

SERVICE HOSE FOR AUTOMOTIVE AIR CONDITIONING

Foreword—This Reaffirmed Document has been changed only to reflect the new SAE Technical Standards Board Format

1. Scope—This SAE Standard covers reinforced rubber, reinforced thermoplastic, or otherwise constructed hose, or hose assemblies, intended for conducting liquid and gaseous refrigerants for service connections from mobile air conditioning systems to service equipment such as a manifold gauge set and vacuum pumps or for use internally, in charging stations or service equipment intended for use in servicing mobile air-conditioning systems.

1.1 The hose shall be designed to minimize permeation of refrigerants and contamination of refrigerant passing there through and to be serviceable over a temperature range of -30 to 95 °C. Hose working pressure shall be at least 3.4 MPa and the minimum burst pressure shall be at least 5 times.

2. References

2.1 Applicable Publications—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, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J51—Automotive Air-Conditioning Hose

SAE J513—Refrigerant Flare Fittings

SAE J639—Safety Practices for Mechanical Vapor Compression Refrigeration Equipment or System used to Cool Passenger Compartments of Motor Vehicles

SAE J2197—Service Hose Fittings

SAE J2210—HFC-134a Recycling Equipment for Mobile Air-Conditioning Systems

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

ARI 720—Refrigerant Access Valves and Hose Connectors

2.1.3 ASTM PUBLICATIONS—Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM D 380—Methods of Testing Rubber Hoses

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3. Definitions

- 3.1 High-Side Service Hose**—A hose connected between the vehicle high-side service port and the manifold gauge set or equipment. For CFC-12 (R-12), it includes a 1/4 female refrigeration flare (FFL) nut on both ends and a shutoff device within 30 cm of the end connected to the serviced system or equipment. For HFC-134a (R-134a), it includes a high-side coupling, as defined in SAE J639 and a shutoff device within 30 cm of the connection to the serviced system or equipment, and a 1/2 ACME female nut on the other end.
- 3.2 Low-Side Service Hose**—A hose connected between the vehicle low-side service port and the gauge manifold, or equipment. For R-12, it includes a 1/4 female refrigeration flare (FFL) nut on both ends and a shutoff device within 30 cm of the end connected to the serviced the system or equipment. For R-134a, it includes a low-side coupling, as defined in SAE J639, and a shutoff device within 30 cm of the connection to the serviced system or equipment, and a 1/2 ACME female nut on the other end.
- 3.3 Utility Hose**—A hose connected between the manifold gauge set and the service equipment (vacuum pump, charging equipment, recovery/recycling unit). For R-12, it includes a 1/4 FFL nut on both ends and a shutoff device within 30 cm of the end connected to the serviced system or equipment. For R-134a, it includes a 1/2 ACME female nut on both ends and a shutoff device within 30 cm of the connection to the serviced system or equipment.
- 3.4 Internal Hose**—A hose connected between components within or as part of service equipment. If the connection is made external to the unit, it shall be a wrench tight connection different than those described in high-side service hose, low-side service hose and utility hose as previously defined.
- 3.5 Charge Coupling, used with R-134a**—The female connector intended to be used with the vehicle service fittings (ports) as identified in SAE J639.
- 3.6 The 1/2 ACME Female Nut**—Was established for connecting service hoses to R-134a refrigerant containers to prevent cross contamination of refrigerants. After consideration of existing fittings for refrigerant containers along with manufacturing and safety concerns, it was determined that possible cross threading of metric threads could occur. Establishment of the 1/2 ACME thread reduces the chance of cross threading service hoses resulting in leakage and safety concerns.

4. Hose Assembly Construction

4.1 R-12 Hose

- 4.1.1 No color, fitting restrictions, or shutoff device requirements shall apply to internal hoses. Hoses which use internal or external wrench tight connections shall be exempt from fitting requirements pertaining to the end of the hose so connected.
- 4.1.2 High-side service hoses, low-side service hoses, and utility hoses shall be constructed with 1/4 FFL nuts on both ends and shall have a shutoff device within 30 cm of one end of the hose.
- 4.1.3 A valve core depressor shall be provided on the same end of the hose as the shutoff device. In most cases, valve core pins on the male fittings are located per ARI Standard 720 refrigerant access valves and hose connectors, but other locations have been used.
- 4.1.4 Adapters will be used to account for different high-side vehicle service fittings per SAE J639.
- 4.1.5 Colors for various hoses shall be:
- 4.1.5.1 *Low-Side Service Hose*—Solid blue is preferred with optional black with continuous blue stripe.

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4.1.5.2 *High-Side Service Hose*—Solid red is preferred with optional black with continuous red stripe.

4.1.5.3 *Utility Hose*—Solid yellow or solid white is preferred with optional black with yellow or white continuous stripe.

4.1.5.4 Additional marking as noted in Section 6.

4.2 R-134a Hose

4.2.1 No color, fitting restrictions, or shutoff device requirements shall apply to internal hoses. Hoses which use internal or external wrench tight connection shall be exempt from fitting requirements pertaining to the end of the hose so connected.

4.2.2 High-side service hose and low-side service hose shall be constructed with the charge coupling on one end, a 1/2 ACME female nut per SAE J2197 on the other end, and a shutoff device within 30 cm of the charge coupling end. Charge couplings for high- and low-side shall meet the requirements and be compatible as defined in SAE J639.

4.2.2.1 Hoses shall be constructed with the charge coupling integral. As defined in SAE J2197, a 14 mm threaded connection for service replacement of the hose portion is optional. The replacement hose shall meet all the other requirements (no charge coupling) of this document.

4.2.3 Utility hose shall have 1/2 ACME female nut per SAE J2197 on both ends and a shutoff device within 30 cm of one end. The end with the shutoff device shall also include a valve core depressor compatible with SAE J2197.

4.2.4 Colors for various hoses shall be:

4.2.4.1 *Low-Side Service Hose*—Solid blue with black stripe.

4.2.4.2 *High-Side Service Hose*—Solid red with black stripe.

4.2.4.3 *Utility Hose*—Solid yellow with black stripe.

4.2.4.4 See Figure 1 for stripe and marking detail.

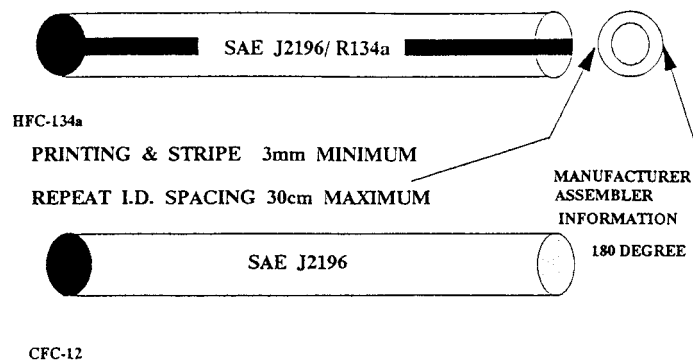


FIGURE 1—SERVICE HOSE

4.2.4.5 Additional marking as noted in Section 6.