28 March 1977 Superseding MIL-R-81939A (AS) 16 August 1974

MILITARY SPECIFICATION

RACK, BOMB EJECTOR, AIRCRAFT; BRU-10, BRU-11, AND BRU-19 SERIES

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

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification establishes the requirements for the manufacture and inspection of three types of bomb racks capable of carrying and releasing stores having suspension lugs spaced 355.6 millimeters (14 inches) and 762 millimeters (30 inches) apart and weighing from 113.40 kilograms (250 pounds) to 1,814.36 kilograms (4,000 pounds). The test limits in this specification define minimum acceptable capabilities.

1.2 Classification. Bomb ejector racks, hereinafter called bomb racks, covered by this specification shall be of the following types:

Type I	BRU-10/A or BRU-10A/A Bomb Ejector Rack
Type II	BRU-1 l/A or BRU-I lA/A Bomb Ejector Rack
Type III	BRU-19/A or BRU-1 9A/A Bomb Ejector Rack

2. APPLICABLE DOCUMENTS

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

SPECIFICATIONS

Military

MIL-T-7743

Testing, Store Suspension and Release Equipment; General Specification for

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to:

ENGINEERING SPECIFICATIONS AND STANDARDS DEPARTMENT (CODE 93) NAVAL AIR ENGINEERING CENTER, LAKEHURST, N.J. 08733, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

FSC 1095

	MIL-C-81842	Connector Assemblies for Bomb Rack Electric Fuzing Provisions			
	MIL-H-85042	Hooks, Bomb Rack, General Specification for			
STANDA	RDS				
Mili	tary				
	MIL-STD-100	Engineering Drawing Practices			
	MIL-STD-129	Marking for Shipment and Storage			
	MIL-STD-130	Identification Marking of U.S. Military Property			
	MIL-STD-143	Standards and Specifications, Order of Precedence for the Selection of			
	MIL-STD-704	Electric Power, Aircraft, Characteristics and Utilization of			
	MIL-STD-794	Parts and Equipment, Procedure for Packaging and Packing of			
	MIL-STD-831	Test Reports, Preparation of			
	MS3314	Lug, Suspension, 453.6 Kg (1,000 lb.) class, Airborne Equipment			

DRAWINGS

Naval Air Systems Command

1380540 Lug, Suspension, Mk 3 Mod O

(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 Order of precedence of specifications end standards. Should a conflict exist between any requirement in this specification and any requirement in the applicable documents referenced herein, the requirements of this specification shall take precedence over the referenced (applicable) document.

3. **REQUIREMENTS**

3.1 First article. The bomb racks furnished under this specification shall be a product which has been inspected and passed the first article inspection specified herein (see 4.3).

3.2 Selection of specifications and standards. Specifications and standards for necessary commodities and services not specified herein shall be selected in accordance with MIL-STD-143.

3.3 Interchangeability. All parts having the same part number shall be directly and completely interchangeable with each other with respect to installation and performance.

3.4 Identification of parts. All parts shall be marked as specified on the drawings listed in the data list for the bomb rack being procured, or in accordance with MI L-STD-1 30, if not specified on the drawings. The item identification and part number requirements of MI L-STD-1OO shall govern the part number and changes thereto.

3.5 Bomb rack.

3.5.1 Construction. The construction of the bomb rack shall be in accordance with the drawings listed in the data list for the bomb rack being procured and as specified herein (see 6.2. 1g).

3.6.2 performance. The bomb racks shall satisfy all performance requirements when subjected to the following inspections in the order specified in Tables I and II.

- a. Electromechanical Component Inspection (4.6.1)
- b. Bomb Rack Inspection (4.6.2)
- c. Functional Test (4.6.3)
- d. Arming Mechanism (4.6.4)
- e. Electric Fuze Arming (4,6.5)
- f. Secondary Release (4.6.6)
- g. Manual Function (4.6.7a)
- h. Electrical Characteristics (4.6.7b)
- i. Lag Determination (4.6.7c)
- i. High-g Release (4.6.7d)
- k. Sand (4.6.7e)
- 1. Salt Spray (4.6.7f)
- m. Vibration Test (4.6.7g)
- n. Shock Test (4.6.7h)
- o. Life Test (4.6.7i)
- P. Static Test (4.6.7j)
- q. Lock Shut Firing (4.6.8)

3.6 Bomb rack hooks. The construction and inspection of the bomb rack hooks shall be in accordance with MIL-H-85042.

3.7 Electric fuze arming unit, The construction and inspection of the electric fuze arming unit shall be in accordance with MIL-C-81842.

3.8 Workmanship. The workmanship displayed in fabrication and assembly of the bomb racks shall be such as to assure, within design limitations, the ability of the bomb racks to meet their performance requirements under all applicable environmental conditions specified herein. Unauthorized repair, welding, heavy burrs, or parts assembled by introduction of high stresses not prescribed in the drawings, are typical signs of inferior workmanship and shall because for rejection. The standards of workmanship exhibited in the approved first article sample, subject to any qualification stated in the government's notice of approval, shall be determinative of the requirements of the contract relative to workmanship.

4. QUALITY ASSURANCE PROVISIONS (see 6.4)

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

4.2 Classification of inspection. The inspection of the bomb racks shall be classified as follows:

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

4.3 First article inspection. First article inspection shall consist of all of the inspections listed in Table I. First article inspection report format shall be in accordance with MI L-STD-83 1 (see 6.3).

4.3.1 sampling for first article inspection. First article bomb rack samples shall consist of the first two bomb racks manufactured on contract. The bomb racks shall be permanently labeled A and B for ease of identification. Failure of the bomb racks to pass any of the first article inspections shall be cause for rejection (see 6.3).

4.4 Quality conformance inspection. Quality conformance inspection shall consist of the following inspections:

- a. Individual Inspections (see 4.4.1)
- b. Sampling Inspections (see 4.4.2)

Quality conformance inspection report format shall be in accordance with MIL-STD-831 (see 6.3).

4.4.1 Individual inspections. Individual inspections are those inspections conducted on each bomb rack. Individual inspections for the bomb racks are shown in Table II, Group 1. Failure to pass any of these inspections shall be cause for rejection of the bomb rack.

TABLE I

SPARE UNITS REQUIRED PER RACK TESTED*				6 • •	
AUXILIARY UNLOCK	SECONDARY RELEASE	TESTS	TEST PARAGRAPH	SAN A	APLE B
		Elect mechanical Component Inspection	4.6.1	1	3/
		Bomb Rack Inspection	4.6.2	1	1
		Functional	4.6.3	2	3
		Arming Mechanism	4.6.4	3	4
		Electric Fuze Arming	4.6.5	4	x
		Manual Function	4.6.7a	5	X
		Electrical Characteristics	4.6.7b	Х	2
6	3	Secondary Release 2	4.6.6	6	х
		Lag Determination	4.6.7c	7	X
	3	High-g Release	4.6.7d	Х	5
		Sand	4.6.7e	8	х
1	1	Salt Spray	4.6.7f	9	х
		Vibration	4.6.7g	х	7
		Shock	4.6.7h	x	6
		Life	4.6.7i	10	X
		Static	4.6.7j	x	8
		Lock Shut Firing	4.6.8	11	х

FIRST ARTICLE INSPECTIONS-SCHEDULE AND SEQUENCE

-^{\prime} Inspection sequence is denoted by the numbers in the sample columns. An X denotes inspection not required.

_²/ Spare units are applicable to Type II bomb racks only. See 6.2.1f.

- -*/ This requirement is applicable to all Type II bomb rack inspections with the exception of arming mechanisms and electric fuze arming.
- The auxiliary release inspection of 4.6.31 is not applicable to Type III bomb racks.

TABLE II

QUALITY CONFORMANCE INSPECTIONS-SCHEDULE AND SEQUENCE

SPARE UNITS REQUIRED PER		UNITS ED PER ESTED ² /	TESTS	TEST PARAGRAPH	SAMPLE		2	
┞								
	AUXILIARY UNLOCK	SECONDARY RELEASE	GROUP 1		ALI	. SA	MP	LES
			Electromechanical Component	4.6.1		_3/		
		•	Bomb Rack Inspection	4.6.2		•	1	
	-	-	Functional 4	4.6.3		2	2	ĺ
	-	-	Arming Mechanism	4.6.4			3	
			Electric Fuze Arming	4.6.5 4		4		
			GROUP 2		A	B	с	D
	-	-	Manual Function	4.6.7a	1	x	1	x
	· _	-	Electrical Characteristics	4.6.7.b	X	1	X	
	6	3	Secondary Release_2/	4.6.6	2.	X		X
	-	-	Lag Determination	4.6.7c	3	X	X	X
	-	3	High-g Release	4.6.7d	X	2	X	
	-	-	Sand	4.6.7e	4		X	
	1	· 1	Salt Spray	4.6.71	5	X		X. V
	-	-	Vibration	4.6.7g		4		
	-	-	Shock	4.6./h	X			
	-	-	Life	4.6./1				2
	-	-	Static	4.0./3				x
	-	-	Lock Shut Firing	4.0.8	<u> </u>			

-1' Inspection sequence is denoted by the numbers in the same sample columns. An X denotes inspection not required.

- $\frac{2}{2}$ Spare units are applicable to Type II bomb racks only. See 6.2.lf.
- _____ This requirement is applicable to all Type II bomb rack inspections with the exception of arming mechanisms and electric fuze arming.
- ▲ The auxiliary release inspection of 4.6.31 is not applicable to Type III bomb racks.

4.4.2 Sampling inspections. A random sampling of the bomb racks shall be selected by the procuring activity from each production lot in accordance with Table III and shall be subjected to the inspections listed in Table II, Group 1 and Group 2. Group 1 inspections shall be conducted prior to Group 2 inspections. Failure to pass any of these inspections shall be cause for rejection of the entire lot (see 6.2.1 f and 6.3).

TABLE III

SAMPLING TEST ITEMS

ITEM	PRODUCTION LOT SIZE	NUMBER OF SAMPLES
Bomb Racks	100 or Less 101-200 201-300 301 or More	2 3 4

-1 The procuring activity shall specify the number of samples, and the sequence of inspections each unit shall be subjected to for lots in excess of 300 units (see 6.2.1 e).

4.5 Inspection conditions. Unless otherwise specified, all inspections shall be performed under the following conditions:

- a. Room temperature. Room ambient of 25 +/- 10°C (77+ /-18°F) indicated.
- b. Test temperature. All parts of the test item shall be stabilized at the specified temperature +/-2.8°C (+/-5° F) indicated prior to conducting any tests. Unless otherwise specified, temperature stabilization will have been attained when the indicated temperature of the surface of the largest mass of the test item does not change by more than +/-2.8°C (+/-5°C) in a period of 1 hour.
- c. Swaybraces. Whenever tests require that a store be mounted to the bomb rack, sway braces shall be used. The sway braces shall be adjusted as described in 4.6.3e for stores utilizing 355.6 millimeter (14 inch) suspension and 4.6.3g for stores utilizing 762 millimeter (30 inch) suspension.
- d. Test stores. The stores, as referenced herein by weight, shall conform to the following parameters. The store suspension lugs shall be in accordance with MS3314 and Drawing 1380540.
 - The 113.4 kilogram (250 pound) store shall utilize applicable suspension lugs, spaced 355.6 millimeters (14 inches) apart. Its center of gravity shall be based on the MK.81 G.P. bomb.
 - 2. The 453.6 kilogram (1,000 pound) store shall utilize applicable suspension lugs, spaced 762 millimeters (30 inches) apart. Its center of gravity shall be based on the MK.83 G.P. bomb.

- 3. The 907.2 kilogram (2,000 pound) store shall utilize applicable suspension lugs,spaced 762 millimeters (30 inches) apart. Its center of gravity shall be based on the MK.84 G.P. bomb.
- 4. The 1,621.62 kilogram (3,575 pound) store shall utilize applicable suspension lugs spaced 762 millimeters (30 inches) apart. Its center of gravity shall be midway between the suspension lugs and 203.2 millimeters (8 inches) below the hook bearing surface of each suspension lug.
- e. Ejector assembly, Unless otherwise specified, the ejector assembly shall be installed in position A for 355.6 millimeter (14inch) suspension and position B for 762 millimeter (30 inch) suspension.
- f. Input power requirements. The bomb rack shall perform satisfactorily under all applicable conditions specified herein from a 28 VDC rated voltage power source with characteristics and limits as defined in MIL-STD-704, except that the bomb rack shall operate over a range of 20 to 30 VDC, measured at the bomb rack's input connector(s).
- **4.6** Inspection methods.

4.6.1 Electromechanical component inspection, Type II bomb rack. The following inspection shall be made during (when applicable) and after each of the tests conducted on the bomb rack as specified in Tables I and II, with the exception of 4.6.4 and 4.6.5.

- a. The Electromechanical Linear Actuator Assembly (In Flight Operable Bomb Rack Lock), hereinafter referred to as the IFOBRL, shall be electrically locked after cocking the linkage assembly of the bomb rack, unless otherwise specified herein. Unless otherwise specified, the IFOBRL shall be electrically unlocked just prior to each release of the linkage assembly, with or without a store suspended from the bomb rack, The IFOBRL shall complete full travel (lock-to-unlock or unlock-to-lock) in 2.2 to 4.5 seconds when operated electrically (20-30 VDC). This requirement is applicable to all environmental conditions specified herein. Proper operation of electrical and mechanical position indicators of the IFOBRL shall be verified for each cycle.
- b. Proper operation of the auxiliary unlock assembly indicator switch, which indicates actuation of auxiliary unlock assembly, shall be verified.
- **4.6.2** Bomb rack inspection. The bomb rack shall be inspected as follows:

4.6.2.1 Individual inspections. Each bomb rack shall be inspected to ensure that it has been properly assembled and adjusted, that the electrical connections are secure and that the workmanship is as specified herein (see 3.8).

- **4.6.2.2** First article and quality conformance inspections.
- a. Each bomb rack shall be thoroughly. examined to determine conformance to all of the requirements specified herein (see 3.5.1).
- b. The bomb racks shall be examined to ascertain that the packaging conforms to the contract requirements (see 5).

4.6.3 Functional test. Each bomb rack, mounted in a horizontal position, shall complete the following tests. The auxiliary release unit test of 4.6.31 shall be deleted when testing Type III bomb racks.



The bomb rack shall not be cocked with the IFOBRL in the locked position or fired without a reactive store load imposed on the ejector foot.

- a. With the ejector assembly mounted in the rack in any of the four positions, cock the bomb rack, latch all the hooks, and install the safety pin or lock the IFOBRL electrically, whichever is applicable. Verify that the release piston of the bomb rack ejector assembly is mechanically blocked from releasing the bomb rack and that the relief valve of the ejector assembly is opened to allow venting of the breech, For Type II bomb racks, verify that the indicator on the bomb rack side shows "locked," that the position indicators of the IFOBRL are operating and that the IFOBRL operates smoothly. Apply a 11.27 N.m (100 inchpound) maximum torque to the manual release bolt. The release mechanism shall not actuate.
- b. Remove the safety pin or unlock the IFOBRL electrically, whichever is applicable. For Type II bomb racks, verify that the indicator on the bomb rack side shows "unlock," that the position indicators of the IFOBRL are operating and that the IFOBRL operates smoothly. Rotate the manual release bolt. The release mechanism shall operate smoothly and the hooks shall open.
- c, Repeat a. and b. four times.
- d. Cock the bomb rack, install the safety or lock the IFOBRL, whichever is applicable. Suspend a 113.4 kilogram (250 pound) store from the 355.6 millimeter (14 inch) hooks.
- e. Back off the aft set of sway braces 6.35 millimeters (0.250 inch) minimum from store contact. Tighten the forward and center set of swaybraces as follows:
 - 1. Hand tighten all braces until the pads lightly contact the store.
 - 2. Tighten forward starboard pad 1/4 turn.
 - 3. Tighten center port pad 1/4 turn.
 - 4. Tighten forward port pad 1/4 turn.
 - 5. Tighten center starboard pad 1/4 turn.
 - 6. Repeat tightening in order of 2. through 5. to attain 1/2 turn total on each swaybrace.

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- f. Remove the safety pin or unlock the IFOBRL and rotate the manual release bolt. The store shall be released.
- g. Repeat d., e. and f. with a 907.2 kilogram (2,000 pound) store on the 762 millimeter (30 inch) hooks except that the center set of swaybraces shall be adjusted to provide 6.35 millimeters (0.250 inch) minimum clearance between the store and the swaybrace pads and the aft set of sway braces shall be tightened.
- h. With the bomb rack cocked and the hooks latched, apply a 88,964 N (20,000 pound) vertical down static load on the 355.6 millimeter (14 inch) hooks using standard bomb lugs conforming to MS3314. Concentrate the load midway between the hooks, The hooks shall hold load.
- i. Repeat h. with a 133,446.66 N (30,000 pound) load on the 762 millimeter (30 inch) hooks.
- j. Cock the bomb rack and lock the IFOBRL or insert the safety pin, whichever is applicable. Load the ejector assembly with two applicable impulse cartridges (see 6.2.11). Install the ejector assembly in position B and suspend a 113.4 kilogram (250 pound) store from the 355.6 millimeter (14 inch) hooks. Tighten the swaybraces as in e. and adjust the ejector foot to make contact with the store. Unlock the IFOBRL or remove the safety pin, whichever is applicable. Apply 28 VDC to the bomb rack, The impulse cartridges shall ignite and the store shall be ejected. Remove, disassemble, clean and inspect the ejector assembly and surrounding areas of the bomb rack as indicated in the applicable manuals (see 6.2.1h). There shall be no damage to the bomb rack.
- k. Repeat j. with two applicable impulse cartridges (see 6.2.11) in the ejector assembly and a 907.2 kilogram (2,000 pound) store suspended from the 762 millimeter (30 inch) hooks. Tighten swaybraces as in g.
- 1. With the ejector assembly removed from the bomb rack, install a MK-19 impulse cartridge in the auxiliary release unit. Cock the bomb rack and lock the IFOBRL or insert the safety pin, whichever is applicable. Suspend the 907.2 kilogram (2,000 pound) store from the 762 millimeter (30 inch) hooks. Tighten the swaybrace pads as in g. After removing the safety pin or unlocking the IFOBRL, whichever is applicable, apply 28 VDC to the bomb rack. The store shall be released, Remove, disassemble, clean and inspect the auxiliary release unit and surrounding areas of the bomb rack as indicated in the applicable manuals (see 6.2. lb). There shall be no damage to the bomb rack.

4.6.4 Arming mechanism. A MK-9 or MK-11 bomb arming wire assembly shall be inserted in the tail and nose arming units of the bomb rack. With each arming unit unenergized, pull each arming wire slowly, in a vertically downward direction, parallel to the side of the bomb rack. Each arming unit shall support a 40,03 N (9 pound) load, but release the wire at any load in excess of 57.83 N (13 pounds), A minimum of three successive measurements shall be obtained on each unenergized arming unit. With each arming unit energized, pull on each arming wire in the same direction as specified above. Each arming unit shall support a load of 667.23 N (150 pounds),

4.6.5 Electric fuze arming. The 0° pull-out force for the electric fuze connector assembly and the pull test fixture shall be in accordance with MI L-C-8 1842. Three successive measurements shall be made. In addition, the interlock switch shall be verified to be open when the bomb rack is latched and closed when the bomb rack is released.

4.6.6 Secondary release. This test shall apply to Type I and Type II bomb racks only. The bomb rack shall be released, with a 1,621.62 kilogram (3,575 pound) store suspended from the 762 millimeter (30 inch) hooks, at the following temperatures:

- a. Room Temperature
- b. -56.7°C (-70°F)
- c. $+70^{\circ}C (+158^{\circ}F)$

One release shall be made at each temperature. The auxiliary release assembly of the bomb rack shall be used to release the store. A 28 VDC voltage shall be used to ignite the MK-19 impulse cartridge.

4.6.6.1 Type II bomb rack, additional conditions. prior to each of the above releases, the IFOBRL will be in the locked position. It shall be disabled by applying 28 VDC to the M55 ignition element of the unlock indicator assembly. Proper position of the indicator switches in the unlock indicator assembly shall be verified before and after each release, The unlock indicator assembly shall be replaced with a spare unit, supplied by the contractor (see Tables I and II), after each release.

4.6.7 Additional tests. The bomb rack shall pass the following tests of MIL-T-7743 as specified, except as modified herein. The arming units shall meet the requirements of 4.6.4 when they are required to be tested, and they shall be tested in the vertically downward direction only.

- a. Manual Function (see 4.6.7.1)
- b. Electrical Characteristics (see 4.6.7.2)
- c. Lag Determination (see 4.6.7.3)
- d. High-g Release (see 4.6.7.4)
- e. Sand Test (see 4.6.7.5)
- f. Salt Spray (see 4.6.7.6)
- g. Vibration Test (see 4.6.7.7)
- h. Shock Test (see 4.6.7.8)
- i. Life Test (see 4.6.7.9)
- j. Static Test (see 4.6.7.10)

4.6.7.1 Manual function. When testing Type II bomb racks, the IFOBRL shall be operated manually.

4.6.7.2 Electrical characteristics. The minimum operating voltage shall be determined by demonstrating that all electrical equipment on the bomb rack operates when 20 VDC is applied to the terminals of the applicable bomb rack connectors.

4.6.7.3 Leg determination. This test shall be conducted in accordance with the lag or time of release determination test for dive bomb (DB) items. The 113.4 kilogram (250 pound) and 453.6 kilogram (1,000 pound) store shall be used for 355.6 millimeter (14 inch) suspension tests. The 907.2 kilogram (2,000 pound) and 1,621.62 kilogram (3,575 pound) store shall be used for 762 millimeter (30 inch) suspension tests.

- **4.6.7.4** High-g release. This test shall be conducted with the following conditions:
- a. 355.6 millimeter (14 inch) suspension Perform 12 ejections with the applied load based on a 657,72 kilogram (1,450 pound) store, and one release utilizing the auxiliary release assembly.
- b. 762 millimeter (30 inch) suspension Perform 13 ejections with the applied load based on a 1,621.62 kilogram (3,575 pound) store, and two releases utilizing the auxiliary release assembly.

4.6.7.6 Sand test. When testing Type II bomb racks the IFOBRL shall be in the "lock" position prior to sand exposure. The IFOBRL shall be operated electrically during operation of the bomb rack. The electric fuze arming unit shall not be tested for Type I and Type III bomb racks.

4.6.7.6 Salt spray. The minimum operating voltage shall be as defined herein (see 4.6.7.2). When testing Type II bomb racks the IFOBRL shall be electrically operated to the "lock" position prior to the salt spray conditioning.

4.6.7.7 Vibration. The electric fuze arming unit vibration test shall not be conducted. The minimum weight store used shall be 113.4 kilograms (250 pounds) for the 355.6 millimeter (14 inch) hooks and the maximum weight store used shall be 453.6 kilograms (1,000 pounds) for the 762 millimeter (30 inch) hooks. When testing Type II bomb racks, the IFOBRL shall be operated electrically for all tests. The IFOBRL shall be in the "unlock" position during unloaded vibration and in the "lock" position during loaded vibration.

4.6.7.8 Shock test. Light load tests shall be conducted with a 113.4 kilogram (250 pound) store (see 4.6.7.7) for the 355.6 millimeter (14 inch) hooks. Yield and ultimate load tests shall be conducted with a 1,621.62 kilogram (3,575 pound) store for the 762 millimeter (30 inch) hooks. Applied shock amplitudes for yield shock tests shall be based on the limit shock loads given in Table IV. Yield shock loads are 1.15 times the values shown in Table IV. When testing Type II bomb racks, the IFOBRL shall have been locked prior to each applied shock.

DIRECTION	APPLIED SHOCK LIGHT LOAD (g's) FOR 113.4 KG. (250 LB.) STORE	APPLIED SHOCK LIMIT LOAD (g's) FOR 1,621.6 KG. (3,575 LB.) STORE					
Vertical Down	25	6.05					
Vertical Up	25	3.30					
Longitudinal Forward	25	7.70					
Longitudinal Aft	25	7.70					
Transverse Port	25	2.20					
Transverse Starboard	25	2.20					

TABLE IV

APPLIED SHOCK LOADS

4.6.7.9 Life test. This test shall be conducted in accordance with the life test for explosive items. A 113.4 kilogram (250 pound) store, for the 355.6 millimeter (14 inch) hooks, shall be used for light store ejections. A 1,621.62 kilogram (3,575 pound) store, for the 762 millimeter (30 inch) hooks, shall be used for heavy store ejections.

4.6.7.10 Static test. This test shall be conducted with the following conditions. The bomb rack shall be loaded to limit, yield and ultimate loads. Yield loads shall be 1.15 times and ultimate loads 1.5 times the limit loads given in Table V. The combined loads and moments shall be applied to a rigid simulated store of negligible weight (90.72 kilograms, 200 pounds maximum) in accordance with Table V such that they act at the store center of gravity. The set of swaybraces not in use shall be locked in place 6.35 millimeter (0.250 inch) minimum above the store surface prior to each test. When testing a Type II bomb rack, the IFOBRL shall be electrically locked after cocking the bomb rack, prior to installing the simulated store.

4.6.8 Lock shut firing. The bomb rack shall retain the store after the following test. There shall be no damage to the bomb rack, except for the relief valve assembly of the ejector unit.

- **4.6.8.1** Type I and Type III bomb racks. The test shall be conducted as follows:
- a. Load the ejector assembly with two applicable impulse cartridges as specified by the procuring activity (see 6.2.11).
- b. Cock the bomb rack and place the safety pin in the safety pin hole.
- c. Suspend a 1,621.62 kilogram (3,575 pound) store from the 762 millimeter (30 inch) hooks.
- d. Ignite the impulse cartridges using 28 VDC.
- **4.6.8.2** Type II bomb rack. The test shall be conducted as follows:
- a. Repeat 4.6.8.1a.
- b. Cock the bomb rack and electrically or manually operate the IFOBRL to the "lock". position.
- c. Repeat 4.6.8.1c.
- d. Ignite the impulse cartridges using 28 VDC.

5. PACKAGING

5.1 Bomb rack preservation and packaging. Preservation and packaging shall be in accordance with Level A, B or C as specified in MIL-STD-794, as specified in the contract, without the use of preservation compound.

5.2 Packing. Shipping containers shall contain one each packaged bomb rack. The container shall be suitable for Level A, B or C as specified in MIL-STD-794.

6.3 Unitized loading. Unitized loading for the bomb racks is authorized as specified in MIL-STD-794.

TABLE V

STATIC TEST LIMIT LOADS

S	tore	Lug C	enters	Store Diameter		Vertical Dimension, Lug Bearing Surface to Store C.G.		
	А	355.6 (14	Mm. In.)	774,7 Mm. (30.5 In.)		412.7 Mm. (16.25 In.)		
	B 762.0 (30		Mm. In.)	774.7 Mm. (30.5 In.)			421.6 Mm. (16.60 In.)	
	С	762.0 (30	Mm. in.)	398.8 Mm. (15.7 in.)			233.7 Mm. (9.20 in.)	
	COMI	BINED LIM	IT LOADS	AND MOMEN	NTS A	ABOUT REFER	ENCE POINT (STO	RE C.G.)
Con- dition	Store	Pz Vertical	Py Side	Px Longitudinal	Mzz Yaw Moment		M yy Pitch Moment	Mxx Roll Moment
1	А	-66,723.33 N (-15,000 lbs.)	-20,906.64 N (-4,700 lbs.)	7,561.98 N (1,700 lbs.)	-10,165.13 N.m (-90,000 inch-lbs.)		-16,941.88 N.m (-150,000 inch-lbs.)	
2	В	-55,602.78 N (-12,500 lbs.)	11,120.56N (2,500 lbs.)	26,689.33 N (6,000 lbs.)	38 (339	,288.66 N.m 9,000 inch-lbs.)	33,666.45 N.m (121,000 inch-lbs.)	
3	С	-95,191.95 N (-21 ,400 lbs.)	83,181.75 N (18,700 lbs.)	-33,806.49 N (-7,600 lbs.)	-3,298.02 N.m (-29,200 inch-lbs.)		5,782.83 N.m (51 ,200 inch-lbs.)	-13,305.02 N.m (-117,800 inch-lbs.)
				SIGN CO	NVEN	TION		
+ Px = Longitudinal Aft $+Mxx = Roll Clockwise Looking Forward$ $+Py = Side to Port$ $+Myy = Pitch Nose Up$ $+Pz = Vertical Up$ $+Mzz = Yaw Nose to Port$				rd				

SIMULATED STORE CHARACTERISTICS

-¹/ The store C.G. shall be on the longitudinal centerline of the store midway between the suspension lugs.

5.4 Marking. All shipping containers shall be marked in accordance with the requirements of MIL-STD-129 with the following information:

RACK, BOMB, AIRCRAFT BRU-MILITARY SPECIFICATION NO. MIL-R-81939 (AS) PRESERVED (DATE) DOMESTIC OR EXPORT PACKED (AS APPLICABLE) GOVERNMENT ORDER NO. (OR CONTRACT NO. IF ORDER NO. IS NOT ASSIGNED) NAME OF SUPPLIER (AND NAME OF MANUFACTURER IF NOT THE SAME) MANUFACTURERA CODE IDENTIFICATION NUMBER

6. NOTES

6.1 Intended use. The bomb racks covered by this specification are intended for use in all types of bombing. They are mounted either externally, as in an aircraft wing pylon, or internally, as in a bomb bay. They are intended for use on either land-based or carrier-based aircraft.

- 6.2 Ordering data procurement documents shall specify the following:
- **6.2.1** Procurement requirements.
- a. Title, number and date of this specification.
- b. Selection of applicable levels of preservation, packaging and packing required (see 5.1 and 5.2).
- c. Samples subjected to sampling inspection shall not be considered or accepted as part of the contract (see 4.4.2).
- d. Sampling inspection selection (see 4.4.2).
- e. Number of samples and inspection sequence for production lots in excess of 300 units (see Table III).
- f. Number of extra unlock indicator assemblies as required for testing purposes (see Tables I and II for quantities required).
- g. Applicable drawing package for type of bomb rack required (see 3.5.1).
- h. Applicable maintenance manuals for type of bomb rack required (see 4.6.3).
- i. Name and location of government representative responsible for random selection of inspection samples (see 4.4.2).
- i. Items of data required (see 6.3).
- k. Name and location of government approved test laboratory.

1. Number and designation of impulse cartridges required for testing (see 4.6.3 and 4.6.8.1).

6.2.2. Contract provision. Contracts shall specify the following provision for first article inspection,

6.2.2.1 First article. When a first article is required for inspection and approval (see 3.1,4.3, 6.2 and 6.3), the contract shall specify the following provision for first article inspection. When a contractor is in continuous production of bomb racks from contract to contract, consideration should be given to waive the first article inspections. If inspection is required, indicate:

- a. If first article inspections are conducted at the contractor's plant or a government approved laboratory, an inspection report shall be forwarded to the procuring activity for verification.
- b. That the approval of first article samples or the waiving of the first article inspection shall not relieve the contractor of his obligation to fulfill all other requirements of the specification and contract.

6.3 Contract data requirements. When this specification is used in a procurement which incorporates a DD Form 1423 and invokes the provisions of 7-104.9(n) of the Armed Services Procurement Regulations, the data requirements identified below will be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the approved Contract Data Requirements List (DD Form 1423) incorporated into the contract. When the provisions of ASPR-7-104.9(n) are not invoked, the data specified below will be delivered by the contractor in accordance with the contract requirements. Deliverable data required by this specification is cited in the following paragraphs:

Paragraph	Data Requirement	Applicable DID
4.3	First Article Inspection Reports	DI-T-5329-Inspection Test Reports
4.4	Quality Conformance Inspection Reports	DI-T-5329 - Inspection Test Reports

(Copies of data item descriptions required by the contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

6.4 Quality assurance definitions. Definitions for quality assurance terms are in accordance with MIL-STD-109.

Preparing Activity NAVY-AS DOD Proj. No. 1095-NO97

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL			OMB Approval No. 22-R255			
INSTRUCTIONS: The purpose of this form is to solicit beneficial comments which will help achieve procurement of suitable products at reasonable cost and minimum delay, or will otherwise enhance use of the document. DoD con- tractors, government activities, or manufacturers/vendors who are prospective suppliers of the product are invited to submit comments to the government. Fold on lines on reverse side, staple in corner, and send to preparing activity. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements. Attach any pertinent data which may be of use in improving this document. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity.						
DOCUMENT IDENTIFIER AND TITLE		ת סו				
MIL-R-81939B(AS) RACK, BOMB EJECTOR, I	CONTRACT NUMBER	10, BR	U-11, and BRU-19 SERIES			
NAME OF ORGANIZATION AND ADDRESS						
	MATERIAL PROCUR	ED UNDE	R A			
	DIRECT GOVER	NMENTC	ONTRACT SUBCONTRACT			
 HAS ANY PART OF THE DOCUMENT CREATED PROBLE USE? A. GIVE PARAGRAPH NUMBER AND WORDING. 	MS OR REQUIRED IN T	ERPRET	ATION IN PROCUREMENT			
B. RECOMMENDATIONS FOR CORRECTING THE DEFICE	ENCIES					
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2 COMMENTS ON ANY DOCUMENT DE OMPENENT CONSID						
2. CUMMENTS ON ANT DOCUMENT REWOREMENT CONSIDERED TOO RIGID						
3. IS THE DOCUMENT RESTRICTIVE?	-					
YES NO (If "Yes", in what way?)						
4. REMARKS						
SUBMITTED BY (Printed or typed name and address - Optional)	TELEPH	IONE NO.			
		DATE				

DD , FORM 1426

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MIL-R-81939B(AS) AMENDMENT 1 6 February 1984

MILITARY SPECIFICATION

RACK, BOMB EJECTOR, AI RCRAFT; BRU-10, BRU-11, AND BRU-19 SERIES

This amendment forms a part of Military Specification MIL-R-81939B(AS) dated 28 March 1977 and is approved for use by the Naval Air Systems Command, Department of the Navy and is available for use by all Departments and Agencies of the Department of Defense.

PAGE 2

2.1 Under STANDARDS, Military, delete "MIL-STD-100" and substitute " "DOD-STD-100." Delete title of MIL-STD-704 and" substitute "Aircraft Electric Power Characteristics."

PAGE 3

3.4, line 3, delete "MIL-STD-100" and substitute "DOD-STD-100."

Preparing Activity: Navy - AS (Project No. 1095-N171)

FSC 1095