$$K_{22}^2 = \begin{bmatrix} \frac{-15\,U}{t} & \frac{-2\,U}{t} & 0 & \frac{-3\,U}{2\,t} & \frac{-3\,U}{\sqrt{2}\,t} & 0 & 0 & \frac{-5\,U}{t} & \frac{\left(33\,\sqrt{4-4\,\sqrt{\frac{\alpha}{11}}}+10\,\sqrt{121-11\,\sqrt{22}}-22\,\sqrt{22-2\,\sqrt{22}}\right)\,U^2}{44\,\sqrt{52-8\,\sqrt{22}}\,t^2} & \frac{\left(1001\,\sqrt{2+2\,\sqrt{\frac{\alpha}{11}}}+\sqrt{11+\sqrt{22}}\,(264+5\,\sqrt{22})\right)\,U^2}{528\,\sqrt{26+4\,\sqrt{22}}\,t^2} \\ \frac{-2\,U}{t} & \frac{-5\,U}{t} & 0 & \frac{U}{t} & -\left(\frac{\sqrt{2}\,U}{t}\right) & 0 & 0 & \frac{-2\,U}{t} & -\frac{\left(44\,\sqrt{4-4\,\sqrt{\frac{\alpha}{11}}}+\sqrt{484-44\,\sqrt{22}}+38\,\sqrt{121-11\,\sqrt{22}}\right)\,U^2}{44\,\sqrt{52-8\,\sqrt{22}}\,t^2} & -\frac{\left(253\,\sqrt{2+2\,\sqrt{\frac{\alpha}{11}}}+\sqrt{22}\,(11+\sqrt{22})\right)\,U^2}{528\,\sqrt{26+4\,\sqrt{22}}\,t^2} \\ 0 & 0 & \frac{-5\,U}{t} & \frac{4\,t^2+t^2}{\sqrt{2}\,t^2} & 0 & \frac{U}{t} & 0 & -2\,\sqrt{2} & -\frac{\left(99\,\sqrt{2-2\,\sqrt{\frac{\alpha}{11}}}+3\,\sqrt{242-22\,\sqrt{22}}+11\,\left(\sqrt{44-4\,\sqrt{22}}+4\,\sqrt{11-\sqrt{22}}\right)\right)\,U}{66\,\sqrt{52-8\,\sqrt{22}}\,t} & \frac{\left(-517\,\sqrt{4+4\,\sqrt{\frac{\alpha}{11}}}+2\,(132\,\sqrt{2}-\sqrt{11})\,\sqrt{11+\sqrt{22}}\right)\,U}{528\,\sqrt{26+4\,\sqrt{22}}\,t} \\ \frac{-3\,U}{2\,t} & \frac{U}{t} & \frac{4\,t^2+t^2}{\sqrt{2}\,t^2} & \frac{-9\,U}{2\,t} & \frac{-3\,U}{\sqrt{2}\,t} & -2\,\sqrt{2} & 0 & \frac{-U}{2\,t} & \frac{4\,(-11+\sqrt{22})}{11\,\sqrt{2-2\,\sqrt{\frac{\alpha}{11}}}} & \frac{4\,(11+\sqrt{22})}{11\,\sqrt{2+2\,\sqrt{\frac{\alpha}{11}}}} \\ \frac{-3\,U}{\sqrt{2}\,t} & -\left(\frac{\sqrt{2}\,U}{t}\right) & 0 & \frac{-3\,U}{\sqrt{2}\,t} & \frac{-6\,U}{t} & -\left(\frac{U^2}{t^2}\right) & \frac{\sqrt{2}\,t^2}{t^2} & -\left(\frac{U}{\sqrt{2}\,t}\right) & 0 & 0 \\ 0 & 0 & \frac{U}{t} & -2\,\sqrt{2} & -\left(\frac{U^2}{t^2}\right) & 0 & \frac{2\,\sqrt{2}\,U}{t} & 2\,\sqrt{2} & -\frac{\left(33\,\sqrt{2-2\,\sqrt{\frac{\alpha}{11}}}+\sqrt{242-22\,\sqrt{22}}+22\,\sqrt{11-\sqrt{22}}\right)\,U}{11\,\sqrt{52-8\,\sqrt{22}}\,t} & \frac{\left(-517\,\sqrt{4+4\,\sqrt{\frac{\alpha}{11}}}+2\,(132\,\sqrt{2}-\sqrt{11})\,\sqrt{11+\sqrt{22}}\right)\,U}{264\,\sqrt{26+4\,\sqrt{22}}\,t} \\ 0 & 0 & 0 & \frac{\sqrt{2}\,U^2}{t^2} & \frac{2\,\sqrt{2}\,U}{t} & \frac{-4\,U}{t} & 0 & -\frac{\left(11\,\sqrt{4-4\,\sqrt{\frac{\alpha}{11}}}+14\,\sqrt{121-11\,\sqrt{22}}-22\,\sqrt{22-2\,\sqrt{22}}\right)\,U}{22\,\sqrt{52-8\,\sqrt{22}}\,t} & -\frac{\left(209\,\sqrt{2+2\,\sqrt{\frac{\alpha}{11}}}+\sqrt{11+\sqrt{22}}\,(66+5\,\sqrt{22})\right)\,U}{66\,\sqrt{26+4\,\sqrt{22}}\,t} \\ \frac{-5\,U}{2\,t} & \frac{-2\,U}{t} & -2\,\sqrt{2} & \frac{-U}{2\,t} & -\left(\frac{U}{\sqrt{2}\,t}\right) & 2\,\sqrt{2} & 0 & \frac{-11\,U}{2\,t} & \frac{\left(-32\,\sqrt{121-11\,\sqrt{22}}+176\,\sqrt{22-2\,\sqrt{22}}\right)\,t^2+\left(33\,\sqrt{4-4\,\sqrt{\frac{\alpha}{11}}}+2\,\sqrt{121-11\,\sqrt{22}}+22\,\sqrt{22-2\,\sqrt{22}}\right)\,U^2}{44\,\sqrt{52-8\,\sqrt{22}}\,t^2} & -\frac{-2112\,\left(\sqrt{2+2\,\sqrt{\frac{\alpha}{11}}}+\sqrt{11+\sqrt{22}}\right)\,t^2+\left(517\,\sqrt{2+2\,\sqrt{\frac{\alpha}{11}}}+(-264+\sqrt{22})\,\sqrt{11+\sqrt{22}}\right)\,U^2}{528\,\sqrt{26+4\,\sqrt{22}}\,t^2} \\ \frac{\left(33\,\sqrt{4-4\,\sqrt{\frac{\alpha}{11}}}+10\,\sqrt{121-11\,\sqrt{22}}-22\,\sqrt{22-2\,\sqrt{22}}\right)\,U^2}{44\,\sqrt{52-8\,\sqrt{22}}\,t^2} & -\frac{\left(11\,\sqrt{4-4\,\sqrt{\frac{\alpha}{11}}}+10\,\sqrt{121-11\,\sqrt{22}}\right)\,U^2}{22\,\sqrt{52-8\,\sqrt{22}}\,t^2} & -\frac{\left(99\,\sqrt{2-2\,\sqrt{\frac{\alpha}{11}}}+3\,\sqrt{242-22\,\sqrt{22}}+11\,\left(\sqrt{44-4\,\sqrt{22}}+4\,\sqrt{11-\sqrt{22}}\right)\right)\,U}{66\,\sqrt{52-8\,\sqrt{22}}\,t} & \frac{4+4\,\sqrt{\frac{\alpha}{11}}}{\sqrt{2-2\,\sqrt{\frac{\alpha}{11}}}} & 0 & -\frac{\left(33\,\sqrt{2-2\,\sqrt{\frac{\alpha}{11}}}+\sqrt{242-22\,\sqrt{22}}+22\,\sqrt{11-\sqrt{22}}\right)\,U}{11\,\sqrt{52-8\,\sqrt{22}}\,t} & -\frac{\left(11\,\sqrt{4-4\,\sqrt{\frac{\alpha}{11}}}+14\,\sqrt{121-11\,\sqrt{22}}-22\,\sqrt{22-2\,\sqrt{22}}\right)\,U}{22\,\sqrt{52-8\,\sqrt{22}}\,t} & -\frac{\left(209\,\sqrt{2+2\,\sqrt{\frac{\alpha}{11}}}+\sqrt{11+\sqrt{22}}\,(66+5\,\sqrt{22})\right)\,U}{66\,\sqrt{26+4\,\sqrt{22}}\,t} & \frac{\left(-32\,\sqrt{121-11\,\sqrt{22}}+176\,\sqrt{22-2\,\sqrt{22}}\right)\,t^2+\left(33\,\sqrt{4-4\,\sqrt{\frac{\alpha}{11}}}+2\,\sqrt{121-11\,\sqrt{22}}+22\,\sqrt{22-2\,\sqrt{22}}\right)\,U^2}{44\,\sqrt{52-8\,\sqrt{22}}\,t^2} & -\frac{-2112\,\left(\sqrt{2+2\,\sqrt{\frac{\alpha}{11}}}+\sqrt{11+\sqrt{22}}\right)\,t^2+\left(517\,\sqrt{2+2\,\sqrt{\frac{\alpha}{11}}}+(-264+\sqrt{22})\,\sqrt{11+\sqrt{22}}\right)\,U^2}{528\,\sqrt{26+4\,\sqrt{22}}\,t^2} \\ \frac{\left(1001\,\sqrt{2+2\,\sqrt{\frac{\alpha}{11}}}+\sqrt{11+\sqrt{22}}\,(264+5\,\sqrt{22})\right)\,U^2}{528\,\sqrt{26+4\,\sqrt{22}}\,t^2} & -\frac{\left(913\,\sqrt{2+2\,\sqrt{\frac{\alpha}{11}}}+61\,\sqrt{22\,(11+\sqrt{22})}\right)\,U^2}{528\,\sqrt{26+4\,\sqrt{22}}\,t^2} & \frac{\left(-517\,\sqrt{4+4\,\sqrt{\frac{\alpha}{11}}}+2\,(132\,\sqrt{2}-\sqrt{11})\,\sqrt{11+\sqrt{22}}\right)\,U}{528\,\sqrt{26+4\,\sqrt{22}}\,t} & \frac{4+4\,\sqrt{\frac{\alpha}{11}}}{\sqrt{2+2\,\sqrt{\frac{\alpha}{11}}}} & 0 & \frac{\left(-517\,\sqrt{4+4\,\sqrt{\frac{\alpha}{11}}}+2\,(132\,\sqrt{2}-\sqrt{11})\,\sqrt{11+\sqrt{22}}\right)\,U}{264\,\sqrt{26+4\,\sqrt{22}}\,t} & -\left(\frac{209\,\sqrt{2+2\,\sqrt{\frac{\alpha}{11}}}+\sqrt{11+\sqrt{22}}\,(66+5\,\sqrt{22})}{66\,\sqrt{26+4\,\sqrt{22}}\,t}\right) & -\frac{-2112\,\left(\sqrt{2+2\,\sqrt{\frac{\alpha}{11}}}+\sqrt{11+\sqrt{22}}\right)\,t^2+\left(517\,\sqrt{2+2\,\sqrt{\frac{\alpha}{11}}}+(-264+\sqrt{22})\,\sqrt{11+\sqrt{22}}\right)\,U^2}{528\,\sqrt{26+4\,\sqrt{22}}\,t^2} & \frac{3\,\left(17842\,\sqrt{2}-3370\,\sqrt{11}-4015\,\sqrt{52-8\,\sqrt{22}}\right)\,U}{16\,\sqrt{52-8\,\sqrt{22}}\,\left(-11+\sqrt{22}\right)^2\,t} & -\left(\frac{\left(69\,\sqrt{11}-121\,\sqrt{\frac{114\,\sqrt{22}}{11-\sqrt{22}}}+11\,\sqrt{\frac{22\,(11+\sqrt{22})}{11-\sqrt{22}}}\right)\,U}{528\,t}\right) \end{bmatrix}$$