Damaging Effects of Mismatched Tires On Tandem Axles

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Freightliner Service Bulletin

NOTICE

Using the interaxle differential lock on a tandem axle with different size tires can cause catastrophic damage to the axle and axle components.

General Information

When the interaxle differential (IAD) lock is engaged on a tandem axle that has tires with varying diameters, the wheels of one axle try to rotate at a different speed than the other axle. In this event, torque builds up between the drive axles, which prevents the IAD lock from disengaging and leads to a severe increase in axle operating temperature that can cause premature oil failure and result in gear, bearing, or seal damage. In extreme cases, catastrophic axle damage can result.

The actual temperature increase and/or damage depends on the difference in tire diameter between the axles. However, tests have shown that the diameter of each tire must be within 1/4 inch (6 mm) of all other tires on the tandem for the IAD lock mechanism to function properly, and that a tire diameter difference of 3/4 inch (2 cm) or more can result in the IAD lock failing to disengage. With a difference of 3-1/2 inches (9 cm), driving a vehicle with a locked IAD on a hard roadway (asphalt or concrete, wet or dry) will result in a very rapid increase in oil temperature, and extended operation will probably result in catastrophic axle damage.

Normal road and driving conditions (such as bumps, dips, corners, wet road surfaces, and stops) are not sufficient to unbind the lock mechanism and allow disengagement; even when the dash switch (**Fig. 1**) has been moved to the UNLOCK position, the IAD lock mechanism cannot actually disengage. So if driving a vehicle with mismatched tire diameters cannot be avoided, the IAD lock can be unbound by stopping the vehicle on a good roadway, moving the dash switch to the UNLOCK position, and backing the vehicle 15 to 20 feet (5 to 6 m). If the IAD lock is successfully disengaged, the IAD will function as intended and compensate for the different tire diameters.

With four or eight tires on a tandem axle, tire diameters can be mismatched in many different ways—one tire may have a different diameter, the tires at one axle end may be different than the tires at the other ends, or the tire diameters of one axle may be different than those of the other axle. See the following instructions to measure tire diameters on a tandem axle.

NOTE: Uneven tire inflation can have a similar effect to mismatched tires.

Measuring Tire Diameters On a Tandem Axle

1. Park the vehicle on a level surface, shut down the engine, and set the parking brake. Chock the tires, and do the following at each end of the tandem axle.
2. Check tire pressure, and ensure they are inflated to the manufacturer's specification.

NOTE: For a dual-wheel assembly, place a level across the top center of both tires to determine if they are the same size.

3. Place a level across the top center of a tire, and using a tape measure, measure the tire diameter. See **Fig. 2**.

Warranty

This bulletin is informational only. Warranty does not apply.

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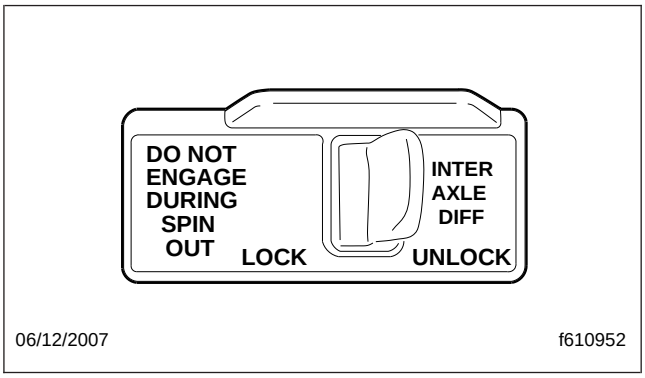

Fig. 1, IAD Switch

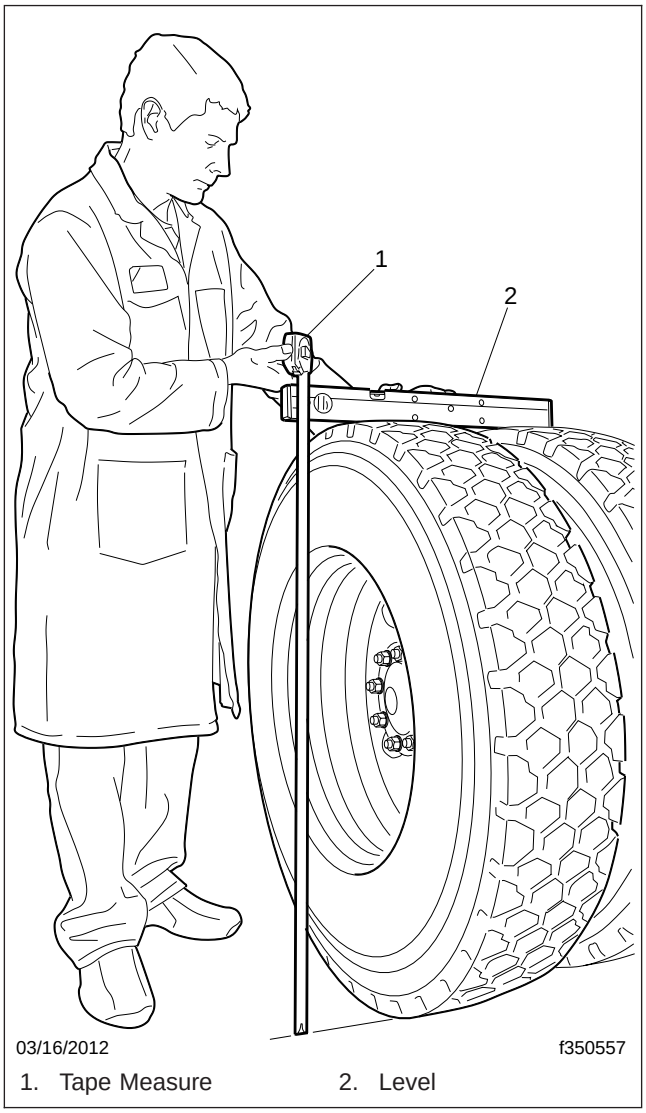

Fig. 2, Measuring Tire Diameter