Auxiliary Views

Drafting/ CAD 1
Mr. Mandl
Auxiliary Views

Learning Objectives:

✓ Determine the need for an Auxiliary View.
✓ Construct each of the three classifications of Auxiliary Views.
✓ Identify the three classifications of Auxiliary Views.

✓ Cut Auxiliary sections.
✓ Define key terms.
✓ Understand and demonstrate the concept of Auxiliary Views on worksheets and CAD drawings.
Auxiliary Views

What is the *main* purpose of Auxiliary Views?

- Auxiliary views are used to show the true size and shape of inclined or oblique surfaces.

When do we need to draw Auxiliary Views?

- When a surface is not parallel to any of the six principal views – Front, Top, Right Side, Left Side, Bottom, or Rear.

- The surface is shown shorter than its true length.
The Auxiliary View shows the true size and shape of the principal face and the hole feature.
Auxiliary Views

Key Terms:

- **Auxiliary View**
  - A view used to show the true size of inclined and oblique surfaces.

- **Auxiliary**
  - Additional.

- **Reference Plane**
  - Lines that serve as datum planes for transferring distances from one orthographic view to the auxiliary view.
Auxiliary Views

Key Terms:

- **Dihedral Angle**
  ✔ The Angle between two planes.

- **Primary Auxiliary View**
  ✔ A view projected on a plane that is perpendicular to one of the principal planes of projection and inclined to the other views.

- **Secondary Auxiliary View**
  ✔ A view projected from the primary auxiliary view.
Auxiliary Views

Three Classifications of Auxiliary Views

✓ Auxiliary Views are classified according to the principal dimension shown in the view.

Depth Auxiliary View
✓ An Auxiliary View hinged to the frontal plane.

Height Auxiliary View
✓ An Auxiliary View hinged to the horizontal plane.

Width Auxiliary View
✓ An Auxiliary View hinged to the profile plane.
Auxiliary Views

Developing Auxiliary Views

An auxiliary view is drawn looking into the surface at a 90° angle.
Auxiliary Views

Developing Auxiliary Views

Reference Plane Method

✓ Involves the use of 2 reference lines.
✓ One reference plane on a main view.
  ▷ Measurements are taken from this plane.
✓ One reference plane on the Auxiliary View.
  ▷ Measurements are transferred to this plane.

Reference Plane

✓ Lines that serve as datum planes for transferring distances from one orthographic view to the auxiliary view.
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Developing Auxiliary Views

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Developing Auxiliary Views

Line of Sight

90 Degrees

Figure has 3 surfaces

We are concerned with

Surface ‘A’
Auxiliary Views

Developing Auxiliary Views

Step One
Developing Auxiliary Views

Step Two

Reference Plane

Line of Sight perpendicular to Surface A

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Step Three

- Reference Plane
- Line of Sight Perpendicular to Surface A
- Edge View of Ref. Plane

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Step Four
Auxiliary Views

Developing Auxiliary Views

Step Five

Line of sight perpendicular to surface A

Transfer with dividers

Reference plane

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Developing Auxiliary Views

Step Six
Auxiliary Views

Developing Auxiliary Views

Step Seven
Auxiliary Sections

- Auxiliary Sections is cut on an auxiliary plane.
- A section cut on an angle.
- A reference plane and cutting plane line are used.
Auxiliary Views

Rotating Auxiliary View Drawings

(a) GIVEN DRAWING

(b) REVOLVED DRAWING

Primary Aux. View

Secondary Aux. View
Auxiliary Views

Summary

- Auxiliary views show true size and shape of inclined or oblique surfaces.

- Used when a surface is not parallel to any of the six principal views.

- When not parallel, the surface is shown shorter than its true length.
Auxiliary Views

Summary

✓ The three classifications of Aux Views are Width, Height, and Depth.

✓ Auxiliary Views are classified according to the principal dimension shown in the view.

✓ An Auxiliary Section is cut on an auxiliary plane – on an angle.