

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

200 marks

TUESDAY, 24 JUNE - AFTERNOON 2.00 TO 5.00

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.

1. Details of a SUPPORT SWIVEL are given in Fig. 1 with a parts list tabulated below.

INDEX	PART	REQUIRED
1	Body	1
2	Support	1
3	Bolt	1
4	M16 nut	1
5	Flat washer (not shown)	1
6	Brass bush	1
7	Brass bush	1

- (a) Make the following drawings of the assembled swivel in first or third angle projection, with face X of the support in a horizontal position.
 - (i) A side elevation viewed in the direction of arrow Y.
 - (ii) A sectional plan on section plane BB.

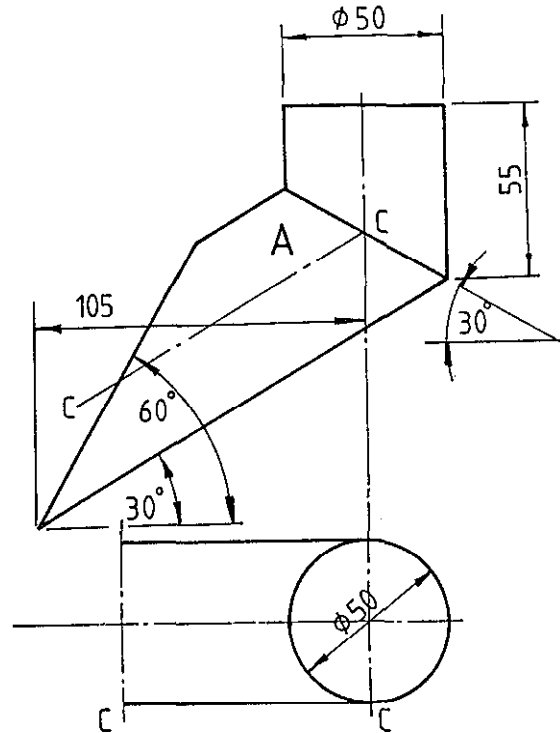
- (b) Insert the following on the drawings:
 - (i) Title:- SUPPORT SWIVEL
 - (ii) ISO projection symbol.
 - (iii) Four leading dimensions.

(100 marks)

2. The elevation and incomplete plan of a pair of pipes are shown in Fig. 2.

- (a) Draw the given elevation and complete the plan.
- (b) Draw the surface development of pipe A making the seam on CC.
- (c) Make a large neat freehand sketch of a suitable joint for seam CC.

FIG.2.



(50 marks)

3. (a) Draw a radial plate cam with a shaft diameter 30mm, a minimum radius of 30mm and anti-clockwise rotation to impart the following motion to an in-line knife edge follower:-

- 0° to 180° rise 50mm with simple harmonic motion.
- 180° to 270° fall 50mm with uniform velocity.
- 270° to 360° dwell.

Include the displacement diagram as part of your solution.

(b) Fig. 3 shows a link mechanism. Crank OA rotates in an anti-clockwise direction. OA is connected at A by a pivot which allows link AB to slide through a fixed pivot at B.

(i) Using a line diagram to represent the linkage, plot the locus of the two ends of the link AB.

(ii) Draw the profile of a simple machine guard about the mechanism with a minimum clearance of 15mm.

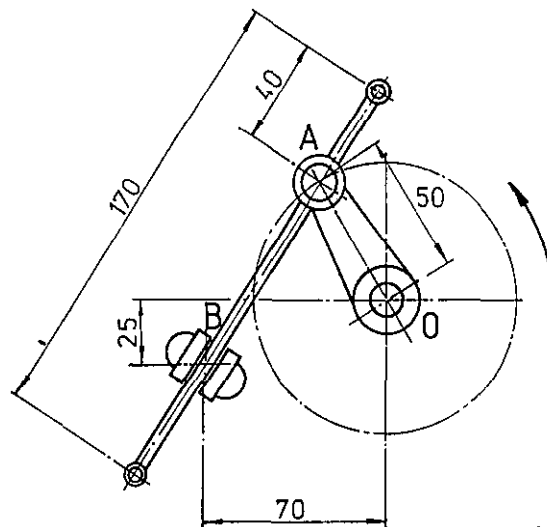


FIG.3

(50 marks)

4. (a) Fig. 4 shows an **incorrectly** dimensioned template.

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 template.

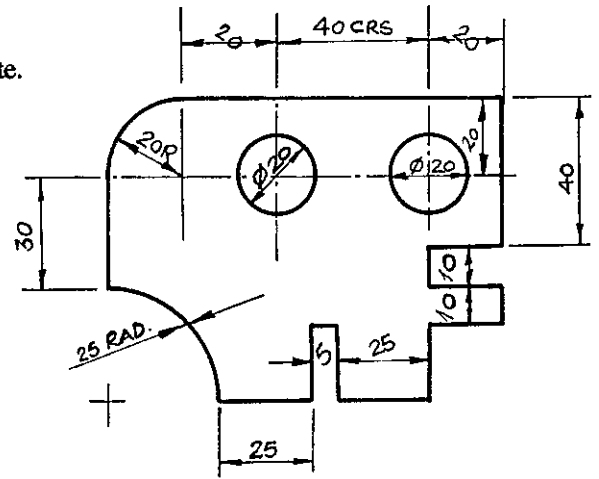


FIG. 4

- (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 a machine shaft with various numbered parts depicted using conventional symbols. Copy the chart shown below on your answer sheet and identify each part by inserting the appropriate number in the left hand column.

No.	Conventional Feature
	Hexagonal Section
	Radius
	Square Section
	Circular Section
	Under-Cut
	External Screw Thread
	Centre Line

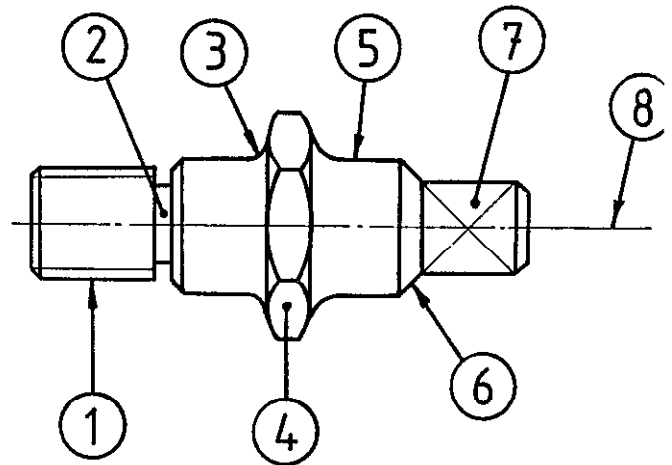


FIG. 6

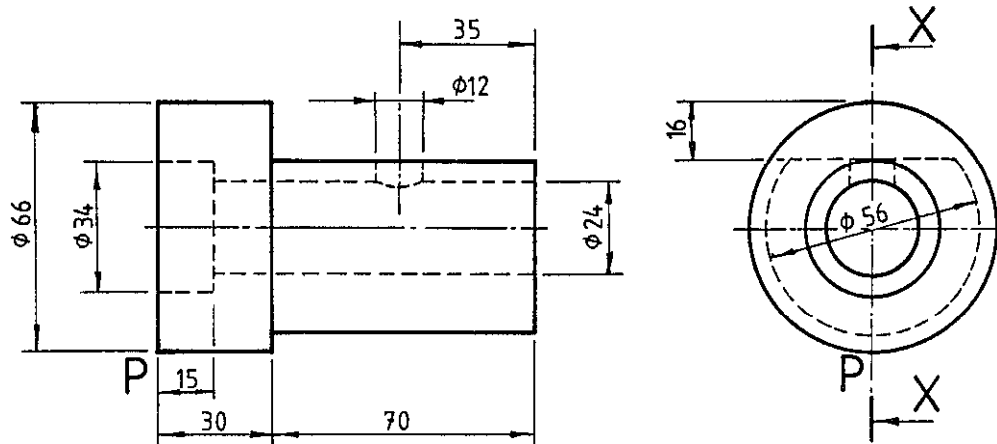
(50 marks)

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

SECTION A

- (a) Fig. 7 shows two elevations of a screw support. Draw an isometric view of the bracket viewed on the section plane XX with the front half of the support removed. P is to be the lowest point of the drawing.

FIG.7



- (b) By means of neat freehand sketches explain the following engineering terms:

- (i) Split Lug;
- (ii) Vee Pulley;
- (iii) Blind Tapped Hole.

OR

SECTION B

- (i) With the aid of a large freehand sketch show Fig 8.1 as a wire frame representation.
- (ii) Name four automatic drawing facilities offered by a CAD system.
- (iii) Which would be the most suitable snap resolution for the drawing in Fig 8.2 ?
- (iv) List a selection of six commands necessary to produce the drawing shown in Fig 8.3.
- (v) By means of sketch and a short note explain the purpose of the following commands:
 - (i) Chamfer;
 - (ii) Trim;
 - (iii) Mirror.

(50 marks)

**AN ROINN OIDEACHAIS
SCRÚDÚ ARDTEISTIMÉIREACHTA**

1997

LÍNÍOCHT THEICNIÚIL - GNÁTHLEIBHÉAL

PÁIPÉAR II(A)

FEIDHMIÚCHÁIN INNEALTÓIREACHTA

AN ROINN OIDEACHAIS

LEAVING CERTIFICATE EXAMINATION

1997

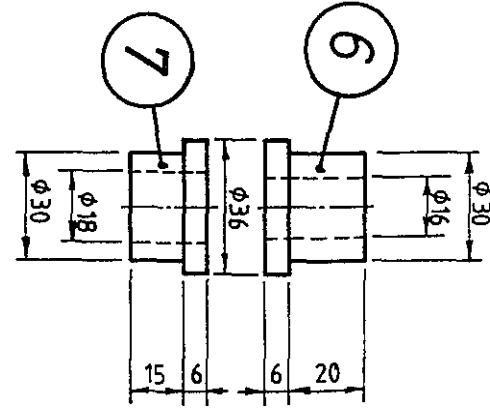
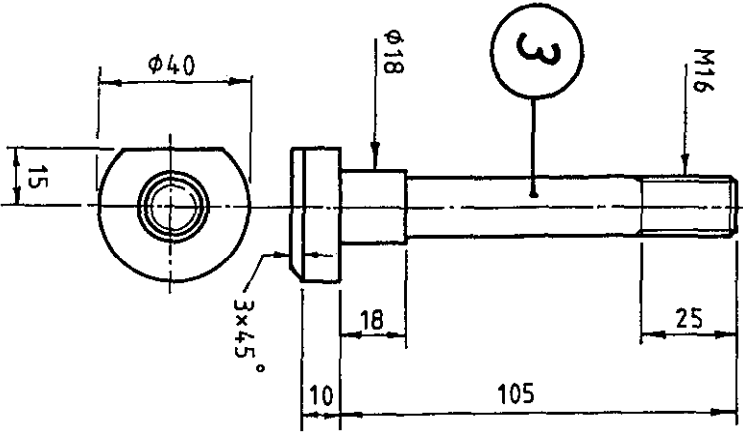
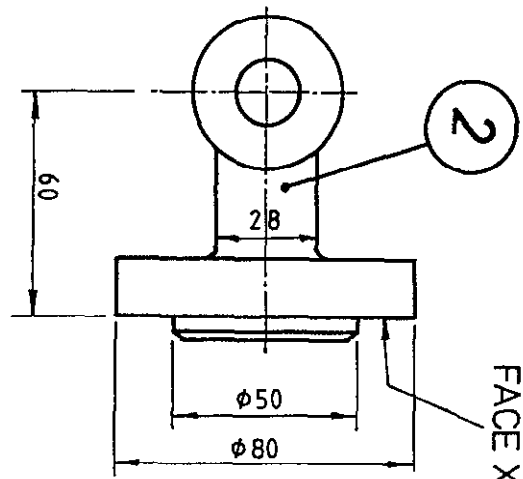
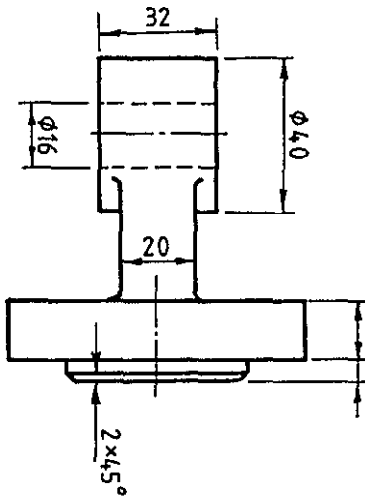
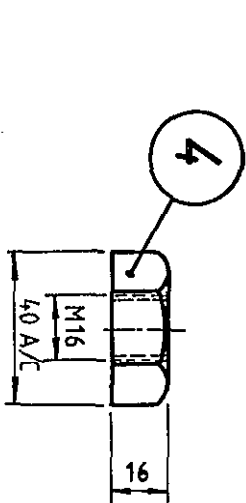
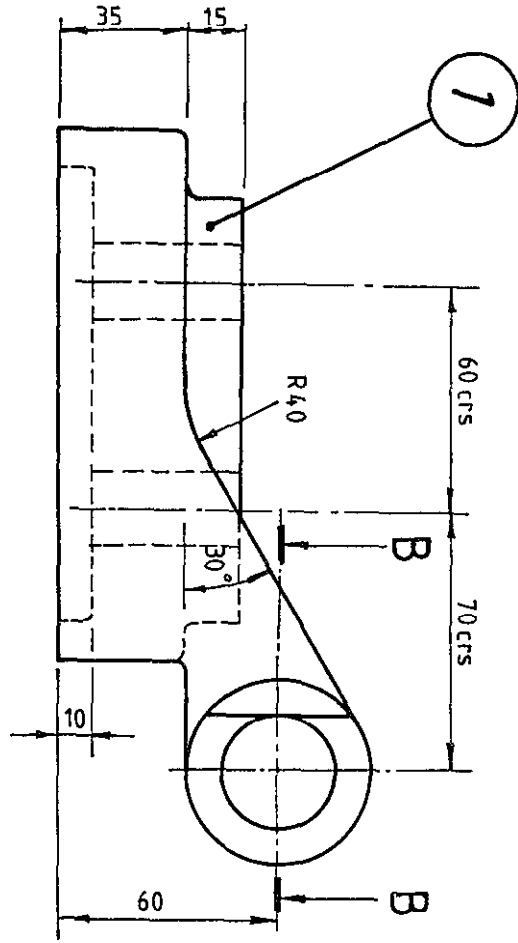
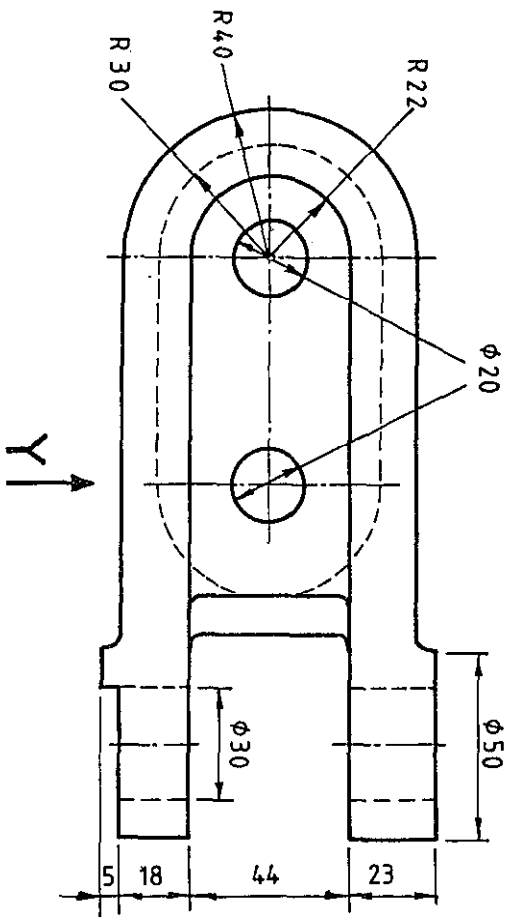
TECHNICAL DRAWING - ORDINARY LEVEL

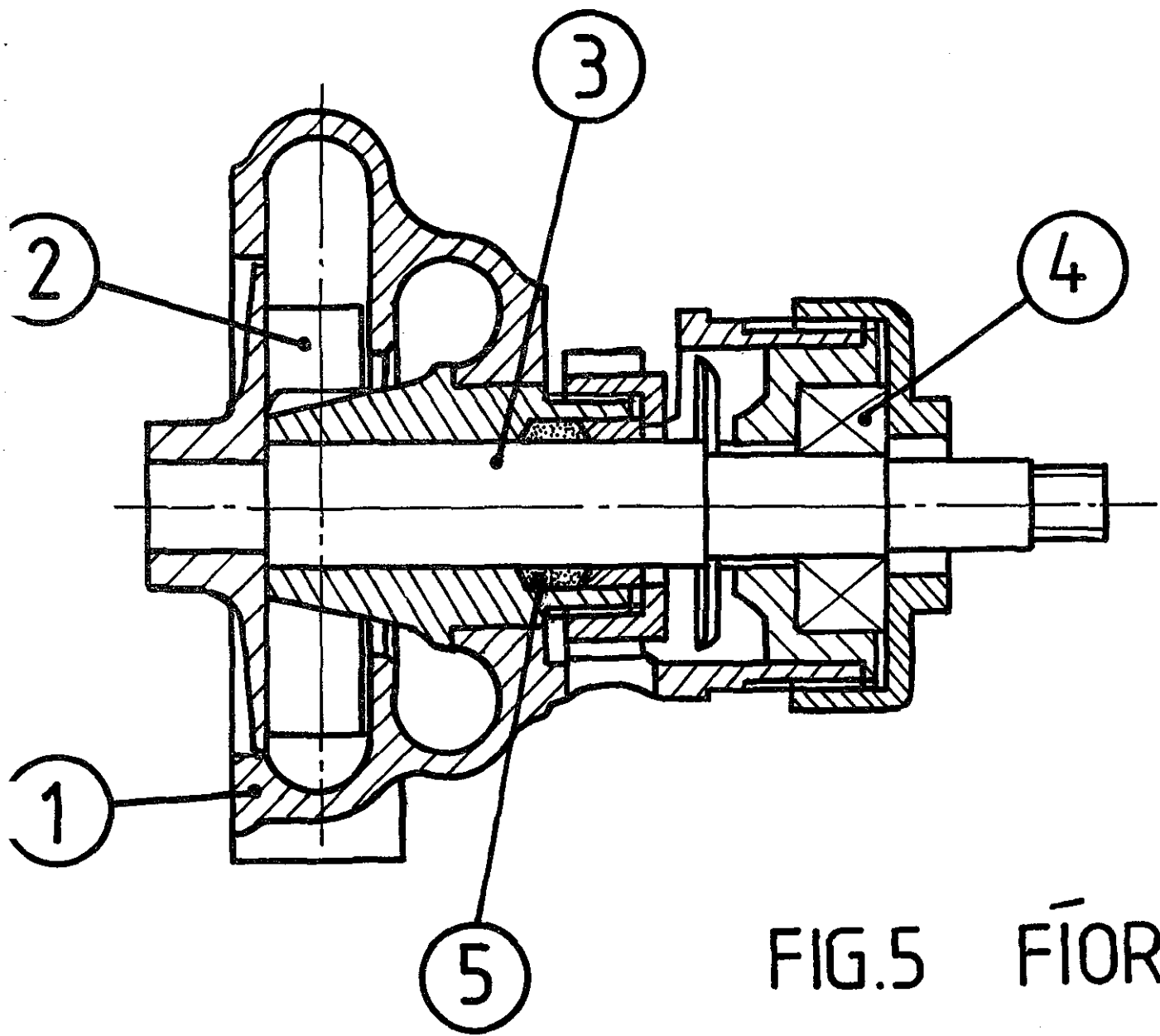
PAPER II(A)

ENGINEERING APPLICATIONS

PROJECTION
TEILGEAN

FIG. 1
FIOR 1





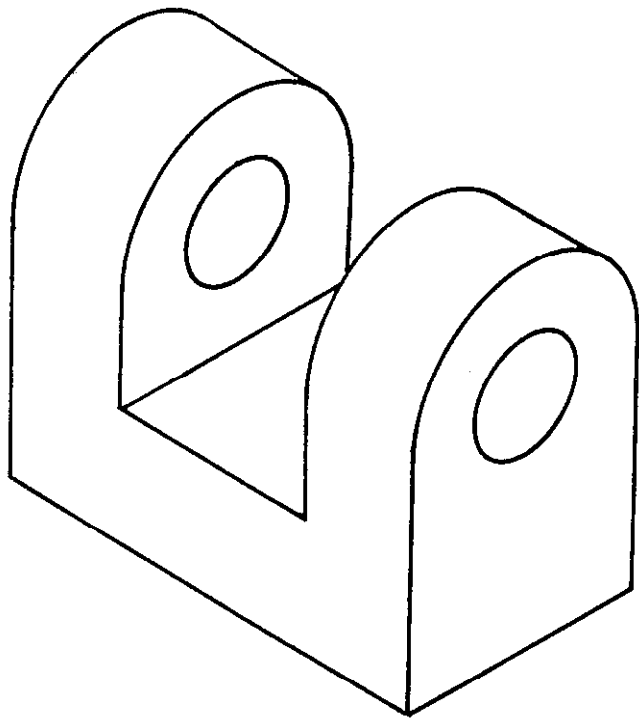


FIG. 8.1 FÍOR 8.1

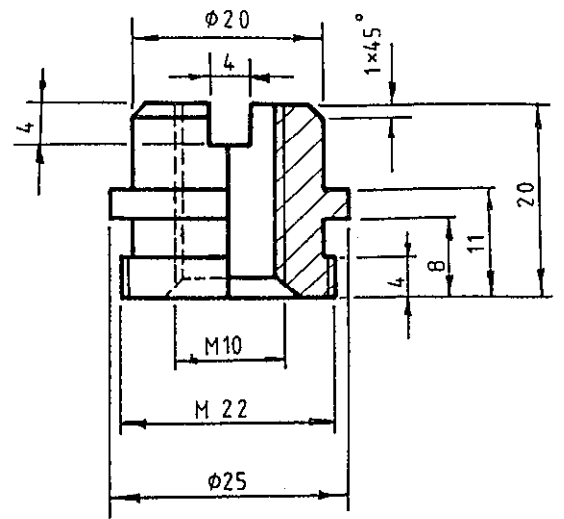


FIG. 8.2
FÍOR 8.2

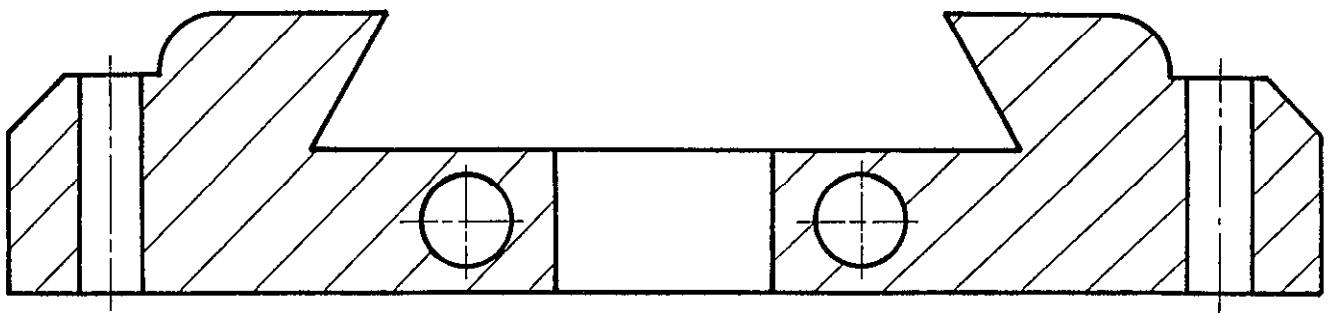


FIG. 8.3

FÍOR 8.3