Erratum: “Scaling Laws for Ultra-Short Hydrostatic Gas Journal Bearings”

Z. S. Spakovszky and L. X. Liu

(1) The exponents of the clearance to radius term \( C/R \) in the scaling law for damping ratio \( \zeta \) in Eqs. (19) and (20) were inadvertently switched between these two equations. Equations (19) and (20) should read:

\[
\zeta \propto \left( \frac{C}{R} \right)^{-3} \left( \frac{\Delta p}{p_o} \right)^{-1/2} \left( \frac{p_\infty}{p_o} \right)^{-1/2} \sqrt{\Lambda Re C \mu L^2} \frac{1}{\rho_d C^2 (\Omega R)} \tag{19}
\]

and

\[
\zeta \propto \left( \frac{L}{D} \right)^2 \left( \frac{C}{R} \right)^{-1} \left( \frac{\Delta p}{p_o} \right)^{-1/2} \left( \frac{p_\infty}{p_o} \right)^{1/2} A^{1/2} \sqrt{Re C^{-1/2}}. \tag{20}
\]

(2) This correction also pertains to Table 1, where the second term in the last row, with the damping ratio \( \zeta \), should read –1 as shown below.

(3) Consistently, the second sentence of the fifth paragraph on p. 259, in the section “Design Implications,” should read: “Since the damping ratio \( \zeta \) scales with \( (L/D)^2, (C/R)^{-1} \), and …”.

<table>
<thead>
<tr>
<th>( \lambda )</th>
<th>( \zeta )</th>
<th>( \frac{\Delta p}{p_\infty} )</th>
<th>( \frac{p_\infty}{p_o} )</th>
<th>( \Lambda )</th>
<th>( Re C )</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \zeta )</td>
<td>2</td>
<td>−1</td>
<td>−1/2</td>
<td>1/2</td>
<td>1/2</td>
</tr>
</tbody>
</table>

Table 1 Scaling laws for ultra-short hydrostatic gas journal bearings