$$
\begin{aligned}
&-k_{l0}\left(\zeta_2(t)-\zeta_3(t)\right)+k_{l0}\left(\zeta_3(t)-\zeta_4(t)\right)+\\
&\quad 2\,m_0\left(\cos(\theta(t))\,R(t)+\cos(\alpha(t))\cos(\theta(t)+\psi(t))\left(\frac{L_0}{2}+\eta_3(t)+\eta_4(t)+\eta_5(t)\right)\right)\zeta_3{}'(t)\\
&\qquad\left(\cos(\theta(t))\,R'(t)-\cos(\theta(t)+\psi(t))\sin(\alpha(t))\left(\frac{L_0}{2}+\eta_3(t)+\eta_4(t)+\eta_5(t)\right)\alpha'(t)-\right.\\
&\qquad\qquad R(t)\sin(\theta(t))\,\theta'(t)-\cos(\alpha(t))\sin(\theta(t)+\psi(t))\left(\frac{L_0}{2}+\eta_3(t)+\eta_4(t)+\eta_5(t)\right)\left(\theta'(t)+\psi'(t)\right)+\\
&\qquad\qquad\left.\cos(\alpha(t))\cos(\theta(t)+\psi(t))\left(\eta_3{}'(t)+\eta_4{}'(t)+\eta_5{}'(t)\right)\right)+\\
&\quad\left(m_0\left(\cos(\theta(t))\,R(t)+\cos(\alpha(t))\cos(\theta(t)+\psi(t))\left(\frac{L_0}{2}+\eta_3(t)+\eta_4(t)+\eta_5(t)\right)\right)^2+i_{\text{xm3}}\right)\zeta_3{}''(t)=\\
&c_{l0}\left(\zeta_2{}'(t)-\zeta_3{}'(t)\right)-c_{l0}\left(\zeta_3{}'(t)-\zeta_4{}'(t)\right)
\end{aligned}
$$