



Summit SKILLS

**Minimum Technical Competency
of Individuals undertaking
Plumbing Installation work**

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1. Introduction

This document is intended to set out the basic indicators of training, experience and knowledge that will ensure that an organisation or individual has the appropriate skills to undertake work in a Competent Person Scheme designated in Schedule 2A of the Building Regulations.

The purpose of Competent Person Schemes is to allow approved persons to certify the compliance of controlled work in buildings that are subject to the Building Regulations. This process removes the need to seek approval from building control before work starts.

A person operating under an approved competent person scheme has a duty to comply with all aspects of the Building Regulations not just the core aspects of the work being undertaken.

Evidence of training and assessment alone are not sufficient to prove that an individual has the skills to plan, install and commission work in compliance with the Building Regulations. Therefore, adequate experience and skills knowledge and the ability to apply them in the workplace are an essential part of the entry requirements for competent person scheme registration.

1.1 National Occupational Standards

The standards for this MTC document are based on National Occupational Standards (NOS). NOS are statements of the skills, knowledge and understanding needed in employment and clearly define the outcomes of competent performance. Developed by representatives of employment sectors on a UK-wide basis they are used to provide vocational qualifications (NVQs).

National Vocational Qualifications are work-related, competence-based qualifications. They reflect the skills and knowledge needed to do a job effectively, and show that a candidate is competent in the area of work the NVQ framework represents.

NVQs are based on national occupational standards. Together, they cover all the main aspects of an occupation, including current best practice, the ability to adapt to future requirements and the knowledge and understanding that underpin competent performance and provides a statement that describes what competent people working in the heating sector are expected to be able to do.

Competence involves the application of knowledge in a broad range of varied work activities performed in a wide variety of contexts, most of which are complex and non-routine. There is considerable responsibility and autonomy and control or guidance of others is often required.

These requirements will be taken into account when scheme applicants apply for registration with a Competent Person Scheme provider as they help to define areas of expertise and common competences and creates a consistent approach to registration.

2. Definitions

Assessed Enterprise = an enterprise which has been assessed in accordance with the requirements of this document as competent, and which possesses a current Assessment Certificate.

Assessor = Individuals, on behalf of a competent persons scheme operator, carrying out an assessment of a persons professional competence as defined by National Occupational Standards, or a recognised Standard Setting Body fuel specific pathway that has been adopted within this MTC document.

Building Regulations = In England and Wales, Building Regulations made under the Building Act 1984 (as amended) and all subsequent Building Regulations (Amendment) Regulations.

Client = the person ordering the work who may or may not be the user of the premises.

Commissioning = after installation, where adjustments to the operating function of the system components are required, commissioning procedures should be followed as required by the current Standards/Regulations/Manufacturers Instructions. Please note; maintenance procedures are currently being approved by the Secretary of State that will supersede the above statement upon approval.

Competent = in possession of the necessary technical knowledge, skill and experience for the nature of the plumbing work undertaken and the ability to prevent danger and/or where appropriate injury.

Competent Person Scheme Operator = a body offering self-certification scheme meeting the requirements of this document and listed by Government in Schedule 2A of the Building Regulations 2006, as amended.

Enterprise = each address and trading title of a sole trader, partnership, private limited company, public limited company, public body or other legal entity.

Individual = a man or a woman carrying out the relevant work.

Inspector = Individuals, on behalf of a competent person's scheme operator, carrying out an inspection of an enterprise, its systems and compliance with scheme registration requirements.

Person = an enterprise or individual acting as a business.

Plumbing installation work = the design, installation, commissioning and testing of sanitary conveniences, washing facilities or bathrooms including hot and cold water systems and associated controls, not involving work on shared or underground drainage. Note; whilst carrying out plumbing installation work, all Building Regulations that apply to the work being carried out must be adhered to.

Sufficient Involvement = carrying out plumbing installation work, including as relevant the design, installation, commissioning and testing of that work in accordance with the requirements of the relevant Regulations and British/European Standards.

- 3. Requirements relating to the ability of an individual to design, install, commission and test plumbing installations.**
- 3.1 The MTC plumbing criteria define the requirements for the competent individual working directly on the installation for which self-certification is required under the Building Regulations.
- 3.2 The scheme operator must ensure that there is a record of each competent individual capable of completing self certification. Such records may be held on a register by the Competent Persons Scheme Operator or, where their rules allow it, by the employing enterprise that is registered within the Competent Person Scheme. The Competent Persons Scheme Operator must ensure that there are sufficient competent individuals to ensure the compliance of work undertaken by each registered enterprise.
- 3.3 It is recognised that the competent individual may be supported by other individuals who do not meet the criteria (such as fitters mates, apprentices or other specialists) in which case the competent individual must recognise that they have the responsibility for the safety and compliance of the work with the Building Regulations and must have sufficient involvement in the work that they are able to ensure this.
- 3.4 The scheme operator must have quality assurance arrangements in place to make sure that each registered enterprise has sufficient competent individuals in place to ensure the compliance of the work undertaken by each registered enterprise, that work is certified only by competent individuals where they have had sufficient involvement to do so and that the work of each competent individual is periodically randomly monitored by the scheme operator to check on its compliance.
- 3.5 The Minimum Technical Competency Group for this sector will remain active and meet as necessary to reflect any changes in Legislation, National Occupational Standards or Technical Standards.

4. Testing

4.1 Test Instruments

- 4.1.1 Each enterprise shall have or have access to a sufficient number of test instruments appropriate to its nature of work that will enable them to accurately carry out and record the outcomes of the following tests:

Test
Hydraulic Pressure test (hot and cold pipework systems) as per the current Water Regulations
Performance test (pressure and flow rates)
Performance test (temperature)
Pressure test (above ground) discharge pipework systems) as per BSEN 12056

- 4.1.2 Test equipment shall be:
- Maintained in clean, working condition, and;
 - Used in a workmanlike manner in accordance with the manufacturers instructions
- 4.1.3 The enterprise shall have a suitable system in place to ensure that all test instruments used for testing plumbing installations, whether owned or hired by the enterprise are accurate and consistent.

5. Certification and Reporting

- 5.1 The enterprise shall issue the appropriate commissioning record to the client; detailing the results of the performance tests carried out as required by the relevant Standards and Regulations.
- 5.2 The assessed enterprise shall issue the appropriate Building Regulations compliance notification in accordance with the relevant Standards and Regulations for all of the plumbing installation work that it carries out.

6. Insurance

- 6.1 The enterprise shall hold at least £2 million of public liability insurance covering all of the work that it carries out within the scope of their registration.

7. Complaints

- 7.1 The assessed enterprise shall maintain a record of all complaints received over at least the previous six years, concerning the compliance with Building Regulations of the Plumbing installation work it has carried out, together with the details of the action taken to resolve these complaints.

8. Health and Safety

- 8.1 The enterprise shall comply with the requirements of the Health and Safety at Work Act, shall have a written health and safety policy statement where required by law and shall carry out risk assessments where necessary.

9. Records

The assessed enterprise shall hold:

- 9.1 specifications, drawings and commissioning records relating to plumbing installation work, carried out and in progress.
- 9.2 a list of all plumbing installation work carried out.

10. Entry Criteria

- 10.1 NVQ level 3 National Occupational Standards provide the most relevant benchmark against which to measure competence for the Plumbing sector. NVQ level 3 includes the relevant system design elements (pipe sizing, heat loss calculations etc.) that would be expected of a Competent Individual.
- 10.2 However, as many people operating in the industry do not have an NVQ level 3, criterion for “equivalents” have been defined and a skills gap analysis has been undertaken to help formulate a five-year target, to enable those practitioners working in the Building Service sector who do not satisfy the entry requirements, to achieve the level expected (see 10.4).
- 10.3 The Plumbing Mechanical Services MTC document sets out an initial ***minimum*** base line entry criteria for Competent Person Self-Certification scheme operators and requires that people undertaking or involved in self certification should be competent to install, maintain and commission the relevant systems themselves which requires them to have:
1. The relevant skills knowledge
 2. Adequate experience
 3. The ability to apply them in the workplace
- 10.4 The specifications to enable Competent Person Self-Certification scheme operators to assess the competence of applicants for registration are covered on pages 8 to 16.

- 10.5 The standards listed within this document are based upon National Occupational Standards (NOS) for MES Plumbing and take the form of Units. These Units set out the main roles and responsibilities within defined occupational areas but expressed in outcomes. These outcomes capture the skills, knowledge and understanding required of people to perform competently to the standards required by the industry in the identified roles.
- 10.6 The document is broken down into systems based modules, which then identify the functions required of an individual working on that system as shown on the following page:
- 10.7 For the Installation of Unvented Hot Water Storage Systems the installer should hold a current Registered Operative Identity card/certificate 5 years from the date of issue for the installation of domestic unvented hot water storage systems issued by an accredited/certification body.

Plumbing	
Systems	
Cold Water	
Hot Water	
Above Ground Drainage	
Demonstrate knowledge and application of the current Water Supply (Water Fittings) Regulations	
Functions	NOS Unit
Equipment Selection	Unit 1 - Design Domestic Plumbing Systems
Planning	Unit 3 - Plan Complex Domestic Plumbing Work Activities
Installation	Unit 7 - Install Non Complex Plumbing Systems and Components
Testing and Commissioning	Unit 13 - Commission and Decommission Complex Domestic Plumbing Systems

10.8 Water Regulations

- 10.8.1 Each scheme applicant shall demonstrate knowledge and application of the current Water Supply (Water Fittings) Regulations by holding the appropriate certification.

10.9 Water Efficiency

10.9.1 Water conservation is currently contained within the Water Regulations that refer to waste, misuse, undue consumption and erroneous measurement.

10.9.2 Future developments of new standards to compliment the Water Regulations, will be assessed and appropriately incorporated into this document.

10.10 Energy Efficiency

10.10.1 Regulations governing hot water and their controls are contained within the Water Regulations and the Building Regulations. Each applicant/registrant will require evidence of a recognised Energy Efficiency certificate by 29 March 2008.

10.11 Professional Development

10.11.1 For applicants with a formal qualification prior to the NVQ in plumbing, evidence of Professional Development is a requirement.

10.11.2 Any relevant study that has enhanced the applicants knowledge and skills, keeping them up to date with current working practices, legislation and innovative products, will be deemed as valid.

10.11.3 The MTC group will adjudicate and assess the knowledge and skills requirements in the event of changes/amendments' to the Building Regulations (see 3.4).

11. Assessment Strategies

11.1 Guidance on the competence of assessors/inspectors and how they should approach the task of assessment against the relevant National Occupational Standards will be given in the assessment strategy document upon completion.

Plumbing MTC Matrix

This Matrix provides the means to demonstrate the Minimum Technical Competency criteria required for Plumbing Competent Person Scheme Entry				
Entry Route (refer to 10.2)	Skills Knowledge	Experience	Ability to Apply	
			Inspection / Assessment	
			On -Site	Off-Site
1	NVQ Level 2 or equivalent + Water Regulations certificate For the installation of unvented cylinders, a current registered operative identity card is required	3 Years (18 months post qualification)	Yes	
Equivalents				
2	Technical Certificate Level 2 + Water Regulations certificate	Portfolio of evidence + experience as above	Yes	
3	C&G Craft Certificate + Water Regulations certificate	Portfolio of evidence, Professional Development + experience as above	Yes	
4	No formal Qualification will require Water Regulations certificate	Completion of the Experienced Plumber Programme	Yes	Yes
5	Current Scheme registrant without entry route 1 requirements	See Entry Routes 2, 3 or 4 above Completion by 29.03.08		

Annex 1

Portfolio of Evidence & On-Site Inspection/Assessment Specification - Plumbing

Designing Plumbing Systems - Identifying Customer Requirements

You must provide evidence that you can:	Guidance
<p>Identify and record the customer job requirements</p> <p>Identify any areas of the proposed Installation where compliance with industry requirements is necessary</p> <p>Prepare a range of design options which comply with key design requirements</p> <p>Use a range of methods of presentation to explain design options to the customer which meet identified requirements</p> <p>Obtain customer agreement to the design proposals</p>	<p>Types of systems - cold water (direct & indirect systems), hot water (direct, indirect & non-storage), above ground discharge (single stack systems) and earth continuity systems.</p> <p>Types of appliances - baths, wash hand basins, showers, bidets, WC's (inc macerators), sinks, dishwashers washing machines and storage vessels (cisterns & cylinders).</p> <p>Current codes of practice for system design, current British Standard recommendations, current manufacturers' technical information, current commercially acceptable standards</p> <p>System layout (inc positioning of appliances), performance requirements of systems, types of components and appliances, compliance with statutory requirements and recommendations, availability of mains services (water supply, drainage provisions & suitability of existing system).</p> <p>Use of formal or informal presentation styles Use of presentation equipment – OHP, projection, Use of IT - Computer/E-mail</p> <p>Formal and informal agreements Standard forms of contract</p>

Portfolio of Evidence & On-Site Inspection/Assessment Specification - Plumbing

Plan Plumbing Systems– Plan work activities to be carried out

You must provide evidence that you can:	Guidance
<p>Ensure that all job information essential to the correct installation of the system or system component(s) is on site before job commencement and that you can identify the key features of the system components</p>	<p>Job plans and specifications, component specifications and schedules, Work schedules, operating instructions for components, verbal. Cold water (direct & indirect systems), hot water (direct & indirect systems), above ground discharge pipework systems (single stack systems & ventilation pipework) and earth continuity systems. Pipe materials, fittings, fixings, pumps & valves, storage vessels (cisterns and cylinders) sanitary appliances and domestic appliances inc washing machines and dishwashers.</p>
<p>Confirm compliance of the proposed installation with industry requirements</p>	<p>Current Codes of Practice, current Standards Recommendations, current Manufacturers' Technical data, current Health and Safety current Commercially agreed standards.</p>
<p>Confirm that the building structure is suitable to accommodate system Components</p>	<p>Provisions for pipe runs, provisions for component or appliance installation, specified finishes, state of readiness for system installation.</p>
<p>Monitor the progress of the job against the installation programme and agree revisions to work programmes with others where modifications and deviations are necessary</p>	<p>Liaison with customer/co-contractor, systems installation stages(s) (first and second fix), testing and commissioning and handover. Customer, co-worker own trade, co-worker other trades and site officials (site manager, clerk of works, statutory inspectors).</p>
<p>Obtain customer approval of any proposed deviation from the original specification</p>	

Portfolio of Evidence & On-Site Inspection/Assessment Specification - Plumbing

Installing Plumbing Systems – Preparing work locations

You must provide evidence that you can:	Guidance
Ensure that safety provisions within the immediate work location conform to the requirements of health and safety legislation	Personal Protective Equipment, potential hazards, adequate ventilation, work in confined spaces, First Aid facilities, fire fighting equipment and access equipment, inc. warning notices.
Ensure that access provision to and from the immediate work location complies with health and safety requirements for the safe movement of the workforce, members of the public and materials	Walkways, access to work at heights, condition of access equipment, warning notices and lighting levels.
Check that input services to the system components are suited to their intended purpose	Water supplies & discharge systems, (new and existing) and earth continuity systems.
Confirm that the customer has job information on all key aspects of the installation process	Simple job plans and specifications, component specifications, work schedules, operating instructions for components and verbal instructions.
Carry out preparatory work to meet the installation requirements of system components	Liaison with other trades, marking out positions of system components, cutting access routes for pipework in building fabric, any pre- installation work for components. Pipe materials, fittings and fixings, pumps & valves, storage vessels (cisterns & cylinders) sanitary appliances and domestic appliances (washing machines and dishwashers).

Portfolio of Evidence & On-Site Inspection/Assessment Specification - Plumbing

Commissioning & Decommissioning of Plumbing Systems – Pre-commissioning checks & tests

You must provide evidence that you can:	Guidance
<p>Confirm that the system or system component installation complies with industry requirements</p> <p>Check that input services to the system components are suited to their intended purpose</p> <p>Check systems/components for soundness using Industry standard procedures</p> <p>Carry out pre-commissioning tests and checks in accordance with industry requirements</p> <p>Check that the system cleanliness, additives & charging comply with Industry requirements</p>	<p>Cold water (direct & indirect systems), hot water (direct & indirect systems), above ground discharge pipework systems (single stack systems and ventilation pipework) and earthing systems. Pipe materials, fittings and fixings, pumps and valves, storage vessels (cisterns & cylinders), sanitary appliances and domestic appliances inc washing machines and dishwashers.</p> <p>Water supplies and discharge systems for new and existing services. Pipe materials, fittings and fixings, pumps and valves, storage vessels (cisterns & cylinders), sanitary appliances and domestic appliances inc washing machines and dishwashers.</p> <p>Codes of Practice, British Standards Recommendations, Manufacturers' Technical data, Health and Safety (safe working practices) and Commercially acceptable standards.</p> <p>Visual inspections and checks, manufacturers' recommendation for pre-commissioning test procedures, static tests, air tests, earth continuity & polarity tests and system hygiene and charging procedures.</p> <p>Codes of Practice, British Standards Recommendations, Manufacturers' Technical data, Health and Safety (safe working practices) and Commercially acceptable standards.</p>

Annex 2

Experienced Plumber Programme Assessment Specification - Plumbing

Designing Plumbing Systems – Designing systems to meet Customer Requirements

The candidate must prove knowledge of:	Questions shall cover:
<p>The range of job information required, to carry out design work in new and existing buildings</p>	<p>Building type and layout, system layout, performance requirements of systems, types of components and appliances, compliance with statutory requirements & recommendations and the availability/suitability of mains services (water supply & drainage provisions).</p>
<p>The positioning requirements for components within systems and standard system layouts</p>	<p>System layout (including controls & appliances), performance requirements of systems, types of components and appliances, compliance with statutory requirements & recommendations and the positioning/suitability of mains services (water supply & drainage provisions).</p>
<p>How to calculate the requirements of system components (size and specification)</p>	<p>Pipe materials, fittings, fixings, pumps & valves, storage vessels (cisterns and cylinders) sanitary appliances and domestic appliances inc washing machines and dishwashers.</p>
<p>Methods of presenting information to customers (drawings, specifications and quotations)</p>	<p>Use of formal or informal presentation styles, formal and informal agreements and standard forms of contract. For cold water (direct & indirect systems), hot water (direct & indirect systems), above ground discharge pipework systems (single stack systems & ventilation pipework) and earth continuity systems.</p>
<p>How information technology (IT) may be used in presenting design information</p>	<p>Use of presentation equipment – OHP, projection, Use of IT - Computer/E-mail</p>

Experienced Plumber Programme Assessment Specification - Plumbing

Plan Plumbing Systems– Plan work activities to be carried out

The candidate must prove knowledge of:	Questions shall cover:
<p>The system types and their intended functions (system components & layout)</p>	<p>Job plans and specifications, component specifications and schedules, Work schedules, operating instructions for components, verbal. Cold water (direct & indirect systems), hot water (direct & indirect systems), above ground discharge pipework systems (single stack systems & ventilation pipework) and earth continuity systems. Pipe materials, fittings, fixings, pumps & valves, storage vessels (cisterns and cylinders) sanitary appliances and domestic appliances inc washing machines and dishwashers.</p>
<p>The regulations governing system design, installation and operation</p>	<p>Current Codes of Practice, current Standards Recommendations, current Manufacturers' Technical data, current Health & Safety and current commercially agreed standards.</p>
<p>The installation requirements for systems (installation sequences & liaison with others)</p>	<p>Provisions for pipe runs, provisions for component or appliance installation, specified finishes, state of readiness for system installation.</p>
<p>How to monitor the progress of the job against the installation programme and agree revisions to work programmes with others where modifications and deviations are necessary</p>	<p>Liaison with customer/co-contractor, systems installation stages(s) (first and second fix), testing and commissioning and handover. Customer, co-worker own trade, co-worker other trades and site officials (site manager, clerk of works, statutory inspectors).</p>
<p>How to calculate the size of system components (pipework and appliances)</p>	<p>Pipe materials, fittings, fixings, pumps & valves, storage vessels (cisterns and cylinders) sanitary appliances and domestic appliances inc washing machines and dishwashers.</p>

Experienced Plumber Programme Assessment Specification - Plumbing

Installing Plumbing Systems – Installation of systems and components

The candidate must prove knowledge of:	Questions shall cover:
<p>Industry practices and work standards for fabricating and installing system components</p> <p>The fixing requirements for system components to conform to system design</p> <p>The procedures required for connecting to input services and existing systems</p> <p>The care/maintenance requirements of tools & equipment and checks for safe condition</p> <p>The range of tests used to confirm the soundness of systems and components and how to use the range of soundness test equipment</p>	<p>Pipe materials, fittings, fixings, pumps & valves, storage vessels (cisterns and cylinders) sanitary appliances and domestic appliances inc washing machines and dishwashers. Current Codes of Practice, current Standards Recommendations, current Manufacturers' Technical data, current Health & Safety and current commercially agreed standards.</p> <p>Current Codes of Practice, British & European Standards, current Manufacturers' Technical data and safe working practices.</p> <p>Cold water (direct & indirect systems), hot water (direct & indirect systems), above ground discharge pipework systems (single stack systems & ventilation pipework) and earth continuity systems. Water supplies, discharge systems and earth continuity systems to new & existing services.</p> <p>Consumable materials, fittings, system components, tools & equipment for prefabrication and installation purposes and access equipment.</p> <p>Pressure tests for pipework systems, static pressure tests, air tests and system hygiene & charging procedures. Liaison with customer, safe & secure isolation of system, sealing of all open pipework, labelling of controls and liaison with line manager, supervisor or inspector.</p>

Experienced Plumber Programme Assessment Specification - Plumbing

Commissioning & Decommissioning of Plumbing Systems – Checks & tests

The candidate must prove knowledge of:	Questions shall cover:
The routines and sequences for commissioning systems & components	Cold water (direct & indirect systems), hot water (direct & indirect systems), above ground discharge pipework systems (single stack systems & ventilation pipework) and earth continuity systems.
The points in the commissioning process where cooperation with others may be required	Customer, co-worker own trade, co-worker other trades and site officials (site manager, clerk of works, statutory inspectors).
Completing commissioning documentation & handover procedures (end user)	Drawings, specifications & schedules, manufacturers' specifications or catalogues and contact specifications for commissioning.
The potential hazards that could arise from de-commissioning activities and the required checks before de-commissioning	Current Codes of Practice, British & European Standards, current Manufacturers' Technical data, safe working practices and current commercially accepted standards.
Measures to prevent systems being brought into operation	Liaison with customer, safe & secure isolation of system, sealing of all open pipework and labelling of controls.
How to safely collect and dispose of system components that may be hazardous to health or the environment	Current Codes of Practice, safe working practices and commercially accepted standards. Pipe materials, fixings, pumps & valves, storage vessels (cisterns and cylinders) and sanitary appliances.

APPENDIX

A. Technical Reference Documents

- A1. The Individual shall hold or have access to current editions, including all amendments, of the documents (or recognised equivalent documents) listed in the following table.

Technical Reference Documents in relation to
The Water Regulations Guide
BS 6700: Specification for Design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages
BSEN 806 part 1: Specifications for installations inside buildings conveying water for human consumption. General.
BSEN 806 part 2: Specifications for installations inside buildings conveying water for human consumption. Design.
BSEN 806 part 3: Specifications for installations inside buildings conveying water for human consumption. Pipe sizing. Simplified method.
BS EN 12056 part 1: Gravity drainage systems inside buildings. General and performance requirements.
BS EN 12056 part 2: Gravity drainage systems inside buildings. Sanitary pipework, layout and calculation
BS EN 12056 part 5: Gravity drainage systems inside buildings. Installation and testing, instructions for operation, maintenance and use.
BS 6465 part 1: Sanitary installations. Code of practice for the design of sanitary facilities and scales of provision of sanitary and associated appliances.
BS 6465 part 2: Sanitary installations. Code of practice for space requirements for sanitary appliances
Building Regulations Approved Document G: Hygiene (this document includes Unvented Hot Water Storage Systems).
Building Regulations Approved Document H: Drainage and Waste Disposal.