

AEROSPACE RECOMMENDED PRACTICE

SAE ARP1287

**REV.
A**

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Superseding ARP1287

SAE Standards for Use in the Design of Aerospace Vehicular Ground Equipment

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1. SCOPE:

This SAE Aerospace Recommended Practice (ARP) is applicable to any type of aerospace ground support vehicle, powered or unpowered.

1.1 Purpose:

This document provides designers and manufacturers of aerospace vehicular ground equipment a quick reference of SAE documents which should be incorporated wherever practical in the design of equipment to better ensure a high level of performance and durability.

2. REFERENCES:

It is recommended that consideration be given to the current issues of the following references in the design, manufacturing, and testing of ground equipment.

- 2.1 AIR documents are SAE Aerospace Information Reports, ARP documents are SAE Aerospace Recommended Practices, and AS documents are SAE Aerospace Standards. The J documents are SAE Standards, Recommended Practices, and Information Reports, which appear in the annual SAE Handbook. Copies of the documents may be purchased from SAE.

3. AEROSPACE GROUND EQUIPMENT DOCUMENTS:

3.1 Numerical Listing:

ATA101B

AS832D

Air/Surface (Intermodal) General Purpose Containers

ARP836A

Design and Safety Criteria for Passenger Boarding Stairways

AIR1044

Interior Contours, Main Deck Cargo Compartments, Jet Powered Cargo Airplanes (Use IATA's Unit Load Devices Manual C)

ARP1051A

Format, Text, and Numbering System for Preparing Specifications Covering Civil Aircraft Ground Support Equipment

ARP1052

Selection Criteria for Reciprocating Prime Movers

AS1130E

Air and Air/Surface (Platform) Cargo Pallets

AS1131B

Air and Air/Surface (Platform) Cargo Pallet Nets

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3.1 (Continued):

ARP1148A	Ground Electrical Power Unit, Transportable 115/200 Volt AC (Nominal) 400 Hertz, 3-Phase 4-Wire (Ground Neutral) Y-Connected System
ARP1247B	General Requirements for Aerospace Ground Support Equipment, Motorized and Nonmotorized
ARP1395	Minimum Requirements for Future Wide-Body Aircraft Cargo Systems and Compartments (Intermodal)
ARP1480	Ground Electrical Power Unit, Brushless, Synchronous, Electric Motor-Driven, 400 Hertz, 3-Phase Output
AS1491A	Interline Air Cargo Pallets
AS1492A	Interline Air Cargo Pallet Nets

4. BRAKES:

J10	Automotive and Off-Highway Air Brake Reservoir Performance and Identification Requirements
J201	In-Service Brake Performance Test Procedure Passenger-Car and Light-Duty Truck
J299	Stopping Distance Test Procedure
J318	Air Brake Gladhand Service (Control) and Emergency (Supply) Line Couplers - Trucks, Truck-Tractors, and Trailers
J360	Truck and Bus Grade Parking Performance Test Procedure
J379a	Gogan Hardness of Brake Lining
J380	Specific Gravity of Brake Lining
J656	Automotive Brake Definitions and Nomenclature
J661	Brake Lining Quality Control Test Procedure
J662	Brake Block Chamfer
J786a	Brake System Road Test Code - Truck, Bus, and Combination of Vehicles

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4. (Continued):

J840	Test Procedures for Brake Shoe and Lining Adhesives and Bonds
J843d	Brake System Road Test Code - Passenger Car and Light Duty Truck
J866	Friction Coefficient Identification System for Brake Linings
J880	Brake System Rating Test Code - Commercial Vehicles
J992	Brake System Performance Requirements - Truck, Bus, and Combination of Vehicles

5. COOLING SYSTEMS:

J971	Brake Rating Test Code - Commercial Vehicle Inertia Dynamometer
J164	Radiator Caps and Filler Necks
J631	Radiator Nomenclature
J868	Large Size Radiator Filler Caps and Necks

6. ELECTRICAL COMPONENTS AND SYSTEMS:

J139	Ignition System - Nomenclature and Terminology
J156	Fusible Links
J180	Electrical Charging Systems for Construction and Industrial Machinery
J235	Electric Blower Motor Switch
J258	Circuit Breaker - Internal Mounted - Automatic Reset
J259	Ignition Switch
J342	Spark Arrestor Test Procedure for Large Size Engines
J350	Spark Arrestor Test Procedure for Medium Size Engines
J537	Storage Batteries
J538	Grounding of Storage Batteries
J539	Voltages for Diesel Electrical Systems

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6. (Continued):

J541	Voltage Drop for Starting Motor Circuits
J548	Spark Plugs
J551	Performance Levels and Methods of Measurement of Electromagnetic Radiation from Vehicles and Devices (30 to 1000 MHz)
J553	Circuit Breakers
J554	Electric Fuses (Cartridge Type)
J561	Electrical Terminals - Eyelet and Spade Type
J771	Automotive Printed Circuits
J821	Electrical Wiring Systems for Construction, Agricultural and Off-Road Machines
J831	Nomenclature - Automotive Electrical Systems
J858a	Electrical Terminals - Blade Type
J928	Electrical Terminals - Pin and Receptacle Type
J930	Storage Batteries for Off-Road Work Machines
J973	Ignition System Measurements Procedure
J1127	Battery Cable
J1128	Low Tension Primary Cable
J1292	Automobile, Truck, Truck-Tractor, Trailer, and Motor Coach Wiring
J2031	High Tension Ignition Cable

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7. EXHAUST EMISSIONS:

J171	Measurement of Fuel Evaporative Emissions from Gasoline Powered Passenger Cars and Light Trucks Using the Enclosure Technique
J177	Measurement of Carbon Dioxide, Carbon Monoxide, and Oxides of Nitrogen in Diesel Exhaust
J215	Continuous Hydrocarbon Analysis of Diesel Emissions
J244	Measurement of Intake Air or Exhaust Gas Flow of Diesel Engines
J254	Instrumentation and Techniques for Exhaust Gas Emissions Measurement
J255a	Diesel Engine Smoke Measurement
J335	Multiposition Small Engine Exhaust System Fire Ignition Suppression
J342	Spark Arrester Test Procedure for Large Size Engines
J350	Spark Arrester Test Procedure for Medium Size Engines
J900	Crankcase Emission Control Test Code

8. FASTENERS:

J102	Square Head Setscrews
J479	Slotted Headless Setscrews
J492	Rivets and Riveting
J494	Grooved Straight Pins
J495	Straight Pins (Solid)
J496	Spring Type Straight Pins
J497	Unhardened Ground Dowel Pins
J773b	Conical Spring Washers
J891a	Spring Nuts
J892a	Push-On Spring Nuts

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9. FUEL SYSTEMS:

- | | |
|------|--|
| J398 | Fuel Tank Filler Conditions - Passenger Car, Multi-Purpose Passenger Vehicles, and Light Duty Trucks |
| J829 | Fuel Tank Filler Cap and Cap Retainer |

10. HYDRAULICS:

- | | |
|------|--|
| J514 | Hydraulic Tube Fittings |
| J515 | Hydraulic O-Ring |
| J516 | Hydraulic Hose Fittings |
| J517 | Hydraulic Hose |
| J518 | Hydraulic Flanged Tube, Pipe, and Hose Connections, 4-Bolt Split Flange Type |
| J744 | Hydraulic Pump and Motor Mounting and Drive Dimensions |
| J745 | Hydraulic Power Pump Test Procedure |
| J746 | Hydraulic Motor Test Procedure |
| J747 | Control Valve Test Procedure |
| J748 | Hydraulic Directional Control Valves, 3000 psi Maximum |
| J931 | Hydraulic Power Circuit Filtration |

11. HYDRODYNAMIC DRIVE:

- | | |
|------|---------------------------------|
| J640 | Symbols for Hydrodynamic Drives |
| J641 | Hydrodynamic Drives Terminology |
| J643 | Hydrodynamic Drive Test Code |

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12. INSTRUMENTS AND CONTROLS:

J209	Instrument Face Design and Location for Construction and Industrial Equipment
J680	Location and Operation of Instruments and Controls in Motor Truck Cabs
J841	Operator Controls for Agricultural Wheeled Tractors
J898	Control Locations for Off-Road Work Machines
J1362	Symbols for Controls, Indicators, and Tell-Tales for Off-Road, Self-Propelled Work Machines

13. LIGHTING COMPARTMENTS AND SYSTEMS:

J137	Lighting and Marking of Agricultural Equipment on Highways
J186	Supplemental High Mounted Stop and Rear Turn Signal Lamps for Use on Vehicles Less Than 2032 mm in Overall Width
J222	Parking Lamps (Front Position Lamps)
J253	Headlamp Switch
J387	Terminology - Motor Vehicle Lighting
J572	Requirements for Sealed Lighting Unit for Construction and Industrial Machines
J573	Miniature Lamp Bulbs
J580	Sealed Beam Headlamp Assembly
J585	Tail Lamps (Rear Position Lamps)
J586	Stop Lamps for Use on Motor Vehicles Less Than 2032 mm in Overall Width
J589	Turn Signal Switch
J592	Clearance, Side Marker, and Identification Lamps
J593	Backup Lamps (Reversing Lamps)

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13. (Continued):

J595	Flashing Warning Lamps for Authorized Emergency, Maintenance and Service Vehicles
J598	Sealed Lighting Units for Construction, Industrial and Forest Machinery
J599	Lighting Inspection Code
J602	Headlamp Aiming Device for Mechanically Aimable Headlamp Units
J725	Mounting Brackets and Socket for Warning Lamp and Slow-Moving Vehicle (SMV) Identification Emblem
J759	Lighting Identification Code
J760a	Dimensional Specifications for General Service Sealed Lighting Units
J845	360 Degree Warning Lamp for Authorized Emergency, Maintenance and Service Vehicles
J852	Front Cornering Lamps for Use on Motor Vehicles
J910	Hazard Warning Signal Switch
J914	Side Turn Signal Lamps
J974	Flashing Warning Lamp for Agricultural Equipment
J975	Headlamps for Agricultural Equipment

14. METALS:

14.1 Ferrous:

J126	Selecting and Specifying Hot and Cold Rolled Steel Sheet and Strip
J368	High Strength, Quenched, and Tempered Structural Steels
J401	Selection and Use of Steels
J403	Chemical Compositions of SAE Carbon Steels
J404	Chemical Compositions of SAE Alloy Steels

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14.1 (Continued):

J405	Chemical Compositions of SAE Wrought Stainless Steels
J410	High Strength, Low Alloy Steel
J412	General Characteristics and Heat Treatments of Steels
J413	Mechanical Properties of Heat Treated Wrought Steels
J415	Definitions of Heat Treating Terms
J935	High Strength Carbon and Alloy Die Drawn Steels
J940	Glossary of Carbon Steel Sheet and Strip Terms
J1397	Estimated Mechanical Properties and Machinability of Steel Bars

14.2 Nonferrous:

J451	Aluminum Alloys - Fundamentals
J452	General Information - Chemical Compositions, Mechanical and Physical Properties of SAE Aluminum Casting Alloys
J454	General Data on Wrought Aluminum Alloys
J457	Chemical Compositions, Mechanical Property Limits, and Dimensional Tolerances of SAE Wrought Aluminum Alloys
J459c	Bearing and Bushing Alloys
J460e	Bearing and Bushing Alloys
J993	Alloy and Temper Designation Systems for Aluminum

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15. MISCELLANEOUS GENERAL INFORMATION:

J185	Access Systems for Off-Road Machines
J227a	Electric Vehicle Test Procedure
J348	Wheel Chocks
J362	Vehicle Hood Latch Systems
J377	Performance of Vehicle Traffic Horns
J450	Use of Terms Yield Strength and Yield Point
J490	Ball Joints
J491	Steering Ball Studs and Socket Assemblies
J500	Serrated Shaft Ends
J501	Shaft Ends
J502	Woodruff Keys
J503	Woodruff Key Slots and Keyways
J510	Leaf Springs for Motor Vehicle Suspension - Made to Customary U.S. Units
J512	Automotive Tube Fittings
J638	Motor Vehicle Heater Test Procedure
J645	Automotive Transmission Terminology
J646	Planetary Gear(s) - Terminology
J678	Speedometers and Tachometers - Automotive
J682	Rear Wheel Splash and Stone Throw Protection
J683	Tire Chain Clearance - Trucks, Buses (Except Suburban, Intercity, and Transit Buses), and Combinations of Vehicles

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15. (Continued):

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J687	Nomenclature - Truck, Bus, Trailer
J688	Truck Ability Prediction Procedure
J689	Curb Clearance Approach, Departure, and Ramp Breakover Angles - Passenger Car and Light Truck
J690	Certificates of Maximum Net Horsepower for Motor Trucks and Truck Tractors
J691	Motor Truck CA Dimensions
J693	Truck Overall Widths Across Dual Tires
J695	Turning Ability and Off Tracking - Motor Vehicles
J697	Safety Chain of Full Trailers or Converter Dollies
J706	Ratings of Winches
J753	Lubrication Chart - Construction and Industrial Machinery
J819	Engine Cooling System Field Test (Air-to-Boil)
J826	Devices for Use in Defining and Measuring Vehicle Seating Accommodation
J833	Human Physical Dimensions
J846	Coding Systems for Identification of Fluid Conductors and Connectors
J862	Factors Affecting Accuracy of Mechanically Driven Automotive Speedometer and Odometers
J869	Component Nomenclature - Construction Two- and Four-Wheel Tractors
J872	Drawbar Test Procedure for Construction, Forestry and Industrial Machines

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J873	Drag Force Test Procedure for Construction, Forestry, and Industrial Machines
J874	Center of Gravity Test Code
J879b	Motor Vehicle Seating Systems
J897	Machine Slope Operation Test Code
J899	Operator's Seat Dimensions for Off-Road Self-Propelled Work Machines
J916	Rules for SAE Use of SI (Metric) Units
J925	Minimum Service Access Dimensions for Off-Road Machines
J950	Gradeability Test Code
J962	Formed Tube Ends for Hose Connections
J978	Bumper Jacking Test Procedure - Motor Vehicles
J980a	Bumper Evaluation Test Procedure - Passenger Cars
J1121	Helical Compression and Extension Spring Terminology
J1234	Specification Definitions - Off-Road Work Machines

16. NONMETALLIC MATERIALS:

16.1 Fluids and Lubricants:

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J300	Engine Oil Viscosity Classification
J304	Engine Oil Tests
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J308	Axle and Manual Transmission Lubricants

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J310	Automotive Lubricating Greases
J311	Fluid for Passenger Car Type Automatic Transmissions
J312	Automotive Gasolines
J313	Diesel Fuels
J357	Physical and Chemical Properties of Engine Oils
J754a	Lubricant Types - Construction and Industrial Machinery
J814	Engine Coolants
J1703	Motor Vehicle Brake Fluid

16.2 Hoses:

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J30	Fuel and Oil Hoses
J51	Automotive Air Conditioning Hose
J90	Standard Classification System for Nonmetallic Automotive Gasket Materials
J111	Seals - Terminology of Radial Lip
J120a	Rubber Rings for Automotive Applications
J188	Power Steering Pressure Hose - High Volumetric Expansion Type
J191	Power Steering Pressure Hose - Low Volumetric Expansion Type
J200	Classification System for Rubber Materials
J250	Synthetic Resin Plastic Sealers, Nondrying Type
J314	Felts - Wool and Part Wool
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J673	Automotive Safety Glazing
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J1403	Vacuum Brake Hose
J1601	Rubber Cups for Hydraulic Actuating Cylinders
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17. POWER PLANTS, ACCESSORIES, AND DRIVE TRAIN:

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J226	Engine Preheaters
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J607	Small Spark Ignition Engine Test Code
J615	Engine Mountings
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J637	Automotive V-Belt Drives
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