIST

A4.1 CORE REQUIREMENTS

Safety, Legislation and Standards
A selection of power tools and electrical equipment

Products and Characteristics of Combustion
A selection of gas appliances with a variety of burners at least one to be showing signs of incomplete combustion
An electronic flue gas performance analyser with MIs and a selection of probes
Installed Open Flued, Room Sealed, and Flueless Appliance with MIs.

Ventilation for Domestic Gas Burning Appliances
A selection of air grilles and air bricks (including terracotta)
Air vent probe.
A selection of installed ventilation air grilles and bricks with appliances installed (for candidates to calculate ventilation requirements)

Installation of Pipework and Fittings
A selection of copper fittings
Copper pipe
Bending machine (for copper)
Mild steel pipework and taper threaded fittings
CSST fittings and pipework
Mechanical fittings including, compression, threaded, washer and union types
Flexible connectors including meter connections and cooking appliances
Temporary continuity bond
A 'live' metered gas installation including Equipotential Bonding

Tightness Testing and Purging
A domestic LP gas installation and appliance for tightness testing and purging
An MP fed gas supply (test rig) with a meter inlet valve
An installation with a gas escape for the candidate to trace and repair

Checking and/or Setting Meter Regulators
A live installation including a gas meter and pipework connected to at least 2 appliances

Unsafe Situations, Emergency Notices and Warning Labels
A selection of ID appliances and installations including: Signs of spillage / leaking products of combustion Gas escape.
A selection of AR appliances and installations including: Chimney defects.
A selection of warning labels and notices

Checking and Setting Appliance Operating Pressures and Heat inputs
A live installation including a gas meter & pipework connected to at least 2 appliances

Operation and Checking of Appliance Gas Safety Devices and Controls
A range of gas safety devices and controls to include: Simple gas tap Cooker safety shut off valves (fold down cooker lid) Thermo electric flame supervision device (FSD) Vapour pressure FSD Electronic FSD Solenoid Liquid expansion thermostat Electrically operated thermostat Regulator Multifunctional control Air/gas ratio valve interruptible thermo-electric valve Vitiation device Overheat device Pressure switches. <i>Note: These devices may be contained within an appliance.</i>

Chimney Inspection and Testing
Two different open flued chimney systems, one to be precast
A room sealed appliance
A fan assisted appliance with an extended chimney that requires supporting
A concealed fan assisted chimney installation requiring an inspection hatch
A room sealed fan assisted positive pressure appliance (can be simulated)
An open chimney appliance including cement based and metallic chimney pipe, joints and adaptors
A room scenario including a circulating or ceiling fan (can be simulated)

Re-establish Existing Gas Supply and Re-light Appliances
A selection of bays with a live installation including a gas meter and pipework connected to at least 2 appliances with MIs. Appliances to include:
Cooking appliance
Open flued boiler
Room Sealed boiler
Warm air unit (where this appliance competency is delivered by the training centre)
Open flued gas fire
Flueless fire

Basic Electrical Safety
Appliance connected via a connector unit
Extraneous metalwork
Two pole voltage detector
Non-contact voltage detector
Proving unit or known source

A4.2 APPLIANCE OPTIONS

Central Heating Boilers, Systems & Controls
<p>A selection of installed boilers including:</p> <ul style="list-style-type: none"> Room Sealed Natural Draught Fan assisted chimney Open flue Boiler with an air/gas ratio valve.
<p>A boiler installation connected to an electrical supply (or wiring board) comprising of the following components:</p> <ul style="list-style-type: none"> Motorised valve(s) Room thermostat Time and temperature controls Pump over-run Cylinder thermostat.
Ducted Air Heaters
<p>A functioning installed warm air unit complete with plenum and return air duct</p>
Fires and Wall Heaters
<p>A selection of gas fires including:</p> <ul style="list-style-type: none"> Outset gas fire Inset live fuel effect type Flueless gas fire.
Cookers
<ul style="list-style-type: none"> Free standing cooker fitted with cooker hose Cooker with fold down lid Built in hob fitted with flexible connection.
<p>Selection of stability devices</p>
Domestic Gas Meters and Regulators
<p>A selection of domestic gas meters, regulators, interconnecting pipework & fittings, semi rigid connections, meter unions, meter washers, meter brackets and meter boxes.</p> <p>A Low-pressure gas supply with main equipotential bonding fitted.</p>
Water Heaters
<p>An instantaneous water heater (not a combination boiler)</p>

Copyright © 2022, IGEN. Licensed copy: IGEN Online Standards. Not to be reproduced

APPENDIX 5: FURTHER GUIDANCE

Guidance for the new entrant, the training organisation and the Recogniser of training is to be provided and as a minimum is to include:

- Education requirements for new entrants
Applicants will normally have gained a minimum of 2 GCSEs (grade C) or equivalent, preferably English, Mathematics or relevant/appropriate experience or an entry assessment.
- Information for the new entrant about the opportunities in the industry following successful completion of the training
- Responsibilities of the training organisation
- Responsibilities of the new entrant
- Transfer of training to other recognised training organisations
In the event of the training organisation being unable to provide the remaining training or learner advocates to use another training organisation part way through the programme, for example has relocated to another part of the UK the transfer of training is allowed.

APPENDIX 6: REFERENCES, GLOSSARY, ACRONYMS AND ABBREVIATIONS

A6.1 REFERENCES

This Specification 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 and reference to appropriate national Legislation will be necessary.

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

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

A6.1.1 Primary legislation

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

A6.1.2 Secondary legislation

- Gas Safety (Installation and Use) Regulations 1998, as amended (GS(I&U)R)
- Provision and Use of Work Equipment Regulations 1998 (PUWER)
- Electricity at Work Regulations 1989
- Work at Height Regulations 2005, as amended
- Building Regulations 2010, as amended
- Control of Substances Hazardous to Health 2002, as amended (COSHH)
- Manual Handling Operations Regulations 1992.

A6.1.3 HSE ACoPs and guidance

- L56 Safety in the Installation and Use of Gas Systems and Appliances Approved Code of Practice (ACoP)
- HSG168 Fire safety in construction.

A6.1.4 IGEN Standards and guidance

- IGEN/IG/1 Edition 2 Standards of training in gas work
- IGEN/G/4 Edition 2 A Standard for IGEN Standards
- IGEN/G/11 Edition 2 Gas Industry Unsafe Situations Procedure
- IGEN/G/11 Supplement 1 Responding to domestic CO alarm activations/reports of fumes after attendance by the emergency service provider or the Liquefied Petroleum Gas supplier
- IGEN/UP/1B Edition 3 Tightness testing and direct purging of small Liquefied Petroleum Gas/Air, Natural Gas and Liquefied Petroleum Gas installation.

A6.1.5 SMB guidance

- GN8 ACS Guidance Note 8.

A6.2 **GLOSSARY**

Industry accepted definitions are contained in IGEN/G/4 which is freely available by downloading a printable version from IGEN's website, www.igem.org.uk.

The definitions listed below are relevant to the use of this Standard.

Recommended and legacy gas metering arrangements are given in IGEN/G/1 which is freely available by downloading a printable version from IGEN's website, www.igem.org.uk.

DEFINITIONS

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.
competence	the combination of skills, knowledge and understanding to perform consistently to current recognised Standards.
domestic utilisation sector	those premises containing gas installations which are downstream of the Natural Gas Network or LPG installation emergency control valve other than those associated with non-domestic premises.
industry recognised	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.
learner	a person (new entrant) learning a subject or skill.
mentor	a technically competent, Gas Safe registered person with suitable industry experience, holding relevant competencies, who provides on-site support and advice to the new entrant whilst building evidence for their portfolio, during the programme duration.
mentoring	a person(s) with the appropriate knowledge and experience supporting the new entrant in their training.
new entrant	a person who does not hold relevant gas qualifications, has not received recognised training and wishes to achieve a recognised industry qualification, see IGEN/IG/1.
`Off-site' training	training that is undertaken in a classroom or workshop (which may be indoor or outdoor).
`On-site' training	training that is undertaken for a customer at the learner's place of work (it may be simulated in a workshop under certain limited conditions).
portfolio	a collection of records which will be written, copies of documents, reports or test papers and photographs that is evidence of the work experience and/or work that the learner has undertaken.

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. The body currently performing these duties is E&US.
Standards Consultation Forum (SCF)	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 E&US.
Strategic Management Board (SMB)	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 GS(I&U)R and subsequent registration requirements for consumer safety. For details, contact E&US.
trainer	a technically competent person, who delivers off-site training to the required training specification. A trainer shall be suitably qualified and experienced and hold relevant vocational and/or ACS qualifications/accreditations for the subject delivery. It is expected that trainers have been actively involved in gas installation and maintenance work and it is desirable for trainers to have had at least 5 years of post-qualification experience. New and inexperienced trainers are permitted to be involved with the programme provided they are closely monitored and supported in their development.

A6.3 **ACRONYMS AND ABBREVIATIONS**

ACoP	Approved Code of Practice
ACS	Nationally Accredited Certification Scheme for Individual Gas Fitting Operatives
AR	At Risk
CFS	communal flue system
CSST	corrugated stainless steel tubing
CO	carbon monoxide
CO ₂	carbon dioxide
COSHH	control of substances hazardous to health
DO	directly observed
DOC	directly observed simulated realistic activity in centre
ECV	emergency control valve
E&US	Energy and Utility Skills
FSD	flame supervision device
GB	Great Britain
GCSE	General Certificate of Secondary Education
GS(I&U)R	Gas Safety (Installation and Use) Regulations
HSE	Health and Safety Executive
ID	Immediately Dangerous
IGEM	Institution of Gas Engineers and Managers
LP	low pressure
LPG	Liquefied Petroleum Gas
MI	manufacturer's instructions
MP	medium pressure
PUWER	Provision and Use of Work Equipment Regulations
RAC	reflective account centre
RAS	reflective account site
RIDDOR	Reporting of Injuries, Diseases and Dangerous Occurrences Regulations
SCF	Standards Consultation Forum
SMB	Strategic Management Board
TRV	thermostatic radiator valves.

BLANK PAGE

Copyright © 2022, IGEN. Licensed copy: IGEN Online Standards. Not to be reproduced

Institution of Gas Engineers and Managers

IGEM House
High Street
Kegworth
Derbyshire
DE74 2DA

T 01509 678150

E technical@igem.org.uk

W www.igem.org.uk