SAE INTERNATIONAL

SURFACE VEHICLE STANDARD

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Recovery Equipment for Contaminated R-134a or R-1234yf Refrigerant from Mobile Automotive Air Conditioning Systems

RATIONALE

This standard is required to facilitate service of contaminated mobile air-conditioning (MAC) R-134a and/or R-1234yf refrigerant systems. If the MAC system refrigerant has been contaminated such that the refrigerant in the MAC system cannot be on-site recycled and meet J2099 with equipment that meets SAE J2788, J2843 or J3030, then it should be recovered and sent for proper disposal. If a refrigerant identifier that meets J2912 or J2927 indicates that the refrigerant has been contaminated, it should be removed only with equipment that meets this standard and then disposed of by a qualified facility

1. SCOPE

This standard covers equipment used to remove contaminated R-134a and/or R-1234yf refrigerant from Mobile Air Conditioning (MAC) systems.

1.1 Purpose

1.2 The purpose of this SAE Standard is to provide minimum performance and operating requirements for equipment used to recover contaminated refrigerant or to recover refrigerant at facilities which do not service MAC systems. Any contaminated refrigerant recovered with this equipment is to be returned to an EPA approved refrigerant reclamation facility that will process it appropriately as per AHRI 700 standard or dispose of it. Refrigerant recovered with this equipment cannot be recycled. Refrigerant recovery equipment is required to ensure adequate refrigerant recovery and to reduce emissions during the removal of refrigerant from mobile air conditioning systems.

1.3 Equipment shall be certified to meet all performance requirements outlined in this document and international and regional construction and safety requirements as outlined in Section 8 of this document.

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SAE values your input. To provide feedback on this Technical Report, please visit http://www.sae.org/technical/standards/J2851_201502

2. REFERENCES

2.1 Applicable Documents

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

2.1.1 SAE Publications

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

2.1.1.1 System Design Guidelines

SAE J639 Safety Standards for Motor Vehicle Refrigerant Vapor Compression Systems

2.1.1.2 Service Activities

SAE J2197 HFC-134a (R-134a) Service Hose Fittings for Automotive Air-Conditioning Service Equipment.

SAE J2888 R-1234yf Service Hose, Fittings and Couplers for Mobile Refrigerant Systems Service Equipment

2.1.1.3 Technician Service Procedures

SAE J2845 R-1234yf [HFO-1234yf] and R-744 Technician Training for Safe Service and Containment of Refrigerants Used in Mobile A/C Systems

2.1.1.4 Service Equipment

SAE J2099 Standard of Purity for Recycled R-134a (HFC-134a) and R-1234yf (HFO-1234yf) for Use in Mobile Air-conditioning Systems

SAE J2912 Performance Requirements for R-134a and R-1234yf Refrigerant Diagnostic Identifiers (RDI) for Use with Mobile Air Conditioning Systems.

SAE J2788 HFC-134a (R-134a) Recovery/Recycling Equipment and Recovery/Recycling/Recharging for Mobile Air-Conditioning Systems

SAE J2810 HFC-134a (R-134a) Refrigerant Recovery Equipment for Mobile Automotive Air-Conditioning Systems.

SAE J2843 R-1234yf [HFO-1234yf] Recovery/Recycling/Recharging Equipment for Flammable Refrigerants for Mobile Air-Conditioning Systems for R-134a and R-1234yf Refrigerant Diagnostic Identifiers (RDI) for Use with Mobile Air Conditioning Systems

SAE J2927 R-1234yf Refrigerant Identifier Installed in Recovery and Recycling Equipment for Use With Mobile A/C Systems

SAE J3030 Automotive Refrigerant Recovery/Recycling Equipment Intended for use with Multiple Refrigerants

2.1.2 Related Publications

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

ISO 7010:201 Graphical Symbols - Safety Colours and Safety Signs - Registered Safety Signs

SAE J2776 Refrigerant Purity and Container Requirements for New HFC-134a 1,1,1,2 - Tetrafluoroethane Refrigerant Used in Mobile Air-Conditioning Systems

SAE J2844 R-1234yf (HFO-1234yf) New Refrigerant Purity and Container Requirements for Use in Mobile Air-Conditioning Systems

SAE J2296 Retest of Refrigerant Container

SAE J2911 Procedure for Certification that Requirements for Mobile Air Conditioning System Components, Service Equipment, and Service Technician Training Meet SAE J Standards

2.1.3 AHRI Publication

Available from Air Conditioning and Refrigeration Institute, 1501 Wilson Boulevard, Sixth Floor, Arlington, VA 22209.

AHRI 700 Specifications for Fluorocarbon Refrigerants

2.1.4 CGA Publication

Available from CGA, 14501 George Carter Way, Suite 103, Chantilly, VA 20151, Tel: 703-788-2700, www.cganet.com.

CGA S-1.1 Pressure Relief Device Standard Part 1 - Cylinders for Compressed Gases

2.1.5 Specification for Cylinders

It is the responsibility of the equipment manufacturer and/or equipment user to be compliant with the most recent cylinder standards that apply in the region where the equipment is used for recovery. For reference, examples of cylinder specifications are shown below.

NOTE: This list is not exhaustive and local/regional standards may change recovery cylinder requirements.

EU Cylinders ADR Standard and TPED Standard

US Cylinders DOT Standard CFR 49, Section 173.304Shippers - General Requirements for Shipments and Packaging.

2.1.6 UL Publications

Available from UL, 333 Pfingsten Road, Northbrook, IL 60062-2096, Tel: 847-272-8800, www.ul.com.

UL is currently in the process of updating UL 1963 to comprehend the use with A2L fluids. All references to UL 1963 within this document shall be to UL1963 (version 4). The following are exceptions to UL1963:

1. A hazardous location plug shall not be required.
2. A hose assembly inside the machine shall not exceed 0.91 meters (3 feet) in length.
3. The hose tensile pull requirement shall be 113 kg (250 lbs) minimum.
4. The required hose permeation shall be 4.9 - kg/m^2 (1 lb/ft^2) /yr. maximum.

UL 1769 Cylinder Valves

UL 1963 Refrigerant Recovery/Recycling Equipment Standard for Safety for Refrigerant Recovery/Recycling Equipment