

Department of Mechanical Engineering
Massachusetts Institute of Technology
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2.800 Tribology

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Homework #5 (Discussion in two weeks from November 15, 2004)

1. The propeller shaft of a naval submarine must be sealed to prevent the ocean water from leaking into the vessel. State the functional requirements (FRs) of the seal. The maximum speed of the shaft is 100 rpm. The diameter of the shaft is 20 cm.

Given the functional requirements you have chosen, design a seal that can satisfy the FRs.

2. All passenger cars must have "weather strips" around the door of the car to isolate the passenger compartment from outside and allow flow of controlled amount of air. The nominal gap between the door and the doorframe is 3 mm, but it can be as large as 1 cm. State the FRs of the weather strip.

Given the functional requirements you have chosen, design a weather strip that can satisfy the FRs.

3. Having seen the Tribotek power connector during your visit to Tribotek, state the FRs of the connector. Suggest means of improving the design.