

apprenticeship FRAMEWORK

Heating & Ventilating Systems (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?

For any previous versions of this framework: www.acwcerts.co.uk/framework_library

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Heating & Ventilating Systems (Wales)

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Framework information

Information on the Issuing Authority for this framework:

Instructus

The Apprenticeship sector for occupations in air conditioning, building services engineering, business and administration, cleaning, customer service, digital/information technology, electro technical, electrical and electronic servicing, enterprise and business support, facilities management, heating and ventilating, housing, human resources and recruitment, industrial relations, leadership and management, marketing and sales (also includes contact centres and third sector), plumbing, property and refrigeration.

Issue number: 3	This framework includes:
Framework ID: FR04292	Level 2 <input checked="" type="checkbox"/> Level 3 <input checked="" type="checkbox"/> Level 4-7 <input type="checkbox"/>
Date this framework is to be reviewed by: 01/04/2023	This framework is for use in: Wales

Short description

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

Roles in this framework are likely to fit into Standard Occupational Code (SOC): 53

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

[Instructus Skills, 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

Name: [Tony Beecher]

Organisation: [Instructus Skills (formerly Skills CfA, Summit Skills)]

Organisation Type: [Sector Skills Council]

Job Title: [Standards and Portfolio Manager]

Phone: [01536 738 631]

Email: [skills@instructus.org]

Postal address: [Unit 3 Cherry Hall Road
Kettering Business Park
Kettering
NN14 1UE]

Website: [<https://www.instructus-skills.org/>]

Issuing Authority's contact details

Issued by: [Instructus]

Issuer contact name: [Damian Brown]

Issuer contact phone: [01536 738 631]

Issuer Email: [skills@instructus.org]

Contact Details

Who is making this revision | Larisa Puk

Your organisation | Instructus Skills

Your email address: | skills@instructus.org

Revising a framework

Why this framework is being revised

[This framework has been updated by Instructus Skills in order to amend contact details, and ensure all qualifications are up to date.]

Summary of changes made to this framework

[This framework has been updated by Instructus Skills in order to amend contact details, and ensure all qualifications are up to date.]

Two pathways have been withdrawn due to qualifications no longer awarded or not available to new learners:

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

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

Qualifications removed

[Level 2 NVQ Diploma in Heating and Ventilating - Ductwork Installation - 501/1696/4 - EAL

Level 2 NVQ Diploma in Heating and Ventilating - Ductwork Installation - 600/0144/6 - City & Guilds

Level 2 NVQ Diploma in Heating and Ventilating Industrial and Commercial Installation - 501/1622/8 - EAL

Level 2 NVQ Diploma in Planned and Reactive Maintenance on Heating and Ventilating Equipment - 600/1759/4 - EAL

Level 3 NVQ Diploma in Heating and Ventilating - Ductwork Installation - 600/1005/8 - City & Guilds

Level 3 NVQ Diploma in Heating and Ventilating - Ductwork Installation - 600/1024/1 - EAL

Level 3 NVQ Diploma in Heating and Ventilating - Industrial and Commercial - 600/1163/4 - EAL

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

600/1188/9 - EAL

Qualifications added

None

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.

Please refer to the Instructus Skills website for more information: www.instructus-skills.org

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 Disclosure and Barring Service (DBS) 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 the framework at level 2:

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

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 - WITHDRAWN

Description of this pathway

[This pathway is withdrawn due to both qualifications no longer awarded or not available to new learners.]

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

[N/A]

Job title(s)	Job role(s)
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	000/0000/0	WITHDRAWN	00	000	N/A
B1b	000/0000/0	WITHDRAWN	00	000	N/A

Relationship between competence and knowledge qualifications

N/A

Essential Skills

An apprenticeship framework must specify as a Welsh certificate requirement the expected achievement levels of Essential Skills in Communication and the Application of Number, and Digital Literacy (where required).

ESSENTIAL SKILLS WALES

Communication	Min.Level 2
Application of Number	Min.Level 2
IT/Digital Literacy	Min.Level 1

For the current list of acceptable proxy qualifications and appropriate minimum grade/level requirements, please refer to the most recent version of SASW on the gov.wales website. Additional guidance materials can be found on the Knowledge Base section of the ACW website.

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Progression routes into and from this pathway

N/A

UCAS points for this pathway:

[Framework Developer to complete with relevant info]

Employee rights and responsibilities

Please note that for Apprenticeship starts from 14/10/2016 onwards ERR is no longer a **mandatory** requirement in all frameworks.

However, it may still be included in some frameworks and where it is not explicitly stated that ERR is not a requirement then confirmation of an Apprentice's ERR achievement will still remain a requirement for Apprenticeship certification purposes.

Is ERR a requirement for this framework? **YES** **NO**

Delivery and assessment

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.

Job title(s)	Job role(s)
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
B1b	600/1806/9	City & Guilds	81	696	810

Relationship between competence and knowledge qualifications

This framework pathway requires the completion of the combined qualification B1b identified in the 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: register.ofqual.gov.uk/ and search by the relevant qualification.

Essential Skills

An apprenticeship framework must specify as a Welsh certificate requirement the expected achievement levels of Essential Skills in Communication and the Application of Number, and Digital Literacy (where required).

ESSENTIAL SKILLS WALES

Communication	Min.Level 2
Application of Number	Min.Level 2
IT/Digital Literacy	Min.Level 1

For the current list of acceptable proxy qualifications and appropriate minimum grade/level requirements, please refer to the most recent version of SASW on the gov.wales website. Additional guidance materials can be found on the Knowledge Base section of the ACW website.

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 Key Skills
- 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.

Please refer to the Instructus Skills website for more information: www.instructus-skills.org

UCAS points for this pathway:

Framework Developer to complete with relevant info

Employee rights and responsibilities

Please note that for Apprenticeship starts from 14/10/2016 onwards ERR is no longer a **mandatory** requirement in all frameworks.

However, it may still be included in some frameworks and where it is not explicitly stated that ERR is not a requirement then confirmation of an Apprentice's ERR achievement will still remain a requirement for Apprenticeship certification purposes.

Is ERR a requirement for this framework? **YES** **NO**

Delivery and assessment

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.

Job title(s)	Job role(s)
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	860

Relationship between competence and knowledge qualifications

This framework requires the completion of the combined qualification B1a identified in the 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: register.ofqual.gov.uk/ and search by the relevant qualification.

Essential Skills

An apprenticeship framework must specify as a Welsh certificate requirement the expected achievement levels of Essential Skills in Communication and the Application of Number, and Digital Literacy (where required).

ESSENTIAL SKILLS WALES

Communication	Min.Level 2
Application of Number	Min.Level 2
IT/Digital Literacy	Min.Level 1

For the current list of acceptable proxy qualifications and appropriate minimum grade/level requirements, please refer to the most recent version of SASW on the gov.wales website. Additional guidance materials can be found on the Knowledge Base section of the ACW website.

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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 Key Skills
- 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 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.

Please refer to the Instructus Skills website for more information: www.instructus-skills.org

UCAS points for this pathway:

N/A

Employee rights and responsibilities

Please note that for Apprenticeship starts from 14/10/2016 onwards ERR is no longer a **mandatory** requirement in all frameworks.

However, it may still be included in some frameworks and where it is not explicitly stated that ERR is not a requirement then confirmation of an Apprentice's ERR achievement will still remain a requirement for Apprenticeship certification purposes.

Is ERR a requirement for this framework? **YES** **NO**

Delivery and assessment

Level 3

Title for this framework at level 3

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

Pathways for the framework at level 3:

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

Description of this pathway

This pathway is withdrawn due to both qualifications no longer awarded or not available to new learners

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

N/A

Job title(s)	Job role(s)
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	000/0000/0	WITHDRAWN	00	0000	N/A
B1b	000/0000/0	WITHDRAWN	00	0000	N/A

Relationship between competence and knowledge qualifications

N/A

Essential Skills

An apprenticeship framework must specify as a Welsh certificate requirement the expected achievement levels of Essential Skills in Communication and the Application of Number, and Digital Literacy (where required).

ESSENTIAL SKILLS WALES

Communication	Min.Level 2
Application of Number	Min.Level 2
IT/Digital Literacy	N/A

For the current list of acceptable proxy qualifications and appropriate minimum grade/level requirements, please refer to the most recent version of SASW on the gov.wales website. Additional guidance materials can be found on the Knowledge Base section of the ACW website.

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Progression routes into and from this pathway

N/A

UCAS points for this pathway:

N/A

Employee rights and responsibilities

Please note that for Apprenticeship starts from 14/10/2016 onwards ERR is no longer a **mandatory** requirement in all frameworks.

However, it may still be included in some frameworks and where it is not explicitly stated that ERR is not a requirement then confirmation of an Apprentice's ERR achievement will still remain a requirement for Apprenticeship certification purposes.

Is ERR a requirement for this framework? **YES** **NO**

Delivery and assessment

N/A

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.

Job title(s)	Job role(s)
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	570

Relationship between competence and knowledge qualifications

This framework requires the completion of the combined qualification B1a identified in the 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: register.ofqual.gov.uk/ and search by the relevant qualification.

Essential Skills

An apprenticeship framework must specify as a Welsh certificate requirement the expected achievement levels of Essential Skills in Communication and the Application of Number, and Digital Literacy (where required).

ESSENTIAL SKILLS WALES

Communication	Min.Level 2
Application of Number	Min.Level 2
IT/Digital Literacy	N/A

For the current list of acceptable proxy qualifications and appropriate minimum grade/level requirements, please refer to the most recent version of SASW on the gov.wales website. Additional guidance materials can be found on the Knowledge Base section of the ACW website.

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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

Please refer to the Instructus Skills website for more information: www.instructus-skills.org

UCAS points for this pathway:

N/A

Employee rights and responsibilities

Please note that for Apprenticeship starts from 14/10/2016 onwards ERR is no longer a **mandatory** requirement in all frameworks.

However, it may still be included in some frameworks and where it is not explicitly stated that ERR is not a requirement then confirmation of an Apprentice's ERR achievement will still remain a requirement for Apprenticeship certification purposes.

Is ERR a requirement for this framework? **YES** **NO**

Delivery and assessment

Framework Developer to complete with relevant info

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.

Job title(s)	Job role(s)
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	620

Relationship between competence and knowledge qualifications

This framework requires the completion of the combined qualification B1a identified in the 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*
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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

Credit Value 5

Competence Element = 17 credits

Total Qualification = 62 credits

For further qualification details refer to: register.ofqual.gov.uk/ and search by the relevant qualification.

Essential Skills

An apprenticeship framework must specify as a Welsh certificate requirement the expected achievement levels of Essential Skills in Communication and the Application of Number, and Digital Literacy (where required).

ESSENTIAL SKILLS WALES

Communication	Min.Level 2
Application of Number	Min.Level 2
IT/Digital Literacy	N/A

For the current list of acceptable proxy qualifications and appropriate minimum grade/level requirements, please refer to the most recent version of SASW on the gov.wales website. Additional guidance materials can be found on the Knowledge Base section of the ACW website.

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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 Key Skills
- 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.

Please refer to the Instructus Skills website for more information: www.instructus-skills.org

UCAS points for this pathway:

N/A

Employee rights and responsibilities

Please note that for Apprenticeship starts from 14/10/2016 onwards ERR is no longer a **mandatory** requirement in all frameworks.

However, it may still be included in some frameworks and where it is not explicitly stated that ERR is not a requirement then confirmation of an Apprentice's ERR achievement will still remain a requirement for Apprenticeship certification purposes.

Is ERR a requirement for this framework? **YES** **NO**

Delivery and assessment

Framework Developer to complete with relevant info

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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.

Instructus Skills 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.

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

Summary of on- and off-the-job training

Foundation Level Apprenticeships

Overview of Installing Industrial and Commercial H&V Ductwork Systems – WITHDRAWN

N/A

Overview of Installing Industrial and Commercial H&V Pipework Systems

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

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

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

Total minimum Training Hours for this pathway = 923

Overview of Servicing and Maintaining H&V Systems

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

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

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

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 - **WITHDRAWN**

N/A

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

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

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

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

Total minimum Training Hours for this pathway is 728 hrs

Overview of Servicing and Maintaining H&V Systems

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

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

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

Total minimum Training Hours for this framework - 778 hrs |

Off-the-job training

Foundation Level Apprenticeships

Installing Industrial and Commercial H&V Ductwork Systems – WITHDRAWN

N/A

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 - **WITHDRAWN**

N/A

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.

Evidence of off the job hours When claiming the Apprenticeship certificate, training providers will be required to sign the Apprenticeship Certificate Claim form, stating that the total training hours have been met by the learner. The Claim Form can be downloaded from ACW:

https://acwcerts.co.uk/web/form_s-documentation |

On-the-job training

Foundation Level Apprenticeships

Installing Industrial and Commercial H&V Ductwork Systems - WITHDRAWN

N/A

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 -

WITHDRAWN

N/A

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 contributed 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.

Evidence of on the job training hours

As part of the evidence requirements for Apprenticeship Completion certification, a copy of a completed Apprentice Consent Form may be requested. ACW:

<https://acwcerts.co.uk/web/form s-documentation> |

Wider key skills assessment and recognition

While Wider Key Skills are not a **mandatory** part of the framework, training providers are encouraged to provide apprentices the opportunity to achieve them.

For this framework, there are natural opportunities for Wider Key Skills to be embedded within the mandatory units of the following qualifications:

[Enter Qualification Names]

Improving own learning and performance

[Give examples - signpost to specific units in framework qualifications that would meet these requirements]

Working with others

[Give examples - signpost to specific units in framework qualifications that would meet these requirements]

Problem solving

[Give examples - signpost to specific units in framework qualifications that would meet these requirements]

apprenticeship FRAMEWORK

For more information visit-
www.acwcerts.co.uk/framework_library