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SAE J1942 MAR89

**Hose and Hose
Assemblies for
Marine Applications**

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HOSE AND HOSE ASSEMBLIES FOR MARINE APPLICATIONS

1. SCOPE:

This standard covers specific requirements for several styles of hose and/or hose assemblies in systems on board commercial vessels inspected and certificated by the U.S. Coast Guard. It is intended that this standard establish hose constructions and performance levels that are essential to safe operations in the marine environment. Refer to SAE J1273 for selection, installation and maintenance of hose and hose assemblies.

2. HOSE APPLICATION/CONSTRUCTION:

Hose construction and performance shall conform to Table 1.

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TABLE 1

CLASS	APPLICATION	MAXIMUM SERVICE PRESSURE	HOSE REINFORCEMENT/ CONSTRUCTION	REQUIREMENTS
1	Fluid Power (Hydraulic Systems)	△	Plies or braids of steel wire or textile △	Paragraphs 5, 6, 8, 9, 10 (SAE J517 may be substituted for paragraph 8)
2	Vital and Nonvital Fresh and Salt Water	△	Plies or braids of steel wire or textile △	Paragraphs 5, 6, 9, 10
3	Nonvital Water and Pneumatic	50 lbf/in ² (psi)	Optional	Paragraphs 5, 6, 9, 10
4	Lube Oil and Fuel Systems	△	Plies or braids of steel wire with or without textile △	Paragraphs 5, 6, 7, 8, (impulse per 8E not required), 9, 10

△ As rated by SAE J517 or as rated by manufacturer.

△ Wire helix construction may be used on suction and return lines in conjunction with a textile reinforcement.

3. FITTINGS:

Fittings shall conform to SAE J1475 where applicable; only hose and fitting combinations that have been tested and passed the requirements of this standard as hose assemblies are acceptable. Push-on fittings, quick disconnect couplings and fittings with a single worm-gear clamp or a single band around the hose, are unacceptable.

4. QUALIFICATION TESTS:

For qualification to this specification, hose and/or hose assemblies made therefrom shall conform to the following tests and requirements. Testing shall conform to SAE J343 except as noted.

5. IMMERSION-BURST TEST:

One 18-in assembly, uncapped, shall be completely immersed in a non-pressurized, closed container filled with synthetic sea water conforming to ASTM D 1141-52 for 48 ± 1 h at $158 \pm 2^\circ\text{F}$. The assembly shall then be removed and held for 48 ± 1 h in air at room temperature ($70 \pm 5^\circ\text{F}$). Following this aging, the assembly shall be subjected to the burst test specified in SAE J343.

Burst shall not occur at a pressure less than four times the rated operating pressure. Within 1/2 h following the burst test, the hose shall be cut apart and the reinforcement examined for signs of corrosion and/or deterioration. The wire of wire reinforced hose shall not show red rust.

6. FLAME RESISTANCE:

The hose cover shall pass the MSHA (Mine Safety Health Administration) flame resistance requirements of 30 CFR 18.65. In lieu of testing the hose cover, it may be protected by a firesleeve of suitable material that conforms to the flame resistance criteria of 30 CFR 18.65.

7. 2-1/2 MIN FIRE TEST:

For hose 2-in inside diameter and smaller, three assemblies are to be consecutively tested for fire resistance. For hoses larger than 2 in inside diameter, one hose assembly shall be tested. Free hose length measured between the fittings shall be 16 - 24 in. At least one end fitting shall be positioned to be engulfed in the flame. The hose shall be positioned 9 in above the top edge of an open pan the size of 8-1/2 x 14 x 1/2 in. Sufficient heptane shall be added to the pan to provide for a 2-1/2 min burn.

Thermocouples shall be mounted so as to sense the flame temperature in the same plane and elevation as the hose assembly. The assembly shall be pressurized with water to the maximum operating pressure and maintained during the burning portion of the test. Following ignition of the heptane, timing shall begin and the temperature shall be monitored. The temperature shall reach a minimum of 1200°F but shall not exceed 1350°F . (If 1200°F is not reached, the test must be repeated with a new sample. If 1350°F is exceeded, results may be discarded and the test repeated.)

At the end of 2-1/2 min of fire exposure, the flame shall be extinguished and pressure relieved. Water from a three-foot head shall flow through the assembly. Failure to achieve free flow shall constitute failure. With free flow established, the assembly shall be pressurized to the maximum operating pressure for 30 seconds. Leakage during the fire exposure or subsequent pressure test shall constitute failure. Reference Figs. 1 and 2 for fire test set-up and test chamber. (Note: Hose assemblies may use protective firesleeves.)

8. NON-J517 HOSE/HOSE ASSEMBLIES:

Products not conforming to SAE J517 shall meet the following:

- a. Proof test per SAE J343, no leakage allowed.
- b. Change in length per SAE J343, not to exceed +2 and -4% (does not apply to wire helix type hose).
- c. Burst test per SAE J343, minimum burst shall be at least four times the rated operating pressure.
- d. Cold bend test per SAE J343, no cracking or leakage allowed. Testing to be done at the manufacturer's minimum recommended temperature.
- e. Impulse test per SAE J343. Conduct test at 125% of operating pressure for 200 000 cycles at a fluid temperature of 200°F. No leakage or other malfunction is allowed. (Impulse not required on wire helix type hose.)

9. INSPECTION TESTS:

The tests required in Table 1 shall be repeated at least every three years and the recorded results maintained on file for review for a period of six years.

10. MARKING:

Hose meeting SAE J517 is to be identified in accordance with SAE J517. Non-SAE J517 hose shall contain, as a minimum, the following information: maximum operating pressure, manufacturer's name and part number and hose size.

Dimensions:
Weight 48 in
Width 48 in
Depth 30 in

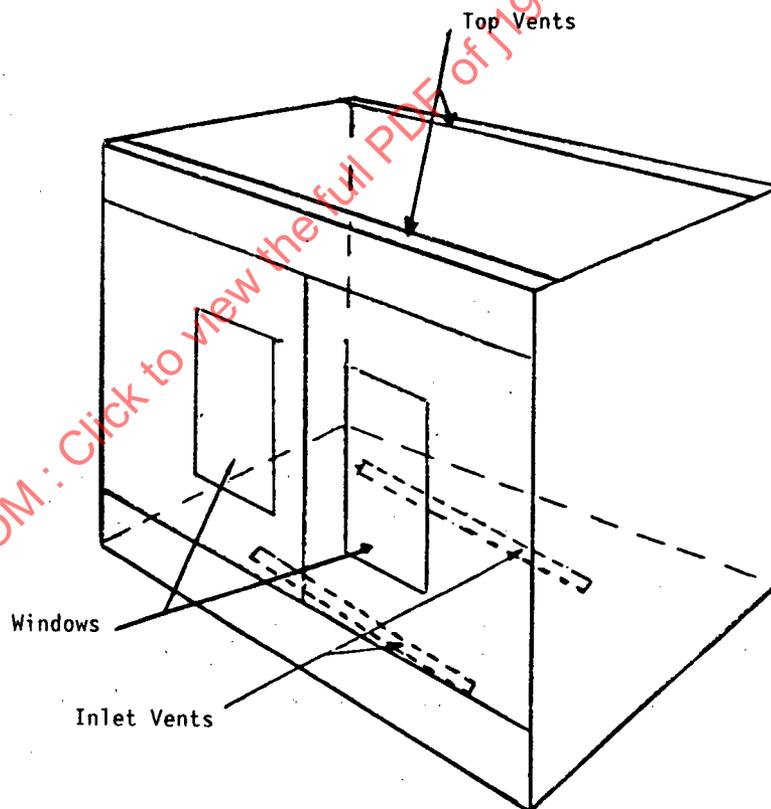


FIGURE 1 - Fire Test Cabinet

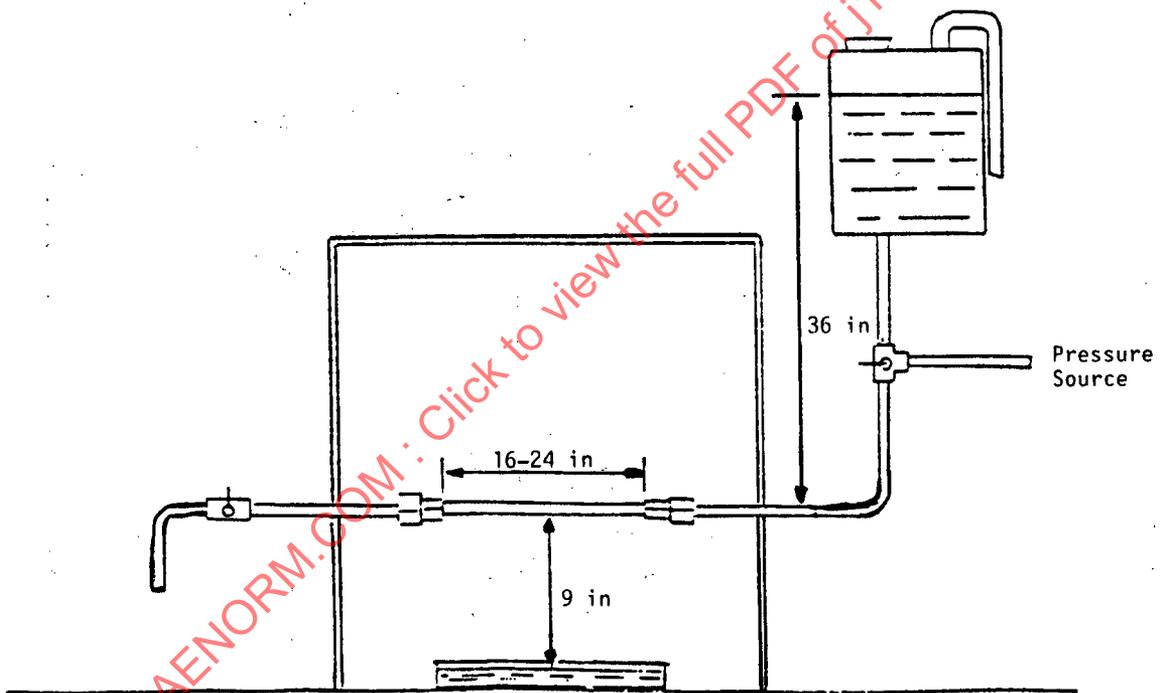


FIGURE 2 - Test Set-Up