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Aims and Scope

The decision for editing and printing of the current journal was taken on Balkantrib'93, Sofia, October, 1993 during the Round Table discussion of the representatives of the Balkan countries: Bulgaria, Greece, Former Yugoslav Republic of Macedonia, Romania, Turkey and Yugoslavia. The Journal of the Balkan Tribological Association is dedicated to the fundamental and technological research of the third principle in nature – the contacts.

The journal will act as international focus for contacts between the specialists working in fundamental and practical areas of tribology.

The main topics and examples of the scientific areas of interest to the Journal are:

- (a) overall tribology;
- (b) tribotechnics and tribomechanics; friction, lubrication, abrasive wear, boundary lubrication, adhesion, cavitation, corrosion, computer simulation, vibration phenomena, mechanical contacts in gaseous, liquid and solid phase, technological tribological processes, coatings, etc.;
- (c) tribochemistry – defects in solid bodies, tribochemical emissions, triboluminescence, triboluminescence, technological tribochemistry; composite materials, polymeric materials in mechanics and tribology; special materials in military and space technologies, etc.;
- (d) kinetics, thermodynamics and mechanism of tribochemical processes;
- (e) biotribology – biological tribology, tribotherapy, tribological wear, biological tribotechnology, etc.;
- (f) lubrication – solid, semi-liquid lubricants, additives for oils and lubricants, surface phenomena, wear in the presence of lubricants; lubricity of fuels;
- (g) ecological tribology; the role of tribology in the sustainable development of technology;
- (h) management and organisation of the production; machinery breakdown; oil monitoring;
- (i) European legislation in the field of tribotechnics and lubricating oils;
- (j) educational problems in tribology, lubricating oils and fuels.

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DETERMINATION OF RELIABILITY OF MOTOR VEHICLE STEERING SYSTEM TIE-ROD JOINT

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ABSTRACT

Procedures for planning of truncated tests for reliability assessment and processing of test results are presented in the paper, using the case of the tie-rod joint belonging to the steering system of light commercial vehicle. In order to select and quantify the optimum plan for testing the observed object, it is necessary to know in detail the structure, the way of operation, the causes of potential failure modes and mechanisms of their generation. Statistical data set related to the operation time until failure on tie-rod joint occurrence is gained by conducting tests in exploitation conditions. Test results processing is done using computer and corresponding software. Selection of optimum theoretical model of random variable distribution is conducted with taking into account all relevant identifiers.

Keywords: reliability, planning of truncated tests, tie-rod joint, distribution model.

AIMS AND BACKGROUND

Steering system is one of the vital parts of motor vehicle complex mechanical system¹. Together with the braking system and with the tires, it has a crucial significance for safety of motor vehicles and people in traffic. Thus, a great attention is given to demands that are set before the steering system regarding the reliability. By analysis of modes, consequences and criticality of failures of the steering system elements built on light commercial vehicles, it has been established that the tie-rod joints are the most critical elements from the aspect of reliability and safety².

Application of procedures for accelerated testing in order to estimate reliability has a great importance from the aspect of reduction of the test costs and time necessary to obtain needed information on reliability. Description of a larger number of accelerated testing procedures for estimation of reliability may be

* For correspondence.

