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SURFACE VEHICLE RECOMMENDED PRACTICE

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(R) TOWED VEHICLE DRIVETRAIN TEST PROCEDURE PASSENGER CARS, VANS, AND LIGHT DUTY TRUCKS

1. SCOPE:

This document 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.

NOTE: The glossary as included in Section 6 of SAE J1142 will be used in conjunction with this document.

2. TEST EQUIPMENT:

2.1 Tow Truck:

2.1.1 Tow Sling Equipment - Passenger Cars, Vans, and Light Duty Trucks Being Towed With Tow Sling Equipment: The tow vehicle used will conform to criteria set in SAE J1142, 2.2.1 through 2.2.3.1.

2.1.2 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, 2.3.1 and 2.3.3.

2.1.3 Additional towing equipment, as necessary, to safely tow the vehicle. See SAE J1142, 2.1 through 2.1.6.

2.1.4 Other equipment and information as required. See SAE J1142, 4.2.6.

2.2 Vehicle Ballast:

3. TOWED VEHICLE DRIVETRAIN TEST PROCEDURE - PASSENGER CARS, VANS, AND LIGHT DUTY TRUCKS:

3.1 Towed Vehicle Preparation:

3.1.1 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.

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

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

3.1.4 The trim height shall be within the vehicle manufacturer's specifications prior to testing.

3.1.5 Test Vehicle Loads:

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

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

3.1.6 Record Final Vehicle Weights:

3.1.7 Drivetrain Combination Break-In: Drive the test vehicles for 50 miles (80 km) at 55 mph (88 km/h) constant speed, with the transmission selector in Drive position for automatic transmissions and High position for manual transmission. After each 5 miles (8 km), make a moderate stop and subsequent moderate acceleration back to 55 mph (88 km/h).

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

3.2 Vehicle Test Procedure:

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

3.2.2 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, 2.1.5.

3.2.3 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. Raise the lifted wheels to a minimum of 4 in (102 mm) above the ground.

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

3.2.5 Towing Test Procedure (Rear Wheel Drive Vehicles):

NOTE: For recording purposes, use the towed vehicle drivetrain test data sheet.

3.2.5.1 Tow the vehicle at 55 mph (88 km/h) for 50 miles (80 km). Refer to SAE J1143, 3.2.12.

3.2.5.2 Detach the vehicle from the tow truck and drive the vehicle to evaluate the vehicle drivetrain operation.

3.2.5.3 Remove the drivetrain combination from the vehicle, disassemble, and inspect for damage and record.

3.2.5.4 Reinstall drivetrain.

3.2.5.5 Drive the vehicle to determine if the vehicle is operating normally.

3.2.6 Towing Test Procedure (Front Wheel Drive Vehicles):

NOTE: For recording purposes, use the towed vehicle drivetrain test data sheet.

3.2.6.1 Perform 3.2.5.1 through 3.2.5.5.

3.2.6.2 Perform 3.2.5.1 through 3.2.5.5.

3.2.6.3 Perform 3.2.5.1 through 3.2.5.5.

3.2.6.4 Perform 3.2.5.1 through 3.2.5.5.

3.2.6.5 Perform 3.2.5.1 through 3.2.5.5.

3.2.7 Towing Test Procedure (Four-Wheel Drive Vehicles):

NOTE: For recording purposes, use the towed vehicle drivetrain test data sheet.

3.2.7.1 Depending on which wheels, (front or rear), will be on the ground, place the transmission and transfer case selectors in the vehicle manufacturer's recommended positions for towing.

3.2.7.2 Tow on rear drive wheels per 3.2.5.1.

3.2.7.3 Repeat 3.2.5.2 through 3.2.5.5.

3.2.7.4 Repeat 3.2.5.2 through 3.2.5.5.

3.2.7.5 Repeat 3.2.5.2 through 3.2.5.5.

3.2.7.6 Repeat 3.2.5.2 through 3.2.5.5.

3.2.7.7 Place the transmission and transfer case selectors in the vehicle manufacturer's recommended position for towing, and attach the towing equipment to the vehicle following the manufacturer's recommended procedure.

3.2.7.8 Tow on front drive wheels per 3.2.5.1.

3.2.7.9 Repeat 3.2.5.2 through 3.2.5.5.

3.2.7.10 Repeat 3.2.5.2 through 3.2.5.5.

3.2.7.11 Repeat 3.2.5.2 through 3.2.5.5.

The (R) is for the convenience of the user in locating areas where technical revisions have been made to the previous issue of the report. If the symbol is next to the report title, it indicates a complete revision of the report.

TOWED VEHICLE DRIVETRAIN TEST - PASSENGER CARS, VANS, AND LIGHT TRUCKS - TWO- AND FOUR-WHEEL DRIVE APPLICATIONS DATA SHEET

Test Vehicle: _____ Year _____ Model _____

Car No. _____ Exp. _____ Proto _____ Prod. _____

Loaded Test Vehicle Weight (3.1.6)

Left Front _____ lb (kg)

Right Front _____ lb (kg)

Left Rear _____ lb (kg)

Right Rear _____ lb (kg)

TOTAL _____ lb (kg)

Inspection Notes:

Pretest _____

_____

_____

_____

_____

Posttest _____

_____

_____

_____

_____