Gas Emergency Response

Unit ERM08 Install, commission and de-commission gas pipework up to 35mm ($1^1/_4$”) diameter in domestic and small commercial premises

This module should be designed to develop an apprentice’s skills and knowledge required to install, commission, and de-commission gas pipework up to 35mm in diameter. The unit includes: the design of gas systems, installation requirements for domestic appliances, install, commission, exchange, de-commission and remove pipework, problem resolution and all other safety related requirements.

The assessment specification is the minimum core standard of these requirements, but this does not preclude employers from enhancing the skills and knowledge of the learner through additional or company specific training. The knowledge and performance criteria should be used as the basis for training input.

What does this specification look like?

Gas emergency response personnel need to be able to:

ICDGP1 Design gas systems for installing gas pipework
ICDGP2 Plan and prepare work activities for installing domestic gas cookers, tumble dryers and leisure appliances
ICDGP3 De-commission domestic gas pipework to industry standards
ICDGP4 Install, exchange, and remove gas pipework to industry standards
ICDGP5 Pre-commission and commission gas pipework to industry standards
ICDGP6 Use and communicate data and information to carry out de-commissioning, installation and commissioning work
ICDGP7 Resolve problems which could affect the de-commissioning, installation and commissioning process
ICDGP8 Install, commission and de-commission gas pipework up to 35mm (1¼) diameter in domestic and small commercial premises

What do I need to take this module?

There are no pre-requisites to taking this unit.

Candidates to be **assessed** as competent in this area must successfully meet the criteria listed below or have other unitary evidence demonstrating an equivalent level of competence.

Evidence must be gathered from the workplace on at least one occasion.

Performance Criteria

To achieve this unit you will need to be able to:

Design gas systems for installing gas pipework

P1. Identify and record the customer's job requirements
P2. Compare the customer's job requirements with statutory and industry requirements and identify any conflicting issues.
P3. Survey the work site and consult site diagrams for any key structural features that could affect the installation, record details of any features that may affect the installation
P4. Check that the proposed positioning of the pipework meets the manufacturers' and industry standards' requirements for location and clearances
P5. Check that the availability of input services for both gas and electricity
P6. Meet the appliance manufacturers' and industry standards' requirements for the pipework installation
P7. Check and ensure the design of the proposed installation is in compliance with industry standards
P8. Prepare a range of design options to meet both customer and industry requirements
P9. Present design options to the customer using variety of media including; written, oral & drawings
P10. Consult with the customer and obtain agreement to the design option that best meets all the requirements

Plan and prepare work activities for installing domestic gas cookers, tumble dryers and leisure appliances

P11. Produce a risk assessment and method statement that incorporates:
    a) Safety provisions on the work site
    b) Access to the work site
    c) Movement of people on site
    d) The movement and safe storage of installation materials, tools and equipment for the job
P12. Survey the work site for any pre-installation damage or defects to existing building features and record details of any features that may affect the installation
P13. Advise the property occupier of any defects found in the survey
P14. Protect the work site and the building fabric against possible damage being caused during de-commissioning and installation
P15. Obtain confirmation from the customer before the job starts to ensure that they agree the planned work
P16. Check and confirm that all materials, tools and equipment are available as required and are fit for purpose as needed for:

a) De-commissioning
b) Installation
c) Commissioning

P17. Check and confirm that the proposed siting of the gas supply meets the appliance manufacturers and industry standards requirements for location, siting and clearances
P18. Check and confirm that the gas supply, earthing supply and provision of ventilation meets industry standards' requirements in relation to other services
P19. Confirm that the proposed siting of the gas supply meets industry standards' requirements in relation to other services i.e. electricity supply
P20. Carry out all necessary checks and tests to confirm the gas supply and electricity supply meet the manufacturers' and industry requirements for the installation
P21. Calculate and confirm the correct sizing of pipework to ensure minimum pressure loss across installation
P22. Check the existing installation for unsafe:
a) Appliances
b) System components
P23. Apply the gas industry unsafe situations procedures to any identified

De-commission domestic gas pipework to industry standards

P24. Check that the gas supply and electricity supply are in a condition that enables safe appliance de-commissioning
P25. Use the correct tools and equipment for de-commissioning activities
P26. Use designated safe isolation methods, tests and procedures to de-commission gas and systems and components
P27. Take precautionary actions to ensure that temporarily de-commissioned appliances, systems, and components, do not present a safety hazard
P28. Permanently remove and disconnect appliances, gas system components and earthing system components
P29. After permanent removal of pipework mark any live gas pipes with a notice to indicate the pipe contains gas

Install, exchange, and remove gas pipework to industry standards

P30. Carry out preparatory work to meet the installation requirements
P31. Carry out the installation processes minimising damage to customer property and building features
P32. Select and use the correct tools and equipment for installation activities
P33. Remove existing gas and earthing system components as required by the installation plan
P34. Fabricate gas system, fittings and components as required by the installation plan

P35. Position the pipework and confirm it meets the location, siting and clearances required by the appliance manufacturers' and industry standards' specification
P36. Provide adequate ventilation for new and replacement pipework installations and systems
P37. Provide adequate support(s) for pipework installation to conform to industry standards' specification
P38. Position and protect pipework installation in and through walls to meet industry standards for sleeving and purpose designed channels
P39. Position and protect pipework installation in multi-occupancy dwellings to meet industry standards' requirements. Includes use of fire stops, sleeving, purposed designed shafts
P40. Position and protect pipework installation in protected shafts containing stairs, lifts and other protected fire escape routes to meet industry standards' requirements
P41. Position and protect external installations to meet industry standards and requirements
P42. Ensure existing gas systems are clean and free of debris
P43. Fix and connect gas pipework, valves, fittings and components to the supply
P44. Mark any live gas pipes with a notice to indicate the pipe contains gas
P45. Install additional emergency control valve (AECV) to the supply
P46. Connect earthing system components to the gas supply

Pre-commission and commission gas pipework to industry standards

P47. Confirm that the complete appliance installation complies with:
    a) Manufacturers' specification
    b) Industry standards
    c) Gas Safety (Installation & Use) Regulations
    d) British standards
    e) Building regulations
P48. Check that conditions within the gas system will permit safe commissioning
P49. Select and use the correct tools and equipment for commissioning activities
P50. Use tightness testing and purging procedures to confirm the integrity of the installed gas system and existing appliance(s)
P51. Use purging procedures to confirm the safe supply of gas to the installed gas system
P52. Use electrical testing procedures to confirm the integrity of the installed earthing system
P53. Apply protective coating to pipework and to joints after gas tightness testing has been completed
P54. Reconfirm that the ventilation requirements meet industry standards for the installation
P55. Check and confirm the operation of the installed gas valves and components to ensure they function safely and operate in accordance with manufacturers' instructions
P56. Instruct the property occupier on the correct operation of the gas system, valves and components, providing them with a copy of any user instructions

P57. Take precautionary actions to prevent the unauthorised use of uncommissioned gas appliances, gas systems, electrical systems and components, by isolation procedures and use of warning notices

Use and communicate data and information to carry out de-commissioning, installation and commissioning work

P58. Liaise with the property occupier and other people who will be affected by the work during planning, de-commissioning, installation and commissioning, to minimise disturbance to the job
P59. Use normative documents, industry standards, British standards and information from manufacturers' instructions for the appliance to ensure the work is completed in accordance with the specification
P60. Advise of any delays to the work to any persons who are affected by the delay
P61. Report any delays in the work schedules to the line manager responsible for the job
P62. Advise the designated persons of any unsafe situations and actions required to remedy those situations
P63. Complete documentation to confirm the safe commissioning of the gas system and components
P64. Complete records and documentation confirming the safe commissioning of gas systems and components
P65. Complete gas system de-commissioning records

Resolve problems which could affect the de-commissioning, installation and commissioning process

P66. Rectify and report deficiencies in gas and earthing input services
P67. Resolve problems in accordance with approved procedures where pre-commissioning checks and tests reveal gas system or component defects
P68. Resolve problems in accordance with approved procedures when gas systems and components being commissioned do not meet design requirements
P69. Resolve problems in accordance with approved procedures when the gas system and components cannot be restored to full performance

Knowledge and Understanding

To achieve this unit, you will need to be able to:

Install, commission and de-commission gas pipework up to 35mm (1¼) diameter in domestic and small commercial premises

K1. Describe the health, safety and environmental factors which need to be incorporated in risk assessment for the domestic installation process
K2. Explain safe access and working at heights procedures
K3. Specify the tools and equipment necessary to provide safe access to work at heights, or in confined spaces
K4. Describe the methods of working which protect the building décor, customer property and existing systems and components
K5. State the care and maintenance requirements of tools and equipment, and checks for safe condition
K6. State the tools, equipment, materials and components required for the gas system installation, commission and de-commission – ordering, supplying, advising, checking and delivery procedures
K7. Explain how to safely secure and store tools, equipment, materials and components to minimise loss or wastage
K8. Describe the potential hazards that could arise from all de-commissioning, installation and commissioning activities and the checks to be carried out before work takes place
K9. Explain the steps to take should materials, components, tools and equipment not be available at the site to commence the de-commissioning, installation and commissioning activity
K10. Demonstrate how and where to access the required information, i.e. normative documents, industry standards guidance documents, British standards and manufacturers' instructions applicable to the gas system and appliance, to ensure the work is done to the specification and industry standards
K11. Demonstrate how to read and interpret the information contained in normative documents, industry standards guidance documents, British standards and manufacturers' instructions
K12. Describe how to measure and record installation and site details for prefabrication purposes
K13. Explain how to confirm that the gas supply and earthing system requirements are adequate for the installation of the new gas system and components or for extending the system or adding components to
K14. Explain how to confirm that the provision of ventilation meets the industry standards' requirements for the installation i.e. in voids, shafts, ducts
K15. Calculate correct sizing of pipework to ensure minimum pressure loss across installation

K16. State checks and tests to confirm suitability of the gas supply
K17. State checks and tests to confirm suitability of the earthing system, including the installation and positioning of the main equipotential bonding
K18. State safe isolation methods, tests, and procedures for temporary and permanent de-commissioning of gas systems, earthing systems and components, including the use of temporary continuity bonds
K19. Explain the precautions to ensure that de-commissioned gas and earthing systems do not prove a safety hazard
K20. Describe measures to prevent de-commissioned gas systems being brought into operation utilising safety and warning notices
K21. Describe the need to liaise with others whose procedures or routines may be affected by the suspension of the gas system operation
K22. Summarise the points in the de-commissioning, installation and commissioning process where co-operation and liaison with other trades and property occupier may be required
K23. State the industry practices and work standards for fabricating and installing gas pipework, valves, systems and components to comply with the manufacturers' specification, industry standards, Gas Safety (Installation & Use) Regulations, British standards and building regulations
K24. Identify and describe the types of pipe materials suitable for carrying gas - steel, malleable iron, copper, corrugated stainless steel tube (CSST), polyethylene & lead
K25. Identify and describe the types of pipe fittings suitable for carrying gas – capillary, compression, push-fit, union joints & screwed joints
K26. State the industry practices and work standards for jointing materials and fittings suitable for carrying gas, including connecting to lead composition pipes
K27. Describe the safety precautions to take when jointing materials and fittings Including COSHH
K28. Explain the industry practices and methods of bending pipe materials suitable for carrying gas i.e. bending methods of copper pipe, corrugated stainless steel tube (CSST) and stainless steel flexible pipe (anacondas)
K29. Explain the industry practices and methods of bending copper pipework to set measured distances to include double sets / offset bends, 90 degree bends, crank sets/ passover bends
K30. State the positioning and fixing requirements for gas pipework, valves, systems and components to comply with the manufacturers' specification, industry standards, Gas Safety (Installation & Use) Regulations, British standards and building regulations
K31. Describe how installation of gas pipework meets the industry standards' requirements for:
    a) Location
    b) Siting
    c) Clearance requirements and relationship to other services, i.e. electricity supply
K32. State industry practices and work standards of providing adequate support(s) for pipework installation to conform to industry standards' requirements

K33. Produce a plan showing the positioning, protection and fixing methods for gas pipework, valves, systems and components in: floors, ducts, through walls, buried in walls, multi-occupancy buildings, protected shafts containing stairs, lifts or other protected fire escape routes; to comply with industry standards, Gas Safety (Installation & Use) Regulations, British standards and building regulations i.e. sleeving, purposed designed channels, fire stops, purposed designed shafts

K34. State the industry practices and work standards for pipe installation within suspended & joisted floors including methods of lifting & replacing floorboards and chipboard flooring

K35. State the industry practices and work standards for pipe installation in concrete floors

K36. Explain the installation and protection of external installations to meet industry standards requirements i.e. protection against mechanical damage, minimum depth below ground level

K37. Describe the procedures and work methods for connecting to input services including; gas, earthing and ventilation systems

K38. Describe the procedures and work methods of connecting pipework, valves and components to both new and existing gas systems and appliances

K39. Describe the procedures and work methods to ensure correct gas pipe identification

K40. Describe the process and procedures, equipment and legislative requirements for applying tightness testing and purging to gas appliances, systems and components

K41. Describe the process and procedures, equipment and legislative requirements for applying electrical tests to earthing systems and components to ensure safe functioning i.e. earth continuity checks

K42. State the procedures for checking the correct operation and performance of gas systems, valves and components and checking against the design specification to ensure safe functioning

K43. Explain the routines and sequences for commissioning gas systems, valves and components

K44. State how to complete all installation and commissioning documentation and records to be left with the property occupier including Benchmark, landlord / home owner gas safety record

K45. Explain system handover procedures and demonstrate the operation of gas systems, valves and components to end users

K46. Summarise the steps to take when problems arise in the work activities

K47. Describe job management structures and methods of reporting and recording job progress or problems delaying progress

K48. Describe how to safely collect and dispose of system contents that may be hazardous to health or the environments i.e. waste products including asbestos and insulation materials

K49. Demonstrate how and where to access the required information, i.e. industry regulations regarding the safe disposal of system contents that may be hazardous to health or the environment i.e. Special Waste Regulations, Hazardous Waste Regulations, Control of Asbestos at Work Regulations

K50. Explain how to isolate unsafe gas appliances, gas systems and components and apply the gas industry unsafe situations procedure