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MIL-P-6640C
13 November 1967
SUPERSEDING
MIL-P-6640B
6 August 1958

MILITARY SPECIFICATION

PNEUMATIC BAG, AIRCRAFT LIFTING, 12 TON CAPACITY, TYPE F-2

This specification is mandatory for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 This specification covers one type of aircraft lifting pneumatic bag, designated type F-2.

2. APPLICABLE DOCUMENTS

2.1 The following documents of the issue in effect on date of invitation for bids or request for proposal, form a part of the specification to the extent specified herein.

SPECIFICATIONS

Federal

V-T-276	Thread; Cotton
ZZ-H-500	Hose, Rubber, And Hose Assemblies, Rubber; Pneumatic (Braided Or Wrapped)
CCC-C-428	Cloth, Cotton, Duck, Fire, Water, Weather And Mildew Resistant
PPP-B-601	Boxes, Wood, Cleated-Plywood

Military

MIL-P-116	Preservation, Methods Of
MIL-B-371	Braid, Textile (Cotton, Tubular)
MIL-W-530	Webbing, Textile, Cotton, General Purpose, Natural Or In Colors
MIL-D-1000	Drawings, Engineering And Associated Lists
MIL-C-26712	Cloth, Coated, Nylon, Chloroprene-Coated

STANDARDS

Federal

FED-STD-595	Colors

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Military

MIL-STD-105	Sampling Procedures And Tables For Inspection By Attributes
MIL-STD-129	Marking For Shipment And Storage
MIL-STD-130	Identification Marking Of US Military Property
MIL-STD-143	Specifications And Standards Order Of Precedence For The Selection Of
MIL-STD-831	Test Reports, Preparation Of
MIL-STD-1186	Cushioning, Anchoring, Bracing, Blocking And Waterproofing; With Appropriate Test Methods
MS22040	Adapter, Parachute, Harness Quick Fit

DRAWINGS

Air Force

48C7171	Bag Assembly - Lifting Aircraft Pneumatic Type F-2

(Copies of specifications, standards, drawings, and publications required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following document forms a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.

Consolidated Classification Committee

Consolidated Freight Classification Rules

(Application for copies should be addressed to the Consolidated Classification Committee, 202 Chicago Union Station, Chicago, Ill. 60606.)

3. REQUIREMENTS

3.1 Preproduction testing. This specification makes provisions for preproduction testing.

3.2 Components. The pneumatic bag shall consist of the following major components:

Description	See Requirement
a. Bag	3.8
b. Outlets	3.9
c. Handles	3.10
d. Lacing band	3.11

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Description	See Requirement
e. Hose	3.12
f. Tarpaulin	3.13

3.3 General. The requirements of Drawing 48C7171 apply as requirements of this specification with the exceptions and deletions specified herein. When the drawing and this specification conflict, this specification shall govern.

3.4 Selection of specifications and standards. Specifications and standards for necessary commodities and services not specified herein shall be selected in accordance with MIL-STD-143, except as specified in 3.4.1 and 3.4.2.

3.4.1 Commercial parts. Commercial parts having suitable properties may be used where, on the date of invitation for bids, there are no suitable standard parts. In any case, commercial utility parts, such as screws, bolts, nuts, and cotter pins, having suitable properties may be used provided:

a. They can be replaced by the standard parts (MS or AN) without alteration.

b. The corresponding standard part numbers are referenced in the parts list and, if practical, on the contractor's drawings.

3.4.2 Standard parts. With the exception specified in 3.4.1, AN and MS standard parts shall be used where they suit the purpose. They shall be identified on the drawings by their part numbers.

3.5 Materials.

3.5.1 Protective treatment. When materials are used in the construction of the pneumatic bag that are subject to deterioration when exposed to climatic and environmental conditions likely to occur during service usage, they shall be protected against such deterioration in a manner that will in no way prevent compliance with the performance requirements of this specification. The use of any protective coating that will crack, chip, or scale with age or extremes of climatic and environmental conditions shall be avoided.

3.6 Design and construction. The pneumatic bag shall be designed and constructed so that no parts will work loose in service. It shall be built to withstand the strains, jars, vibrations, and other conditions incident to shipping, storage, installation, and service.

3.6.1 Adjustments and repairs. The pneumatic bag shall be constructed so that adjustments and repairs can be easily made by the personnel of operating units and overhaul bases without the use of special tools.

3.7 Performance. The pneumatic bag shall be capable of satisfactory operation after being subjected to the following:

3.7.1 Each bag shall be capable of passing the test specified in 4.6.2 throughout temperatures ranging from -65° to +160° Fahrenheit (F).

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3.7.2 Pressure. The pneumatic bag shall be so constructed that when inflated to a pressure of 3.5 pounds per square inch (psi) and confined at the top and bottom by two rigid plates spaced 5 feet 6 inches apart, the pressure at the end of 1/2 hour shall be not less than 2.5 psi.

3.7.3 There shall be no indication of failure when the pneumatic bag is confined at the top and bottom by two paralled rigid plates spaced 5 feet 6 inches apart at a pressure of 4.5 psi for not less than 2 minutes.

3.8 Bag. Each bag shall be of one-ply construction. The total weight, including the tarpaulin cover, shall not exceed 225 pounds. The ply shall consist of a layer of nylon cloth conforming to MIL-C-26712.

3.9 Outlets. Two outlets shall be provided on each bag and shall be located as shown on Drawing 48C7171. Each outlet shall be 4 inches in diameter and shall be provided with a sleeve of the same diameter and 24 inches long, attached to the outlet and extending outward, or other suitable outlet device acceptable to the procuring activity. Twelve inches of the sleeves shall be fabricated from the same material as used in the construction of the bag. The remaining 12 inches of the sleeves shall be constructed of a lighter weight material to facilitate tying the outlets. A 36-inch length of cotton cord conforming to MIL-B-371 shall be supplied with each outlet and means provided to prevent loss of the cord when not in use.

3.10 Handles. Each handle on the pneumatic bag shall be of sufficient strength to withstand a steady pull of not less than 200 pounds.

3.11 Lacing band. The rolled cord fabric used in the construction of the lacing band shall be high-quality tire cord treated with a rubber compound. The fabric of the band shall be of the same material as used in the bag.

3.12 Hose. A 50-foot length of hose, conforming to ZZ-H-500, shall be supplied with each pneumatic bag. Gaskets used at all connections shall be made of a low-temperature compound capable of passing the low temperature tests specified herein.

3.13 Tarpaulin. A tarpaulin, fabricated in accordance with Figure 1, shall be supplied with each pneumatic bag.

3.13.1 The tarpaulin fabric shall conform to type I, Number 6, of CCC-C-428. The cotton webbing straps with MS22040 adapters shall be 1 1/2 inches in width and shall conform to MIL-W-530, type II. The thread shall conform to type IBI, four-ply cord, ticket Number 16 of V-T-276.

3.13.2 The color of the tarpaulin and straps shall be olive drab, color 34087, of FED-STD-595.

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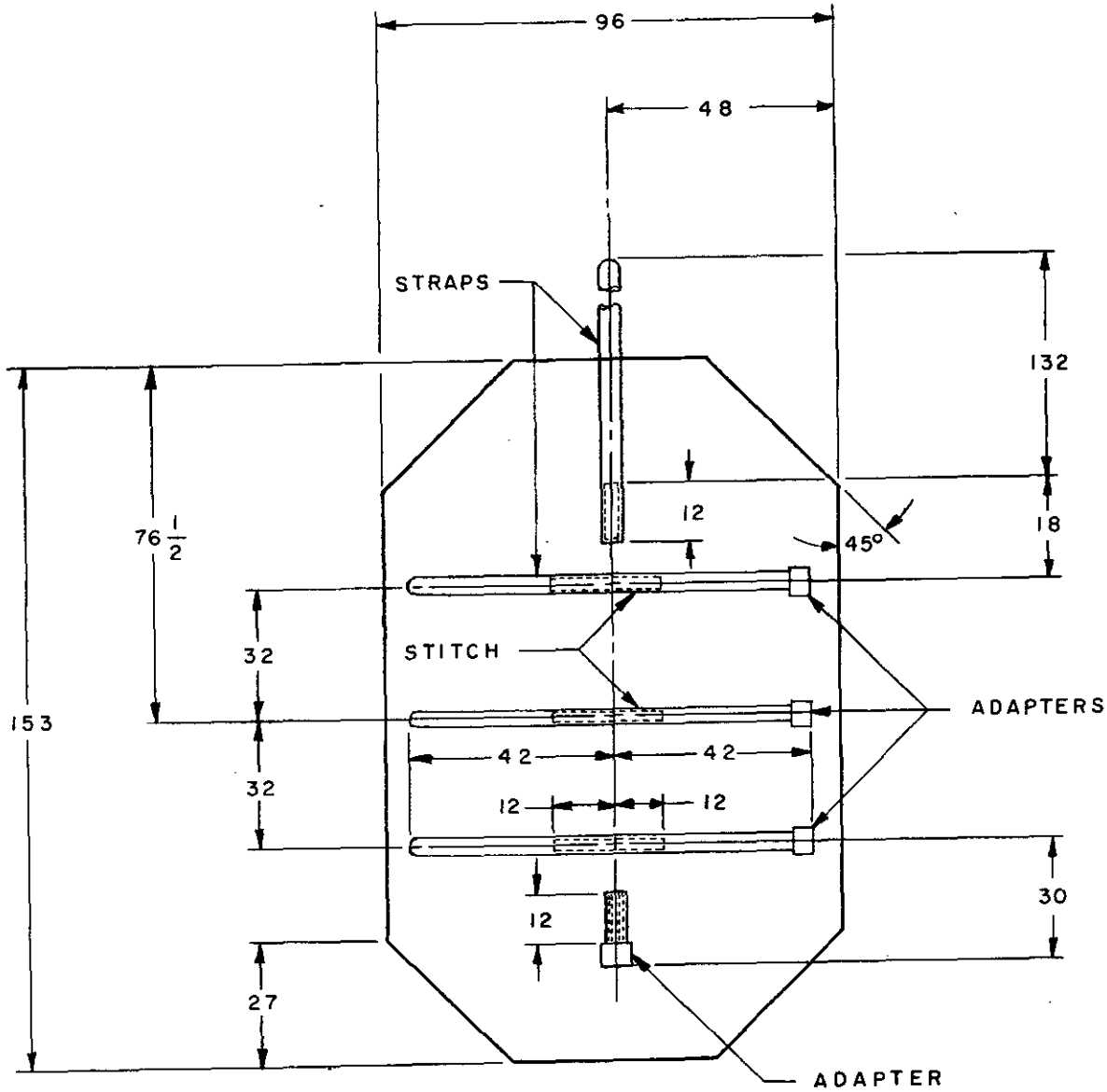

DIMENSIONS IN INCHES. UNLESS OTHERWISE SPECIFIED,
TOLERANCES: FRACTIONS $\pm \frac{1}{16}$, ANGLES $\pm$ 2 DEGREES

FIGURE 1. TARPAULIN COVER

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3.14 Interchangeability. All parts having the same manufacturer's part number shall be directly and completely interchangeable with each other with respect to installation and performance. The drawing number requirements of MIL-D-1000 shall govern changes in the manufacturer's part numbers.

3.15 Color. The color of the pneumatic bag shall be black.

3.16 Markings. The pneumatic bag and tarpaulin shall be durably and legibly marked in the following manner, using yellow paint, color 33538, of FED-STD-595:

3.16.1 Over and under the inlet and outlet of the pneumatic bag, "Inlet" and "Outlet" shall be stenciled respectively, using 1-inch letters.

3.16.2 The following caution shall be stenciled on any two opposite sides of the bag, using 2-inch letters for "Caution" and 1-inch letters for the remainder:

CAUTION:

ALL TRACES OF OIL OR GREASE SHALL BE REMOVED WITH GASOLINE IMMEDIATELY UPON DETECTION.

DO NOT USE THIS BAG FOR LOADS IN EXCESS OF 12 TONS.

3.17 Identification of product. Equipment assemblies, and parts shall be marked for identification in accordance with MIL-STD-130.

3.18 Workmanship.

3.18.1 General. The pneumatic bag, including all parts and accessories, shall be fabricated and finished in a thoroughly workmanlike manner. The wearing surface shall be free from blemishes such as knots and loose plies, and shall present a comparatively uniform surface free from excessive irregularities.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own facilities or any commercial laboratory acceptable to the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

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4.2 Classification of tests. The inspection and testing of the pneumatic bag shall be classified as follows:

a. Preproduction tests . . . . . see 4.4

b. Acceptance tests . . . . . see 4.5

4.3 Test conditions.

4.3.1 Atmospheric conditions. Unless otherwise specified, tests shall be made at atmospheric pressure (approximately 29.92 inches mercury) and at room temperature (approximately 77°F). When tests are made with atmospheric pressure or room temperature differing materially from the above values, proper allowance shall be made for the difference from the specified condition.

4.3.1.1 Records. Notes shall be placed on the log sheets of all incidents of the tests, such as adjustments made, leaks, blisters, or any other irregular functioning of the pneumatic bag and the corrective measures taken.

4.4 Preproduction tests.

4.4.1 Test samples. The preproduction test sample shall consist of one pneumatic bag representative of the production equipment. It shall be tested at a laboratory designated by the procuring activity or, when so stated in the contract, at the contractor's plant under the supervision of the procuring activity.

4.4.2 Test report. When the tests are conducted at a location other than the laboratory of the procuring activity, a test report in accordance with MIL-STD-831 shall be furnished that activity.

4.4.3 Tests. The preproduction tests shall consist of all the tests described under 4.6. Failure of the sample to pass any of these tests shall be cause for rejection.

4.5 Acceptance tests. Acceptance tests shall consist of:

a. Individual tests

b. Sampling plan and test

4.5.1 Individual tests. Each pneumatic bag shall be subjected to the following tests, as described under 4.6. Failure to pass any one of the tests shall be cause for rejection.

a. Examination of product

b. Inflation

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4.5.2 Sampling plan and test.

4.5.2.1 Lot. A lot shall consist of pneumatic bags manufactured under essentially the same conditions and submitted for inspection at substantially the same time.

4.5.2.2 Sampling plan. One pneumatic bag shall be selected at random from each lot of twenty-five or fraction thereof on the order and subjected to the test specified in 4.6.3. Failure of any pneumatic bag to pass this test shall necessitate the testing of each pneumatic bag of the entire lot.

4.5.2.2.1 Rejection and retest. When one or more pneumatic bags from a lot fail to meet the specification, acceptance of all pneumatic bags in the lot shall be withheld until the extent and cause of failure are determined. After corrections have been made, all necessary tests shall be repeated.

4.5.2.2.2 Individual tests may continue. For production reasons, individual tests may be continued pending the investigation of a sampling test failure. Final acceptance of the entire lot shall not be made until it is determined that the lot meets all the requirements of the specification.

4.5.2.2.3 Defects in pneumatic bags already accepted. The investigation of a test failure could indicate that defects may exist in pneumatic bags already accepted. If so, the contractor shall fully advise the procuring activity of all defects likely to be found and methods of correcting them.

4.6 Test methods.

4.6.1 Examination of product. The pneumatic bag shall be inspected to determine compliance with the requirements specified herein with respect to materials, dimensions, workmanship, and marking.

4.6.2 Inflation. The pneumatic bag shall be inflated to a pressure of 3.5 psi while confined at top and bottom by parallel plates spaced 5 feet 6 inches apart. After standing for not less than 1/2 hour, the drop in pressure shall not exceed 1 psi.

4.6.2.1 During the test specified in 4.6.2, one handle shall be tested by applying a force of not less than 200 pounds on the handle at right angles to the edge and side of the pneumatic bag.

4.6.3 Proof pressure test. The pneumatic bag shall be confined at the top and bottom by rigid parallel plates spaced 5 feet 6 inches apart and inflated to 4.5 psi and held at that pressure for not less than 2 minutes. The pneumatic bag shall be examined for any indications of failure.

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4.6.4 Low temperature. The pneumatic bag shall be deflated, strapped inside the tarpaulin, and placed in an atmosphere of -65° ±2°F. After exposure for 48 hours and while still maintained at -65°F, the bag shall be unrolled and inflated at a rate not to exceed 6 cubic feet per minute to a pressure of 3.5 psi while confined at the top and bottom by two rigid parallel plates spaced 5 feet 6 inches apart. The pneumatic bag shall then be inspected for evidence of cracking, flaking, or leaking of air.

4.6.5 High temperature. The pneumatic bag shall be deflated, strapped inside the tarpaulin cover, and placed in an atmosphere of +160 ±2°F. After exposure for 50 hours, the bag shall be removed from the test chamber, inspected for signs of adhesion or exudation, and inflated to a pressure of 3.5 psi while confined at the top and bottom by two rigid parallel plates spaced 5 feet 6 inches apart.

4.7 Examination of preparation for delivery requirements. An examination shall be made to determine that preservation and packaging requirements of Section 5 are complied with. The sample unit shall be one pneumatic bag fully prepared for delivery with the exception that it need not be sealed. The lot shall be the number of pneumatic bags prepared for delivery at one time. Sampling shall be in accordance with MIL-STD-105, Inspection Level S-2 with an acceptable quality level (AQL) of 2.5.

5. PREPARATION FOR DELIVERY

5.1 Preservation and packaging.

5.1.1 General. To prevent the folds of the bags from sticking together, the bags shall be dusted with talc before packaging.

5.1.2 Level A. Pneumatic bags shall be preserved and packaged in accordance with MIL-P-116, Method III.

5.1.3 Level C. Pneumatic bags shall be preserved and packaged in accordance with the manufacturer's commercial practice.

5.2 Packing.

5.2.1 Level A. Each pneumatic bag and component part preserved and packaged as specified in 5.1 shall be packed in a container conforming to PPP-B-601, Style A, overseas type.

5.2.2 Level B. Each pneumatic bag and component part preserved and packaged as specified in 5.1 shall be packed in a container conforming to PPP-B-601, Style A, domestic type.

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

5.3 Physical protection. Cushioning, blocking, and bracing of shipping containers shall be in accordance with MIL-STD-1186. Free-fall drop tests shall be in accordance with MIL-STD-1186. The tests are not required when level C packing is specified.

5.4 Marking. Interior and exterior containers shall be marked in accordance with MIL-STD-129. The nomenclature shall be as follows:

PNEUMATIC BAG, AIRCRAFT LIFTING, 12 TON CAPACITY, TYPE F-2

6. NOTES

6.1 Intended use. The Type F-2 pneumatic bag covered by this specification is intended for use in lifting crashed aircraft, and where the use of standard jacks is not practical.

6.2 Ordering data. Procurement documents should specify the following:

a. Title, number, and date of this specification.

b. Level of preservation, packaging and packing required.

c. Point of testing. (see 4.4)

6.3 Identification of changes. Asterisks are not used in this revision to identify changes with respect to the previous issue, due to the extensiveness of the changes.

Custodians:
Army - AV
Navy - AS
Air Force - 82

Review Activities:
Army - AV
Navy - AS
Air Force - 82

Preparing Activity:
Air Force - 82

Project No. 1730-0060

Code N

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SPECIFICATION ANALYSIS SHEET

Form Approved Budget Bureau No. 119-R004

INSTRUCTIONS

This sheet is to be filled out by personnel either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity.

SPECIFICATION

ORGANIZATION

CITY AND STATE

CONTRACT NO.

QUANTITY OF ITEMS PROCURED

DOLLAR AMOUNT

$

MATERIAL PROCURED UNDER A

☐ DIRECT GOVERNMENT CONTRACT ☐ SUBCONTRACT

1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?

A. GIVE PARAGRAPH NUMBER AND WORDING.

B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES.

2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID

3. IS THE SPECIFICATION RESTRICTIVE?

☐ YES ☐ NO IF "YES", IN WHAT WAY?

4. REMARKS (*Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity*)

SUBMITTED BY (*Printed or typed name and activity*)

DATE

DD FORM 1426
1 APR 63

REPLACES NAVSHIPS FORM 4863, WHICH IS OBSOLETE

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