

# apprenticeship FRAMEWORK

## Heating & Ventilating Systems (Non-Statutory) (Wales)

### IMPORTANT NOTIFICATION FOR ALL APPRENTICESHIP STARTS FROM 14 OCTOBER 2016

Modifications to SASW came into effect on 14 October 2016. These changes relate to the **Essential Skills and Employer Rights and Responsibilities** requirements of a framework and they **ONLY** apply to new Apprenticeship starts on, or after, 14th October. Apprenticeship starts before this date must continue to meet the 2013 SASW requirements for Essential Skills and Employer Rights and Responsibilities.

For more details of the changes and how they will affect new apprenticeship starts, please read the following preface page to the framework document. NB: Please check the "Revising a Framework" section for information on any additional changes that may have been made to this framework.

### Latest framework version?

Please use this link to see if this is the latest issued version of this framework:

[afo.sscalliance.org/frameworkslibrary/index.cfm?id=FR03706](http://afo.sscalliance.org/frameworkslibrary/index.cfm?id=FR03706)

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# CHANGES TO REQUIREMENTS FOR APPRENTICESHIP STARTS FROM 14TH OCTOBER 2016

These changes relate to the Essential Skills and Employer Rights and Responsibilities requirements of a framework and they ONLY apply to new Apprenticeship starts on, or after, 14th October 2016. Apprenticeship starts before this date must continue to meet the 2013 SASW requirements for Essential Skills and Employer Rights and Responsibilities.

## Alternatives for Essential Skill qualifications

**Foundation apprenticeships (Level 2):** Where Essential Skills qualifications are specified in a foundation apprenticeship framework (Level 2), the apprenticeship framework must specify as a Welsh certificate requirement, the acceptance of one of the following recognised proxy qualifications.

For Communication:

- a. GCSE or iGCSE qualification in English language or literature to at least grade G (Level 1 equivalent); or
- b. O Level qualification in English language or literature to at least grade E; or
- c. A/AS Level qualification in English language or literature to at least grade E; or
- d. SCQF Level 4 – Communication Core Skills (Oral communication and written communication); or
- e. SQA National 4 English; or
- f. Functional Skills or Key Skills literacy qualifications in English provided the proxy qualification(s) attained are at Level 1 or above.

For Application of Number:

- a. GCSE or iGCSE qualification in Mathematics to at least grade G (Level 1 equivalent); or
- b. O Level qualification in Mathematics to at least grade E; or
- c. A/AS Level qualification in Mathematics to at least grade E; or
- d. SCQF Level 4 – Numeracy Core Skill (Graphical Information and using number); or
- e. SQA National 4 Mathematics ; or
- f. Functional Skills or Key Skills numeracy qualifications in Mathematics provided the proxy qualification(s) attained are at Level 1 or above.

**Apprenticeships (Level 3):** Where Essential Skills qualifications are specified in an apprenticeship framework (Level 3), the apprenticeship framework must specify as a Welsh certificate requirement, the acceptance of one of the following recognised proxy qualifications.

For Communication:

- a. GCSE or iGCSE qualification in English language or literature to at least grade C (Level 2 equivalent); or
- b. O Level Qualification in English language or literature to at least grade C; or
- c. A/AS Level qualification in English or literature to at least grade E; or
- d. SCQF Level 5 – Communication Core Skills (Oral communication and written communication); or
- e. SQA National 5 English; or
- f. Functional Skills or Key Skills literacy qualifications in English provided the proxy qualification(s) attained is at Level 2 or above.

For Application of Number:

- a. GCSE or iGCSE qualification in Mathematics to at least grade C (Level 2 equivalent); or
- b. O Level Qualification in Mathematics to at least grade C; or
- c. A/AS Level qualification in Mathematics to at least grade E; or
- d. SCQF Level 5 – Numeracy Core Skill (Graphical information and using number); or
- e. SQA National 5 Mathematics; or
- f. Functional Skills or Key Skills numeracy qualifications in Mathematics provided the proxy qualification(s) attained are at Level 2 or above.

**Higher Apprenticeships (Levels 4-7):** Essential Skills requirements are as for an apprenticeship frameworks at Level 3.

# CHANGES TO REQUIREMENTS FOR APPRENTICESHIP STARTS FROM 14TH OCTOBER 2016

## Employer Rights and Responsibilities (ERR)

The final modification to SASW is to Employer Rights and Responsibilities (ERR) which is no longer compulsory in frameworks. Please refer to the Employer Rights and Responsibilities section within the framework document to confirm specific requirements.

## Additional Information

It should be noted that SASW has also been modified to reflect existing improvements to Essential Skills Wales Qualifications. These improvements to ESW qualifications were signalled by the revised names:

- Essential Skills Wales Communication is now Essential Communication Skills (still 6 credits in size)
- Essential Skills Wales Application of Number Skills is now Essential Application of Number Skills (still 6 credits in size)
- Essential Skills Wales Information Communication Technology Skills is now Essential Digital Literacy Skills (still 6 credits in size)

Whilst there have been some amendments to the content of ESW qualifications, the most significant change has been to the assessment methodology for these qualifications.

From 1 January 2016, all new starts have had to follow the revised Essential Skill qualifications.

The updated version of SASW, and guidance documents, can be accessed here:

<http://gov.wales/topics/educationandskills/skillsandtraining/apprenticeships/providers/?lang=en&dgd>

Over the coming months, the Essential Skills section within AFO will be amended to reflect the SASW modifications and all current frameworks will be updated and reissued to incorporate these changes. In the meantime, if you are in any doubt as to the requirements of any framework then please contact the relevant Issuing Authority.

# Heating & Ventilating Systems (Non-Statutory) (Wales)

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# Framework summary

## Heating & Ventilating Systems (Non-Statutory)

### Foundation (Level 2) Apprenticeships in Heating and Ventilating (H&V) Systems

#### Pathways for this framework at level 2 include:

##### Pathway 1: Installing Industrial and Commercial H&V - Ductwork Systems

**Competence qualifications available to this pathway:**

N/A

**Knowledge qualifications available to this pathway:**

N/A

**Combined qualifications available to this pathway:**

B1 - Level 2 NVQ Diploma in Heating and Ventilating - Ductwork Installation

**This pathway also contains information on:**

- Employee rights and responsibilities
- Essential skills

##### Pathway 2: Installing Industrial and Commercial H&V Pipework Systems

**Competence qualifications available to this pathway:**

N/A

**Knowledge qualifications available to this pathway:**

N/A

**Combined qualifications available to this pathway:**

B1 - Level 2 NVQ Diploma in Heating and Ventilating Industrial and Commercial Installation

**This pathway also contains information on:**

- Employee rights and responsibilities
- Essential skills

##### Pathway 3: Servicing and Maintaining H&V Systems

**Competence qualifications available to this pathway:**

N/A

**Knowledge qualifications available to this pathway:**

N/A

**Combined qualifications available to this pathway:**

B1 - Level 2 NVQ Diploma in Planned and Reactive Maintenance on Heating and Ventilating Equipment

**This pathway also contains information on:**

- Employee rights and responsibilities
- Essential skills

## Heating & Ventilating Systems (Non-Statutory)

### Apprenticeship (Level 3) in Heating and Ventilating (H&V) Systems

#### Pathways for this framework at level 3 include:

##### Pathway 1: Installing and Pre-commissioning Industrial and Commercial H&V Ductwork Systems

**Competence qualifications available to this pathway:**

N/A

**Knowledge qualifications available to this pathway:**

N/A

**Combined qualifications available to this pathway:**

B1 - Level 3 NVQ Diploma in Heating and Ventilating - Ductwork Installation

**This pathway also contains information on:**

- Employee rights and responsibilities
- Essential skills

##### Pathway 2: Installing and Pre-commissioning Industrial and Commercial H&V Pipework Systems

**Competence qualifications available to this pathway:**

N/A

**Knowledge qualifications available to this pathway:**

N/A

**Combined qualifications available to this pathway:**

B1 - Level 3 NVQ Diploma in Heating and Ventilating - Industrial and Commercial

**This pathway also contains information on:**

- Employee rights and responsibilities
- Essential skills

##### Pathway 3: Servicing and Maintaining H&V Systems

**Competence qualifications available to this pathway:**

N/A

**Knowledge qualifications available to this pathway:**

N/A

**Combined qualifications available to this pathway:**

B1 - Level 3 NVQ Diploma in Planned and Reactive Maintenance on Heating and Ventilating

**This pathway also contains information on:**

- Employee rights and responsibilities
- Essential skills

# Framework information

## Information on the Publishing Authority for this framework:

### SummitSkills

The Apprenticeship sector for occupations in electrical and electronic servicing, plumbing, heating and building services (summarised as electrotechnical; plumbing, heating and ventilating; refrigeration and air conditioning).

Issue number: 2	<b>This framework includes:</b>
Framework ID: FR03706	Level 2 Level 3
Date this framework is to be reviewed by: 01/04/2020	<b>This framework is for use in: Wales</b>

## Short description

Apprenticeships for occupations in the Heating and Ventilating (H&V) Industry are designed to meet the competence requirements of the industry.

This Apprenticeship Framework document contains six occupation framework pathways at two different levels:

### Foundation (Level 2) -

- Installing Industrial and Commercial H&V Ductwork Systems
- Installing Industrial and Commercial H&V Pipework Systems
- Servicing and Maintaining H&V Systems

Whichever occupation framework pathway is chosen at Foundation (Level 2), it provides an opportunity for individuals to gain the skills and knowledge necessary for a career in an established industry and for employers and apprentices to benefit from the associated structured learning and assessment programme.

Successful completion of the Foundation (Level 2) frameworks reflect the ability to select and

use relevant knowledge, ideas, skills and procedures to complete well defined tasks and address straightforward problems. They include taking responsibility for completing tasks and procedures, and exercising autonomy and judgement subject to overall direction or guidance.

The apprentice also has the competencies to progress to an associated Apprenticeship (Level 3) Framework.

These Foundation (Level 2) frameworks can be completed within 24 months.

Job roles covered are:

- Heating and Ventilating Ductwork Installation Operative
- Heating and Ventilating Pipework Installation Operative
- Heating and Ventilating Service and Maintenance Operative

Apprenticeship (Level 3) -

- Installing and Pre-commissioning Industrial and Commercial H&V Ductwork Systems
- Installing and Pre-commissioning Industrial and Commercial H&V Pipework Systems
- Servicing and Maintaining H&V Systems

Whichever occupation framework pathway is chosen at Apprenticeship (Level 3), it will provide an opportunity to further develop the skills, knowledge and competence to the level required by job roles such as:

- Heating and Ventilating Ductwork Installer
- Heating and Ventilating Engineer/ Heating and Ventilating Welder
- Heating and Ventilating Service and Maintenance Engineer

Progression into this framework is considered by employers to normally be for those who have already completed the relevant Foundation (Level 2) framework or for individuals with comparable experience and knowledge. The structured learning and assessment programme of this framework will enhance the skills and knowledge of the entrant to the benefit of employers and apprentices alike.

Successful completion of an Apprenticeship (Level 3) framework reflects the ability to identify and use relevant understanding, methods and skills to complete tasks and address problems that, while well defined, have a measure of complexity. They include taking responsibility for initiating and completing tasks and procedures as well as exercising autonomy and judgement within parameters. They also reflect awareness of different perspectives or approaches within an area of study or work.

These Apprenticeship (Level 3) frameworks can be completed within 24 months



# Contact information

## Proposer of this framework

SummitSkills the Standards Setting Organisation for the Plumbing and Heating industry regularly engages with employers, government departments, manufacturers, trade associations and training providers to ensure that this framework document is fit-for-purpose at the time it is issued.

## Developer of this framework

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# Revising a framework

## Contact details

Who is making this revision: Tony Beecher  
Your organisation: SummitSkills  
Your email address: tony.beecher@summitskills.org.uk

## Why this framework is being revised

As this framework is over 4 years old a review has taken place of any changes needed to this document and this includes new contact details for the developers and issuing authority to make sure the framework meets or exceeds the requirements of apprenticeships across the UK.

## Summary of changes made to this framework

Contact details have been amended as those listed have left SummitSkills, changes made to ERR evidence requirements, additional progression opportunities and additional qualifications have been added with details below

## Qualifications removed

N/A

## Qualifications added

Level 3 Award in the Fundamental Principles and Requirements of Environmental Technology Systems (BPEC 600/6377/4) LCL 600/5715/4, Pro Qual 600/6253/8) & LCL Level 3 Award in Energy Efficiency for Gas fired and Oil fired domestic heating and Hot water systems (QCF) 601/3942/0

## Qualifications that have been extended

N/A

# Purpose of this framework

## Summary of the purpose of the framework

The occupation frameworks are designed to provide individuals and those seeking progression in their career with the opportunity to develop the competencies needed to carry out job roles and responsibilities associated with the installation, maintenance and commissioning of Heating and Ventilating (H&V) systems, including relevant:

- Sustainable Building Best Practices
- Environmental technologies
- Technological requirements and changes
- Statutory and non-statutory regulations and requirements

The following job roles will be covered in the Foundation (Level 2) occupation pathways:

- H&V Ductwork Installation Operative
- H&V Pipework Installation Operative
- H&V Service and Maintenance Operative

The following job roles will be covered in the Apprenticeship (Level 3) occupation pathways:

- H&V Ductwork Installer
- H&V Engineer/ H&V Welder
- H&V Service and Maintenance Engineer

## Aims and objectives of this framework (Wales)

The aim of the occupation frameworks is to ensure that the Foundation (Level 2) and Apprenticeship (Level 3) programmes deliver:

- The skills and knowledge required by the industry to achieve competence
- Job-related skills that will be used in the working environment
- Transferable skills
- Career progression

Employers have endorsed this programme as it delivers qualified competent employees and improves productivity and retention.

Further career guidance can be found at: <http://www.summitskills.org.uk/building-services-apprenticeships-careers>

# Entry conditions for this framework

Although there are generally no nationally laid-down minimum entry or previous experience requirements to undertake the Foundation (Level 2) and Apprenticeship (Level 3) in the Heating and Ventilating Industry, the following selection criteria may be used as guidance.

The programme is likely to be suitable for individuals who:

- Have an aptitude for technical subjects and/or are practically minded
- Have an interest in technology
- Can demonstrate an ability to solve practical problems

A career in the Heating and Ventilating Industry will not only reward an apprentice's potential, but also offer opportunities to enhance their technical capability. The industry always needs individuals of appropriate ability, and in return offers a varied and rewarding career in a challenging working environment.

Other selection criteria may include:

- Motivation to succeed
- Willingness to learn and apply that learning in the workplace/job role
- Enthusiasm and attitude to work
- Ability to demonstrate that they have the potential to achieve the qualifications which are part of the Foundation (Level 2) and/or Apprenticeship (Level 3) programme
- Ability to communicate effectively with a range of people
- Being numerate and literate
- Good colour vision to recognise colour coded wires and components
- Ability to work at heights or in confined spaces
- Willingness to work outside
- Willingness to work unsociable hours
- Willingness to undergo a Criminal Records Bureau (CRB) check when required

Examples of formal qualifications that can be used as an indication that an applicant has the potential to progress into and complete either the Foundation (Level 2) or Apprenticeship (Level 3) frameworks can be found in the individual occupation pathways.

No individual should be refused access to an initial assessment on the basis of educational qualifications alone. The ultimate responsibility for selection will rest with the individual employer.

## Level 2

Title for this framework at level 2

# Foundation (Level 2) Apprenticeships in Heating and Ventilating (H&V) Systems

### Pathways for this framework at level 2

- Pathway 1: Installing Industrial and Commercial H&V - Ductwork Systems
- Pathway 2: Installing Industrial and Commercial H&V Pipework Systems
- Pathway 3: Servicing and Maintaining H&V Systems

## Level 2, Pathway 1: Installing Industrial and Commercial H&V - Ductwork Systems

### Description of this pathway

Installing Industrial and Commercial Heating and Ventilating (H&V) Ductwork Systems in various properties - 82 credits in total

### Entry requirements for this pathway in addition to the framework entry requirements

Successful completion of this Foundation (Level 2) framework reflects the ability to select and use relevant knowledge, ideas, skills and procedures to complete well-defined tasks and address straightforward problems. It includes taking responsibility for completing tasks and procedures and exercising autonomy and judgement subject to overall direction or guidance.

Examples of formal qualifications that can be used as an indication that an applicant has the potential to progress into and complete the Foundation (Level 2) in Installing Industrial and Commercial Heating and Ventilating (H&V) Ductwork Systems are:

- Welsh Baccalaureate Foundation Diploma
- Completion of a 'Pathway to Apprenticeship' in Plumbing
- GCSE grade A-D in each of the following:- a communication subject, maths and either a science or technical-based subject
- Level 1 GNVQs in relevant vocational/technical subjects
- A Level 1 'Access to Building Services Engineering' qualification

<b>Job title(s)</b>	<b>Job role(s)</b>
H&V Ductwork Installation Operative	Works under minimal supervision to complete the installation, assembly, fitting, testing and de-commissioning of ductwork systems

# Qualifications

## Competence qualifications available to this pathway

N/A

## Knowledge qualifications available to this pathway

N/A



## Combined qualifications available to this pathway

B1 - Level 2 NVQ Diploma in Heating and Ventilating - Ductwork Installation					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
B1a	501/1696/4	EAL	64	490	N/A
B1b	600/0144/6	City & Guilds	64	490	N/A

## Relationship between competence and knowledge qualifications

This framework requires the completion of either of the combined qualification B1a or B1b identified in the combined qualifications section B1 above.

Qualification Title - Level 2 NVQ Diploma in Heating and Ventilating - Ductwork Installation which has:

### Knowledge Units

- Understand how to communicate with others within building services engineering J/602/2482 **Unit Credit Value 3**
- Understand how to apply environmental protection measures within BSE D/602/2486 **Unit Credit Value 4**
- Understand industrial and commercial rectangular ductwork installation techniques J/602/2711 **Unit Credit Value 9**
- Understand industrial and commercial circular and flat oval ductwork installation techniques L/602/2712 **Unit Credit Value 9**
- Understand industrial and commercial air handling unit installation techniques R/602/2713 **Unit Credit Value 4**
- Understand industrial and commercial plastic ductwork installation techniques D/602/2715 **Unit Credit Value 4**
- Understand industrial and commercial fire-rated ductwork installation techniques H/602/2716 **Unit Credit Value 4**
- Understand industrial and commercial local exhaust ventilation system installation techniques M/602/2718 **Unit Credit Value 4**
- Understand how to apply scientific principles within MES J/602/2496 **Unit Credit Value 7**

**Knowledge Element = 48 credits**

- Understand and carry out safe working practices in building services engineering  
J/602/2479 **Unit Credit Value 10**
- Apply safe working practices in building services engineering working environment  
T/602/2493 **Unit Credit Value 2**
- Install industrial and commercial H&V ductwork M/602/2721 **Unit Credit Value 4**

**Competence Element = 16 credits**

**Total Qualification = 64 credits**

For further qualification details refer to: [www.register.ofqual.gov.uk/Qualification](http://www.register.ofqual.gov.uk/Qualification) and search by relevant qualification or unit number.

# Transferable skills (Wales)

## Essential skills (Wales)

	Minimum level	Credit value
Communication	2	6
Application of numbers	2	6
IT	1	6

## Progression routes into and from this pathway

### Progression routes into this pathway:

Applicants may come from a range of routes including:

- Welsh Baccalaureate Foundation Diploma
- Completion of a 'Pathway to Apprenticeship' in Plumbing
- Work or work experience
- Training and/or experience which could include a portfolio showing what they have done
- Academic qualification(s) such as three GCSEs grades A-D in each of the following:- a communication subject, maths and either a science or technical-based subject
- Achievement of Essential Skills or Wider KeySkills
- Level 1 GNVQs in relevant vocational/technical subjects
- A Level 1 'Access to Building Services Engineering' qualification

No individual should be refused access to an initial assessment on the basis of educational qualifications alone. The ultimate responsibility for selection will rest with the individual employer

### Progression routes out of this pathway:

On successful completion of this Foundation (Level 2) framework in Installing Industrial and Commercial H&V Ductwork Systems, an apprentice will have the skills, knowledge and qualifications to:

- Register on an appropriate Certification Scheme
- Progress to learning and assessment programmes that lead to relevant Level 3 qualifications and/or Apprenticeship (Level 3) in Installing and Commissioning Industrial and Commercial H&V Ductwork Systems
- Progress in their career into job roles such as Technician, Designer Estimator, Project

Manager, Site/Workshop Supervisor/Manager, Chartered Engineer, Sales Engineer or Commercial Manager

Further career guidance can be found at: <http://www.summitskills.org.uk/building-services-apprenticeships-careers>

# Employee rights and responsibilities

The Employee Rights and Responsibilities (ERR) elements identified below will be achieved through an induction programme, in combination with the Level 2 Diploma in Heating and Ventilating (Ductwork Installation) qualification (501/1696/4 EAL or 600/0144/6 City & Guilds) into which they are integrated and signposted. The ERR elements will be evidenced by the issuing of a qualification achievement certificate plus the declaration consent form when claiming for the apprenticeship certificate.

The delivery and assessment of ERR must be designed so that the apprentice:

1. knows and understands the range of employer and employee statutory rights and responsibilities under Employment Law and that employment rights can be affected by other legislation as well. This should cover the apprentice's rights and responsibilities under the Disability Discrimination Act, other relevant equalities legislation and Health and Safety, together with the responsibilities and duties of employers;
2. knows and understands the procedures and documentation in their organisation which recognise and protect their relationship with their employer. Health and Safety and Equality and Diversity training must be an integral part of the apprentice's learning programme;
3. knows and understands the range of sources of information and advice available to them on their employment rights and responsibilities. Details of Access to Work and Additional Learning Support must be included in the programme;
4. understands the role played by their occupation within their organisation and industry;
5. has an informed view of the types of career pathways that are open to them;
6. knows the types of representative bodies and understands their relevance to their industry and organisation, and their main roles and responsibilities;
7. knows where and how to get information and advice on their industry, occupation, training and career;
8. can describe and work within their organisation's principles and codes of practice;
9. recognises and can form a view on issues of public concern that affect their organisation and industry

## Level 2, Pathway 2: Installing Industrial and Commercial H&V Pipework Systems

### Description of this pathway

Installing Industrial and Commercial H&V Pipework Systems - 99 credits in total

### Entry requirements for this pathway in addition to the framework entry requirements

Examples of formal qualifications that can be used as an indication that an applicant has the potential to progress into and complete the Foundation (Level 2) framework in Installing Industrial and Commercial H&V Pipework Systems are:

- Welsh Baccalaureate Foundation Diploma
- Completion of a 'Pathway to Apprenticeship' in Plumbing
- GCSE grade A-D in each of the following:- a communication subject, maths and either a science or technical-based subject
- Level 1 GNVQs in relevant vocational/technical subjects
- A Level 1 'Access to Building Services Engineering' qualification

<b>Job title(s)</b>	<b>Job role(s)</b>
Heating and Ventilating Installer	Works under minimal supervision to complete the installation, testing and de-commissioning of industrial and commercial Heating and Ventilating Pipework systems, including hot water, cold water, fire protection, heating (including gas pipework carcassing) and compressed air systems

# Qualifications

## Competence qualifications available to this pathway

N/A

## Knowledge qualifications available to this pathway

N/A



## Combined qualifications available to this pathway

B1 - Level 2 NVQ Diploma in Heating and Ventilating Industrial and Commercial Installation					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
B1a	501/1622/8	EAL	81	696	N/A
B1b	600/1806/9	City & Guilds	81	696	N/A

## Relationship between competence and knowledge qualifications

This framework pathway requires the completion of either of the combined qualification B1a or B1b identified in the combined qualifications section B1 above.

Qualification Title - Level 2 NVQ Diploma in Heating and Ventilating Industrial and Commercial Installation which has:

### Knowledge Units

- Understand how to communicate with others within building services engineering  
J/602/2482 **Unit Credit Value 3**
- Understand how to apply environmental protection measures within BSE D/602/2486 **Unit Credit Value 4**
- Understand industrial and commercial cold water system installation techniques  
Y/602/2728 **Unit Credit Value 3**
- Understand industrial and commercial hot water system installation techniques  
H/602/2733 **Unit Credit Value 3**
- Understand industrial and commercial heating system installation techniques M/602/2735  
**Unit Credit Value 3**
- Understand industrial and commercial chilled water system installation techniques  
F/602/2738 **Unit Credit Value 3**
- Understand how to apply scientific principles within MES J/602/2496 **Unit Credit Value 7**

**Knowledge Element = 26 credits**

### Competence Units

- Understand and carry out safe working practices in building services engineering

**J/602/2479 Unit Credit Value 10**

- Apply safe working practices in building services engineering working environments

**T/602/2493 Unit Credit Value 2**

- Install industrial and commercial H&V systems Y/602/2776 **Unit Credit Value 3**

- Understand and carry out site preparation and pipework fabrication techniques for industrial and commercial systems A/602/2768 **Unit Credit Value 40**

**Competence Element = 55 credits**

**Total Qualification = 81 credits**

For further qualification details refer to: [www.register.ofqual.gov.uk/Qualification](http://www.register.ofqual.gov.uk/Qualification) and search by the relevant qualification or unit number.

# Transferable skills (Wales)

## Essential skills (Wales)

	Minimum level	Credit value
Communication	2	6
Application of numbers	2	6
IT	1	6

## Progression routes into and from this pathway

### Progression routes into this pathway:

Applicants may come from a range of routes including:

- Welsh Baccalaureate Foundation Diploma
- Completion of a 'Pathway to Apprenticeship' in Plumbing
- Work or work experience
- Training and/or experience which could include a portfolio showing what they have done
- Academic qualification(s) such as three GCSEs grades A-D in each of the following:- a communication subject, maths and either a science or technical-based subject
- Achievement of Essential Skills or Wider KeySkills
- Level 1 GNVQs in relevant vocational/technical subjects
- A Level 1 'Access to Building Services Engineering' qualification

No individual should be refused access to an initial assessment on the basis of educational qualifications alone. The ultimate responsibility for selection will rest with the individual employer

### Progression routes out of this pathway:

On successful completion of the Foundation (Level 2) framework in Installing Industrial and Commercial H&V Pipework Systems, an apprentice will have the skills, knowledge and qualifications to:

- Register on an appropriate Certification Scheme
- Progress to learning and assessment programmes that lead to relevant Level 3 qualifications and/or Apprenticeship (Level 3) in Installing and Commissioning Industrial and Commercial H&V Pipework Systems
- Progress in their career with further training into job roles such as Technician, Designer

Estimator, Project Manager, Site/Workshop Supervisor/Manager, Chartered Engineer,  
Sales Engineer or Commercial Manager

Further career guidance can be found at: <http://www.summitskills.org.uk/building-services-apprenticeships-careers>

# Employee rights and responsibilities

The Employee Rights and Responsibilities (ERR) elements identified below will be achieved through an induction programme, in combination with the Level 2 NVQ Diploma in Heating and Ventilating Industrial and Commercial Installation qualification (either EAL (501/1622/8) or (City & Guilds 600/1806/9) into which they are integrated and signposted. The ERR elements will be evidenced by the issuing of a qualification achievement certificate plus the declaration consent form when claiming for the apprenticeship certificate.

The delivery and assessment of ERR must be designed so that the apprentice:

1. knows and understands the range of employer and employee statutory rights and responsibilities under Employment Law and that employment rights can be affected by other legislation as well. This should cover the apprentice's rights and responsibilities under the Disability Discrimination Act, other relevant equalities legislation and Health and Safety, together with the responsibilities and duties of employers.
2. knows and understands the procedures and documentation in their organisation which recognise and protect their relationship with their employer. Health and Safety and Equality and Diversity training must be an integral part of the apprentice's learning programme;
3. knows and understands the range of sources of information and advice available to them on their employment rights and responsibilities. Details of Access to Work and Additional Learning Support must be included in the programme
4. understands the role played by their occupation within their organisation and industry;
5. has an informed view of the types of career pathways that are open to them;
6. knows the types of representative bodies and understands their relevance to their industry and organisation, and their main roles and responsibilities.
7. knows where and how to get information and advice on their industry, occupation training and career;
8. can describe and work within their organisations principles and codes of practice;
9. recognises and can form a view on issues of public concern that affect their organisation and industry

## Level 2, Pathway 3: Servicing and Maintaining H&V Systems

### Description of this pathway

Servicing and Maintaining H&V Systems - 104 credits in total

### Entry requirements for this pathway in addition to the framework entry requirements

Examples of formal qualifications that can be used as an indication that an applicant has the potential to progress into and complete the Foundation (Level 2) in Servicing and Maintaining H&V Systems are:

- Welsh Baccalaureate Foundation Diploma
- Completion of a 'Pathway to Apprenticeship' in Plumbing
- GCSE grade A-D in each of the following:- a communication subject, maths and either a science or technical-based subject
- Level 1 GNVQs in relevant vocational/technical subjects
- A Level 1 'Access to Building Services Engineering' qualification

<b>Job title(s)</b>	<b>Job role(s)</b>
H&V Service and Maintenance Operative	Completes, under minimal supervision, the planned service and maintenance of Heating and Ventilating components, pipework and appliances

# Qualifications

## Competence qualifications available to this pathway

N/A

## Knowledge qualifications available to this pathway

N/A



## Combined qualifications available to this pathway

B1 - Level 2 NVQ Diploma in Planned and Reactive Maintenance on Heating and Ventilating Equipment					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
B1a	600/0143/4	City & Guilds	86	733	N/A
B1b	600/1759/4	EAL	86	733	N/A

## Relationship between competence and knowledge qualifications

This framework requires the completion of either of the combined qualification B1a or B1b identified in the combined qualifications section B1 above.

Qualification Title - Level 2 NVQ Diploma in Planned and Reactive Maintenance on Heating and Ventilating Equipment which has the following:

### Knowledge Units

- Understand how to communicate with others within building services engineering J/602/2482 **Unit Credit Value 3**
- Understand how to apply environmental protection measures within BSE D/602/2486 **Unit Credit Value 4**
- Understand how to apply scientific principles within MES J/602/2496 **Unit Credit Value 7**
- Understand industrial and commercial air system maintenance techniques R/602/4929 **Unit Credit Value 5**
- Understand industrial and commercial hot and cold water system maintenance techniques J/602/4927 **Unit Credit Value 6**
- Understand industrial and commercial hot water heating system maintenance techniques L/602/4928 **Unit Credit Value 5**

Knowledge Element = 30 credits

### Competence Units

- Apply safe working practices in building services engineering working environment T/602/2493 **Unit Credit Value 2**
- Service and maintain industrial and commercial H&V systems J/602/4930 **Unit Credit**

**Value 4**

- Understand and carry out safe working practices in building services engineering J/602/2479 **Unit Credit Value 10**
- Understand and carry out site preparation and pipework fabrication techniques for industrial and commercial systems A/602/2768 **Unit Credit Value 40**

**Competence Element = 56 credits**

**Total Qualification = 86 credits**

For further qualification details refer to: [www.register.ofqual.gov.uk/Qualification](http://www.register.ofqual.gov.uk/Qualification) and search by the relevant qualification or unit number.

# Transferable skills (Wales)

## Essential skills (Wales)

	Minimum level	Credit value
Communication	2	6
Application of numbers	2	6
IT	1	6

## Progression routes into and from this pathway

### Progression routes into this pathway:

Applicants may come from a range of routes including:

- Welsh Baccalaureate Foundation Diploma
- Completion of a 'Pathway to Apprenticeship' in Plumbing
- Work or work experience
- Training and/or experience which could include a portfolio showing what they have done
- Academic qualification(s) such as three GCSEs grades A-D in each of the following:- a communication subject, maths and either a science or technical-based subject
- Achievement of Essential Skills or Wider KeySkills
- Level 1 GNVQs in relevant vocational/technical subjects
- A Level 1 'Access to Building Services Engineering' qualification

No individual should be refused access to an initial assessment on the basis of educational qualifications alone. The ultimate responsibility for selection will rest with the individual

### Progression routes out of this pathway:

On successful completion of the Foundation (Level 2) framework in Servicing and Maintaining H&V Systems, an apprentice will have the skills, knowledge and qualifications to:

- Register on an appropriate Certification Scheme
- Progress to learning and assessment programmes that lead to relevant Level 3 qualifications and/or Apprenticeship (Level 3) in Servicing and Maintaining H&V Systems
- Progress in their career into job roles such as Technician, Designer Estimator, Project Manager, Site/Workshop Supervisor/Manager, Chartered Engineer, Sales Engineer or Commercial Manager

Further career guidance can be found at: <http://www.summitskills.org.uk/building-services-apprenticeships-careers>

# Employee rights and responsibilities

The Employee Rights and Responsibilities (ERR) elements identified below will be achieved through an induction programme, in combination with the Level 2 NVQ Diploma in Planned and Reactive Maintenance on Heating and Ventilating Equipment qualification (either EAL 600/1759/4 or City & Guilds 600/0143/4) into which they are integrated and signposted. The ERR elements will be evidenced by the issuing of a qualification achievement certificate plus the declaration consent form when claiming for the apprenticeship certificate.

The delivery and assessment of ERR must be designed so that the apprentice:

1. knows and understands the range of employer and employee statutory rights and responsibilities under Employment Law and that employment rights can be affected by other legislation as well. This should cover the apprentice's rights and responsibilities under the Disability Discrimination Act, other relevant equalities legislation and Health & Safety, together with the responsibilities and duties of employers.
2. knows and understandand the procedures and documentation in their organisation which recognise and protect their relationship with their employer. Health and Safety and Equality and Diversity training must be an integral part of the apprentice's learning programme;
3. knows and understands the range of sources of information and advice available to them on their employment rights and responsibilities. Details of Access to Work and Additional Learning Support must be included in the programme
4. understands the role played by their occupation within their organisation and industry;
5. has an informed view of the types of career pathways that are open to them;
6. knows the types of representative bodies and understands their relevance to their industry and organisation, and their main roles and responsibilities
7. knows where and how to get information and advice on their industry, occupation, training and career;
8. can describe and work within their organisations principles and codes of practice;
9. recognises and can form a view on issues of public concern that affect their organisation and industry

## Level 3

Title for this framework at level 3

# Apprenticeship (Level 3) in Heating and Ventilating (H&V) Systems

### Pathways for this framework at level 3

- Pathway 1: Installing and Pre-commissioning Industrial and Commercial H&V Ductwork Systems
- Pathway 2: Installing and Pre-commissioning Industrial and Commercial H&V Pipework Systems
- Pathway 3: Servicing and Maintaining H&V Systems

## Level 3, Pathway 1: Installing and Pre-commissioning Industrial and Commercial H&V Ductwork Systems

### Description of this pathway

Installing and Pre-commissioning Industrial and Commercial H&V Ductwork Systems - 57 credits in total

### Entry requirements for this pathway in addition to the framework entry requirements

The Heating and Ventilating Industry would normally expect entry into this framework to be for those who have already completed an Foundation (Level 2) framework in Installing Industrial and Commercial H&V Ductwork Systems, or for individuals with experience and knowledge that is comparable with the requirements of the framework.

Examples of formal qualifications that can be used as an indication that an applicant has the potential to progress into and complete the Apprenticeship (Level 3) in Installing and Commissioning Industrial and Commercial H&V Ductwork Systems are:

- Foundation (Level 2) framework in Installing Industrial and Commercial H&V Ductwork Systems
- Welsh Baccalaureate Intermediate Diploma
- Completion of a 'Pathway to Apprenticeship' in Plumbing
- GCSE grade A-C in each of the following:- a communication subject, maths and either a science or technical-based subject
- Level 2 GNVQs in relevant vocational/technical subjects
- A Level 2 'Access to Building Services Engineering' qualification

<b>Job title(s)</b>	<b>Job role(s)</b>
Heating & Ventilating Ductwork Installer	Completes and oversees the installation, assembly, fitting, testing, pre-commissioning and de-commissioning of ductwork systems



# Qualifications

## Competence qualifications available to this pathway

N/A

## Knowledge qualifications available to this pathway

N/A

## Combined qualifications available to this pathway

B1 - Level 3 NVQ Diploma in Heating and Ventilating - Ductwork Installation					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
B1a	600/1005/8	City & Guilds	39	272	N/A
B1b	600/1024/1	EAL	39	272	N/A

## Relationship between competence and knowledge qualifications

This framework requires the completion of either of the combined qualifications B1a or B1b identified in the combined qualifications section B1 above.

Qualification Title - Level 3 NVQ Diploma in Heating and Ventilating - Ductwork Installation which has:

### Knowledge Units

- Understand how to organise resources within BSE R/602/2498 **Unit Credit Value 3**
- Understand and apply industrial and commercial circular and flat oval ductwork installation and pre-commissioning techniques A/602/4911 **Unit Credit Value 8**
- Understand and apply industrial and commercial air handling unit installation and pre-commissioning techniques D/602/4920 **Unit Credit Value 4**
- Understand and apply industrial and commercial plastic ductwork installation and pre-commissioning techniques K/502/8202 **Unit Credit Value 4**
- Understand and apply industrial and commercial fire-rated ductwork installation and pre-commissioning techniques M/502/8203 **Unit Credit Value 4**
- Understand and apply industrial and commercial local exhaust ventilation system installation and pre-commissioning techniques R/502/8226 **Unit Credit Value 4**

### Knowledge Element = 27 credits

- Install and pre-commission industrial and commercial ductwork systems H/502/8229 **Unit Credit Value 4**
- Understand and apply industrial and commercial rectangular ductwork installation and pre-commissioning techniques F/602/4909 **Unit Credit Value 8**

### Competence Element = 12 credits

**Total Qualification = 39 credits**

For further qualification details refer to: [www.register.ofqual.gov.uk/Qualification](http://www.register.ofqual.gov.uk/Qualification) and search by the relevant qualification or unit number.

# Transferable skills (Wales)

## Essential skills (Wales)

	Minimum level	Credit value
Communication	2	6
Application of numbers	2	6
IT	N/A	N/A

## Progression routes into and from this pathway

### Progression routes into this pathway:

Applicants may come from a range of routes including:

- Successful completion of a Foundation (Level 2) framework in Installing Industrial and Commercial H&V Ductwork Systems
- Successful completion of a Welsh Baccalaureate Intermediate Diploma
- Successful Completion of a 'Pathway to Apprenticeship' in Plumbing
- Work or work experience
- Training and/or experience which could include a portfolio showing what they have done
- Academic qualification(s) such as three GCSEs grades A-C in each of the following:- a communication subject, maths and either a science or technical-based subject
- Achievement of Essential Skills or Wider KeySkills
- Level 2 GNVQs in relevant vocational/technical subjects
- Completion of a Level 2 'Access to Building Services Engineering' qualification

No individual should be refused access to an initial assessment on the basis of educational qualifications alone. The ultimate responsibility for selection will rest with the individual employer

### Progression routes out of this pathway:

On successful completion of the Apprenticeship (Level 3) in Installing and Pre-commissioning Industrial and Commercial H&V Ductwork Systems, an apprentice will have the skills, knowledge and qualifications to:

- Register on a relevant industry Certification Scheme
- Progress to relevant Level 4/5 qualifications e.g. Building Services Engineering Technology & Project Management or Foundation Degree in Engineering

- Progress onto the Level 6 Apprenticeships related to this field such as in Building Services Engineering Technology & Project Management
- Take a relevant Trade Test to demonstrate competence to work in other UK countries
- Progress in their career with further training into job roles such as Technician, Designer Estimator, Project Manager, Site/Workshop Supervisor/ Manager, Chartered Engineer, Sales Engineer or Commercial Manager

Further career guidance can be found at: <http://www.summitskills.org.uk/building-services-apprenticeships-careers>

**UCAS points for this pathway: N/A**

# Employee rights and responsibilities

The normal entry is through the previous completion of the Foundation (Level 2) in Heating and Ventilating Ductwork Installation programme. The ERR elements are integrated and signposted, and will be automatically evidenced by issuing a qualification achievement certificate. Recognition of Prior Learning (RPL) may therefore be applied if ERR is gained in this way or from another programme.

Alternatively the ERR elements identified below must be achieved through an induction programme, in combination with the Level 3 NVQ Diploma in Heating and Ventilating - Ductwork Installation qualification (EAL 600/1024/1 or City & Guilds 600/1005/8) into which they are integrated and signposted. The ERR elements will be evidenced by the issuing of a qualification achievement certificate plus the declaration consent form when claiming for the apprenticeship certificate.

The delivery and assessment of ERR must be designed so that the apprentice:

1. knows and understands the range of employer and employee statutory rights and responsibilities under Employment Law and that employment rights can be affected by other legislation as well. This should cover the apprentice's rights and responsibilities under the Disability Discrimination Act, other relevant equalities legislation and Health & Safety, together with the responsibilities and duties of employers.
2. knows and understands the procedures and documentation in their organisation which recognise and protect their relationship with their employer. Health & Safety and Equality & Diversity training must be an integral part of the apprentice's learning programme;
3. knows and understands the range of sources of information and advice available to them on their employment rights and responsibilities. Details of Access to Work and Additional Learning Support must be included in the programme
4. understands the role played by their occupation within their organisation and industry;
5. has an informed view of the types of career pathways that are open to them;
6. knows the types of representative bodies and understands their relevance to their industry and organisation, and their main roles and responsibilities
7. knows where and how to get information and advice on their industry, occupation, training and career;
8. can describe and work within their organisations principles and codes of practice;
9. recognises and can form a view on issues of public concern that affect their organisation and industry

## Level 3, Pathway 2: Installing and Pre-commissioning Industrial and Commercial H&V Pipework Systems

### Description of this pathway

Installing and Pre-commissioning Industrial and Commercial H&V Pipework Systems - 75 credits in total

### Entry requirements for this pathway in addition to the framework entry requirements

The Heating and Ventilating Industry would normally expect entry into this framework to be for those who have already completed a Foundation (Level 2) Apprenticeship in Installing Industrial and Commercial H&V Pipework Systems, or for individuals with comparable experience and knowledge.

Examples of formal qualifications that can be used as an indication that an applicant has the potential to progress into and complete the Apprenticeship (Level 3) in Installing and Commissioning Industrial and Commercial H&V Pipework Systems are:

- Successful completion of the Foundation (Level 2) framework in Installing Industrial and Commercial H&V Pipework Systems
- Welsh Baccalaureate Intermediate Diploma
- Completion of a 'Pathway to Apprenticeship' in Plumbing
- GCSE grade A-C in each of the following:- a communication subject, maths and either a science or technical-based subject
- Level 2 GNVQs in relevant vocational/technical subjects
- A Level 2 'Access to Building Services Engineering' qualification

<b>Job title(s)</b>	<b>Job role(s)</b>
Heating and Ventilating Welder	Completes and oversees the installation, fabrication, welding and specialist jointing of industrial and commercial H&V pipework systems
Heating and Ventilating Engineer	Completes and oversees the installation, testing, pre-commissioning and maintenance of industrial and commercial H&V systems including hot water, cold water, heating, fire protection and compressed air systems



# Qualifications

## Competence qualifications available to this pathway

N/A

## Knowledge qualifications available to this pathway

N/A

## Combined qualifications available to this pathway

B1 - Level 3 NVQ Diploma in Heating and Ventilating - Industrial and Commercial					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
B1a	600/1009/5	City & Guilds	57	454	N/A
B1b	600/1163/4	EAL	57	454	N/A

## Relationship between competence and knowledge qualifications

This framework requires the completion of either of the combined qualifications B1a or B1b identified in the combined qualifications section B1 above.

Qualification Title - Level 3 NVQ Diploma in Heating and Ventilating Industrial and Commercial Installation.

This qualification has a variety of unit combinations to permit achievement. The learner must achieve 50 credits from eight units in the mandatory group plus an additional 7 credits from a group contained in one of the optional pathways P1, P2 or P3.

### **Mandatory Knowledge Units**

- Understand how to organise resources within BSE R/602/2498 **Unit Credit Value 3**
- Understand industrial and commercial cold water system installation and pre-commissioning techniques R/602/4851 **Unit Credit Value 5**
- Understand industrial and commercial hot water system installation and pre-commissioning techniques Y/602/4852 **Unit Credit Value 5**
- Understand industrial and commercial heating system installation and pre-commissioning techniques K/602/4855 **Unit Credit Value 5**
- Understand industrial and commercial chilled water system installation and pre-commissioning techniques A/602/4858 **Unit Credit Value 5**
- Understand the principles and requirements of industrial and commercial fuel systems F/602/4862 **Unit Credit Value 12**

**Knowledge Element of Mandatory Units = 35 credits**

### **Mandatory Competence Units**

- Understand and carry out electrical work on industrial and commercial heating and ventilating systems and components R/502/9151 **Unit Credit Value 12**
- Install H&V industrial and commercial systems Y/602/4897 **Unit Credit Value 3**

**Competence Element of Mandatory Units = 15 credits**

### ***Optional pathway P1***

#### **Knowledge unit from P1**

- Understand industrial and commercial H&V maintenance techniques H/602/4871 **Unit Credit Value 5**

#### **Competence unit from P1**

- Maintain industrial and commercial H&V systems Y/502/8194 **Unit Credit Value 2**

### ***Optional pathway P2***

#### **Knowledge unit from P2**

- Understand industrial and commercial oxy-acetylene pipe jointing techniques D/602/4884 **Unit Credit Value 5**

#### **Competence unit from P2**

- Perform industrial and commercial oxy-acetylene pipe jointing techniques K/602/4905 **Unit Credit Value 2**

### ***Optional pathway P3***

#### **Knowledge unit from P3**

- Understand industrial and commercial manual metal arc pipe jointing techniques K/602/4886 **Unit Credit Value 5**

#### **Competence unit from P3**

- Perform industrial and commercial manual metal arc pipe jointing techniques T/602/4907 **Unit Credit Value 2**

**Total Knowledge Element = 40 credits**

**Total Competence Element = 17 credits**

**Total Qualification = 57 credits**

For further qualification details refer to: [www.register.ofqual.gov.uk/Qualification](http://www.register.ofqual.gov.uk/Qualification) and search

by the relevant qualification or unit number.

# Transferable skills (Wales)

## Essential skills (Wales)

	Minimum level	Credit value
Communication	2	6
Application of numbers	2	6
IT	N/A	N/A

## Progression routes into and from this pathway

### Progression routes into this pathway:

Applicants may come from a range of routes including:

- Successful completion of a Foundation (Level 2) framework in Installing Industrial and Commercial H&V Pipework Systems
- Successful completion of a Welsh Baccalaureate Intermediate Diploma
- Successful Completion of a 'Pathway to Apprenticeship' in Plumbing
- Work or work experience
- Training and/or experience which could include a portfolio showing what they have done
- Academic qualification(s) such as three GCSEs grades A-C in each of the following:- a communication subject, maths and either a science or technical-based subject
- Achievement of Essential Skills or Wider KeySkills
- Level 2 GNVQs in relevant vocational/technical subjects
- Completion of a Level 2 'Access to Building Services Engineering' qualification

No individual should be refused access to an initial assessment on the basis of educational qualifications alone. The ultimate responsibility for selection will rest with the individual employer

### Progression routes out of this pathway:

On successful completion of the Apprenticeship (Level 3) framework in Installing and Commissioning Industrial and Commercial H&V Pipework Systems, an apprentice will have the skills, knowledge and qualifications to:

- Register on a relevant industry Certification Scheme
- Progress to relevant Level 4/5 qualifications e.g. Building Services Engineering Technology & Project Management or Foundation Degree in Engineering

- Progress onto the Level 6 Apprenticeships related to this field such as in Building Services Engineering Technology & Project Management
- Take a relevant Trade Test to demonstrate competence to work in other UK countries
- Progress in their career with further training into job roles such as Technician, Designer Estimator, Project Manager, Site/Workshop Supervisor/Manager, Chartered Engineer, Sales Engineer or Commercial Manager

Further career guidance can be found at: <http://www.summitskills.org.uk/building-services-apprenticeships-careers>

**UCAS points for this pathway: N/A**

# Employee rights and responsibilities

The normal entry is through the previous completion of the Foundation (Level 2) framework in Installing and Commissioning Industrial and Commercial H&V Pipework Systems. The ERR elements are integrated and signposted, and will be evidenced by the issuing of a qualification achievement certificate. Recognition of Prior Learning (RPL) may therefore be applied if ERR is gained in this way or from another programme.

Alternatively the ERR elements must be achieved through an induction programme in combination with the Level 3 NVQ Diploma in Heating and Ventilating Industrial and Commercial Installation qualification (EAL 600/1163/4 or City & Guilds 600/1009/5) into which they are integrated and signposted. The ERR elements will be evidenced by the issuing of a qualification achievement certificate plus the declaration consent form when claiming for the apprenticeship certificate.

The delivery and assessment of ERR must be designed so that the apprentice:

1. knows and understands the range of employer and employee statutory rights and responsibilities under Employment Law and that employment rights can be affected by other legislation as well. This should cover the apprentice's rights and responsibilities under the Disability Discrimination Act, other relevant equalities legislation and Health and Safety, together with the responsibilities and duties of employers.
2. knows and understands the procedures and documentation in their organisation which recognise and protect their relationship with their employer. Health and Safety and Equality and Diversity training must be an integral part of the apprentice's learning programme;
3. knows and understands the range of sources of information and advice available to them on their employment rights and responsibilities. Details of Access to Work and Additional Learning Support must be included in the programme
4. understands the role played by their occupation within their organisation and industry;
5. has an informed view of the types of career pathways that are open to them;
6. knows the types of representative bodies and understands their relevance to their industry and organisation, and their main roles and responsibilities
7. knows where and how to get information and advice on their industry, occupation, training and career;
8. can describe and work within their organisations principles and codes of practice;
9. recognises and can form a view on issues of public concern that affect their organisation and industry

## Level 3, Pathway 3: Servicing and Maintaining H&V Systems

### Description of this pathway

Servicing and Maintaining H&V Systems (Servicing and maintaining H&V systems, components, pipework and appliances) - 80 credits in total.

### Entry requirements for this pathway in addition to the framework entry requirements

The Heating and Ventilating Industry would normally expect entry into this framework to be for those who have already completed a Foundation (Level 2) framework in Heating and Ventilating - Service and Maintenance, or for individuals with the experience and knowledge comparable with the requirements of that framework.

Examples of formal qualifications that can be used as an indication that an applicant has the potential to progress into and complete the Apprenticeship (Level 3) framework in Servicing and Maintaining H&V Systems are:

- Successful completion of the Foundation (Level 2) framework in Servicing and Maintaining H&V Systems
- Welsh Baccalaureate Intermediate Diploma
- Completion of a 'Pathway to Apprenticeship' in Plumbing
- GCSE grade A-C in each of the following:- a communication subject, maths and either a science or technical-based subject
- Level 2 GNVQs in relevant vocational/technical subjects
- A Level 2 'Access to Building Services Engineering' qualification



<b>Job title(s)</b>	<b>Job role(s)</b>
Heating and Ventilating Service and Maintenance Engineer	Completes and oversees the servicing and maintenance, fault-finding, repairs, rectification, and modification of complex H&V systems, components, pipework and appliances

# Qualifications

## Competence qualifications available to this pathway

N/A

## Knowledge qualifications available to this pathway

N/A

## Combined qualifications available to this pathway

B1 - Level 3 NVQ Diploma in Planned and Reactive Maintenance on Heating and Ventilating					
No.	Ref no.	Awarding organisation	Credit value	Guided learning hours	UCAS points value
B1a	600/1008/3	City & Guilds	62	504	N/A
B1b	600/1188/9	EAL	62	504	N/A

## Relationship between competence and knowledge qualifications

This framework requires the completion of either of the combined qualifications B1a or B1b identified in the combined qualifications section B1 above.

Qualification Title - Level 3 NVQ Diploma in Planned and Reactive Maintenance on H&V Systems which has:

### Knowledge Units

- Understand how to organise resources within BSE R/602/2498 **Unit Credit Value 3**
- Understand the principles and requirements of industrial and commercial fuel systems F/602/4862 **Unit Credit Value 12**
- Understand industrial and commercial hot and cold water system maintenance and fault diagnosis techniques D/502/8231 **Unit Credit Value 8**
- Understand industrial and commercial hot water heating system maintenance and fault diagnosis techniques F/502/8190 **Unit Credit Value 8**
- Understand industrial and commercial ventilation system maintenance and fault diagnosis techniques J/502/8191 **Unit Credit Value 7**
- Understand industrial and commercial air conditioning system maintenance and fault diagnosis techniques L/502/8192 **Unit Credit Value 7**

**Knowledge Element = 45 credits**

### Competence Units

- Understand and carry out electrical work on industrial and commercial heating and ventilating systems and components R/502/9151 **Unit Credit Value 12**
- Maintain and diagnose faults on H&V industrial and commercial systems R/502/8193 **Unit**

***Credit Value 5***

**Competence Element = 17 credits**

**Total Qualification = 62 credits**

For further qualification details refer to: [www.register.ofqual.gov.uk/Qualification](http://www.register.ofqual.gov.uk/Qualification) and search by the relevant qualification or unit number.

# Transferable skills (Wales)

## Essential skills (Wales)

	Minimum level	Credit value
Communication	2	6
Application of numbers	2	6
IT	N/A	N/A

## Progression routes into and from this pathway

### Progression routes into this pathway:

Applicants may come from a range of routes including:

- Successful completion of a Foundation (Level 2) framework in Servicing and Maintaining H&V Systems
- Successful completion of a Welsh Baccalaureate Intermediate Diploma
- Successful Completion of a 'Pathway to Apprenticeship' in Plumbing
- Work or work experience
- Training and/or experience which could include a portfolio showing what they have done
- Academic qualification(s) such as three GCSEs grades A-C in each of the following:- a communication subject, maths and either a science or technical-based subject
- Achievement of Essential Skills or Wider KeySkills
- Level 2 GNVQs in relevant vocational/technical subjects
- Completion of a Level 2 'Access to Building Services Engineering' qualification

No individual should be refused access to an initial assessment on the basis of educational qualifications alone. The ultimate responsibility for selection will rest with the individual employer

### Progression routes out of this pathway:

On successful completion of the Apprenticeship (Level 3) framework in Servicing and Maintaining H&V Systems, an apprentice will have the skills, knowledge and qualifications to:

- Register on a relevant industry Certification Scheme
- Progress to relevant Level 4/5 qualifications e.g. Building Services Engineering Technology & Project Management or Foundation Degree in Engineering
- Progress onto the Level 6 Apprenticeships related to this field such as in Building Services

#### Engineering Technology & Project Management

- Take a relevant Trade Test to demonstrate competence to work in other UK countries
- Progress in their career with further training into such job roles as Technician, Designer Estimator, Project Manager, Site/Workshop Supervisor/Manager, Chartered Engineer, Sales Engineer or Commercial Manager

Further career guidance can be found at: <http://www.summitskills.org.uk/building-services-apprenticeships-careers>

**UCAS points for this pathway: N/A**

# Employee rights and responsibilities

The normal entry into this framework would be through the previous completion of the Foundation (Level 2) framework in Heating and Ventilating - Service and Maintenance into which the Employee, Rights and Responsibilities (ERR) elements are integrated and signposted. The ERR elements will be evidenced by the issuing of a qualification achievement certificate. Recognition of Prior Learning (RPL) may therefore be applied if ERR is gained in this way or from another programme.

Alternatively the ERR elements identified below must be achieved through an enhanced induction programme in combination with the Level 3 NVQ Diploma in Planned and Reactive Maintenance on H&V Systems qualification (EAL 600/1188/9 or City & Guilds 600/1008/3) into which they are integrated and signposted. The ERR elements will be evidenced by the issuing of a qualification achievement certificate plus the declaration consent form when claiming for the apprenticeship certificate.

The delivery and assessment of ERR must be designed so that the apprentice:

1. knows and understands the range of employer and employee statutory rights and responsibilities under Employment Law and that employment rights can be affected by other legislation as well. This should cover the apprentice's rights and responsibilities under the Disability Discrimination Act, other relevant equalities legislation and Health and Safety, together with the responsibilities and duties of employers.
2. knows and understands the procedures and documentation in their organisation which recognise and protect their relationship with their employer. Health and Safety and Equality and Diversity training must be an integral part of the apprentice's learning programme;
3. knows and understands the range of sources of information and advice available to them on their employment rights and responsibilities. Details of Access to Work and Additional Learning Support must be included in the programme
4. understands the role played by their occupation within their organisation and industry;
5. has an informed view of the types of career pathways that are open to them;
6. knows the types of representative bodies and understands their relevance to their industry and organisation, and their main roles and responsibilities
7. knows where and how to get information and advice on their industry, occupation, training and career;
8. can describe and work within their organisations principles and codes of practice;
9. recognises and can form a view on issues of public concern that affect their organisation and industry

*The remaining sections apply to all levels and pathways within this framework.*

## How equality and diversity will be met

The nature of the work means that the Heating and Ventilating Industry is not a traditional career choice for women, but women do qualify and work successfully in the industry and this is encouraged. We are continuing to work with the UK Resource Centre for Women in Science, Engineering and Technology and the Young Woman's Trust to promote the opportunities for women working within the building services engineering sector.

SummitSkills will have overall responsibility for the development and review of the framework and for monitoring equality of opportunity, primarily by the analysis of the National Apprenticeship Service data.

There should be open recruitment of apprentices who meet the selection criteria, which is available to all individuals, regardless of gender, ethnic origin, religion/belief, sexual orientation or disability.

All partners involved in the delivery of the apprenticeship and employers must be committed to a policy of equal opportunities and must have a formal equal opportunities policy and procedure in place. Employers/providers must be able to demonstrate that there are no overt or covert discriminatory practices in selection and employment. All promotional, selection and training activities must comply with relevant legislation, such as the Equality Act 2010.

<http://www.equalityhumanrights.com/advice-and-guidance/new-equality-act-guidance/>

Providers will monitor equality of opportunity practice and procedures within their own organisation and take positive action when necessary. It is also recommended that employers/providers conduct an exit interview if the apprentice leaves the programme before completion.



# On and off the job training (Wales)

## Summary of on- and off-the-job training

### *Foundation Level Apprenticeships*

#### **Overview of Installing Industrial and Commercial H&V Ductwork Systems**

Qualification Total - 490 hrs (Knowledge elements 394hrs + Competence elements 96hrs)

Essential Skills (ES) - 135 hrs (notional value of 45hrs per ES x 3, which can be offset if previously completed)

Mentoring - 92 hrs (based on 46 wks x 2hrs)

Total minimum Training Hours for this pathway 717

#### **Overview of Installing Industrial and Commercial H&V Pipework Systems**

Qualification Total - 696 hrs (Knowledge elements 244hrs + Competence elements 452hrs)

Essential Skills (ES) - 135 hrs (notional value of 45hrs per ES x 3, which can be offset if previously completed)

Mentoring - 92 hrs (based on 46 wks x 2hrs)

Total minimum Training Hours for this pathway = 923

#### **Overview of Servicing and Maintaining H&V Systems**

Qualification Total - 733 hrs (Knowledge elements 279hrs + Competence elements 454hrs)

Essential Skills - 135 hrs (notional value of 45hrs per ES x 3, which can be offset if previously completed)

Mentoring - 92 hrs (based on 46 wks x 2hrs)

Total minimum Training Hours for this pathway - 960 hrs

### *Apprenticeships (Level 3) Level Apprenticeships*

#### **Overview of Installing and Pre-commissioning Industrial & Commercial H&V Ductwork Systems**

Qualification Total - 272 hrs (Knowledge elements 203hrs + Competence elements 69hrs)

Essential Skills (ES) - 90 hrs (notional value of 45hrs per ES x 2, which can be offset if previously completed)

Mentoring - 184 hrs (based on 92 wks x 2hrs)

Total minimum Training Hours for this pathway - 546 hrs

### **Overview of Installing and Pre-commissioning Industrial and Commercial H&V Pipework Systems**

Qualification Total - 454 hrs (Knowledge elements 344hrs + Competence elements 110hrs)

Essential Skills (ES) - 90 hrs (notional value of 45hrs per ES x 2, which can be offset if previously completed)

Mentoring - 184 hrs (based on 92 wks x 2hrs)

Total minimum Training Hours for this pathway is 728 hrs

### **Overview of Servicing and Maintaining H&V Systems**

Qualification Total - 504 hrs (Knowledge elements 390hrs + Competence elements 114hrs)

Essential Skills (ES) - 90 hrs (notional value of 45hrs per ES x 2, which can be offset if previously completed)

Mentoring - 184 hrs (based on 92 wks x 2hrs)

Total minimum Training Hours for this framework - 778 hrs

## **Off-the-job training**

### ***Foundation Level Apprenticeships***

**Installing Industrial and Commercial H&V Ductwork Systems** - Minimum total off-the-job Training Hours is 533 hrs over 24 months

- Yr 1 - 267 hrs
- Yr 2 - 266 hrs

**Installing Industrial and Commercial H&V Pipework Systems** - Minimum total off-the-job Training Hours is 739 hrs over 24 months

- Yr 1 - 370 hrs
- Yr 2 - 369 hrs

**Servicing and Maintaining H&V Systems** - Minimum total off-the-job Training Hours is 776 hrs over 24 months

- Yr 1 - 388 hrs
- Yr 2 - 388 hrs

### ***Apprenticeships (Level 3) Level Apprenticeships***

**Installing and Pre-commissioning Industrial and Commercial H&V Ductwork Systems** - Minimum total off-the-job Training Hours is 362 hrs over 24 months

- Yr 1 - 181 hrs
- Yr 2 - 181 hrs

**Installing and Pre-commissioning Industrial and Commercial H&V Pipework Systems** - Minimum total off-the-job Training Hours is 589 hrs over 24 months

- Yr 1 - 295 hrs
- Yr 2 - 294 hrs

**Servicing and Maintaining H&V Systems** - Minimum total off-the-job Training Hours is 594 hrs over 24 months

- Yr 1 - 297 hrs
- Yr 2 - 297 hrs

## **How this requirement will be met**

Training Hours will be achieved through clear and specific outcomes which contribute directly to the successful completion of the framework, and these may include accredited and non-accredited elements.

Training hours will be delivered through one or more of the following methods: individual and group teaching; e-learning; distance learning; feedback and assessment; guided study.

All Training hours delivery will take place during contracted working hours and while working under an Apprenticeship Agreement.

This will be evidenced by training provider attendance statistics and assessment reports.

## **On-the-job training**

### ***Foundation Level Apprenticeships***

**Installing Industrial and Commercial H&V Ductwork Systems** - Minimum total on-the-job Training Hours is 184 hrs over 24 months

- Yr 1 - 92 hrs
- Yr 2 - 92 hrs

**Installing Industrial and Commercial H&V Pipework Systems** - Minimum total on-the-job Training Hours is 184 hrs over 24 months

- Yr 1 - 92 hrs
- Yr 2 - 92 hrs

**Servicing and Maintaining H&V Systems** - Minimum total on-the-job Training Hours is 184 hrs over 24 months

- Yr 1 - 92 hrs
- Yr 2 - 92 hrs

### ***Apprenticeships (Level 3) Level Apprenticeships***

**Installing and Pre-commissioning Industrial and Commercial H&V Ductwork Systems** - Minimum total on-the-job Training Hours is 184 hrs over 24 months

- Yr 1 - 92 hrs
- Yr 2 - 92 hrs

**Installing and Pre-commissioning Industrial and Commercial H&V Pipework Systems** - Minimum total on-the-job Training Hours is 184 hrs over 24 months

- Yr 1 - 92 hrs
- Yr 2 - 92 hrs

**Servicing and Maintaining H&V Systems** - Minimum total on-the-job Training Hours is 184 hrs over 24 months

- Yr 1 - 92 hrs
- Yr 2 - 92 hrs

These are the minimum number of Training Hours that should be allocated for the apprentice to gather evidence in accordance with the requirements of the integrated qualification and mentoring.

### **How this requirement will be met**

Training Hours will be achieved through clear and specific outcomes which contribute directly to the successful achievement of the framework and these may include accredited and non-accredited elements of the framework.

Training Hours will be delivered through one or more of the following methods: coaching; mentoring; feedback and assessment; collaborative/ networked learning with peers.

All Training Hours delivery must be completed while undertaking apprenticeship training and will take place during contracted working hours.

This will be evidenced by the apprentices portfolio, employer dialogue, qualification assessment records and reports.

# Wider key skills assessment and recognition (Wales)

## Improving own learning and performance

There is no requirement for apprentices to provide evidence they have achieved the Wider Key Skill of **Improving own learning and performance**. However, it should be noted that the content, delivery and assessment of the combined qualifications within the Foundation (Level 2) and Apprenticeship (Level 3) frameworks will provide an opportunity for the apprentice to demonstrate they have the ability, to improve their own learning and performance in the work place and training environment.

## Working with others

There is no requirement for apprentices to provide evidence they have achieved the Wider Key Skill of **Working with others**. However, it should be noted that the content, delivery and assessment of the combined qualifications within the Foundation (Level 2) and Apprenticeship (Level 3) frameworks will provide an opportunity for the apprentice to demonstrate they have the ability, to work with others in the work place and training environment.

## Problem solving

There is no requirement for apprentices to provide evidence they have achieved the Wider Key Skill of **Problem Solving**. However, it should be noted that the content, delivery and assessment of the combined qualifications within the Foundation (Level 2) and Apprenticeship (Level 3) frameworks will provide an opportunity for the apprentice to demonstrate they have the ability, to solve theoretical and practical problems in the work place and training environment.

## Additional employer requirements

Although not a requirement for issuing an "Apprenticeship Completion Certificate", employers in the building services engineering sector **encourage** organisations that are delivering a learning and assessment programme for this Apprenticeship (Level 3) Framework to integrate the Level 3 Award in the Fundamental Principles and Requirements of Environmental Technology Systems (City & Guilds 600/0701/1, EAL 600/0665/1, BPEC 600/6377/4) LCL 600/5715/4, Pro Qual 600/6253/8) into their delivery models.

Subject to the type of work carried out by the employer we would **encourage** training providers to discuss with employers whether it would be useful to also train the apprentice in the following qualification:

- LCL Level 3 Award in Energy Efficiency for Gas fired and Oil fired domestic heating and Hot water systems (QCF) 601/3942/0

It should be noted that the delivery of this qualification will **not** attract funding.

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apprenticeship  
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For more information visit  
[www.afo.sscalliance.org](http://www.afo.sscalliance.org)