



Higher National Unit specification

General information for centres

Unit title: Woodmachining: Jointing Techniques

Unit code: F8RD 34

Unit purpose: This Unit is designed to enable candidates to develop their knowledge, understanding and skill in the selection, set up and safe use of specialist machines utilising advanced techniques to manufacture a range of joints using solid timbers and board materials. This Unit will also enable candidates to correctly select and identify tooling, jigs and fixtures used to manufacture a range of joints.

On completion of the Unit the candidate should be able to:

- 1 Demonstrate knowledge and understanding of machines for joint forming.
- 2 Demonstrate knowledge and understanding of machining requirements to manufacture piece parts.
- 3 Set up and operate appropriate machinery tooling, jigs and fixtures.

Credit points and level: 1 HN credit at SCQF level 7: (8 SCQF credit points at SCQF level 7*)

**SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.*

Recommended prior knowledge and skills: Access to this Unit will be at the discretion of the centre. It would be beneficial if candidates have successfully completed the Professional Development Award (PDA) in Woodmachining at SCQF level 6 (G9FH 46) or have the equivalent level of industrial experience and prior learning.

Core Skills: There are opportunities to develop the Core Skills of *Communication, Numeracy, Working with Others* and *Problem Solving* all at SCQF level 5 in this Unit, although there is no automatic certification of Core Skills or Core Skills components.

Context for delivery: This Unit forms part of the Professional Development Award in Woodmachining at SCQF level 7 and is aimed at candidates following a career in Machine Woodworking and receiving complementary industrial experience. It is recommended that it should be taught and assessed within the subject area of the Group Award to which it contributes

General information for centres (cont)

Unit title: Woodmachining: Jointing Techniques

Assessment: This Unit is assessed on the candidates' actual performance of safely selecting and setting up a range of machinery, tooling, cutting agents, jigs and holding devices for appropriate production of a range of joints. The candidates will also have to show knowledge and understanding to evaluate the use of machines, their tooling, attachments and ancillary equipment for the formation of a range of joints using various solid timbers and board materials.

Evidence will be gathered through observation of work processes and assessment of the completed work. Assessment should be carried out under controlled, supervised conditions. In order to achieve this Unit, candidates are required to present sufficient evidence that they have met all the Knowledge and/or Skills elements for each Outcome. Details of these requirements are given for each Outcome.

The assessment instruments used should follow the general guidance offered by the Scottish Qualifications Authority (SQA) assessment model and an integrative approach to assessment is encouraged. Centres may use the instruments of assessment which they consider to be most appropriate but are advised to use the Woodmachining Training and Assessment Programme (TAP) SCQF level 7 which has been developed centrally by SQA. Any other instruments of assessment used must be comparable to the TAP 7.

Accurate records should be made of the assessment instruments used showing how evidence is generated for each Outcome and given marking schemes, checklists and recorded candidate feedback. Records of candidates' achievements should be retained. These records will be made available for external verification.

Higher National Unit specification: statement of standards

Unit title: Woodmachining: Jointing Techniques

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The sections of the Unit stating the Outcomes, Knowledge and/or Skills, and Evidence Requirements are mandatory.

Where evidence for Outcomes is assessed on a sample basis, the whole of the content listed in the Knowledge and/or Skills section must be taught and available for assessment. Candidates should not know in advance the items on which they will be assessed and different items should be sampled on each assessment occasion.

Outcome 1

Demonstrate knowledge and understanding of machines for joint forming

Knowledge and/or Skills

- ◆ Chain and chisel mortice machine
- ◆ Single end tenon machine
- ◆ Double end tenon machine
- ◆ Vertical and horizontal borers
- ◆ Dovetail machine
- ◆ Spindle moulder
- ◆ High speed router
- ◆ Four sided moulder
- ◆ Radial arm cross cut
- ◆ C.N.C. and N.C. machinery
- ◆ Attachments including dove tail and tenon, feed units and fixtures
- ◆ Joints — mortise and tenon, housing, widening, lengthening, dovetail and corner joints

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- ◆ identify **five** machines used for jointing their tooling and functions correctly
- ◆ describe the purpose of their accessories and feed arrangements

Centres can sample five machines from the knowledge and skills list of assessment. For reassessment purposes three of the machines must be changed. Evidence will be gathered under closed-book and supervised conditions.

Assessment Guidelines

The candidate could provide oral and/or written evidence using correct technical terminology to identify and describe machine parts, accessories and feed arrangements.

Higher National Unit specification: statement of standards (cont)

Unit title: Woodmachining: Jointing Techniques

Outcome 2

Demonstrate knowledge and understanding of machining requirements to manufacture piece parts

Knowledge and/or Skills

- ◆ Stiles
- ◆ Rails
- ◆ Muntins
- ◆ Transomes
- ◆ Mullions
- ◆ Legs
- ◆ Gables
- ◆ Haffits
- ◆ Tops
- ◆ Joints — mortise and tenon, housing, widening, lengthening, dovetail and corner joints

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- ◆ select **three** appropriate machines, and **three** attachments and ancillary equipment for the manufacture of **six** given piece parts
- ◆ describe correctly **three** setting up and operating procedures
- ◆ correctly select the appropriate tooling and cutting agents for specific piece parts

Evidence must be gathered under closed-book and supervised conditions.

Assessment Guidelines

The candidate should provide oral and/or written evidence using correct technical terminology to show knowledge and understanding to identify the machining requirements for six different piece parts by selecting 3 machines, 3 attachments and ancillary equipment and also describe 3 procedures for setting up and safe operation of machinery to produce jointed components.

Higher National Unit specification: statement of standards (cont)

Unit title: Woodmachining: Jointing Techniques

Outcome 3

Set up and operate appropriate machinery tooling, jigs and fixtures

Knowledge and/or Skills

- ◆ Hand tools
- ◆ Cutters
- ◆ Cutterblocks
- ◆ Saws
- ◆ Twist drills
- ◆ Setting stand
- ◆ Balancing equipment
- ◆ Clamping devices
- ◆ Timber, plywood, M.D.F. adhesives
- ◆ Jig manufacture
- ◆ Machine set up
- ◆ Machine operation
- ◆ Production of jointed components.
- ◆ Feed mechanisms, guards and accessories.
- ◆ Planning and wastage
- ◆ Current relevant Health and Safety legislation

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- ◆ set up and operate suitable machinery safely
- ◆ manufacture jigs and holding devices for specific operations
- ◆ produce jointed components/piece parts to specific dimensions
- ◆ correctly utilise feed mechanisms, guards and accessories for various operations
- ◆ plan methods of work, minimising wastage and complying with current health and safety legislation

Candidates must manufacture at least one of each of the following joints: Mortise and tenon; Housing; Widening; Lengthening; Dovetail and Corner Joints.

All components must be to a tolerance of no more than ± 1 mm.

An assessor observation checklist should be completed to ensure that the candidate has met the required specification and tolerances and this observation checklist should be retained as evidence. Evidence must be gathered under controlled, supervised conditions.

Assessment Guidelines

The candidate will be assessed on actual performance of setting up of machines used for jointing accurately using appropriate tooling, jigs, guarding and feed mechanisms for specific operations.

Administrative Information

Unit code: F8RD 34

Unit title: Woodmachining: Jointing Techniques

Superclass category: WK

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Version	Description of change	Date

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Higher National Unit specification: support notes

Unit title: Woodmachining: Jointing Techniques

This part of the Unit specification is offered as guidance. The support notes are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 40 hours.

Guidance on the content and context for this Unit

This Unit has been developed as a mandatory Unit in the PDA in Woodmachining at SCQF level 7. The content and context of this Unit is aimed at candidates who are pursuing a career in the craft of Machine Woodworking.

This Unit has been designed to enable the candidate to develop their knowledge and understanding to enable them to identify and use a range of specialised machinery, tooling and ancillary equipment to produce a range of piece parts to manufacture a range of joints. The successful completion of this Unit will help the candidate to set up and operate specialist machines used to manufacture joints after outlining the design details of a range of machines.

Health and Safety and Sustainability are integral and key to the construction industry therefore throughout the Unit emphasis will be placed where appropriate on the application of Health and Safety and Sustainability. Safe working practices should be looked at in accordance with current safety codes of practice and regulations. Sustainability should include reference to criteria affecting sustainability, impact of not implementing sustainability on the environment and the legislation promoting sustainability.

Where feasible, centres should also incorporate modern machining methods, tooling, equipment and materials used within the Machine Woodworking industry. Candidates should be made aware of current industry practice and emerging practice or technology which may become conventional in the future.

Guidance on the delivery and assessment of this Unit

As part of the Professional Development Award (PDA) in Woodmachining at SCQF level 7, this Unit may be delivered in a sequence suitable to individual candidates and centres. When completing this Unit as part of the PDA it is recommended that, where possible, opportunity is taken to integrate aspects of Constructional Technical Communication Skills (DW4D 34).

Centres may use the instruments of assessment which they consider to be most appropriate but are advised to use the Woodmachining Training and Assessment (TAP) at SCQF level 7 which has been developed centrally by SQA. Any other instruments of assessment used must be comparable to the TAP 7.

Where this Unit is incorporated into other Group Awards it is recommended that it be delivered in the context of the specific occupational area that the award is designed to cover. Details on approaches to assessment are given under Evidence Requirements and Assessment Guidelines under each Outcome in the Higher National Unit specification statement of standards section. It is essential that these sections be read carefully before proceeding with assessment of candidates.

Higher National Unit specification: support notes (cont)

Unit title: Woodmachining: Jointing Techniques

The candidate should be introduced to all relevant machinery components, tooling and ancillary equipment, feed mechanisms used to produce jointed components, through classroom teaching with the use of visual aids, electronic presentations, DVD's, e-learning, reference books, classroom exercises and group discussions and site visits where appropriate. The function of each component should be thoroughly demonstrated. Safe working practice methods should be demonstrated by candidates showing good technique in the setting and safe operation of machinery. This teaching approach should help ensure the candidate is acquiring the underpinning knowledge required for the Unit.

Candidates will be required to demonstrate their knowledge of machinery, terminology, techniques, tooling and practices by successful completion of a question paper describing the capabilities, limitations, attachments, ancillary equipment and tooling used in the manufacture of joints within timber products. The candidates will also have to identify up to date appropriate machinery and describe the correct tooling, setting up and operating procedures used to manufacture joints.

Candidates should be given as much practise as possible prior to being set the practical assessments. Evidence will be gathered through observation that the candidates have met the given standards and tolerances during practical assessment.

Where available, evidence from the workplace can be incorporated to enhance the Outcomes, provided that this evidence is appropriate and authenticated as the candidate's own work. It is the responsibility of the centre to satisfy themselves that the portfolio of evidence submitted for assessment is entirely original and solely the respective student's work.

Opportunities for developing Core Skills

The delivery and assessment of this Unit may contribute towards the Core Skill of *Communication* at SCQF 5 particularly in Outcomes 1 and 2. As candidates complete the practical tasks in Outcome 3 they will be expected to communicate with others using correct terminology, tone and style suited to the workplace.

There are opportunities to develop the Core Skill of *Numeracy* at SCQF Level 5 within Outcome 3 where the candidate will be required to interpret sizes and measurements, read and produce accurate drawings and transfer information accordingly.

The Core Skill of *Working with Others* at SCQF 5 could also be developed in this Unit in the practical work where candidates may work in pairs. Working with Others involves the ability to work with others to plan, agree, and take responsibility for tasks; to support co-operative working in appropriate ways; and to review the effectiveness of one's own contribution.

The Core Skill of *Problem Solving* at SCQF level 5 could be developed through the choice of tooling, appropriate materials, safety issues, safety equipment and sustainability.

Higher National Unit specification: support notes (cont)

Unit title: Woodmachining: Jointing Techniques

Open learning

Although this Unit could be delivered by distance learning, it would require a considerable degree of planning by the centre to ensure the sufficiency and authenticity of candidate evidence. Arrangements would have to be made to ensure that:

- ◆ candidates have access to a suitable workshop with suitable equipment and tools
- ◆ health and safety considerations are fully taken into account
- ◆ the practical activities are supervised by a responsible person and clearly recorded (using an assessment checklist for the assessor)
- ◆ the assessor is, at some point, able to question the candidate on that performance
- ◆ assessment is carried out under the stated conditions

For information on open learning arrangements, please refer to the SQA guide *Assessment and Quality Assurance of Open and Distance Learning* (www.sqa.org.uk)

Disabled candidates and/or those with additional support needs

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering whether any reasonable adjustments may be required. Further advice can be found on our website www.sqa.org.uk/assessmentarrangements

General information for candidates

Unit title: Woodmachining: Jointing Techniques

This Unit has been designed to further your career in the timber industry by developing your competence and improving your knowledge of jointing techniques. It has been written as part of the Professional Development Award (PDA) in Woodmachining at SCQF level 7, and is for experienced crafts persons working in the timber industry as Woodmachinists.

This Unit will further your knowledge and understanding of a wide range of machinery manufactured for specific jointing machining and also attachments used to adapt existing machinery to also manufacture joints. The Unit will also develop your underpinning knowledge and skills in the set up and use of a specialist range of machinery and attachments used to manufacture various joints, and identify cutting agents used in the manufacture of joints for a range of purposes.

You will be assessed on your knowledge of identifying specialist jointing machinery, tooling, cutting agents, ancillary equipment and your underpinning knowledge of the correct setting up procedures for specific operations. These assessments will be closed-book and will be supervised.

You will also be assessed on the safe set up of machinery used in the manufacture of various jointed components to given dimensions/drawings within the practical workshop through observation.

There are opportunities within the Unit to develop your Core Skills of *Communications*, *Numeracy*, *Problem Solving*, *Working with Others* and at SCQF level 5, although there is no automatic certification of Core Skills or Core Skills components.

If you successfully complete this Unit and the full PDA at SCQF level 7, you will not only have advanced your craft skills, but will also automatically receive some credit for your achievement if you progress on to the HNC Construction.