



British Horological

Certificate in the Repair, Restoration and Conservation of Clocks / Watches

Unit 7 : Final Grade Part II : Practical Clockmaking Techniques

29th May 2007

Important notes - please read carefully

1. You are required to produce the components shown on the accompanying drawing and then design and make the pallets. Draw out a design for the pallets according to the escapement data provided; the pallet body is to be made to the dimensions shown on the drawing. When the pallet acting faces have been adjusted to work correctly they should be hardened. All the components should be finished to a high standard according to the specification indicated. Your design drawing for the pallets (showing clearly the method of constructing the entry and exit pallets) and your flycutter used to cut the escape wheel teeth must be submitted with your work. **Test pieces will not be assessed without the flycutter used to produce the wheel teeth.**
2. You will be known to your Examiners by your examination number only; your work must be indelibly marked with your Examination Number at the position shown on the drawing. (this aspect is not assessed – scratch number or use, fine permanent marker, metal etching pen) You must also use the tie on label, securely fastened to your work, to give your examination number.
In previous years some unidentified work has been received; please ensure that your time and effort are not wasted in this way.
3. The package containing your work must be clearly marked "Practical Examination" with your Examination Number on the outside of the package.
It should be addressed:-
The Examinations Secretary
British Horological Institute
Upton Hall
Upton
Newark
Notts, NG23 5TE, United Kingdom.

The date of arrival of the package will be recorded. The package will be opened by the Examinations Secretary and must **only** contain the test piece with your drawing of the dead beat escapement, your declaration and the postcard which enables the Institute to inform you when the piece has arrived. ("Overseas" candidates are not provided with a postcard but should email, or post, a copy of the "Certificate of Posting" giving the date the Practical Test Piece was despatched).

The Declaration will be retained at Upton Hall and the Practical Piece and drawing forwarded to the Examiner for marking.

4. Practical Pieces, whether or not completely finished, are to arrive at the Institute on or before the date given on the drawing; candidates, whose work is received late will be penalised, dependent on the degree of lateness. (1 - 2 days: 5%; 3 - 5 days: 10%; over 5 days piece will not be accepted). In order for you to know when your test piece has been received please ensure that the enclosed card is completed and sent with the test piece. The card will be returned to you giving the date of receipt at Upton Hall. In case of loss or delay in transit, it is advisable to request evidence of posting from the Post Office. In the event of any delay arising between the date of despatch and arrival at Upton Hall please inform the Institute and include evidence of posting.
5. You must complete and sign the declaration at the bottom of this page and return it with your work. All components, including screws, taper pins etc., are to be produced by the candidate, unless the Institute indicates otherwise. It is expected that completed test piece will show the candidate's awareness of "good practice". E.g. fits and clearances.
6. An Examiner may contact you, either during or after the Examination, to enquire about the various processes you have undertaken when making the Practical Test Piece.
7. Examiners consider the action of the escapement, accuracy of a number of dimensions and some elements of workmanship and surface finish. **The functioning of the escapement accounts for over 50% of your final result.**
This "sampling" process cannot consider every point of accuracy or quality of construction. If it is evident to the Examiner that a candidate's work includes a **serious error** in the accuracy, workmanship or finish of an aspect **not** being routinely checked five marks will be deducted from the total score.
E.g. components fastened with Loctite or Superglue instead of riveting
soldering to repair component broken during construction
excessive error in dimension (over 0.5 mm)
8. No electrolytic treatment, such as the plating of components, is permitted.
9. Your test piece will be retained by the Institute for a number of years.

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Candidate's Declaration:-

I declare that the whole of the work in producing this Practical Test Piece is my own work, not aided or advised by any other person. Moreover, my signature is given in the knowledge that if it is found, at any time, that a false declaration has been made, any "Pass" or "Pass with Merit" achieved in this and other Horology Examinations may become null and void.

Candidate's Name Examination Number

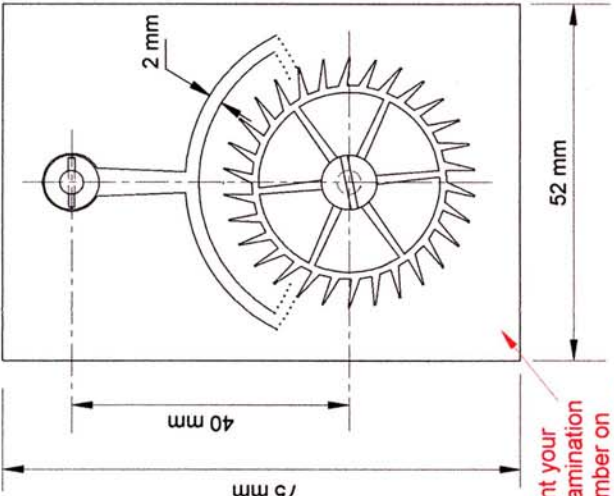
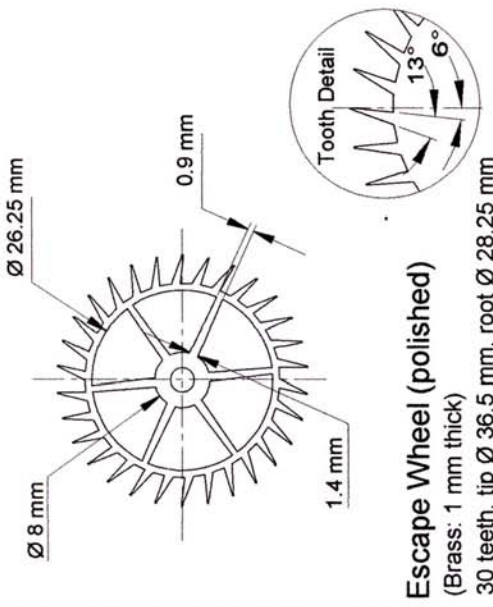
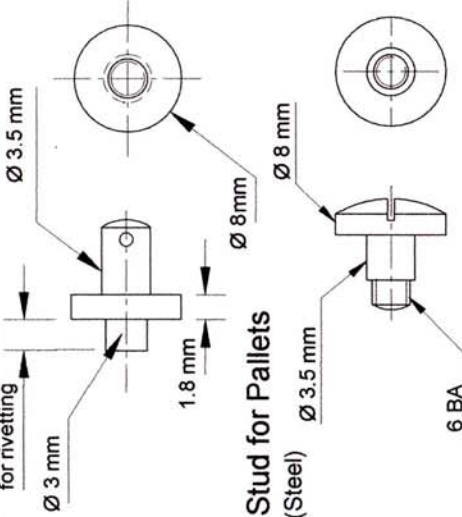
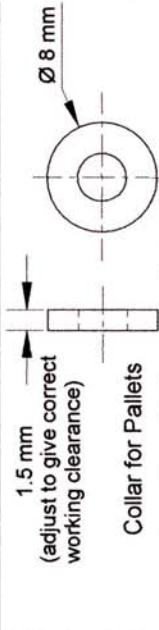
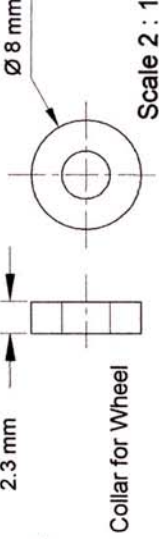
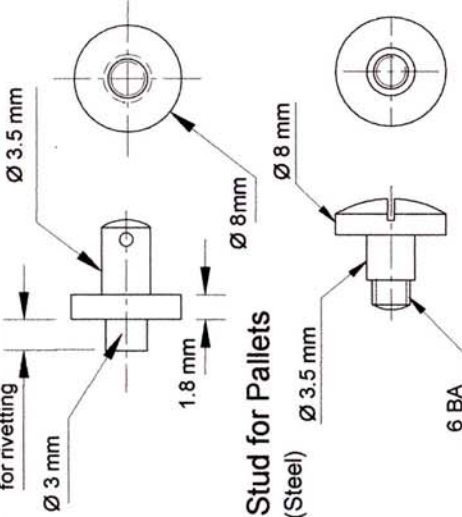

Signed

Date.....

Signature of College Lecturer.....

Date.....

Make sure that your examination number is on the package and on your work.

 <p style="color: red; font-weight: bold;">Print your Examination Number on the back here. (not assessed)</p>	 <p style="text-align: center;">Escape Wheel (polished) (Brass: 1 mm thick) 30 teeth, tip \varnothing 36.5 mm, root \varnothing 28.25 mm Scale 1 : 1</p>	 <p style="text-align: center;">Stud for Pallets (Steel) \varnothing 3.5 mm 1.8 mm 8 mm 6 BA Scale 2 : 1</p>
 <p style="text-align: center;">Spacing Collars (polished) (Steel) Collar for Pallets 1.5 mm (adjust to give correct working clearance) 8 mm Scale 2 : 1</p>	 <p style="text-align: center;">Collar for Wheel 2.3 mm 8 mm Scale 2 : 1</p>	 <p style="text-align: center;">Screw for Wheel (polished and blued) (Steel) \varnothing 3.5 mm 1.8 mm 8 mm 6 BA Scale 2 : 1</p>
<p>You are required to:-</p> <ol style="list-style-type: none"> 1. make and finish the components shown in the drawing: use a flycutter to produce the escape wheel teeth (they are not the same profile as produced by a Thornton's cutter) Your flycutter is to be submitted with your work for assessment. 2. draw pallets using the centre distance given, spanning ten and a half teeth, impulse angle 2°, locking 0.5° and drop 1°, the overall shape of the pallets is shown 3. make, adjust, harden and finish the pallets <p>NB The operation of the escapement will be assessed together with general accuracy, workmanship and quality of finish. You are to submit your drawing for the design of the pallets with your finished work</p>		
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<p>DEAD BEAT ESCAPEMENT</p>	<p>UNSTATED DIMENSIONS AND WORKING CLEARANCES ARE LEFT TO THE CANDIDATE'S DISCRETION</p>	
<p>MATERIALS: AS STATED</p>	<p>FIRST ANGLE PROJECTION</p>	
<p>FINISH: AS STATED</p>	<p>FINISHED COMPONENTS TO BE SUBMITTED TO UPTON HALL BY 21st June 2007</p>	
<p>ALL DIMENSIONS IN mm. (Do not scale)</p>	<p>© British Horological Institute</p>	
<p>GENERAL TOLERANCE: \pm 0.03 mm</p>		