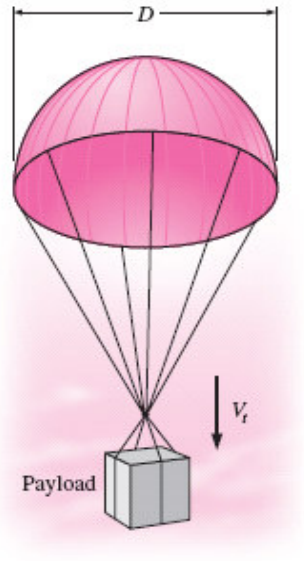
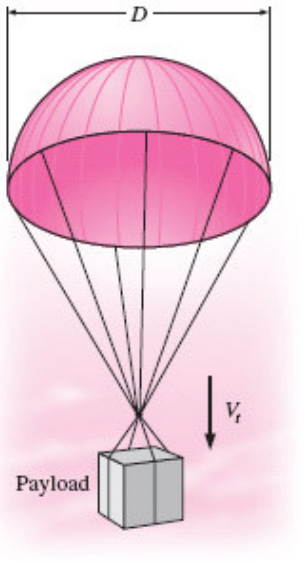
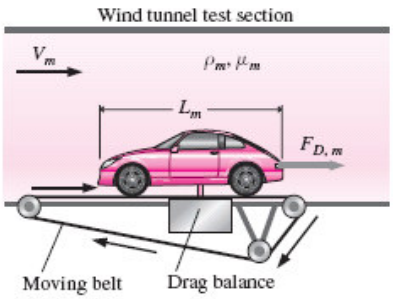
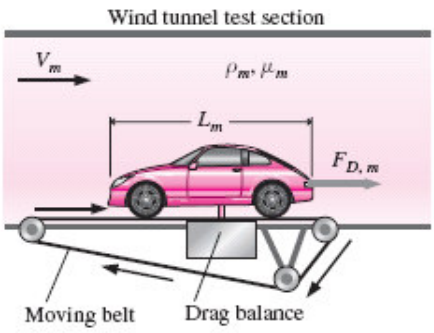
Page No	Current version	Corrected version
307	**7–18E** Thumb through the appendices of this book and/or your thermodynamics book, and find three properties or constants not mentioned in Probs. 7–1 to 7–17. List the name of each property or constant and its English units. Then write out the primary dimensions of each property or constant.	7-18 Thumb through the appendices of this book and/or your thermodynamics book, and find three properties or constants not mentioned in Probs. 7-1 to 7-17. List the name of each property or constant and its SI units. Then write out the primary dimensions or each property or constant.
310	**7–38E** A lightweight parachute is being designed for military use (Fig. P7–38E). Its diameter D is 24 ft and the total weight W of the falling payload, parachute, and equipment is 230 lbf. The design *terminal settling speed* V_t of the parachute at this weight is 20 ft/s. A one-twelfth scale model of the parachute is tested in a wind tunnel. The wind tunnel temperature and pressure are the same as those of the prototype,	7-38 A lightweight parachute is being designed for military use (Fig. P7-38). Its diameter D is 8m and the total weight W of the falling payload, parachute, and equipment is 51kgf. The design terminal settling speed V_t of the parachute at this weight is 6m/s. A one-twelfth scale model of the parachute is tested in a wind tunnel. The wind tunnel temperature and pressure are the same as those of the prototype,
311	namely 60°F and standard atmospheric pressure. (*a*) Calculate the drag coefficient of the prototype. (Hint: At terminal settling speed, weight is balanced by aerodynamic drag.) (*b*) At what wind tunnel speed should the wind tunnel be run in order to achieve dynamic similarity? (*c*) Estimate the aerodynamic drag of the model parachute in the wind tunnel (in lbf).	namely 15.5°C and standard atmospheric pressure. (a) Calculate the drag coefficient of the prototype. (Hint: At terminal settling speed, weight is balanced by aerodynamic drag.) (b) At what wind tunnel speed should the wind tunnel be run in order to achieve dynamic similarity? (c) Estimate the aerodynamic drag of the model parachute in the wind tunnel (in N).
311	 FIGURE P7–38E	 FIGURE P7-38

311	 **FIGURE P7–41E**	 FIGURE P7-41
311	**7–41E** The aerodynamic drag of a new sports car is to be predicted at a speed of 60.0 mi/h at an air temperature of 25°C. Automotive engineers build a one-fourth scale model of the car (Fig. P7–41E) to test in a wind tunnel. The temperature of the wind tunnel air is also 25°C. The drag force is measured with a drag balance, and the moving belt is used to simulate the moving ground (from the car's frame of reference). Determine how fast the engineers should run the wind tunnel to achieve similarity between the model and the prototype.	7-41 The aerodynamic drag of a new sports car is to be predicted at a speed of 95km/h at an air temperature of 25°C. Automotive engineers build a one-fourth scale model of the car (Fig. P7-41) to test in a wind tunnel. The temperature of the wind tunnel air is also 25°C. The drag force is measured with a drag balance, and the moving belt is used to simulate the moving ground (from the car's frame of reference). Determine how fast the engineers should run the wind tunnel to achieve similarity between the model and the prototype.
311	**7–42E** This is a follow-up to Prob. 7–41E. The aerodynamic drag on the model in the wind tunnel (Fig. P7–41E) is measured to be 36.5 lbf when the wind tunnel is operated at the speed that ensures similarity with the prototype car. Estimate the drag force (in lbf) on the prototype car at the conditions given in Prob. 7–41E.	7-42 This is a follow-up to Prob. 7-41. The aerodynamic drag on the model in the wind tunnel (Fig. P7-41) is measured to be 8.2N when the wind tunnel is operated at the speed that ensures similarity with the prototype car at the conditions given in Prob. 7-41.
315	**7–77E** A small wind tunnel in a university's undergraduate fluid flow laboratory has a test section that is 20 by 20 in in cross section and is 4.0 ft long. Its maximum speed is 160 ft/s. Some students wish to build a model 18-wheeler to study how aerodynamic drag is affected by rounding off the back of the trailer. A full-size (prototype) tractor-trailer rig is 52 ft long, 8.33 ft wide, and 12 ft high. Both the air in the wind tunnel and the air flowing over the prototype are at 80°F and atmospheric pressure. (*a*) What is the largest scale model they can build to stay within the rule-of-thumb guidelines for blockage? What are the dimensions of the model truck in inches? (*b*) What is the maximum model truck Reynolds number achievable by the students? (*c*) Are the students able to achieve Reynolds number independence? Discuss.	7-77 A small wind tunnel in a university's undergraduate fluid flow laboratory has a test section that is 50 by 50 cm in cross section and is 1.2m long. Its maximum speed is 50m/s. Some students wish to build a model 18-wheeler to study how aerodynamic drag is affected by rounding off the back of the trailer. A full size (prototype) tractor-trailer rig is 16m long, 2.5m wide, and 3.65m high. Both the air in the wind tunnel and the air flowing over the prototype are at 26.67°C and atmospheric pressure. (a) What is the largest scale model they can

		build to stay within the rule-of-thumb guidelines for blockage? What are the dimensions of the model truck in centimetres? (b) What is the maximum model truck Reynolds number achievable by the students? (c) Are the students able to achieve Reynolds number independence? Discuss.