

CAMBRIDGE INTERNATIONAL EXAMINATIONS

**Joint Examination for the School Certificate
and General Certificate of Education Ordinary Level**

**GEOMETRICAL AND MECHANICAL DRAWING 7040/2
PAPER 2**

OCTOBER/NOVEMBER SESSION 2002

2 hours 40 minutes

Additional materials:

A2 drawing paper (1 sheet)
Standard drawing equipment

TIME 2 hours 40 minutes

INSTRUCTIONS TO CANDIDATES

Print your name, Centre number and candidate number at the bottom right-hand corner of your drawing paper.

Answer **both** questions.

Use both sides of the drawing paper for your answers.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets [] at the end of each question or part question.

The insert contains Fig. 2 for Section 2.

You should spend 10 minutes reading carefully the text of Section 2 before answering the questions.

Arcs of circles less than 5 mm radius may be drawn freehand.

All dimensions are in millimetres unless otherwise stated.

This question paper consists of 4 printed pages and an insert.

Section 1

Candidates are advised to spend not more than 30 minutes on this section.

- 1 The exploded pictorial drawing of a threading device, used in the tailstock of a lathe, is shown in Fig. 1.
- (a) Sketch freehand, in good proportion and in third angle projection:
- (i) two appropriate views of the Die Holder, including hidden detail; [6]
 - (ii) two appropriate views of the Lever; [3]
 - (iii) two appropriate views of the Mandrel. [2]
- (b) Fully dimension the two views of the **Die Holder** sketch in accordance with BS308/PD7308 recommendations. The dimensions should include at least one of each of the following:
- a horizontal length;
 - a vertical length;
 - a diameter;
 - the size of a screw thread;
 - the size of an angle. [5]
- (c) Make a parts list that includes a reference, a name, the material and number required for the four members of the assembly. [4]

The use of instruments, including any form of straight-edge, when constructing the views or when lining-in will be heavily penalised.

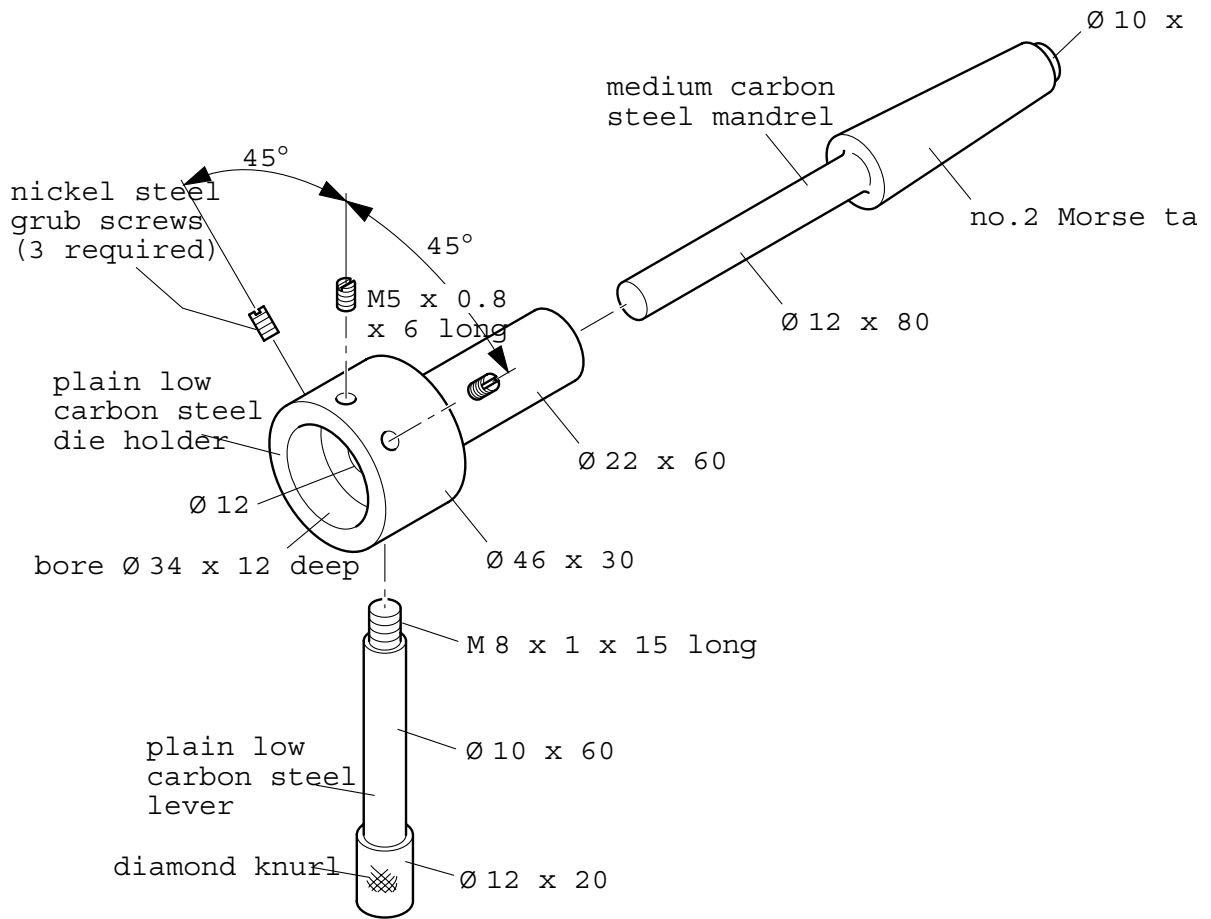


Fig.1

Section 2

- 2 Fig. 2, on the insert, shows details of a Swinging Arm Jig used when drilling round bar.

The components are assembled as follows:

The 26 mm diameter stem of the Bush ⑦ is inserted into the 26 mm diameter hole in the Swinging Arm ② with its flange in contact with the upper face and the two counter bored holes in alignment with the M6 holes. The Bush is secured using the two Cheese Head Screws ⑧.

The curved tongue of the Swinging Arm is positioned in the 76 mm wide slot of the Body ① with the 10 mm diameter holes in alignment. The threaded end of the Hinge Pin ③ is inserted into these holes and screwed tight, restraining the Swinging Arm whilst allowing it to rotate as a hinge.

The ring of the Eye Bolt ④ is fitted into the 15 mm wide slot in the Body with the 10 mm diameter holes in alignment. The threaded end of the Pivot Pin ⑤ is inserted into these holes and screwed tightly into the M8 threaded hole, allowing the Eye Bolt to swing into, or clear, of the slotted portion of the Swinging Arm, as required.

With the Eye Bolt in the vertical position and located in the 12 mm wide slot, the Clamping Nut ⑥ is screwed onto the Eye Bolt and tightened, securing the Swinging Arm firmly to the Body.

The Work Piece ⑨ is positioned in the vee groove and the two M10 Bolts ⑩ screwed into the threaded holes in the upper face of the Swinging Arm until they tighten onto the Work Piece, preventing it from moving when being drilled.

- (a) With the components assembled as indicated above and the Work Piece positioned centrally in the vee groove, draw, **full size**, the following views in either first or third angle projection:
- (i) A sectional elevation, the plane of the section and the direction of the required view being indicated by SS on the plan view details of the Body ① and Swinging Arm ②. [45]
 - (ii) A full plan view. [29]

Hidden detail is not required in any view.

Suitable dimensions should be estimated where not provided.

- (b) On the side of your drawing paper showing the above views, draw a suitable title block, including a title and the scale used. Indicate, by BS308/PD7308 recommended symbol, the method of projection you have used. [6]

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PAPER 2

INSERT

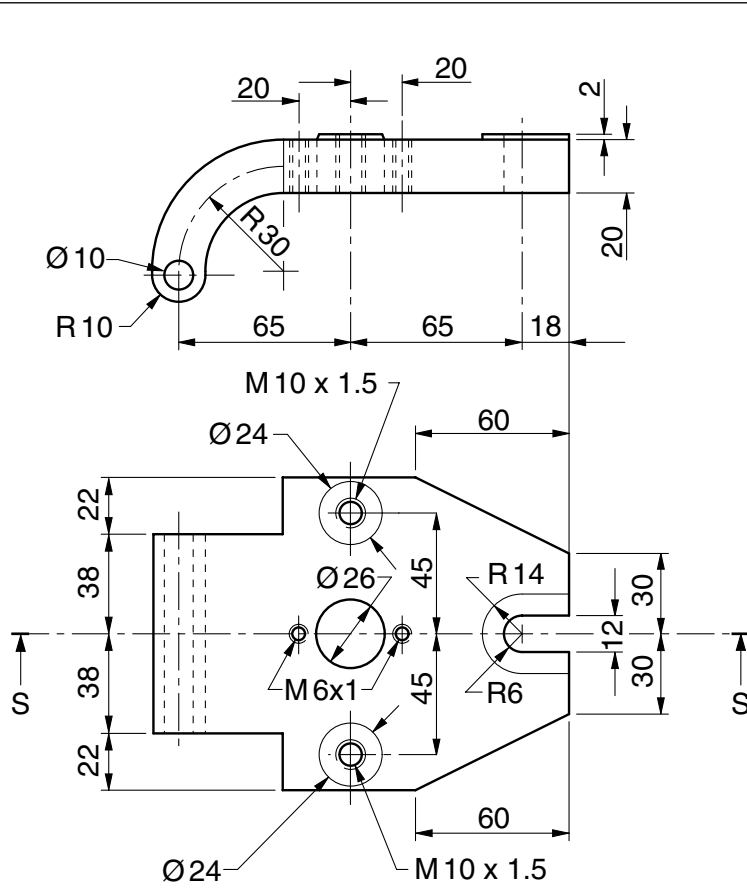
OCTOBER/NOVEMBER SESSION 2002

2 hours 40 minutes

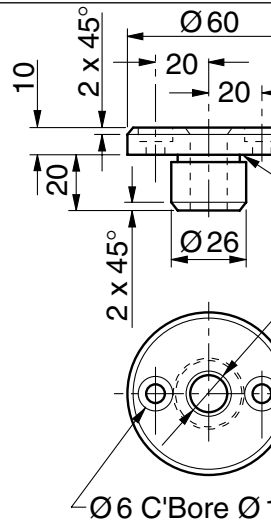
INSTRUCTIONS TO CANDIDATES

This insert contains Fig. 2 for Section 2.

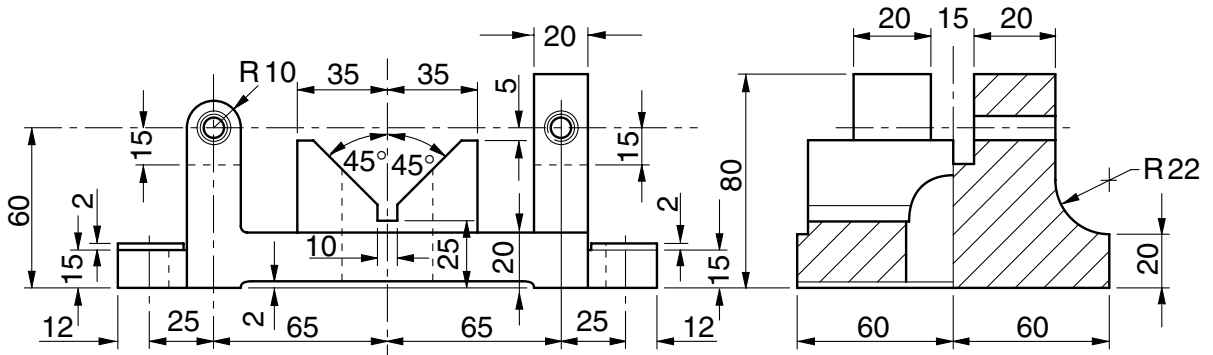
This insert consists of 3 printed pages and 1 blank page.



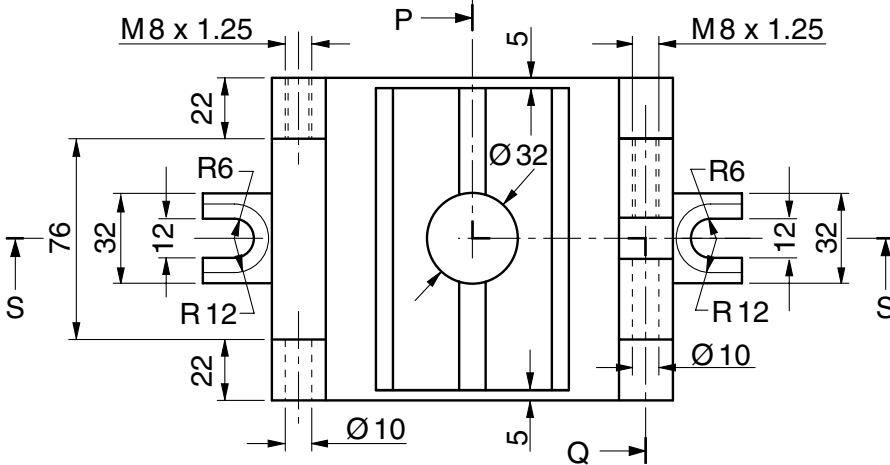
② Swinging Arm



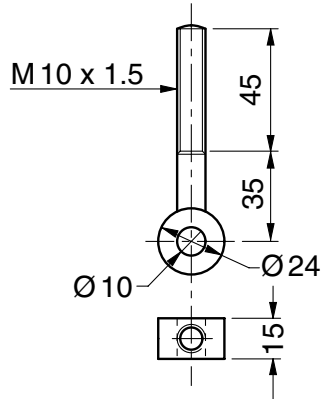
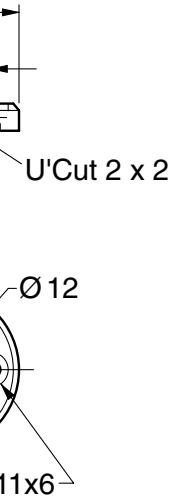
⑦ Bush



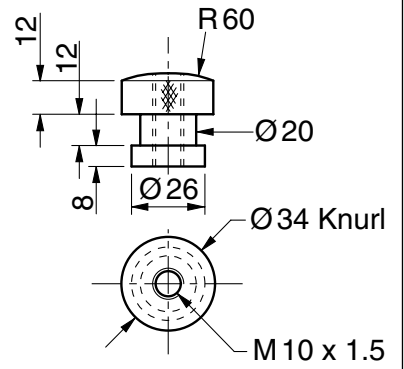
Section PQ



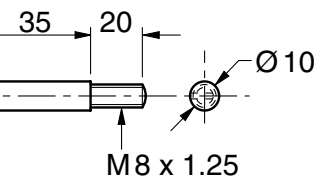
① Body



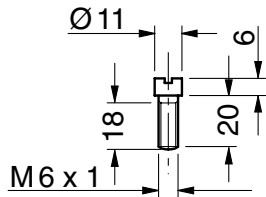
④ Eye Bolt



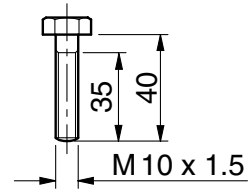
⑥ Clamping Nut



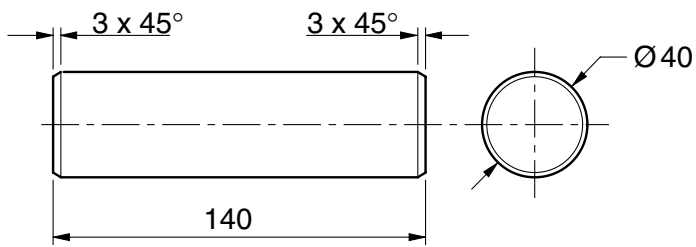
⑤ Pivot Pin



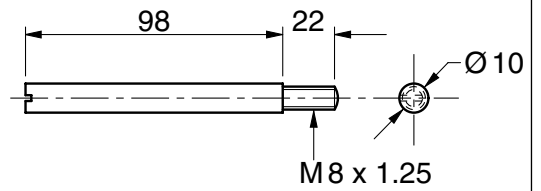
⑧ Screw (2 off)



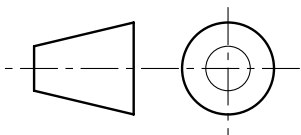
⑩ M10 Bolt (2 off)



⑨ Work Piece



③ Hinge Pin



UNSPECIFIED FILLETS AND RADII 3

ALL DIMENSIONS ARE IN MILLIMETRES

