Machine Design Course for Communication / Electrical Department
Sheet 3 – Design of Welding Joints

Problem 1

Two steel plates with Sy = 50 ksi are attached by parallel-loaded fillet welds, as shown in Figure P11.9. E60 series welding rods are used, and good welding practice is followed. Each of the welds is 3 in. long. With a safety factor of 3, what maximum tensile load can be applied?
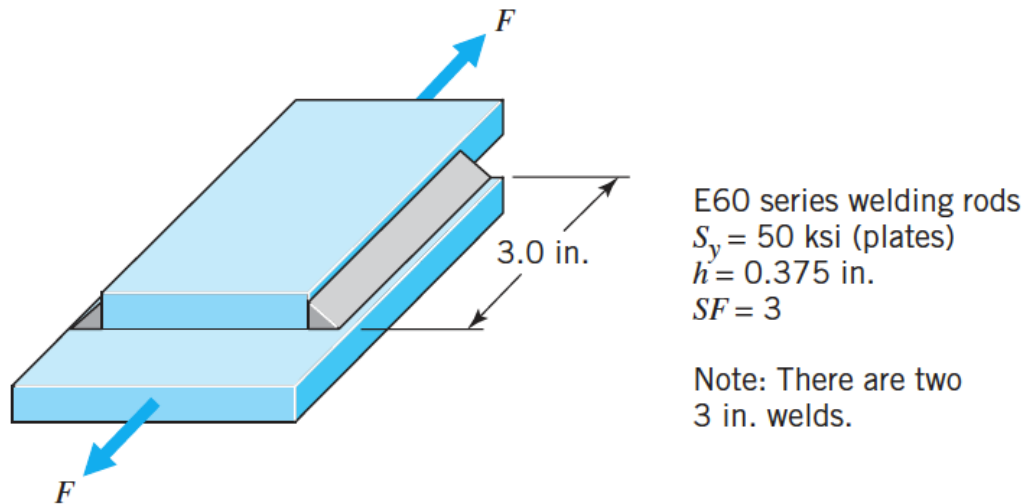

3.0 in.

E60 series welding rods
S_y = 50 ksi (plates)
h = 0.375 in.
SF = 3

Note: There are two
3 in. welds.

Figure 1.

Problem 2

Determine the required weld size for Figure 2 using a welding rod of (Sy = 345 MPa) and a safety factor of 2.5 based on yielding.
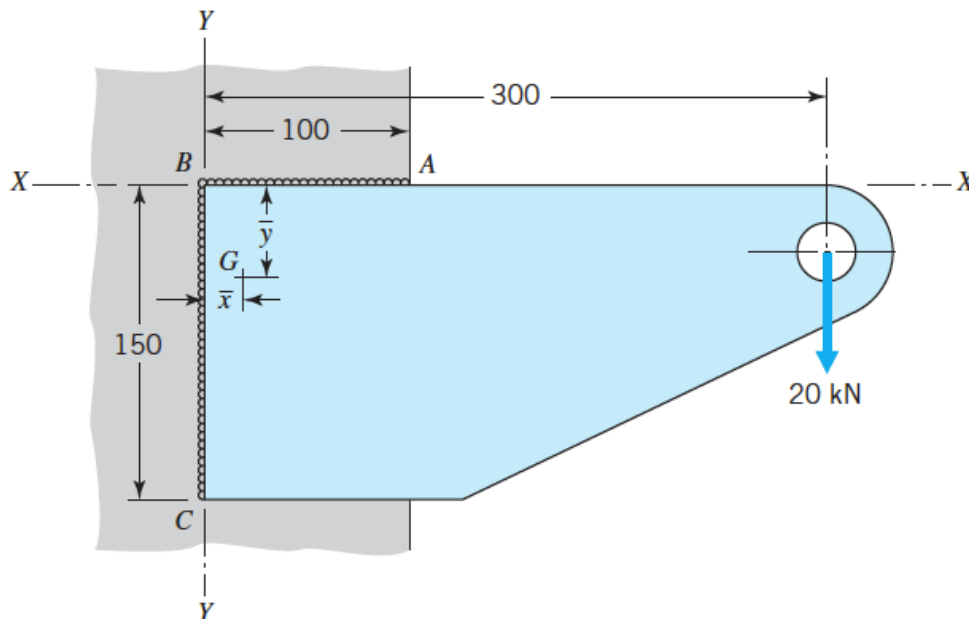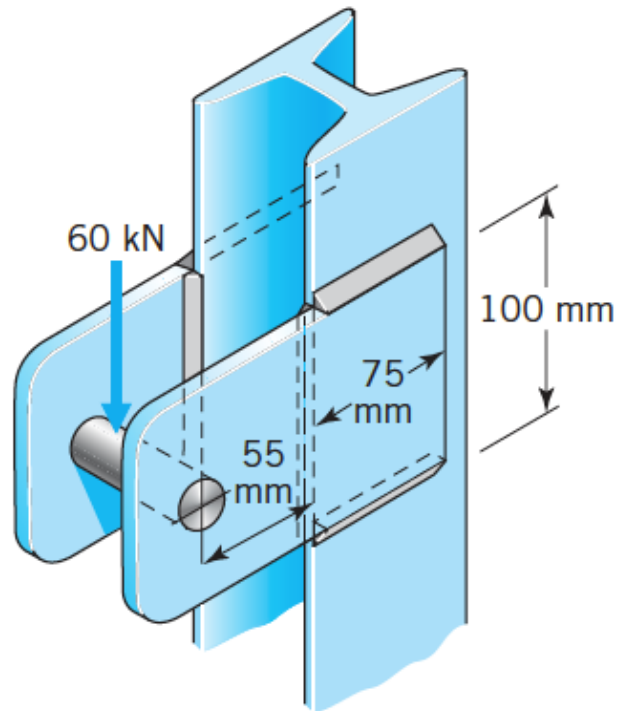

Figure 2.

Problem 3

The bracket shown in Figure 3 is to support a total load (equally divided between the two sides) of 60 kN. Using a welding rod of (Sy = 345 MPa) and a safety factor of 3.0, what size weld should be specified?

60 kN

100 mm

75 mm

55 mm

Note: Each plate has two 75 mm welds and one 100 mm weld.

Figure 3.