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MIL-D-22706F(AS)
 8 July 1991
 SUPERSEDING
 MIL-D-22706E(AS)
 15 October 1985

MILITARY SPECIFICATION

DUCT AND SCUFF COVER, PNEUMATIC, FLEXIBLE

This specification is approved for use by the Naval Air Systems Command, Department of the Navy, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers flexible, pneumatic ducts and scuff covers for use in the delivery of high-flow, low pressure air at temperatures to 600°F for operation of aircraft starting and air conditioning systems.

1.2 Classification. The products shall be of the following types and classes:

1.2.1 Types.

Type I	Duct
Type II	Scuff Cover
Type III	Duct and Scuff Cover

1.2.2 Classes.

Class I	30-foot length
Class II	60-foot length

1.3 Military part numbering system (see 6.5).

M22706-D-30 (Type I, Class I)
 M22706-D-60 (Type I, Class II)
 M22706-S-30 (Type II, Class I)
 M22706-S-60 (Type II, Class II)
 M22706-DS-30 (Type III, Class I)
 M22706-DS-60 (Type III, Class II)

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Systems Engineering and Standardization Department (Code 53), Naval Air Engineering Center, Lakehurst, NJ 08733-5100, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 4720

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

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2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. The following specifications and standards form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

FEDERAL

TT-I-735	Isopropyl Alcohol
TT-S-735	Standard Test Fluids, Hydrocarbon
PPP-B-576	Box, Wood, Cleated, Veneer, Paper Overlaid
PPP-B-585	Boxes, Wood, Wirebound
PPP-B-601	Boxes, Wood, Cleated-Plywood
PPP-B-621	Boxes, Wood, Nailed and Lock-Corner

MILITARY

MIL-P-116	Preservation, Methods of
MIL-H-5606	Hydraulic Fluid, Petroleum Base, Aircraft and Ordnance
MIL-L-7808	Lubricating Oil, Aircraft Turbine Engine, Synthetic Base
MIL-L-10547	Liners, Case, Waterproof
MIL-L-23699	Lubricating Oil, Aircraft Turbine Engines, Synthetic Base

STANDARDS

MILITARY

DOD-STD-100	Engineering Drawing Practices
MIL-STD-129	Marking for Shipment and Storage
MIL-STD-130	Identification Marking of U.S. Military Property
MIL-STD-810	Environmental Test Methods
MIL-STD-831	Test Reports, Preparation of
MIL-STD-970	Standards and Specifications. Order of

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MIL-STD-1186	Cushioning, Anchoring, Bracing, Blocking and Waterproofing, With Appropriate Test Methods
MS17833	Fitting, Pneumatic Starter Duct-Flanged (Male)
MS17835	Fitting, Pneumatic Starter Duct-Flanged (Female)

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from Standardization Documents Order Desk, 700 Robbins Avenue, Building #4, Section D, Philadelphia, PA 19111-5094).

2.2 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

Power Test Code 19.5-72 Interim Supplement on instrument and apparatus, application, part II of fluid meters

(Application for copies should be addressed to the American Society of Mechanical Engineers, Publications Department, United Engineering Center, 345 East 47th Street, New York, NY 10017.)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM-D-413	Standard Test Methods for Rubber Property - Adhesion to Flexible Substrate
ASTM-D-629	Standard Test Methods for Quantitative Analysis of Textiles

(Applications for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103-1187.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the 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.

3. REQUIREMENTS

3.1 Qualification. The items furnished under this specification shall be products which are qualified for listing on the applicable Qualified Products List (QPL) at the time set for opening of bids (see 6.4).

3.1.1 Qualify by similarity. Qualification is automatically extended to the Class II duct (or scuff cover) when a manufacturer's duct (or scuff cover) can be manufactured in Class I length and the Class II duct or scuff cover is exactly the same in design, construction and materials to the Class I duct (or scuff cover), and the Class I duct (or scuff cover) is qualified.

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3.1.2 Retention of qualification. To maintain status on a QPL, certification shall be submitted at two year intervals to indicate continued compliance with the requirements of this specification (see 4.3.1 and 6.4).

3.2 Selection of specifications and standards. Specifications and standards for necessary commodities and services not specified herein shall be selected in accordance with MIL-STD-970.

3.3 Materials. Materials and parts not specifically covered herein shall be sound, of uniform quality and condition, and free of defects that may adversely affect the appearance, strength, endurance and wear resistance of the finished products. The materials used in the duct shall be resistant to deterioration or corrosion, liquid absorption or penetration, fungus growth, and sunshine. The quality of the materials to meet the environmental requirements of MIL-STD-810 shall be verified by the contractor in accordance with 4.5.11.

3.3.1 Protective treatment. Protective treatment shall be applied when materials subject to corrosion in salt air or other atmospheric conditions are used in the construction of the duct assembly. Materials shall be protected against harsh corrosion in a manner that will not prevent compliance with the performance requirements of this specification. The use of any protective coating that will crack, chip or scale, with age or extremes of atmospheric conditions is prohibited during a 6 month time in use.

3.4 Design and construction. The assembly shall consist of a length specified by the procuring activity or contracting activity (see 1.2 and 6.2). An easily replaceable scuff cover (Figure 1) shall be used. The duct shall be manufactured to ensure that the pressure and temperature requirements are satisfied. The duct shall be able to perform all the tests identified herein and shall experience no failures during testing. Any failures during the test shall be cause for rejection. The duct shall be designed to be compatible with MS17833 and MS17835 (see Appendix).

3.4.1 Duct.

3.4.1.1 Dimensions. The duct shall be of 30-foot \pm 3 inches or 60-foot \pm 6 inches length as specified. The duct shall have a uniform wall thickness with a tolerance of \pm .032 inch exclusive of the scuff cover. The inside diameter of the duct shall be not less than 3.500 inches nor greater than 3.562 inches at standard day conditions(see Figure 2). The outside diameter shall be as small as possible consistent with the requirements specified herein but shall be not greater than 4.125 inches. The duct construction shall be uniform throughout so that it will be possible to cut off a section of the duct at any location and reconnect to any of the standard beaded shank end fittings. No painting nor any other special treatment of the cut surface shall be required.

3.4.1.1.1 Dimensional changes. The duct shall be so designed and constructed that it will not decrease in length more than two percent nor increase more than three percent when new or after exposure to any of the conditions specified herein. The inside diameter shall not decrease more than two percent after exposure to any of the conditions specified herein. Increases in outside diameter shall be restricted to the maximum diameter specified in 3.4.1.1.

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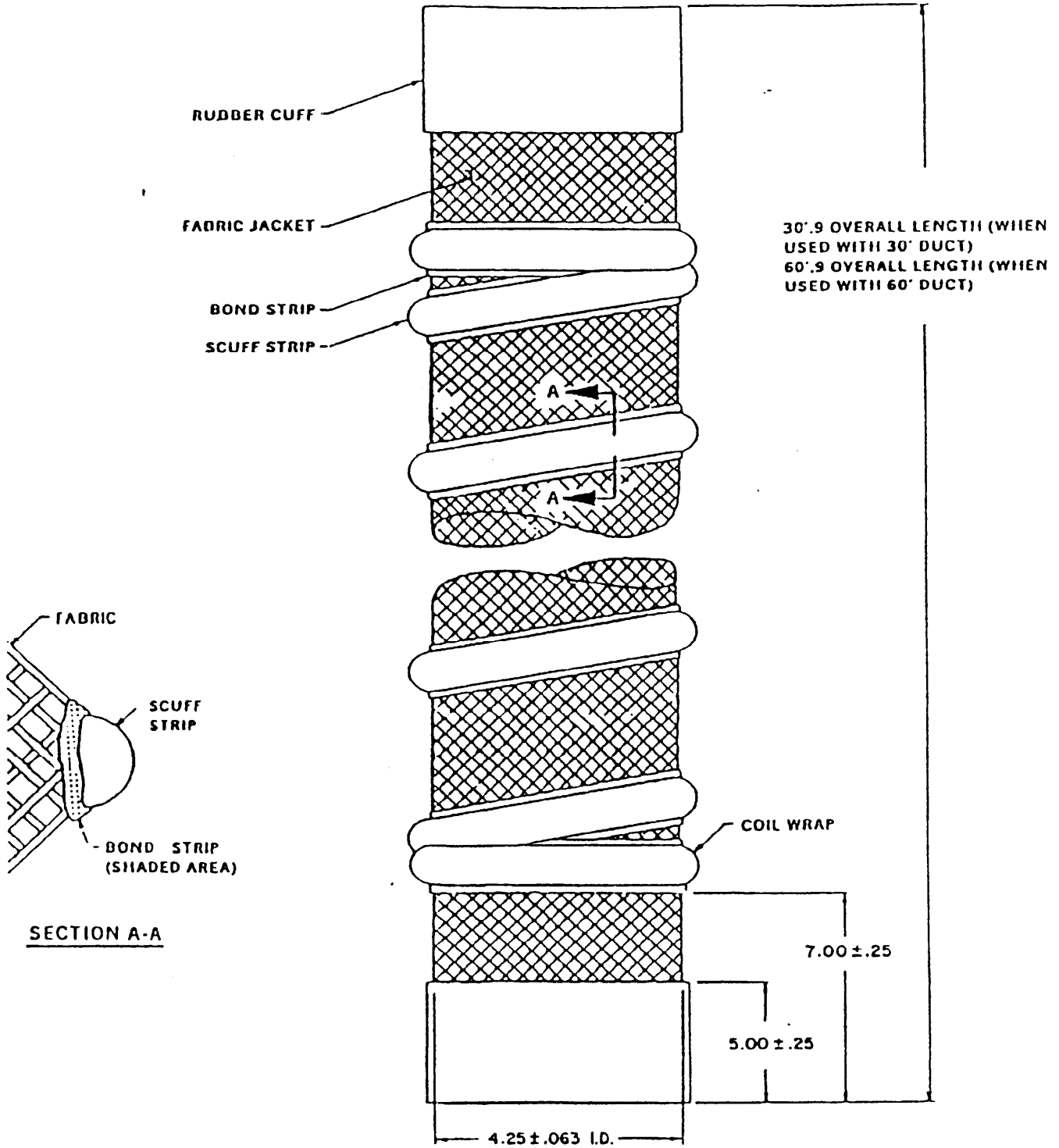


FIGURE 1. Scuff cover 30 ft/60 ft.

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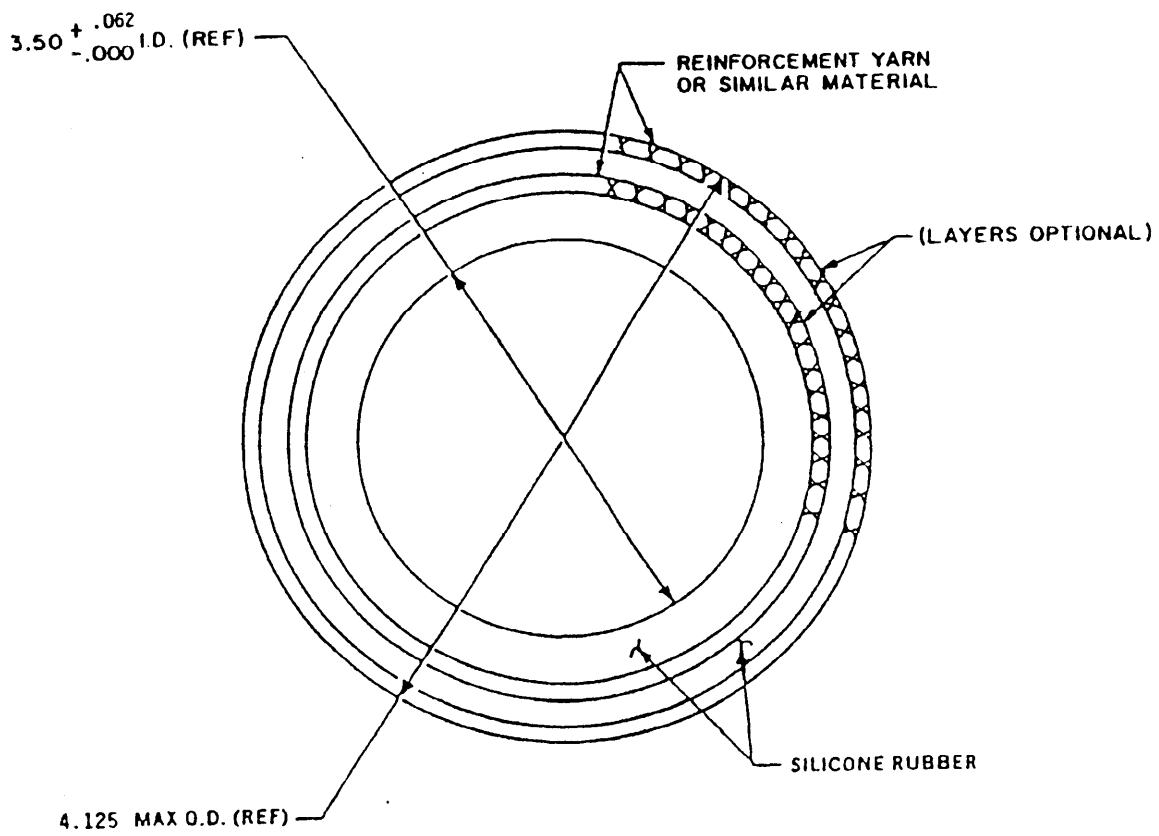


FIGURE 2. Duct construction detail.

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3.4.1.2 Fabric. The exterior fabric shall be a material that is resistant to liquid absorption and penetration that will meet the requirements and tests specified herein. The fabric shall be highly resistant to abrasion (see 4.5.12).

3.4.1.3 Serviceability. The duct shall be designed and constructed to resist abrasion (see 4.5.12), exposure to solvents (see 4.5.10), and leakage (see 4.5.3). It shall withstand continuous flexing consistent with the inspections specified herein (see 4.5.4).

3.4.2 Scuff cover.

3.4.2.1 Dimensions. Scuff cover dimensions shall be as specified in Figure 1.

3.4.2.2 Fabric. The scuff cover (see Figure 1) shall be constructed of a moisture resistant fabric having a maximum regain of 0.5% as measured by ASTM Test No. D629. Materials may be treated with a moisture resistant compound to meet this requirement. The fabric shall be of an open construction (weave or braid).

3.4.2.3 Scuff strip. The scuff cover shall be wound with a protective helical coil of natural or synthetic rubber with a minimum durometer of 60, permanently vulcanized to the fabric. A bonding strip shall be used between the scuff strip and the fabric. The bond strip shall be vulcanized to the fabric so that the fabric immediately below the bond strip is completely contained within the rubber material and there are no exposed threads below the bond strip. The last coil wrap at each end shall be wrapped squarely around the fabric and vulcanized to itself to prevent separation or raveling of the strip.

3.4.2.4 Scuff cover ends (cuff). Each end of the scuff cover shall be vulcanized with a 5 inch minimum width rubber strip to prevent unravelling of the scuff cover and space for identification information (see 3.8.1).

3.5 Environmental conditions. The duct and scuff cover shall be able to operate under the following environmental conditions:

- a. Exposure to salt sea atmosphere (see 4.5.11).
- b. Fungus growth as encountered in tropical conditions (see 4.5.11).
- c. Radiant energy as found under natural conditions (see 4.5.11).

3.6 Performance. The duct and scuff cover shall be capable of satisfying the performance requirements (detail tests are shown in section 4) and shall be able to operate in the following conditions:

- a. Ambient temperature of $-65^{\circ} \pm 5^{\circ}\text{F}$ when air flowing at 200 ± 5 pounds per minute, 100 ± 2 psia, and $600 +0^{\circ}\text{F}$, -10°F (see 4.5.4).
- b. Ambient temperature of $+130 \pm 5^{\circ}\text{F}$ when air flowing at 200 ± 5 pounds per minute, 100 ± 2 psia, and $600 +0^{\circ}\text{F}$, -10°F (see 4.5.9).

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- c. Static proof pressure of 250 psia at normal ambient temperatures for 5 minutes with the pressure trapped, the static pressure shall not drop 30 psi during that period (see 4.5.2).
- d. A minimum bend radius of 8 inches when the duct is under no pressure and a bend radius of 30 inches while under pressure of 30 psia.
- e. A pneumatic pressure equal to maximum operating pressure and shall not leak more than the value specified in 4.5.3.
- f. The duct assembly shall be capable of withstanding abrasion resistance when tested in accordance with 4.5.12.
- g. The scuff cover shall have a tensile strength of 1500 pounds and shall be able to withstand the requirements when tested in accordance with 4.5.13.
- h. The duct shall meet the adhesion requirements of ASTM-D-413 when tested in accordance with adhesion test (see 4.5.8).
- i. The pressure drop through duct assembly shall not exceed the value specified in 4.5.7.
- j. Resistance to various fluid when tested in accordance with 4.5.10.

3.7 Part numbering interchangeability. All parts having the same manufacturer's part number shall be functionally and dimensionally interchangeable. The item identification and part number requirements of DOD-STD-100 shall govern the manufacturer's part numbers and changes thereto.

3.8 Weight. The weight of the duct without end flanges and fittings but with scuff cover shall be not greater than 2.5 pounds per foot of length.

3.9 Marking.

3.9.1 Identification of product. Duct, flanges and scuff covers shall be marked for identification in accordance with MIL-STD-130. The identification shall be permanent and shall not peel off, crack or loosen with age and environmental conditions. Approximate locations and other details selected for marking shall be in accordance with Figure 3.

3.10 Workmanship. All workmanship shall be such as to result in a first quality duct and scuff cover to meet the requirements of this specification. The duct and scuff cover shall be free from blemishes and defects and shall be fabricated and finished in a workable manner.

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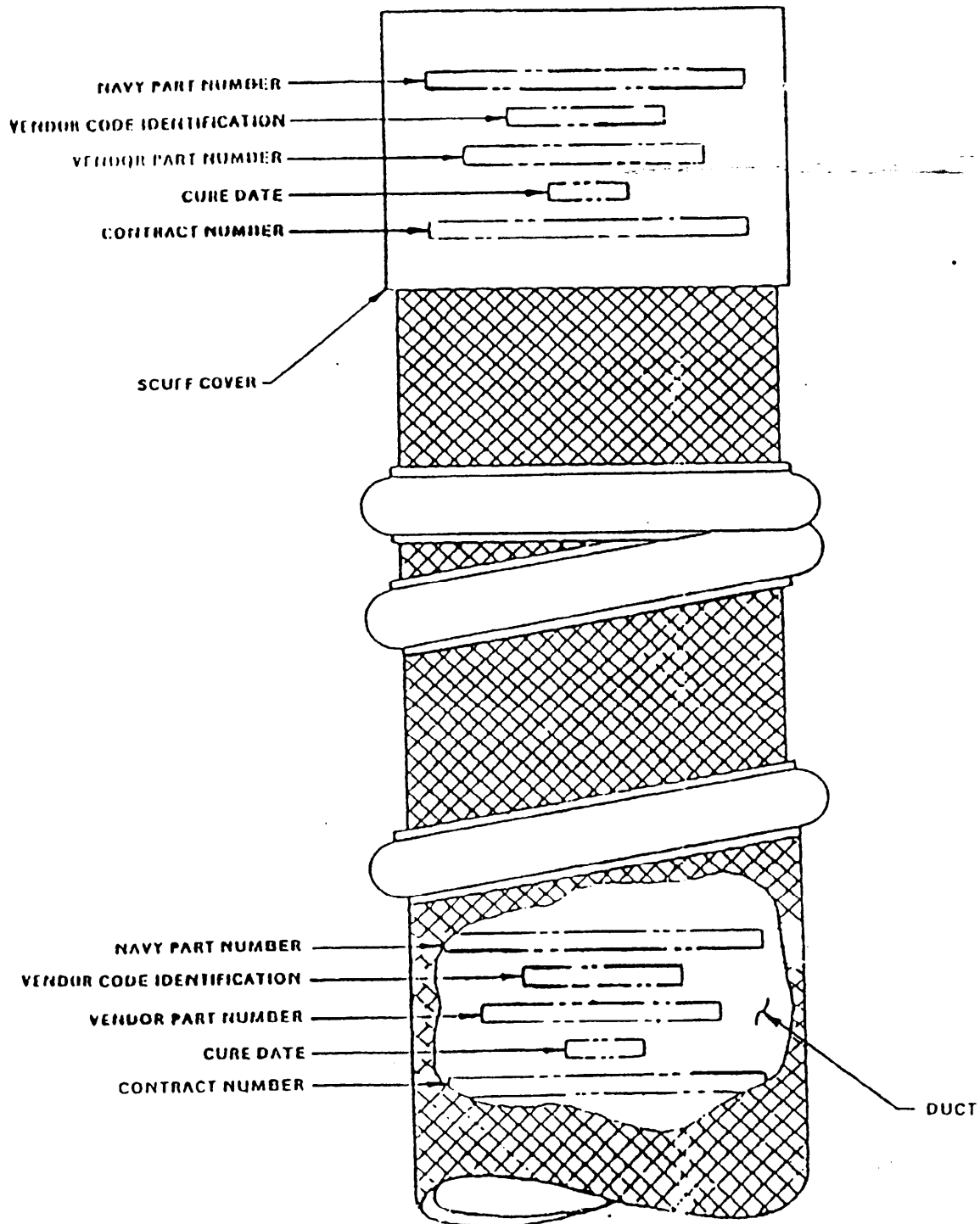


FIGURE 3. Duct/scuff cover (30'-60') identification markings, typical each end.

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4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements (examinations and tests) as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items shall meet all requirements of Sections 3 and 5. The inspections set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements; however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

4.2 Classification of inspections. The inspection requirements specified herein shall be classified as follows:

- a. Qualification inspection (see 4.3).
- b. Quality conformance inspection (see 4.4).

4.3 Qualification inspection. Qualification inspection shall be as specified in Table I.

4.3.1 Retention of qualification. To comply with the requirements specified in 3.1.1, the manufacturer shall forward qualification certification at two year intervals to the Naval Air Engineering Center, Code 5263, Lakehurst, NJ 08733. This certification, signed by a responsible official of management, shall attest that the manufacturer has the capability to produce pneumatic ducts and scuff covers under conditions equal to those existing at the time of the original approved listing.

4.3.2 Qualification test samples. The supplier shall furnish two Type III, Class I (30-foot) duct assemblies and one Type II, Class I (30-foot) scuff cover to determine conformance with this specification.

4.3.3 Test sequence. The samples specified in 4.3.2 for qualification testing shall be conducted in the order listed in Table I.

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TABLE I. Qualification inspection.

Sample 1		Sample 2		Sample 3	
Name of test	Test paragraph	Name of test	Test paragraph	Name of test	Test paragraph
Examination of product	4.5.1	Examination of product	4.5.1	Tensile	4.5.13
Static proof pressure	4.5.2	Static proof pressure	4.5.2	Scuff strip adhesion	4.5.14
Leakage	4.5.3	Leakage	4.5.3		
Low temperature	4.5.4	* High temperature soak	4.5.6		
Bend radius	4.5.5	Pressure drop	4.5.7		
Abrasion resistance	4.5.12	Endurance	4.5.9		
Fluid resistance	4.5.10	Adhesion	4.5.8		
Environmental	4.5.11				
Adhesion	4.5.8				

*Without scuff cover.

4.3.4 Qualification test report. The contractor shall prepare a report of the qualification tests in accordance with MIL-STD-831 showing that the assemblies tested conform to this specification. Two copies shall be furnished to the contracting activity. Two additional copies shall be forwarded to the qualifying activity with the verification test samples. Qualification test report shall be in accordance with paragraph 6.4.

4.3.5 Test methods. The qualification tests shall follow the methods prescribed in 4.5. When the scuff cover is used, it shall be considered as an integral part of the duct and unless otherwise specified, all tests shall be conducted on the entire assembly.

4.4 Quality conformance inspection. Quality conformance inspection shall consist of:

- a. Individual inspection (4.4.1).
- b. Sampling tests (4.4.2).

4.4.1 Individual inspection. Each duct shall be subjected to examination of product in accordance with 4.5.1. Any type of failing to pass the examination shall be a cause for rejection.

4.4.2 Sampling tests. One duct from each lot of 100 or fraction thereof shall be randomly selected and subjected to a 150 cycle test per 4.5.9, followed by a static proof pressure test per 4.5.2. Immediately upon completion of the static proof pressure test, conduct an adhesion test in accordance with 4.5.8.

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4.4.3 Production lot. A production lot shall consist of ducts fabricated from a single batch of raw material and produced as one continuous run.

4.5 Inspection methods.

4.5.1 Examination of product. Each duct and scuff cover shall be examined to determine conformance to the requirements specified herein with respect to materials, workmanship, marking, weight and dimensions. Records of examinations shall be kept complete and available to the Government as specified in the contract or purchase order.

4.5.2 Static proof pressure test. The duct shall be sealed and restrained at both ends and subjected to a static pressure of 250 psia with air, water or nitrogen at normal ambient temperatures for five minutes to insure compliance with the static proof pressure requirements specified in paragraph 3.6c. Special caution should be used when using air or nitrogen at this pressure.

4.5.3 Leakage test. The test shall be conducted at ambient prevailing temperatures. With the test duct blocked at both ends, the duct shall be pressurized with air or nitrogen to 150 psia and with the pressure trapped, the static pressure shall not drop 30 psi in less than one hour.

4.5.4 Low temperature soak test. The duct assembly shall be placed in a chamber and cooled to and maintained at a temperature of $-65^{\circ} \pm 5^{\circ}\text{F}$ for a period of 8 hours. At the end of the soak period and at $-65^{\circ} \pm 5^{\circ}\text{F}$, a 2000 lb force exerted on a rubber covered member shall be applied on the duct. The force shall cover 6 inches of duct length and overhang the width of the duct when flattened. The force shall be removed after one minute. This test shall be repeated 25 times with an examination of the duct upon completion of the test. While at $-65 \pm 5^{\circ}\text{F}$, the duct shall be subjected to 100 flexing cycles near each end to permit internal inspection without destroying the duct. A flexing cycle shall consist of folding the duct back on itself and then returning it to the straight configuration. With the duct initially at $-65 \pm 5^{\circ}\text{F}$, it shall be subjected to 25 cycles of the endurance test (see 4.5.9). Damage to the duct as a result of any of the tests above shall be cause for rejection.

4.5.5 Bend radius and length. At a stabilized -65°F temperature, the unpressurized duct assembly shall be subjected to bending until it will not bend further without being damaged. The minimum bend radius shall not exceed 8 inches as measured to the centerline of the duct. Subsequently, the duct assembly shall be pressurized with air to 30 psia and the bend radius redetermined. The bend radius shall not exceed 30 inches without crimping, as measured to the center of the duct. The temperature shall then be stabilized at 130°F and the tests (pressurized and unpressurized) repeated. After the pressurized bend radius has been determined, the pressure shall be decreased to 15 psia in increments of 5 psia and the change in the duct length shall not be greater than the values specified in 3.4.1.1.1. The duct assembly shall then be subjected to the tests specified in 4.5.2 and 4.5.3.

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34.5.6 High temperature soak test. The duct shall be placed in a chamber and heated to and maintained at a temperature of $600^{\circ} \pm 10^{\circ}\text{F}$ for a period of 30 minutes. At the end of this time, while in the chamber at $600^{\circ} \pm 10^{\circ}\text{F}$, the duct shall be subjected to a static proof pressure of 150 ± 2 psig for 5 minutes. Ballooning, bursting or otherwise failure of the duct to withstand the above pressure shall be cause for rejection.

4.5.7 Pressure drop test. The pressure drop through a 30-foot section of duct assembly shall not exceed 6 psi when installed as shown in Figure 4 under flow conditions of 4.5.9.

4.5.8 Adhesion test. The outer wall of sample I duct shall have a reinforcement to rubber adhesion of 15 pounds per linear inch (PLI) minimum when tested in accordance with ASTM-D-413, strip specimen, type A, 180 degree peel machine method. The sample II duct, upon completion of the 1000 cycle endurance test, shall be tested at both folded locations (see Figure 4) in accordance with the above procedure, except the ply adhesion shall be 9 PLI minimum.

4.5.9 Endurance test. While installed as shown in Figure 4, the duct shall be subjected to a 1000 cycle test. Each cycle shall consist of flowing air through the duct at the rate of 200 ± 5 pounds per minute at 100 ± 2 psia total pressure with an inlet temperature of $600 +0, -10^{\circ}\text{F}$ for one minute followed by one minute of no air flow. The duct shall be flexed 18 inches from the inlet end as described in 4.5.4 during the no flow portion of the cycle. This total elapsed time of 2 minutes shall constitute one cycle. The duct shall be in an environment with an ambient temperature of $130 +10/-5^{\circ}\text{F}$. A "warmup" period of 10 cycles is permissible to establish the 130°F ambient temperature within the tolerances specified. The 1000 cycle test may be conducted continuously for a minimum of eight hours.

4.5.10 Fluid resistance. Six exterior adjacent one-foot sections approximately at the center of a 30-foot duct assembly shall be saturated with each of the following fluids for five minutes:

- a. Test fluid conforming to TT-S-735, Type III.
- b. Test fluid conforming to TT-S-735, Type VI.
- c. Engine lubricating oil conforming to MIL-L-7808 and MIL-L-23699.
- d. Anti-icing fluid conforming to TT-I-735.
- e. Hydraulic fluid conforming to MIL-H-5606.
- f. Salt water (5% by weight).

This saturation shall be repeated five times at 24 hour intervals, after which it shall be tested in sequence static proof pressure test (4.5.2) and leakage test (4.5.3).

4.5.11 Environmental. The manufacturer shall verify and document environmental suitability of the materials. Suitability shall be indicated by the following tests in accordance with the procedures of MIL-STD-810:

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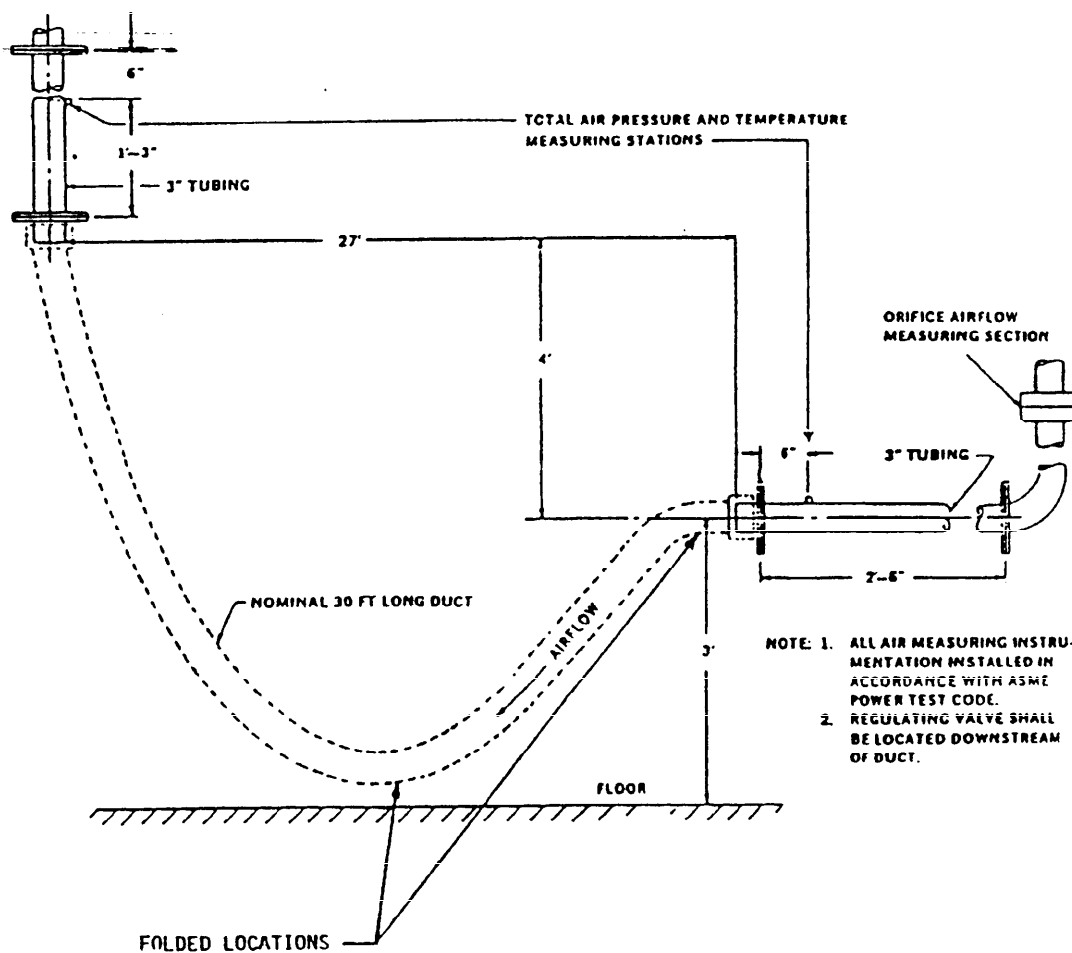


FIGURE 4. Duct test installation.

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- a. Fungus resistance - The fungus resistance test shall be conducted in accordance with Method 508.
- b. Sunshine - The sunshine test shall be in accordance with Method 505 for 100 hours.
- c. ~~Salt fog~~ - The salt fog test shall be conducted in accordance with Method 509.

4.5.12 Abrasion resistance. The duct assembly (duct/scuff cover) shall be attached to a towing vehicle at one end of the assembly. The towing vehicle attachment point shall not be more than one foot above ground level. The duct assembly thus attached shall be dragged at a minimum of 5 miles per hour for 20,000 feet without rotation, on concrete (a dry, brushed surface subject to approval by the qualifying activity (see 6.4)). The test shall be repeated with the duct assembly being dragged by its opposite end. The test shall be repeated with the duct assembly bent 180 degrees at its midpoint and both ends attached to the towing vehicle. After the last test, the duct assembly shall be tested for leakage in accordance with 4.5.3.

4.5.13 Tensile test. The scuff cover shall be capable of withstanding a 1500 pound pull applied axially at the ends of the cover. Plugs shall be installed and clamped into each end of the cover. The plugs shall have attached hooks and one end shall be hooked to a fixed support while a 1500 pound pull is applied to the other end for a minimum of 5 minutes. Any separation of components, breaks in the braid cover, or breaks in the scuff cover strip shall be cause for rejection. The test shall be repeated after heating the scuff cover to 200°F for 24 hours.

4.5.14 Scuff strip adhesion test. The scuff strip adhesion test shall be conducted as follows. The scuff strip and bond strip interface shall be cut with a sharp knife. The two strips shall then be pulled away from each other. Separation of the scuff strip and bond strip shall occur as tearing of the rubber rather than by pulling apart of one distinct strip from the other. If separation occurs along an apparent parting surface, this shall be cause for rejection.

5. PREPARATION AND DELIVERY

5.1 Preservation. Preservation shall be level A or level C as specified (see 6.2).

5.1.1 Level A. Ducts and scuff covers shall be preserved in accordance with MIL-P-116, Method III.

5.1.2 Level C. Ducts and scuff covers shall be preserved and packaged in such a manner as to ensure adequate protection during shipment to the initial destination for immediate use.

5.2 Packing.

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5.2.1 Level A. Ducts and scuff covers shall be packed in accordance with exterior type shipping containers conforming to PPP-B-585, PPP-B-601, PPP-B-621 or PPP-B-576. Exterior containers shall be of uniform shape and size of minimum cube and tare consistent with the protection required, and shall contain identical quantities. The gross weight of each pack shall not be greater than 200 pounds. Containers shall be provided with a case liner conforming to MIL-L-10547 and shall be sealed in accordance with the appendix thereto.

5.2.2 Level C. Packages which require overpacking for acceptance by carrier shall be packed in exterior type shipping containers in a manner that will ensure safe transportation at the lowest rate to the point of delivery. Containers shall meet Consolidated Freight Classification rules or regulations of other common carriers, as applicable to the mode of transportation.

5.2.3 Physical protection. Cushioning, blocking, bracing and bolting as required shall be in accordance with MIL-STD-1186 except that waterproofing requirements for cushioning materials and containers shall be waived for domestic shipments. The drop tests of MIL-STD-1186 shall be waived when the item is preserved, packaged and packed for immediate use or when the drop tests of MIL-P-116 are applicable.

5.3 Marking for shipment. Interior and exterior containers shall be marked in accordance with MIL-STD-129.

6. NOTES

6.1 Intended use. The duct covered by this specification is intended for use in delivering of high-flow, low-pressure air to aircraft starting and air conditioning systems.

6.2 Ordering data.

6.2.1 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number and date of this specification.
- b. Type and class required (see 1.2).
- c. Military part number (see 1.3 and 6.5).
- d. Special marking, if required (see 3.9).
- e. Level of packing (see 5.1).

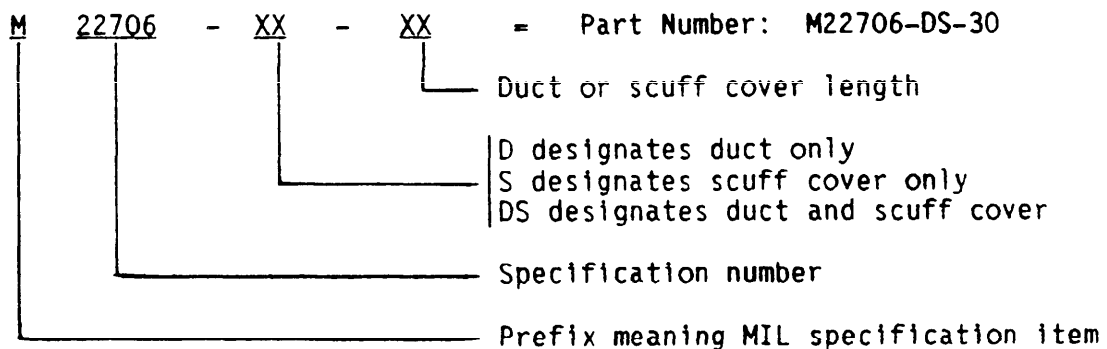
6.3 Data. For the information of contractors and contracting officers, any of the data specified in (a) applicable documents listed in Section 2 of this specification, or (b) referenced lower tier documents need not be prepared for the Government and shall not be furnished to the Government unless specified in the contract or purchase order. The data to be furnished shall be listed on DD Form 1423 (Contractor Data Requirements List), which shall be attached to and made part of the contract or purchase order.

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6.4 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time set for opening of bids, qualified for inclusion on the applicable Qualified Products List whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or purchase orders for the products covered by this specification. The activity responsible for the Qualified Products List is the Commander, Naval Air Systems Command, Department of the Navy, Washington, DC 20361, Attention: AIR-55231; information pertaining to qualification of products may be obtained from the Naval Air Engineering Center, Lakehurst, NJ 08733, Attention: code 5263.

6.5 Military part numbering system.

Example of part numbering:



6.6 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

6.7 Subject term (keyword) listing.

Air, high flow, low pressure
Aircraft starting, air conditioning systems
Operating temperature 600°F

Preparing Activity:
Navy - AS

(Project No. 4720-N031)

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APPENDIX

SECURING DUCT AND SCUFF COVER ASSEMBLY TO MS17833 AND MS17835 FITTINGS

10. SCOPE

10.1 Scope. This appendix covers procedures to attach MS17833 and MS17835 fittings to the duct and scuff cover.

20. APPLICABLE DOCUMENTS

Apparatus Manufacturer.

Band-It Division, Houdaille Industries, Inc., Denver, CO 80216,
CAGE No. 70847.

30. INSTALLATION

30.1 Sample.

30.1.1 Connecting male and female fittings. The duct shall be secured to male (MS17833) and female (MS17835) fittings with Band-It buckles (part number C-256) and bands (part number C-206).

30.1.2 Installation of bands and buckles. To install the bands and buckles, place three .75 inch bands and three buckles on each end of the duct assembly for the purpose of attaching the duct to the MS17833 and MS17835 fittings. The first two banks of MS17833 fittings (closest to the flanged end) shall have one band on each bank that will secure only the duct to the fitting. The third bank shall have a band on the exterior of the scuff cover to secure the cover to the fitting. Radially locate the buckles 120° apart around the duct. Install the clamps using the tool (C001) and nut (C040) manufactured by Band-It. Torque the clamps to a value of 100 inchoate. While torquing, tap around the clamp to seat it firmly. Use the same procedures for the MS17835 fitting on the opposite end.

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

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I RECOMMEND A CHANGE:

1. DOCUMENT NUMBER

MIL-D-22706F(AS)

2. DOCUMENT DATE (YYMMDD)

8 July 1991

II. DOCUMENT TITLE

Duct and Scuff Cover, Pneumatic, Flexible

III. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)

IV. REASON FOR RECOMMENDATION

V. SUBMITTER

a. NAME (Last, First, Middle Initial)

b. ORGANIZATION

c. ADDRESS (Include Zip Code)

d. TELEPHONE (Include Area Code)

7. DATE SUBMITTED (YYMMDD)

(1) Commercial

(2) AUTOVON

(If applicable)

VI. PREPARING ACTIVITY

a. NAME

Commanding Officer
NAEC, SESD, CODE 53

b. TELEPHONE (Include Area Code)

(1) Commercial

(908) 323-7594

(2) AUTOVON

624-7594

c. ADDRESS (Include Zip Code)

Lakehurst, NJ 08733-5100

IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:
 Defense Quality and Standardization Office
 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466
 Telephone (703) 756-2340 AUTOVON 289-2340