

8-22 Equation (f), Sec. 8-7:  $C = \frac{k_b}{k_b + k_m}$

$$\text{Eq. (8-17): } k_b = \frac{A_d A_t E}{A_d l_t + A_t l_d}$$

$$\text{Eq. (8-22): } k_m = \frac{0.5774\pi(207)d}{2 \ln \left[ 5 \frac{0.5774(40) + 0.5d}{0.5774(40) + 2.5d} \right]}$$

See Table 8-7 for other terms used.

Using a spreadsheet, with coarse-pitch bolts (units are mm, mm<sup>2</sup>, MN/m):

$d$	$A_t$	$A_d$	$H$	$L >$	$L$	$L_T$
10	58	78.53982	8.4	48.4	50	26
12	84.3	113.0973	10.8	50.8	55	30
14	115	153.938	12.8	52.8	55	34
16	157	201.0619	14.8	54.8	55	38
20	245	314.1593	18	58	60	46
24	353	452.3893	21.5	61.5	65	54
30	561	706.8583	25.6	65.6	70	66

$d$	$l$	$l_d$	$l_t$	$k_b$	$k_m$	$C$
10	40	24	16	356.0129	1751.566	0.16892
12	40	25	15	518.8172	2235.192	0.188386
14	40	21	19	686.2578	2761.721	<b>0.199032</b>
16	40	17	23	895.9182	3330.796	0.211966
20	40	14	26	1373.719	4595.515	0.230133
24	40	11	29	1944.24	6027.684	0.243886
30	40	4	36	2964.343	8487.533	0.258852

Use a M14 × 2 bolt, with length 55 mm.      *Ans.*