<u>PATRIOT</u>

LOADING, TIEDOWN, AND UNLOADING PROCEDURES FOR THE MISSILE ROUND, PACKED ONE PER CONTAINER, IN/ON TACTICAL VEHICLES

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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 THE PATRIOT MISSILE ROUND, PACKED ONE PER CONTAINER, IN/ON TACTICAL VEHICLES. IF OTHER TYPES OF CARGO ITEMS ARE TRANSPORTED WITH THAT SHOWN, THE TOTAL LOAD MUST BE COMPATIBLE, AND THE ADDED ITEMS MUST BE SECURED WITH WEB STRAP ASSEMBLIES, AS REQUIRED TO PREVENT DISPLACEMENT DURING TRANSPORTATION.
- C. DEPICTED PROCEDURES APPLY TO THE VEHICLES DESIGNATED HEREIN, MODIFIED TO INCLUDE THE UNIVERSALLY APPLICABLE "TIE DOWN KIT" WHICH CONSISTS OF THE TIE DOWN FITTINGS OR ANCHOR DEVICES FOR INSTALLATION IN/ON CARGO BEDS, AND WEB STRAP TIE DOWN ASSEMBLIES.
- D. WHENEVER POSSIBLE, A LOAD SHOULD BE CENTERED LATERALLY IN/ON CARRYING VEHICLE TO PROVIDE FOR EQUAL ANGLE HOLD DOWN BY THE SECURING WEB STRAP ASSEMBLES, WHENEVER POSSIBLE, LODING SHOULD BE POSTITIONED AGAINST THE FRONT WALL OF THE VEHICLE OR CENTERED LONGITUDINALLY IN/ON THE CARRYING VEHICLE BETWEEN THE SELECTED TIE DOWN FITTINGS TO BE USED, HOWEVER, DUE TO LADING WEIGHT, LADING LENGTH, LADING CONFIGURATION AND/OR LOCATION AND QUANTITY OF TIEDOWN ANCHORS WITHIN THE CARRYING VEHICLE IT MAY BE NECESSARY TO LOCATE THE LADING LONGITUDINALLY IN/ON A VEHICLE AS SHOWN WITHIN THIS DRAWING TO PROVIDE FOR PROPER TIEDOWN AND TO ACHIEVE A MAXIMUM LOAD.
- E. WEB STRAP TIEDOWN ASSEMBLIES MUST BE SECURELY HOOKED INTO ANCHORING DEVICES ON THE TRANSPORTING VEHICLE AND FIRMLY TENSIONED. ALSO, WHEN ONE ITEM IS UNIVIZED TO ANOTHER, THE HOOKS ON A STRAP MUST BE SECURELY ENGAGED AND THE STRAP FRIMLY TENSIONED. BENECISE CARE DURING STRAP APPLICATION, AVOID TWISTS IN THE STRAP TO THE EXTENT POSSIBLE (IF TIME PERMITS), BUT INSURE THERE ARE NO KNOTS IN STRAP. ON THE TAKE-UP SPOOL OF RATCHET, INSURE STRAIGHT LAY OF STRAP WHEN TENSIONING. THE TENSIONED STRAP MUST FORM AT LEAST ONE AND ONE-HALF COMPLETE WRAPS ON THE TAKE-UP SPOOL OF THE TENSIONING RATCHET. THE BACK THE LOOSE END OF STRAP AFTER TENSIONING IS COMPLETED (LOOSE END MAY BE FOLDED AND TAPED OR TIED TO THE TENSION STRAP IF TIME PERMITS).
- F. ADJUSTABLE SCUFF SLEEVES PROVIDED ON WEB STRAP ASSEMBLIES WILL BE LOCATED TO PROVIDE A PAD WHERE STRAPS PASS OVER SHARP EDGES OR RATCHES AND HOOKS ON PREVIOUSLY INSTALLED WEB STRAP TIEDOWN ASSEMBLIS. METAL PARTS OF A STRAP ASSEMBLY SHOULD BE LOCATED SO AS TO AVOID CONTACT WITH THE CARGO. 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 CARGO AND IF NECESSARY, TAPED OR TIED IN POSITION.
- G. CONTAINER DETAIL:
- H. IF THE SIDE RACKS FOR THE SEMITRAILER ARE TO BE TRANSPORTED ON THE LOADED TRAILER, THEY WILL BE STACKED ON THE TRAILER AND SECURED WITH A SUFFICIENT QUANTITY OF WEB STRAP TIE DOWN ASSEMBLIES TO PREVENT LOSS DURING TRANSPORT. SIDE RACKS FOR THE MERT AND MERZ SEMITRAILER MAY BE POSITIONED AGAINST THE FORWARD BULKHEADS AND SECURED WITH WEB STRAP TIE DOWN ASSEMBLIES.
- J. ITEM LOCATION AND QUANTITIES OF THE DESIGNATED ITEM MAY BE VARIED TO SATISFY OPBATIONAL REQUIREMENTS, PROVIDED LOADING AND TIEDOWN PRINCIPLES SPECIFIED HEREIN ARE RETAINED AND A VEHICLE IS NOT OVERLOADED, <u>CAUTION</u>: CONTAINERS MUST NOT BE STACKED MORE THAN TWO HIGH.

(CONTINUED AT RIGHT)

(GENERAL NOTES CONTINUED)

- K, WHEN ONE WEB STRAP TIEDOWN ASSEMBLY IS NOT LONG ENOUGH TO SPAN THE DISTANCE DEPICTED TWO ASSEMBLIES MAY BE HOOKED TOGETHER TO GAIN THE NECESSARY LENGTH.
- L. 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 ISOMETRIC FORM WITH THE STRUCTURAL PORTIONS OMITTED AS NECESSARY TO IMPROVE THE CLARITY OF THE DEPICTED PROCEDURES.
- M. DURING LOADING OPERATIONS, ANTI-CHAFING MATERIAL OF SUITABLE THICKNESS MAY BE PLACED BETWEEN CONTACTING CONTAINERS WITHIN A LOAD AT THE DISCRETION OF THE PERSONNEL IN CHARGE.
- N. THE TIEDOWN METHODS WITHIN THIS DRAWING SHOW TWO HOOKS TO BE CONNECTED TO ONE TIEDOWN EVE, THIS IS AUTHORIZED AS SPECIFIED HEREIN AND MEETS THE INTENT OF THE REQUIREMENTS CITED IN TB 9-2300-280-30.
- O. CAUTION: THE GUIDED MISSILE MAY BE DAMAGED IF TORQUE TUBE HANDLE IS UNILOCKED DURING SHIPMENT. IN LOCKED POSITION, TORQUE TUBE HANDLE IS LEFT OF CENTER WITH GUICK RELEASE PIN IN RIGHT TRAVEL RESTRAINT HOLE. WHEN UNILOCKED, TORQUE TUBE HANDLE IS RIGHT OF CENTER AND A RED WARNING PATCH IS VISIBLE ON THE INSTRUMENT PANEL, CHECK TO BE SURE TORQUE TUBE HANDLE IS IN THE LOCKED POSITION PRIOR TO LOADING.
- P. THIS DRAWING DEPICTS THE AFT END OF THE CONTAINER POINTING TOWARD THE REAR OF THE VEHICLE. HOWEVER, THE CONTAINER MAY BE LOADED WITH THE AFT END POINTING TO THE REAR, OR TO THE FORWARD END OF THE VEHICLE.
- Q. FOR ADDITIONAL GUIDANCE, ATTENTION IS DIRECTED TO THE "SPECIAL NOTES" AND CHART ON PAGE 3, THE "SPECIAL NOTES" WITH EACH LOAD ON PAGE 4 THRU 14, AND THE "LOAD PLANNING GUIDANCE" ON PAGE 3.

MATERIAL SPECIFICATIONS

REVISION

REVISION NO. 1, DATED MARCH 1985, CONSISTS OF:

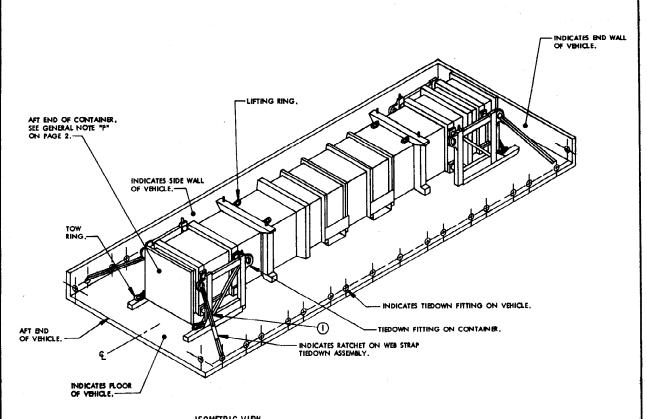
1. ADDED GENERAL NOTES "O" AND "P" ON THIS PAGE.

- ONLY MAXIMUM LOADS ARE SHOWN FOR THE VEHICLES AND/OR TRALERS LISTED IN THE CHART AT THE RIGHT. FOR LOADS OF ONE THROUGH BIGHT CONTAININGS, SEE THE "LOAD FLANNING GUIDANCE FOR ONE THROUGH EIGHT CONTAININS" ON THIS
- PAGES 4 THROUGH 15 SHOW METHODS OF LOADING ONE THROUGH 8 CONTANIES. BY USING THE METHOD SHOWN AND THE "LOAD FLANNING GUIDANCE" ON THIS PAGE, LOADS OF ONE THROUGH EIGHT CONTANIES MAY BE ACHIEVED. THISE METHODS ARE APPLICABLE FOR ANY TACTICAL VEHICLE HAVING A SUFFICIENT QUANTITY OF TIEDOWN FITTINGS LOCATED ON THE SIDEWALL OR ON THE FLOOR, THE BEST METHOD OR COMBINATION OF METHODS SHOULD BE SELECTED FOR THE VEHICLE BEING LOADED. THE METHOD USED WILL DEPBND ON THE QUANTITY OF CONTAINES TO BE LOADED AND THE TYPE OF VEHICLE USED. ANY COMBINATION OF THE LOADS SHOWN ON PAGES 4 THROUGH 15 MAY BE USED WHEN LOADING A VEHICLE.

TYPICAL TACTICAL VEHICLES AND MAXIMUM LOAD PER VEHICLE (SEE "NOTE ⊕" BELOW)					
TYPICAL VEHICLE AND/OR TRAILER BEING LOADED (SEE "NOTE (#) " BELOW)	MAXIMUM NUMBER OF CONTAINERS IN LOAD, PER VEHICLE WEIGHT LIMIT OR SIZE OF VEHICLE	SEE THE LOAD OR COMBINATION OF LOADS SHOWN ON PAGE (S)			
TRUCK, CARGO, 5 TON, M55	2 CONTAINERS (WEIGHT LIMIT)	PAGE 5			
SEMITRAILER, STAKE, 12 TON, M127	4 CONTAINERS (LIMITED TO SIZE OF VEHICLE)	PAGE 10			
SEMITRAILER, 22-1/2 TON, MST1	4 CONTAINERS (LIMITED TO SIZE OF VEHICLE)	PAGE 10			
SEMITRAILER, 34 TON, M872	8 CONTAINERS (LIMITED TO SIZE OF VEHICLE)	PAGES 14 AND 15			

THE TACTICAL VEHICLES LISTED IN THE CHART ABOVE AND SHOWN WITHIN THIS DRAWING WERE SELECTED AS TYPICAL ONLY. OTHER TYPES OF VEHICLES MAY BE USED IN LIEU OF THOSE SHOWN, AS LONG AS THEY COMPLY WITH GENERAL NOTE "C" ON PAGE 2.

LOAD PI	ANNING GUIDANCE FOR O	NE THROUGH EIGHT CONTAINERS
QUANTITY OF CONTAINERS AND WEIGHT	SEE LOAD SHOWN ON PAGE (5) OR USE THE ALTERNA- TIVE METHOD LISTED IN COLUMN AT RIGHT	ALTERNATIVE METHOD OF LOADING THE QUANTIT OF CONTAINERS LISTED IN THE FIRST COLUMN OF THIS CHART
1 (3,750 LBS)	4 AND 6	NONE
2 (7,500 LBS)	5 AND 7	IF THE TRAILER IS LONG ENOUGH, TWO CONTAIN MAY BE LOADED END-TO-END AND SECURED AS SHOWN FOR THE ONE CONTAINER LOAD ON PAGE 6.
3 (11,250 LBS)	8	THREE CONTAINERS MAY BE LOADED AS SHOWN AT THE REAR OF THE SEVEN CONTAINER LOAD ON PAGE 12.
4 (15,000 LBS)	9	FOUR CONTAINERS MAY BE LOADED AS SHOWN AT THE REAR OF THE FIVE CONTAINER LOAD ON PAGE 10.
5 (18,750 LBS)	10	FIVE CONTAINERS MAY BE LOADED WITH THREE CONTAINERS AT THE REAR AS SHOWN IN THE LOAD ON PAGE 12 AND TWO CONTAINERS AT THE FRONT AS SHOWN IN THE LOAD ON PAGE 1
6 (22,500 LBS)	11	SIX CONTAINERS MAY BE LOADED WITH TWO GROUPS OF THREE CONTAINERS AS SHOWN AT THE REAR OF THE SEVEN CONTAINER LOAD ON PAGE 12.
7 (26,250 LBS)	12 AND 13	NONE
8 (30,000 LBS)	14 AND 15	NONE



ISOMETRIC VIEW

SPECIAL NOTES:

- A TYPICAL LOAD OF ONE CONTAINER IS SHOWN IN A TRUCK, CARGO, 5 TON, MSS, HAVING INSIDE DIMENSIONS OF 244" LONG BY 88" WIDE.
- THE VEHICLE SHOWN WAS SELECTED AS TYPICAL ONLY AND VEHICLES OF OTHER DIMENSIONS, AND/OR TRAILESS, WHICH HAVE A SUFFICIENT QUANTITY OF TIEDOWN FITTINGS, LOCATED ON THE SIDE WALL AND END WALL, OR ON THE FLOOR, MAY BE USED.
- A TOTAL OF FOUR WEB STRAP TIEDOWN ASSEMBLIES ARE REQUIRED FOR THE LOAD SHOWN.
- 4. THE HOOK END OF THE WEB STRAP MUST BE THREADED THROUGH THE CONTAINER TIEDOWN FITTING BECAUSE THE HOOK OPENING IS TOO SMALL TO ATTACH TO THE CONTAINER TIEDOWN. THE HOOK WILL FIT ON THE TOW RING AND THE LETTING RING.
- WEB STRAP TIEDOWN ASSEMBLIES MUST NOT BE POSITIONED OVER THE BODY OF THE CONTAINER AS THE BODY MUST FLOAT WITHIN THE CRADLE.
- CAUTION: THE TORQUE TUBE HANDLE MUST BE IN THE LOCKED POSITION PRIOR TO LOADING THE CONTAINER IN/ON A VEHICLE, SEE GENERAL NOTE "O" ON PAGE 2.

KEY NUMBER

WEB STRAP TIEDOWN ASSEMBLY (4 REQD). INSTALL TO EXTEND FROM A TIEDOWN FITTING ON SIDE OF THE VEHICLE, UP AND THROUGH A CONTAINER TIEDOWN FITTING, BACK TO THE SAME TIEDOWN PITTING ON SIDE OF THE VEHICLE. SEE SPECIAL NOTE 4 ON THIS PAGE.

LOAD AS SHOWN

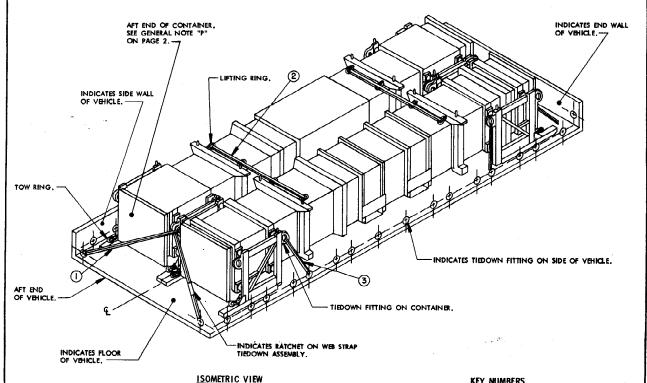
ITEM QUANTITY

WEIGHT (APPROX)

CONTAINER ----- 1 ----- 3,750 LBS

PAGE 4

ONE CONTAINER



- A TYPICAL LOAD OF TWO CONTAINERS IS SHOWN IN A TRUCK, CARGO, 5 TON, M55, HAVING INSIDE DIMENSIONS OF 244" LONG BY 88" WIDE,
- THE VEHICLE SHOWN WAS SELECTED AS TYPICAL ONLY AND VEHICLES OF OTHER DIMENSIONS, AND/OR TRAILERS, WHICH HAVE A SUFFICIENT GUANTITY OF TIEDOWN FITTINGS, LOCATED ON THE SIDE WALL AND END WALL, OR ON THE FLOOR, MAY BE USED?
- A TOTAL OF TEN WEB STRAP TIEDOWN ASSEMBLIES ARE REQUIRED FOR THE LOAD SHOWN . 3.
- THE HOOK END OF THE WEB STRAP MUST BE THREADED THROUGH THE CONTAINER TIEDOWN FITTING BECAUSE THE HOOK OPENING IS TOO SMALL TO ATTACH TO THE CONTAINER TIEDOWN. THE HOOK WILL FIT ON THE TOW RING AND THE LIFTING RING.
- WEB STRAP TIEDOWN ASSEMBLIES <u>MUST NOT</u> BE POSITIONED OVER THE BODY OF THE CONTAINER AS THE BODY MUST <u>FLOAT</u> WITHIN THE CRADLE.
- <u>CAUTION:</u> THE TORQUE TUBE HANDLE MUST BE IN THE <u>LOCKED</u> POSITION PRIOR TO LOADING THE CONTAINER IN/ON A VEHICLE. SEE GENERAL NOTE "O" ON PAGE 2.

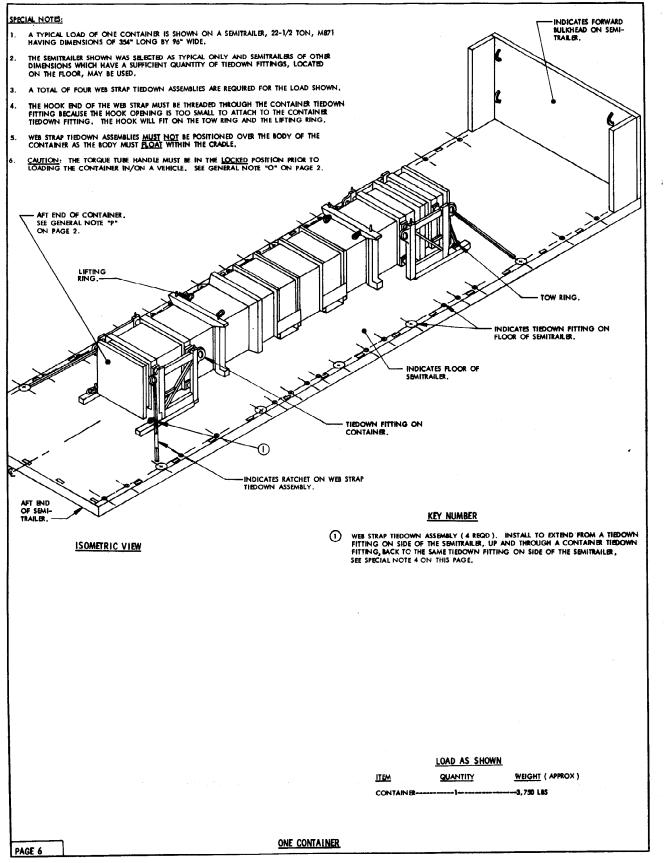
KEY NUMBERS

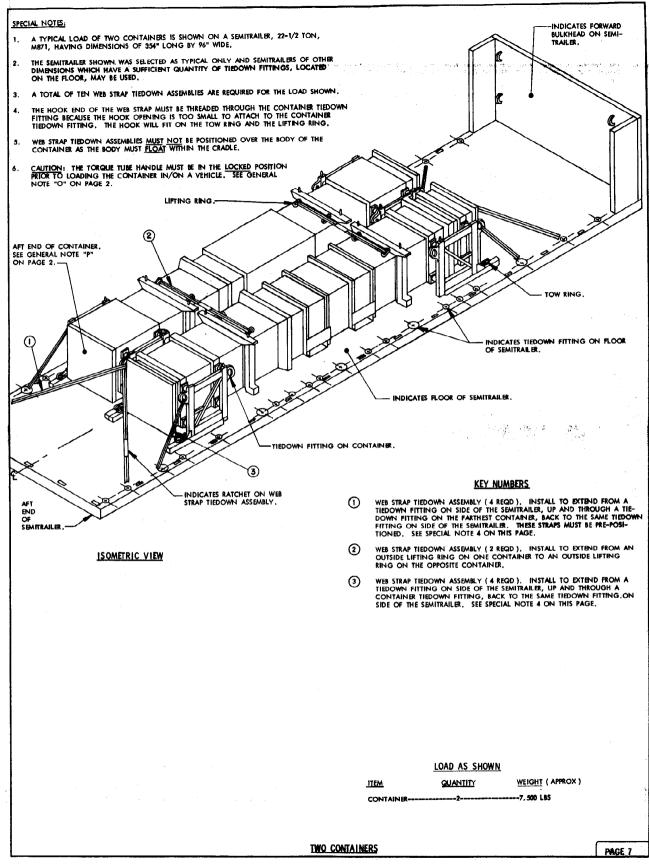
- WEB STRAP TIEDOWN ASSEMBLY (4 REQD). INSTALL TO EXTEND FROM A TIEDOWN FITTING ON BND WALL (OR SIDEWALL) OF THE VEHICLE, UP AND THROUGH A TIEDOWN FITTING ON THE FARTHEST CONTAINE, BACK TO THE SAME TIEDOWN FITTING ON END WALL (OR SIDEWALL) OF THE VEHICLE. THESE STRAPS MUST BE PRE-POSITIONED, SEE SPECIAL NOTE 4 ON THIS PAGE.
- (2) WB STRAP TIEDOWN ASSEMBLY (2 REQD). INSTALL FROM AN OUTSIDE LIFTING RING ON ONE CONTAINER TO AN OUTSIDE LIFTING RING ON THE OPPOSITE CONTAINER.
- WEB STRAP TIEDOWN ASSEMBLY (4 REQD), INSTALL TO EXTEND FROM A TIEDOWN FITTING ON SIDE OF THE VEHICLE, UP AND THROUGH A CONTAINER TIEDOWN FITTING, BACK TO THE SAME TIEDOWN FITTING ON SIDE OF THE VEHICLE. SEE SPECIAL NOTE 4 ON THIS PAGE

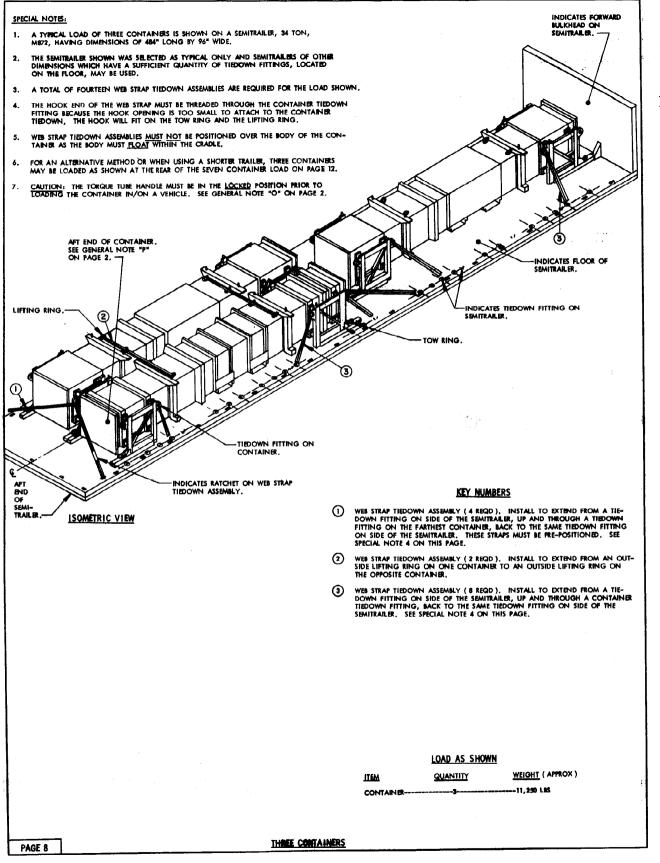
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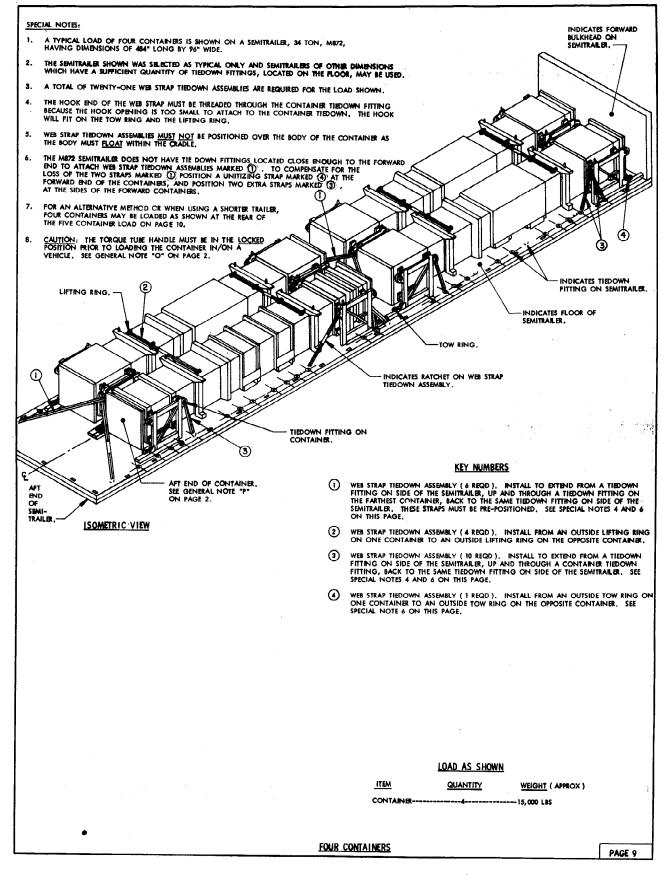
ITEM QUANTITY WEIGHT (APPROX) CONTAINER-----7,500 LBS

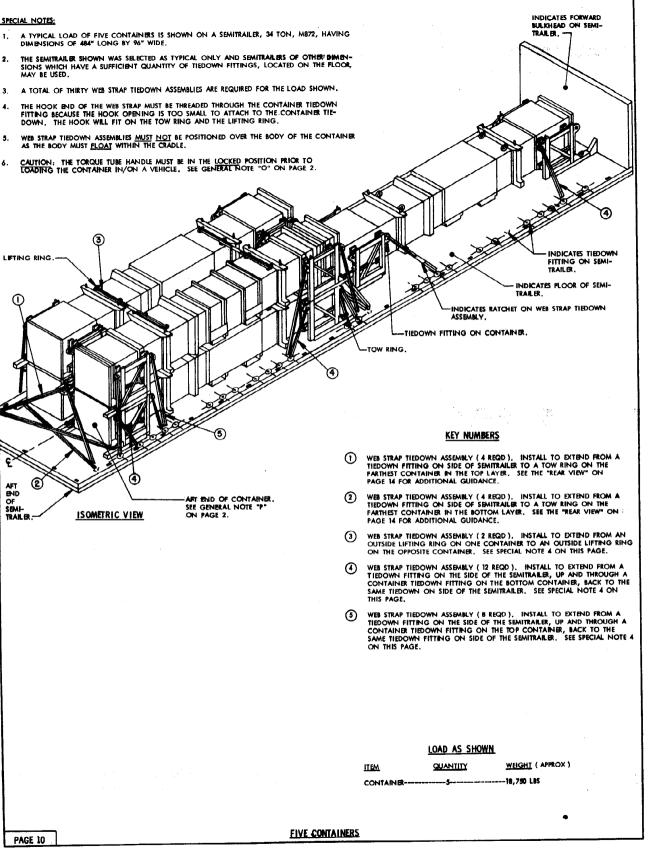
TWO CONTAINERS

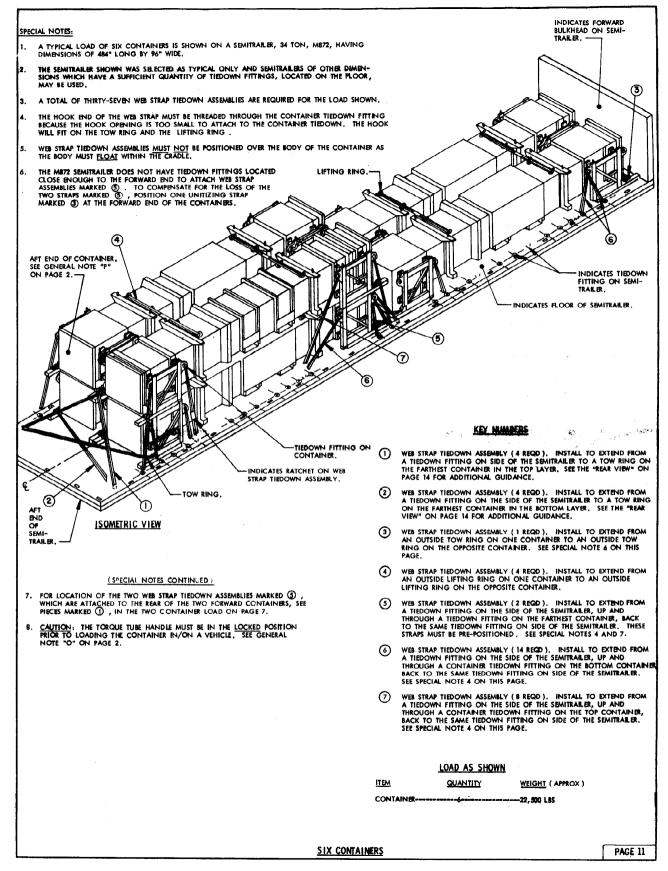


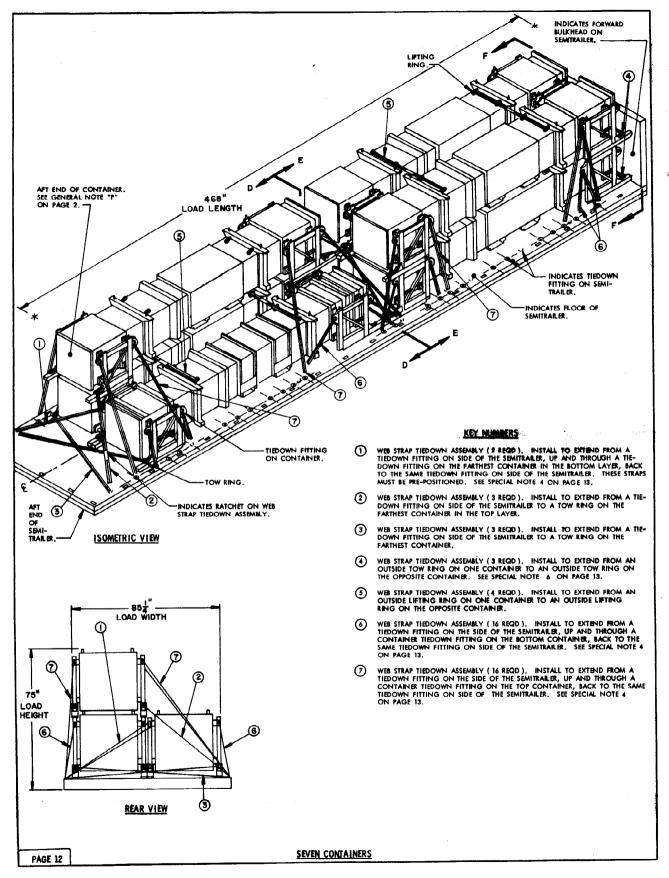


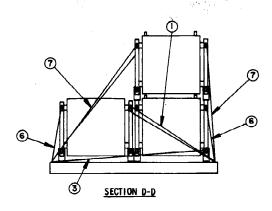


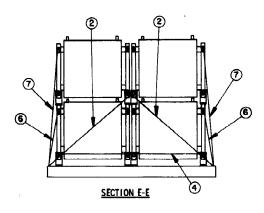


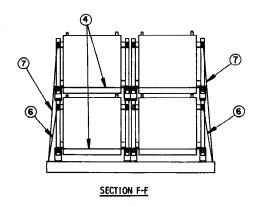












- A TYPICAL LOAD OF SEVEN CONTAINERS IS SHOWN ON A SEMI-TRAILER, 34 TON, MB72, HAVING DIMENSIONS OF 484" LONG BY 96" WIDE.
- THE SEMITRAILER SHOWN WAS SELECTED AS TYPICAL ONLY AND SEMITRAILERS OF OTHER DIMENSIONS WHICH HAVE A SUFFICIENT QUANTITY OF TIEDOWN FITTING, LOCATED ON THE FLOOR, MAY BE USED.
- A TOTAL OF FOURTY-SEVEN WEB STRAP TIEDOWN ASSEMBLIES ARE REQUIRED FOR THE LOAD SHOWN.
- 4. THE HOOK END OF THE WEB STRAP MUST BE THREADED THROUGH THE CONTAINER TIEDOWN FITTING BECAUSE THE HOOK OPPNING IS TOO SMALL TO ATTACH TO THE CONTAINER TIEDOWN. THE HOOK WILL FIT ON THE TOW RING AND THE LIFTING RING.
- WEB STRAP TIEDOWN ASSEMBLIES MUST NOT BE POSITIONED OVER THE BODY OF THE CONTAINER AS THE BODY MUST FLOAT WITHIN THE CRADLE,
- 6. THE M872 TRAILER DOES NOT HAVE TIEDOWN FITTINGS LOCATED CLOSE ENOUGH TO THE FORWARD END TO ATTACH WEB STRAP TIEDOWN ASSEMBLIES MARKED ② AND ③ . TO COMPENSATE FOR THE LOSS OF THE TWO STRAPS MARKED ② AND THE TWO STRAPS MARKED ③ , POSITION ONE UNITIZING STRAP MARKED ④ AT THE FORWARD END OF THE BOTTOM CONTAINERS AND ONE UNITIZING STRAP MARKED ⑥ AT THE FORWARD END OF THE TOP CONTAINERS. SEE "SECTION F-F" ON THIS PAGE,
- 7. CAUTION: THE TORQUE TUBE HANDLE MUST BE IN THE LOCKED POSITION PRIOR TO LOADING THE CONTAINER IN/ON A VEHICLE. SEE GENERAL NOTE "O" ON PAGE 2.

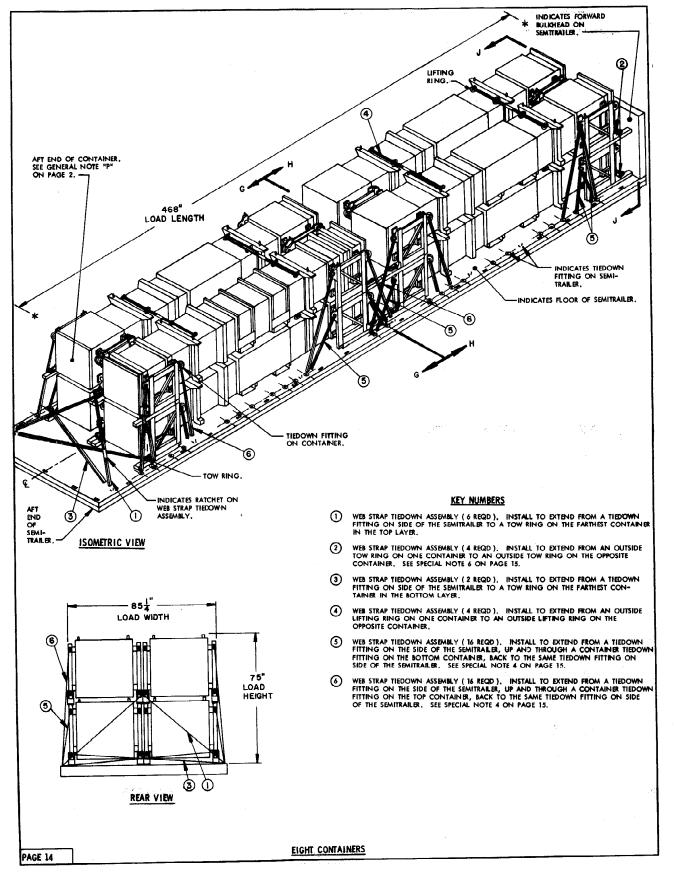
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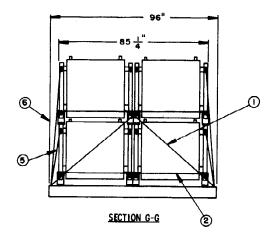
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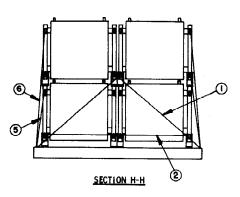
WEIGHT (APPROX)

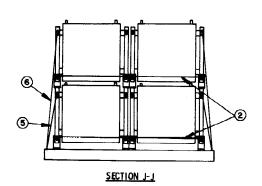
CONTAINER-----26,250 LBS

SEVEN CONTAINERS









- A TYMCAL LOAD OF EIGHT CONTAINERS IS SHOWN ON A SEMI-TRAILER, 34 TON, M872, HAVING DIMENSIONS OF 484" LONG BY 96" WIDE.
- THE SEMITRAILER SHOWN WAS SELECTED AS TYPICAL ONLY AND SEMITRAILERS OF OTHER DIMENSIONS WHICH HAVE A SUFFICIENT QUANTITY OF TIEDOWN FITTINGS, LOCATED ON THE FLOOR, MAY BE USED.
- A TOTAL OF FOURTY-EIGHT WEB STRAP TIEDOWN ASSEMBLIES ARE REQUIRED FOR THE LOAD SHOWN.
- 4. THE HOOK END OF THE WEB STRAP MUST BE THREADED THROUGH THE CONTAINER TIEDOWN FITTING BECAUSE THE HOOK OPENING IS TOO SMALL TO ATTACH TO THE CONTAINER TIEDOWN. THE HOOK WILL FIT ON THE TOW RING AND THE LIFTING RING.
- WEB STRAP TIEDOWN ASSEMBLIES MIST NOT BE POSITIONED OVER THE BODY OF THE CONTAINER AS THE BODY MUST PLOAT WITHIN THE CRADLE.
- 6. THE METZ SEMITRAILER DOES NOT HAVE TIEDOWN FITTINGS LOCATED CLOSE BNOUGH TO THE FORWARD BND TO ATTACH WEB STRAP TIEDOWN ASSEMBLIES MARKED (1) AND ONLY TO COMPENSATE FOR THE LOSS OF THE TWO STRAPS MARKED (2) AND THE TWO STRAPS MARKED (3) POSITION ONE UNITIZING STRAP MARKED (2) AT THE FORWARD BND OF THE BOTTOM CONTAINERS AND ONE UNITIZING STRAP MARKED (2) AT THE FORWARD BND OF THE TOP CONTAINERS. SEE "SECTION J-J ON THIS PAGE.
- CAUTION: THE TORQUE TUBE HANDLE MUST BE IN THE LOCKED POSITION PRIOR TO LOADING THE CONTAINER IN/ON A VEHICLE, SEE GENERAL NOTE "O" ON PAGE 2.

LOAD AS SHOWN

ITEM QUANTITY

WEIGHT (APPROX)

CONTAINER ---

-30,000 LBS

EIGHT CONTAINERS