



SURFACE VEHICLE RECOMMENDED PRACTICE

J2848™-2

MAR2023

Issued 2011-06
Reaffirmed 2023-03

Superseding J2848-2 JUN2011

Tire Pressure Systems - Maintenance (ATIS) Type
for Medium and Heavy Duty Highway Vehicles

RATIONALE

Today the world of mobility is served extensively by tires which are pneumatic in design. To function correctly, these tire designs need pneumatic pressure to derive their performance characteristics—optimum tread wear, fuel economy, ride quality, or fatigue life—hence the value of keeping the retained pressure at design levels ranks high.

While periodic inspection and the periodic action of adjusting the inflation pressure while a vehicle is at rest has been the norm for maintaining pressure, the need to hold tire inflation pressures closer to their design targets over time, even while operating a vehicle on the open road at highway speeds, becomes apparent. The minimum performance capabilities recommended in the following document support these needs.

Within the medium and heavy-duty vehicle industry, the equipment supplier community has responded to the need to maintain inflation pressure, by developing various tire pressure systems which automatically re-inflate the tire/wheel assemblies even while operating on the highway. Because these systems do not require any intervention or action by the operator, operators will eventually come to rely upon these systems to maintain tire inflation pressure. It is therefore important that all marketed systems provide an adequate level of performance to assure continued in-service safety.

Tires and wheels are integral components of tire pressure systems. The system attributes for tire pressure systems described herein assume an appropriate fitment of tire and wheel for each application, and that these tire pressure systems are not dependent on the performance or physical characteristics of the tire or wheel components. The substitution of one tire/wheel assembly for another tire/wheel assembly of another configuration, appropriate for the vehicle system, shall not render the tire pressure system inoperative, so long as it provides a pneumatic chamber for the inflation gas.

Under SAE J2848-1, the system functions and performance expectations for tire pressure monitoring systems have been established. The subject document (SAE J2848-2) addresses tire pressure maintenance systems for which it is essential that the performance and communications to the driver be consistent with that established for tire pressure monitoring systems (see Figure 1).

SAE J2848-2 has been reaffirmed to comply with the SAE Five-Year Review policy.

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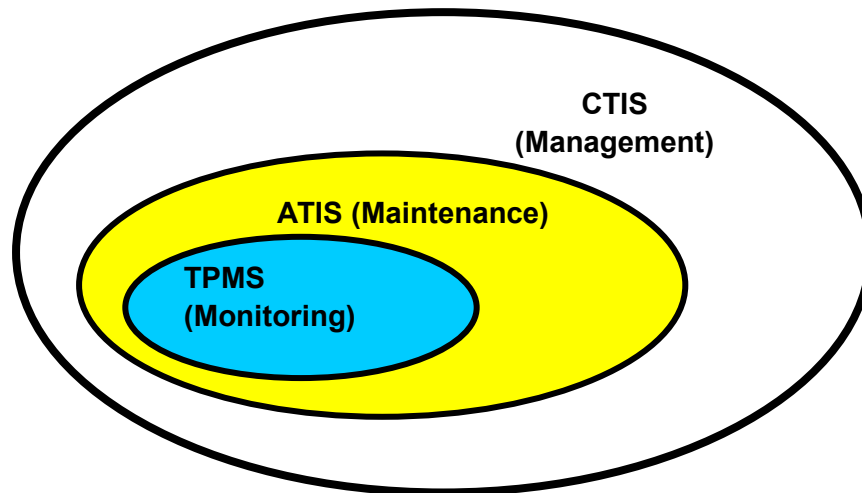


FIGURE 1 - RELATIONSHIP OF TIRE PRESSURE SYSTEMS

While tire pressure maintenance systems do not relieve the driver of his immediate responsibility to take the recommended maintenance action, these systems must still keep the driver informed of the status of the pressure level and make him aware when the system applied is no longer performing its intended function.

This document incorporates the attributes of pressure maintenance systems into the management of tire inflation pressure while retaining the alerts and warnings so vitally important to the driver.

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1. SCOPE

This SAE Recommended Practice defines the system and component functions, measurement metrics, and testing methodologies for evaluating the functionality and performance of ground vehicle tire pressure maintenance (ATIS) systems (systems which automatically restore the inflation pressure to its specified level), and recommended maintenance practices for these systems within the known operating environments.

These systems are recommended to address all serviceable tires as originally installed on a vehicle by the OEM and/or specialty vehicle manufacturer, and for the aftermarket (including replacement or spare parts) are recommended (but optional) to address all tire/rim combinations installed after initial vehicle sale or in-use dates.

This document is applicable to all axle and all wheel combinations for the following vehicle types - single unit powered vehicles exceeding 7257 kg (16 000 lb) gross vehicle weight rating (GVWR), and multi-unit vehicle combinations, up to three towed units, which use an SAE J560 connector for power and/or communication, or equivalent successor connector technology. For combination vehicles including two or more trailers, the dolly axles are also included. The included vehicles can be newly manufactured vehicles or existing vehicles, fitted with air or hydraulic braking systems.

SPECIAL NOTE: Equipment known as 'dual tire equalizers' are commonly used with this category of vehicles. When employing an ATIS system, dual tire equalizers systems are not recommended as they run counter to the purpose of the maintenance system.

NOTE: The following systems are not being addressed in this edition of the subject document.

1. The management system types and more mature/complex versions of maintenance and management types, to include on-board reporting/storage/retrieval data/control capabilities, will be addressed separately by future changes/additions to this document series.
2. Tire pressure monitoring systems - These systems have been addressed under SAE J2848-1.

1.1 Purpose

The installed systems for the maintenance of tire inflation pressure defined herein are on-board vehicle systems only. The maintenance type systems described herein may be controlled mechanically, electronically, and/or a combination of both, and should include sensing, restoring, and indicating/communicating, and recording (when specified by the OEM or user) capabilities. The design approach taken is expected to support the purpose and performance objectives of such a maintenance type system, and to function within the intended operating environment and design configuration of the vehicle itself.

The tire pressure system of the maintenance (ATIS) type is intended to (1) restore the tire's lost inflation gas, measured as inflation pressure, relative to the SSP (specified service pressure) under each operational stage; (2) maintain the specified service pressure level for the typical range of ambient conditions; and (3) provide the driver with indications of low uncorrected pressure(s) and system malfunction.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

SAE J560	Primary and Auxiliary Seven Conductor Electrical Connector for Truck-Trailer Jumper Cable
SAE J1211	Handbook for Robustness Validation of Automotive Electrical/Electronic Modules
SAE J1455	Recommended Environmental Practices for Electronic Equipment Design in Heavy-Duty Vehicle Applications
SAE J1609	Air Reservoir Capacity Performance Guide - Trucks and Buses
SAE J1939	Recommended Practice for a Serial Control and Communications Vehicle Network
SAE J2334	Laboratory Cyclic Corrosion Test
SAE J2402	Road Vehicles - Symbols for Controls, Indicators, and Tell-tales
SAE J2721	Recommended Corrosion Test Methods for Commercial Vehicle Components
SAE J2848-1	Tire Pressure Monitoring Systems - For Medium and Heavy Duty Highway Vehicles

2.1.2 ASTM Publication

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM B 117 Salt Spray (Fog) Testing

2.1.3 Federal Publications

Available from Federal Motor Carriers Safety Administration, United States Department of Transportation, 1200 New Jersey Avenue, SE, Washington, DC 20590, Tel: 1-800-832-5660, www.fmcsa.dot.gov.

Commercial Vehicle Tire Condition Sensors (FMCSA - Dec. 2003)

Tire Pressure Monitoring and Maintenance Systems Performance Report (FMCSA - Jan. 2007)

2.2 Related Publications

The following publications are provided for information purposes only and are not a required as part of this SAE Technical Report.

2.2.1 The Tire and Rim Association Publication

Available from The Tire and Rim Association, 175 Montrose West Avenue, Suite 150, Copley, OH 44321, Tel: 330-666-8121, www.us-tra.org.

Tire and Rim Year Book