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Tire to Body Clearance Check for Recreational Vehicles

SAE Recommended Practice
Reaffirmed December 1986

Submitted for Recognition as
an American National Standard

SAE The Engineering Society For Advancing Mobility Land Sea Air and Space

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SPECIALIZED VEHICLE PRACTICE

Submitted for recognition as an American National Standard

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Reaffirms J1214

TIRE TO BODY CLEARANCE CHECK FOR RECREATIONAL VEHICLES

1. SCOPE: The purpose of this recommended practice is to set guidelines for tire to wheel house and body clearances on recreational vehicles.

2. BASIC REQUIREMENTS:

2.1 Front Tire to Body Clearance:

2.1.1 Front Non-Driving Axle: A minimum all around clearance of 0.50 in (13 mm) is recommended between tire and body and chassis when tire is positioned according to procedure described in paragraph 4.1.

2.1.2 Front Driving Axle: A minimum all around clearance of 0.50 in (13 mm) is recommended between tire and body and chassis when tire is positioned according to procedure described in paragraph 4.1. If it is desired to provide tire chain clearance, refer to SAE J683a, Tire Chain Clearance (May, 1977).

2.2 Rear Tire to Body Clearance:

2.2.1 Rear Non-Driving or Trailer Axle: A minimum all around clearance of 0.50 in (13 mm) is recommended between tire and body and chassis when tire is positioned according to procedure described in paragraph 4.2.

2.2.2 Rear Driving Axle: A minimum all around clearance of 0.50 in (13 mm) is recommended between tire and body and chassis when tire is positioned according to procedure described in paragraph 4.2. If it is desired to provide tire chain clearance, refer to SAE J683a, Tire Chain Clearance (May, 1977).

3. METHOD OF DETERMINING CLEARANCES:

3.1 Design Layout: Clearances may be checked by scale layout drawing using tire profile, of the size being used, developed according to Tire and Rim Association definition of maximum envelope dimensions for grown tires in service. (See current T&RA Handbook.)

3.2 Vehicle Check: Clearance may be checked by actually jouncing tire through geometry specified in Section 4 on the vehicle. It is recommended that a tire model made to Tire and Rim Association maximum envelope dimensions for grown tires in service (see current T&RA Handbook) be used for this type of check.

4. DESIGN CHECK PROCEDURE:

4.1 Front Tires:

4.1.1 Independent Front Suspension: Analysis of tire to body clearances to be made under the following conditions at front wheel geometry.

Steering Angle[α] (Inside Wheel)[1]	Ride Position
Fig. 1	Fig. 2
0 deg	Full jounce to full rebound (metal to metal)
10 deg	Full jounce (metal to metal)
20 deg	1/2 Ride jounce bumper compression
Full Turn	1/3 Ride jounce bumper compression

4.1.2 Solid Axle Front Suspension: Analysis of tire to body clearances to be made under the following conditions of front wheel geometry.

4.2 Rear Tires:

4.2.1 Independent Rear Suspension: Analysis of tire to body clearances to be made through complete range of rear wheel travel, full rebound to full jounce (metal to metal) position.

[1]Outside wheel angle established by vehicle steering geometry.

4.2.2 Solid Axle Rear Suspension:

4.2.2.1 Two Wheel Jounce: Analysis of tire to body clearances to be made through complete range of rear axle travel, full rebound to full jounce (metal to metal) position. See Fig. 4.

4.2.2.2 One Wheel Jounce: Analysis of tire to body clearance to be made by restraining one wheel in its design position and jouncing other wheel to full metal to metal position. See Fig. 5.

4.2.2.3 Alternate Proposal - One Wheel Jounce: Analysis of tire to body clearance to be made by jouncing one wheel to metal to metal position with axle tilted at 5 deg. See Fig. 5.

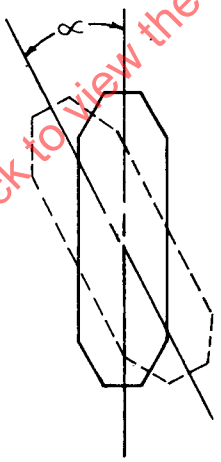

FIG. 1

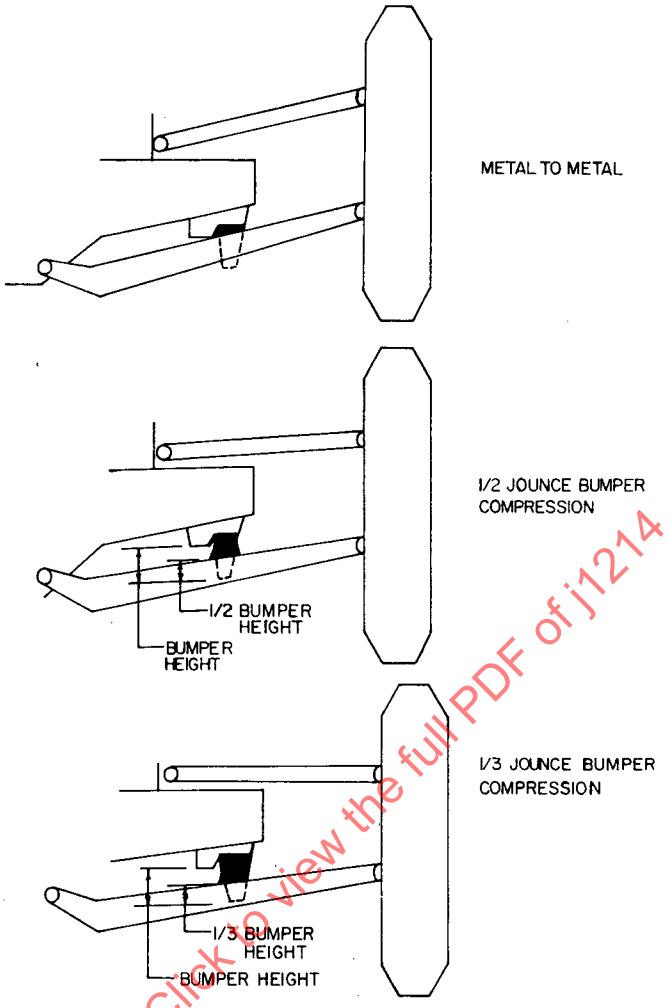

FIG. 2

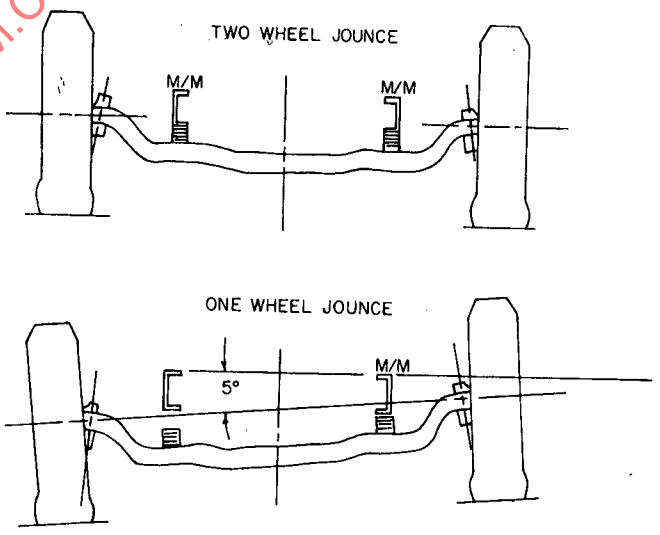

FIG. 3

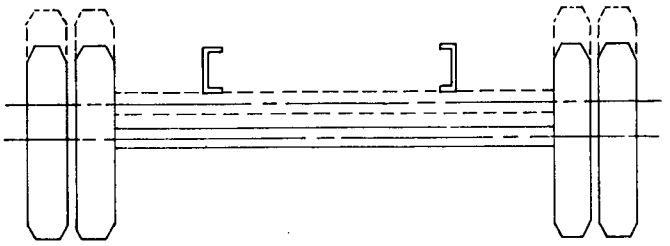

FIG. 4

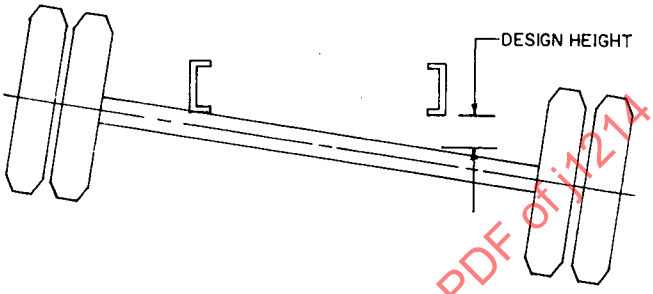

FIG. 5

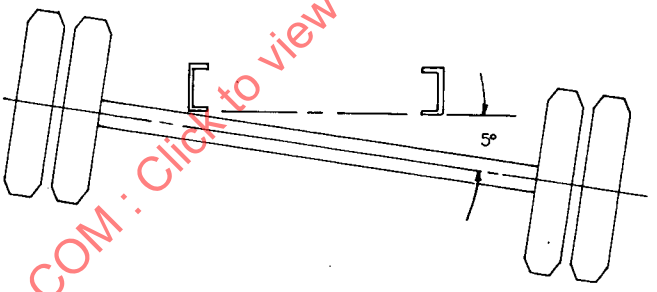

FIG. 5
(ALTERNATE)