National Standards on Engineering Drawing for Mechanical Engineering

Bureau of Indian Standards

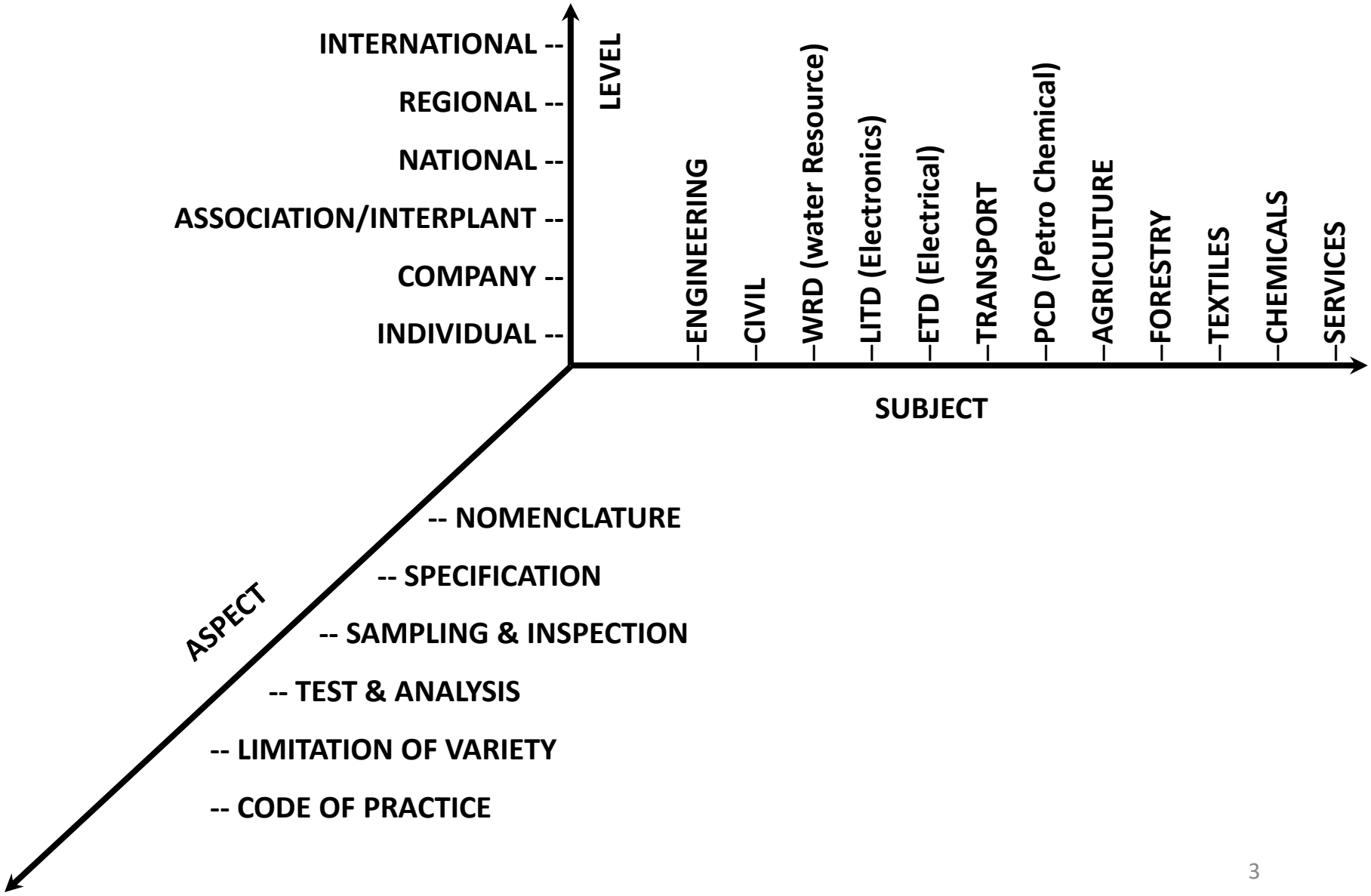
Ministry of Consumer Affairs and Food Distribution
Govt. of India

Shri Navindra Gautam &
Prof S R Kale

Structure

- **GOVERNING COUNCIL**
- **EXECUTIVE COMMITTEE**
- **Advisory Committees**
  - ❖ Finance
  - ❖ Conformity Assessment
  - ❖ Testing and Calibration
  - ❖ Research and Training
  - ❖ **<u>Standards</u>**
    - Division Council **- 15**
      - ➢ Sectional Committees **- 330 numbers**
        - Sub-committees **- 160 numbers**
        - Panels **- 485 numbers**

STANDARDIZATION SPACE



What Standards contain?

Typically Product Standards contain

- Technical specifications
- Performance requirements
- Methods of tests
- Inspection Plans and acceptance criteria
- Labeling requirements
- Other technical details that may be necessary

PURPOSE OF NATIONAL STANDARDS

- **FOR TECHNOLOGISTS**
  - Accepted methods and materials for expending designs
  - Facility for introducing improvement in products
  - Increased knowledge of properties, possibilities and application of materials
  - Guidance for formulation of research and development programs.

Development of Indian Standard

Project Approach

- Project Stages
  - Proposal Stage
  - Preparatory Stage
  - Committee Stage
  - Approval Stage
  - Publication Stage

STANDARDS DEVELOPMENT PROCESS

NEW WORK ITEM

WD

CIRCULATION TO COMMITTEE MEMBERS

COMMENTS

P-DRAFT

CIRCULATION TO COMMITTEE MEMBERS

COMMENTS

WC DRAFT

WIDE CIRCULATION

COMMENTS

F-DRAFT STANDARD

ADOPTION BY DIVISION COUNCIL

NATIONAL STANDARD

Production and General Engineering Division Council

Scope: Standardization in the field of Production Engineering and General Engineering
such as basic standards; engineering drawings, screw threads and fasteners; transmission devices; weights and measures; engineering metrology; ergonomics; bearings and tribology; gears; horology; machine tools, hand tools, and cutting tools and pneumatic tools; fluid power systems; meteorological instruments; mountaineering equipment; arms and ammunition for civilian use; metal containers; automation in manufacturing and robotics; consumer products and allied equipment; metal forming machines; abrasives; lubricating equipment; educational instruments and equipment; optics and photonics; conveyor belts and **sports goods.**

Drawings Sectional Committee, PGD 24

Scope : Formulation of code of practice for general engineering drawings and related standards.

Liaison :

ISO TC-10 (P): Technical product documentation
ISO TC-10 SC-1 (P): Basic conventions
ISO TC-10 SC-6 (P): Mechanical engineering documentation
ISO TC-10 SC-8 (P): Construction documentation
ISO TC-10 SC-10 (O): Process plant documentation
ISO TC213 (P): Dimensional and geometrical product specifications and verification

Total published Standards: 124

STANDARDIZATION OF DRAWINGS

- SP 46 : 2003 Engineering drawing practice for schools and colleges

- IS 8000 : Geometrical Product Specifications (GPS) — Geometrical Tolerancing **(normally called GD&T)**
  - Part 1 Tolerances of Form, Orientation, Location and Run-Out (Second Revision)
  - Part 2 Maximum Material Requirement (MMR), Least Material Requirement (LMR) and Reciprocity Requirement (RPR) (Second Revision)
  - Part 3 dimensioning and tolerancing of profiles (Second Revision)
  - Part 4 practical examples of indications on drawings

Important Standards for Mechanical Engineers

- IS 10714 : Part 1 Technical drawings - General principles of presentation

(Total of 15 parts)

  - Part 1 introduction and index
  - Part 34 views on mechanical engineering drawings
  - Part 44 sections on mechanical engineering drawings
  - Part 71 Simplified Representation for Mechanical Engineering Drawings

- IS 17083 : Part 7 : 2019 ISO 14617- 7:2002 Graphical symbols for diagrams: Part 7 basic mechanical components (This Standard has a total of 15 parts for different components)

Above standards are not part of Engineering Drawing publication

IS 10714 : Part 34 Technical drawings - General principles of presentation
Part 34 Views on Mechanical Engineering Drawings

This part specifies rules for the presentation of views applicable to mechanical engineering drawings that follow the orthographic projection methods (other than mentioned in SP 46)

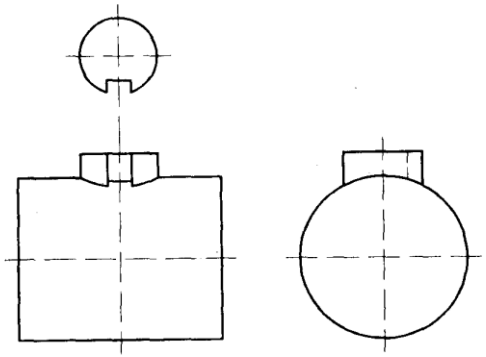


Figure 1 — Local view of journal

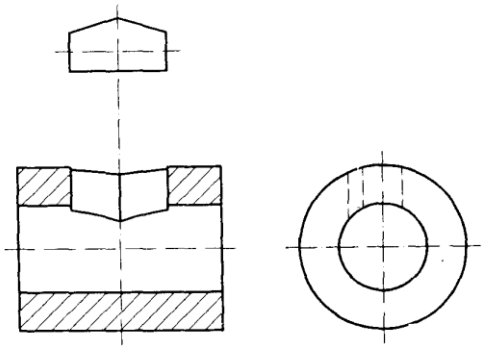


Figure 2 — Local view of groo\

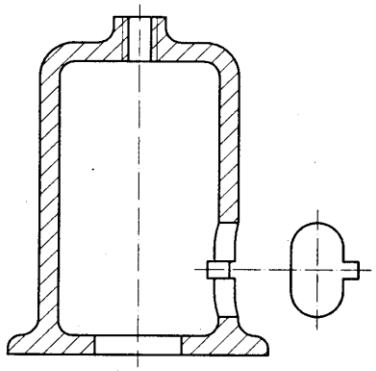


Figure 3 — Local view of hole

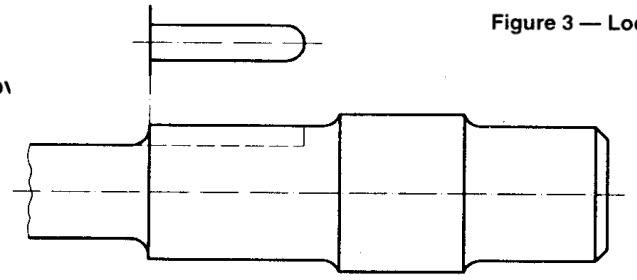


Figure 4 — Local view of groove

Representation of Local Views

Views on Mechanical Engineering Drawings Cntd…

Representation of Adjacent Parts and Contours

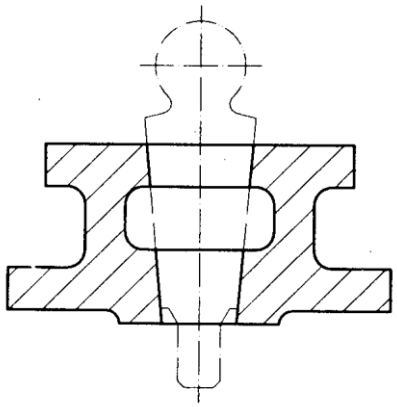


Figure 5 — Bounded adjacent part

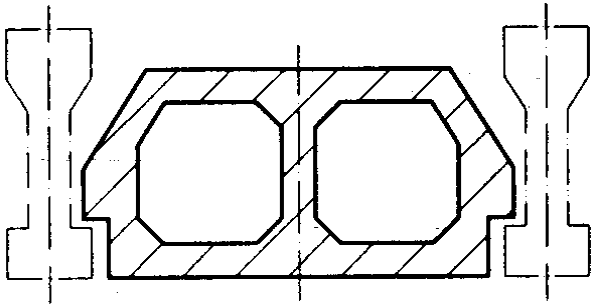


Figure 6 — Adjacent parts

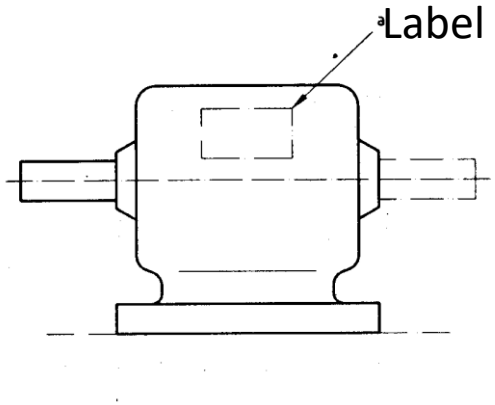


Figure 7 — Indication of contours

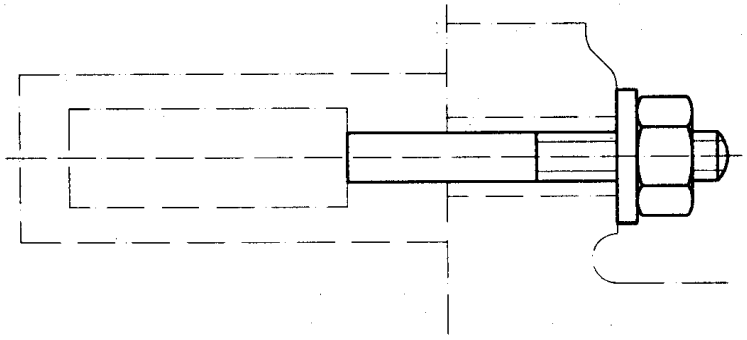


Figure 8 — Indication of contours

Views on Mechanical Engineering Drawings Cntd…

Representation of Intersections

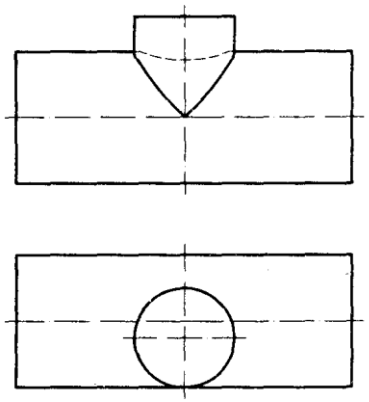


Figure 9 — True intersection

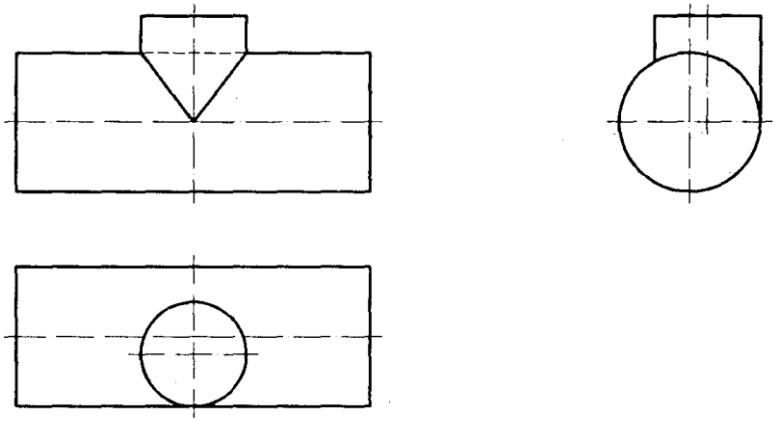


Figure 10 — Simplified intersection

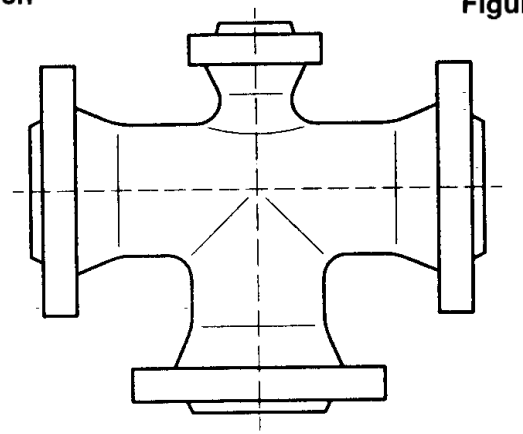


Figure 11 — Imaginary intersections

Views on Mechanical Engineering Drawings Cntd…

Representation of Square ends on shafts

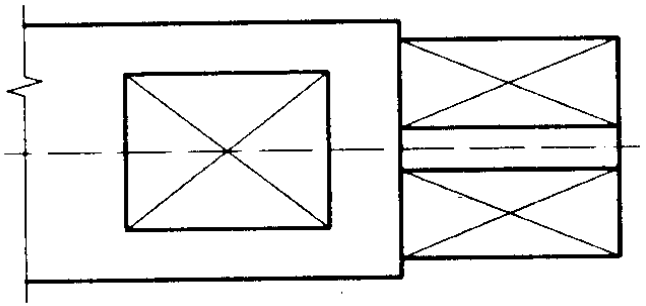


Figure 12 — Square end and flat

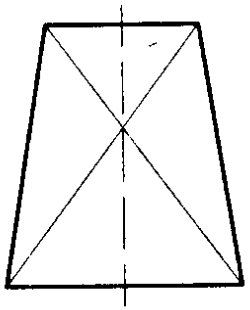


Figure 13 — Tapered square end

Interrupted views

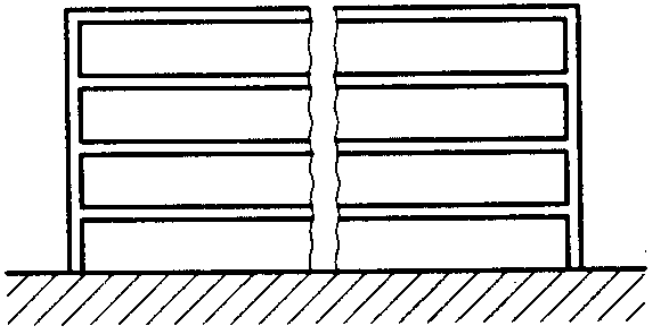


Figure 14 — Interrupted view

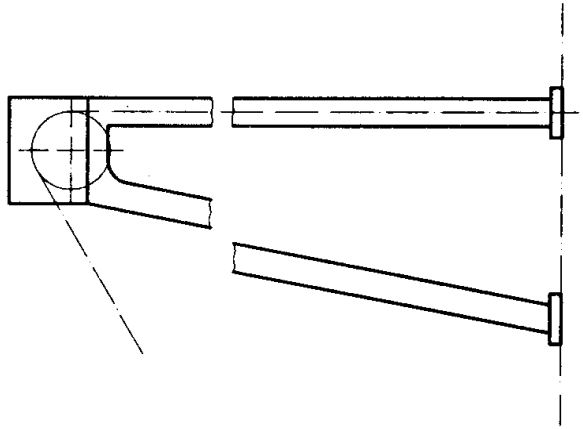


Figure 15 — Interrupted view

Views on Mechanical Engineering Drawings Cntd…

Representation of repeated features

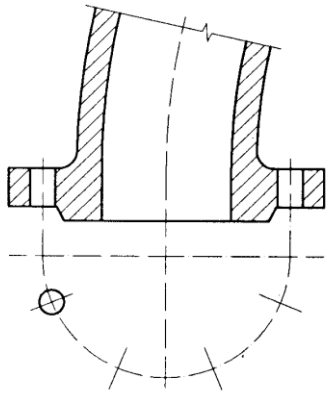


Figure 16 — Symmetrical repeated features

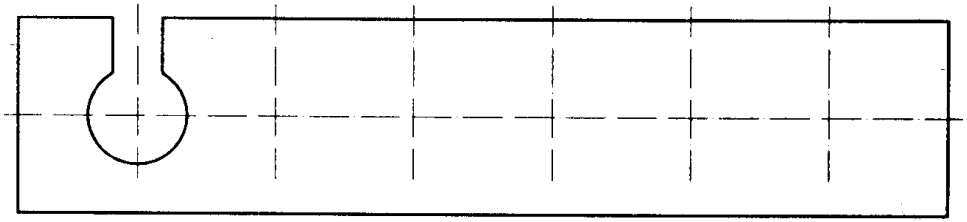


Figure 17 — Symmetrical repeated features

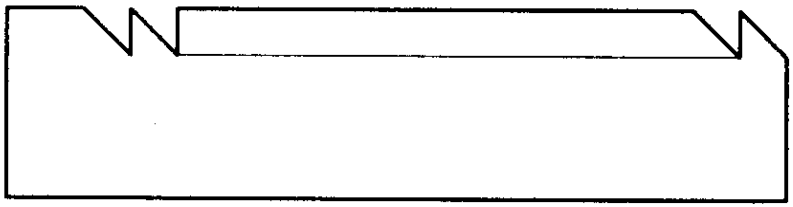


Figure 18 — Asymmetrical repeated features

Representation of enlarged features

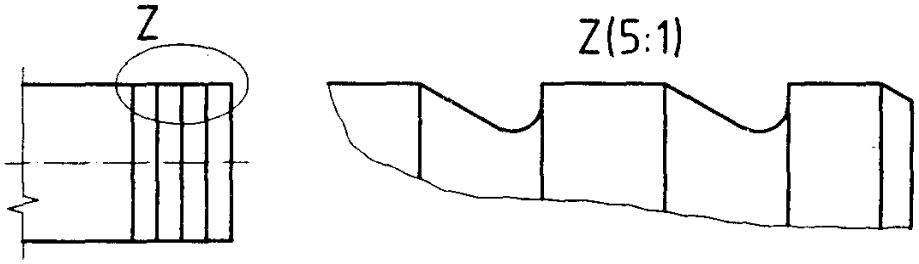


Figure 19 — Enlarged features

Initial Outlines

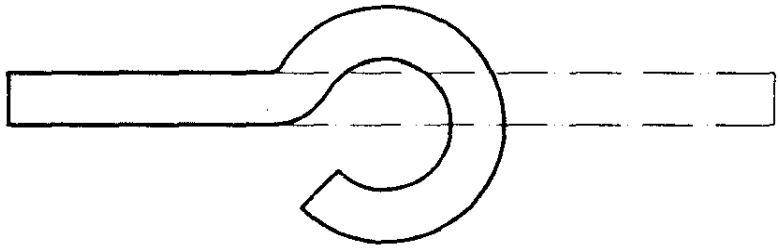
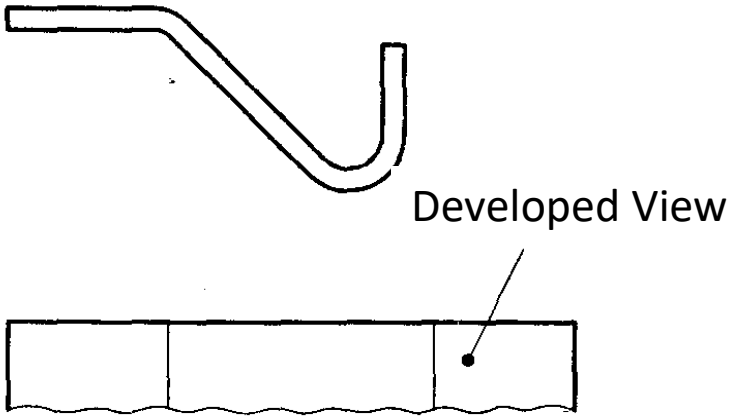


Figure 20 — Initial outlines

Views on Mechanical Engineering Drawings Cntd...

Representation of Bend Lines



Slight Inclines or Curves

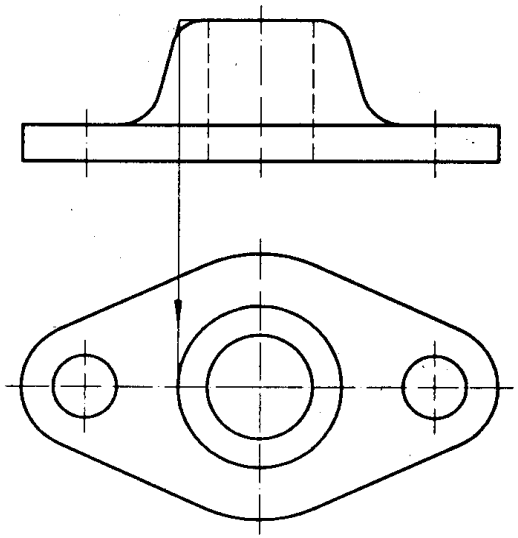


Figure 22 — Slight curve

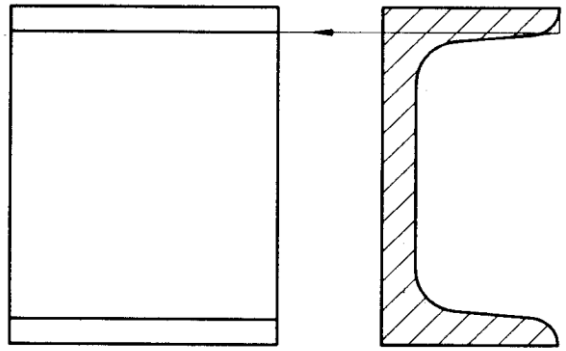


Figure 23 — Slight incline

Views on Mechanical Engineering Drawings Cntd...

Representation of Transparent Objects

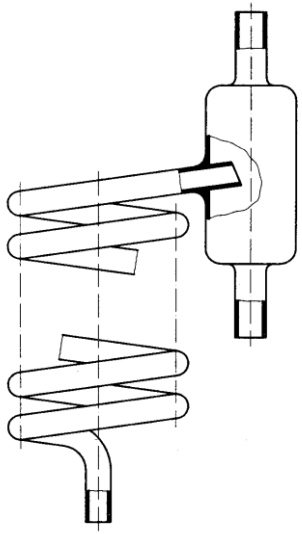


Figure 24 — Transparent object

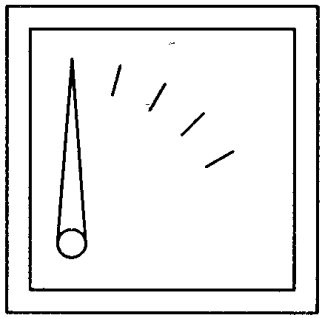


Figure 25 — Assembly of transparent object

Movable Parts

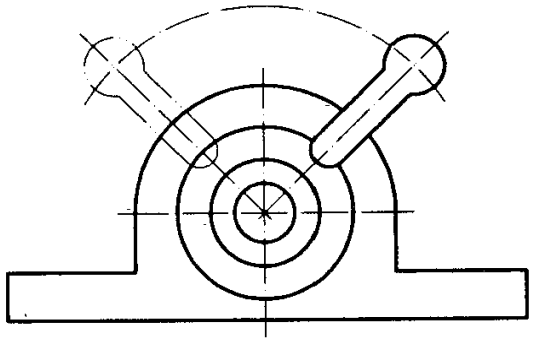


Figure 26 — Movable part

Views on Mechanical Engineering Drawings Cntd...

Representation of Finished parts and Blanks

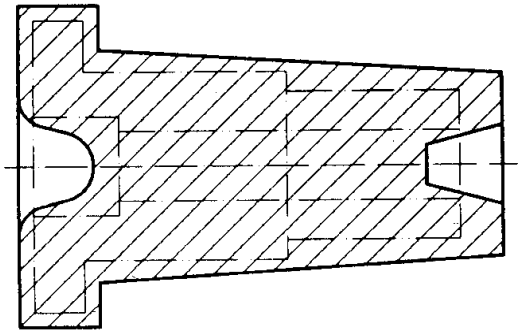


Figure 27 — Finished part indicated in blank

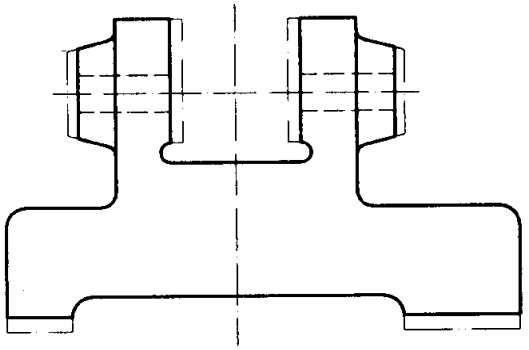


Figure 28 — Blank indicated in finished part

Parts made from separate, equal elements

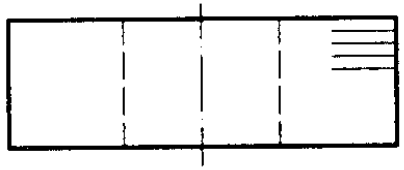


Figure 29 — Separate, equal elements

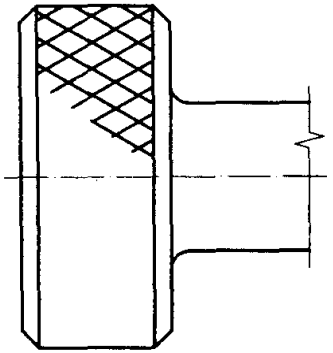


Figure 30 — Surface pattern

Views on Mechanical Engineering Drawings Cntd…

Fibre and Rolled Directions

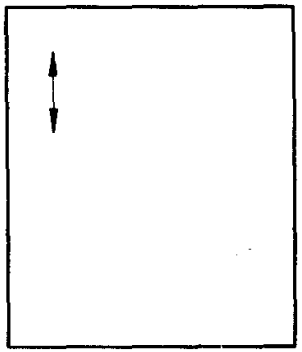


Figure 31 — Fibre direction

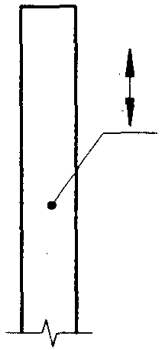


Figure 32 — Rolled direction

Parts with two or more identical views

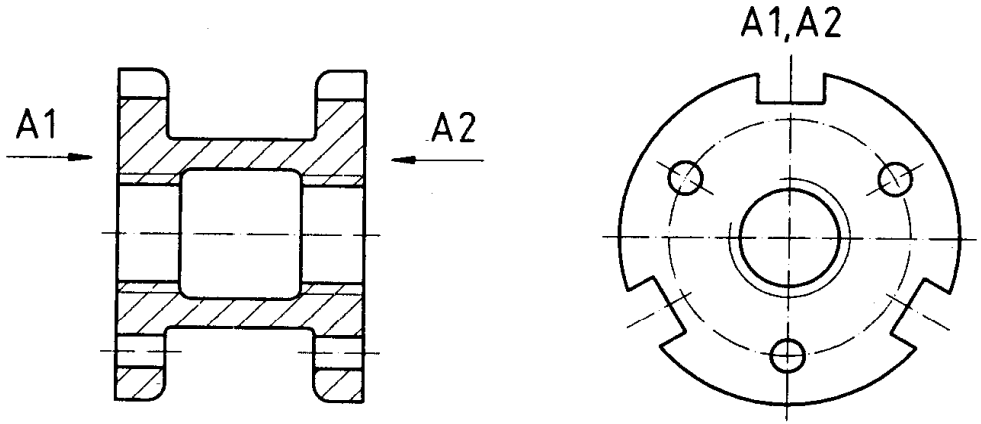


Figure 33 — Two identical views

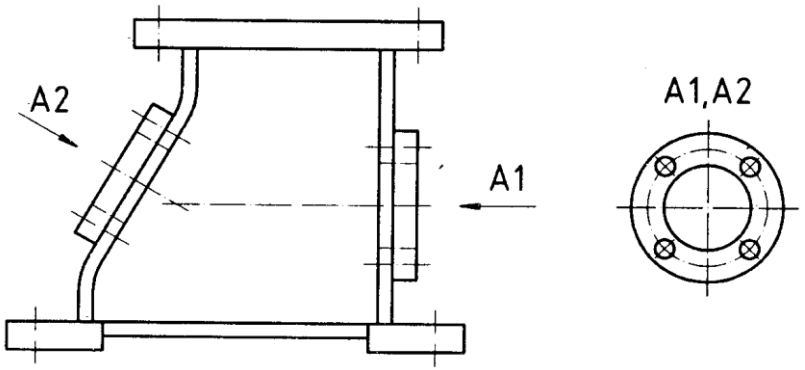
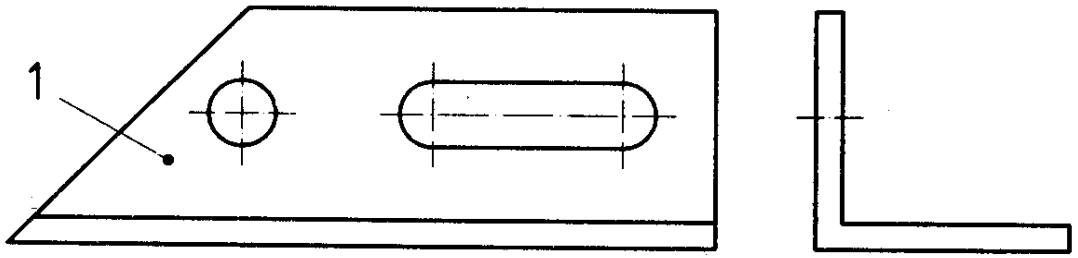


Figure 34 — Two identical local views

Views on Mechanical Engineering Drawings Cntd…



Key

1 Part 1

EXAMPLE (In title block) "Part 1, as drawn; part 2, identical mirror image."

Figure 35 — Mirror-image parts

Thank You

For any queries you may also please write to pgd@bis.gov.in or pgd24@bis.gov.in