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MIL-H-1237C
26 March 1962
SUPERSEDING
MIL-H-001237B(SHIPS)
10 December 1959
MIL-H-1237A
27 June 1950

MILITARY SPECIFICATION

HINGES, BUTT (FOR SHIPBOARD USE)

This specification has been approved by the Department of Defense and is mandatory for use by the Army, the Navy, and the Air Force.

1. SCOPE

1.1 Scope. - This specification covers butt hinges for general shipboard applications.

1.2 Classification. - Hinges shall be of the following types, classes and styles as specified (see 6.2):

Type

Type I - Fast-pin, flush or oval ends, with holes, swaged.
Type II - Loose-pin, button-tipped, with holes, swaged.
Type III - Fast-pin, flush or oval ends, without holes, swaged.
Type IV - Fast-pin, flush or oval ends, with holes not swaged.
Type V - Fast-pin, flush or oval ends, with holes, swaged (heavy).
Type VI - Fast-pin, flush or oval ends, with holes, not swaged (heavy).
Type VII - Fast-pin, flush or oval ends, without holes, not swaged.

Class

Class 1 - Wrought brass hinge with corrosion-resisting steel (CRES) pin.
Class 2 - Wrought aluminum hinge
  Group a - With CRES bushing and hard brass pin.
  Group b - With CRES wafers and CRES pin.
Class 3 - Wrought steel hinge.
  Group a - With hard brass.
  Group b - With CRES steel pin.

Style

Style A - Without nylon shoulder bushings (for type II, class 1, 3-1/2 by 3-inch hinges only).
Style B - With nylon shoulder bushings (for type II, class 1, 3-1/2 by 3-inch hinges only).

2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issue in effect on date of invitation for bids, form a part of this specification to the extent specified herein:

SPECIFICATIONS

MILITARY
MIL-S-933 - Screws, Machine, Cap and Set; and Nuts.
MIL-H-22173 - Hardware, Builders, Packaging and Packing of.

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

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2.2 Other publications. - The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids shall apply.

AMERICAN SOCIETY FOR TESTING MATERIALS
A245-58 - Specification for Flat Rolled Carbon Steel Sheets of Structural Quality (Tentative).
B-121-55 - Specification for Leaded Brass Plate, Sheet, Strip, and Rolled Bar.
B209-58 - Specification for Aluminum-Alloy Sheet and Plate (Tentative).

(Copies may be purchased directly from the American Society for Testing Materials, 1916 Race Street. Philadelphia 3, Pennsylvania.)

OFFICIAL CLASSIFICATION COMMITTEE
Uniform Freight Classification Rules.

(Application for copies should be addressed to the Official Classification Committee, 1 Park Avenue at 33rd St., New York 16, N. Y.)

3. REQUIREMENTS

3.1 Material. -

3.1.1 Hinges. - Hinges and screws shall be made of brass conforming to Specification ASTM-B121-55 (any alloy) annealed, or steel, conforming to Specification ASTM-A245-58, grade A, or aluminum conforming to Specification ASTM-B209-58. The use of equivalent brass, steel or aluminum alloy is acceptable. Where wrought materials are specified, it shall be construed as including rolled, forged, or extruded material.

3.1.2 Pins. - Pins shall be made of corrosion resisting steel conforming to American Iron and Steel and Steel Institute type 302, 303, or 305 for class 1 and 2 hinges, CRES conforming to AISI type 430 or hard brass rod conforming to Specification ASTM-B121-55 (any alloy) annealed for class 3 hinges.

3.1.3 Button tips. - Button tips for steel hinges shall be made of brass.

3.2 Knuckles. - Hinges shall have five knuckles, which shall fit snugly and have no lost motion.

3.3 Hinge sizes. - Hinge sizes as specified (see 6.2), shall be as shown in table I and shall conform to figure 1. Hinges not swaged shall be slightly less in width.

Table I - Thickness of metal and size of screws. 1/

Size		Required thickness of metal 2/				Screw 3/	
Length (inches)	Width, open (inches)	Types				Length	Nominal size
		I	II, III	IV, VII	V and VI		
		Inch	Inch	Inch	Inch	Inch	
1-1/2	1-1/4, 2	0.074	0.074	0.074	-----	1/2	6 - 32
2	1-1/2, 2, 2-1/2	.082	.082	.082	0.107	1/2	8 - 32
2-1/2	2, 2-1/2	.089	.089	.089	.119	1/2	8 - 32
3	2, 2-1/2, 3, 4	.092	.092	.092	.130	1/2	10 - 24
3-1/2	3	.123	.123	.123	.146	1/2	10 - 24
3-1/2	3-1/2	.123	.123	.123	.146	1/2	10 - 24
4	4	.130	.130	.130	.160	1/2	12 - 24

1/ On butt hinges where 2 dimensions are given the first indicates the length of joint (not including tips) and the second the full width when open.
2/ A tolerance of plus or minus 0.005 inch will be permitted.
3/ Screws shall be in accordance with Specification MIL-S-933, or commercial equivalent. Screws shall be the same metal as hinge except for aluminum hinges which will be furnished with CRES screws (see 3.11).

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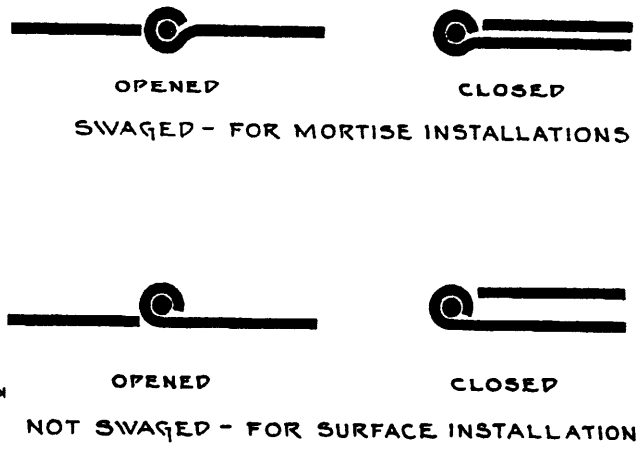

Figure 1 - Hinge applications.

3.4 Screw holes. -

3.4.1 Screw holes for hinges 2 inches in length and smaller shall conform to the dimensions shown in table II and conform to figure 2.

Table II - Screw holcs for hinges 2 inches in length and smaller.

Size		Dimensions				
Length	Width. open	A	B	C	D	E
Inches	Inches	Inches	Inches	Inches	Inch	Inch
1-1/2	1-1/4	1.25	1.50	1.0	0.25	0.171
1-1/2	2	2.0	1.50	1.0	.25	.312
2	1-1/2	1.50	2.0	1.375	.312	.250
2	2	2.0	2.0	1.375	.312	.312
2	2-1/2	2.50	2.0	1.375	.312	.312

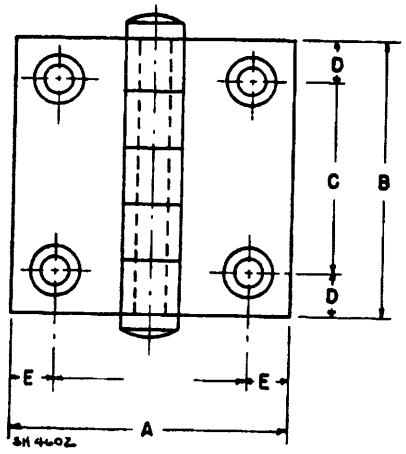

Figure 2 - Lay-out for table II hinges.

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3.4.2 Screw holes for hinges 2-1/2 to 3-1/2 inches inclusive. in length shall conform to the dimensions shown in table III and conform to figure 3.

Table III - Screw holes for hinges 2-1/2 to 3-1/2 inches inclusive.

Size		Dimensions					
Length	Width, open	K	L	M	N	P	R
Inches	Inches	Inches	Inches	Inch	Inches	Inch	Inch
2-1/2	2	2.0	2.5	0.312	0.938	0.320	0.320
2-1/2	2-1/2	2.5	2.5	.312	.938	.516	.320
3	2	2.0	3.0	.312	1.188	.312	.312
3	2-1/2	2.5	3.0	.312	1.188	.580	.312
3	3	3.0	3.0	.312	1.188	.580	.312
3	4	4.0	3.0	.312	1.188	.580	.312
3-1/2	3	3.0	3.5	.355	1.395	.687	.360
3-1/2	3-1/2	3.5	3.5	.355	1.395	.687	.360

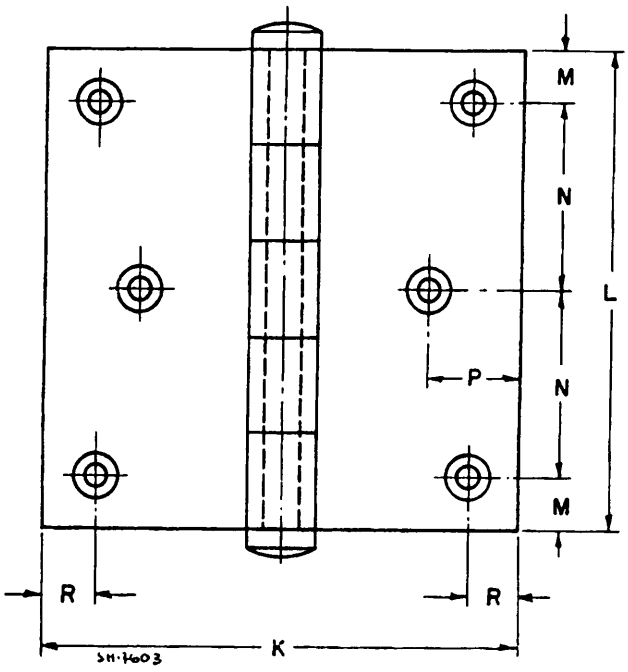

Figure 3 - Lay-out for table III hinges.

3.4.3 Screw holes for hinges 4 by 4 inches shall conform to figure 4.

3.5 Countersunk screw holes. - The countersunk part of screw holes in butt shall form a good seat for the screw heads with no sharp edges at the back.

3.6 Fastening. - Hinges shall be furnished with all necessary screws for proper application. Screw sizes specified are the minimum acceptable.

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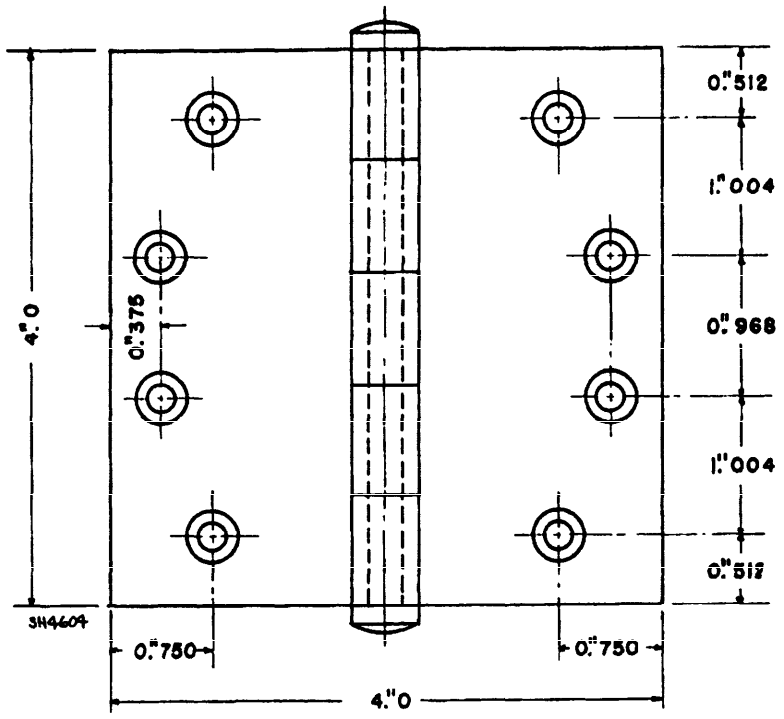

Figure 4 - Lay-out for 4 or 4-inch hinges.

3.7 Button tips. - Button tips shall be of the cylindrical type having a square shoulder approximately 1/8 inch high flush with the barrel of the butt hinge.

3.8 Finish. -

3.8.1 Class 1. - Unless otherwise specified, brass hinges, tips, and screws shall be satin nickel finished 0.0002 inch thick. Type II, class 1, styles A and B, 3-1/2- by 3-inch hinges and screws shall have a dull chrome US 26D finish.

3.8.2 Class 2. - After manufacture, aluminum hinges and tips shall be satin finished and given a commercial anodized treatment. The anodic treatment shall provide a coating of aluminum oxide not less than 0.0004 inch thick to obtain the necessary hardness and positive protection against corrosion (see 4.4.1). The anodic coating shall be continuous, smooth, adherent, uniform in appearance and shall be free from powdery areas, discontinuities such as breaks and scratches or other damage. The size and number of contact marks shall be at a minimum consistent with good practice (see 4.3).

3.8.3 Class 3. - After manufacture steel hinges and screws shall be zinc coated with a minimum thickness of 0.0005 inch of zinc. The zinc coated hinges shall be treated with a phosphate solution (see 4.4.2). The zinc coating shall have a reasonably bright appearance and shall be smooth, continuous, adherent and substantially free from injurious blisters, lumps, gritty areas, acid spots, dross warts, flux and excess zinc on the edges or in locations which will interfere with the operation of the hinge (see 4.3).

3.9 Types I, III, IV, V, VI and VII. - The pins of types I, III, IV, V, VI, and VII hinges shall be finished flush with the ends of the knuckles or with oval tips.

3.10 Types I, II, III, and V. - The leaves on types I, II, III, and V hinges, where closed parallel, shall have a clearance of 1/16 inch, with the exception of 3-1/2 by 3-inch size, which shall have a clearance of 1/8 inch.

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3.11 Types I and II. - Machine screws for types I and II hinges shall be flat undercut-head, National coarse thread series, class 2, free fit, in accordance with Specification MIL-S-933 or commercial equivalent. Type II, class 1, style B, 3-1/2- by 3-inch hinges shall be drilled and countersunk for eight No. 10-24 screws and shall be fitted with nylon or CRES shoulder bushings in each hinge knuckle, when ordered for metal joiner doors.

3.12 Types I, II, III, IV, and VII aluminum hinges only. -

3.12.1 Types I, II, III, IV, and VII aluminum hinges, 3 inches and up, shall be fitted with a CRES bushing extending the entire length of each knuckle. The hinges fitted with CRES bushings shall be fitted with hard brass pins.

3.12.2 Types, I, III, IV, and VII aluminum hinges below the 3-inch size shall have CRES wafers fitted between the knuckles.

3.13 Type II. -

3.13.1 Type II hinges, size 3-1/2 inches and up, shall have a nonrising pin feature.

3.13.2 The upper tip of type II hinges shall be firmly secured to the end of the pin. The lower tip shall be firmly secured to the lower knuckle.

3.14 Workmanship. - The workmanship shall be first class in every respect. The metals shall be free from imperfections. The finishes shall be smooth without blemishes. The edges shall be square and true without burrs. The pins shall fit neatly and the hinges operate freely.

4. QUALITY ASSURANCE PROVISIONS

4.1 Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. 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.

4.2 Sampling. -

4.2.1 Lot. - For purposes of sampling, examination and tests, a lot shall consist of all hinges of one type, class, style and size.

4.2.2 Sampling for examination and tests. - Sampling for examination and tests shall be in accordance with table IV.

Table IV - Sampling for visual and dimensional examination and tests AQL (approx.) = 2.5 percent defective.

Number of units in lot	Number of units in the sample	Acceptance number (defective)	Rejection number (defective)
1 to 8	3	0	1
9 to 25	5	0	1
26 to 40	7	0	1
41 to 65	10	0	1
66 to 110	15	1	2
111 to 300	25	1	2
301 to 500	35	2	3
501 to 800	50	3	4
801 to 1300	75	4	5
1301 and over	110	6	7

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4.3 Examination. - Each sample hinge selected in accordance with 4.2.2 shall be subjected to a thorough examination to determine conformance with the finish requirements of 3.8 and all other requirements of this specification not involving tests.

4.4 Test procedures. -

4.4.1 Anodizing test. - The thickness of the anodic coating shall be measured by either a magnetic or electronic instrument or by the chemical method of weighing an anodized hinge, removing the anodic treatment chemically and then weighing the hinge, then calculate the thickness of the aluminum oxide from the differences in weights as applied to the total surface area of the hinge. The specific gravity of aluminum oxide is 3.5.

4.4.2 Zinc coating test. - The thickness of the zinc metal shall be measured by the micrometer measurement, the microscopic test or by a magnetic or electronic instrument method. The chemical drop test is not acceptable for treated (phosphate) zinc coatings.

4.4.3 Nickel plating test. - The thickness of the nickel plating on the brass hinges shall be measured by the microscopic test method or an instrument method approved by the bureau or activity concerned.

4.5 Inspection of preparation for delivery. - The preservation, packaging, and marking shall be examined to determine conformance with the requirements of section 5 of this specification, and as required by specifications referenced therein.

5. PREPARATION FOR DELIVERY

5.1 Preservation, packaging and packing. - Hinges shall be preserved, packaged Level A or C and packed Level A, B or C as specified (see 6.2) in accordance with Specification MIL-H-22173.

6. NOTES

6.1 Intended use. - These hinges are primarily intended for shipboard use.

6.2 Ordering data. - Procurement documents should specify the following:

(a) Title, number, and date of this specification.
(b) Type, class and style of hinge required (see 1.2).
(c) Size of hinge required (see 3.3).
(d) Selection of applicable level of preservation, packaging and level of packing required (see 5.1).

6.3 Superseding data. - The relationship of the types of butt hinges covered in this specification, Specification MIL-H-001237B(SHIPS) and Specification MIL-H-1237A to the types covered in Specification MIL-H-1237 is as follows:

This specification, Specification, MIL-H-1237A and MIL-H-001237B(SHIPS)	Specification MIL-H-1237
Type I	Type A
Type II	Type B
Type III	------
Type IV	Type D
Type V	Type E
Type VI	Type F
Type VII	------

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Notice. - When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

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SPECIFICATION ANALYSIS SHEET
NAVSHIPS-4863 (8-61)

BUDGET BU. NO. 45-R309

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 Bureau of Ships

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 dotted lines on reverse side, staple in corner, and send to Bureau of Ships, Specifications and Standardization Branch, Washington 25, D.C.

SPECIFICATION

ORGANIZATION	CITY	STATE

CONTRACT NO.	QUANTITY OF ITEMS PROCURED	DOLLAR AMOUNT
		$

MATERIAL PROCURED UNDER A DIRECT GOVERNMENT CONTRACT ☐ OR A 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 THE ANSWER IS "YES", IN WHAT WAY?

4 REMARKS *(Attach any pertinent data which may be of use in improving this specification.)* PLACE THIS FORM AND PAPERS IN AN ENVELOPE AND SEND TO THE BUREAU.

SUBMITTED BY *(Print name and activity)*	DATE

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