RECOMMENDED PRACTICE SAE J1144

APPROVED AS ANSI/SAE J1144-1976
BY AMERICAN NATIONAL
STANDARDS INSTITUTE

TOWED VEHICLE DRIVETRAIN TEST PROCEDURE —PASSENGER CARS—SAE J1144

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TOWED VEHICLE DRIVETRAIN TEST PROCEDURE—PASSENGER CARS—SAE J1144

SAE Recommended Practice

Report of Automotive Safety Committee approved July 1976.

1. Purpose—The purpose of this test procedure is to provide a means for evaluating the drivetrain of the passenger car being wrecker-towed under a variety of road conditions. Wrecker towing attachment is evaluated by conducting SAE J1143, Towed Vehicle/Wrecker Attachment Test Procedure—Passenger Cars.

NOTE: For the purpose of this test procedure, the drivetrain refers to the combination of a specific transmission (make, model, size, type), a specific differential assembly (make, model, size, type), and if required, a specific propeller shaft (make, model, size, type).

2. Test Equipment

2.1 Tow Truck—PASSENGER CARS—Recommended tow vehicle is a 10,000 GVW-lb (4500 GVW-kg), 60 in (1525 mm) Cab-to-Axle (CA) dual-wheel wrecker.

2.2 Towing Equipment

2.2.1 Tow sling, or hitch, as required by vehicle to be tested.

2.2.2 Other conventional towing equipment as required by towing procedure instruction sheets.

2.3 Vehicle Ballast.

2.4 Wheel alignment checking device.

2.5 SAE J1144, Towed Vehicle Drivetrain Test Procedure—Passenger Cars.

3. Procedure

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. Ballast may be used, if required.

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

3.1.3 Inspect components of drivetrain combination to be tested to production part specifications. Record inspection results.

3.1.4 Install drivetrain combination to be tested in test vehicle.

3.1.5 Fluid levels in transmission and differential shall be minimum specifications for normal vehicle operation.

3.1.6 Check drive wheel alignment and record on data sheet. Reset to specifications, if required.

3.1.7 Trim height shall be within specifications prior to test.

3.1.8 BALLAST

Passenger Cars—Ballast to manufacturer's recommended Cargo Weight Rating.

3.1.9 Record final vehicle weights.

3.1.10 DRIVETRAIN COMBINATION BREAK-IN—Drive the test vehicles for 50 miles (80 km) at 50 miles/h (80 km/h) constant speed, with 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 50 miles/h (80 km/h).

3.1.11 Drivetrain shall meet acceptable noise levels after break-in.

3.2 Vehicle Test Procedure

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

3.2.2 For front-wheel-drive and 4-wheel-drive vehicles, set front wheels in straight ahead position and secure steering wheel according to manufacturer's recommended procedure.

3.2.3 With wrecker and vehicle on level ground, attach wrecker sling or hitch to the vehicle following the manufacturer's recommended procedure for the towing of vehicles on their drive wheels. Raise the lifted wheels a minimum of 4 in (100 mm) above the ground.

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

3.2.5 TOWING TEST PROCEDURE—REAR-WHEEL-DRIVE VEHICLES

3.2.5.1 Tow vehicle at 35 miles/h (55 km/h) for 30 miles (50 km).

3.2.5.2 Disconnect propeller shaft, and tow at 50 miles/h (80 km/h).

NOTE: This step may be deleted for those vehicles that require axle shafts to be disconnected or removed, or a dolly to be used over 35 miles/h (55 km/h) and/or beyond 30 miles (50 km).

3.2.5.3 Detach vehicle from wrecker, reinstall propeller shaft, and drive vehicle to evaluate vehicle drivetrain operation.

3.2.5.4 Check drive wheel alignment and record on data sheet.

3.2.5.5 Remove drivetrain combination from vehicle, disassemble, and inspect for damage.

3.2.6 TOWING TEST PROCEDURE—FRONT-WHEEL-DRIVE VEHICLES

3.2.6.1–3.2.6.5 Perform paragraphs 3.2.5.1 and 3.2.5.5.

3.2.7 TOWING TEST PROCEDURE—4-WHEEL-DRIVE VEHICLES

3.2.7.1 Place transmission and transfer case selectors in manufacturer's recommended positions for towing.

3.2.7.2 Tow on rear drive wheels per paragraph 3.2.5.1–3.2.5.2.

3.2.7.3 Detach vehicle from wrecker, reinstall propeller shaft, and drive vehicle to evaluate drivetrain operation.

3.2.7.4 Check drive wheel alignment and record on data sheet.

3.2.7.5 Remove drivetrain combination from vehicle, disassemble, and inspect for damage.

3.2.7.6 Reinstall drivetrain combination in vehicle, place transmission and transfer case selectors in manufacturer's recommended position for towing, and attach wrecker sling or hitch to vehicle following manufacturer's recommended procedure.

3.2.7.7 Tow on front drive wheels per paragraph 3.2.5.1 and 3.2.5.2.

3.2.7.8–3.2.7.10 Repeat paragraphs 3.2.7.3–3.2.7.5.

TOWED VEHICLE DRIVETRAIN TEST
SAE J1144
Passenger Cars
4-Wheel-Drive Applications
DATA SHEET

Test Vehicle_____ Year_____ Model_____
Car No._____ Exp._____ Proto_____ Prod._____
Inspection Notes
Pre-Test (3.1.6)_____

Post-Test Part 1 (3.2.7.5)_____

Post-Test Part 2 (3.2.7.10)_____

Wheel Alignment Data

	Initial		After Front Tow (3.2.7.4)		After Rear Tow (3.2.7.9)	
Front	RH	LH	RH	LH	RH	LH
Camber-deg						
Caster-deg						
Toe-in (mm)						
Rear						
Camber-deg						
Toe-in (mm)						

Loaded Test Vehicle Weight (3.1.9):

Left front_____ lb (kg)
Right front_____ lb (kg)
Left rear_____ lb (kg)
Right rear_____ lb (kg)
TOTAL_____ lb (kg)

TOWED VEHICLE DRIVETRAIN TEST
SAE J1144
Passenger Cars
Two-Wheel-Drive Applications
DATA SHEET

Vehicle_____ Year_____ Model_____
Car No._____ Exp._____ Proto_____ Prod._____
Inspection Notes
Pre-Test (3.1.6)_____

Post-Test (3.2.5.5, 3.2.6.5)_____

Wheel Alignment Data

	Initial		Final (3.2.5.4 or 3.2.6.4)		Change	
FRONT	RH	LH	RH	LH	RH	LH
Camber-deg						
Caster-deg						
Toe-in (mm)						

Comments:_____

	Initial		Final (3.2.5.4 or 3.2.6.4)		Change	
REAR	RH	LH	RH	LH	RH	LH
Camber-deg						
Toe-in (mm)						

Comments:_____

Loaded Test Vehicle Weight (3.1.9):

Left front_____ lb (kg)
Right front_____ lb (kg)
Left rear_____ lb (kg)
Right rear_____ lb (kg)
TOTAL_____ lb (kg)