

## Carry out work on unvented hot water storage operations

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### Overview

This standard covers carrying out work on unvented hot water storage operations in the gas sector. This includes commissioning and fault finding against manufacturer's instructions. This work must be in accordance with the current versions of the appropriate industry standards and regulations; the specification; industry recognised working practices; the working environment and the natural environment.

To meet this standard you will be able to:

- carry out safe electrical isolation and associated electrical tests on unvented hot water storage
- carry out required checks in order to commission an unvented hot water storage system
- fault find and rectify any faults on unvented hot water storage systems
- install, maintain, commission and de-commission unvented hot water storage systems
- take personal responsibility for your own actions and for the quality and accuracy of the work carried out.

This standard is suitable for a craftsperson or technician working independently in the energy supply and use sector.

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### Performance criteria

#### You must be able to:

1. identify the work area using organisational documentation, systems and work instructions
2. select, inspect and wear relevant personal protective equipment for completing work activities in line with organisational procedures
3. carry out a site specific risk assessment of the work, identifying hazards and the required control measures
4. carry out a pre-use inspection of the tools and equipment to be used, checking condition and service information in accordance with organisational procedures
5. plan and carry out all work in line with organisational policy and work procedures
6. de-commission an unvented hot water storage system to industry standards
7. maintain an unvented hot water storage system to industry standards
8. install an unvented hot water storage system to industry standards
9. pre-commission and commission an unvented hot water storage system to industry standards
10. use and communicate data and information to carry out de-commissioning, maintenance and commissioning work
11. resolve problems or faults which could affect the correct and safe operation of an unvented hot water storage system
12. handle and dispose of waste materials in line with legislative and organisational procedures
13. store tools and equipment safely and securely, leaving the work area in a safe condition in accordance with organisational procedures

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## Knowledge and understanding

## You need to know and understand:

1. the principles of health and safety in the workplace, environmental legislation and relevant regulations in relation to the work to be carried out
2. the organisations reporting lines, authorisation roles and responsibilities
3. the organisational safety rules, policies and procedures in relation to working with gas
4. how to carry out a site risk assessment, identify hazards and assess risks of the site and proposed activity
5. how to select, inspect and use personal protective equipment
6. the different methods of heating an unvented hot water storage system
7. the methods of preventing stored water from exceeding 100 degrees
8. the minimum number of independent safety devices required to prevent overheating in unvented hot water systems
9. the expansion rate of water when converted to steam
10. the working principle of **functional devices** in unvented hot water systems
11. the positioning and fixing requirements of **components** used in unvented hot water systems
12. the positioning and fixing requirements of external controls used in unvented hot water systems
13. the installation, fixing and sizing requirements for **safety relief pipework**
14. the criteria for selecting an unvented hot water system and component types
15. the methods to prevent legionella in stored water
16. the methods of working which protect the building décor, customer property and existing systems and components
17. the tools, equipment, materials and components required for an unvented hot water storage system de-commission, maintenance, installation and commission
18. 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
19. how and where to access the required information and how to interpret that information
20. how to confirm that the water supply, and electric supply requirements are adequate
21. safe isolation methods, tests, and procedures to de-commission water and electricity systems or components
22. the industry practices and work standards for fabricating, installing, positioning and fixing an unvented hot water storage system

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23. the process, procedures and work methods for connecting new and existing input services including and applying electrical safety tests to cylinder, systems and components to ensure safe functioning
24. the routines and sequences for the maintenance process and re-commissioning of an unvented hot water storage system in accordance with manufacturers' specification and industry standards
25. the procedures for checking the correct operation and performance of an unvented hot water storage system against the design specification to ensure safe functioning and compliance with the manufacturers' specification
26. the system handover procedures including completion of the benchmark documentation and demonstrating the operation to end users
27. how to safely find and rectify faults on an unvented hot water storage system
28. the requirements of the relevant Water Supply Regulations and Byelaws,
29. the different types of water treatment apparatus available to dwellings
30. the suitability of materials and substances in contact with water
31. the requirements for **water fittings**
32. the requirement for pressure testing
33. how surges within a pipework system can affect **system performance**
34. the installation requirements for pipes and operational fittings
35. the design and installation requirements for a water supply system
36. the methods of preventing the contamination of water fittings and the water contained within them when passing through contaminated environments
37. the installation requirements for the provision, operation and location of servicing valves, stop valves and draining taps
38. the requirements with respect to dead legs and redundant fittings
39. the reason for the flushing of a system installation
40. when system disinfection is required
41. the meaning of unwholesome water in relation to: rainwater ; recycled water; any fluid not supplied by a water undertaker
42. the requirements for identifying an unwholesome water system so that it is readily distinguishable from a wholesome system in relation to: colour coding for pipes and fittings; labelling for pipes and terminal fittings
43. the backflow prevention fluid categories and the requirements for backflow prevention
44. the guidance clauses relating to backflow prevention
45. the method of protection against the backflow of water into a supply or distributing pipe without the need for a mechanical backflow prevention device
46. installation requirements for a mechanical backflow protection

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- device
  - 47. when whole site and zone protection are required
  - 48. the installation requirements and methods of connection for **water fittings**
  - 49. the installation requirements for toilet flushing devices and urinals approved for use
  - 50. the types of bath, sink, showers and taps and their location and installation requirements
  - 51. the consumption limitations for washing machines, dishwashers and other appliances
  - 52. the requirements for water supplied for outside use
  - 53. how to maintain safe working and environmental practices throughout the duration of the work minimising the risks to self and others
  - 54. how to handle and dispose of hazardous and non-hazardous waste materials in line with relevant regulations
  - 55. how to update, report and record information in accordance with organisational procedures
  - 56. how and the importance of leaving the work area in a safe and secure condition

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## Scope/range

### The Range to be covered in the Knowledge and Understanding

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#### **functional devices** in unvented hot water systems

- Line strainer
- Pressure reducing valve
- Check valves
- Expansion device (vessel or integral to cylinder)
- Tundish
- Composite valve

#### **components** used in unvented hot water systems

- Control thermostat
- Overheat thermostat
- Temperature relief valve
- Line strainer
- Pressure reducing valve
- Check valves
- Expansion device
- Expansion relief valve
- Composite valves
- Tundish arrangements

#### **safety relief pipework**

- Discharge D1
- Discharge D2
- Tundish
- Multiple discharge pipe arrangements from safety devices
- Termination

the requirements for **water fittings** in relation to:

- British Standards or equivalent
- Immunity and protection from galvanic action
- Water tightness
- Prevention of ingress from contaminants
- Prevention from damage by freezing and other causes
- Prevention from deterioration by permeation

**system performance** in relation to:

- Water hammer
- Relief valve discharge
- Pneumatic accumulators

**water fittings** in relation to:

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- Float operated valves
- Inlets to cisterns
- Outlets from cisterns
- Warning and overflow pipes
- Cold water storage cisterns
- Directly heated unvented hot water systems
- Indirectly heated unvented hot water systems
- Independent water heaters
- Methods of accommodating expanded water in a hot water system
- Maximum temperature within a hot water system
- Hot water distribution temperatures
- Temperature of hot water at terminal fittings and surfaces of hot water pipes

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Scope/range related to knowledge and understanding



## Carry out work on unvented hot water storage operations

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Original URN	new
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Suite	Down Stream Gas, Downstream Operations
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