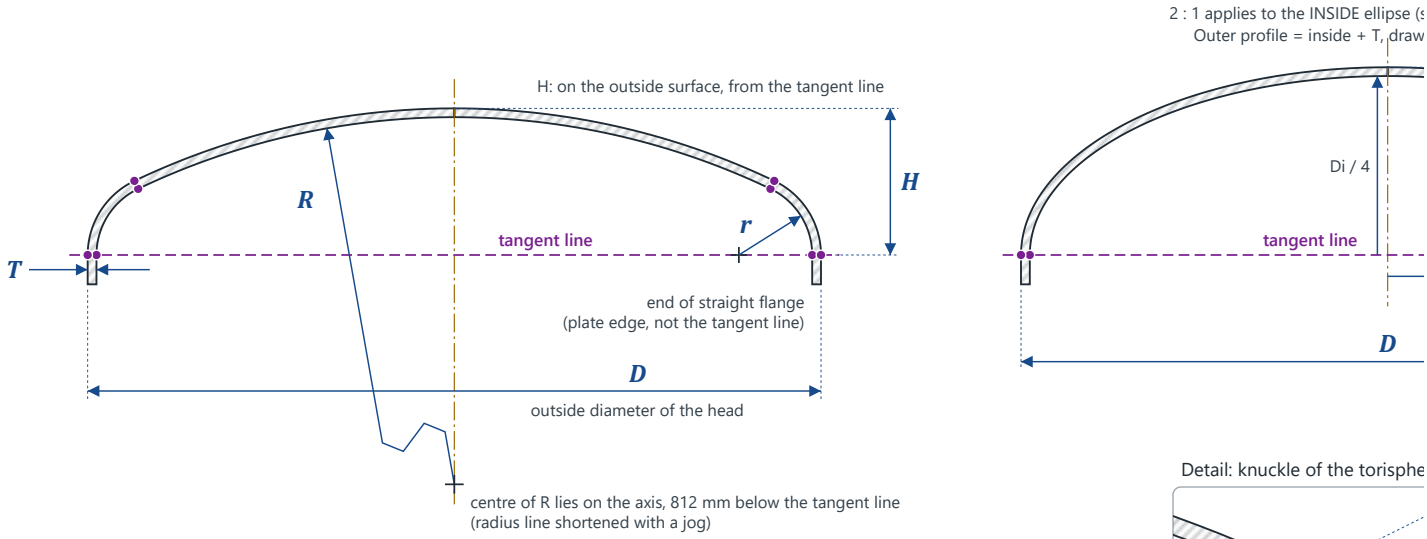
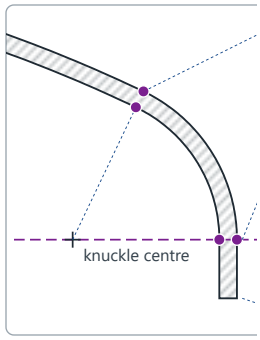
Dished ends — geometry and symbols used in IBR 2026, regulation 174

Left: partial-spherical (torispherical) head. Right: semi-ellipsoidal head, 2 : 1 on the inside. Full cross-section through the axis; wall hatched.





Reading the symbols (as defined in IBR 2026 reg. 174):

D = outside diameter of the head; H = height of the head measured on its outside surface from the junction of the dished part with the cylindrical shell (the tangent line); R = inside radius of the spherical part; r = inside knuckle radius; T = thickness (regs. 175, 177).

● marks the tangent points: crown/knuckle and knuckle/straight flange. The tangent line is NOT the cut end of the straight flange.

Worked illustration (hypothetical values): D = 1000 mm, T = 12 mm, R = 1000 mm, r = 100 mm → H ≈ 199.9 mm, H/D ≈ 0.200.

Checks against reg. 174(c): r ≥ 0.1D (100 ≥ 100) ✓ r ≥ 3T (100 ≥ 36) ✓ R ≤ D (1000 ≤ 1000) ✓ H ≥ 0.18D (199.9 ≥ 180) ✓

Elliptical example: inside 2 : 1, outside H ≈ 256 mm, H/D ≈ 0.256 (reg. 174(b) requires H ≥ 0.2D, measured on the outside).

These checks illustrate the shape rules only. They are NOT a thickness or pressure calculation; see regs. 175–177 and the Gazette.

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Figure: fig-dished-end-geometry Rev B
Units: mm Scale: NTS on screen (DXF at 1:1 mm)
Date: 2026-11-20 Tool: FreeCAD 1.1.4 + Python
Engineering review: in progress

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