SAE International

# SURFACE VEHICLE RECOMMENDED PRACTICE

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## Disc Wheel Radial Runout Low Point Marking

RATIONALE

This document has been determined to contain basic and stable technology which is not dynamic in nature.

STABILIZED NOTICE

This document has been declared "Stabilized" by the SAE Truck and Bus Wheel Committee and will no longer be subjected to periodic reviews for currency. Users are responsible for verifying references and continued suitability of technical requirements. Newer technology may exist.



## 1. SCOPE

This SAE Recommended Practice provides for standardized steel 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 International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

SAE J179 Labeling—Disc Wheel and Demountable Rims—Trucks

SAE J393 Nomenclature—Wheels, Hubs, and Rims for Commercial Vehicles

#### 2.1.2 ISO Publications

Available from American National Standards Institute, 25 West 43rd Street, New York, NY 10036-8002, Tel: 212-642-4900, www.ansi.org.

ISO 3911 Wheels/rims—Nomenclature, designation and marking

ISO 16833 Road Vehicles-Wheels-Measurement of radial and lateral run-out



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## 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 DATUM

The combination of physical features used to locate a wheel during runout measurement.

### 3.3 AVERAGE RADIAL RUNOUT

The total indicator reading obtained by simultaneous averaging of both bead seat radial runout signals (see Figure 1).

### 3.4 FIRST HARMONIC

The magnitude of the sinusoidal component representing one cycle per revolution of a runout trace (see Figure 2).

### 3.5 LOW POINT

The location on a wheel at which the minimum value of first harmonic of average radial runout occurs (see Figure 2, “x”).

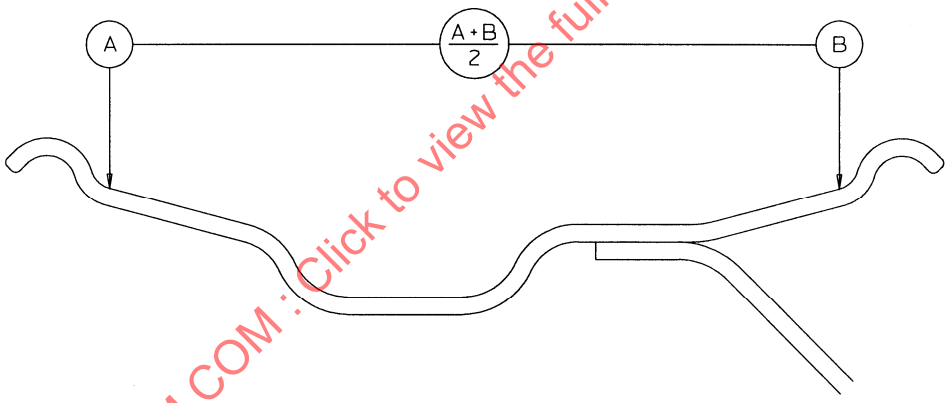


FIGURE 1 - AVERAGE RADIAL RUNOUT

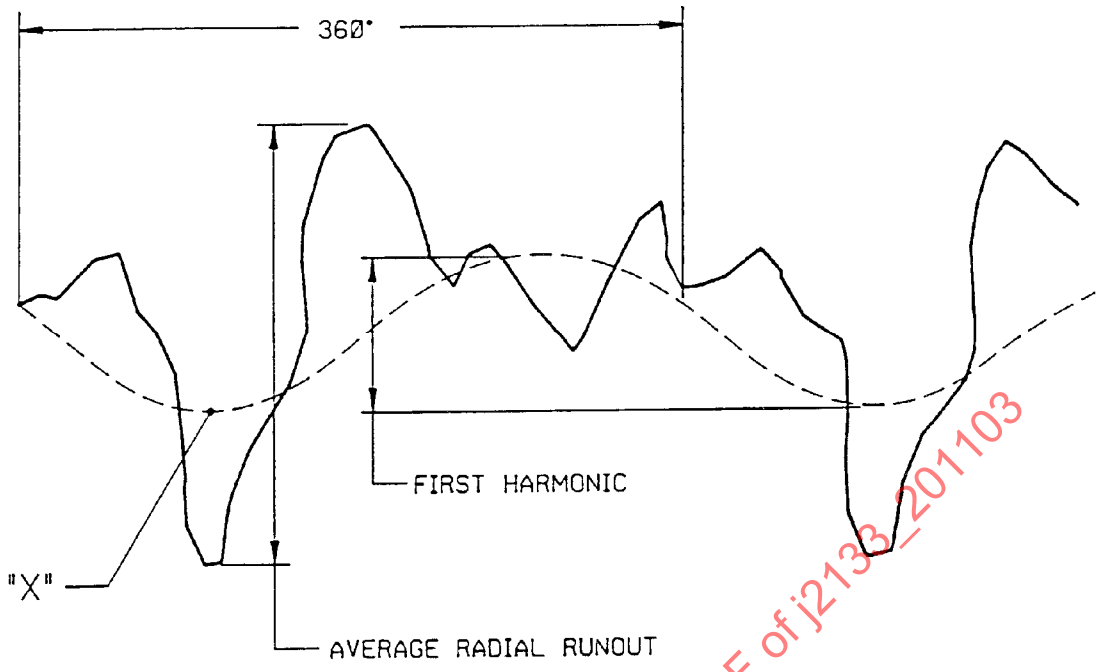


FIGURE 2 - FIRST HARMONIC AND LOW POINT

4. MEASUREMENT PROCEDURE AND EQUIPMENT

4.1 Datum Requirement

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

4.2 The measuring system 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 location.

4.3 A maximum interval of 3 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 location.

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 (see Figure 3). 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.

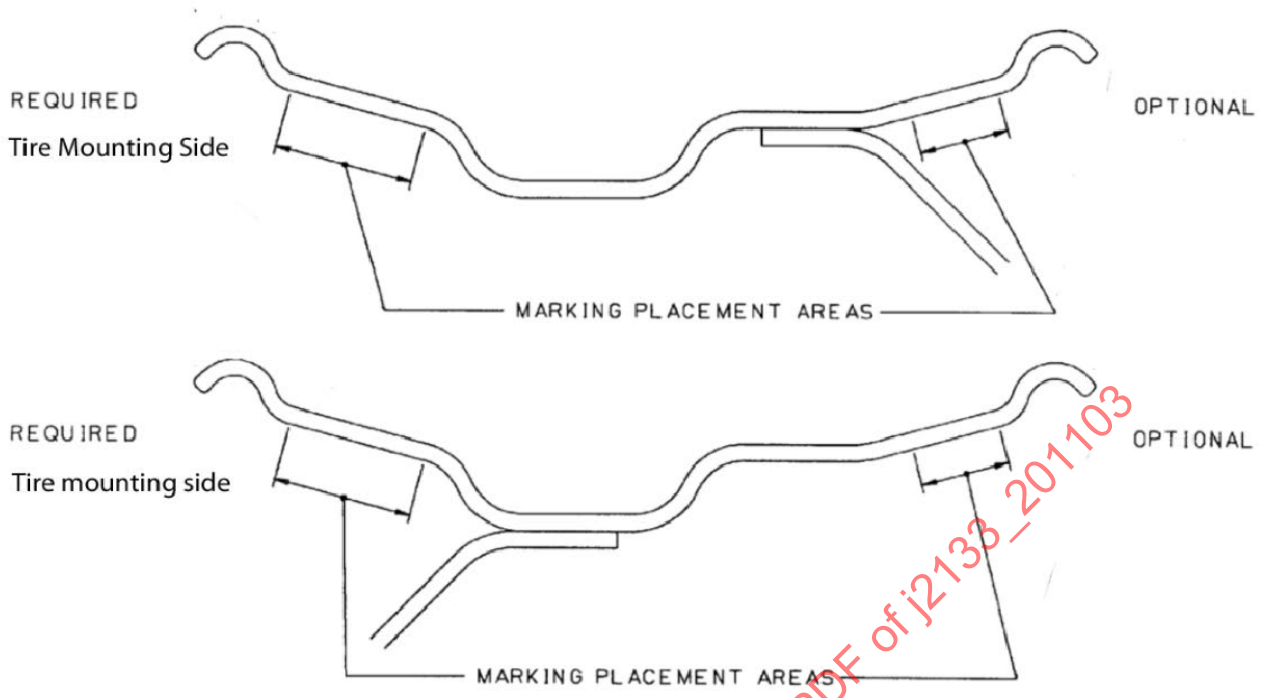


FIGURE 3 - MARKING LOCATIONS

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 |