



Determination of the Driving Engine Reliability for the Special Purposes Motor Vehicle

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Abstract. The fundamental tasks that are being set before experts that are dealing with problems of using and maintenance of a motor vehicle are: to establish the variation of a vehicle's technical characteristics and to define methods and means for ensuring its proper operation. In this paper the attention is devoted to solving the first problem. As a result of work on determination of technical characteristics variation is presented determination of reliability parameters of the driving engine of a vehicle for special purposes. Based on obtained results it is possible to determine the optimal periodicity of its maintenance.

Keywords: Driving engine, Exploitation, Law of technical state variation, Reliability

1. Introduction

Out of all the possible solutions for the maintenance strategy, for the given driving engine and the set conditions, only one is optimal. In that case the optimal values are reached for availability, reliability, operational and maintenance costs, and accordingly total costs during the engine's life cycle. The system optimization task for the driving aggregates consists of obtaining that optimum. This is why it is necessary to properly define the variation of engine's technical characteristics, primarily through determination of its reliability parameters. In this paper is presented determination of those parameters for the driving engine of a special purposes vehicle.

2. Problem Formulation

In the special purposes vehicle (Fig. 1) is as a driving engine built the four-stroke "V" Diesel engine (Fig. 2), with 10 cylinders at 90° and direct injection, with a chamber in the piston and cooled by liquid. The engine is placed in the engine-transmission space, parallel to the vehicle's longitudinal axis, fixed by four elastic supports to a stand, which is welded to the vehicle's floor. The engine is placed in the vehicle in such a way that its back side (flywheel) is facing the front side of a vehicle.

3. The Most Frequent Irregularities in Exploitation of an Engine

The numerous irregularities can appear in exploitation of the OM403 engine, out of which only a few are listed here:

- Engine can not start because:
 - the driving gear of the starter can not rotate, or rotates with insufficient rpms due to loose electric leads of a starter
 - the driving gear of the starter can not rotate, or rotates with insufficient rpms because the starter's clutch slides

