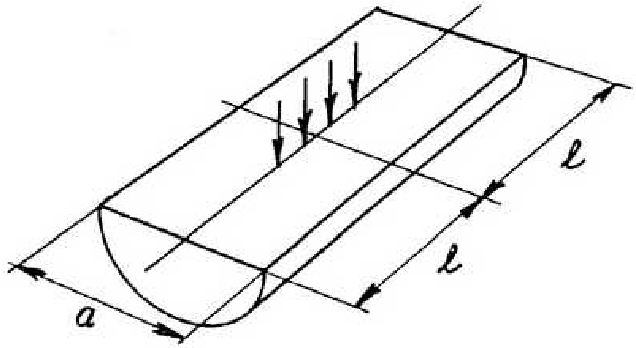
G) BAR OF SEMI-CIRCULAR CROSS SECTION



The geometric factor for an infinitely long bar of semi-circular cross section is included in (d):

$$\rho = G\,\frac{V}{s}, \qquad G = \frac{2\pi s}{F}$$

where $F = F(\frac{a}{s})$ is shown at page 33.

The value of F for $a = 10\cdot s$ is $F(\frac{a}{s} = 10) = 1{,}038$, or $G(\frac{a}{s} = 10) = 0{,}963 \cdot 2\pi s$.

When $a \geq 10s$, then $0{,}963 \cdot 2\pi s \leqq G \leqq 2\pi s$, where $2\pi s$ is the geometric factor for a semi-infinite volume.

The deviation of G from $G = \frac{2\pi s}{F}$ for a bar of finite length 2l can be estimated from the special case of a box-shaped bar treated by Hansen (d), see p. 31, as the rectangular shape with $h = \frac{1}{2}\cdot a$ is not very different in this context from a semi-circular cross section with diameter a.

So, on the basis of (d) we estimate that when

$$2l \geqq 3s + \tfrac{1}{2}a, \qquad \text{then } 0{,}98\,\frac{2\pi s}{F} \leq G \leqq \frac{2\pi s}{F}.$$