



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

GEOMETRICAL AND MECHANICAL DRAWING

7040/02

Paper 2

October/November 2007

2 hours 40 minutes

Additional Materials: A2 Drawing Paper (1 sheet)
 Standard Drawing Equipment

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name at the bottom right-hand corner of your Drawing Paper.

Use both sides of the paper.

Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **both** questions.

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 less than 5 mm radius may be drawn freehand.

All dimensions are in millimetres unless otherwise stated.

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

This document consists of **4** printed pages and **1** insert.



Section 1

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

- 1 The exploded pictorial drawing of a protractor guide is shown in Fig. 1.
- (a) Sketch freehand, in good proportion, using orthographic third angle projection:
- (i) an elevation and plan of the clamp; [2]
 - (ii) an elevation, end view and plan of the guide; [4]
 - (iii) an elevation and two end views, of the protractor head, one end view to be in section. [5]

Estimate details where these are not provided. Include hidden detail in any view that is not sectioned.

- (b) Insert five dimensions on your views in accordance with BS308 / PD7308 recommendations. The dimensions should include one of each of the following:
- a horizontal length;
 - a vertical length;
 - a diameter;
 - a radius;
 - and the size of a screw thread. [5]
- (c) Make a parts list for the five members of the assembly that includes a reference, a name, the material and number required. [4]

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

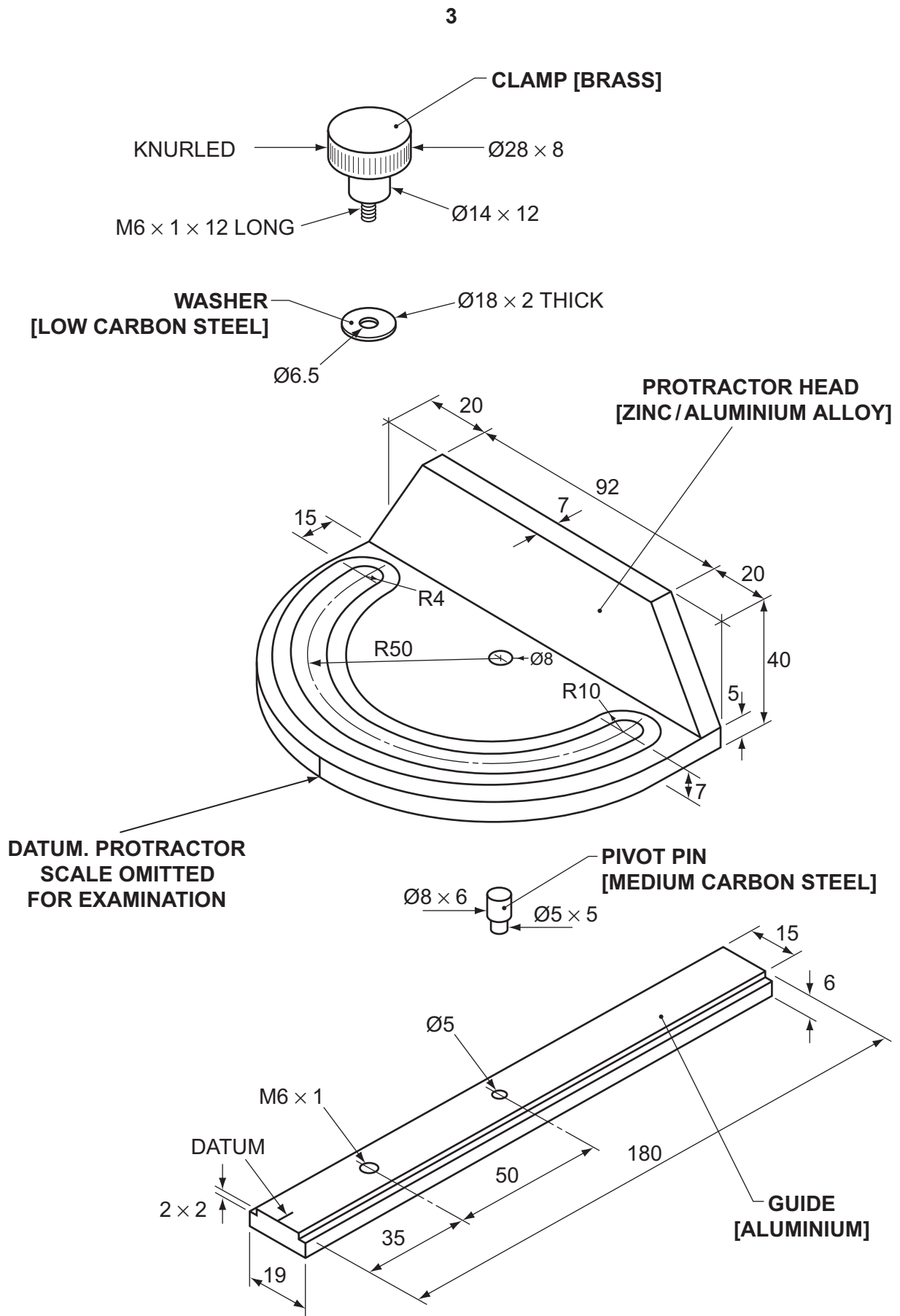


Fig. 1

Section 2

- 2 Fig. 2 on the insert shows details of the main components of a tank tap. The components are assembled as follows.

The Spindle ⑤ is screwed into the Gland ③ with the M10 threaded end and the square section projecting out from the face A of the Gland.

The Fibre Washer ⑧ is pushed over the spherical projection of the Jumper ⑦ until the washer is in contact with the face of the 30 mm diameter portion. The 10 mm diameter stem is then inserted into the 10 mm diameter hole of the Spindle.

A Soft Washer ⑨ is fitted over the M44 threaded end of the Gland before screwing the Gland and Spindle assembly into the Body ①.

The Seal Ring ⑥ is fitted over the 14 mm diameter of the protruding Spindle followed by the Gland Nut ④. The Gland Nut is screwed into the Gland causing the Seal Ring to be pushed into the M24 threaded hole until it makes contact with the 30° chamfer.

The Handle ⑩ is fitted onto the 10 mm square section of the Spindle and secured in place by the M10 Nut ⑪.

Finally, the second Soft Washer ⑨ is fitted over the M44 threaded portion of the Body and the assembled tap screwed into the webbed end of the Base Plate ②.

Draw, FULL SIZE, the following views of the assembled components in either first or third angle projection, with the tap in the closed position. i.e. The face of the Fibre Washer is in contact with the 30 mm diameter boss in the Body.

- (a) A sectional elevation, the plane of the section and the direction of the required view being indicated by **SS** on the details of the Base Plate, Body, Gland and Handle, the handle being shown full length. [42]
- (b) An end view as seen looking in the direction of arrow **H**. [14]
- (c) A plan view in projection with (a). [18]

Hidden detail is not required in any view.

Suitable dimensions should be estimated where not provided.

- (d) On the side of your drawing paper showing these views draw a title block. Print into this block a title and the scale used. Indicate, using the recommended BS308/PD7308 symbol, the method of projection you have used. [6]

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