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DEPT. OF TRANSPORTATION  
DOCKET SECTION

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Docket Clerk  
U.S. DOT Dockets  
Room PL-401  
400 Seventh Street, SW  
Washington, DC 20590-001

FHWA-97-2364-35

July 18, 1997

Re: FHWA Docket No. MC-97-5;  
FHWA Notice of Proposed Rule Making to Amend Part 393  
of the Federal Motor Carrier Safety Regulations

Dear Sir or Madam:

This letter provides comments concerning the proposed changes to 49 CFR Section 393.45-46 set out in the Notice of Proposed Rule Making, as those changes pertain to various types of brake tubing and brake hose.

These comments are provided by DON VERHOFF, OSAKOSH TRUCK  
HEAVY DUTY TRUCKS. The comments in this letter provide a discussion of the proposed changes to Section 393.45-46 that are ill advised and should not be made.

Brake tubing and hose that are subject to Section 393.45-46 are critical safety components which are used on trucks and buses and other vehicles in a demanding environment. The tubing (which is a single wall product) and hose (which is a multi-layer reinforced product) are expected to last for many years (in some cases for the life of the vehicle). The products are exposed to extreme heat and ultraviolet light conditions in the summer Arizona sun. They are exposed to extreme low-temperature conditions as they are used in Alaska in winter. They are coated with oil, diesel fuel, de-icing salts, methanol, caustic cleaning fluids, and other chemicals. They are then bent, pressurized, impacted, twisted and stressed an untold number of times in a wide range of applications.

The regulatory framework that sets out the minimum requirements for these products is found at 49 CFR 571.106 and at 49 CFR 393.45-46. In general, the former regulation (which is promulgated by NHTSA) provides generic minimum requirements for all of the covered products. The latter regulation (which is promulgated by FHWA) provides individual requirements that are specific to metallic air brake tubing, non-rubber non-metallic straight and coiled air brake hose and tubing, rubber air brake hose, rubber hydraulic brake hose, and rubber vacuum hose. The requirements of these two regulations are not in conflict with one another. Instead, these regulations supplement one another. Either regulation by itself is insufficient. But together, they provide the appropriate generic and specific requirements for products that meet the demanding applications for brake tubing and hose.

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To explain the performance based requirements that are proposed to be eliminated in the Notice of Proposed Rule Making, the following product specific requirements of current Section 393.45-46 which are not covered by the generic requirements in Section 571.106 are proposed to be eliminated:

A. For metallic air brake tubing, the following requirements of SAE J1149.

SAE J1149 specifies the minimum requirements for two types of metallic brake tubing—type 1 being copper tubing and type 2 being galvanized steel pipe. SAE J1149 specifies the manufacturing methods, dimensions and tolerances, quality, material properties, performance requirements, and testing methods for certifying metallic air brake tubing. If these requirements for the metallic tubing are not met, the tubing may not perform satisfactorily with the fittings on the vehicle that are designed to work with J1149 tubing.

B. For non-rubber, non-metallic air brake tubing, the following requirements of SAE J844.

Dimensions. SAE J844 requires tightly controlled dimensions of the tubing to assure fitting compatibility. Tight dimensional control insures interchangeability between air brake fittings and tubing from different manufacturers. FMVSS 106, Sections 7 and 8, do not address this requirement.

Ultraviolet Light Resistance. SAE J844 requires that non-metallic air brake tubing be resistant to intense ultraviolet light. Ultraviolet light testing is required to prevent tube failures when exposed long term to direct sunlight. FMVSS 106 does not address this requirement.

Cold Temperature Impact Resistance. SAE J844 requires that non-metallic air brake tubing be resistant to cold temperature impact. Tubing is often exposed to impact from stones or ice propelled by the truck wheels, and this impact can occur at cold temperatures. The cold temperature impact test is a requirement necessary to prevent tube failures. FMVSS 106 does not address this test requirement.

Adhesion. SAE J844 requires heat aged tubing (type B) to have inseparable layer adhesion. This requirement assures that non-metallic air brake tubing will maintain its shape and burst strength when exposed to long-term elevated temperatures. This test is not covered in FMVSS 106.

Collapse Resistance. SAE J844 requires that non-metallic air brake tubing have resistance to collapse when bent into a small bend radius. This test requirement is necessary to insure that adequate flow can be transferred through the air brake tubing. This test requirement is not adequately covered in FMVSS 106, Section 7.3.1.

Leakage Test. SAE J844 requires that 100 percent of all manufactured tubing is to pass a leakage pressure test at 200 psi to assure that no structural defects exist in the tubing. FMVSS 106 does not address this test requirement in Section 7.3.8.

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Burst Test. The SAE J844 room temperature burst pressure requirements for tubing are significantly higher than those stated in FMVSS 106. These higher burst pressure requirements provide for adequate burst resistance on actual applications where operating temperatures are much higher than room temperature causing non-metallic air brake tubing to burst at substantially lower pressure. The burst test requirements stated in FMVSS 106 are inadequate for non-metallic air brake tubing.

Methyl Alcohol Resistance. SAE J844 requires that non-metallic air brake tubing have specific resistance to methyl alcohol. This requirement is meant to assure that non-metallic air brake tubing is chemically resistant to products such as windshield washer fluids and antifreeze. FMVSS 106 does not address this chemical compatibility requirement.

Boiling Water Resistance. SAE J844 requires that non-metallic air brake tubing have resistance to the effects of boiling water. This test requirement is meant to assure that the tubing will not deteriorate when exposed to boiling water such as when tubing is exposed to a cooling system leak or to high-temperature water or steam cleaning of the vehicle. FMVSS 106 does not address this testing requirement.

Construction Materials. SAE J844 requires that non-metallic air brake tubing be manufactured from materials which will withstand the effects of environmental exposure, moisture exposure, and chemical exposure. The construction requirements of FMVSS 106 do not address the true chemical compatibility and environmental conditions. These requirements are adequately spelled out only in SAE J844.

C. For rubber air brake hose, the following requirements of SAE J1402.

FMVSS 106 was written around the specification requirements of SAE J1402. Elimination of SAE J1402, however, would remove the critical flexure test which is specified in the current SAE J1402 document. A hose flexure test simulates the extreme flexing of hose assemblies which are installed on truck axles. The flexure test is meant to guard against early hose failures in critical flexing applications. The flexure test is not specified in FMVSS 106.

D. For rubber hydraulic brake hose, the following requirements of SAE J1401.

Tensile Test. The SAE J1401 tensile test requires rubber hose assemblies to meet two separate tensile pull rates and two different maximum load capacities. The DOT 106 specification does not address a fast pull rate and high tensile load condition on hydraulic brake assemblies.

High-Temperature Impulse Test. SAE J1401 requires hydraulic brake hose assemblies to meet a high-temperature hydraulic impulse test run at 295°F for 150,000 cycles. An impulse test is critical in evaluating the life expectancy of hydraulic brake hoses. This test is not required in DOT 106.

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Dynamic Ozone Test. SAE J1401 requires rubber hydraulic hose assemblies to pass a flex test while exposed to high concentrations of ozone. The SAE specification requires rubber hose assemblies to be flexed in the presence of ozone for a minimum of 48 hours or until failure occurs. This test is critical when evaluating the life expectancy of rubber hose assemblies. This test is not documented in DOT 108.

E. For rubber vacuum hose, the following requirements of SAE J1403.

SAE J1403 classifies vacuum hoses as heavy wall and light wall constructions compared to the designation given by DOT 108 of heavy duty or light duty vacuum hose. The collapse resistance requirements of SAE J1403 are more stringent in that they specify collapse percentages allowable for heavy wall and light wall vacuum brake hose. These requirements in DOT 108, Section 9 2.7, Table 5, are not as stringent.

F. For fittings, the following requirements of SAE J512 and J246.

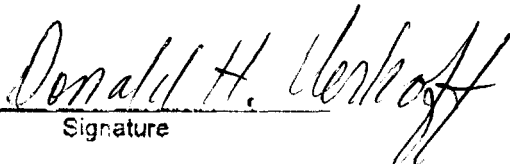
The rewrite of 393.45(e) does not address how air brake fittings are to be designed and constructed. These requirements were previously specified in 393.46(f) where it is stated that fittings must meet SAE standard J512 and SAE J246. The rewrite of 393.45(e) eliminates these SAE requirements and in so doing, also eliminates the proper design and construction for air brake fittings.

G. For vacuum brake engine manifold connections, the following requirement of 393.46(d).

Existing 393.46(d) specifies the minimum inside diameter necessary for manifold connections used with vacuum air brake hoses. This requirement should be retained as it establishes a minimum inside diameter for vacuum ports used in all vacuum air brake systems.

While the goal of eliminating needless Regulations is certainly endorsed, the elimination of widely accepted minimum physical requirements for critical safety components on trucks and buses is not in the public interest. For these reasons, these performance based requirements should be retained in Section 393.45-46.

Very truly yours,

  
Signature