$$\Delta l = l_0 \alpha_l \Delta T = l_0 \alpha_l (T_f - T_0)$$

= (15 m) [17.0 x 10⁻⁶ (°C)⁻¹](-9°C - 40°C)
= -1.25 x 10⁻² m = -12.5 mm (-0.49 in.)

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