



Dimensions in inches

FIGURE P11-3

Problem 11-8

- 11-25 Use the information in Problem 11-8 to find the torque needed to drive the crank at the position shown using the method of virtual work.
- 11-26 Use the information in Problem 11-8, but change the lengths of links 3 and 4 to 7.4 and 8.0 in, respectively, to make it Grashof. Then use program FOURBAR to find and plot all pin forces and the torque needed to drive the crank at a constant speed of 40 rad/sec for one revolution of the crank.
- 11-27 Use the information in Problem 11-8, but change the lengths of links 3 and 4 to 7.4 and 8.0 in, respectively, to make it Grashof. Then find and plot the torque needed to drive the crank at a constant speed of 40 rad/sec for one revolution of the crank using the method of virtual work.

FOR REFERENCE

- 11-8 Figure P11-3 shows a fourbar linkage and its dimensions. The steel crank and rocker have uniform cross sections 1 in wide by 0.5 in thick. The aluminum coupler is 0.75 in thick. In the instantaneous position shown, the crank O_2A has $\omega = 40$ rad/sec and $\alpha = -20$ rad/sec². There is a horizontal force at P of $F = 50$ lb. Find all pin forces and the torque needed to drive the crank at this instant.