

INCH POUND

MIL-DTL-0083406D(USAF)

15 April 2010

USED IN LIEU OF

MIL-DTL-83406C

24 March 2006

DETAIL SPECIFICATION

ANTI-G GARMENT, CUTAWAY, CSU-13B/P

Reactivated after 24 March 2006 and may be used for new and existing designs and acquisitions.

This specification is for an Aviation Critical Safety Item (CSI/Flight Safety Critical Aircraft Part (FSCAP) and the acquisition process must comply with the DoD Materiel Management Regulation – DoD 4140.1-R



Comments, suggestions, or questions on this document should be addressed to ASC/ENRS, 2530 Loop Road West, Bldg 560, Wright-Patterson AFB OH 45433-7101 or e-mailed to EngineeringStandards@wpafb.af.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <https://assist.daps.dla.mil>.

AMSC N/A

FSC 8475

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MIL-DTL-0083406D(USAF)

This specification is approved for interim use by the Air Force. Other activities in the Department of Defense may use this interim revision or may continue using MIL-DTL-83406C.

1. SCOPE

1.1 Scope.

This specification covers the requirements for the CSU-13B/P anti-g garment, which is designated as a critical safety item.

1.2 CLASSIFICATION.

Anti-g garments are of the following sizes and lengths, as specified (see 6.2 and 6.6):

| | | | |
|--------------------|---------------------|--------------------|------------------------|
| Small regular (SR) | Medium regular (MR) | Large regular (LR) | Large extra long (LXL) |
| Small long (SL) | Medium long (ML) | Large long (LL) | |

2. APPLICABLE DOCUMENTS

2.1 General.

The documents listed in this section are specified in sections 3, 4, and 5 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3, 4, and 5 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks.

The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

FEDERAL STANDARDS

| | |
|-------------------|-----------------------------------|
| FED-STD-4 | Glossary of Fabric Imperfections |
| FED-STD-595/27040 | Miscellaneous, Semigloss |
| FED-STD-595/34096 | Green, Flat or Lusterless |
| FED-STD-595/34097 | Green, Flat or Lusterless |
| FED-STD-595/34128 | Green, Flat or Lusterless |
| FED-STD-595/37038 | Miscellaneous, Flat or Lusterless |
| FED-STD-595/37056 | Miscellaneous, Flat or Lusterless |

MIL-DTL-0083406D(USAF)

COMMERCIAL ITEM DESCRIPTIONS

| | |
|-----------|--|
| A-A-50195 | Thread, Aramid |
| A-A-55126 | Fastener Tapes, Hook and Loop, Synthetic |
| A-A-55621 | Fasteners, Snap, Style 3 Pronged Ring Head Type (16 Ligne) |
| A-A-55634 | Zippers (Fasteners, Slide Interlocking) |
| A-A-55809 | Insulation Tape, Electrical, 600V, Polyvinyl Chloride, Pressure-Sensitive Adhesive |
| A-A-59826 | Thread, Nylon |

DEPARTMENT OF DEFENSE SPECIFICATIONS

| | |
|----------------|---|
| MIL-PRF-5038 | Tape, Textile and Webbing, Textile, Reinforcing, Nylon |
| MIL-W-5664 | Webbing, Textile, Elastic |
| MIL-PRF-6855/4 | Rubber, Synthetic, Tubing |
| MIL-DTL-32075 | Label: for Clothing, Equipage, and Tentage, (General Use) |
| MIL-DTL-32092 | Leather, Cattlehide, Deerskin and Horsehide, Chrome Tanned |
| MIL-T-38328 | Tape, Textile, Nylon, Aromatic, Nonmelting, Reinforcing |
| MIL-C-43204 | Cloth, Spacer (Olefin) |
| MIL-L-43283 | Leather, Calfskin, Kip, and Cattlehide for Footwear Uppers, Chrome Tanned |
| MIL-W-81116 | Webbing, Textile, Polyamide, High Temperature Resistant, Loop |
| MIL-C-83242 | Cord, Aromatic Polyamide, Nonmelting |
| MIL-C-83390 | Connector, Hose, Quick-Acting, Male, Anti-G Garment |
| MIL-C-83429 | Cloth, Plain and Basket Weave, Aramid |
| MIL-C-83489 | Cloth, Coated, Nylon, Polyurethane Coated |

DEPARTMENT OF DEFENSE STANDARDS

| | |
|----------|---|
| MS 27755 | Connector, Hose Quick Disconnect, Female, Anti "G" Suit |
|----------|---|

(Copies of these documents are available online at <https://assist.daps.dla.mil/quicksearch/> or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.2.2 Other Government documents, drawings, and publications.

The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

MIL-DTL-0083406D(USAF)

AIR FORCE DRAWINGS

| | |
|-----------|---|
| 71380 | Patterns, CSU-13B/P anti-g garment, Size Small Regular |
| 71381 | Patterns, CSU-13B/P anti-g garment, Size Small Long |
| 71382 | Patterns, CSU-13B/P anti-g garment, Size Medium Regular |
| 71383 | Patterns, CSU-13B/P anti-g garment, Size Medium Long |
| 71384 | Patterns, CSU-13B/P anti-g garment, Size Large Regular |
| 71385 | Patterns, CSU-13B/P anti-g garment, Size Large Long |
| 71386 | Patterns, CSU-13B/P anti-g garment, Miscellaneous All Sizes |
| 74204 | Spacer, Tube – Anti-g Garment |
| 74206 | Pattern, Anti-g Garment, CSU-13B/P, Size Large Extra Long |
| 200518653 | Source Control Drawing- Fastener, Slide |

(Copies of these documents are available from the Defense Supply Center Philadelphia, Clothing and Textiles Directorate, ATTN: DSCP-CBTC, (Bldg 6), 700 Robbins Ave., Philadelphia, PA. 19111-5092 or for DoD personnel they are available online at www.jedemics.net.)

2.3 Non-Government publications.

The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of documents are those cited in the solicitation or contract.

AEROSPACE INDUSTRIES ASSOCIATION (AIA)**NATIONAL AEROSPACE STANDARDS (NAS)**

| | |
|-----------|---|
| NAS397 | Clamp – Ratchet, One Piece (DoD Adopted) |
| NASM20230 | Grommet, Metallic, Plain and Rolled Rim, with Washer, Type I and Type III (DoD Adopted) |
| NASM27980 | Fasteners, Snap, Style 2 (Regular Wire Spring Clamp Type) (DoD Adopted) |
| NASM27983 | Fasteners, Snap, Style 4 (Three Way Locking Type) (DoD Adopted) |

(Copies of these documents are available from www.aia-aerospace.org or Aerospace Industries Association, 1000 Wilson Blvd, Suite 1700, Arlington VA 22209-3901.)

AMERICAN SOCIETY FOR QUALITY (ASQ)

| | |
|---------------|---|
| ANSI/ASQ Z1.4 | Sampling Procedures and Tables for Inspection by Attributes (DoD Adopted) |
|---------------|---|

(Copies of this document are available from www.asq.org or the American Society for Quality, 600 North Plankinton Ave., Milwaukee WI 53203-2914.)

MIL-DTL-0083406D(USAF)

ASTM INTERNATIONAL

| | |
|--------------|--|
| A 313/A 313M | Standard Specification for Stainless Steel Spring Wire (DoD Adopted) |
| D 5034 | Standard Test Method for Breaking Strength and Elongation of Textile Fabrics (Grab Test) |
| D 6193 | Standard Practice for Stitches and Seams (DoD Adopted) |

(Copies of these documents are available from www.astm.org or ASTM International, 100 Bar Harbor Dr., West Conshohocken PA 19428-2959.)

THE PARACHUTE INDUSTRY ASSOCIATION (PIA)

| | |
|------------|---|
| PIA-C-3953 | Cloth, Duck, Nylon (DoD Adopted) |
| PIA-W-4088 | Webbing, Textile, Woven Nylon (DoD Adopted) |

(Copies of these documents are available from www.pia.com or the Parachute Industry Association, 3833 West Oakton St., Skokie IL 60076.)

SAE INTERNATIONAL

| | |
|-----------------|---|
| SAE AMS-T-22085 | Tapes, Pressure-Sensitive, Adhesive, Preservation and Sealing (DoD Adopted) |
|-----------------|---|

(Copies of this document are available from or www.sae.org or SAE World Headquarters, 400 Commonwealth Dr., Warrendale PA 15096-0001.)

AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS (AATCC)

| | |
|-----------------|--|
| Test Method 135 | Dimensional Changes of Fabrics after Home Laundering |
|-----------------|--|

(Copies of this document are available from or www.aatcc.org or AATCC, P.O. Box 12215 Research Triangle Park, NC 27709-2215)

2.4 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 anti-g garments furnished under this specification shall be products that are authorized by the qualifying activity for listing in the Qualified Products Database (QPD) before contract award (see 4.3 and 6.3).

3.2 First article.

When specified (see 6.2), a sample shall be subjected to first article inspection in accordance with 4.4.

MIL-DTL-0083406D(USAF)

3.3 Recycled, recovered, or environmentally preferable materials.

Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible, provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs. However, used, rebuilt, or refurbished items shall not be provided.

3.4 Materials and parts.

Except for the metallic materials and parts, the materials and parts of the anti-g garment shall have been manufactured not more than 12 months prior to the date of delivery of the anti-g garment.

3.4.1 Basic materials**3.4.1.1 High temperature resistant cloth.**

Except for the bladder, the basic material for the anti-g garment shall be plain weave conforming to type II, class 6 of MIL-C-83429 and the color shall be AF Sage Green 1590 (see 6.4) with the exception that the weight of the test material shall be 4.6 – 5.0 ounces per yard square and AATCC Test Method 135 shall be used, utilizing 5 wash cycles.

3.4.1.2 Polyurethane coated nylon cloth.

The material for the bladder, including the attachment patches, reinforcement of inflation tubes, external covering, and checklist retainer area of thigh, shall be plain weave conforming to type I of MIL-C-83489, with the exception that finished fabric weight shall be 5.5 - 6.75 ounces per square yard and minimum tear strength shall be 5 lbs warp and 4 lbs fill.

3.4.2 Reinforcements and bindings.

Unless otherwise specified herein, the reinforcements shall be made of the basic material specified in 3.4.1.1. The 5/16-inch wide (finished), centerfold, bias binding shall be 45 degrees bias, cut 1-1/4 inches to 1-3/8 inches wide from the basic material (see 3.4.1.1).

3.4.3 Adjustment laces and lanyard.

The cord for the lanyard and for the adjustment laces shall be coreless conforming to type I of MIL-C-83242 and shall approximately match the shade of the basic material (see 3.4.1.1).

3.4.4 Slide fasteners.

The slide fasteners shall conform to table I of this specification and AF Drawing 200518653, except as otherwise specified herein. The slide fasteners shall be brass with a tab pull. The tape and the bead of all size fasteners (including the body opening) shall be a high temperature resistant polyamide material that has been dyed to match the color of the basic material specified in 3.4.1.1. The tape of the slide fastener shall have colorfastness in accordance with A-A-55634, except that fair colorfastness, in lieu of good colorfastness, to light will be acceptable. The finish of the chain and the other metal components shall be black chemical finish. All automatic locking sliders shall have a pin-type locking device.

3.4.5 Spacer material.

The spacer material for the bladder and bladder inflation tube shall conform to type III of MIL-C-43204.

MIL-DTL-0083406D(USAF)

TABLE I. Slide fasteners.

| GARMENT SIZE | CONTROL DRAWING | LOCATION |
|--------------|-----------------|---------------|
| SR | 200518653-01 | Thigh take-up |
| SL/ML/LL/LXL | 200518653-03 | Thigh take-up |
| MR/LR | 200518653-05 | Thigh take-up |
| ALL | 200518653-07 | Pocket |
| ALL | 200518653-11 | Body |
| SR | 200518653-13 | Left leg |
| SR | 200518653-15 | Right leg |
| SL | 200518653-17 | Left leg |
| SL | 200518653-21 | Right leg |
| MR | 200518653-23 | Left leg |
| MR | 200518653-25 | Right leg |
| ML | 200518653-27 | Left leg |
| ML | 200518653-31 | Right leg |
| LR | 200518653-33 | Left leg |
| LR | 200518653-35 | Right leg |
| LL | 200518653-37 | Left leg |
| LL | 200518653-41 | Right leg |
| LXL | 200518653-43 | Left leg |
| LXL | 200518653-45 | Right leg |

3.4.6 Stiffeners.

The stiffeners for the slide fasteners, front and back body, shall be made of nylon cloth conforming to class 2 of PIA-C-3953.

3.4.7 Aromatic polyamide tape.

The slide fastener's tape for the pull thong, loops for the slide fasteners, and the hanger shall be 5/16 \pm 1/32 inch wide conforming to type VI of MIL-T-38328 and shall approximately match the color of the basic material (see 3.4.1.1). The webbing for the waist and leg socket snap tap assemblies shall be 1-1/2 \pm 1/32 inch wide conforming to MIL-T-38328, type IV.

3.4.8 Nylon webbing.

The webbing for the knife pocket reinforcement shall be untreated, conforming to class 1, type XII of PIA-W-4088, and match the shade of the basic material in 3.4.1.1 or it shall be natural. The webbing of stiffeners shall conform to type I of PIA-W-4088.

MIL-DTL-0083406D(USAF)

3.4.9 Wrapping tape for anti-g garment hose assembly.

The tape for wrapping the anti-g garment hose assembly shall be black, 1-inch wide and conform to A-A-55809.

3.4.10 Lacer loops.

The tape for the lacer loops shall conform to MIL-W-81116, except that the sleeve may have 16 carriers, in lieu of 20 carriers; the length shall be 39-1/2 inches, in lieu of 45 inches for each yard of webbing; and the color shall match the color of the basic material (see 3.4.1.1).

3.4.11 Thread.

Unless otherwise specified herein, the thread for all sewing operations shall be soft, 800d, and 80 or 60 Tex, conforming to A-A-50195 and shall approximately match the color of the basic material as specified in 3.4.1.1. (NOTE: This thread may be used to sew the nylon mesh cloth (see 3.4.21) in lieu of the thread conforming to type I, class A, Tex 68-70 of A-A-59826, which is specified on AF Drawing 74204.)

3.4.12 Snap fasteners.

Except for the knife pocket, the snap fasteners shall be black conforming to style 3, finish A of A-A-55621 (Part Identifying Nos. (PIN): A-A-55621-1B, pronged ring; A-A-55621-2B, socket; A-A-55621-4B, and A-A-55621-5B, eyelet). The snap fastener for the knife pocket shall conform to style 4, construction A of NASM27983 (PIN Nos.: NASM27983-1, button; NASM27983-2 socket, NASM27983-3, stud; and NASM27983-4, eyelet). Snaps shall be securely attached to the materials. The roller barrels in each socket and stud shall be rolled over completely and shall have a symmetrical donut shaped appearance with no cracks.

3.4.13 Grommet.

The grommet shall be size 00 conforming to NASM20230-B20 and shall be oxidized a black color.

3.4.14 Fastener tape.

The hook and pile fastener tapes shall conform to type I, class 2 of A-A-55126 and the color shall approximately match the color of the basic material specified in 3.4.1.1 (see 6.4). The fastener tape shall be 1 inch wide, except that the pile fastener tape for the checklist retainer shall be 2 inches wide.

3.4.15 Adhesive.

The adhesive for cementing the spacer material to the coated bladder material shall be a one-part polyurethane cement (see 6.8).

3.4.16 Connector.

The connector shall conform to MIL-C-83390. This connector, deemed Inactive for New Design, is a critical component and required for use in the anti-g garment which is still being used, throughout the DoD, including the reserves and national guard and in support of Foreign Military Sales (FMSs) agreements.

3.4.17 Rubber sleeve.

The rubber sleeve for the connector shall be tubular conforming to classification nos. 14 and 16 and tubing size H22 of MIL-PRF-6855/4. The rubber sleeve shall be $3 \pm 1/16$ inches long, shall have an outer diameter of $3/4 \pm 1/16$ inch, and shall have a wall thickness of $1/8 \pm 1/32$ inch. No silicone or any other lubricant shall be applied to either the rubber sleeve or the connector prior to assembling the rubber sleeve to the connector.

MIL-DTL-0083406D(USAF)

3.4.18 Clamps

The clamps for securing the connector to the inflation tube and external inflation tube shall conform to Oetiker Part No. 16700031, Ref No. 25.6-706R, size 22.4 to 25.6 mm (see figure 1a) or as an alternative, clamps conforming to NAS397-14 and NAS397-16 may be used (see figure 1b).

3.4.19 Leather reinforcement.

The leather for the knife and leg pocket reinforcement and the reinforcement patch over the inflation sleeve opening shall be black, conforming to type 1 of MIL-L-43283, except that the thickness (ounces) shall be 2 to 2-1/2 ounces. Leather, conforming to MIL-DTL-32092, type I, class 1, weight 2 to 2-1/2 ounces is an acceptable substitute.

3.4.20 Springs for tube spacer.

The material for the springs of the tube spacer shall be a round, 0.016-inch diameter, composition 304, wire with a minimum tensile strength of 306,000 psi and a maximum of 336,000 psi per ASTM A313/A313M.

3.4.21 Cloth for the tube spacer.

The cloth for the tube spacer shall be polypropylene netting/mesh cloth with approximately 14 x 12 strands per inch; hole size .05 x .08, 0.020 inches thick, and 19 pounds per 1000 feet squared.

3.4.22 Rubber band.

The rubber band (see figures 1a and 1b) shall be $3/4 \pm 1/32$ inch inside diameter, $1-1/4 \pm 1/32$ (was $1/16$) inch long and 0.035 inch (minimum) thickness. The color of the rubber band shall be black. The rubber shall comply with class 2, type A of MIL-PRF-6855/4 and the color of the rubber band shall be black conforming to 27040, 37038, or 37056 of FED-STD-595 or it shall be green conforming to 34096, 34097, or 34128 of FED-STD-595.

3.4.23 Elastic webbing.

The elastic for the kneeboard subassembly shall conform to MIL-W-5664, type I, class I and shall be one inch wide and cut in lengths specified in table II. The color of the elastic shall approximately match the shade of the basic material in 3.4.1.1 or be black.

TABLE II. Elastic for kneeboard subassembly.

| Size of Anti-G Garment | Cut length elastic (2 ea) (Inches) |
|-------------------------------|---|
| Small regular (SR) | 7-3/4 |
| Small long (SL) | 7-3/4 |
| Medium regular (MR) | 8-1/4 |
| Medium long (ML) | 8-1/4 |
| Large regular (LR) | 9-1/4 |
| Large long (LL) | 9-1/4 |
| Large xtra long (LXL) | 9-3/4 |

MIL-DTL-0083406D(USAF)

3.5 Design.

The anti-g garment shall be a wrap-around garment that extends from the body to over the calves of the wearer. It shall have an inflatable bladder that will cover the body and the leg areas of the wearer and a connector that will provide normal and emergency connection and disconnection of the bladder of the anti-g garment to and from the air pressure source. Both sides of the anti-g garment shall have external adjustment laces in the body, thigh, and calf areas; however, the adjustment laces shall have covers that can be unfastened for easy accessibility. The anti-g garment shall have a pocket on the calf of each leg, an elastic strap across the front face of each thigh, and a knife pocket on the front of the left thigh.

3.6 Construction.

The anti-g garment shall be constructed as specified in table III; however, the manufacturer will not be required to follow the exact sequence of operations as listed therein.

3.6.1 Stitches and seams.

Stitches and seams specified in table III shall conform to ASTM D 6193. Thread breaks and ends of all stitches and seams, if not caught in other stitches or seams, shall be securely backstitched reversing the stitching direction and sewing a continuous row of stitching superimposed on the original row of stitching for a distance of 1/2 inch. Stitching shall be considered caught in another stitch or seam if the two stitches are in opposite directions and superimposed directly on each other for at least one inch. The bartacks joining the spacer material and attaching the patches (see figures 2 and 3) shall be 3/4 inch long, centered, and shall contain approximately 32 stitches. Thread ends of all stitches inside and outside of the anti-g garment shall be trimmed flush with the fabric.

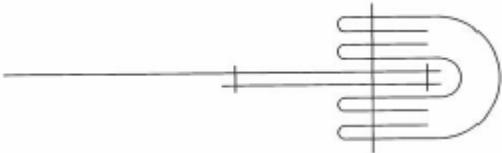
MIL-DTL-0083406D(USAF)

TABLE III. Manufacturing operations.

| No. | Description of Operation | Stitch Type | Seam & Stitching Type | Stitches per Inch |
|-----|---|-------------|-----------------------|-------------------|
| 1. | <p>Cut parts (see 3.11.1).</p> <p>Cut the parts (including the bladders) of the anti-g garment in accordance with the patterns which show shape, size, directional lines, and marking for the proper assembly of the parts.</p> <p>NOTE: Trimming of the body lacer covers, the thigh lacer covers, and the calf lacer covers will be permitted as specified in Operations 5.b, 6.b, and 6.e.</p> | | | |
| 2. | <p>Shade mark.</p> <p>Mark all parts to ensure a uniform shade throughout the anti-g garment.</p> | | | |
| 3. | <p>Sear raw edges.</p> <p>Sear the raw edges of all parts made of nylon material.</p> | | | |
| 4. | <p>Sew loops of lacer loop tape.</p> <p>Sew one row of stitching along each length of the lacer loop tape, through the base of each loop to prevent the loops from slipping.</p> | 301 | SSa-1 | 10-12 |
| 5. | <p>Make body lace covers.</p> <p>a. Select the length of the fastener tapes for the body lacer covers in accordance with table IV.</p> <p>b. Trim the fastener tape, if necessary, to fit the body lacer covers at the top and the bottom. Turn each body lacer cover under 3/8 inch. Sew the hook fastener tape to each body lacer cover, at the pattern location, with a single row of stitching 1/16 inch from the edge on all four sides.</p> <p>NOTE: Operation 5.b shall be performed before Operation 5.c so that the fastener tape will be sewn to the body lacer covers before the body lacer covers are bound.</p> | 301 | LSd-1 | 8-10 |

MIL-DTL-0083406D(USAF)

TABLE III. Manufacturing operations – Continued.

| No. | Description of Operation | Stitch Type | Seam & Stitch Type | Stitches per Inch |
|-----|---|-------------|--------------------|-------------------|
| 5. | <p>Make body lacer covers – contd.</p> <p>c. Bind each body lacer cover at each end with 5/16 inch wide (finished) bias binding 1/16 ±1/32 inch from the edge. Before completing the stitching of the binding, at the top and the bottom of each lacer cover, fold the raw edges approximately ½ inch of each end of the binding (two ends per lacer cover) so that no raw edges are exposed (see turned-under binding in the sketch below). Complete the stitching of the binding to the fastener tape.</p>  | 301 | BSc-1 | 10-12 |
| 6. | <p>Make leg (thigh and calf) lacer covers.</p> <p>a. Select the length of the fastener tapes for the thigh lacer covers in accordance with table III.</p> <p>b. Trim the fastener tape, if necessary, to fit the thigh lacer covers at the top and the bottom. Turn each thigh lacer cover under 3/8 inch. Sew the hook fastener tape to each thigh lacer cover, at the pattern location, with a single row of stitching 1/16 inch from the edge on all four sides.</p> <p>NOTE: Operation 6.b shall be performed before Operation 6.c so that the fastener tape will be sewn to the thigh lacer covers before the thigh lacer covers are bound.</p> <p>c. Bind each thigh lacer cover at each end with 5/16 inch wide (finished) bias binding 1/16 ±1/32 inch from the edge. Before completing the stitching of the binding approximately ½ inch, at the top and the bottom of each lacer cover, fold the raw edges of each end of the binding (two ends per lacer cover) so that no raw edges are exposed (see turned-under binding sketch in Operation 5.c). Complete the stitching of the binding to the fastener tape.</p> <p>d. Select the length of the fastener tapes for the calf lacer covers in accordance with table IV.</p> | 301 | LSd-1 | 8-10 |
| | | 301 | BSc-1 | 10-12 |

MIL-DTL-0083406D(USAF)

TABLE III. Manufacturing operations - Continued.

| No. | Description of Operation | Stitch Type | Seam & Stitch Type | Stitches per Inch |
|-----|---|-------------|--------------------|-------------------|
| 6. | <p>Make leg (thigh and calf) lacer covers – contd.</p> <p>e. Trim the fastener tape, if necessary, to fit the calf lacer covers at the top and the bottom. Turn each calf lacer cover under 3/8 inch. Sew the hook fastener tape to each calf lacer cover, at the pattern location, with a single row of stitching 1/16 inch from the edge on all four sides.</p> <p>NOTE: Operation 6.e shall be performed before Operation 6.f so that the fastener tape will be sewn to the calf lacer covers before the calf lacer covers are bound.</p> <p>f. Bind each calf lacer cover at each end with 5/16 inch wide (finished) bias binding 1/16 ±1/32 inch from the edge. Before completing the stitching of the binding, at the top and the bottom of each lacer cover, fold the raw edges of each end approximately ½ inch of the binding (two ends per lacer cover) so that no raw edges are exposed (see turned-under binding sketch in Operation 5.c). Complete the stitching of the binding to the fastener tape.</p> | 301 | LSd-1 | 8-10 |
| | | 301 | BSc-1 | 10-12 |
| 7. | <p>Make thigh take-ups.</p> <p>a. Select the slide fasteners for the thigh take-ups in accordance with table I. Zigzag stitch the tapes of the slide fasteners together from the bottom stop to the ends of the tapes.</p> <p>b. Sew the 3/4 inch wide stiffener to the inside of the thigh take-up fly, right and left, on the long center line from end to end with a single row of stitching</p> <p>c. With the open end of the slide fastener at the top, center the top and bottom stops between the top and bottom of the thigh take-ups. Match the edges of the slide fastener tape with the edges of the thigh take-ups fly. Cut the ends of the slide fastener tapes off, even with the cover, and sew all around with a single row of stitching 1/8 ±1/16 inch from the edge.</p> <p>d. Bind all around the leg take-ups, catching the ends of the slide fastener tapes in the binding, with 5/16 inch wide (finished) bias binding 1/16 ±1/32 inch from the edge.</p> | 301 or 401 | SSa-1 | 20-26 |
| | | 301 | SSa-1 | 10-12 |
| | | 301 | SSa-1 | 4-6 |
| | | 301 | BSc-1 | 10-12 |

MIL-DTL-0083406D(USAF)

TABLE III. Manufacturing operations - Continued.

| No. | Description of Operation | Stitch Type | Seam & Stitch Type | Stitches per Inch |
|-----|--|---|---------------------------|--|
| 7. | <p>Make thigh take-ups – contd.</p> <p>e. Thread a 5 inch length of the 5/16 inch wide webbing for the pull thong through the pull of each slide fastener. Fold the webbing in the center and bartack at the ends and close to the pull.</p> | bartack | | 21-23 stitches per bartack |
| 8. | <p>Prepare slide fasteners for body and leg openings.</p> <p>a. Select the slide fasteners for the body and the leg openings in accordance with table I.</p> <p>b. Prefold the slide fastener tapes for the leg openings at the open ends with a triangular fold so that the beaded edge of the tape is across the end and the fold is to the inside. Sew with a single row of stitching 3/32 +1/32 or -1/16 inch from the edge. Prefold and sew the slide fastener tape for the body opening in the same manner as for the leg openings, making certain that the fold is placed so that the length of the slide fastener tape will be 8-5/8 ±1/8 inches.</p> <p>c. Thread a 5-inch length of the 5/16 inch wide webbing for the pull thong through the pull of each slide fastener. Fold the webbing in the center, bartack at the ends and close to the pulls.</p> <p>d. Cut three, 6 inch long tapes from the 5/16 inch wide webbing. Fold the tapes in the center to form a loop; join, forming a box “X” stitch with a single row of stitching 1/16 inch from the edge, to the separating end of the slide fastener opposite the sliders, with the ends of the tape down 5/8 inch from the end of the slide fastener tape. Sew the tape to the inside of the anti-g garment.</p> <p>e. Sew the loops of the two tapes on the leg opening slide fasteners closed by sewing both sides of the loops with a single row of stitching 1/16 inch from the edges.</p> | <p>301</p> <p>bartack</p> <p>301</p> <p>301</p> | <p>EFa-1</p> <p>SSa-1</p> | <p>10-12</p> <p>21-23 stitches per bartack</p> <p>10-12</p> <p>10-12</p> |

MIL-DTL-0083406D(USAF)

TABLE III. Manufacturing operations - Continued.

| No. | Description of Operation | Stitch Type | Seam & Stitch Type | Stitches per Inch |
|-----|--|-------------|--------------------|-------------------|
| 9. | <p>Make body protective cover.</p> <p>a. Place a 1-inch square reinforcement of the basic fabric as marked on the pattern so that the center of the reinforcement will be 3/4 inch down from the top of the finished fly on the inside, and sew with a single row of stitching 1/8 inch from the edge. Place another 1-inch square reinforcement of the basic fabric so that the center of the reinforcement will be 5-1/2 inches below the center of the upper reinforcement and equally distant from the edge of the protective fly cover.</p> <p>b. Fold the body protective fly cover lengthwise on the fold line, the material face to face; sew across the bottom and the top with a single row of stitching 3/8 inch from the edge.</p> <p>c. Turn and insert the stiffener, folding the raw edge to the inside enclosing the stiffener. Sew all around the top, bottom, and two sides with a single row of stitching, 1/8 inch from the edge. Sew four additional rows of stitching, evenly spaced end to end.</p> <p>d. Sew two boxes, "X" 7/8 by 7/8 inch, 1/8 inch from the edge of two reinforcements described in Operation 9.a with a single row of stitching.</p> <p>e. Punch a hole, diameter 1/8 inch, in the center of each box "X" described in Operation 9.d. Install stud NASM27980-7B and eyelet NASM27980-8B through the hole at the center of box "X" stitch, ensuring the stud is on the side that matches with socket of tab assembly.</p> <p>f. Attach the slide fastener tape (with the slider attached) to the back edge of the body protective fly, the open end at the top; sew with a single row of stitching 1/8 inch from the edge. The slide fastener will extend below the bottom edge of the body protective fly by 5/8 ±1/8 inch.</p> | 301 | SSa-1 | 10-12 |
| | | 301 | SSe-2(a) | 10-12 |
| | | 301 | SSe-2(b) | 10-12 |
| | | 301 | SSa-1 | 10-12 |

MIL-DTL-0083406D(USAF)

TABLE III. Manufacturing operations - Continued.

| No. | Description of Operation | Stitch Type | Seam & Stitch Type | Stitches per Inch |
|------------|--|-------------|--------------------|-------------------|
| 10. | <p>Make leg protective cover.</p> <p>a. Position a 1 inch square box reinforcement of the basic fabric, as marked on the patterns, so that the center of the reinforcement will be 2-5/8 inches down from the top of the leg protective fly finished edge and on the inside. Sew with a single row of stitching 1/8 inch from the edge.</p> <p>b. Fold the leg protective fly cover lengthwise on the fold line, the face sides of the material together; sew across the bottom and the top with a single row of stitching 3/8 inch from the edge.</p> <p>c. Turn and insert the stiffener, folding the raw edges to the inside enclosing the stiffener; sew all around the top, the bottom, and the two sides with a single row of stitching 1/8 inch from the edge. Sew four additional single rows of stitching evenly spaced from end to end.</p> <p>d. Sew a box "X" 7/8 by 7/8 inch, 1/8 inch from the edge of reinforcement described in Operation 9.a with a single row of stitching.</p> <p>e. Punch a hole, diameter 1/8 inch, in the center of box "X" described in Operation 9.d. Install stud NASM27980-7B and eyelet NASM27980-8B through the hole at center of box "X" stitch, ensuring the stud is on the side that matches with socket of tab assembly.</p> <p>f. Attach the slide fastener tape (with the slider attached) to the back edge of the leg protective fly, the open end at the bottom; sew with a single row of stitching 1/8 inch from the edge.</p> | 301 | SSa-1 | 10-12 |
| 11. | <p>Assemble pockets.</p> <p>a. Position leather patch on pocket face aligning cut edge of leather with pocket pattern markings. Stitch leather to pocket with a single row of stitching $\frac{1}{4} \pm \frac{1}{32}$ inch from cut edge of leather.</p> <p>b. Bind the side edges of the pockets with 5/16 inch wide (finished) bias tape with a single row of stitching $\frac{1}{16} \pm \frac{1}{16}$ inch from the edge</p> | 301 | SSa-2 | 8-10 |
| | | 301 | BSc-1 | 10-12 |

MIL-DTL-0083406D(USAF)

TABLE III. Manufacturing operations - Continued.

| No. | Description of Operation | Stitch Type | Seam & Stitch Type | Stitches per Inch |
|-----|--|---|--|--|
| 11. | <p>Assemble pockets – contd.</p> <p>c. Place the slide fastener at the marked location on the pocket to the inside; join with a single row of stitching 1/16 inch from the edge all around. (The bridge end shall be at the lowest point on the pocket opening.)</p> <p>d. Slit through the center and diagonally at the ends. Turn the fabric under approximately 1/4 inch; sew with a single row of stitching 1/16 inch from the folded edge.</p> <p>e. Sew the bottom corners, the face sides of the material together, with a single row of stitching 3/8 inch from the edge.</p> <p>f. Raise the sides and the bottom edge of the pockets, at the pattern marks, with a single row of stitching 1/16 inch from the folded edge.</p> <p>g. Thread a 5-inch length of the 5/16 inch wide webbing for the pull thong through the pull of each slide fastener. Fold the webbing in the center and bartack at the ends and close to the pulls.</p> <p>h. Cut four, 2-3/4-inch squares of the basic fabric to reinforce the slide fasteners. Turn the outside edges of each reinforcement under 1/4 inch on all four sides and stitch two reinforcements to each pocket with a box “X” stitch inside a box through all thicknesses of leather, fabric, and zipper tape. The reinforcements shall be positioned so that a reinforcement will be adjacent to each end of the metal portion of the slide fastener (centered from the top and the bottom on the inside of the pocket).</p> | <p>301</p> <p>301</p> <p>301</p> <p>301</p> <p>bartack</p> <p>301</p> | <p>SSa-1</p> <p>LSd-1</p> <p>SSa-1</p> <p>OSf-1</p> <p></p> <p>LSa-1</p> | <p>10-12</p> <p>10-12</p> <p>10-12</p> <p>10-12</p> <p>21-23 stitches per bartack</p> <p>10-12</p> |
| 12. | <p>Make leg loop assembly.</p> <p>Cut two pieces of nylon tape in accordance with the patterns, fold at the center, sew a box “X” 3/4 by 1-1/4 inches, 1/8 inch from the folded edge. Punch a hole diameter 1/8 inch in the center of box “X” stitch, install button NASM27980-1B and socket NASM27980-6B through the hole at center of box “X” stitch.</p> | 301 | SSa-1 | 10-12 |

MIL-DTL-0083406D(USAF)

TABLE III. Manufacturing operations - Continued.

| No. | Description of Operation | Stitch Type | Seam & Stitch Type | Stitches per Inch |
|-----|--|-------------|--------------------|----------------------------|
| 13. | <p>Make body loop tab assemblies.</p> <p>a. Cut two pieces of nylon tape in accordance with the patterns, fold on the line, sew a box "X" 3/4 by 1-1/4 inch, 1/8 inch from the folded edge. Punch a hole, diameter 1/8 inch, in the center of box "X" stitch, install button NASM27980-1B and socket NASM27980-6B through the hole at the center of box "X" stitch.</p> <p>b. Fold the 3/8 inch extended end over the short end. Sew all around the tab with a single row of stitching 1/16 inch from the edge.</p> | 301 | SSa-1 | 10-12 |
| 14. | <p>Construct bladder.</p> <p>a. The polyurethane coated cloth (see 3.4.1.2) specified for the bladder shall be cut in lengths required by the applicable patterns. The bottom half of the bladder, with the coated surface face up, shall be laid on a clear flat surface.</p> <p>b. Four strips of the spacer material (see 3.4.5) shall be cut in lengths required by the applicable pattern, except that the horizontal spacer extending across the inside of the abdominal bladder shall have approximately 2 to 3 inches of slack (the length of spacer between the two patches in the abdominal bladder shall be 2 to 3 inches longer than the distance, in the flat, between the two patches). The width of the spacer in the bladder extension and the abdominal bladder shall be 3/4 inch. The width of the leg spacers shall be 1 inch.</p> <p>c. The ends of the legs and abdominal spacer material shall be overlapped and joined to patches that are made of polyurethane coated nylon cloth (see 3.4.1.2) and that are approximately 1 inch by 1-3/4 inches by bartacking as shown on figures 2 and 3. Two additional pieces of spacer material, 1 inch wide by 10 inches long, shall be sewn to the upper portion of the leg spacer material (one length per leg).</p> | bartack | | 21-23 stitches per bartack |

MIL-DTL-0083406D(USAF)

TABLE III. Manufacturing operations - Continued.

| No. | Description of Operation | Stitch Type | Seam & Stitch Type | Stitches per Inch |
|-----|--|-------------|--------------------|-------------------|
| 14. | <p>Construct bladder – contd.</p> <p>d. The upper end of the piece of spacer material that is 1 inch by 10 inches shall be placed approximately 1 inch below the patch joining the leg spacer to the abdominal spacer and shall be sewn to the leg spacer with two rows of stitching 1/4 inch from each edge of the leg spacer with the thread specified (see 3.4.11) and all ends backstitched a minimum of 1 inch. The bladder extension spacer material shall be overlapped on the abdominal spacer material approximately 2-1/2 inches from the joint between the leg and abdominal spacer material and shall be similarly bartacked (no patch).</p> <p>e. The spacer material (anti-block system) shall be positioned on the coated side of the bottom half of the bladder as indicated on the applicable pattern and then secured by cementing patches to the bottom of the bladder as shown on figure 1.</p> <p>f. The bladder halves shall be positioned and RF welded together so that the bonded area will be 1/8 ±1/32 inch wide and the distance from the edge of the bladder to the outside edge of the bond will be 3/8 ±1/16 inch. The bonded seam shall be straight, continuous, and parallel to the edge of the bladder.</p> <p>g. No part of the spacer material or the attachment patches shall be caught in any portion of the welded seam. The completed bladder shall be inflated to 2 pounds per sq inch (psi) air pressure. The seams of the inflated bladder shall be inspected for proper joining and adhesion. The inflatable area of the complete bladder shall not be greater than 5/8 inch nor less than 1/4 inch from the edge of the patterns. The upper tab of the finished bladder shall be stamped with the abbreviated anti-g garment size.</p> | 301 | LSa-2 | 6-8 |

MIL-DTL-0083406D(USAF)

TABLE III. Manufacturing operations - Continued.

| No. | Description of Operation | Stitch Type | Seam & Stitch Type | Stitches per Inch |
|-----|---|-------------|--------------------|-------------------|
| 15. | Hem body bladder cover. | | | |
| | a. Hem the upper edge of the separate leg extension to the inside, 1/4 inch, with a single row of stitching 1/16 inch from the edge. Before completing the stitching of the binding at top & bottom of each lacer cover, hold the raw edges of each of the binding (2 ends per lacer cover), approximate 1/2 inch, so that no raw edges are exposed and complete the stitching at the binding to the fastener tape. | 301 | EFa-1 | 10-12 |
| | b. Fold the end of the outside body bladder cover leg, to which the separate leg extension is to be attached, to the inside 1/4 inch and hem with a single row of stitching 1/16 inch from the edge. | 301 | EFa-1 | 10-12 |
| | NOTE: The terms "back body bladder cover," "front body bladder case," "outside cover," and "forward cover" as indicated in this document and on the pattern drawings of the bladder cover shall be interpreted as that portion of the bladder cover on the outside (away from the wearer's body) and has a truncated section cut off. The term "back body bladder cover" or "front body bladder case" shall be interpreted as the cover positioned next to the wearer's body and is full size as indicated on the pattern drawings. | | | |
| | c. Lap the hemmed end of the separate leg extension up under the body bladder cover leg end until the lower edge is even with the opposite leg end and sew at the sides with a single row of stitches 1/8 inch from the edge. | 301 | SSa-1 | 10-12 |
| 16. | Join bladder case. | | | |
| | a. Join the front and the back body bladder case, material face to face, with a single row of stitching 1/4 inch from the edge, leaving the legs, the bladder inflation sleeve, and one inch at tab locations (top, bottom, and right side) open. | 301 | SSe-2(a) | 10-12 |
| | b. Turn and topstitch with a single row of stitching 1/16 inch from the edge. | 301 | SSe2(b) | 10-12 |

MIL-DTL-0083406D(USAF)

TABLE III. Manufacturing operations - Continued.

| No. | Description of Operation | Stitch Type | Seam & Stitch Type | Stitches per Inch |
|-----|--|---|---|---|
| 17. | <p>Hem leg bladder covers.</p> <p>Hem the leg bladder covers to the inside, 1/4 inch, down the sides and around the bottom and the top, with a single row of stitching 1/16 inch from the edge.</p> | 301 | EFa-1 | 10-12 |
| 18. | <p>Make body section.</p> <p>a. Join the left side of the body front to the left side of the body back with a double row of stitching, 1/16 inch from the edges, ¼ inch gage.</p> <p>b. Sew a 1-1/8 inch wide bias-cut piece of the basic fabric folded to 5/8 ±1/16 inch over the center of the body front and back body seam (inside) with a single row of stitching, 1/16 inch from the edge, each side of the binding.</p> <p>c. Center the bias-cut pieces of the basic fabric on the stiffeners. Sew three rows of stitching from end to end with one row in the center and one row on the right and the left sides of the center stitching 1/8 inch.</p> <p>d. Place the stiffeners at the pattern marks on the back body and front body and stitch a single row of stitching, 1/16 inch from the edges, each side of the binding.</p> <p>e. Place the four lacer loop tapes on the body back, in accordance with the pattern marks, the ends even with the top and bottom edges of the body back, loops facing loops, and join with a double row of stitching 1/16 inch from the edge 3/16 inch gage.</p> <p>f. Bartack both ends of lacer loop across full width of the lacer loop including the loop material, 3/8 inch from the top and bottom edge.</p> <p>g. Place the pile fastener tape on the lacer loop tape on the body back, 1/8 inch from the loops, and join with a single row of stitching 1/16 inch from the edge.</p> <p>h. Bind across the top, catching the seam tape and the lacer loop tape in the binding, with the 5/16 inch wide (finished) bias binding with a single row of stitching 1/16 ±1/32 inch from the edge.</p> | <p>301</p> <p>301</p> <p>301</p> <p>301</p> <p>301</p> <p>Bartack</p> <p>301</p> <p>301</p> | <p>(see figure 4)</p> <p>LSd-1</p> <p>SSa-1</p> <p>SSa-1</p> <p>SSa-1</p> <p></p> <p>SSa-1</p> <p>BSc-1</p> | <p>8-10</p> <p>8-10</p> <p>10-12</p> <p>10-12</p> <p>10-12</p> <p>21-23 stitches per bartack</p> <p>8-10</p> <p>10-12</p> |

MIL-DTL-0083406D(USAF)

TABLE III. Manufacturing operations - Continued.

| No. | Description of Operation | Stitch Type | Seam & Stitch Type | Stitches per Inch |
|-----|--|---|---|---|
| 18. | <p>Make body section – contd.</p> <p>i. Bind across the bottom of the body front and body back with a 5/16 inch wide (finished) bias tape with a single row of stitching 1/16 ±1/32 inch from the edge.</p> <p>j. Cut a 4 inch length of the 5/16 inch wide webbing. Bartack one end 3/4 inch down from the top of the edge binding-on-binding strip over the seam joining the body front to the side back. Fold the webbing to the inside; bartack the other end 1-3/4 inches from the top edge binding.</p> <p>k. Turn the body lacer cover under 3/8 inch. Place the finished edge of the body lacer cover on the inner row of lacer loop tape, edge to edge; join with a double row of stitching 1/16 inch from the edge, 3/16 inch gage.</p> | <p>301</p> <p>Bartack</p> <p>301</p> | <p>BSc-1</p> <p>LSa-2</p> | <p>10-12</p> <p>21-23 stitches per bartack</p> <p>10-12</p> |
| 19. | <p>Attach inflation tube opening reinforcement.</p> <p>a. Lay the 3-5/16 inch square reinforcement piece of the basic fabric at the marked location on the outside of the body front, evenly spaced over the hole position. Sew around the hole marking, approximately 1-1/8 inch diameter, with a single row of stitching.</p> <p>b. Trim the 1/4 inch inside stitching and make approximately six small cuts around the edge of the hole but not closer than 1/16 inch from the stitching. Turn the reinforcement piece through the opening; topstitch with a single row of stitching 1/16 inch from the topstitched edge.</p> <p>c. Turn the outside edge of the reinforcement under 1/2 inch all around and sew to the body front with a single row of stitching 1/16 inch from the folded edge.</p> <p>d. Lay the octagon-shaped leather reinforcement piece evenly spaced over the hole position, on the inside of the body front, and sew around the hole 3/32 inch from the edge (on the inside). Sew around the outside edge of the leather patch 3/32 inch from the edge (on the inside).</p> | <p>301</p> <p>301</p> <p>301</p> <p>301</p> | <p>SSe-2(a)</p> <p>SSe-2(b)</p> <p>LSd-1</p> <p>LSa-2</p> | <p>10-12</p> <p>10-12</p> <p>10-12</p> <p>9-11</p> |

MIL-DTL-0083406D(USAF)

TABLE III. Manufacturing operations - Continued.

| No. | Description of Operation | Stitch Type | Seam & Stitch Type | Stitches per Inch |
|-----|--|-------------|--------------------|-------------------|
| 20. | <p>Attach body bladder cover.</p> <p>Place the assembled body bladder cover on the body front to the inside at the marked location with the bladder inflation sleeve on the left side; join with a double row of stitching 1/16 inch from the edge, 1/16 inch gage. Leave open the end of the inflation tube external covering, the leg openings, and 1 inch at the tab location, top, bottom, and right side.</p> | 301 | SSa-2 | 10-12 |
| 21. | <p>Attach assembled body protective fly.</p> <p>a. Turn the edge of the cloth under 3/8 inch on the body front. Sew the slide fastener tape side with the protective fly attached; with 1/4 inch of the slide fastener tape exposed; with a double row of stitching 1/16 inch from the folded edge 1/4 inch gage. The slide fastener shall be on the inside with the opening on the top and the closed end extending below the body panel by 1 ±1/8 inch.</p> <p>b. Sew the upper body button socket tab to the inside of the side back (front) on the right-hand side of the slide fastener edge as marked on the patterns, forming a box and "X" stitch, 3/8 inch by 1-3/8 inches, 1/16 inch from the edge. The upper button socket tab shall match the stud eyelet on the body protective fly. Sew the lower button, socket tab 5-1/2 inches (center line to center line) below the upper button socket tab. The lower button socket tab shall match the lower stud eyelet on the body protective fly.</p> | 301 | LSd-2 | 10-12 |
| | | 301 | LSd-1 | 10-12 |
| 22. | <p>Make leg sections.</p> <p>a. Sew a 5/8 inch wide folded, bias cut piece of the basic fabric on the inside of the legs, at the positions marked at the sides of the pocket and at the leg take-ups, with a single row of stitching 1/16 inch from the edge each side of the binding, right and left.</p> <p>b. Turn the neck of the pockets inside 1/4 inch; sew across the knees at the marked locations with a double row of stitching 1/16 inch from the edge, 1/16 inch gage, leaving 1/2 inch at each edge open, the pocket to the outside, the slide fastener closing to the outside.</p> | 301 | LSd-1 | 10-12 |
| | | 301 | LSd-2 | 10-12 |

MIL-DTL-0083406D(USAF)

TABLE III. Manufacturing operations - Continued.

| No. | Description of Operation | Stitch Type | Seam & Stitch Type | Stitches per Inch |
|-----|---|-------------|--------------------|-------------------|
| 22. | <p>Make leg sections – contd.</p> <p>c. Sew a 2-1/2 inches wide, 4-1/2 inches long reinforcement, made of the bladder material, on the inside of the left and right leg at the position marked for the checklist pile fastener tape (see table IV), with a single row of stitching 1/8 inch from the edge (see figure 5).</p> <p>d. Sew the checklist pile fastener tape on the outside of the left and right leg, in accordance with figure 6 at the marked position, with a single row of stitching 1/8 inch from the edge on all four sides.</p> <p>e. Place the webbing, with the button socket assembly (NASM27980-1B, -6B) attached to the webbing, on the inside of the legs. The top edge of the webbing shall be parallel with and down from the top, 1-3/4 inches. Sew across the back end of the webbing, following the contour of the bladder cover locations, with a single row of stitching. The socket of the button socket tab shall face the body and shall match the stud on the leg protective fly.</p> | 301 | LSa-1 | 10-12 |
| 23. | <p>Make and attach knife pocket.</p> <p>a. Lay the knife pocket reinforcement piece on the pocket fabric, face up, in accordance with the notches and the drill marks. Sew the knife pocket reinforcement piece to the pocket with a single row of stitching 1/16 to 1/8 inch from the edge on all four sides</p> <p>b. Fold the pocket fabric lengthwise with the raw edges even. Bind the square end with a 5/16 inch wide (finished) bias binding with a single row of stitching 1/16 ±1/32 inch from the edge. The knife pocket reinforcement shall be on the outside after folding.</p> <p>c. Bind the straight edge of the small flap reinforcement piece for the top of the pocket with 5/16 inch wide (finished) bias binding with a single row of stitching 1/16 ±1/32 inch from the edge.</p> | 301 | SSa-1 | 10-12 |
| | | 301 | BSc-1 | 10-12 |
| | | 301 | BSc-1 | 10-12 |

MIL-DTL-0083406D(USAF)

TABLE III. Manufacturing operations - Continued.

| No. | Description of Operation | Stitch Type | Seam & Stitch Type | Stitches per Inch |
|---|--|-------------|--------------------|-------------------|
| 23. | Make and attach knife pocket - contd. | | | |
| | d. Position the flap reinforcement piece in accordance with the notch and the drill marks at the round end of the pocket with the flap piece on the same side as the webbing piece. Sew the flap piece to the two top plies of the pocket fabric with a single row of stitching $1/8 \pm 1/16$ inch from the edge. | 301 | SSa-1 | 10-12 |
| | e. Place the leather reinforcement piece on the outside of the knife pocket, flat and smooth, with the bottom edge resting on the center notch on the knife pocket and the top edge toward the round end of the knife pocket. Stitch the leather reinforcement piece $1/8 \pm 1/16$ inch from the edge on all four sides. Double stitch across the top of the leather reinforcement piece with 1/4-inch gage. | 301 | SSa-1 | 9-11 |
| | f. Fold the pocket fabric on the center notch. Bind the pocket with $5/16$ inch wide (finished) bias binding starting at the bottom folded end and sewing the binding around the sides and the top with a single row of stitching $1/16 \pm 1/32$ inch from the edge. The leather reinforcement piece shall be on the outside after binding. The tape shall extend $1/2$ inch beyond the end on each side for turning under. | 301 | BSc-1 | 10-12 |
| | g. Place a single row of stitching across the flap through both plies at the round end of the flap, approximately 1 inch from the open bound end. | 301 | SSa-1 | 10-12 |
| h. Install a size 00 grommet on the pocket, between the square end and the round end of the flap reinforcement piece, in accordance with the drill marks. | | | | |
| i. Position the reinforcement patch on the left thigh front so that the knife pocket is just inside the bladder case stitch line at the front, bottom, and top corners and so that the side of the pocket is parallel to the leg opening slide fastener. Turn the raw edges under $3/8$ inch at the bottom and the sides; join with a double row of stitching $1/16$ inch from the folded edge $1/4$ -inch gage. Trim the top even with the top of the thigh. | 301 | LSd-2 | 10-12 | |

MIL-DTL-0083406D(USAF)

TABLE III. Manufacturing operations. – Continued

| No. | Description of Operation | Stitch Type | Seam & Stitch Type | Stitches per Inch |
|-----|--|-------------|--------------------|-------------------|
| 23. | <p>Make and attach knife pocket – contd.</p> <p>j. Position the knife pocket on the reinforcement patch, with the round end up and the opening on the inside, in accordance with the drill marks. Start at the bound opening and sew down the side, across the bottom, and up to the bound opening, turning the bias end of the tape under on each side and backstitching 1/2 inch on each side, with a double row of stitching 1/16 inch from the edge, 1/8 inch gage. The distance between the inside longitudinal stitch lines shall be 2-1/4 ±1/8 inches.</p> <p>k. Sew across the bound square end at the top of the pocket opening, securely tacking the top of the pocket to the patch and the anti-g garment with a single row of stitching.</p> <p>l. Stamp one snap fastener socket and button to the center of the flap so that the dot on the snap fastener will be at the top of the flap in accordance with the drill marks at the rounded end.</p> <p>m. Stamp one snap fastener stud and eyelet, reinforced with bladder material on the inside, in the anti-g garment to correspond to the snap fastener socket. If the stud and eyelet location is on top of the binding around the thigh opening, relocate position just below the binding. Snaps shall be securely attached to the materials. Ensure that roller barrels in each socket and stud shall be rolled over completely and shall have a symmetrical donut shaped appearance with no cracks.</p> <p>n. Thread a 64-inch long lanyard through the grommet. Tie the lanyard with a square knot. Sear both ends of the lanyard. Fold the lanyard in layers that are approximately 4 inches long. Position the folded lanyard in the pocket, parallel with the pocket, with all of the folds within the pocket. Close the snap fastener.</p> | 301 | LSd-2 | 10-12 |
| | | 301 | SSa-1 | 10-12 |

MIL-DTL-0083406D(USAF)

TABLE III. Manufacturing operations - Continued.

| No. | Description of Operation | Stitch Type | Seam & Stitch Type | Stitches per Inch |
|-----|---|-------------|--------------------|----------------------------|
| 24. | <p>Attach leg bladder covers.</p> <p>Place the leg bladder covers on the legs at the marked locations on the patterns. Join down each side, leaving the top and 1 inch at the marked position for the tabs open, with a double row of stitching 1/16 inch from the edge, 1/16-inch gage. Fold back 1/4 inch at the neck of the pocket left loose so that the pocket is not stitched through in this operation.</p> | 301 | LSd-2 | 10-12 |
| 25. | <p>Attach pockets.</p> <p>a. Sew the pockets to the lower legs on the center of the basic fabric bias binding, down each side, with a single row of stitching 1/16 inch from the edge of the pocket binding.</p> <p>b. Join the pockets at the bottom and the upper edges at the knee opening to the legs with a single row of stitching 1/8 inch from the edge.</p> | 301 | LSd-1 | 10-12 |
| | | 301 | SSa-1 | 10-12 |
| 26. | <p>Bind knee openings and bottom of legs.</p> <p>Bind the knee openings (including the pockets) and the bottom of the legs (including the pockets and the lower edge of leather patches with 5/16 inch wide (finished) bias binding with a single row of stitching 1/16 ±3/32 inch from the edge.</p> | 301 | BSc-1 | 10-12 |
| 27. | <p>Join lacer loop tapes to the thighs and calves.</p> <p>a. Place the eight lacer loop tapes the length of each thigh and each calf, in accordance with the marks on the patterns, with the ends even with the top and the bottom edge, with loops facing loops. Join the lacer loop tapes to each thigh and each calf with a double row of stitching 1/16 inch from the edge 3/16 inch gage.</p> <p>b. Bartack both ends of each lacer loop, across the full width of the lacer loop including the loop material, 3/8 inch from the top and bottom edge.</p> | 301 | SSa-2 | 9-11 |
| | | Bartack | | 21-22 stitches per bartack |
| 28. | <p>Join pile fastener tape to thighs and calves.</p> <p>Place the pile fastener tape on the lacer loop tape on each thigh and each calf, 1/8 inch from the loops, and join with a single row of stitching 1/16 inch from the edge.</p> | 301 | SSa-1 | 8-10 |

MIL-DTL-0083406D(USAF)

TABLE III. Manufacturing operations - Continued.

| No. | Description of Operation | Stitch Type | Seam & Stitch Type | Stitches per Inch | | | |
|-----|--|-------------|--------------------|--|-----|-------|-------|
| 29. | <p>Attach assembled leg (thigh and calf) lacer covers.</p> <p>Turn the raw edge of each assembled leg (thigh and calf) lacer cover under 3/8 inch; place the finished edge of each leg lacer cover on the inner row of the lacer loop tape, edge to edge. Join with a double row of stitching 1/16 inch from the edge 3/16-inch gage.</p> | 301 | LSa-2 | 10-12 | | | |
| 30. | <p>Make elastic kneeboard subassembly.</p> <p>NOTE: The respective webbing ends of the elastic kneeboard assembly shall be trimmed, if necessary, so that the elastic kneeboard subassembly lays flat across the thigh cover.</p> <p>a. Sear-cut webbing (type II, class 1 of MIL-PRF-5038) 2-3/4 inches long. Cut elastic (type I, class 1 of MIL-W-5664) in accordance with table II.</p> <p>b. Sew elastic to the webbing in accordance with figure 3 and figure 6. Repeat for remaining end.</p> <p>c. Position one end of the kneeboard elastic subassembly (face up) 5 inches from top of and perpendicular to each respective thigh take-up assembly in accordance with figure 3 and attach to the anti-g garment in accordance with figure 7.</p> <p>d. Position the remaining free end of the kneeboard elastic subassembly (face-up) to the opposite side of the leg section square with the thigh-take up attachment point in accordance with figure 3 and attach to the anti-G garment in accordance with figure 8.</p> | 301 | SSa-1 | 8-10 | | | |
| 301 | SSa-1 | 8-10 | 31. | <p>Join leg take-ups.</p> <p>Position one end of the kneeboard elastic subassembly (face up) under the thigh take-up assembly in accordance with pattern markings. Join the assembled right and left take-ups to the outside at the thigh, in accordance with the pattern marks, do</p> <p>NOTE: Use proper thread tension and fabric tension to avoid waviness (chain flatness of slide fastener).</p> | 301 | LSa-2 | 10-12 |

MIL-DTL-0083406D(USAF)

TABLE III. Manufacturing operations - Continued.

| No. | Description of Operation | Stitch Type | Seam & Stitch Type | Stitches per Inch |
|-----|---|-------------|--------------------|-------------------|
| 32. | <p>Sew around reinforcement.</p> <p>Sew around the edges of the reinforcement inside of the leg take-ups with a single row of stitching, 1/16 inch from the edge.</p> | 301 | SSa-1 | 10-12 |
| 33. | <p>Attach assembled leg protective flies.</p> <p>Position the remaining end of the kneeboard elastic subassembly (face-up) on the leg section in accordance with pattern markings. Turn the edge of the cloth and elastic subassembly under 3/8 inch. Place the edge of the cloth down the legs on the slide fastener tapes so that the separating ends of the slide fastener will be at the top, the protective fly will open to the back, the corners at the knee holes will be spaced 3/4 ±1/8 inch apart on the slide fastener tapes, and 1/4 inch of the slide fastener tape will be exposed. Join with a double row of stitching 1/16 inch from the edge, 1/4-inch gage.</p> | 301 | LSd-2 | 10-12 |
| 34. | <p>Install snap fasteners.</p> <p>a. Install the snap fastener cap and socket through the lower edge of the legs to the side opposite the protective fly, 7/8 inch from the bottom edge and 5/8 inch from the edge of the slide fastener teeth edge to the center of the snap fastener, with the cap on the face side of the cloth. Snaps shall be securely attached to the materials. Ensure that roller barrels in each socket and stud shall be rolled over completely and shall have a symmetrical donut shaped appearance with no cracks.</p> <p>b. Install the snap fastener stud and post, to match the snap fastener cap and socket, through the protective flies at the bottom of the legs, approximately 5/8 inch from the edge of the protective fly and 1 inch up from the bottom edge of the legs to the center of the snap fasteners with the stud to the outside.</p> | | | |

MIL-DTL-0083406D(USAF)

TABLE III. Manufacturing operations - Continued.

| No. | Description of Operation | Stitch Type | Seam & Stitch Type | Stitches per Inch |
|-----|---|-------------|--------------------|-------------------|
| 35. | Join upper ends of legs to body front. | | | |
| | a. Join the upper ends of the legs to the body front, with the face sides of the material together, in accordance with the marks on the patterns, with a single row of stitching 3/8 inch from the edge. | 301 | LSq-2(a) | 10-12 |
| | b. Turn and topstitch with a single row of stitching 1/16 inch from the folded edge. | 301 | LSq-2(b) | 10-12 |
| | c. Sew an additional row of stitching 5/16 inch from the folded edge. | 301 | SSa-1 | 10-12 |
| 36. | <p>Insert adjustment laces in take-ups.</p> <p>a. Select the adjustment laces in accordance with table V.</p> <p>b. Insert the adjustment laces into the lacer loops for the body take-ups as follows: Start lacing from the bottom, similar to lacing shoes. Route the adjustment laces through each lacer loop on each side (loose ends exiting from the top lacer loops). Draw the lacing up so that approximately one-half of the adjustment will be taken with the lacing. Fold the excess lacing into a hank that is approximately 3 inches long. Wrap the hank with one turn of 2-inch wide tape that conforms to SAE AMS-T-22085.</p> <p>c. Insert the adjustment laces into the lacer loops for the thigh take-ups in the same manner as specified for the body take-ups in Operation 35.b, except that the lacing shall start from the top lacer loops and exit from the bottom lacer loops. Draw the lacing up so that approximately one-half of the adjustment will be taken up with the lacing. Fold the excess lacing into a hank that is approximately 3 inches long. Wrap the hank with one turn of 2 inch wide tape that conforms to SAE AMS-T-22085.</p> <p>d. Insert the adjustment laces into the lacer loops for the calf take-ups in the same manner as specified for the body take-ups in Operation 35.b, except that the lacing shall be pulled tight (minimum ankle circumference shall be 12 inches for all sizes except that the minimum ankle circumference for the size large extra long shall be 13-3/4 inches).</p> | | | |

MIL-DTL-0083406D(USAF)

TABLE III. Manufacturing operations - Continued.

| No. | Description of Operation | Stitch Type | Seam & Stitch Type | Stitches per Inch |
|-----|--|-------------|--------------------|-------------------|
| 37. | <p>Final assembly.</p> <p>Install the bladder through the openings at the top of the legs left open for this purpose and into the bladder covers. Insert the bladder tabs through the 1-inch wide openings; sew with a double row of stitching 1/16 inch from the edge, 1/16 inch gauge.</p> | 301 | SSa-2 | 10-12 |
| 38. | <p>Attach connector assembly to inflation tube.</p> <p>a. Make an insertion tool from a coat hanger or any other suitable wire by clipping and filing the end round and smooth.</p> <p>b. Insert the insertion tool into the folded end of the spacer tube (see A-A of AF Drawing 74204). Push the spacer assembly into the bladder inflation hose, working the spacer tube in slowly so that it lies adjacent to the existing space tube spacer and so that the spacer extends approximately 4 inches into the body bladder. When the spacer tube is completely inserted, hold on to the folded end of the spacer tube from the outside of the body bladder and pull the insertion tool out.</p> <p>c. See section U-U of figures 1a and 1b. Pull the bladder inflation tube over the spacer tube assembly and rubber sleeve flush with the wide labeled part of the connector. Clamp the bladder inflation tube to the rubber sleeve of the connector assembly with NAS 397-16 (see Operation 38) clamp toward the connector and wrap the clamped area with at least two full turns of wrapping tape. Clamped area shall be centered within at least a one inch width of wrapping tape.</p> <p>d. See section U-U of figures 1a and 1b. Install the rubber band (see 3.4.22) over all wrapped, clamped areas so that about a third of the rubber band covers the wide labeled part of the connector and the rest covers the wrapped clamped areas. All wrapping tape shall be covered by the rubber band.</p> | | | |

MIL-DTL-0083406D(USAF)

TABLE III. Manufacturing operations - Continued.

| No. | Description of Operation | Stitch Type | Seam & Stitch Type | Stitches per Inch |
|-----|---|-------------|--------------------|-------------------|
| 39. | <p>Make connector assembly.</p> <p>See section U-U of figure 1a. Insert the rubber sleeve (see 3.4.17), onto connector (see 3.4.16). Slide Oetiker clamp (see 3.4.18), over inflation sleeve assembly (see 3.4.19); tube covering (3.4.1.2), inflation tube (3.4.1.2), spacer (3.4.5), mesh (3.4.21) and springs (3.4.20) in preparation for assembly to connector. Connect attachment sleeve assembly to connector by inserting interlaced springs from the unfolded end of the mesh spacer tube (section B-B of Drawing 74204), into the rubber sleeve so that end of springs is about 1/4 inch from the wide labeled part of the connector. Slide spacer and mesh over connector to about 1" from the wide labeled part of the connector and wrap with 2 wraps of tape (see 3.4.9). Slide inflation tube to be even with the wide labeled part of the connector and wrap with 2 wraps of tape. Slide tube covering to be even with wide labeled part of the connector and clamp Oetiker clamp in place, positioned halfway on the connector extension and wrap with 2 wraps of tape. Cover tape over clamp with rubber band (see 3.4.22).</p> | 301 | SSa-2 | 10-12 |
| 40. | <p>Make connector assembly (alternate).</p> <p>See section U-U of figure 1b. Insert the free end of the rubber sleeve (see 3.4.17), the unfolded end of the mesh spacer tube (section B-B of Drawing 74204), and insert interlaced springs (see 3.4.20) over the spacer tube so that it ends about 1/4 inch from the wide labeled part of the connector. Connect the spacer tube and spacer fabric to the rubber sleeve by clamping in place with NAS 397-14 about one inch from the wide labeled part of the connector. Wrap the clamped area with at least two full turns of the wrapping tape. Clamped areas shall be centered within at least a 1-inch width of the wrapping tape.</p> | 301 | SSa-2 | 10-12 |

MIL-DTL-0083406D(USAF)

TABLE IV. Dimensions of hook and pile fastener tape (inches).

| Size of Anti-g Garment | Body Lacer Covers <u>1/</u> <u>2/</u> | Thigh Lacer Covers <u>1/</u> <u>2/</u> | Checklist Retainers <u>3/</u> | Calf Lacer Covers <u>1/</u> <u>2/</u> |
|-------------------------------|--|---|--------------------------------------|--|
| Small regular (SR) | 1 x 9-1/2 | 1 x 10-5/8 | 2 x 4 | 1 x 12-1/2 |
| Small long (SL) | 1 x 9-1/2 | 1 x 11-1/2 | 2 x 4 | 1 x 13-18 |
| Medium regular (MR) | 1 x 10 | 1 x 10-7/8 | 2 x 4 | 1 x 12-1/2 |
| Medium long (ML) | 1 x 10 | 1 x 11-3/8 | 2 x 4 | 1 x 13-1/8 |
| Large regular (LR) | 1 x 10 | 1 x 10-7/8 | 2 x 4 | 1 x 12-1/2 |
| Large long (LL) | 1 x 10 | 1 x 11-1/4 | 2 x 4 | 1 x 13-1/4 |
| Large extra long (LXL) | 1 x 10 | 1 x 11-1/4 | 2 x 4 | 1 x 17-1/4 |

NOTES:

1/ Since the requirements of table II specify that the fastener tape for the lacer covers shall be trimmed, if necessary, so that the fastener tape will be even with the top and the bottom edges of the flap, these dimensions are approximate.

2/ Two for each anti-g garment shall be required.

3/ Two of the pile fastener tapes shall be required.

TABLE V. Length of adjustment laces (feet). 1/

| Size of Anti-g Garment | Body Area <u>2/</u> | Thigh Area <u>2/</u> | Calf Area <u>2/</u> |
|-------------------------------|----------------------------|-----------------------------|----------------------------|
| Small regular (SR) | 12 | 12 | 14 |
| Small long (SL) | 12 | 13 | 16 |
| Medium regular (MR) | 12 | 13 | 16 |
| Medium long (ML) | 12 | 14 | 17 |
| Large regular (LR) | 13 | 14 | 17 |
| Large long (LL) | 13 | 16 | 19 |
| Large extra long (LXL) | 13 | 16 | 19 |

NOTES:

1/ The dimensions specified in this table are approximate and shall be governed by the following requirement: Both ends of each adjustment lace shall extend at least six inches beyond the open end of the lacing tape when the adjustment laces are completely extended. Both ends of each adjustment lace shall be dipped in a hot solution of 50% beeswax and 50% paraffin.

2/ Two per anti-g garment shall be required.

MIL-DTL-0083406D(USAF)

3.7 Performance**3.7.1 Leakage.**

When the bladder in the anti-g garment is inflated to a pressure of 12 psig, the bladder shall not lose more than 0.5 psig of air pressure in 60 seconds (see 4.6.2).

3.7.2 Endurance.

When the anti-g garment is inflated 1,000 times, to a pressure of 15 psig, the anti-g garment shall not develop any structural defects. Structural defects shall include, but not be limited to, material torn, seam separation, slide fastener slider lock broken, slide fastener chain separated, or clamps loosened or broken. After the anti-g garment has been inflated 1,000 times, to a pressure of 15 psig, the anti-g garment shall meet the requirements in Operation 14 (see 4.6.3).

3.7.3 Inflation time.

With a free airflow of 10 cubic feet per minute and with a back pressure of 9 to 12 psig applied from the pressure source, the anti-g garment shall inflate to a pressure of 8 psig in not more than 3 seconds (see 4.6.4).

3.7.4 Low temperature storage.

The anti-g garment shall not be adversely affected by storage at a temperature of -60°F (see 4.6.5).

3.7.5 High temperature storage.

The anti-g garment shall not be adversely affected by storage at a temperature of $+160^{\circ}\text{F}$ (see 4.6.6).

3.7.6 Low temperature operation.

The anti-g garment shall operate satisfactorily at a temperature of -30°F (see 4.6.7).

3.7.7 Bond strength (bladder).

The force required to separate the bonded bladder halves shall be not less than 40 pounds (see 4.6.8).

3.8 Finished measurements.

The finished measurements of the anti-g garment shall be as specified in table VI. The minimum finished measurements specified in table V shall be the measurements of the finished anti-g garment when its adjustment laces are tight. The maximum finished measurements specified in table VI shall be the measurements of the finished anti-g garment when its adjustment laces are loose and the fabric is stretched to the limit of the solid fabric with the lacer cover closed. The finished measurements (see figure 9) shall be taken with the body slide fastener and the leg slide fasteners open and as follows: Measure the body circumference straight across the top edge of the body. Measure the thigh circumference, with the thigh take-up slide fasteners closed for the minimum finished measurement and with the thigh take-up slide fastener open for the maximum finished measurement, straight across the top edge of the cut out. Measure the leg length at the slide fastener location from the top to the bottom of the slide fastener of the leg opening. Measure the ankle circumference straight across the leg terminal. Measure the length of the inflation tube from the end of the nose piece of the connector (see figure 1 of MIL-C-83390) to the end of the stitching of the bladder cover to the body front at the bladder neck opening (see body front pattern).

MIL-DTL-0083406D(USAF)

TABLE VI. Finished measurements (inches) (see figure 9).

| Size of Anti-g Garment | Body Circumference | | Thigh Circumference | | Leg Length at Fastener Location | Ankle Circumference | | Hose Length |
|------------------------|--------------------|--------------|---------------------|--------------|---------------------------------|---------------------|---------|-------------|
| | A (min) | B (max) | C (min) | D (max) | E (nominal) | F (min) | G (max) | H (nominal) |
| Small regular (SR) | 29-1/2 | 34-1/2 | 21 | 26 | 26 | 12 | 15 | 17 |
| Small long (SL) | 29 | 34-1/4 | 20-3/4 | 25-1/2 | 28 | 12 | 15 | 17 |
| Medium regular (MR) | 32-1/4 | 38-1/4 | 22-1/4 | 27-1/4 | 26-1/2 | 12 | 15 | 17 |
| Medium long (ML) | 32 | 38 | 22-1/2 | 27-1/2 | 28-1/2 | 12 | 15 | 17 |
| Large regular (LR) | 35-1/4 | 41 | 23-1/2 | 28-3/4 | 27 | 12 | 15 | 17 |
| Large long (LL) | 35-1/2 | 41-1/4 | 24 | 29 | 29 | 12 | 15 | 17 |
| Large extra long (LXL) | 35-1/2 | 41-1/4 | 24 | 29 | 33 | 13-3/4 | 16-3/4 | 17 |
| Tolerance | +3/4 -1/2 | +3/4 -1/2 | +1/2 -3/8 | +1/2 -3/8 | ±1/2 | +0 -1/2 | ±1/4 | ±1/4 |

3.9 Color.

The color of the materials of the anti-g garment shall be as specified herein. Materials for which color requirements have not been specified and which are hidden by the construction may be used in natural or colored form. The color of all exposed sewing threads shall approximately match the color of the basic fabric specified in 3.4.1.1.

3.10 Identification of product.**3.10.1 Labels.**

Each anti-g garment shall have a contractor's label, a size label, laundering instruction label, and a blank label.

3.10.1.1 Contractor's label.

The contractor's label shall conform to type VI, class 1 of MIL-DTL-32075 and shall be approximately 2-1/2 inches by 1-1/2 inches. The label shall contain the following information:

Anti-G Garment, Cutaway, CSU-13B/P

Specification 1/

Contract or Order No. 1/

Manufacturer's Identification 1/

1/ The manufacturer shall insert the applicable information.

MIL-DTL-0083406D(USAF)

3.10.1.2 Size label.

The size label shall conform to type VI, class 2 of MIL-DTL-32075 and shall be approximately 2-1/2 inches by 1-1/2 inches. In addition to the adjective size, the size label shall contain the stature and the weight ranges (see table VII), and the national stock number (NSN) of the anti-g garment in the following manner:

Size /

Stature / Weight /

NSN /

Lot No. /

Serial No. (see 3.10.3)

Date of Manufacture /

 The manufacturer shall insert the applicable information.

3.10.1.2.1 Stamped size label.

The upper tab of the finished bladder shall be stamped for identification with the abbreviated anti-g garment size (see table VII).

3.10.1.2.2 Stature and weight ranges.

Proper fitting of the anti-g garment is based on stature and weight; other body measurements are not used in selecting the proper size. The applicable stature and weight ranges for each size are shown in table VII.

TABLE VII. Stature and weight ranges.

| Size of anti-g Garment | Stature Range (inches) | Weight Range (pounds) |
|-------------------------------|-------------------------------|------------------------------|
| Small regular (SR) | 63 – 67-7/8 | 131 – 160 |
| Small long (SL) | 68 – 72-7/8 | 131 – 160 |
| Medium regular (MR) | 64-1/2 – 69-3/8 | 161 – 190 |
| Medium long (ML) | 69-1/2 – 74-3/8 | 161 – 190 |
| Large regular (LR) | 67 – 71-3/8 | 191 – 220 |
| Large long (LL) | 71-1/2 – 75-3/8 | 191 – 220 |
| Large extra long (LXL) | 75-1/2 - 79 | 191 - 230 |

MIL-DTL-0083406D(USAF)

3.10.1.3 Laundering (care) instruction label.

The laundering instruction label shall conform to type VI, class 3 of MIL-DTL-32075 and shall be approximately 2 inches by 1-1/2 inches. The instruction label shall contain the following information:

DO NOT IRON OR DRY CLEAN.
PLUG AIR INLET PORT SECURELY.
WASH WITH MILD SOAP AND WATER NOT OVER 120 °F.

THE MATERIAL OF THE OUTER SHELL OF THIS
ANTI-G GARMENT IS AN INHERENT FIRE RESISTANT
MATERIAL THAT WILL NOT MELT OR DRIP AND CAN
BE LAUNDERED WITHOUT LOSING ITS FIRE-RESISTANT
PROPERTIES. NO RETREATMENT IS NECESSARY.

3.10.1.4 Blank label.

The blank label shall be approximately 5 inches by 1-1/2 inches, conforming to type VI of MIL-DTL-32075.

3.10.1.5 Serial numbers.

The cutaway garment shall be identified by individual serial numbers which shall be assigned by the manufacturer. Serialization shall be by a block of consecutive numbers to cover the entire acquisition document quantity.

3.10.1.7 Barcode label.

Each item shall be individually barcoded with a type VII, class 17 label in accordance with MIL-DTL-32075. The label shall be located on the bag so it is completely visible when the item is folded or packaged as specified herein.

3.10.1.8 Item Unique Identification (IUID) label.

The contractor shall attach an Item Unique Identification (IUID) label to each unit in accordance to DFARS Clause 252.211-7003 Item Identification and Valuation.

3.10.2 Special identification.

The abdominal area of each anti-g garment subjected to the endurance test (see 4.6.3) shall be marked, with waterproof ink, in letters that are at least 1 inch high. The marking shall be as follows: ENDURANCE TESTED - NOT TO BE USED IN FLIGHT.

3.11 Patterns.

The standard patterns referenced in AF Drawings 71380 through 71386 and AF Drawings 74204 and 74206 will be furnished by the Government (see 6.7). The standard patterns show size, directional lines, and notches for the proper assembly of the parts of the anti-g garment. The standard patterns shall be used by the manufacturer as a guide in cutting the manufacturer's working patterns. The manufacturer's working patterns shall be identical in size and shape to the standard patterns. Neither the standard patterns nor the manufacturer's working patterns shall be altered in any way.

3.11.1 Directional line.

A straight line with an arrow at each end and the word "straight" affixed to the straight line marked on a pattern part indicates the straight of the material which is also defined as the warp or lengthwise direction of the cloth or fabric. The pattern part shall be laid on the cloth so that the straight line with the arrows indicating the "straight" of the fabric is parallel to the selvage

MIL-DTL-0083406D(USAF)

edge (lengthwise) of the fabric. This shall be accomplished by placing the straight line on the lengthwise grain of the fabric as follows: Measure the distance, at two points, from the straight line to the selvage. Adjust the pattern part until the distance from the straight line to the selvage is the same from both points (see figure 10).

3.12 Workmanship.

In as much as the correct functioning of the anti-g garment directly affects the safety of personnel, it shall be free of all loose thread, lint, foreign matter, irregularities or defects that would adversely affect performance, appearance, or durability.

4. VERIFICATION**4.1 Classification of inspection.**

The inspection requirements specified herein are classified as follows:

- a. Qualification inspection (see 4.3)
- b. First article inspection (see 4.4)
- c. Conformance inspection (see 4.5)

4.2 Inspection conditions.**4.2.1 Atmospheric conditions.**

Unless otherwise specified herein, all tests required by this specification shall be accomplished at an atmospheric pressure of 28 to 32 inches of mercury, at a temperature of 77 ± 18 °F, and at a relative humidity of 80% or less. Where tests are accomplished at atmospheric pressure or temperature substantially different from these values, proper allowance shall be made for the change in instrument reading.

4.2.2 Connector.

A connector conforming to MS27755 shall be used to connect the anti-g garment to the air source for tests that require inflation and deflation cycling of the anti-g garment.

4.2.3 Air.

The air used to test the anti-g garment as specified herein shall not contain any oil or moisture.

4.2.4 Air pressure gauge.

Air pressure gauges utilized shall be in pounds per square inch (psig) and shall be precise and calibrated to at least one hundredth of a psig. The gauge shall have a current calibration.

4.3 Qualification inspection.

The qualification samples described in 4.3.1 shall be subjected to qualification inspection. The qualification inspection for the anti-g garments and bladders shall consist of the test methods described in 4.6.1 through 4.6.7. The qualification inspection for the bladder shall consist of the test described in 4.6.8 (see table VIII).

4.3.1 Qualification samples.

Qualification samples, consisting of two anti-g garments tested as specified in 4.5 and of two untested bladders, shall be furnished to the qualifying activity (see 6.3).

MIL-DTL-0083406D(USAF)

TABLE VIII. Qualification inspections.

| Inspection | Requirement | Test Method |
|---------------------------|--------------------|--------------------|
| Visual examination | 3.5 | 4.6.1 & table VI |
| Leakage | 3.7.1 | 4.6.2 |
| Endurance | 3.7.2 | 4.6.3 |
| Inflation time | 3.7.3 | 4.6.4 |
| Low temperature storage | 3.7.4 | 4.6.5 |
| High temperature storage | 3.7.5 | 4.6.6 |
| Low temperature operation | 3.7.6 | 4.6.7 |
| Bond strength (bladder) | 3.7.7 | 4.6.8 |
| Finished measurements | 3.8 & table V | 4.7 & figure 9 |

4.4 First article inspection.

The first article samples specified in 4.4.1.1 shall be subjected to first article inspection (see table IX). The first article inspection for the anti-g garment shall consist of the tests described in 4.6.1 through 4.6.7. The first article inspection for the bladder shall consist of the test described in 4.6.8.

4.4.1 First article samples.

The first article samples shall be manufactured after the award of the contract and before production of the anti-g garment commences. The first article samples shall consist of the items specified in 4.4.1.1 and shall be representative of the materials, components, construction, and workmanship to be used in the production items. If a manufacturer is in continuous production of the anti-g garments from contract to contract, inspection and submission of further first article samples may be waived at the discretion of the Engineering Support Activity (ESA) (see 6.2). Approval of the first article samples or the waiver of the first article inspection shall not preclude the requirements for the performance of the quality conformance inspection.

4.4.1.1 Test samples.

The manufacturer of the anti-g garments shall subject two anti-g garments and two bladders for each size being made under that contract (see 6.2b) for the first article inspection described in 4.4.

TABLE IX. First article inspections.

| Inspection | Requirement | Test Method |
|---------------------------|--------------------|--------------------|
| Visual examination | 3.5 | 4.6.1 & table VI |
| Leakage | 3.7.1 | 4.6.2 |
| Endurance | 3.7.2 | 4.6.3 |
| Inflation time | 3.7.3 | 4.6.4 |
| Low temperature storage | 3.7.4 | 4.6.5 |
| High temperature storage | 3.7.5 | 4.6.6 |
| Low temperature operation | 3.7.6 | 4.6.7 |
| Bond strength (bladder) | 3.7.7 | 4.6.8 |
| Finished measurements | 3.8 & table V | 4.7 & figure 9 |

MIL-DTL-0083406D(USAF)

4.5 Conformance inspection.

Conformance inspection shall consist of the following:

- a. Individual inspection
- b. Sampling inspection.

4.5.1 Individual inspection.

Each anti-g garment shall be subjected to the following tests (see table X) as described under 4.6:

- a. Examination of product (4.6.1)
- b. Leakage (4.6.2).

TABLE X. Conformance inspections.

| Inspection | Requirement | Test Method |
|--------------------|-------------|------------------|
| Visual examination | 3.5 | 4.6.1 & table VI |
| Leakage | 3.7.1 | 4.6.2 |
| Endurance | 3.7.2 | 4.6.3 |
| Inflation time | 3.7.3 | 4.6.4 |

4.5.2 Sampling inspection.

Sampling inspection shall be conducted in accordance with plans A, B, and C for the end items and components (see 4.5.3.2, 4.5.3.3, and 4.5.3.4).

4.5.3 Plans for end items and components.**4.5.3.1 Lot formation.**

Each lot for plan A shall consist of 500 anti-g garments that have been manufactured essentially under the same conditions and submitted for inspection at substantially the same time see 4.5.3.2). Each lot for plan B shall consist of 501 bladders that have been manufactured essentially under the same conditions and submitted for inspection at substantially the same time (see 4.5.3.3). Each lot for plan C shall consist of 501 bladders that have been manufactured essentially under the same conditions and submitted for inspection at substantially the same time (see 4.5.3.4). A fraction of a lot shall not be permitted for plan A, B, or C unless the total quantity of the anti-g garments required to be delivered during a specified period under the contract is less than 500 anti-g garments.

4.5.3.2 Plan A.

Two anti-g garments shall be selected at random from each lot or fraction thereof, provided a fraction is permitted (see 4.5.3.1). Each anti-g garment selected shall be subjected to the following tests as described under 4.6:

- a. Endurance (4.6.3)
- b. Inflation time (4.6.4).

4.5.3.3 Plan B.

One bladder shall be selected at random from each lot of bladders or fraction thereof (see 4.5.3.1) provided a fraction of a lot is permitted. The bladder selected as a sample shall be subjected to the test described in 4.6.8.

MIL-DTL-0083406D(USAF)

4.5.3.4 Plan C.

Prior to initiation of garment production, ten bladders shall be selected at random from each lot of bladders or fraction thereof (see 4.5.3.1) provided a fraction of a lot is permitted. The bladder selected as a sample shall be subjected to the test described in 4.6.

4.5.3.5 Rejection and retest.

When one or more items selected from a lot in accordance with plan A, B, or C fail to meet the specification, acceptance of all items in the lot shall be withheld until the extent and cause of the failure have been determined. The contractor shall explain fully, to the Government representative and notify the engineering support activity in writing, the cause of failure, the action taken to preclude recurrence, and the impact this failure may have in scheduled deliveries. After correction, all of the sampling tests shall be repeated.

4.5.3.6 Individual tests may continue.

For production reasons, individual inspection or other sampling plans may be continued pending the investigation of a sampling test failure. Final acceptance of the entire lot or lots produced later shall not occur until it is determined that all items meet all the requirements of the specification.

4.5.3.7 Defects in items already accepted.

The investigation of a test failure could indicate that defects may exist in items already accepted. If so, the contractor shall fully advise the engineering support activity of all defects likely to be found and the method of correcting them.

4.6 Test methods**4.6.1 Examination of product.**

The anti-g garment and bladder shall be examined to determine compliance with the requirements of this specification with respect to materials, finished measurements, identification marking, and workmanship. Defects found during this examination shall be classified as specified in table XI. If the anti-g garment contains any critical defect, 2 or more major defects, or five or more combined (major and minor) defects it shall be cause for rejection.

MIL-DTL-0083406D(USAF)

TABLE XI. Classification of defects.

| NO. | DEFECT | CRITICAL | MAJOR | MINOR |
|-----|---|-------------|---------------------------------|-------|
| 1. | Materials Materials not conforming to specified requirements unless otherwise classified herein. | 1 | | |
| 2. | Fabric imperfection See FED-STD-4 <u>1</u> / | | 101 | |
| 3. | Slide fasteners a. Fabric seam on tape catching in slider or slider not operating freely. b. Slide fastener not specified type, style, or length. c. Any part of slide fastener assembly omitted, bent, or broken. d. Pull tabs missing. e. Stiffeners missing. f. Pull tabs not specified type. g. Stiffeners not specified type. | 2 3 4 | 102 103 104 105 | |
| 4. | Color a. Color not matching specified color shade. b. Any component not specified color. | | 106 107 | |
| 5. | Snap fasteners a. Stud not securely clinched, damaged spring, or damaged or missing snap fastener. b. Stud not aligned with the socket causing noticeable bulge or twist when snapped. c. Stud mismatched with socket. d. Snap fastener not holding together or the assembled bottom and socket rotate when hand force is applied. e. Snap fastener not specified type or split and/or crack in barrel as noticed by visual. f. Snap fasteners not separating under normal pull, or the bottom end is not a continuous sloped circle. <u>2</u> / | 5 | 108 109 110 111 112 | |

MIL-DTL-0083406D(USAF)

TABLE XI. Classification of defects - Continued.

| NO. | DEFECT | CRITICAL | MAJOR | MINOR |
|-----|--|-------------------------------|------------------------------|---|
| 6. | Assembly a. Incorrectly assembled, that is, reversed seams, not specified type of seam, not specified type of stitch, or misplaced or reversed components. b. Incompletely assembled, that is, any component or required operation omitted. c. Any component not as specified; any component part or required operation omitted; or any operation improperly performed. NOTE: This defect shall be classified and scored as a major defect when it seriously affects the serviceability or appearance; otherwise, it shall be classified and scored as a minor defect. | 6 7 8 | | |
| 7. | Identification of product Any label missing, misplaced, illegible, or information on label incorrect or incomplete. | | 113 | |
| 8. | Workmanship a. Holes, cuts, tears, or needle chews. b. Darns or mends affecting serviceability. c. Darns or mends affecting appearance. d. Thread ends not trimmed flush with fabric. e. Stains, oil spots, or dirt over 1/4 inch diameter. f. Stains, oil spots, or dirt up to 1/4 inch in diameter in not more than two places. g. Holes, cuts, tears on bladder cover. h. Stains, oil spots, or dirt up to 1/4 inch in diameter in three or more places. i. All other areas. NOTE: These defects shall be classified and scored as a major defect when it seriously affects the serviceability or appearance; otherwise it shall be classified and scored as a minor defect. j. Thread ends not trimmed to a maximum of ¼ inch. | 9 10 11 | 114 115 116 117 | 201 202 203 |

MIL-DTL-0083406D(USAF)

TABLE XI. Classification of defects - Continued.

| NO. | DEFECT | CRITICAL | MAJOR | MINOR |
|-----|---|------------------------|----------------------------------|-------|
| 9. | Measurements <ul style="list-style-type: none"> a. Any finished measurement not within specified tolerance. b. Distance between inside longitudinal stitch lines, attaching knife pocket to reinforcement patch, greater than 2-3/8 inches or less than 2-1/8 inches. c. Width of inside opening of knife pocket (distance between longitudinal stitch lines) less than 1-3/4 inches. | 12 | 118 119 | |
| 10. | Hook assembly <ul style="list-style-type: none"> a. Hook assembly not specified type. b. Hook not aligned with loop (tolerance 1/8 inch) <u>3/</u> <ul style="list-style-type: none"> - more than 1/8 inch but less than 1/4 inch - more than 1/4 inch | 13 | 120 | 204 |
| 11. | Stitches and seams <ul style="list-style-type: none"> a. Open seams shall be defined as one or more broken stitches or one or more continuous skipped stitches or run-offs: <ul style="list-style-type: none"> - Stitching missing, broken, skipped, or cut on bladder cover and leg and body slide fasteners. - All others b. Ends of stitching not caught in other seams or stitching not securely backstitched for a minimum of 1/2 inch. c. Stitching missing, broken, skipped, or cut. d. Run-offs. e. Stitching margins unless otherwise classified herein: <u>4/</u> <ul style="list-style-type: none"> - up to 1/16 inch stitching margins not within tolerance of +1/32 or -0 inch. - over 1/16 to 1/4 inch stitching margins (tolerance +1/32 or -0 inch) that exceeds plus tolerance less than +1/16 inch. | 14 15 16 | 121 122 123 124 | 205 |

MIL-DTL-0083406D(USAF)

TABLE XI. Classification of defects - Continued.

| NO. | DEFECT | CRITICAL | MAJOR | MINOR |
|-----|---|---|----------------------------------|----------------------------------|
| 11. | <p>Stitches and seams – Contd.</p> <ul style="list-style-type: none"> - over 1/16 inch to 1/4 inch stitching margins (tolerance +1/32 inch or -0 inch) that exceeds tolerance more than +1/16 or more than -1/32 inch. - over 1/4 to 1/2 inch stitching margins (tolerance +1/16 or -1/32 inch) that exceeds tolerance by more than +1/16 or more than -1/32 inch. f. Seams not within tolerance of $\pm 1/32$ inch: <ul style="list-style-type: none"> - up to 1/4 inch seam that exceeds tolerance up to +1/32 inch. - up to 1/4 inch seams that exceeds tolerance more than $\pm 1/32$ inch. - over 1/4 inch seams that exceeds tolerance up to +1/16 inch - over 1/4 inch seams that exceeds tolerance more than +1/16 or -1/32 inch. g. More than 1/4 inch but less than 1 inch raw edge. h. More than 1 inch raw edge. | <p>17</p> <p>18</p> | <p>125</p> <p>126</p> <p>127</p> | <p>206</p> <p>207</p> <p>208</p> |
| 12. | <p>Bladder</p> <ul style="list-style-type: none"> a. Materials not conforming to the specification. b. Incorrectly assembled. c. Any component not as specified; any component part or required operation omitted; or any operation improperly performed. d. Holes, cuts, tears. e. Any finished measurement not within specified tolerance. f. Spacer material or the attachment patches caught in any portion of the welded seam. g. The seams of the inflated bladder not proper joining and adhesion. The seams not straight, continuous, and parallel to the edge of the bladder. h. The inflatable area of the complete bladder shall not be greater than 5/8" nor less than 1/4" from the edge of the patterns. | <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> | <p>128</p> <p>129</p> <p>130</p> | |

MIL-DTL-0083406D(USAF)

TABLE XI. Classification of defects - Continued.

| NO. | DEFECT | CRITICAL | MAJOR | MINOR |
|--|--|----------|-------|-------|
| 12. | Bladder – contd. i. The upper tab of the finished bladder shall be stamped | | 131 | |
| NOTES:: <u>1/</u> Fabric imperfections that would affect the function of the anti-g garment shall be considered major defects. <u>2/</u> The snap fastener shall be checked for proper function and attachment by snapping closed and unsnapping the snap fastener at least three times. <u>3/</u> The hook assembly shall be checked by attaching the hook to the loop and closing the slide fastener. Alignment of the hook assembly shall not interfere with the slide fastener operation. <u>4/</u> The classification of defects for stitching margins shall not apply to any stitching margins for which a tolerance has been specified in table III. A stitching margin that is not within the tolerance specified in table III shall be classified as a major defect. | | | | |

4.6.2 Leakage.

The bladder in the anti-g garment shall be inflated to a pressure of 12 psig by means of a suitable connection arranged so that the pressure of the bladder will be indicated by a gage. The air supply shall be shut off securely. After a minimum of 60 seconds the pressure in the bladder shall be checked and readjusted, if necessary, to the original pressure of 12 psig. A minimum of 60 seconds after the pressure has been checked and readjusted, the pressure in the bladder shall be checked. If the pressure in the bladder is less than 11.5 psig, the anti-g garment shall be rejected. While the anti-g garment is still inflated, it shall be examined for material and constructional failure, separation of seams and components, change in location of slide fastener sliders, separation of slide fastener chains, and twisting and distortion of the anti-g garment. If the anti-g garment contains any of these defects, it shall be rejected. After this examination is completed the bladder of the anti-g garment shall be completely deflated.

4.6.3 Endurance.

The anti-g garment shall be fitted to the inanimate model specified in 4.7. The anti-g garment shall be inflated 1,000 times, in accordance with table XII, to a pressure of not less than 15 psig and then examined for structural defects. If the anti-g garment contains any of the defects specified in 4.6.1, the anti-g garment shall be rejected. After the anti-g garment has been examined for defects, the anti-g garment shall be subjected to the leakage test described in 4.6.2.

MIL-DTL-0083406D(USAF)

TABLE XII. Inflation of anti-g garment.

| Minimum pressure (psig) | Maximum seconds permitted to inflate garment to minimum pressure | Minimum seconds permitted to deflate garment to zero psig (gage pressure reading) | Minimum cycles |
|--------------------------------|---|--|-----------------------|
| 15 | 8 | 4 | 5 per minute |
| 12 | 8 | 4 | 5 per minute |
| 6 | 30 | 10 | 10 per hour |

4.6.3.1 Bladder post endurance bladder inspection.

After the successful completion of endurance testing and successful completion of post endurance leakage, the bladder assembly shall be carefully removed from the casing assembly of the endurance tested anti g garments. To remove the bladder from the anti g casing carefully remove the stitching on the (9) bladder tabs. Remove the rubber sleeve and clamps or clamps and tape from the hose, separate the connector from the hose and remove the spring. Make a 5" incision in the casing material only, on the inside of the abdomen bladder. NOTE: Use extreme care not to cut the bladder or any stitching. Remove the complete bladder through this incision. The bladders shall be dimensionally and visually inspected in accordance with tables III and XI and figures 2 and 3.

4.6.4 Inflation time.

The anti-g garment shall be fitted to the inanimate model specified in 4.7. The anti-g garment shall be connected to a source of air with a free flow of 10 cubic feet per minute. The regulator shall be adjusted so that the pressure shall not exceed 12 psig. The bladder in the anti-g garment shall inflate to a pressure of 8 psig in not more than 3 seconds when the pressure is applied.

4.6.5 Low temperature storage.

The anti-g garment shall be packaged in a corrugated box with maximum dimensions of 13-1/2 by 4-1/2 by 8-1/2 inches. The packaged anti-g garment shall be subjected to a temperature of -60 °F or colder for at least 48 hours. The packaged anti-g garment shall then be kept at room temperature for at least 24 hours. The anti-g garment shall be removed from the box, fitted to the inanimate model specified in 4.7 and inflated 500 times, in accordance with table XII, to a pressure of not less than 12 psig. At the completion of this test, the anti-g garment shall be examined for failures or defects in the material or workmanship. Structural defects or any other defects shall be cause for rejection of the anti-g garment.

4.6.6 High temperature storage.

The anti-g garment shall be packaged in a corrugated box with maximum dimensions of 13-1/2 by 4-1/2 by 8-1/2 inches. The packaged anti-g garment shall be subjected to a temperature of +160 °F or warmer for at least four (4) hours. The packaged anti-g garment shall then be kept at room temperature for at least 24 hours. The anti-g garment shall be removed from the box, fitted to the inanimate model specified in 4.7 and inflated 500 times in accordance with table XII to a pressure of not less than 12 psig. At the completion of this test, the anti-g garment shall be examined for failures or defects in the material or workmanship. Structural defects or any other defects shall be cause for rejection of the anti-g garment.

MIL-DTL-0083406D(USAF)

4.6.7 Low temperature operation.

The anti-g garment shall be subjected to a temperature of -30°F or colder for a period of four (4) hours. During the four-hour period the anti-g garment is being subjected to the -30°F , it shall be inflated at the rate of 10 times per hour to a pressure of not less than six (6) psig in accordance with table XII. At the completion of this test, the anti-g garment shall be examined for failures or defects in the material or workmanship. Structural defects or any other defects shall be cause for rejection of the anti-g garment.

4.6.8 Bond strength (bladder).

Five (5) specimens shall be cut from different locations of the bladder so that the specimens will be representative of the sealing of the entire bladder. The specimens shall be taken from the straight of the bladder only. Each of the specimens shall be cut across and perpendicular to the seam of the bladder and shall be $1 \pm 1/16$ inch wide and $6 \pm 1/16$ inches long. A suitable inspection apparatus equipped with calibrated recording mechanism (see ASTM D5034) shall be used to conduct the bond strength test. The front clamp of each jaw of the inspection apparatus shall be 1 inch by 3 inches. The rate of separation of the jaws of the inspection apparatus under no load shall be $12 \pm 1/2$ inches per minute. One of the free ends of a specimen (an end that is not bonded) shall be placed in the upper jaw of the inspection apparatus. The other free end of the specimen shall be placed in the lower jaw of the inspection apparatus. The bonded portion (seam of bladder) of the specimen shall be in the center between the two jaws. The jaws shall be separated until either breakage of the cloth or separation of the bond occurs. The highest value required to separate the bonded specimens or to break the cloth shall be recorded as the test result of the individual bonded specimen. This test shall be repeated until the other four specimens have been tested for bond strength. The lowest value obtained from the tests of the five specimens shall be reported as the test result for the bond strength test and shall be not less than 40 pounds.

4.7 Inanimate models.

Two inanimate models, each consisting of two legs and one torso, shall be required. The anti-g garments in sizes small regular and small long shall be fitted to the small model. The anti-g garments in sizes medium regular, medium long, large regular, large long, and large extra long shall be fitted to the large model. The inanimate models shall conform to figure 11 and table XIII. The inanimate models shall have smooth surfaces that are free of nicks, burrs, or foreign material.

4.7.1 Fitting anti-g garment to models.

Fitting of the anti-g garments for all tests that require the use of the inanimate models shall be accomplished as follows: Wooden or plastic spacers shall be inserted between the anti-g garment and the model. The spacer for the torso section shall be 4 inches wide by 12 to 14 inches long by $3/4$ inch thick and shall be inserted so that the 4 inch width will face the model. The spacer for each leg shall be 2 inches wide by 12 to 14 inches long by $3/4$ inch thick and shall be inserted so that the 2 inch width will face the model. The adjustment laces of the anti-g garment shall then be taken up and tied so that the anti-g garment will fit snugly, but not tightly, around the abdomen and thighs. All slide fasteners shall be in the fully closed position. The model shall be placed in a sitting position, approximating that of a pilot seated in the cockpit of an aircraft, with a seat back angle of approximately 15 degrees. If a snug fit cannot be obtained at the body for the sizes large long and large extra long anti-g garments, shims shall be affixed to the model on both sides of the H and J dimensions shown on figure 11. All spacers shall be removed prior to commencement of the tests.

MIL-DTL-0083406D(USAF)

TABLE XIII. Inanimate models dimensions.

| MODELS | Leg Dimensions (inches) <u>1/</u> | | | | | | |
|--|--|--------------------|--------------------|----------|----------|----------|----------|
| | A | B <u>2/</u> | C <u>2/</u> | D | E | | |
| Small | 33 | 6-3/4 | 2-11/16 | 1-1/4 | 1-1/4 | | |
| Large | 33 | 7-3/16 | 3-1/16 | 1-1/4 | 1-1/2 | | |
| MODELS | Torso Dimensions (inches) <u>1/</u> | | | | | | |
| | G | H | I | J | K | L | M |
| Small | 14-1/4 | 12-3/4 | 8-1/16 | 10-1/8 | 6-13/16 | 1-1/4 | 1-1/4 |
| Regular | 14 | 13-3/4 | 9-1/8 | 11-3/8 | 7-15/16 | 1-1/4 | 1-1/2 |
| NOTES: | | | | | | | |
| <u>1/</u> Tolerances on all dimensions shall be $\pm 1/16$ inch. | | | | | | | |
| <u>2/</u> Dimensions B and C are diameters. | | | | | | | |

MIL-DTL-0083406D(USAF)

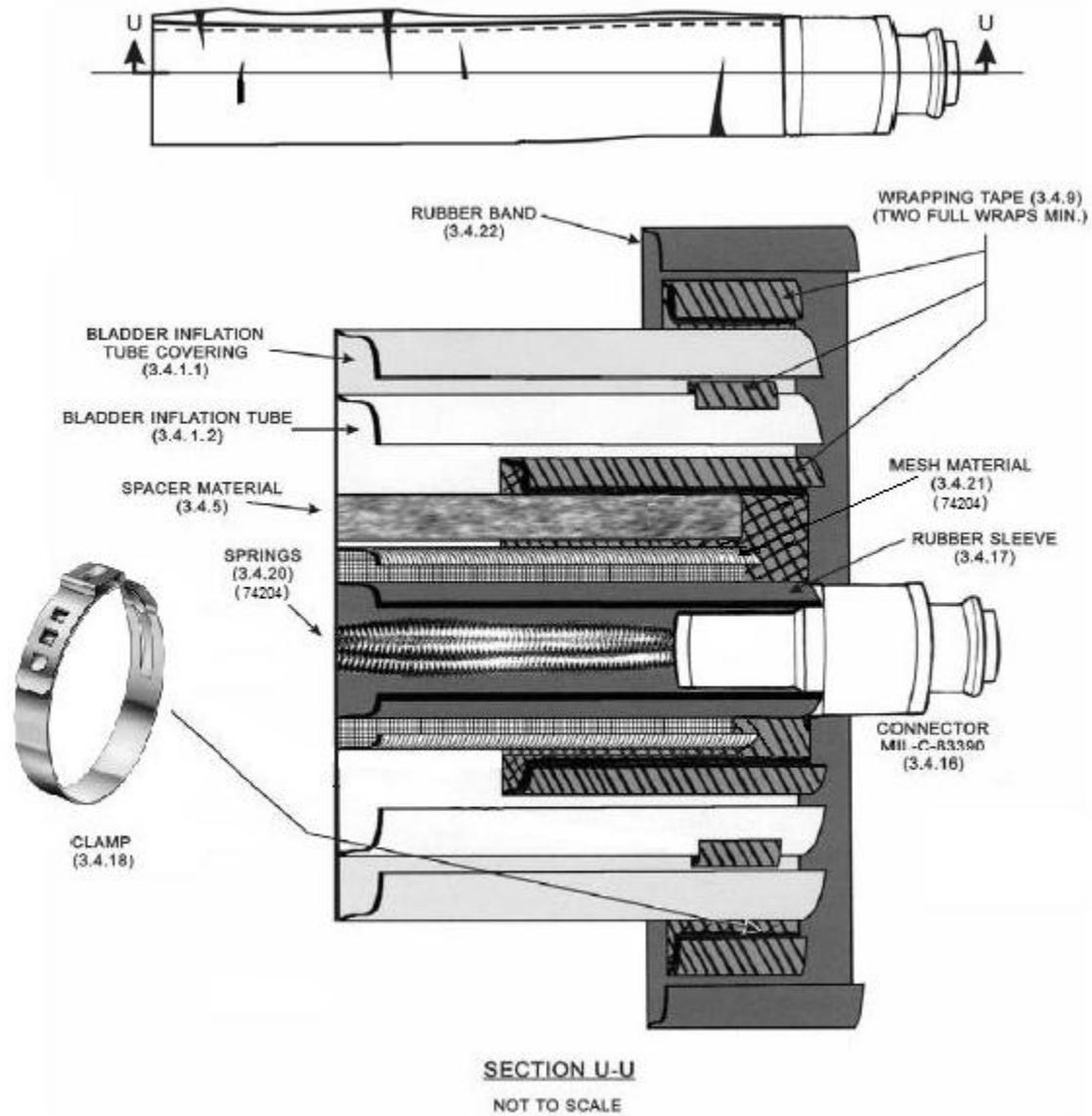


FIGURE 1a. Inflation tube assembly.

MIL-DTL-0083406D(USAF)

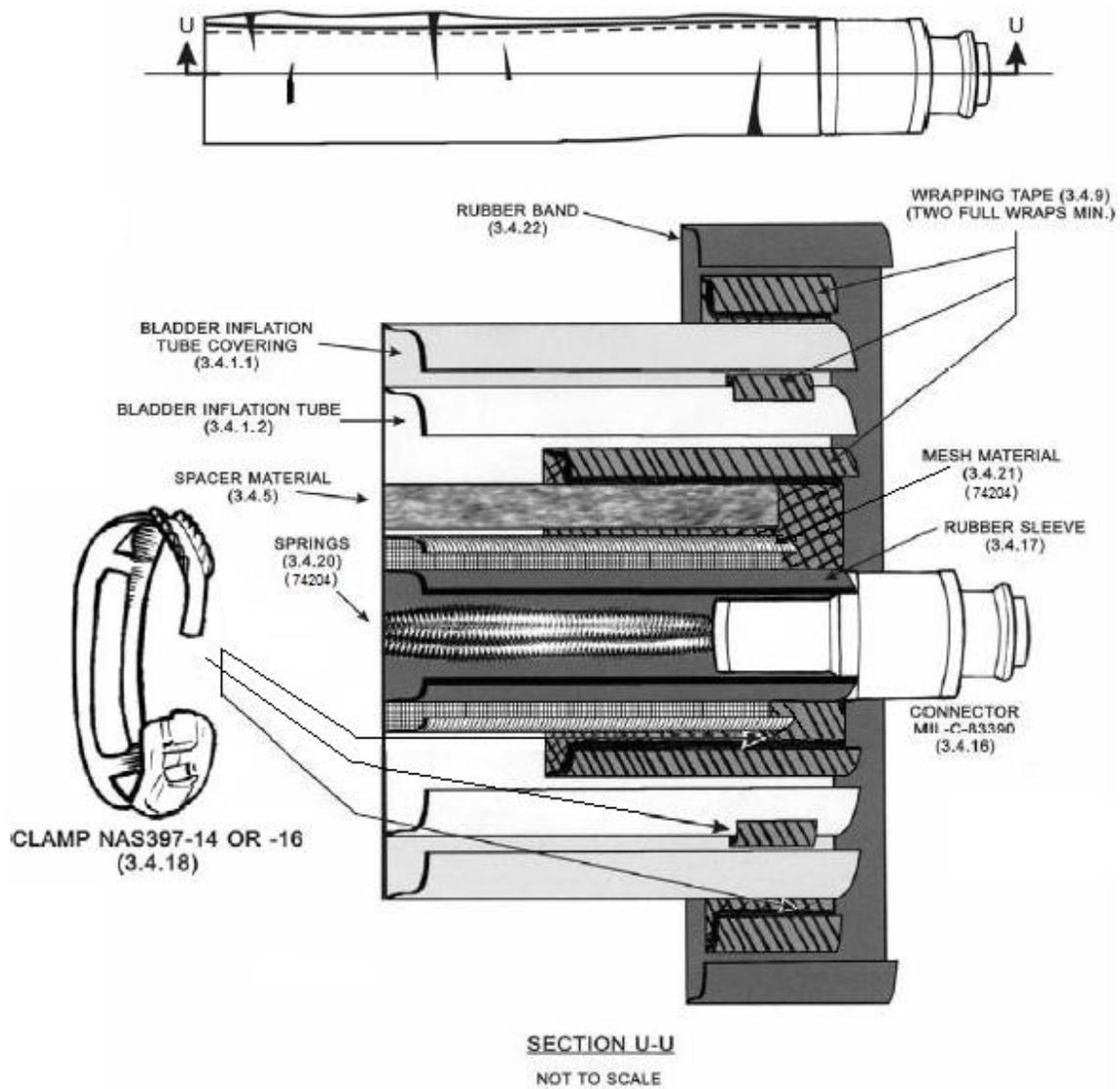


FIGURE 1b. Inflation tube assembly (alternate).

MIL-DTL-0083406D(USAF)

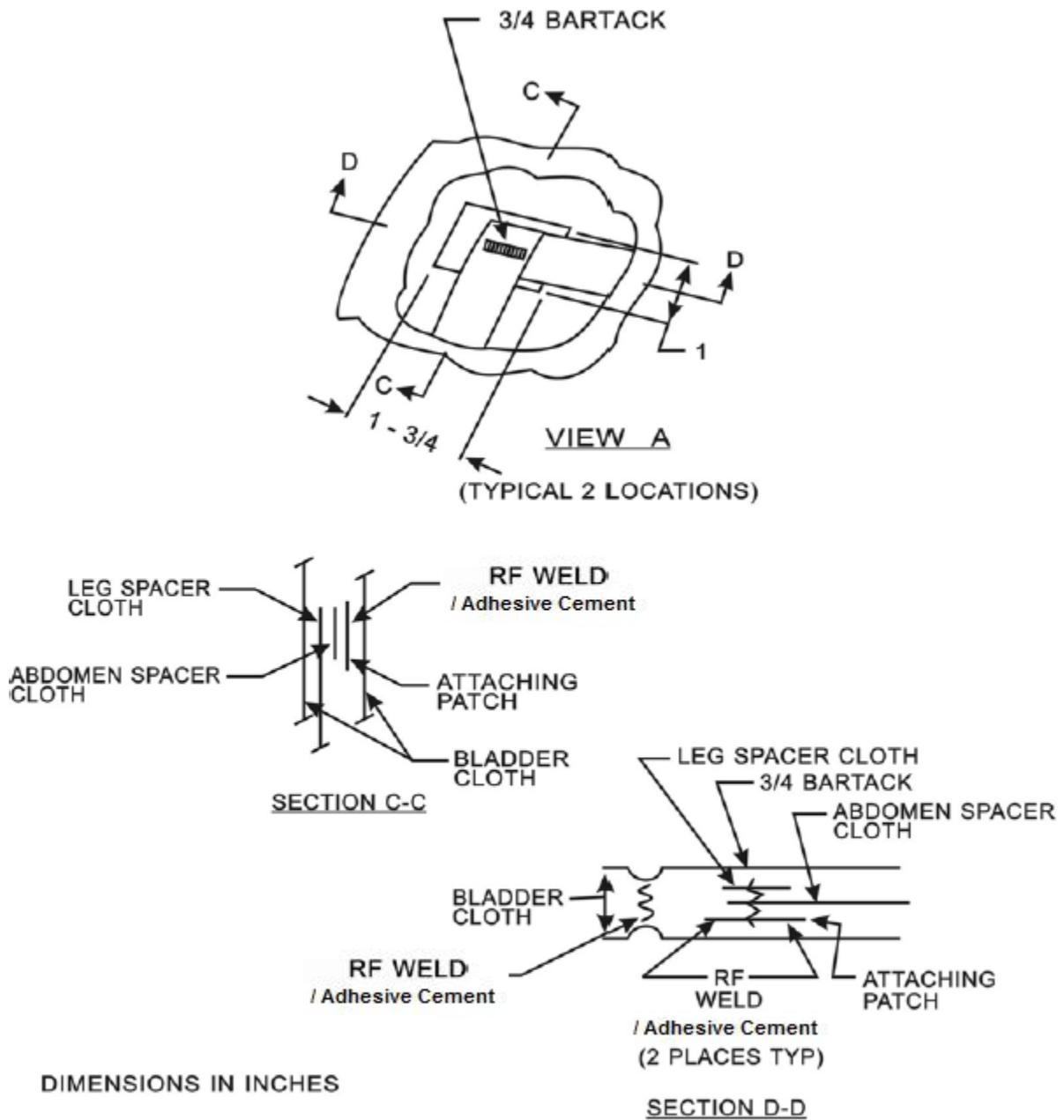


FIGURE 2. Bartack (view A).

MIL-DTL-0083406D(USAF)

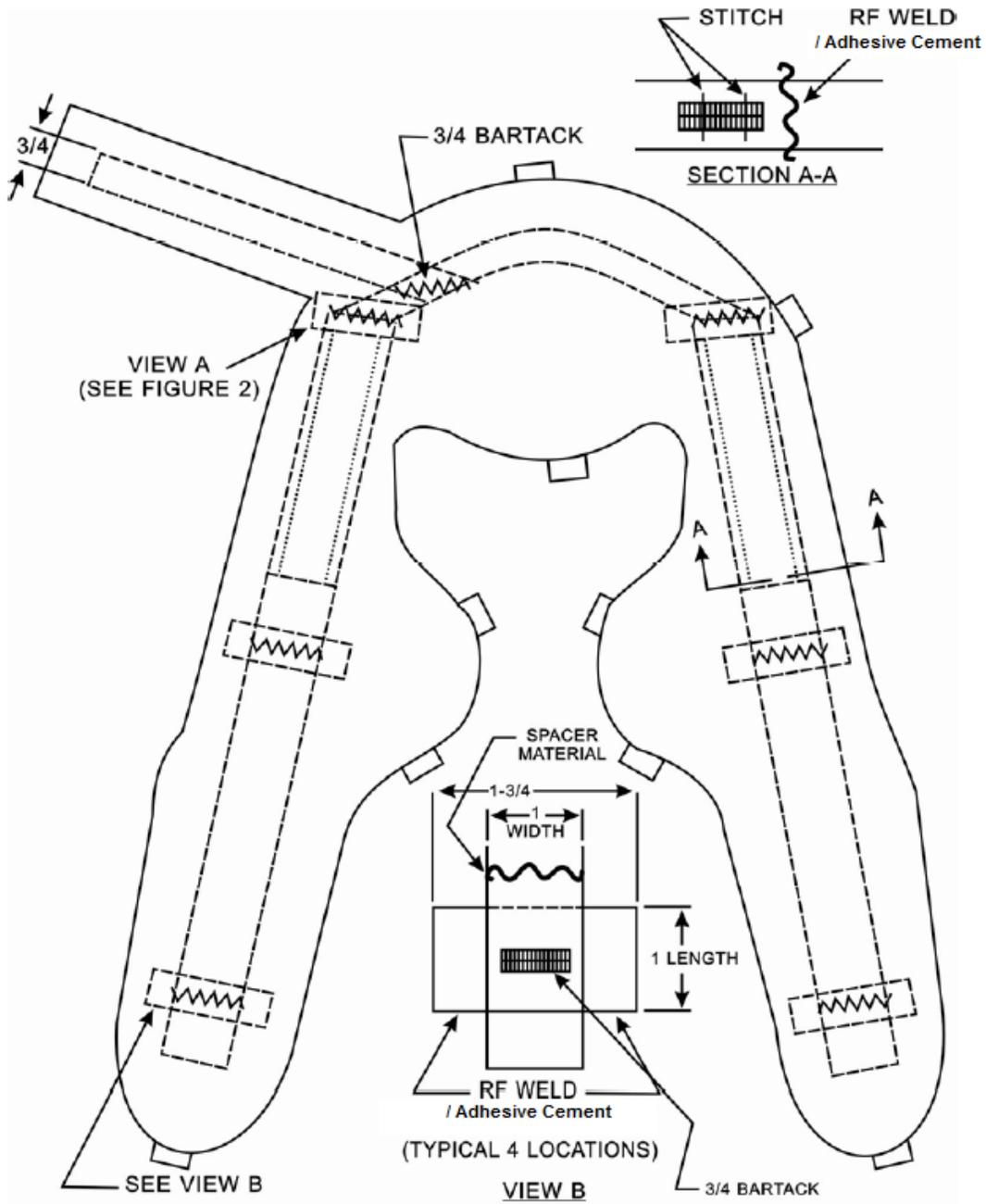


FIGURE 3. Bladder construction (dimensions are in inches).

MIL-DTL-0083406D(USAF)

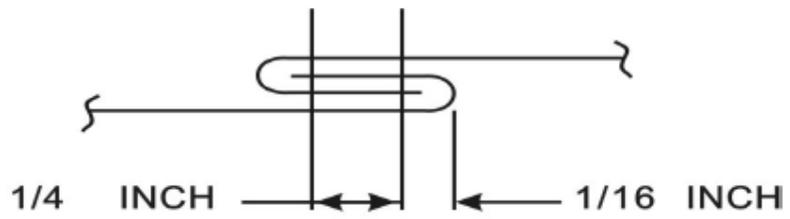


FIGURE 4. Seam type.

MIL-DTL-0083406D(USAF)

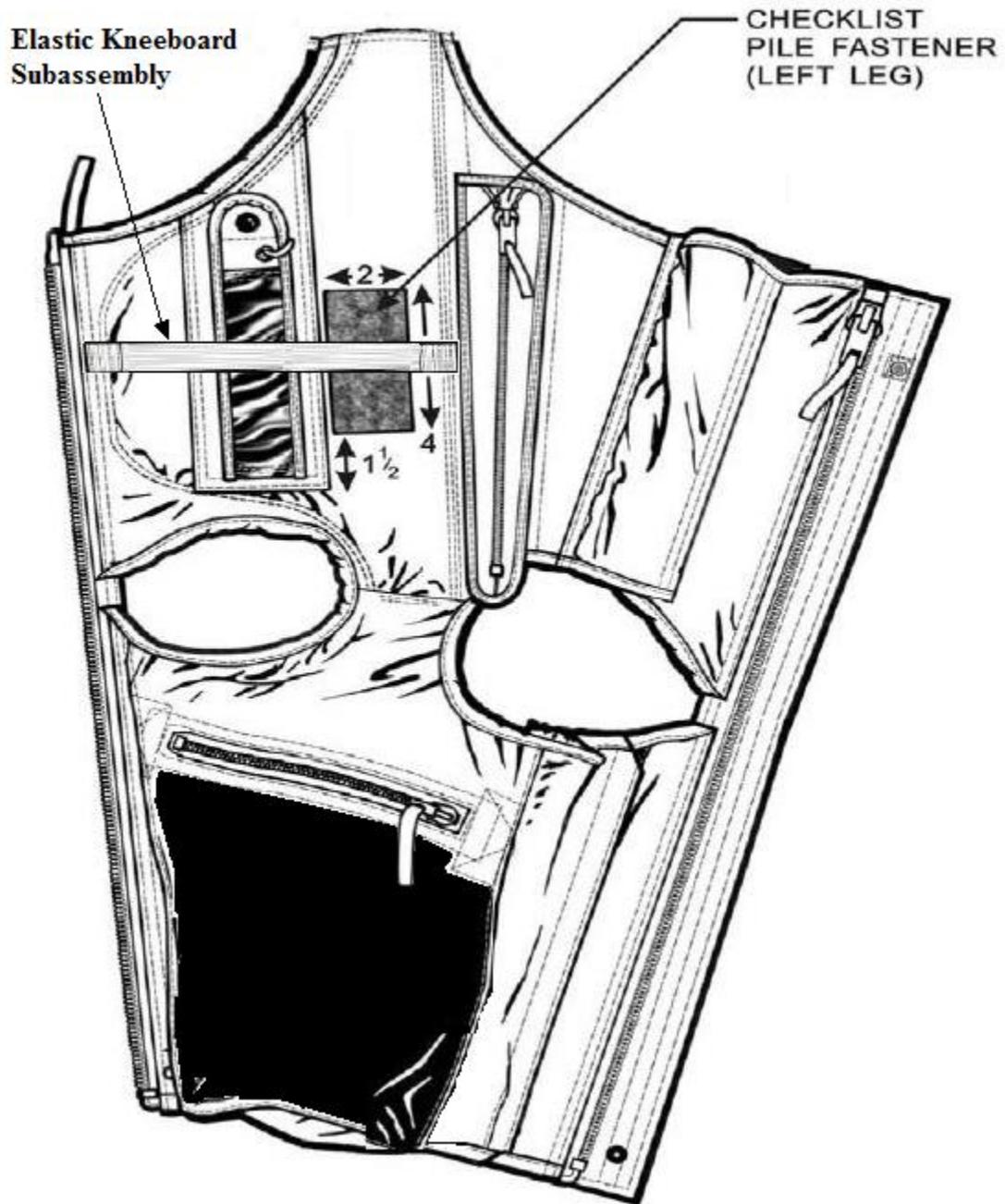


FIGURE 5. Location of checklist fastener.

MIL-DTL-0083406D(USAF)

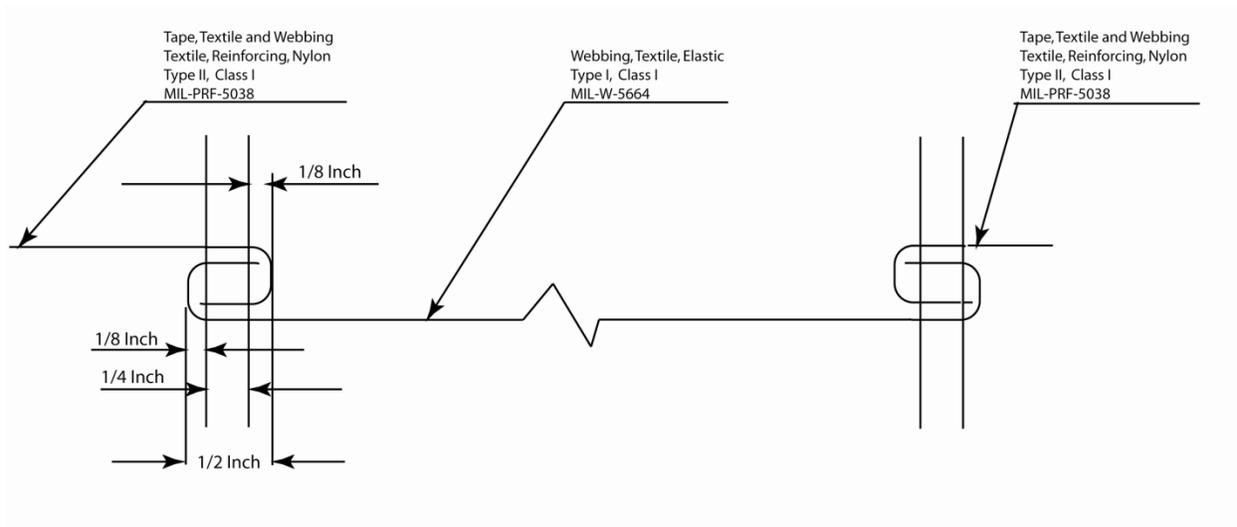


FIGURE 6. Construction of kneeboard assembly

MIL-DTL-0083406D(USAF)

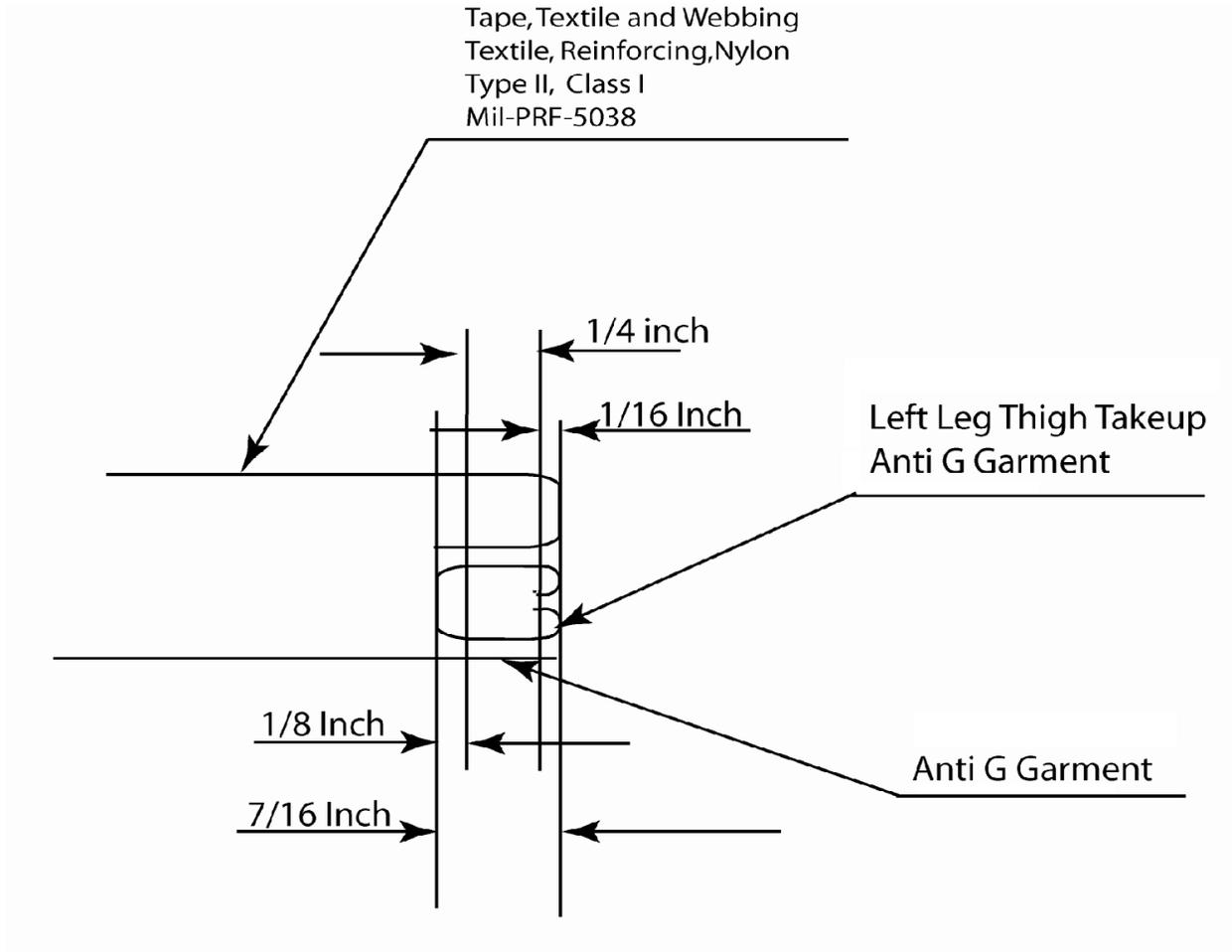


FIGURE 7. Attachment of kneeboard assembly to leg thigh take-up side.

MIL-DTL-0083406D(USAF)

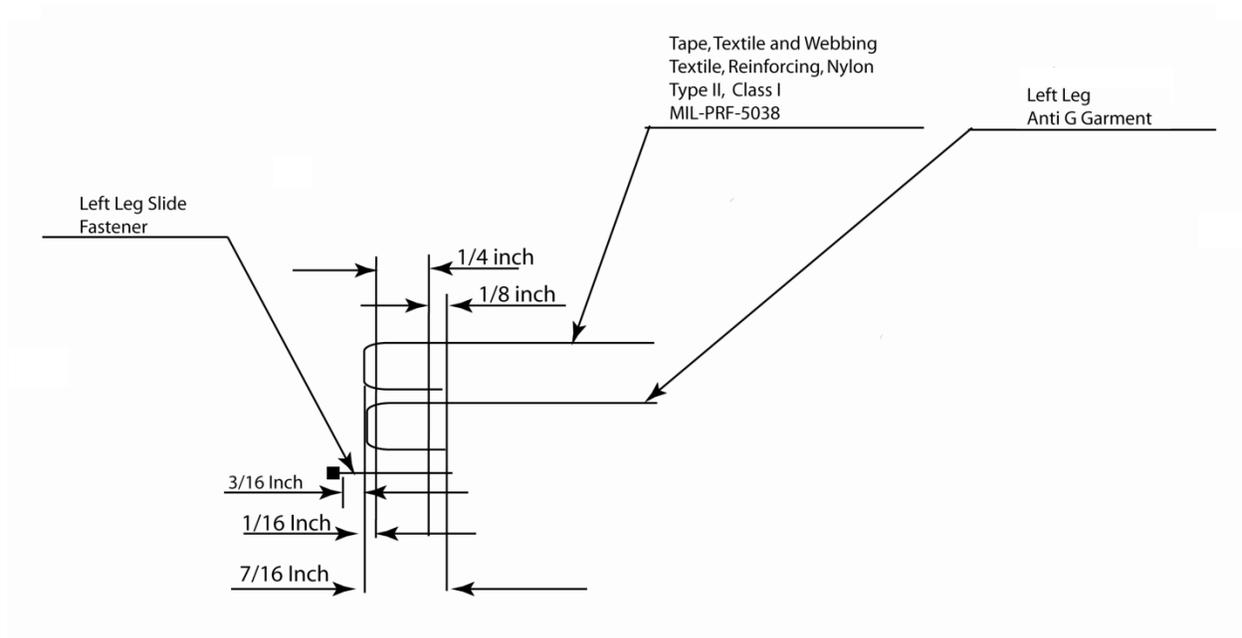


FIGURE 8. Attachment of kneeboard assembly to the leg slide fastener side.

MIL-DTL-0083406D(USAF)

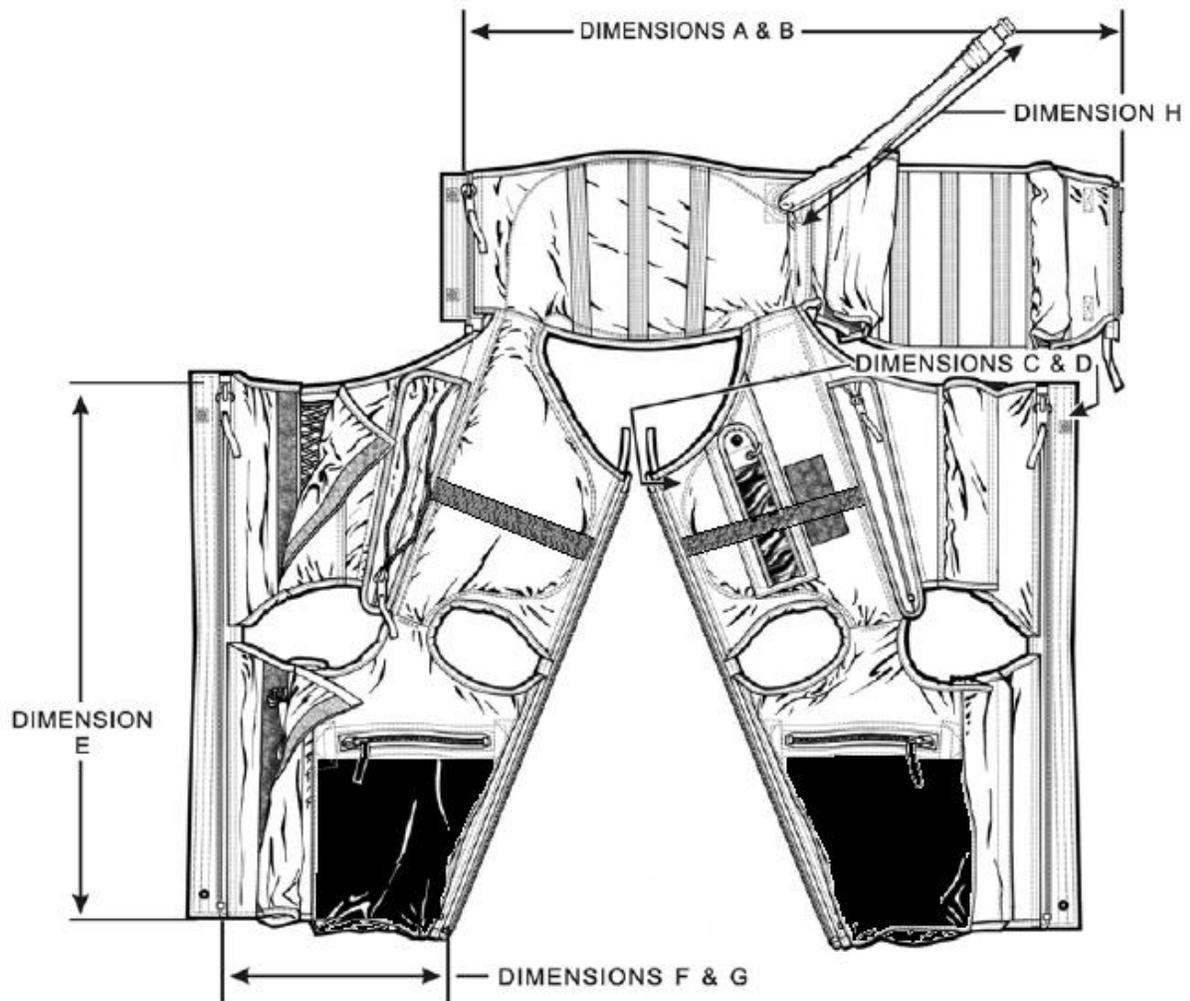


FIGURE 9. Finished garment measurements (see 3.8).

MIL-DTL-0083406D(USAF)

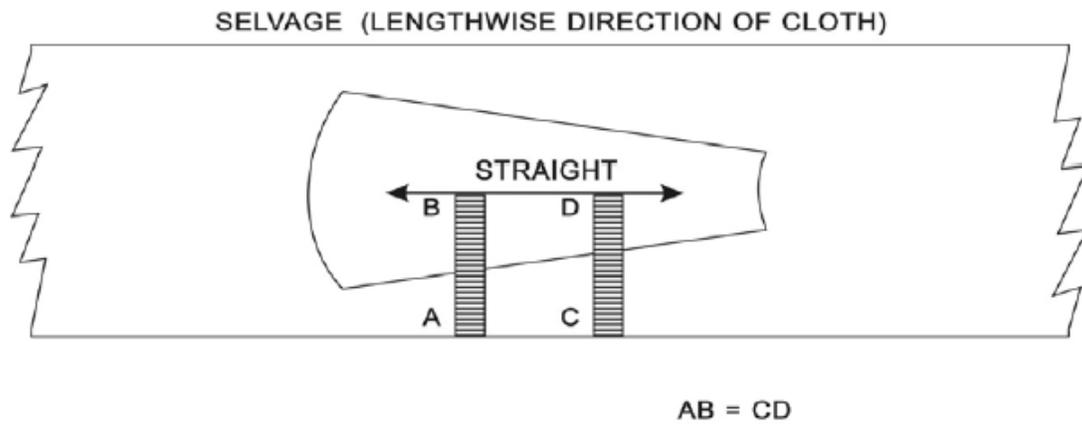
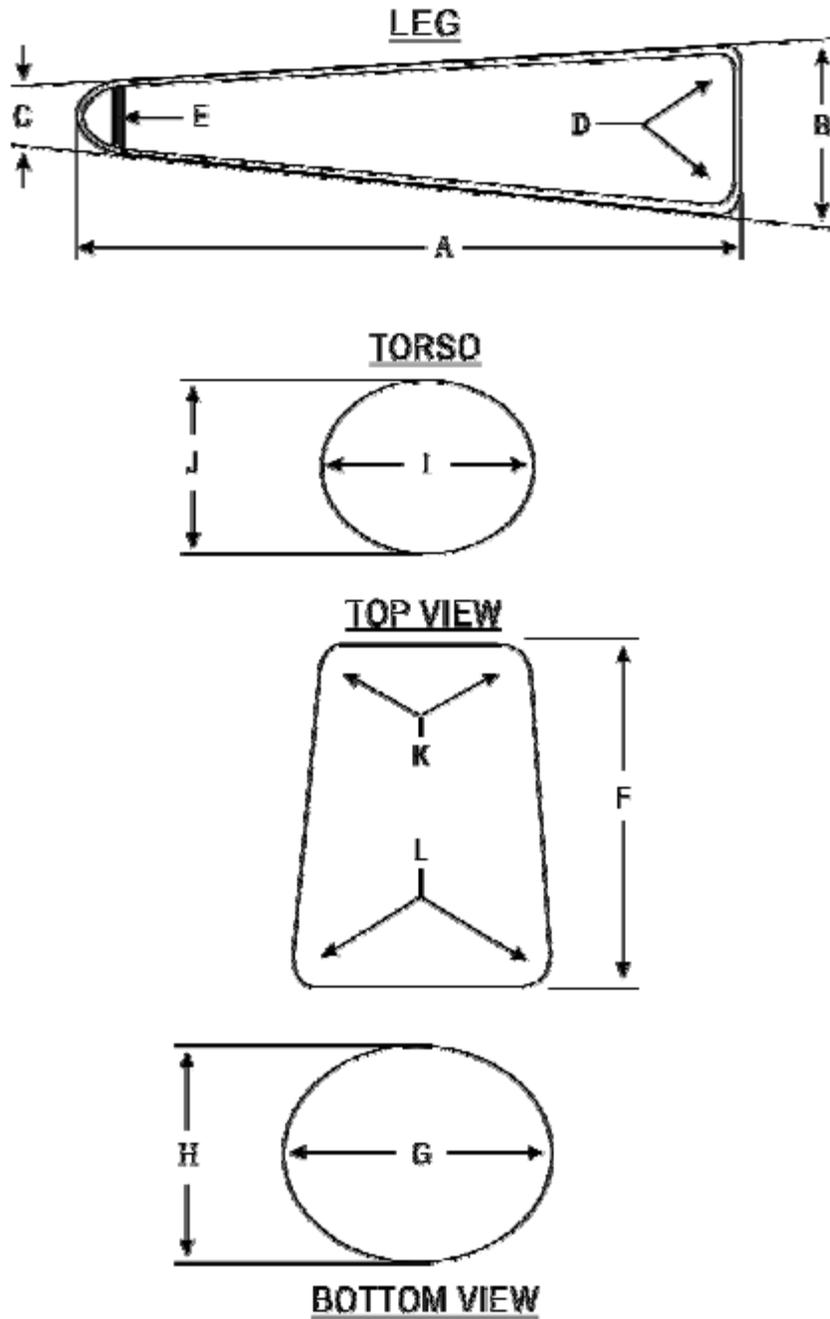


FIGURE 10. Directional line.

MIL-DTL-0083406D(USAF)



DIMENSIONS B AND C ARE DIAMETERS

FIGURE 11. Inanimate models.

MIL-DTL-0083406D(USAF)

5. PACKAGING**5.1 Packaging.**

For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2.). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or within the military service's system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use.

The anti-g garment covered by this specification is intended to be worn by fighter aircraft pilots to counteract positive head to foot G forces. The extreme g-forces experienced by fighter aircraft pilots makes this a critical life support item as well as a military unique item.

6.2 Acquisition requirements.

Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. Size required (see 1.2).
- c. When first article is required (see 3.2).
- d. Whether plan A, B, or C testing is required (see 4.5.2).
- e. Packaging requirements (see 5.1).

6.3 Qualification.

With respect to products requiring qualification, awards will be made only for products which are, at the time of award of contract, qualified for inclusion in the applicable Qualified Products Database (QPD), 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 orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from 642nd CBSG/GBEA, Robins AFB, GA, 31088.

6.4 Color samples.

Samples of color shades can be obtained from the engineering support activity or as directed by the contracting officer.

6.5 Test samples.

The test methods described in 4.6.3 for endurance and in 4.6.8 for bond strength (bladder), which are required for the sampling inspection specified in 4.5.3.2 and 4.5.3.3, are destructive tests. Since these tests are destructive, the anti-g garments selected and tested in accordance with 4.5.3.2 and 4.5.3.3 should not be included in the quantities of serviceable finished end

MIL-DTL-0083406D(USAF)

items required. The anti-g garments selected as samples and subjected to the endurance test should be delivered to the engineering support activity. The bladders selected as samples and subjected to the bond strength (bladder) test should not be delivered.

6.7 Government-furnished property.

The contracting officer should arrange to furnish the patterns listed in 3.11.

6.8 Adhesive source.

UR-1092 Clifton Adhesive Part No. 7531037; 282 Burgess Place, Wayne, NJ 07474-0282

6.9 Shelf-life.

This specification covers items where the assignment of a Federal shelf-life code is a consideration. Specific shelf-life requirements should be specified in the contract or purchase order, and should include, as a minimum, shelf-life code, shelf-life package markings in accordance with MIL-STD-129 or FED-STD-123, preparation of a materiel quality storage standard for type II (extendible) shelf-life items, and a minimum of 85 percent of shelf-life remaining at time of receipt by the Government. These and other requirements, if necessary, are in DoD 4140.27-M, Shelf-life Management Manual. The shelf-life codes are in the Federal Logistics Information System (FLIS) Total Item Record. Additive information for shelf-life management may be obtained from DoD 4120.27-M, or the designated shelf-life Points of Contact (POC). The PoC should be contacted in the following order: (1) the Inventory Control Points that manage the item and (2) the DoD Service and Agency administrators for the DoD Shelf-Life Program. Appropriate PoCs for the DoD Shelf-Life Program can be contacted through the DoD Shelf-Life Management website: <https://www.shelflife.hq.dla.mil/>.

6.9 Subject term (key word) listing.

- Aramid
- Bladder
- Bond strength
- Critical life support item
- High temperature storage
- Inflation tube assembly
- Low temperature storage

6.10 Changes from previous issue.

Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

CONCLUDING MATERIAL

Custodian:

Air Force - 11

Preparing Activity:

Air Force – 11

(Project 8475-2010-001)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.daps.dla.mil>.