# **JAVELIN**

# UNITIZATION PROCEDURES FOR GUIDED MISSILES PACKED ONE PER CYLINDRICAL PLASTIC CON-TAINER, UNITIZED SIX CONTAINERS PER 4-WAY ENTRY PALLET

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# U.S. ARMY MATERIEL COMMAND DRAWING

APPROVED, U.S. ARMY **AVIATION AND MISSILE COMMAND** CAUTION: VERIFY PRIOR TO USE AT HTTPS://MHP.REDSTONE.ARMY.MIL THAT THIS IS THE MOST CURRENT VERSION OF THIS DOCUMENT. THIS IS PAGE 1 OF 6. OCONNOR.DOUGL Digitally signed by CONNOR.DOUGAS.LEO.1140582251 (Dict.-Life o-U.S. Government.ou-Dob. pa-Ph. ou-U.S. dovernment.ou-Dob. ou-Ph. ou-Dob. ou-Ph. ou-U.S. dovernment.ou-Dob. ou-Ph. ou-U.S. dovernment. DO NOT SCALE **FEBRUARY 2001 ENGINEER** BASIC LAURA FIEFFER OR TECHNICIAN **MADELINE BANKS** REV. **REVISION NO. 2 NOVEMBER 2016** FIEFFER.LAURA Digitally signed by FIEFFER.LAURA FIEFFER.LAURA 1230375 APPROVED BY ORDER OF COMMANDING **ENGINEERING** GENERAL, U.S ARMY MATERIEL COMMAND SEE THE REVISION LISTING ON PAGE 3 DIVISON .A.1230375727 CLASS DIVISION DRAWING TEST ENGINEER FELICIANO.AD Digitally signed by FELICIANO.ADIN.1259200373 SHIMP.UPTON SHIMP.UPTONR 1231257183 DN: c-US, c-US, Government, ou-DoD, c-IS, Government, ou-DoD, ou-DoD, ou-USA, ou-U TEST IN.1259200373 ou=PKI, ou=USA, on=FELICIANO.ADIN.1259200373 Date: 2015.10.28 09:22:27-05'00' 99-08 BARICKMAN.PHII.

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#### **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-1860
- B. FOR DETAIL OF THE JAVELIN MISSILE ROUND SHIPPING CONTAINER, SEE MICOM DRAWING NO. 13303015.

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CONTAINER DIMENSIONS - - 55.50" LONG X 15.20" WIDE X 18.11" HIGH (17.36" STACKING) CONTAINER GROSS WEIGHT - - - - - - - 96 LBS (APPROX) CONTAINER CUBE - - - - - - - 8.84 CU FT (APPROX)
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- C. <u>CAUTION</u>: THIS ITEM IS IN A "PROPULSIVE STATE" AND MUST BE LOADED ON THE PALLET WITH THE FORWARD END OF ALL CONTAINERS FACING IN ONE DIRECTION.
- D. THE FOLLOWING AMC DRAWINGS ARE APPLICABLE FOR OUTLOADING AND STORAGE OF THE ITEMS COVERED BY THIS DRAWING.

CARLOADING	19-48-5995-GM5.JV2
	19-48-5996-GM11JV2
STORAGE	- 19-48-5271-GM1-3-4-14-22JV2
END OPENING ISO CONTAINER	19-48-5998-GM15JV5
MI LVAN	19-48-5997-GM15JV4
	R 19-48-5999-GM15JV6
CROP	19-48-4906/11-CA17Q6
TACTICAL VEHICLE	19-48-8218-GM17JV2

- E. DIMENSIONS, CUBE AND WEIGHT OF A PALLET UNIT WILL VARY SLIGHTLY DE-PENDING UPON THE ACTUAL DIMENSIONS OF THE BOXES AND THE WEIGHT OF THE SPECIFIC ITEM BEING UNITIZED.
- F. DIMENSIONAL LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF A 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.
- G. 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.
- H. ALTHOUGH THE CONTAINERS DEPICTED IN THE UNIT LOAD ON PAGE 3 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.
- J. WHEN ASSEMBLING A COMPLETE PALLET UNIT, CARE SHALL BE TAKEN TO ENSURE THAT THE CONTAINERS AND DUNNAGE ASSEMBLIES OR PIECES ARE EVENLY ALIGNED SO THAT THE SIDES AND ENDS OF THE PALLET UNIT DO NOT EXCEED A 1/2\* TOLERANCE, RELATIVE TO THE PALLET.
- K. INSTALL EACH TIEDOWN STRAP TO PASS UNDER THE TOP DECKBOARDS OF THE PALLET. NOTE THAT THE STRAPS WILL BE LOCATED AS SHOWN, THREAD-ED THROUGH THE TOP CONTAINER HANDLES AND ALIGNED WITH THE STACK-ING LUGS.
- L. 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 STRAP IS REQUIRED TO PERMIT SUBSEQUENT TIGHTENING OF LOOSENED STRAPPING. RETENSIONING CAN BE ACCOMPLISHED WITHOUT REPLACING STRAPPING OR SPLICING STRAPPING THROUGH THE USE OF MANUAL OR PNEUMATIC FEEDWHEEL TYPE TENSIONING TOOL AND THE APPLICATION OF ONE ADDITIONAL SEAL.

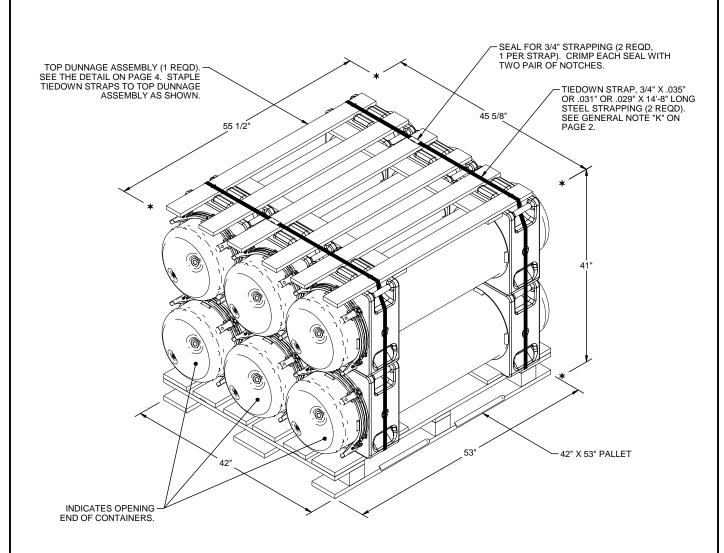
(CONTINUED AT RIGHT)

#### **MATERIAL SPECIFICATIONS**

<u>PALLET</u> :	MIL SPEC MIL-P-15011; 4-WAY ENTRY, STYLE 1B, TYPE I, CLASS 1, PRESERVATIVE AND HEAT TREATED. SEE GENERAL NOTES "S" AND "T".
<u>LUMBER</u> :	SEE TM743-200-1 (DUNNAGE LUMBER) AND VOLUNTARY PRODUCT STANDARD PS 20. SEE GENERAL NOTES "S" AND "T".
NAILS:	ASTM F1667; COMMON STEEL NAIL (NLCMS OR NLCMMS). ALT: UNDERLAYMENT NAIL (NLUL), PALLET NAIL (NLPL), OR COOLER NAIL (NLCL) OF SAME SIZE.
STRAPPING, STEEL:	ASTM D3953; FLAT STRAPPING, TYPE 1, HEAVY DUTY, FINISH B (GRADE 2), SIZE 3/4" X .035" OR .031" OR .029".
SEAL, STRAP:	ASTM D3953; CLASS H, FINISH B (GRADE 2) DOUBLE NOTCH TYPE, STYLE I, II, III OR IV. ALTERNATIVE SEAL FINISH: SIGNODE PAINTED SEALS MAY BE USED AS AN ALTERNATIVE IF ALL SURFACES ARE PAINTED. GRITTED BACKING IS NOT PERMITTED.
<u>STAPLE</u> :	ASTM F1667; STFCS-189, STFCS-198, STFCS-207, OR STFCS-216, 15/16" OR 1" CROWN WIDTH X 3/4" LEG LENGTH.
ANTI -CHAFING MATERIAL:	MIL-B-121 (OR EQUAL); NEUTRAL BARRIER MATERIAL.

#### (GENERAL NOTES CONTINUED)

- M. IN ORDER TO OBTAIN COMPACT (SOUND) UNITS, ALL STRAPS SHALL BE LOCATED IN PROPER ALIGNMENT AND TENSIONED UNTIL THEY CUT INTO THE EDGE OF THE DUNNAGE ASSEMBLY AND THE PALLET DECK. AFTER TENSIONING, ALL STRAPS WILL BE SECURED USING ONE SEAL AND TWO PAIR OF NOTCHES PER SEAL. ALL STRAPPING MUST BE STRAIGHT WITHIN 2" ON ANY SURFACE OF THE UNITIZED LOAD I.E., TOP, BOTTOM, SIDES, OR ENDS THAT IT ENCOMPASSES.
- N. REFER TO DAC DRAWING ACV00617 FOR APPROVED SOURCES FOR SEAL-LESS (CLIPLESS) SEALING TOOL. THESE APPROVED SEALING TOOLS CAN BE USED IN PLACE OF SEAL CURRENTLY SPECIFIED IN THE MATERIAL SPECIFI-CATIONS LISTED AT LEFT.
- O. IF STRAP CUTTERS ARE SPECIFICALLY REQUIRED BY THE PROCURING ACTIVITY, REFER TO DARCOM DRAWING 19-48-4127-20P1000 FOR APPROPRIATE MEANS OF SECUREMENT TO THE PALLET UNIT.
- P. DIMENSIONS GIVEN FOR DUNNAGE ASSEMBLIES AND THE PALLET DUNNAGE LOCATION WILL BE FIELD CHECKED PRIOR TO ASSEMBLY OF PALLET UNIT. CONTAINERS MUST FIT SNUGLY AGAINST THE DUNNAGE ASSEMBLIES.
- Q. UNLESS OTHERWISE SPECIFIED, A PLUS-OR-MINUS 1/4" IS ALLOWED ON OVERALL DIMENSIONS OF ANY PIECE OF DUNNAGE OR DUNNAGE ASSEMBLY. HOWEVER, SIMILAR PIECES IN AN ASSEMBLY MUST BE WITHIN 1/8" OF THE SAME DIMENSION.
- R. THE STYLE 1B PALLET DELINEATED IN THE DETAIL ON PAGE 4 NEED NOT HAVE CHAMFERS OR STRAP SLOTS AS SPECIFIED WITHIN MILITARY SPECIFICATION MILP-15011 WHEN USED FOR THE UNITIZATION OF ITEMS COVERED BY THIS DRAWING.
- S. THE PALLET AND 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-QUINOLINO-LATE), PB DENOTING M-GARD W550 (ZINC NAPTHANATE EMULSIFIABLE) OR PC DENOTING M-GARD W510 OR CUNAPSOL 5 (COPPER NAPTHANATE) MUST BE APPLIED TO THE WOOD DUNNAGE IN LETTERS AT LEAST ONE-INCH HIGH, AND WILL BE APPLIED ON THE OUTER FACE OF A CENTER POST ON A 53" SIDE OF THE PALLET AND TO AN OUTER FACE OF DUNNAGE ASSEMBLY.
- T. ALL NON-MANUFACTURED WOOD USED IN PALLETIZED LOAD SHALL BE HEAT TREATED AND MARKED TO SHOW CONFORMANCE TO THE INTERNATIONAL PLANT PROTECTION CONVENTION STANDARD (IPPC), ISPM-15. SEE DAC DRAWING ACV00831 FOR ISPM-15 CERTIFICATION MARKING AND PLACEMENT DETAILS.
- U. ALL NAILS DRIVEN INTO THE DUNNAGE ASSEMBLIES, FILLER ASSEMBLIES, OR PALLET SHALL BE DRIVEN SO THAT THE NAILHEADS ARE FLUSH OR SLIGHTLY BELOW THE SURFACE OF THE PIECE THAT THEY ARE BEING DRIVEN THROUGH.
- V. A UNIT LOAD, SUCH AS THE LAST UNIT LOAD FOR AN AMMUNITION LOT, CAN BE ASSEMBLED WITH FEWER LAYERS THAN SPECIFIED FOR THE BASIC UNIT LOAD. THE UNIT LOAD CAN ALSO BE ASSEMBLED WITH A PARTIAL TOP LAYER PROVIDING IT IS TO BE SHIPPED WITHIN CONUS TO A DEPOT, DEPOT ACTIVITY, POST, CAMP, OR STATION. FOR OCONUS OR FOREIGN MILITARY SALES (FMS) SHIPMENTS, HOWEVER, THE UNIT LOAD MUST NOT BE ASSEMBLED WITH A PARTIAL LAYER. EMPTY CONTAINERS OR FILLER ASSEMBLIES WILL BE USED TO ACHIEVE FULL-LAYER CONFIGURATION. FOR ADDITIONAL GUIDANCE, SEE GENERAL NOTE "W" AND THE DETAILS ON PAGE 6.
- W. IF LESS THAN SIX CONTAINERS ARE TO BE LOADED ON A PALLET, IT SHALL BE ACCOMPLISHED BY SUBSTITUTING FILLER ASSEMBLIES, AS DEPICTED ON PAGE 6, FOR ONE OR TWO OMITTED CONTAINERS, EXCEPT AS OTHERWISE STATED WITHIN GENERAL NOTE "V". HOWEVER, IF MORE THAN TWO CONTAINERS ARE TO BE OMITTED, A COMPLETE LAYER OF CONTAINERS MUST BE OMITTED. FILLER ASSEMBLIES WILL BE POSITIONED WITHIN THE UNIT LOAD AS DEPICTED IN THE DETAILS ON PAGE 6, NOTE: EMPTY OR REJECT CONTAINERS MAY BE USED IN PLACE OF FILLER ASSEMBLIES AS NECESSARY. WHEN (EMPTY) FILLER CONTAINERS ARE USED IN PLACE OF OMITTED CONTAINERS TO COMPLETELY FILL OUT A LAYER ON A PALLET, THEY WILL BE MARKED AS SPECIFIED IN ARDEC DRAWING NO. 1298/2865.
- X. IF UNITIZING OPERATIONS ARE BEING PERFORMED IN SUPPORT OF A SHIPMENT OF ITEMS FOR TROOP USE AT A CAMP, POST OR STATION, AND, IF IN ADDITION TO FULL LAYER UNITS SPECIFIED IN GENERAL NOTE "V", A FEW LOOSE CONTAINERS ARE REQUIRED TO SATISFY THE QUANTITY REQUISITIONED, THE LOOSE CONTAINERS NEED NOT BE UNITIZED. HOWEVER, THE METHOD FOR BRACING AND STAYING OF THE LOOSE CONTAINERS WITHIN THE LOAD TO BE SHIPPED MUST COMPLY WITH THE METHOD SPECIFIED WITHIN THE APPLICABLE 19-48 SERIES OUTLOADING PROCEDURAL DRAWING.
- Y. PALLETIZED UNITS OF MISSILES ARE LIMITED TO ONE LOT PER PALLET UNIT, EXCEPT WHERE REQUIRED BY BALLISTIC SAMPLE SHIPMENT OR TROOP USE AT POST, CAMP, OR STATION, OR AS REQUIRED WITHIN GOVERNMENT CON-TRACT PRIOR TO GOVERNMENT ACCEPTANCE.
- Z. ANTI-CHAFING MATERIAL MAY BE INSTALLED AT POINTS OF CONTACT BETWEEN CONTAINERS, BETWEEN CONTAINERS AND DUNNAGE, AND BETWEEN CONTAINERS AND STEEL STRAPPING, IF DESIRED, TO PREVENT CHAFING DAMAGE TO CONTAINER AND MARKINGS.



#### **PALLET UNIT**

SEE GENERAL NOTE "E" ON PAGE 2.

# **REVISIONS**

REVISION NO. 1, DATED OCTOBER 2010, CONSISTS OF:

- 1. UPDATING DRAWING FORMAT.
- UPDATING DRAWING FORMA
   UPDATING GENERAL NOTES.
- 3. UPDATING MATERIAL SPECIFICATIONS.

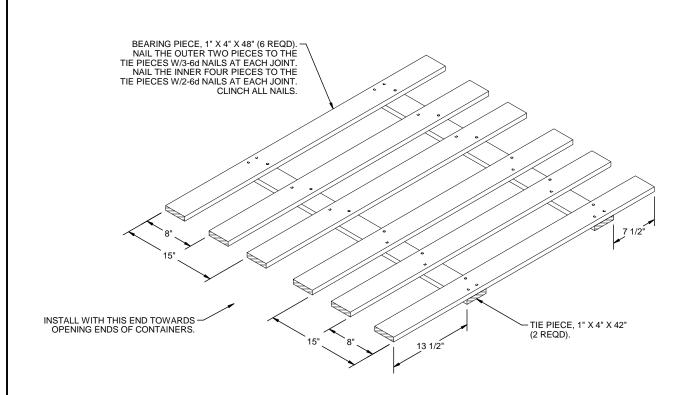
REVISION NO. 2, DATED NOVEMBER 2016, CONSISTS OF:

ADDING ALTERNATE NAIL TYPE TO THE "PALLET DUNNAGE LOCATION" DETAIL ON PAGE 4.

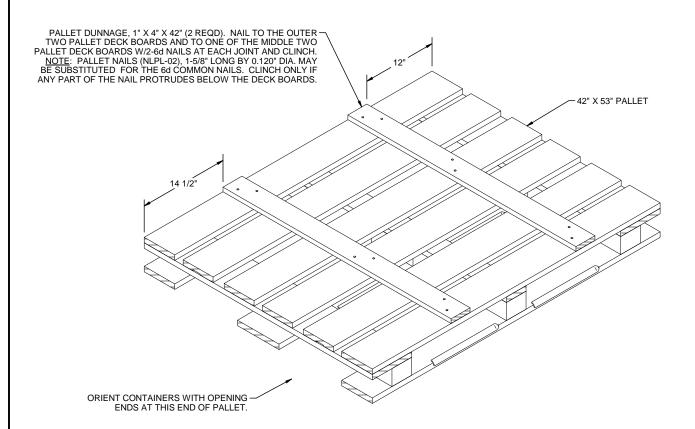
6 JAVELIN DUNNAGE - PALLET -	-	-	-	-	-	- `	-	 	-	-	-	-	-	-	-	-	-	-	-	-	-	29	LBS LBS LBS	
							OT	WE	ΙG	ΗТ	-	-	-	-	-	-	-	-	-	-	-			(APPROX)

BILL OF MATERIAL									
LUMBER LI NEAR FEET BOARD FEET									
1" X 4"	38	13							
NAILS	NAI LS NO. REQD								
6d (2")	40	1/4							
PALLET, 42" X 53" 1 REQD 90 LBS STEEL STRAPPING, 3/4" - 29.33' REQD 2.62 LBS SEAL FOR 3/4" STRAPPING 2 REQD NIL STAPLE, 15/16" X 3/4" 4 REQD NIL									

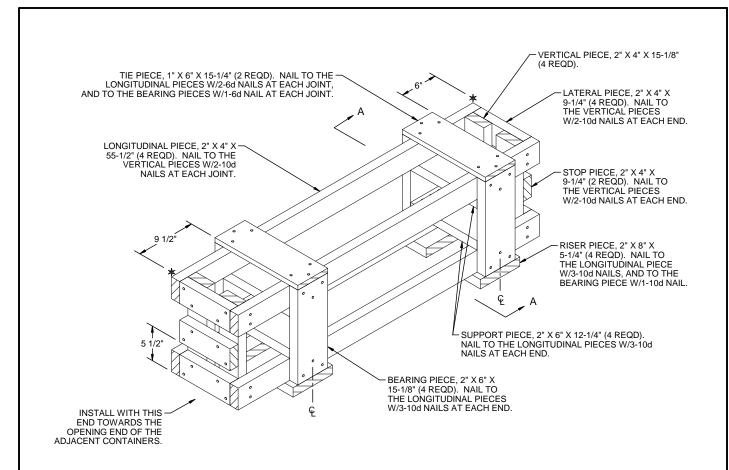
PAGE 3



## **TOP DUNNAGE ASSEMBLY**

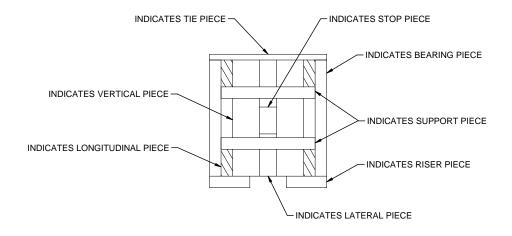


## PALLET DUNNAGE LOCATION



#### FILLER ASSEMBLY

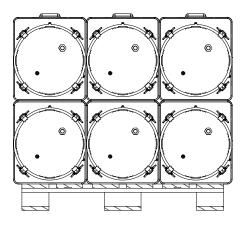
THIS ASSEMBLY IS TO BE USED WHEN ONE CONTAINER IS TO BE OMITTED FROM A PALLET UNIT OR IN COMBINATION WITH OTHER FILLER ASSEMBLIES. **NOTE**: FILLER ASSEMBLY DIMENSIONS MUST BE FIELD CHECKED PRIOR TO ASSEMBLY.



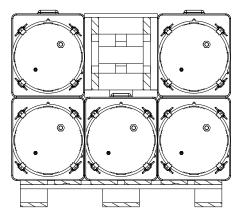
**VIEW A-A** 

PAGE 5

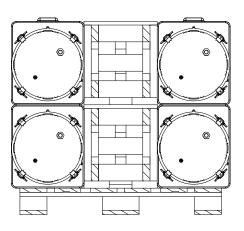
<u>NOTE</u>: ALL DUNNAGE AND STRAPPING HAVE BEEN OMITTED FROM THE SIX PALLET UNITS BELOW FOR CLARITY PURPOSES.



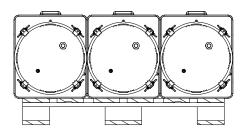
**FULL PALLET UNIT** 



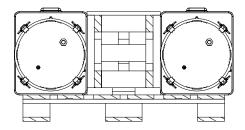
PALLET UNIT MINUS ONE CONTAINER



**PALLET UNIT MINUS TWO CONTAINERS** 

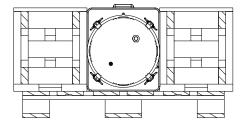


PALLET UNIT MINUS THREE CONTAINERS



#### PALLET UNIT MINUS FOUR CONTAINERS

NOTE: THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" DEPICTED IN THE PERTINENT OUTLOADING DRAWINGS MAY BE USED TO TRANSPORT TWO LEFTOVER CONTAINERS INSTEAD OF THE PROCEDURE SHOWN ABOVE. SEE GENERAL NOTE "X" ON PAGE 2.



### PALLET UNIT MINUS FIVE CONTAINERS

NOTE: THE "PROCEDURES FOR SHIPMENT OF LEFTOVER CONTAINERS" DEPICTED IN THE PERTINENT OUTLOADING DRAWINGS MAY USED TO TRANSPORT ONE LEFTOVER CONTAINER INSTEAD OF THE PROCEDURE SHOWN ABOVE. SEE GENERAL NOTE "X" ON PAGE 2.

ASSEMBLY OF FULL AND LESS-THAN-FULL PALLET UNITS

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