



SURFACE VEHICLE RECOMMENDED PRACTICE

J1528™

APR2016

Issued 1990-06
Stabilized 2016-04

Superseding J1528 JUN1990

Fatigue Testing Procedure for Suspension-Leaf Springs

RATIONALE

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1. **Scope**

1.1 Test Material—Only fully processed new springs which are representative of springs intended for the vehicle shall be used for the tests. No complete spring or separate leaf shall be used for more than one test.

2. References—There are no referenced publications specified herein.

3. Report Content—To obtain uniform documentation, every report shall include detailed information on the following points, when applicable:

3.1 Geometry—Overall dimensions, location and dimensions of fracture sections including the location of the fracture initiation point shall be described in writing or by photographs.

3.2 Material and Manufacturing Process—The type of material, as well as essential steps in the manufacturing which may affect the test results, shall be specified. As examples, type of hardening, shot-peening under stress at given level, etc., can be mentioned.

The hardness shall be checked on critical surfaces, and the hardness distribution through the section shall be measured. Shot peen coverage and the microstructure shall be evaluated.

3.3 Fractography—Fracture surfaces shall be shown on photographs and the type of fracture discussed. The extension of fatigue fracture shall be measured and the crack starting points shall be examined.

3.4 Test Result Presentation—The individual test results may be clearly stated. Even noncritical events like cracks in secondary leaves must be recorded.

The results of the fatigue testing of a group of springs should be subjected to statistical analysis. The Weibull distribution is recommended. Also, it is recommended that minimum fatigue performance requirements be specified in terms of B10 life and population slope.