DET 0801

UNITIZATION PROCEDURES FOR FIELD RETURNS OF COMPLETE ROUNDS IN CYLINDRICAL METAL CONTAINERS ON 4-WAY ENTRY PALLETS

PROJECTILE, 155MM, XM982, EXCALIBUR, PACKED 1 PER PA179 CONTAINER, UNITIZED UP TO 3 CONTAINERS PER 40" X 48" WOODEN PALLET; APPROX CONTAINER SIZE 44-1/2" L X 9-1/4" W X 9-1/4" H

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PROJECT DET 0801

GENERAL NOTES

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5) AND CONFORMS TO MIL-STD-1660.
- B. THE UNITIZATION PROCEDURES SPECIFIED IN THIS DRAWING ARE APPLICABLE TO FIELD RETURNS OF THREE OR LESS EXCALIBUR PROJECTILES PACKED IN PA179 CONTAINERS. NOTE: IF MORE THAN THREE CONTAINERS ARE TO BE RETURNED, PROCEDURES DEPICTED IN AMC DRAWING 19-48-4231/55-20PM1006 SHALL BE FOLLOWED. SEE ARDEC DRAWING 13001473 FOR DETAILS OF THE PA179 CONTAINER
- C. ANY REQUEST FOR DEVIATION FROM THE PROCEDURES DELINATED HEREIN MUST BE DIRECTED TO THE COMMANDER, U.S. ARMY RDECOM-ARDEC, ATTN: AMSRD-AAR-AIL-TP (R), ROCK ISLAND, IL 61299-7300, FOR SPECIFIC APPROVAL. FOR EXAMPLE, SPECIFIC APPROVAL MUST BE OBTAINED FOR UNITIZATION OF AN ITEM WHEN PACKED IN CONTAINERS WHICH ARE DIFFERENT IN SIZE THAN THOSE SHOWN IN THE DRAWING FOR THAT ITEM. CONFIGURATION MANAGEMENT PROCEDURES CONTAINED IN MIL-STD-973 DO NOT APPLY TO THIS DRAWING OR ANY APPENDICES THERETO.
- D. A PLUS-OR-MINUS 1/4" IS ALLOWED ON OVERALL DIMENSIONS OF A FILLER AS-SEMBLY, SPACER ASSEMBLY OR ANY OTHER DUNNAGE ASSEMBLY. HOW-EVER, SIMILAR PIECES IN AN ASSEMBLY MUST BE WITHIN 1/8" OF THE SAME DIMENSION.
- E. DIMENSIONAL LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE UNLESS OTHERWISE SPECIFIED. FOR EXAMPLE, 1" X 4" MATERIAL IS ACTUALLY 3/4" THICK BY 3-1/2" WIDE AND 2" X 4" MATERIAL IS ACTUALLY 1-1/2" THICK BY 3-1/2" WIDE.
- F. IN ORDER TO OBTAIN COMPACT (SOUND) UNITS, ALL STRAPS SHALL BE LO-CATED IN PROPER ALIGNMENT AND TENSIONED UNTIL THEY CUT INTO THE EDGE OF THE TOP ASSEMBLY AND/OR THE PALLET DECK. AFTER TENSIONING, EACH STRAP WILL BE SECURED USING ONE SEAL AND TWO PAIR OF NOTCHES PFR SFAI.
- G. WHEN APPLYING ANY STRAP, CARE MUST BE EXERCISED TO ASSURE THAT THE END OF THE STRAP ON THE UNDERSIDE OF THE JOINT EXTENDS AT LEAST 6" BEYOND THE SEAL. THIS EXTRA MINIMUM LENGTH OF THE STRAP IS REQUIRED TO PERMIT SUBSEQUENT TIGHTENING OF LOOSENED STRAPPING. RETENSIONING CAN BE ACCOMPLISHED WITHOUT REPLACING STRAPPING OR SPLICING STRAPPING THROUGH THE USE OF A MANUAL OR PNEUMATIC FEEDWHEEL TYPE TENSIONING TOOL AND THE APPLICATION OF ONE ADDITIONAL SEAL.

(CONTINUED AT RIGHT)

MATERIAL SPECIFICATIONS

MIL SPEC MIL-P-15011; 4-WAY ENTRY, STYLE 1, TYPE I, CLASS 1, PRESERVATIVE AND HEAT TREATED. SEE GENERAL NOTE "R" ON PAGE 3.

<u>LUMBER</u> :	SEE TM 743-200-1 (DUNNAGE LUMBER) AND VOLUNTARY PRODUCT STANDARD PS 20 FOR FILLER ASSEMBLIES. ASTM D6199; CLASS 2, GROUP II, III, OR IV, PRESERVATIVE AND HEAT TREATED FOR OTHER DUNNAGE ASSEMBLIES. NOTE: ONLY GROUP IV LUMBER IN ACCORDANCE WITH ASTM D6199 WILL BE ACCEPTABLE FOR THE CONSTRUCTION OF THE PALLET. SEE GENERAL NOTES "O" AT RIGHT AND "R" ON PAGE 3.
NAILS:	ASTM F1667; COMMON STEEL NAIL (NLCMS OR NLCMMS). ALT: UNDERLAYMENT NAIL (NLUL), PAL- LET NAIL (NLPL), OR COOLER NAIL (NLCL) OF SAME SIZE. SEE GENERAL NOTE "Q" ON PAGE 3.
<u>PLYWOOD</u> :	COMMERCIAL ITEM DESCRIPTION A-A-55057, INDUSTRIAL PLYWOOD, INTERIOR WITH EXTERIOR GLUE, GRADE C-D. IF SPECIFIED GRADE IS NOT AVAILABLE, A BETTER INTERIOR OR AN EXTERIOR GRADE MAY BE SUBSTITUTED.
STRAPPING, STEEL:	ASTM D3953: FLAT STRAPPING, TYPE 1, HEAVY DUTY, FINISH B (GRADE 2), SIZE $3/4$ " X .035" OR .031". ALTERNATIVE SIZE $1-1/4$ " X .035" OR .031". NOTE: IF EDGES DO NOT MEET THE PRECE TEST FOR GRADE 2, AMY BRITE OR SLIT EDGES SHALL HAVE FINISH A OVERLAY APPLIED.
SEAL, STRAP:	ASTM D3953; CLASS H, FINISH B (GRADE 2), DOUBLE NOTCH TYPE, STYLE I, II, III, OR IV. ALTERNATIVE SEAL FINISH: SIGNODE OR DELTA PAINTED SEALS MAY BE USED AS AN ALTERNATIVE IF ALL SURFACES ARE PAINTED. GRITTED BACKING IS NOT PERMITTED

(GENERAL NOTES CONTINUED)

- H. PALLET UNIT LOADS SHALL BE INSPECTED FOR TORN, DETERIORATED OR LOOSENED STRAPPING PRIOR TO SHIPPING.
 - TORN OR BROKEN STRAPS SHOULD BE REPLACED BY CONTRACTORS, BUT MAY BE REPAIRED AT THE DEPOT/FIELD LEVEL BY SPLICING IN A MANNER SIMILAR TO THAT DESCRIBED IN "H.4(B)" BELOW.
 - DETERIORATION DUE TO A MINOR AMOUNT OF RUST WILL NOT NECESSAR-ILY BE CAUSE FOR REPLACING A STRAP. HOWEVER, AN EXTENSIVELY RUSTED/SCALED/PITTED STRAP IS CAUSE FOR REPLACING THE STRAP.
 - A DAMAGED OR DEFECTIVE SEAL IS SUFFICIENT CAUSE FOR REPLACEMENT OF THE SEAL.
 - 4. LOOSE STRAPS SHOULD BE CHECKED FOR DEGREE OF LOOSENESS BY PO-SITIONING THE HOOK OF A SCALE (COMMONLY KNOWN AS A FISH SCALE) BEHIND THE STRAPS NEAR THE MIDPOINT AT THE TOP OR SIDE OF THE UNIT LOAD. PULL THE SCALE UNTIL A READING OF 20 POUNDS IS OBTAINED. THE DISTANCE BETWEEN THE INITIAL POSITION OF THE STRAP AND THE STRAP UNDER THE 20 POUND LOAD MUST NOT EXCEED 1". IF MEASUREMENT EX-CEEDS 1", THE STRAP MUST BE TIGHTENED OR REPLACED. TIGHTENING CAN BE ACCOMPLISHED BY EITHER OF TWO METHODS.
 - (A) A STRAP TENSIONING TOOL CAN BE USED IF THE STRAP HAS AT LEAST A 6" LONG TAB AT THE SEAL. SEE GENERAL NOTE "G" AT LEFT.
 - (B) AN 18" OR LONGER STRAP CAN BE USED AS A SPLICE PIECE. CUT THE LOOSE STRAP ON BOTH SIDES OF THE ORIGINAL SEAL AND DISCARD THE CUT OUT SECTION. OVERLAP ONE END OF THE STRAP SPLICE PIECE TO ONE END OF THE ORIGINAL STRAPPING SO AS TO PROTRUDE SLIGHTLY BEYOND THE END OF THE SEAL TO BE USED. POSITION AND SECURE SEAL TO OVERLAPPED SECTION WITH TWO PAIR OF NOTCHES. USING A STRAPPING TOOL, TENSION AND SEAL THE LENGTHENED STRAP. THE STRAP SPLICE PIECE MAY BE CUT FROM NEW STRAP OR USED STRAP, PROVIDED IT IS AT LEAST OF AS GOOD A QUALITY AS THE STRAP TO WHICH IT IS BEING SECURED. NOTE: ONLY ONE SPLICE PER STRAP IS ALLOWED ON UNIT LOADS OF AMMUNITION.
 - CAUTION: WHEN A STRAP IS REPLACED/SPLICED OR RETENSIONED, AND THE OTHER STRAPS ON A UNIT LOAD ARE NOT, CARE MUST BE EXERCISED TO INSURE THAT THE TENSION ON THE AFFECTED STRAP IS NEARLY THE SAME AS THAT OF THE OTHER STRAPS.
- J. ROOFING NAILS IN ACCORDANCE WITH ASTM F1667 NL RF R-02Z MAY BE USED AS AN ALTERNATE TO STAPLES FOR SECURING STEEL STRAPS TO BOARDS NAILS MUST BE APPLIED NEXT TO THE STRAPPING SUCH THAT THE NAIL HEADS OVERLAP THE STRAPPING. APPLY TWO NAILS IN PAIRS (TO REPLACE ONE STA-PLE) ON EITHER SIDE OF THE STRAP, WITH THE SECOND NAIL APPLIED AP-PROXIMATELY 180 DEGREES FROM THE FIRST NAIL.
- K. UNIT LOAD MARKING WILL BE ACCOMPLISHED IN ACCORDANCE WITH DAC DRAWING ACV00561, UNIT LOAD MARKING FOR SHIPMENT AND STORAGE, AMMUNITION AND EXPLOSIVES.
- L. CONVERSION TO METRIC EQUIVALENTS: DIMENSIONS WITHIN THIS DOCUMENT 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.
- M. WHEN ASSEMBLING A PALLET UNIT, CARE SHALL BE TAKEN TO INSURE THAT THE CONTAINERS AND DUNNAGE ASSEMBLIES ARE EVENLY ALIGNED SO THAT THE SIDES AND ENDS OF THE PALLET UNIT DO NOT EXCEED A 1/2" TOLERANCE, RELATIVE TO THE PALLET.
- N. DIMENSIONS GIVEN FOR DUNNAGE ASSEMBLIES WILL BE FIELD CHECKED PRIOR TO THEIR ASSEMBLY. THIS GUIDANCE MUST BE APPLIED PRIOR TO BEGINNING A PALLETIZING OPERATION. ALSO, DUE TO VARIATIONS OF CONTAINER DIMENSIONS, ADJUSTMENTS MAY BE REQUIRED AS TO THE LOCATION OF CERTAIN PIECES ON DUNNAGE ASSEMBLIES.
- O. ALL WOODEN DUNNAGE USED IN UNIT LOADS SHALL BE PRESERVATIVE TREATED IN ACCORDANCE WITH THE PROCEDURES SPECIFIED IN MIL-B-2427 FOR CLEATED WOODEN BOXES. IF THE DUNNAGE CONSISTS OF MORE THAN ONE COMPONENT, IT MUST BE ASSEMBLED PRIOR TO TREATMENT. THE LETTERS PA DENOTING PQ56 (COPPER-8-QUINOLINOLATE), PB DENOTING M-GARD W550 (ZINC NAPHTHENATE EMULSIFIABLE), OR PC DENOTING M-GARD W510 OR CUNAPSOL 5 (COPPER NAPHTHENATE) MUST BE APPLIED TO THE DUNNAGE IN LETTERS AT LEAST ONE INCH HIGH.
- P. WHERE 3/4" WIDE STEEL STRAPPING IS SPECIFIED FOR USE BY THIS DRAWING, 1-1/4" WIDE STEEL STRAPPING MAY BE SUBSTITUTED FOR THE 3/4" STRAPPING, PROVIDED THAT THE BASIC REQUIREMENTS ARE SATISFIED. ALL OF THE SPECIFICATION CRITERIA SET FORTH UNDER THE "MATERIAL SPECIFICATIONS" FOR THE 3/4" STRAPPING AND STRAP SEALS WILL BE USED FOR THE 1-1/4" STRAPPING AND STRAP SEALS WILL BE USED FOR THE 1-1/4" STRAPPING AND STRAP SEALS WILL BE USED FOR THE 1-1/4" STRAPPING AND STRAP SEALS WILL BE USED FOR THE 1-1/4" STRAPPING AND STRAP SEALS WILL BE USED FOR THE 1-1/4" STRAPPING AND STRAP SEALS WILL BE USED FOR THE 1-1/4" STRAPPING AND SEALS.
- Q. COOLER NAILS MAY BE SUBSTITUTED FOR THE COMMON NAILS AS SPECIFIED WITHIN EACH APPENDIX BY APPLYING THE FOLLOWING GUIDANCE. THE NUMBER OF COOLER NAILS TO BE USED WILL BE THE NUMBER OF COMMON NAILS MULTIPLIED BY 1.2 AND ROUNDED UP TO THE NEXT WHOLE NUMBER. THE SIZE OF THE COOLER NAILS TO BE USED WILL BE THE SAME AS SPECIFIED FOR THE COMMON NAILS (44, 64, 104, ETC.) BUT WILL CONFORM TO THE SIZE AND WEIGHT TOLERANCES SPECIFIED WITHIN ASTM F1667 FOR COOLER NAILS.

(CONTINUED ON PAGE 3)

STAPLE, STRAP

PALLET - - - -

ASTM F1667; STFCS-189, STFCS-198, STFCS-207, OR STFCS-216, 15/16" OR 1" CROWN WIDTH X 3/4" LEG LENGTH FOR 3/4" STRAPPING OR STFCS-224, 1-17/32" CROWN WIDTH X 3/4" LEG LENGTH FOR 1-1/4" STRAPPING.

PALLET UNIT DATA						
ITEMS INCLUDED		*HAZARD				
NSN	DODIC	CLASS AND DIVISION	*COMPATI- BILITY GROUP	APPROX WEIGHT (LBS)		
1320- 01-534-2535 01-552-1850	DA39 DA45	1. 1 1. 1	D D	593 593		

^{*}HAZARD AND 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 LISTING(S).

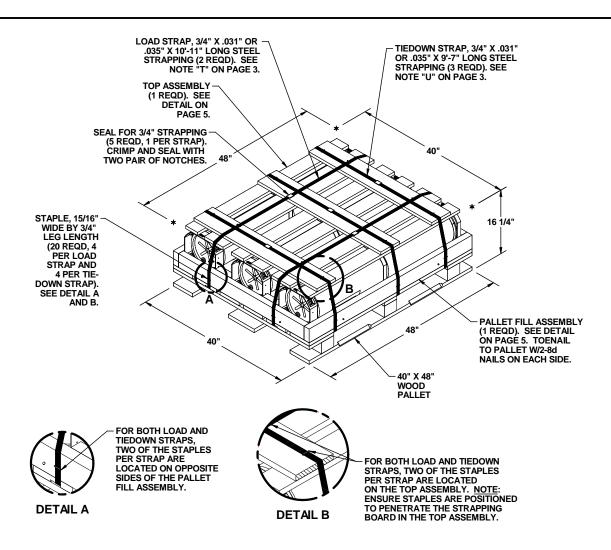
(GENERAL NOTES CONTINUED FROM PAGE 2)

- R. ALL NON-MANUFACTURED WOOD USED IN THE PALLETIZED LOAD SHALL BE HEAT TREATED TO A CORE TEMPERATURE OF 56 DEGREES CELSIUS FOR A MINIMUM OF 30 MINUTES. THE PALLET MANUFACTURER AND THE MANUFACTURER OF WOOD TO BUILD FILLER ASSEMBLIES AND DUNNAGE ASSEMBLIES FOR THE PALLETIZED LOAD SHALL BE AFFILIATED WITH AN INSPECTION AGENCY ACCREDITED BY THE AMERICAN LUMBER STANDARDS COMMITTEE. THE PALLET MANUFACTURER AND THE MANUFACTURER OF WOOD USED TO BUILD FILLER ASSEMBLIES AND DUNNAGE ASSEMBLIES FOR THE PALLETIZED LOAD SHALL ENSURE TRACEABILITY TO THE ORIGINAL SOURCE OF HEAT TREATMENT. EACH PALLET, FILLER ASSEMBLY, OR DUNNAGE ASSEMBLY SHALL BE MARKED TO SHOW THE CONFORMANCE TO THE INTERNATIONAL PLANT PROTECTION CONVENTION STANDARD. PALLETS, FILLER ASSEMBLIES, AND DUNNAGE ASSEMBLIES MADE OF NON-MANUFACTURED WOOD SHALL BE HEAT TREATED AND MARKED APPROPRIATELY. THE QUALITY MARK FOR THE PALLET SHALL BE PLACED ON TWO OPPOSITE END POSTS. THE QUALITY MARK FOR THE FILLER ASSEMBLIES AND DUNNAGE ASSEMBLIES SHALL BE PLACED ON TWO OPPOSITE SIDES. FOREIGN MANUFACTURERS SHALL HAVE THE HEAT TREATMENT OF NON-MANUFACTURED WOOD PRODUCTS VERIFIED IN ACCORDANCE WITH THEIR NATIONAL PLANT PROTECTION ORGANIZATION'S COMPLIANCE PROGRAM.
- S. DIMENSIONS, CUBE AND WEIGHT OF A PALLET UNIT WILL VARY SLIGHTLY DEPENDING UPON THE ACTUAL DIMENSIONS OF THE CONTAINERS AND THE WEIGHT OF THE SPECIFIC ITEM BEING UNITIZED.
- T. THE LOAD STRAPS MUST BE THREADED THROUGH THE STRAP SLOTS OF A PALLET. LOAD STRAPS MUST BE TENSIONED AND SEALED PRIOR TO APPLICATION OF TIEDOWN STRAPS.
- U. INSTALL EACH TIEDOWN STRAP TO PASS UNDER THE TOP DECK BOARDS OF THE PALLET AND TO BE LOCATED AS SHOWN. TIEDOWN STRAPS WILL NOT BE APPLIED UNTIL THE LOAD STRAPS HAVE BEEN TENSIONED AND SEALED.
- V. THE FOLLOWING AMC DRAWINGS ARE APPLICABLE FOR OUTLOADING OF THE ITEMS COVERED BY THIS DRAWING. <u>CAUTION</u>: THIS PALLET UNIT IS NOT APPROVED FOR STORAGE, AND IS INTENDED FOR FIELD RETURNS ONLY.

CARLOADI NG - - - 19-48-4115-5PA1002
TRUCKLOADI NG - 19-48-4117-11PA1003
END OPENI NG I SO
CONTAI NER - - 19-48-4153-15PA1002
MI LVAN - - 19-48-4166-15PA1003
SI DE OPENI NG I SO
CONTAI NER - - 19-48-4267-15PA1009

- W. THE STYLE 1 PALLET DELINEATED IN THE DETAIL ON PAGE 4 NEED NOT HAVE CHAMFERS AS SPECIFIED WITHIN MILITARY SPECIFICATION MIL-P-15011 WHEN USED FOR THE UNITIZATION OF ITEMS COVERED BY THIS DRAWING.
- X. IF TWO OR LESS PA179 CONTAINERS ARE TO BE UNITIZED, FILLER ASSEMBLIES MUST BE USED. IF TWO PA179 CONTAINERS ARE TO BE UNITIZED, ONE FILLER ASSEMBLY WILL BE USED IN THE POSITION OF THE CENTER CONTAINER AS DETAILED IN "ONE FILLER ASSEMBLY UNIT LOAD" DETAIL ON PAGE 6. IF ONLY ONE PA179 CONTAINER IS TO BE UNITIZED, TWO FILLER ASSEMBLIES WILL BE USED AND POSITIONED WHERE THE TWO OUTER CONTAINERS NORMALLY WOULD APPEAR AS DEPICTED IN THE "TWO FILLER ASSEMBLY UNIT LOAD" DETAIL ON PAGE 6.

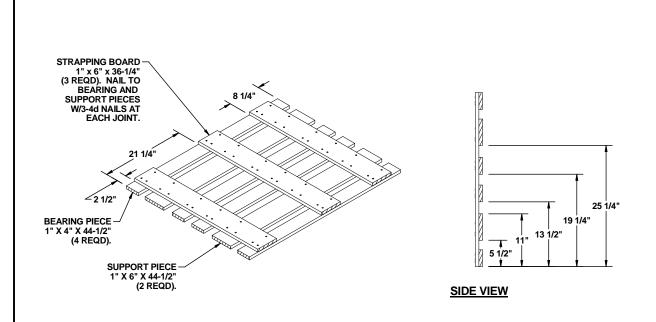
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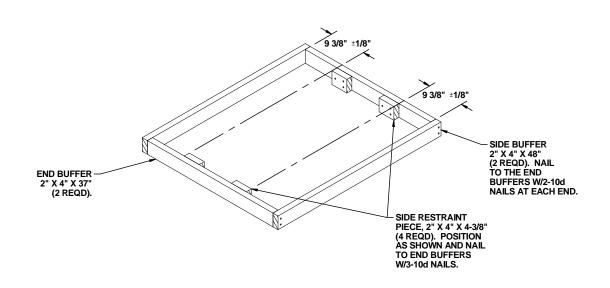
PALLET UNIT SEE GENERAL NOTE "S" ON PAGE 3.

3 CONTAINERS OF PROJECTILES (1 PER CNTR) ● 156 DUNNAGE		468 LBS 55 LBS 80 LBS
TOTAL WEIGHT CUBE	18	603 LBS (APPROX) .1 CU FT (APPROX)

BILL OF MATERIAL					
LUMBER	LINEAR FEET	BOARD FEET			
1" X 4" 1" X 6" 2" X 4"	15 17 16	5 9 11			
NAI LS	NO. REQD	POUNDS			
4d (1-1/2") 8d (2-1/2") 10d (3")	54 8 20	0. 19 0. 08 0. 31			
PALLET, 40" X 48" 1 REQD 80 LBS STEEL STRAPPING, 3/4" - 50.59' REQD 4.52 LBS SEAL FOR 3/4" STRAPPING 5 REQD NIL STAPLE, 15/16" X 3/4" 20 REQD NIL					

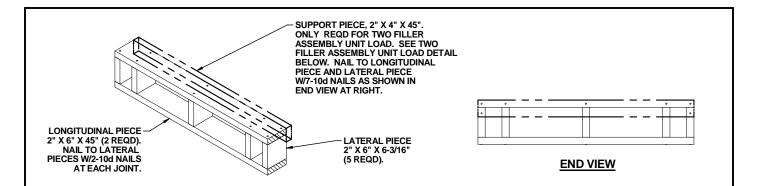


TOP ASSEMBLY

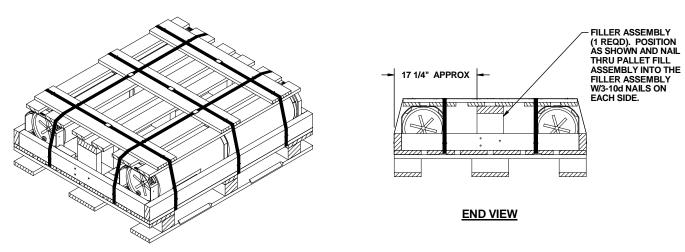


PALLET FILL ASSEMBLY

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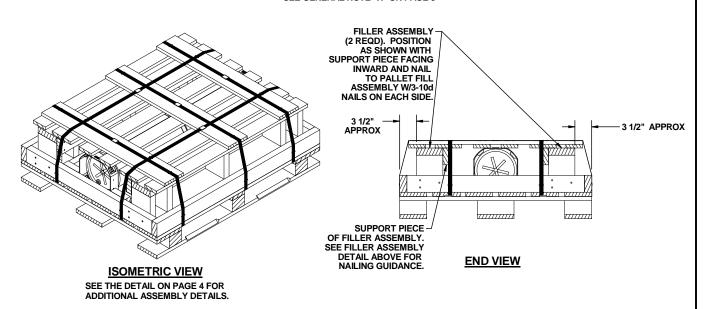
FILLER ASSEMBLY



ISOMETRIC VIEW

SEE THE DETAIL ON PAGE 4 FOR ADDITIONAL ASSEMBLY DETAILS.

ONE FILLER ASSEMBLY UNIT LOAD SEE GENERAL NOTE "X" ON PAGE 3



TWO FILLER ASSEMBLY UNIT LOAD

(SEE GENERAL NOTE "X" ON PAGE 3)

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