

FINAL REPORT
JULY 1997

REPORT NO. 97-04

19980914 017

2.75-INCH, HYDRA 70, PA150,
ROCKET PALLET FIRST ARTICLE
TESTING (FAT)

Prepared for:
U.S. Army Armament Research, Development
and Engineering Center
ATTN: AMSTA-AR-ESK
Rock Island, IL 61299-7300

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VALIDATION ENGINEERING DIVISION
SAVANNA, ILLINOIS 61074-9639

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19. ABSTRACT (Continue on reverse if necessary and identify by block number) The U.S. Army Defense Ammunition Center (DAC), Validation Engineering Division (SIOAC-DEV), was tasked by the U.S. Army Armament Research, Development and Engineering Center (ARDEC) to conduct first article MIL-STD-1660, Design Criteria for Ammunition Unit Loads, testing on the 2.75-inch, Hydra 70, PA150, rocket pallet produced by Delfasco of Tennessee, Greeneville, TN. Results from the MIL-STD-1660 testing indicated that the pallet, adapters, and containers produced by Delfasco met MIL-STD-1660 test requirements.					
20. DISTRIBUTION / AVAILABILITY OF ABSTRACT <input checked="" type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS			21. ABSTRACT SECURITY CLASSIFICATION UNCLASSIFIED		
22a. NAME OF RESPONSIBLE INDIVIDUAL JEROME H. KROHN		22b. TELEPHONE (Include Area Code) 815-273-8929		22c. OFFICE SYMBOL SIOAC-DEV	

U.S. ARMY DEFENSE AMMUNITION CENTER
VALIDATION ENGINEERING DIVISION
SAVANNA, IL 61074-9639

REPORT NO. 97-04

2.75-INCH, HYDRA 70, PA150, ROCKET PALLET FIRST ARTICLE TESTING (FAT)

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PART 1

INTRODUCTION

A. **BACKGROUND**. The U.S. Army Defense Ammunition Center (DAC), Validation Engineering Division (SIOAC-DEV), was tasked by the U.S. Army Armament Research, Development and Engineering Center (ARDEC) to conduct first article MIL-STD-1660, Design Criteria for Ammunition Unit Loads, testing on the 2.75-inch, Hydra 70, PA150, rocket pallet produced by Delfasco of Tennessee, Greeneville, TN.

B. **AUTHORITY**. This test was conducted IAW mission responsibilities delegated by the U.S. Army Armament, Munitions and Chemical Command (AMCCOM), Rock Island, IL. Reference is made to the following:

1. Change 4, 4 October 1974, to AR740-1, 23 April 1973, Storage and Supply Activity Operation.

2. AMCCOM-R, 10-17, Mission and Major Functions of USADACS, 13 January 1986.

C. **OBJECTIVE**. The objective of the tests was to determine if the pallets produced by Delfasco met MIL-STD-1660 test requirements prior to the acceptance of the pallets by the U.S. Army (USA).

D. **CONCLUSION**. Two of the three pallets submitted by Delfasco were evaluated using MIL-STD-1660 test requirements. No significant flaws were found in the two pallets during testing so the third pallet was not evaluated. As a result of the performance of the pallets during testing, the 2.75-inch, Hydra 70, PA150, rocket pallet produced by Delfasco is recommended for USA-wide use.

PART 2

MARCH - AUGUST 1996

ATTENDEES

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Rock Island, IL 61299-7300

PART 3

TEST PROCEDURES

The test procedures outlined in this section were extracted from MIL-STD-1660, Design Criteria for Ammunition Unit Loads, 8 April 1977. This standard identifies nine steps that a unitized load must undergo if it is to be considered acceptable. The four tests that were conducted on the test pallets are summarized below.

A. STACKING TEST. The unit load was loaded to simulate a stack of identical unit loads stacked 16 feet high, for a period of one hour. This stacking load was simulated by subjecting the unit load to a compression weight equal to an equivalent 16-foot stacking height. The compression load was calculated in the following manner. The unit load weight was divided by the unit load height in inches and multiplied by 192. The resulting number was the equivalent compressive force of a 16-foot-high load.

B. REPETITIVE SHOCK TEST. The repetitive shock test was conducted IAW Method 5019, Federal Standard 101. The test procedure is as follows: The test specimen was placed on, but not fastened to, the platform. With the specimen in one position, the platform was vibrated at 1/2-inch amplitude (1-inch double amplitude) starting at a frequency of approximately 3 cycles per second. The frequency was steadily increased until the package left the platform. The resonant frequency was achieved when a 1/16-inch-thick feeler gage momentarily slid freely between every point on the specimen in contact with the platform at some instance during the cycle or a platform acceleration achieved 1 ± 0.1 Gs. Midway into the testing period, the specimen was rotated 90 degrees and the test continued for the duration. Unless failure occurred, the total time of vibration was two hours if the specimen was tested in one position and three hours for more than one position.

C. EDGEWISE ROTATIONAL DROP TEST. This test was conducted using the procedures of Method 5008, Federal Standard 101. The procedure for the edgewise rotational drop test is as follows: The specimen was placed on its skids with one end of the pallet supported on a beam 4-1/2 inches high. The height of the beam was increased if necessary to ensure that there was no support for the skids between the ends of the pallet when dropping took place, but was not high enough to cause the pallet to slide on the supports when the dropped end was raised for the drops. The unsupported end of the pallet was then raised and allowed to fall freely to the concrete, pavement, or similar underlying surface from a prescribed height. Unless otherwise specified, the height of drop for level A protection conforms to the following tabulation:

GROSS WEIGHT (WITHIN RANGE LIMITS) (Pounds)	DIMENSIONS OF ANY EDGE, HEIGHT OR WIDTH (WITHIN RANGE LIMITS) (Inches)	HEIGHT OF DROPS ON EDGES	
		Level A (Inches)	Level B (Inches)
150 - 250	60 - 66	36	27
250 - 400	66 - 72	32	24
400 - 600	72 - 80	28	21
600 - 1,000	80 - 95	24	18
1,000 - 1,500	95 - 114	20	16
1,500 - 2,000	114 - 144	17	14
2,000 - 3,000	Above 145 - No limit	15	12
Above - 3,000		12	9

D. INCLINE-IMPACT TEST. This test was conducted by using the procedure of Method 5023, Incline-Impact Test of Federal Standard 101. The procedure for the incline-impact test is as follows: The specimen was placed on the carriage with the surface or edge to be impacted

projecting at least 2 inches beyond the front end of the carriage. The carriage was brought to a predetermined position on the incline and released. If it was desired to concentrate the impact on any particular position on the container, a 4- by 4-inch timber was attached to the bumper in the desired position before the test. No part of the timber was struck by the carriage. The position of the container on the carriage and the sequence in which surfaces and edges were subjected to impacts was at the option of the testing activity and depends upon the objective of the tests. This test was to determine satisfactory requirements for a container or pack, and, unless otherwise specified, the specimen was subjected to one impact on each surface that has each dimension less than 9.5 feet. Unless otherwise specified, the velocity at time of impact was 7 feet per second.

PART 4

TEST EQUIPMENT

A. Compression Tester.

- | | |
|-----------------------|----------------------|
| 1. Manufacturer: | Ormond Manufacturing |
| 2. Platform: | 60- by 60-inches |
| 3. Compression Limit: | 50,000 pounds |
| 4. Tension Limit: | 50,000 pounds |

B. Transportation Simulator.

- | | |
|------------------|--------------------|
| 1. Manufacturer: | Gaynes Laboratory |
| 2. Capacity: | 6,000-pound pallet |
| 3. Displacement: | 1/2-inch amplitude |
| 4. Speed: | 50 to 400 rpm |
| 5. Platform: | 5- by 8-foot |

C. Inclined Plane.

- | | |
|------------------|--------------------|
| 1. Manufacturer: | Conbur Incline |
| 2. Type: | Impact Tester |
| 3. Grade: | 10 percent incline |
| 4. Length: | 12-foot |

PART 5

TEST RESULTS

Two of three pallets submitted by Delfasco of Tennessee were inertly loaded to the specified design weight using two 4- by 4-inch lengths of lumber, two 2- by 4-inch lengths of lumber, and a quantity of ammunition simulant to bring each container individually to the required weight. Special care was taken to ensure that each container had the proper amount of weight in order to achieve a realistic pallet center of gravity (CG). Once properly prepared, the first two pallets were tested using MIL-STD-1660, Design Criteria for Ammunition Unit Loads, requirements. As a result of the good performance of the pallets during testing, the third pallet submission was not tested.

A. PALLET NO. 1.

Date:	19 November 1996
Weight:	2,245 pounds
Length:	78-1/2 inches
Width:	29-3/8 inches
Height:	43-1/2 inches

1. Compression Test. The test pallet was compressed with a load force of 9,900 pounds for 60 minutes. No damage was noted as a result of this test.

2. Repetitive Shock Test. The test pallet was vibrated 90 minutes at 220 RPM in the longitudinal orientation and 90 minutes at 185 RPM in the lateral orientation. Small cracks were noted to have formed in the pallet posts next to the pallet skids at the completion of the longitudinal vibration test. No change in the cracks was noted after the lateral vibration.

3. Edgewise Rotational Drop Test. The test pallet was edgewise rotationally dropped from a height of 15-inches on the longitudinal and lateral drops. No additional cracking was noted in the pallet posts.

4. Sling Compatibility Test. The test pallet was lifted off of the ground using the toplift adapter by four points, three points, two diagonal points, two adjacent points, and one point. No shifting of the containers or permanent deformation of the toplift adapter was noted.

5. Incline-Impact Test. The test pallet was incline-impacted on all four sides from a height of 8 feet. No additional damage was noted at the completion of the test.

6. Post Test Inspection. Following completion of MIL-STD-1660 testing, the pallet was disassembled and inspected for additional damage. The cracks noted at the completion of the longitudinal vibration test had not increased significantly. No significant damage was noted in the top or bottom adapters or the pallet deck.

B. PALLET NO. 2

Date:	20 November 1996
Weight:	2,245 pounds
Length:	78-1/2 inches
Width:	29-3/8 inches
Height:	43-1/2 inches

1. Compression Test. The test pallet was compressed with a load force of 9,900 pounds for 60 minutes. No damage was noted as a result of this test.

2. Repetitive Shock Test. The test pallet was vibrated 90 minutes at 220 rpm in the longitudinal orientation and 90 minutes at 155 rpm in the lateral orientation. Three small cracks were noted to have formed in the pallet posts next to the pallet skids at the completion of the longitudinal vibration test. Following completion of the lateral vibration, the cracks were noted

to have increased in size and extended from the edge of the skid up to the strengthening dimple in the pallet post.

3. Edgewise Rotational Drop Test. The test pallet was edgewise rotationally dropped from a height of 15 inches on the longitudinal and lateral drops. No additional cracking was noted in the pallet posts.

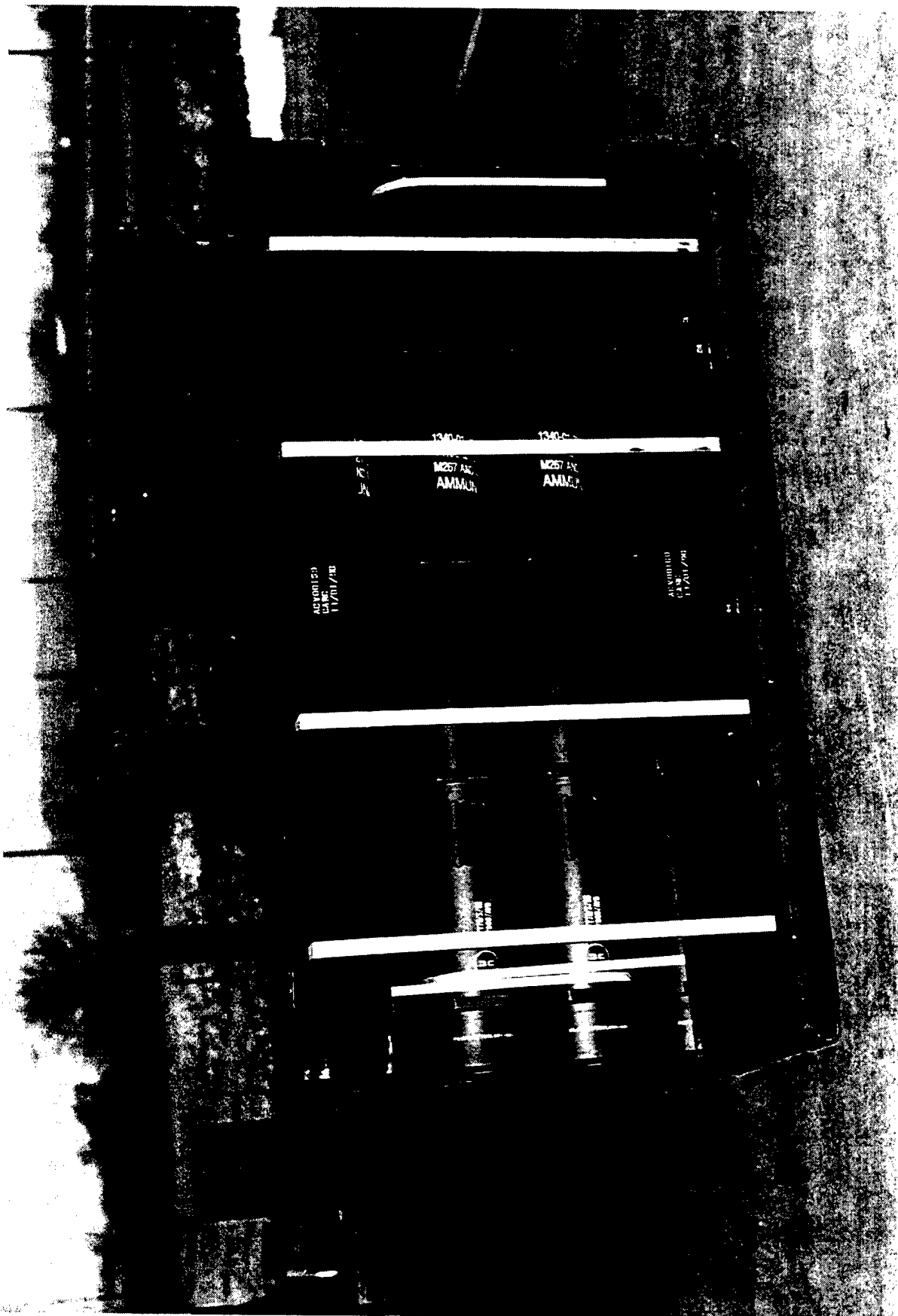
4. Sling Compatibility Test. The test pallet was lifted off of the ground using the toplift adapter by four points, three points, two diagonal points, two adjacent points, and one point. No shifting of the containers or permanent deformation of the toplift adapter was noted.

5. Incline-Impact Test. The test pallet was incline-impacted on all four sides from a height of 8 feet. No additional damage was noted at the completion of the test.

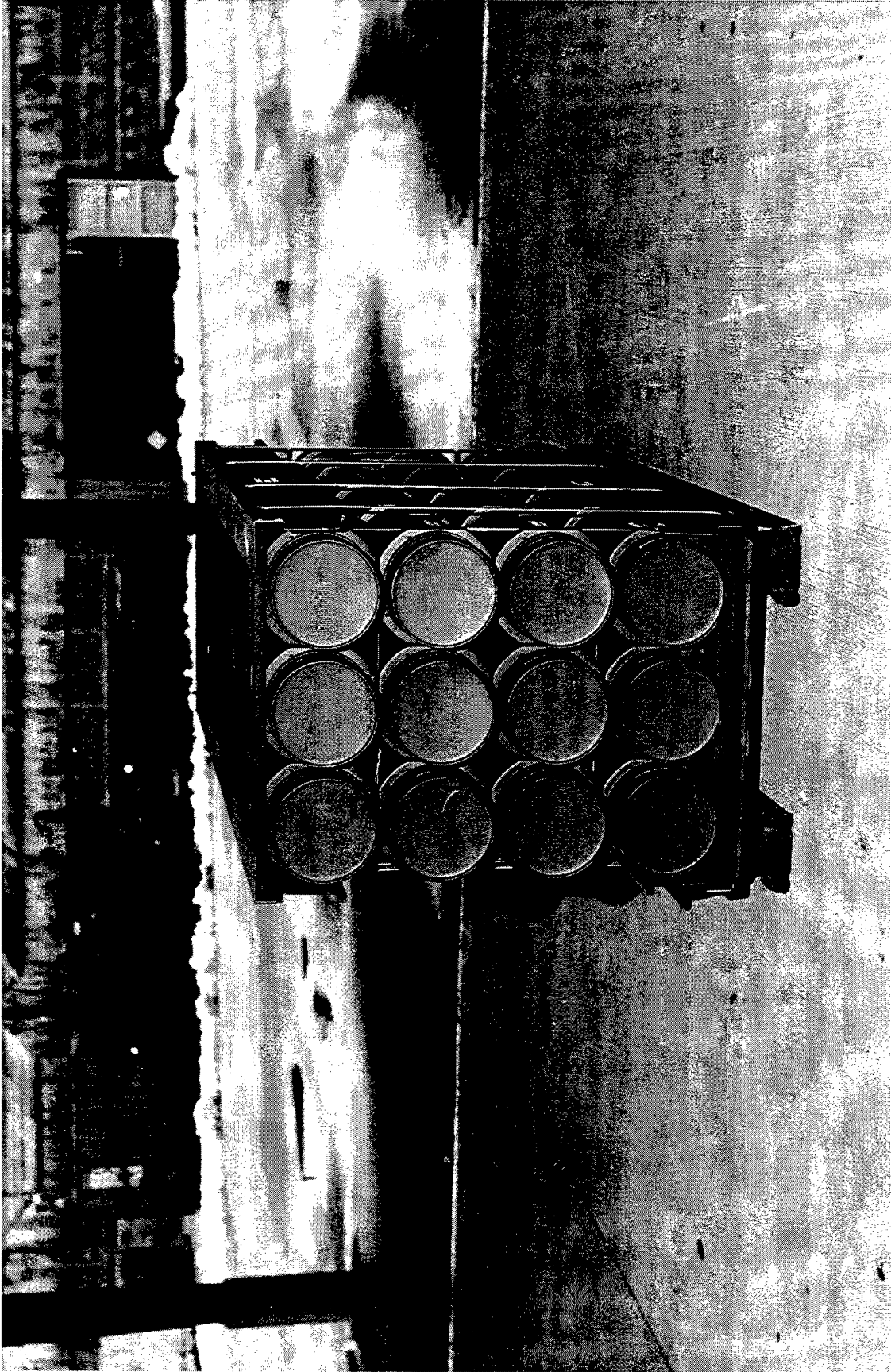
6. Post Test Inspection. Following completion of MIL-STD-1660 testing, the pallet was disassembled and inspected for additional damage. The cracks noted at the completion of the vibration test had not increased significantly. No significant damage was noted in the top or bottom adapters and only minor deformation was noted on the pallet deck.

PART 6

PHOTOGRAPHS



	<p>U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL - SAVANNA, IL</p>	
<p>PHOTO NO. A0317-SCN-97-1159. This photograph shows the side view of one of the three pallets submitted by Delfasco of Tennessee.</p>		



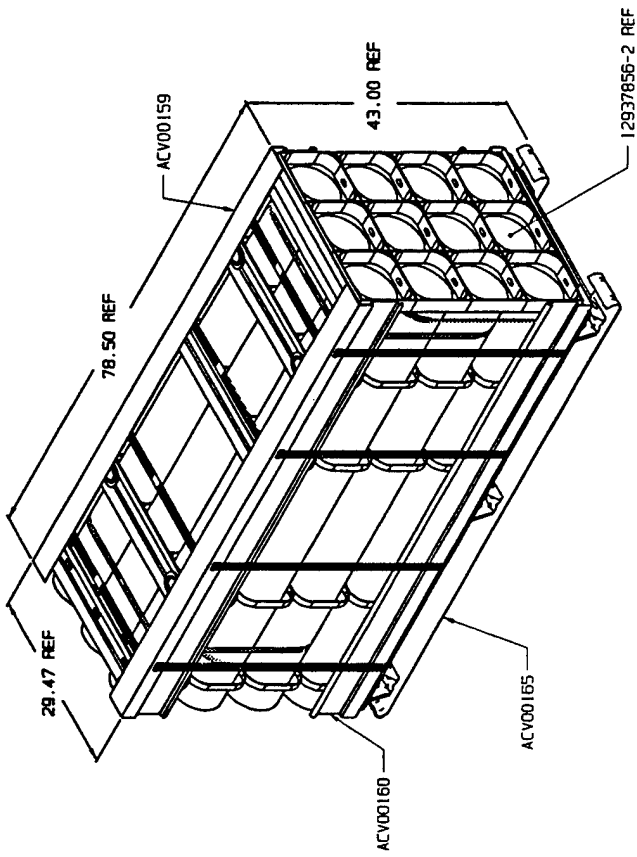
U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL -
SAVANNA, IL

PHOTO NO. A0317-SCN-97-1163. This photograph shows the end view of one of the three pallets submitted by Delfasco of Tennessee.

PART 7

DRAWINGS

REV	DESCRIPTION	DATE	APPROVED
-	PRODUCT BASELINE	94-03-25	SCHULTZ
A	ERR MAR2001	95-06-22	
A	WTR HET3003	95-06-22	
	(ECP MER3004) 95-02-22	95-04-11	



COMBINATION OF ADOPTED ITEMS	PART NO
PALLET - SPECIAL SIZE 78.50 X 29.31 SHEET METAL	ACV00165
TOP ASSEMBLY - PALLET ADAPTER PA150 CONTAINER	ACV00159
BOTTOM ASSEMBLY - PALLET ADAPTER PA150 CONTAINER	ACV00160
UNITIZATION DRAWING	19-48-4231/61-20PH1006

DISTRIBUTION STATEMENT A.
 APPROVED FOR PUBLIC RELEASE;
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DESIGN ACTIVITY	94-03-25	DESIGNER	B.J. SCHULTZ
PROJECT	COMBINATION OF ADOPTED ITEMS, PALLET AND PALLET ADAPTER, UNITIZATION OF PA150 CONTAINER	DATE	94-03-25
SCALE	1/8"	UNIT	IN
SHEET	1 OF 1	DATE	94-03-25

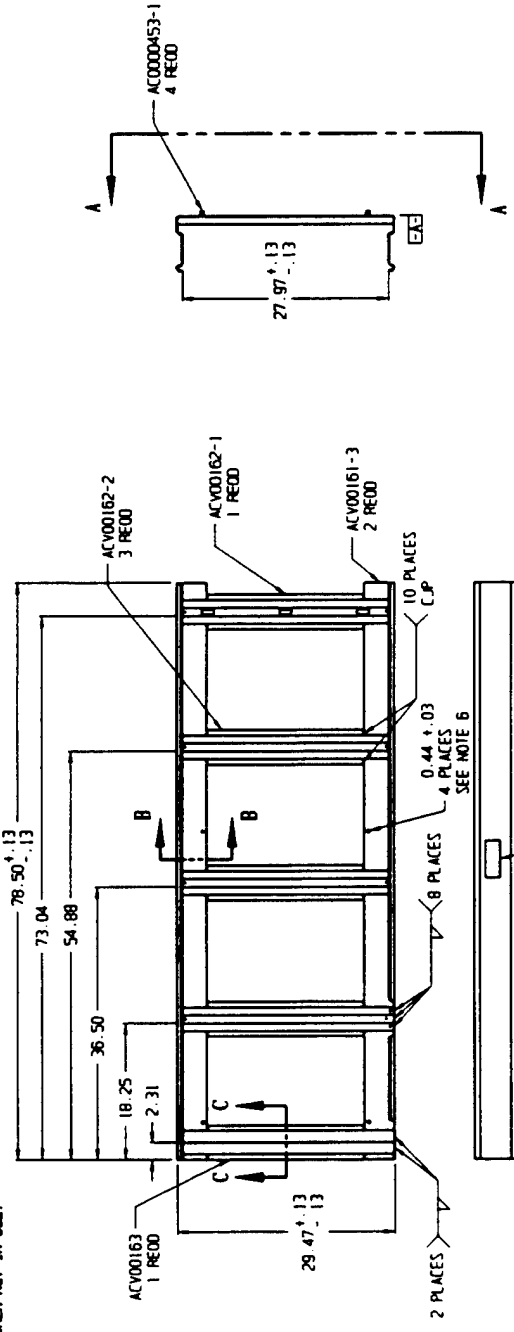
UNITIZATION OF ADOPTED ITEMS, PALLET AND PALLET ADAPTER, UNITIZATION OF PA150 CONTAINER

SCALE 1/8" UNIT IN

SHEET 1 OF 1

REV	DESCRIPTION	DATE	APPROVED
-	PRODUCT BASELINE	94-03-25	SCHULTZ
A	FOR PART 3003 (ECP MFR0004) 95-08-22	95-08-22	
	(ECP MFR0004) 95-02-22	95-02-22	
	(ECP MFR0006) 95-03-18	95-03-18	

- NOTES:
- MIL-A-2550, ANST/ANS A2.4-88, ANSI Y14.5M-1982 AND MIL-A-20789 APPLY.
 - PROTECTIVE FINISH SHALL BE IN ACCORDANCE WITH DWG AC20000423. COLOR SHALL BE GREEN NO. 353 PER MIL-C-46168 (FED STD 595 NO. 34094).
 - PAINTING SHALL BE IN ACCORDANCE WITH DWG AC20000423. COLOR SHALL BE WHITE NO. 37875 0.50 INCH HIGH LETTERS.
 - WELDMENT CONSTRUCTION SPEC MIL-STD-1281, CLASS 1, APPLIES. CHAMFERED CORNER SHALL NOT BE WELDED IN ORDER TO ALLOW ADDITIONAL DRAIN HOLE.
 - ALTERNATE ALIGNING LUG PART NO AC20000453-3 MAY BE USED INSTEAD OF PART NO AC20000453-1. IF ALTERNATE LUG IS USED, USE 0.52 4 PLACES.
 - DIMENSIONS OF THE RETAINER RING MAY BE VARIED TO INSURE THE RING'S POSITION WHEN LIFTED VERTICALLY. THIS DIMENSION ASSURES AND 95 DEGREES WITH THE HORIZONTAL. THIS DIMENSION ASSURES THAT THE RING SHALL BE SELF NESTING WHEN NOT IN USE.



A	A
SHEET 1	SHEET 2
REVISION STATUS OF SHEETS	

PART NO ACV00159

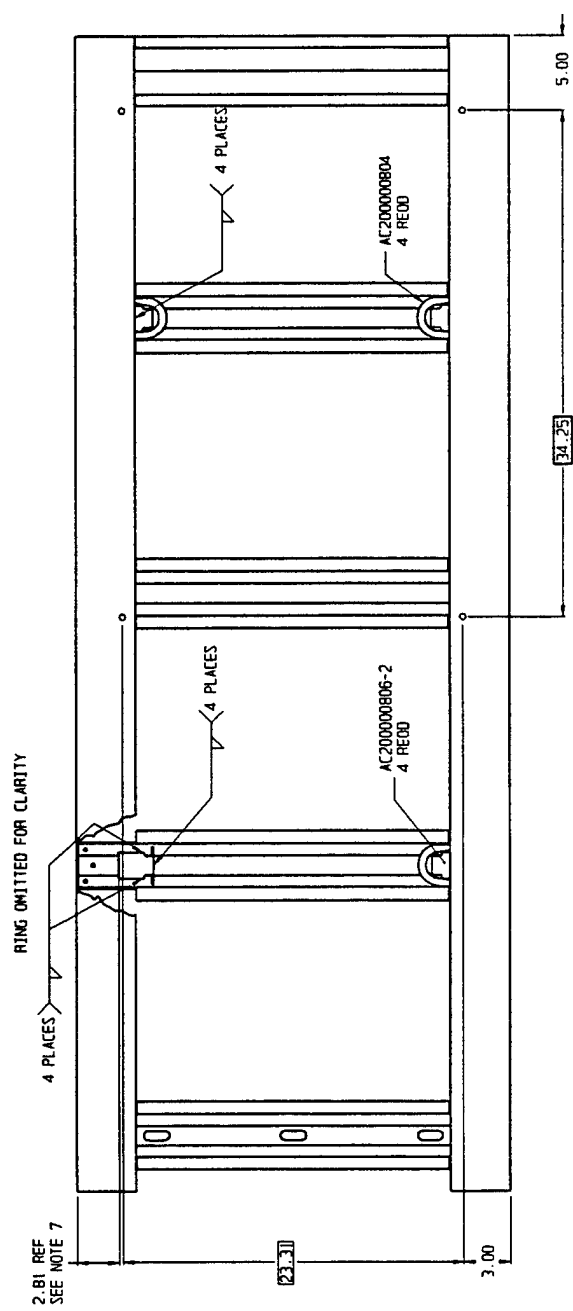
REV	DESCRIPTION	DATE	APPROVED
94-03-25	SCHULTZ	94-03-25	SCHULTZ
B.K. SPS	SCHULTZ		
J.S. JAK	T.J. NIOBELS		
W.F. ERNST			
WILLIAM F. ERNST			

APPLICATION: ACV00159 PALLETS BEST ASSY USED ON

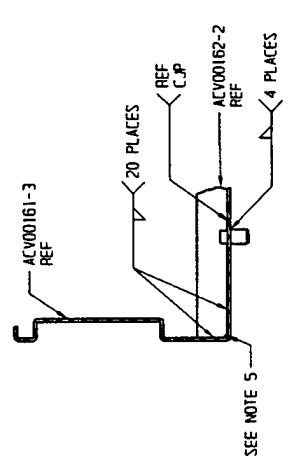
REVISION STATUS OF SHEETS: SHEET 1 OF 2

DISTRIBUTION STATEMENT A:
 APPROVED FOR PUBLIC RELEASE;
 DISTRIBUTION IS UNLIMITED.

REV	DESCRIPTION	DATE	APPROVED
-	PRODUCT BASELINE	94-03-25	SCHULTZ
A	ERR M6R2001 (ECP M6R3004)	95-06-22	
	(ECP M6R3006)	95-03-18	



VIEW A-A



SECTION B-B
SCALE 1/2

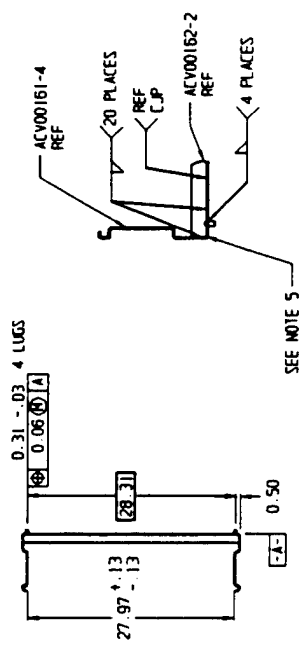
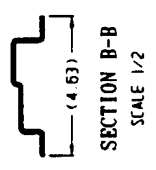
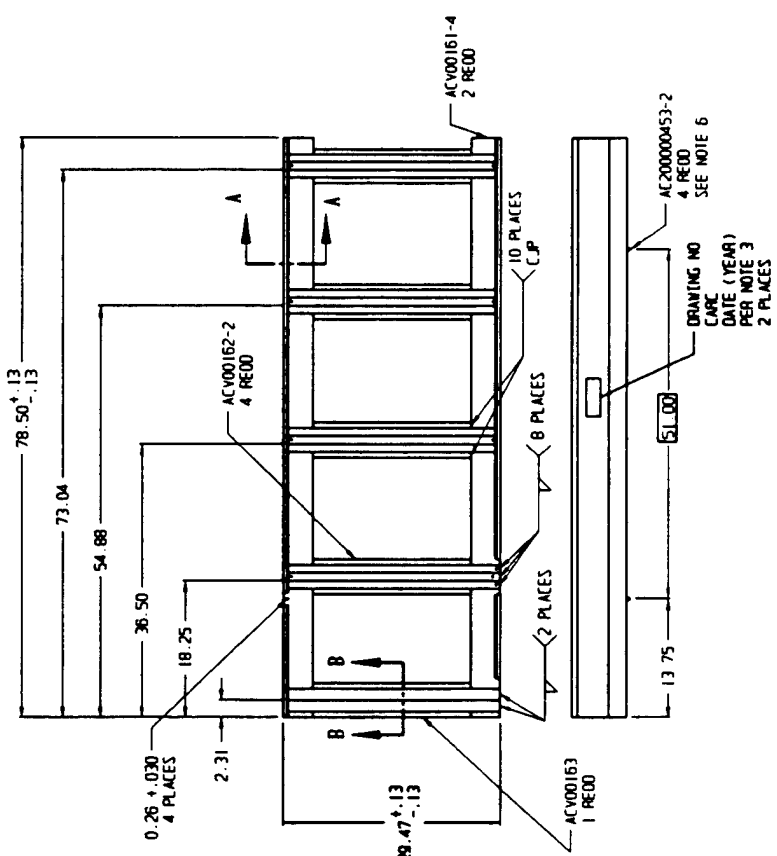
DESIGN ACTIVITY		DATE	
DESIGNER	W. J. ERNST	DATE	94-03-25
CHECKER	T. J. MICHELS	DATE	95-06-22
APPROVER	WILLIAM F. ERNST	DATE	95-03-18
PROJECT		PROJECT	
TOP ASSEMBLY -		TOP ASSEMBLY -	
PALLET ADAPTER		PALLET ADAPTER	
PALSO CONTAINER		PALSO CONTAINER	
SCALE	1/4	UNIT	IN
SHEET 1/4		SHEET 2 OF 2	

DISTRIBUTION STATEMENT A:
APPROVED FOR PUBLIC RELEASE;
DISTRIBUTION IS UNLIMITED.

REV	DESCRIPTION	DATE	APPROVED
-	PRODUCT BASELINE	94-03-25	SCHULTZ
A	FOR MFG 2001	95-06-22	
A	(ECP MFG 3004)	96-02-22	

NOTES:

- MIL-A-2550, ANST/ANS A2.4-86, ANS1 Y14.5H-1982 AND MIL-A-70788 APPLY.
- PROTECTIVE FINISH SHALL BE IN ACCORDANCE WITH DNG AC20000423. COLOR SHALL BE GREEN NO 303 PER MIL-C-46168 (RED STD 595 NO 34094).
- MARKING PAINT SHALL BE IN ACCORDANCE WITH DNG AC20000423. COLOR SHALL BE WHITE NO 37875 0.50 INCH HIGH LETTERS.
- WELDMENT CONSTRUCTION SPEC MIL-STD-1281, CLASS 1, APPLIES. CHAMFERED CORNER SHALL NOT BE WELDED IN ORDER TO ALLOW ADDITIONAL DRAIN HOLE.
- ALTERNATE ALIGNING LUG DNG AC20000453-5 MAY BE USED INSTEAD OF DNG AC20000453-2, IF THE ALTERNATE LUG IS USED, USE 0.32 ± 0.03 IN FOUR (4) PLACES.



SECTION A-A
SCALE 1/4

PART NO ACV00160

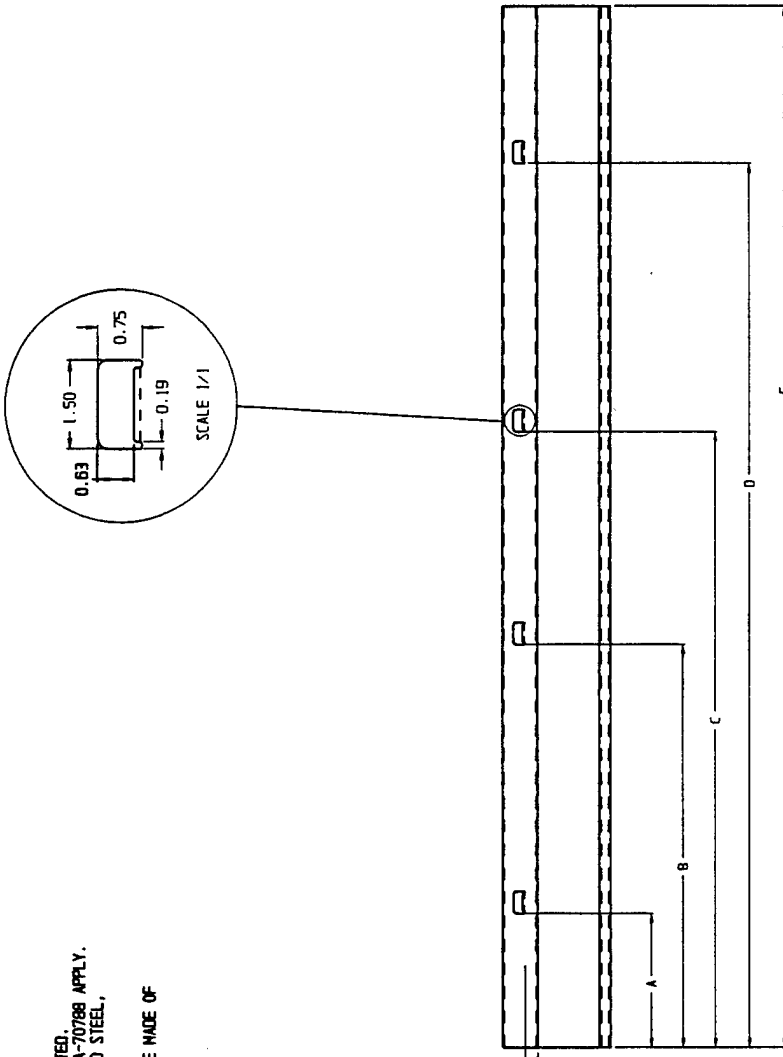
REV	DESCRIPTION	DATE	APPROVED
-	PRODUCT BASELINE	94-03-25	SCHULTZ
A	FOR MFG 2001	95-06-22	
A	(ECP MFG 3004)	96-02-22	

DESIGNER	94-03-25	DESIGN ACTIVITY	DESIGNED BY	DATE
BLK	SMS	SCHULTZ	DESIGNED BY	DATE
JS	JAK	T. J. MICHELS	DESIGNED BY	DATE
W. F. ERNST			DESIGNED BY	DATE
WILLIAM F. ERNST			DESIGNED BY	DATE

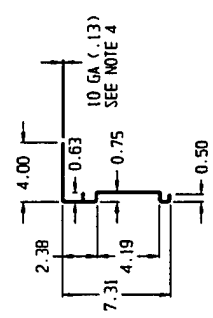
APPROVED FOR PUBLIC RELEASE:	ACV00160
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DATE	DESCRIPTION	REVISION	DATE	APPROVED
	PRODUCT BASELINE		94-03-25	
	ERR MAR2001		94-03-25	
	A1 NOR 1513003		95-05-22	
			95-04-11	



- NOTES:
- BEND RADIUS 0.13 INCH MAX WHERE NOT NOTED.
 - ANSI Y14-SM-1982, MIL-A-2550 AND MIL-A-70788 APPLY.
 - MATERIAL: SHEET, SAE OR ANSI 1005-1010 STEEL, CARBON, COLD ROLL OR HOT ROLL, PER ASTM A568, (ASTM A366 OR A569).
 - PARTS ACV00161-2 AND ACV00161-4 MAY BE MADE OF 12 GA (.10) MATERIAL.



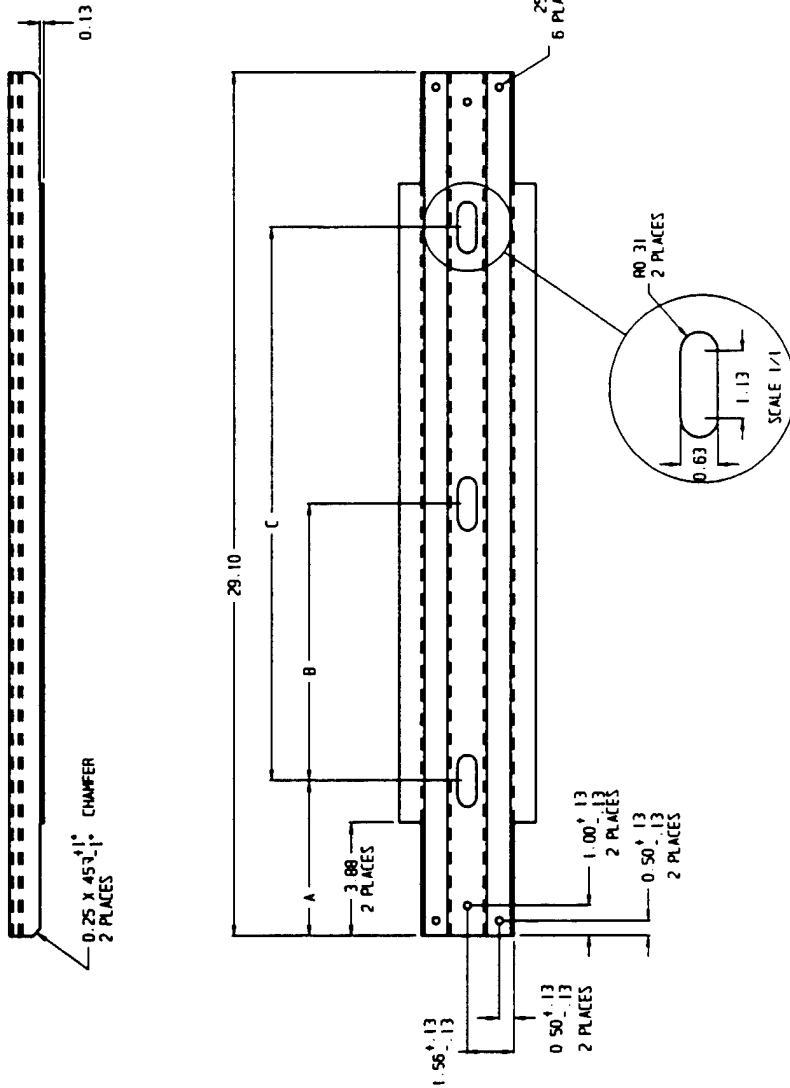
PART NO	DIMENSION				
	A	B	C	D	E
ACV00161-1	9.75	24.75	44.50	59.50	70.75
ACV00161-2	---	---	---	---	70.75
ACV00161-3	9.00	27.08	49.92	68.00	78.50
ACV00161-4	---	---	---	---	78.50

DISTRIBUTION STATEMENT A:
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SEE PARTS LIST

DESIGN ACTIVITY	94-03-25	U.S. ARMY AMMUNITION RESEARCH AND DEVELOPMENT CENTER DURHAM, N.C. 27715-6199
PROJECT NAME	SMS SCHULTZ	
DESIGNER	J.S. JAK	
CHECKER	T.J. MICHELS	
APPROVER	H.F. ERNST	
DATE	2-25-1994	
SCALE	1:1	
SHEET NO	2	TOTAL SHEETS 2
UNIT	IN	
PART NO	ACV00161	
DESCRIPTION	SIDE RAIL	
APPLICATOR	WILLIAM F. ERNST	

- NOTES:
- BEND RADIUS 0.13 INCH MAX WHERE NOT NOTED.
 - ANSI Y14.5M-1982, MIL-A-2550 AND MIL-A-70788 APPLY.
 - MATERIAL: SHEET, SAE OR ANSI 1005-1010 STEEL, CARBON, COLD ROLL OR HOT ROLL PER ASTM A568, (ASTM A306 OR A569).

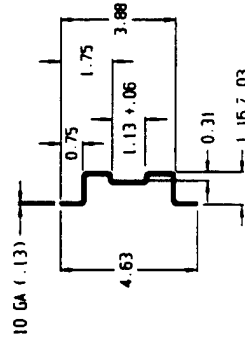


DIMENSION			
PART NO	A	B	C
ACV00162-1	5.30	9.25	18.50
ACV00162-2	----	----	----

DISTRIBUTION STATEMENT A.
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SEE PARTS LIST

REV	DESCRIPTION	DATE	APPROVED
1	PRODUCT BASELINE	94-03-25	
2	ERRA MR2001	95-06-22	
3	NGP MR13003	95-06-22	
4	(ECP MR63004)	95-02-22	
		94-03-25	SCHULTZ
		95-04-11	



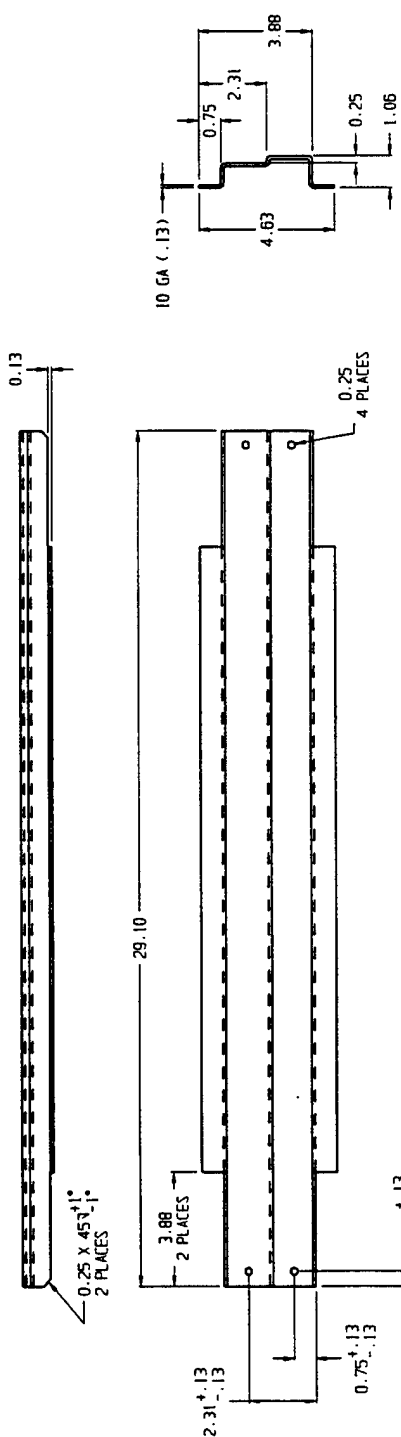
REVISION			
REV	DESCRIPTION	DATE	APPROVED
1	PRODUCT BASELINE	94-03-25	
2	ERRA MR2001	95-06-22	
3	NGP MR13003	95-06-22	
4	(ECP MR63004)	95-02-22	
		94-03-25	SCHULTZ
		95-04-11	

DESIGN ACTIVITY	DATE	BY	CHKD
DESIGN	94-03-25	J. J. NICHOLS	J. J. NICHOLS
DETAIL		W. F. ERNST	W. F. ERNST
APPREVED FOR RELEASE	DATE	BY	CHKD
APPROVED FOR RELEASE	94-03-25	WILLIAM F. ERNST	WILLIAM F. ERNST

SCALE	1/2
UNIT	IN
SHEET	1
OF	1

DATE	REVISION	APPROVED
94-03-25	PRODUCT BASELINE	SCHULTZ
95-06-22	ERRI MAR2001	
96-04-11	NORI K613003	
96-02-22	(ECP NHB3004) 96-02-22	

- NOTES:
- BEND RADIUS 0.13 INCH MAX WHERE NOT NOTED.
 - ANSI Y14.5M-1982, MIL-A-2550 AND MIL-A 70788 APPLY.
 - MATERIAL: SHEET, SAE OR ANSI 1005-1010 STEEL, CARBON, COLD ROLL OR HOT ROLL, PER ASTM A568, (ASTM A366 OR A569).



PART NO ACV00163

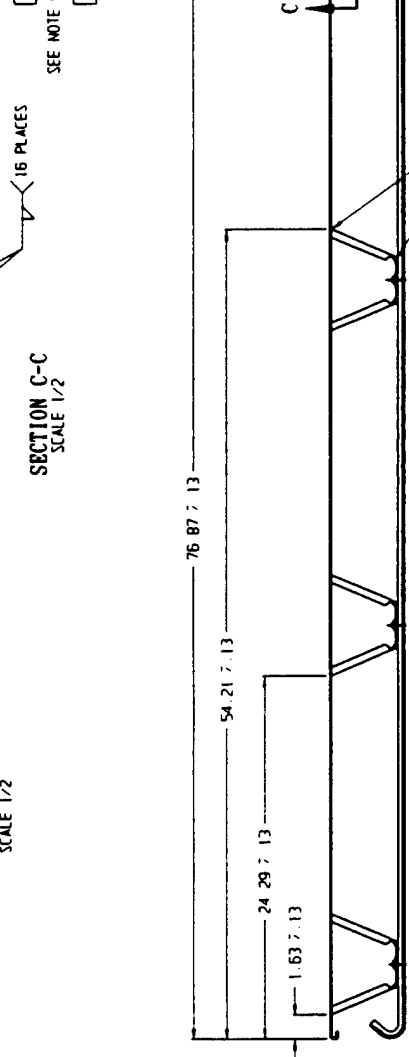
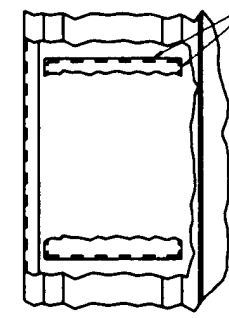
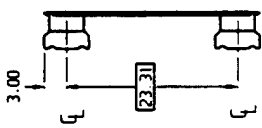
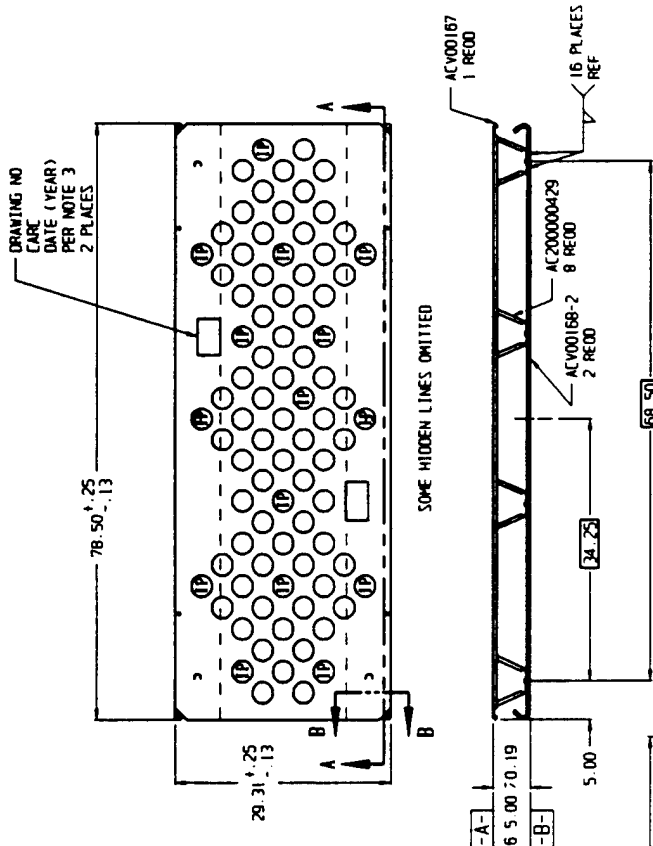
DATE	REVISION	APPROVED
94-03-25	PRODUCT BASELINE	SCHULTZ
95-06-22	ERRI MAR2001	
96-04-11	NORI K613003	
96-02-22	(ECP NHB3004) 96-02-22	

DESIGN ACTIVITY	APPROVED MANUFACTURING CENTER AND SCHOOL
DESIGNER	WILLIAM F. ERNST
CHECKER	T. J. NICHOLS
DATE	94-03-25
SCALE	1/2
SHEET	OF

DISTRIBUTION STATEMENT A.
 APPROVED FOR PUBLIC RELEASE;
 DISTRIBUTION IS UNLIMITED.

REVISION		DATE	APPROVED
-	PRODUCT BASE LINE	94-03-25	SCHULTZ
	ERR 1462001	95-08-22	
	NCR 14613003	95-08-22	
	(REP. 14613004)	96-12-22	

- NOTES:
- MIL-A-2550, AMS/ANS A2.4-66, ANSI Y14.34-1982 AND MIL-P-70786 APPLY.
 - PROTECTIVE FINISH SHALL BE IN ACCORDANCE WITH DNG AC200000423. COLOR SHALL BE GREEN NO 383 PER MIL-C-46168 (FED STD 595 NO 34094).
 - MARKING PAINT SHALL BE IN ACCORDANCE WITH DNG AC200000423. COLOR SHALL BE WHITE NO 37875 0.50 INCH HIGH LETTERS.
 - WELDMENT CONSTRUCTION SPEC MIL-SITD-1261, CLASS 1, APPLIES.
 - MAXIMUM GAP ALONG WELD LINE BETWEEN POST AND DECK OR POST AND SKID WILL NOT EXCEED 0.02 INCHES PRIOR TO WELDING. THIS MAY BE EXCEEDED WHEN RESTRAINED BY UP TO 1500 LBS UNIFORMLY APPLIED TO THE TOP SURFACE OF THE DECK.
 - THIS DIMENSION IS TO BE CHECKED AT THE INSPECTION POINTS (IP) DEFINED IN THE TOP VIEW. THE MEASUREMENTS WILL ORIGINATE FROM DATUMS A AND B.



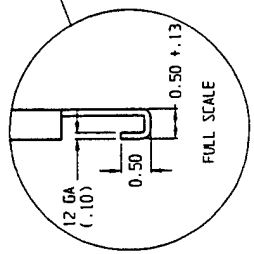
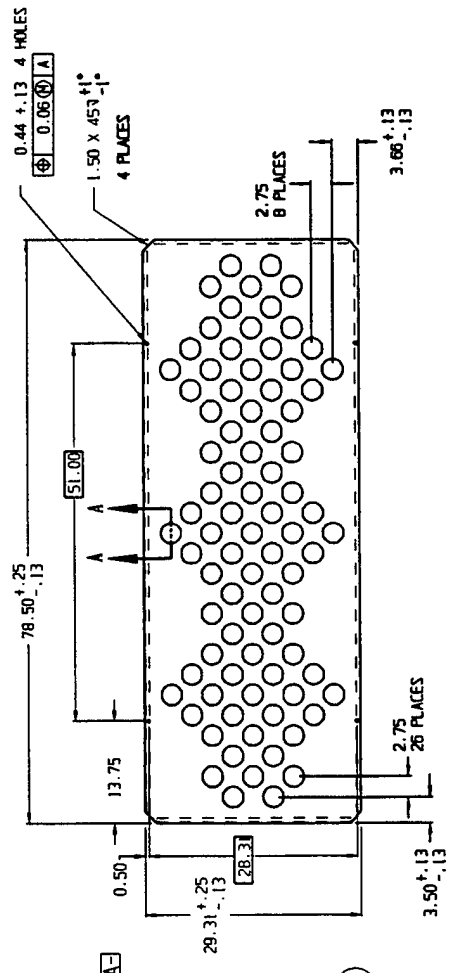
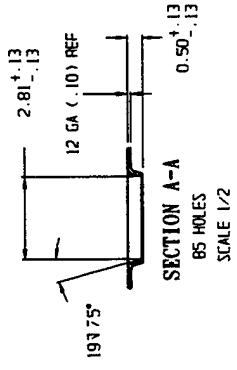
PART NO ACV00165

DESIGN ACTIVITY		REVISION	
94-03-25	W.F. ERNST	94-03-25	SCHULTZ
B.K. SWS	T.J. MICHELS	95-08-22	
J.S. JAM	W.F. ERNST	95-08-22	
WILLIAM F. ERNST		WILLIAM F. ERNST	
APPROVED FOR PUBLIC RELEASE:		APPROVED FOR PUBLIC RELEASE:	
DISTRIBUTION IS UNLIMITED.		DISTRIBUTION IS UNLIMITED.	
PALLETS-SPECIAL SIZE		PALLETS-SPECIAL SIZE	
78.50 X 29.31		78.50 X 29.31	
SHEET METAL		SHEET METAL	
PART NO ACV00165		PART NO ACV00165	
SCALE 1/8		SCALE 1/8	
UNIT WT		UNIT WT	
SHEET 1 OF 1		SHEET 1 OF 1	

DISTRIBUTION STATEMENT A:
APPROVED FOR PUBLIC RELEASE:
DISTRIBUTION IS UNLIMITED.

REV	DESCRIPTION	DATE	APPROVED
1	PRODUCT BASELINE	94-03-25	SCHULTZ
2	ERR CORR	94-06-22	
3	REVISED	95-06-22	

- NOTES:
- BEND RADIUS 0.13 INCH MAX WHERE NOT NOTED.
 - ANSI Y14.54-1982, MIL-A-2550 AND MIL-P-70786 APPLY.
 - MATERIAL: SHEET, SAE OR ANSI 1005-1010 STEEL, CARBON, COLD ROLL OR HOT ROLL, PER ASTM A568, (ASTM A366 OR A569).



SOME HIDDEN LINES OMITTED FOR CLARITY

PART NO ACV00167

DATE	BY	CHKD	DESIGN ACTIVITY
94-03-25	BJK	SMS	DESIGN
	JS	JFK	DETAIL
			ASSEMBLY
			TESTING
			FINISH
			PACKAGING
			SHIPMENT
			REWORK
			REVISION
			APPROVAL

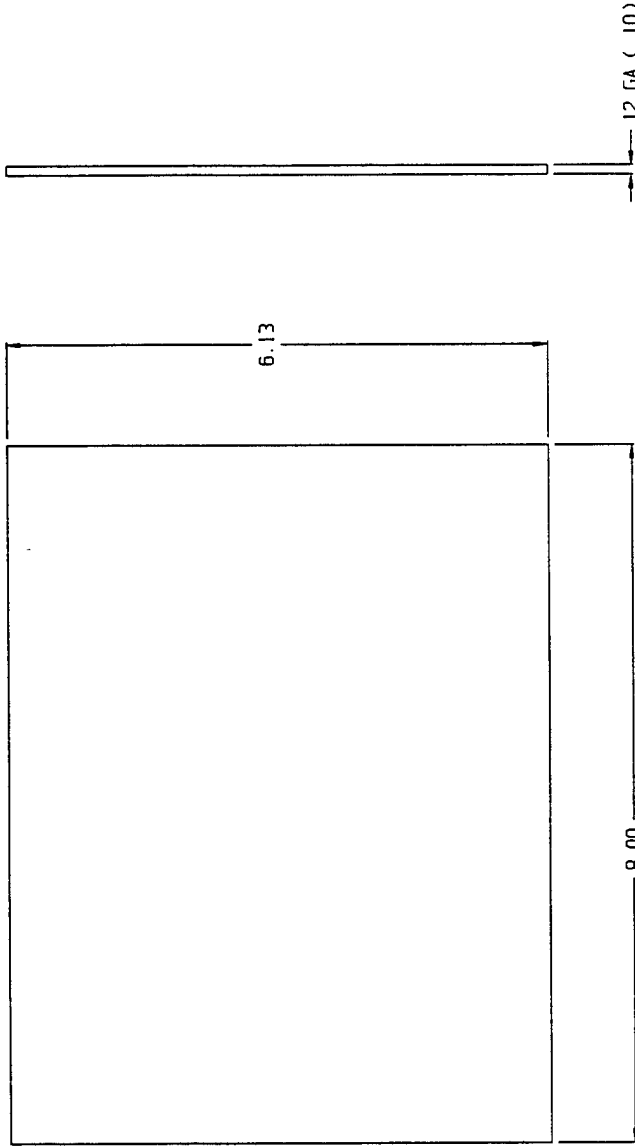
FILE NO	94-03-25
DESIGNER	SCHULTZ
CHECKER	T. J. MICHELS
DATE	94-03-25
BY	W. F. ERNST
CHKD	WILLIAM F. ERNST
DATE	94-03-25
SCALE	1/2
UNIT	IN
SHEET	OF

DESIGN ACTIVITY	FILE NO
DESIGN	94-03-25
DETAIL	
ASSEMBLY	
TESTING	
FINISH	
PACKAGING	
SHIPMENT	
REWORK	
REVISION	
APPROVAL	

APPROVED FOR PUBLIC RELEASE:	UNLIMITED
DISTRIBUTION STATEMENT A:	

REVISION		
LTR	DESCRIPTION	DATE
-	PRODUCT BASELINE ERR @#0### YY-MM-DD	YY-MM-DD

- NOTES:
- ANSI Y14.5M-1982, MIL-A-2550 AND MIL-P-70786 APPLY.
 - MATERIAL: SHEET, SAE OR ANSI 1005-1010 STEEL, CARBON, COLD ROLL OR HOT ROLL, PER ASTM A568, (ASTM A366 OR A569).



PART NO ACV00307

UNLESS OTHERWISE NOTED, DIMENSIONS ARE IN INCHES. SHARP CORNERS AND EDGES.		DATE	96-06-05	DESIGN ACTIVITY	U.S. ARMY INDUSTRIAL OPERATIONS COMMAND DEFENSE AMMUNITION CENTER AND SCHOOL SAVANNAH, ILLINOIS 61074-9839
FRACTIONS ON DECIMALS		BY	BJK	SIZE	C
TOLERANCES ON		CHKD	TJM	CAGE CODE	28620
BY		DATE	01/07/97	SCALE	1/1
MATERIAL		BY	MICHEL	UNIT	WT
ACV00165 2.75 HYDRA		POST SUPPORT PLATE			
ACV00164 ROCKET		ACV00307			
NEXT ASSY USED ON		SHEET 1 OF 1			
APPLICATION					

DISTRIBUTION STATEMENT A.

APPROVED FOR PUBLIC RELEASE;
DISTRIBUTION IS UNLIMITED.

REVISION		DATE	APPROVED
LTR	DESCRIPTION		
A	CHANGE PAINT THICKNESS REQUIREMENTS	87-09-17	ERNST
B	PRODUCT BASELINE ERR M8K9450	89-04-10	TT
C	NOR M2T4200 92-07-20 (ECP M3T4030 93-11-02)	94-11-04	SCHULTZ
D	NOR M4T3005 94-06-02	95-06-07	SCHULTZ
E	NOR M5T8003 95-05-09 (ECP M6R3004) 96-02-22	96-04-11	

1. DETAIL REQUIREMENTS FOR SURFACE PREPARATION (CLEANING AND PRETREATMENT) TO BARE METAL PRIOR TO PRIMING AND PAINTING.

1.1 ALL SURFACES SHALL BE THOROUGHLY CLEANED SUCH THAT THE BARE METAL SURFACES ARE FREE FROM OIL, GREASE, DIRT, SCALE, RUST, FOREIGN MATTER AND LOOSE WELD SPATTER. THE CLEANING METHOD SHALL BE IN ACCORDANCE WITH ANY METHOD IN TABLE IV OF MIL-STD-171 OR AS SPECIFIED IN PARAGRAPH 3.1 OF MIL-1-704. PARTICULAR CARE MUST BE TAKEN TO REMOVE WELD SLAG AND LOOSE WELD SPATTER FROM WELDS AND ADJACENT AREAS.

1.2 IMMEDIATELY AFTER CLEANING, ANY SOLVENTS OR MOISTURE SHALL BE COMPLETELY REMOVED. THESE CLEAN DRY SURFACES SHALL THEN HAVE A PRETREATMENT APPLIED IN ACCORDANCE WITH MIL-STD-171. FOR STEEL SUBSTRATES THE PRETREATMENT TO USE IS ZINC PHOSPHATE, FINISH NO. 5.1.1, IRON PHOSPHATE, FINISH NO. 5.1.2 OR WASH PRIMER, FINISH NO. 5.2.

1.3 IMMEDIATELY PRIOR TO PRIMING, ALL SURFACES WHICH HAVE BEEN CLEANED AND PRETREATED IN ACCORDANCE WITH PARAGRAPH 1.1 AND 1.2 SHALL BE CHECKED FOR THOROUGH CLEANLINESS. ANY ACCUMULATION OF OIL, GREASE, DIRT, RESIDUES FROM THE CLEANING PROCESS OR ANY FOREIGN MATERIAL SHALL BE COMPLETELY REMOVED. THE USE OF SOLVENTS MEETING THE REQUIREMENTS OF TABLE IV, FINISH NO. 4.3 OF MIL-STD-171 IS ACCEPTABLE. THE COMPLETE DRYING OF ANY SOLVENTS OR MOISTURE IS ESSENTIAL.

2. DETAIL REQUIREMENTS FOR APPLICATION OF ANTI-CORROSIVE PRIMER PAINT.

2.1 PRIMER SHALL BE APPLIED ON ALL SURFACES IN ACCORDANCE WITH MANUFACTURERS' INSTRUCTIONS AND PARAGRAPHS 5.2.1 AND 5.2.2 OF MIL-STD-171 (EXCEPT THAT WHEN ACCELERATED DRYING IS EMPLOYED, OVEN TEMPERATURE IS NOT TO EXCEED 200 DEGREES F). MIL-P-53022 OR MIL-P-53030 MAY BE USED ON EITHER FERROUS OR NON-FERROUS MATERIALS.

2.2 ONE COAT OF PRIMER SHALL BE APPLIED AS PROMPTLY AS POSSIBLE AFTER THE SURFACES HAVE BEEN PREPARED AND CLEANED BY THE FOREMENTIONED PROCEDURES. THE PRIMER SHALL BE DRY TO THE TOUCH IN ACCORDANCE WITH MIL-C-53072. ALL EPOXY PRIMERS SHALL BE PROPERLY ORIED BEFORE TOPCOATING, PRIMER DRY FILM THICKNESS SHALL BE APPLIED TO ATTAIN THE 336 HOUR SALT SPRAY REQUIREMENT. RECOMMENDED THICKNESS RANGE IS .0010 TO .0035 INCHES (.0254 TO .0889 MM).

3. DETAIL REQUIREMENTS FOR APPLICATION OF POLYURETHANE TOPCOAT PAINT.

3.1 TOPCOAT SHALL BE APPLIED ON EXTERIOR SURFACES ONLY IN ACCORDANCE WITH MANUFACTURERS' INSTRUCTIONS OR PARAGRAPHS 5.2.1 AND 5.2.2 OF MIL-STD-171. UNLESS OTHERWISE SPECIFIED, THE TOPCOAT COLOR SHALL BE GREEN NO. 383 IN ACCORDANCE WITH MIL-C-46168 OR MIL-C-53039.

3.2 TOPCOAT DRY FILM THICKNESS OF MIL-C-46168 AND MIL-C-53039 SHALL BE .0018 TO .0035 INCHES (.0457 TO .0889 MM) TOTAL APPLIED IN TWO COATS. THE SECOND COAT MAY BE APPLIED IN ACCORDANCE WITH MIL-C-53072 OR MANUFACTURERS' RECOMMENDATIONS.

3.3 ALL REWORK SHALL BE IN ACCORDANCE WITH PARAGRAPH 3.6.1 OF MIL-C-53072.

3.4 ALTERNATE COATINGS MAY BE USED IF APPROVED BY THE CONTRACTING OFFICER.

4. DETAIL REQUIREMENTS FOR APPLICATION TO PREVIOUSLY PAINTED SUBSTRATES.

4.1 ALL PREVIOUSLY PAINTED SURFACES MUST BE CLEAN AND FREE FROM RUST. WHERE RUST EXISTS, MECHANICAL CLEANING IN ACCORDANCE WITH FINISH NO. 4.1 OF MIL-STD-171 (WIREBRUSH IS ACCEPTABLE) SHALL BE PERFORMED UNTIL BRIGHT METAL IS EXPOSED. ONE COAT OF POLYURETHANE PAINT PER MIL-C-46168 OR MIL-C-53039 CAN BE APPLIED DIRECTLY OVER EXISTING ENAMEL OR POLYURETHANE COATINGS WITHOUT ANY ADDITIONAL SURFACE PREPARATION EXCEPT CLEANING. IF THE SURFACE IS BROKEN DOWN TO THE SUBSTRATE, THAT AREA MUST BE CLEANED, PRETREATED, PRIMED AND TOPCOATED PER PARAGRAPH 1 THROUGH 3. THE POLYURETHANE COATING SHALL NOT HOWEVER, BE DIRECTLY APPLIED OVER LACQUER. THE LACQUER MUST BE REMOVED DOWN TO THE BARE METAL BEFORE POLYURETHANE COATING IS APPLIED PER PARAGRAPHS 1 THROUGH 3.

4.2 WHERE VENDOR PARTS ARE SUPPLIED TO THE PRIME ORIGINAL EQUIPMENT MANUFACTURER (OEM) ALREADY ENAMEL PAINTED, THE PRIME OEM WILL HAVE TO REPAINT PER PARAGRAPH 4.1 BY APPLYING DIRECTLY OVER THE EXISTING ENAMEL COATING. IF THE VENDOR PARTS ARRIVE JUST ENAMEL PRIMED (WHICH IS PREFERRED), WITH SPECIFICATION PRIMERS SUCH AS IT-P-1757 OR IT-P-664, THEN THE POLYURETHANE PAINT PER PARAGRAPH 4.1 WILL BE APPLIED DIRECTLY OVER PRIMED SURFACES. IF THE ENAMELS ON THE VENDOR PARTS ARE OF A COMMERCIAL OR UNKNOWN TYPE THEY MUST BE TESTED BEFORE THE POLYURETHANE CAN BE APPLIED. THIS ENTAILS APPLYING POLYURETHANE PAINT TO A SMALL AREA OF THE PART AND OBSERVING FOR A PERIOD OF 15 MINUTES FOR ANY DEFECTS SUCH AS BLISTERING, DELAMINATION OR BLEEDING. IF NONE ARE OBSERVED, THE REMAINDER OF THE PARTS CAN BE PAINTED. IF THERE IS A DEFECT, THE PARTS MUST BE CLEANED, PRETREATED, PRIMED AND TOPCOATED AS PREVIOUSLY DESCRIBED FOR BARE SUBSTRATES IN PARAGRAPH 1 THROUGH 3.

5. TESTING.

5.1 PALLETTS AND/OR ADAPTERS FINISHED IN ACCORDANCE WITH PARAGRAPH 2.3, AND 4 AS APPLICABLE SHALL BE TESTED FOR PAINT ADHESION USING ACTUAL PRODUCTION ITEMS.

5.2 THE PRIMER AND TOPCOAT SHALL BE ADHESION TESTED IN ACCORDANCE WITH PARAGRAPH 4.2.7.2 OF IT-C-490.

5.3 THE PRIMER AND TOPCOAT SHALL BE TESTED IN ACCORDANCE WITH PARAGRAPH 4.2.8 OF IT-C-490.

5.4 MIL-C-53072, PARAGRAPH 4.3.3.7 APPLIES.

DISTRIBUTION STATEMENT A.

APPROVED FOR PUBLIC RELEASE;
DISTRIBUTION IS UNLIMITED.

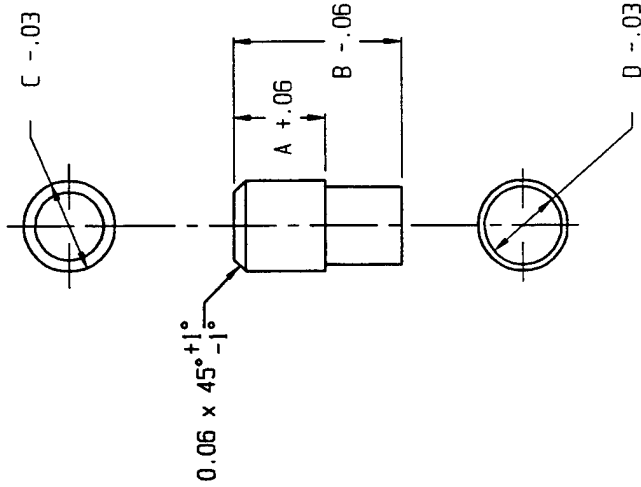
UNLESS OTHERWISE NOTED DIMENSIONS ARE IN INCHES. BREAK SHARP CORNERS AND EDGES.		DATE 86-05-09		DESIGN ACTIVITY	
POLYNAMES ON		DRYER	COAT	U.S. ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND DESIGNS APPLICATION CENTER AND SCHOOL SAVANNAH, GEORGIA 31074-9638	
PRACTICES		DRYER	NO. 1	CHEMICAL AGENT RESISTANT COATING (CARC) FINISHING REQUIREMENTS FOR METAL PALLETTS AND/OR PALLET ADAPTERS	
REWORKS		DRYER	NO. 1	CAGE CODE	
FILES		DRYER	NO. 1	C 28820	
MATERIAL		DRYER	NO. 1	SCALE NONE	
		DRYER	NO. 1	UNIT WT	
		DRYER	NO. 1	AC200000423	
		DRYER	NO. 1	SHEET 1 OF 1	
NEXT ASSY USED ON		APPLICATION			
		JOHN L. BYRD, JR. U.S. ARMY DESIGNS APPLICATION CENTER AND SCHOOL			

REVISION

LTR	DESCRIPTION	DATE	APPROVED
-	PRODUCT BASELINE ERR M8K9450	89-04-10	TPT
A	NOR M913051 89-04-26	89-06-23	FRIEND
B	ECP M913082-009 89-08-16	90-09-24	DREIER
C	ECP M0A2201-001 90-10-19	90-12-07	SCHULTZ
D	NOR M214200 92-07-20 (ECP M413005 94-06-02)	94-11-02	SCHULTZ
E	NOR M5T3003 95-06-22	96-04-11	

NOTES:

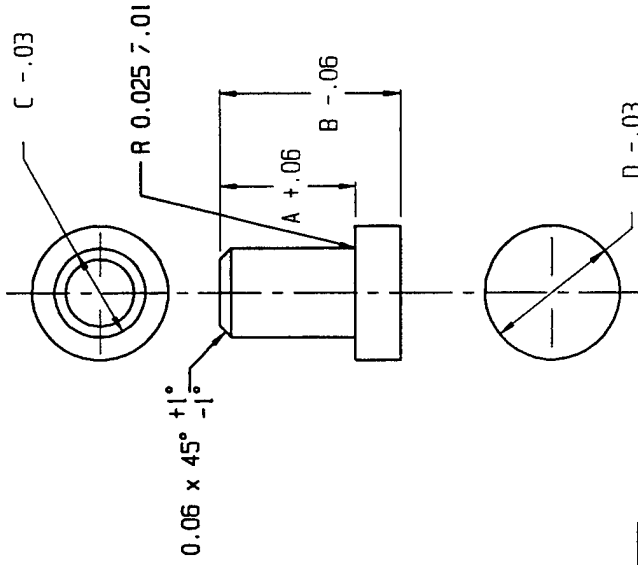
- ANSI Y14.5M-82 APPLIES.
- MATERIAL: STEEL, 1018 OR 1020, PER ASTM A36.



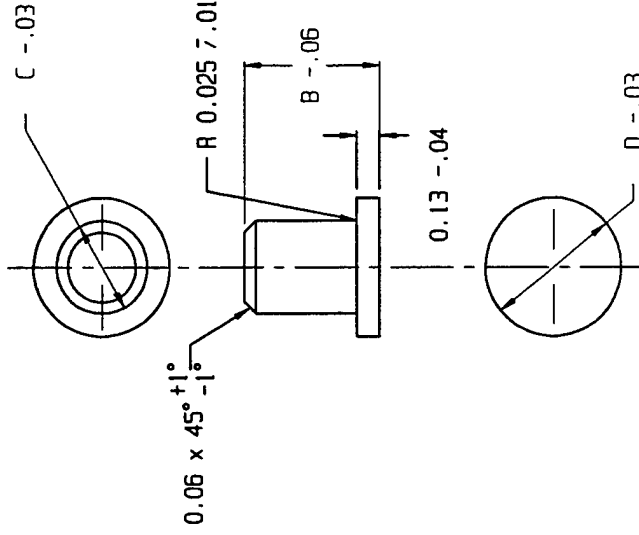
PART NO AC200000453-1
 PART NO AC200000453-2
 PART NO AC200000453-5

DIMENSION

PART NO	A	B	C	D
AC200000453-1	.63	1.00	.50	.43
AC200000453-2	.50	.75	.31	.25
AC200000453-3	.75	1.00	.50	.75
AC200000453-4	N/A	.75	.31	.56
AC200000453-5	.63	.69	.37	.31



PART NO AC200000453-3



PART NO AC200000453-4

UNLESS OTHERWISE NOTED,
 DIMENSIONS ARE IN INCHES.
 SHARP CORNERS AND EDGES.

TOLERANCES ON
 FRACTIONS
 DECIMALS ±.03

MATERIAL

DATE

87-06-05

DESIGN ACTIVITY

U.S. ARMY
 ARMAMENT, MUNITIONS AND CHEMICAL COMMAND
 DEFENSE APPROPRIATION CENTER AND SCHOOL
 SAVANNAH, ILLINOIS 61074-9699

DESIGNER
 MJJ DREIER

SCALE-DWG
 WM JK T. J. MICHELS
 CHIEF, SUPPLY ENGINEERING DIV

APPROVED BY
 W. F. ERNST
 CHIEF, LOGISTICS DISTRIBUTION OFFICE

APPROVED BY
 JOHN L. BYRD, JR.
 CHIEF, AMMUNITION CENTER AND SCHOOL

U.S. ARMY
 AMMUNITION CENTER AND SCHOOL

LUG- ALIGNING
 METAL PALLET

DISTRIBUTION STATEMENT A.
 APPROVED FOR PUBLIC RELEASE;
 DISTRIBUTION IS UNLIMITED.

SIZE
 C 28620 AC200000453

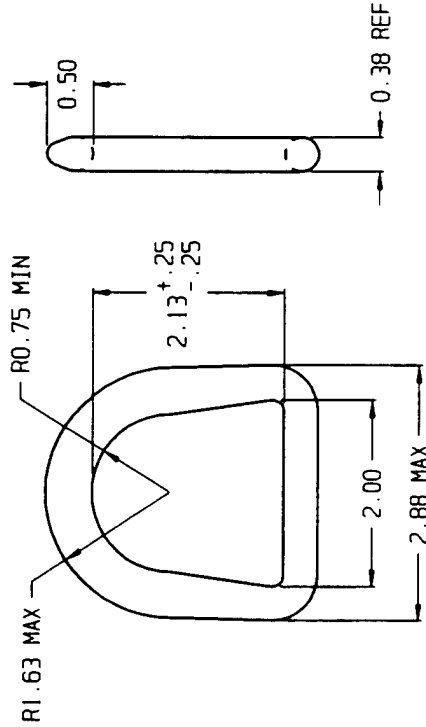
SCALE 2/1 UNIT WT

SHEET 1 OF 1

NOTES:

1. FRAME: 'D' -RING, 0.38 STOCK DIA, 4140 STEEL, 5,000# SAFE WORKING LOAD, ULTIMATE STRENGTH 13,000# OR GREATER.
2. PLATING: IMMERSION ZINC FLAKE/CHROMATE DISPERSION MIL-C-87115.
3. DIMENSIONS SHOWN ARE ENVELOPE DIMENSIONS NECESSARY FOR THE RING TO MATE WITH THE RING RETAINER AND TO PERFORM ITS INTENDED FUNCTION.
4. IDENTIFICATION OF THE SUGGESTED SOURCE(S) HEREON IS NOT TO BE CONSTRUED AS A GUARANTEE OF PRESENT OR CONTINUED AVAILABILITY AS A SOURCE OF SUPPLY FOR THE ITEM(S).

SUGGESTED SOURCES OF SUPPLY		
SUPPLIER DATA		
CAGE	PART NUMBER	NAME AND ADDRESS
16007	1070	U.S. FORGECRAFT CORP. P.O. BOX 387 FT. SMITH, AR 72902
6V480	204-115	HELGESEN INDUSTRIES, INC. 7261 HIGHWAY 60 WEST HARTFORD, WI 53027



REVISION			
LTR	DESCRIPTION	DATE	APPROVED
-	PRODUCT BASELINE ERR M9T3051	89-06-23	FRIEDO
A	ECP M9T3082-005	89-08-16	DREIER
B	ECP M9T3087-005	89-09-19	SCHULTZ
	NOR M2T4200	92-07-20	
C	(ECP M0T4200	90-12-11)	
	(ECP M4T3005	94-06-02)	
D	NOR M5T3003	95-06-22	SCHULTZ
		96-04-11	

SPECIFICATION CONTROL DRAWING

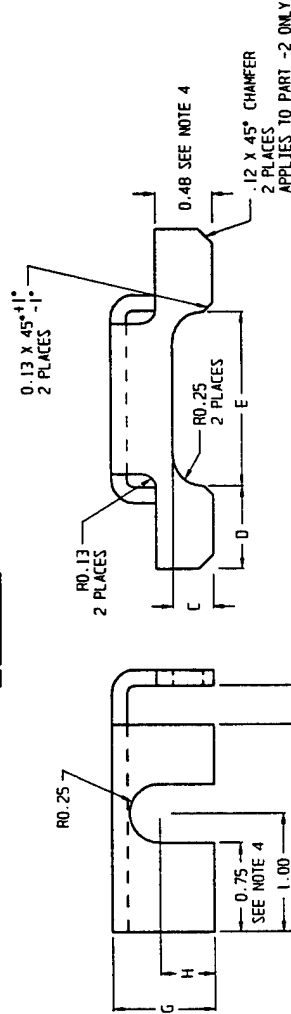
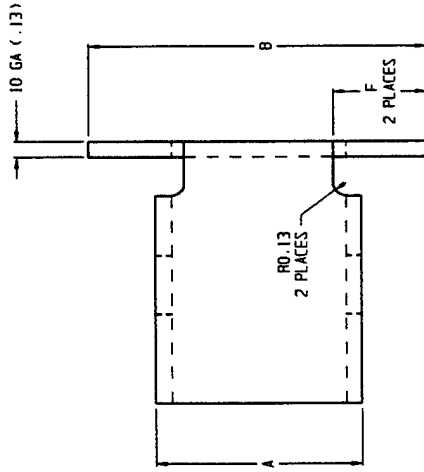
DESIGN ACTIVITY		U.S. ARMY CHEMICAL COMMAND ARMAMENT, MANITORS AND DEFENSE APPLICATION CENTER AND SCHOOL SAVANNAH, ILLINOIS 81074-9839	
DATE	89-03-10	DESIGNER	DREIER
OFFICE	JG	INCHARGE	MJJ
DESIGNER	WM	APPROVED	T. J. MICHELS
UNLESS OTHERWISE NOTED, BREAK SHARP CORNERS AND EDGES. ROUNDNESS ON RADIUS		MATERIAL	
NEXT ASSY		USED ON	
APPLICATION			
SIZE	CAGE CODE	SCALE	UNIT WT
C	28620	1/1	
LIFTING RING			SHEET 1 OF 1

DISTRIBUTION STATEMENT A.

APPROVED FOR PUBLIC RELEASE;
DISTRIBUTION IS UNLIMITED.

REV	DESCRIPTION	DATE	APPROVED
-	PRODUCT BASELINE		
A	ECR M173051	89-06-23	FRIEDL
B	ECR M173052-005	90-09-24	DREIER
C	NOR M214200	92-07-20	
D	ECR M173005	94-06-02	
E	NOR M173003	95-06-22	SCHALTZ
F	ECR M173006	96-03-18	

- NOTES:
- BEND RADIUS 0.06 INCH MAX WHERE NOT NOTED.
 - ANSI Y14.5M-1982 APPLIES.
 - MATERIAL: SHEET, SAE OR ANSI 1005-1010 STEEL, CARBON, COLD ROLL OR HOT ROLL.
 - PER ASTM A569, (ASTM A366 OR A569).
 - THESE DIMENSIONS MAY BE VARIED TO ACHIEVE THE ASSEMBLY OBJECTIVE DETAILED ON SHEET 2.
 - DIMENSION SHOWN IS TO ACHIEVE A RING POSITION AT BEST MATCH IS BELOW THE TOP SURFACE OF THE PALLET, BUT ELEVATED TO READILY ACCEPT THE SLING HOOK.
 - THIS DIMENSION IS TO BE ACHIEVED WHEN MATED WITH SIDE RAIL AND SQUARE RING RESTRAINT OF SIDE RAIL AND SQUARE BELL RESTRAINT. SEE NEXT ASSEMBLY DRAWING FOR ASSEMBLY DIMENSIONS.



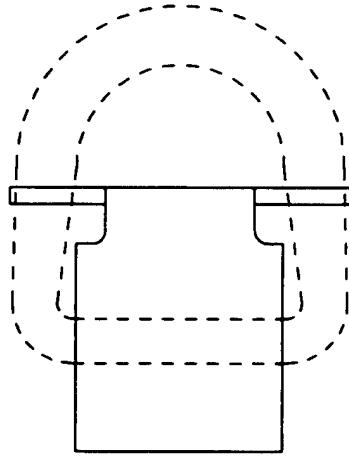
C	C
SHEET 1	SHEET 2
REVISION STATUS OF SHEETS	

DESIGN ACTIVITY	DESIGNER	DATE	REV	DESCRIPTION
DESIGN	MJJ DREIER	89-03-13	1	INITIAL DESIGN
REVISION	T.J. MICHELS		2	REVISION
APPROVED	V. F. ERNST			
DESIGNER: M. J. DREIER CHECKER: T. J. MICHELS APPROVED: V. F. ERNST DATE: 89-03-13				
PROJECT: LIFTING RING RETAINER DRAWING NO: AC200000806 SCALE: 2:1 SHEET 2 OF 2				

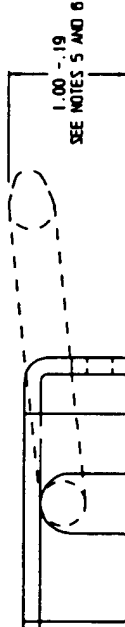
DISTRIBUTION STATEMENT A.
 APPROVED FOR PUBLIC RELEASE;
 DISTRIBUTION IS UNLIMITED.

PART NUMBER	A	B	C	D	E	F	G	H
AC200000806	1.75	2.86	.34	.70	1.46	.80	.86	.46
AC200000806-2	1.78	2.73	.02	.61	1.51	.73	.87	.03

REV	DESCRIPTION	DATE	APPROVED
-	PRODUCT BASELINE		
A	(ECP MER305)	89-06-23	FRIEND
B	(ECP MER306)	92-07-20	
C	(ECP MER307)	94-06-02	SCHALIZ
D	(ECP MER308)	95-06-22	
E	(ECP MER309)	96-03-18	



.147.01
APPLIES TO
PART-2 ONLY



DESIGN ACTIVITY		DATE	
DATE	BY	DATE	BY
89-03-13	JG		
	REVIEWED		
	DREIER		
	BY		
	T. J. MICELS		
	DATE		
	V. F. ERST		
TITLE		SCALE	
LIFTING RING		2/1	
RETAINER		UNIT WT	
JOB NO		AC200000806	
26628			
SCALE		SHEET 2 OF 2	

DISTRIBUTION STATEMENT A.
APPROVED FOR PUBLIC RELEASE;
DISTRIBUTION IS UNLIMITED.

APPENDIX 60

UNITIZATION PROCEDURES FOR BOXED AMMUNITION AND COMPONENTS PACKED IN CYLINDRICAL METAL OR PLASTIC CONTAINERS ON 4-WAY ENTRY METAL PALLET

2.75" HYDRA ROCKET, PACKED 4 PER PA150
CYLINDRICAL METAL CONTAINER, UNITIZED
12 PER 78.50" X 29.31" SPECIAL METAL
PALLET; APPROX CONTAINER SIZE 78.50" L
X 9.25" W X 9.25" H

NOTICE: THIS APPENDIX CANNOT STAND ALONE BUT MUST BE USED IN CONJUNCTION WITH
THE BASIC UNITIZATION PROCEDURES DRAWING 19-48-4231-20PM1006.

DISTRIBUTION STATEMENT A.

APPROVED FOR PUBLIC RELEASE;
DISTRIBUTION IS UNLIMITED.

U. S. ARMY MATERIEL COMMAND DRAWING			
APPROVED, U.S. ARMY INDUSTRIAL OPERATIONS COMMAND <i>David W. Piskoch</i> AMSTA-AR-ESK AMSIO-TMJ	DRAFTSMAN ENGINEER <i>J. Sprague</i>	BETTY J. KUNDERT SANDRA M. SCHULTZ	
APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND <i>Sam W. Albright</i> U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL	SUPPLY ENGINEERING DIVISION <i>J. Sprague</i>	TRANSPORTATION ENGINEERING DIVISION <i>W. Zumbach</i>	VALIDATION ENGINEERING DIVISION <i>P. K. Kocher</i>
		LOGISTICS ENGINEERING OFFICE <i>Thomas J. Mitchell</i> APRIL 1994	
REVISION NO. 1 MARCH 1996	CLASS DIVISION DRAWING FILE		
SEE THE REVISION LISTING ON PAGE 2	19 48 4231/ 60	20PM 1006	

DO NOT SCALE

PALLET UNIT DATA				
ITEMS INCLUDED		HAZARD CLASS AND DIVISION ●		APPROX WEIGHT LBS
NSN	DODIC	OD CLASS	COMP GROUP	
1340-				
01-379-7814	H165			2,239
01-289-4719	H184			2,239
01-379-6347	H463	(04)1.2	G	2,239
01-379-7780	H463	(04)1.2	G	2,239
01-379-6350	H464	(09)1.2	E	2,239
01-379-7797	H464	(09)1.2	E	2,239
01-379-7889	H974	(04)1.2	G	2,239

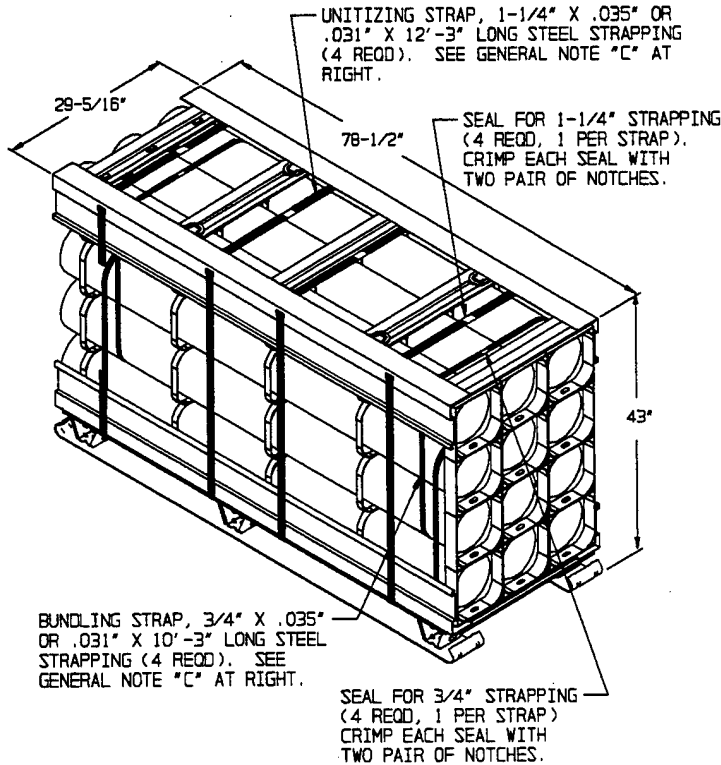
- HAZARD CLASSIFICATION DATA CONTAINED IN THE ABOVE CHART IS FOR GUIDANCE AND INFORMATIONAL PURPOSES ONLY. VERIFICATION OF THE SPECIFIED DATA SHOULD BE MADE BY CONSULTING THE MOST RECENT JOINT HAZARD CLASSIFICATION SYSTEM LISTING OR OTHER APPROVED LISTINGS).

REVISION

REVISION NO. 1, DATED MARCH 1996, CONSISTS OF:

1. ADDING ITEM BY NATIONAL STOCK NUMBER TO "PALLET UNIT DATA" CHART.
2. CHANGING GENERAL NOTE "H" ON PAGE 3.
3. CHANGES IN ACCORDANCE WITH ECP MST3003.

GENERAL NOTES



PALLET UNIT

SEE GENERAL NOTE "B" AT RIGHT.

12 CONTAINERS OF 2.75 HYDRA ROCKETS (4 PER CONTAINER) AT 162 LBS	1,944 LBS (APPROX)
DUNNAGE	185 LBS
PALLET	110 LBS
TOTAL WEIGHT	2,239 LBS (APPROX)
CUBE	57.3 CU FT (APPROX)

BILL OF MATERIAL

METAL PALLET, 78.50" X 29.31"	1 REOD	-110 LBS
TOP ASSEMBLY	1 REOD	- 90 LBS
BOTTOM ASSEMBLY	1 REOD	- 85 LBS
STEEL STRAPPING, 3/4"	41.00' REOD	- 2.93 LBS
STEEL STRAPPING, 1-1/4"	49.00' REOD	- 7.00 LBS
SEAL FOR 3/4" STRAPPING	4 REOD	- NIL
SEAL FOR 1-1/4" STRAPPING	4 REOD	- NIL

- A. THIS APPENDIX CANNOT STAND ALONE BUT MUST BE USED IN CONJUNCTION WITH THE BASIC UNITIZATION PROCEDURES DRAWING 19-48-4231-20PM1006. TO PRODUCE AN APPROVED UNIT LOAD, ALL PERTINENT PROCEDURES, SPECIFICATIONS AND CRITERIA SET FORTH WITHIN THE BASIC DRAWING WILL APPLY TO THE PROCEDURES DELINEATED IN THIS APPENDIX. ANY EXCEPTIONS TO THE BASIC PROCEDURES ARE SPECIFIED IN THIS APPENDIX.
- B. DIMENSIONS, CUBE AND WEIGHT OF A PALLET UNIT WILL VARY SLIGHTLY DEPENDING UPON THE ACTUAL DIMENSIONS OF THE CONTAINER AND THE WEIGHT OF THE SPECIFIC ITEM BEING UNITIZED.
- C. BUNDLING STRAPS MUST BE TENSIONED AND SEALED PRIOR TO THE APPLICATION OF THE UNITIZING STRAPS. BUNDLING STRAPS MUST ALSO BE INSTALLED AS CLOSE TO THE OUTER RINGS AS POSSIBLE, TO AVOID DAMAGE TO THE CONTAINER.
- D. ALTHOUGH THE CONTAINERS DEPICTED IN THE UNIT LOAD AT LEFT ARE CONSTRUCTED WITH INTERLOCKING DEVICES, THE INTERLOCKS WILL NOT FUNCTION PROPERLY UNLESS THE CONTAINERS ARE POSITIONED SO THAT THE "PINS" OF THE INTERLOCKS ARE FACING UPWARD. THIS ORIENTATION WILL AID IN THE PREVENTION OF CONTAINER MOVEMENT, BOTH LATERSL AND LONGITUDINALLY, DURING SHIPMENT OF THE UNIT LOAD.
- E. THE FOLLOWING AMC DRAWINGS ARE APPLICABLE FOR OUTLOADING AND STORAGE OF THE ITEMS COVERED BY THIS APPENDIX.

CARLOADING	19-48-4242/60-5PM1004
TRUCKLOADING	19-48-4243/60-11PM1004
STORAGE	19-48-4250-1-2-3-4-14-22PM1004
END OPENING ISO CONTAINER	19-48-4245/60-15PM1009
MILVAN	19-48-4244/60-15PM1008
SIDE OPENING ISO CONTAINER	19-48-4272/60-15PM1016

- F. FOR METHOD OF SECURING A STRAP CUTTER TO THE PALLET UNIT, SEE AMC DRAWING 19-48-4127-20P1000.
- G. IF ITEMS COVERED HEREIN ARE UNITIZED PRIOR TO ISSUANCE OF THIS APPENDIX, THE CONTAINERS NEED NOT BE REUNITIZED SOLELY TO CONFORM TO THIS APPENDIX.
- H. FOR DETAILS OF THE PALLET AND PALLET ADAPTERS, SEE AMCCOM DRAWING ACV00156, MIL-A-70788 AND MIL-P-70786.
- J. THE UNITIZATION PROCEDURES DEPICTED HEREIN MAY ALSO BE USED FOR UNITIZING 2.75" HYDRA ROCKETS WHEN IDENTIFIED BY DIFFERENT NATIONAL STOCK NUMBERS (NSN) THAN WHAT IS SHOWN ON PAGE 2, PROVIDED THE CONTAINER PACK DOES NOT VARY FROM WHAT IS DELINEATED HEREIN. THE EXPLOSIVE CLASSIFICATION OF OTHER ITEMS MAY BE DIFFERENT THAN WHAT IS SHOWN.
- K. EMPTY OR REJECT PA150 CONTAINERS WILL BE USED AS FILLER CONTAINERS AS NECESSARY. FILLER CONTAINERS MUST BE INSTALLED IN THE MIDDLE OF THE TOP LAYER(S) OF CONTAINERS. IF FOUR FULL CONTAINERS ARE TO BE OMITTED, ONE FULL LAYER OF CONTAINERS WILL BE OMITTED. WHEN (REJECTED) FILLER CONTAINERS ARE USED IN PLACE OF OMITTED CONTAINERS TO COMPLETE A LAYER ON A PALLET, THEY WILL BE MARKED AS SPECIFIED WITHIN MIL-STD-129-1, EXCEPT WHEN (EMPTY/REPAIRABLE) CONTAINERS ARE USED IN PLACE OF OMITTED CONTAINERS TO COMPLETE A LAYER ON A PALLET; THE WORD "EMPTY" WILL BE STENCILED IN ORANGE ON THE EMPTY CONTAINER IN 1-INCH SIZE LETTERS. THE WORD "EMPTY" WILL BE STENCILED TWICE ON THE OPEN END PORTION OF THE CONTAINER WITH THE WORDS PAINTED ALONG THE CIRCUMFERENCE, 180 DEGREES APART, AND THREE TIMES ON THE BODY PORTION OF THE CONTAINER WITH THE WORDS PAINTED LENGTHWISE ON THE CONTAINER AND SPACED 120 DEGREES APART AS MEASURED AROUND THE CONTAINER CIRCUMFERENCE.
- L. FOR DETAILS OF THE PA150 CONTAINER SEE PICATINNY DRAWING 12937856-2.

