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Module 2 – Geometry and Pattern Development

Unit 5 – Oblique Cylinders

Duration – 8 Hours

Learning Outcome:
By the end of this unit each apprentice will be able to:

- Identify the properties of the oblique cylinder
- Identify the geometrical differences between the right cylinder and the oblique cylinder
- Develop patterns for oblique cylinders cut by angular and curved planes
- Develop true shape of holes of intersection

Key Learning Points:

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Training Resources:
- Drawing instruments, equipment and materials
- Textbook: The Geometry of Sheet Metalwork
- Instructor handouts, drawings

Exercise:
Sample exercise - Figure 1.

Key Learning Points Code:
- M = Maths
- D = Drawing
- RK = Related Knowledge
- Sc = Science
- P = Personal Skills
- Sk = Skill
- H = Hazards
Oblique Cylinders

Exercise

Answer Sample Questions

1. Fig. 1 shows the elevation of an oblique cylinder. Develop the full template to the dimensions given.
2. Fig. 2 shows the junction of two oblique cylinders. Draw the elevation given and develop the full template for one leg, placing the seam on the short side. Scale: 1:10.
3. The elevation of intersecting cylinders of equal diameter is shown in Fig. 3. Develop the full template for each cylinder with the seam on the short side. Scale: 1:5.
4. The inlet to a square tank is shown in elevation in Fig. 4. Develop the full template for the cylindrical member with the seam at SS and draw also the true shape of the hole required in the tank. Scale: 1:2.
5. The elevation of an elliptical tank is shown in Fig. 5; the bottom is a circular plate 350 mm in diameter. Develop the full template, locating the seam on the short side. Scale: 1:5.
Figure 2 - Developed Pattern

Developed Pattern Procedure

1. Draw plan and elevation.
2. Divide the base on the plan into a number of parts, e.g. 12.
3. Bring these divisions up to the base in elevation, and then up parallel to the learning edge, as shown.
4. Project each division line on the elevation at right angles.
5. Choose a starting point A and with radius L from the plan, swing an arc B. Find B.
6. Continue to locate other points.
7. Construct the panels and add top and base.
Self Assessment
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