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INTERNATIONAL
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SURFACE VEHICLE INFORMATION REPORT

SAE J1288

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Packaging, Storage, and Shelf Life cf Hydraulic Brake Hose Assemblies

***Foreword*—**This Reaffirmed Document has not changed other than to put it into the new SAE Technical Standards Board Format.

***1. Scope*—**This SAE Information Report is the listing of recommendations for the proper packaging, storage, and shelf life limitations of new and unused hydraulic brake hose assemblies. The document embodies the testing, analysis, and experience of many users and manufacturers. Where specific manufacturer's recommendations are made, those recommendations shall supersede the recommendations of this document.

This document describes the successful procedures and practices associated with brake hose assemblies usage by a wide cross section of manufacturers and users over several years. The practices are expected to be applicable to all brake hose assemblies which qualify under SAE J1401.

1.1 Purpose—Hydraulic brake hose assemblies have a finite life. The purpose of this document is to provide useful guidelines for handling brake hose assemblies after manufacture and prior to installation onto a vehicle.

Another purpose relates to the performance requirements of SAE J1401 which apply to new and unused brake hose assemblies. Hose assemblies in storage for any length of time could be considered new and unused, and therefore expected to meet the requirements of SAE J1401 and FMVSS 106. Hostile storage conditions could preclude meeting those requirements.

2. References

2.1 Applicable Publications—The following publications form a part of the specification to the extent specified herein. Unless otherwise indicated the latest revision of SAE publications shall apply.

2.1.1 SAE PUBLICATION—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J1401—Road Vehicle—Hydraulic Brake Hose Assemblies for Use with Non-Petroleum Base Hydraulic Fluids

2.1.2 FEDERAL AND MILITARY PUBLICATION—U. S. Government, DOD SSP, Subscription Service Division, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094

FMVSS 106

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3. Packaging Conditions

3.1 Background—Optimum packaging conditions are not always feasible because of the design of the brake hose assembly, and the available storage environment. The objective of packaging is to protect the hose from harmful materials in the environment, identify the brake hose assembly, and provide marketing value. It is the responsibility of the brake hose assembly supplier, in conjunction with the distributor, to insure that the individual package is acceptable. Optimum conditions are recommended, and exceptions should be carefully evaluated.

3.2 Positioning of Brake Hose Assemblies—Brake hose assemblies should be stored in a straight position with no external forces on the hose. A straight position is essential to the proper installation of the brake hose assembly to the vehicle. Curved storage positions result in residual deformation which makes correct installation difficult, and could result in the brake hose contacting the tire or suspension after installation. Any curvature to the hose adds stress to the cover. The result of the stress is an acceleration of the normal aging effect of the polymers.

3.3 Compatibility of Brake Hose with Packaging Materials—Some customary packaging materials contain chemicals which cause a reaction with the brake hose. Among those materials are certain plastics, adhesives, and paper treatments. Care should be taken to insure that the packaging materials are inert to the hose assembly.

4. Storage Conditions

4.1 Background—All polymeric materials undergo changes in physical properties over time. Detrimental changes can be minimized by controlling the storage environment. Oils, solvents, lubricants, ozone, ultraviolet light, heat, adhesives, water, salts, and humidity are some of the natural forces which can act to degrade a brake hose assembly.

4.2 Cleanliness—It is imperative that the brake hose assembly be kept clean. Even foreign materials which do not affect the brake hose assembly can be detrimental to the brake system. The bases, bores, and sealing surfaces are particularly sensitive to foreign material contaminants.

4.3 Ozone and Oxidation Protection—Ozone is an especially active form of oxygen which causes deterioration of rubber products. Ozone is present in the natural form, but it can be generated by such equipment as electric motors, high-intensity lamps, and voltage discharge apparati. The storage room should be remote from ozone-producing equipment.

4.4 Temperature—Care should be taken to avoid high temperature (above 40 °C) storage because the higher temperature increases the aging deterioration of the brake hose. Cold temperature (below –40 °C) will cause the hose to stiffen, but would not be expected to impart any performance change.

4.5 Humidity—Brake hoses are not known to be performance sensitive to humidity. Extremely moist and dry environments should, however, be avoided because of possible degradation to the supporting yarn or plastic armor.

4.6 Light—The brake hoses should be protected from direct exposure to sunlight and high-intensity artificial light.

4.7 Cleaning Solutions—Care should be taken to avoid contact of the hose with cleaning solutions which contain materials that leach plasticizers from the hose. Cleaning with water or discretionary use of isopropyl alcohol will not harm the hose. The hose should be dry before use.

4.8 Ammonia and Ammonia Derivatives—Many brake hose end fittings are made from brass which is susceptible to degradation due to ammonia contact. The source of degradation can be from animal waste, cleaning materials, fertilizers, or other available forms. Degradation of brass due to attack from ammonia compounds can be rapid, therefore, extreme care should be taken to avoid hose assembly contact with these types of materials.

4.9 Oils, Solvents, and Special Fluids—Oils, solvents, and other fluids can cause the rubber material to soften and swell. Further, certain brake hose protective sleeving is especially susceptible to performance loss due to attack by such materials. Therefore, the hose should be protected against contact with these materials.

4.10 Salts—The presence of salts can cause corrosion of metal components and degradation of rubbers. Such salts can be found in households, fertilizer, or in natural forms. Brake hose assemblies should be protected from all forms of salts.

5. Shelf Life of Brake Hose Assemblies

5.1 Background—Different hose constructions have different initial performance levels and different degradation rates relative to specific adverse packaging, handling, and storage conditions.

5.2 Inspection—The brake hose assembly should be inspected prior to installation on the vehicle. The inspection should include items such as straightness, flexibility, cleanliness, cracks, swell, and corrosion.

5.3 Qualified Shelf Life—Under optimum packaging and storage conditions, shelf life of brake hose assemblies is unrestricted. Shelf life will be reduced commensurate with the degree of departure from optimum conditions. Based upon the inspection, 5.2, the hose assembly can be put into service if it is not degraded or has not been mishandled.

5.3.1 SPECIAL CONDITIONING OF BRAKE HOSE PRIOR TO INSTALLATION—If brake hoses are deformed during packaging or storage, it is recommended that the hose be removed from the package and placed in a straight position and allowed to stabilize to a temperature of 15 to 40 °C.

After temperature stabilization, the brake hose should be manually flexed to remove any residual deformation and inspected for cracks before attempting to install the brake hose to the vehicle.

PREPARED BY THE SAE AUTOMOTIVE BRAKE AND STEERING HOSE STANDARDS COMMITTEE