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## Overview

This national occupational standard is for gas engineers who are required to maintain domestic water heating and wet central heating appliances and includes the following range of appliances: Instantaneous Water Heaters, and Wet Central Heating Boilers. This standard covers the work activities of planning, maintaining, de-commissioning and commissioning those appliances.

## Performance criteria

- You must be able to:*
- Plan and prepare work activities for maintaining water heating and wet central heating appliances
  - 1. 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
  - 2. Survey the work site for any pre-maintenance damage or defects to existing building features and record it
  - 3. Advise the property occupier of any defects found and agree the planned work
  - 4. Protect the work site and the building fabric against possible damage being caused during the de-commissioning and maintenance process
  - 5. Check and confirm all materials, tools and equipment necessary for the de-commissioning, maintenance and commissioning process are available as required and are fit for purpose
  - 6. Check and confirm that the siting of the appliance meets the manufacturers' and industry standards' requirements for location, siting and clearances
  - 7. Confirm that the services and systems meet the appliance manufacturers' and industry standards' requirements for the installation
  - 8. Check existing installation for any unsafe appliances and system components and apply the gas industry unsafe situations procedures as required

De-commission water heating and wet central heating appliances to industry standards and manufacturers' instructions

- 9. Check that conditions within the gas and electricity systems will permit safe de-commissioning
- 10. Select and use the correct tools and equipment for de-commissioning activities
- 11. Use designated safe isolation methods, tests, and procedures to de-commission gas and electricity systems and components
- 12. Take precautionary actions to ensure that temporarily de-commissioned appliances, systems, or components do not present a safety hazard
- 13. Permanently remove and disconnect appliances, gas system components and electricity system components as required

Maintain water heating and wet central heating appliances to industry

standards and manufacturers' instructions

14. Carry out preparatory work to meet the maintenance requirements set out in the plan
15. Remove existing gas and electricity system components as required by the planned maintenance activities
16. Carry out the maintenance process in accordance with manufacturers' specification and industry standards taking care to minimise damage
17. Select and use the correct tools and equipment for maintenance work activities
18. Re-position the appliance and confirm it meets the location, siting and clearances required by the manufacturers' and industry standards' specification
19. Confirm existing ventilation for appliances and system meets industry requirements for the installation
20. Ensure existing gas systems are clean and free of debris
21. Re-connect gas and electricity system components to the appliance
22. Use tightness testing and purging and electrical testing procedures to confirm the integrity of the re-connected gas system and
23. Use industry standard checks and testing procedures to confirm the integrity of the existing chimney system and appliance flue seals

Pre-commission and Commission water heating and wet central heating appliances to industry standards and manufacturers' instructions

24. Confirm the complete appliance installation complies with the manufacturers' specification, industry standards, Gas Safety (Installation & Use) Regulations, British Standards and Building Regulations
25. Check that conditions within the gas and electricity systems will permit safe commissioning
26. Select and use the correct tools and equipment for commissioning activities
27. Check and confirm the gas system operating pressures meet industry standards and the appliance operating pressure and the gas rate meet industry standards' and manufacturers' requirements
28. Check the combustion performance visually and by flue gas analysis as required
29. Test systems performance and reconfirm it performs according to manufacturers' and industry standards' requirement's
30. Reconfirm that the location of condensate disposal is in compliance

with appliance manufacturers' and industry standards' requirements, as necessary

31. Check and confirm the operation of the gas appliance, the system, and components to ensure they function safely and operate in accordance with manufacturers' instructions

32. Instruct the property occupier on the correct operation of the appliance and gas system and provide them with their copy of the appliance literature

33. Take precautionary actions to prevent the unauthorised use of un-commissioned 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, maintenance and commissioning work

34. Liaise with the property occupier and other people who will be affected by the work during the planning, de-commissioning, maintenance, and re-commissioning processes to minimise disturbance to the job

35. Use normative documents, industry standards, British Standards and information from manufacturers' instructions for the appliance to ensure the work is done to the specification

36. Advise of any delays to the work, unsafe situations and required remedial actions to those who require the information

37. Check that the customer is satisfied with the finished job

38. Complete records and documentation confirming the safe maintenance of gas appliances, systems and components

39. Complete gas appliance and gas system commissioning and de-commissioning records as required and ensure they are stored securely

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

40. Rectify problems within own area of responsibility and competence and report deficiencies in gas and electric input services

Resolve problems in accordance with approved procedures where

a) pre-maintenance checks and tests reveal gas appliance, gas system or component defects

b) gas appliances, gas systems and components being commissioned do not meet design requirements

c) the gas system or component cannot be restored to full performance

## 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, maintaining and commissioning water heating and wet central heating appliances

4. The health, safety and environmental factors which need to be incorporated in risk assessment for the domestic maintenance process
5. The tools and equipment necessary to provide safe access to work at heights, or in confined spaces
6. The methods of working which protect the building décor, customer property and existing systems and components
7. The care and maintenance requirements of tools and equipment, and checks for safe condition
8. The tools, equipment, materials and components required for the gas appliance and gas system de-commission, maintenance and commission – ordering, supplying, advising, checking and delivery procedures
9. How to safely secure and store tools, equipment, materials and components to minimise loss or wastage
10. The potential hazards that could arise from all de-commissioning, maintenance and commissioning activities and the checks to be carried out before work takes place
11. The steps to take should materials, components, tools and equipment not be available at the site to commence the de-commissioning, maintenance and commissioning activity
12. 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
13. How to confirm that the services and system requirements are adequate for existing gas appliances, systems, or components
14. Safe isolation methods, tests, and procedures to de-commission gas and electricity systems or components
15. The procedures for safe temporary and permanent de-

- commissioning of appliances and systems including use of temporary continuity bonds
16. Measures to prevent de-commissioned appliances or systems being brought into operation utilising safety and warning notices
  17. The need to liaise with others whose procedures or routines may be affected by the suspension of the gas appliance and gas system operation and when to liaise with them
  18. The industry practices and work standards for fabricating and installing water heating and wet central heating gas appliances, systems and components to comply with the manufacturers' specification, industry standards, Gas Safety (Installation & Use) Regulations, British Standards and Building Regulations
  19. The positioning and fixing requirements for water heating and wet central heating gas appliances, systems and components to comply with the manufacturers' specification, industry standards, Gas Safety (Installation & Use) Regulations, British Standards and Building Regulations in;
    - a) airing cupboards
    - b) compartments
    - c) roof spaces
    - d) external installations
  20. The industry practices and manufacturers' requirements for the positioning and the installation of condensate drain for condensing boilers
  21. The procedures and work methods for connecting to input services and systems
  22. The procedures and work methods of connecting water heating and wet central heating gas appliances and components to both new and existing services and systems
  23. The safe processes and procedures for applying tightness testing and purging and electrical testing to appliances, gas systems and components
  24. The routines and sequences to be followed for the maintenance of water heating and wet central heating domestic gas appliances, gas systems and components in accordance with manufacturers' specification and industry standards
  25. The routines and sequences for re-commissioning water heating and wet central heating domestic gas appliances, gas systems and components in accordance with manufacturers' specification and industry standards
  26. The procedures for checking:

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- a) the correct operation and performance of water heating and wet central heating gas appliances, gas systems and components against the design specification and for safe functioning
  - b) that the hot water performance of water heating gas appliances and combination boilers complies with the manufacturers' specification including ensuring there is sufficient pressure & flow rate and correct temperatures are achieved
27. The procedures for checking and confirming the gas system operating pressures and the appliance operating pressure and the gas rate
  28. The tests, checks and use of flue gas analysers which confirm the suitability of the gas combustion performance
  29. The tests and checks to confirm the integrity, suitability and performance of the systems
  30. How to complete all maintenance documentation and records to be left with the property occupier Measures to prevent un-commissioned gas systems being brought into operation utilising safety and warning notices
  31. The system handover procedures and demonstrating the operation of replacement systems and components to end users
  32. The steps to take when problems arise in the work activities
  33. Job management structures and methods of reporting and recording job progress or problems delaying progress
  34. How to safely collect and dispose of system contents that may be hazardous to health or the environment How to isolate unsafe gas appliances, gas systems and components and application of the gas industry unsafe situations procedure

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## 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

“Water Heating Appliances” refers to Instantaneous Single Point and Multi-point Water Heaters. These will include Flueless, Room-Sealed, and Fan Draught Chimneys.

“Wet Central Heating Appliances” refers to Basic, Condensing and Combination Wet Central Heating Boilers These will include Open, Room-Sealed, and Fan Draught Chimneys.

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

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



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