

**FIGURE 11-4**

Dynamic force analysis of the fourbar slider-crank linkage

- 11-45 Table P11-5 (on next page) gives kinematic and geometric data for a slider-crank linkage of the type and orientation shown in Figure 11-4 (p. 597). For the row(s) in the table assigned, solve for the three pin forces and the torque available at the crank for the position shown.
- 11-46 Table P11-5 (on next page) gives kinematic and geometric data for a slider-crank linkage of the type and orientation shown in Figure 11-4 (p. 597). For the row(s) assigned in the table, solve for the torque available at the crank using the method of virtual work for the position shown, assuming no friction losses.

**TABLE P11-5 Data for Problems 11-45 to 11-46** (See Figure 11-4 for Nomenclature)Part 1 Lengths (inches), velocity (in/sec), acceleration (in/sec<sup>2</sup>)

Row	link 2	link 3	$d$	$\dot{d}$	$\ddot{d}$	$R_{12}$	$R_{23}$	
<i>a</i>	4	12	14	400	-22 760	1.3	3.0	0.15
<i>b</i>	3	10	8	375	67 350	1.0	2.5	0.00
<i>c</i>	5	15	12	390	36 400	1.7	3.8	0.10
<i>d</i>	6	20	18	700	45 430	2.0	5.0	0.18
<i>e</i>	2	8	8	225	3 010	0.7	2.0	0.08
<i>f</i>	10	35	35	-900	69 750	3.3	8.8	0.12
<i>g</i>	7	25	25	-935	209 900	2.3	6.2	0.14

Part 2 force (lbf, deg), mass (blobs), moments of Inertia (blob-in<sup>2</sup>)

Row	$F_p$ mag	$F_p$ ang	$m_2$	$m_3$	$m_4$	$I_{G_2}$	$I_{G_3}$
<i>a</i>	60	180	0.002	0.020	0.060	0.10	0.2
<i>b</i>	45	180	0.050	0.100	0.200	0.20	0.4
<i>c</i>	75	180	0.010	0.020	0.030	0.05	0.1
<i>d</i>	90	180	0.006	0.150	0.050	0.12	0.3
<i>e</i>	30	180	0.001	0.004	0.014	0.30	0.8
<i>f</i>	150	180	0.150	0.300	0.050	0.24	0.6
<i>g</i>	110	180	0.080	0.200	0.100	0.45	0.9