

MIL-B-208D  
 6 March 1970  
 SUPERSEDING  
 MIL-B-208C  
 16 April 1964

## MILITARY SPECIFICATION

BATTERY, STORAGE, LEAD ACID, AUTOMOTIVE AND NAVY PORTABLE  
 (EXCEPT AIRCRAFT), PACKAGING AND PACKING OF

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

### 1. SCOPE

1.1 This specification covers the packaging and packing of charged and dry, or uncharged and dry batteries.

### 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 this specification to the extent specified herein.

#### SPECIFICATIONS

##### Federal

- |           |  |
|-----------|--|
| NN-P-530  | - Plywood, Flat Panel.   |
| QQ-S-781  | - Steel, Strapping, Flat.  |
| MMM-A-260 | - Adhesive, Water-Resistant, (for Sealing Waterproofed Paper).                     |
| PPP-B-636 | - Box, Fiberboard.   |
| PPP-B-640 | - Boxes, Fiberboard, Corrugated, Triple-Wall.                                      |
| PPP-F-320 | - Fiberboard; Corrugated and Solid, Sheet Stock (Container Grade), and Cut Shapes. |
| PPP-T-76  | - Tape, Pressure-Sensitive Adhesive Paper, (for Carton Sealing).                   |

##### Military

- |           |                             |
|-----------|-----------------------------|
| MIL-P-116 | - Preservation, Methods of. |
|-----------|-----------------------------|

#### STANDARDS

##### Federal

- |                  |                                |
|------------------|--------------------------------|
| FED. STD. NO. 75 | - Glossary of Packaging Terms. |
|------------------|--------------------------------|

PACK

MIL-B-208D

## Military

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-129 - Marking for Shipment and Storage.
- MIL-STD-147 - Palletized and Containerized Unit Loads 40"x48" Pallets, Skids, Runners, or Pallet-Type Base.
- MIL-STD-731 - Quality of Wood Members for Containers and Pallets.

(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 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 or request for proposal shall apply.

CONSOLIDATED CLASSIFICATION COMMITTEE  
Consolidated Freight Classification

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

AMERICAN TRUCKING ASSOCIATIONS  
National Motor Freight Classification

(Application for copies should be addressed to the American Trucking Associations, Inc. 1616 P Street, NW, Washington D. C. 20036).

Technical society and technical association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.

### 3. REQUIREMENTS

3.1 Packaging. Packaging shall be level A or C as specified (see 6.1), except that battery types 2H, 4H, 8T, 2HN, 6TN, and 4MC shall be packaged in accordance with level A only. Vent openings of charged and dry, or uncharged and dry batteries shall be moisture sealed in such a manner that the seal must be broken in order to activate the battery.

#### 3.1.1 Level A.

3.1.1.1 Preproduction sample. When specified (see 6.1), the contractor shall furnish a preproduction sample for examination and testing (see 4.2), prior to packaging and packing in quantity.

MIL-B-208D

3.1.1.2 Materials. All materials shall be as specified herein or shall conform to the applicable specification.

3.1.1.3 Cleaning and drying. Batteries shall be cleaned in accordance with method C-1 of MIL-P-116, and dried by any applicable procedure specified therein.

3.1.1.4 Top frame. For batteries weighing 15 pounds or more, a top frame shall be provided. When specified (see 6.1), a top frame for batteries weighing less than 15 pounds shall be provided. Top frame shall be made of wood, a combination of plywood and fiberboard, or fiberboard as specified in 3.1.1.4.1 through 3.1.1.4.3.1.

3.1.1.4.1 Wood. When wood is specified for a top frame, the wood shall conform to class 2 of MIL-STD-731.

3.1.1.4.2 Combination of plywood and fiberboard. When a combination of plywood and fiberboard is specified for a top frame, the plywood shall conform to NN-P-530. The fiberboard shall conform to type CF, class weather-resistant, variety TW, grade 1100 of PPP-F-320. The plywood shall be laminated to the fiberboard in accordance with 3.1.1.4.4.1.

3.1.1.4.3 Fiberboard.

3.1.1.4.3.1 Triple wall corrugated. When fiberboard is specified for a top frame and a 1/2 inch thickness can be used to build up the top frame, triple wall corrugated fiberboard conforming to type CF, class weather-resistant, variety TW, grade 1100 of PPP-F-320 shall be used. When a thickness of less than 1/2 inch must be used to build up the top frame, B flute with a thickness of 1/8 inch, or C flute with a thickness of 3/16 inch, conforming to type CF, class weather-resistant, variety TW, grade 1100 of PPP-F-320 shall be used.

3.1.1.4.4 Construction of top frame. Each battery weighing 15 pounds or more shall have a top frame constructed substantially as shown in figures 1 through 6 for the applicable types. The top frame shall bear firmly on the battery case and inter-cell connectors and not on the terminal posts, cell tops, or filler caps. When specified (see 6.1), a top frame shall be provided for each battery weighing less than 15 pounds.

3.1.1.4.4.1 Lamination. Lamination shall be accomplished by bonding with an adhesive conforming to MMM-A-260, covering a minimum of 60 percent of the contact surface between the plies.

MIL-B-208D

3.1.1.5 Fillers (sleeves or pads). When specified (see 6.1), the battery shall have a sleeve or pad fitted to the battery case. The sleeve or pad shall fill out flush any recessed portion of the case, and compensate for any projections on the battery case. The sleeve or pad shall be made of as many laminated plies of fiberboard as are required to provide a flush surface. Thickness of the fiberboard material shall be as specified in 3.1.1.4.3.1. Fillers for batteries shall be constructed substantially as shown on figures 1 through 7, as applicable.

3.1.1.5.1 Lamination. Lamination shall be accomplished as specified in 3.1.1.4.4.1.

3.1.1.6 Unit packaging. Unless otherwise specified in the contract or order, unit packaging and quantities shall be as specified in 3.1.1.6.1 or 3.1.1.6.2, as applicable. When specified (see 6.1), unit packaging shall be in accordance with Table I as applicable.

Table I. Unit packaging

Each Ext. Size	2H, 6 Volt	4H, 6 Volt	8T, 12 Volt
Item Gr. Wt.	10 3/8 x 7 1/8 x 9 1/8 28.5	13 x 7 1/8 x 9 1/4 41.	20 3/4 x 11 x 10 1/4 118.5
Cube	.39	.50	1.35
Unit Ext. Size	11 3/8 x 8 1/8 x 11 1/8	14 x 8 1/8 x 11 1/4	22 1/4 x 12 1/4 x 12 3/4
Pkg. Gr. Wt.	31.	43.5	127.5
Cube	.59	.61	2.0
Contr. Size	10 3/8 x 7 1/8 x 9 7/8	13 1/8 x 7 1/8 x 9 3/4	21 1/4 x 11 1/2 x 10 3/4
Ext. Ext. Size			
Pack Gr. Wt.			
Cube			
Unit protection	None	None	None
Method III	MIL-P-116	MIL-P-116	MIL-P-116
Method III	Method III	Method III	Method III
Method III	PPP-B-640	PPP-B-640	PPP-B-640
Container	Class 2, style E flute arrangement AAA or AAC	Class 2, style E, filler 2 pcs, req'd. per figure 2	Class 2, style E flute arrangement-AAA or AAC sleeve-per figures 3 and 4
Cushioning	See figure 1	See figure 2	See figures 3 & 4
Closure		PPP-T-76, size 2x19, a strip on top and bottom, 3 inch overlap on each panel, if practical	PPP-T-76, size 2x27, (2 pcs) strip on top and bottom, 3 in overlap on each panel, if practical
Strapping	QQ-S-781, size 1/2x.015 Two girthwise strap bands	QQ-S-781, size 1/2x.015 Single center girth strap	QQ-S-781, size 1/2x.015 type I, class B, grade 2 2 girthwise strap bands
Fragile labels	None	None	Labels required. Container shall be marked "THIS SIDE UP"
Load type	Fed. Std. No. 75 Type 3	Fed. Std. No. 75 Type 3	Fed. Std. No. 75 Type 3

MIL-B-208D

MIL-B-208D

Table I. Unit packaging - (Cont'd)

	6TN, 12 Volt	4MC, 6 Volt	2HN, 12 Volt
Each Ext. Size	11 x 10 1/2 x 9	5 1/2 x 4 x 8 1/2	10 1/4 x 5 3/8 x 9
Item Gr. Wt.	52.	10.25	27.
Cube	.60	.108	.29
Unit Ext. Size	12 x 11 1/2 x 12	7 3/4 x 5 1/4 x 10	11 1/4 x 6 3/8 x 13 1/4
Pkg. Gr. Wt.	57.	12.	30.
Cube	.96	.235	.55
Cntr. Size	11 1/8 x 10 5/8 x 10 1/2	7 1/2 x 5 x 9 1/2	10 1/2 x 5 7/8 x 9 1/2
Ext. Size		32 1/8 x 22 1/8 x 12 1/4	
Pack Gr. Wt.		198.	
Cube	None	5.29	None
Unit protection	MIL-P-116 Method III PPP-B-640	MIL-P-116 Method III PPP-B-636	MIL-P-116 Method III PPP-B-640
	Class 2, style E, flute arrangement-AAA or AAC, filler, 2 pcs. req'd. per figure 6	V3c, style RSC, size 7 1/2 x 5 x 9 1/2. Filler pads per figure 7. Apply 1 strip on top and bottom, 2 pcs. (2x14) PPP-T-76. 16 Items per pack. Exterior pack PPP-B-640, class 2, style E, inside dimension 31 x 21 x 10, exterior size 32 1/8 x 22 1/8 x 12 1/4	Class 2, style A. Top frame per figure 5
Container	See figure 6	See figure 7	See figure 5
Cushioning			PPP-T-76, size 2 x 16, (2pcs), a strip on top and bottom, 3 inch over- lap on each panel, if practical
Closure	QQ-S-781, size 1/2 x .015 Type 1, class B, grade 2. Single center girth strap	PPP-B-640 Appendix	QQ-S-781, size 1/2 x .015 Single center Girth strap
Strapping	None	None	None
Fragile labels	Fed. Std. No. 75 Type 3	Fed. Std. No. 75 Type 3	Fed. Std. No. 75 Type 3
Load type	Type 3	Type 3	Type 3

MIL-B-208D

3.1.1.6.1 Batteries weighing 15 pounds or more. Batteries weighing 15 pounds or more, with top frame and fillers in place, shall be individually packaged into a close fitting box conforming to class 2, style E of PPP-B-640. The package shall meet the requirements as specified for method III of MIL-P-116.

3.1.1.6.2 Batteries weighing less than 15 pounds. Batteries weighing less than 15 pounds, with top frame (see 3.1.1.4) and fillers (see 3.1.1.5) as required, shall be individually packaged into a close fitting box conforming to V3c, style RSC of PPP-B-636. The box shall be closed with two strips of 2 inch tape conforming to PPP-T-76; one strip each on top and bottom seam. The package shall meet the requirements as specified for method III of MIL-P-116.

3.1.2 Level C. Batteries other than cited in 3.1 (Types 2H, 4H, 8T, 2HN, 6TN and 4MC) which are packaged level A only shall be cleaned, preserved and packaged in a manner which will afford adequate protection against corrosion, deterioration and physical damage during shipment from supply source to the first receiving activity for immediate use. For Navy purchases, the top of each battery shall be fitted with a piece of wood, plywood, or 350 pound test fiberboard with cutouts for projections, such as terminal posts and filler caps. It shall be of sufficient thickness to extend above any such projections. It shall be flush with all outer edges of the top. Each battery shall be enclosed in a 350 pound test double-wall corrugated fiberboard box, with side walls lined the full height with 275 pound test single-wall corrugated fiberboard.

3.2 Packing. Packing shall be level A, B or C as specified (see 6.1), except that battery type 4MC shall be packed in accordance with level A only.

3.2.1 Level A.

3.2.1.1 Batteries weighing 15 pounds or more. Batteries weighing 15 pounds or more shall be packed in close fitting boxes conforming to class 2 of PPP-B-640. When such batteries are packaged as specified in 3.1.1.6.1 and Table I, the unit container shall also be the shipping container. When specified (see 6.1), the shipping containers shall be palletized in accordance with MIL-STD-147.

3.2.1.2 Batteries weighing less than 15 pounds. Batteries weighing less than 15 pounds and packaged as specified in 3.1.1.6.2 and Table I, shall be packed in a close fitting box, conforming to class 2, style E of PPP-B-640.

3.2.2 Level B. Unless otherwise specified (see 6.1), all batteries shall be packed the same as for level A. When specified (see 6.1), shipping containers shall conform to class 1 of PPP-B-640.



MIL-B-208D

3.2.3 Level C. Batteries other than cited in 3.2 (Type 4MC) which are packed level A only shall be packed in manner to insure carrier acceptance and safe delivery at destination at lowest rates. Containers and packing shall comply with Uniform Freight Classification Rules or National Motor Freight Classification Rules (see 2.2).

3.3 Marking. In addition to any special marking required by the contract or order, or herein, unit packages and shipping containers shall be marked in accordance with MIL-STD-129.

3.4 Workmanship. The quality of workmanship shall be such as to permit acceptance of the completed preservation, packaging, packing and marking requirements in accordance with the testing specified in section 4.

#### 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 Preproduction sample. When required (see 3.1.1.1) the preproduction sample shall consist of one complete pack, packed as for shipment, meeting the requirements of this specification. The preproduction sample shall be representative of a pack proposed to be furnished to the Government. Preproduction inspection shall be conducted by the Government at a place designated by the procuring activity and shall consist of examination for the defects specified in 4.3.4.2 and testing as specified in 4.3.5.1.

4.2.1 Failure. Failure of a preproduction sample to pass any of the examinations or tests specified herein, may be cause for the Government to refuse to conduct additional examinations or tests until the faults revealed have been corrected.

#### 4.3 Inspection for packaging and packing.

4.3.1 Lot formation. A lot shall consist of all packs prepared for shipment in accordance with level A or B, of one part number, from an identifiable production period, submitted at one time.

4.3.2 Sampling for examination. Sampling for examination shall be in accordance with MIL-STD-105.



MIL-STD-208D

4.3.3 Sampling for testing. One package and one pack (see 3.1.1.6.2 and 3.2.1.2) or one complete pack (see 3.2.1.1), as applicable, shall be selected.

4.3.4 Examination for packaging and packing.

4.3.4.1 Acceptable quality level. Each sample selected in accordance with 4.3.2 shall be examined for conformance to the following acceptable quality levels (AQL) on the basis of percent defective.

<u>Classification</u>	<u>AQL</u>
Major	1.0
Minor	2.5

4.3.4.2 Examination. Examination shall be conducted as specified in table II. Any package or pack in the sample containing one or more defects shall be rejected, and if the number of defects in any one sample exceeds the acceptance number for that sample, the lot represented by the sample shall be rejected.

Table II. Classification of Defects in Packaging and Packing

<u>Categories</u>	<u>Defects</u>
Critical:	None defined
Major:	
101	Material of top frame not as specified (see 3.1.1.4).
102	Battery improperly cleaned (see 3.1.1.3).
103	Construction of top frame not as specified (see 3.1.1.4.4).
104	Filler not as specified (see 3.1.1.5).
105	Improper unit package (see 3.1.1.6).
106	Incorrect marking (see 3.3).
107	Missing or illegible marking (see 3.3).
Minor:	
201	Improper closure or strapping (see 3.1.1.6.1 and 3.2.1.2).
202	Poor workmanship (see 3.4).

4.3.5 Testing of packs.

4.3.5.1 Testing. When level A or B is specified (see 6.1), the samples selected in accordance with 4.3.3 shall be subjected to the rough handling test as specified in MIL-P-116.

MIL-B-208D

4.3.5.2 Failure. Failure of the pack to pass the specified test may be cause for the Government to refuse to accept the lot until it has been proved to the satisfaction of the Government that the faults revealed by the test have been corrected.

5. PREPARATION FOR DELIVERY.

This section is not applicable to this specification.

6. NOTES

6.1 Ordering data. Procurement documents should specify the following:

- (a) Title, number and date of this specification.
- (b) Level of packaging (see 3.1 and 4.3.1) and packing (see 3.2 and 4.3.5.1).
- (c) When a preproduction sample is required (see 3.1.1.1).
- (d) When a top frame is required (see 3.1.1.4).
- (e) When a top frame is to be provided for batteries weighing less than 15 pounds (see 3.1.1.4.4).
- (f) When fillers are required (see 3.1.1.5).
- (g) When unit packaging shall be in accordance with table I (see 3.1.1.6).
- (h) When shipping containers are to be palletized (see 3.2.1.1).
- (i) If batteries are to be packed other than specified (see 3.2.2).
- (j) When shipping containers as specified are required (see 3.2.2).

Custodians:

Army - AT  
Navy - YD  
Air Force - 82

Preparing activity:

Army - AT

Project No. PACK-0161

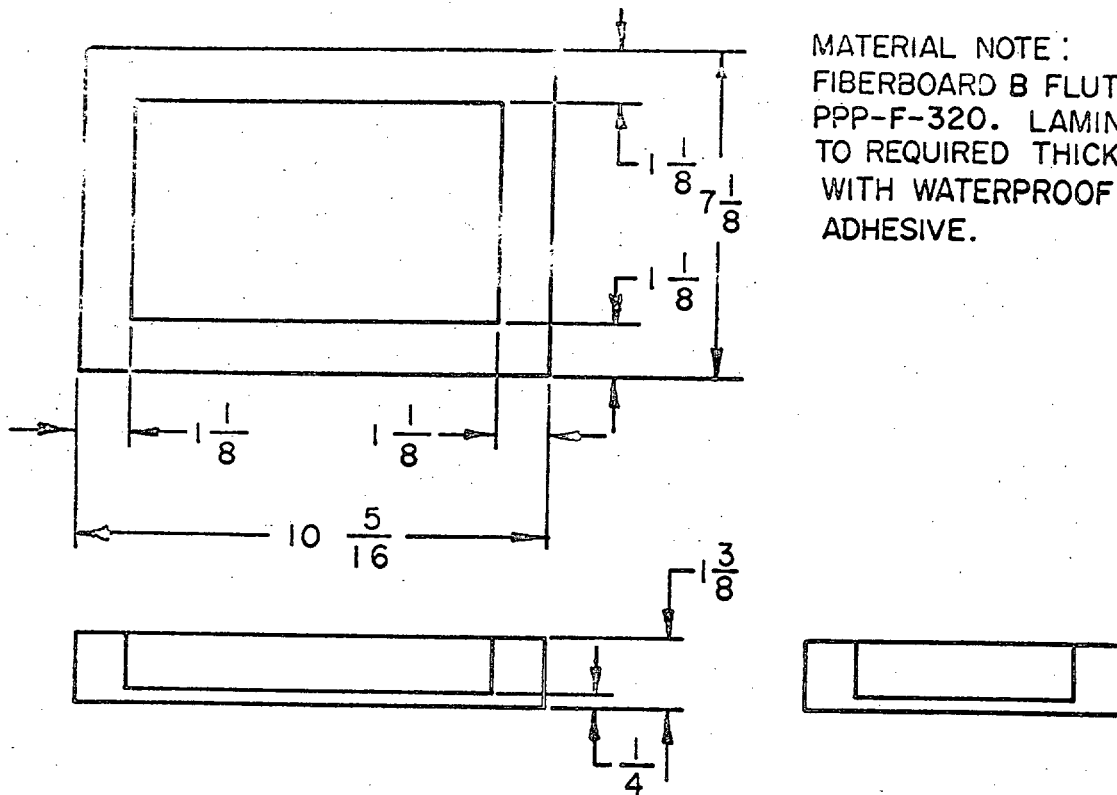
Review activities:

Army - EL, SM  
Navy - SA, SH  
Air Force - 85

User activities:

Army - ME  
Navy - MC EC

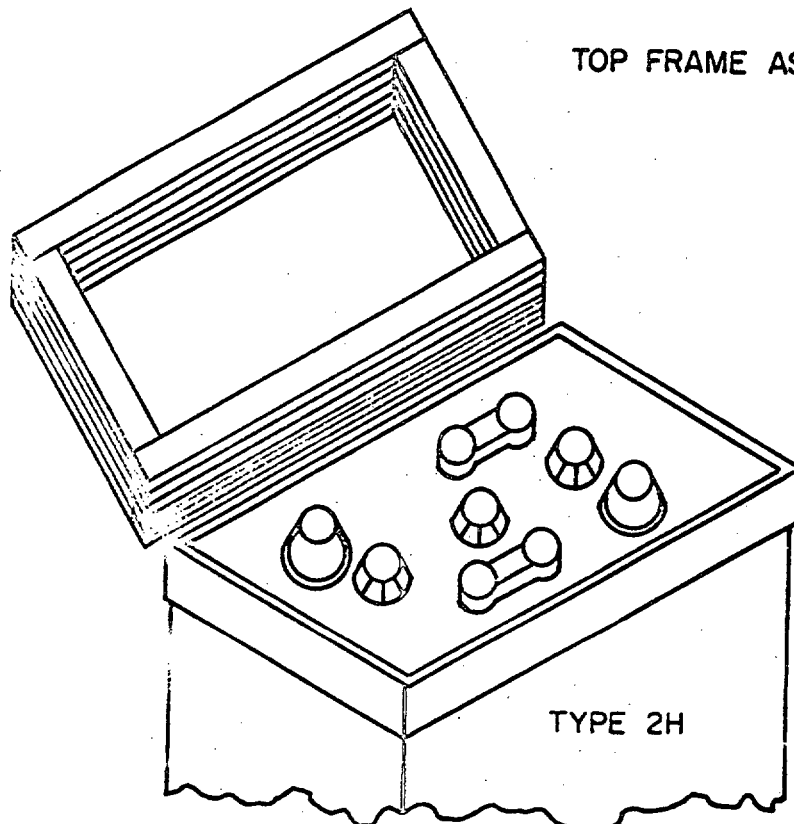
MIL-B-208D



MATERIAL NOTE :  
FIBERBOARD B FLUTE, V3c,  
PPP-F-320. LAMINATE  
TO REQUIRED THICKNESS  
WITH WATERPROOF  
ADHESIVE.

FIGURE 1 - TOP FRAME AND ASSEMBLY

TOP FRAME ASSEMBLY



TYPE 2H

MIL-B-208D

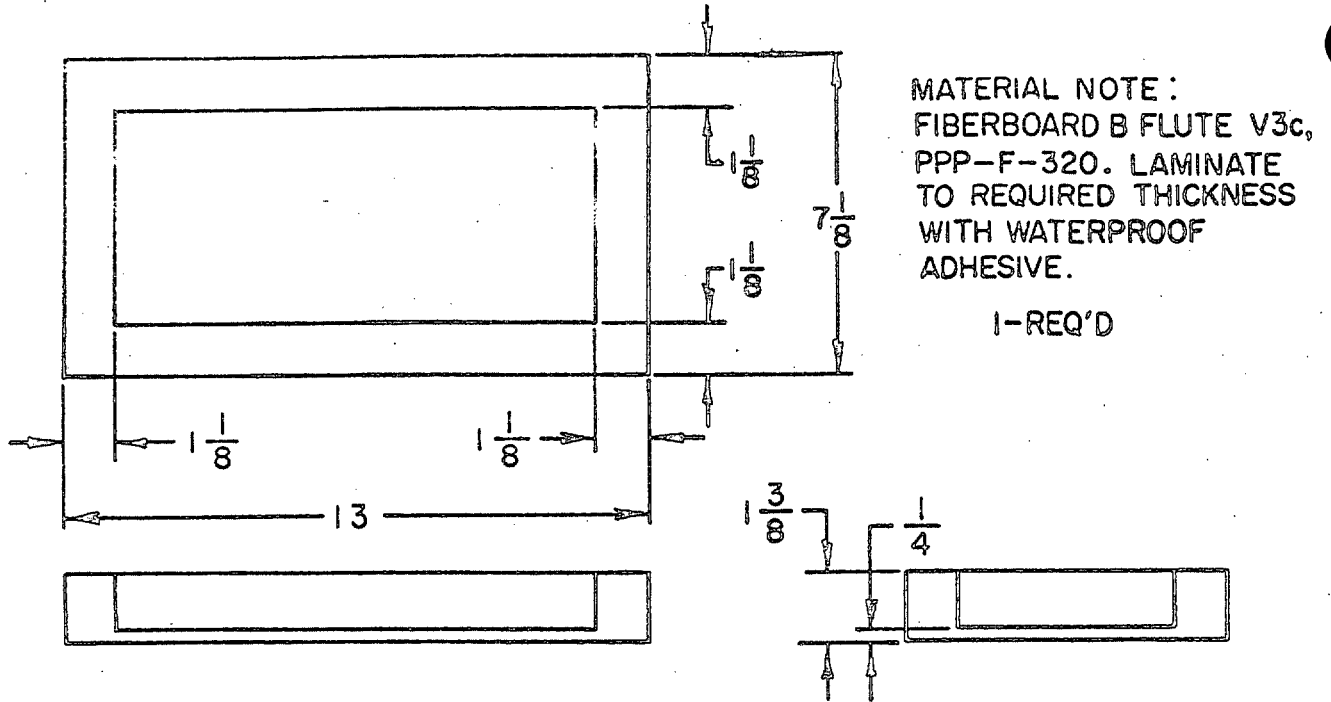
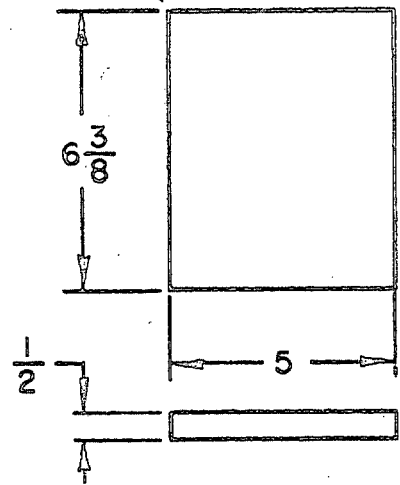
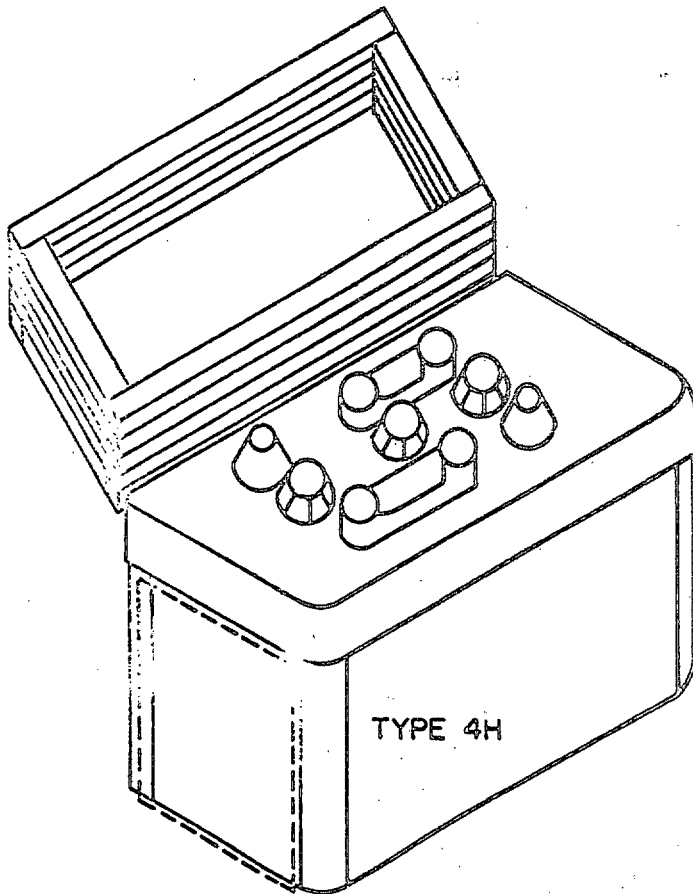


FIGURE 2- TOP FRAME FILLER AND ASSEMBLY

TOP FRAME AND FILLER ASSEMBLY

FILLER



MATERIAL NOTE:  
FIBERBOARD TYPE CF,  
CLASS WR, VARIETY TW,  
GRADE 1100, PPP-F-320

2 REQ'D

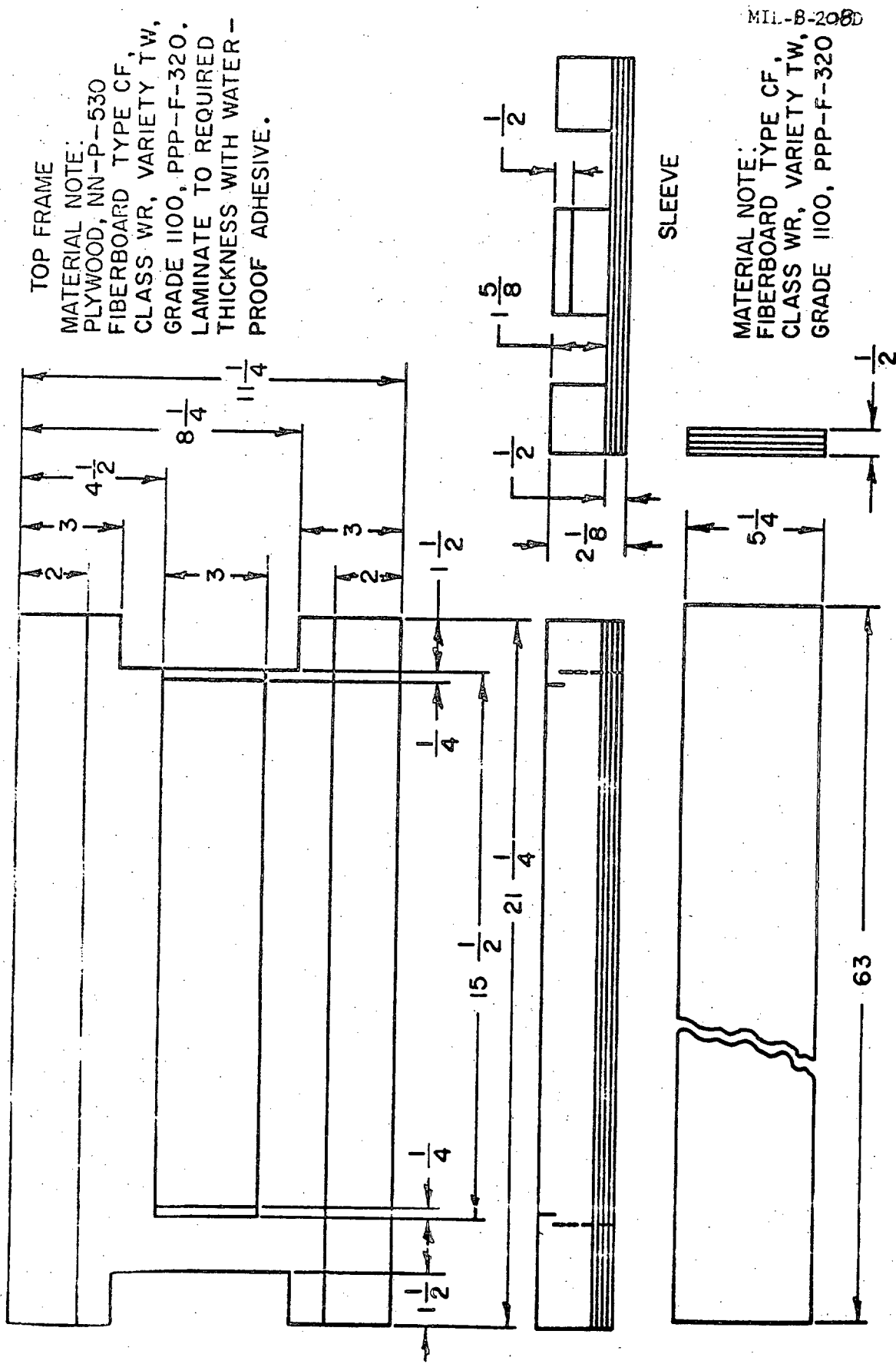


FIGURE 3 - TOP FRAME AND SLEEVE

MIL-B-208D

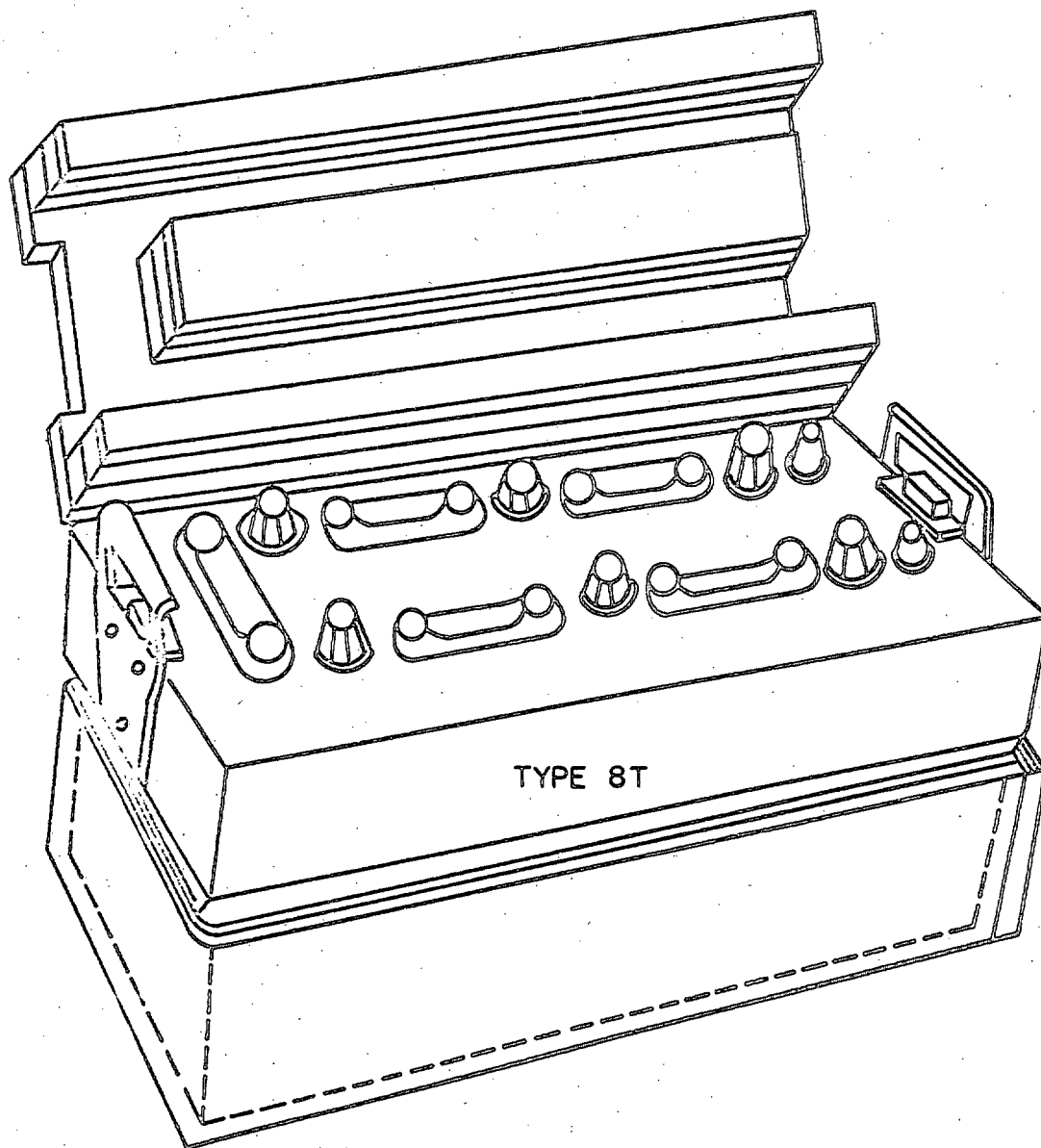


FIGURE 4 - TOP FRAME AND SLEEVE ASSEMBLY

MIL-B-208D

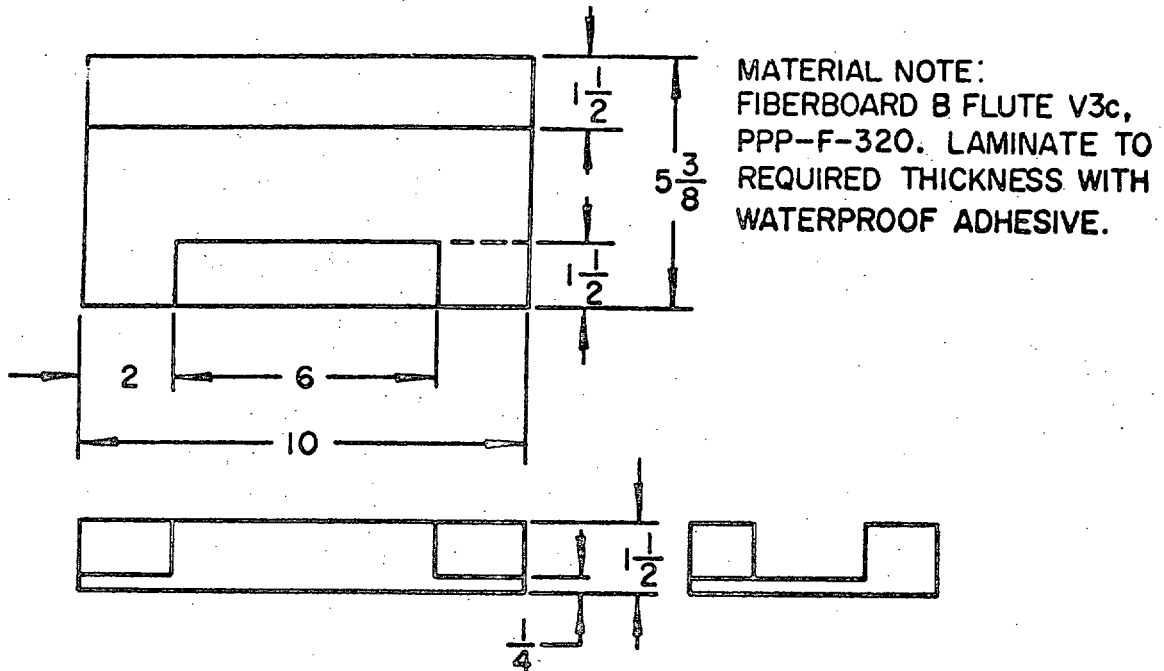
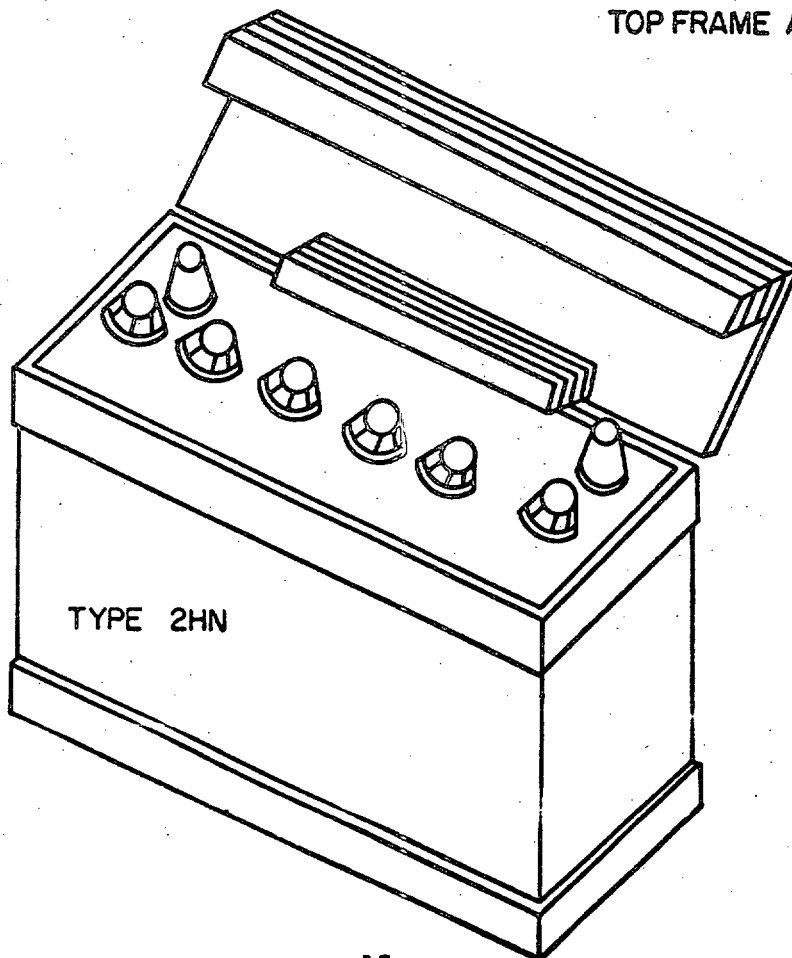


FIGURE 5-TOP FRAME AND ASSEMBLY

TOP FRAME ASSEMBLY





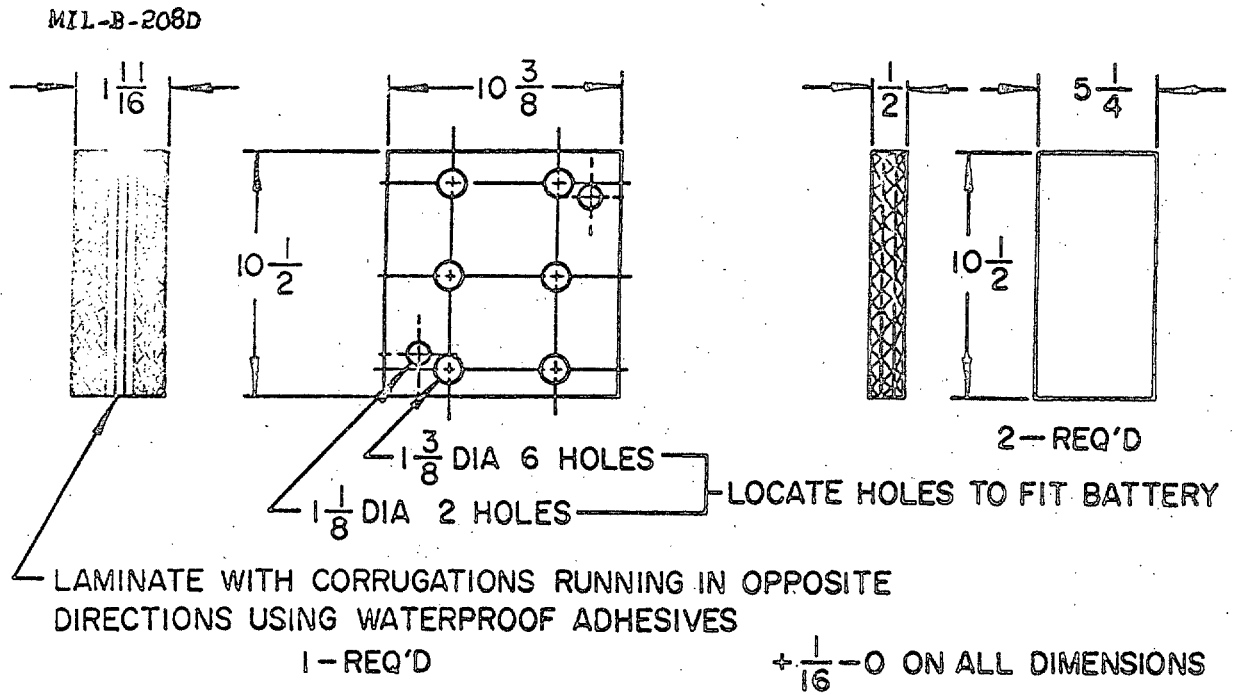
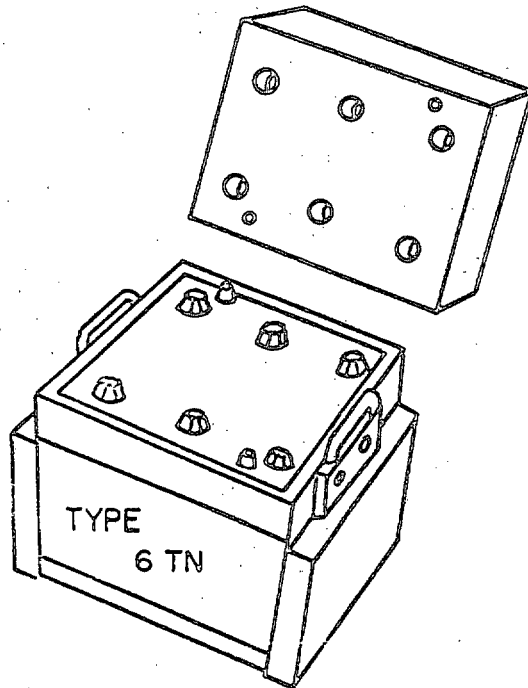


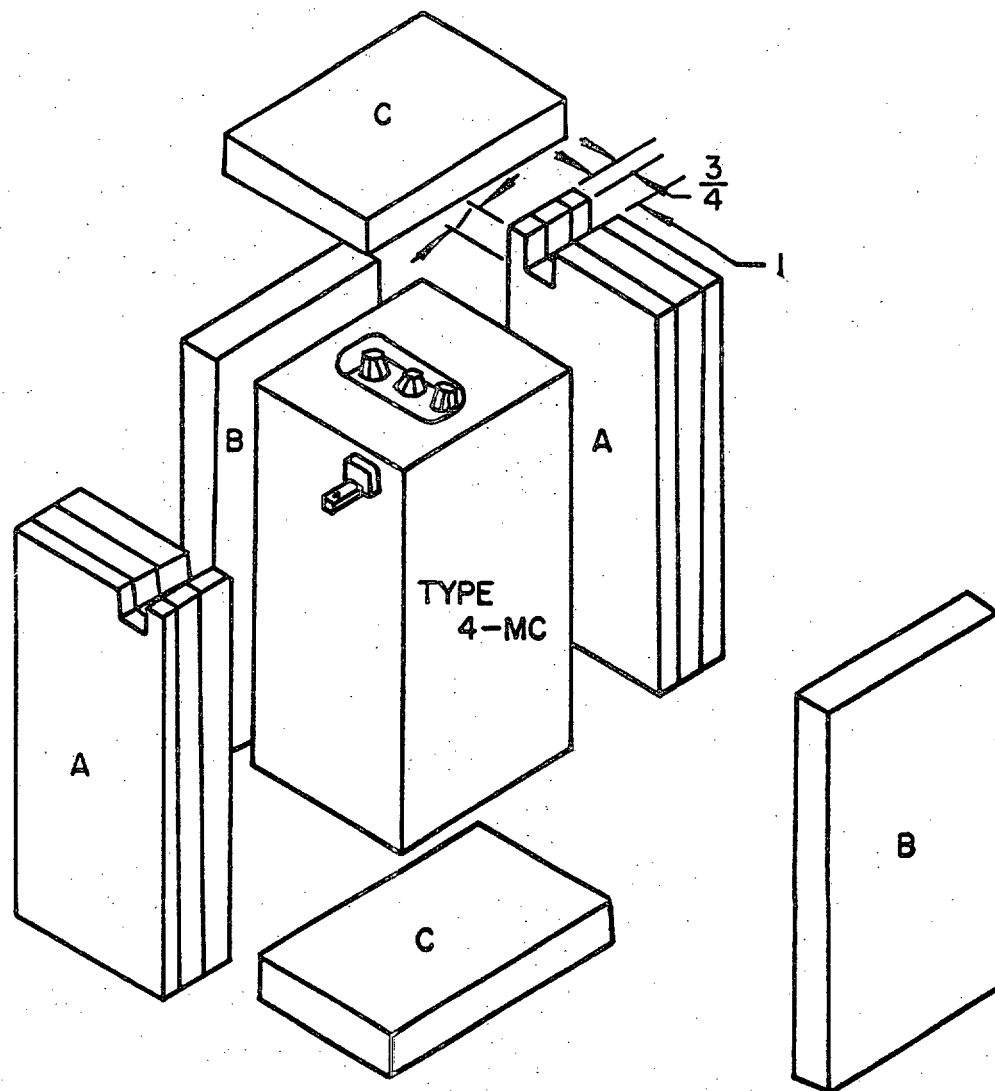
FIGURE 6-TOP FRAME AND FILLER PAD ASSEMBLY

TOP FRAME ASSEMBLY



MATERIAL NOTE :  
FIBERBOARD TYPE CF,  
CLASS WR, VARIETY TW,  
GRADE 1100, PPP-F-320

MIL-B-208D



BILL OF MATERIALS		
PAD	SIZE	REQ
A	8 1/2 x 4 7/8 x 1 1/2	2
B	8 1/2 x 4 1/2 x 1/2	2
C	7 1/2 x 5 x 1/2	2

MATERIAL NOTE:  
 FIBERBOARD TYPE CF,  
 CLASS WR, VARIETY TW,  
 GRADE 1100, PPP-F-320

FIGURE 7— FILLER PADS AND ASSEMBLY