LOADING AND BRACING[®] IN END **OPENING ISO CONTAINERS OF ADK-723 ADAPTER KITS PACKED IN CNU-483 CONTAINERS**

INDFX

<u>I TEM</u>	TEM PAGE(S)						
TYPICAL LOADING PROCED GENERAL NOTES AND MATE CONTAINER DETAILS DETAILS LESS-THAN-FULL-LOAD PR	URES RI AL SPEC OCEDURES	I FI C.	ATI ONS			 5	2 3 4 7 8
DISTRIBUTION STATEMENT A: APPROVED FOR PUBLIC RELEASE DISTRIBUTION IS UNLIMITED. * THE PROCEDURES SHOWN HEREIN ARE APPLICABLE TO LOADS THAT ARE TO BE SHIPPED BY TRAILER/CONTAINER-ON-FLATCAR (T/COFC) RAIL, MOTOR, OR WATER CARRIERS. U.S. ARMY MATERIEL COMMAND DRAWING							
APPROVED, U.S. ARMY JONT MUNITIONS COMMAND	CAUTIO	<u>)N</u> : VE TH	ERIFY PRIOR TO USE AT HTTI HE MOST CURRENT VERSION	PS://MHI OF THIS	P.REDSTON S DOCUME	NE.ARMY.MIL	THAT THIS IS AGE 1 OF 8.
RUS.ALLEN.J RUS.ALLEN.J1230354282 DN: c=US, o=U.S. Government, ou=DoD, 0u=USA, 1230354282 0CuS, o=U.S. Government, ou=DoD, 0u=USA, 0EUS, auto, superstance, ou=DoD, 0EUS, o=U.S. Government, o=U	DO NOT SCALE				DECE	MBER	2014
Date: 2015.01.20 08:15:47 -06:00"	DESIGN ENGINEER	BASIC	CANH TRAN	┢──			
APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND	ENGINEERI DIVISON	ING	FIEFFER.LAUR A.A.1230375727 be c-US.o-US.Covernment.courbo. 				
SHIMP.UPTON Nr. cul3, cul3, Soverment, ou-DoD, Du 1221257182		EER V/A	FELICIANO.AD FELICIANA.ADN 1285200373 DN: cuts. cuts. Government, ou-bob DN: cuts. cuts. Government, ou-bob DN: cuts. cuts. Covernment, ou-bob DN: cuts. cuts. cuts. cuts. Cuts. cuts. cuts. DN: cuts. cuts. Cuts. cuts. DN: cuts.	CLASS	DIVISION	DRAWING	FILE
U.S. ARMY DEFENSE AMMUNITION CENTER	EXPLOSIV SAFETY DIRECTORA	/E ATE	CAMBRON.KIMBE Digitally signed by CAMBRON.KIMBE Dis July 2000 Dis July 2000	19	48	8814	SP15J151



ISOMETRIC VIEW

BILL OF MATERIAL					
LUMBER	LINEAR FEET	BOARD FEET			
1" X 4" 2" X 4" 2" X 6" 4" X 4"	80 74 91 43	27 50 91 57			
NAI LS	NO. REQD	POUNDS			
6d (2") 10d (3") 12d (3-1/4")	27 240 36	1/4 3-3/4 0. 75			
STEEL STRAPPING, 1-1/4" - 188' REQD 27 LBS SEAL FOR 1-1/4" STRAPPING - 12 REQD 1/2 LB UNI VERSAL LOAD RETAINER - 6 REQD 39 LBS					

- ① FORWARD/REAR BLOCKING ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 6. NOTE: THE STRUT LEDGERS ARE ONLY REQUIRED ON THE BLOCKING ASSEM-BLY AT THE REAR OF THE LOAD.
- UNITIZING STRAP, 1-1/4" X .035" OR .031" OR .029" X 15'-8" (11'-5" FOR A TWO HIGH LOAD) LONG STEEL STRAPPING (12 REQD, 2 PER STACK). INSTALL THROUGH FORK POCKETS AS FAR APART AS POSSIBLE. 2
- SEAL FOR 1-1/4" STEEL STRAPPING (12 REQD, 1 PER STRAP). DOUBLE NOTCH EACH SEAL. SEE THE "END-OVER-END LAP JOINT DETAILS" ON PAGE 5. 3
- ④ SEPARATOR ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 7.
- UNIVERSAL LOAD RETAINER (6 REOD, 3 PER SIDE). NAIL THROUGH THE HOLES INTO THE DOOR POST VERTICAL W/2-10d NAILS. SEE THE "DETAIL A" ON PAGE 5 AND GENERAL NOTE "R" ON PAGE 3. (5)
- DOOR POST VERTICAL (2 REQD). SEE THE DETAIL ON PAGE 7, "DETAIL A" ON PAGE 5, AND GENERAL NOTE "R" ON PAGE 3. 6
- DOOR SPANNER, 4" X 4" MATERIAL CUT TO A LENGTH THAT WILL PROVIDE A DRIVE FIT (REF: 7'-1/2") (3 REQD). TOENAIL TO THE DOOR POST VERTICAL W/2-12d NAILS AT EACH END. SEE THE "BEVEL-CUT" DETAIL ON PAGE 6. 7
- STRUT, 4" X 4" BY CUT-TO-FIT (REF: 13-1/2") (6 REQD). TOENAIL TO THE BUFFER PIECE OF THE REAR BLOCKING ASSEMBLY AND TO THE DOOR POST VERTICAL W/2-12d NAILS AT EACH END. SEE THE "BEVEL-CUT" DETAIL ON PAGE 6. 8

LOAD AS SHOWN

ITEM	QUANTI TY	WEIGHT (APPROX)
CNU-483 CONT DUNNAGE CONTAI NER -	AINER - 18 	 18,000 LBS 519 LBS 4,700 LBS
T	OTAL WEIGHT	 23,219 LBS (APPROX)

PAGE 2

GENERAL NOTES

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE SPECIFIED OUTLOADING PROCEDURES ARE APPLICABLE TO LOADS OF ADK-723 ADAPTER KITS PACKED IN CNU-483 CONTAINERS. SUBSEQUENT REFERENCE TO CONTAINER HEREIN MEANS THE CONTAINER WITH ADAPTER KITS. SEE PAGE 4 AND AIR FORCE DRAWING 8982910 FOR DETAILS OF THE CONTAINER. <u>CAUTION</u>: REGARDLESS OF THE QUANTITY OF CONTAINERS TO BE SHIPPED, THE "MAXIMUM GROSS WEIGHT" OF THE END OPENING ISO CONTAINER MUST NOT BE EXCEEDED.
- C. THE LOAD AS SHOWN IS BASED ON A 4,700 POUND 20' LONG BY 8' WIDE BY 8'-6' HIGH END OPENING ISO CONTAINER WITH INSIDE DIMENSIONS OF 19'-4" LONG BY 92' WIDE BY 93' HIGH, WITH A MAXIMUM GROSS WEIGHT OF 52,910 POUNDS. OLDER/OTHER CONTAINERS MAY HAVE A TOTAL INSIDE HEIGHT OF 95'', BUT A CLEAR HEIGHT UNDER THE ROOF BOWS OF 93'', VERIFY INSIDE CONTAINER HEIGHT PRIOR TO FABRICATING DUNNAGE. THE LOAD IS DE-SIGNED FOR TRAILER/CONTAINER-ON-FLATCAR (T/COFC) SHIPMENT, HOWEV-ER, THE LOAD AS DESIGNED CAN ALSO BE MOVED BY OTHER SURFACE MODES OF TRANSPORT. <u>NOTICE</u>: OTHER CONTAINERS OF THE SAME DESIGN CONFIGURATION CAN BE USED.
- D. WHEN LOADING CONTAINERS, THEY ARE TO BE POSITIONED SO AS TO ACHIEVE A TIGHT LOAD (TIGHT AGAINST THE DUNNAGE ASSEMBLIES). THE UNBLOCKED SPACE ACROSS THE WIDTH OF A LOAD BAY IS NOT TO EXCEED 1-1/2".
- E. DUNNAGE LUMBER SPECIFIED IS OF NOMINAL SIZE. FOR EXAMPLE, 1" X 4" MATERIAL IS ACTUALLY 3/4" THICK BY 3-1/2" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE.
- F. A STAGGERED NAILING PATTERN WILL BE USED WHENEVER POSSIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEMBLIES OR WHEN LAMI-NATING DUNNAGE. ADDITIONALLY, THE NAILING PATTERN FOR AN UPPER PIECE OF LAMINATED DUNNAGE WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL FOR THAT PIECE WILL NOT BE DRIVEN THROUGH ONTO OR RIGHT BE-SIDE A NAIL IN A LOWER PIECE.
- G. IN SOME CONTAINERS THERE IS A SLOT AT THE CORNERS OF THE FORWARD WALL. PIECES OF DUNNAGE MATERIAL MUST BE LAMINATED TO THE BUFFER PIECES ON THE FORWARD BLOCKING ASSEMBLY OR FORWARD STRUT AS-SEMBLIES TO PROVIDE A FLAT SURFACE FOR THE BUFFER PIECES. A PIECE OF 2' X 4'', 2'' X 3'' OR A SPECIAL WIDTH PIECE CUT-TO-FIT CAN BE USED. THIS FILL PIECE WILL BE NAILED WITH ONE APPROPRIATELY SIZED NAIL EVERY 12''. NOTE THAT SOME CONTAINERS ARE EQUIPPED WITH 'TIE-BARS'' IN THE CORNER SLOT, WHICH PRECLUDE THE USE OF A FULL HEIGHT FILL PIECE. WHEN 'TIE-BARS'' ARE PRESENT, THE FILL PIECE MUST BE INSTALLED IN SEGMENTS DESIGNED TO FIT BETWEEN THE 'TIE-BARS'' VERTICALLY. THE FILL PIECE(S) IS NOT REQUIRED WHEN THE 'TIE-BARS'' VERTICALLY. THE FILL PIECE(S) IS NOT REQUIRED WHEN THE CORNER PORTIONS OF THE CONTAINER FORWARD WALL ARE SMOOTH AND FLAT. DO NOT ALLOW ANY DUNNAGE ASSEMBLY TO CONTACT THE CONTAINER FORWARD WALL, ONLY THE CORNER POSTS OF THE CONTAINER SHOULD BE USED FOR FORWARD LONGITUDINAL BLOCKING.
- H. WHETHER A CONTAINER IS FULL OR IS LOADED WITH A REDUCED QUANTITY OF LADING UNITS, THE LENGTHWISE CENTER OF GRAVITY OF THE LOAD MUST BE WITHIN 12", IN EITHER DIRECTION, OF THE MID-POINT OF THE CON-TAINER.
- J. <u>CAUTION</u>: DO NOT NAIL DUNNAGE MATERIAL TO THE CONTAINER WALLS OR FLOOR. ALL NAILING WILL BE WITHIN THE DUNNAGE.
- K. PORTIONS OF THE CONTAINER DEPICTED WITHIN THIS DRAWING, SUCH AS THE SIDEWALL, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.

L. MAXIMUM LOAD WEIGHT CRITERIA:

THE MAXIMUM LOAD WEIGHTS ARE CONTROLLED BY EQUIPMENT CAPABILITY FACTORS. ALTHOUGH THE HEAVIEST MAXIMUM LOADS ARE DELINEATED IN THE LOAD VIEWS, PROVISIONS ARE INCLUDED WITHIN THIS DRAWING SO THAT THE BASIC LOADS CAN BE ADJUSTED TO SATISFY A LESSER QUANTITY OF LADING UNITS. DEPENDING ON TRANSPORTATION ROUTING, IT MAY BE NECESSARY TO REDUCE THE LOAD WEIGHT TO SATISFY "WEIGHT LAWS" OF CERTAIN STATES. ALSO, IT MAY BE NECESSARY TO REDUCE THE LOAD WEIGHT TO SATISFY OTHER WEIGHT RESTRICTIONS IMPOSED ON THE IN-TERMODAL CONTAINER SYSTEM.

M. REQUIREMENTS CITED WITHIN THE ASSOCIATION OF AMERICAN RAILROADS (AAR) INTERMODAL LOADING GUIDE APPLY WHEN THE SHIPMENT MOVES BY TRAILER/CONTAINER-ON-FLATCAR (T/COFC). SPECIAL T/COFC NOTES FOL-LOW:

- 1. A LOADED CONTAINER MUST BE ON A CHASSIS EQUIPPED WITH TWO BO-GIE ASSEMBLIES WHEN BEING MOVED IN TOFC SERVICE.
- 2. THE LOAD LIMIT OF A T/COFC RAILCAR MUST NOT BE EXCEEDED, NOR WILL A CAR BE LOADED SO THAT THE TRUCK UNDER ONE END OF THE CAR CARRIES MORE THAN ONE-HALF OF THE LOAD LIMIT FOR THAT CAR.
- N. DURING INTRASTATE AND/OR INTERSTATE MOVES BY MOTOR CARRIER, A PROPER CHASSIS OR MODIFIED FLATBED TRAILER MUST BE USED TO PRE-CLUDE VIOLATION OF ONE OR MORE "WEIGHT LAWS" APPLICABLE TO THE STATE OR STATES INVOLVED.

(CONTINUED AT RIGHT)

(GENERAL NOTES CONTINUED)

- O. WHEN STEEL STRAPPING IS SEALED AT AN END-OVER-END LAP JOINT, A MIN-IMUM OF ONE SEAL WITH TWO PAIR OF NOTCHES WILL BE USED TO SEAL THE JOINT WHEN A NOTCH-TYPE SEALER IS BEING USED. A MINIMUM OF TWO SEALS, BUTTED TOGETHER, WITH TWO PAIR OF CRIMPS PER SEAL WILL BE USED TO SEAL THE JOINT WHEN A CRIMP-TYPE SEALER IS BEING USED. RE-FER TO THE "STRAP JOINT A" AND "STRAP JOINT B" DETAILS ON PAGE 5 FOR GUIDANCE.
- P. THE QUANTITY OF CONTAINERS SHOWN IN THE LOAD ON PAGE 2 MAY BE REDUCED FOR SHIPMENT, IF DESIRED. SEE THE "LESS-THAN-FULL-LOAD PROCEDURES" ON PAGE 8.
- Q. AS REQUIRED BY THE ASSOCIATION OF AMERICAN RAILROADS (AAR), ALL 1-1/4" AND 2" STEEL STRAPPING USED FOR LOAD RESTRAINT MUST BE MARKED AS SPECIFIED WITHIN THE APPLICABLE AAR RULES GOVERNING LOADING, BLOCKING AND BRACING OF FREIGHT WITHIN THE CONVEYANCE. FOR THE SPECIFIC MARKING SIZE, FREQUENCY, ETC., REQUIRED, REFER TO THE APPROPRIATE AAR LOADING RULES.
- R. SIX UNIVERSAL LOAD RETAINERS, AS DEPICTED IN THE LOADS ON PAGES 2 AND 8, ARE REQUIRED WHEN LOADING A THREE HIGH LOAD, FOUR ARE REQUIRED WHEN LOADING A LESS THAN THREE HIGH LOAD. REFER TO DAC DRAWING ACV00682 FOR DETAILS OF THE UNIVERSAL LOAD RETAINER CONSTRUCTION, AND TO DEPARTMENT OF THE ARMY DRAWING DA-116 FOR DETAILS FOR INSTALLATION TO THE DOOR POST VERTICAL, PLACE-MENT INTO THE CONTAINER, AND FOR OTHER METHODS OF REAR-OF-LOAD RESTRAINT.
- S. DUNNAGE LUMBER SPECIFIED IS OF NOMINAL SIZE. FOR EXAMPLE, 1" X 4" MATERIAL IS ACTUALLY 3/4" THICK BY 3-1/2" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" THICK BY 5-1/2" WIDE.
- T. ANTI-CHAFING MATERIAL MAY BE INSTALLED AT POINTS OF CONTACT BE-TWEEN CONTAINERS AND END OPENING CONTAINER, AND BETWEEN CON-TAINERS AND STEEL STRAPPING, IF DESIRED, TO PREVENT CHAFING DAMAGE TO CONTAINER PAINT AND MARKINGS.
- U. CONVERSION TO METRIC EQUIVALENTS: DIMENSIONS WITHIN THIS DOCU-MENT ARE EXPRESSED IN INCHES AND WEIGHTS ARE EXPRESSED IN POUNDS. WHEN NECESSARY, THE METRIC EQUIVALENTS MAY BE COMPUTED ON THE BASIS OF ONE INCH EQUALS 25.4MM AND ONE POUND EQUALS 0.454 KG.
- V. RECOMMENDED SEQUENTIAL LOADING PROCEDURES:
 - 1. PREFABRICATE TWO FORWARD/REAR BLOCKING ASSEMBLIES, TWO SEPARATOR GATES, TWO DOOR POST VERTICALS WITH UNIVERSAL LOAD RETAINERS, AND UNITIZE CONTAINERS (THREE PER UNIT).
 - 2. INSTALL THE FORWARD BLOCKING ASSEMBLY.
 - 3. LOAD TWO UNITS.
 - 4. INSTALL ONE SEPARATOR GATE.
 - 5. REPEAT STEPS 3 AND 4.
 - 6. LOAD TWO UNITS.
 - 7. INSTALL THE REAR BLOCKING ASSEMBLY.
- 8. INSTALL THE DOOR POST VERTICAL ASSEMBLIES.
- 9. INSTALL THREE DOOR SPANNERS.

10. INSTALL STRUTS.

MATERIAL SPECIFICATIONS

LUMBER :	SEE TM 743-200-1 (DUNNAGE LUMBER) AND VOL- UNTARY PRODUCT STANDARD PS 20.
NAILS :	ASTM F1667; COMMON STEEL NAIL (NLCMS OR NLCMMS).
STRAPPING, STEEL:	ASTM D3953; FLAT STRAPPING, TYPE 1, HEAVY DUTY, FINISH A, B (GRADE 2), OR C.
<u>Seal, strap</u> :	ASTM D3953; CLASS H, FINISH A, B (GRADE 2), OR C, DOUBLE NOTCH TYPE, STYLE I, II, OR IV.
ANTI-CHAFING MATERIAL:	MIL-PRF-121 (OR EQUAL); NEUTRAL BARRIER MATERIAL.
<u>steel,</u> <u>structural</u> :	ASTM A36; 36,000 PSI MINIMUM YIELD OR BET- TER.



UNITIZATION AND HANDLING GUIDANCE

1. STACKING CONTAINERS FOR UNITIZING:

- A. AN UPPER CONTAINER SHOULD BE PLACED AS CLOSE AS POSSIBLE IN VERTICAL ALIGNMENT WITH THE NEXT LOWER CONTAINER.
- B. POSITION THE AFT END OF AN UPPER CONTAINER ABOVE THE AFT END OF THE NEXT LOWER CONTAINER.
- C. THE CONTAINER SKIDS OF AN UPPER CONTAINER SHOULD BE FULLY SEATED AGAINST THE SKID LOCATOR PIECES ON THE COVER OF THE NEXT LOWER CONTAINER.
- 2. INSTALLATION OF UNITIZING STRAPS:
 - A. STRAPS WILL BE POSITIONED SO AS TO ENCIRCLE THE CONTAINERS AND SO THAT THE STRAPPING LAYS FLAT AND STRAIGHT WITH THE BODY SURFACE OF THE CONTAINER; I.E., VERTICAL ALONG THE SIDES AND FLAT ACROSS THE TOP AND BOTTOM OF THE STACK..
 - B. PLACE ANTI-CHAFING NEUTRAL BARRIER MATERIAL UNDER THE STRAP-PING AT ALL POINTS OF CONTACT WITH THE CONTAINER, IF DESIRED, AND SECURE TO PREVENT DISLODGEMENT DURING AND AFTER STRAP APPLICATION. STRIPS OF ANTI-CHAFING MATERIAL MAY BE TAPED OR STRING-TIED TO THE CONTAINER OR STRAPPING, OR IT CAN BE FORMED INTO STRAP ENCIRCLING TUBES BY WINDING THE MATERIAL AROUND THE STRAPPING TO FORM A SELF-HOLDING UNIT.
 - C. STRAPPING WILL BE FIRMLY TENSIONED AND EACH END-OVER-END LAP JOINT WILL BE SEALED AS DELINEATED IN GENERAL NOTE "O" ON PAGE 3. THE LAP JOINTS WILL BE MADE ALONG THE SIDE OF THE STACK AS SHOWN. DURING STRAP TENSIONING, CARE SHOULD BE EXERCISED TO ENSURE THAT THE CONTAINERS ARE NOT DAMAGED. EXCESS STRAP-PING (STRAP ENDS) SHOULD BE CUT OFF OR BROKEN OFF NEAR THE JOINT SEALS.

(CONTINUED AT RIGHT)

(UNITIZATION AND HANDLING GUIDANCE CONTINUED)

3. CONTAINER OR CONTAINER STACK HANDLING:

- A. ONLY APPROVED AND APPROPRIATELY SIZED MATERIAL HANDLING EQUIPMENT WILL BE USED FOR HANDLING THE DEPICTED CONTAINERS. APPROVED MATERIAL HANDLING EQUIPMENT (FORKLIFT TRUCKS, CRANES, HAND TRUCKS, DOLLIES, ROLLER ASSEMBLIES, SLINGS, SPREADER BARS, ETC.) IS SPECIFIED ELSEWHERE.
- B. PRECAUTIONARY HANDLING TECHNIQUES NORMALLY EMPLOYED OR AS SPECIFIED FOR THE TYPE OF COMMODITY INVOLVED WILL BE OBSERVED.
- C. IF HANDLING IS ACCOMPLISHED WITH A FORKLIFT TRUCK, THE CONTAIN-ERS SHOULD BE HANDLED FROM A SIDE POSITION AS MUCH AS POSSI-BLE. CARE MUST BE EXERCISED WHEN INSERTING FORKS UNDER A CONTAINER, TO PREVENT DAMAGE TO THE CONTAINER BY THE FORK TINES OR THE FORKLIFT PACKAGE GUARD. IF ONE CONTAINER IS HAN-DLED BY SLINGING, THE SLING MAY BE ATTACHED TO THE LIFTING POINTS ON THE CONTAINER. DO NOT HANDLE STACKED CONTAINERS WITH A SLING.
- D. WHEN UNLOADING A CONTAINER OR CONTAINER STACK FROM THE END OPENING ISO CONTAINER, THE FORKLIFT TINES WILL BE INSERTED UN-DER THE LOWER CONTAINER, THE FORKLIFT WILL THEN ELEVEATE THE END SLIGHTLY ABOVE THE FLOOR, AND BEGIN DRAGGING THE CONTAIN-ER OR STACK FROM THE END OPENING ISO CONTAINER AFTER ATTACH-ING A CHAIN OR WEB STRAP FROM A LOWER CONTAINER LIFT POINT AROUND THE FORKLIFT MAST TO A LIFT POINT OF THE OPPOSITE SIDE OF THE CONTAINER.

PAGE 4







PAGE 7

