LOADING, BRACING AND TIEDOWN PROCEDURES FOR BOXED AMMUNITION AND COMPONENTS IN/ON THE M998● HIGH MOBILITY MULTIPURPOSE WHEELED VEHICLE (HMMWV) FOR MILITARY AIR DEPLOYMENT

● NOTE: THE PROCEDURES CONTAINED HEREIN ARE ALSO APPLICABLE TO THE M1038 HMMWV VARIANTS, WHEN BEING READIED FOR AIR DEPLOYMENT WITH AMMUNITION LOADS.

DO NOT SCALE

REVISIONS			

DRAFTSMAN: FBQ/pt | PROJ ENG: /WRF

CHECKER: | LOG ENGRG OFFICE:

APPROVED, U.S. ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND

APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND (AMC)
William J. Crist
U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL

U.S. ARMY AMC DRAWING

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PROJECT CAP-TV 3-86

GENERAL NOTES

A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1.

B. THIS DRAWING COVERS PROCEDURES APPLICABLE TO THE TRANSPORT OF PALLETIZED BOXED AMMUNITION AND COMPONENTS, SECURED WITH WEB STRAP TIEDOWN ASSEMBLIES, IN/ON TACTICAL TYPE VEHICLES, FOR MILITARY AIR DEPLOYMENT. SEE NOTE "D" BELOW.

C. THE DEPICTED PROCEDURES APPLY TO THE HIGH MOBILITY MULTIPURPOSE WHEELED VEHICLE (HMMWV), HAVING CARGO RESTRAINT ANGLES INSTALLED AND THE TIEDOWN ANCHORS REPLACED WITH 1/2" SHOULDER EYEBOLTS AS SPECIFIED IN THE MATERIAL SPECIFICATIONS.

D. CAUTION: THE PROCEDURES DEPICTED WITHIN THIS DOCUMENT ARE TO BE USED FOR AIR OR ON/OFF ROAD MOVEMENTS ONLY, AND WILL NOT BE APPLIED IF THE VEHICLE IS TO BE DEPLOYED BY RAILCAR. NOTE: THE PALLET UNITS DEPICTED IN THE LOADS ON PAGES 3-8 ARE TYPICAL. ADJUSTMENTS MAY BE REQUIRED DUE TO ACTUAL SIZE OF THE PALLET UNITS TO BE SHIPPED; HOWEVER, THE DEPICTED PROCEDURES WILL BE FOLLOWED AS CLOSELY AS PRACTICABLE. REGARDLESS OF THE QUANTITY TO BE SHIPPED, THE MAXIMUM PAYLOAD OF 2,100 POUNDS SPECIFIED FOR THE M998 HMMWV MUST NOT BE EXCEEDED.

E. WEB STRAP TIEDOWN ASSEMBLIES MUST BE SECURELY HOOKED INTO ANCHORING DEVICES ON THE TRANSPORTING VEHICLE AND FIRMLY TENSIONED. FIRMLY TENSIONED MEANS WHEN THE OPERATOR PULLS ON THE RATCHET HANDLE BY HAND, THE RATCHET WILL NOT ADVANCE ANOTHER NOTCH. NO TYPE OF MECHANICAL EXTENSION OR LEVER WILL BE USED. EXERCISE CARE DURING STRAP APPLICATION. AVOID TWISTS IN THE STRAP TO THE EXTENT POSSIBLE (IF TIME PERMITS) BUT ENSURE THERE ARE NO KNOTS IN THE STRAP. ON THE TAKE-UP SPOOL OF THE RATCHET ENSURE STRAIGHT LAY OF THE STRAP WHEN TENSIONING. AFTER INITIAL WEBBING-TO-WEBBING CONTACT HAS BEEN MADE, BY ROTATING THE TAKE-UP SPOOL UNTIL NO METAL ON THE SPOOL IS SHOWING AND THE STRAP HAS MADE CONTACT WITH ITSELF, THE TENSIONED STRAP MUST FORM AT LEAST 1/2 BUT NOT MORE THAN 1-1/2 WRAPS OF STRAP ON THE TAKE-UP SPOOL OF THE TENSIONING RATCHET. AFTER TENSIONING IS COMPLETED ENSURE THAT THE SPOOL LOCKING-LATCH IS FULLY SEATED AT BOTH ENDS OF THE SPOOL IN MATCHING LOCKING NOTCHES. TIE BACK THE LOOSE END OF THE STRAP AFTER TENSIONING IS COMPLETE (LOOSE END MAY BE FOLDED AND TAPED OR TIED TO THE TENSION STRAP IF TIME PERMITS). FOR ADDITIONAL GUIDANCE, SEE "RATCHET/RATCHETING DETAILS" ON PAGE 10.

F. ADJUSTABLE SCUFF SLEEVES, WHEN PROVIDED ON WEB STRAP ASSEMBLIES, WILL BE LOCATED TO PROVIDE A PAD WHERE STRAPS PASS OVER SHARP EDGES, OR RATCHETS AND HOOKS ON PREVIOUSLY INSTALLED WEB STRAP TIEDOWN ASSEMBLIES. METAL PARTS OF A STRAP ASSEMBLY SHOULD BE LOCATED SO AS TO AVOID CONTACT WITH THE PALLET UNITS. IF CONTACT CANNOT BE AVOIDED, A SUITABLE ANTI-CHAFING MATERIAL AS LISTED UNDER THE MATERIAL SPECIFICATIONS BELOW, MUST BE POSITIONED BETWEEN THE METAL PARTS OF A STRAP ASSEMBLY AND THE PALLET UNITS, AND IF NECESSARY, TAPED OR TIED IN POSITION.

G. ONLY THE CARGO BODIES OR BEDS OF THE TACTICAL VEHICLES HAVE BEEN SHOWN HEREIN TO PREVENT DISTRACTION FROM THE DELINEATED LOADING AND TIEDOWN PROCEDURES, AND ARE SHOWN IN OUTLINE FORM WITH THE STRUCTURAL PORTIONS OMITTED AS NECESSARY TO IMPROVE THE CLARITY OF THE DEPICTED PROCEDURES.

(CONTINUED AT RIGHT)

(GENERAL NOTES CONTINUED)

H. 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 0.454KG.

J. THROUGHOUT THIS DRAWING, REFERENCE TO "PALLETIZED UNIT" OR "SKIDDED UNIT" MAY BE INTERPRETED TO INCLUDE EITHER OR BOTH TYPES.

K. IN THE EVENT THAT MISCELLANEOUS UNPALLETIZED BOXES ARE TO BE SHIPPED, REFER TO THE "PALLET BOX ON M998 HMMWV" INSTRUCTIONS ON PAGE 8 AND THE "AMMUNITION PALLET BOX" DETAIL ON PAGE 9.

MATERIAL SPECIFICATIONS

TIEDOWN ASSEMBLY, WEB STRAP: NSN 5340-00-980-9277. ALTERNATIVE STRAPS - NSN 1670-00-725-1437; NSN 5340-01-089-4997; NSN 5340-01-204-3009.

ANTI-CHAFING MATERIAL: CANVAS, BURLAP, TAPE OR ANY OTHER SUITABLE MATERIAL.

EYEBOLT, SHOULDER: MS 51937; SIZE 1/2", 13 UNC-2A, NSN 5306-00-050-0347.

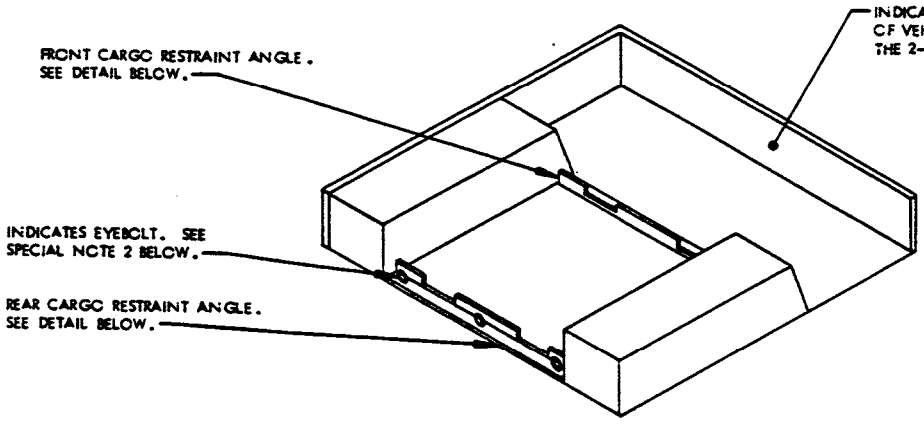
SPACER, STEEL: HOT ROLLED ROUND, ASTM A36 STEEL, 1-1/2" DIAMETER.

ANGLE, STEEL: ASTM A36 STEEL, SIZE 3" X 2-1/2" X 1/4".

LUMBER: TM 743-200-1 (DUNNAGE LUMBER) AND FED SPEC MM-L-751.

NAILS: FED SPEC FF-N-105; COMMON.

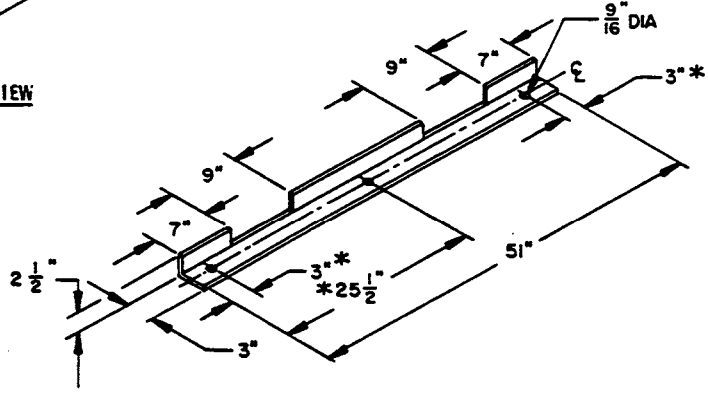
PLYWOOD: FED SPEC NN-P-530; GROUP 8, PS-1 (CONSTRUCTION AND INDUSTRIAL), EXTERIOR, GRADE C-D. IF SPECIFIED GRADE IS NOT AVAILABLE, A BETTER EXTERIOR GRADE MAY BE SUBSTITUTED.



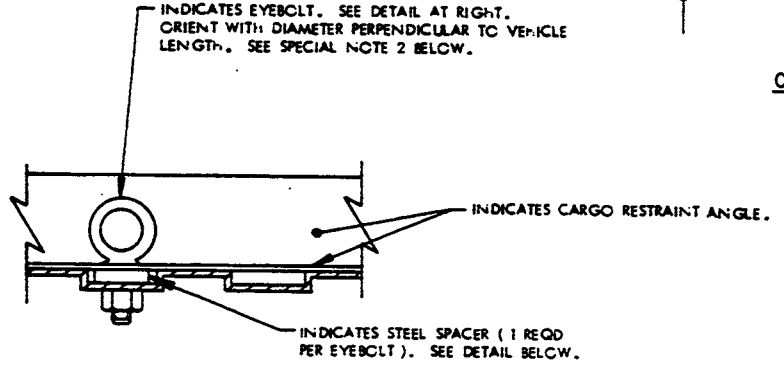
ISOMETRIC VIEW

* NOTE:

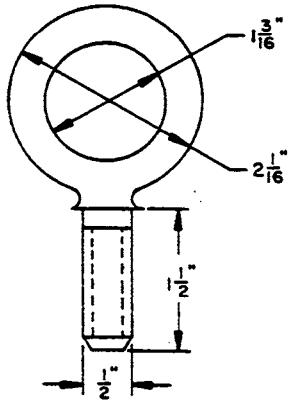
HOLE LOCATION DIMENSIONS ARE FOR REFERENCE ONLY. HOLES MUST ALIGN WITH HMMWV TIEDOWN ANCHOR BOLT HOLES.



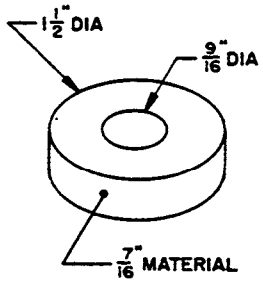
HMMWV
CARGO RESTRAINT ANGLE



EYEBOLT INSTALLATION



1/2" EYE BOLT

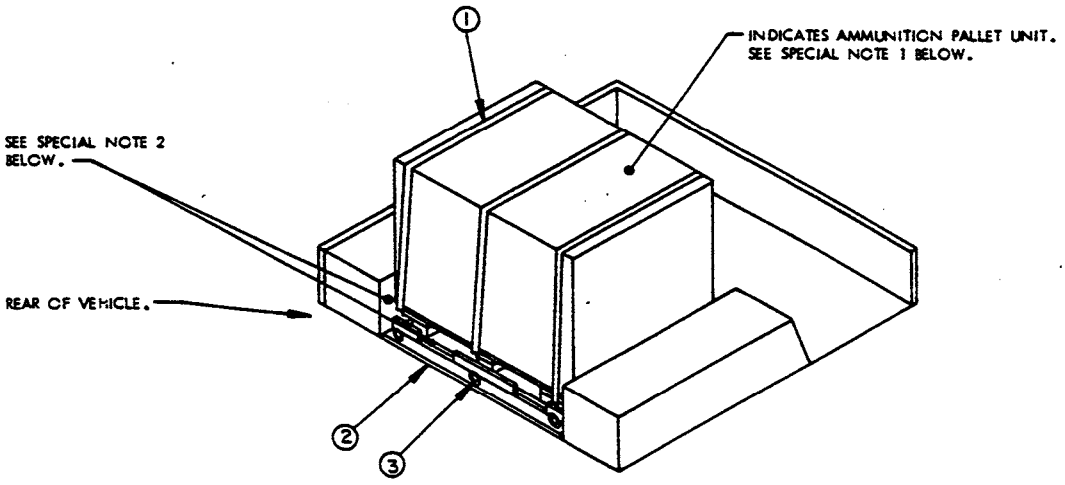


SPACER

SPECIAL NOTES:

1. THE ABOVE ISOMETRIC VIEW DEPICTS THE PLACEMENT OF CARGO RESTRAINT ANGLES AND EYEBOLT TIEDOWNS IN THE CARGO AREA OF AN M998 (HMMWV) TACTICAL VEHICLE.

2. WHEN TRANSPORTING AMMUNITION ITEMS IN/ON THE HMMWV WHEN INVOLVED IN MILITARY AIR DEPLOYMENT, THE TIEDOWN ANCHORS MUST BE REPLACED WITH 1/2" SHOULDER EYEBOLTS. SHOULDER EYEBOLTS USED MUST CONFORM TO MATERIAL SPECIFICATION MS 51937; SIZE 1/2", 13 UNC-2A, NSN 5306-00-050-0347. A 75 FT-LB MINIMUM TORQUE REQUIREMENT FOR TIEDOWN FIXTURES IS TO BE OBSERVED WHEN INSTALLING EYEBOLTS AND EYEBOLTS ARE TO BE ORIENTED AS SHOWN IN THE ISOMETRIC VIEW ABOVE. IF A PROPER TORQUE WRENCH IS UNAVAILABLE FOR TIGHTENING THE EYEBOLTS IN THE VEHICLE, THE REQUIRED 75 FT LBS OF TORQUE MAY BE REACHED BY ROTATING THE EYEBOLT APPROXIMATELY 200 DEGREES (I.E., SLIGHTLY MORE THAN 1/2 TURN) AFTER INITIAL CONTACT OF THE EYEBOLT SHOULDER IS MADE WITH THE RESTRAINT ANGLE. NOTE THAT ACTUAL TORQUE MAY BE SLIGHTLY MORE DUE TO THE FINAL EYEBOLT ORIENTATION AS DEPICTED ABOVE.



ISOMETRIC VIEW

SPECIAL NOTES:

1. ONE PALLETIZED UNIT OF BOXED AMMUNITION HAVING DIMENSIONS OF 50" WIDE BY 44" LONG BY 38" HIGH IS SHOWN IN THE LOAD ABOVE. NOTE: PALLET UNIT DIMENSION PERPENDICULAR TO WHEEL WELL MUST BE 44" OR GREATER TO ALLOW FOR THE PLACEMENT OF THREE WEB STRAP TIE-DOWN ASSEMBLIES AS DEPICTED. SEE PAGES 5 AND 6 FOR GUIDANCE TO BE APPLIED WHEN THE DIMENSION PERPENDICULAR TO THE WHEEL WELL IS LESS THAN 44".

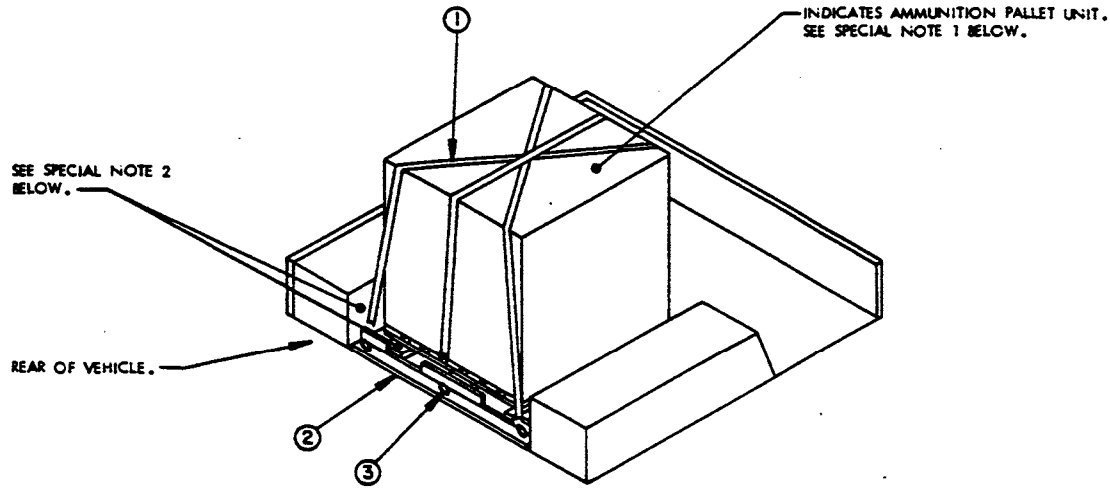
2. FILLER ASSEMBLIES, AS DEPICTED ON PAGE 7, MUST BE INSTALLED BETWEEN THE PALLET UNIT AND WHEEL WELLS OR PALLET UNIT AND ANGLES, AS APPROPRIATE, WHEN THE LATERAL OR LONGITUDINAL VOIDS EXCEED 1-1/2"

KEY NUMBERS

① WEB STRAP TIEDOWN ASSEMBLY (3 REQD). INSTALL EACH STRAP TO EXTEND FROM A TIEDOWN ANCHOR ON ONE END OF VEHICLE, OVER TOP OF PALLETIZED UNIT, TO A TIEDOWN ANCHOR ON THE OPPOSITE END OF THE VEHICLE, TAKE UP EXCESS SLACK IN STRAP AND THEN RATCHET TIGHT. SEE GENERAL NOTES "E" AND "F" ON PAGE 2.

② CARGO RESTRAINT ANGLE (2 REQD). SEE THE DETAIL ON PAGE 3.

③ EYEBOLT, 1/2" (6 REQD). SEE "EYEBOLT INSTALLATION" DETAIL AND SPECIAL NOTES ON PAGE 3.



ISOMETRIC VIEW

SPECIAL NOTES:

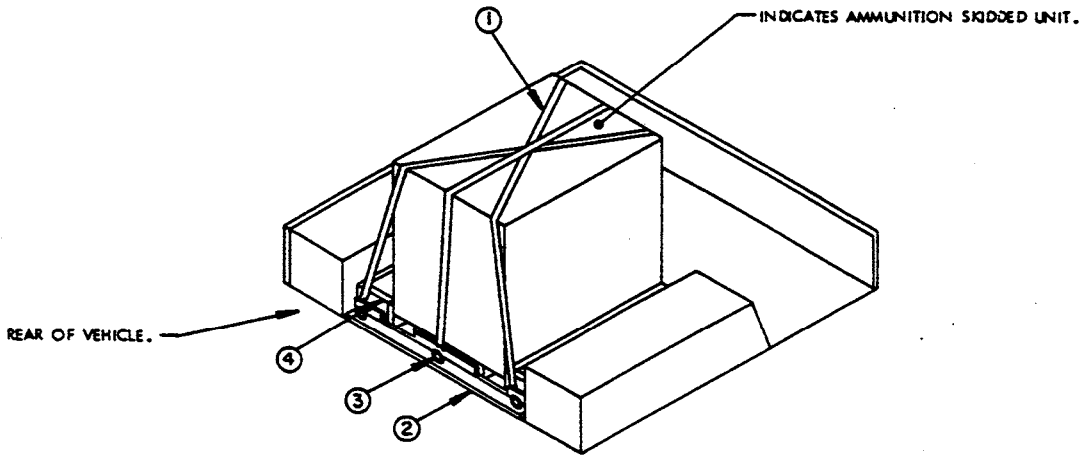
1. ONE PALLETIZED UNIT OF BOXED AMMUNITION HAVING DIMENSIONS OF 42" WIDE BY 42" LONG BY 46" HIGH IS SHOWN IN THE LOAD ABOVE. NOTE: WHEN PALLET UNIT DIMENSION PERPENDICULAR TO WHEEL WELL IS LESS THAN 44", THE WEB STRAP TIEDOWN ASSEMBLIES MUST BE POSITIONED AS SHOWN TO PROVIDE PROPER PALLET UNIT RESTRAINT.
2. FILLER ASSEMBLIES, AS DEPICTED ON PAGE 7, MUST BE INSTALLED BETWEEN THE PALLET UNIT AND WHEEL WELLS OR PALLET UNIT AND ANGLES, AS APPROPRIATE, WHEN THE LATERAL OR LONGITUDINAL VOIDS EXCEED 1-1/2".

KEY NUMBERS

① WEB STRAP TIEDOWN ASSEMBLY (3 REQD). INSTALL EACH STRAP TO EXTEND FROM A TIEDOWN ANCHOR ON ONE END OF VEHICLE, OVER TOP OF PALLETIZED UNIT, TO A TIEDOWN ANCHOR ON THE OPPOSITE END OF THE VEHICLE, TAKE UP EXCESS SLACK IN STRAP AND THEN RATCHET TIGHT. SEE GENERAL NOTES "E" AND "F" ON PAGE 2.

② CARGO RESTRAINT ANGLE (2 REQD). SEE THE DETAIL ON PAGE 3.

③ EYEBOLT, 1/2" (6 REQD). SEE "EYEBOLT INSTALLATION" DETAIL ON PAGE 3.



ISOMETRIC VIEW

SPECIAL NOTES:

1. ONE SKIDDED UNIT OF BOXED AMMUNITION HAVING DIMENSIONS OF 32" WIDE BY 45" LONG BY 42" HIGH IS SHOWN IN THE LOAD ABOVE. NOTE: WHEN SKIDDED UNIT DIMENSION PERPENDICULAR TO WHEEL WELL IS LESS THAN 44", THE WEB STRAP TIEDOWN ASSEMBLIES MUST BE POSITIONED AS SHOWN TO PROVIDE PROPER SKIDDED UNIT RESTRAINT.
2. FILLER ASSEMBLIES, AS DEPICTED ON PAGE 7, MUST BE INSTALLED BETWEEN THE SKIDDED UNIT AND WHEEL WELLS OR SKIDDED UNIT AND ANGLES, AS APPROPRIATE WHEN THE LATERAL OR LONGITUDINAL VOIDS EXCEED 1-1/2".

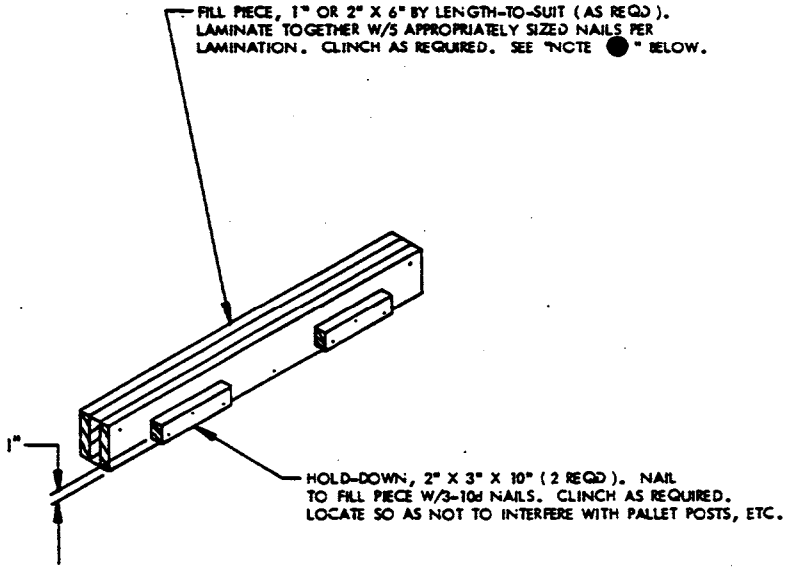
KEY NUMBERS

(1) WEB STRAP TIEDOWN ASSEMBLY (3 REQD). INSTALL EACH STRAP TO EXTEND FROM A TIEDOWN ANCHOR ON ONE END OF VEHICLE, OVER TOP OF SKIDDED UNIT, TO A TIEDOWN ANCHOR ON THE OPPOSITE END OF THE VEHICLE, TAKE UP EXCESS SLACK IN STRAP AND THEN RATCHET TIGHT. SEE GENERAL NOTES "E" AND "F" ON PAGE 2.

(2) CARGO RESTRAINT ANGLE (2 REQD). SEE THE DETAIL ON PAGE 3.

(3) EYEBOLT, 1/2" (6 REQD). SEE "EYEBOLT INSTALLATION" DETAIL ON PAGE 3.

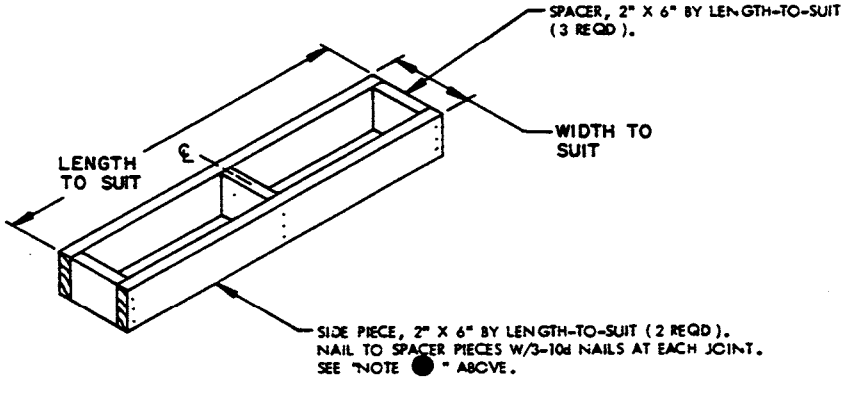
(4) FILLER ASSEMBLY (2 REQD). INSTALL BETWEEN THE SKIDDED UNIT AND THE VEHICLE WHEEL WELL. SEE THE "TYPICAL FILLER ASSEMBLY B" DETAIL ON PAGE 7.



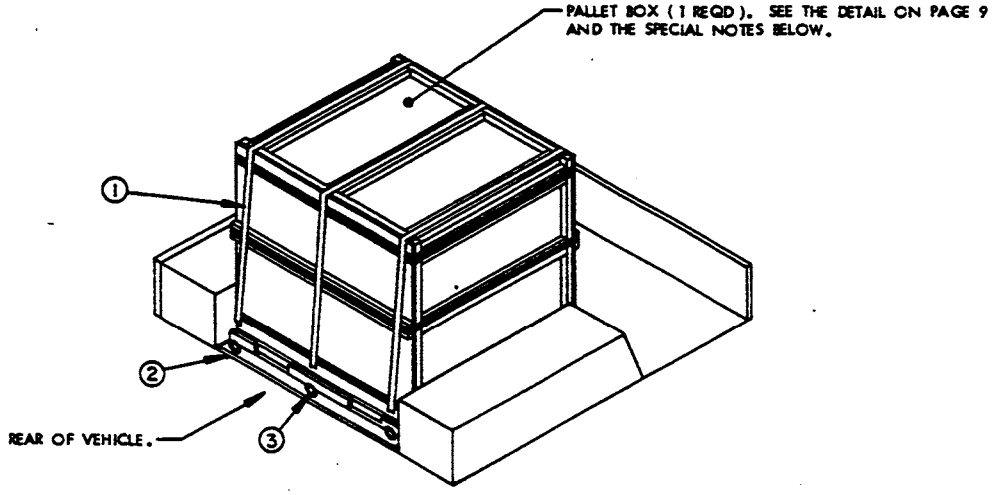
TYPICAL FILLER ASSEMBLY A

NOTE ● :

FILLER ASSEMBLY LENGTH TO BE THE DISTANCE BETWEEN ANGLES MINUS 1/2" OR DISTANCE BETWEEN VEHICLE WHEEL WELLS MINUS 1/2", AS APPLICABLE.



TYPICAL FILLER ASSEMBLY B



ISOMETRIC VIEW

SPECIAL NOTES:

1. ONE "KNOCK-DOWN" TYPE PALLET BOX CONTAINING UNPALLETIZED MISCELLANEOUS BOXES OF AMMUNITION OR COMPONENTS IS SHOWN IN THE LOAD ABOVE. SEE THE "AMMUNITION PALLET BOX" DETAILS ON PAGE 9 FOR ASSEMBLY DETAILS.

2. AMMUNITION BOXES TO BE POSITIONED WITHIN THE PALLET BOX SO AS TO FILL OUT VERTICAL, LATERAL, AND LONGITUDINAL VOIDS AS NEARLY AS PRACTICABLE. WHEN THE VERTICAL, LATERAL, OR LONGITUDINAL VOID EXCEEDS 2", DUNNAGE MUST BE INSTALLED TO ELIMINATE THE VOID. DUNNAGE MAY CONSIST OF SINGLE WOODEN FILL PIECES, ASSEMBLIES, OR EMPTY BOXES.

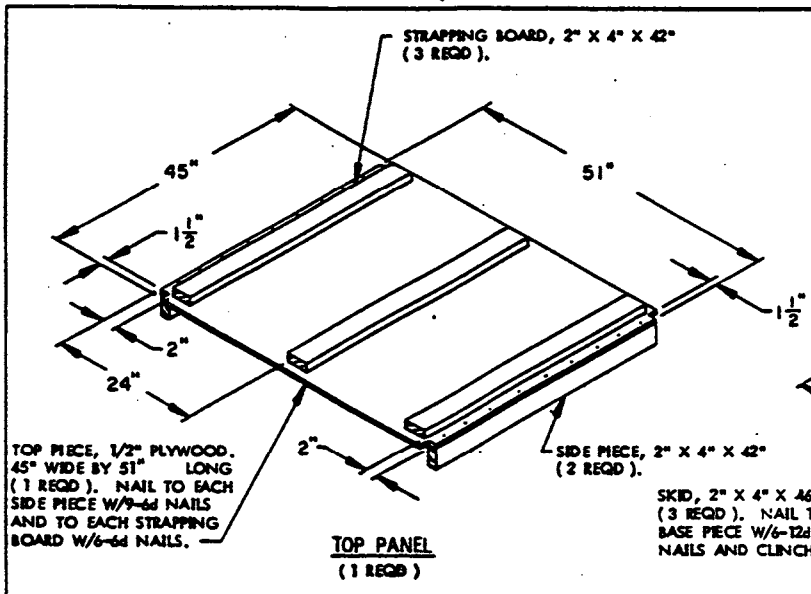
3. CAUTION: UNPALLETIZED BOXED AMMUNITION MUST NOT BE OFFERED FOR AIR TRANSPORT UNLESS CONTAINED WITHIN THE PALLET BOX DEPICTED ON PAGE 9.

KEY NUMBERS

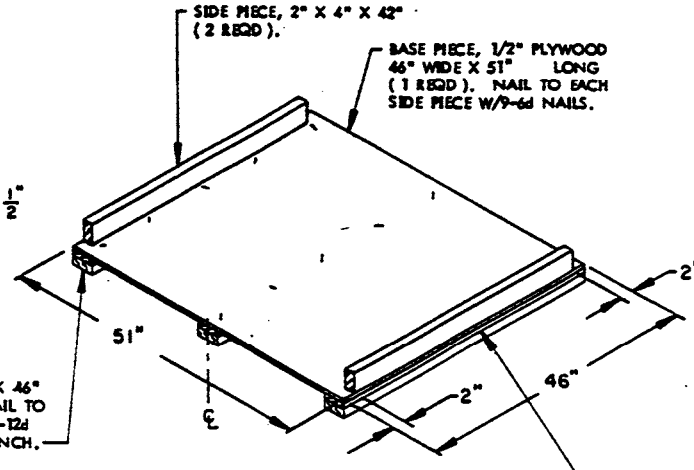
(1) WEB STRAP TIEDOWN ASSEMBLY (3 REQD). INSTALL EACH STRAP TO EXTEND FROM A TIEDOWN ANCHOR ON ONE END OF VEHICLE, OVER TOP OF PALLET BOX, TO A TIEDOWN ANCHOR ON THE OPPOSITE END OF THE VEHICLE, TAKE UP EXCESS SLACK IN STRAP AND THEN RATCHET TIGHT. SEE GENERAL NOTES "E" AND "F" ON PAGE 2.

(2) CARGO RESTRAINT ANGLE (2 REQD). SEE THE DETAIL ON PAGE 3.

(3) EYEBOLT, 1/2" (6 REQD). SEE "EYEBOLT INSTALLATION" DETAIL ON PAGE 3.

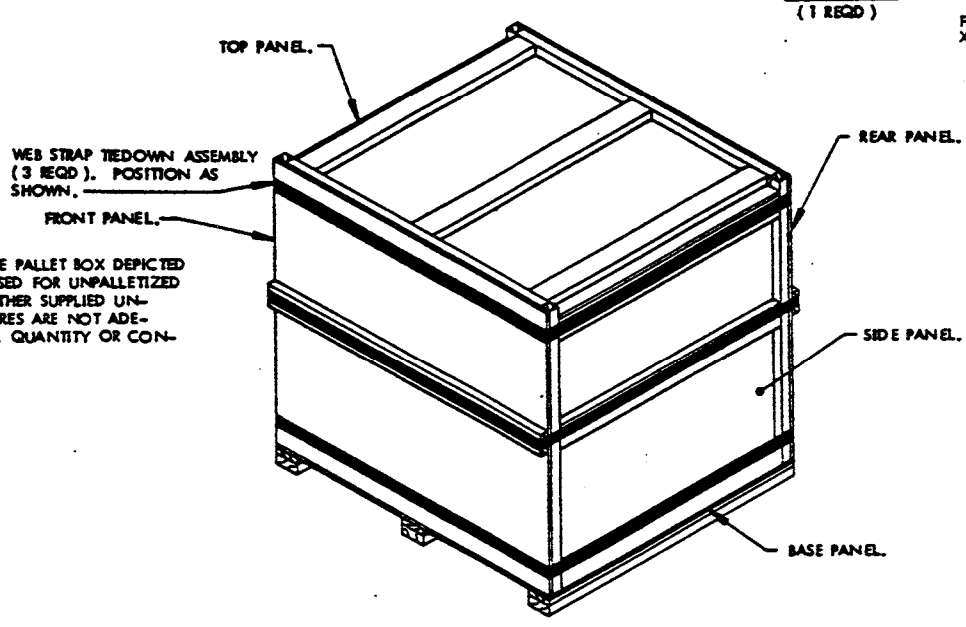


TOP PANEL
(1 REQD)



BASE PANEL
(1 REQD)

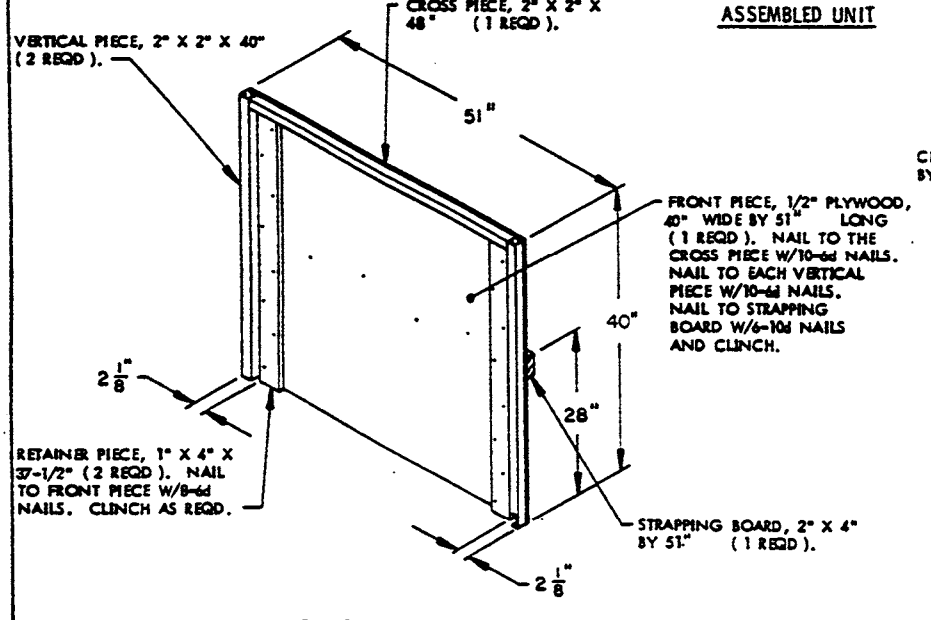
FILL PIECE, 1" X 4" X 46" (3 REQD).



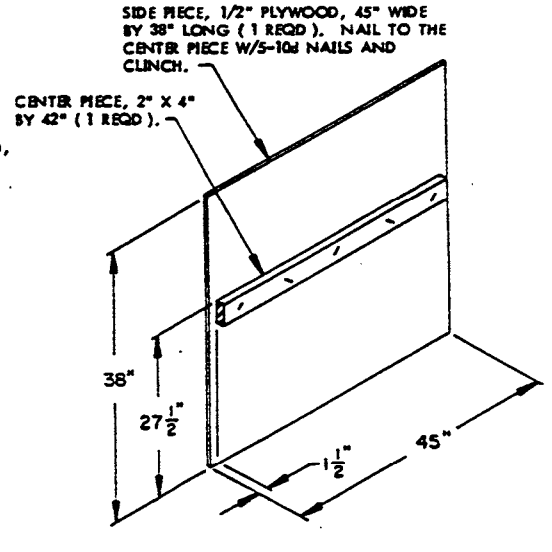
ASSEMBLED UNIT

NOTE:

THE "KNOCK-DOWN" TYPE PALLET BOX DEPICTED ON THIS PAGE CAN BE USED FOR UNPALLETIZED BOX TRANSPORT WHEN OTHER SUPPLIED UNPALLETIZED BOX PROCEDURES ARE NOT ADEQUATE DUE TO BOX SIZE, QUANTITY OR CONFIGURATION.

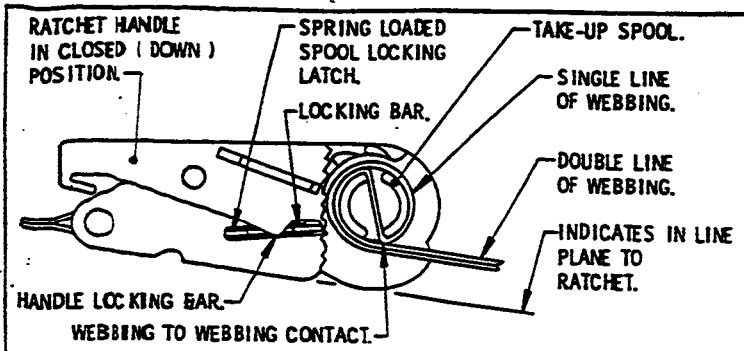


FRONT/REAR PANEL
(2 REQD)



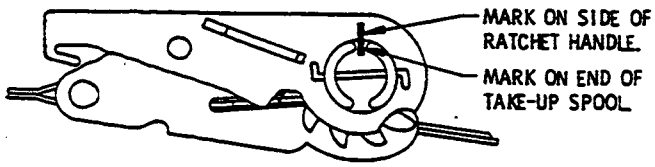
SIDE PANEL
(2 REQD)

AMMUNITION PALLET BOX



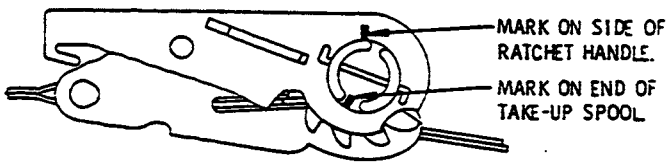
STEP 1

IN THIS VIEW PART OF THE RATCHET HOUSING IS SHOWN BROKEN AWAY TO DEPICT WEBBING-TO-WEBBING CONTACT ON THE TAKE-UP SPOOL OF THE RATCHET. WEBBING-TO-WEBBING CONTACT IS ACHIEVED WHEN THE OPERATOR HOLDS THE DOUBLE LINE OF WEBBING IN AN "IN LINE PLANE TO THE RATCHET" AND IT MAKES CONTACT WITH THE SINGLE LINE OF WEBBING.



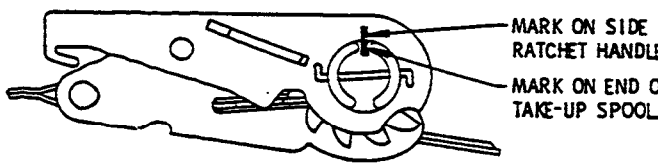
STEP 2

THIS VIEW DEPICTS THE LOCATION OF THE FIXED MARK ON THE RATCHETING HANDLE, WITH ANOTHER MATCHING MARK ON THE END OF THE TAKE-UP SPOOL, AFTER WEBBING-TO-WEBBING CONTACT HAS BEEN MADE.



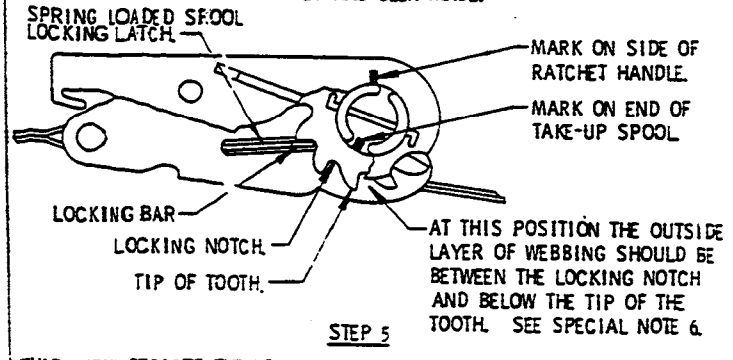
STEP 3

THIS VIEW DEPICTS THE LOCATION OF THE MARK ON THE END OF THE TAKE-UP SPOOL AFTER THE SPOOL HAS BEEN ROTATED ONE-HALF TURN, AFTER WEBBING-TO-WEBBING CONTACT HAS BEEN MADE.



STEP 4

THIS VIEW DEPICTS THE LOCATION OF THE MARK ON THE END OF THE TAKE-UP SPOOL AFTER THE SPOOL HAS BEEN ROTATED ONE FULL TURN, AFTER WEBBING-TO-WEBBING CONTACT HAS BEEN MADE.



STEP 5

THIS VIEW DEPICTS THE LOCATION OF THE MARK ON THE END OF THE TAKE-UP SPOOL AFTER THE SPOOL HAS BEEN ROTATED ONE AND ONE-HALF TURNS, AFTER WEBBING-TO-WEBBING CONTACT HAS BEEN MADE. ALSO IN THIS VIEW, PART OF THE RATCHET HANDLE IS SHOWN BROKEN AWAY TO SHOW THE LOCKING BAR FULLY SEATED IN THE MATCHING LOCKING NOTCH (SPROCKET GEAR TEETH).

SPECIAL NOTES:

1. THE PURPOSE OF THE RATCHET DETAILS ON THIS PAGE, AND OF THESE NOTES, IS TO AUGMENT THE GUIDANCE SET FORTH WITHIN GENERAL NOTE "E" ON PAGE 2.

2. THE REQUIREMENT FOR 1/2 BUT NOT MORE THAN 1-1/2 WRAPS OF STRAP ON THE TAKE-UP SPOOL OF THE TENSIONING RATCHET, AS SPECIFIED WITHIN GENERAL NOTE "E" ON PAGE 2, ACTUALLY MEANS 1/2 TO 1-1/2 WRAPS OF DOUBLED WEBBING, THE 1/2 TO 1-1/2 WRAPS REQUIRE THAT THE SPOOL MECHANISM BE ROTATED 1/2 TO 1-1/2 TURNS. ALSO, THE 1/2 TO 1-1/2 WRAPS (TURNS) ARE TO BE ACCOMPLISHED ONLY AFTER ENOUGH WEBBING HAS BEEN WOUND ONTO THE SPOOL TO ACHIEVE A WEBBING TO WEBBING CONFIGURATION, AS SHOWN IN THE "STEP 1" DETAIL ON THIS PAGE.

3. ONE METHOD THAT CAN BE USED TO ENSURE THAT THE 1/2 TO 1-1/2 WRAPS ARE WOUND ONTO THE TAKE-UP SPOOL, AFTER WEBBING TO WEBBING CONTACT HAS BEEN MADE, IS TO PLACE A FIXED MARK (PAINT OR SIMILAR MATERIAL) ON THE SIDE OF THE RATCHETING HANDLE, WITH THE HANDLE IN ITS CLOSED (DOWN) POSITION, AND ANOTHER SHORT MATCHING MARK ON THE END OF THE SPOOL, AS SHOWN IN THE "STEP 2" DETAIL ON THIS PAGE. AS THE SPOOL IS ROTATED TO TENSION A TIE-DOWN STRAP ASSEMBLY, THE NUMBER OF WRAPS (TURNS) CAN BE DETERMINED VISUALLY BY COMPARING THE "MARK" LOCATION ON THE SPOOL TO THE "MARK" LOCATION ON THE RATCHETING HANDLE WITH THE HANDLE IN CLOSED POSITION. SEE THE "STEP 3", "STEP 4", AND "STEP 5" DETAILS ON THIS PAGE.

4. ANOTHER METHOD THAT CAN BE USED TO ENSURE THAT THE 1/2 TO 1-1/2 WRAPS ARE ACHIEVED, AFTER WEBBING TO WEBBING CONTACT HAS BEEN MADE, IS TO COUNT THE AUDIBLE CLICKS MADE BY THE RATCHET ASSEMBLY AS A WEB STRAP ASSEMBLY IS BEING TENSIONED. THE RATCHET ASSEMBLY ON MOST WEB STRAP ASSEMBLIES HAVE 11 TEETH ON THE GEARLIKE DEVICE ON EACH END OF THE TAKE-UP SPOOL; SOME OTHER STRAP ASSEMBLIES HAVE ONLY 9 TEETH. THEREFORE, AFTER INITIAL WEBBING TO WEBBING CONTACT HAS BEEN MADE, ROTATE (TURN) THE SPOOL THROUGH A MINIMUM OF 6 TO A MAXIMUM OF 17 CLICKS (1/2 TO 1-1/2 WRAPS) WHEN THE GEAR HAS 11 TEETH, AND ROTATE (TURN) THE SPOOL THROUGH A MINIMUM OF 5 TO A MAXIMUM OF 14 CLICKS (1/2 TO 1-1/2 WRAPS) IF THE GEAR HAS 9 TEETH.

5. AFTER A STRAP ASSEMBLY HAS BEEN PROPERLY TENSIONED, CARE MUST BE EXERCISED TO ASSURE THAT THE TAKE-UP SPOOL LOCKING LATCH (SPRING LOADED DEVICE WITH A LOCKING BAR ON EACH SIDE OF THE RATCHET ASSEMBLY) IS FULLY SEATED ON BOTH SIDES IN MATCHING LOCKING NOTCHES, WHICH ARE SIMILAR TO SPROCKET GEAR TEETH, THAT ARE LOCATED ON EACH END OF THE TAKE-UP SPOOL. SEE "STEP 5" DETAIL ON THIS PAGE. THE LOCKING LATCH IS "FULLY SEATED" WHEN THE HANDLE WILL CLOSE AND THE LOCKING EAR, OR SIMILAR DEVICE ON THE HANDLE, PREVENTS THE ACCIDENTAL WITHDRAWAL OF THE LOCKING LATCH. SEE "STEP 1" DETAIL ON THIS PAGE. IF THE FULLY SEATED CONDITION CANNOT BE ACHIEVED, THE STRAP MUST BE RELEASED AND HAND RETENSIONED AS TIGHT AS POSSIBLE TO ACHIEVE THE FULLY SEATED CONDITION.

6. ANOTHER VISUAL METHOD OF DETERMINING WHEN THERE IS 1/2 TO 1-1/2 WRAPS OF WEBBING ON THE TAKE-UP SPOOL, AFTER INITIAL WEBBING-TO-WEBBING CONTACT HAS BEEN MADE, IS TO LOOK AT THE SPOOL, "WHEN A TIEDOWN IS COMPLETE, THE STRAP WEBBING ON THE SPOOL OF THE RATCHET SHOULD BE ABOVE THE LOWER CURVE OF THE LOCKING NOTCH, AND SHOULD BE BELOW THE TIPS OF THE TEETH OF THE RATCHET" AS IDENTIFIED IN "STEP 5" ON THIS PAGE. IT SHOULD BE NOTED THAT ANY PROCEDURES THAT ENSURE PROPER TENSIONING ARE ACCEPTABLE AND METHODS ON THE DRAWING ONLY PROVIDE SOME METHODS.