Abstract. In this paper, an approach to 3D modeling of spatial manipulators using the Maple 2023 is proposed. Algorithms and program codes have been developed in order to obtain 3D computer models of manipulators controlled by generalized coordinates. Implementation of developed algorithms and program codes made it possible to create 3D computer models of manipulators with the accurate images of links and their cross sections, kinematic pairs, grips and loads, with various structures and degrees of freedom and which are clearly visible in three-dimensional space. Whenmanipulators move, from own masses of links the distributed dynamic loads of a complex nature arise in the links. Such dynamic loads cause the prob lems: for example, due to large dynamic loads or due to large deformation of the links, the manipulator may fail, etc. Therefore, analytical approaches have been developed to determine the patterns of dynamic loads distribution along the longitudinal axes of manipulator links. Algorithms and program codes have been developed for constructing diagrams of distributed dynamic loads in mutually per pendicular planes formed by the main axes of the cross sections of the links and the axes passing along the links. Through this it is possible to see changes in the direction and magnitude of distributed dynamic loads in all cross sections of the links for the full working process of the manipulator. This enables to consider the found dynamic loads in strength and stiffness calculations of manipulator links, which are important in design of new innovative manipulators