



AEROSPACE STANDARD

AS5420™**REV. G**Issued 1999-12
Revised 2017-11

Superseding AS5420F

Hose Assembly, Heated, 125 psig,
Lined Silicone, Potable Water,
Procurement Specification

RATIONALE

Add Parts Standards listings and minor corrections.

1. SCOPE

This SAE Aerospace Standard (AS) covers the requirements for a flexible, lightweight, low pressure, self-extinguishing, integrally heated silicone hose assembly. The hose has a fully fluorinated fluoropolymer inner liner and is primarily intended for use in aircraft potable water systems with an environmental operating temperature range of -65 °F (-54 °C) to +160 °F (+71 °C).

2. APPLICABLE DOCUMENTS

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of a conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

AMS-QQ-A-225	Aluminum and Aluminum Alloy, Bar, Rod, Wire, or Special Shapes; Rolled, Drawn, or Cold Finished; General Specification For
AMS-QQ-S-763	Steel, Corrosion Resistant, Bars, Wire, Shapes, and Forgings
AMS-STD-2219	Fusion Welding for Aerospace Applications
AMS2472	Anodic Treatment of Aluminum Alloys Sulfuric Acid Process, Dyed Coating

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Documents
Document Sharing Hub

AMS2700	Passivation of Corrosion Resistant Steels
AMS4124	Aluminum Alloy, Rolled or Cold Finish Bars, Rods, and Wire, 5.6Zn - 2.5Mg - 1.6Cu - 0.23Cr (7075-T73, T7351) Solution Heat Treated, Stress Relieved by Stretching, and Overaged
AMS4771	Silver Alloy, Brazing Filler Metal, 50Ag - 16Cd - 15.5Zn - 15.5Cu - 3.0Ni, 1170 to 1270 °F (632 to 688 °C) Solidus-Liquidus Range
AMS4772	Silver Alloy, Brazing Filler Metal, 54Ag - 40Cu - 5.0Zn - 1.0Ni, 1325 to 1575 °F (718 to 857 °C) Solidus-Liquidus Range
AMS4777	Nickel Alloy, Brazing Filler Metal, 82Ni - 4.5Si - 7.0Cr - 3.1B - 3.0Fe, 1780 to 1830 °F (971 to 999 °C) Solidus-Liquidus Range
AMS4778	Nickel Alloy, Brazing Filler Metal, 92Ni - 4.5Si - 3.1B, 1800 to 1900 °F Solidus-Liquidus Range
AMS5556	Steel, Corrosion and Heat-Resistant, Seamless or Welded Hydraulic Tubing, 18Cr - 11Ni - 0.70Cb (SAE 30347) Solution Heat Treated
AMS5557	Steel, Corrosion and Heat-Resistant, Seamless or Welded Hydraulic Tubing, 18.5Cr - 10.5Ni - 0.40Ti (SAE 30321) Solution Heat Treated
AMS5567	Steel, Corrosion Resistant, Seamless or Welded Hydraulic Tubing, 19Cr - 10Ni (SAE 30304) Solution Heat Treated
AMS5570	Steel, Corrosion and Heat-Resistant, Seamless Tubing, 18Cr - 11Ni - 0.40Ti (321) Solution Heat Treated
AMS5571	Steel, Corrosion and Heat-Resistant, Seamless Tubing, 18Cr - 10.5Ni - 0.70Cb (Nb) (347) Solution Heat Treated
AMS5575	Steel, Corrosion and Heat-Resistant, Welded Tubing, 18Cr - 10.5Ni - 0.70Cb (Nb) (347) Solution Heat Treated
AMS5636	Steel, Corrosion-Resistant, Bars and Wire, 18Cr - 9.0Ni (SAE 30302) Solution Heat Treated and Cold Drawn, 100 ksi (689 MPa) Tensile Strength
AMS5637	Steel, Corrosion Resistant, Bars and Wire, 18Cr - 9.0Ni (SAE 30302) Solution Heat Treated, Cold Drawn and Stress Relieved, 125 ksi (862 MPa) Tensile Strength
AMS5638	Steel, Corrosion-Resistant, Bars and Forgings, 0.14S - 18Cr - 9.5Ni - 0.50Mo - 0.80Al (303MA) Free-Machining; Swaging or Upsetting, Solution Heat Treated
AMS5639	Steel, Corrosion-Resistant, Bars, Wire, Forgings, Tubing, and Rings, 19Cr - 10Ni, Solution Heat Treated
AMS5640	Steel, Corrosion-Resistant, Bars, Wire, and Forgings, 18Cr - 9.0Ni, Free Machining
AMS5645	Steel, Corrosion and Heat Resistant, Bars, Wire, Forgings, Tubing, and Rings, 18Cr - 10Ni - 0.40Ti (321) Solution Heat Treated
AMS5646	Steel, Corrosion and Heat-Resistant, Bars, Wire, Forgings, Tubing, and Rings, 18Cr - 11Ni - 0.60Cb(Nb) (347) Solution Heat Treated
AMS5647	Steel, Corrosion-Resistant, Bars, Wire, Forgings, Tubing and Rings, 19Cr - 9.5Ni, Solution Heat Treated

AMS5648	Steel, Corrosion and-Heat Resistant, Bars, Wire, Forgings, Tubing, and Rings, 17Cr - 12Ni - 2.5Mo (316), Solution Heat Treated
AMS5685	Steel, Corrosion Resistant, Safety Wire, 18Cr - 11.5Ni (SAE 30305) Solution Heat Treated, Cold Finished
AMS5688	Steel, Corrosion-Resistant, Wire, 18Cr - 9.0Ni (SAE 30302) Spring Temper
AMS5689	Steel, Corrosion and Heat Resistant, Wire, 18Cr - 10.5Ni - 0.40Ti (SAE 30321) Solution Heat Treated
AMS5690	Steel, Corrosion and Heat Resistant, Wire, 17Cr - 12Ni - 2.5Mo (SAE 30316) Solution Heat Treated
AMS5697	Steel, Corrosion-Resistant, Wire, 19Cr - 9.5Ni (SAE 30304) Solution Heat Treated
AS478	Identification Marking Methods
AS611	Hose Assembly and Tubing, Polytetrafluoroethylene, Cleaning Methods for
AS1073	Sleeve Hose Assembly, Heat Shrinkable
AS1650	Coupling Assembly, Threadless, Flexible, Fixed Cavity, Self-Bonding, Procurement Specification
AS1656	Fitting End, Threadless - Flexible, Fixed Cavity, Self-Bonding, Male and Female, Design Standard
AS1708	Fitting End, Internal Flare, Design Standard
AS1791	Wire, Retainer - Tube Coupling Nut
AS4370	Nut, Fitting, Retained
AS4375	Fitting End, Flareless, Design Standard
AS4395	Fitting End, Flared, Tube Connection, Design Standard
AS4468	Hose Assembly, 125 psi, Lined Silicone, Potable Water, Procurement Specification
AS5272	Lubricant, Solid Film, Heat Cured, Corrosion Inhibiting, Procurement Specification
AS6449	Solid Film Lubricant for Fluid Fittings in Oxygen, Potable Water, Hydraulic, and Other Systems
AS8879	Screw Threads - UNJ Profile, Inch, Controlled Radius Root with Increased Minor Diameter
ARP9013	Statistical Product Acceptance Requirements
AS21921	Nut, Sleeve Coupling, Flareless
AS39029/31	Contacts, Electrical Connector, Pin, Crimp Removable (For MIL-DTL-26482 Series 1, MIL-DTL-26500 and MIL-DTL-26518 Connectors)
AS39029/32	Contacts, Electrical Connector, Socket, Crimp Removable (For MIL-DTL-26482 Series 1, MIL-DTL-26500 and MIL-DTL-26518 Connectors)

2.1.2 U.S. Government Publications

Copies of these documents are available at <http://quicksearch.dla.mil>.

MIL-A-8625	Anodic Coating for Aluminum and Aluminum Alloys
MIL-STD-129	Military Marking for Shipment and Storage
MIL-STD-810	Environmental Engineering Considerations and Laboratory Tests

2.1.3 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM A269	Seamless and Welded Austenitic Stainless Steel Tubing for General Service
ASTM A313/A313M	Chromium Nickel Stainless and Heat Resisting Steel Spring Wire
ASTM A479/A479M	Stainless Steel Bars and Shapes for Use in Boilers and Other Pressure Vessels
ASTM D570	Standard Method of Test for Water Absorption of Plastics
ASTM A580/A580M	Stainless and Heat Resisting Steel Wire, Condition A
ASTM A582/A582M	Specification for Free Machining Stainless and Heat Resistant Steel Bars, Hot Rolled and Cold Finished (S30300, S30310, S30323 and S30345)
ASTM A632	Seamless and Welded Austenitic Stainless Steel Tubing (Small Diameter) for General Service
ASTM E1417	Standard Practice for Liquid Penetrant Examination

2.1.4 NAS Publications

Available from Aerospace Industries Association, 1000 Wilson Boulevard, Suite 1700, Arlington, VA 22209-3928, Tel: 703-358-1000, www.aia-aerospace.org.

NAS847	Caps and Plugs, Protective, Dust and Moisture Seal
NAS1760	Fitting End, Flareless Acorn, Standard Dimension for

2.1.5 AWS Publications

Available from American Welding Society, 8669 NW 36 Street, #130, Miami, FL 33166-6672, Tel: 1-800-443-9353 or 305-443-9353, www.aws.org.

AWS A5.8/A5.8M	Filler Metals for Brazing and Braze Welding
AWS A5.9	Rods and Wire, Welding, Corrosion and Heat Resistant Alloys
AWS A5.14/A5.14M	Rods and Wire, Welding, Corrosion Resistant Alloys
AWS C3.6	Specification for Furnace Brazing
AWS D17.1	Specification for Fusion Welding for Aerospace Applications

2.1.6 RTCA Publications

Available from RTCA, Inc., 1150 18th Street, NW, Suite 910, Washington, DC 20036, Tel: 202-833-9339, www.rtca.org.

RTCA/DO-160 Environmental Conditions and Test Procedures for Airborne Equipment, Section 4 and 8

2.1.7 PRI Publications

Available from Performance Review Institute, 161 Thorn Hill Road, Warrendale, PA 15086-7527, Tel: 724-772-1616, www.pri-network.org.

AC7112 National Aerospace and Defense Contractors Accreditation Program Requirements for Fluid System Components

PD2001 Qualified Product Management Council Procedures for Qualified Products Group

PD2101 Aerospace Quality Assurance, Product Standard, Qualification Procedures, Fluid Systems

PD1100 Nadcap Program Requirements

2.1.8 Public Health Service Publication

Available from The U.S. Department of Health and Human Services, 200 Independence Avenue, SW, Washington, DC 20201, Tel: 1-877-696-6775, www.hhs.gov.

USPHS No. 308 Handbook of Sanitation of Airlines (United States Public Health Service, Department of Health Education and Welfare)

2.2 Related Publications

The following publications are provided for information purposes only and are not a required part of this SAE Aerospace Technical Report.

2.2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org. The hose assembly parts standards applicable to this procurement standard include:

AS5421 Hose Assembly, Lined Silicone, Heated, Flareless, 125 psi, Potable Water

AS5422 Hose Assembly, Lined Silicone, Heated, Fixed Cavity, 125 psi, Potable Water

AS5423 Hose Assembly, Lined Silicone, Heated, Flareless to Fixed Cavity, 125 psi, Potable Water

3. REQUIREMENTS

3.1 Qualification

Hose assemblies supplied in accordance with this procurement specification shall be representative of products which have been subjected to and which have successfully passed the qualification tests specified in this specification.

3.1.1 Manufacturer Qualification

A manufacturer producing a product in conformance to this procurement specification shall be accredited in accordance with the requirements of PD2101, PD1100 and AC7112, and shall be listed in a Performance Review Institute (PRI) Qualified Manufacturers List (QML). See www.eAuditNet.com.

3.1.2 Product Qualification

All products shall conform to the requirements of this procurement specification and shall be approved in accordance with the requirements of PD2001 and PD2101 for listing in a Performance Review Institute (PRI) Qualified Parts List (QPL) PRI-QPL-AS5420. See www.eAuditNet.com.

3.2 Materials

The hose assembly materials shall be uniform in quality, free from defects, suitable for the intended use, consistent with good manufacturing practices and shall conform to the applicable specifications and the requirements specified herein.

Materials used in these hose assemblies shall be selected from those listed in Table 1.

Table 1 - Assembly materials

Component	Material Designation	Material Specification	Material Finish
Nut (Coupling) AS21921, AS4370, or Equivalent	Type 300 Series Corrosion Resistant Steel	AMS5636, AMS5637, AMS5639, AMS5645, AMS5646, ASTM A479 or AMS-QQ-S-763	Passivate per AMS2700, Method 1, Type 6 or 7 and Solid Film Lubricate per AS6449 Type I or II. See Note /1/
	Type 2024 Aluminum Alloy	AMS-QQ-A-226/6	Anodize per AMS2472 or MIL-A-8625, Type I or Type II, Class 2, Color Optional and Solid Film Lubricate per AS6449 Type I or II. See Note /1/
	Type 7075 Aluminum Alloy	AMS4124 or AMS-QQ-A-225/9	Anodize per AMS2472 or MIL-A-8625, Type I or Type II, Class 2, Color Optional and Solid Film Lubricate per AS6449 Type I or II. See Note /1/
Hose (Inner Tube)	Fully Fluorinated Fluoropolymer Lined Silicone Inner Tube		As Manufactured
Heater Wire	Alloyed Metal	Commercial	As Manufactured
Lead Wires	Fluoropolymer Insulated, Tin Coated Copper	AS22759/34	As Manufactured
Hose (Wire Reinforcement)	Type 300 Series Corrosion Resistant Steel	ASTM A313/A313M, ASTM A580/A580M, AMS5688, AMS5689, AMS5690 or AMS5697	As Manufactured
Hose (Nonmetallic Braid, Reinforcement and/or Covering)	Aramid Fiber, Nylon, Polyester, Fire Resistant Composite Fiber Fiberglass or Similar Yarns	Commercial	Dark
Thermostat	Bi-Metal Type		As Manufactured
Insert Fitting (Nipple or Elbow)	Type 303 Series, 304, 304L, 316, 321, or 347 Corrosion Resistant Steel	AMS5648, AMS5556, AMS5557, AMS5567, AMS5570, AMS5571, AMS5575, AMS5638, AMS5640, AMS-QQ-S-763, ASTM A582/A582M, ASTM A269 or ASTM A632	Passivate per AMS2700, Method 1, Type 2, 6, or 7 as applicable
Socket (Collar)	Type 303 Series, 304, 304L, 316, 321, or 347 Corrosion Resistant Steel	AMS5648, AMS5556, AMS5557, AMS5567, AMS5570, AMS5571, AMS5575, AMS5638, AMS5640, AMS-QQ-S-763 or ASTM A582/A582M	Passivate per AMS2700, Method 1, Type 2, 6, or 7 as applicable
	Type 6061 Aluminum Alloy	AMS-QQ-A-225/8	Anodize per AMS2472 or MIL-A-8625, Type II, Class 2, Color Optional
Band (Identification)	Polyester Film or Polyolefin with Permanent Marking or Corrosion Resistant Steel		As Manufactured
Nut Retaining Wire AS1791 or Equivalent	Type 302, 304, or 305 Corrosion Resistant Steel, Condition A	ASTM A313/A313M, ASTM A580/A580M, AMS5688, AMS5689, AMS5690, AMS5697 or AMS5685	Passivate per AMS2700, Method 1, Type 2, 6, or 7 as applicable and Solid Film Lubricate per AS6449 Type I or II. See Note /1/

NOTE /1/ - SOLID FILM LUBRICANT (SFL) PER AS6449 TYPE I OR II SHALL BE USED IN PLACE OF AS5272 TYPE I. EXISTING INVENTORY OF AS5272 TYPE I COATED COMPONENTS MAY BE USED FOR AN ADDITIONAL 6 MONTHS FROM THE DATE OF PUBLICATION OF AS5420 REVISION F. THIS CHANGE DOES NOT REQUIRE RE-QUALIFICATION.

3.3 Design and Construction

The hose assembly shall consist of an integrally heated smooth inner tube with reinforcement braid or covering to meet the requirements of this document and as required for its intended use. Unless other fittings are specified, hose assemblies may have flared fittings per AS1708 or AS4395, flareless fittings per NAS1760 or AS4375 fitting ends or fixed cavity ends per AS1656-1 or AS1656-3. Hose end fittings shall be permanently attached to the hose.

3.3.1 End Fitting

3.3.1.1 Insert Fitting (Nipple and Elbow)

Inserts (nipples and elbows) shall be made of corrosion-resistant steel. They may be one-piece, welded or brazed construction assemblies. Only fusion welded butt joints or brazed lap joints shall be used.

3.3.1.2 Coupling Nuts

Coupling nuts shall be corrosion resistant steel or aluminum alloy as specified on part standard or drawing. Fitting nuts shall be dimensionally equivalent to AS21921 or AS4370. The nut threads and internal surfaces shall be solid film lubricated in accordance with AS6449 Type I or II. Solid film lubricant on external nut surfaces shall not be cause for rejection.

3.3.1.3 Sockets (Collars)

The sockets shall be corrosion resistant steel or aluminum alloy as specified on the part standard or drawing. Sockets shall be attached by crimping or swaging.

3.3.1.4 Screw Threads

All end fittings with threads shall be in accordance with AS8879, Class 3A or 3B as applicable. A 10% increase to the maximum thread tolerances is permissible after proof test.

3.3.1.5 Joining of End Fittings

Fusion welds shall be per AWS D17.1 Class C with 100% penetration. Filler wire, if required, shall be Type 347 per AWS A5.9 or AWS A5.14/A5.14M. Welds shall be penetrant inspected per ASTM E1417. Brazed joints shall be per AWS C3.6, Class C, using a brazing alloy BNi12 per AWS A5.8/A 5.8M.

Brazing alloys AMS4777, AMS4778, AMS4772, and AMS4771 are optional. Brazing shall be accomplished without flux in a vacuum, inert or dry hydrogen atmosphere. All welds shall be penetrant inspected per ASTM E1417 (water washable).

3.3.1.6 Fixed Cavity End Fittings

Hose assemblies with fixed cavity (threadless coupling) end fittings per AS1650 series standards shall have insert ends per AS1656-1 or AS1656-3.

3.3.1.7 The maximum allowable ID of AS1708 and NAS1760 style fittings may be in accordance with Table 2.

Table 2 - Maximum fitting ID

Size	ID
06	0.319
08	0.440
10	0.567
12	0.676
16	0.927

3.3.2 Hose

3.3.2.1 Inner Tube

The inner tube shall be fully fluorinated fluoropolymer lined silicone of seamless construction. It shall have a smooth inner surface, be free of cracks, and shall be nonshedding or particle producing. Only virgin materials shall be used for the inner tube.

3.3.2.1.1 Inner Tube Liner

The inner liner shall be a fully fluorinated fluoropolymer. It shall be free of splits or holes. There shall be no leakage during a 2 psig pneumatic proof pressure test of the fully fluorinated fluoropolymer inner liner, or visible defects when visually inspected against a light source. No rerun or reclaimed materials shall be used. The inner liner shall be clear, without carbon particles added. No material or combination of materials that are known to produce toxic effects when in contact with potable water, or after contact with mild cleaning agents shall be used. The hose shall not cause an objectionable odor or taste in potable water.

3.3.2.2 Reinforcement and Covering

The inner tube shall be reinforced with plies of nonmetallic material and/or metallic wires of sufficient number to meet the requirements of this document. The heating element shall be an integral part of the reinforcement and shall be sealed from the external environment. A nonmetallic reinforcement braid may be utilized as the hose outer cover.

3.3.3 Electrical Power Requirements

The required electrical power for each heated hose assembly configuration shall be determined by the following empirical equation:

$$P = \text{Power (Watts)} = (4a + 8.5) * b/12 + ca^2 \pm 10\% \quad (\text{Eq. 1})$$

where:

a = Hose size in inches

b = Assembly length in inches

c = 15 (when both end fittings are flared or flareless)

= 10 (when one end fitting is flared or flareless and the other is fixed cavity)

= 7.5 (when both end fittings are fixed cavity)

3.3.3.1 Resistance Values

The resistance (R) values shall be calculated based on the following equation:

$$R \text{ MIN} = 115^2/1.1 P \quad (\text{Eq. 2})$$

$$R \text{ MAX} = 115^2/0.9 P \quad (\text{Eq. 3})$$

3.3.3.2 Current Draw Values

The current (A) draw values shall be calculated based on the following equation:

$$A \text{ MIN} = 115/R \text{ MAX} \quad (\text{Eq. 4})$$

$$A \text{ MAX} = 115/R \text{ MIN} \quad (\text{Eq. 5})$$

3.3.4 Service Life

The hose assembly shall be designed such that it will meet all the requirements of this document. Expected service life (no age limit or environmental degradation) is 20 years.

3.3.5 Corrosion Resistance

Materials (see Table 1) used shall not corrode or have detrimental effect on each other when the hose assembly is exposed to conditions normally encountered in service.

3.3.6 Public Health Service Compliance

All hose assembly materials (see Table 1) that are normally in contact with potable water shall comply with Public Health Service Publication 308. The supplier shall obtain Public Health Service approval for any material not already approved.

3.3.7 Temperature Compliance

Each hose assembly type shall be capable of operating at the environmental operating temperature range of -65 to +160 °F.

3.3.8 Lead Wire Terminations

The black lead wire shall terminate with a pin contact in accordance with M39029/31-229 and a plug connector as applicable. The white lead wire shall terminate with a socket contact per M39029/32-248 and a receptacle connector as applicable.

Socket contacts shall have a split four tine internal design with a napkin ring around the front end and have the front end enclosed in a hood. The napkin ring shall be located a minimum of 0.025 inch from the mating end of tines and shall have a minimum width of 0.040 inch. The material of the napkin ring shall be stainless steel per ASTM A666, half hard or beryllium copper per ASTM B194, ASTM B196, or ASTM B197.

Pin and socket contacts shall have plating resistive to oxidation when exposed to heat.

3.4 Dimensions and Weights

3.4.1 Hose Dimensions

Minimum hose inside diameters, maximum outside diameters, and bend radii shall be in accordance with Table 3.

Table 3 - Hose data, dimensions, and performance ratings

Hose Size Code	Hose ID Min	Hose OD Max	Minimum Inside Bend Radius Inch	Operating Pressure psig Max	Proof Pressure psig Min	Burst Pressure psig Min	Nominal Weight Pound/Inch Ref
06	0.355	0.66	1.13	125	250	500	0.0097
08	0.475	0.79	1.50	125	250	500	0.0122
10	0.600	0.94	1.88	125	250	500	0.0161
12	0.725	1.07	2.25	125	250	500	0.0194
16	0.975	1.32	3.00	125	250	500	0.0253

3.4.2 Fitting Dimensions

The basic fitting dimensions shall be as specified on the applicable standard or drawing.

3.4.3 Assembly Length

Hose assembly length designations shall be as specified on the applicable standard or drawing. Flareless hose assemblies with NAS1760 ends shall be measured from sealing gage point to sealing gage point. Flareless hose assemblies with combinations of NAS1760 to AS4375 end terminations shall be measured from the NAS1760 sealing gage point to the end of AS4375. Hose assemblies with AS1656 fixed cavity fitting ends shall be measured to the end of the fitting.

3.4.4 Weights

Nominal hose weights shall be in accordance with Table 3. Nominal weights of hose assemblies with standard end fittings shall be determined as shown in the applicable standard or drawing. Nominal weights of hose assemblies with nonstandard end fittings shall be listed on the supplier's drawing when submitted to purchaser for approval. Deviations from Nominal Weights shall not be cause for rejection.

3.5 Performance

The hose assembly dimensions and ratings, shown in Table 3, shall be verified by meeting or exceeding the requirements and quality assurance provisions specified herein.

3.5.1 Proof Pressure

The hose assembly shall withstand a room temperature proof pressure of 250 psig minimum for a minimum of 5 minutes without wetting, leakage, or evidence of permanent deformation or malfunction when tested in accordance with 4.6.2.

3.5.2 Electrical Connections

The hose assembly shall be capable of meeting the operational requirements of 3.5.4 after the lead wires are subjected to a 12 pound pull test when tested in accordance with 4.6.3.

3.5.3 Electrical Requirements

3.5.3.1 Linear Resistance

The linear resistance of the hose assembly shall not be greater than 0.9 Ω per linear foot when tested in accordance with 4.6.4.1.

3.5.3.2 Insulation Resistance

The insulation resistance of the hose assembly shall be not less than 200 M Ω when tested in accordance with 4.6.4.2.