<table>
<thead>
<tr>
<th>$h$</th>
<th>$h/b$</th>
<th>$k_2$ (by Table 6.1)</th>
<th>(h \cdot k_2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>17.05</td>
<td>1.00</td>
<td>0.208</td>
<td>3.462</td>
</tr>
<tr>
<td>28.58</td>
<td>1.50</td>
<td>0.231</td>
<td>6.602</td>
</tr>
<tr>
<td>31.10</td>
<td>2.00</td>
<td>0.246</td>
<td>9.373</td>
</tr>
<tr>
<td>36.75</td>
<td>1.929</td>
<td>0.2439</td>
<td>8.962</td>
</tr>
<tr>
<td>36.77</td>
<td>1.930</td>
<td>0.2439</td>
<td>8.969</td>
</tr>
<tr>
<td>36.78</td>
<td>1.931</td>
<td>0.2440</td>
<td>8.973</td>
</tr>
</tbody>
</table>

Therefore, \(h \approx 36.775\) mm.

6.35 For equal areas (with \(b = h\) for the square bar and \(d = \text{diameter of the circular bar}\)),

\[
(2b)(2h) = 4h^2 = \frac{\pi d^2}{4} \quad \text{or} \quad d = 2.25674h
\]

For \(b = h\), \(b/h = 1\), \(k_2 = 0.208\) by Table 6.1.

Hence,

\[
T_{\text{max}} \text{(square bar)} = \frac{T}{k_2 (2b)(2h)^2} = \frac{T}{(0.208)(2)(h)^3} = 0.60096 \frac{T}{h^3}
\]

\[
T_{\text{max}} \text{(circular bar)} = \frac{16T}{\pi d^3} = \frac{16T}{\pi (2.25674h)^3} = 0.44312 \frac{T}{h^3}
\]

\[
T_{\text{max}} \text{(square bar)} = 1.356 T_{\text{max}} \text{(circular bar)}
\]

6.36 (a) By Fig. a and 6.15, \(2h = 25\) mm and \(2b = 50\) mm.

Then, by Eq. (m) of Section 6.6,

\[
J = 2.6042 \times 10^5 \left[1 - \frac{96}{\pi^2} \sum_{n=3,5,\ldots} \frac{1}{n^2} \tan \left(\frac{n\pi}{h}\right)\right] \approx 1.787 \times 10^5 \text{mm}^4 \quad (a)
\]

or by Table 6.1, with \(b/h = 2\), \(J = k_2 (2b)(2h)^3 = 1.789 \times 10^5 \text{mm}^4 \quad (b)

By Eqs. (k) of Section 6.6, with \(2h = 25\) mm, \(2b = 50\) mm,

and \(G \theta = T/J \quad \text{[by Eq. (6.63)]}, \text{ we have}

\(\text{(Cont.)}\)