AN ROINN OIDEACHAIS AGUS EOLAÍOCHTA
LEAVING CERTIFICATE EXAMINATION, 1998

M.82

TECHNICAL DRAWING - ORDINARY LEVEL
PAPER II (A) - ENGINEERING APPLICATIONS

200 marks

TUESDAY, 23 JUNE - AFTERNOON 2.00 p.m. - 5.00 p.m.

7285

INSTRUCTIONS

(a) Answer question 1 and two other questions.
(b) Drawings and sketches should be in pencil unless otherwise stated.
(c) Where dimensions are omitted they may be estimated.
(d) Credit will be given for neat orderly presentation of work.
(e) Candidates should work on one side of the paper only.
(f) The Examination Number should be written on each drawing sheet used.
(g) All dimensions are in millimetres.

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1. Details of a CLAMPING DEVICE are given in Fig. 1 with a parts list tabulated below.

INDEX	PART	REQUIRED
1	Body	1
2	Movable jaw	1
3	End plate	1
4	Clamping screw	1
5	Set screw	2

(a) Make the following drawings of the assembled clamping device in first or third angle projection with a gap of 35mm between the jaws.

(i) A sectional side elevation on section plane XX.

(ii) A plan projected from (i).

(b) Insert the following on the drawings:

(i) Title:- CLAMPING DEVICE

(ii) ISO projection symbol.

(iii) Four leading dimensions. **(100 marks)**

OVER→

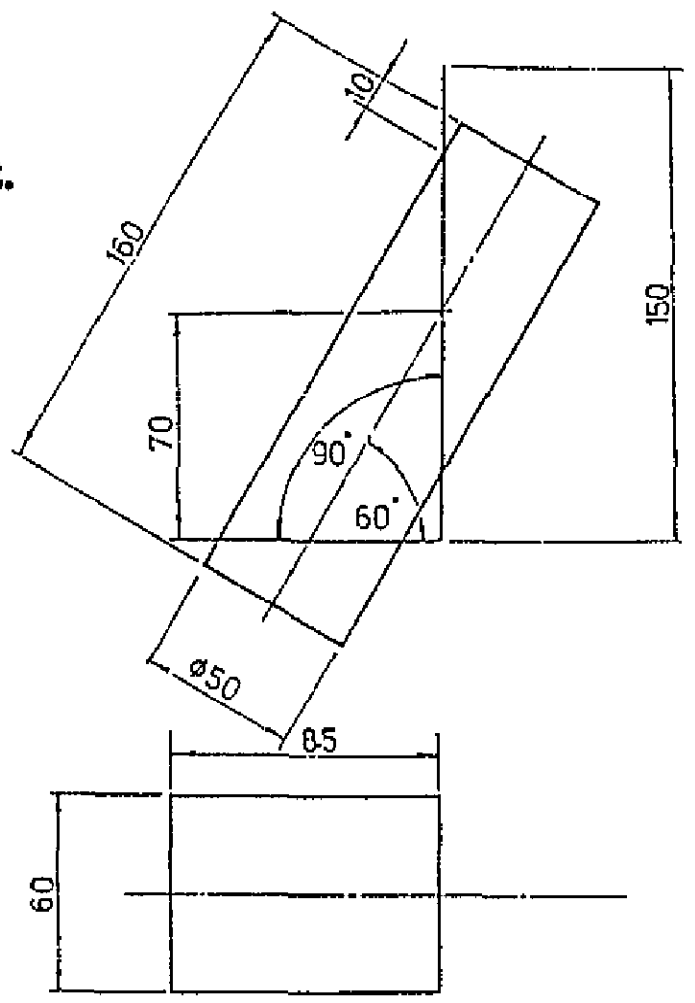
2. Fig. 2 shows the elevation and incomplete plan of two plates welded together at 90° and penetrated by a cylinder.

(a) Draw the elevation as given and complete the plan view (Hidden detail not required).

(b) Draw the surface development of the plates showing the true shape of the holes necessary to receive the cylinder (Ignore the thickness of the plates).

(c) Make a neat freehand sketch of a "safe edge".

Fig. 2.



(50 marks)

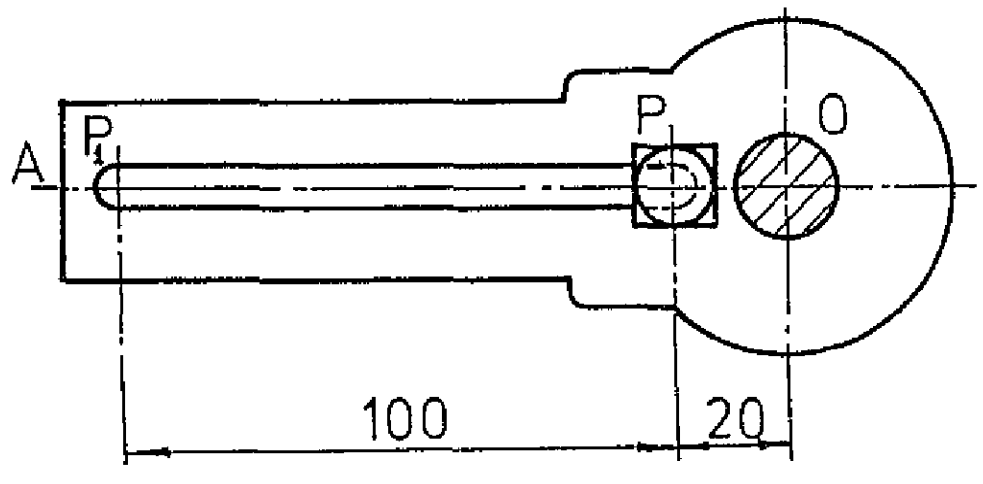
3. (a) Draw a radial plate cam with a shaft diameter 20mm, a minimum radius of 25mm and clockwise rotation, to impart the following motion to an in-line knife edge follower:-

0° to 180°	rise 45mm with uniform acceleration and retardation.
180° to 210°	dwell.
210° to 270°	fall 15mm with uniform velocity.
270° to 360°	return to initial position with simple harmonic motion.

Include the displacement diagram as part of your solution.

(b) Fig. 3 shows a rod OA which rotates clockwise at constant speed about 0 through 180°. During this movement the block P slides from P to position P_1 and back to P at constant speed. Using a line diagram to represent the system, draw the locus of P, during a complete movement of OA.

Fig. 3



(50 marks)

4. **(a)** Fig. 4 shows an **incorrectly** dimensioned machine screw. Assume all numerical values to be correct.

(i) How many dimensions are shown correctly with reference to BS 308?

(ii) Using the dimensions given, produce a correctly dimensioned drawing of the screw.

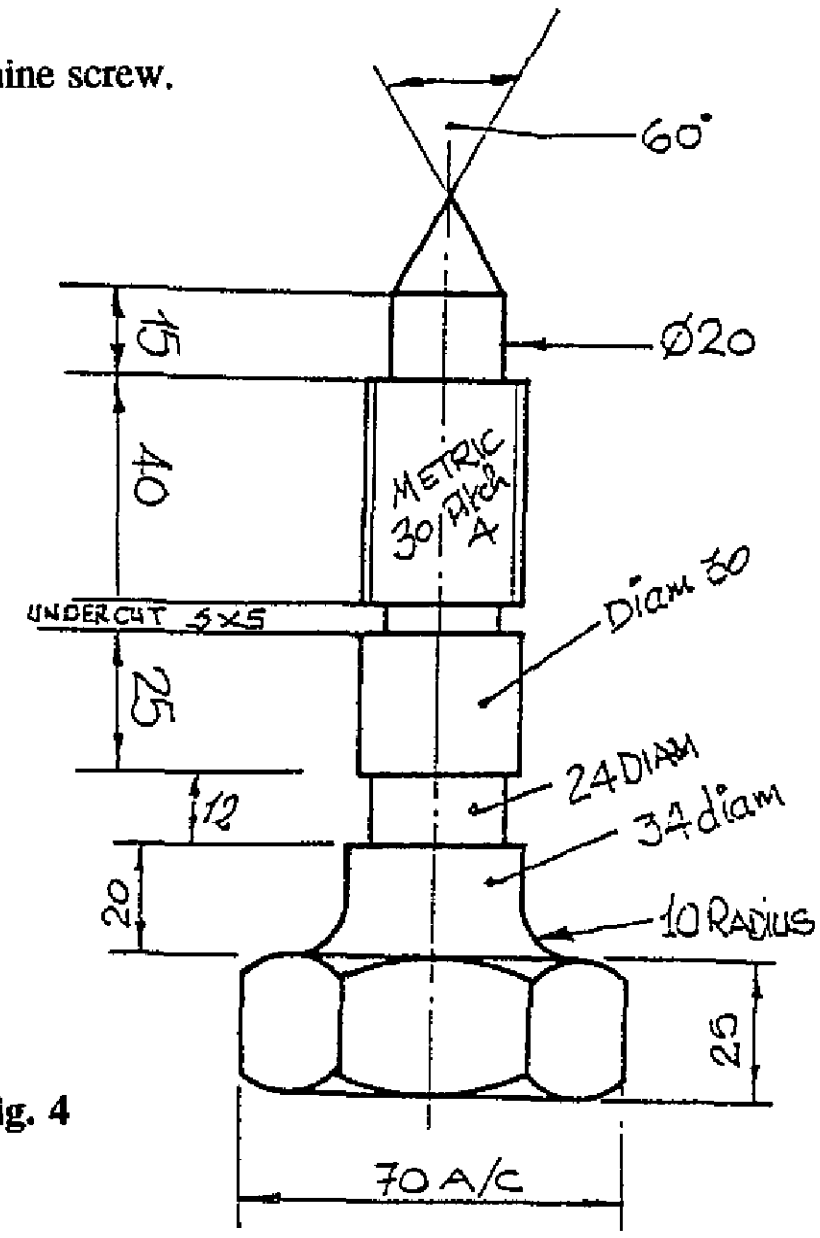


Fig. 4

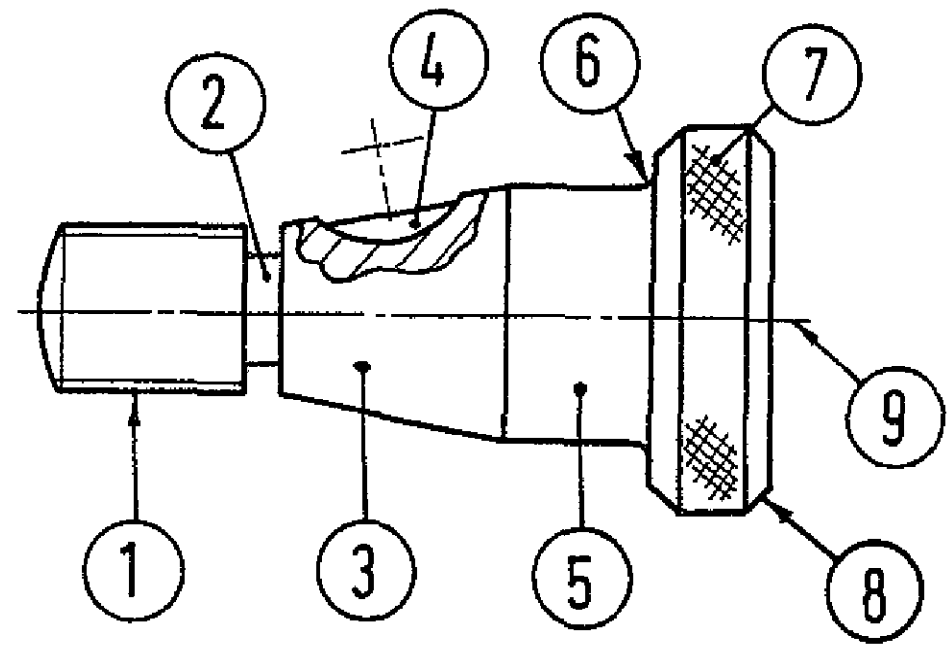
(b) **(i)** Identify the assembly shown in Fig. 5.

(ii) Name the parts 1, 2, 3, 4 and 5.

(c) Fig. 6 shows a drawing of an engineering component with various numbered parts depicted using conventional symbols. Copy the chart shown on your answer sheet and identify each part by inserting the appropriate number in the left-hand column.

No.	Conventional Feature
	Diamond Knurling
	Circular Section
	Chamfer
	Centre Line
	Under-Cut
	Taper Section
	Screw Thread
	Woodruff Keyway
	Radius

Fig. 6



(50 marks)

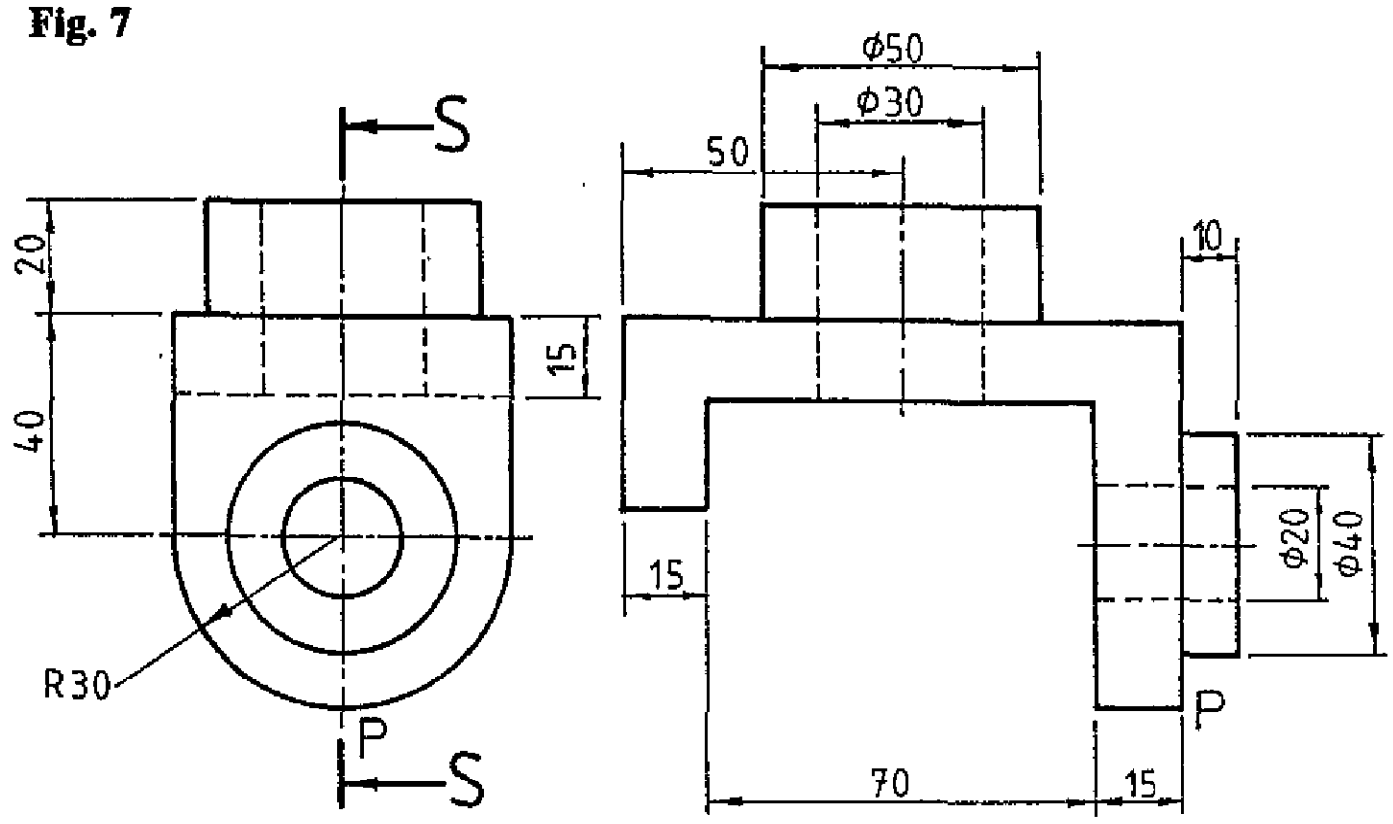
OVER→

5. Answer SECTION A or SECTION B but not both.

SECTION A

(a) Fig. 7 shows two elevations of a machine casting. Draw an isometric view of the casting, viewed on the section place SS with the right-hand side removed. Make point P the lowest point of the drawing.

Fig. 7



(b) By means of neat freehand sketches distinguish between:

(i) Hexagon head bolt;
(ii) Hexagon head screw;
(iii) Stud.

OR

SECTION B

(a) List five (5) advantages of Computer Aided Design (CAD) systems.

(b) List a selection of six commands necessary to produce the drawing shown in Fig. 7.1.

(c) Having completed a drawing on a CAD system which of the following would you choose to produce the best quality hard copy?
(i) Dot matrix printer;
(ii) Plotter;
(iii) Ink jet printer.

(d) Which would be the most suitable snap resolution to make the drawing in Fig. 7.2?

(e) With the aid of a sketch and a short note explain the following functions used in CAD systems.
(i) Translating;
(ii) Duplicating;
(iii) Rotation.

(50 marks)

M82(L)

AN ROINN OIDEACHAIS AGUS EOLAÍOCHTA

6602

SCRÚDÚ ARDTEISTIMÉIREACHTA

1998

LÍNÍOCHT THEICNIÚIL - GNÁTHLEIBHÉAL

PÁIPÉAR II(A)

FEIDHMIÚCHÁIN INNEALTÓIREACHTA

AN ROINN OIDEACHAIS AGUS EOLAÍOCHTA

LEAVING CERTIFICATE EXAMINATION

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TECHNICAL DRAWING - ORDINARY LEVEL

PAPER II(A)

ENGINEERING APPLICATIONS

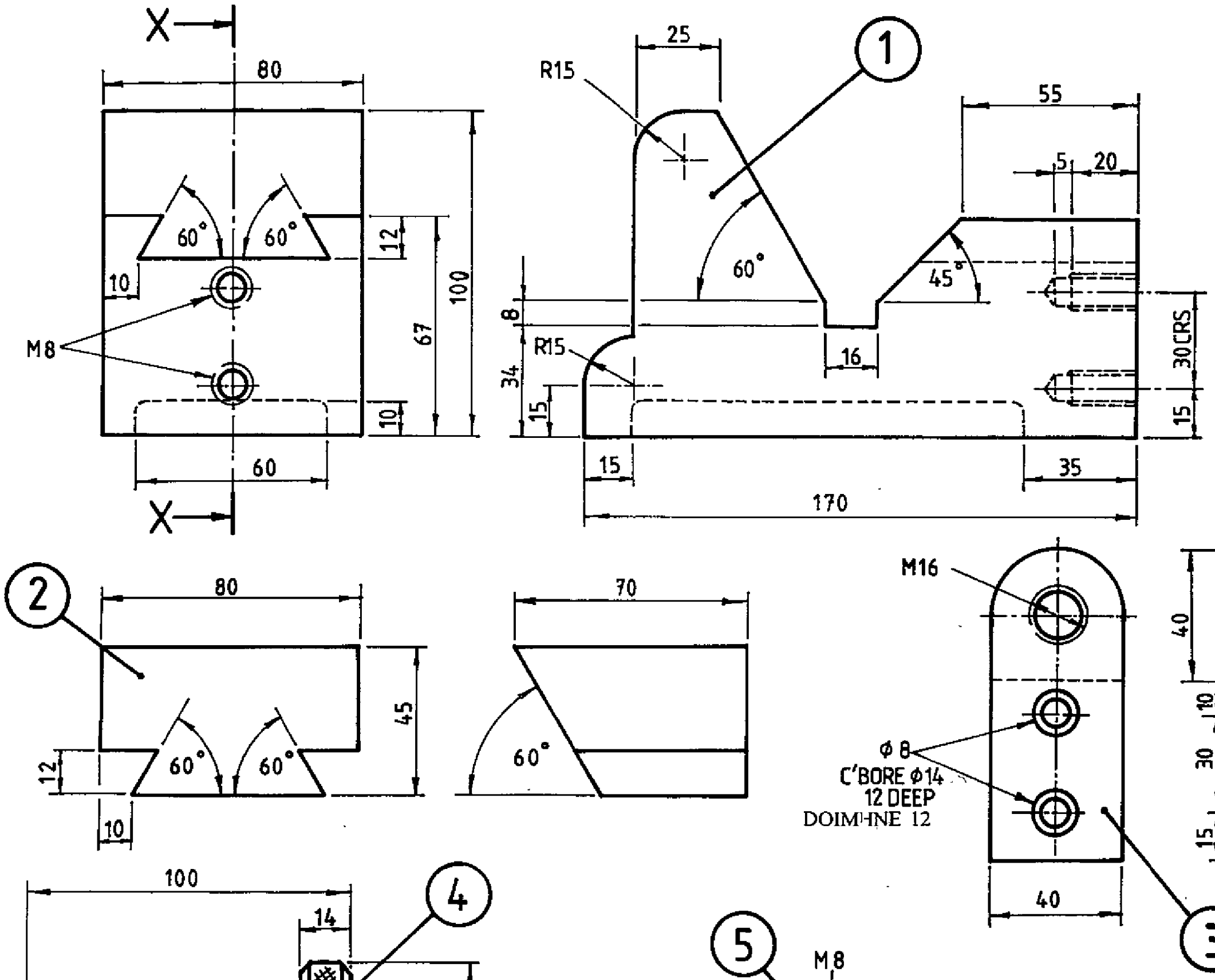

X
80
60°
60°
12
10
M8
67
100
10
60
X
25
R15
1
55
5
20
60°
45°
8
R15
34
15
16
30 CRS
15
15
35
170
2
80
45
12
60°
60°
10
70
60°
100
14
4
ϕ40
M16
2×45°
5
M8
ϕ14
30
8
M16
ϕ 8
C'BORE ϕ14
12 DEEP
DOIMHNE 12
40
3
20
40
10
30
15
75
25
PROJECTION
TEILGEAN

FIG. 1
FÍOR 1

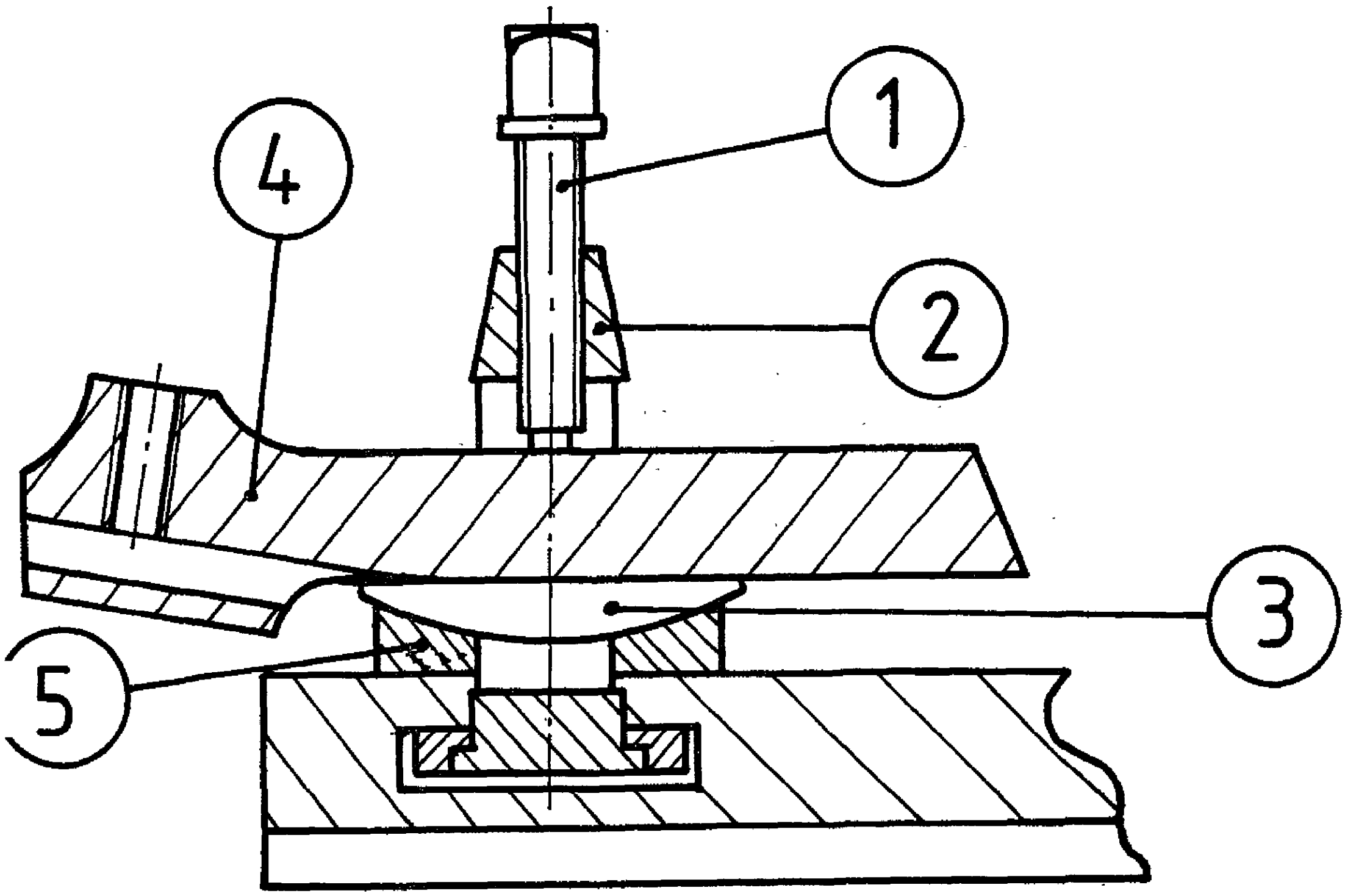
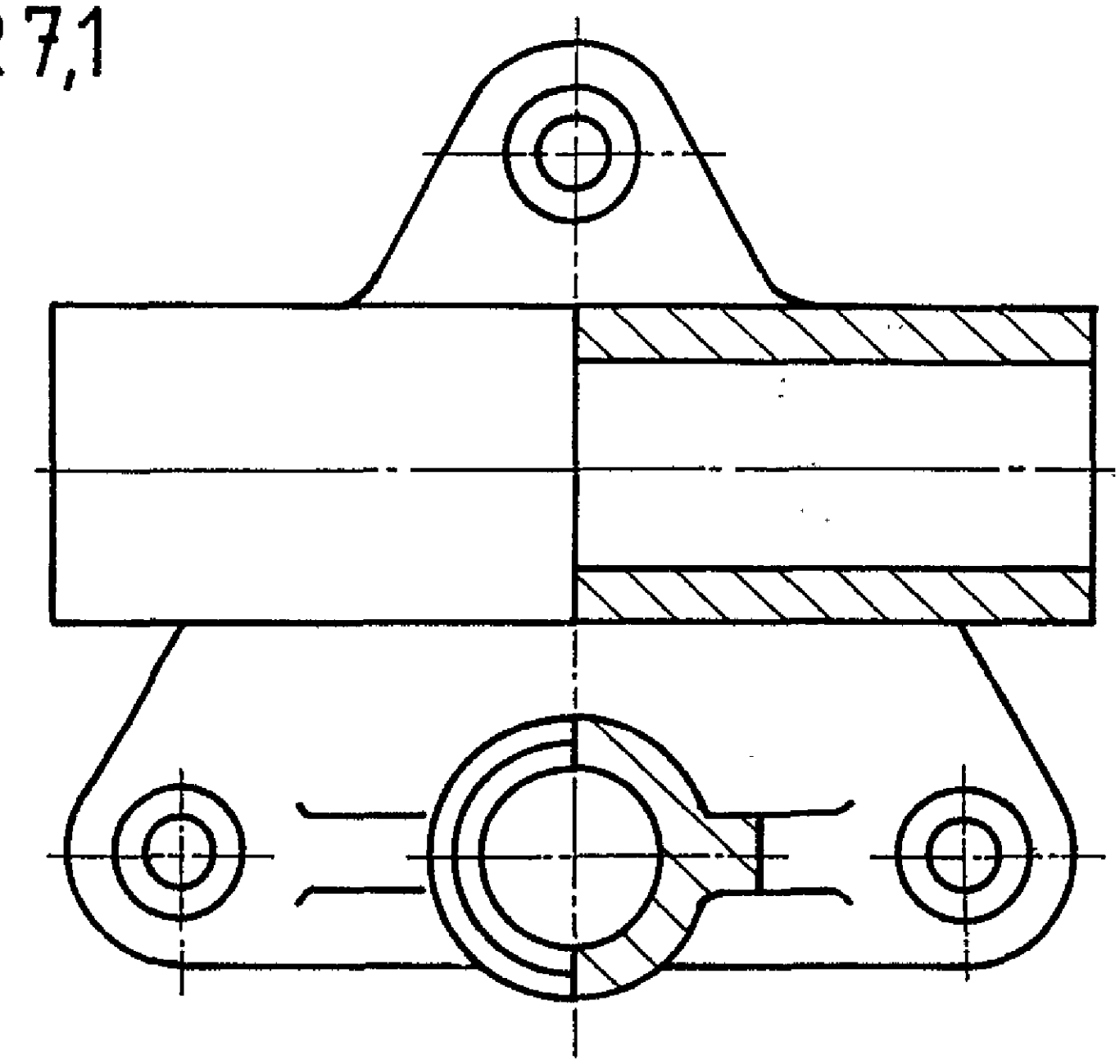


FIG.5

FIOR 5

FIG. 7,1
FÍOR 7,1



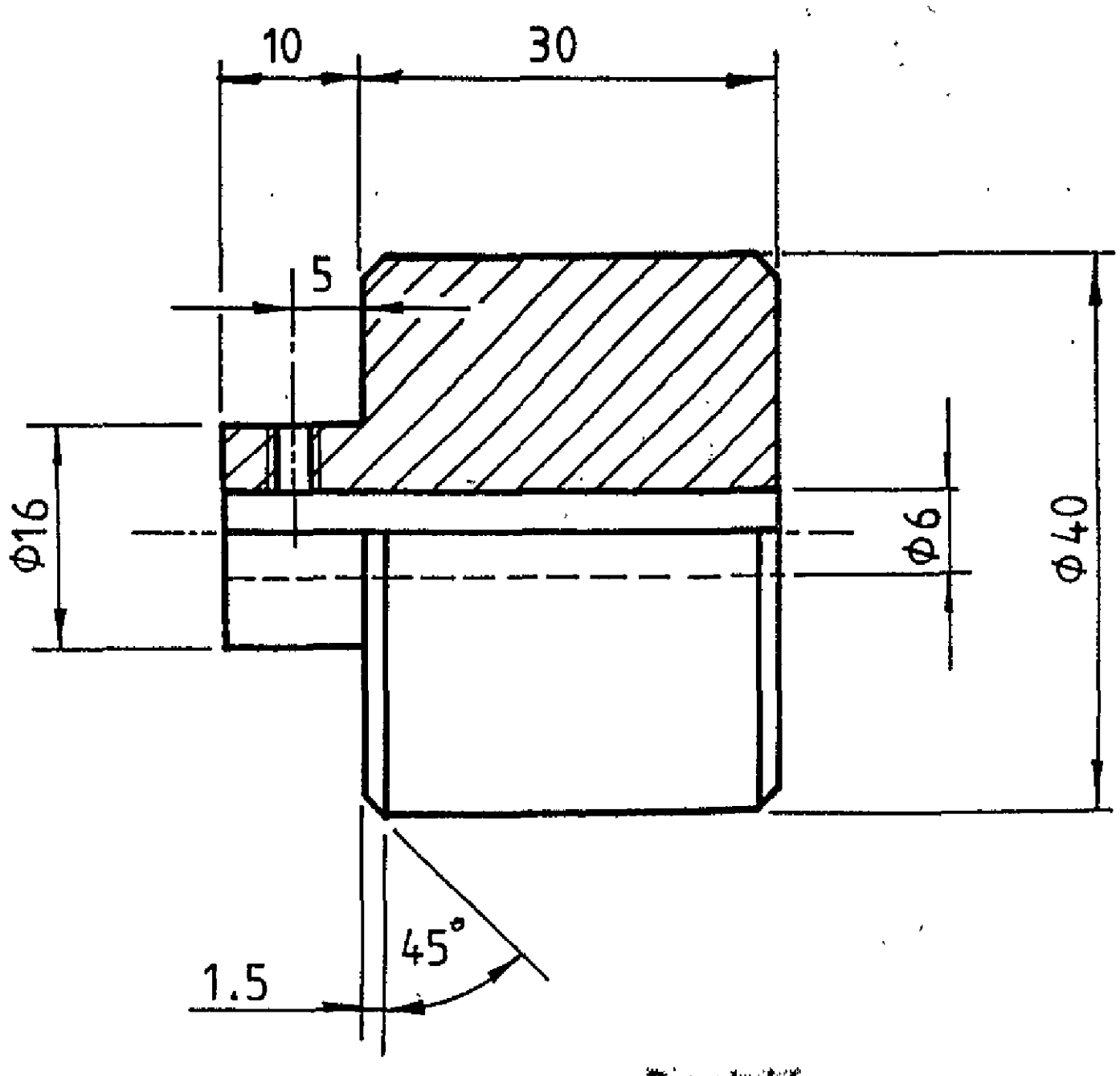


FIG. 7,2
FIOR 7,2