

Chapter 6

Surface Models

- 6.1 Bellows Joints
- 6.2 Beam Bracket
- 6.3 Gearbox
- 6.4 Review

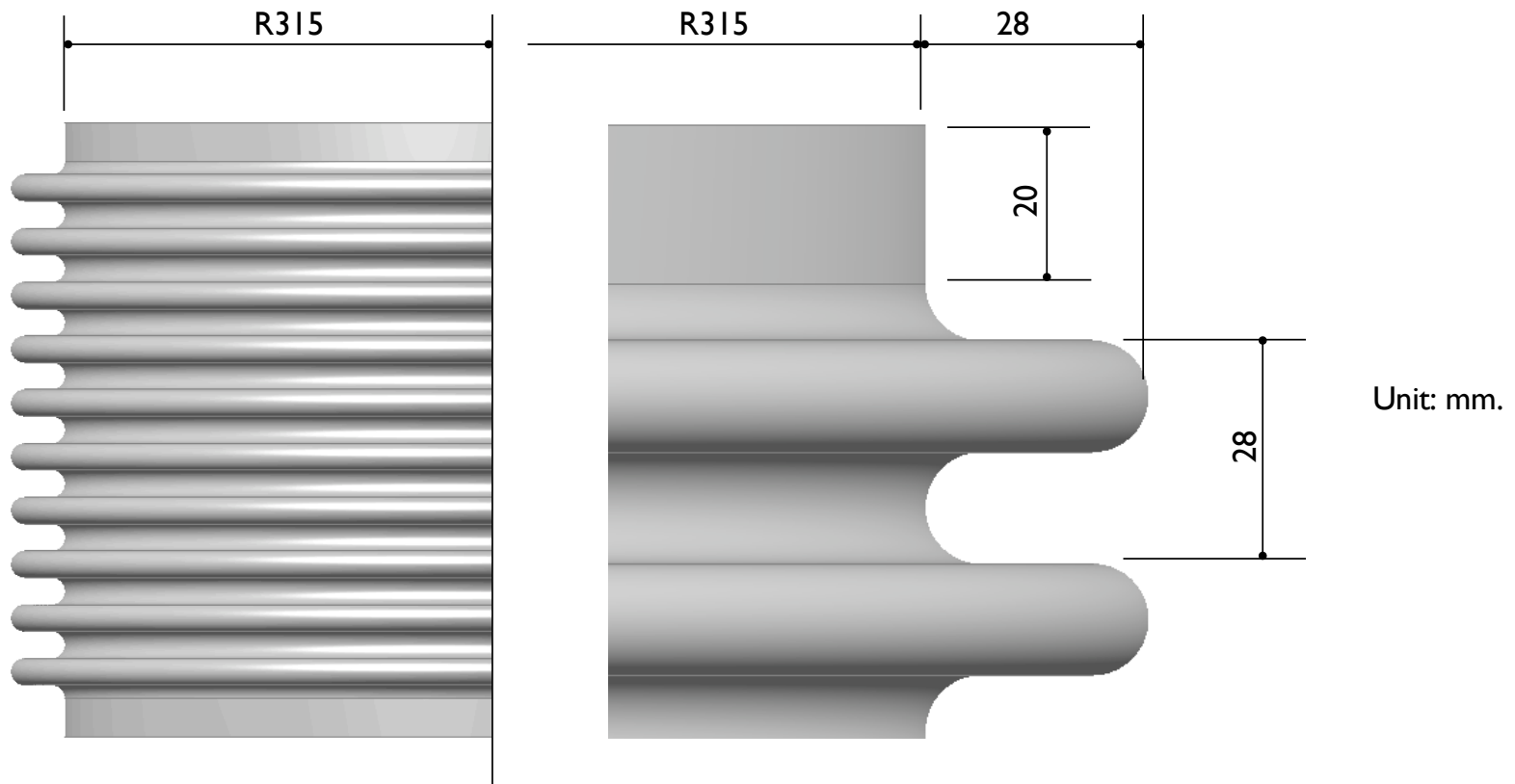
Section 6.1

Bellows Joints

Problem Description

- With the internal pressure, the engineers are concerned about the radial deformation (due to an engineering tolerance consideration) and hoop stress (due to a safety consideration).

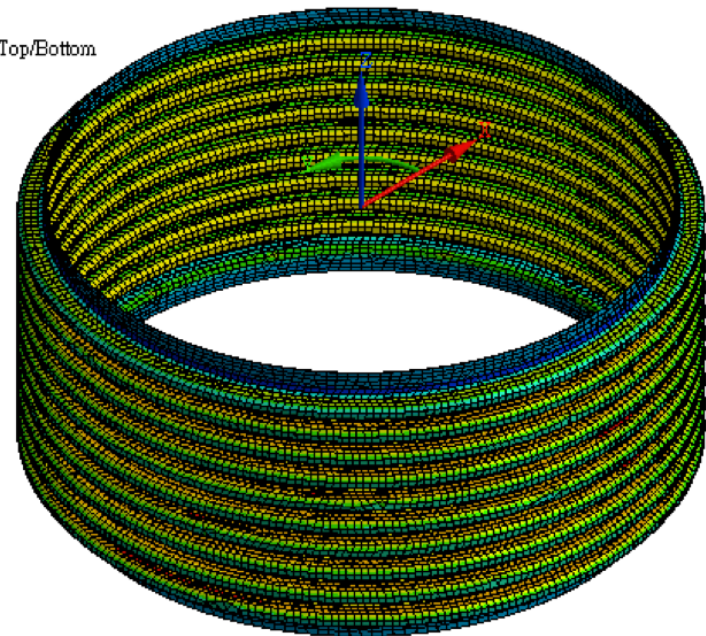
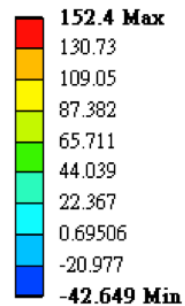




Techniques/Concepts

- Create surface bodies using **Revolve**.
- Top/Bottom of a surface body
- Shell Elements

A: Static Structural
Hoop Stress
Type: Normal Stress(Y Axis) - Top/Bottom
Unit: MPa
Cylindrical Coordinate System
Time: 1



Section 6.2

Beam Bracket

Techniques/Concepts

- Create surface bodies using **Mid-Surface**

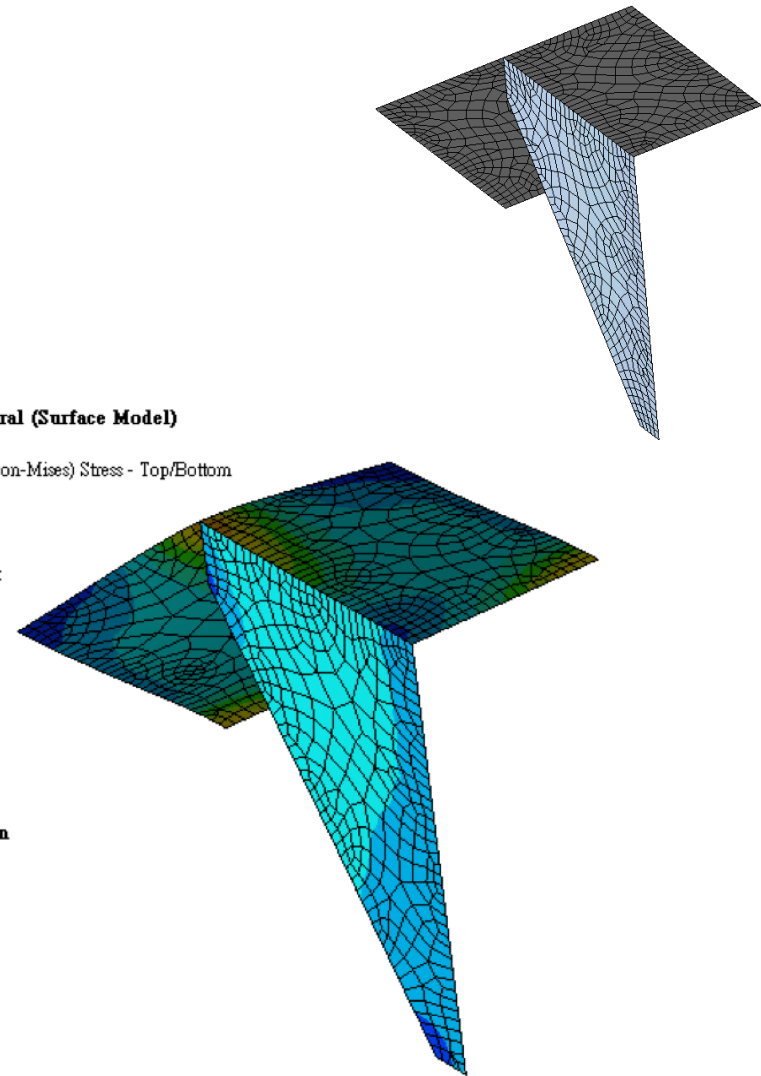
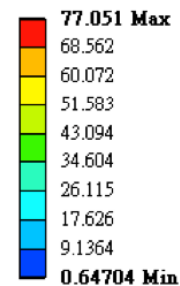
B: Static Structural (Surface Model)

Equivalent Stress

Type: Equivalent (von-Mises) Stress - Top/Bottom

Unit: MPa

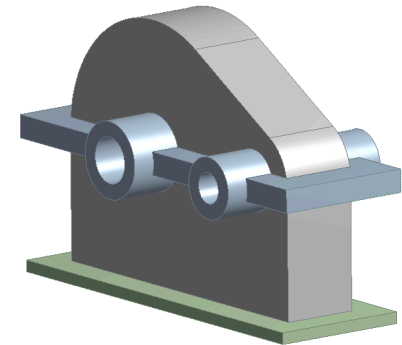
Time: 1



Section 6.3

Gearbox

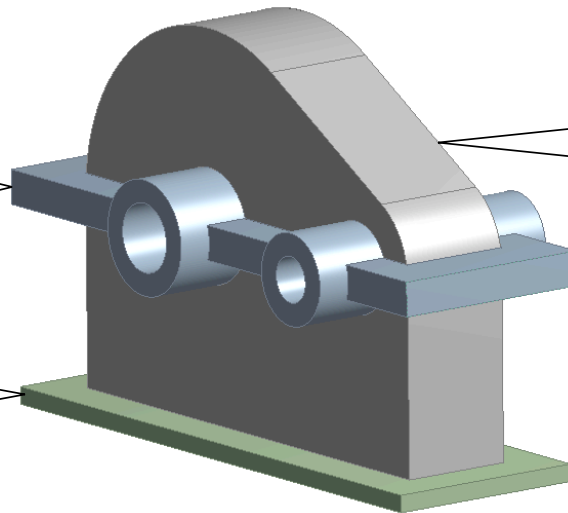
Problem Description

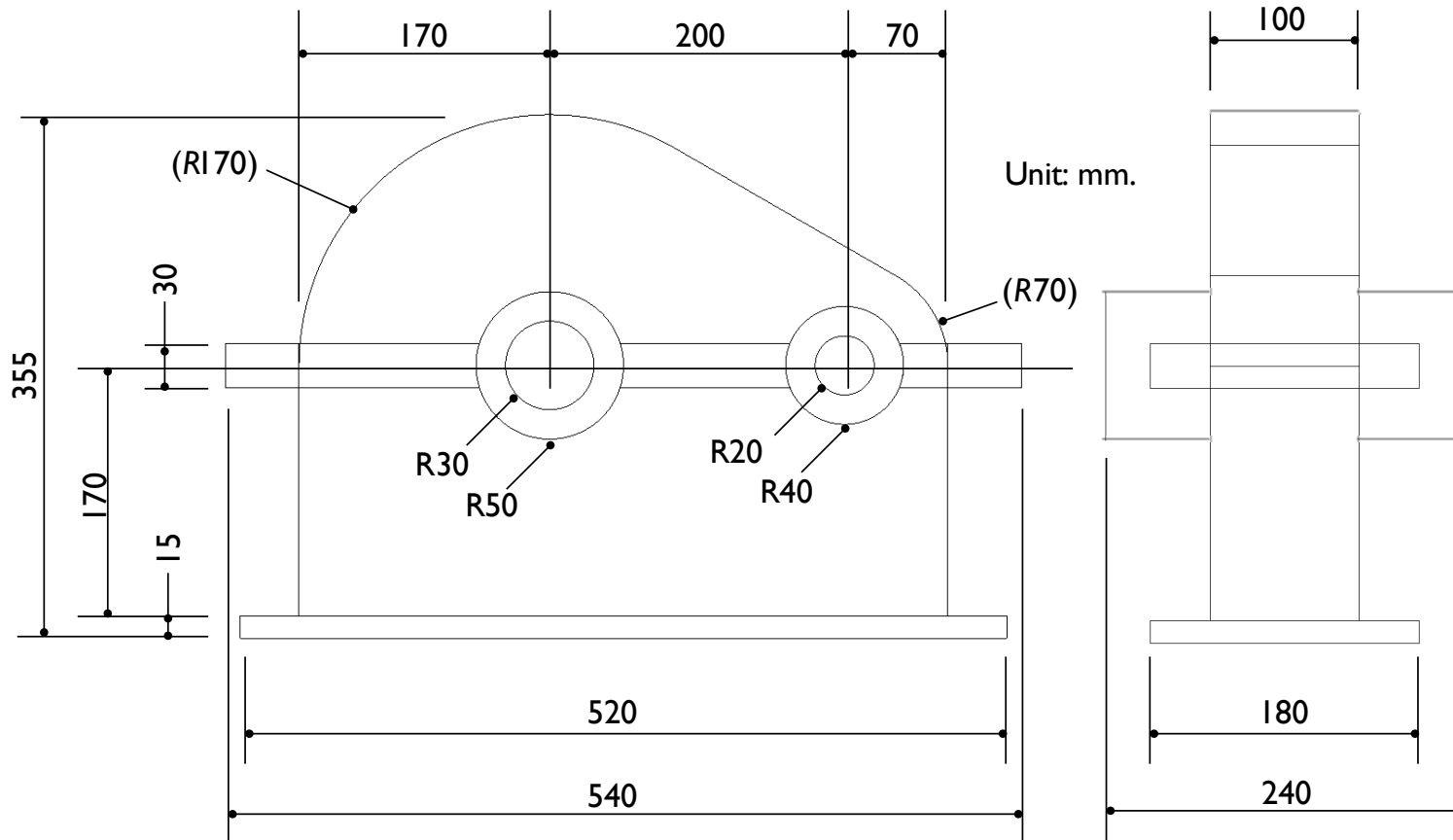


[1] The flanged bearing is made of gray cast iron.

[2] The base is also made of cast iron.

[3] The housing is made of stainless sheet steel of 3 mm thickness.





Techniques/Concepts

- Create surface bodies by **Thin/Surface**
- **Loads>Bearing Loads**
- Set up **Bonded** connections.

A: Static Structural

Equivalent Stress

Type: Equivalent (von-Mises) Stress - Top/Bottom

Unit: MPa

Time: 1

