higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

ENGINEERING GRAPHICS AND DESIGN

NQF LEVEL 3

(Second paper)

(6021023)

2 December 2024 (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.

585Q2N2402

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(Second paper)
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. Draw a 20 mm border on both sides of the drawing sheet.
6. Only the candidate information on the drawing sheet must be done in ink. All other drawing work must be done in pencil.
7. A balanced layout is important. 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 SANS 10111 Code of Practice for Engineering Drawing.
11. Work neatly.

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QUESTION 1

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

1.1 Redraw the table (FIGURE 1) to scale 1:1. Dimensions need not be shown. (2)

1.2 Neatly print the answers to the following questions in the table drawn for QUESTION 1.1, using 3 mm lettering: (2)

1.2.1 Name TWO dimensioning methods.

1.2.2 State TWO angles used to construct an isometric scale.

1.2.3 Give the names of the TWO axes of an ellipse.

(3 × 2) (6)
[10]

QUESTION 2

FIGURE 2, DIAGRAM SHEET 2 (attached), shows the views of a casting in first-angle orthographic projection.

Do not copy the given views.

2.1 Construct an isometric scale. (2)

2.2 Draw an isometric view of the casting using the isometric scale. Point A must be the lowest point on the isometric drawing. No hidden detail is required. (13)
[15]

QUESTION 3

FIGURE 3, DIAGRAM SHEET 3 (attached), shows two views of a truncated pipe, which is open on both ends.

3.1 Draw the given views using a scale of 1:1. (2)

3.2 Show all construction lines to develop the surface of the pipe. (2)

3.3 Develop the surface of the truncated pipe. (13)
[17]

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QUESTION 4

FIGURE 4, DIAGRAM SHEET 4 (attached), shows a sectional view of a main supply valve (in the closed position) in first-angle orthographic projection.

Draw, to scale 1:1, a detailed drawing of the following:

4.1 The spool (Item 3) showing a full-sectional front view (the closed position).

4.2 The spool (Item 3) showing a full-sectional left view (the open position).

(2 × 12) **[24]**

QUESTION 5

FIGURE 5, DIAGRAM SHEET 5 (attached), shows the components of a cable roller assembly in first-angle orthographic projection.

The complete parts list is as follows:

ITEM	NAME	NO PER ASSY
1	Base	1
2	Fork	1
3	Roller	1
4	Axle	1
5	Axle cap	1
6	M12 hexagon head bolt	1
7	Pin	1

5.1 Draw, to scale 1:1, a full sectional front view of the cable roller assembly. (25)

5.2 Insert the item numbers on the assembly drawing. (7)

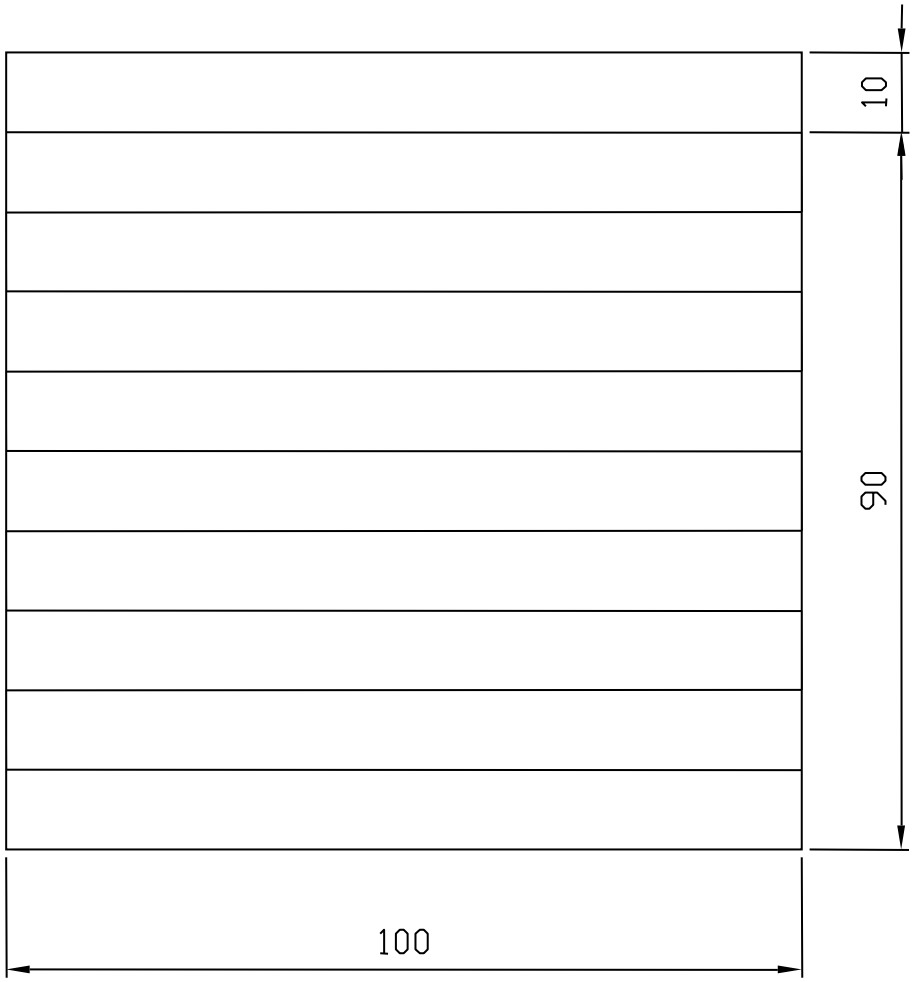
5.3 Insert the title and scale centrally beneath the assembly drawing. (2)

[34]

TOTAL: 100

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DIAGRAM SHEET 1



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DIAGRAM SHEET 2

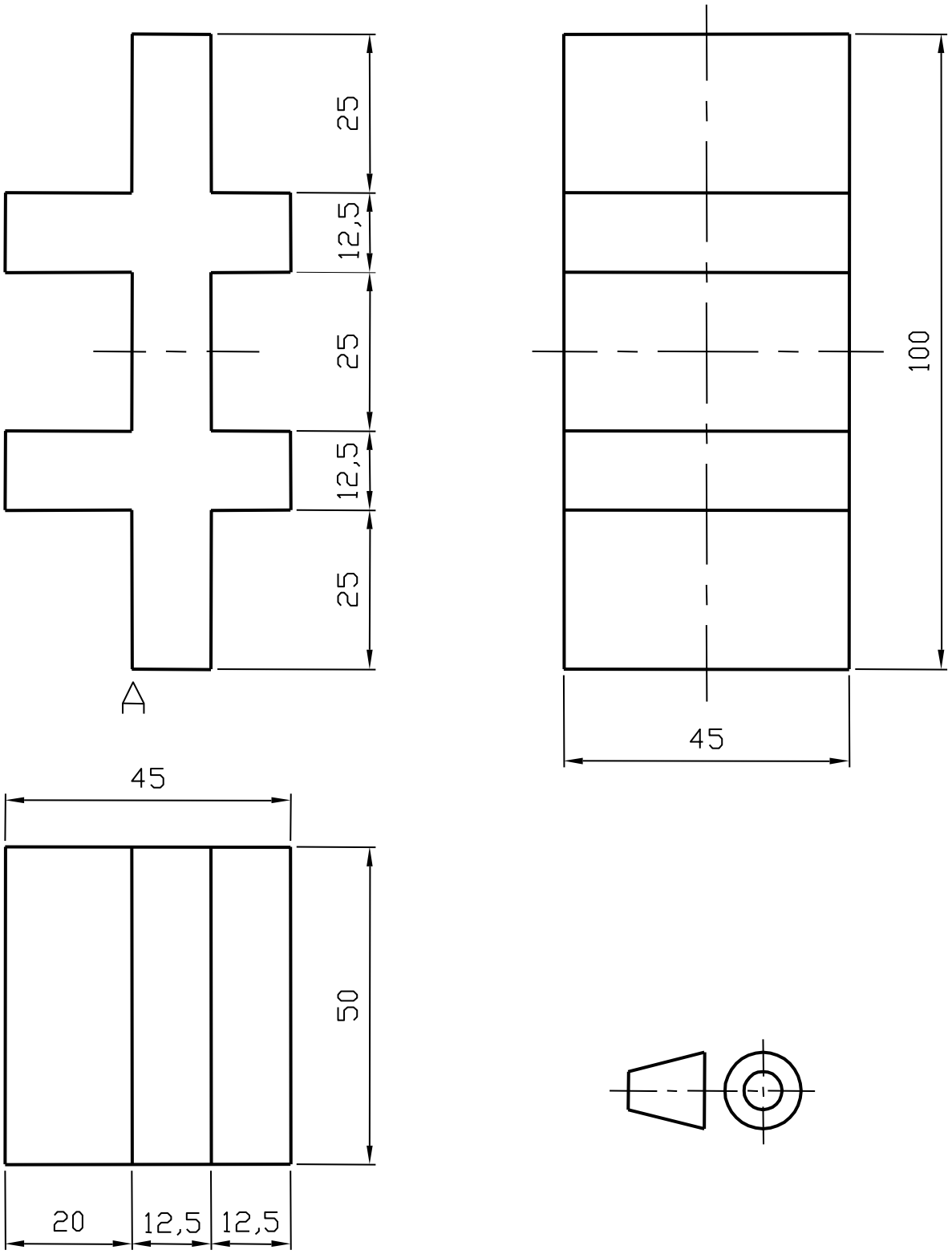
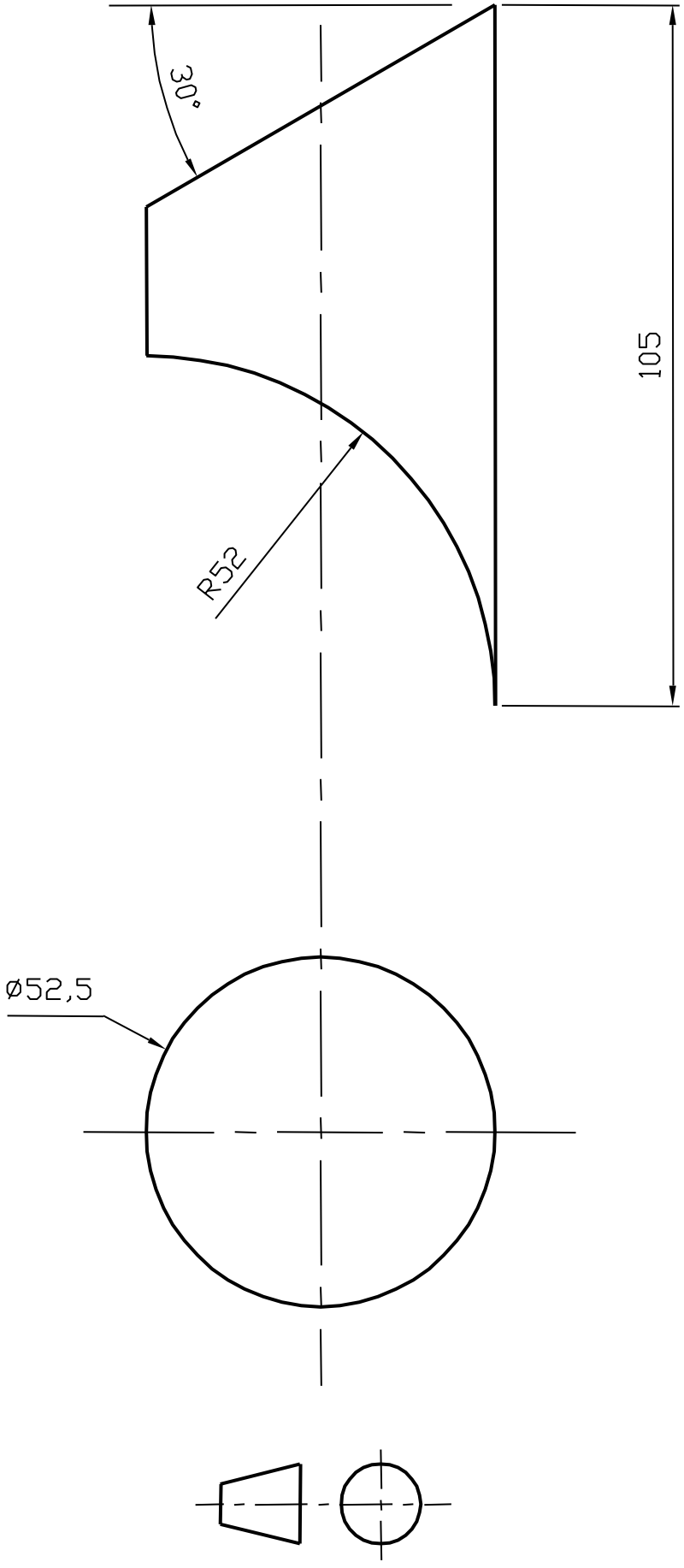
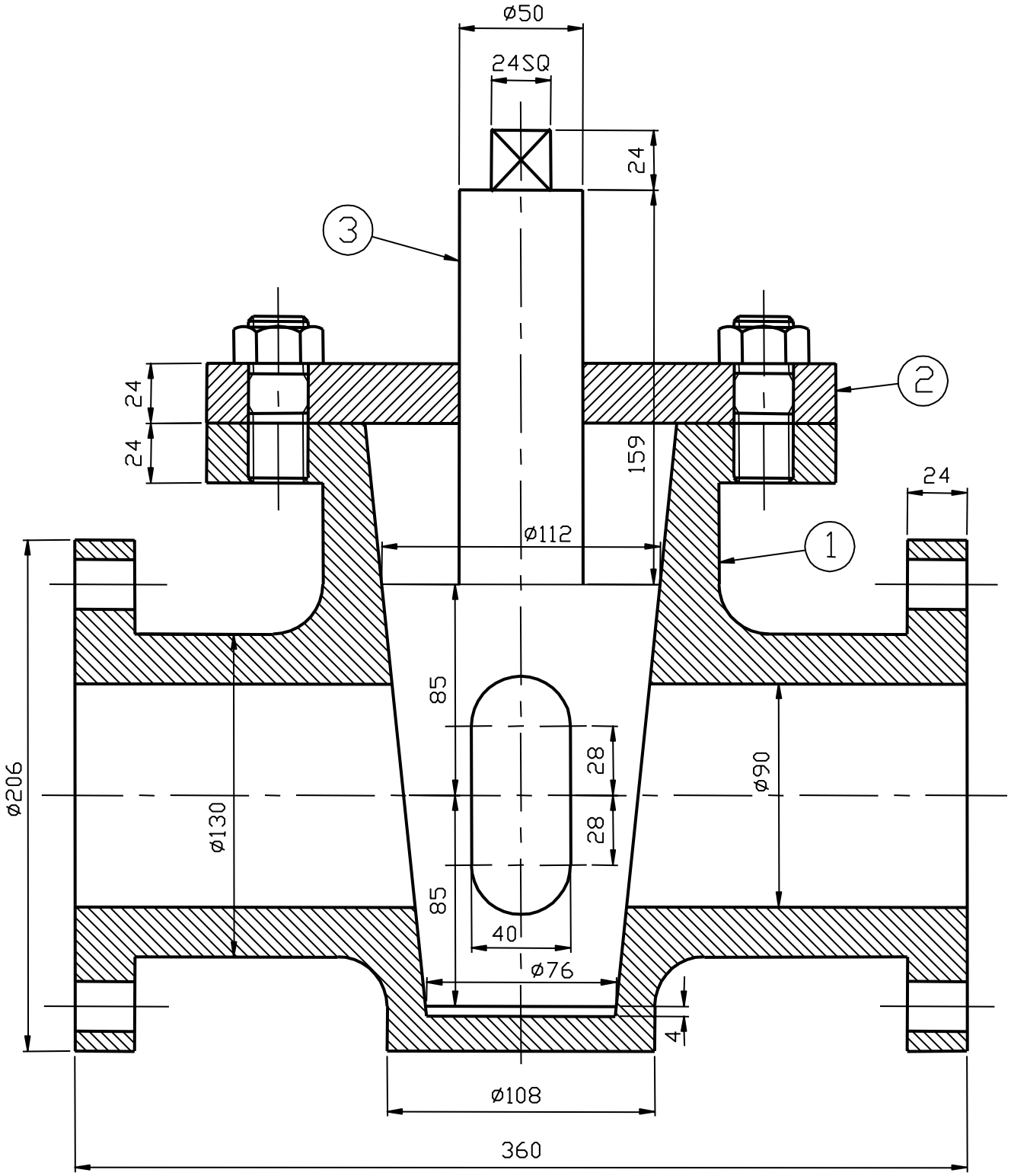


DIAGRAM SHEET 3



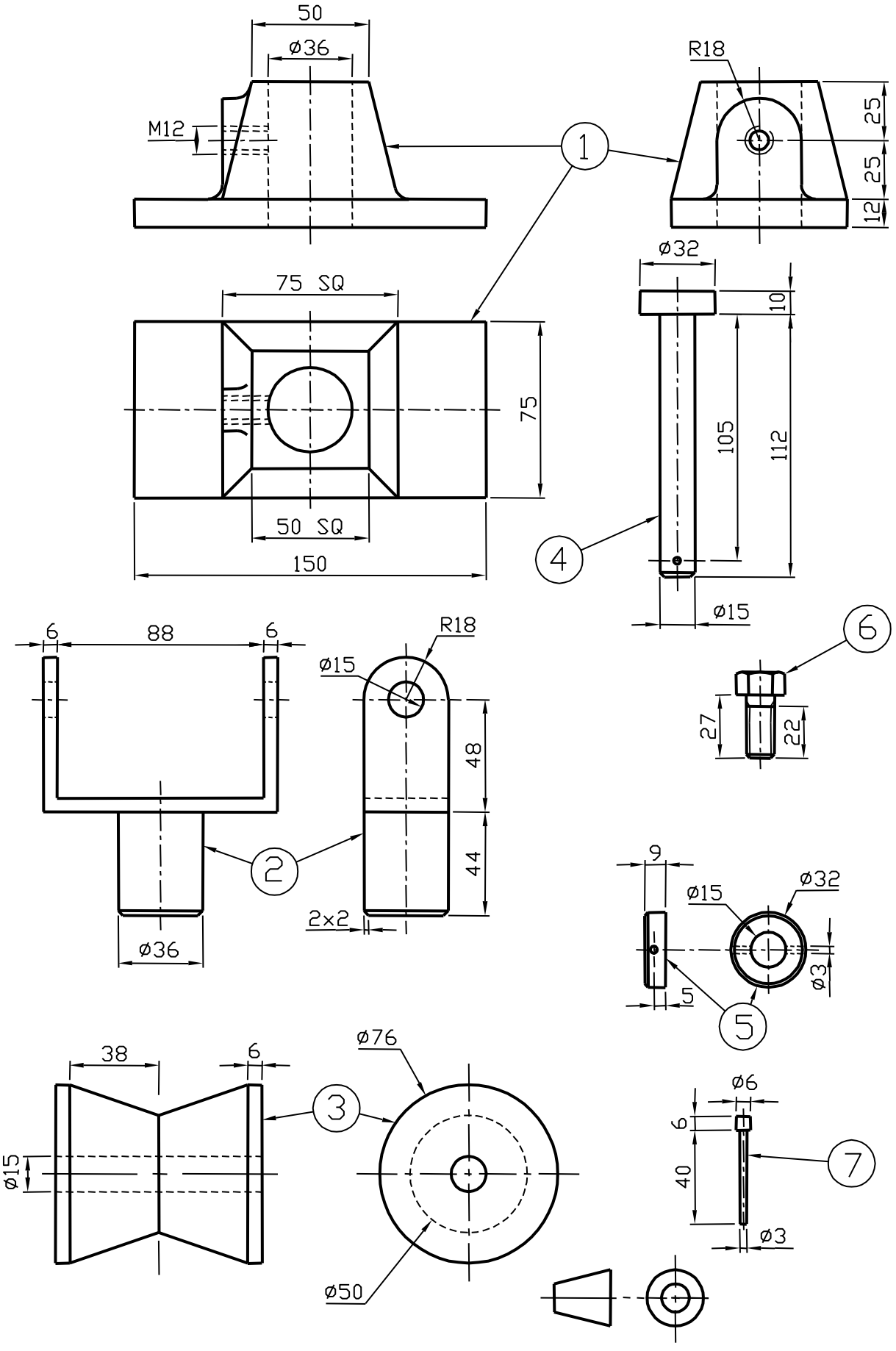
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DIAGRAM SHEET 4



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DIAGRAM SHEET 5



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