

A Guide to TMC Recommended Practices

TM C's *Recommended Practices Manual* has been recognized throughout the heavy-duty commercial vehicle maintenance arena for more than 30 years as being one of the leading maintenance guides for commercial vehicles and contains the best equipment maintenance and maintenance shop management information available.

This comprehensive manual contains more than 300 Recommended Practices (RPs). A Recommended Practice is a specification or practice—the adoption of which is voluntary—that is used to assist fleets and equipment manufacturers in the purchase, design, maintenance and performance of their equipment. TMC issues two types of RPs: Recommended Maintenance Practices, and Recommended Engineering Practices.

Recommended Maintenance Practices are voluntary practices that assist equipment users, vehicle/component manufacturers, and other industry suppliers in the maintenance of commercial vehicle equipment. They also include informational documents that cover technical aspects of maintenance, equipment and supporting technologies.

Recommended Engineering Practices are voluntary practices that assist equipment users, vehicle/ component manufacturers, and other industry suppliers in the design, specification, construction and performance of commercial vehicle equipment.

What follows is a description of each RP that appear in the current edition of TMC's *Recommended Practices Manual*.

*Will appear in TMC's 2015 *Recommended Practices Manual Supplement*.

ELECTRICAL- S.1

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| RP 101B | Heavy-Duty Truck Alternator Mounting — Discusses location and installation procedures and mounting material selection for maximum charging system life. Procedure covers mounting bracket, adjusting strap, pulleys, bushings, and associated hardware. Also describes alternator mounting maintenance procedures. |
| RP 105C | Battery Cable Assemblies — Gives recommendations for proper selection and installation of battery cables to obtain maximum cranking circuit performance. This RP covers battery cables, terminals, heat shielding, grounding techniques, wire gauge, and replacement wire selection. |
| RP 106 | 6-Volt vs. 12-Volt Battery Study — Discusses the relative merits of 6-volt vs. 12-volt batteries for linehaul trucks. Covers battery life, hook-up, installation configurations, effects of electrical problems, and gives usage statistics for both types of battery systems. |

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- RP 107C Seven Conductor Truck-Trailer and Converter Dolly Jumper Cable and Connector Selection — Covers the minimum requirements for heavy-duty tractor-trailer and converter dolly jumper cables and connectors.
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- RP 109A Battery Ratings and Engine Cranking Requirements — Defines cold cranking ampere and reserve capacity ratings and gives recommendations to achieve adequate engine cranking performance and long-term cranking system reliability.
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- RP 110C Low-Tension Cable for Heavy-duty Truck-Tractor Wiring Systems — This RP provides guidelines for spec'ing low-tension cables for heavy-duty truck/tractor wiring systems.
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- RP 111B Circuit Protection — Covers guidelines for circuit protection of heavy-duty truck-tractor D.C. wiring systems.
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- RP 112A Terminals for Heavy-duty Truck-Tractor Primary Wiring Systems — Covers design criteria, performance specifications, and application guidelines for primary wiring terminals.
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- RP 113B Electrical System Connectors- Covers minimum general guidelines for the design, performance, and application of connectors and insulators for heavy-duty motor vehicles.
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- RP 114B Wiring Harness Protection- Covers minimum guidelines for protection of wiring harnesses from the operating and environmental conditions encountered on heavy duty-truck tractors.
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- RP 115 Speedometer and Tachometer Cable Requirements — Discusses application, installation, testing, and lubrication of light-and heavy-duty speedometer and tachometer cables.
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- RP 116 Installing Instruments, Gauges & Speedometers — Discusses proper mounting, wiring, and reliability determination for electrical and mechanical gauges and transducers.
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- RP 118A Turn Signal Switches — Covers design criteria, minimum performance, and test specifications for heavy-duty truck turn signal switches.
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- RP 120B Wiring System Identification — Covers the minimum requirements for wiring system identification on heavy-duty trucks and tractor-trailers.
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- RP 121A Electrical Connector System for Auxiliary Starting and Off-Board Diagnostics — Covers detail, dimension, and design of the plug and receptacle which must mate properly to permit interchangeable use of different manufacturers' products.
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- RP 123A Standardization of Speedometer and Tachometer Signals — Establishes a standard vehicle and engine speed signal and frequency that can be used by any electronic device on a heavy-duty vehicle requiring knowledge of speed/distance or engine revolution information.
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- RP 124A Heavy-duty Headlamp Design Specifications — Provides specifications for heavy-duty headlamps for use both by lamp users and lamp manufacturers.
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- RP 125A Battery Vibration Standards — Replaces existing battery mounting guidelines with one to offer both truck manufacturers and fleets an alternative to mounting batteries between the frame rails to increase battery life.
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- RP 127B Fleet Service Light Bulb Specifications — Identifies heavy-duty lamps and includes a specifications chart for most light bulbs used in heavy-duty vehicle applications.
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- RP 128B Turn Signal and Warning Hazard Flashers. This Recommended Practice (RP) covers the design and application of motor vehicle turn signal and hazard warning flashers for heavy-duty vehicle applications.
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- RP 129A Heavy-Duty Vehicle Cranking And Charging Troubleshooting: 12-Volt Systems — Provides preventative maintenance and troubleshooting procedures for heavy-duty vehicle starting and charging systems.
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- RP 130 Guidelines to Determine Requirements of Charging Systems — Aids in fleet specification of charging system components by recommending the best charging system for a given vehicle designed for a specific use.
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- RP 131B High-CCA Battery Applications for Commercial Vehicles. This RP offers spec'ing guidelines for selecting commercial vehicle batteries for applications requiring high cold-cranking amperage (CCA).
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- RP 132B Battery Charging, Testing, and Handling. This updated RP covers proper procedures for heavy truck battery charging, testing and handling.
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- RP 133 High CCA Battery Applications for Class 2 to 6 Commercial Vehicles — This Recommended Practice points out potential application problems for the entire cranking system when utilizing high CCA batteries in place of standard batteries in Class 2 to 6 commercial vehicles. Covers effects on the starter, battery cables, and effects on battery cycling and life.
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RP 134A	Starter/Alternator Rebuild Performance Standard Guidelines. This RP offers performance guidelines for rebuilding starters and alternators.	RP 143	Light Emitting Diode (LED) Technology — Describes benefits and features of LEDs when spec'ing heavy-duty signaling and marking devices. Offers spec'ing recommendations on connectors and wiring for LEDs and offers return on investment formula for making purchasing decisions.
RP 135	Multi-Pin Connector Repairs — Provides fleet maintenance organizations with an effective guide for obtaining the proper multi-pin connector repair products and services. The Recommended Practice is not intended to define repair procedures because of the vast number of different connector systems on the market. Instead, the Recommended Practice defines what products and services fleets should expect to receive from connector suppliers. This product definition is necessary to simply the repair of a wide range of types of multi-pin connectors used in today's wiring systems.	RP 144	Minimum Performance Requirements for In-Cab Trailer ABS Malfunction Lamps — Identifies minimum performance requirements for ABS warning lamps.
RP 136A	Isolated Battery Systems — Provides guidelines for the design of isolated/split battery systems to enable cab accessory units to be electrically powered without drawing on the primary/starting system of the vehicle or retrofitting an existing vehicle to an isolated system.	RP 145	Symbols for Electrical Circuit Protection — This RP endorses an SAE Recommended Practice that standardizes electrical circuit symbology.
RP 137C	Antilock Electrical Supply From Tractors Through the SAE J560 Seven-Pin Connector — The purpose of this RP is to provide fleets with a method of ensuring that adequate power will be available at the front of a trailer (or first trailer in a double or triple combination unit) to operate an antilock braking system (ABS), using the traditional seven pin connector.	RP 146	Identification of Standardized Electrical Circuits for Class 8 Vehicles — This RP endorses an SAE Recommended Practice that standardizes electrical circuit identification.
RP 138A	Auxiliary Forward Lighting — This Recommended Practice provides fleets, truck manufacturers, and component manufacturers with guidelines for the proper installation of auxiliary forward lighting devices to help conform to various state regulations. Such devices include daytime running lights (DRLs) and fog lamps, the use of which can be desirable under certain environmental conditions. The RP also provides a current list of state regulations covering a variety of auxiliary forward lighting devices.	RP 147	SAE J560 Plug and Receptacle Wire-to-Terminal Interface Performance Guidelines — This RP establishes new equipment-user driven performance guidelines for the SAE J560 plug and receptacle wire-to-terminal interface.
RP 139B	Battery Selection Criteria — This RP is an update of RP 139, offering guidelines on selecting batteries for commercial vehicles.	RP 148	Exterior Lighting Systems for Signaling, Marker, Clearance and Identification Lamps — This RP offers guidelines for exterior lighting systems.
RP 141	Trailer ABS Power Supply Requirements — This RP sets performance standards for trailer ABS power supply requirements.	RP 149	Alternator Drive Standardization — This RP offers guidelines for alternator drive standardization.
RP 142	High-Speed Data Link Cable Repair Guidelines — Identifies recommended materials and methods to repair or add a device to high-speed data link cables.	RP 150	Alternator Terminal Standardization — This RP offers guidelines for alternator terminal standardization.
		RP 151	Guidelines for Extending Headlamp Life — This RP offers guidelines for extending headlamp life.
		RP 152	Performance Guidelines for Cab and Sleeper Interior Lighting — This RP offers guidelines for cab and sleeper interior lighting.
		RP 153	Lamp-to-Connector Interface Guidelines — This RP offers guidelines on lamp-to-connector interfaces.
		RP 154	Guidelines for Wiring Harness, Routing, Clamping and Protection — This RP offers guidelines on wiring harness, routing clamping and protection.
		RP 155	Selection and Application of Corrosion Preventive Materials for Electrical Terminals and Connectors — This RP covers selection and application of corrosion prevention materials.

RP 156	Electrical Circuit Protection Components — This RP covers electrical circuit protection components.
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RP 157	Service And Installation Guidelines For Citizen Band Radio Antenna Systems — This RP covers service and installation guidelines for CB radio antenna systems.
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RP 158	Wiring And Circuit Protection Guidelines For 12-Volt Cab And Sleeper Power Outlets-This RP covers wiring and circuit protection guidelines for cab and sleeper power outlets.
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RP 159	Installation and Inspection Guidelines for Seven Conductor Truck-Trailer/Converter Dolly Jumper Cable and Connector — This RP covers installation and inspection guidelines for combination vehicle electrical connectors and cables.
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RP 160	Wiring And Circuit Protection Guidelines For 12-Volt DC to 120-Volt AC In-Cab Inverter Systems — This RP covers wiring and circuit protection guidelines for in cab inverter systems commonly used on tractors.
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RP 161	Forward Lighting Aiming Methods — This proposed RP offers guidelines for forward lighting aiming methods.
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RP 162	Design Guidelines for Electrochemical Capacitors Used in Starting Applications. — This proposed RP offers design guidelines for electrochemical capacitors used in starting applications.
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RP 163	Power Inverter Selection Recommendations-This proposed RP offers guidelines for selecting power inverters for Class 7-8 vehicle applications.
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RP 165	Proper Electric Arc Welding Procedures For Vehicles With Sensitive Electronics. — This RP offers guidelines for proper electric arc welding procedures in order to protect vehicle electronics.
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RP 166	Low-Voltage Primary Electrical Cable Specification for Heavy-Duty Electrical Repair. This RP defines the proper terminology and specifications for a universal, low-voltage (maximum 60 volts) primary wiring cable that meets the performance requirements needed for servicing heavy-duty truck, tractor or trailer electrical systems.
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RP 167	Vehicle Electrical Fires: Causes and Preventive Solutions. This RP provides insight into the causes of in-service vehicle electrical fires. It also offers preventive solutions based on maintenance and operational practices, covering Class 7-8 heavy-duty vehicles.
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RP 168	Design Recommendations for Preventing Vehicle Fires. The purpose of this Recommended Practice (RP) is to provide design recommendations for preventing vehicle electrical fires. It covers Class 7-8 heavy-duty commercial vehicles.
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RP 169	Road Service Diagnostic Evaluation Process. The purpose of this RP is to offer safe and effective procedures for systematically conducting a proper diagnostic evaluation of the primary electrical system — batteries, starter, alternator, and cabling — during a road service call.
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RP 170	Chassis-to-body Electrical Interface Guidelines For Vocational/Refuse Trucks. The purpose of this RP is to provide the vocational/refuse industry a common electrical interface connection that is environmentally sealed, contains all required electrical circuits and is located in an industry standardized location. This RP defines the electrical interface between the truck chassis and the vocational/refuse body and the connector type, performance, function, location and pin assignments.
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RP 171	High-Performance Coatings for Forward Lighting On Commercial Trucks. The purpose of this Recommended Practice (RP) is to provide guidelines for specifying forward lighting coating systems for plastic headlamps that not only meet applicable federal requirements but also provide the basis for more robust coating performance in on-highway applications.
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RP 172	Recommended Cleaning and Maintenance of Headlamps for Commercial Vehicles. This Recommended Practice (RP) provides guidelines for the cleaning, maintenance and restoration of headlamp systems used on commercial vehicles. It defines the expected performance requirements and augments, with specific requirements, the standards depicted in the SAE and TMC Recommended Practices covering the general maintenance of forward lighting coating systems.
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RP 173	Design Guidelines for ECM Harness and Connectors — This RP offers design guidelines for ECM harnesses and connectors. (Formerly RP 349.)
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TIRE & WHEEL — S.2

RP 201D	Tire Flap & Rim Dimensions — Relates tire width and diameter with recommended rim and flap widths.
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*RP 203D	Truck Tire Regrooving — Summarizes two crucial federal regulations that must be followed when regrooving tires.
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RP 205B	Use of Tire Bead Lubricants — Outlines proper selection and use of tire bead lubricants.	RP 217D	Attaching Hardware for Aluminum Disc Wheels — Provides information to enable proper selection of compatible wheels, studs, and nuts for use with various types of disc wheel mountings.
RP 206B	Tire Repair Procedures — Provides easy-to-follow, step-by-step procedures for repairing bias and radial tires that will consistently produce satisfactory repairs.	RP 218E	DOT Tire Identification Codes — Defines DOT tire codes thus simplifying fleet tire record keeping and tire identifying procedures.
*RP 208E	Total Tire Cost Analysis. This Recommended Practice (RP) is designed to help fleet managers track and analyze annual heavy-duty vehicle tire costs, durability and fuel efficiency through the use of the worksheets described in the RP.	RP 219C	Radial Tire Wear Conditions and Causes: A Guide To Wear Pattern Analysis. This RP provides a reference source and training aid which will assist the user in identifying radial tire wear patterns and determining causes which can then be corrected to minimize irregular wear.
RP 209E	Tire and Rim Safety Procedures. This RP offers safety procedure guidelines when servicing and maintaining tires, wheels and rims.	RP 220D	Tire Tread Design Selection. The purpose of this RP is to help fleet managers select the proper tread design for an intended application to maximize tire service life and minimize tire cost per mile. These guidelines apply to tread design selection for heavy-truck tires.
RP 210D	Radial Tire Construction Terminology — This RP describes radial tire construction terminology.	RP 221D	Retread Plant Inspection Guidelines — Provides guidelines for the evaluation and selection of a tire retread supplier.
RP 211B	Rim and Wheel Selection and Maintenance — Acquaints the user of highway tractors and trailers with rim/wheel nomenclature, types available, load inflation restrictions, potential dangers of mismatched multi-piece rim components, dual spacings, and proper maintenance practices.	RP 222C	User's Guide to Wheels and Rims — Covers all aspects of wheel and rim damage, probable cause, and recommended actions. This Recommended Practice contains numerous photographs and is available as a separate publication.
RP 212D	Industry Recommended Practice for Retreading Truck and Bus Tires. This Recommended Practice (RP) offers guidelines for the retreading of light truck, and medium- and heavy-duty truck and bus tires used for on-highway service.	RP 223D	Tire Selection Process. This RP is intended to make the tire purchaser, fleet operator, or maintenance manager aware of major items for consideration, and to provide a step-by-step thought process for selecting the best type of tire for the application.
RP 213E	RMA Truck Tire and Wheel Related Publications. This Recommended Practice (RP) provides a list of Rubber Manufacturers Association (RMA) publications for care and service of truck tires and wheels.	RP 224D	Tire Retread Process — Assists the retread user in understanding the differences and characteristics of the various retread processes.
RP 214D	Tire/Wheel End Balance and Runout. This RP offers equipment users suggestions that can help reduce the vibration, irregular tread wear, resulting maintenance costs and driver discomfort that accompany serious out-of-balance or out-of-round tire/wheel end assemblies.	RP 226C	Radial Tire Repair Identifier (Blue Triangle) — Explains how to properly apply tire repair identification patches to repaired heavy-duty vehicle tires. These patches can prevent the possibility of the tire (and vehicle) from mistakenly being placed out of service due to what a safety inspector or mechanic perceives as a dangerous tire defect and not a normal tire section repair bulge.
RP 215D	Sources of Tire & Wheel Information — Gives addresses of associations disseminating information on tire retreading, wheels and rims, and tire rubber.	RP 228B	Guidelines For Wireless Tire Pressure Monitoring Systems (TPMS) for Medium- and Heavy-Duty Truck Tires. This RP offers guidelines for tire pressure monitoring systems (TPMS) that utilize wireless transponders and readers or processing modules to measure the actual tire inflation condition.
RP 216C	Radial Tire Conditions Analysis Guide. This guide is designed to be a reference source and a training aid, and to assist users in tire grading. It advises users when it may be necessary to consult with a specialist (original manufacturer or retreader) for final determination of a tire's cause of failure.		

RP 229B Computerized Tire Recordkeeping — This RP provides guidance to fleets trying to establish a computerized tire recordkeeping system.

RP 230B Tire Test Procedures for Tread Wear, Serviceability and Fuel Economy. The purpose of this RP is to provide fleets guidelines on tire testing procedures.

RP 231 Wheel System Maintenance Labeling Guidelines — Establishes a standard format for wheel system maintenance labels.

*RP 232A Zipper Rupture Inspection Procedures for Light- and Medium-Duty Truck Tires — This RP establishes procedures for identifying “zipper” ruptures failures in tires.

RP 233B Radial Tire Nail Hole Repair Training Guidelines. The purpose of this RP is to establish minimum training guidelines for radial tire nail hole repair.

RP 234A Valve Hardware Selection Guidelines. This RP offers guidelines for selecting valve hardware for commercial vehicles.

RP 235 Guidelines for Tire Inflation Pressure Maintenance- This RP covers guidelines for tire inflation pressure maintenance.

RP 236A Outsourcing Guidelines for Tire and Wheel Maintenance. This RP is designed to help fleet managers make decisions regarding outsourcing of tire and/or wheel maintenance. It offers guidelines for identifying appropriate roles, responsibilities, expectations, and exchange of information, as well as a method for measuring the benefit of outsourcing tire/wheel maintenance.

RP 237A Retorquing Guidelines for Disc Wheels. This RP offers guidelines regarding the need to retorque disc wheels following installation on a vehicle.

RP 238A Troubleshooting Disc Wheel Looseness. This RP provides fleets with a logical approach to troubleshooting loose stud-piloted and hub-piloted disc wheels used on Class 6-8 commercial vehicles.

RP 239A Commercial Vehicle Tire Inflation and/or Monitoring Systems Guidelines. This RP covers current capabilities and basic operation of tire inflation and pressure monitoring systems. It is designed to help fleets select tire inflation and monitoring systems for commercial truck tires.

RP 240A Steel Wheel and Rim Refinishing Guidelines. This RP provides guidelines and inspection criteria for steel wheel and rim refinishing and for evaluating refinishing suppliers. It describes various types and processes of steel wheel and

rim refinishing systems used today for commercial vehicle applications.

RP 241A Tubeless Disc Wheel Inspection for Undersized Bead Seats-This RP covers inspection guidelines for undersized bead seats on tubeless disc wheels.

RP 242 Guidelines for Evaluating Tire and Wheel Related Products and Systems-This RP offers guidelines for evaluating tire and wheel related products.

RP 243 Tire and Wheel Match Mounting Markings-This RP covers identification of tire and wheel match mounting markings.

RP 244A Bias Tire Conditions Analysis Guide — A detailed guide covering all aspects of bias tire damage and defects and includes multiple photographs. This guide is an invaluable tool for the determination of tire failure. Guide is also available as a separate publication.

RP 245 Tire Assembly Balancing With Wheel Weights. This RP offers guidelines for tire/wheel assemblies using lead wheel weights.

RP 246 Consideration for Products Intended for Use Inside Tires. This RP offers guidelines regarding consideration of products intended for use inside of the tire/wheel assembly.

RP 247 Tire Radio Frequency Identification (RFID) Device Guidelines (Passive Tags) for Medium- and Heavy-Duty Truck Tires. This RP provides guidelines for the use of passive radio frequency identification (RFID) tags attached to medium- and heavy- duty tubeless truck tires.

RP 248 Guidelines for Tire Casing Data Marking in the Retread and/or Repair Process. This RP offers tire casing marking guidelines for improving the availability of information on medium- and heavy-duty truck casing condition and/or history.

RP 249 Safety Issues Related to the Use of Flammable Fluids During Tire Demounting. This RP covers maintenance guidelines regarding the use of flammable fluids for the tire demounting process and how it impacts tire retreadability.

RP 250 Effects of Extreme Temperatures on Wheel Torque and Clamp Load. This Recommended Practice (RP) provides fleet managers and tire technicians information about the effects of extreme ambient and wheel end temperature changes on wheel nut torque and clamping force. This RP applies to hub-piloted disc wheels in applications using 22 mm phosphate/oil-coated studs and organic-coated nuts.

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- RP 251 Irregular Wear In Low-Profile Metric Wide-base Radial Tires Used In Trailer Service. The purpose of this RP is to describe the most likely causes of irregular tire wear for 50 and 55 series low-profile metric widebase radial tires used in trailer service-specifically, tire sizes 445/50R22.5 and 455/55R22.5.
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- *RP 252 Troubleshooting Radial Tire Irregular Wear. This RP offers guidelines and a diagnostic process to identify the root cause or causes of radial tire irregular wear patterns that may develop during the useful life of the tire. It also provides guidelines to correct these conditions and prevent future occurrences. This RP applies to radial tires used on Class 6-8 commercial vehicles.
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- *RP 253 Usage Guidelines for Retreaded Steer Axle Tires. The purpose of this RP is to offer fleets guidelines for the appropriate use of retreaded tires on steer axles of medium- and heavy-duty trucks and tractors.
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- *RP 254 Usage Guidelines for Repaired Steer Axle Tires. The purpose of this RP is to offer fleets and service providers basic repair guidelines and minimum repair specifications for steer axle tires used on medium- and heavy-duty trucks, buses and tractors.
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- ENGINE — S.3**
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- RP 301C Maintaining Air Intake Systems — Covers maintenance and service procedures and discusses intake restriction for oil bath and dry element air cleaners and intake systems.
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- RP 302C Fleet Purchasing Specification for Low — Silicate, Ethylene Glycol — Base Antifreeze Engine Coolant Requiring SCAs — Lists minimum specifications for ethylene glycol coolant.
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- RP 303C Silicone Coolant Hoses and Hose Assemblies- This Recommended Practice covers straight or pre- formed hose or hose assemblies of a superior quality polysiloxane (silicone) type used in diesel or gasoline engine coolant systems between engines, radiators, and heaters. Hose and/or hose assemblies are to be used where ultra — long life is required or extreme temperature conditions are prevalent.
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- RP 304C Minimum Specifications for On-Highway No. 2-D Diesel Fuel — This updated Recommended Practice lists minimum diesel fuel specifications for over — the road, heavy-duty, diesel — fueled vehicles.
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- RP 309B Preferred Fuel Specification — 2D and Glossary of Fuel Terms — This updated Recommended Practice contains suggested and recommended guidelines describing better quality diesel fuel. A glossary of terms is provided to further assist fuel purchasers in becoming familiar with fuel terminology and fuel property options.
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- RP 310A Water Ingestion Prevention — Discusses the consequences of water and salt (from rain and road deicing chemicals) entering heavy-duty vehicle air intake systems and gives methods to minimize the ingestion of water and road salt.
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- RP 311A Cold Weather Operation — Discusses the proper methods to use to prepare a heavy-duty truck for cold weather operation (+40 to — 40°F.) Topics covered include readying the following for cold weather operation: engine coolant; engine, transmission, and differential lubricants; hoses and clamps; air starters; batteries and cables; diesel fuel; coolant, intake manifold, and oil heaters; fuel heaters; and winterfronts and radiator shutters.
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- RP 312B Qualifying Questions for Evaluating Aftermarket Diesel Fuel Additive Packages. This RP is intended to provide a list of questions fleet maintenance managers should keep in mind when considering the use of diesel fuel additives. This will assist in making intelligent choices in the selection of fuel additives.
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- RP 313C Checklist for Cooling System Maintenance — This RP provides guidelines for cooling system maintenance.
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- RP 317A Fuel/Water Separating Devices — Guides the fleet operator on how to best specify a fuel/water separating device.
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- RP 318C Used Engine Oil Analysis — Discusses reasons for oil analysis, oil analysis laboratory selection, sampling procedures, and test results. An oil analysis glossary is included.
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- RP 319A General Guidelines and Precautions on Supplemental Coolant Additives — Gives guidelines for the selection and use of supplemental coolant additives used to protect heavy-duty vehicle cooling systems.
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- RP 320C Inspection, Maintenance and Tension of Accessory Belt Drive Systems. This RP provides fleet maintenance personnel with correct procedures for inspecting and maintaining accessory belt drive systems.
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- RP 321 Fuel Crossover Line Protection and Configuration Guidelines- Designed to reduce the possibility of crossover line ruptures which may result in fuel spills which pose safety problems and contaminate road/right-of-way-surfaces leading to environmental clean-up and fines.
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- RP 322A Coolant Pump Failure Modes and Life Extension — Contains information from a TMC fleet survey conducted by the Coolant Pump Failure Task Force, presentations made during Task Force meetings, and current Service Bulletins from various original equipment manufacturers (OEMs) and suppliers. This Recommended Practice does not make suggestions about coolant pump design changes.
- RP 323 Aqueous Propylene Glycol Coolant Guidelines — Presents a general guideline for the comparison of propylene glycol-based coolants to ethylene glycol-based coolants in heavy-duty truck systems. This Recommended Practice identifies some of the precautions and application considerations to be aware of when switching to an aqueous propylene glycol-based coolant.
- RP 325 Radiator Integrity for On-Highway Trucks — Establishes time and mileage parameters, as well as service and maintenance characteristics for radiators in medium- and heavy-duty trucks used in on-highway service. It can serve as a guideline for OEM truck assembly and radiator manufacturers when designing cooling products for specific applications and help the end-user when purchasing new vehicles.
- RP 326 Recycling Engine Coolant — This Recommended Practice describes the reasons why changing coolant is necessary and discusses the various processes used in on-site recycling equipment. Some considerations in deciding whether or not to recycle coolant on-site are given and a table is included for reference concerning various operational parameters and costs associated with the listed processes.
- RP 327 Fan Drive Control Systems — This Recommended Practice describes the control system for fan drives requiring the use of remote temperature sensing controls and override switches, and addresses maintenance and troubleshooting for such systems.
- RP 328 Fleet Purchasing Specification for Nitrite-Containing Supplemental Coolant Additives — This Recommended Practice covers general, physical, chemical, and performance requirements for SCAs that are used for precharging and periodic servicing of coolants for use in heavy-duty engines. This includes SCA concentrates in liquid, solid, or slurry form.
- RP 329A Fleet Purchasing Specification for Nitrite-Containing Ethylene Glycol Base Coolant — This Recommended Practice specifies requirements for concentrated and prediluted forms of fully-formulated ethylene glycol base antifreeze/coolant which does not require a precharge of supplemental coolant additives.
- RP 330 Fleet Purchasing Specification for Nitrite-Containing Propylene Glycol Base Coolant — This Recommended Practice specifies requirements for fully-formulated propylene glycol base antifreeze/coolant which does not require a precharge of supplemental coolant additives.
- RP 331A Charge Air Cooler Design Guidelines — This Recommended Practice is designed to improve the design, maintenance, safety and performance of charge air coolers (CAC) while reducing CAC costs to equipment users.
- RP 332B Guidelines For Hoses, Clamps, and Fittings For Cooling And Charge Air Cooler Systems — This proposed RP offers guidelines for hoses clamps and fittings used on engine cooling and charge air cooler systems.
- RP 333A Heat Exchanger Maintenance and Cleaning — This RP provides guidance concerning the exterior maintenance and cleaning of heat exchangers/cooling modules used in Class 6-8 vehicles. Heat exchangers/cooling modules are defined as the radiator, charge air cooler, condenser, oil-to-air cooler, recirculation shields, and associated mounting brackets and hardware.
- RP 334A Determining Extended Oil Drain Intervals for Heavy-duty Diesel Engines — Helps equipment users determine extended oil drain intervals for diesel engines over 8.0L displacement.
- RP 335 Simplified Snap-Idle Acceleration Smoke Testing — Offers simplified, easy-to-understand instructions for conducting J1667 Snap-Idle Smoke Test Procedures.
- RP 336A Aluminum Radiator Maintenance — Offers interior and exterior maintenance recommendations for aluminum radiators.
- RP 337B Determining the Validity of Low-Power Complaints. This RP offers technicians and equipment users useful tips for determining the validity of low-power complaints for Class 7 and 8 vehicles.
- RP 338A Extended Service Interval Coolants — Describes new extended service interval (ESI) coolant technologies. “Q&A” format addresses common technician concerns regarding ESI and traditional coolants.

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- RP 339 Maintaining Fuel/Water Separators — This RP offers recommendations for maintaining fuel/water separators.
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- RP 342 Guidelines for Recording Electronic Engine Parameter Changes — This RP offers security guidelines for keeping track of parameter changes for electronic engines.
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- RP 343A Charge Air Cooler Winterfront Application and Design Guidelines — This RP offers guidelines for design and selection of CAC winterfronts.
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- RP 344 Understanding Engine ECM Data — This RP offers information on interpreting and using engine data collected on-board vehicles.
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- RP 345A Diesel Fuel Housekeeping Guidelines — This RP offers guidelines for maintaining diesel fuel storage and delivery infrastructure so as to ensure quality fuel.
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- RP 346A Accessory Belt Drive Pulley Standardization. — This proposed RP offers guidelines for standardizing accessory belt drive pulleys.
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- RP 347 Fan Drive Maintenance and Troubleshooting — This RP offers guidelines on fan drive maintenance and diagnostics.
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- RP 348 Coolant Hose Rating Factors — This RP covers guidelines for coolant hose ratings.
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- RP 351 Guidelines for Color Standardization of Engine/Coolant Antifreeze — This RP offers guidelines for standardizing engine coolant color schemes.
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- RP 352 Fan Drive Design and Application Guidelines — This RP offers guidelines for fan drive design and application.
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- RP 353 Standard Fitting for Engine Coolant Handling — This RP offers standard fitting recommendations for engine coolant handling.
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- RP 354 Fuel Economy Tracking Guidelines-This RP offers guidelines for tracking fuel economy in Class 7-8 vehicles.
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- RP 355A Maintenance and Inspection Guidelines For OEM-Installed Exhaust Particulate Filters For Diesel-Powered Vehicles. This RP describes the various types of original equipment diesel particulate filter (DPF) technology used on heavy-duty diesel-powered vehicles. It offers general guidelines and information on DPF function, performance, diagnostics, maintenance, handling and cleaning.
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- RP 356 Cold Flow Operability Of Diesel Fuel-This RP address cold flow operability issues pertaining to diesel fuel.
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- RP 357 Biodiesel Blended Fuels-This RP provides fleets and suppliers with guidelines on the use of biodiesel blends B2 through B20. This RP offers definitions and terminology for biodiesel blends, as well as address biodiesel blend performance, industry standards, engine manufacturer warranties, tax incentives and existing position statements on the use of such fuels.
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- RP 358 Charge Air Cooler Maintenance and Testing Guidelines-This Recommended Practice (RP) offers maintenance and testing guidelines to maximize the durability, maintainability, safety and performance of charge air coolers (CACs) while reducing costs to the end user. This document applies to CACs used on Class 7-8 heavy duty vehicles. It defines the CAC as including the core, end tanks, attaching hardware and mounting brackets, unless otherwise specified.
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- RP 359 Qualifying Questions For Evaluation of Supplemental Engine Oil Filtration Systems-This Recommended Practice (RP) is intended to provide a list of questions that fleet managers should consider when evaluating the use of supplemental engine oil filtration systems-commonly referred to as bypass or secondary filtration devices. This RP applies to supplemental filtration systems used on Class 7-8 commercial vehicles.
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- RP 360 Diesel Exhaust Fluid Guidelines-The purpose of this Recommended Practice (RP) is to educate equipment users on selective catalytic reduction (SCR) technology and its use of diesel exhaust fluid (DEF). This RP will provide definitions and terminology of SCR systems, and offer guidelines on DEF storage and handling.
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- RP 361 EGR Cooler Diagnosis and Cleaning. This RP offers guidelines for the cleaning and troubleshooting of exhaust gas recirculation (EGR) coolers used on Class 6-8 diesel-powered commercial vehicles.
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- RP 362 Guidelines for Used Coolant Analysis of Heavy-Duty Vehicles. This RP provides guidelines for cooling system sampling procedures, commonly run field and laboratory tests, and warning/condemnation limits for used engine coolants. It applies to Class 7-8 commercial vehicles.
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- RP 363 Underhood Thermal Event Prevention. This RP addresses recommendations for preventing underhood vehicle fires.
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- RP 364 Fleet Purchasing Specification for Organic Acid Technology Extended Life Coolant. This RP provides a fleet purchasing specification for organic acid technology (OAT) extended life coolants for heavy-duty vehicles.
- RP 365 Coolant Maintenance Guidelines. This RP offers guidelines for identifying various types of heavy-duty aqueous coolants and ensuring proper quality of each type of aqueous coolant to protect the entire cooling system.
- RP 366 Standardized Clutch Engagement Torque Requirements. This RP provides a test procedure for measuring clutch engagement torque of commercial medium- and heavy-duty diesel engines in a test cell environment. It helps the user accurately determine what clutch engagement torque value is needed for satisfactory vehicle startability. This metric also can help vehicle manufacturers properly design drivelines that satisfy customer expectations for a given vehicle vocation.
- *RP 367 Fuel Filters: Complaint, Cause & Correction. The purpose of this RP is to explore the various potential causes of short fuel filter life and offer fleet managers recommendations for troubleshooting and solving these problems. This RP applies to commercial vehicles with diesel engines.

CAB & CONTROLS — S.4

- RP 401B Location and Operation of Instruments and Controls in Motor Truck Cabs — A recommendation to help avoid confusion when drivers shift from one truck to another; to promote safety and convenience; and to simplify design, production, and servicing.
- RP 402 Windshield Washer Anti-Freeze and Cleaner Specification — Covers the general characteristics and performance requirements of windshield washer antifreeze products used for cleaning automotive windshields.
- RP 403A Placement of Safety Equipment — Establishes guidelines for vehicle manufacturers to determine proper locations for the placement of safety equipment in their model truck cabs.
- RP 404B Truck and Truck-Tractor Access Systems — Gives recommendations allowing anyone entering or exiting a cab to have three limbs in contact with the truck or tractor at any time.
- RP 405B Windshield Washer System Performance Recommendations. This RP establishes minimum performance requirements and test procedure for windshield washers used in heavier gross

weight vehicles with a service life potential of 500,000 miles (804,500 km).

- RP 406C Windshield Wiper System Performance Recommendations. This Recommended Practice covers minimum performance requirements and test procedures for windshield wiper systems used on heavy-duty vehicles that have a potential service life of 500,000 miles.
- RP 407A Defrosting, Defogging, And Heating Performance Requirements For Truck Cabs With And Without Sleepers. — Lists minimum requirements for defrosting, defogging, and heating of truck cabs for improved driver environment and visibility.
- RP 408A Dash and Sleeper Heater and/or Air Conditioner Blower Motor Accessibility. This Recommended Practice (RP) covers the minimum accessibility requirements for dash and sleeper heater and/or air conditioner blower motors. It should be considered by vehicle original equipment manufacturers (OEMs) and heater and air conditioner component suppliers on any new or revised designs.
- *RP 409A Maintenance of Wiping Quality of Wiper Blades. This RP covers steps to be taken to maintain an acceptable quality of wiping by the wiper blade.
- RP 410A Seat Belt Assembly, Inspection, and Maintenance Procedures — Provides a formal procedure and checklist for inspecting and maintaining heavy-duty vehicle seat belt assemblies.
- RP 411A Vehicle Surface Preparation for Painting — Provides information to help commercial vehicle operators properly prepare vehicles for painting. This Recommended Practice may be used to ensure that painting service suppliers also properly prepare vehicles prior to painting.
- RP 412A Air Pressure Wiper System Recommendations for Consideration in Future Designs — Addresses wipe area, wiper motor interchangeability, unitized wiper set, wiper component accessibility, motor oiler, and minimum pressure for the design of air-operated wiper systems.
- RP 413A Heavy-duty In-Cab Air Conditioners, Refrigerant-12 Systems — Establishes recommendations on the maintenance of air conditioning equipment which are intended to specify equipment capable of meeting the durability requirements of over-the-highway vehicles and to minimize maintenance costs. Provides unit descriptions, and installation and preventive maintenance procedures for heavy-duty in-cab air conditioning systems.

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- RP 414B Truck Cab Air Conditioner Specification Guidelines. This RP is designed to help industry professionals reduce heavy-duty truck air conditioner problems through better specifications when purchasing and designing new vehicles.
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- RP 415A Selecting Painting Systems for Commercial Vehicles — Provides information to help commercial vehicle operators select among the various paint systems available, both as originally specified on new vehicles and for refinishing used vehicles.
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- RP 416A Questions to Ask When Selecting a Commercial Vehicle Refinisher — The complexity of new paint systems, as well as environmental and health concerns, makes the selection of a commercial vehicle refinishing vendor more difficult than ever. This Recommended Practice provides the commercial vehicle operator with a list of questions to consider to aid in proper selection of a vehicle refinisher.
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- RP 417A Supporting Pneumatic/Electrical Lines Between Cab and Trailer — This Recommended Practice serves as an industry guide to performance requirements, applicable regulations, and proper means of support for pneumatic/electrical service hoses between the tractor cab and trailer.
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- RP 418A Heavy-Duty In-Cab R-134A Air Conditioning Systems. This RP offers guidelines for spec'ing cab air conditioning systems for commercial vehicles.
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- RP 419 Heater Performance Requirements for Truck Cabs — This Recommended Practice provides heater system performance parameters that will achieve driver comfort in cold weather driving conditions. This Recommended Practice covers all Class 6, 7, and 8 powered vehicles. It shall apply at an ambient temperature of 0°F.
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- RP 420B Minimum Service Life Requirements for Heavy-duty HVAC Cab Controls — Establishes minimum service life requirements for heating, ventilation, and air conditioning (HVAC) systems in heavy-duty commercial vehicles that are acceptable to equipment users.
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- RP 421 In-Cab Air Conditioning Retrofit Procedure — Establishes a retrofitting procedure for fleets wishing to retrofit R-12 A/C systems to R-134a or other alternative refrigerants.
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- RP 422 A Cab Insulation Testing Methodology — Establishes test procedures for determining heat or thermal transmission rates of heavy-duty vehicle driver and sleeper cabins. Also establishes rating method for heat/thermal transmission.
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- RP 423 Color Coding of Air Brake Systems — Establishes recommendations for standardized color-coding of air brake systems.
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- RP 424 Door Hardware Performance Requirements — This RP establishes minimum performance standards for tractor door hardware.
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- RP 425 Mirror Positioning and Aiming — This RP offers guidelines on cab mirror positioning and aiming.
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- RP 426 Service Guidelines for Occupant Restraints — This RP offers recommendations on servicing and maintaining heavy-duty vehicle occupant restraints.
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- RP 428A Guidelines For Vision Devices. The purpose of this Recommended Practice (RP) is to specify minimum driver vision requirements, and suggest various means of achieving these requirements. Although this document was developed specifically for tractor-trailer combination vehicles, it applies to all commercial vehicles.
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- RP 429 Windshield Replacement and Repair — This RP offers guidelines on windshield replacement and repair.
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- RP 430A Guidelines for Collision Warning Devices. This RP offers guidelines for spec'ing collision warning devices.
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- RP 431 Guidelines for Electrical Cab Power Points — This RP offers guidelines for spec'ing electrical cab power points.
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- RP 432A Engine Off HVAC Performance Requirements for Trucks With Sleeper Cabs — This RP offers guidelines for performance requirements of engine-off HVAC systems for sleeper cabs.
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- RP 433 Truck Washing and Cleaning Guidelines — This RP offers guidelines for truck washing and cleaning.
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- RP 434 Cab And Sleeper Insulation Efficiency Guidelines-This RP offers recommendations for cab and sleeper insulation.
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- RP 435 Installation and Inspection Guidelines for Pneumatic and Electrical Tractor-Trailer Hookup Lines-This RP offers installation and inspection guidelines for tractor-trailer connectors.
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- RP 436A Air Conditioning System Performance Requirements for Truck Cabs With and Without Sleepers. — This RP offers recommendations for HVAC performance and testing criteria for Class 7-8 commercial vehicles.
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- RP 437 Guidelines for Truck Stop Electrification Interface-This RP offers guidelines for the
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interface between vehicle and truckstop electrification systems.

RP 438 Engine-Off HVAC Performance Requirements For Truck Cabs Without Sleepers-This Recommended Practice (RP) establishes performance requirements for engine-off heating, ventilation, and air conditioning (HVAC) systems in order to achieve driver thermal comfort in both winter or summer rest periods.

RP 439 Minimum Performance Criteria for Auxiliary Power Units (APUs) and Gensets-This Recommended Practice (RP) establishes minimum performance criteria for auxiliary power units (APUs) and generator sets (gensets) used on Class 6-8 day-cab and sleeper-equipped tractors operated within an ambient temperature range of -10°F to 120°F (-23 °C to 43°C).

RP 440 Seat Base Installation Standardization. This Recommended Practice (RP) establishes a common seat mounting interface zone for commercial vehicle cabs. This RP defines a minimum spacing for fastener locations in the truck floor within that zone, as well as separate zones for seatbelt anchorages. It also recommends air supply and electrical connection locations to avoid interference with mechanical interfaces. This RP is applicable to all Class 7 and 8 vehicles.

RP 441 Electrified A/C System Performance Specifications, Requirements, and Testing Criteria For Hybrid/Electric, All-Electric and Conventional Trucks. This RP is designed to help equipment users select an electrified air conditioning (A/C) system that best suits fleet operational needs by means of a standardized test used to compare factory-installed systems.

RP 443 In-Cab Cleaning and Deodorizing Guidelines. The purpose of this RP is to offer guidelines for the in-cab cleaning and deodorizing of commercial vehicles. It is meant to provide information on the benefits of establishing a proper vehicle interior cleaning program. It is not intended to endorse any single method or chemistry. This document applies to all commercial vehicles.

RP 444 Standardization of Speedometer and Tachometer Signals — Establishes a standard vehicle and engine speed signal and frequency that can be used by any electronic device on a heavy-duty vehicle requiring knowledge of speed/distance or engine revolution information. (Formerly RP 123A)

FLEET MAINTENANCE MANAGEMENT — S.5

RP 503B Standardization of Training Aid Materials — Provides a training aid format guideline for automotive manufacturers to adhere to when producing audiovisual training aids.

RP 510A New Facility Development — This Recommended Practice is designed to help fleet managers plan for future maintenance facility requirements that adequately support their business plans.

RP 511 Refrigerant Recovery — The purpose of this Recommended Practice is to establish recommendations for the use of mobile air conditioning refrigerant recovery and recycling equipment, and for certification of technicians who use the equipment when servicing these systems.

RP 512A Mechanic Staffing Determination — Provides a basic formula to calculate the number of mechanics required to adequately staff a heavy-vehicle maintenance shop. The formula can be utilized with manual (paper) records or computerized data. If no history is available, maintenance information can be obtained from vehicle manufacturers.

RP 513 Estimating Number of Service Bays — Intended to assist fleets that are planning new maintenance shop facilities by giving an analytical methodology for estimating the number of service bays required in the new facility. Covers general maintenance shop facilities for all classes of vehicles.

RP 515 Maintenance Shop Design Considerations — Intended to assist fleets who are planning new maintenance shop facilities. It provides a list of critical elements that should be considered in the design.

RP 516A Technician Training: A Model for Training Program Planners — Presents a guideline for the maintenance shop manager to use in preparing a training program for service technicians. It explains factors for consideration in developing a performance-based training program — whether the program is developed internally or provided by outside suppliers.

RP 517 Managing Environmental Compliance — This Recommended Practice is designed to provide guidance in a program for managing environmental compliance. Compliance involves satisfying regulatory bodies at the federal, state, and local levels. This RP is limited to providing guidance on compliance education/training, self-audits, and recordkeeping. It does not cover regulatory requirements of the U.S. Department of Transportation (DOT).

RP 518A	Fuel Station Planning. The purpose of this RP is to provide fleet managers guidelines when working with design professionals in designing fueling stations.	RP 534	Guidelines For Determining Vehicle Lift Productivity Efficiencies — This proposed RP offers guidelines for determining the productivity efficiencies of vehicle lifts in a maintenance shop.
RP 519	Recommendations for an Employee Performance Evaluation Program — This RP provides fleet managers with a basic set of forms and instructions for the assessment and evaluation of maintenance and support personnel. The reader must realize this Recommended Practice offers general guidelines only. A complete evaluation system must be structured to each operation.	RP 536	Guidelines for Technician Exposure to Road Deicing Chemicals. This RP offers protective guidelines to technicians who may come in contact with road deicing chemicals during the course of vehicle maintenance.
RP 520	A/C System Refrigerant Flushing — Covers flushing material, equipment and procedures for flushing both CFC (R-12) and HFC (R-134a) charged vehicle cab A/C systems in service, repair or retrofit operations.	RP 537	Disaster Recovery Guidelines for Vehicle Maintenance Operations. This RP offers guidelines for developing a disaster recovery plan covering pre-evaluation, planning, and duty assignment of assets, property and personnel.
RP 521	Cost Items Needed to Determine a Fully Burdened Technician Labor Rate — Identifies items that should be used to determine fully burdened labor rates.	RP 538	Quality Shop Process Improvement. The purpose of this RP is to provide fleet managers with some basic guidelines for implementing a process by which shop efficiency and productivity can be continuously improved — i.e., quality shop process improvement.
RP 522	Survey Development Guidelines — This management RP offers recommendations for developing and administering surveys.	CHASSIS AND BRAKE SYSTEMS — S.6	
RP 524	Advisory Annotation Guidelines — This RP offers recommendations for standardizing definitions for advisory annotation terms, such as “danger,” “warning,” etc.	RP 602B	Recovery Attachment Points for Trucks, Tractors, and Combination Vehicles — The purpose of this Recommended Practice is to help recovery professionals reduce the time necessary to recover vehicles from their immediate location of disablement, and avoid further damaging the vehicle during the recovery process. For recommendations on long-term towing of disabled or wrecked vehicles see TMC RP 626, “Heavy-duty Truck Towing Procedures.” This Recommended Practice establishes the performance objectives of recovery attachment points. It is directed at Class 6, 7, and 8 on and on-off highway trucks, truck tractors, and tractor-trailer combinations (both conventional and cab-over configurations).
RP 525	ISO 9002 Certification Considerations — This RP offers guidelines for fleets considering ISO 9002 certification.	RP 603C	Fifth Wheel Mounting — Aftermarket — Provides information to assist in the safe installation of heavy-duty vehicle aftermarket stationary and sliding fifth wheels.
RP 526	Guidelines for Shop Review Practices — This RP offers guidelines for shop review procedures.	RP 604C	Brake Chambers for Air-Braked Vehicles. This RP is intended to familiarize users with the installation, maintenance, and safety procedures associated with diaphragm and spring brake chambers for air braked vehicles. It covers all on-highway trucks, tractors, or trailers using air brakes and equipped with service chambers or spring parking brakes.
RP 527A	Vendor Selection Guidelines for Towing and Recovery — This RP offers guidelines for selecting towing and recovery vendors.	RP 605B	Reconditioning Brake Shoes. This RP sets recommendations for brake shoe reconditioning
RP 528	Technician Certification Program Guidelines — This RP offers guidelines for establishing an in-house fleet technician certification program.		
RP 530	Fleet Guidelines for Parts Purchasing—This RP offers guidelines on parts purchasing.		
RP 531	Parts Inventory Management Guidelines—This RP offers guidelines for parts inventory management.		
RP 532	Model Year Introduction Guidelines—This RP offers guidelines for standardizing model year introductions of vehicles.		

specifications that will ensure consistent performance required for a balanced brake system. It covers drum brake stamped steel shoes used on Class 7-8 commercial vehicles.

RP 606B Brake Relining Procedures. This RP covers legal marking requirements for drum brake linings, air disc brake pads, and explains these markings. It also covers shoe/lining assembly and related procedures as they apply to heavy-duty commercial vehicles.

RP 607B Service and Inspection of S-Cam Brake Systems — Serves as a thorough guide for the inspection and servicing of all heavy-duty S-cam air brake system components. The RP identifies all appropriate brake system nomenclature and explains how each component interacts to ensure maximum braking performance. It also defines tolerances for proper lining and drum performance.

RP 608B Brake Drums and Rotors. This RP covers installation, maintenance, and safety procedures associated with spoke wheel and hub-mounted drums and rotors used on heavy-duty vehicles.

RP 609C Self-Adjusting and Manual Brake Adjuster Removal, Installation and Maintenance. The purpose of this RP is to provide information regarding the removal, installation, operation, maintenance, and selection of heavy-duty vehicle manual and self-adjusting brake adjusters.

*RP 610B Driveline Design Criteria. The purpose of this RP is to provide workable guidelines for the evaluation of driveline designs and installations on Class 7-8 commercial vehicles. Adherence to these recommendations should provide satisfactory truck driveline performance.

RP 612B Pneumatic Brake Balance — Provides general guidelines for brake balance on tractors, trailers, and combination vehicles.

RP 613 Brake System Torque Balance Test Procedure — Provides a method to determine the brake system torque balance for commercial vehicles.

RP 614 Air Brake (Nylon Reinforced) Tubing & Fittings — Covers minimum requirements for fleet maintenance of air brake connections utilizing fractional inch nonmetallic tubing. Included are dimensional, performance, and identification requirements and specifications.

RP 615 Hose Fitting Standard — Lists complete standards for SAE 45° flare seat fittings in sizes -4 through -12 and SAE 37° flare seat fittings in sizes -16 and above.

RP 616A Uniform Labeling of Air Brake Valves. The purpose of this RP is to provide a means of identifying vehicle air brake system components with performance (input-output) characteristics. This RP applies to air brake system valves used to control the vehicle service brakes on heavy-duty commercial vehicles.

RP 617A Contaminant Elimination Procedure for Tractor, Trailer or Dolly Air Brake Systems — This RP offers a procedure for eliminating contaminants from air brake systems.

RP 618A Wheel Bearing Adjustment Procedure — This RP offers a procedure to achieve a verifiable wheel bearing end play of 0.001-0.005 inch (0.025-0.127 mm) for steer, drive, and trailer axle assemblies using conventional double-nut or single-nut systems.

RP 619B Air System Inspection Procedure. This RP provides guidelines for inspecting air systems used on air-braked commercial vehicles.

RP 620B Front End Alignment Steering Geometry — Defines caster, camber, and knuckle pin inclination and toe-in specifications and describes the types of tire wear and vehicle handling problems that occur when these specifications are incorrect.

RP 621 Specifications/Communications — Tries to identify and clarify specification communication among component suppliers, equipment users, and manufacturers by providing step-by-step guidelines for improving communications and establishing the necessary procedures to ensure that equipment users will get the options they specify.

RP 622A Wheel Seal and Bearing Removal, Installation, and Maintenance — Defines practices and procedures to perform a wheel seal replacement that meets fleet performance requirements. Also includes procedures and standards for storage, handling, and installation of wheel seals and wheel bearings for heavy-duty vehicles.

RP 623 Uniform Diagnostics Guide for Heavy-duty Vehicle Power Steering Systems — Provides a uniform method of diagnosing heavy-duty truck and truck tractor power steering complaints and gives the maintenance technician general advice concerning the diagnosis and correction of commercial vehicle steering related problems.

RP 624A Lubricant Fundamentals. — This proposed RP offers general information on the fundamentals of chassis-related lubricants.

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- RP 625 Brake Drum and Lining Compatibility — Provides guidelines for the inspection and maintenance of the foundation brake system. It addresses causes of premature lining wear and drum wear and other brake components
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- RP 626 Heavy-duty Truck Towing Procedures — Provides guidelines for equipment usage and to acquaint the tow truck operator with the general phases involved in heavy-duty truck towing. This should not be considered as a comprehensive guide to truck towing and recovery, but rather as a brief introduction to some of the problems involved.
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- RP 627A Brake Lining Structural Defects. This RP helps equipment users identify structural defects in brake linings and classify them into either an “out-of-service” category-as defined by the CVSA North American Uniform Out-of-Service Criteria-or an “in-service” category which permits continued vehicle operation.
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- RP 628B Aftermarket Brake Lining Classification — This Recommended Practice provides information on judging the performance of aftermarket brake linings on 16.5 x 7-inch brakes when tested to the federally mandated, original equipment dynamometer test procedure contained in Federal Motor Vehicle Safety Standard 121.
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- RP 629 Brake Lining Contamination — This Recommended Practice identifies grease- and oil-contaminated brake lining conditions and provides guidelines for lining evaluation caused by such contamination.
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- RP 630 Air Compressor Diagnosing for Excessive Oil Consumption — This Recommended Practice is concerned with identifying the problems and describing possible solutions in attempting to troubleshoot excessive oil consumption in air compressors.
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- RP 631B Recommendations for Wheel End Lubrication. This RP offers recommendations and operational considerations for selecting, inspecting and using lubricants in wheel end applications in Class 3-8 trucks, buses, tractors and trailers.
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- RP 632 Matching Air Brake Systems — This Recommended Practice addresses vehicles with braking systems manufactured in accordance with Federal Motor Vehicle Safety Standard (FMVSS) 121 Docket 90-3. Specifically, it outlines some of the issues that could be encountered in vehicle combinations, where both pre- and post-Docket 90-3 vehicles are operated. It recommends maintenance practices for existing vehicles and specification details for new vehicles that will enhance the brake performance of combination vehicles. The purpose of this Recommended Practice is to identify and address potential problems in mixing vehicles and brake systems manufactured pre- and post-Docket 90-3. It also advises fleet operators of the maintenance practices to be adopted for existing vehicles and to inform them regarding the specification and installation of braking equipment for new vehicles, so as to minimize any negative impacts of FMVSS 121 Docket 90-3 on vehicle operation.
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- RP 633 Effects of Drivetrain Torsionals — This Recommended Practice is intended to inform fleet managers of a number of drivetrain torsional issues that must be considered when specifying drivetrains. This RP presents a hierarchy of high risk vehicle configurations and usages, lists the specific failure modes that are attributable to drivetrain torsionals, and suggests specific corrective actions that will result in enhanced durability and driver comfort levels. This RP is designed to supplement the information contained in TMC RP 610A, Driveline Design Criteria. The first two sections of this Recommended Practice alert users of the potential problems associated with some of today’s vehicle configurations. The third section offers solutions to the identified problems.
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- *RP 634A Ride Height Concerns and Adjustment Procedures for Truck/Tractor Air Ride Suspensions. This RP points out the potential problems caused by improper ride height and provides recommendations for maintaining proper adjustment of air ride suspensions. It also describes procedures for adjusting air ride suspension ride height and recommends that manufacturers clearly label correct ride height settings on the vehicle.
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- RP 635 Long Stroke Brake Chambers — Provides fleets information on the use of long stroke brake chambers.
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- RP 636A Specifying Auxiliary Retarders. This RP offers spec’ing recommendations for auxiliary retarders used on Class 7-8 tractor-trailers and trucks.
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- RP 637 Tractor Air Dryer Guidelines — Offers recommendations for spec’ing, installing and maintaining tractor air dryers.
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RP 638A Heavy-Duty Clutch Maintenance Guidelines. The purpose of this RP is to provide information for the proper maintenance of heavy-duty clutches, including troubleshooting, installation and removal guidelines.

RP 639A Spec'ing Heavy-Duty Clutches. The purpose of this RP is to provide information for the proper spec'ing of heavy-duty clutches.

RP 640A Alternate Wheel Bearing Adjustment Systems — This RP offers information on alternate wheel bearing adjustment systems.

RP 641A Maintenance Guidelines for Hydraulically Actuated Clutches. This RP offers guidelines for maintaining hydraulically activated clutches.

RP 642B Total Vehicle Alignment: Recommendations for Maximizing Tire and Alignment-Related Component Life — This RP offers comprehensive alignment guidelines for medium- and heavy-duty vehicles.

RP 643 Air-Ride Suspension Maintenance Guidelines — This RP offers maintenance guidelines for air-ride suspension systems used on tractor chassis.

RP 644A Wheel End Conditions Analysis Guide — This RP offers guideline on wheel end conditions and how to identify them.

RP 645 Tie Rod Inspection and Maintenance Procedure — This RP offers guidelines on tie rod inspection and maintenance.

RP 646 Driveline Fastener Preventive Maintenance — This RP offers guidelines on driveline fastener preventive maintenance.

RP 647 Guidelines for Care and Use of Onboard Lubrication Systems — This RP offers guidelines for care and use of onboard lubrication systems.

RP 648 Troubleshooting Ride Complaints — This RP offers a comprehensive guideline to diagnosing ride complaints in heavy-duty tractors and trucks.

RP 649 Diagnostic Guidelines for Performance-Based Brake Testing — This RP offers troubleshooting guidelines for vehicles following unsuccessful testing using a performance-based brake tester.

RP 650 Guidelines for Fifth Wheel Pre-Delivery Inspection, Preventive Maintenance and Troubleshooting — This RP offers guidelines for fifth wheel pre-delivery, inspection, PM and troubleshooting.

RP 651 Steer Axle Maintenance Guidelines-This RP offers guidelines for steer axle maintenance.

RP 652 Service and Inspection of Air Disc Brakes-This RP offers guidelines on service and inspection of air disc brakes.

RP 653 Fifth Wheel Coupling And Uncoupling Guidelines-This RP offers guidelines on fifth wheel coupling and uncoupling.

RP 654 Torque Rod Selection and OEM Installation Guidelines for On-Highway Vehicles-This RP offers guidelines for torque rod selection and OEM installation.

RP 655 Drive Axle Maintenance Guidelines-This RP offers guidelines on drive axle maintenance.

RP 656 Hub and Spoke Wheel Fastener Maintenance — This proposed RP offers guidelines on hub and spoke wheel fastener maintenance.

RP 657 Heavy-Duty Drivetrain Specification Guidelines-The purpose of this Recommended Practice (RP) is to help fleet managers effectively and accurately specify an entire drivetrain used on a Class 6-8 on-highway vehicle. This RP provides the definitions and formulas necessary to specify a truck-tractor drivetrain that will meet the equipment user's performance expectations for the vocation and conditions desired. This RP is intended to supplement truck and component manufacturers' procedures and guidelines for designing and specifying drivetrains.

RP 658 Target Deceleration Value Guidelines for Performance-Based Brake Testers-This Recommended Practice (RP) provides target deceleration value guidelines for performance-based brake testers (PBBTs) used in fleet maintenance programs. It also provides information about the type of tests that can be performed and the differences that exist among the various types of PBBTs.

RP 659 Air Release Fifth Wheel Function Guidelines-This Recommended Practice (RP) provides a standard guideline for the installation and operation of in-cab, air-release fifth wheels to ensure maximum safety and optimum performance. This RP covers all on-highway commercial vehicles equipped with in-cab, air-release fifth wheels in both new and aftermarket applications.

RP 660 Tractor Crossmember Specifications for Pintle Hook Applications-The purpose of this Recommended Practice (RP) is to offer specification guidelines that standardize tractor rear crossmembers for the purposes of installing pintle hook connections. It provides recommended

specifications for the rear crossmember itself, crossmember bracing, attachment locations for safety chains and air/electrical connection locations. This RP applies to Class 7-8 tractors used for on-highway towing of converter dollies.

- RP 661 Considerations for Use of Outset Wide-Base Wheels on Drive, Trailer, and Auxiliary Axles. The purpose of this Recommended Practice (RP) is to provide guidelines for selecting, specifying and inspecting wide-base tires/wheels for drive, trailer, and auxiliary axles. The scope of this RP is limited to wide-base outset wheels on drive, trailer, and auxiliary (e.g, dolly, tag, or pusher) axle applications. This RP does not cover singled inset (dual-type) wheels.

TRAILERS, BODIES AND MATERIAL HANDLING — S.7

- RP 701 Mud Flap Mounting Brackets and Drilling Pattern — Diagrams mud flap mounting brackets and mud flap drilling pattern for mud flap installation.
- RP 702C Trailer Lamp and Reflector Placement — Covers lamp and reflector replacement on all van, open top, reefer, platform, pole, convertible side, grain and dump trailers, and tankers.
- RP 703C Electrical and Gladhand Connector Placement. This RP offers guidelines for electrical and gladhand connector placement and is intended to serve as a means of increasing efficiency and personnel safety.
- RP 704C Heavy-Duty Lighting Systems for Trailers. The purpose of this RP is to help equipment purchasers specify a safe and effective heavy-duty trailer lighting system that is low-maintenance, durable, and corrosion-free for a minimum service life of 12 years. This service life interval should apply to the integrity of all system connectors, wiring and support components.
- RP 705A Standard Trailer Landing Gear Mounting Pattern — Provides a template to produce a standard trailer-mounting bracket to which all models of landing gear can be applied, using a standard 5/8-inch hole for mounting.
- RP 707A Rear Bumper Dimensions — Standardizes ICC bumper dimensions.
- RP 708C Trailer Axle Alignment. This RP provides equipment users with guidance on performing trailer axle alignment.
- RP 709 Hubcap Standardization: Bolt-on Type-Diagrams the Type I and Type II bolt-on hubcap, two types recommended for use on trailer axle hubs.

- RP 710A Overhead Door Selection, Installation, and Maintenance for a Dry-Van or Body. This RP offers guidelines for selection, installation and maintenance of overhead doors used on dry-van trailers or bodies.
- RP 711 12-Year Life Swing-Type Dry Freight Van Trailer Doors — Gives manufacturing specifications for dry freight van trailer swing (hinged) doors, which will provide 12 years of useful service with routine maintenance that includes repair or replacement of door gaskets.
- RP 713B Procedure for Hooking Double Trailers — Gives steps to properly hitch doubles with one person.
- RP 714 Piggy-Back Trailers — Gives names of four Truck Trailer Manufacturers Association Recommended Practices that assist in specifying piggy-back options for trailers.
- RP 715 Truck Trailer (Van) Front and Rear Construction for Trailer on Flatcar Service — Establishes general design load specifications intended as minimum requirements for front and rear end structures of van trailers for use in over-the-road and trailer on flatcar applications.
- RP 716 Kingpin and Upper Coupler Requirements for Trailers — Gives kingpin and upper coupler requirements for trailers when specified for TOFC service.
- RP 717A Guidelines for Infrared Thermographic Testing of Refrigerated Trailers — Discusses infrared scanning of refrigerated trailers for air leaks and/or insulation irregularities. This Recommended Practice covers locating a scanning service, scanning equipment types, scanning procedures, effects of weather conditions, and scanning documentation.
- *RP 718B Method for Classification of Controlled Temperature Vehicles. The purpose of this RP is to establish a method for classifying controlled temperature vehicles and domestic containers (hereafter referred to as vehicles). This practice applies to vehicles which are equipped with temperature control devices and covers only new vehicles.
- RP 720 Emergency Contaminant Removal From a Refrigeration Unit — Establishes a process for cleaning trailer reefer systems that have become contaminated internally, i.e., loss of refrigerant coupled with system contamination from dirt and moisture.

RP 721A Practices for Safe Maneuvering of Converter Dollies. This RP offers guidelines for safe maneuvering of converter dollies.

RP 722 Large Vehicle Conspicuity Markings — Establishes the minimum design, configuration, and dimensional criteria for reflective marking systems to improve the night conspicuity of large vehicles.

RP 723A 12-Year Life Domestic Laminated Hardwood Flooring For Dry Freight Van Trailers — Designed to assist in the writing of specifications for domestic laminated hardwood flooring which will provide 12 years of useful service. Addresses preparation, construction, and finishing of the wood component only, and does not address the floor as a structural system within the dry freight van.

RP 724 Fiberglass Reinforced Plywood (FRP) Construction Specifications — Intended to provide minimum standards for fleet operators purchasing fiberglass reinforced plywood (FRP) trailers and van bodies. It is also intended to inform fleet operators of the availability of various FRP options. It considers the structural components of FRP trailers and van bodies as a total system. Specifications considered include plywood core and fiberglass thickness and construction, fiberglass finish coats, scuff liners, bottom side rails, fasteners, and moisture protection.

RP 725 FRP Panel Maintenance and Repair — This Recommended Practice is designed to serve as a guide for the proper care, maintenance and repair of fiberglass reinforced plastic (FRP) panels used in the trucking industry.

RP 727 Liftgate Specifications and Installation — Designed to assist equipment users in specifying rear- or side-mounted, hydraulic liftgates. It covers liftgates used on straight trucks and combination vehicles. It addresses proper equipment identification, proper vehicle specification and liftgate installation, and proper identification of liftgate operating specifications (i.e., number of performance cycles, driving [recharge] time, proper power supply, etc.)

RP 728 Trailer Axle Maintenance — Offers guidance on improving the efficiency and performance of trailer axle equipment and its maintenance. It specifically covers welding hardware to axles, installing axles and associated components, inspecting axles and associated components, and lubricating axle components.

RP 729 Trailer Fastener Specification — Offers fleets guidance on trailer fastener specification.

RP 730 Air Line Antifreeze Recommendations for Trailer Air Brake Systems — Offers fleets guidance on the use of air line antifreeze for trailer air brake systems.

RP 731A Lube Free Coupling Guidelines — This RP offers guidelines for lube-free tractor-trailer coupling systems.

RP 732 Trailer Rear Impact Guard Repair Guidelines — This RP offers repair guidelines for trailer rear impact guards.

RP 733 Liftgate Preventive Maintenance Inspection — This RP offers guidelines for liftgate preventive maintenance and inspection.

RP 734A Spec'ing Guidelines for Minimizing Van Moisture Contamination. This RP addresses moisture contamination in van trailers caused by external sources and internal condensation.

RP 735 Battery Recommendations for Engine Powered Material Handling Vehicles — Provides nine recommendations and standards to minimize battery problems in material handling vehicles.

RP 736 Repair, Section, and Replacement of Longitudinal Van Rails — This RP offers guidelines for repair, section and replacement of longitudinal van rails.

RP 737 Recommendations for a Universal Replacement Horizontal Rear Impact Guard — This RP offers recommendations for a universal replacement impact guard.

RP 738 Spec'ing Guidelines for Cargo Securement Systems Used on Flatbed Vehicles — This RP offers guidelines for spec'ing cargo securement systems used on flatbeds.

RP 739 Maintenance, Inspection, and Operating Guidelines for Cargo Securement Systems Used on Flatbed Vehicles-Description is self-explanatory.

RP 740 Corrosion Protection From Dissimilar Metals — This RP offers guidelines for corrosion prevention related to contact between dissimilar metals.

RP 741 Guidelines for Flatbed, Van Trailer, and Truck Body Entry and Egress — This RP offers guidelines on trailer entry and egress.

RP 742 Minimal Specifications for Van Trailers Shipped on Railcars — This RP offers recommendations for spec'ing van trailers to be shipped on railcars.

RP 743	Cargo Securement Systems For Van-Type Trailers And Truck Bodies-This RP offers recommendations for cargo securement systems for van-type trailers and bodies.	the safe handling of heavy-duty, single-axle converter dollies (also known as converter gear) used in Class 7-8 tractor-trailer applications.
RP 744	Pintle Hook Maintenance Guidelines-This RP offers maintenance guidelines for pintle hooks.	
RP 745	Inspection And Maintenance Guidelines For Cargo Securement Systems Used With Van-Type Trailers And Truck Bodies-This RP offers inspection and maintenance guidelines for cargo securement systems used on van-type trailers and bodies.	
RP 746	Drawbar Length Considerations-This RP offers guidelines for drawbar length.	
RP 747	Drawbar Eye Maintenance Guidelines-This RP offers guidelines on drawbar eye maintenance.	
RP 748	Trailer Refrigeration Unit Preventive Maintenance Inspection Guidelines-This RP offers preventive maintenance inspection guidelines for trailer refrigeration units.	
RP 749	Composite Van Trailer Repairs-This RP offers guidelines for repairing composite van trailers.	
RP 750	Upper Coupler Inspection Guidelines-This RP offers guidelines for inspecting upper couplers.	
RP 751	Safety Chains and Attachments-This RP offers guidelines on safety chains and attachments.	
RP 752	Forklift Preventive Maintenance Inspection Guidelines-This RP offers guidelines on forklift preventive maintenance inspection.	
RP 753	Guidelines for Liftgate Decals. — This proposed RP offers guidelines for designing liftgate advisory decals.	
RP 754	Liftgate Charging and Power Circuits — This proposed RP offers design guidelines for liftgate charging and power circuits.	
RP 755	Alternative Liftgate and Material Handling Charging Methods-The purpose of this Recommended Practice (RP) is to help equipment users identify supplementary or alternative charging methods for recharging batteries used on Class 6-8 combination vehicles equipped with power liftgates and/or material handling equipment. This RP defines alternative charging methods as those not already defined within TMC RP 754, Liftgate Charging and Power Circuits.	
RP 756	Ergonomic Design Parameters for Safe Maneuvering of Converter Dollies. This RP offers ergonomic design guidelines for facilitating	
RP 757	Proper Forklift Specifications. This RP is designed to help fleets determine operational needs for spec'ing a forklift, and what forklift type is needed for a particular application, such as regional, longhaul, or temporary storage of freight. This RP applies to forklifts with a carrying capacity range of 3000-8000 lbs. and the options available on such units.	
RP 758	Van Moisture Contamination Maintenance and Repair Guidelines. This RP offers maintenance and repair guidelines for moisture contamination in van trailers caused by external sources and internal condensation. This RP applies to van trailers used in Class 7-8 combination vehicles.	
*RP 759	Splash and Spray Suppression Guidelines. The purpose of this RP is to identify fleet equipment specifications, driver training issues, and evaluation methods for reducing road spray at highway speeds in inclement weather, thereby improving highway safety for all motorists traveling in those conditions. This RP applies to Class 8 combination vehicles.	
COST CONTROL METHODS — S.8		
RP 801C	Bar Coding Guidelines — This updated Recommended Practice provides guidelines and minimum performance criteria for the use of bar code technology for parts identification and inventory tracking in the trucking industry. The use of Symbology 3 of 9 and UPC Symbology are discussed.	
RP 802D	TMC/ATA Vehicle Maintenance Reporting Standards (VMRS 2000) — Provides an outline of TMC/ATA VMRS 2000, its advantages to the fleet operator, and guidance on the basic requirements for implementation of the VMRS 2000 System.	
RP 803A	Pre-Service Vehicle Inspection. This RP provides a form which contains most of the standard items to be inspected prior to a truck or tractor being put into service. This will enable users to have a basic format to which they can add high-frequency repair items and special equipment needs.	
RP 804	Labor Productivity Measurement — Provides a basic set of standard forms and instructions to aid measurement of maintenance shop productivity.	

RP 805 Parts Vendor Performance Evaluation — Designed to help fleet maintenance managers choose vehicle parts vendors that provide efficient service in a fair and impartial manner. Also provides information to help measure the quality of service provided parts vendors.

RP 806A Service Vendor Performance Evaluation. The purpose of this RP is to guide the fleet maintenance department in rating the quality of service provided by outside service vendors and to assist fleets in making objective decisions when choosing among competing vendors.

RP 807A Universal Equipment Claim Process — This RP offers guidelines for standardizing claim processing.

RP 808 EDI Guidelines for Aftermarket Parts Purchasing — This RP offers guidelines for aftermarket parts purchasing transactions using electronic data interchange.

RP 809 Guidelines for Electronic Repair Orders. This RP provides guidelines for standardizing the transmission and capture of electronic repair order transactions. It also establishes the basic data elements that an electronic repair order should contain.

SUSTAINABILITY AND ENVIRONMENTAL TECHNOLOGIES — S.11

RP 1102A TMC In-Service Fuel Consumption Test Procedure—Type II. This RP provides a standardized test procedure for comparing the fuel consumption of two conditions of a single test vehicle or of one test vehicle to another when it is not possible to run the two or more test vehicles simultaneously.

*RP 1103A TMC In-Service Fuel Consumption Test Procedure—Type III. This RP provides a standard test procedure for comparing the fuel economy of components or systems of the type which cannot be switched from one vehicle to another in a short period of time. This test procedure is also ideally suited for comparing the fuel consumption of one vehicle to another, and one component of a combination vehicle to the other vehicle without the component in another. This procedure is specifically designed to be completed in one day.

RP 1104 Computer Application Technology — Offers suggestions for parameters to consider when running truck and engine manufacturers' computer simulations to assist in vehicle spec'ing.

RP 1105A Idling Limiting Systems — This RP is an update of RP 1105, which offers guidelines on spec'ing idle limiting systems.

RP 1106 Evaluating Diesel Fuel Additives for Commercial Vehicles — Provides performance testing and supplier information to educate and help commercial vehicle operators select from among the various fuel additives and suppliers of additives that claim fuel economy and other performance benefits.

RP 1107 Spec'ing Drivetrains — Provides truck buyers with procedures to help determine drivetrain specs that will enable the trucks to get maximum fuel economy for a given set of operating conditions and performance requirements.

RP 1108 Analysis of Costs from Idling and Parasitic Devices for Heavy Duty Trucks — This Recommended Practice identifies sources of cost associated with engine idling and provides methods for estimating these costs, including a simple method for determining the horsepower demand of optional accessories for truck/tractor trailer combinations.

RP 1109B Type IV Fuel Economy Test Procedure. This RP provides a test procedure for comparing the fuel consumption of two vehicles of similar capabilities, or one unit of a combination vehicle to the same unit of another combination vehicle. This procedure also provides for evaluation of the effects of certain components or systems on fuel economy. This version permits valid comparison of vehicles using both particulate trap aftertreatment and diesel exhaust fluid (DEF).

RP 1110 Aerodynamic Devices: Inspection and Maintenance Procedures — The purpose of this Recommended Practice is to describe the effects that aerodynamic drag reduction devices can have on truck and combination vehicle operation and maintenance.

RP 1111B Relationships Between Truck Components and Fuel Economy. This RP provides equipment operators with a basic awareness of the relationships between truck components and fuel economy—along with an understanding of how other variables also affect fuel consumption. Because the number of possible vehicle applications is enormous, the scope of this RP is limited to Class 8 tractors coupled to 48-53 ft. single and double trailers with maximum gross weights of 80,000 lbs.; in dry or refrigerated van applications with maximum vehicle speeds of 65-70 mph.

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- RP 1112 Lightweight Components Effect on Fuel Economy — Describes the effect of lightweight components on fuel economy. Useful aid in vehicle specification.
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- RP 1113 Guidelines for Driver Incentive Programs — Offers guidelines for the successful implementation of driver incentive programs.
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- RP 1114 Driver's Effect on Fuel Economy — Describes driver's effect on vehicle fuel economy and offers recommendations on improving driver performance.
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- RP 1115 Guidelines for Qualifying Products Claiming a Fuel Economy Benefit — This RP offers guidelines for qualifying products claiming a fuel economy benefits.
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- RP 1116 Diesel Fuel Additive Functional Groups and Winter Operability — This RP offers information when considering spec'ing and using diesel fuel additives for improving winter operability.
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- RP 1117 Guidelines for Shop Sustainability Efforts. The purpose of this RP is to offer guidelines for transitioning traditional fleet maintenance shop processes to more sustainable efforts that reduce the energy and consumables waste typically associated with shop operation.
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- ONBOARD VEHICLE ELECTRONICS — S.12**
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- RP 1201 Joint TMC/SAE Recommended Practice for Serial Data Communications Between Micro-computer Systems in Heavy-duty Vehicle Applications — The purpose of this Recommended Practice is to define a general-purpose serial data communication link that may be utilized in heavy-duty vehicle applications. It is intended to serve as a guide toward a standard practice to promote serial communication compatibility among microcomputer-based modules. The primary use of the general-purpose communications link is expected to be the sharing of data among stand-alone modules to cost effectively enhance their operation.
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- RP 1202C Off-Board Diagnostic Standards. This Recommended Practice (RP) has been prepared to standardize the hardware and systems used for off-board diagnostics of heavy-vehicle electronic and related systems. This RP is not intended to define the diagnostic and repair procedures, but rather to define a common environment to allow for the widest possible use of cost effective standardized tools and procedures to simplify the diagnostics of heavy trucks.
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- RP 1203A Electronic Term Standardization — This Recommended Practice provides definitions for the numerous electronic terms and acronyms used throughout the trucking industry by vehicle manufacturers and others.
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- RP 1204 Mechanic's Electrical Skill Evaluation — Prepared as an aid to fleets in evaluating the electrical skill level of their mechanics. The Evaluation results are intended to be used to determine the required training programs needed for the mechanic to properly maintain truck electronic control systems.
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- RP 1205 Heavy-duty Vehicle Chassis Dynamometer Test Procedure — Provides a standard procedure for chassis dynamometer testing of heavy-duty vehicles for the purpose of determining power delivered through the drive tires. It also provides a method for correcting observed power to reference test conditions and explains how to analyze test data.
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- RP 1206 Placement and Structural Requirements For Heavy-duty Navigation/Communication Devices — Provides guidelines to original equipment manufacturers for provision of power and ground connections in the vehicle cab to support end-user installed trip recorders, mobile communication equipment, etc. Designed to cover connection of such devices to 12-volt negative ground electrical systems requiring 20 amps or less of unswitched power or 15 amps of switched power, the in-cab accessory power interface is intended to simplify end-user installation, maintenance, and transfer of user-installed electronic and electrical equipment by providing power and ground connection access.
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- RP 1207 Cab Electronic Accessory Power Interface — This Recommended Practice established general guidelines for OEM vehicle electrical power wiring design to support the proper installation of quote "add-on" equipment by end-users.
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- RP 1208B PC Selection Guidelines for Service Tool Applications. This Recommended Practice (RP) addresses the acquisition and use of off-board personal computers (PCs) for vehicle diagnosis, repair, and maintenance management. It is intended to help equipment users understand how various PC-based service application programs can influence PC selection.
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- RP 1209 Sensor Diagnostics — Covers troubleshooting, maintenance and installation issues regarding many types of vehicle sensors.
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RP 1210C Windows Application Program Interface (API). This document describes a standardized application program interface (API) for personal computer (PC) to onboard vehicle ECU communications under the Microsoft Windows(tm) family of operating systems. It establishes a standard API interface between the physical datalink (i.e., CAN/J1939), a VDA, and Windows(tm)-based software applications running on a PC.

RP 1211 Electronic Dash Display Guidelines — Establishes a standard protocol for transmission of electronic messages to and from a dash-mounted display device.

RP 1212A PC-to-User Interface Recommendations for Electronic Engines — This RP offers guidelines for developing user interfaces for engine-related software packages to minimize technician training requirements.

RP 1213 Vehicle to Off-Board Computing Devices Component User Interface Guidelines — This RP offers guidelines for component user interface between the vehicle and off-board technology.

RP 1214 Guidelines for Event Recording: Collection, Storage & Retrieval — This RP offers guidelines for event data recording, storage and retrieval.

RP 1215 Software Compatibility Guidelines — This RP offers guidelines for software compatibility between service programs.

RP 1216 Vehicle to Office Data Communications — This RP offers design and specification recommendations for establishing industry voluntary practices for vehicle to office data communications as it applies to on-board technologies.

RP 1217 Tractor Trailer Interface Guidelines — This document defines the minimum requirements for a new and optional replacement / supplemental connector for the J560 connector. The new connector will allow for increased power between the tractor and trailer and facilitate data communications. This connector will be used in the short term to allow for growth of new technical advancements, and long term as a possible replacement for the existing J560 connector. The document defines the minimum requirements as seen by the industry and will be provided to SAE to facilitate the development/specification for a new connector. It is assumed that every effort will be made to keep this new solution cost effective. This intention and sole purpose of this RP to provide a recommendation for SAE in their selection criteria and in no way endorses, recommends,

approves, promotes, or favors the preferential treatment of one vendor over another.

RP 1218 Guidelines for Remote Disablement of Commercial Vehicles-This RP offers guidelines for remote disablement of commercial vehicles.

RP 1220 Guidelines For Collision Warning And Adaptive Cruise Control Safety Devices For Use On Heavy Trucks-This RP offers guidelines for collision warning and adaptive cruise control safety devices used on Class 7-8 trucks.

RP 1221 Guidelines For Lane Departure Warning Systems-This RP offers guidelines for lane departure warning systems.

RP 1222 Guidelines For Heavy-Duty Vehicle Stability Systems-This RP offers guidelines for heavy-duty vehicle stability systems.

RP 1224 Driver Communications Interface. This RP offers minimum requirements for a common driver communications interface — also referred to in this document as a human-machine interface (HMI) — which should facilitate a standard look and feel among various HMI units in different makes and models of vehicles. This RP applies to all commercial vehicles equipped with on-board vehicle communications equipment that utilize an electronic driver display for wireless communications.

RP 1225 General Guidelines for Security Risk Analysis of Electronic Driver Log Systems. This RP document defines a guideline for identifying security risks associated with an electronic driver log system. The suggested risk analysis approach serves to identify potential vulnerabilities for which to consider whether appropriate security controls have been effectively implemented.

Light- & Medium-Duty and Specialty Trucks — S.14

RP 1401 Cab and Body Preventive Maintenance Inspection Procedures — This Recommended Practice offers a standardized, effective preventive maintenance (PM) procedure for truck bodies using a checklist worksheet that covers all popular types of light- and medium-duty cabs and bodies. This RP is one section of a comprehensive PM manual for light- and medium-duty vehicles (Class 2-6 vehicles).

RP 1402 Tire Selection for Commercial Light Trucks — This Recommended Practice is designed to assist fleets in the selection of tires for Class 2-5 vehicles used in commercial applications. The RP explains tire size designations; tire speed and load index designations, and tire construction options.

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- RP 1403 Determining Engine Oil Drain Intervals for Light- and Medium-Duty Trucks — This Recommended Practice is designed to help fleets establish optimum oil change intervals for light- and medium-duty vehicles used in short-haul, pickup and delivery, and/or “peddle-type” applications. This Recommended Practice applies to gasoline, diesel, and other alternatively fueled internal combustion engines used in Class 2-6 vehicles.
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- RP 1404 Wiring System Standards for the Light- and Medium-Truck Chassis/Body Interface — Establishes recommendations for wiring systems standardization between light/medium truck chassis and bodies.
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- RP 1405 Minimizing Dirt and Water Intrusion in Cargo Areas — Offers fleets guidance on how to minimize dirt and water intrusion in light/medium vehicle cargo areas.
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- RP 1406 Basic Electric/Electronic Diagnostic Procedures — Offers recommendations for basic electrical/electronic troubleshooting procedures for Class 2-6 vehicles.
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- RP 1407 Hydraulic Brake Maintenance Guidelines — Offers technicians guidelines in the proper inspection, diagnosis, and repair of hydraulic brake systems used in light- and medium-duty vehicles.
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- RP 1408 Cab Interior Noise Standard for Light- and Medium-Duty Walk-in Vans — This RP establishes equipment user-driven performance guidelines for cab interior noise for light- and medium-duty walk-in vans.
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- RP 1409 Light- and Medium-Duty Automatic Transmission Operation, Design and Specifications — This RP offers spec’ing and operation guidelines for LMV automatic transmissions.
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- RP 1410 Maintenance Guidelines for Light- and Medium-Duty Automatic Transmissions — This RP offers maintenance guidelines for LMV automatic transmissions.
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- RP 1411 Light- and Medium-Duty Automatic Transmission Fluid Guidelines — This RP offers spec’ing and usage guidelines for LMV automatic transmission fluid.
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- RP 1412 Walk-in Van Electrical System Routing and Load Requirements — This RP offers design guidelines for electrical system routing and load requirements for walk-in van applications.
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- RP 1413 Dry Freight Body Components — This RP offers guidelines for maintaining/spec’ing dry freight bodies.
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- RP 1414 Guidelines for Evaluating Preventive Maintenance Programs for Light- & Medium-Duty Vehicles — This RP offers guidelines for evaluating preventive maintenance programs for Class 2-6 vehicles.
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- RP 1415 Hydraulic Brake Rotor Durability and Diagnostic Guidelines — This RP offers guidelines for durability and troubleshooting of hydraulic brake system rotors.
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- RP 1416 Guidelines for Used Engine Coolant Analysis-This RP offers guidelines for used engine coolant analysis.
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- RP 1417 Lubricant and Fluid Sampling Guidelines-This RP offers guidelines for lube and fluid sampling.
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- RP 1418 Effects of Drivetrain Torsionals on Light- and Medium-Duty Vehicles-This RP offers guidelines on the effects of drivetrain torsionals on Class 2-6 vehicles.
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- RP 1419 Trailer Towing With Light- and Medium-Duty Vehicles-This RP offers guidelines on trailer towing with Class 2-6 vehicles.
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- RP 1420 Fluid Analysis For Class 2-6 Vehicles. — This proposed RP offers guidelines for fluid analysis pertaining to Class 2-6 commercial vehicles.
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- RP 1425 Guidelines for Mounting Fixed Second Unit Bodies. A variety of body-to-chassis interface variables can complicate the mounting of a second unit body (SUB) onto a Class 3-6 truck chassis frame. This RP offers truck body manufacturers system performance guidelines for mounting a fixed SUB to a Class 3-6 truck chassis cab.
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- RP 1426 Guidelines for Mounting Fixed Second Unit Bodies on Van Based Chassis. This Recommended Practice (RP) offers truck body manufacturers system performance guidelines for mounting a fixed SUB to a Class 2-4 van-based chassis cab (also referred to as cut-away or chop vans).
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- RP 1427 Standard Body-To-Chassis Connector. This Recommended Practice (RP) is intended to assist truck body manufacturers, truck chassis manufacturers and equipment users with the design and installation of the end-of-frame (EOF) chassis connector. Successful implementation of this RP will not only help ensure long service life and reduced maintenance, it will also simplify the troubleshooting process should maintenance be required.
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RP 1428 Entry And Egress Guidelines for Vehicles With Fold-Under Type Liftgates. The purpose of this Recommended Practice (RP) is to provide practical location guidelines for steps and handhold/grab handles used for entering and exiting the rear and side doors of a truck body equipped with a fold-under style liftgate. These guidelines should help provide both improved entry and egress and a more uniform placement of steps and handles that is ergonomically friendly for the operator. This RP applies to Class 3-6 truck bodies equipped with side/rear fold-under style liftgates.

RP 1429 Understanding Automatic Transmission Fluid Diversity. This RP describes differences among automatic transmission fluids (ATFs) currently used in Class 2-6 light- and medium-duty vehicles. It is designed to help fleet managers make informed decisions when selecting ATF and describe factors that have led to the industry's current ATF diversity.

*RP 1430 Lamp and Reflector Placement For Light- and Medium-Duty Vehicles With Liftgates. The purpose of this RP is to provide placement guidelines for lamps and reflectors on Class 2-6 vehicles equipped with various styles of liftgates (e.g., rail-type, fold-under, slide-under, etc). It identifies specific areas for locating the required reflectors and lamps that must be used to supplement or replace the required vehicle lighting when liftgates have been installed.

SPECIALTY TRUCKS — S.15

RP 1501 Preventive Maintenance Guidelines for Specialty Vehicle Hydraulic Systems — This RP offers preventive maintenance guidelines for hydraulic systems used on specialty vehicles.

RP 1502 Spec'ing Guidelines for Hydraulic System Fluids, Hoses, and Filters — This RP offers spec'ing guidelines for hydraulic system fluids, hoses and filters used on specialty vehicles.

RP 1503 Brake Maintenance Guidelines for Severe Vocational Applications-This RP offers maintenance guidelines for braking systems used in severe-service vocational applications, such as refuse operations.

RP 1504 Refuse Chassis-to-Body Electrical System Circuit and Load Requirements-This RP offers guidelines for chassis-to-body electrical system circuit and load requirements for refuse vehicles.

RP 1505 Torque Rod Selection and OEM Installation Guidelines for Vocational Vehicles-This RP offers torque rod selection and installation guidelines for vocational vehicles.

RP 1506 Torque Rod Maintenance Guidelines for Vocational Vehicles-This RP offers torque rod maintenance guidelines for vocational vehicles.

RP 1507 Recommendations for a J1939 Network Interface Strategy-This RP offers recommendations for developing J1939 network interfaces for vocational vehicles.

RP 1510 Power Take-Off (PTO) Selection Guidelines-The purpose of this Recommended Practice (RP) is to offer fleet managers guidelines for power take-off (PTO) selection. PTO selection can be a complex process, and TMC recommends that fleet managers do so with the assistance of a local PTO distributor. This RP applies to transmission-mounted PTOs used in vocational applications.

RP 1511 General Safety Guidelines for Servicing Commercial Vehicles With Hybrid Drive Systems-This Recommended Practice (RP) offers general safety guidelines for servicing hybrid electric drive systems used on Class 1-8 commercial vehicles. This RP applies to charge-sustaining and charge-depleting hybrid systems employing series or parallel architecture with rated voltages between 50-800 volts.

RP 1512 Guidelines for Specifying Pneumatic Supply on Vocational Vehicles-The purpose of this Recommended Practice (RP) is to help equipment users specify pneumatic systems used on Class 8 vehicles in vocational applications. It also offers recommendations for upgrading specifications on vehicles where the existing pneumatic supply is not adequate. This RP applies to refuse, construction, dump, mixer, tank, concrete, and bulk off-loading applications, as well as other vocational applications in which the vehicle is frequently used on-highway. Vehicles in these applications experience a drive/duty cycle that frequently taxes the pneumatic supply limits of the typical on-highway vehicle. This RP does not pertain to commercial vehicles that do not experience high-demand air requirements.

RP 1513 In-Cab Control Placement Guidelines for Refuse Vehicles. This Recommended Practice (RP) offers guidelines for standardizing the layout and labeling of in-cab controls for refuse vehicles so that operators may be familiar with control placement, function and accessibility regardless of vehicle manufacturer.

RP 1514 Hydraulic System Failure Analysis. The purpose of this RP is to help maintenance personnel troubleshoot and maintain hydraulic systems used on Class 7-8 vocational trucks.

RP 1515 Auxiliary Axle Maintenance. The purpose of this RP is to offer guidelines and procedures for properly maintaining auxiliary axles used on commercial vehicles in vocational applications.

RP 1516 Auxiliary Axle Specification Guidelines. The purpose of this RP is to offer guidelines for selecting auxiliary axles used on commercial vehicles in vocational applications.

SERVICE PROVIDER – S.16

RP 1601 Guidelines for Measuring Equipment User Customer Satisfaction. This RP offers service providers voluntary guidelines for developing and implementing a successful customer satisfaction index (CSI) system.

RP 1602 Repair Order Authorization and Approval. This RP offers a template for effective communication between equipment owners and third party maintenance providers. It focuses on strategies that leverage the purchase order (PO) number and other key points of interaction/communication to promote mutual satisfaction with the service experience.

RP 1603 Warranty Workflow Procedures. The purpose of this Recommended Practice (RP) is establishing standard workflow procedures to expedite a warranty repair, and communicate the results of that repair back to the equipment owner. These standardized procedures should facilitate efficient and thorough warranty repairs so as meet fleet customer expectations.

RP 1604 Rapid Repair Assessment. This RP provides basic guidelines for a service provider to implement and manage a rapid repair assessment process in its operation.

RP 1605 Justification for a Parts & Service Assistant. The purpose of this RP is to help service managers justify and implement the hiring of a Parts and Service Assistant.

RP 1606A Standard Repair Time Implementation Guidelines. The purpose of this RP is to lead third-party maintenance service providers through the process of selecting and implementing a standard repair time (SRT) guide for providing estimates on applicable repairs.

*RP 1607 Technician Career Development. This RP provides maintenance and human resource

managers a model for designing, developing and implementing a technician career development program in both fleet and service provider operations. It focuses on developing technician candidates and the responsibilities of key participants in the development process.

OFFBOARD DATA SYSTEMS – S.22

RP 2201 Transportation and Linerless Label Media Specification – This RP offers recommendations for specifying transportation and linerless label media.

RP 2202 Transportation and Linerless Printer Product Specification – This RP offers recommendations for specifying transportation and linerless printer product.

RP 2203 Trailer Tracking Interface Standard – This RP standardizes trailer-tracking interfaces.

RP 2204 Guidelines for Wireless Data Connectivity at Fixed Points of Presence-This RP offers guidelines for wireless data connectivity and fixed points of presence such as truckstops.