APPENDIX 7B

UNITIZATION PROCEDURES FOR COMPLETE ROUNDS PACKED IN CYLINDRICAL METAL CONTAINERS ON 4-WAY ENTRY PALLETS*

CARTRIDGE, 120MM, TP-T, M831 OR M831A1, OR TPCSDS-T, M865, OR TMP-T, M1002, PACKED 1 PER PA116 OR PA171 SERIES CONTAINER, UNITIZED 30 CONTAINERS PER 40" X 44" SPECIAL WOODEN PALLET*; APPROX CONTAINER SIZE 44-1/2" L X 7-3/4" W X 7-3/4" H

NOTICE: THIS APPENDIX CANNOT STAND ALONE BUT MUST BE USED IN CONJUNCTION WITH THE BASIC UNITIZATION PROCEDURES DRAWING 19-48-4079-20PM1002.

DISTRIBUTION STATEMENT A:

APPROVED FOR PUBLIC RELEASE DISTRIBUTION IS UNLIMITED.

* SEE GENERALNOTE "K" ON PAGE 3.

APPROVED, U.S. ARMY RESEARCH, DEVELOPMENT AND ENGINEERING COMMAND CAUTION: VERIFY PRIOR TO USE AT HTTPS://MHP.REDSTONE.ARMY.MIL THAT THIS IS REHMSTEDT. Digitally signed by REHMSTEDT MARK J. 120548400 DN: C-IG. SOLVENDER STEP TAMAK J. 120548400 CHR. SELVENDER STEP TAMAK J. 120548400 CHR. SELVENDER STEP TAMAK J. 120548400 CHR. SELVENDER STEP TAMAK J. 120548400 DIRECTION J. 13 10-16 22 - 0000 THE MOST CURRENT VERSION OF THIS DOCUMENT. THIS IS PAGE 1 OF 6. RDAR-EIL-TP DO NOT SCALE **NOVEMBER 1987** APPROVED, U.S. ARMY JOINT MUNITIONS COMMAND **ENGINEER** BASIC LAURA A. FIEFFER RUS.ALLEN.J Digitally signed by RUS.ALLEN.J.1230354282 OR TECHNICIAN **MADELINE BANKS** RF\/ .1230354282 Ou-PKI, ou-USA, ou-PKI, ou-USA, ou-PKI, ou-USA, ou-PKIS, ALLEN, J.1230354282 Date: 2015.03.25 08:38:53 -05'00' **REVISION NO. 8 MAY 2015** FIEFFER.LAURA DIGITAL S GOVERNMENT OF THE STATE OF THE ST **ENGINEERING** AMSJM-LIT SEE THE REVISION LISTING ON PAGE 2 DIVISON .A.1230375727 ou=PKI, ou=USA, cn=FIEFFER.LAURA.A.1230375721 Date: 2014.07.28 10:39:27 -05'00' APPROVEDBY ORDER OF COMMANDING CLASS DIVISION DRAWING GENERAL, U.S ARMY MATERIEL COMMAND TEST ENGINEER FELICIANO.AD Digitally signed by FELICANO.ADIN.1259200373 SHIMP.UPTON Digitally signed by SHIMP.UPTON.R.1231257183 DN: c=US, c=U.S. Government, TEST IN.1259200373 ou=DoD, ou=PKI, ou=USA, ou=USA, on=FELICIANO.ADIN.1259200373 Date: 2014.08.04 10:47:02-05:00* 50-87 REPORT .R.1231257183 ou=PKI, ou=USA, cn=SHIMP.UPTON.R.1231257183 Date: 2015.03.25 10:04:48 -05'00' TRIVITT.TERRY Digitally signed by TRIVITT.TERRY.F.1230872011 4079/7B 20PM1002 **EXPLOSIVE** 19 48 SAFETY .F.1230872011 | du=PKI, du=USA, cn=TRIVITT.TERRY.F.123087201: Date: 2014.08.07 10:47:19 -0600' DIRECTORATE U.S. ARMY DEFENSE AMMUNITION CENTER

U.S. ARMY MATERIEL COMMAND DRAWING

PALLET UNIT DATA							
ITEMS INCLUDED		*					
NSN	DODIC	*HAZARD CLASS AND DIVISION	*COMPATI- BILITY GROUP	APPROX WEIGHT (LBS)			
1315- 01-250-8636 01-369-6612 01-242-4796 01-288-5545 01-550-4811 01-599-5332 01-607-2105 01-509-3555	C784 C784 C785 C785 C785 C785 C785 C785 CA31	1. 2. 1 1. 2. 1 1. 2. 1 1. 2. 1 1. 3 1. 2. 1 1. 3 1. 3	00000000	2, 420 2, 420 2, 054 2, 054 2, 174 2, 054 2, 174 2, 288			

 $^{^{\}star}$ HAZARD CLASSIFICATION DATA CONTAINED IN THE ABOVE CHART IS FOR GUIDANCE AND INFORMATIONAL PUR-POSES ONLY. VERIFICATION OF THE SPECIFIED DATA SHOULD BE MADE BY CONSULTING THE MOST RECENT JOINT HAZARD CLASSIFICATION SYSTEM LISTING OR OTHER APPROVED LISTING(S).

REVISIONS

REVISION NO. 1, DATED MARCH 1989, CONSISTS OF:

- 1. CHANGING THE QD CLASSES IN THE "PALLET UNIT DATA" CHART. 2. ADDING GENERAL NOTE "N" (BUFFER PIECE THICKNESS).
- 3. ADDING ITEM BY NATIONAL STOCK NUMBER TO THE "PALLET UNIT DATA" CHART.

REVISION NO. 2, DATED MAY 1994, CONSISTS OF CHANGES PER ECP M3K3014 INCLUDING:

ADDING ITEM BY NATIONAL STOCK NUMBER TO THE "PALLET UNIT DATA" CHART.

REVISION NO. 3, DATED APRIL 1996, CONSISTS OF CHANGES PER ECP M3T4321 AND ECP M4T3006 IN-CLUDING:

- 1. ADDING AN ALTERNATE STRINGER LOCATION TO BETTER SUPPORT THE TIEDOWN STRAPS.
- 2. ADDING THE APPLICATION TABLE
- 3. ADDING GENERAL NOTE "R" (BUNDLING STRAP).

REVISION NO. 4, DATED OCTOBER 1998, CONSISTS OF CHANGES PER ECP R7T9211 INCLUDING:

- 1. ADDING GENERAL NOTE "J" (LOT NUMBER MARKING).
- ADDING LOT NUMBER MARKING DETAIL TO ISOMETRIC VIEW
- REMOVING GENERAL NOTE RELATING TO STRAP CUTTER AND RELETTERING THE REMAINING NOTES (NOT IN ECP).

REVISION NO. 5, DATED MARCH 2003, CONSISTS OF CHANGES PER ECP R2T5303 INCLUDING:

- UPDATING GENERAL NOTE "H" TO REFLECT NEW ACV DRAWING.
 UPDATING GENERAL NOTE "K" TO MAKE THE ALTERNATE STRINGER LOCATION THE MANDATORY
- ADDING GENERAL NOTE "O" ALLOWING THE USE OF TRUSS NAIL PLATES OR ADDITIONAL NAILS INTO THE POSTS.

REVISION NO. 6, DATED JULY 2006, CONSISTS OF CHANGES PER ECP R05T5076 INCLUDING:

- ADDING ALL REFERENCES FOR PA171 CONTAINER
- CHANGING THE HARDWOOD BUFFER TO ALLOW ONLY HARDWOOD USE, ELIMINATING PLYWOOD.
- ADDING GENERAL NOTE "S" (ROOFING NAILS) AND UPDATING PALLET UNIT DETAIL.
- ELIMINATING ONE PIECE OF THE PLYWOOD PALLET DUNNAGE.
 SHIFTING THE HEAT TREATMENT MARKING FROM THE RIGHT FORK OPENING TO THE LEFT.
- ADDING ITEM BY NATIONAL STOCK NUMBER TO THE "PALLET UNIT DATA" CHART.
- 7. ADDING THE PERTINENT DRAWINGS TO GENERAL NOTE "C"

REVISION NO. 7, DATED AUGUST 2010, CONSISTS OF CHANGES PER ECP R07T3003 (#1) AND R08K3004 (#2) INCLUDING:

- ADDING ITEM BY NATIONAL STOCK NUMBER TO THE "PALLET UNIT DATA" CHART. UPDATING GENERAL NOTE "J" TO ADD M1002. UPDATING GENERAL NOTE "N" TO COMBINE PRESERVATIVE TREATMENT (REVISION 6 GENERAL NOTE "N") WITH NEW HEAT TREATMENT REQUIREMENTS (REVISION 6 GENERAL NOTE "P").

REVISION NO. 8, DATED MAY 2015, CONSISTS OF CHANGES PER ECP R13T3006 (#1-3) AND R11T3007 (#1) INCLUDING:

- ADDING ITEMS BY NATIONAL STOCK NUMBER TO THE "PALLET UNIT DATA" CHART.
 UPDATING GENERAL NOTE "H" (ACV00561 MARKING) TO REFLECT "IN ACCORDANCE WITH"
- UPDATING GENERAL NOTES "K" (SPECIAL PALLET) ÁND "O" (TRUSS PLATE) TO REFLECT MIL-DTL-15011

GENERAL NOTES

- A. THIS APPENDIX CANNOT STAND ALONE BUT MUST BE USED IN CONJUNCTION WITH THE BASIC UNITIZATION PROCEDURES DRAWING 19-48-4079-20PM1002. 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 BOXES AND THE WEIGHT OF THE SPECIFIC ITEM BEING UNITIZED.
- C. THE FOLLOWING AMC DRAWINGS ARE APPLICABLE FOR OUTLOADING AND STORAGE OF THE ITEMS COVERED BY THIS APPENDIX.

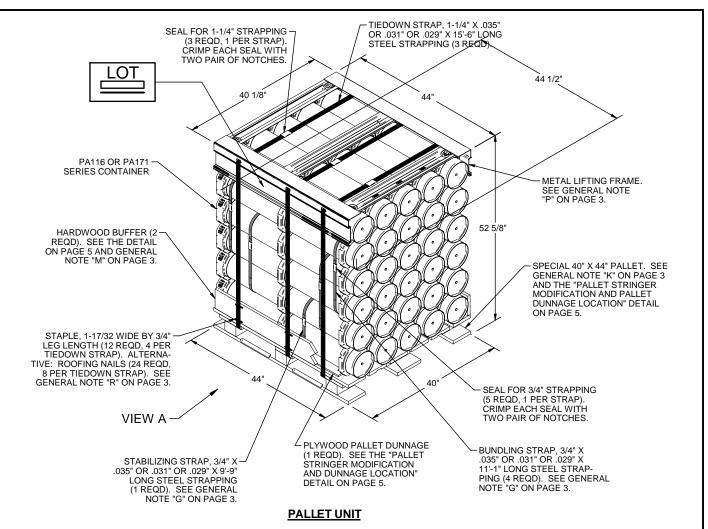
CARLOADI NG - - - - 19-48-4212/8B-5PM1003
TRUCKLOADI NG - - 19-48-4213/8B-11PM1003
STORAGE - - - 19-48-4145/8B-12-3-4-14-22PM1003
END OPENI NG I SO
CONTAI NER - - 19-48-4215/8B-15PM1013
MI LVAN - - - 19-48-4214/8B-15PM1006
SI DE OPENI NG I SO
CONTAI NER - - - 19-48-4265/8B-15PM1014
CROP - - - - - - 19-48-4906/25-CA1707

- D. IF ITEMS COVERED HEREIN ARE UNITIZED PRIOR TO ISSUANCE OF THIS REVISION TO THIS APPENDIX, THE CONTAINERS NEED NOT BE REUNITIZED SOLELY TO CONFORM TO THIS REVISION.
- E. FOR DETAILS OF THE PA116 OR PA171 CONTAINER SEE ARDEC DRAWING 9386831 OR 12990755. RESPECTIVELY.
- F. THE UNITIZATION PROCEDURES DEPICTED HEREIN MAY ALSO BE USED FOR UNITIZING 120MM CARTRIDGES 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.
- G. BUNDLING STRAPS AND STABILIZING STRAPS MUST BE TENSIONED AND SEALED PRIOR TO THE APPLICATION OF THE TIEDOWN STRAPS. INSTALL AS CLOSE TO THE OUTER CONTAINER RINGS AS POSSIBLE, TO AVOID DAMAGE TO THE CONTAINER. CAUTION: STRAPS MUST NOT BE ALLOWED TO OVERLAP. DO NOT PLACE ANY STRAP OVER THE IM BLOWOUT PANELS OF THE PA171 SRIPS CONTAINERS.
- H. FULL IDENTIFICATION MARKINGS IN ACCORDANCE WITH DAC DRAWING ACV00561, TO INCLUDE NSN AND DODIC, QUANTITY AND NOMENCLATURE, LOT NUMBER AND GROSS WEIGHT OF THE LOAD, SHALL BE MARKED ON TAGS LOCATED ON OPPOSITE UPPER CORNERS OF THE LOAD. BAR CODE LABELS ARE REQUIRED IN ACCORDANCE WITH DAC DRAWING ACV00561.
- J. THE AMMUNITION LOT NUMBER MARKING SHALL BE PLACE IN THE AREA INDICATED IN THE ISOMETRIC VIEW ON PAGE 4, FOR THE M865, M831A1 AND M1002 CARTRIDGES ONLY; IN 1/2" HIGH UNDERLINED LETTERS.
- K. THE SPECIAL PALLET WILL BE CONSTRUCTED AND ASSEMBLED IN ACCORDANCE WITH A MILITARY SPECIFICATION MIL-DTL-15011, STYLE 1, TYPE I, CLASS 1 PALLET WITH THE FOLLOWING EXCEPTIONS. THE TOP AND BOTTOM DECK BOARDS WILL BE 44" LONG INSTEAD OF 48". IN ORDER TO PROVIDE ADDITIONAL SUPPORT FOR THE STEEL BANDS, THE TWO OUTSIDE 1" X 8" STRINGER BOARDS ON THE MODIFIED PALLET SHALL BE POSITIONED AS SHOWN IN THE DETAIL ON PAGE 5, AND THE CENTER STRINGER BOARD ON THE MODIFIED PALLET SHALL BE REPLACED WITH A 1" X 6" AS SHOWN IN THE DETAIL ON PAGE 5. THE MODIFIED STYLE 1 PALLET ALSO NEED NOT HAVE CHAMFERS OR STRAP SLOTS AS SPECIFIED WITHIN MILITARY SPECIFICATION MIL-DTL-15011 WHEN USED FOR THE UNITIZATION OF ITEMS COVERED BY THIS APPENDIX. ALL OTHER REQUIREMENTS SPECIFIED WITHIN MID-TL-15011 FOR A STYLE 1, TYPE 1, CLASS 1 PALLET WILL APPLY TO THE PALLET SPECIFIED WITHIN THIS DRAWING.
- L. ALTHOUGH THE CONTAINERS DEPICTED IN THE UNIT LOAD ON PAGE 4 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 LATERALLY AND LONGITUDINALLY, DURING SHIPMENT OF THE UNIT LOAD.

(CONTINUED AT RIGHT)

(GENERAL NOTES CONTINUED)

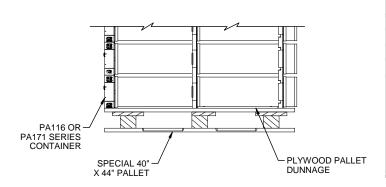
- M. THE HARDWOOD BUFFER PIECES DEPICTED IN THE UNIT LOAD ON PAGE 4 WILL BE NOMINAL 1" X 6" LUMBER IAW ASTM D6199, CLASS 2, GROUP IV. THE THICKNESS OF THE HARDWOOD BUFFER PIECES MUST BE ADJUSTED, AS REQUIRED, TO COMPLY WITH THE DIMENSIONAL VARIANCE OF THE PA116 OR PA171 CONTAINERS, SO AS TO COMPLETELY FILL OUT THE PALLET. THE LENGTH DIMENSION OF THE PALLET UNIT AT THE HARDWOOD BUFFER PIECES MUST BE WITHIN THE TOLERANCE OF PLUS 1/4", MINUS 0" OF THE LENGTH DIMESSION AT THE TOP OF THE PALLET UNIT.
- N. ALL WOODEN DUNNAGE SHALL BE PRESERVATIVE TREATED IN ACCORD-ANCE WITH GENERAL NOTE "X" IN THE BASIC PROCEDURES, AND HEAT TREATED IN ACCORDANCE WITH GENERAL NOTE "BB" IN THE BASIC PRO-CEDURES. SEE PAGE 5 FOR THE ALTERNATIVE PALLET MARKING LOCA-TIONS TO BE USED IF NAIL PLATES COVER THE PALLET POST ENDS AND CANNOT BE MARKED AS REQUIRED IN THE BASIC PROCEDURES.
- O. TWO METHODS MAY BE USED TO IMPROVE PALLET PERFORMANCE DURING MULTIPLE HANDLINGS IN THE REUSE PROGRAM, IF SO DESIRED. FIRST METHOD: COMMERCIALLY AVAILABLE TRUSS-NAIL PLATES MAY BE ADDED TO THE SIX OUTSIDE POSTS OF THE PALLET. SECOND METHOD: FOUR 3-1/4" NAILS MAY BE USED IN EACH POST IN A BOX SHAPED PATTERN IN LIEU OF THE THREE 3-1/4" NAILS IN A STAGGERED PATTERN CURRENTLY SPECIFIED IN MIL-DTL-15011.
- P. FOR DETAILS OF THE METAL LIFTING FRAME, SEE DAC DRAWING AC200000807 AND MILITARY SPECIFICATION MIL-A-70788.
- Q. WHEN TWO OR MORE LAYERS ARE OMITTED, THE BUNDLING STRAP REQUIREMENTS WILL CHANGE. A FOUR LAYER UNIT WILL HAVE TWO BUNDLING STRAPS OMITTED. THE REMAINING BUNDLING STRAPS WILL SURROUND THE SECOND THROUGH THE FOURTH LAYERS. A UNIT WITH THREE OR LESS LAYERS DOES NOT REQUIRE BUNDLING STRAPS. THERE WILL BE NO CHANGE ON THE STABILIZING STRAP REQUIREMENT.
- R. ROOFING NAILS IAW ASTM F1667 NL RF SS-02Z OR NL RF SQ-02Z MAY BE USED AS AN ALTERNATIVE TO STAPLES FOR SECURING THE STEEL STRAPS TO THE BUFFER PIECES. NAILS MUST BE APPLIED NEXT TO THE STRAPPING SUCH THAT THE NAIL HEADS OVERLAP THE STRAPPING. APPLY 12 NAILS (FOUR PER STRAP) TO EACH BUFFER PIECE IN PAIRS ON EITHER SIDE OF THE STRAP WITH THE SECOND NAIL APPLIED APPROXIMATELY 180 DEGREES FROM THE FIRST NAIL.



SEE GENERAL NOTE "B" PAGE 3.

PALLET UNIT DATA

DUNNAGE	20MM CARTRIDGES @ 75.4 LBS	 81 LBS
	TOTAL WEIGHT CUBE	



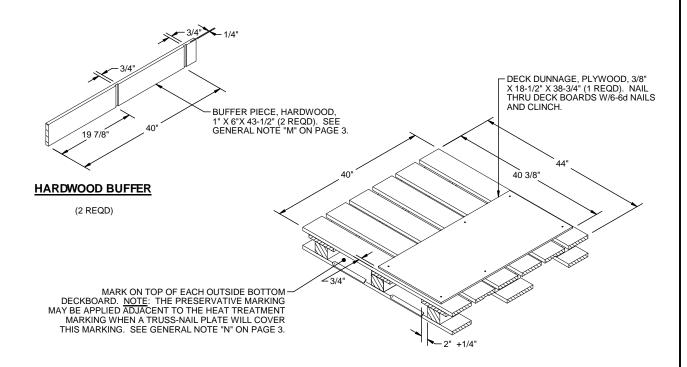
DILL OF MATERIAL					
LUMBER	LINEAR FEET	BOARD FEET			
1" X 6"	7. 25	3. 63			
NAILS	NO. REQD	POUNDS			
6d (2")	6	0. 04			
SPECIAL PALLET, 40" X 44" 1 REQD 77 LBS					

DILL OF MATERIAL

STEEL STRAPPING, 3/4" - 54.08' REQD - 4.83 LBS
STEEL STRAPPING, 1-1/4" - 46.50' REQD - 6.64 LBS
SEAL FOR 3/4" STRAPPING - - 5 REQD - - - NIL
SEAL FOR 1-1/4" STRAPPING - - 3 REQD - - - NIL
STAPLE, 1-17/32" X 3/4" - - 12 REQD - - - NIL
METAL LIFTING FRAME - - - 1 REQD - 5.13 LBS
PLYWOOD, 3/8" - - 4.98 SQ FT REQD - 5.13 LBS

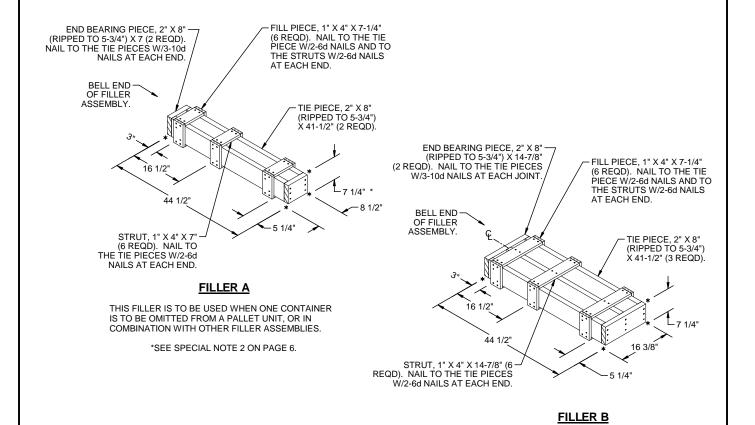
PARTIAL VIEW A

HARDWOOD BUFFER AND STRAPS HAVE BEEN OMITTED FOR CLARITY.

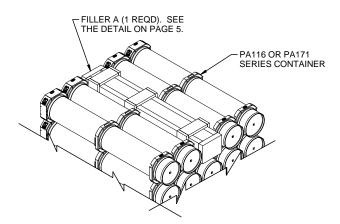


PALLET STRINGER MODIFICATION AND PALLET DUNNAGE LOCATION

SEE GENERAL NOTE "K" ON PAGE 3.

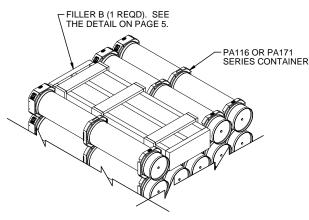


THIS FILLER IS TO BE USED WHEN TWO CONTAINERS ARE TO BE OMITTED FROM A PALLET UNIT, OR IN COMBINATION WITH OTHER FILLER ASSEMBLIES.



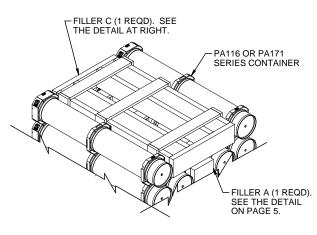
DETAIL A

THIS DETAIL DEPICTS PROCEDURES TO BE USED WHEN A STANDARD PALLET UNIT MINUS ONE CONTAINER IS TO BE UNITIZED. THE FILLER ASSEMBLY DEPICTED MUST BE INSTALLED IN THE MIDDLE OF THE TOP LAYER OF THE PALLET UNIT.



DETAIL B

THIS DETAIL DEPICTS PROCEDURES TO BE USED WHEN A STANDARD PALLET UNIT MINUS TWO CONTAINERS IS TO BE UNITIZED. THE FILLER ASSEMBLY DEPICTED MUST BE INSTALLED IN THE MIDDLE OF THE TOP LAYER OF THE PALLET UNIT.

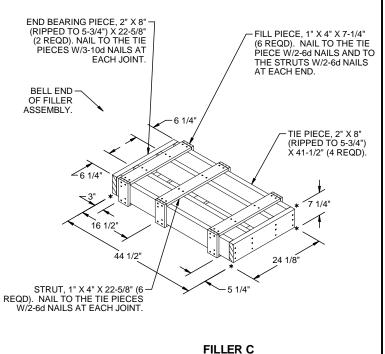


DETAIL C

THIS DETAIL DEPICTS PROCEDURES TO BE USED WHEN A STANDARD PALLET UNIT MINUS FOUR CONTAINERS IS TO BE UNITIZED. THE FILLER ASSEMBLIES DEPICTED MUST BE INSTALLED IN THE MIDDLE OF THE TOP LAYERS OF THE PALLET UNIT.

SPECIAL NOTES:

- 1. WHEN FIVE CONTAINERS ARE TO BE OMITTED FROM A PALLET UNIT, A COMPLETE LAYER OF CONTAINERS WILL BE OMITTED. WHEN FOUR CONTAINERS ARE TO BE OMITTED FROM A PALLET UNIT, A COMBINATION OF FILLER ASSEMBLIES DEPICTED ON PAGE 5 AND BELOW MUST BE USED. WHEN THREE OR LESS CONTAINERS ARE TO BE OMITTED FROM A PALLET UNIT, A COMBINATION OR ONE OF THE FILLER ASSEMBLIES DEPICTED ON PAGE 5 AND BELOW MUST BE USED. ALL FILLER ASSEMBLIES MUST BE INSTALLED IN THE MIDDLE OF THE TOP LAYER OR LAYERS OF A PALLET UNIT.
- 2. WHEN A "FILLER A" ASSEMBLY IS USED IN COMBINATION WITH A "FILLER B" OR "FILLER C" ASSEMBLY THE "FILLER A" ASSEMBLY MUST BE POSITIONED IN THE SECOND LAYER OF CONTAINERS FROM THE TOP OF THE PALLET UNIT AND MUST HAVE ITS OVERALL HEIGHT REDUCED FROM 7-1/4" TO 7" AND ALSO 2" X 6" MATERIAL WILL BE SUBSTITUTED FOR THE 2" X 8" (RIPPED TO 5-3/4") PIECES
- WHEN TWO "FILLER A" ASSEMBLIES ARE USED IN PLACE OF TWO OMITTED CON-TAINERS, THE FILLER ASSEMBLIES WILL BE SEPARATED BY AT LEAST ONE CON-TAINER TO INSURE PROPER FILLER ASSEMBLY RETENTION AND TO PRECLUDE ASSEMBLY INTERFERENCES.
- WHEN TWO OR MORE LAYERS ARE OMITTED, THE BUNDLING STRAP REQUIRE-MENTS WILL CHANGE. SEE GENERAL NOTE "Q" ON PAGE 3.



THIS FILLER IS TO BE USED WHEN THREE CONTAINERS ARE TO BE OMITTED FROM A PALLET UNIT, OR IN COMBINATION WITH OTHER FILLER ASSEMBLIES.