

MIL-H-18160C(SH)  
 AMENDMENT-1  
 1 October 1979

MILITARY SPECIFICATION

HOSE ASSEMBLIES, CORRUGATED STEEL, 200 LB/IN<sup>2</sup>

AND 425°F MAXIMUM STEAM SERVICE RATING

This amendment forms a part of Military Specification MIL-H-18160C(SH), dated 9 May 1978.

PAGE 1

2.1, under "SPECIFICATIONS, FEDERAL": Delete reference to "QQ-C-390", "QQ-S-698", and "QQ-W-423".

2.1, under "SPECIFICATIONS, MILITARY": Delete reference to "MIL-B-16444" and "MIL-B-16541".

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2.2: Delete reference to "AMERICAN IRON AND STEEL INSTITUTE (AISI)".

2.2, under "AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)": Delete reference to "B61" and "B62", and add the following:

- \*A27 - Mild-to Medium-Strength Carbon-Steel Castings for General Application.
- \*A47 - Malleable Iron Castings.
- \*A53 - Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
- \*A106 - Seamless Carbon Steel Pipe for High-Temperature Service.
- \*A109 - Steel, Carbon, Cold-Rolled Strip.
- \*A120 - Pipe, Steel, Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless for Ordinary Uses.
- \*A167 - Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
- \*A296 - Corrosion-Resistant Iron-Chromium, Iron-Chromium-Nickel, and Nickel-Base Alloy Castings for General Application.
- \*A312 - Seamless and Welded Austenitic Stainless Steel Pipe.
- \*A366 - Steel, Carbon, Cold-Rolled Sheet, Commercial Quality.
- \*A446 - Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Structural (Physical) Quality.
- \*A478 - Chromium-Nickel Stainless and Heat-Resisting Steel Weaving Wire.
- \*A526 - Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Commercial Quality.
- \*A580 - Stainless and Heat-Resisting Steel Wire.
- \*A611 - Steel, Cold-Rolled Sheet, Carbon, Structural.
- \*A619 - Steel Sheet, Carbon, Cold-Rolled, Drawing Quality.
- \*A620 - Steel Sheet, Carbon, Cold-Rolled, Drawing Quality, Special Killed.
- \*A666 - Austenitic Stainless Steel, Sheet, Strip, Plate, and Flat Bar for Structural Applications.
- \*A743 - Corrosion-Resistant Iron-Chromium, Iron-Chromium-Nickel, and Nickel-Base Alloy Castings for General Application.
- \*B36 - Brass Plate, Sheet, Strip, and Rolled Bar.
- \*B43 - Seamless Red Brass Pipe, Standard Sizes.
- \*B209 - Aluminum-Alloy Sheet and Plate.
- \*B271 - Copper-Base Alloy Centrifugal Castings.
- \*B584 - Copper Alloy Sand Castings for General Applications."

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Table I: Delete and substitute:

"TABLE I. Materials.

Part	Material and specification	
	Class S	Class NM
Pressure carrier	Cold rolled carbon steel: ASTM A109, A366, A611, A619, and A620	Stainless steel (300 series, maximum permeability not greater than 2.0 after fabrication): ASTM A666 and A167
Wire braid reinforcement	Stainless steel (300 series): ASTM A478 and A580	Stainless steel (300 series, maximum permeability not greater than 2.0 after fabrication): ASTM A478 and A580
Guard	Galvanized carbon steel: ASTM A446 and A526 Aluminum: ASTM B209	Brass: ASTM B36 Aluminum: ASTM B209
Couplings	Malleable iron: ASTM A47 Carbon steel: ASTM A27	Brass: ASTM B584 and B271 Stainless steel (austenitic): ASTM A296 and A743
Nipples	Malleable iron: ASTM A47 Carbon steel: ASTM A53, A106, and A120	Brass: ASTM B43 Stainless steel (300 series): ASTM A312

1/ The amount of zinc on the guard shall be sufficient to pass the salt spray corrosion test specified in 4.3.6."

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## 3.2.1: Delete and substitute:

"3.2.1 Recovered materials. Unless otherwise specified herein, all equipment, material, and articles incorporated in the products covered by this specification shall be new and shall be fabricated using materials produced from recovered materials to the maximum extent practicable without jeopardizing the intended use. The term "recovered materials" means materials which have been collected or recovered from solid waste and reprocessed to become a source of raw materials, as opposed to virgin raw materials. None of the above shall be interpreted to mean that the use of used or rebuilt products is allowed under this specification unless otherwise specifically specified."

3.3, line 2: Delete "wire".

3.3, line 3: Delete "mechanical".

3.3.3, line 1: Delete "wire".

3.3.4, first sentence: Delete and substitute: "Coupling nipple shall be attached by welding or brazing. Hose shall include a coupling on each end securely fastened by means other than welding."

3.5, second sentence: Delete and substitute: "Lengths shall be continuous and pressure carrier may contain no more than two welded segmented joints (splices). Segmented joints are permissible only if hose to be supplied has received complete first article inspection. Segments shall have been positioned so as to receive full flexing tests."

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4.3.1: Delete and substitute:

"4.3.1 First article samples. Samples of class S hose assemblies shall be submitted as follows for the tests specified in 4.3.2 through 4.3.7. If class NM hose is being offered, then class NM will be tested. Only the largest and smallest sizes of hose being acquired shall be tested.

- (a) Two lengths of hose with couplings attached. The overall length shall be not less than 15 feet for the tests specified in 4.3.2 and 4.3.3.
- (b) One length of hose with couplings attached. The overall length shall be not less than 5 feet (exclusive of couplings) for the tests specified in 4.3.4 through 4.3.6."

4.3.1.1: Delete.

PAGES 4 and 5

4.3.3: Delete and substitute:

"4.3.3 Flexing test. After hoses have successfully passed the test specified in 4.3.2, they shall be subjected to flexing tests on a flexing device as shown on figure 1. Hose shall be bent to the bend diameter specified in table II. Each size hose being tested shall be subjected to a minimum of 20,000 cycles of flexure while under 200 lb/in<sup>2</sup> and 425°F steam simulated service conditions. Hose shall be cycled at the rate of 20 cycles per minute."

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4.3.6, second sentence: Delete and substitute: "Samples shall be thoroughly cleaned to remove grease and dust."

4.5, item(b): Delete "wire".

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5.1.1: Delete and substitute:

"5.1.1 Level A.

"5.1.1.1 Class S hose. Each class S hose shall be cleaned, dried, preserved and unit protected method I in accordance with the requirements of MIL-P-116. Selection of the cleaning and drying process shall be at the contractors option. Each hose interior shall be coated with a preservative compound conforming to P-3 or P-21 at the contractors option. Hose ends shall be sealed with plugs or caps that will provide protection against entry of any foreign material alternatively, ends may be sealed with a greaseproof barrier material conforming to type I, grade A, class 2 of MIL-B-121 extending approximately four inches over the open ends and onto the hose body and secured with a minimum 1-inch wide water resistant, pressure sensitive tape. The barrier wrap shall be provided with a final, full covering burlap overwrap which shall be securely fastened. Exposed threads shall be protected from damage. Each hose shall be coiled in a uniform and compact manner and to an inside diameter of not less than that specified in 3.4, table II, as applicable to the hose size. Each coil shall be secured in a minimum of three places, placed approximately equidistant apart.

"5.1.1.2 Class NM base. Each class NM base shall be cleaned, dried, and unit protected method III in accordance with the requirements of MIL-P-116. Selection of the cleaning and drying process shall be at the contractors option. Hose ends shall be sealed with plugs or caps that will provide protection against entry of any foreign material alternatively, ends may be sealed with a greaseproof barrier material conforming to type I, grade A, class 2 of MIL-B-121 extending approximately four inches over the open ends and onto the hose body and secured with a minimum 1-inch wide water resistant, pressure sensitive tape. The barrier wrap shall be provided with a final, full covering burlap overwrap which shall be securely fastened. Exposed threads shall be protected from damage. Each hose shall be coiled in a uniform and compact manner and to an inside diameter of not less than that specified in 3.4, table II, as applicable to the hose size. Each coil shall be secured in a minimum of three places, placed approximately equidistant apart."

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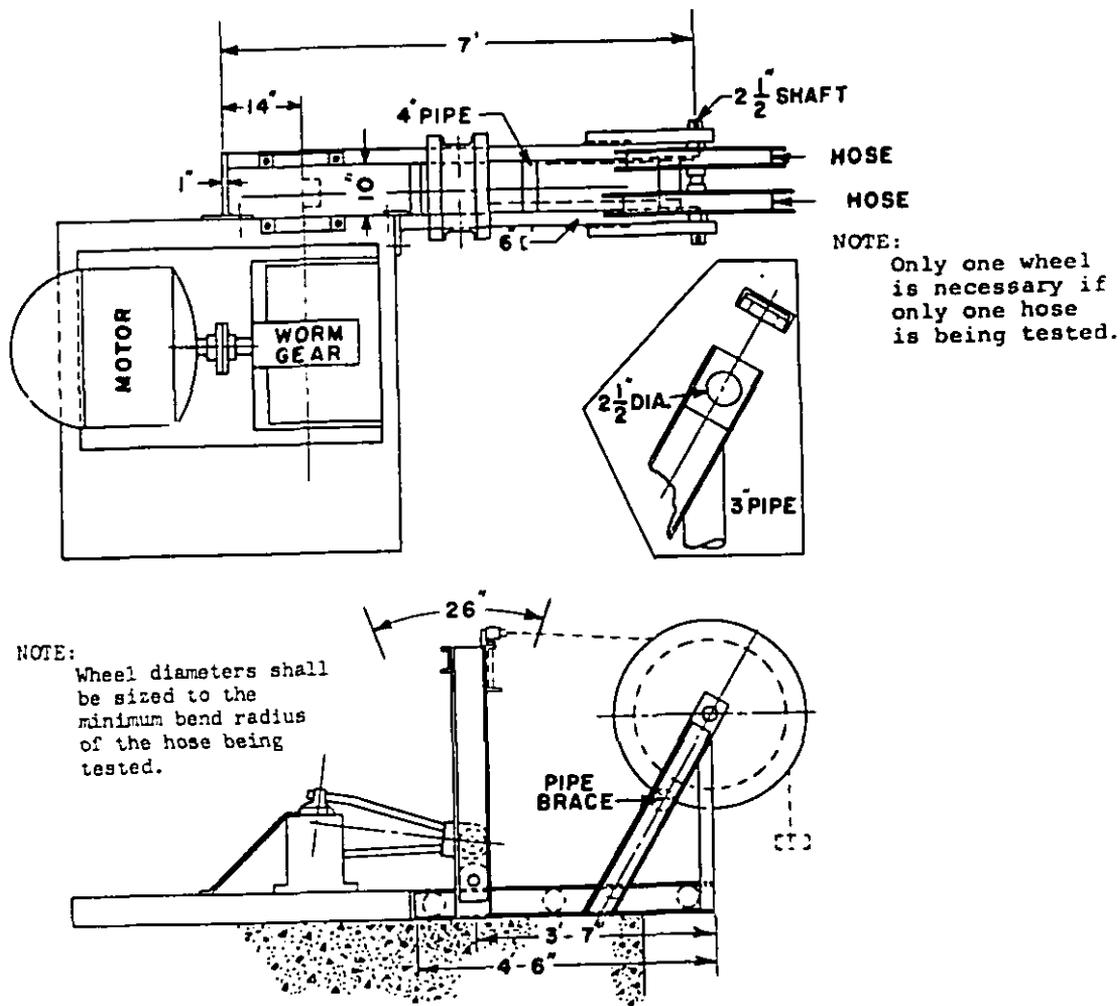
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Figure 1: Delete and substitute the attached figure 1.

Preparing activity:  
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FIGURE 1. Flexing apparatus.