



SURFACE VEHICLE STANDARD

J2523™

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(R) Rolling Circumference Index Groups for Agricultural Tractor Drive Tires

RATIONALE

The figures listing tire size and RCI that were in this standard did not include all products. They were removed as The Tire and Rim Association publishes the tire's RCI in its Annual Year Book.

1. SCOPE

This SAE Standard is established for the following purpose:

- Simplify the application of drive wheel tires to agricultural vehicles especially those with multiple drive axles having tires of different sizes.
- Provide a pattern to combine similar sized tires into **Rolling Circumference Index** groups with uniform spacing between groups.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 Tire and Rim Association Publications

Available from The Tire and Rim Association, Inc., 175 Montrose West Avenue, Suite 150, Copley, OH 44321, Tel: 330-666-8121, www.us-tra.org.

Tire and Rim Association, Inc., Annual Year Book

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3. DEFINITIONS

3.1 ROLLING CIRCUMFERENCE (RC)

The distance traveled by a tire in one revolution with no relative slip between the tire and ground. The measurement is made on a flat, level, hard surface, and unless otherwise specified is done with the tire loaded to its rated capacity and inflated to its corresponding rated inflation pressure.

3.2 ROLLING CIRCUMFERENCE INDEX (RCI)

An integer index value assigned to each rolling circumference target dimension. The index is selected to begin at RCI = 0 for a RC of 500 mm. For an increase of 10:1 in RC, 44 steps of approximately 5.4%/step occur.

$$RC_{nom} = 500 * (10 ^{(RCI / 44)}) \text{ Round to nearest 5 mm} \quad (\text{Eq. 1})$$

3.3 TIRE MARKING

Adding the RCI number to the tire identification (sidewall stamping) is optional, but if applied should be of the form "RCI 46," with a space between the RCI and the integer number (46 in this example).

3.4 TOLERANCE

Any particular tire size may be assigned to a nominal RCI number group per the following formula:

$$RCI = \text{ROUND} (44 * \text{LOG}_{10} (RC / 500)) \pm 0.2 \text{ RCI max deviation} \quad (\text{Eq. 2})$$

4. TECHNICAL DETAIL

4.1 All dimensions are expressed in SI units.

4.2 Rolling Circumference Index groups have been selected to accommodate existing tire sizes. As a result, vehicles designed for use with existing tires should work with tires designed to the new standard and new vehicles designed for new tire sizes should also accept many existing sizes.

4.3 The ratio of Rolling Circumference is the same between any two Rolling Circumference Index groups having the same difference in RCI group numbers. This allows convenient identification of suitable tire sets in MFWD tractors. For example, a rear tire in RCI group 46 mated with a front tire in RCI group 41 represents a 5 RCI step difference. Any other tire set with a 5 RCI step difference would mechanically fit the tractor.

4.4 Tires with industry service codes R-1 and R-1W have whole number RCI values, whereas service code R-2 tires are positioned on the 0.5 increment of RCI due to the unique dimensional difference associated with R-2 tires.

4.5 Basic tire dimensions for each tire size are as defined by The Tire and Rim Association, Inc., and other tire standards publications.

4.6 RCI values for specific tire sizes are shown in the general data pages in the agricultural section of The Tire and Rim Association Yearbook.

4.7 RCI values are shown in Table 1. For a tire to have a certain RCI value, it must be within ± 0.2 of the RCI.