higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

ENGINEERING GRAPHICS AND DESIGN

(Second Paper)

NQF LEVEL 3

(6021023)

15 March 2018 (X-Paper)
09:00–13:00

REQUIREMENTS: A2 drawing sheet

Drawing instruments may be used.

This question paper consists of 4 pages and 5 diagram sheets.

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TIME: 4 HOURS
MARKS: 100

INSTRUCTIONS AND INFORMATION

1. Answer ALL the questions.
2. Read ALL the questions carefully.
3. Number the answers according to the numbering system used in this question paper.
4. Use both sides of the DRAWING SHEET.
5. A 20 mm border must be drawn on both sides of the DRAWING SHEET.
6. ALL drawings, including the candidate's information, must be done in pencil.
7. A balanced layout is important and candidates will be penalised for poor planning.
8. A radius curve stencil may be used to draw arcs.
9. Use your own discretion where dimensions are NOT given.
10. ALL drawing work must conform to the latest SABS 0111 Code of Practice for Engineering Drawing.
11. Print neatly and legibly.

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QUESTION 1

1.1 FIGURE 1, DIAGRAM SHEET 1 (attached), shows a table.

Draw the table, shown on DIAGRAM SHEET 1, and print the answers to the following questions using 3 mm lettering. (2)

1.2 Indicate whether the following statements are TRUE of FALSE. Choose the answer and write only 'true' or 'false' next to the question number (1.2.1–1.2.4) on the DRAWING SHEET.

1.2.1 An isometric view is approximately 82% of a full-sized isometric drawing.

1.2.2 One of the dimensioning methods is called the string dimensioning method.

1.2.3 The abbreviation for machined is MCD.

1.2.4 On a front view of a drawing, all lines in the vertical plane are the true lengths.

(2 × 4) (8)
[10]

QUESTION 2

FIGURE 2, DIAGRAM SHEET 2 (attached), shows TWO views of a machine component in first-angle orthographic projection.

Do NOT copy the given views.

2.1 Construct a suitable isometric scale. (2)

2.2 Draw an isometric view of the machine component using the isometric scale. (13)
[15]

QUESTION 3

FIGURE 3, DIAGRAM SHEET 3 (attached), shows a rectangular duct with irregular angles.

3.1 Draw, to scale 1 : 1, the given views. (4)

3.2 Develop the surfaces of the rectangular duct. (13)
[17]

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QUESTION 4

FIGURE 4, DIAGRAM SHEET 4 (attached), shows TWO views of a pedestal bearing in third-angle orthographic projection.

Draw, to scale 2 : 1, the following detail drawings:

4.1 A full-sectional front view of item 1 (13)

4.2 A full-sectional front view of item 2 (11)
[24]

QUESTION 5

FIGURE 5, DIAGRAM SHEET 5 (attached), shows the components of a bearing puller in third-angle orthographic projection.

The parts list is as follows:

ITEM	NAME	NO PER ASSY
1	Beam	1
2	Strong arm	2
3	Worm screw	1
4	M8 bolt	2

5.1 Draw, to scale 1 : 1, a full-sectional front view of an assembly. (28)

NOTES:

1. The worm screw must be in the fully closed position in the assembly drawing.

2. The strong arms must be in the fully closed position in the assembly drawing.

5.2 Insert the item numbers on the assembly drawing. (4)

5.3 Insert the title and scale centred below the assembly drawing. (2)
[34]

TOTAL: 100

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DIAGRAM SHEET 1

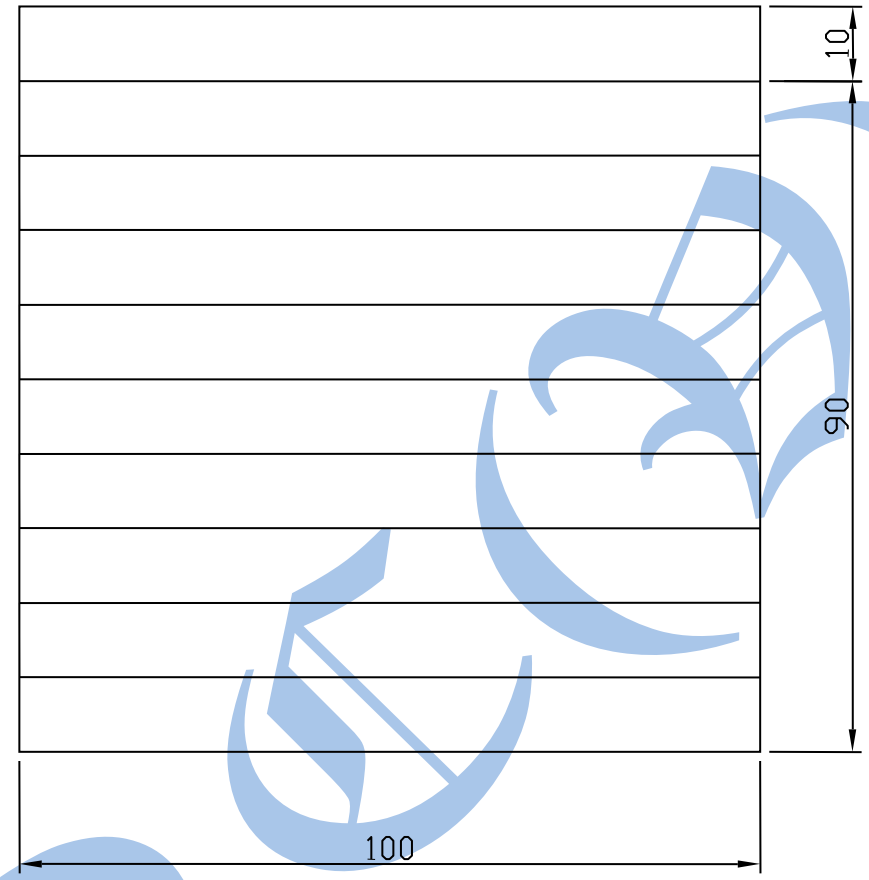


FIGURE 1

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DIAGRAM SHEET 2

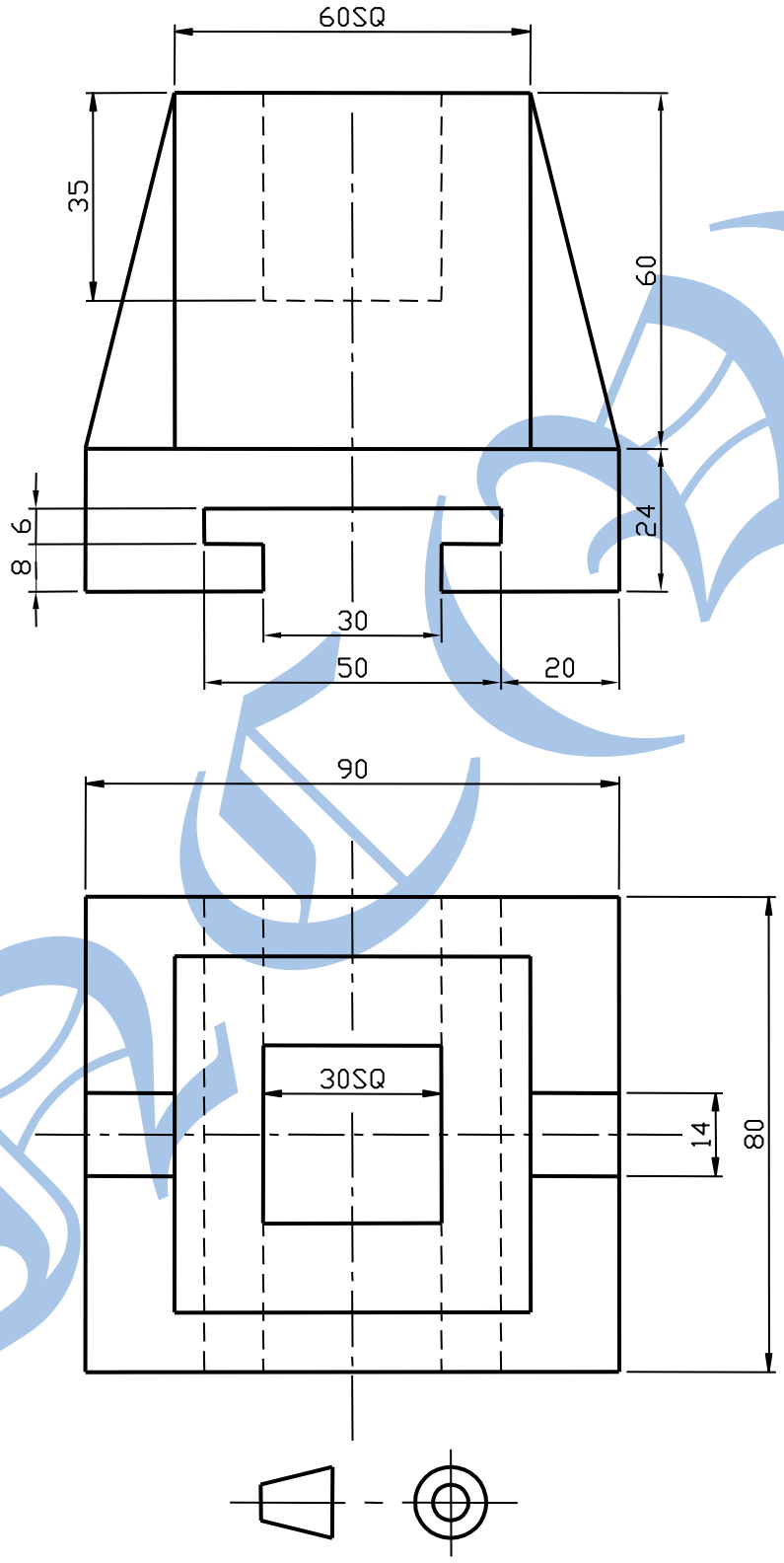


FIGURE 2

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DIAGRAM SHEET 3

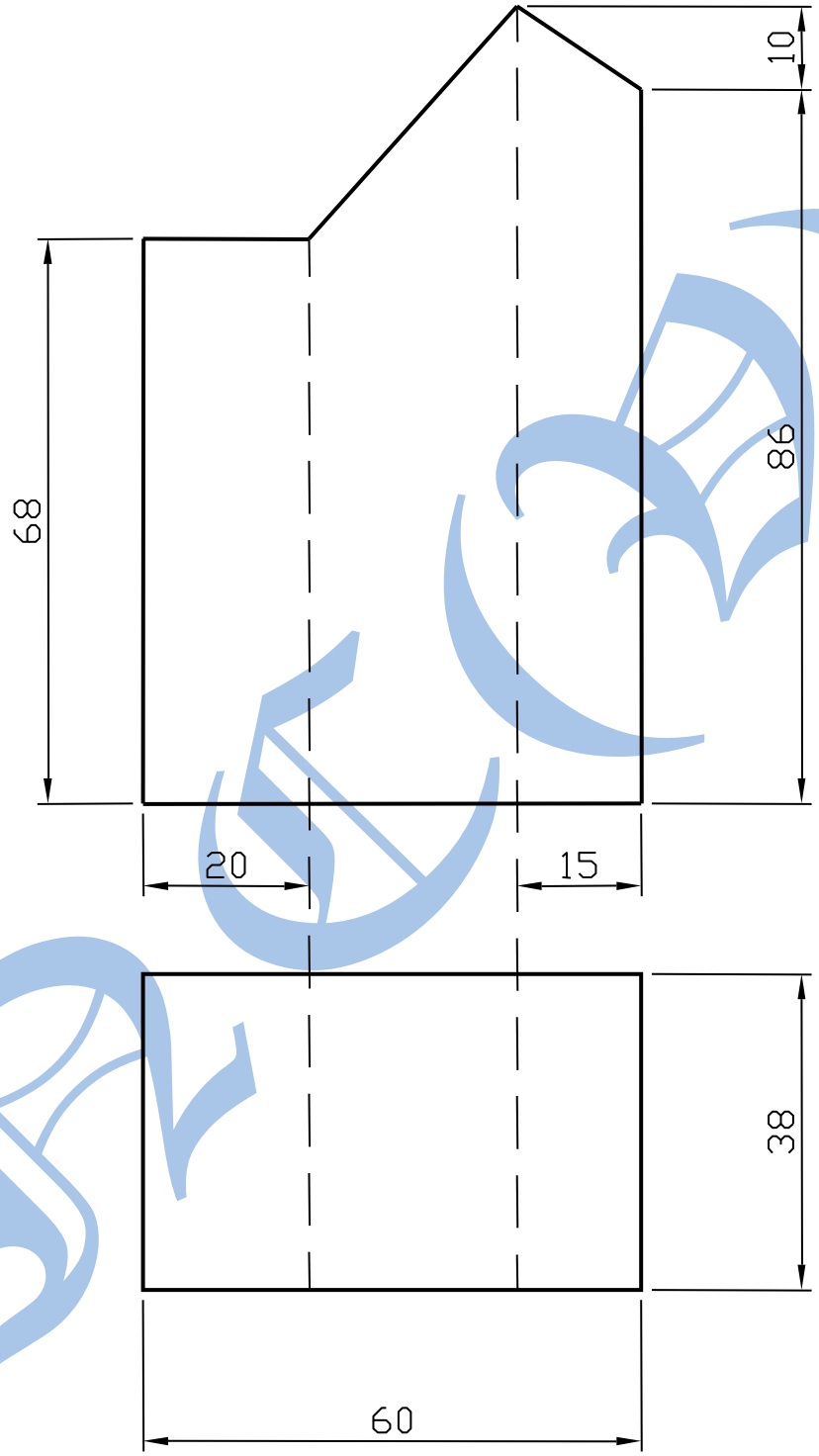


FIGURE 3

DIAGRAM SHEET 4

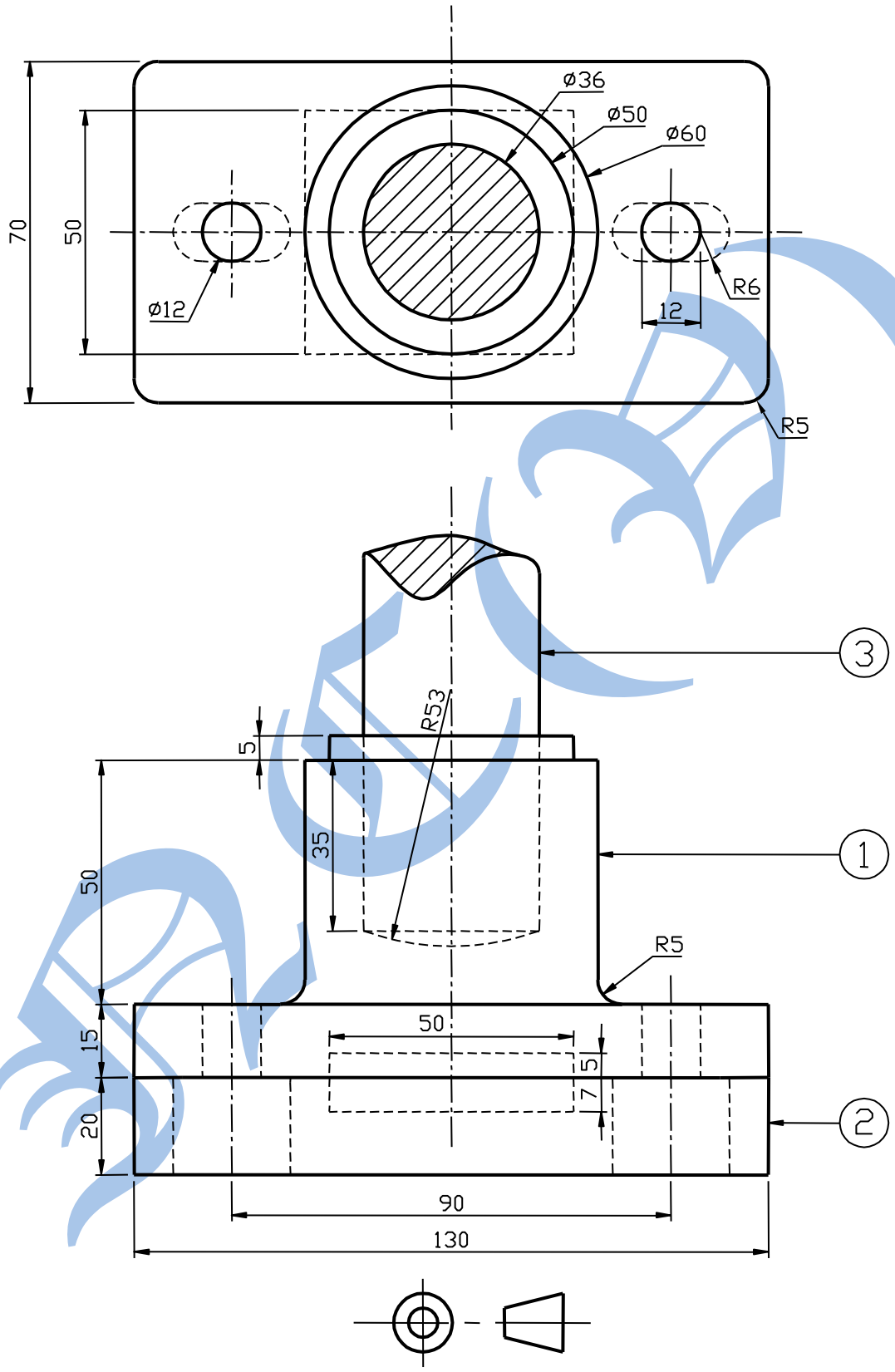


FIGURE 4

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DIAGRAM SHEET 5

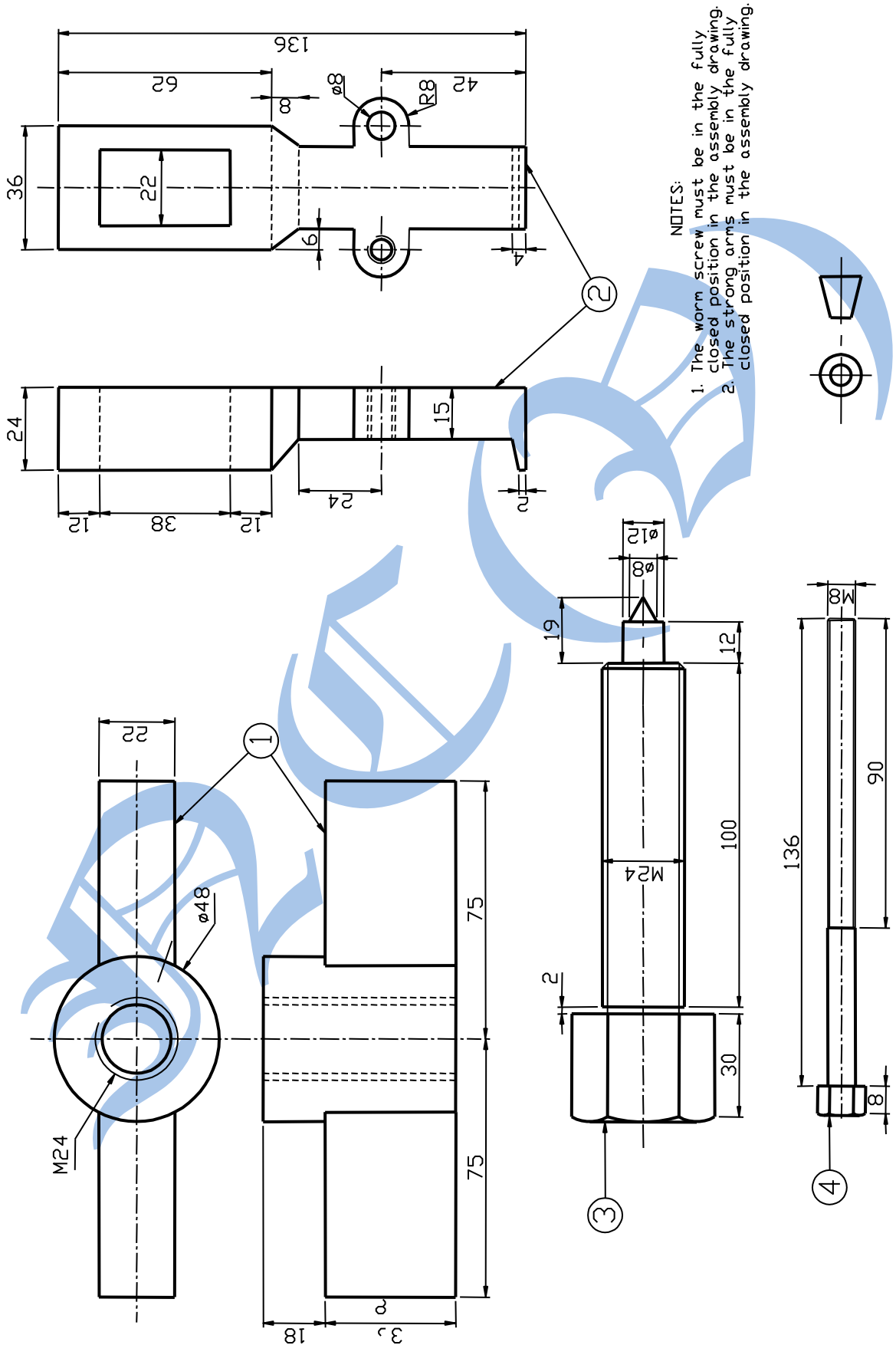


FIGURE 5

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