$$K_9^1 = \begin{bmatrix} 0 & \frac{\left(3+\mathbf{i}\sqrt{3}\right)U}{\sqrt{2}\,t} & \frac{\mathbf{i}\left(3\,\mathbf{i}+\sqrt{3}\right)}{\sqrt{2}} & 0 \\ \frac{\mathbf{i}\left(3\,\mathbf{i}+\sqrt{3}\right)U}{\sqrt{2}\,t} & -\mathbf{i}\sqrt{3} & \frac{\left(3+\mathbf{i}\sqrt{3}\right)U}{2\,t} & \frac{\mathbf{i}\left(3\,\mathbf{i}+\sqrt{3}\right)}{\sqrt{2}} \\ \frac{3+\mathbf{i}\sqrt{3}}{\sqrt{2}} & \frac{\frac{\mathbf{i}}{2}\left(3\,\mathbf{i}+\sqrt{3}\right)U}{t} & -\mathbf{i}\sqrt{3} & 0 \\ 0 & \frac{3+\mathbf{i}\sqrt{3}}{\sqrt{2}} & 0 & 0 \end{bmatrix}$$