The Engineering Society For Advancing Mobility Land Sea Air and Space®
INTERNATIONAL
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SURFACE VEHICLE STANDARD

SAE J2204

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TIRE SIZE DIFFERENTIAL—ARTICULATED WHEEL LOADER

***Foreword*—**This Document has not changed other than to put it into the new SAE Technical Standards Board Format. Definitions has changed to Section 3.

***1. Scope*—**This SAE Standard applies to the usage of tires of the same nominal size and tread type, but with different outside diameter for articulated front-end loaders. Articulated four-wheel-drive front-end loader performance and component life can be affected by excessive differences in the tire outside circumference and/or diameter. The purpose is to provide specific guidelines for the usage of tires with different outside circumference and/or diameter on articulated front-end loaders.

2. References

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

SAE J1057 SEP88—Identification Terminology of Earthmoving Machines
SAE J1116 JUN86—Categories of Off-Road Self-Propelled Work Machines
SAE J1544 JAN88—Revolution Per Mile and Static Loaded Radius for Off-Road Tires

3. Definitions

3.1 Overall Diameter (OD)—Largest dimension of the tire extremities measured at the tire centerline. This measurement should be taken in an unloaded and inflated condition.

3.2 Circumference—Distance around outside of tire measured at the centerline of tread. This measurement should be taken in an unloaded and inflated condition.

***4. Field of Application*—**All four tires must be the same nominal size. This will minimize tire dimensional differences. Tires of different construction type (e.g., radial, bias, or bias belted) may be used on different axles, but both tires on the same axle must be of the same construction type. This document pertains to standard configured articulated loaders only. If articulated loader is equipped with no-spin differential or tire chains, consult the articulated loader manufacturer.

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5. Determining Tire Match

5.1 Tire circumference/diameter on the same axle must be within 3% of each other. Tire circumference/diameter between front axle set and rear axle set must be within 6% of each other.

5.2 Procedure for verifying dimensional correctness of four tires on an articulated loader:

5.2.1 Measure all four tires, inflated to their proper working pressures.

5.2.2 Left front must equal right front, ±3%.

5.2.3 Left rear must equal right rear, ±3%.

5.2.4 Left front and right front **average** must equal left rear and right rear **average**, ±6%.

5.3 Procedure for determining acceptable dimensional range for a **replacement** tire on an articulated loader:

5.3.1 Measure the three tires remaining on the loader, inflated to their proper working pressures.

5.3.2 The replacement tire, inflated to its proper working pressure, must equal the tire remaining on the axle (on which it is to be mounted), ±3%.

5.3.3 Left front and right front **average** must equal left rear and right rear **average**, ±6% (same requirement as 5.2.4).

5.3.4 Mount the replacement tire on a wheel and inflate to the recommended inflation pressure. Measure the circumference/diameter of this tire and wheel assembly. The circumference/diameter should be within the 3% tolerance for mating tire on the same axle (5.3.2) and the 6% tolerance for front to rear axle set (5.3.3).

PREPARED BY THE SAE OFF-ROAD MACHINERY TECHNICAL COMMITTEE SC2—
MACHINE DISPLAYS AND SYMBOLS