

Level 2 NVQ Diploma in Installing, Testing and Maintaining Air Conditioning and Heat Pump Systems (6187-01)

Candidate performance evidence logbook
600/0912/3



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Level 2 NVQ Diploma in Installing, Testing and Maintaining Air Conditioning and Heat Pump Systems (6187-01)

Candidate performance evidence logbook

Qualification title	Number	QAN
Level 2 NVQ Diploma in Installing, Testing and Maintaining Air Conditioning and Heat Pump Systems	6187-01	600/0912/3

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1 About your candidate logbook

1.1 Contact details

Candidate name	
Candidate enrolment no	
Centre name	
Centre number	
Programme start date	
Date of registration with City & Guilds	

Keep a record of relevant contact details in the space provided below. You may find it helpful to make a note of phone numbers and e-mail addresses here.

Your Assessor(s)	
Your Internal Verifier	
Quality Assurance Contact	

1 About your candidate logbook

1.2 Introduction to the logbook

This logbook will help you complete the units assessed through a portfolio of evidence in City & Guilds' **Level 2 NVQ Diploma in Installing, Testing and Maintaining Air Conditioning and Heat Pump Systems (6187-01)**. It contains forms you can use to record your evidence of what you have done.

About City & Guilds

City & Guilds Limited (Registered Company 16513878) is the Awarding Organisation for City & Guilds qualifications.

Information about City & Guilds and our qualifications is available on our website **www.cityandguilds.com**.

2 The assessment process

The following people at your centre will explain the assessment process and help you achieve your unit(s).

The assessor/tutor

The assessor/tutor is the person you will have the most contact with as you work towards your unit(s). You may have more than one assessor/tutor depending on which unit(s) you take or you may be assessed by a person who is not your tutor.

The internal verifier

The internal verifier maintains the quality of assessment within the centre.

The external verifier

The external verifier works for City & Guilds and helps to ensure that your centre meets the required standards for quality and assessment.

3 Using your logbook

Recording forms

This logbook contains all of the forms you and your assessor will need to plan, review and organise your evidence. Your assessor will be able to help you decide which forms you need to complete and help you fill them in.

Please photocopy these forms as required.

4 Qualification structures

To achieve the **Level 2 NVQ Diploma in Installing, Testing and Maintaining Air Conditioning and Heat Pump Systems (6187-01)**, learners must achieve **66** credits from the following 10 mandatory units. This Logbook includes only those units assessed by performance in the workplace (marked with an *).

Unit accreditation number	City & Guilds unit	Unit title	Assessment method	Credit value
J/602/2479	201/501	Understand and carry out safe working practices in building services engineering	Online multiple choice / Assignment	10
J/602/2482	202	Understand how to communicate with others within building services engineering	Online multiple choice	3
D/602/2486	203	Understand how to apply environmental protection measures within building services engineering	Online multiple choice	4
J/602/2496	204	Understand how to apply scientific principles within MES	Online multiple choice	7
A/602/4987	210	Understand air conditioning and heat pump system installation, testing and maintenance techniques	On-line multiple choice	7
D/602/5002	211*	Install, test and maintain air conditioning and heat pump systems	Portfolio	4
T/602/2493	219*	Apply safe working practices in building services engineering working environment	Portfolio	2
R/602/4994	228/528	Understand and carry out site preparation and pipework fabrication techniques for RAC systems	Online multiple choice / Assignment	14
D/502/0629	230/530	Handling fluorinated gases and ozone-depleting substances _category I personnel	Online multiple choice / Assignment	3
K/602/4998	302/602	Understand and carry out electrical work on RAC systems and components	Online multiple choice / Assignment	12

5 Overall Unit Sign-off

The following units are included in the rules of combination for the **Level 2 NVQ Diploma in Installing, Testing and Maintaining Air Conditioning and Heat Pump Systems (6187-01)**. Learners must achieve these portfolio units to contribute towards achievement of the overall qualification.

City & Guilds unit	Unit title	Unit Achieved Yes/No	Assessor Initials	Date
211	Install, test and maintain air conditioning and heat pump systems			
219	Apply safe working practices in building services engineering working environment			

Declaration

I confirm that the evidence supplied for the above selected units is authentic and a true representation of my own work. The work logged is my own work carried out during my normal work duties.

The answers in the question bank are my own work and discussed with my assessor on completion. I have been observed in my workplace by my assessor on several occasions.

Candidate Name:	
Candidate Signature:	
Date:	

I confirm that this candidate has achieved all the requirements of the selected units with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.

Assessor Name:	
Assessor Signature:	
Date:	

IV Name:	
IV Signature:	
Date:	

Unit 211

Install, test and maintain air conditioning and heat pump systems

Level: 2

Credit value: 4

UAN: D/602/5002

Outcome 1	Be able to plan and prepare for the installation, testing and maintenance of air conditioning and heat pump systems			
Criteria		Candidate initials	Assessor initials	Evidence reference
1	confirm that all information is available prior to planning installation or maintenance activities			
2	confirm that all tools, equipment and materials are available and fit for use prior to commencement of the work			
3	confirm that all persons relevant to the installation or maintenance activity are identified and that lines of communication are established			
4	ensure that all necessary risk assessment and safe working procedure development has been undertaken prior to work commencement			
5	carry out site survey to identify any variations or deviations to planned work on any structural or access issues which need to be resolved prior to work commencement			
6	identify safe storage arrangement for tools, equipment and materials prior to commencement of installation or maintenance activity			
7	plan safe access to work areas and confirm with responsible person on site			
8	complete preparatory work as necessary in relation to:			
	<ul style="list-style-type: none"> • the location, siting and fixing of: <ul style="list-style-type: none"> - outdoor unit/condensers - indoor unit/evaporators - piping (flow and return) • jointing by brazing or flaring • confirming requirements for: <ul style="list-style-type: none"> - cleanliness inside pipes by purging with OFN - insulation - electrical connection - condensate disposal. 			

Outcome 2		Be able to carry out the installation of air conditioning and heat pump systems		
Criteria		Candidate initials	Assessor initials	Evidence reference
1	identify and interpret appropriate sources of information which impact upon the installation of air conditioning pipework, systems and components, including:			
	• regulatory documents			
	• industry codes of practice			
	• manufacturers' instructions			
	• installation specifications			
2	assemble air conditioning system components to meet the requirements of the installation specification			
3	demonstrate appropriate methods for positioning and fixing:			
	• indoor units			
	• outdoor units			
	• condensate drains			
4	demonstrate appropriate methods for interconnecting, fixing and insulating pipework			
5	complete the interconnection and fixing of electrical power and communication components			
6	confirm that installed system components and pipework are correctly installed in accordance with the installation specification			
7	confirm that the worksite has been cleared in preparation for system testing.			

Outcome 3		Be able to carry out the testing of air conditioning and heat pump systems		
Criteria		Candidate initials	Assessor initials	Evidence reference
1	revisit risk assessment and safe working procedure to confirm currency and validity prior to commencement of testing			
2	carry out checks and tests in accordance with industry and safety requirements			
3	carry out the following tests in accordance with appropriate legislation:			
	• strength integrity test			
	• pressure tightness test			
	• leak test			
	• evacuation, dehydration and vacuum rise test			

4	compare pipework length with system factory charge and determine whether extra refrigerant charge is required			
5	add additional refrigerant charge by weight in accordance with manufacturers' instructions			
6	carry out basic electrical tests to confirm that system is safe to switch on:			
	• continuity			
	• insulation resistance			
	• polarity			
	• resistance to earth			
	• visual check			
7	open system valves and run system			
8	complete checks to confirm system is leak free			
9	confirm that the system provides cooling and/or heating by measuring air flow temperature difference across indoor and outdoor unit heat exchangers			
10	record temperature differences			
11	remove analysers/gauges from systems without refrigerant loss			
12	replace valve caps and confirm valves are leak free.			

Outcome 4		Be able to carry out the maintenance of air conditioning and heat pump systems		
Criteria		Candidate initials	Assessor initials	Evidence reference
1	interpret maintenance schedules to identify required work activities			
2	perform the following service and maintenance tasks safely and efficiently:			
	• cleaning and checking the condition of:			
	- condensers			
	- filters			
	- indoor units			
	- evaporators			
	• checking the condition of:			
- pipework and its insulation				
	- electrical wiring and connections			
3	check system operating conditions against control settings			
4	measure on/off temperature to check comfort conditions in respect of temperature and humidity in the controlled space			

5	reconnect or re-install system after maintenance and then carry out the following checks and tests before running the system:			
	• tightness testing			
	• evacuation and dehydration			
	• electrical testing			
6	re-charge refrigerant to correct quantity and check for leakage			
7	complete system performance test			
8	complete appropriate maintenance documentation and records.			

Outcome 5		Be able to hand over air conditioning and heat pump systems		
Criteria		Candidate initials	Assessor initials	Evidence reference
1	complete system records for hand over documentation, including those which detail:			
	• strength integrity test			
	• pressure tightness test			
	• leak test			
	• evacuation and dehydration			
	• system refrigerant charge and type			
	• performance testing			
	• electrical testing			
2	demonstrate system operation and operating controls to customers			
3	pass over system documentation and records to customer			
4	report to line manager that installation is complete and fill in appropriate company documentation.			

Outcome 6	Be able to carry out the de-commissioning of air conditioning and heat pump systems			
Criteria		Candidate initials	Assessor initials	Evidence reference
1	follow appropriate risk assessments and method statements to ensure decommissioning activities are completed safely			
2	demonstrate work sequences for permanently decommissioning			
	<ul style="list-style-type: none"> a complete air conditioning system or heat pump system 			
	<ul style="list-style-type: none"> part of an air conditioning system or heat pump system 			
3	demonstrate how oil, refrigerant and cleaning solvents can be safely recovered from a system and disposed of in accordance with appropriate regulations.			

Unit 211

Install, test and maintain air conditioning and heat pump systems

Declaration

I confirm that the evidence supplied for this unit is authentic and a true representation of my own work. The work logged is my own work carried out during my normal work duties.

The answers in the question bank are my own work and discussed with my assessor on completion. I have been observed in my workplace by my assessor on several occasions.

Candidate Name:	
Candidate Signature:	
Date:	

I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.

Assessor Name:	
Assessor Signature:	
Date:	

IV Name:	
IV Signature:	
Date:	

Unit 219

Apply safe working practices in building services engineering working environment

Level: 2

Credit value: 2

UAN: T/602/2493

Outcome 1		Be able to demonstrate personal health and safety precautions in the workplace		
Criteria		Candidate initials	Assessor initials	Evidence reference
1	demonstrate the appropriate personal protective equipment is used throughout work activities			
2	ensure that health and safety precautions are in place:			
	<ul style="list-style-type: none"> • first aid kit provision 			
	<ul style="list-style-type: none"> • fire extinguisher provision 			
3	demonstrate safe manual lifting techniques.			

Outcome 2		Be able to prepare and use access equipment in the work place		
Criteria		Candidate initials	Assessor initials	Evidence reference
1	use risk assessments to identify safe methods of working at height			
2	check access equipment for safe conditions prior to use			
3	perform the safe erection of access equipment			
4	demonstrate the safe use of access equipment.			

Outcome 3		Be able to check that the work area is safe in order to carry out work		
Criteria		Candidate initials	Assessor initials	Evidence reference
1	carry out a check of the work location for health and safety hazards			
2	verify that access and exit routes to and from the immediate work location are safe and free from obstructions			
3	demonstrate safe working practices when working with heat producing equipment.			

Outcome 4	Be able to liaise with those responsible for health and safety in the workplace			
Criteria		Candidate initials	Assessor initials	Evidence reference
1	demonstrate methods of recording accidents in the accident book in accordance with company procedures			
2	demonstrate methods of reporting hazards and accidents in accordance with company procedures.			

Unit 219

Apply safe working practices in building services engineering working environment

Declaration

I confirm that the evidence supplied for this unit is authentic and a true representation of my own work. The work logged is my own work carried out during my normal work duties.

The answers in the question bank are my own work and discussed with my assessor on completion. I have been observed in my workplace by my assessor on several occasions.

Candidate Name:	
Candidate Signature:	
Date:	

I confirm that this candidate has achieved all the requirements of this unit with the evidence listed. Assessment was conducted under the specified conditions and context, and is valid, authentic, reliable, current and sufficient.

Assessor Name:	
Assessor Signature:	
Date:	

IV Name:	
IV Signature:	
Date:	

On Site Assessment Plan / Feedback



Evidence Reference:	
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Qualification:
Level:

Qualification number:

Candidate name:
Assessor name:

Date:

Candidate prepared for assessment (Provide details below)	Yes / No	Candidate requires support	Yes / No
Candidate briefed on appeals procedure	Yes / No	Support required	

Assessment Location / Address and postcode:

Type of work to be carried out:

Assessor Feedback:
(Use Assessor continuation sheet if required)

Forward Planning:

Candidate Signature:		
Assessor Signature:		Date:
IV/IQA Name:	IV/IQA Signature:	Date:

Photographic Supplementary Evidence



Evidence Reference:	
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Scheme / Award:

Scheme Number:

Level:

Candidate Name:

Unit Number:

Brief description of task being carried out in the photograph (to be completed by candidate):

(Attach Photo in this Box)

Location of photograph:

Candidate Signature:		
Assessor Signature:		Date:
IV/IQA Name:	IV/IQA Signature:	Date:

Workplace Recorder Details



I confirm I am suitably experienced or qualified in line with the industry requirements to act as a witness for this learner. I acknowledge that I will only counter sign documentation requested by the learner where to my knowledge only the learner has completed the work and on the understanding that the work has been carried out to the acceptable standard.

Workplace Recorder Name:	
Workplace Recorder Signature:	Date:

I confirm I am suitably experienced or qualified in line with the industry requirements to act as a witness for this learner. I acknowledge that I will only counter sign documentation requested by the learner where to my knowledge only the learner has completed the work and on the understanding that the work has been carried out to the acceptable standard.

Workplace Recorder Name:	
Workplace Recorder Signature:	Date:

I confirm I am suitably experienced or qualified in line with the industry requirements to act as a witness for this learner. I acknowledge that I will only counter sign documentation requested by the learner where to my knowledge only the learner has completed the work and on the understanding that the work has been carried out to the acceptable standard.

Workplace Recorder Name:	
Workplace Recorder Signature:	Date:

Appendix 1 Summary of City & Guilds assessment policies

Health and Safety

All centres have to make sure that they provide a safe and healthy environment for learning, including induction and assessment. City & Guilds external verifiers check this when they visit assessment centres.

Equal Opportunities

Your centre will have an equal opportunities policy. Your centre will explain this to you during your induction, and may give you a copy of the policy.

City & Guilds equal opportunities policy is available from our website www.cityandguilds.com, City & Guilds Customer Relations Team or your centre.

Access to assessment

City & Guilds qualifications are open to all candidates, whatever their gender, race, creed, age or special needs. Some candidates may need extra help with their assessment, for example, a person with a visual impairment may need a reader.

If you think you will need alternative assessment arrangements because you have special needs, you should discuss this with your centre during your induction, and record this on your assessment plan. City & Guilds will allow centres to make alternative arrangements for you if you are eligible and if the qualification allows for this. This must be agreed before you start your qualification.

City & Guilds guidance and regulations document *Access to assessment and qualifications* is available on the City & Guilds website www.cityandguilds.com, from the City & Guilds Customer Relations Team or your centre.

Complaints and appeals

Centres must have a policy and procedure to deal with any complaints you may have. You may feel you have not been assessed fairly, or may want to appeal against an assessment decision if you do not agree with your assessor.

These procedures will be explained during induction and you will be provided with information about the Quality Assurance Co-ordinator within your centre who is responsible for this.

Most complaints and appeals can be resolved within the centre, but if you follow the centre procedure and are still not satisfied you can complain to City & Guilds.

Our complaints policy is on our website www.cityandguilds.com or is available from the City & Guilds Customer Relations Team or your centre.

Useful contacts

UK learners

General qualification information

T: +44 (0)844 543 0033

E: learnersupport@cityandguilds.com

International learners

General qualification information

T: +44 (0)844 543 0033

F: +44 (0)20 7294 2413

E: intcg@cityandguilds.com

Centres

Exam entries, Certificates, Registrations/enrolment, Invoices, Missing or late exam materials, Nominal roll reports, Results

T: +44 (0)844 543 0000

F: +44 (0)20 7294 2413

E: centresupport@cityandguilds.com

Single subject qualifications

Exam entries, Results, Certification, Missing or late exam materials, Incorrect exam papers, Forms request (BB, results entry), Exam date and time change

T: +44 (0)844 543 0000

F: +44 (0)20 7294 2413

F: +44 (0)20 7294 2404 (BB forms)

E: singlesubjects@cityandguilds.com

International awards

Results, Entries, Enrolments, Invoices, Missing or late exam materials, Nominal roll reports

T: +44 (0)844 543 0000

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E: intops@cityandguilds.com

Walled Garden

Re-issue of password or username, Technical problems, Entries, Results, e-assessment, Navigation, User/menu option, Problems

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If you have a complaint, or any suggestions for improvement about any of the services that City & Guilds provides, email: feedbackandcomplaints@cityandguilds.com

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