The GMRES method is one of the most useful methods for solving a system of linear algebraic equations with nonsymmetric matrix. So on, many bounds for the residual norm have been derived, that can give us information about the convergence or possible stagnation of the method. A generalization of the GMRES method is the augmented GMRES method. In this paper we will analyze the implementation of augmented GMRES method proposed by Morgan. In these consequences we will be interested in how precise harmonic Ritz vectors approximate the eigenvectors belonging to the smallest in magnitude eigenvalues. We generalize some previous results concerning the convergence of restarted GMRES method for the case of augmented GMRES method. This is the rst contribution of the work. Another main point will be numerical testing and comparing of the bounds for restarted and augmented GMRES and an attempt to state a criterion, when it is suitable to stop the improvement of augmenting vectors, i. e. apply the augmented GMRES method without additional computations.