

UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE
Joint Examination for the School Certificate
and General Certificate of Education Ordinary Level

GEOMETRICAL AND MECHANICAL DRAWING 7040/2
PAPER 2

OCTOBER/NOVEMBER SESSION 2001

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 Fig. 1 shows the pictorial assembly of a Bushed Bearing Bracket.

(a) Sketch **freehand**, in good proportion and in **third angle projection** the following two views of the bushed bearing bracket.

(i) A full sectional elevation, looking in the direction of arrow **C**, the cutting plane to be taken along the centre line of the M8 threaded hole and the web.

(ii) A plan view.

Include hidden detail in view (ii).

Estimate dimensions where these are not provided.

[13]

(b) Insert the following dimensions on the sketched views in accordance with BS308/PD7308 recommendations.

an horizontal length;

a vertical length;

a diameter;

a radius;

the size of one screw thread.

[5]

(c) Make a parts list that includes a reference, a name, the material and number required for each member of the assembly. [2]

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

Section 2

- 2 Fig. 2, on the insert, shows the component parts of a manual press for use on thin sheet material.

The components are assembled as follows.

The Spring ⑥ is fitted over the 26 mm diameter portion of the Punch Ram ⑤ until the Spring is in contact with the 40 mm square head.

The cylindrical part of the Punch Ram is inserted, from the top, into the 40 mm boss of Body ① compressing the Spring between the boss of the Body and the square head of the Punch Ram.

The spigot of the Support Bracket ② is positioned into the 2 mm recess in the flange at the top of the Body with the 12.5 mm diameter holes in line. The two M12 Hex Bolts ⑦, the Plain Washers ⑧ and the M12 Hex Nuts ⑨ are used to secure it to the Body. (the head of the bolt should face the operator).

After ensuring that the 24 mm slot in the top of the Punch Ram is aligned with the inner faces of the two extended pivot lugs of the Support Bracket, the 70 mm diameter portion of the Cam Lever ③ is inserted into the 24 mm gap between them.

The Cam Lever is pressed downwards into the slot in the Punch Ram compressing the spring until the 20 mm diameter holes in both the Support Bracket and the Cam Lever become aligned allowing the Pivot Pin ④ to be inserted.

Finally the two M8 Grub Screws ⑩ are screwed into the two M8 threaded holes in the lugs of the Support Bracket securely locking the Pivot Pin.

With the components assembled as indicated above and the Cam Lever ③ shortened and drawn at an angle of 45° as shown in Fig. 2, draw, **full size**, the following views in either first or third angle projection:

- (a) a front elevation as seen when viewed in the direction of arrow **F** which is indicated on the end view of Body ① ; [30]
- (b) an end view showing the right hand half in section, the plane of the section and the direction of the required view being indicated by SS on details of body. [46]

Suitable dimensions should be estimated where not provided.

Hidden detail is not required on any view.

- (c) On the side of your drawing paper showing the above views, draw a suitable title block, a title and the scale used.
Indicate in accordance with BS308/PD7308, the recommended symbol for the method of projection you have used. [4]