

UNITIZATION PROCEDURES FOR .50 CALIBER CARTRIDGES PACKED IN SURE-PAK CONTAINERS FOR INTRA-THEATER GROUND MOVEMENT ONLY

NOTICE: THE PROCEDURES DELINEATED IN THIS DRAWING ARE FOR INTRA-THEATER GROUND MOVEMENT ONLY.

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U.S. ARMY MATERIEL COMMAND DRAWING

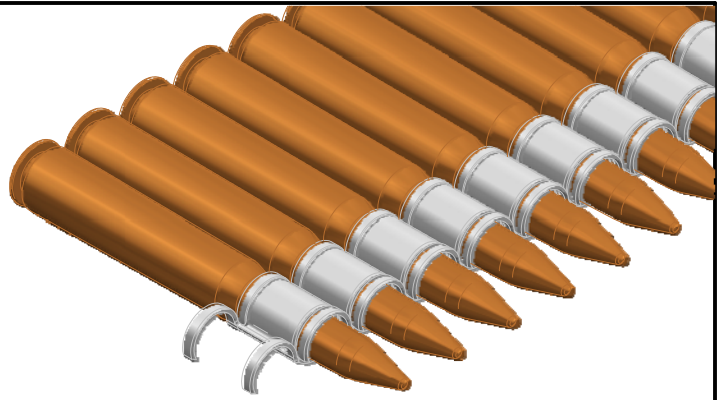
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GENERAL NOTES

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE SPECIFIED UNITIZATION PROCEDURES ARE APPLICABLE TO LOADS OF LOOSE AND LINKED .50 CALIBER CARTRIDGES LOADED IN SURE-PAK CONTAINERS. SUBSEQUENT REFERENCE TO PALLET UNIT HEREIN MEANS THE SURE-PAK WITH AMMUNITION ITEMS. **CAUTION:** REGARDLESS OF THE QUANTITY OF CARTRIDGES TO BE SHIPPED, THE "MAXIMUM GROSS WEIGHT" OF THE SURE-PAK MUST NOT BE EXCEED 2,000 POUNDS.
- C. THE LOADS SHOWN ON PAGES 4 AND 5 ARE BASED ON A 48" LONG BY 40" WIDE BY 30-1/2" HIGH SURE-PAK CONTAINER WITH AN INSIDE HEIGHT OF 24", ALL WITH A MAXIMUM GROSS WEIGHT OF 2,000 POUNDS. ANY OF THE SURE-PAK CONTAINERS LISTED IN THE MATERIAL SPECIFICATIONS BELOW MAY BE USED, BUT MAY RESULT IN EITHER A REDUCTION IN THE QUANTITY SHIPPED OR THE USE OF MORE FILL MATERIAL TO OCCUPY THE VOID.
- D. THE FOLLOWING AMC DRAWINGS ARE APPLICABLE FOR OUTLOADING AND STORAGE OF THE ITEMS COVERED BY THIS DRAWING. THE DELINEATED PROCEDURES ARE INTENDED FOR INTRA-THEATER GROUND MOVEMENT ONLY.
- STORAGE - - - - 19-48-4118-1-2-3-4-14-22PA1002
TACTICAL VEHICLE - 19-48-4901/4-CA1702
TRUCKLOADING - - - 19-48-4117-11PA1003
- E. AMMUNITION SHOULD BE RELOADED AND TRANSPORTED IN ORIGINAL FACTORY PACKAGING WHENEVER POSSIBLE; HOWEVER, THERE ARE SITUATIONS WHEN THIS IS NOT POSSIBLE. IN ORDER TO ENSURE THE HIGHEST LEVEL OF EXPLOSIVES SAFETY PRACTICABLE, USE THE FOLLOWING PACKAGING PRIORITIES WHEN PLANNING AMMUNITION TRANSPORT. FIRST, USE FACTORY PACKAGING IF AT ALL POSSIBLE. SECOND OPTION IS TO LOAD AMMUNITION IN METAL CANS, AS DEPICTED ON PAGES 4 AND 7. THE THIRD AND LEAST DESIRABLE METHOD OF SECURING AMMUNITION FOR TRANSPORT IS TO USE AVAILABLE PACKAGING AND CUSHIONING MATERIAL TO PACK LOOSE OR LINKED AMMUNITION DIRECTLY INTO SURE-PAK CONTAINERS, AS DEPICTED ON PAGE 5.
- F. WHEN LOADING CARTRIDGES, THEY ARE TO BE POSITIONED SO AS TO ACHIEVE A TIGHT LOAD. THE UNBLOCKED SPACE ACROSS THE WIDTH OR LENGTH OF A SURE-PAK CONTAINER OR ANY DIMENSION IN A METAL BOX IS NOT TO EXCEED 1/2", AND UNBLOCKED SPACE IN THE HEIGHT OF THE SURE-PAK IS NOT TO EXCEED 1". EXCESSIVE SLACK CAN BE ELIMINATED FROM A LOAD BY ADDING FILLER MATERIAL SUCH AS CARDBOARD, EMPTY WATER BOTTLES, EMPTY BOXES, SHREDDED CLOTH, OR OTHER SIMILAR MATERIAL.
- G. METAL BOXES THAT MAY BE USED FOR SHIPMENT OF AMMUNITION USING THE PROCEDURES HEREIN INCLUDE M2 SERIES CONTAINERS, M548 CONTAINERS, AND PA120 CONTAINERS.
- H. FILLER MATERIAL IS DEFINED HEREIN AS ANY AVAILABLE MATERIAL WITH SUFFICIENT CUSHIONING TO PROTECT THE AMMUNITION ITEMS. SOME POTENTIAL SOURCES OF FILLER MATERIAL INCLUDE BUT ARE NOT LIMITED TO EMPTY WATER BOTTLES, SHREDDED UNIFORMS (CLEAN WITHOUT SHARP PROJECTIONS), DISCARDED CARDBOARD CARTONS, EGG CARTONS, WOOD SCRAPS (WITHOUT NAILS), TOILET PAPER AND PAPER TOWEL CARDBOARD TUBES, NEWSPAPER, SHREDDED COPY PAPER, AND DISCARDED BANDOLEERS. **CAUTION:** ALL FILLER MATERIAL MUST BE NON-STATIC PRODUCING AND FREE FROM PROJECTIONS AND SHARP EDGES, AS WELL AS FREE FROM FOOD RESIDUE AND EXCESS WATER OR LIQUID RESIDUE.
- J. CARE SHOULD BE TAKEN WHEN LOADING SURE-PAK CONTAINERS TO ENSURE AN EVENLY BALANCED LOAD. ARRANGE THE LOAD IN SUCH A MANNER THAT THE CENTER OF GRAVITY IS CLOSE TO THE PHYSICAL CENTER OF SURE-PAK.
- K. IF SURE-PAK CONTAINERS ARE TIGHTLY PACKED AND LOADED WITH AMMUNITION ITEMS TO WITHIN 1" OF THE TOP ON THE SIDEWALLS, THE SURE-PAKS MAY BE STACKED FOR SHORT TERM STORAGE UP TO THREE HIGH. IF, HOWEVER, THE SURE-PAK CONTAINER LOAD CONSISTS OF MORE THAN ONE INCH OF FILL MATERIAL ON THE TOP OF THE LOAD, THE SURE-PAK CONTAINERS WILL NOT BE STACKED, AND SHOULD BE MARKED AS SUCH. THE ONLY EXCEPTION TO THIS REQUIREMENT IS IF THE FILL MATERIAL IS AS STRONG AS OR STRONGER THAN THE CARTRIDGES BEING LOADED, SUCH AS THE USE OF EMPTY M2 SERIES CANS. IN THIS CASE, THE SURE-PAK CONTAINERS MAY BE STACKED AS OUTLINED ABOVE.
- L. EACH SURE-PAK CONTAINER MUST BE SECURED WITH A MINIMUM OF TWO WEB STRAPS ORIENTED AROUND THE 40" LENGTH AND THE HEIGHT OF THE LOAD. THE TWO STRAPS SHOULD BE EVENLY SPACED ACROSS THE LENGTH OF THE LOAD. CARE MUST BE TAKEN TO ENSURE THAT STRAP RATCHETS WILL NOT INTERFERE WITH EITHER STACKING OF THE SURE-PAK CONTAINERS OR LONGITUDINAL LOADING FOR TRANSPORT. IF WEB STRAPS ARE NOT AVAILABLE, SIMILAR STRENGTH PLASTIC STRAPPING IAW ASTM D3950 MAY BE USED.
- M. PORTIONS OF THE SURE-PAK CONTAINER DEPICTED WITHIN THIS DRAWING, SUCH AS THE TOP AND SIDEWALL, HAVE NOT BEEN SHOWN IN SOME LOAD VIEWS FOR CLARITY PURPOSES.
- N. THE QUANTITY OF CARTRIDGES SHOWN IN THE LOADS HEREIN MAY BE REDUCED FOR SHIPMENT, IF DESIRED. ADDITIONAL FILL MATERIAL MUST BE INSTALLED IN ORDER TO MEET THE REQUIREMENTS IN GENERAL NOTE "F".
- O. 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.

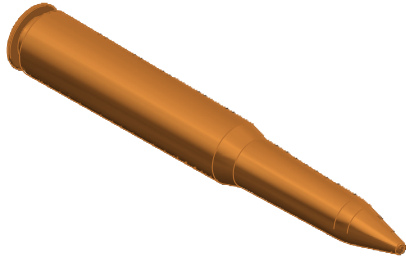
MATERIAL SPECIFICATIONS

- SURE-PAK CONTAINER - : SHIPPING AND STORAGE SYSTEM; SURE-PAK KIT INCLUDING TOP, BASE, SLEEVE AND 8 LOCKING CLIPS: 8115-01-556-2579 (30-1/2" HIGH), 8115-01-556-2580 (36-1/2" HIGH), OR 8115-01-556-2581 (51-1/2" HIGH).
- STRAPPING, WEB - - - : TIE DOWN, CARGO, VEHICLE, 2" NOMINAL STRAP, 2,000 POUND MINIMUM WORKING LOAD LIMIT, 3990-01-204-3009 OR EQUIVALENT.
- HARDBOARD - - - - : ANSI/AHA A135.4, CLASS 1.
- FIBERBOARD - - - - : ASTM D4727.
- TAPE, DUCT - - - - : COMMERCIAL GRADE.
- HONEYCOMB FILLER - - : FIBERBOARD, FACING PAPER WEIGHT 69 POUNDS/1,000 SQUARE FEET, SORE PAPER WEIGHT 33 POUNDS/1,000 SQUARE FEET, 1/2" CORE CELL CENTERS, INTERNATIONAL HONEYCOMB CORPORATION (OR EQUAL).
- FOAM CUSHIONING MATERIAL - - - - : COMMERCIAL ITEM DESCRIPTION A-A-59136, CLASS 1, TYPE III, GRADE A, OR COMMERCIAL EQUIVALENT.



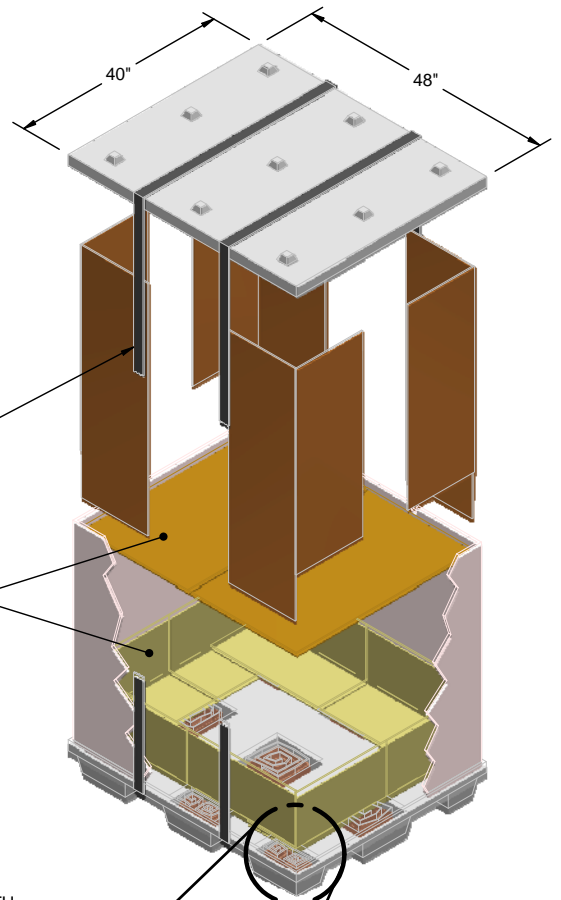
TYPICAL .50 CALIBER LINKED CARTRIDGE

A PORTION OF LINKED A552 CARTRIDGES IS SHOWN AS TYPICAL.



TYPICAL .50 CALIBER LOOSE CARTRIDGE

AN A552 CARTRIDGE IS SHOWN AS TYPICAL ONLY.

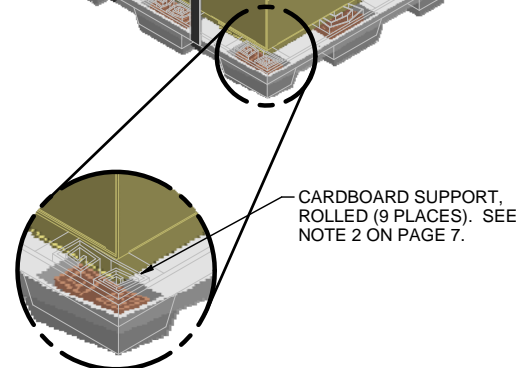


WEB STRAP ASSEMBLY, 2" (2 REQD).
INSTALL AS SHOWN AROUND THE SHORT
DIMENSION OF THE SURE-PAK CONTAINER.
SEE GENERAL NOTE "L" ON PAGE 2.

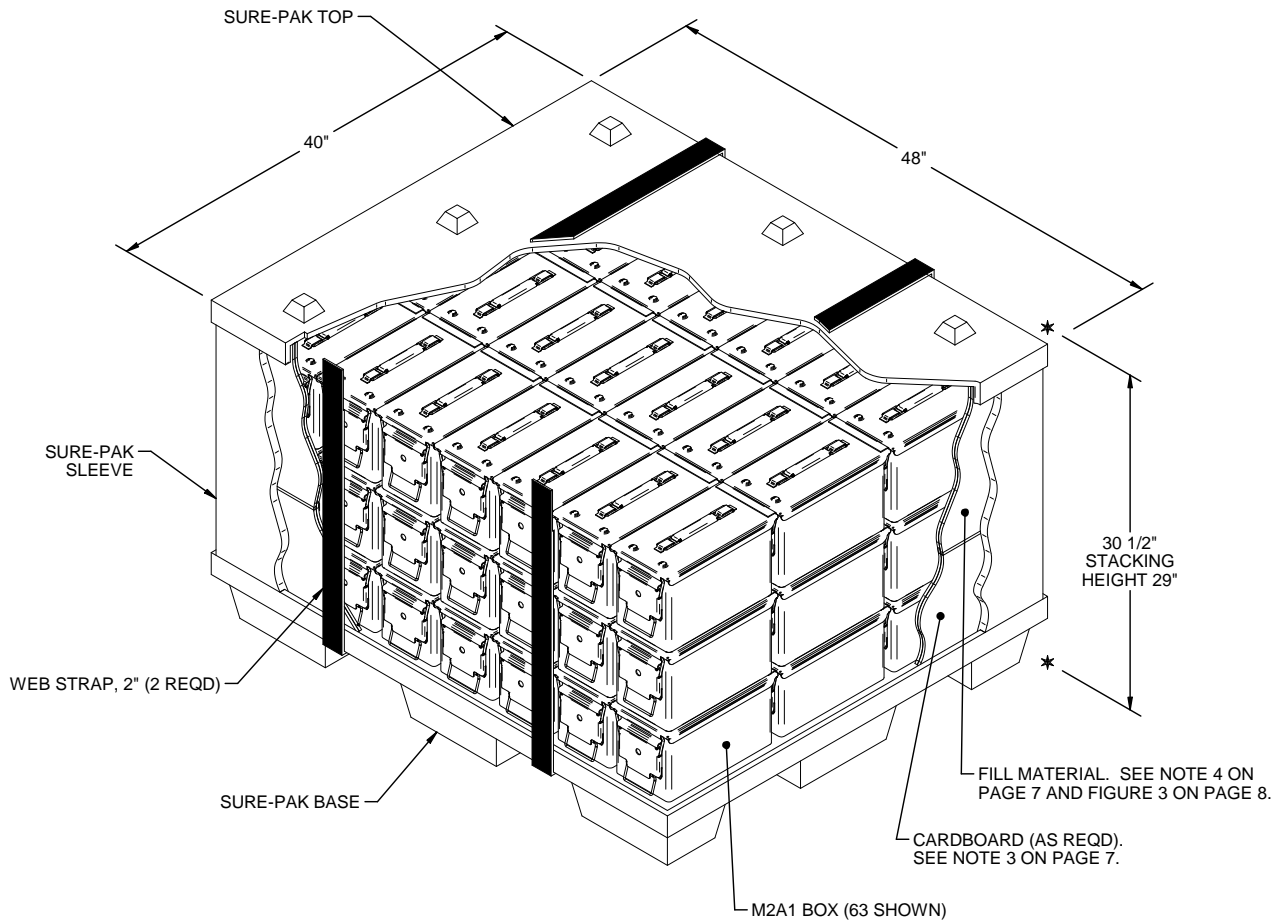
TYPICAL FILL MATERIAL (CARDBOARD SHOWN).

TYPICAL STRAPPED SURE-PAK CONTAINER

THE DETAIL AT RIGHT DEPICTES A SURE-PAK CONTAINER WITH THE MINIMUM REQUIRED FILL MATERIAL (CARDBOARD SHOWN) AND THE REQUIRED WEB STRAPS. THE .50 CAL CARTRIDGES HAVE NOT BEEN SHOWN FOR CLARITY PURPOSES.



CARDBOARD SUPPORT,
ROLLED (9 PLACES). SEE
NOTE 2 ON PAGE 7.



BOXED CARTRIDGE PALLET UNIT

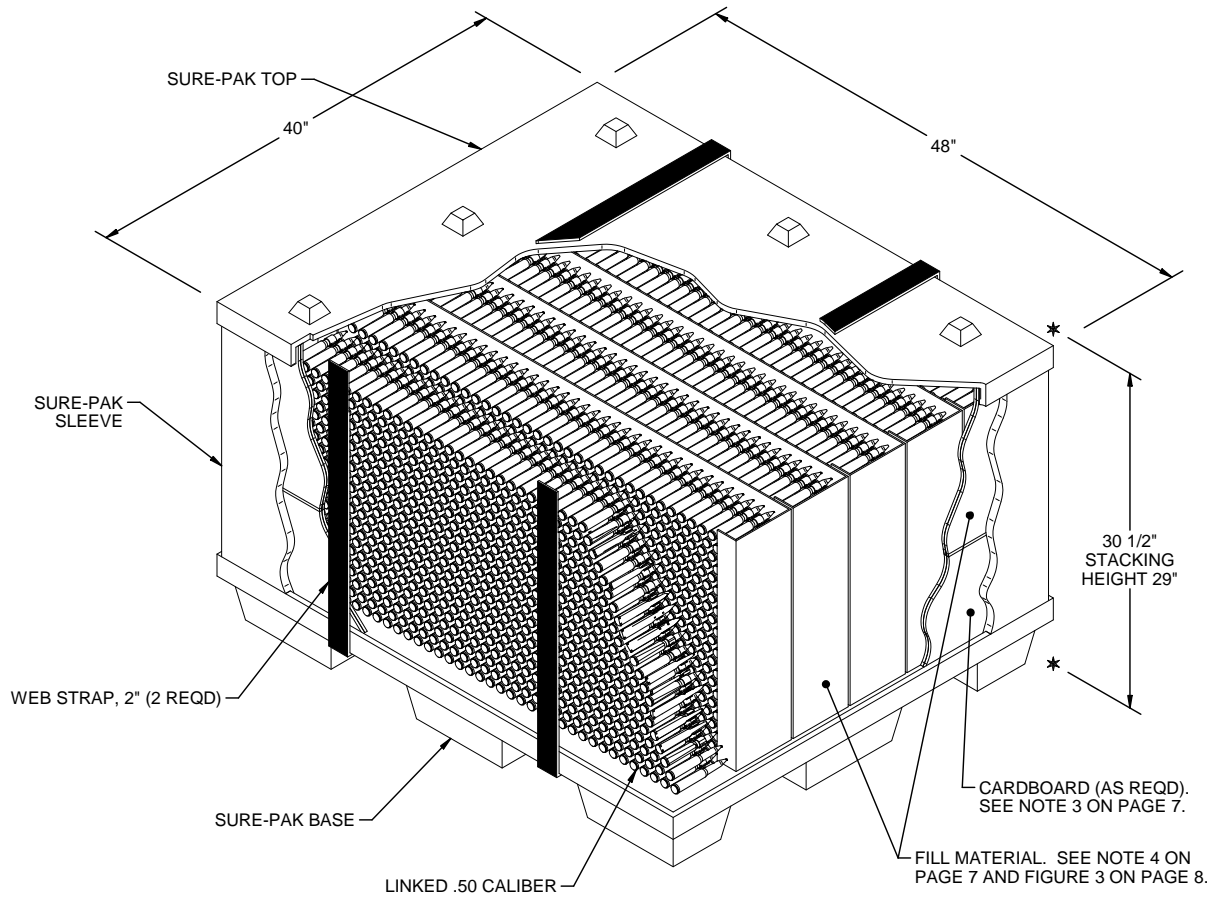
SEE GENERAL NOTE "F" ON PAGE 2. UPPER FILL MATERIAL AND WEB STRAPS NOT SHOWN FOR CLARITY.

63 M2A1 BOXES OF .50 CAL (100 PER BOX) @ 25 LBS	- - - -	1,575 LBS
DUNNAGE	- - - -	26 LBS
PALLET	- - - -	56 LBS

TOTAL WEIGHT	- - - -	1,657 LBS (APPROX)
CUBE	- - - -	32.8 CU FT (APPROX)

BILL OF MATERIAL

SURE-PAK, 40" X 44" X 30-1/2"	1 REQD	- 55.4 LBS
CARDBOARD	- - - - AS REQD	- 15.0 LBS
WEB STRAP ASSEMBLY, 2"	- - - 2 REQD	- 11.0 LBS

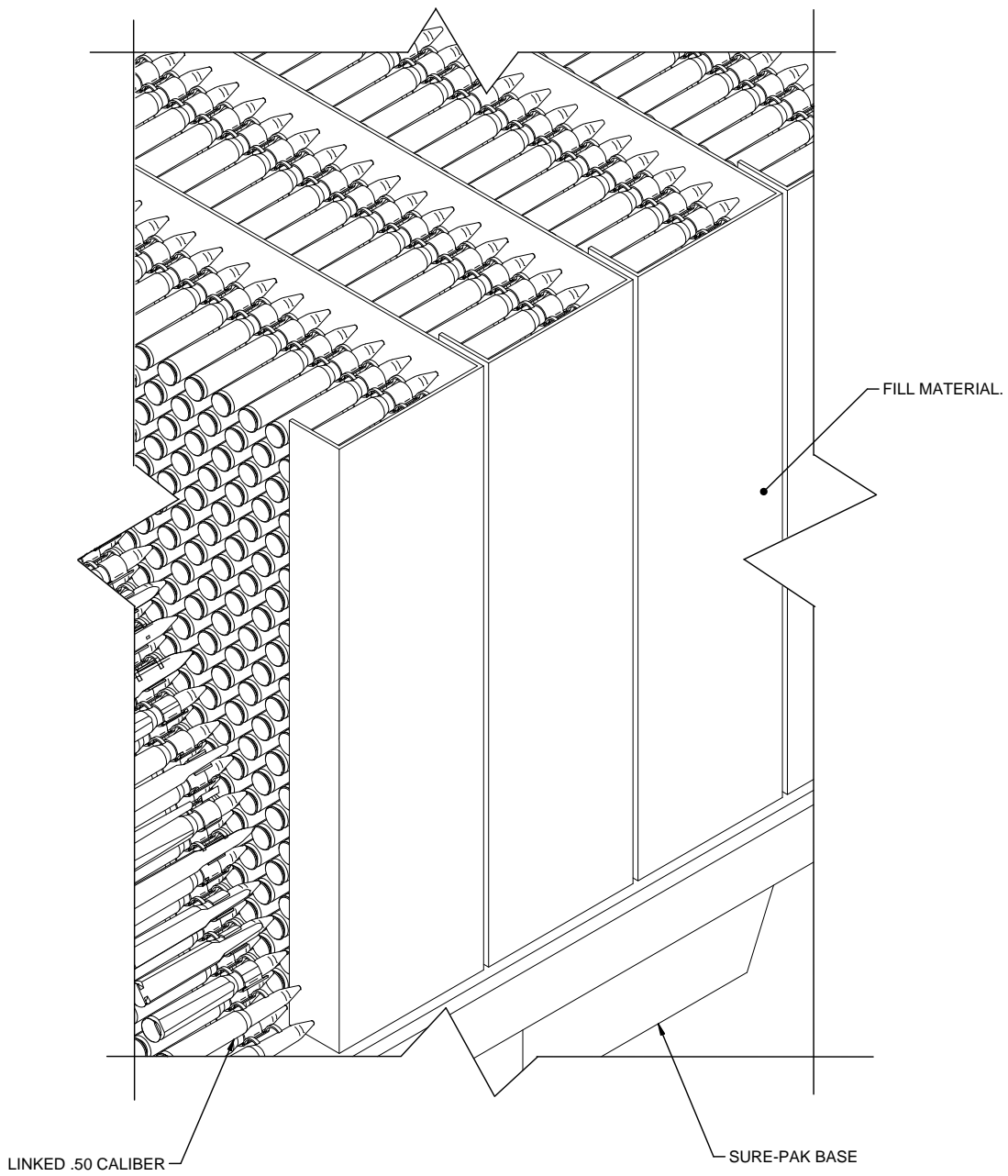


LINKED CARTRIDGE PALLET UNIT

SEE GENERAL NOTE "F" ON PAGE 2. UPPER FILL MATERIAL AND WEB STRAPS NOT SHOWN FOR CLARITY.

LINKED ROUNDS OF .50 CAL (7500/SURE-PAK) @ 0.25 LBS	-	1,875 LBS
DUNNAGE	- - - - -	42 LBS
PALLET	- - - - -	56 LBS
<hr/>		
TOTAL WEIGHT	- - - - -	1,968 LBS (APPROX)
CUBE	- - - - -	32.8 CU FT (APPROX)

B I L L O F M A T E R I A L	
SURE-PAK, 40" X 44" X 30-1/2"	1 REQD - 55.4 LBS
CARDBOARD - - - - -	AS REQD - 31.0 LBS
WEB STRAP ASSEMBLY, 2"	- - - 2 REQD - 11.0 LBS

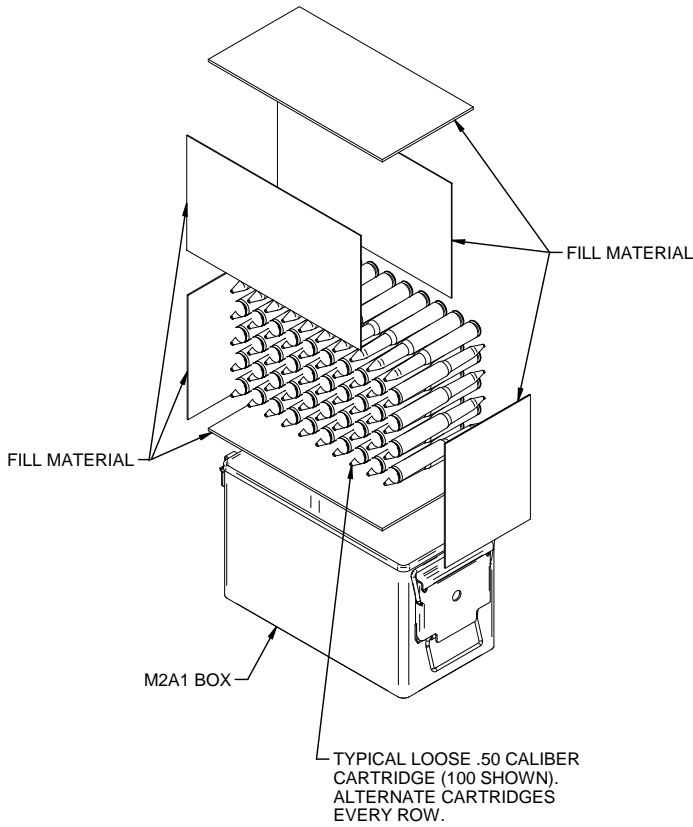


FILL MATERIAL DETAIL

FOR LINKED OR LOOSE ROUNDS, ENSURE THAT THE FILL MATERIAL SURROUNDS THE AMMUNITION TO ENSURE THAT SUFFICIENT MATERIAL IS USED TO PROTECT THE PRIMER MECHANISM OF EACH ROUND AND RESTRICTS MOVEMENT OF THE ROUNDS DURING TRANSPORT.

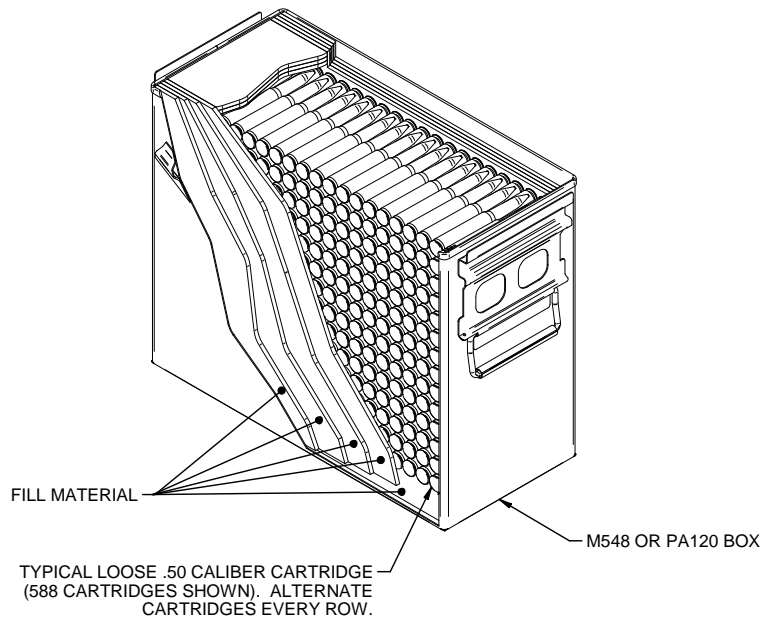
SURE-PAK CONTAINER LOADING PROCEDURES

1. SET UP THE SURE-PAK BASE AND SLEEVE, ENGAGING THE FOUR BOTTOM LOCKING DEVICES.
2. INSTALL CARDBOARD IN THE BOTTOM OF THE SURE-PAK BASE TO FILL VOID AREAS. SEE FIGURE 1 ON PAGE 8.
3. INSTALL CARDBOARD, BENT AT 90°, AROUND THE BOTTOM INTERIOR EDGE OF THE SURE-PAK, ENSURING THAT THE CARDBOARD EXTENDS AT LEAST 8" ONTO THE SURE-PAK BASE AND 8" UP THE SURE-PAK SIDEWALL. SEE FIGURE 2 ON PAGE 8.
4. LOAD M2 SERIES BOXES INTO THE SURE-PAK WITH THE HINGES FACING SAME DIRECTION. SEE THE DETAILS AT LEFT FOR TYPICAL LOADING OF .50 CALIBER CARTRIDGES INTO M2 SERIES BOXES. M548 BOXES AND PA120 CONTAINERS ALSO MAY BE USED TO LOAD .50 CALIBER CARTRIDGES. CARDBOARD MUST BE INSTALLED AT A MINIMUM AGAINST ALL SURE-PAK SIDEWALLS AND THE BASE, TO THE HEIGHT OF THE TOP OF THE BOXES OR TO THE TOP OF THE SIDEWALLS. SEE FIGURE 3 ON PAGE 8.
5. WHEN LOADING CARTRIDGES DIRECTLY INTO THE SURE-PAK, CARDBOARD MUST BE INSTALLED AT A MINIMUM AGAINST ALL SURE-PAK SIDEWALLS AND THE BASE, AND BETWEEN SUBSEQUENT ROWS OF CARTRIDGES TO THE HEIGHT OF THE TOP OF THE CARTRIDGES, AS SHOWN ON PAGE 5.
6. INSTALL EXTRA FILL MATERIAL AS NEEDED THROUGHOUT LOADING, ENSURING THAT THE SURE-PAK LOAD IS RELATIVELY TIGHT.
7. DO NOT EXCEED 2,000 POUNDS GROSS WEIGHT FOR THE SURE-PAK AND CONTENTS.
8. WHEN THE SURE-PAK IS FILLED, ADD CARDBOARD OR OTHER VOID FILLER (SEE GENERAL NOTE "H" ON PAGE 2) AS NEEDED TO FILL OUT THE TOP OF THE SURE-PAK.
9. INSTALL THE SURE-PAK TOP.
10. INSTALL TWO WEB STRAPS (MINIMUM) AROUND THE SHORT DIMENSION OF THE SURE-PAK. SEE PAGE 3 FOR DETAILS.



TYPICAL M2 SERIES BOX LOAD OF LOOSE CARTRIDGES

BOX LID NOT SHOWN FOR CLARITY.



TYPICAL M548 OR PA120 BOX LOAD OF LOOSE CARTRIDGES

BOX LID NOT SHOWN FOR CLARITY.

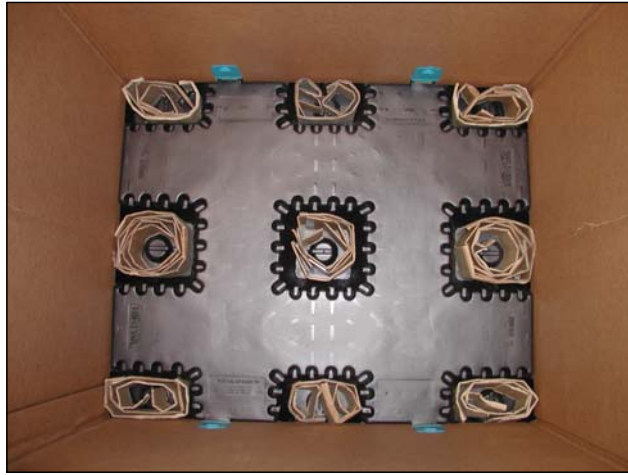


FIGURE 1



FIGURE 2



FIGURE 3