$$\frac{2.8a_{\text{in}}}{1-e_{\text{out}}}\left[\left(1+\frac{m_3}{m_{\text{in}}}\right)\frac{1+e_{\text{out}}}{\sqrt{1-e_{\text{out}}}}\right]^{\frac{2}{5}} < a_{\text{out}} < \left[\frac{3a_{\text{in}}^4 m_3 c^2 \left(1-e_{\text{in}}^2\right)^{3/2}}{4Gm_{\text{in}}^2 \left(1-e_{\text{out}}^2\right)^{3/2}}\right]^{1/3}$$