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INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

SURFACE VEHICLE RECOMMENDED PRACTICE

SAE J2133

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Submitted for recognition as an American National Standard

(R) Disc Wheel Radial Runout Low Point Marking

1. ***Scope—***This SAE Recommended Practice provides for standardized disc wheel radial runout low point marking. This marking is used for match-mounting tires on wheels to minimize assembly radial force variation. It applies to tubeless 15 degree drop center disc wheels for use on class 5, 6, 7, and 8 commercial vehicles.

2. ***References***

2.1 **Related Publications—**The following publications are provided for information purposes only and are not a required part of this document.

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

SAE J179—Labeling—Disc Wheel and Demountable Rims—Trucks
SAE J393—Nomenclature—Wheels, Hubs, and Rims for Commercial Vehicles

2.1.2 ISO PUBLICATION—Available from ANSI, 11 West 42nd Street, New York, NY 10036-8002.

ISO 3911—Wheels/rims—Nomenclature, designation and marking

3. ***Definitions***

3.1 **Radial Runout—**Total indicator reading in the radial direction, taken at the rim bead seat, for one revolution, with the wheel located on the specified datum (see Figure 1, A and B).

3.2 **Lateral Runout—**Total indicator reading in the lateral direction, taken at the rim bead seat, for one revolution, with the wheels located on the specified datum (see Figure 2, A and B).

3.3 **Datum—**The combination of physical features used to locate a wheel during runout measurement.

3.4 **Average Radial (Lateral) Runout—**The total indicator reading obtained by simultaneous averaging of both bead seat radial (lateral) runout signals (see Figures 1 and 2).

3.5 **First Harmonic—**The magnitude of the sinusoidal component representing one cycle per revolution of a runout trace (see Figure 3).

3.6 **Low Point—**The location on a wheel at which the minimum value of first harmonic of average radial runout occurs (see Figure 3, “x”).

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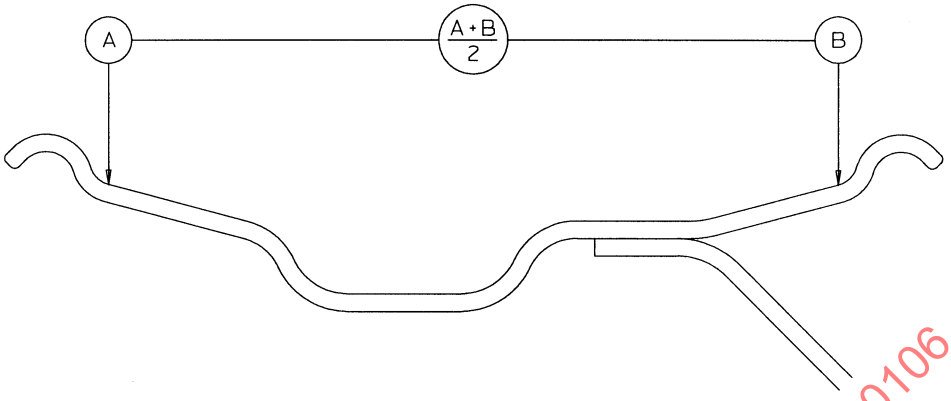

FIGURE 1—AVERAGE RADIAL RUNOUT

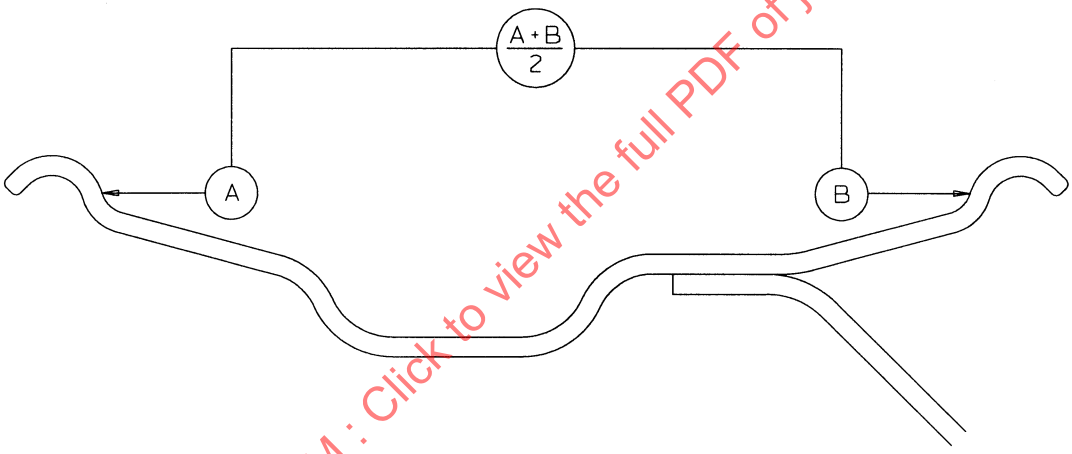

FIGURE 2—AVERAGE LATERAL RUNOUT

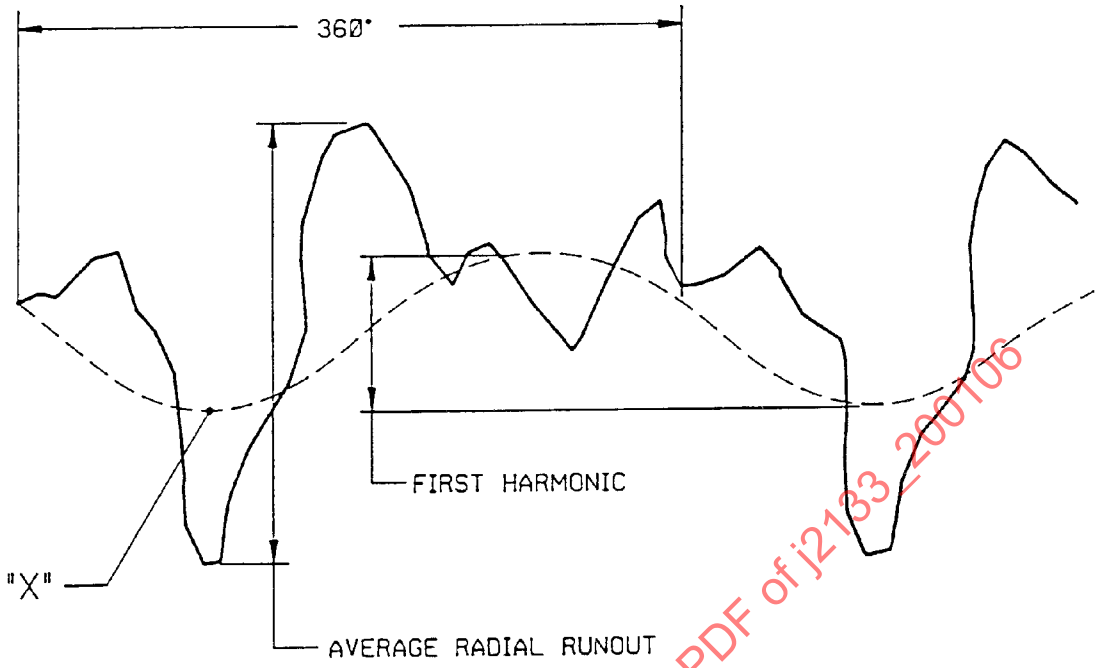

FIGURE 3—FIRST HARMONIC AND LOW POINT

4. Measurement Procedure and Equipment

4.1 Datum Requirement

4.1.1 Hub-piloted wheels shall use as datum features a disc mounting face, and the wheel center-hole periphery.

4.1.2 Stud-piloted wheels shall use as datum features a disc mounting face, and the stud-hole chamfers.

4.2 The measuring device must be capable of collecting average radial runout data, and from the data, computing the first harmonic of average radial runout, together with the low point.

4.3 A maximum interval of three degrees wheel rotation between successive readings shall be maintained.

5. Marking

5.1 Requirement—The wheel surface is to be legibly and permanently marked at the low point.

5.2 Format—The low point mark is to be of circular shape, with minimum diameter of 3.0 mm (0.12 in) and minimum depth of 0.13 mm (0.005 in).

5.3 Placement—The mark is to be located on the rim weather side, in the area of the bead seat radius (see Figure 4). The marking must be placed on the tire-mounting side of the rim, with a duplicate mark optional on the side not used for tire mounting.

5.4 Accuracy—The location of the mark must meet the following tolerances with respect to the actual location of the low point (see Table 1):

TABLE 1—ACCURACY REQUIREMENT

First Harmonic of Average Radial Runout	Marking Location Tolerance
0.13 mm (0.005 in) or less	±180 degrees
greater than 0.13 mm (0.005 in) but less than 0.66 mm (0.025 in)	±45 degrees
greater than 0.66 mm (0.025 in)	±20 degrees

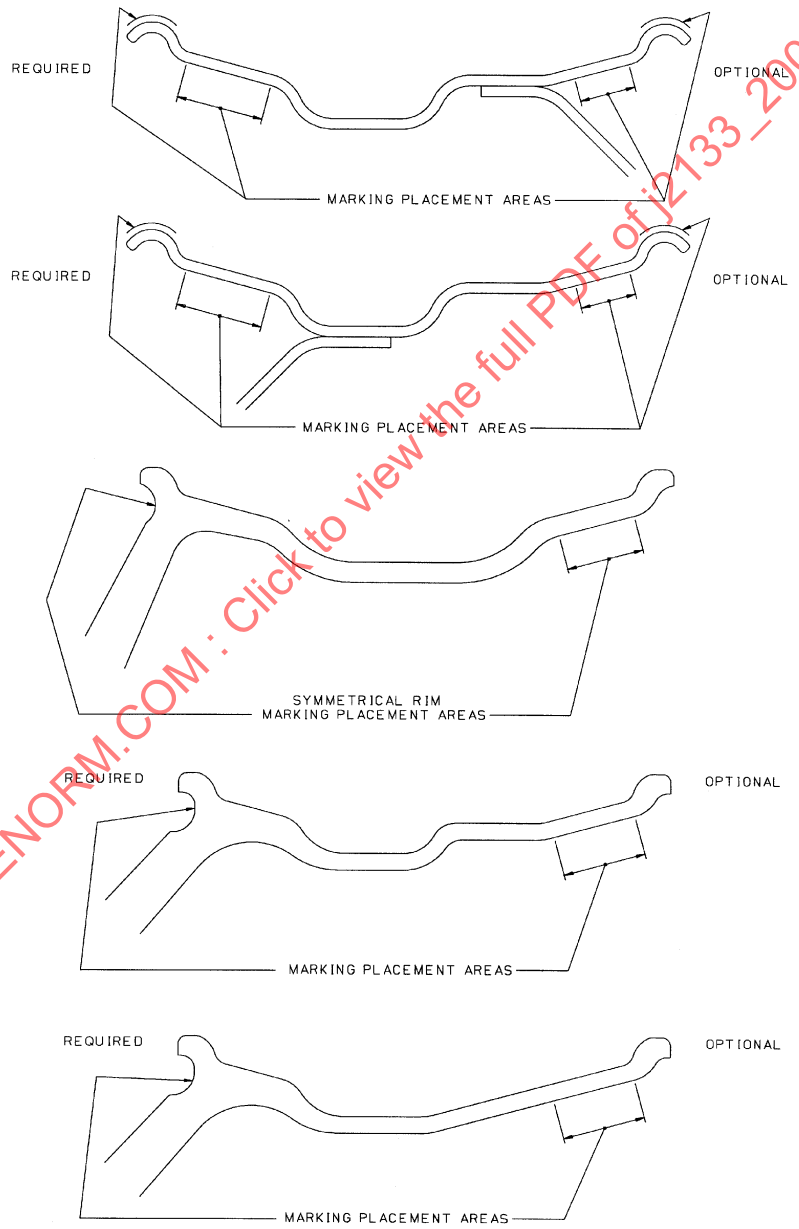

FIGURE 4—MARKING LOCATIONS