

End-point assessment plan for Clock Maker apprenticeship standard

Apprenticeship standard reference number	Apprenticeship standard level	Integrated end-point assessment
ST0447	3	No

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Introduction and overview

This document sets out the requirements for end-point assessment (EPA) for the Clock Maker apprenticeship standard. It is for end-point assessment organisations (EPAOs) who need to know how EPA for this apprenticeship must operate. It will also be of interest to Clock Maker apprentices, their employers and training providers.

Full time apprentices will typically spend 24 months on-programme (before the gateway) working towards the occupational standard, with a minimum of 20% off-the-job training. All apprentices must spend a minimum of 12 months on-programme.

The EPA period should only start, and the EPA be arranged, once the employer is satisfied that the apprentice is deemed to be consistently working at or above the level set out in the occupational standard, all of the pre-requisite gateway requirements for EPA have been met and can be evidenced to an EPAO.

For level 3 apprenticeships and above apprentices without English and mathematics at level 2 must achieve level 2 prior to taking their EPA.

The EPA must be completed within an EPA period typically lasting 3 month(s), after the EPA gateway.

The EPA consists of 3 discrete assessment methods.

The individual assessment methods will have the following grades:

Assessment method 1: Knowledge Test

- Fail
- Pass
- Merit

Assessment method 2: Practical Project

- Fail
- Pass
- Merit

Assessment method 3: Professional Discussion

- Fail
- Pass
- Merit

Performance in the EPA will determine the overall apprenticeship standard grade of:

- Fail
- Pass
- Merit

EPA summary table

On-programme (typically 24 months)	Training to develop the occupation standard's knowledge, skills and behaviours (KSBs).
End-point assessment gateway	<ul style="list-style-type: none"> • Employer is satisfied the apprentice is consistently working at, or above, the level of the occupational standard. • English and mathematics Level 2 <p>Apprentices must complete:</p> <ul style="list-style-type: none"> • A portfolio: the portfolio will have been completed by the apprentice during their on-programme training and submitted to the EPAO either in hard-copy or electronic format at the gateway. The portfolio must cover the knowledge, skills and behaviours that are mapped to the professional discussion assessment method which it underpins. Please see Gateway Section below for full details.
End-point assessment (which will typically take 3 months)	<p>Assessment method 1: Knowledge Test</p> <p>With the following grades:</p> <ul style="list-style-type: none"> • Fail • Pass • Merit <p>Assessment method 2: Practical Project</p> <p>With the following grades:</p> <ul style="list-style-type: none"> • Fail • Pass • Merit <p>Assessment method 3: Professional Discussion</p> <p>With the following grades:</p> <ul style="list-style-type: none"> • Fail • Pass • Merit
Professional recognition	<p>Aligns with recognition by:</p> <ul style="list-style-type: none"> • British Horological Institute (Technician Grade) • British Watch and Clock Makers Guild (Member)

Length of end-point assessment period

The EPA will be completed within an EPA period typically lasting of 3 months, after the EPA gateway. Any supporting material which underpins an EPA assessment method should be submitted at the gateway.

Order of assessment methods

The assessment methods may be delivered in any order.

Gateway

The EPA period should only start once the employer is satisfied that the apprentice is consistently working at or above the level set out in the occupational standard, that is to say they are deemed to have achieved occupational competence. In making this decision, the employer may take advice from the apprentice's training provider(s), but the decision must ultimately be made solely by the employer.

In addition to the employer's confirmation that the apprentice is working at or above the level in the occupational standard, the apprentice must have completed the following gateway requirements prior to beginning EPA:

English and mathematics at level 2.

For those with an education, health and care plan or a legacy statement the apprenticeships English and mathematics minimum requirement is Entry Level 3 and British Sign Language qualification are an alternative to English qualifications for whom this is their primary language.

For Knowledge Test:

- no specific requirements

For Practical Project:

- no specific requirements

For Professional Discussion, the apprentice will be required to submit:

- The portfolio will have been completed by the apprentice during their on-programme learning and presented to the EPAO in either hard-copy or electronic format at the gateway. The portfolio will cover the knowledge, skills and behaviours as mapped to the professional discussion which it underpins. It should not include commentary of a self-reflective nature or any self-assessment.
- The portfolio of evidence itself is not assessed; it is used to underpin the questioning for the Professional Discussion. Training providers are free to devise their own version of the portfolio of evidence, but it is expected to include:
 - evidence referenced to typically 10 – 12 artefacts which should be sufficient to cover all the KSBs mapped to the Professional Discussion. Each artefact must be a real-life product worked on by the apprentice i.e. a complete clock.
 - a written record for each artefact included within the portfolio which is typically no more than 1000 words in length and typically includes the following headings:
 - Description of the artefact
 - Condition of artefact
 - Train count and associated working out/calculations
 - Technical detail such as spring dimensions or weights
 - Historical research on artefact with evidence on which your conclusions are based
 - Approximate date of manufacture

- Country of origin
 - Previous maintenance
 - Identified faults and work required, with justification for steps to be undertaken.
 - Methods and tools to be used
 - Materials to be used
 - Conservation steps required
 - Brief evaluation of work undertaken
- Evidence through a range of sources based upon each of the included artefacts, such as emails, photographs, drawings, calculations, work products, work instructions, safety documentation, company policies and procedures as appropriate to the activities. These pieces of evidence including references and appendices are not included in the suggested word count.
- Evidence of line manager observations carried out over the period of the apprenticeship which must be focused on direct factual observations rather than the employer's opinion of the apprentice, and an appraisal report completed by the employer towards the end of the on-programme period.
- The portfolio produced must be the apprentice's work only; employer support should not extend to any direct contributions to the collation or production of the portfolio. The employer will verify that the work submitted is that of the apprentice only
 - The portfolio must be submitted to the EPAO at the gateway.

Assessment methods

Assessment method 1: Knowledge Test

Overview

The rationale for this assessment method is:

A Knowledge Test is a valid assessment used to test the broad knowledge required of a Clock Maker. The test allows for the efficient testing of knowledge where there is a right or wrong answer. It can also be administered, invigilated and marked by an independent person.

Test Format

The test can be:

- computer based
- paper based

It will consist of 30 multiple-choice questions.

These questions will consist of:

- 20 closed response questions. These will be in multiple-choice format where 4 options are presented and only one option is the correct answer.
- 10 graphical or diagrammatic questions in a multiple-choice format e.g. labelling diagrams and naming tools, where the apprentice will be required to select one correct answer from 4 possible answers. These types of questions are required because Horology is a technical subject and diagrammatical questions are an effective way of assessing the understanding of working mechanisms.

Test administration

Apprentices must have a maximum of 60 minutes to complete the test.

The test is closed book which means that the apprentice cannot refer to reference books or materials.

The following equipment is permitted during the test:

- Pen, Paper, Calculator

Apprentices must take the test in a suitably controlled environment that is a quiet space, free of distractions and influence, in the presence of an invigilator. The invigilator may be specialised (proctor) software (if the test can be taken on-line) or the independent assessor or another external person employed by the EPAO. The EPAO is required to have an invigilation policy that will set out how the test/examination is to be carried out. This will include specifying the most appropriate ratio of apprentices to invigilators to best take into account the setting and security required in administering the test/examination.

The EPAO is responsible for ensuring the security of testing they administer to ensure the test remains valid and reliable (this includes any arrangements made using online tools).

The EPAO must verify the suitability of the venue for taking the test and the identity of the person taking the test.

Marking

Tests must be marked by independent assessors or markers employed by the EPAO following a marking guide produced by the EPAO. Alternatively, marking by computer is permissible where question types allow this.

1 mark is to be awarded for each correct answer in the Knowledge Test meaning the maximum amount of marks possible is 30.

Any incorrect or missing answers must be assigned 0 marks. The score boundaries for fail, pass and merit are detailed in the grading section below.

Question and resources development

Questions must be written by EPAOs and must be relevant to the occupation and employer settings. It is recommended that this be done in consultation with employers of this occupation. EPAOs should also maintain the security and confidentiality of their questions when consulting employers. EPAOs must develop 'question banks' of sufficient size to prevent predictability and review them regularly (and at least once a year) to ensure they, and the questions they contain, are fit for purpose. Predictability of questions may also be reduced by EPAOs ensuring that apprentices have a different set of questions in the case of re-sits/re-takes.

Required supporting material

As a minimum EPAOs will produce the following material to support this method:

- a test specification
- sample test and mark scheme
- live test and mark scheme
- question banks
- analysis reports which show areas of weakness for completed tests/exams
- an invigilation policy.

Assessment method 2: Practical Project

Assessment method 2 component 1: Practical Project

Overview

The project is compiled after the apprentice has gone through the gateway.

The practical project should be designed to ensure that the apprentice's work meets the needs of the business, is relevant to their role and allows the relevant KSBs to be demonstrated for the EPA.

The EPAO will provide one drawing of an assembly of parts and send a materials package to enable the candidate to manufacture a complete project piece in order to evidence the KSBs mapped to this method. The EPAO will hold a bank of drawings, out of which, 1 will be selected and issued to the candidate. The bank of drawings must be large enough to reduce predictability of the assessment and must be reviewed every 12 months by the EPAO.

The materials package will be posted to the employer along with the drawing using a guaranteed next day recorded delivery service ensuring that the apprentice is given a maximum of 2 weeks in which to undertake the practical project. In order to ensure that the apprentice does not exceed the maximum time permitted, the completed project piece will be submitted to the assessor on the same day as the Professional Discussion which will be conducted 2 weeks after the materials pack has been received by the employer.

The material pack is provided to ensure that each candidate has the required materials to undertake the assessment. This must be enough materials to attempt the project 3 times. Should the candidate require more materials, these would typically need to be supplied by the employer via the EPAO and they must be the same specification as those originally sent by the EPAO. The apprentice has 2 weeks following the issuing of the drawing to produce final project piece, irrelevant of how many mistakes they make. They may take as many attempts as they need as long as the final piece is submitted on time, in accordance with the grading criteria.

The rationale for this assessment method is:

The Project will be representative of a practical Clock Making application. The main tasks associated with the Clock Maker occupation are to manufacture, repair and conserve clocks, therefore a practical project is relevant to the Clock Making working environment. Manufacturing of bespoke parts by hand is often required due to the nature of clocks being precision instruments as well as some parts not being readily available due to the age of many clocks. Therefore, it is vital that these skills can be evidenced and meet certain tolerances to be competent in this occupation.

Delivery

Apprentices will conduct a practical project in the form of the production of a defined practical piece based on an issued drawing. Please see Annex A for an example of the type of drawing to be issued by EPAOs to the candidate. The practical project is compiled after the apprentice has gone through the gateway. Materials to be used for the project piece are to be sent by the EPAO to the employer by guaranteed next day recorded delivery 2 weeks before the agreed Professional Discussion date.

The apprentice will submit their practical project piece a maximum of 2 weeks after EPAO receives confirmation that recorded delivery of the materials is signed for by the employer.

The employer will ensure the apprentice has sufficient time and the necessary resources, within this period, to plan and undertake the project.

Whilst completing the project, the apprentice should be subject to the supervision arrangements outlined below:

- During the 2-week period, the employer must ensure that the apprentice produces the project piece themselves under normal working supervision from their line manager.

The project should be in the form of the finished item produced from an issued drawing which must be assessed in person by the independent assessor. It is envisaged that the assessor will assess this piece when they visit the candidate on the day of (but prior to) conducting the professional discussion.

The project may be based on any of the following:

- The drawing issued by the EPAO. All issued drawings should ensure that they are able to cover and assess all KSBs mapped to this method.

As a minimum all projects must:

- include the components as described in the issued drawing which must be manufactured within the defined drawing tolerances.
- include turning operations, drilling and hand work. be finished as specified and meet the defined quality parameters.
- The project must map, in an appendix, how it evidences the relevant KSBs for this assessment method.

When the project piece is submitted, the employer and the apprentice should verify the submitted work is that of the apprentice by means of a signed declaration.

Marking

The independent assessor will review and mark the practical project in a timely manner, as determined by the EPAO, and without extending the EPA unnecessarily. Similarly, all quality control processes will also be conducted in a timely manner, as determined by the EPAO.

Supporting material

EPAOs will produce the following material to support this assessment method:

The EPAO must provide

- a drawing of a clock component which the apprentice must produce within the set parameters. The drawing must be chosen at random by the EPAO from a bank of drawings.
- A materials package corresponding to the issued drawing in order to allow all apprentices to produce the product with the same materials.
- marking materials

Assessment method 3: Professional Discussion

Assessment method 3 component 1: Professional Discussion

Overview

This assessment will take the form of a professional discussion which must be appropriately structured to draw out the best of the apprentice's competence and excellence and cover the KSBs assigned to this assessment method. It will involve questions that will focus on coverage of prior learning or activity and problem solving.

The rationale for this assessment method is:

A professional discussion is not simply a question and answer session but a two-way dialogue between the apprentice and independent assessor. It allows the apprentice to use their own context as a starting point to discuss their own practice and experiences, with supporting evidence from their portfolio. A professional discussion is a well-recognised method of checking knowledge, skills and behaviours and is widely used within the creative and craft sector. The professional discussion will also allow some KSBs which may not regularly naturally occur in every workplace to be assessed as well as the assessment of a disparate set of KSBs.

Delivery

The independent assessors will conduct and assess the professional discussion.

The professional discussion must last for 120 minutes. The independent assessor has the discretion to increase the time of the professional discussion by up to 10% to allow the apprentice to complete their last answer.

During this method, the independent assessor must combine questions from the EPAO's question bank and those generated by themselves.

The professional discussion will be conducted as set out here:

The questioning and evidence provided for this assessment will enable the apprentice to demonstrate the depth of their knowledge, skills and behaviours and understanding in their craft.

A minimum of 20 open questions will be asked during the professional discussion. The independent assessor can ask follow-up questions during the professional discussion to gain clarity on evidence provided by the apprentice. The independent assessor is free to use the EPAO question bank as well as generate their own questions.

The independent assessor will conduct and assess the professional discussion. The portfolio will be reviewed prior to the professional discussion to allow the assessor to generate questions based on the portfolio. The apprentice must evidence how they have demonstrated the KSBs assigned to the professional discussion. Apprentices must be given the opportunity to refer to their portfolio of evidence during the professional discussion.

The professional discussion is carried out in-person on a 1 to 1 basis. The independent assessor must use the assessment tools and procedures that are set by the EPAO to record the professional discussion. The independent assessor will make all grading decisions.

Venue

The professional discussion should take place in a quiet room, free from distractions and influence. The professional discussion can take place in any of the following:

- employer's premises
- a suitable venue selected by the EPAO (for example a training provider's premises)

Other relevant information

A structured test specification and question bank must be developed by EPAOs. The 'question bank' must be of sufficient size to prevent predictability and the EPAO must be reviewed regularly (at least once a year) to ensure that it, and its content, are fit for purpose. The specifications, including questions relating to the underpinning KSBs, must be varied yet allow assessment of the relevant KSBs.

EPAOs must ensure that apprentices have a different set of questions in the case of re-sits/re-takes.

Independent assessors must be developed and trained by the EPAO in the conduct of professional discussions and reaching consistent judgements.

EPAOs will produce the following material to support this assessment method:

- Outline of the assessment method's requirements
- Marking material
- Question bank

Reasonable adjustments

The EPAO must have in place clear and fair arrangements for making reasonable adjustments for this apprenticeship standard. This should include how an apprentice qualifies for reasonable adjustment and what reasonable adjustments will be made. The adjustments must maintain the validity, reliability and integrity of the assessment methods outlined in this assessment plan.

Weighting of assessment methods

All assessment methods are weighted equally.

Grading

Assessment method 1: Knowledge Test

The following grade boundaries apply to the test (test is out of 30):

KSBs	Grade	Minimum score	Maximum score
K1 K3 K5 K6 K7 K8 K9 K10 K11 K12 K13 K14 K15 K16 K18 K23 S19	Fail	0	19
	Pass	20	25
	Merit	26	30

Assessment method 2: Practical Project

KSBs	Fail	Pass	Merit
K4 S5 S14 S15 S16 S18 B4 B6	Does not meet the pass criteria	<p>ALL PASS CRITERIA MUST BE ACHIEVED IN ORDER TO ACHIEVE A PASS</p> <p>Selects and uses the appropriate processes, techniques, materials, tools and equipment to produce the practical project piece in line with the drawing. The final quality of the piece should evidence that tools are well maintained and fit for purpose (K4, S5, B4, B6)</p> <p>Follows instructions set out in the drawing in order to produce the project piece to the required dimensions, within defined tolerances to meet complex customer orders, including finishing and cleaning for presentation with no discernible blemishes or marks (S14)</p> <p>Applies appropriate procedures resulting in the project piece being</p>	<p>ALL PASS CRITERIA AND ALL MERIT CRITERIA MUST BE ACHIEVED IN ORDER TO ACHIEVE A MERIT</p> <p>Manufacture the project piece to the assessed dimensions within half or better of the defined tolerance on the drawing (S14)</p> <p>Produce the project piece so the final product has no discernable deformation or rounding of edges under close inspection (S5, S16)</p>

		<p>fit for purpose and operating correctly (S16)</p> <p>All components presented in an assembled, functioning state within outlined timescale, (S15, S18)</p>	
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Assessment method 3: Professional Discussion

KSBs	Fail	Pass	Merit
<p>K2 K17 K19 K20 K21 K22</p> <p>S1 S2 S3 S4 S6 S7 S8 S9 S10 S11 S12 S13 S17 S20 S21 S22 S23 S24 S25 S26 S27 S28 S29</p> <p>B1, B2 B3 B5 B7 B8 B9 B10</p> <p>B11 B12 B13</p>	Does not meet the pass criteria	<p>ALL PASS CRITERIA MUST BE ACHIEVED IN ORDER TO ACHIEVE A PASS</p> <p><u>Health and Safety</u></p> <p>Explains the principles of the Health and Safety at work Act 1974 and any company regulations that apply to their role, including the reasons for regulations, and the process for reporting incidents (K2)</p> <p>Explains the purpose of implementing risk assessments and the importance of maintaining safe working practices in order to minimize risk to self and others in the work environment (S1, S3, B1)</p> <p>Explains when they have proactively identified safety solutions and improvements, and the importance of sharing knowledge and experience to maintain a safe working environment (B2, B3)</p> <p>Describes what environmental hazards are present in the workplace, the risk management systems that are in place and how these can help to improve workplace safety (S2)</p>	<p>ALL PASS CRITERIA AND ALL MERIT CRITERIA MUST BE ACHIEVED IN ORDER TO ACHIEVE A MERIT</p> <p><u>Health and Safety</u></p> <p>Describes consequences of not following the Health and Safety at work Act 1974 and company standards. (K2)</p> <p>Explains when they have implemented a risk assessment as a preventative measure and the impact this had in the workplace (S3).</p>

<p>B14 B15 B16 B17</p>		<p>Describes when they may need to seek guidance in order to ensure work carried out is safe, healthy and suitable (B10)</p> <p><u>Maintenance and Selection of Tools</u></p> <p>Explains how to correctly choose, prepare and maintain tools and the process to follow when working with unfamiliar or new tools. (S4, B5)</p> <p>Explains how they decide on which tools, materials and techniques to use when servicing or repairing clock movements which require dexterous skill or particular attention to detail (S10)</p> <p><u>Inspection and Identification of Faults</u></p> <p>Describe how to carry out a case inspection to assess the suitability and stability of a case (S9)</p> <p>Describe the process of identifying and reporting faults within a clock both visually and through testing procedures and the precautions taken to minimize damage (S6, B7, B8)</p> <p>Explain how to create an action plan of work to be carried out using knowledge of conservation, restoration and repair, taking into account complex customer requests which may require original solutions (K20, S7, B9)</p> <p><u>Repair and Maintenance of Clock/Parts</u></p> <p>Explains when and why they have worked collaboratively with colleagues and allied trades to carry out repair or maintenance work, and how they consider the</p>	<p><u>Maintenance and Selection of Tools</u></p> <p>Explain the potential impact of not conforming to manufacturers/company specifications when maintaining tools and equipment and the impact of this on the business (S4).</p> <p><u>Inspection and Identification of Faults</u></p> <p>Explains a full testing procedure which can be used to identify a specific fault within a clock (S6)</p> <p><u>Repair and Maintenance of Clock/Parts</u></p> <p>Explain the process to take when approval for work to be carried out is not approved by the customer, and how this could be resolved (S8)</p>
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		<p>needs of other professionals (K17, K21, B13)</p> <p>Explains the methods of clock repair and restoration within their remit (including the application of suitable lubricant) and how these may be used and adapted to meet customer needs (S12, S20, S21, S22, S23)</p> <p>Explains how to seek approval from customers to carry out work and how complex issues or required work can be communicated in a way that is understandable to a non-horological professional which allows the customer to make an informed decision and agree next steps (S8, S27, S29)</p> <p><u>Dis-assembly, Re-assembly and Testing of Clock</u></p> <p>Explains how to test the suitability and effectiveness of a repair and how to review manufacture methods used by selecting and correctly utilising the appropriate test stand (S13, S24)</p> <p>Describes the actions needed to ensure all components are in a suitable condition for re-assembly and explains an example of how the re-assembly process or the quality of the component could be improved (S11, B16)</p> <p><u>Conservation</u></p> <p>Explains how to ensure manufactured parts remain in-keeping with the original clock and the importance of refinishing being in line with conservation ethics, guidelines and company policy (S17, S25)</p>	<p><u>Dis-assembly, Re-assembly and Testing of Clock</u></p> <p>Explains the cost, time and quality implications of suggested improvements to re-assembly or component quality (S11, B16)</p> <p><u>Conservation</u></p> <p>Evaluates the impact of not keeping accurate records on work carried out in line with conservation ethics, guidelines and company policy (K19, S17, S25)</p> <p>Explains and justifies the use of individual conservation techniques</p>
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		<p>Explain how to, and the reasons for keeping accurate and detailed records making reference to actioning planning and what information should be included in records of work carried out (K19, S26, B11)</p> <p><u>CPD</u></p> <p>Explains how to treat customers respectfully and the importance of ensuring personal presentation and communication reflects positively on the organisation (B12)</p> <p>Explain the importance of assessing own skills and shortcomings and how to keep knowledge of industry best-practice up to date (S28, B14, B15),</p> <p>Describes the importance of recording CPD accurately, working and learning as part of a team, acquiring new skills and knowledge and applying this to support the overall work of the team (K22, B17)</p>	<p>used in the restoration and conservation of clocks (S26)</p>
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Overall EPA grading

All EPA methods must be passed for the EPA to be passed overall.

Grades from individual assessment methods should be combined in the following way to determine the grade of the EPA as a whole:

Assessment method 1: Knowledge Test	Assessment method 2: Practical Project	Assessment method 3: Professional Discussion	Overall grading
Merit	Merit	Merit	Merit
Pass	Merit	Merit	Pass
Merit	Pass	Merit	Pass
Merit	Merit	Pass	Pass
Pass	Pass	Merit	Pass
Pass	Merit	Pass	Pass
Merit	Pass	Pass	Pass
Pass	Pass	Pass	Pass
Fail	Any grade	Any grade	Fail
Any grade	Fail	Any grade	Fail
Any grade	Any grade	Fail	Fail

Re-sits and re-takes

Apprentices who fail one or more assessment method will be offered the opportunity to take a re-sit or a re-take. A re-sit does not require further learning, whereas a re-take does.

Apprentices should have a supportive action plan to prepare for the re-sit or a re-take. The apprentice's employer will need to agree that either a re-sit or re-take is an appropriate course of action.

An apprentice who fails an assessment method, and therefore the EPA in the first instance, will be required to re-sit or re-take any failed assessment methods only.

Any assessment method re-sit or re-take must be taken during the maximum EPA period, otherwise the entire EPA must be taken again, unless in the opinion of the EPAO exceptional circumstances apply outside the control of the apprentice or their employer.

Re-sits and re-takes are not offered to apprentices wishing to move from pass to merit.

Where any assessment method has to be re-sat or re-taken, the apprentice will be awarded a maximum EPA grade of pass, unless the EPAO determines there are exceptional circumstances requiring a re-sit or re-take.

Roles and responsibilities

Role	Responsibility
Apprentice	<ul style="list-style-type: none"> • complete the on-programme element of the apprenticeship • prepare for and complete the EPA
Employer	<ul style="list-style-type: none"> • identify when the apprentice is ready to pass the gateway and undertake their EPA • should not be involved in the delivery of the EPA
EPAO	<p>As a minimum EPAOs should:</p> <ul style="list-style-type: none"> • appoint administrators/invigilators and markers to administer/invigilate and mark the EPA • provide training and CPD to the independent assessors they employ to undertake the EPA • have no direct connection with the apprentice, their employer or training provider i.e. there must be no conflict of interest • have processes in place to conduct internal quality assurance and do this on a regular basis • organise standardisation events and activities in accordance with this plan's IQA section • organise and conduct moderation of independent assessors' marking in accordance with this plan • have, and operate, an appeals process
Independent assessor	<p>As a minimum an independent assessor should:</p> <ul style="list-style-type: none"> • be independent of the apprentice, their employer and training provider(s) i.e. there must be no conflict of interest • hold or be working towards an independent assessor qualification e.g. A1 and have had training from their EPAO in terms of good assessment practice, operating the assessment tools and grading • have the capability to assess the apprentice at this level • attend the required number of EPAOs standardisation and training events per year (as defined in the IQA section) • 5 years at Professional level MBHI or equivalent as a minimum • Member of a recognised professional horological body
Training provider	<p>As a minimum the training provider should:</p> <ul style="list-style-type: none"> • work with the employer to ensure that the apprentice is given the opportunities to develop the KSBs outlined in the standard and monitor their progress during the on-programme period • advise the employer, upon request, on the apprentice's readiness for EPA prior to the gateway • Plays no part in the EPA itself

Internal Quality Assurance (IQA)

Internal quality assurance refers to the requirements that EPA organisations must have in place to ensure consistent (reliable) and accurate (valid) assessment decisions. EPA organisations for this EPA must:

- Appoint independent assessors who meet the following criteria:
 - be independent of the apprentice, their employer and training provider(s) i.e. there must be no conflict of interest
 - hold or be working towards an independent assessor qualification e.g. A1 and have had training from their EPAO in terms of good assessment practice, operating the assessment tools and grading
 - have the capability to assess the apprentice at this level
 - attend at least one EPAO standardisation/training event per year
 - 5 years at Professional level MBHI or equivalent as a minimum
 - Member of a recognised professional horological body
- provide training for independent assessors in terms of good assessment practice, operating the assessment tools and grading
- have robust quality assurance systems and procedures that support fair, reliable and consistent assessment across the organisation and over time
- operate induction training and standardisation events for independent assessors when they begin working for the EPAO on this standard and before they deliver an updated assessment method for the first time
- ensure independent assessors attend standardisation events on an ongoing basis and at least once per year

Affordability

Affordability of the EPA will be aided by using at least some of the following practice:

- online assessment
- using an employer's premises
- assessing multiple apprentices simultaneously during the Knowledge Test

Professional body recognition

This apprenticeship is designed to prepare successful apprentices to meet the requirements for registration as a Clock Maker with: The British Horological Institute and The British Watch and Clock Makers Guild.

Mapping of knowledge, skills and behaviours (KSBs)

Assessment method 1: Knowledge Test

Knowledge
K1 The understanding of health and safety legislation such as COSHH and PPE and common hazards within the employees working environment as well as any other current legislation relevant to the business for example GDPR.
K3 The benefit of risk analysis to ensure the safety of self and others when using tools equipment and materials, the benefits of the safe disposal of all waste materials.
K5 The procedures for the identification of operational faults found within clock movements using experience and test equipment
K6 Knowledge of the procedure for visual inspection of the movement components.
K7 The principles for determining appropriate action level.
K8 Knowledge of the differing techniques used in conservation, restoration and repair.
K9 The procedure for determining the condition and safety of the clock case.
K10 Knowledge of how to transport clocks to and from the workshop and within the workshop.
K11 The basic function and construction of clock movements.
K12 The operational principles of a clock mechanism and the characteristics of the components (e.g. gear trains, springs, consumable materials).
K13 The procedure for the servicing of clock movements and the specifying of new components to be manufactured or fitted through the use of simple drawings and description. (e.g. springs, wheels, pinions, raw materials).
K14 Awareness of the possible security procedures within a workshop to ensure that customers clocks are protected from fire and theft
K15 Knowledge of Escapement action and geometry (predominantly for the anchor escapement)
K16 Knowledge of Strike work action and set-up both rack and countwheel striking.
K18 Knowledge of different types of weight lines, there advantages and disadvantages of each type and how to select the correct one for a given application.
K23 General knowledge on the development of time keeping. To include the major developments in mechanical clocks such as the development of escapements and historical styles.
Skills
S19 Calculating the length of, adjusting and manufacturing pendulums.

Assessment method 2: Practical Project

Knowledge
K4 The construction, operational principles and maintenance of tools and equipment required within clock making for example Hand tools: files, screwdrivers mainspring winders etc Machine tools: lathes, drilling machines, Other workshop equipment: cleaning machines, test instruments
Skills
S5 Select and use appropriate tools in the construction, service and repair of clocks.
S14 Manufacture new components where required by more complex customer orders or specify for manufacture through the use of drawings.
S15 Service a clock within an appropriate time scale.
S16 Research and apply appropriate procedures within company quality guidelines ensuring that any repair or service is suitable and fit for purpose.
S18 Manage time effectively whilst undertaking repair work.
Behaviours
B4 Respect tooling and tools and use them for the correct purpose and in the correct manner for which they are intended to be used.
B6 Be diligent in carrying out maintenance as part of daily work to ensure that tools and equipment are safe and efficient to use.

Assessment method 3: Professional Discussion

Knowledge
K2 Knowledge of company regulations for conforming to the Health and Safety at Work Act 1974.
K17 Knowledge of allied trades available and when to use them.
K19 Understand the need for keeping records of work carried out including the condition of the clock before and after work, research of differing methods and suggestion and application of original methods and procedures.
K20 Understand the customers requirements which may be complex and require original solutions.
K21 Understand the needs of other professionals.
K22 Knowledge of where professional development opportunities may be found (e.g. professional publications, lectures and seminars).
Skills
S1 Maintain a safe working environment when using tools, equipment and materials.
S2 Identify and minimise hazards and risks within the working environment, suggesting improvements to processes where appropriate.

S3 Implement risk assessments.
S4 Maintain tools in correct working order in line with manufacturers/company specifications.
S6 Identify faults within a clock, both through visual means and through testing procedures.
S7 Apply the knowledge of conservation, restoration and repair to form an action plan for both standard and complex customer requests in order for the work to be carried out .
S8 Seeking approval for the work to be carried out from the employer or customer.
S9 Carry out case inspections to assess suitability and stability of the case.
S10 Select and use the appropriate tools, materials and techniques to service and repair clock movements displaying dexterous skill and attention to detail.
S11 Ensure that all components are in a suitable condition for re-assembly, suggesting improvements where necessary.
S12 Select and apply a suitable lubricant for a given situation.
S13 Ensure that the clock is running correctly using suitable testing procedures and review how effective the repair/manufacture methods have been.
S17 Ensure any manufactured parts are in keeping with the original clock, but identifiable under close inspection.
S20 Re-facing anchor recoil pallets to correct operation and geometry with appropriate materials and in line with best conservation practice and company policy.
S21 Re-bushing according to required company specifications to include plugging and re-planting where necessary.
S22 Safe selection, maintenance and handling of barrels and springs.
S23 Tying of different types of weigh and fusee lines, to ensure safe and secure operation for both the clock and the customer.
S24 Selection of the appropriate type of test stand and the correct operational use of the test stand.
S25 Where appropriate undertake the refinishing of components in line with conservation ethics, guidelines and company policy. Such as the re-silvering and re-waxing dials or the cleaning of tarnished silvered dials prior to re-assembly where appropriate within conservation ethics and through detailed discussion with the customer as to the required work and effect visually upon the artifact.
S26 Keep a detailed record of all work carried out ensuring that there is a description of the clock along with materials of manufacture approximate age and size and suggesting improvements to procedures where necessary. Also include in detail with supporting photographs any work carried out along with justification for the work, methods used and evaluation of the work and methods.
S27 Use written and verbal communication to simplify and provide complex information in a way that supports positive customer outcome in the relevant format.
S28 Identify short comings or need for more knowledge and skill-based learning through the keeping of records and self-assessment.
S29 Apply the historical knowledge and use clear explanations, providing options and solutions to influence and help customers make choices and agree next steps.

Behaviours
B1 Remain mindful of safe practice and company risk assessments.
B2 Exercise proactivity when identifying safety solutions and improvements to safe working practice.
B3 Share knowledge and experience with others with regards to maintaining safety and the safety of others.
B5 Appreciate own knowledge and skill levels when there is a need for tool maintenance that may be beyond own or company capabilities.
B7 When assessing a clock and its components treat them with respect.
B8 Act with diligence and responsibility to ensure thorough inspection, ensuring notes and records are accurately kept in order to assist in further work and reporting.
B9 Demonstrate company advocacy, values and belief when dealing with customer requests, working to company standards in keeping with the style and quality of the clock.
B10 Develop and maintain a health and safety mindset to ensure work carried out is safe and suitable, seeking guidance where necessary.
B11 Ethically and diligently record all work carried out along with reasoning as to why and how this relates to the action plan.
B12 Ensure personal presentation, in all forms of communication, reflects positively on your organisation's brand by treating all customers respectfully.
B13 Work effectively and collaboratively with colleagues at all levels to achieve results.
B14 Continually identify own shortcomings and the need for more knowledge and skill-based learning.
B15 Proactively keep your service, industry and best practice knowledge and skills up-to-date.
B16 Where appropriate support and suggest through observation where changes could be made to improve quality of work.
B17 Be honest and accurate when recording continual professional development.

ANNEX A: Example of the type of drawing to be issued by EPAOs to the candidate in order to complete the Practical Project Assessment Method.

