We have considered plasmon excitations of dressed Dirac electrons in single and double layer graphene. Dressing of the electrons with circularly polarized photons opens the dynamic gap of several orders of magnitude larger than that of spin-orbit type. In double layer configuration the electron dressing may be combined with sub-lattice symmetry breaking mechanism thus making one of the layers gapless. In such case the energy loss of an energetic particle demonstrates an anomalous behavior of the acoustic plasmon branch.