SOCIETY OF AUTOMOTIVE ENGINEERS, INC. • TWO PENNSYLVANIA PLAZA • NEW YORK, NEW YORK 10001

LAND SEA AIR SPACE

TECHNICAL REPORT J175

WHEELS — PASSENGER CARS — IMPACT PERFORMANCE REQUIREMENTS AND TEST PROCEDURES — SAE J175

SAE Recommended Practice

Report of Wheel Committee approved September 1970.

1. Scope—This SAE Recommended Practice establishes minimum performance requirements and related uniform laboratory test procedures for evaluating impact characteristics of all wheels intended for use on passenger cars.

2. Definitions

2.1 Wheel—Usually an assembly of a rim and a center member, commonly known as a disc or spider.

2.2 Rim—Supporting member for the tire or tire and tube assembly.

2.3 Center Member (Disc or Spider)—The connection between the vehicle and the rim.

2.4 Offset or Dish—The distance between the mounting face of the disc and the rim centerline. This distance is termed positive when the mounting face is outboard of the rim centerline and negative when inboard of the rim centerline.

2.5 For further definitions and descriptions of nomenclature, see Fig. 1.

3. Performance Requirements—The test wheels, when subjected to the test procedures described in paragraph 4 shall meet the following minimum performance requirements:

3.1 No visible fractures of the center member of the wheel assembly.

3.2 No separations of the center member from the rim.

3.3 No total sudden loss of tire air pressure.

3.4 Deformations of the wheel assembly, or fractures in the area of the rim section contacted by the face plate of the weight system, do not constitute a failure.

4. Test Procedures

4.1 Wheels for Test—Use only fully processed new wheels which are representative of wheels intended for passenger car applications.

4.2 Equipment—A test machine shall be a framework designed to guide a weight system in a free-fall manner to impact a wheel-tire assembly supported on a fixture. See Fig. 2.

The main weight shall be 2000 ±40 lb with an auxiliary weight of 220 ±10 lb mounted underneath. This auxiliary weight is guided and spring mounted to the main weight to impart an in-line, initial impact to the wheel assembly and to permit a minimum compliance force buildup before the main weight is subjected onto the test wheel-tire assembly. The combined rate of the three parallel springs in the auxiliary weight system is 6000 ±100 lb/in. The spring assembly system is preloaded ¼ in.; 2.50 in. of travel is available before the auxiliary weight contacts the main weight. This calibration is obtained by dropping the total weight system onto a solid oak block (4 in. x 4 in. x 2 in. thick, minimum) from a 12 in. height. This compliance is intended to simulate typical vehicle suspension rates and distance values under actual vehicle impact conditions. The face plate of the impact weight system is 6 in. x 15 in.

The wheel-tire support fixture is rigidly affixed to the machine base but is adjustable under the weight to accommodate various sizes and shapes of wheels.

4.3 Procedure—The wheel-tire assembly is held at a 30 deg angle to a horizontal plane and the securing stud system can be rotated to allow

PASSENGER CAR WHEEL NOMENCLATURE
(RIM & DISC OR SPIDER ASSEMBLY)

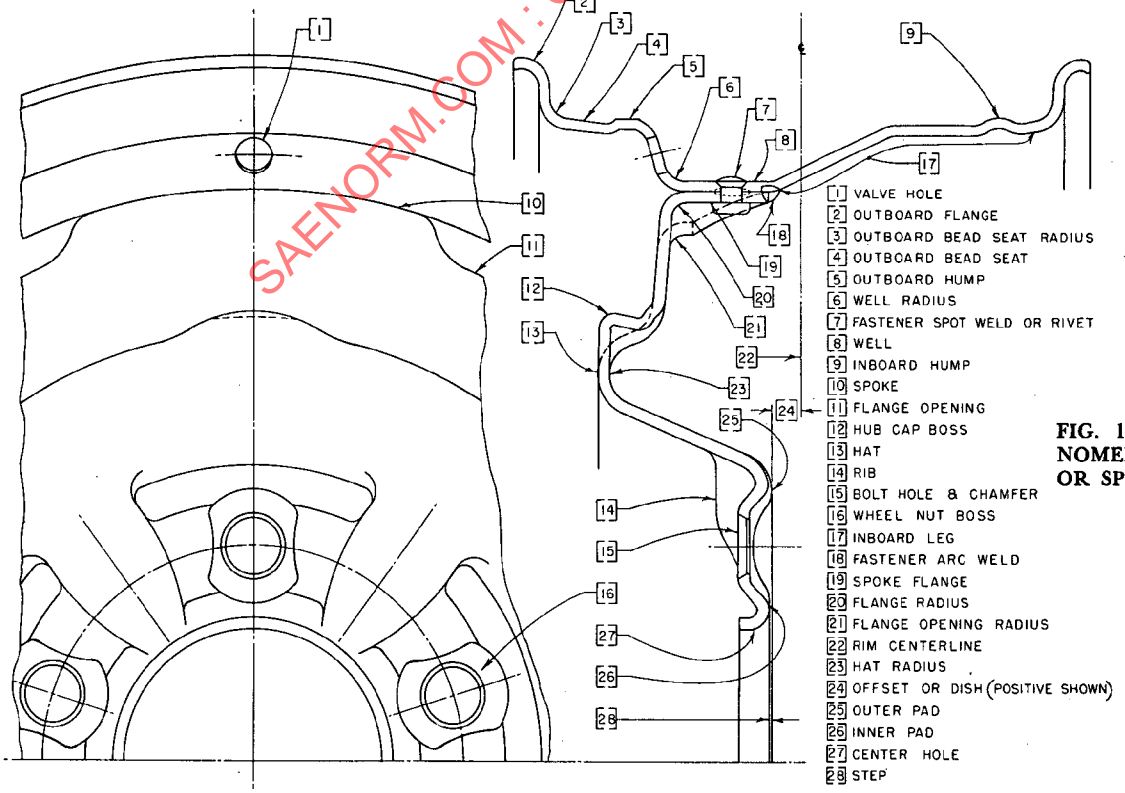

FIG. 1—PASSENGER CAR WHEEL NOMENCLATURE (RIM AND DISC OR SPIDER ASSEMBLY)