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SURFACE VEHICLE RECOMMENDED PRACTICE

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Submitted for recognition as an American National Standard

RATED SUSPENSION SPRING CAPACITY

***Foreword*—**This Document has not changed other than to put it into the new SAE Technical Standards Board Format.

1. ***Scope*—**The Rated Suspension Spring Capacity definition has been developed to assist engineers and designers in the preparation of specifications and descriptive material and values relating thereto.

1.1 **Purpose—**The following definition of Rated Suspension Spring Capacity is applicable to all types of suspensions designed for vehicles used predominantly on the highway. This capacity provides a basis for comparison of spring load carrying abilities in a particular suspension application. This definition is intended to clarify a commonly used term which has heretofore been used indiscriminately.

2. ***References***

2.1 **Applicable Publication—**The following publications form a part of the specification to the extent specified herein. Unless otherwise indicated the lastest revision of SAE publications shall apply.

2.1.1 SAE PUBLICATION—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001

HS J670

3. ***Definitions***

3.1 **Rated Suspension Spring Capacity—**A load rating assigned to each spring installation and vehicle application which will provide adequate spring durability and vehicle stability under all intended load conditions. The value of the load rating must equal or exceed that portion of the maximum allowable force of gravity (usually called 'weight' and equaling mass times acceleration of gravity) at the ground which relates directly to the spring. Therefore, the load rating is based on the total of sprung and unsprung forces of gravity (usually called 'sprung weight' and 'unsprung weight') of the loaded vehicle

3.2 **Spring—**Includes all types of suspension springs (such as: leaf, coil, torsion bar, rubber, pneumatic, etc.).

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3.3 Load Rating—Is expressed in the SI (metric) unit of load, the newton (1N = 1 kg · 1 m/s^2), determined vertically with the vehicle on a horizontal plane. Here the acceleration in the equation is the 'acceleration of gravity' which, by International Agreement, is generally accepted as 9.806 650 m/s^2 on the surface of the earth. What is commonly called 'weight' is actually the force (or load) which requires an equal, but opposite force, to restrain the mass of a body against free fall. This 'force of gravity' (or 'gravitational pull') is proportional to the mass. Thus a body of

1 kg mass will 'weigh'

1 kg · 9.806 650 m/s^2 = 9.806 650 N.

3.4 Spring Installation—Any spring as used in a particular suspension.

3.5 Vehicle Application—The usage of the vehicle as intended by the vehicle manufacturer.

3.6 Adequate Spring Durability—The endurance life characteristics regarded as sufficient by the vehicle manufacturer to satisfy customer requirements.

3.7 Adequate Vehicle Stability—The ride and handling characteristics of the vehicle regarded by the vehicle manufacturer as sufficient for safe operation.

3.8 Intended Load Conditions—The various payloads and payload distribution applied to the vehicle within the prescribed limits of 'Gross Vehicle Weight (GVW)' or 'Vehicle Full Rated Load,' and component capacities as established by the vehicle manufacturer.

3.9 Sprung Weight and Unsprung Weight—Defined in 4.1.1 and 4.1.4 of SAE VEHICLE DYNAMICS TERMINOLOGY - HS J670, as published by SAE in 1978.

3.10 Loaded Vehicle—A vehicle which satisfies the conditions described in 4.7.

3.11 Maximum Allowable Force of Gravity (Weight) at the Ground—The Vehicle Full Rated Load or GVW acting at the ground.

3.12 Related Directly to the Spring—The load at the ground, which is transmitted through the suspension components to the spring and includes that portion of the unsprung weight.

The Rated Suspension Spring Capacity does not indicate spring payload capability, but rather the total of payload and vehicle weight. The assignment of a Rated Suspension Spring Capacity value is the responsibility of the vehicle manufacturer.

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