MILITARY SPECIFICATION

Connector, Electrical, Mounting Device, Flange Type, General Specification for

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

1. SCOPE

1.1 Scope. This specification covers mounting flanges utilized for mounting flange type electrical connectors.

1.2 Classification. The mounting flange shall be of the following types, as specified (see 6.2):

Type I - Full mounting perimeter (heavy duty)
Type II - 3/4 mounting perimeter (medium duty)
Type III - 1/4 mounting perimeter (light duty)

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. Unless otherwise specified, the following specifications, standards, and handbooks of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation form a part of this specification to the extent specified herein.

SPECIFICATIONS

Federal

PPP-H-1581	Hardware (Fasteners and Related Items) Packaging of
QQ-A-250/4	Aluminum Alloy 2024, Plate and Sheet
QQ-A-250/11	Aluminum Alloy 6061, Plate and Sheet

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commanding Officer, ESSD, Code 93, Naval Air Engineering Center, Lakehurst, NJ 08733, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

SPECIFICATIONS (Continued)

Military

MIL-C-5541	Chemical Conversion Coatings on Aluminum and Aluminum Alloys
MIL-A-8625	Anodic Coatings for Aluminum and Aluminum Alloys
MIL-P-23377	Primer, Coating, Epoxy Polyamide, Chemical and Solvent Resistant
MIL-N-25027	Nut, Self-Locking, 250°F, 450°F, and 800°F, 125 KSI Ftu, 60 KSI Ftu, and 30 KSI Ftu (Asg)
MIL-N-45938	Nut, Plain, Self-Locking, Clinch and Nut, Clinch General Specification for
MIL-N-45938/7	Nut, Self-Locking, Clinch (Self-Clinching, Knurled Collar, Miniature, 450°F)

STANDARDS

Military

MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-889	Dissimilar Metals
MIL-STD-1344	Test Methods for Electrical Connectors

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

2.2 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

3. REQUIREMENTS

3.1 Specification sheets. The individual item requirements shall be as specified herein and in accordance with the applicable specification sheets. In the event of any conflict between the requirements of the specification and the specification sheet, the latter shall govern.

3.2 Materials. Materials shall be suitable for the purpose intended and as specified (see 3.1). When a definite material is not specified, a material shall be used which will enable mounting flanges with self-locking nuts to meet the performance requirements of this specification.

3.2.1 Dissimilar metals. When dissimilar metals are employed in intimate contact with each other, protection against electrolytic corrosion shall be provided as specified in MIL-STD-889.

3.3 Protective finish. Mounting flanges shall be alodine in accordance with MIL-C-5541. When required, two coats of a primer specified in MIL-P-23377D shall be applied.

3.4 Design and construction.

3.4.1 Mounting flanges. Mounting flanges shall be of a two piece construction with predrilled or punched holes in aluminum alloy sheet material, incorporating self-locking nuts as noted in specification sheets.

3.4.2 Dimensions. Dimensions and tolerances shall be as specified on the applicable specification sheets and shall apply after plating and prior to supplemental lubrication.

3.5 Installation. Mounting flanges shall be installed as noted in set-up Figure 1 herein. Installation forces shall be exerted so that the mounting flange will interface with the panel-flange type electrical connector.

3.6 Performance. Mounting flanges shall be designed to meet the performance requirements stated herein when tested in accordance with the specified methods of Section 4.

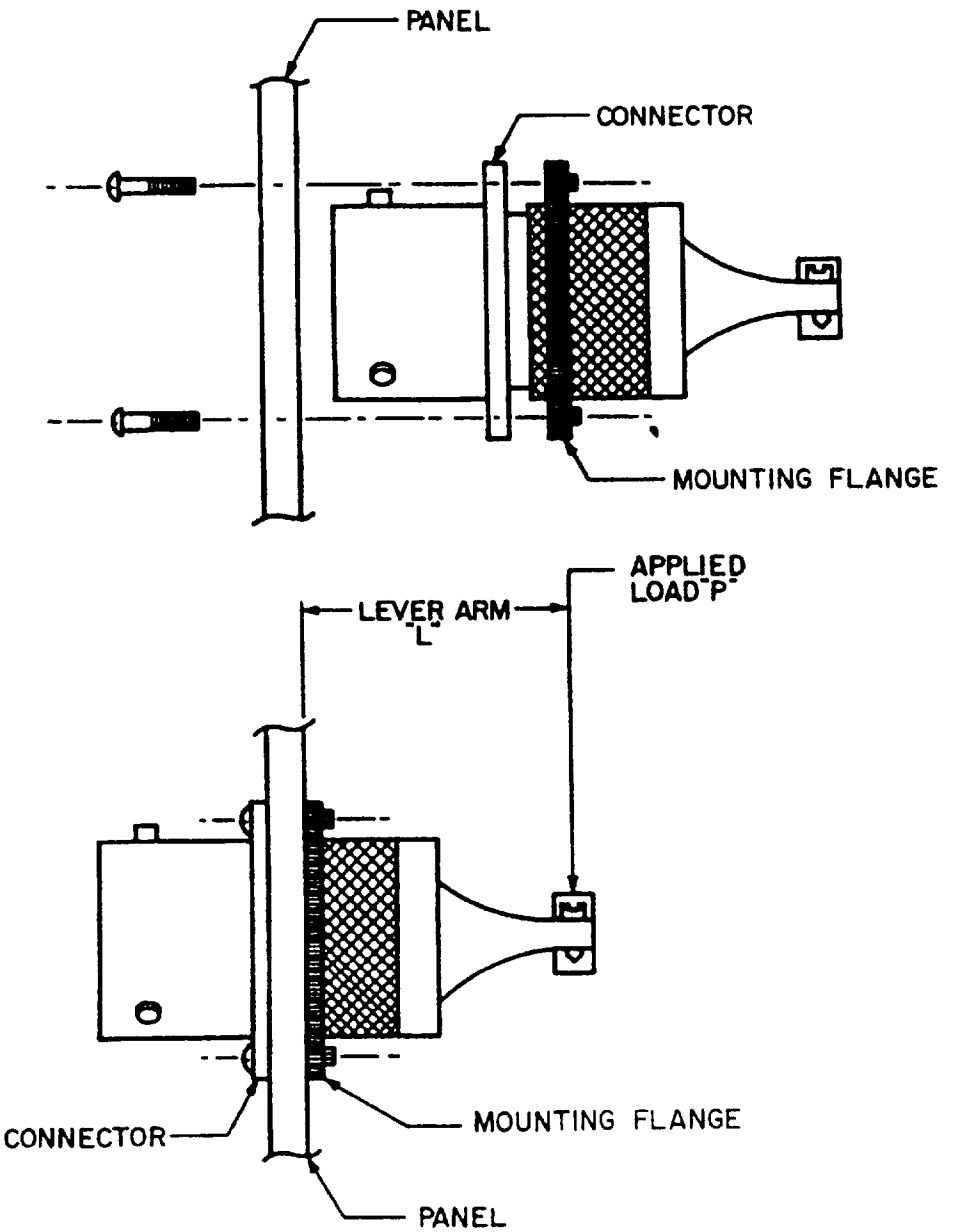
3.6.1 Vibration. Mounting flanges shall withstand the test conditions specified in 4.5.2.3.

3.6.2 External bending moments. When tested as specified in 4.5.2.4 herein, no evidence of damage detrimental to normal operation shall result. (See Figure 1.)

3.6.3 Locking torque. Locking torque tests shall be performed in accordance with 4.5.2.5.

3.6.4 Temperature cycling. Mounting flanges shall withstand the temperature environments specified in 4.5.2.6 with no adverse effects.

3.6.5 Salt spray (corrosion). The mounting flanges shall not show any adverse surface conditions when exposed to the salt spray environment specified in paragraph 4.5.2.7.



CONNECTOR CAN BE INSTALLED FROM EITHER SIDE OF PANEL HOWEVER, MOUNTING FLANGE IS INSTALLED ON BACK SIDE.

Figure 1. Installation - external bending moment test set-up.

3.7 Workmanship. Mounting flanges shall meet all design dimensions, interchangeability and intermateability requirements. Burrs, chipping of plating finish corrosion and surface contamination shall be adequate basis for rejection.

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 in the contract or order, the supplier may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.2 First article inspection. Products delivered under this specification shall be subjected to first article inspection. The tests shall be all those examinations and tests specified herein.

4.3 Inspection lot. A lot shall consist of completed mounting flanges which are of the same part number, produced by the same manufacturer under essentially the same conditions, and submitted for acceptance at one time.

4.4 Sampling for lot inspection.

4.4.1 Sampling for examination. A random sample of mounting flanges shall be taken from each lot in accordance with MIL-STD-105, Inspection Level I. The Acceptable Quality Level (AQL) shall be as specified in Table II.

4.4.2 Sampling for tests. Sampling for tests (installation, temperature cycling, salt spray, external bending moment and vibration) shall be in accordance with MIL-STD-105, Inspection Level S-1. The AQL shall be 2.5 percent defective.

4.4.2.1 Sampling for test of locking torque. Sampling for test of locking torque shall be in accordance with MIL-STD-105, Inspection Level S-2. The AQL shall be 2.5 percent defective.

4.4.3 Sampling for protective coating. Sampling for test of protective coatings shall be in accordance with the applicable specification.

4.4.4 Sampling for packaging and packing. Sampling for examination and test of packaging and packing shall be in accordance with PPP-H-1581.

4.5 Examinations and tests.

4.5.1 Examination of product. Each mounting flange taken as specified in 4.4.1 shall be examined to verify conformance with this specification. Examination shall be conducted in accordance with Table I. Each sample containing a defect shall be rejected and if the number of defective samples exceed the acceptance number, the lot represented by the sample shall be rejected.

TABLE I. Classification of defects.

Categories	Defects	Inspection Method
Critical	None defined	
Major A	AQL = 1.0 percent defective	
102	Material, not as specified (3.2)	Visual
Major B	AQL = 2.5 percent defective	
103	Dimensions, not as specified	*SIE
104	Threads, not as specified	SIE
Minor	AQL = 4.0 percent defective	
202	Protective coating, missing or incomplete	Visual
205	Workmanship (3.8)	Visual

*SIE = Standard Inspection Equipment

4.5.2 Tests.

4.5.2.1 Test panels. Test panels shall be of suitable thickness and hardness for the nut being tested, as specified in the applicable specification sheet.

4.5.2.2 Installation test. Samples taken as specified in 4.4.2 shall be installed in test panels specified in the applicable specification sheet. Installation shall be in accordance with 3.5. Properly installed samples shall be visually inspected under 10 diameters magnification. Evidence of cocking, looseness, splits or cracks shall be cause for rejection. When applicable, depth of embedment shall be measured using standard inspection equipment.

4.5.2.3 Vibration test. Samples taken as specified in 4.4.2 shall be subjected to a vibration test as specified in MIL-N-45938 to determine conformance to 3.6.1.

4.5.2.4 External bending moment (see 3.7.2). The mounting flange and accessories shall be mounted as in normal service to rigid panel as shown in Figure 1. The distance "L" from the point of load application "P" to the mounting panel shall be determined. The load to be applied to point "P" shall then be determined as the bending moment listed in Table II (see 3.1), divided by the level arm "L." This load shall be applied at a rate of approximately 10 pounds per second until the required load is achieved. The applied load shall be held for 1 minute, and then released. The load shall be applied as shown, in two axis 90° apart, at different times for straight and angled accessories.

TABLE II. Bending moment.

Heavy duty (Type I)		Medium duty (Type II)		Light duty (Type III)		
Shell size	Bending moment (lbs min)	Shell size	Bending moment (lbs min)	Shell size	Bending moment Clamp with saddle bars	(lbs min) Clamp w/out saddle bars
8,9	60	8,9	55	8,9	50	25
3,10,10SL,11	130	3,10,10SL,11	90	10,11	75	25
7,12,12S,13	270	7,12,12S,13	180	12,13	75	25
14,14S,15	300	14,14S,15	200	14,15	100	50
16,16S,17	370	16,16S,17	250	16,17	125	50
18,19,27	420	18,19,27	280	18,19	125	50
20,21,37	450	20,21,37	300	20,21	125	75
22,23	520	22,23	350	22,23	125	75
24,25,61	570	24,25,61	380	24,25	150	100
28	630	28	420	28	180	100
32	750	32	500	32	220	
36	810	36	540	36	230	
40	870	40	580	40	240	
44	930	44	620	44	280	
48	990	48	660	48	300	

4.5.2.5 Locking torque tests. Samples taken as specified in 4.4.2.1 shall be subjected to applicable locking torque test paragraphs specified in MIL-N-25027.

4.5.2.6 Temperature cycling test. Mounting flanges shall be subjected to the temperature cycling environments specified in MIL-STD-1344 except the sample and fixture shall be as shown in Figure 1 herein.

4.5.2.7 Salt spray. Samples taken as specified in 4.4.2.1 herein shall be subjected to the salt spray environment (Test Condition C, 500 hours duration) as specified in MIL-STD-1344.

4.5.2.8 Protective coating. Examination and test of protective coating shall be in accordance with the applicable specification 3.3.

5. PREPARATION FOR DELIVERY

5.1 Preservation and packaging. Preservation and packaging shall be level A or C, as specified (see 6.2), in accordance with PPP-H-1581.

5.2 Packing. Packing shall be level A, B or C, as specified (see 6.2), in accordance with PPP-H-1581.

5.3 Marking. Marking of unit packages and shipping containers shall be in accordance with PPP-H-1581.

6. NOTES

6.1 Intended use. Mounting flanges covered by this specification are intended to provide a more durable installation when mounting flange type electrical connectors.

6.2 Ordering data. Acquisition documents should specify the following:

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

b. Title, number and date of applicable specification sheets or military standard.

c. Applicable part number.

d. Selection of applicable levels of packaging and packing (5.1 and 5.2).

Custodians:
Army - CR
Navy - AS
Air Force - 85

Review activities:
Army - AR, MI
Navy - EC, SH
Air Force - 11, 99

User activities:
Army -
Navy -
Air Force -

Preparing activity:
Navy - AS
(Project No. 5935-3284)

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STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions – Reverse Side)

1 DOCUMENT NUMBER	2 DOCUMENT TITLE

3a. NAME OF SUBMITTING ORGANIZATION	4 TYPE OF ORGANIZATION *(Mark one)*
	☐ VENDOR
b ADDRESS *(Street, City, State, ZIP Code)*	☐ USER
	☐ MANUFACTURER
	☐ OTHER *(Specify)* _____

5 PROBLEM AREAS

a. Paragraph Number and Wording

b Recommended Wording

c Reason/Rationale for Recommendation

6 REMARKS

7a. NAME OF SUBMITTER *(Last, First, MI)* – Optional	b WORK TELEPHONE NUMBER *(Include Area Code)* – Optional
c MAILING ADDRESS *(Street, City, State, ZIP Code)* – Optional	8 DATE OF SUBMISSION *(YYMMDD)*

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