We discuss dependencies of magnetic field, electric current density and Lorentz force in erupting flare. In addition, we focus on different methods of Lorentz force calculation. The high-spatiotemporal resolution of the 3D simulation outputs allows us a detailed study of the morphology, evolution, and dynamics, giving us a new view of processes occur in the solar flares. We compare our results of the 3D simulation with observational studies. We find that the contraction of the inflow of the magnetic fields is determined by the currents and Lorentz forces. Additionally, we show that the surface integral coming from the volume integral of the Maxwell stress tensor, as usually used in observational data analysis as the proxy of the Lorentz force, present a different behaviour than the Lorentz force itself. The Lorentz force characterises more complicated morphology than mentioned integrand. Moreover, based on the analysis of the induction equation in the simulation, we unveil that the increase of the horizontal magnetic field around active region PILs during eruptions is solely and exclusively result of the flare reconnection-driven contraction of flare loops. Using our simulation and observations of several flares, we found clear decrease of $J_z$ at the footpoints of the flux rope. These findings can be important in flare diagnostic.