In this study a simplified reliability model is developed on the basis of knowledge, from field data, of the dominating failure modes and mechanisms of large power squirrel cage induction motors operating at constant speed and fed from a conventional 3 phase sinusoidal supply voltage. Field data failures distribution indicates a dominance of failure modes pertaining to machine bearings and stator winding insulation. The motor system can be regarded as a complex combination of three fundamental parts: The stator, the rotor and the bearings which are respectively electrical, electromechanical and mechanical in nature. On this basis, the motor system reliability block diagram is modelled in a series configuration comprising the above mentioned parts. The individual reliability functions developed for each part will yield together the overall motor system reliability