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SURFACE VEHICLE RECOMMENDED PRACTICE

SAE J1144

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Submitted for recognition as an American National Standard

Towed Vehicle Drivetrain Test Procedure Passenger Cars, Vans, and Light-duty Trucks

Foreword—This Document *has also changed* to comply with the new SAE Technical Standards Board Format. Definitions changed to Section 3. All other section numbers have changed accordingly.

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1. ***Scope***—This SAE Recommended Practice provides a means for evaluating the drivetrain of the passenger car, van, or light-duty truck being towed under a variety of road conditions. The towing equipment used is explained in SAE J1142.

NOTE—For the purpose of this document, the drivetrain refers to the combination of a specific transmission (make, model, size, type), a specific differential assembly (make, model, size, type), and a specific driveline, if required.

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2. References

2.1 Applicable Publications—The following publications form a part of the specification to the extent specified herein. Unless otherwise indicated, the latest version of SAE publications shall apply.

2.1.1 SAE PUBLICATIONS—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J1142—Towability Design Criteria and Equipment Use—Passenger Cars, Vans, and Light-Duty Trucks
SAE J1143—Towed Vehicle/Tow Equipment Attachment Test Procedure—Passenger Cars, Vans, and Light-Duty Trucks

3. Definitions—See SAE J1142, paragraph 3.

4. Test Equipment

4.1 Tow Truck

4.1.1 TOW SLING EQUIPMENT—PASSENGER CARS, VANS, AND LIGHT-DUTY TRUCKS BEING TOWED WITH TOW SLING EQUIPMENT—The tow vehicle used should conform to criteria set in SAE J1142, 4.2.1 through 4.2.3.1.

4.1.2 WHEEL-LIFT EQUIPMENT—PASSENGER CARS, VANS, AND LIGHT-DUTY TRUCKS BEING TOWED WITH WHEEL-LIFT EQUIPMENT—The tow vehicle used should conform to criteria set in SAE J1142, 4.3.1 through 4.3.3.

4.1.3 Additional towing equipment, as necessary, to safely tow the vehicle. See SAE J1142, 4.1 through 4.1.6.

4.1.4 Other equipment and information as required. See SAE J1142, Section 6.

4.2 Vehicle Ballast

5. Towed Vehicle Drivetrain Test Procedure—Passenger Cars, Vans, and Light-Duty Trucks

5.1 Towed Vehicle Preparation

5.1.1 The vehicle shall be the model with the heaviest maximum curb weight for which the drivetrain combination to be tested is used. A ballast may be used, if required.

5.1.2 The vehicle shall be equipped with a combination of tires and differential ratio, which gives the highest N/V (engine rpm per vehicle km/h (mph) ratio as recommended by the vehicle manufacturer for which the drivetrain combination to be tested is used).

5.1.3 The fluid levels in transmission and differential shall meet the minimum specifications for normal vehicle operation.

5.1.4 The ride height shall be within the vehicle manufacturer's specifications prior to testing.

5.1.5 TEST VEHICLE LOADS

5.1.5.1 The passenger cars shall be loaded to the vehicle manufacturer's recommended cargo weight rating.

5.1.5.2 The vans and light-duty trucks shall be loaded as specified by the vehicle manufacturer.

5.1.6 Record final vehicle weights (See Figure 1).

FIGURE 1—TOWED VEHICLE DRIVETRAIN TEST

5.1.7 DRIVETRAIN COMBINATION BREAK-IN—Drive the test vehicles for 80 km (50 miles) at 88 km/h (55 mph) constant speed, with the transmission selector in Drive position for automatic transmissions and High position for manual transmission. After each 8 km (5 miles), make a moderate stop and subsequent moderate acceleration back to 88 km/h (55 mph).

5.1.8 The drivetrain shall meet acceptable noise levels after break-in.

5.2 Vehicle Test Procedure

5.2.1 Park the test vehicle on level ground for 8 h minimum for oil drain down.

5.2.2 For front-wheel-drive and four-wheel-drive vehicles, set the front wheels in a straight-ahead position and secure the steering wheel according to SAE J1142, 4.1.5.

5.2.3 With the tow truck and vehicle on level ground, attach the towing equipment to the vehicle following the vehicle manufacturer's recommended procedure for the towing of vehicles on their drive wheels.

5.2.3.1 For tow sling equipment, raise the lifted wheels to 102 mm (4 in) from the bottom of the tire above the ground.

5.2.3.2 For wheel-lift equipment, position retaining/L arms as recommended by the equipment manufacturer and raise the front wheels to a minimum of 255 mm (10 in) from the bottom of the tire above ground.

5.2.4 Place the ignition switch and the transmission selector in an applicable position for towing and release the parking brake.

5.2.5 TOWING TEST PROCEDURE (REAR-WHEEL-DRIVE VEHICLES)

NOTE—For recording purposes, use the towed vehicle drivetrain test data sheet or equivalent (see Figure 1).

5.2.5.1 Tow the vehicle at 88 km/h (55 mph) for 80 km (50 miles). Refer to SAE J1143, 5.2.12.

5.2.5.2 Detach the vehicle from the tow truck and drive the vehicle to evaluate the vehicle drivetrain for normal operation.

5.2.5.3 Remove the drivetrain combination from the vehicle, disassemble, and inspect for damage that could cause a premature failure and record.

5.2.5.4 Install drivetrain.

5.2.5.5 Drive the vehicle to determine if the vehicle is operating at normal functionality.

5.2.6 TOWING TEST PROCEDURE (FRONT-WHEEL-DRIVE VEHICLE)

NOTE—For recording purposes, use the towed vehicle drivetrain test data sheet or equivalent (See Figure 1).

5.2.6.1 Perform 5.2.5.1 through 5.2.5.5.

5.2.7 TOWING TEST PROCEDURE (FOUR-WHEEL-DRIVE VEHICLES)

NOTE—For recording purposes, use the towed vehicle drivetrain test data sheet or equivalent (See Figure 1).