

## Install gas meters and regulators (2.5 to 1076m<sup>3</sup>/hr)

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### Overview

This national occupational standard is for gas engineers who are required to install and exchange positive displacement gas meters and regulators (2.5 to 1076m<sup>3</sup>/hr) on low pressure gas systems. This standard covers the work activities of, planning, installing, exchanging, disconnecting, de-commissioning and commissioning those meters and regulators.

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### Performance criteria

- You must be able to:* Plan and prepare work activities for installing and exchanging gas meters and regulators (2.5 to 1076m<sup>3</sup>/hr) on low pressure and medium pressure gas systems
1. Identify, agree and record the customer's job requirements in line with statutory and industry requirements
  2. Survey the work site and consult site diagrams as necessary for any key structural features that could affect the installation and record them
  3. Check that the proposed siting of the gas meter and regulator meets the manufacturers' and industry standards' requirements for location, siting and clearance
  4. Check that the proposed siting of the gas meter housing for both low and medium pressure meets the manufacturers' and industry standards' requirements for location, siting and clearances
  5. Confirm the availability of input services and that the gas supply, electricity earthing and provision of ventilation meet the manufacturers' and industry standards' requirements for the installation
  6. Produce a risk assessment and method statement which incorporates safety provisions in the work site, access to the work site, movement of the workforce, members of the public, and the movement and safe storage of materials, tools and equipment for the job
  7. Survey the work site for any pre-installation damage or defects to existing building features and record it and advise the property occupier of any defects found
  8. Protect the work site and the building fabric against possible damage being caused during the de-commissioning and installation process
  9. Get confirmation from the property occupier before the job starts to ensure that they agree the planned work
  10. Check and confirm:
    - a) all materials, tools and equipment necessary for the de-commissioning, installation and commissioning process are available as required and are fit for purpose
    - b) whether the gas meter and regulator is a primary or secondary meter installation
    - c) that the gas supply is either low or medium pressure
    - d) the siting of the emergency control valve (ECV) and meter inlet valve (MIV) is accessible, correctly labeled and that they operate correctly
    - e) the siting of any bypass valves, non-return valves, filters and pressure test points to ensure they are accessible, correctly labeled and the correct operation is achieved

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- f) the siting of the gas meter and regulator meets the manufacturers' and industry standards' requirements for location, siting and clearances
  - g) the siting of the meter housing meets the manufacturers' and industry standards' requirements for location, siting, clearances for both low and medium pressure installations
  - h) the siting of the meter housing and the proximity distances of meter boxes and vent-discharges can be achieved and meet the manufacturers' and industry standards' requirements for medium pressure installations
  - i) the gas meter and regulator installation is protected against any potential mechanical damage and the protection meets industry standards requirements
  - j) the siting of the existing gas supply and it's proximity to other services that may affect the installation including the proximity to electrical switchgear, heating or process equipment
- the gas supply and the provision of ventilation meets the gas meter and regulator manufacturers' and industry standards' requirements for the installation

11. Carry out all necessary checks and tests to confirm the gas supply and earthing system meets the manufacturers' and industry requirements for the installation
12. Check existing installation for any unsafe appliances and system components and apply the gas industry unsafe situations procedures as required
13. Check and confirm that all pressure test records for gas system and components are complete

De-commission gas meters and regulators (2.5 to 1076m<sup>3</sup>/hr) on low pressure and medium pressure gas systems

14. Check that conditions within the gas and earthing systems will permit safe de-commissioning
15. Select and use the correct tools and equipment for de-commissioning activities
16. Installations with a meter bypass – ensure that the system bypass valves are opened prior to the gas meter removal to ensure continuity of the gas supply and record the time that system is on bypass
17. Use designated safe isolation methods, tests, and procedures to de-commission gas meters, regulators, earthing systems, gas systems and components

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18. Take precautionary actions to ensure that temporarily de-commissioned gas meters, regulators, earthing systems, gas systems and components do not present a safety hazard
19. Permanently remove and disconnect gas meters, regulators, gas systems and components as required
20. After permanent removal of a gas meter, mark any live gas pipes with a notice to indicate the pipe contains gas

21. Use purging procedures to confirm the safe permanent de-commissioning of the installed gas meter by purging of gas with air

Install, Exchange, and Remove gas meters and regulators (2.5 to 1076m<sup>3</sup>/hr) on low pressure and medium pressure gas systems

22. Carry out planned preparatory work to meet the installation requirements
23. Carry out planned installation processes minimising damage to customer property and building features
24. Select and use the correct tools and equipment for installation activities
25. Remove existing gas and earthing system components as required by the installation plan
26. Visually check new gas meter and regulator for any damage, that the seals are intact, the packaging is removed and gas ways are clear
27. Fabricate and assemble gas meter and regulator system components as required by the installation plan
28. Position the gas meter and regulator and confirm it meets the location, siting and clearances required by the manufacturers' and industry standards' specification
29. Position any filters and pressure test points and confirm they meet the location, siting and clearances required by the manufacturers' and industry standards specification
30. Provide the required ventilation for new or replacement gas meter and regulator installations and systems
31. Ensure existing gas systems are clean and free of debris
32. Fix and connect gas and earthing system components to the gas meter and regulator installation
33. Rotary displacement meter installations – ensure that gas meter is oiled in accordance with manufacturers' instructions
34. Cap, plug or valve off any unused tappings and vent or purge points
35. Use tightness testing and purging procedures to confirm the

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integrity of the installed gas meter and regulator and gas system

36. Complete and attach an emergency notice on or near the meter or at the ECV if remote from the primary meter

37. Take precautionary actions to prevent the unauthorised use of un-commissioned gas meters and regulators, gas appliances, gas systems and components by isolation procedures and use of warning notices

Pre-commission and Commission gas meters and regulators (2.5 to 1076m<sup>3</sup>/hr) on low pressure and medium pressure gas systems

38. Confirm the complete gas meter and regulator installation complies with the manufacturers' specification, industry standards, Gas Safety (Installation & Use) Regulations, British Standards and Building Regulations

39. Check that conditions within the gas and electricity systems will permit safe commissioning

40. Select and use the correct tools and equipment for commissioning activities

41. Check and confirm the gas system operating pressures meet industry standards and is between 19 & 23mbar, if incorrect contact the gas supplier

42. Ensure that adjustments and resealing of meter regulators are performed by Ofgem Approved Meter Installers

43. Reconfirm that the ventilation requirements meet industry standards for the installation

44. Rotary displacement meter installations – ensure that meter is correctly oiled in accordance with manufacturers' instructions

45. Check and confirm the operation of the gas meter, regulator and components to ensure they function safely and operate in accordance with manufacturers' instructions, industry standards and British Standards

46. Check and confirm the earthing system and components function safely and operate in accordance with industry standards

47. Installations with a meter bypass – ensure that the system bypass valves are closed and resealed after commissioning the gas meter installation and record the time that system has been on bypass

48. Instruct the property occupier on the correct operation of the gas meter and regulator installation and provide them with their copy of any literature

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

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49. Liaise with the property occupier and other people who will be affected by the work during the planning, de-commissioning, installation, and commissioning processes to minimise disturbance to the job
50. Use normative documents, industry standards, British Standards and information from manufacturers' instructions for the gas meter, regulator and components to ensure the work is done to the specification
51. Advise of any delays to the work, unsafe situations and required remedial actions to those who require the information
52. Check that the customer is satisfied with the finished job
53. Complete records and documentation confirming the safe commissioning of gas meter, regulator and components
54. Complete gas meter and system de-commissioning records

Resolve problems within own area of responsibility and competence which could affect the de-commissioning, installation and commissioning process

55. Rectify problems within own area of responsibility and competence and report deficiencies in gas and earthing input services
56. Resolve problems in accordance with approved procedures when:
  - a) pre-commissioning checks and tests reveal defects with the gas meter, regulator, gas system and components
  - b) the gas meter, regulator, gas system and components being commissioned do not meet design requirements
  - c) the gas meter, regulator, gas system and components cannot be restored to full performance

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### Knowledge and understanding

*You need to know and understand:* General Knowledge

1. Regulations and guidance governing health and safety in the workplace, environmental protection and the use of risk assessments
2. Legislation covering the general responsibilities of the operative for their own safety and that of others
3. The limits of your own autonomy and responsibility

De-commissioning, Installing and commissioning gas meters and regulators (2.5 to 1076m<sup>3</sup>/hr) on low pressure and medium pressure gas systems

4. The health, safety and environmental factors which need to be incorporated in risk assessment for the domestic and non-domestic installation process
5. Safe access and working at heights
6. The tools and equipment necessary to provide safe access to work at heights, or in confined spaces
7. The methods of working which protect the building décor, customer property and existing systems and components
8. The care and maintenance requirements of tools and equipment, and checks for safe condition
9. The tools, equipment, materials and components required for the gas meter and regulator system de-commission, installation and commission – ordering, supplying, advising, checking and delivery procedures
10. How to safely secure and store tools, equipment, materials and components to minimise loss or wastage
11. 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
12. 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
13. How to access and correctly interpret the required information, including normative documents, industry standards guidance documents, British Standards and manufacturers' instructions applicable to the appliance, to ensure the work is done to the specification and industry standards
14. How to measure and record installation and site details for prefabrication purposes

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15. How to confirm that the gas supply, earthing supply, and ventilation requirements are adequate for installation of the new gas meter, regulator and components on both low and medium pressures
16. How to confirm that the gas supply, earthing supply, and ventilation requirements are adequate for extending the system or adding components to on both low and medium pressures
17. Safe isolation methods, tests, and procedures to de-commission gas meters, regulators, gas systems, components and earthing systems
18. The procedures for temporary and permanent de-commissioning of gas meters, regulators, gas systems and components including use of temporary continuity bonds
19. The precautions to ensure that de-commissioned gas meters, regulators, gas systems and components do not prove a safety hazard
20. Measures to prevent de-commissioned gas meters, regulators, gas systems and components being brought into operation utilising safety and warning notices
21. The need to liaise with others whose procedures or routines may be affected by the suspension of the gas meter, regulator, gas system and components operation
22. The points in the de-commissioning, installation and commissioning process where co-operation and liaison with other trades and property occupier may be required
23. How to identify gas meter installations that incorporate non-return valves and the manufacturers' and industry standards' installation requirements
24. How to identify both low and medium pressure installations and the manufacturers' and industry standards' installation requirements
25. How to identify gas meter installations that incorporate a meter bypass
26. The industry practices and work standards for fabricating and installing emergency control valves (ECV's) and meter inlet valves (MIV's)
27. The procedures and work methods for connecting to input services including; gas, earthing systems and ventilation
28. The industry practices and work standards for fabricating and installing domestic and non-domestic positive displacement gas meters, regulators and components:
  - a) as a primary or secondary meter installation
  - b) on both low and medium pressure installations, to comply with the manufacturers' specification, industry standards, Gas Safety



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(Installation & Use) Regulations, British Standards and Building Regulations

29. The positioning and fixing requirements for domestic and non-domestic positive displacement gas meters, regulators and components, on both low and medium pressure installations, to comply with the manufacturers' specification, industry standards, Gas Safety (Installation & Use) Regulations, British Standards and Building Regulations

30. How to identify gas meter installations that incorporate a meter bypass

31. The industry practices and work standards for de-commissioning, installation and commissioning positive displacement gas meters and regulators with a meter bypass

32. The industry practices and work standards for fabricating and installing:

a) filters and pressure test points

b) domestic and non-domestic positive displacement gas meters, regulators and components in meter housings and compartments, including both low and medium pressure installations

33. The industry practices and work standards for:

a) the siting of gas supplies and other services that may affect the installation taking into account any factors that may impact on the siting

b) the provision of ventilation when installing domestic and non-domestic positive displacement gas meters and regulators

c) fabricating and installing protection against mechanical damage for domestic and non-domestic positive displacement gas meters, regulators and components

34. The process and procedures, equipment and legislative requirements for applying tightness testing and purging to domestic and non-domestic positive displacement gas meters, regulators, gas systems and components on both low and medium pressures in line with current British Standards

35. The routines and sequences for commissioning domestic and non-domestic positive displacement gas meters, regulators and components in accordance with manufacturers' specification and industry standards

36. The procedures for checking:

a) the correct operation and performance of domestic and non-domestic positive displacement gas meters, regulators and components and checking against the design specification and current British Standards on both low and medium pressure

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- b) the operation of domestic and non-domestic positive displacement gas meters, regulators and components to ensure they function safely and operate in accordance with manufacturers' instructions and industry standards
  - c) that rotary displacement meter installations are correctly oiled in accordance with manufacturers' instructions
  - d) and confirming the gas system operating pressure is correct and actions to take if incorrect
37. The procedures for making adjustments to meter regulators
38. How to complete all domestic and non-domestic gas meter installation and commissioning documentation, labels and records to be left with the property occupier The system handover procedures and demonstrating the operation of domestic and non-domestic positive displacement gas meters, regulators and components to end users
39. The steps to take when problems arise in the work activities
40. Job management structures and methods of reporting and recording job progress or problems delaying progress
41. How to safely collect and dispose of system contents that may be hazardous to health or the environment
42. How to isolate unsafe gas appliances, gas systems and components and application of the gas industry unsafe situations procedure

## Glossary

“Cookers” refers to Freestanding, Built In, Slide Under, Hotplates, Grilles, Range Cookers, and Dual Fuel Cookers

“Leisure Appliances” refers to Greenhouse Heaters, BBQ’s, Patio Heaters, Gas Flambeaux, and Outdoor Gas Lighting

“Positive Displacement Meters” refers to; Diaphragm meters and Rotary Displacement meters

“Work Site” refers to the area where the work will take place and all areas affected by the works

“Low pressure” refers to inlet pressures to the meter of up to 75mbar

“Primary meter” refers to a meter nearest to and downstream of a service pipe for ascertaining the volume of gas supplied through that pipe by a supplier

“Secondary meter” refers to a meter, other than a primary meter, for ascertaining the quantity of gas provided by a person for use by another person

‘Services and Systems’ refers to water, central heating, gas, electricity supply, condensate disposal, chimneys and ventilation systems

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