CHAPTER 6

Isometric Drawing
6.1 Pictorial projection

- Pictorial projection:
  - Not intended to give exact or true view.
  - Not intended to transmit dimensions, although sometimes dimension is useful.
  - Useful when the information and instructions to be given to non-technical and untrained people.
  - Hidden lines are not shown in isometric drawing.
6.2 Isometric projection

- Isometric projection is a true representation of the isometric view of an object.
- Isometric view is created by rotating the object 45 degree about vertical axis, and tilting it forward 35 deg 16’.
6.2 Selection of Isometric Axes

- Main purpose of isometric view is to provide a pictorial view which reveals as much detail as possible
- Selection of principal edges is important
- Figure shows different isometric views of the same block
6.2 Isometric projection: scale

- The tilt causes the edges & planes to become foreshortened
- The projected length is approximately 80% of the true length
6.2 Isometric projection & drawing

- Isometric projection & Isometric drawing
  - Isometric projection: drawn at scale of 0.816
  - Isometric drawing: drawn at full scale
6.3 Iso-circles and arcs

- Isometric circles or iso-circle cannot be simply drawn using compass.
- Any iso-circle may lie on either top plane, left (front) plane or right (profile) plane.
- Iso-circle looks slightly oval and skewed.
6.3 Drawing iso-circles

- To draw an iso-circle, on left plane, Diameter 20mm

(a) Draw centre lines, vertical & 30deg to left.
(b) Draw (construction line) 20mm “square box”. The centre lines should divide each side by half.
(c) Draw straight lines; 1-2 & 1-3 and 2-5 & 2-6.
(d) Point 7 is the intersection between line 1-2 & 2-5, and similarly point 8, 1-3 & 2-6 on the other side.
(e) Set your compass to the distance 7-2, draw an arc with centre at point 7, from point 2 to point 5. Do the same on the other side.
(f) Set your compass to the distance 1-2, draw an arc with centre (1), from (2) to (3).
6.3 Irregular curves in isometric

- Irregular curves in isometric are produced by transferring the coordinates from orthogonal view.
- A fixed distance is set, A, and the distance in B direction are obtained.
- These values are then transferred to the isometric view.
6.4 Producing Isometric drawing

- Read the orthogonal drawing carefully,
- observe the scale,
- choose the best point where isometric axes meet to reveal as much detail as possible
- draw an 'isometric box' enclosing the object
- draw in light construction lines
- draw arc & curves in thick, remove excess.
- line in 30° right lines
- line in 30° left lines
- line in vertical lines to complete the view
6.4 Producing Isometric drawing

- Read multi-view dwg given.
- Observe scale, dimension, proj. angle.
- Determine front, side & top view.
- Try to visualise how the object looks like.
- Start with sketching, do not draw straight away.
- If not sure, start with sketching an isometric box, enclosing the whole object.
- You can label points, lines and surfaces on multi-view to help visualisation.
6.4 Producing Isometric drawing

- You can start drawing, once you’re able to visualise how the object looks like, or finish sketching.
- Start with drawing construction line – draw the iso-box, and fill up with other lines.
- Line in (darken) arcs & circles.
6.5 Isometric dimensions

- Although isometric drawing is not intended to transmit dimension, sometimes dimensions are placed to indicate the size.

- Two types:
6.5 Isometric features

Common feature shown in isometric drawing.

Screw thread (external)

Fillet and rounds

Fig. 5.10 Pictorial representation of fillets and rounds
6.5 Isometric assembly: 3D render
End of Chapter 6
THANK YOU