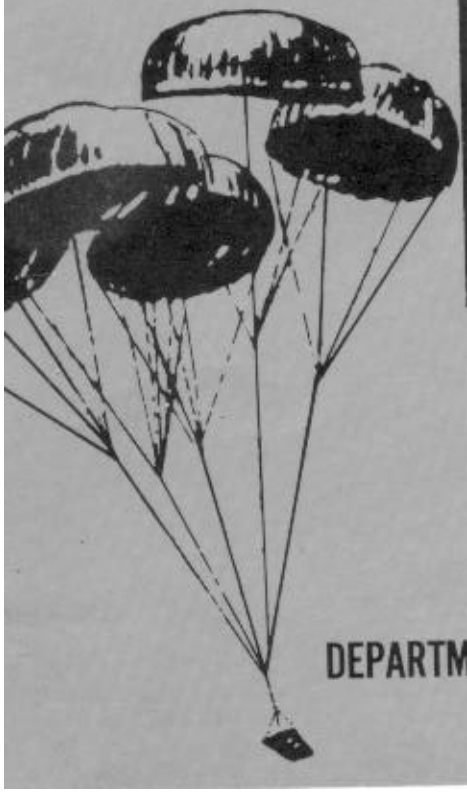
ARMY FM 10-515
AIR FORCE TO 13C7-10-181

AIRDROP OF SUPPLIES AND EQUIPMENT:

RIGGING ARMORED RECONNAISSANCE/ AIRBORNE ASSAULT VEHICLE (M551)



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DEPARTMENTS OF THE ARMY AND THE AIR FORCE

DEPARTMENT OF THE ARMY
AERIAL DELIVERY AND FIELD SERVICES DEPARTMENT
U.S. ARMY QUARTERMASTER CENTER AND SCHOOL
1010 SHOP ROAD
FORT LEE, VIRGINIA 23801-1502

REPLY TO
ATTENTION OF

ATSM-ADFSD

7 October 1998

MEMORANDUM FOR Commander, US Army Training Support Center, ATTN: ATIC-TIST (Mr. Baston), Fort Eustis, VA 23604

SUBJECT: Distribution Restriction Notice on Airdrop Rigging Manuals

1. As proponent for development of all 10-500 series airdrop rigging field manuals and the 10-450 sling load manuals, it has been determined that the distribution restriction on these field manuals should be changed to read: Approved for public release, distribution unlimited.

2. It is requested that unrestricted release of these field manuals be made via the Army Training Digital Library.

3. The new distribution notice will be added to the cover pages as future changes/revisions are made to the manuals.

4. Enclosed you will find a numerical list and the number of changes of the manuals that have unlimited distribution.

5. The point of contact for this action is Mr. Roger Hale, DSN 687-4769.

Encl

THEODORE J. DLUGOS
Director, Aerial Delivery and
Field Services Department

Distribution restrictions for the following Airdrop field manuals should read **"Approved for public release; distribution is unlimited."**

10-450-3	10-524, c2	10-552, c2
10-450-4	10-526, c3	10-554
10-500-2, c2	10-527, c3	10-555, c2
10-500-3, c1	10-528, c6	10-556
10-500-7, c1	10-529, c1	10-557
10-500-45	10-530	10-558, c1
10-500-53	10-531, c2	10-562
10-500-66, c1	10-532, c4	10-564, c6
10-500-71	10-533	10-567, c1
10-508, c1	10-534, c2	10-569, c1
10-510, c3	10-535	10-571
10-512, c4	10-537, c4	10-572
10-513, c3	10-539, c3	10-573, c1
10-515, c1	10-540, c2	10-574, c4
10-516	10-541, c1	10-575, c2
10-517, c5	10-542, c2	10-576, c1
10-518	10-543, c2	10-577
10-519, c3	10-546	10-579, c2
10-520, c3	10-547, c1	10-584
10-521, c2	10-548, c1	10-586
10-522, c1	10-549	10-588
10-523, c2	10-550, c3	10-591, c1

DEPARTMENT OF THE ARMY
HEADQUARTERS UNITED STATES ARMY TRAINING AND DOCTRINE COMMAND
FORT MONROE, VIRGINIA 23651-5000

REPLY TO ATTENTION OF

ATCD-SL (70-1f) 21 Oct 96

MEMORANDUM FOR DEPUTY CHIEF OF STAFF OPERATIONS AND PLANS, 400 ARMY PENTAGON, ATTN: DAMO-FDL, WASHINGTON DC 20310-0400

SUBJECT: Quartermaster (QM) Functional Area Assessment (FAA) Response

1. References:

a. Message, HQDA, DAMO-FDL, 231825Z Apr 96, subject: QM FAA Results.

b. Memorandum, HQ TRADOC, ATCG, 29 Jul 96, Army Airdrop Capabilities Assessment.

2. At the 29 Mar 96 QM FAA briefing to the Director of Army Staff, the decision was reached to revisit the Army's decision to "shelf" Low Altitude Parachute Extraction System (LAPES) (reference 1a).

a. Reference 1b, solicited CINCs input for their positions on LAPES and assessments of airdrop capabilities. The CINCs responses will be used to chart the direction and role for airdrop in the 21st century.

b. Based on the responses received (enclosure), there is no strong support for LAPES airdrop capability at this time. The consensus for the airdrop capabilities is to continue support for current Low Velocity Airdrop System (LVAD), develop a 500-foot LVAD and further explore Advanced Precision Aerial Delivery System (APADS).

3. Further, we will continue to maintain a range of airdrop capabilities to support all contingencies throughout the Army. The results of the Army Airdrop Capabilities Assessment also will be incorporated into the Operational Concept for Aerial Delivery Operations and Improved Cargo Aerial Delivery Capability Mission Needs Statement being developed by the Quartermaster Directorate of Combat Developments, U.S. Army Combined Arms Support Command (CASCOM).

4. The HQ TRADOC POC is MAJ Higgins, Airborne Airlift Action Office, ATCD-SL, E-mail: higginsn@emh10.monroe.army.mil, DSN 680-2469/3921, datafax DSN 680-2520.

ATCD-SL

SUBJECT: Quartermaster (QM) Functional Area Assessment (FAA) Response

FOR THE DEPUTY CHIEF OF STAFF FOR COMBAT DEVELOPMENTS:

Encl

JOHN A. MANDEVILLE
Colonel, GS
Director, Combat Service Support

CF:
USACASCOM (ATCL-CG/ATCL-QC/ATCL-MES)
USAQMC&S (ATSM-CG/ATSM-ABN/FS)
USANRDEC (SSCNC-UT/AMSSC-PM)

10/21/1996 13:55 8047343174 QM GENERALS OFFICE PAGE 03

ORGANIZATION	LAPES	LVAD	500' LVAD	APADS	SPTS/ NOT SPEC
USSOCOM		X	X	X	
EUCOM					X
CENTCOM		X	X		
FORSCOM		X	X	X	
TRANSCOM					X
SOUTHCOM	X			X	
VIII ARMY					X
ACOM					X

USSOCOM: Memorandum specifically states that the command does not support LAPES airdrop capability, but supports LVAD as well as APADS.

EUCOM: Draft memorandum specifically states that the command support the need for a low level airdrop capability. However, memorandum summarizes that the specific capability is not important as to have a capability to meet the required mission/threat profile.

CENTCOM: Memorandum specifically states that the command does not support LAPES airdrop capability, but support both current LVAD and 500-foot LVAD airdrop capabilities.

FORSCOM: 1st Endorsement specifically states that the command does not support LAPES airdrop capability, however supports LVAD, 500-foot LVAD and APADS.

TRANSCOM: Memorandum does not specifically address any airdrop capability as it talks to the 21st century requiring the full spectrum of tactical delivery methods.

SOUTHCOM: Memorandum specifically supports LAPES and APADS airdrop capabilities for their command.

VIII ARMY: E-Mail note for VIII Army states that the command has no input to the assessment as their plans call for a limited employment of airdrop.

ACOM: Sent request for input on 30 Sep 96. Received verbal response on 16 Oct 96 stating command is indifferent on the specific capability received.

DEPARTMENT OF THE ARMY
HEADQUARTERS UNITED STATES ARMY TRAINING AND DOCTRINE COMMAND
FORT MONROE, VIRGINIA 23651-5000

REPLY TO
ATTENTION OF

6 SEP 1995

ATCD-SL (70-1f)

MEMORANDUM FOR

Major General Thomas W. Robison, Commander, U.S. Army Combined Arms Support Command and Fort Lee, Fort Lee, VA 23801-6000
Major General Robert K. Guest, Commander, U.S. Army Quartermaster Center and School, Fort Lee, VA 23801-5030

SUBJECT: Low Altitude Parachute Extraction System (LAPES) Disassembly

1. References:

a. Message, HQ TRADOC, ATCD-SL, 100930Z Jan 95, subject: LAPES.

b. OVVM Note, HQ USACASCOM, 30 March 95, subject: TRADOC Disassembly of LAPES.

2. The U.S. Army and other services recently have concurred that LAPES will be terminated, as this capability is no longer required as a viable wartime contingency airdrop option. However, Headquarters, Department of the Army (DA), Deputy Chief of Staff for Operations and Plans, has agreed that LAPES technology will be shelved, and all specialized equipment preserved for possible future use.

3. Take the necessary steps to terminate training and leader development concerning LAPES operations. Major General Guest's questions regarding the disassembly of LAPES (enclosed) with following guidance will be utilized:

a. "Does the U.S. Army Quartermaster Center and School (USAQMC&S) continue to publish LAPES procedures in their joint field manual(FMs)/technical order manuals?" "Do we publish the LAPES procedures that have been written but not been printed yet?" Publishing LAPES procedures in all joint publications, Army FMs, regulations, etc., will be discontinued and addressed in the next revision of the aforementioned documents. Concurrently, all LAPES procedures that have been written and not printed will not be published.

6 SEP 1995

ATCD-SL
SUBJECT: Low Altitude Parachute Extraction System (LAPES) Disassembly

b. "Do we keep LAPES in our programs of instruction (POIs)?" "Do we teach LAPES to other services and our allies?" The USAQMC&S will remove LAPES procedures from POI and cease teaching LAPES to other services and/or allies.

c. "What do we teach to folks that have LAPES equipment in their war reserves?" All instruction concerning LAPES procedures will be discontinued whether LAPES equipment is located in units or in war reserves.

d. "What is the DA/TRADOC guidance on disposition of unit, depot, and war reserves LAPES equipment?" All LAPES equipment in war reserves and depot should be preserved with the exception of a few items that can be utilized in other existing airdrop capabilities. Specifically, the Type V airdrop platforms and attitude control bars of the LAPES system are being utilized to augment current Low Velocity Airdrop Systems (LVADS) loads.

e. "What is the guidance to U.S. Army Test and Experimentation Command on force development test and experimentation certification of LAPES loads?" The certification of all LAPES loads at the Airborne Special Operations Test Directorate will be redirected toward testing and certification of LVADS loads.

4. HQ TRADOC POC is CPT Higgins or CPT Phillips, ATCD-SL, DSN 680-2469/3921, datafax DSN 680-2520.

FOR THE COMMANDER:

Encl

JOE N. BALLARD
Major General, GS
Chief of Staff

CF:
HQDA (DAMO-FDL)
CDR, NRDEC (SAFNC-UA)
CDR, FORSCOM (FCJ3-FC)
CDR, OPTEC (CSTE-CS, CSTE-OPM)
CDR, ATCOM (AMSAT-W-TD)
DIR, ABNSOTD (ATCT-AB)
HQ TRADOC (ATCD-L, ATCD-RM, ATDO-A, ATTG-IT)

SEP 11 '95 08:30AM CSSRD FT MONROE VA P.3/7

Date and time 07/18/95 10:28:11

rom: HIGGINSN--MON1
o: HIGGINSN--MON1

rom: CPT NEIL HIGGINS, (AAACO), 680-2469
ubject: TRADOC "DISASSEMBLY" OF LAPES

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*********************************
* AIRBORNE AIRLIFT ACTION OFFICE *
*            (AAACO)             *
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** Forwarding note from BRUNEAUN--CMSNAMES 07/18/95 10:27 ***
eceived: from LEE-EMH2.ARMY.MIL by MONROE-EMH1.ARMY.MIL (IBM VM SMTP V2R2)
with TCP; Tue, 18 Jul 95 10:27:22 EDT
eceived: from LEE1 by LEE-EMH2.ARMY.MIL (IBM VM SMTP V2R2) with SSMTP id 3547;
Tue, 18 Jul 95 10:29:34 EDT
omments: Converted from PROFS to RFC822 format by PUMP V2.2X
ate: Tue, 18 Jul 95 10:29:26 EDT
rom: NORMAN BRUNEAU <BRUNEAUN@LEE-EMH2.ARMY.MIL>
ubject: TRADOC "DISASSEMBLY" OF LAPES
o: "NEIL HIGGINS- AAACO " <HIGGINSN@MONROE-EMH1.ARMY.MIL>

*** Resending note of 03/30/95 09:23

-To: LARRY MC MILLIAN AAA <MCMILLIL@MONROE-EMH1.ARMY.MIL>
rom: NORMAN BRUNEAU
ubject: TRADOC "DISASSEMBLY" OF LAPES

EIL- HERE ARE THE QUESTIONS THAT MG GUEST WANTS DA/ TRADOC TO ANSWER RE LAPES, AS I UNDERSTAND HIS GUIDANCE. I HAVE DISCUSSED THESE W/ OUR ABN DPT. IF THESE QUESTIONS MAKE SENSE, GIVE ME AN "UP" BEFORE I FORMALLY SEND ANYTHING OUT. MG GUEST WANTS SPECIFIC GUIDANCE FM TRADOC ON LAPES, RESPONSE NEEDS TO BE CLEAR AND TO THE POINT. A LOT OF THIS WILL HINGE ON WHAT ACC PLANS TO DO W/ LAPES NOW THAT THE AIR STAFF HAS GIVEN THEM THE GREEN LIGHT TO KILL IT. IF THEY PLAN TO PLACE IT ON THE SHELF OR KEEP A LIMITED OR CONTINGENCY CAPABILITY, THAT WILL DRIVE YOUR ANSWER TO US, AT THIS POINT I THINK ACC WILL DO WHATEVER THE ARMY WANTS, AS THEIR PRIMARY CUSTOMER. I WILL NOT REHASH HOW THE ARMY DECIDED THEY DIDNT NEED LAPES. QUESTIONS FOLLOW:

DOES THE QMCS CONTINUE TO PUBLISH LAPES PROCEDURES IN THEIRJOINT FM/TO MANUALS?
DO WE PUBLISH THE LAPES PROCEDURES THAT HAVE BEEN WRITTEN BUT HAVE NOT BEEN PRINTED YET?
DO WE REMOVE ALL LAPES PROCEDURES FROM ALREADY PUBLISHED MANUALS?
DO WE KEEP LAPES IN OUR POI?
DO WE TEACH LAPES TO OTHER SERVICES AND OUR ALLIES?
WHAT DO WE TEACH TO FOLKS THAT HAVE LAPES EQUIPMENT IN THEIR WAR RESERVES?
WHAT IS THE DA/TRADOC GUIDANCE ON DISPOSITION OF UNIT, DEPOT, AND WAR RESERVE LAPES EQUIPMENT?
WHAT IS THE GUIDANCE TO TEXCOM ON THE FDTE CERTIFICATION OF LAPES LOADS?

I KNOW THESE ARE TOUGH QUESTIONS, BUT THEY HAVE TO BE ASKED. HQ STAFFS CANNOT SIMPLY SAY "KILL IT" AND MOVE ON TO THE NEXT ISSUE. I DONT THINK WE ARE DOING OUR JOB IF WE LEAVE IT UP TO THE SCHOOLHOUSE TO INTERPRET SKETCHY GUIDANCE. THAT PLACES US IN THE POSSIBLE POSITION OF BEING ACCUSED OF NOT FOLLOWING ORDERS.

LETS TALK.....NORM

TAB B

Encl 1

SEP 11 '95 08:30AM CSSRD FT MONROE VA

DEPARTMENT OF THE ARMY
QUARTERMASTER CENTER AND SCHOOL
1201 22D STREET
FORT LEE, VIRGINIA 23801-1601

ATSM-ABN-FS 15 Dec 96

MEMORANDUM FOR RECORD

SUBJECT: Airdrop Equipment Update

Reference:

a. Phone conversation between CW4 Mahon, CASCOM and Dick Harper, Weapons System Management Office, Army Aviation Troop Command, Subject : sab

b. Phone conversation between CW4 Mahon, CASCOM and Don Stump, Logistics Management Specialist, Office, Deputy Chief of Staff for Logistics, Subject, sab

c. Phone conversation between CW4 Mahon, CASCOM and Chief Msgt Okraneck, Hqrs Air Combat Command, Subject sab

d. msg dtg R 181348Z Feb 94, subject: FCIF item: Type II platforms, PEFTC and SL/CS for Air Force unilateral training

1. Based on information received from the references a-c above, the following update is provided per request ref c, above.

a. The type II modular platform no longer exists within any contingency stocks. Therefore, maintaining Joint Inspection training program is no longer required for this equipment.

b. The Parachute Extraction Transfer Force Coupling (PEFTC) no longer exists within any contingency stocks. Therefore, maintaining Joint Inspection training program is no longer required for this equipment.

c. The metric platform interim rigging procedures are no longer valid as they apply to metric platforms. Those rigging procedures which have dual application with the type V platform are still valid for the type V platform.

d. The static line connector strap (SL/CS) currently has limited application. Only those loads that specifically require this system are authorized use of this system. The SL/CS is not an across the board substitute for the Extraction Force Transfer Coupling (EFTC). These authorized loads are specific in nature and will normally be found in the special operations arena of airdrop loads. This system is not authorized for use IAW ref d, above.

2. For additional questions/information contact the undersigned at DSN 687-4733, Fax 3084.

John R. Mahon
CW4, USA
Senior Airdrop Systems
Technician

CHANGE
NO 1

HEADQUARTERS
DEPARTMENTS OF THE ARMY
AND THE AIR FORCE
Washington, DC, 14 June 1990

AIRDROP OF SUPPLIES AND EQUIPMENT:

RIGGING ARMORED RECONNAISSANCE/ AIRBORNE ASSAULT VEHICLE (M551)

This change adds the procedures for rigging the ARAAVs for low-velocity and LAPE airdrop on the type V platform. It also includes procedures for rigging the Shillelagh missiles on the type V platform for low-velocity airdrop.

FM 10-515/TO 13C7-10-181, 24 September 1984, is changed as follows:

1. New or changed material is identified by a vertical bar in the margin opposite the changed material.
2. Remove old pages and insert new pages as indicated below:

Remove pages	Insert pages
i through iii	i through v
	5-1 through 5-64
	6-1 through 6-45
	7-1 through 7-13
Glossary-1	Glossary-1
References-1	References-1

3. File this transmittal sheet in front of the publication for reference purposes.

DISTRIBUTION UNLIMITED

FIELD MANUAL
NO 10-515
TECHNICAL ORDER
NO 13C7-10-181

DEPARTMENTS OF THE ARMY
AND THE AIR FORCE
Washington, DC, 24 September 1984

AIRDROP OF SUPPLIES AND EQUIPMENT:

RIGGING ARMORED RECONNAISSANCE/ AIRBORNE ASSAULT VEHICLE (M551)

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REMOVED: 95 MESSAGE TERMINATION OF LAPES

[redacted]

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PREFACE

SCOPE

This manual tells and shows how to rig an M551 and M551A1 ARAAV for low-velocity airdrop from C-130 and C-141 aircraft and for LAPE airdrop from C-130 aircraft. Low-velocity and LAPE airdrop of the M551 and M551A1 ARAAV from C-130 aircraft is restricted to aircraft that have a serial number 62-1784 or higher. This manual also tells and shows how to rig Shillelagh missiles in their containers for low-velocity airdrop from C-130 and C-141 aircraft. This manual is designed for use by all parachute riggers.

USER INFORMATION

The proponent of this publication is HQ TRADOC. You are encouraged to report any errors or omissions and suggest ways for improving this manual. Army personnel, send your comments on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to:

Commander
US Army Quartermaster Center and School (Provisional)
ATTN: ATSM-DTP
Fort Lee, Virginia 23801-5036

Air Force personnel, send your reports on AFTO Form 22 (Technical Order Publication Improvement Report) through:

Headquarters
Military Airlift Command (MAC/DOXT)
Scott AFB, Illinois 62225-5001

to:

Commander
US Army Quartermaster Center and School (Provisional)
ATTN: ATSM-DTP
Fort Lee, Virginia 23801-5036

Also send information copies of AFTO Form 22 to:

San Antonio ALC/MMILRA
Kelly AFB, Texas 78241-5000

CHAPTER 1 INTRODUCTION

1-1. Description of Items

The description of the items covered in this manual is as follows:

a. The unrigged armored reconnaissance/airborne assault vehicle (ARAAV) (figure 1-1) with its combat load of ammunition and petroleum, oil, and lubricant (POL) weighs from 33,000 to 35,000 pounds. The vehicle is 248 inches long, 110 inches wide, and 116 inches high (reducible to 96 1/2 inches).

b. An unboxed Shillelagh missile weighs 62 pounds.

1-2. Special Considerations

a. The loads covered in this manual may include hazardous material as defined in AFR 71-4/TM 38-250. If hazardous material is included, it must be packaged, marked, and labeled as required by AFR 71-4/TM 38-250.

CAUTION

Only ammunition listed in FM 10-553/TO 13C7-18-41 may be airdropped.

b. A copy of this manual must be available to the joint airdrop inspectors during the before-loading and after-loading inspections.

Figure 1-1. Armored reconnaissance/airborne assault vehicle.

CHAPTER 4

RIGGING SHILLELAGH MISSILES IN THE A-22 CARGO BAG

4-1. Description of Load

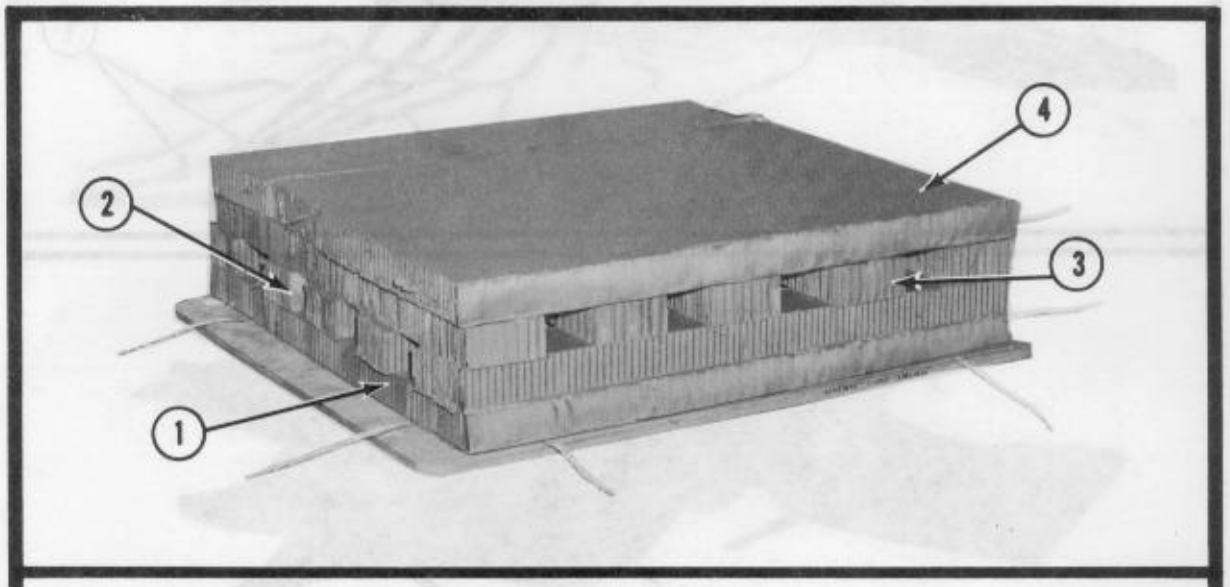
Nine M51C Shillelagh missiles in their containers are rigged in an A-22 cargo bag on a standard skid (NSN 1670-00-883-1654) or a piece of 3/4- by 48- by 53 1/2-inch plywood with one G-12D cargo parachute. Each missile in its container weighs 116 pounds.

4-2. Preparing the A-22 Cargo Bag

Prepare the skid, and lay out the A-22 cargo bag according to procedures given in FM 10-501/TO 13C7-1-11.

4-3. Placing Honeycomb

Place the honeycomb on the skid as shown in figure 4-1.

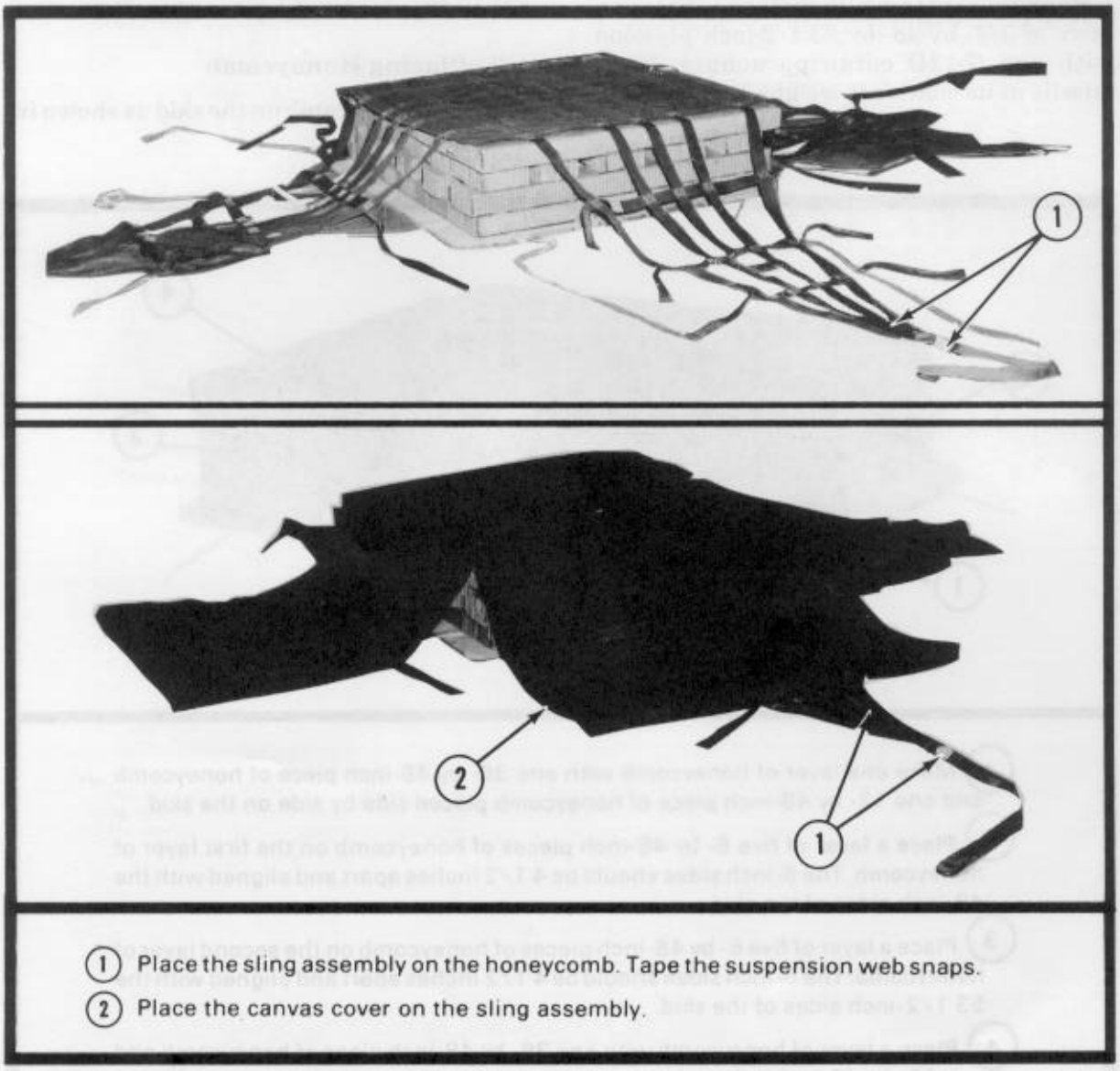


1. Make one layer of honeycomb with one 36- by 48-inch piece of honeycomb and one 12- by 48-inch piece of honeycomb placed side by side on the skid.
2. Place a layer of five 6- by 48-inch pieces of honeycomb on the first layer of honeycomb. The 6-inch sides should be 4 1/2 inches apart and aligned with the 48-inch sides of the skid.
3. Place a layer of five 6- by 48-inch pieces of honeycomb on the second layer of honeycomb. The 6-inch sides should be 4 1/2 inches apart and aligned with the 53 1/2-inch sides of the skid.
4. Place a layer of honeycomb with one 36- by 48-inch piece of honeycomb and one 12- by 48-inch piece of honeycomb side by side on layer 3.

Figure 4-1. Honeycomb placed on skid.

4-4. Placing Cargo Bag

Place the sling assembly and the cover on the skid according to procedures given in FM 10-501/TO 13C7-1-11 and as shown in figure 4-2.



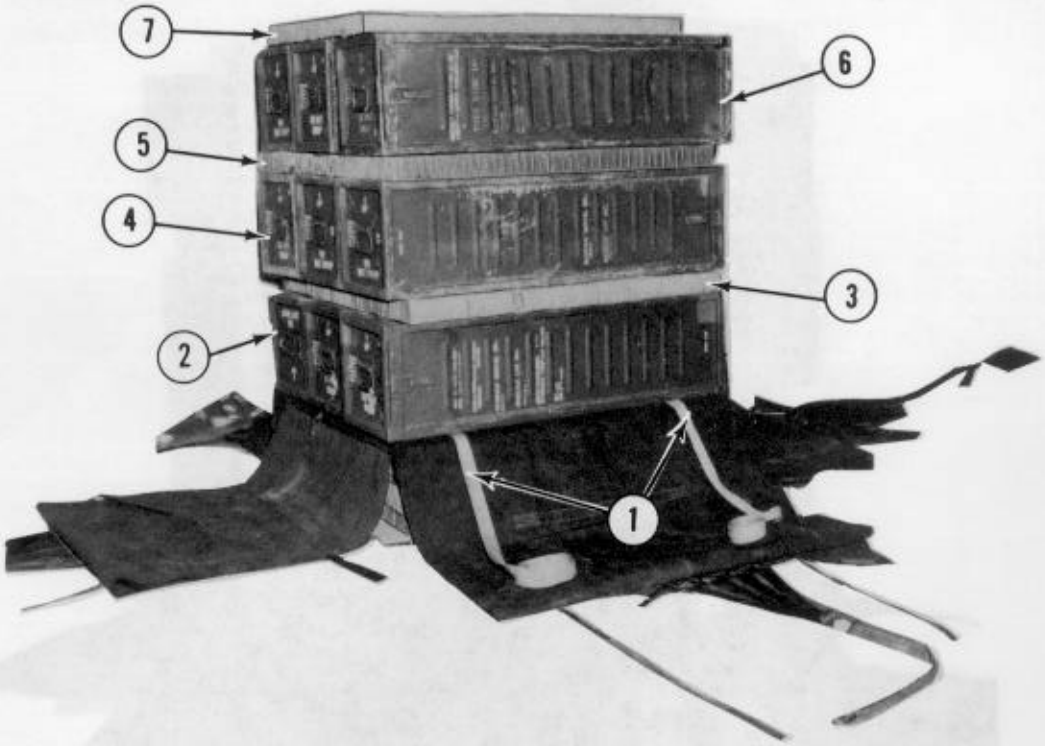
(1) Place the sling assembly on the honeycomb. Tape the suspension web snaps.

(2) Place the canvas cover on the sling assembly.

Figure 4-2. Sling assembly and A-22 cargo bag placed on skid.

4-5. Placing Tiedown Straps and Missiles

Form two 30-foot tiedown straps, using four 15-foot tiedown straps according to procedures given in FM 10-500/TO 13C7-1-5. Tape the D-rings to prevent metal-to-metal contact. Place the 30-foot tiedown straps on top of the canvas cover as shown in figure 4-3. Place the nine encased missiles and three layers of 36- by 48-inch honeycomb as shown in figure 4-3.

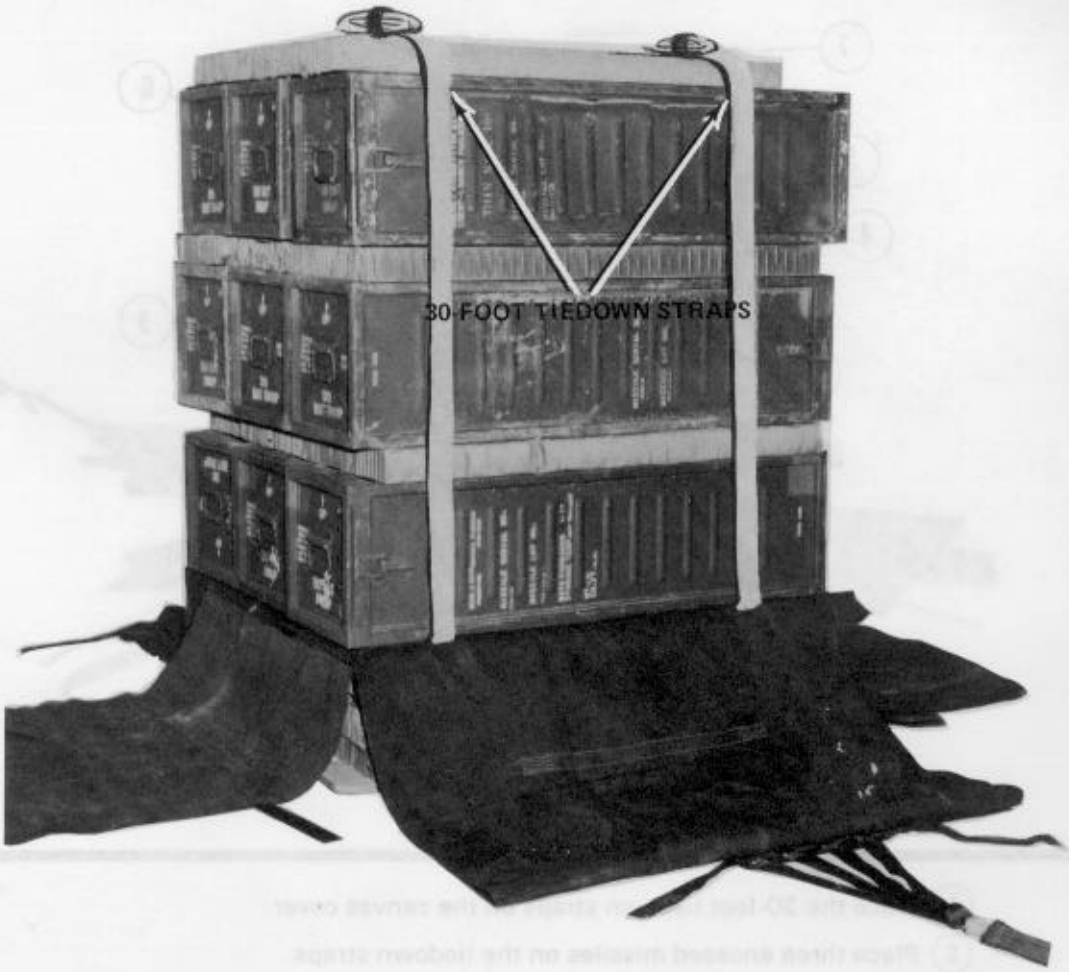


1. Place the 30-foot tiedown straps on the canvas cover.
2. Place three encased missiles on the tiedown straps.
3. Place one 36- by 48-inch layer of honeycomb on the encased missiles.
4. Place three encased missiles on top of the honeycomb.
5. Place one 36- by 48-inch layer of honeycomb on the encased missiles.
6. Place three encased missiles on top of the honeycomb.
7. Place one 36- by 48-inch layer of honeycomb on the encased missiles.

Figure 4-3. Tiedown straps and encased missiles placed.

4-6. Binding Missiles

Bind the missiles together with the prepositioned 30-foot tiedown straps as shown in figure 4-4.

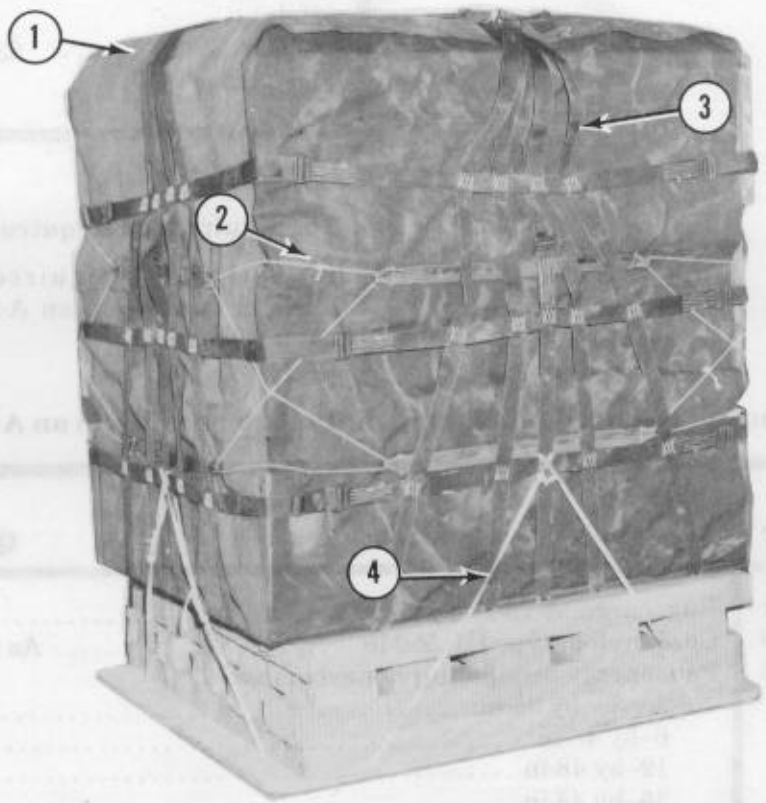


Hook the ends of the tiedown straps together, using two D-rings and a load binder on each strap. Fold excess strap, and tape the folds in place.

Figure 4-4. Encased missiles bound together.

4-7. Closing Cargo Bags and Attaching Suspension Slings

Close the A-22 cargo bag, attach the suspension webs, and tie the skid according to procedures given in FM 10-501/TO 13C7-1-11 and as shown in figure 4-5.



(1) Fold panels of canvas cover over load, folding under excess material as necessary.

(2) Tie the cover with type III nylon cord as outlined in FM 10-501/TO 13C7-1-11.

(3) Fasten the sling assembly as outlined in FM 10-501/ TO 13C7-1-11.

(4) Tie skid to sling assembly with 1/2-inch tubular nylon webbing.

Figure 4-5. Cargo bag closed and skid tied to sling assembly.

4-8. Stowing Cargo Parachute

Place and attach one G-12D cargo parachute with pilot parachute to the load, according to procedures given in FM 10-501/TO 13C7-1-11.

4-9. Rigged Load Data

The rigged load data are as follows:

Weight	1,421 pounds
Height	79 inches
Width	53 1/2 inches
Length	48 inches

4-10. Equipment Required

The equipment required for rigging Shillelagh missiles in an A-22 cargo bag is listed in table 4-1.

Table 4-1. Equipment required for rigging Shillelagh missiles in an A-22 cargo bag.

National Stock Number	Item	Quantity
1670-00-587-3421	Bag, cargo, A-22	1
4020-00-240-2146	Cord, nylon, type III, 550-lb	As required
1670-00-753-3928	Pad, energy-dissipating honeycomb,	
	3- by 36- by 96-in:	5 sheets
	6- by 48-in	(10)
	12- by 48-in	(5)
	36- by 48-in	(5)
1670-00-893-2371	Parachute, cargo, 64-ft, G-12D	1
1670-00-883-1654	*Skid, cargo bag, platform, plywood	1
7510-00-266-5016	Tape, adhesive, 2-in	As required
1670-00-937-0271	Tiedown assembly, 15-ft	4
8305-00-268-2411	Webbing, cotton, 80-lb	As required
8305-00-082-5752	Webbing, nylon, tubular, 1/2-in	As required

*When this item is not available, the following may be used:

5530-00-128-4981	Plywood, 3/4- by 48- by 53 1/2-in	1

CHAPTER 4

RIGGING SHILLELAGH MISSILES IN THE A-22 CARGO BAG

4-1. Description of Load

Nine M51C Shillelagh missiles in their containers are rigged in an A-22 cargo bag on a standard skid (NSN 1670-00-883-1654) or a piece of 3/4- by 48- by 53 1/2-inch plywood with one G-12D cargo parachute. Each missile in its container weighs 116 pounds.

4-2. Preparing the A-22 Cargo Bag

Prepare the skid, and lay out the A-22 cargo bag according to procedures given in FM 10-501/TO 13C7-1-11.

4-3. Placing Honeycomb

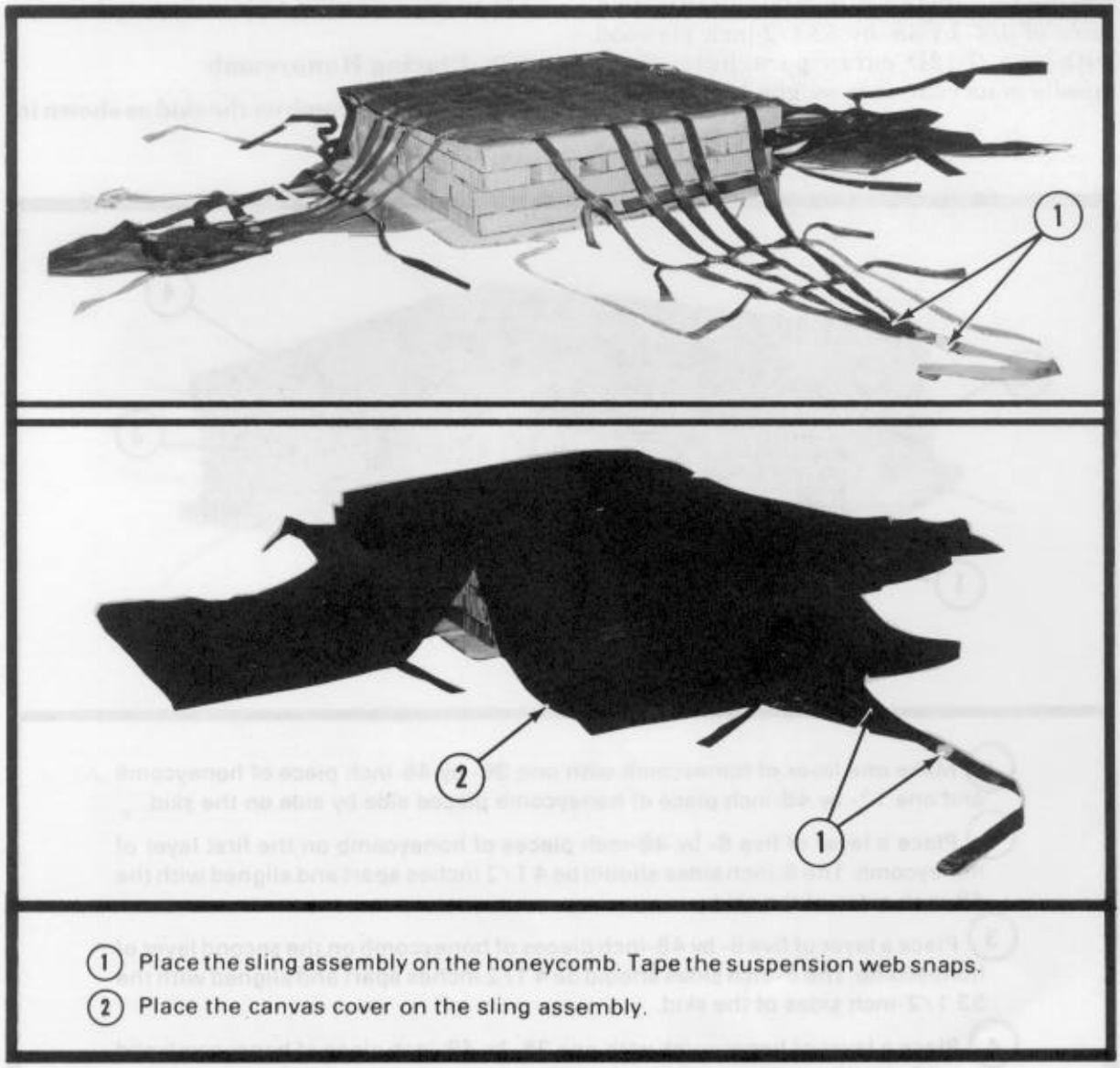
Place the honeycomb on the skid as shown in figure 4-1.

1. Make one layer of honeycomb with one 36- by 48-inch piece of honeycomb and one 12- by 48-inch piece of honeycomb placed side by side on the skid.
2. Place a layer of five 6- by 48-inch pieces of honeycomb on the first layer of honeycomb. The 6-inch sides should be 4 1/2 inches apart and aligned with the 48-inch sides of the skid.
3. Place a layer of five 6- by 48-inch pieces of honeycomb on the second layer of honeycomb. The 6-inch sides should be 4 1/2 inches apart and aligned with the 53 1/2-inch sides of the skid.
4. Place a layer of honeycomb with one 36- by 48-inch piece of honeycomb and one 12- by 48-inch piece of honeycomb side by side on layer 3.

Figure 4-1. Honeycomb placed on skid.

4-4. Placing Cargo Bag

Place the sling assembly and the cover on the skid according to procedures given in FM 10-501/TO 13C7-1-11 and as shown in figure 4-2.



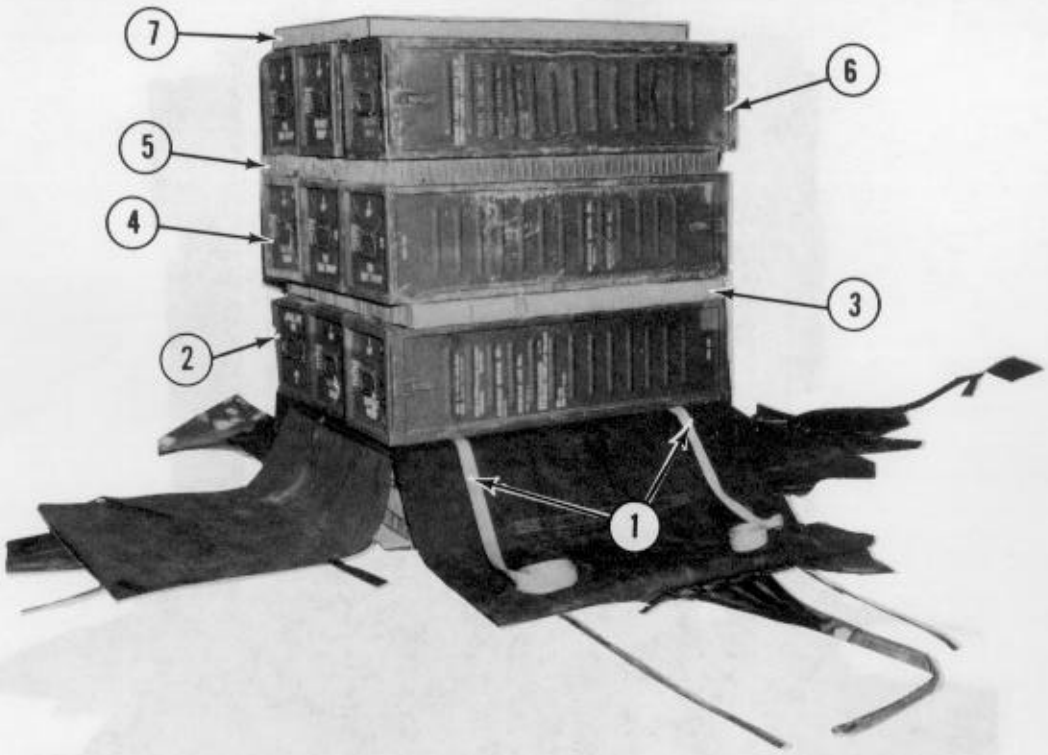
(1) Place the sling assembly on the honeycomb. Tape the suspension web snaps.

(2) Place the canvas cover on the sling assembly.

Figure 4-2. Sling assembly and A-22 cargo bag placed on skid.

4-5. Placing Tiedown Straps and Missiles

Form two 30-foot tiedown straps, using four 15-foot tiedown straps according to procedures given in FM 10-500/TO 13C7-1-5. Tape the D-rings to prevent metal-to-metal contact. Place the 30-foot tiedown straps on top of the canvas cover as shown in figure 4-3. Place the nine encased missiles and three layers of 36- by 48-inch honeycomb as shown in figure 4-3.

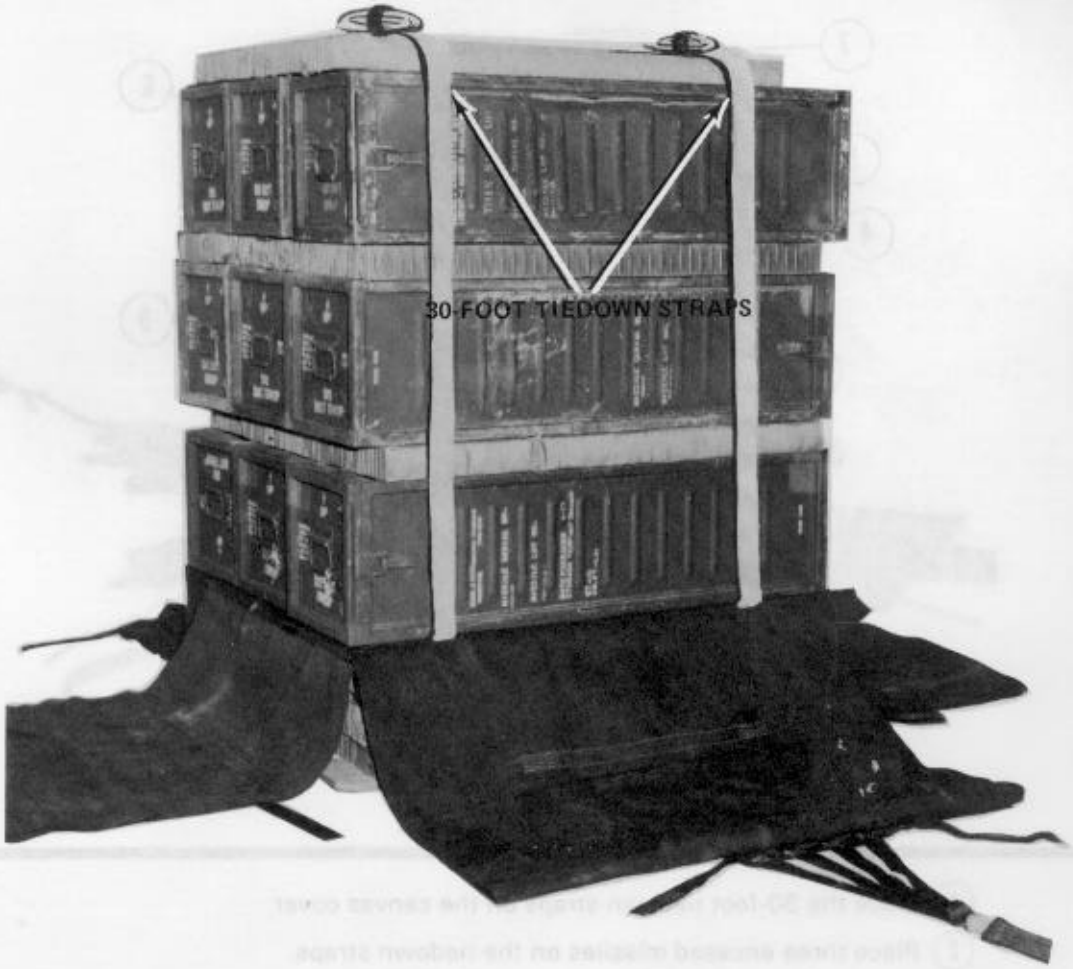


1. Place the 30-foot tiedown straps on the canvas cover.
2. Place three encased missiles on the tiedown straps.
3. Place one 36- by 48-inch layer of honeycomb on the encased missiles.
4. Place three encased missiles on top of the honeycomb.
5. Place one 36- by 48-inch layer of honeycomb on the encased missiles.
6. Place three encased missiles on top of the honeycomb.
7. Place one 36- by 48-inch layer of honeycomb on the encased missiles.

Figure 4-3. Tiedown straps and encased missiles placed.

4-6. Binding Missiles

Bind the missiles together with the prepositioned 30-foot tiedown straps as shown in figure 4-4.

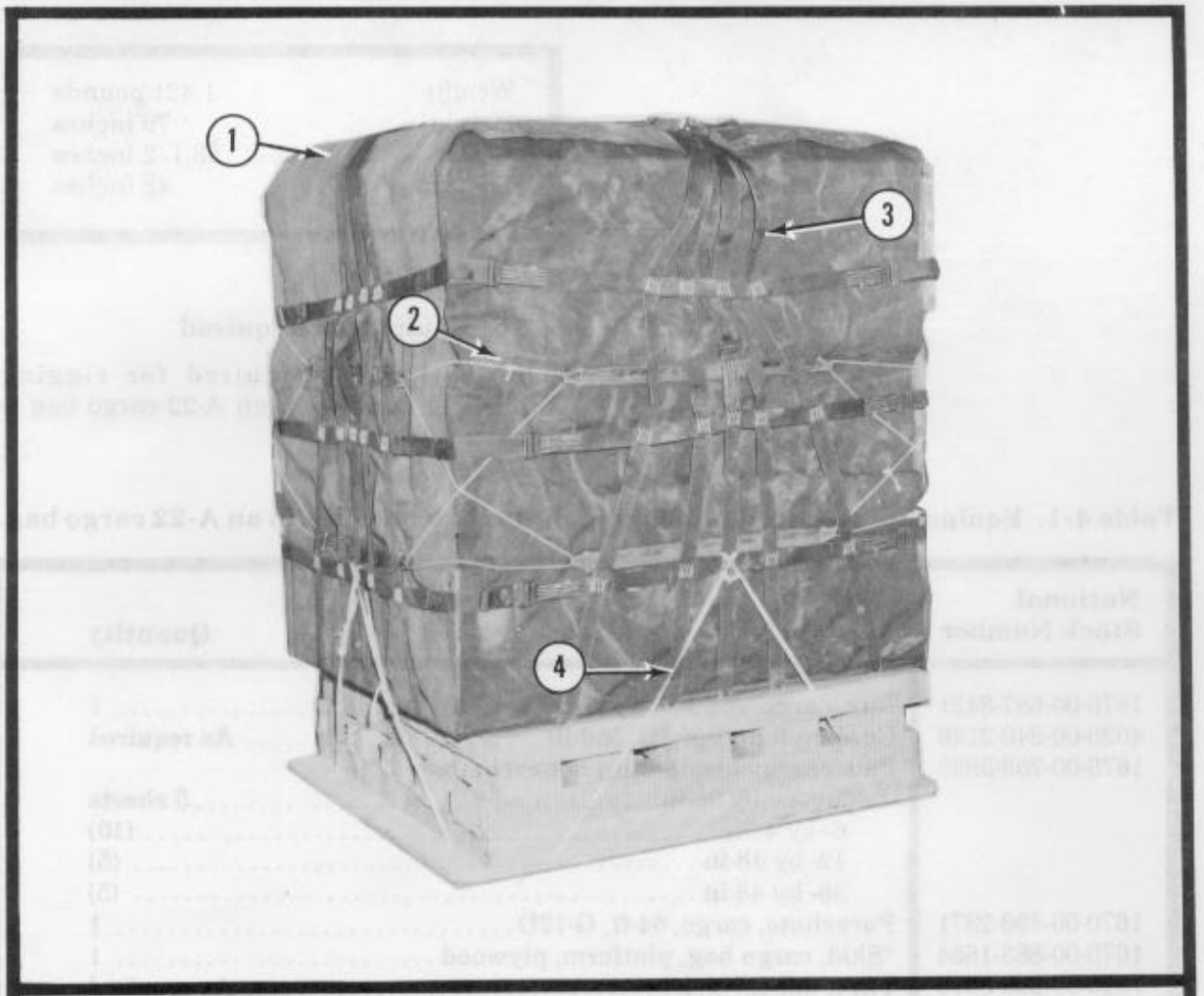


Hook the ends of the tiedown straps together, using two D-rings and a load binder on each strap. Fold excess strap, and tape the folds in place.

Figure 4-4. Encased missiles bound together.

4-7. Closing Cargo Bags and Attaching Suspension Slings

Close the A-22 cargo bag, attach the suspension webs, and tie the skid according to procedures given in FM 10-501/TO 13C7-1-11 and as shown in figure 4-5.



(1) Fold panels of canvas cover over load, folding under excess material as necessary.

(2) Tie the cover with type III nylon cord as outlined in FM 10-501/TO 13C7-1-11.

(3) Fasten the sling assembly as outlined in FM 10-501/ TO 13C7-1-11.

(4) Tie skid to sling assembly with 1/2-inch tubular nylon webbing.

Figure 4-5. Cargo bag closed and skid tied to sling assembly.

4-8. Stowing Cargo Parachute

Place and attach one G-12D cargo parachute with pilot parachute to the load, according to procedures given in FM 10-501/TO 13C7-1-11.

4-9. Rigged Load Data

The rigged load data are as follows:

Weight	1,421 pounds
Height	79 inches
Width	53 1/2 inches
Length	48 inches

4-10. Equipment Required

The equipment required for rigging Shillelagh missiles in an A-22 cargo bag is listed in table 4-1.

Table 4-1. Equipment required for rigging Shillelagh missiles in an A-22 cargo bag.

National Stock Number	Item	Quantity
1670-00-587-3421	Bag, cargo, A-22	1
4020-00-240-2146	Cord, nylon, type III, 550-lb	As required
1670-00-753-3928	Pad, energy-dissipating honeycomb,	
	3- by 36- by 96-in:	5 sheets
	6- by 48-in	(10)
	12- by 48-in	(5)
	36- by 48-in	(5)
1670-00-893-2371	Parachute, cargo, 64-ft, G-12D	1
1670-00-883-1654	*Skid, cargo bag, platform, plywood	1
7510-00-266-5016	Tape, adhesive, 2-in	As required
1670-00-937-0271	Tiedown assembly, 15-ft	4
8305-00-268-2411	Webbing, cotton, 80-lb	As required
8305-00-082-5752	Webbing, nylon, tubular, 1/2-in	As required

*When this item is not available, the following may be used:

5530-00-128-4981	Plywood, 3/4- by 48- by 53 1/2-in	1

CHAPTER 5

RIGGING M551A1 ARAAV ON A 28-FOOT, TYPE V PLATFORM FOR LOW-VELOCITY AIRDROP

Section I

RIGGING ARAAV FOR AIRDROP FROM C-130 AIRCRAFT

5-1. Description of Load

The unrigged M551A1 ARAAV with its combat load of ammunition and POL weighs 35,450 pounds. The vehicle will be dropped with 20 conventional rounds and nine Shillelagh missiles. An unboxed Shillelagh missile weighs 62 pounds. The vehicle is 248 inches long and 110 inches wide. Its height is 116 inches (reducible to 96 1/2 inches). This load can be dropped from a C-130 aircraft only.

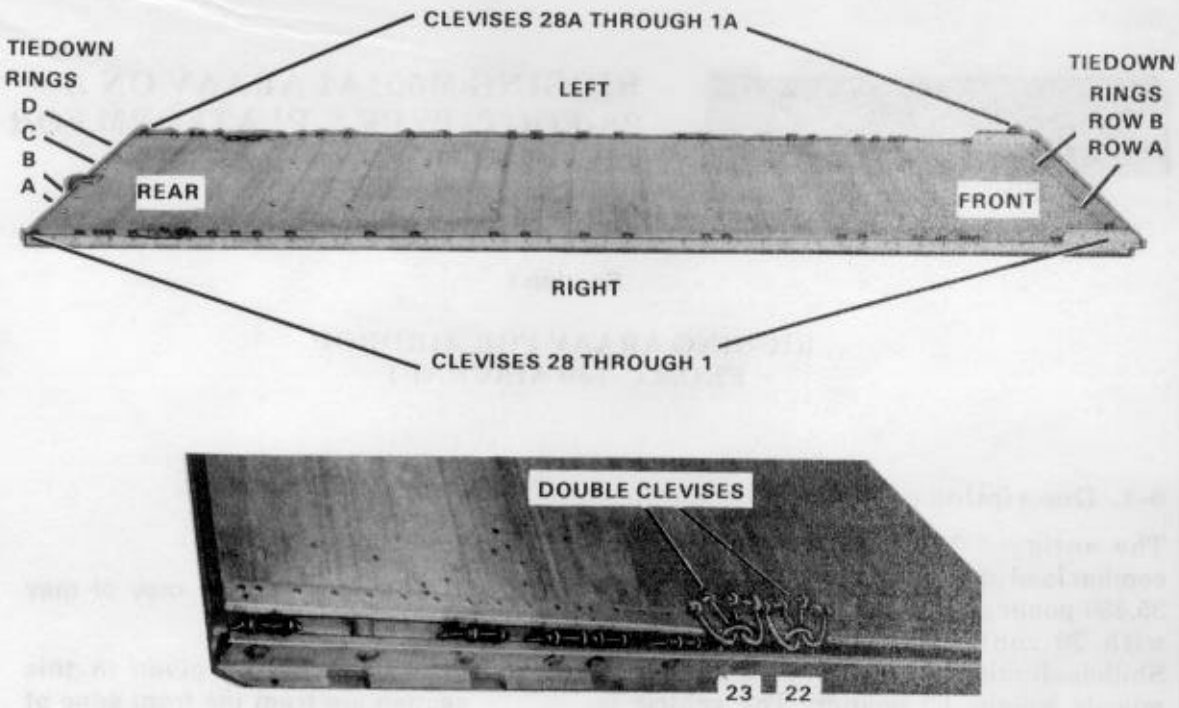
5-2. Preparing Platform

Prepare a 28-foot, type V airdrop platform using two tandem links and 64 tiedown clevises as shown in Figure 5-1.

NOTES:

1. The nose bumper may or may not be installed.

2. Measurements given in this section are from the front edge of the platform, NOT from the front edge of the nose bumper.



Step:

1. Inspect, or assemble and inspect, the platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22.

2. Install a tandem link on the front of each platform side rail using holes 1, 2, and 3.

3. Install a clevis on bushing 2 on each front tandem link.

4. Install a clevis in an inverted position (bell portion up) on each platform side rail using the bushing bolted on hole 49. Install two clevises to each inverted clevis.

5. Repeat step 4 on each platform side rail using the bushing bolted on hole 50.

6. Starting at the front of each platform side rail, install clevises on each platform side rail using the bushings bolted on holes 4, 8, 9, 10, 11, 14, 15, 21, 22, 26, 28, 31, 33, 37, 39, 43, 45, 46, 47, 48, 51, 52, 53, 54, and 56.

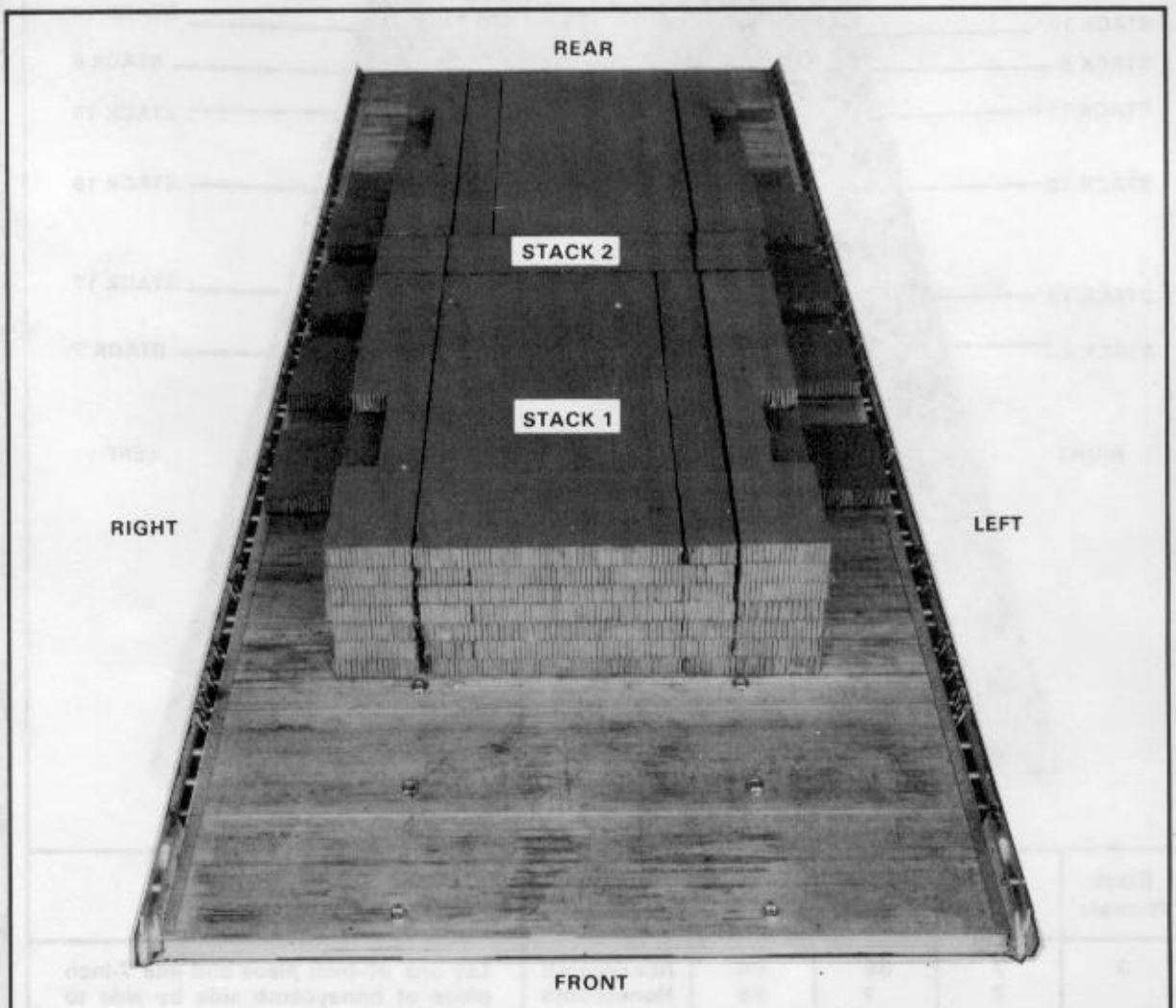
7. Starting at the front of the platform, number the clevises bolted to the right side from 1 through 28 and those bolted to the left side from 1A through 28A. Count double clevises in bushings 49 and 50 as one. For example, count clevises 22 (front) and 22 (rear) as one.

8. Starting at the front of the platform, number the tiedown rings 1 through 14. Label the rows A and B from right to left. Label the tiedown rings on the last panel A, B, C, and D from right to left.

Figure 5-1. Platform prepared

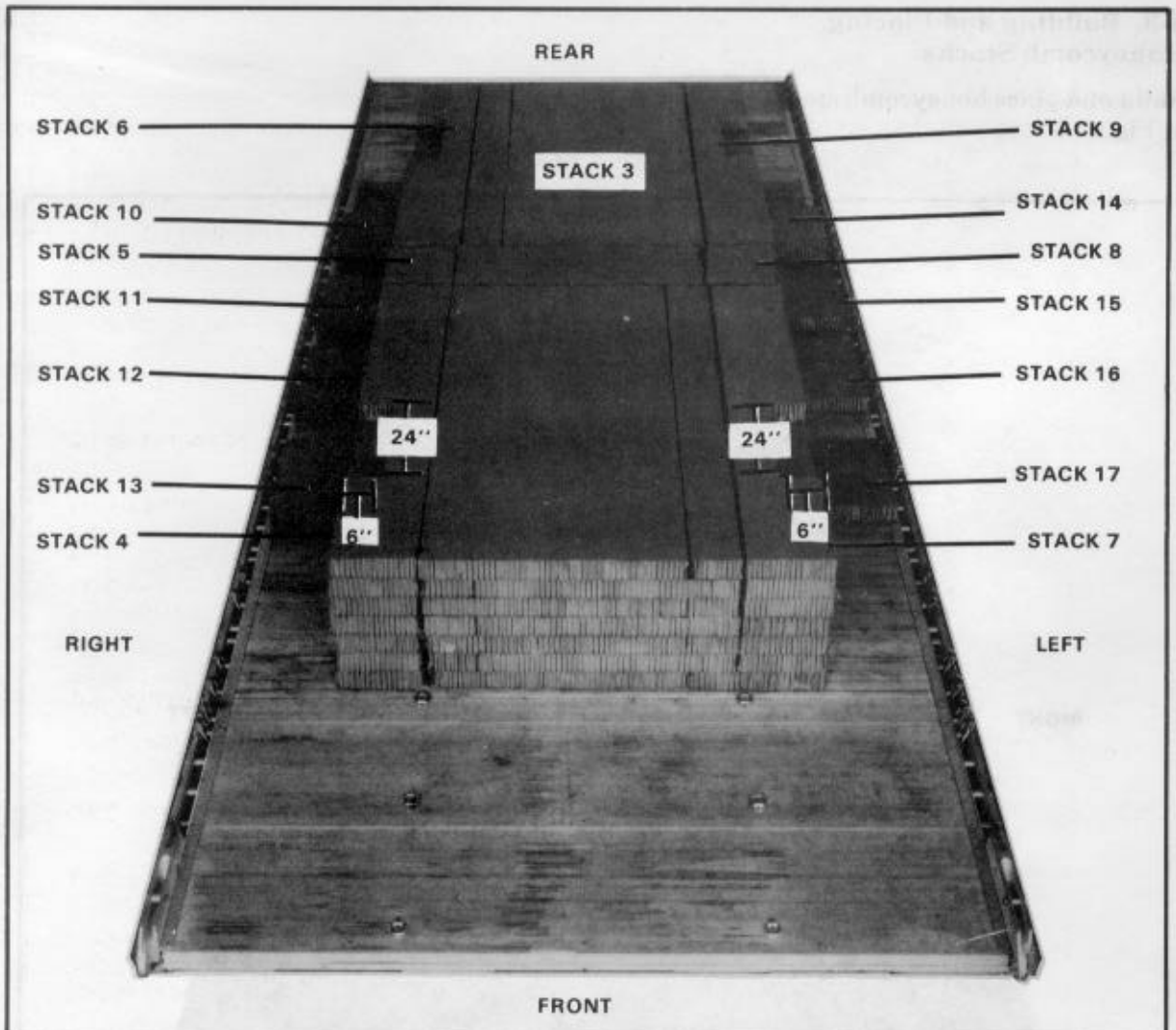
5-3. Building and Placing Honeycomb Stacks

Build and place honeycomb stacks as shown in Figure 5-2.



Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
1	7 7	36 7	96 96	Honeycomb Honeycomb	Lay one 36-inch piece and one 7-inch piece of honeycomb side by side to form each layer. Alternate the pieces in each layer. Center stack on platform 56 inches from the front edge of the platform.
2	7	43	18	Honeycomb	Align stack flush against stack 1.

Figure 5-2. Honeycomb stacks prepared and placed on platform



Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
3	7 7	36 7	96 96	Honeycomb Honeycomb	Lay one 36-inch piece and one 7-inch piece of honeycomb side by side to form each layer. Alternate the pieces in each layer. Align stack flush against stack 2.
4	7	12	96	Honeycomb	Make a 6- by 24-inch cutout 24 inches from the front edge of the stack in the top layer only. Align the stack to the right and flush against stack 1. Place the stack so that the cutout faces the right rail.
5	7	12	18	Honeycomb	Align the stack flush against stacks 2 and 4.

Figure 5-2. Honeycomb stacks prepared and placed on platform (continued)

Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
6	7	12	96	Honeycomb	Make a 6- by 24-inch cutout 24 inches from the rear edge of the stack on the top layer only. Align the stack flush against stacks 3 and 5. Place the stack so that the cutout faces the right rail.
7	7	12	96	Honeycomb	Make a 6- by 24-inch cutout 24 inches from the front edge of the stack in the top layer only. Align the stack to the left and flush against stack 1. Place the stack so that the cutout faces the left rail.
8	7	12	18	Honeycomb	Align the stack flush against stacks 2 and 7.
9	7	12	96	Honeycomb	Make a 6- by 24-inch cutout 24 inches from the rear edge of the stack on the top layer only. Align the stack flush against stacks 3 and 8. Place the stack so that the cutout faces the left rail.
10	1	16	24	Honeycomb	Position honeycomb 108 inches from the rear edge of the platform, 2 1/2 inches from the outside right rail.
11	1	16	24	Honeycomb	Position honeycomb 12 inches from stack 10.
12	1	16	24	Honeycomb	Position honeycomb 12 inches from stack 11.
13	1	16	24	Honeycomb	Position honeycomb 12 inches from stack 12.
14	1	16	24	Honeycomb	Position honeycomb 108 inches from the rear edge of the platform, 2 1/2 inches from the outside left rail.
15	1	16	24	Honeycomb	Position honeycomb 12 inches from stack 14.
16	1	16	24	Honeycomb	Position honeycomb 12 inches from stack 15.
17	1	16	24	Honeycomb	Position honeycomb 12 inches from stack 16.

Figure 5-2. Honeycomb stacks prepared and placed on platform (continued)

5-4. Preparing ARAAV

NOTE: Only authorized ARAAV maintenance personnel may prepare the vehicle for airdrop.

Prepare the ARAAV for airdrop as described in TM 9-2350-230-10 and as described below.

a. Make sure the fuel tank is not more than 1/2 full.

b. Disconnect the wiring harness quick-disconnects from the cupola traverse control switch assembly.

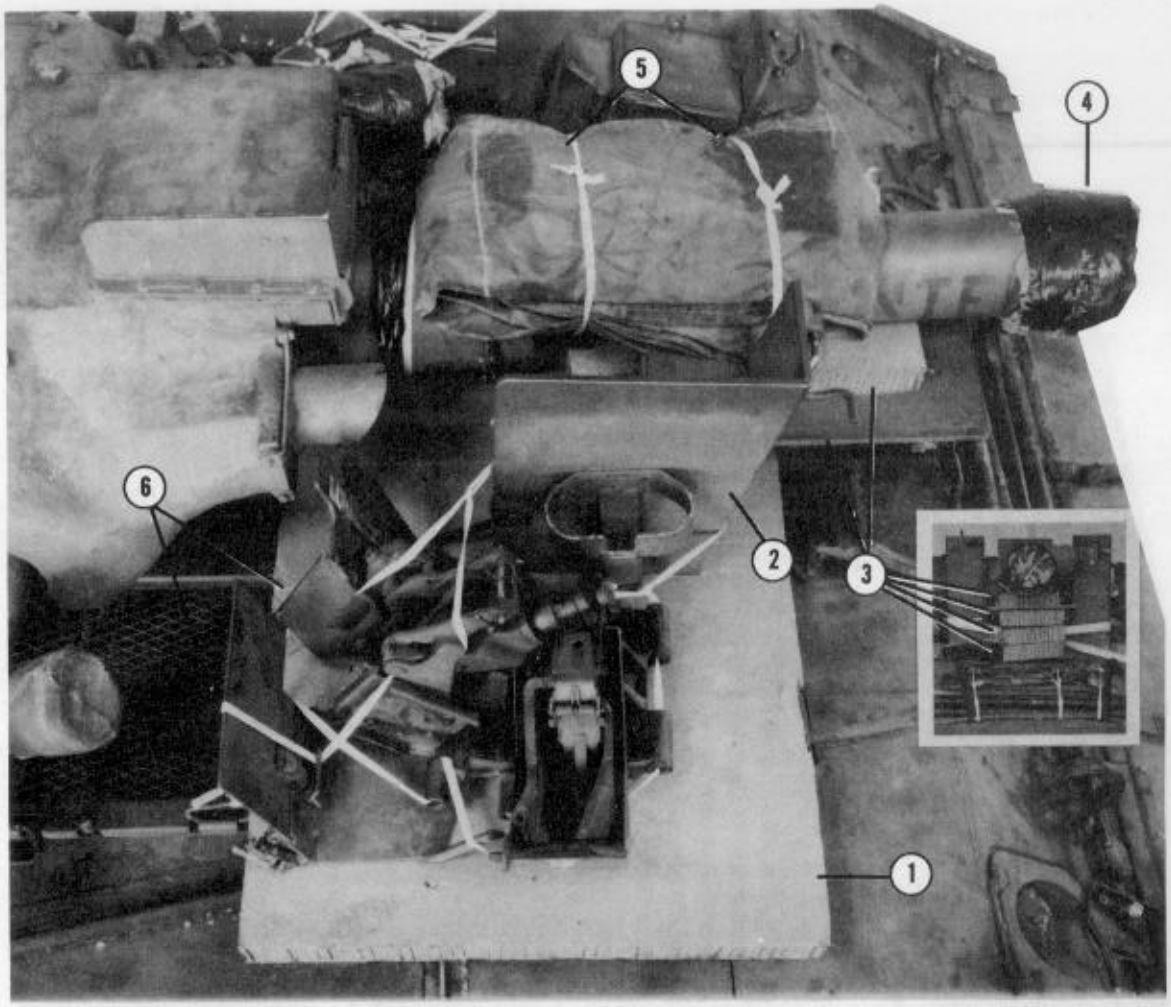
c. Remove the ammunition tray, the commander's ballistic shields, and the 50-caliber machine gun to be stowed later.

d. Remove the machine gun cradle, pintle assembly, and the pintle support. Place all bolts and flat washers in the 20-millimeter ammunition box located on the turret stowage rack.

e. Remove the left and right cupola hatch covers, and place all screw bolts in the 20-millimeter ammunition box.

f. Remove the main antenna mount and auxiliary mount. Wrap them in cellulose wadding, and place them between the rear air bottle and the gas particulate filter. Secure them to the commander's floor support with 1/2-inch tubular nylon webbing.

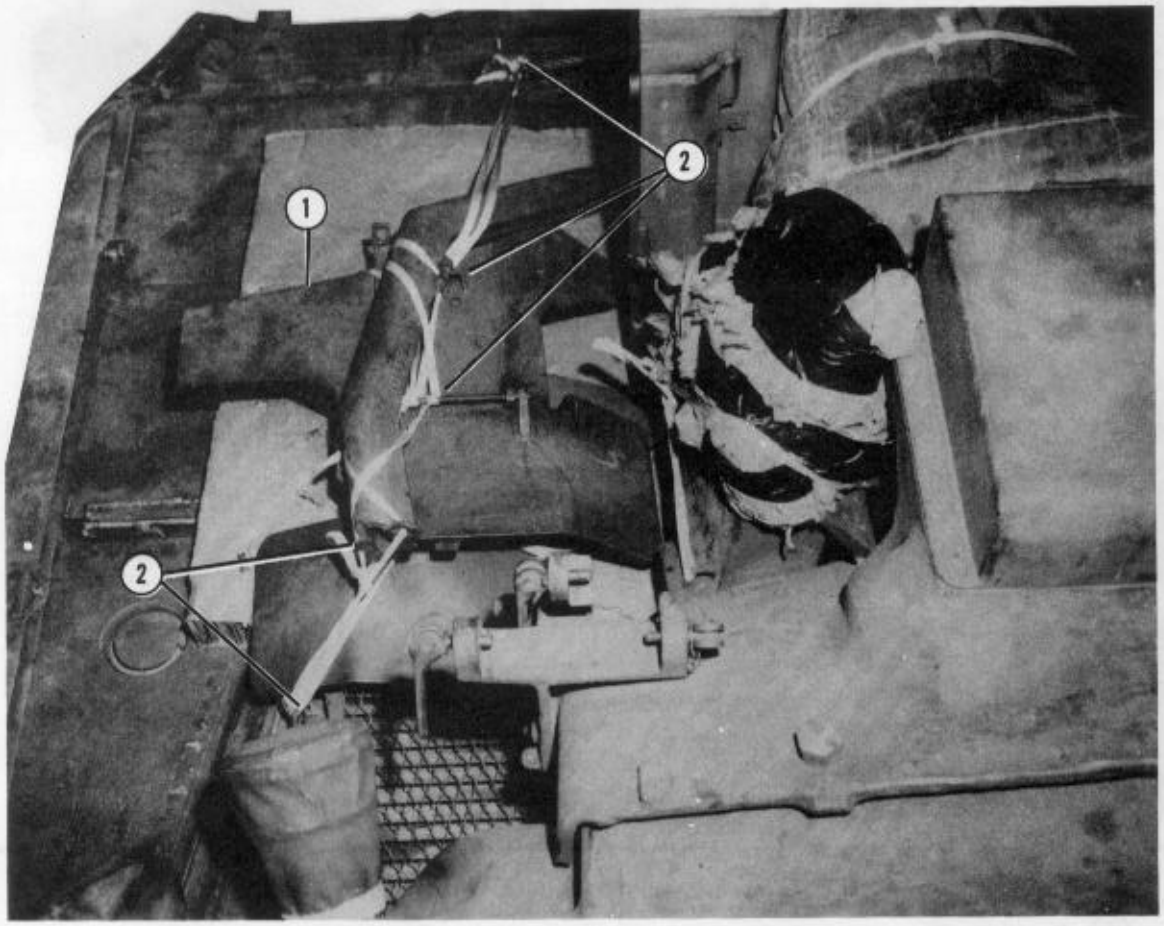
g. Secure the gun, the commander's rear ballistic shield, and other components as shown in Figure 5-3.



1. Place a 36- by 84-inch piece of honeycomb under the gun barrel. Raise the gun barrel.
2. Position the commander's rear ballistic shield on the honeycomb under the barrel with the door toward the rear of the vehicle.
3. Place three 12- by 12-inch pieces of honeycomb under the shield of the gun. Place one additional 12- by 12-inch piece of honeycomb on top of the shield under the barrel of the gun.
4. Lower the gun to the traveling position. Cover the muzzle of the gun with cellulose wadding, and tape it in place.
5. Fold the tarpaulin, and place it on the top of the gun. Tie the cover to the gun with 1/2-inch tubular nylon webbing.
6. Place the 50-caliber machine gun mount, pintle, and ammunition tray on the honeycomb at the left rear of the vehicle. Secure them to the lifting handles and binocular rack with 1/2-inch tubular nylon webbing.

Figure 5-3. Gun, commander's rear ballistic shield, and other items secured

h. Stow the commander's front ballistic shield and the range finder cable guard as shown in Figure 5-4.

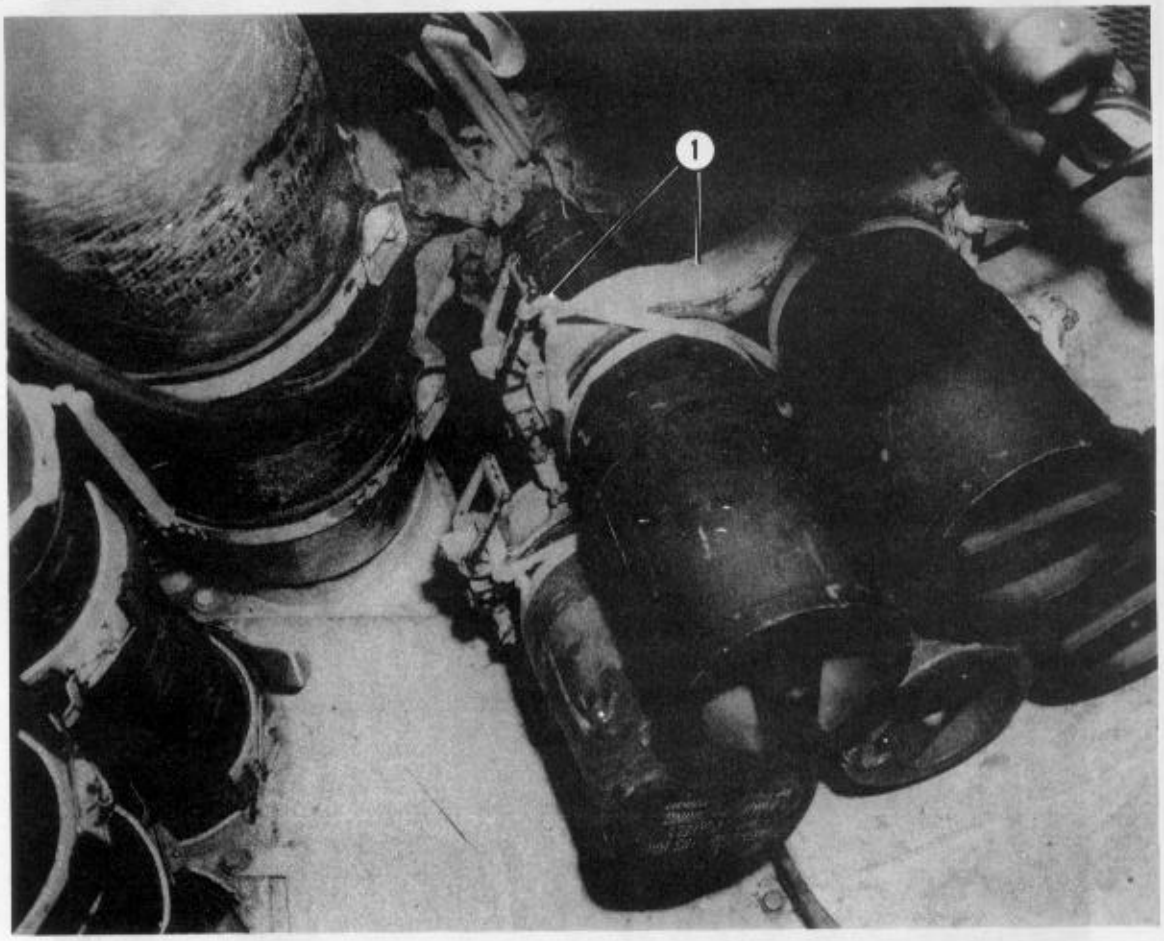


(1) Place the front ballistic shield and laser range finder cable guard on the honeycomb.

(2) Run a length of 1/2-inch tubular nylon webbing through the hinge pin and through the handle of the front ballistic shield to the right rear lifting handle. Pass the webbing through the lifting handle, and secure the webbing to both lifting handles.

Figure 5-4. Front ballistic shield and range finder cable guard secured

i. Prepare the inside and outside of the vehicle as shown in Figures 5-5 through 5-17.



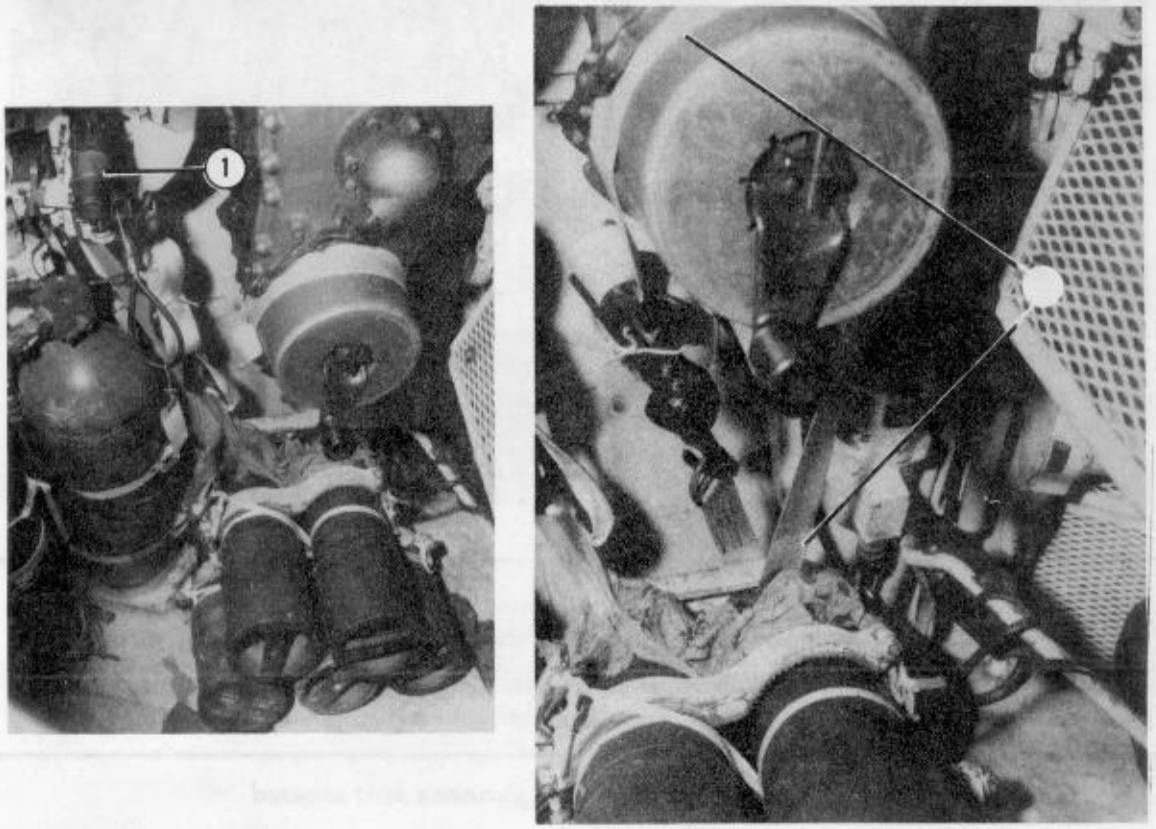
(1) Position and secure ammunition in the ammunition racks, and safety tie the ammunition with 1/2-inch tubular nylon webbing.

Note: This load contains 20 conventional rounds and nine missiles. The basic ammunition load will vary with the mission.

Figure 5-5. Ammunition positioned and secured

(1) Run a 15-foot tiedown strap through the ammunition storage rack, under the gun tube, and around the coaxial gun-mounting bracket. Hook the ends of the strap together with a D-ring and a load binder.

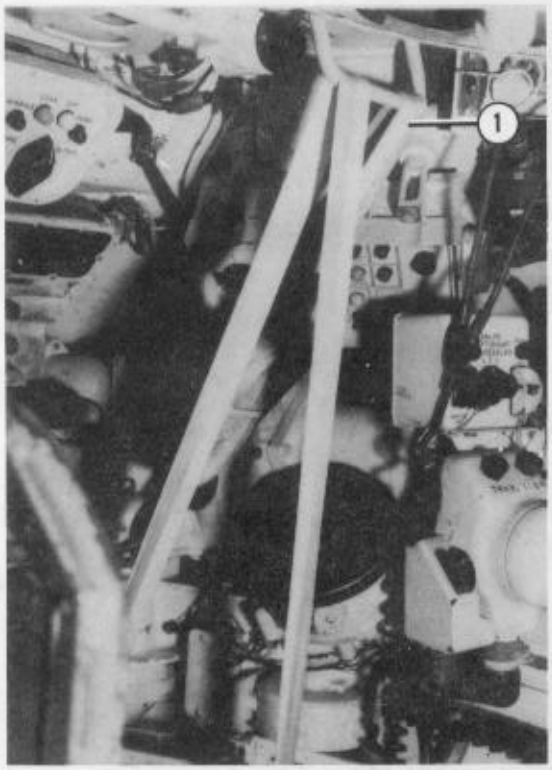
Figure 5-6. Ammunition storage rack secured

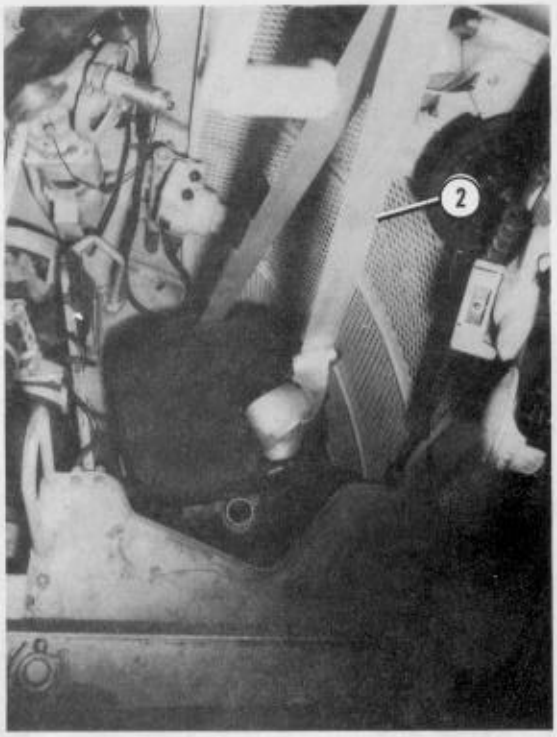


(1) Mount the M240 coaxial gun in its mount.

(2) Run a 15-foot tiedown strap through the ammunition rack, under the cable, and up over the front of the breech to the rear of the breech lock handle. Secure the ends of the strap together with a D-ring and a load binder.

Figure 5-7. Coaxial gun and breech secured

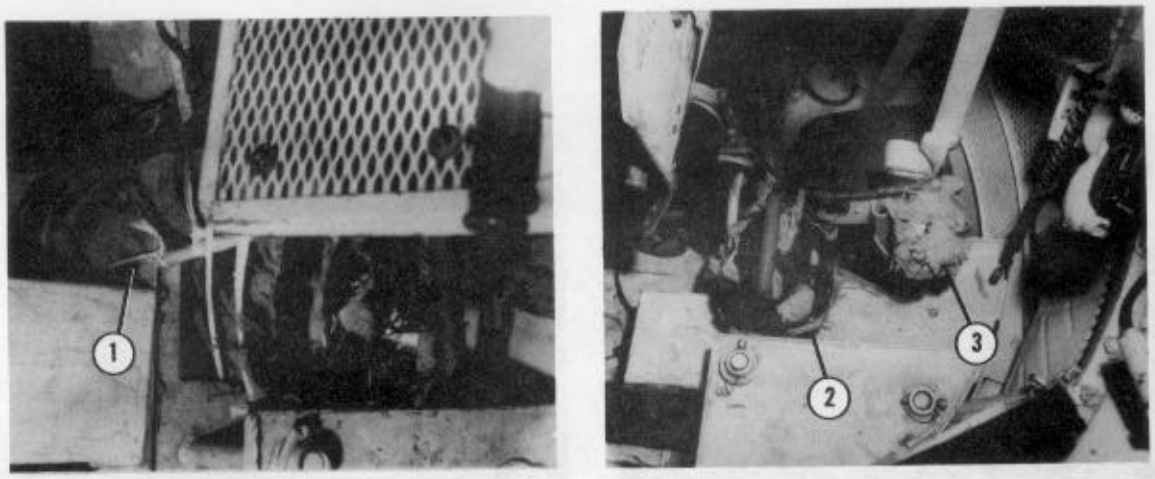




(1) Run a 15-foot tiedown strap around the turret motor (not shown) and through the gunner's right handhold. Secure the ends of the strap with a D-ring and a load binder.

(2) Run a 15-foot tiedown strap under the gunner's seat and through the gunner's right handhold. Hook the ends of the strap together with a D-ring and a load binder.

Figure 5-8. Turret motor and gunner's seat secured

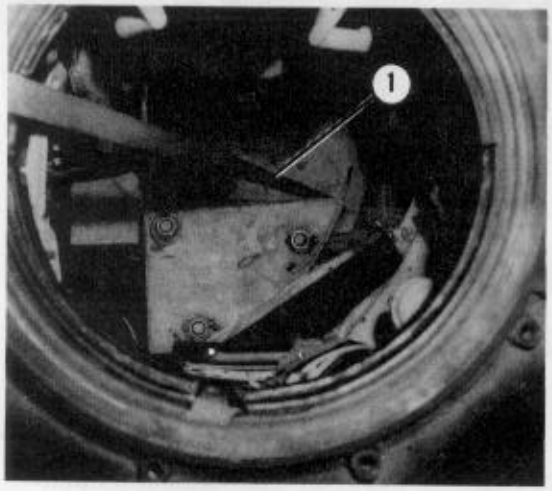


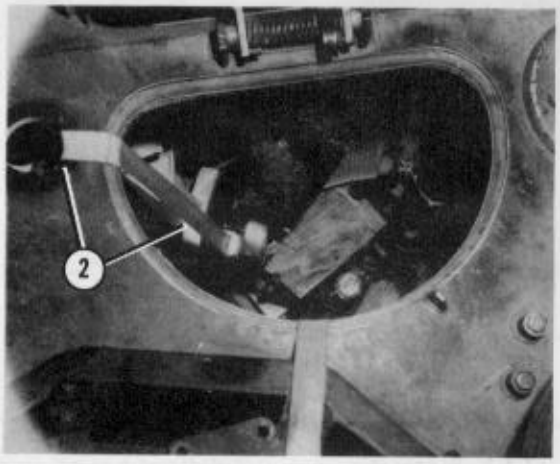
(1) Place the communications set on the floor between the conventional ammunition storage rack and the gas particulate filter unit. Secure the set to the ammunition storage mount and the gunner's seat mount with 1/2-inch tubular nylon webbing.

(2) Wrap the chemical agent alarm detector unit in cellulose wadding, and secure the unit to the left leg guard of the tank commander's seat floor with 1/2-inch tubular nylon webbing.

(3) Secure the M-11 decontaminating apparatus to the back of the gunner's seat with 1/2-inch tubular nylon webbing. Wrap the top of the apparatus with cellulose wadding.

Figure 5-9. Communications set, chemical unit, and M-11 decontaminating apparatus secured



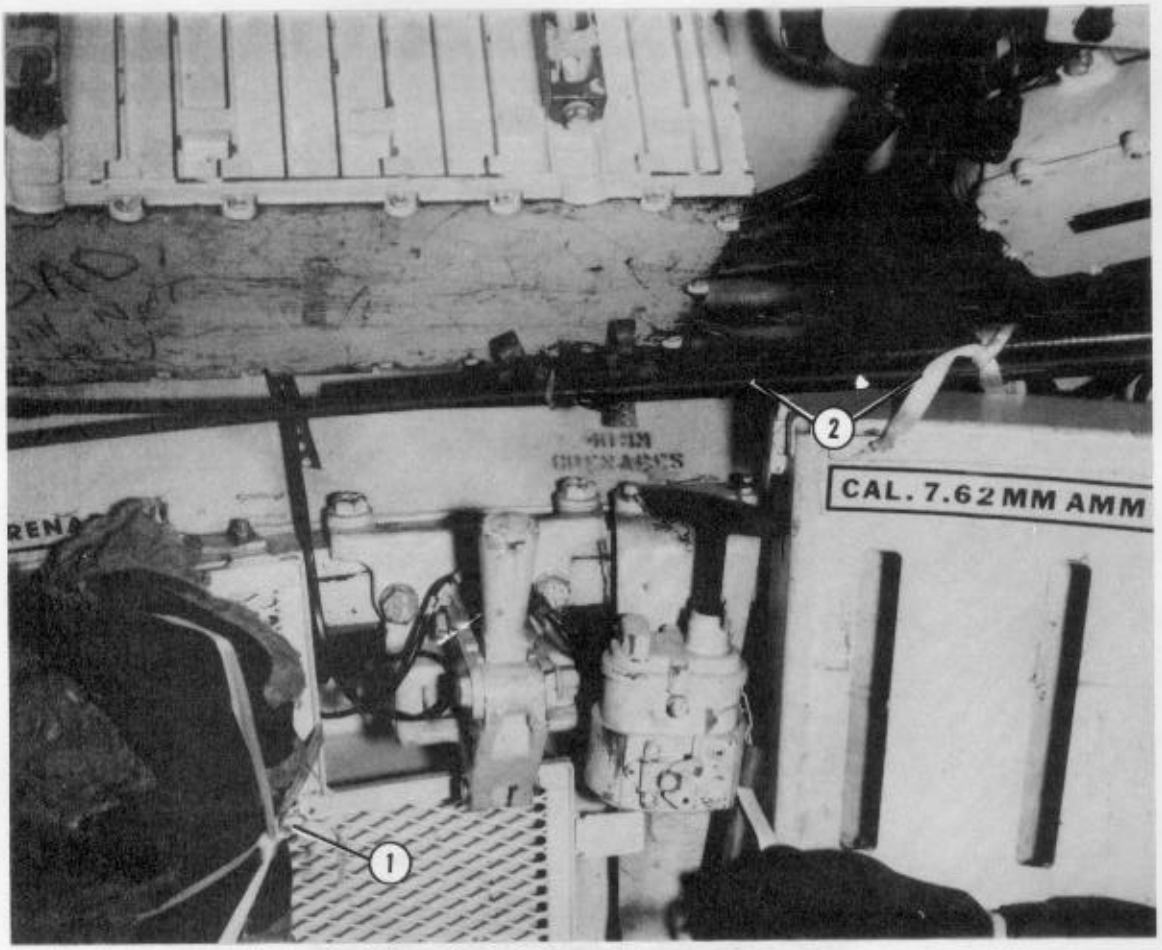


(1) Run a 15-foot tiedown strap under the commander's floor and through the commander's and loader's hatches. Hook the ends of the strap together with a D-ring and a load binder.

(2) Run a 15-foot tiedown strap through and under the loader's seat and through the binocular storage racks. Hook the ends of the strap together with a D-ring and a load binder.

Note: If the binocular storage racks are not installed, run the lashing through the antenna mount hole on top of the turret.

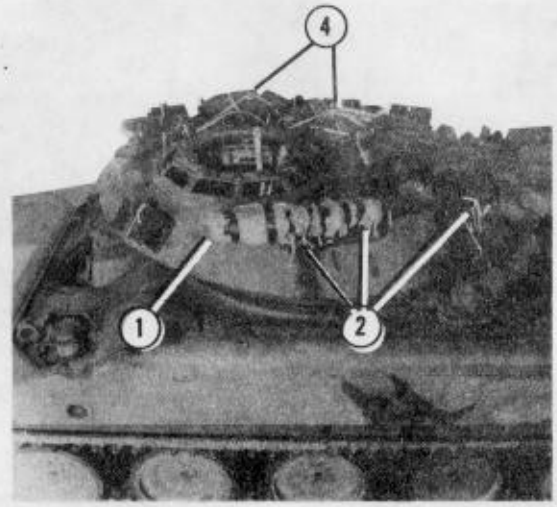
Figure 5-10. Binocular storage racks secured

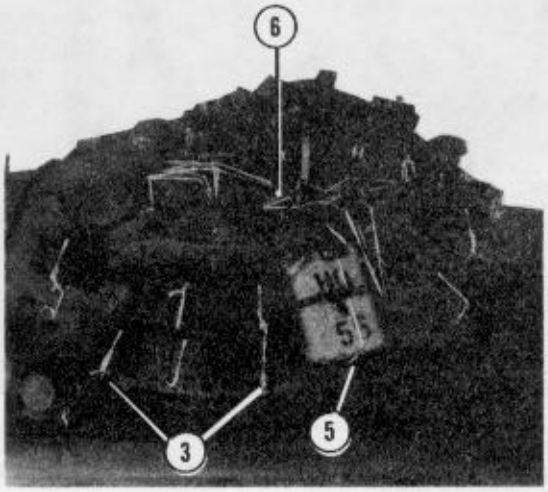


(1) Wrap the CVC helmets with cellulose wadding, and secure them at each station with 1/2-inch tubular nylon webbing.

(2) Secure the antennas to convenient points on the inside of the turret wall above the loader position.

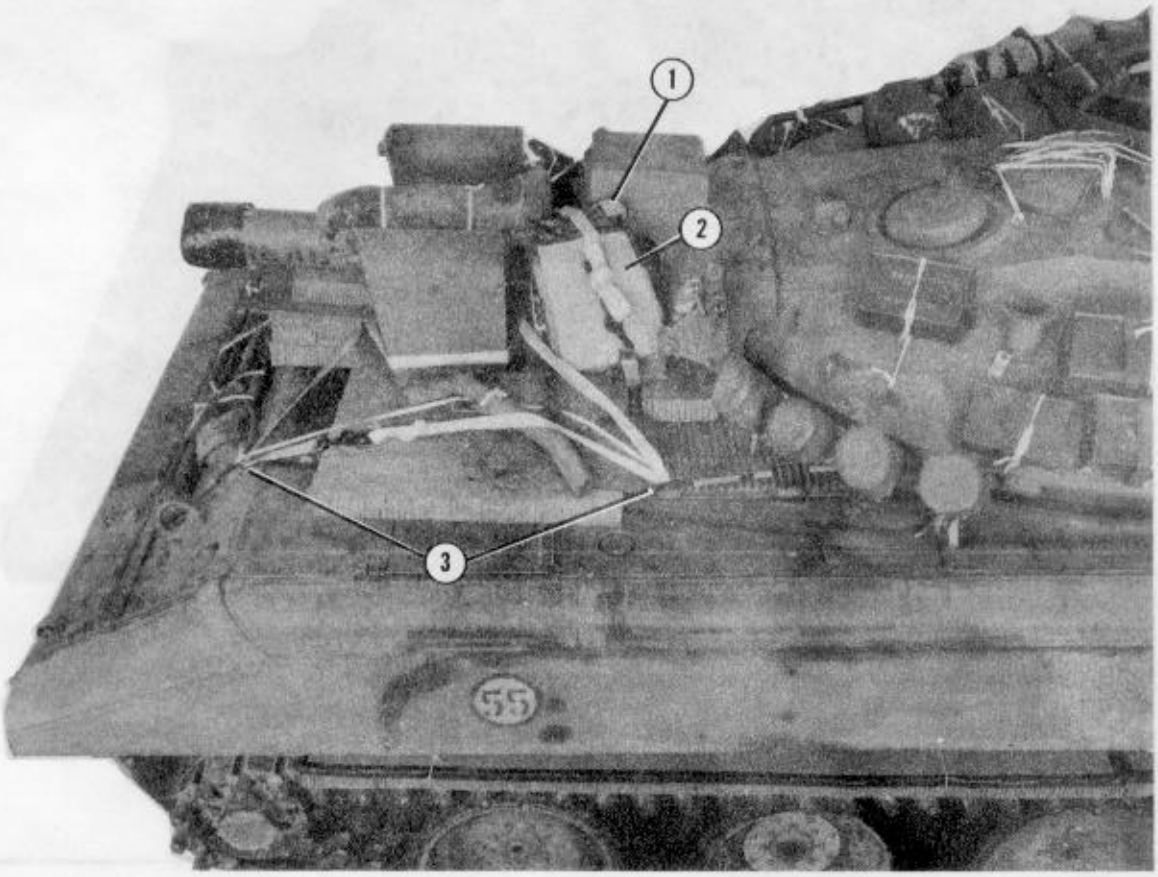
Figure 5-11. CVC helmets and antennas secured





1. Pad the machine gun, its handle, and the traverse mechanism switch assembly with cellulose wadding. Tape the padding in place.
2. Position the machine gun on the right side of the turret, and secure it with 1/2-inch tubular nylon webbing.
3. Secure the 50-caliber ammunition to the turret with 1/2-inch tubular nylon webbing.
4. Secure the left and right cupola hatch covers to the turret with 1/2-inch tubular nylon webbing.
5. Position the 5-gallon oilcan on the right side of the turret, and secure it with 1/2-inch tubular nylon webbing.
6. Secure the hatch cover on top of the turret with 1/2-inch tubular nylon webbing.

Figure 5-12. Gun, ammunition, cupola hatch covers, and oilcan secured



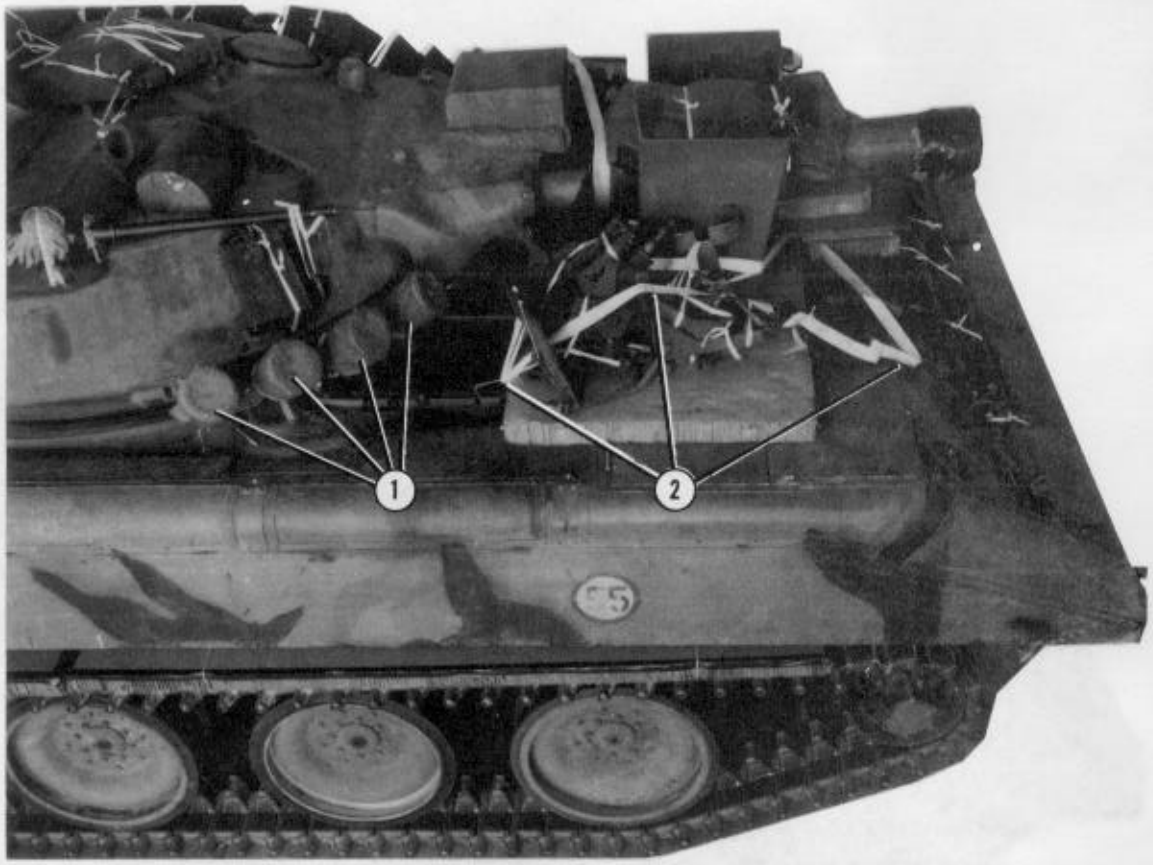
(1) Wrap the laser range finder in cellulose wadding, and position it between the ballistic shield and the left side of the gun barrel. Secure the range finder with 1/2-inch tubular nylon webbing.

(2) Place a 12- by 16-inch piece of honeycomb on the side of the laser range finder. Secure it in place with a lashing, two D-rings, and a load binder.

(3) Wrap a 15-foot lashing around the left side of the ballistic shield. Run one end through the forward lifting handle on the right side of the vehicle and over the ballistic shield support and cable guard. Run the other end through the rear lifting handle on the right side of the vehicle. Join the ends with D-rings and a load binder.

Note: Place the extra track shoes, if included with the vehicle, on the sheet of honeycomb next to the laser range finder. Secure all items with 1/2-inch tubular nylon webbing (not shown).

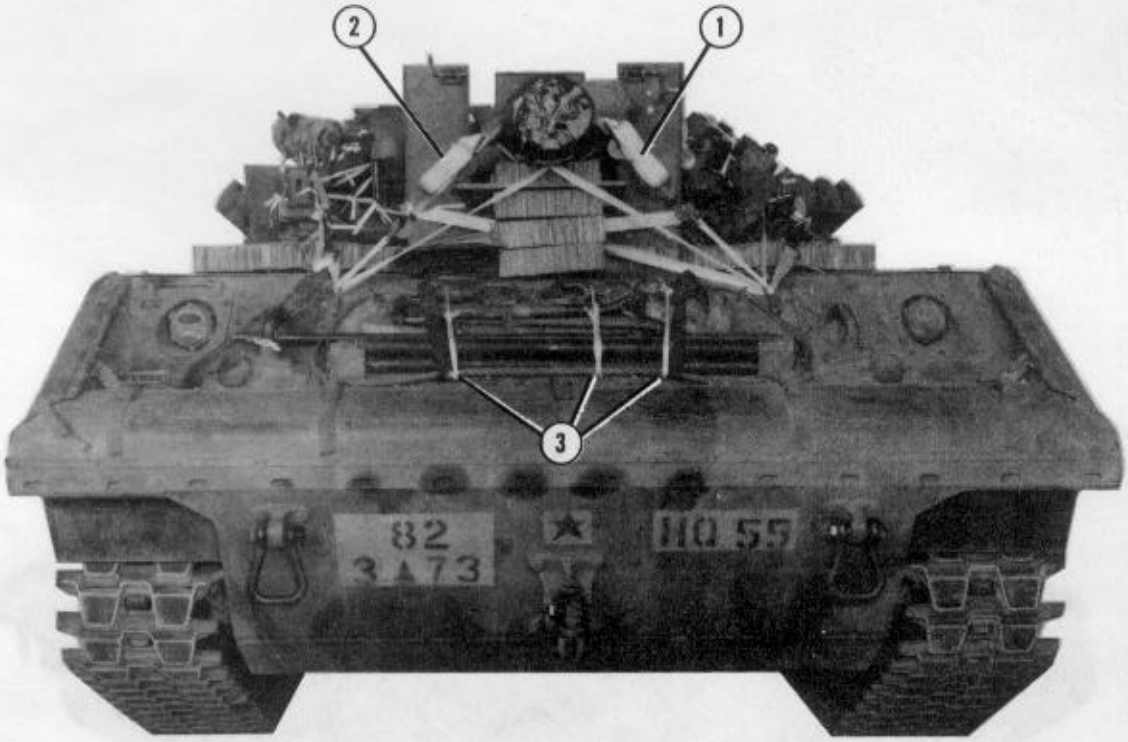
Figure 5-13. Laser range finder and ballistic shield secured



(1) Wrap the grenade launchers with cellulose wadding; or use covers, if provided.

(2) Wrap a tiedown strap around the left side of the ballistic shield. Run one end through the front lifting handle on the left side of the vehicle, through the machine gun mount, and over the ammunition tray. Run the other end through the rear lifting handle on the left side of the vehicle. Join the ends with D-rings and a load binder.

Figure 5-14. Grenade launchers and ballistic shield secured

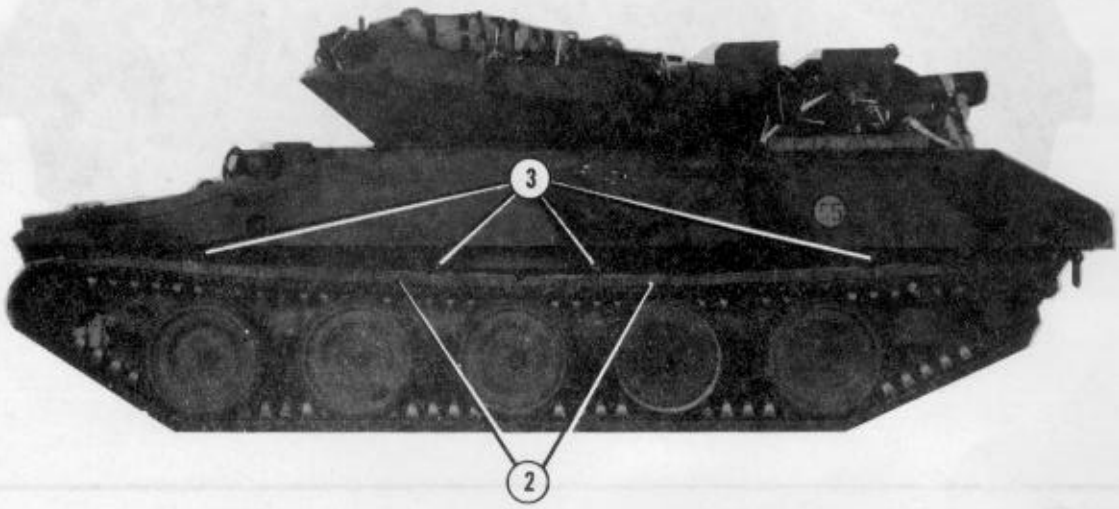


(1) Run a tiedown strap around the gun barrel and through the rear lifting handles on the left side of the vehicle. Secure the strap with a D-ring and a load binder.

(2) Run a tiedown strap around the gun barrel and through the rear lifting handles on the right side of the vehicle. Secure the strap with a D-ring and a load binder.

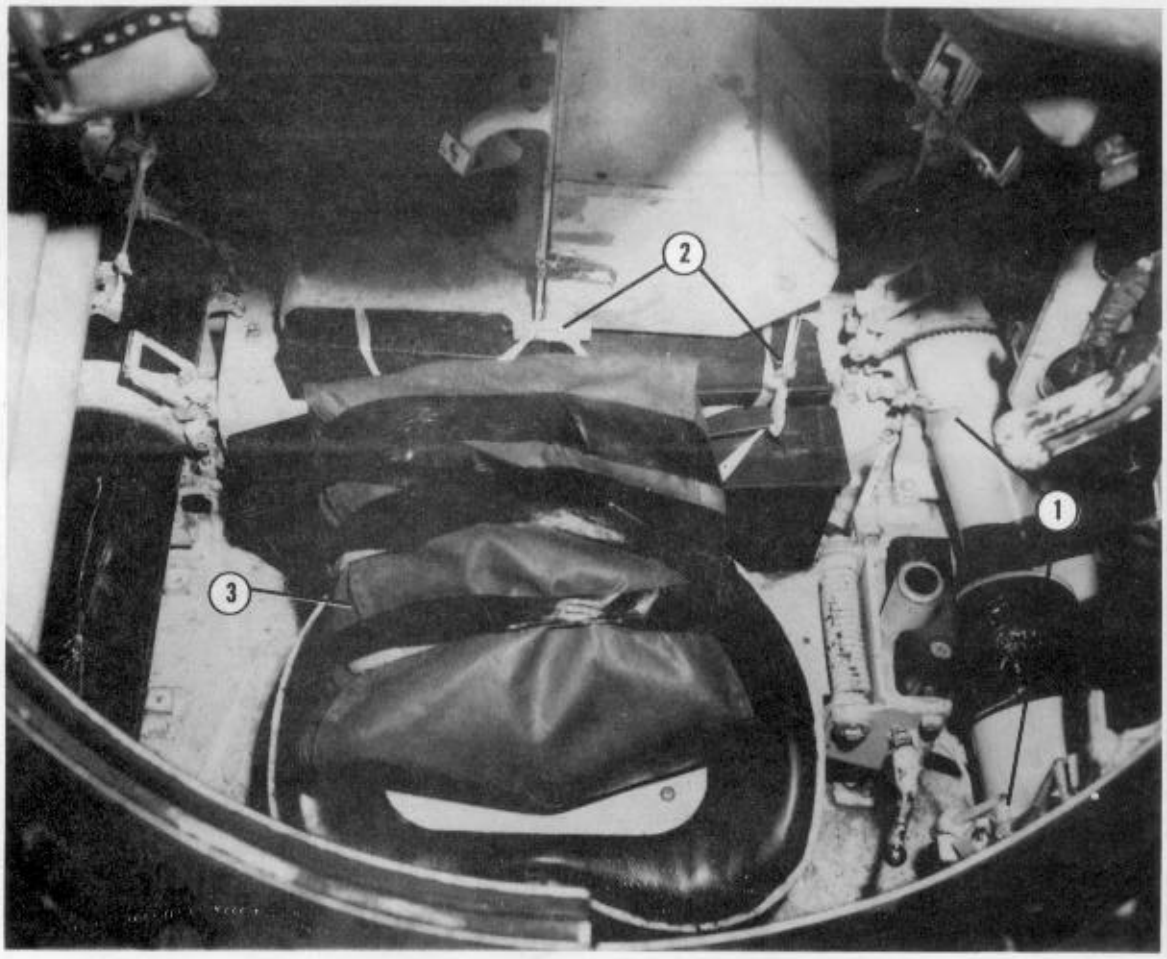
(3) Secure the pioneer tools in place with the retainer straps and 1/2-inch tubular nylon webbing.

Figure 5-15. Gun barrel and pioneer tools secured



1. Place two 16- by 96-inch pieces of honeycomb on the top tracks of the right side of the vehicle (not shown).
2. Place two 16- by 96-inch pieces of honeycomb on the top tracks of the left side of the vehicle.
3. Secure the honeycomb on both sides of the vehicle with type III nylon cord.

Figure 5-16. Honeycomb on tracks secured



(1) Safety the missile racks and conventional racks in the driver compartment with 1/2-inch tubular nylon webbing.

(2) Safety additional cans of 20-millimeter and 7.62-millimeter rounds to the floor of the driver compartment with 1/2-inch tubular nylon webbing.

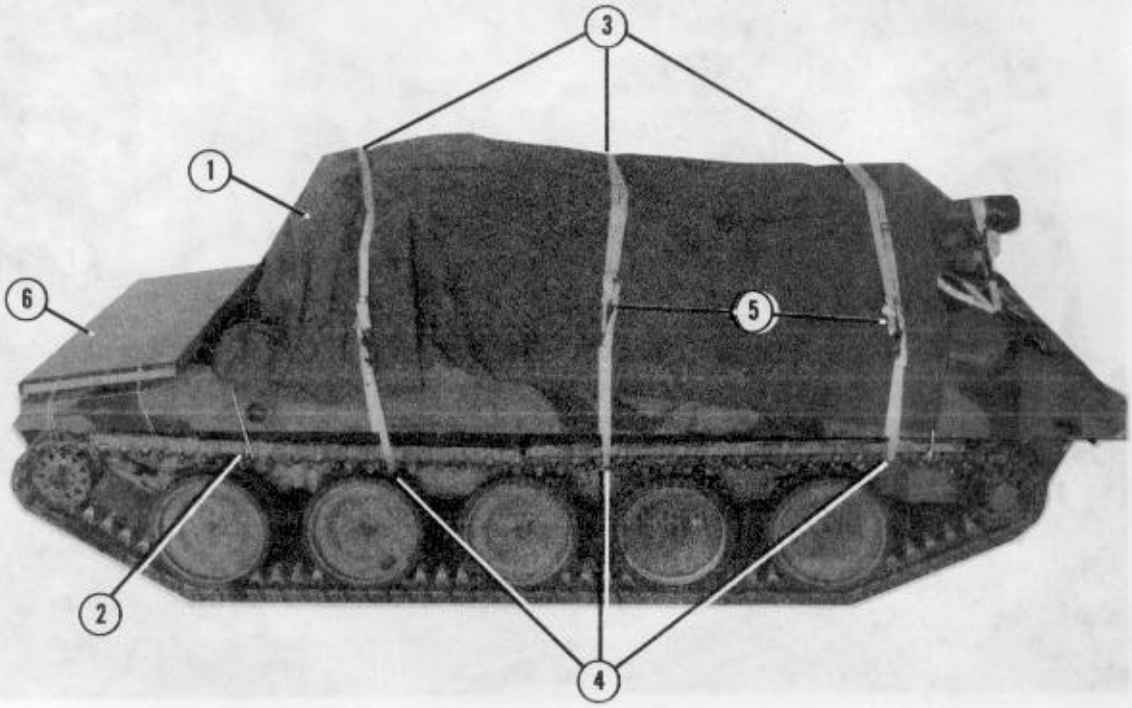
(3) Wrap the TVS sight in its cover, and secure it with tape to the back of the driver seat.

(4) Lock the driver hatch in the open position.

Figure 5-17. Missile racks, ammunition, and the TVS sight secured

5-5. Installing Load Cover and Track Support Tiedown Straps

Install the load cover and track support tiedown straps as shown in Figure 5-18.

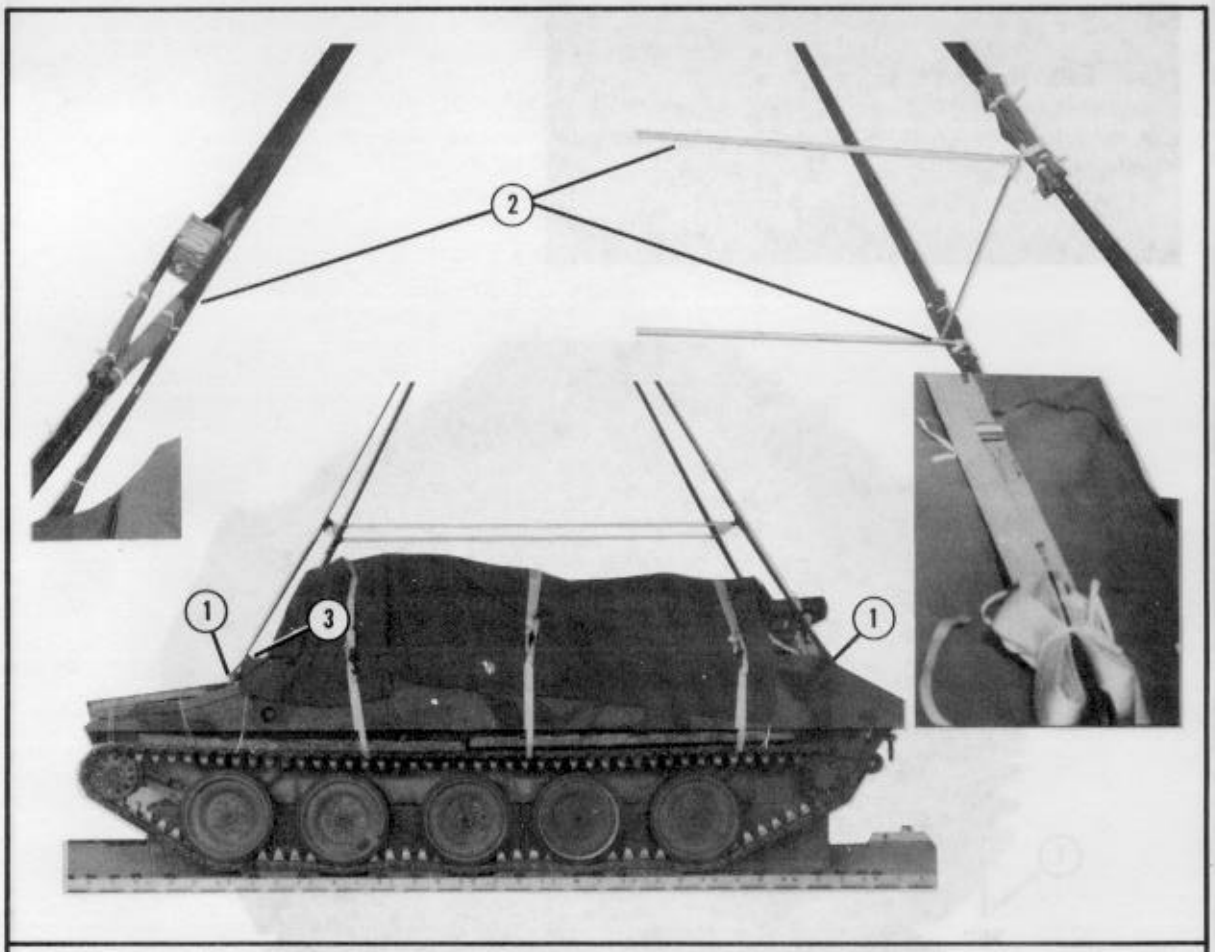


1. Cover the load with a vehicle cover, if available. If not, use a 12- by 16-foot piece of cotton duck cloth to cover the load.
2. Tie the corners of the cover to the track with type III nylon cord.
3. Run three 15-foot tiedown straps around the track on the right side of the vehicle and up through the D-ring on the end of each strap.
4. Run three 15-foot tiedown straps around the track on the left side of the vehicle and up through the D-ring on the end of each strap.
5. Hook the ends of the six straps together over the load with six D-rings and three load binders.
6. Place a 36- by 96-inch piece of honeycomb on top of the front of the vehicle. Secure it to convenient points with type III nylon cord.

Figure 5-18. Load cover and track support tiedown straps installed

5-6. Installing Suspension Slings and Deadman's Tie

Install the suspension slings and the deadman's tie as shown in Figure 5-19.



(1) Use four screw-pin clevises to install four 16-foot (4-loop), type XXVI nylon webbing suspension slings. Bolt a 16-foot sling to each front and rear suspension point with a screw-pin clevis.

(2) Prepare the deadman's tie as outlined in FM 10-500/TO 13C7-1-5. Use eight pieces of 10- by 10-inch cotton muslin to pad the suspension slings. Center one piece of cloth about 55 inches from the suspension point on one of the slings. Wrap it around four of the eight plies, and secure it with two lengths of 80-pound cotton webbing. Repeat the same procedure for the other four plies. Prepare the other three slings using these same procedures.

(3) Push the keeper down to the attaching point.

(4) Tape the keeper in place with masking tape or pressure-sensitive tape (not shown).

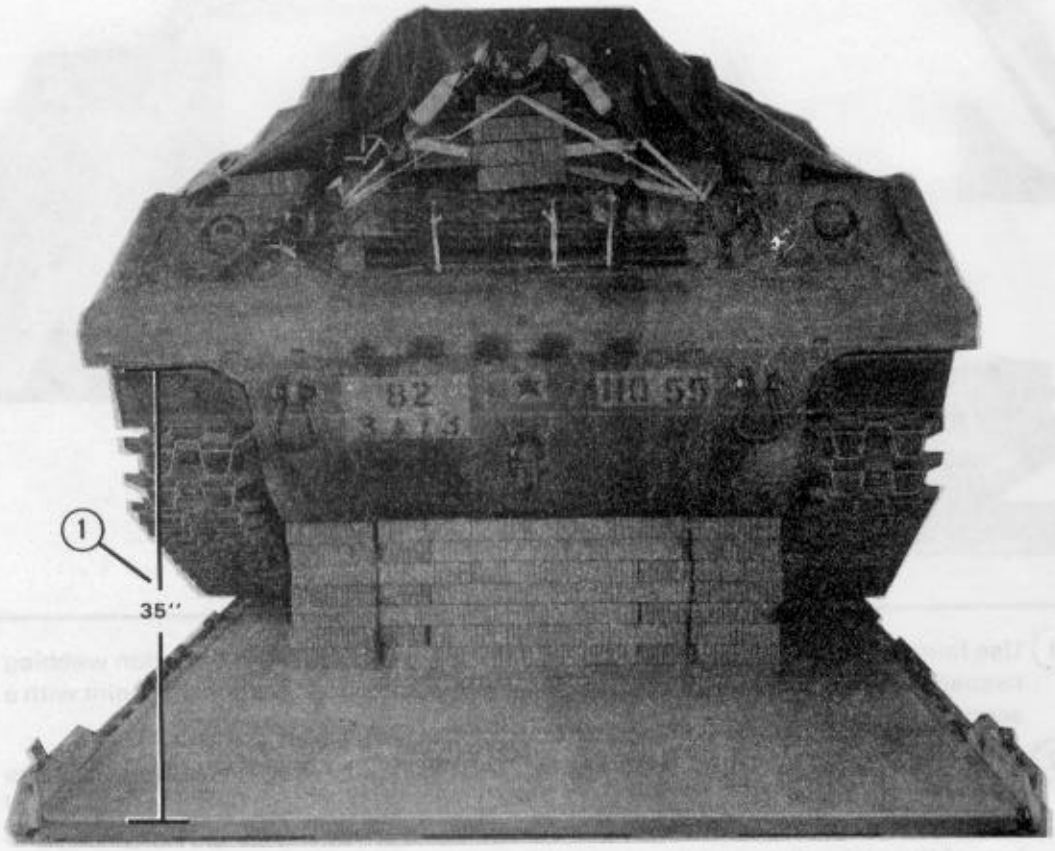
Figure 5-19. Suspension slings and deadman's tie prepared

5-7. Positioning ARAAV on Platform

Position the ARAAV on the platform as shown in Figure 5-20.

CAUTION

Alignment of the vehicle on the platform is critical. The vehicle must be positioned so that the tracks overhang the rails uniformly. The overhang must not exceed 1 inch on each side at the front and rear of the platform.



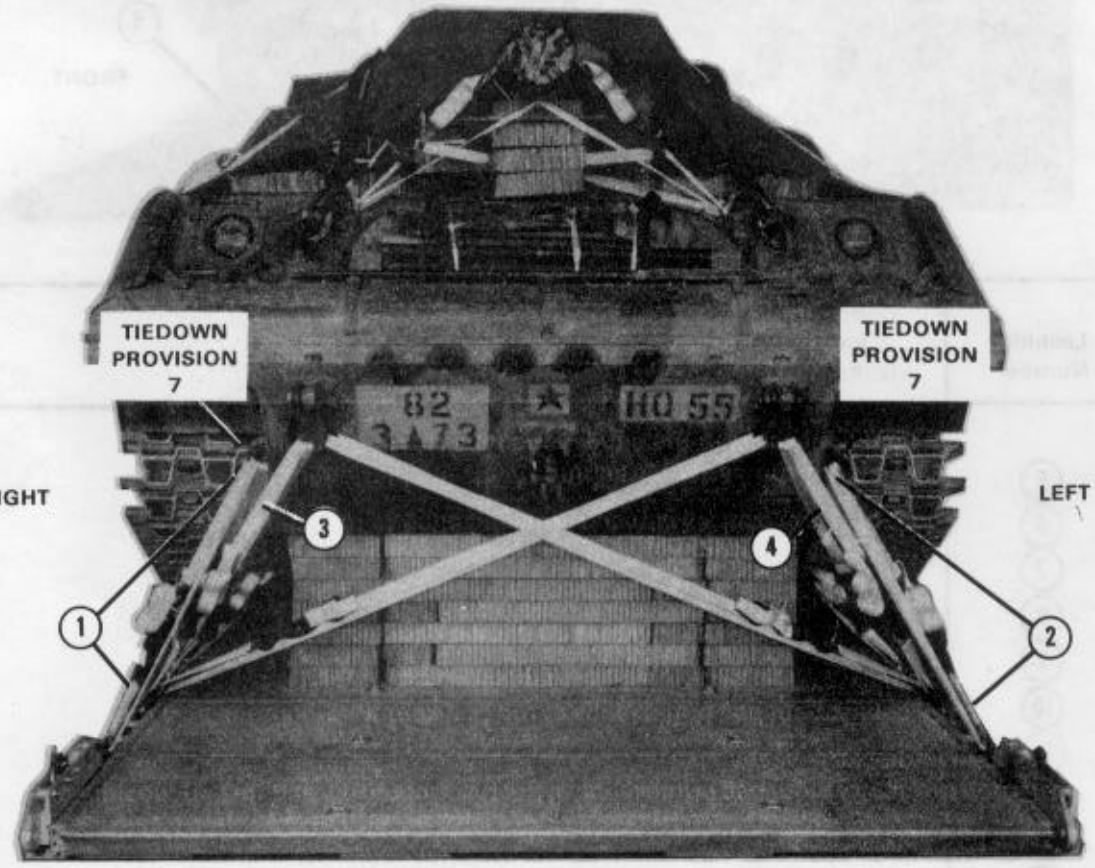
Note: When positioning the vehicle, make sure that the road wheels fit in the void between the honeycomb stacks.

(1) Position the ARAAV on the honeycomb stacks with the rear edge of the vehicle 35 inches from the front edge of the platform.

Figure 5-20. ARAAV positioned on the platform

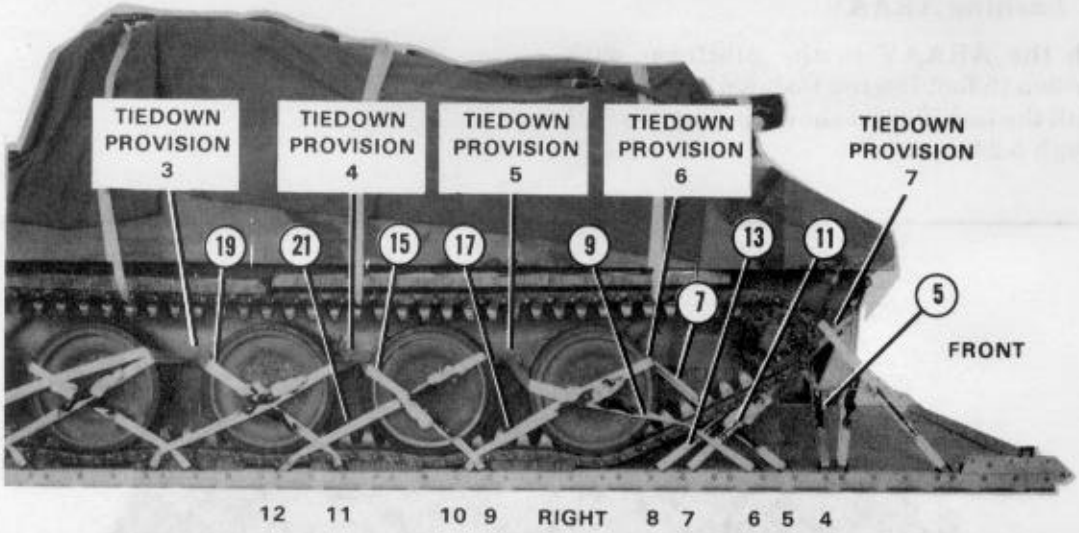
5-8. Lashing ARAAV

Lash the ARAAV to the platform with forty-two 15-foot Dacron tiedown assemblies. Install the lashings as shown in Figures 5-21 through 5-24.



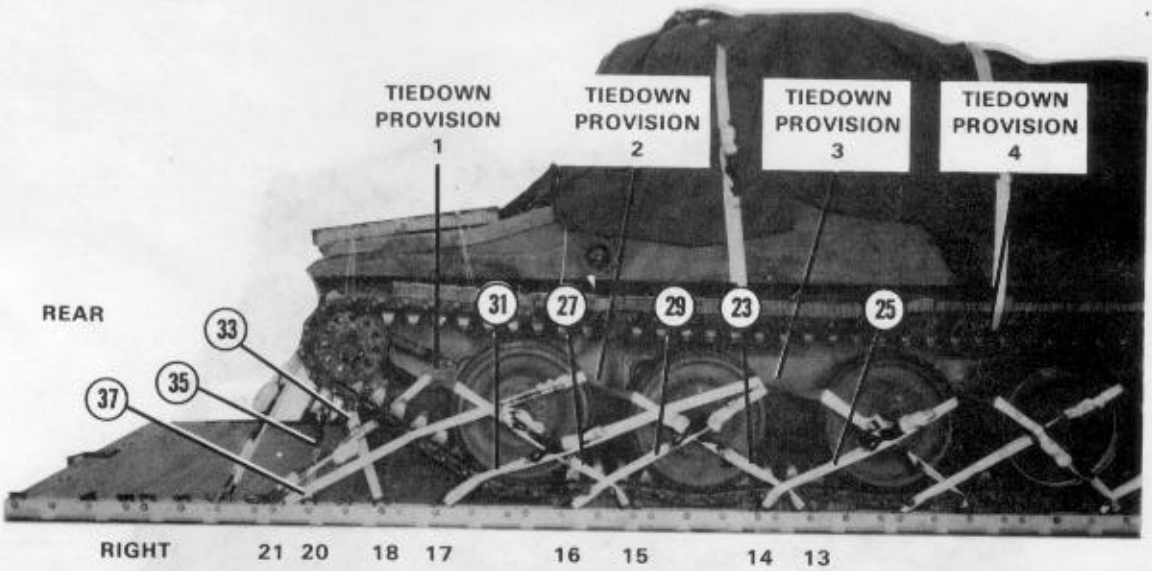
Lashing Number	Tiedown Clevis Number	Instructions
		Pass lashing:
1	2	To tiedown provision 7.
2	2A	To tiedown provision 7.
3	3	To rear towing clevis.
4	3A	To rear towing clevis.

Figure 5-21. Lashings 1 through 4 installed



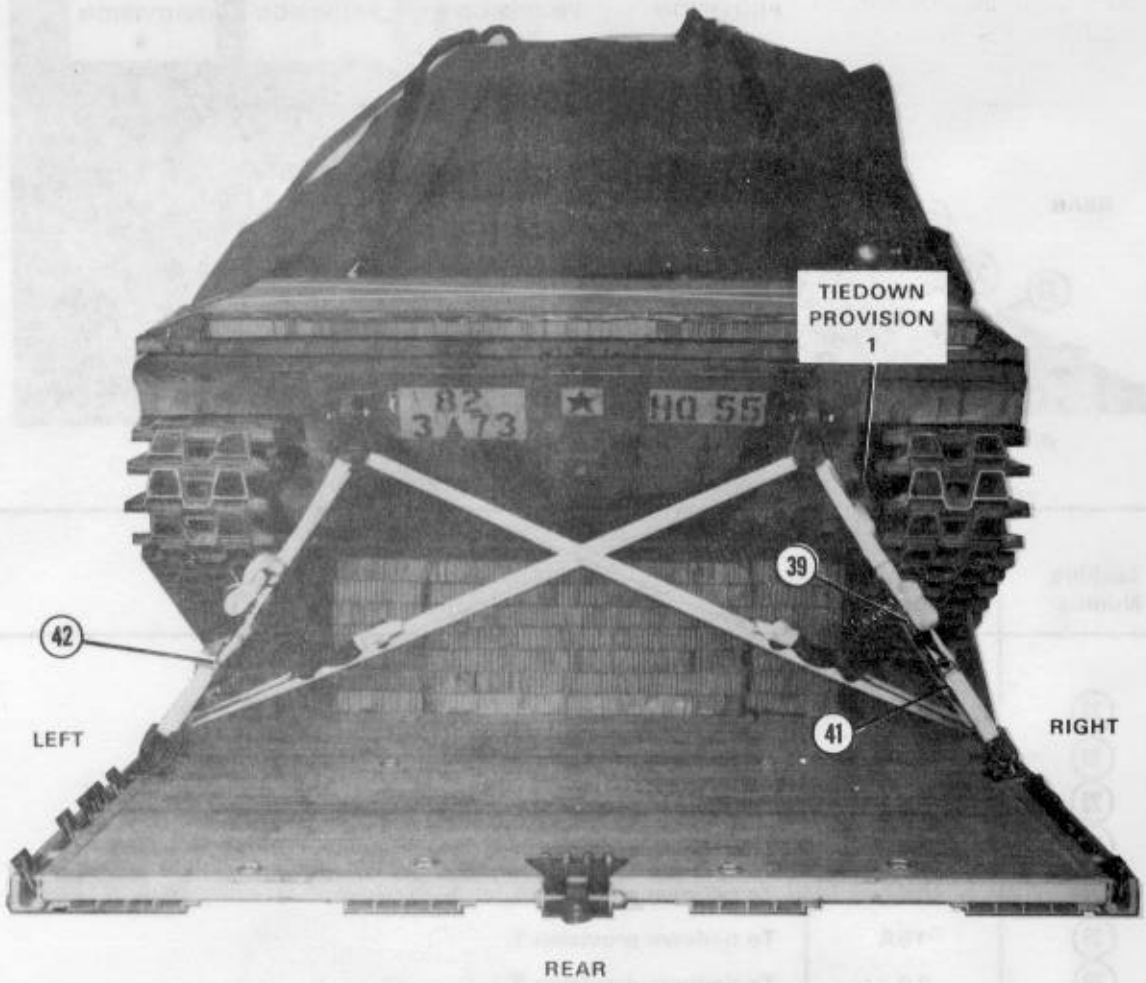
Lashing Number	Tiedown Clevis Number	Instructions
		Pass lashing:
5	4	To rear towing clevis.
6	4A	To rear towing clevis.
7	5	To tiedown provision 6.
8	5A	To tiedown provision 6.
9	6	To tiedown provision 5.
10	6A	To tiedown provision 5.
11	7	To rear towing clevis.
12	7A	To rear towing clevis.
13	8	To tiedown provision 7.
14	8A	To tiedown provision 7.
15	9	To tiedown provision 4.
16	9A	To tiedown provision 4.
17	10	To tiedown provision 6.
18	10A	To tiedown provision 6.
19	11	To tiedown provision 3.
20	11A	To tiedown provision 3.
21	12	To tiedown provision 5.
22	12A	To tiedown provision 5.

Figure 5-22. Lashings 5 through 22 installed



Lashing Number	Tiedown Clevis Number	Instructions
		Pass lashing:
23	13	To tiedown provision 2.
24	13A	To tiedown provision 2.
25	14	To tiedown provision 4.
26	14A	To tiedown provision 4.
27	15	To tiedown provision 1.
28	15A	To tiedown provision 1.
29	16	To tiedown provision 3.
30	16A	To tiedown provision 3.
31	17	To tiedown provision 3.
32	17A	To tiedown provision 3.
33	18	To front towing clevis.
34	18A	To front towing clevis.
35	20	To front towing clevis.
36	20A	To front towing clevis.
37	21	To tiedown provision 2.
38	21A	To tiedown provision 2.

Figure 5-23. Lashings 23 through 38 installed

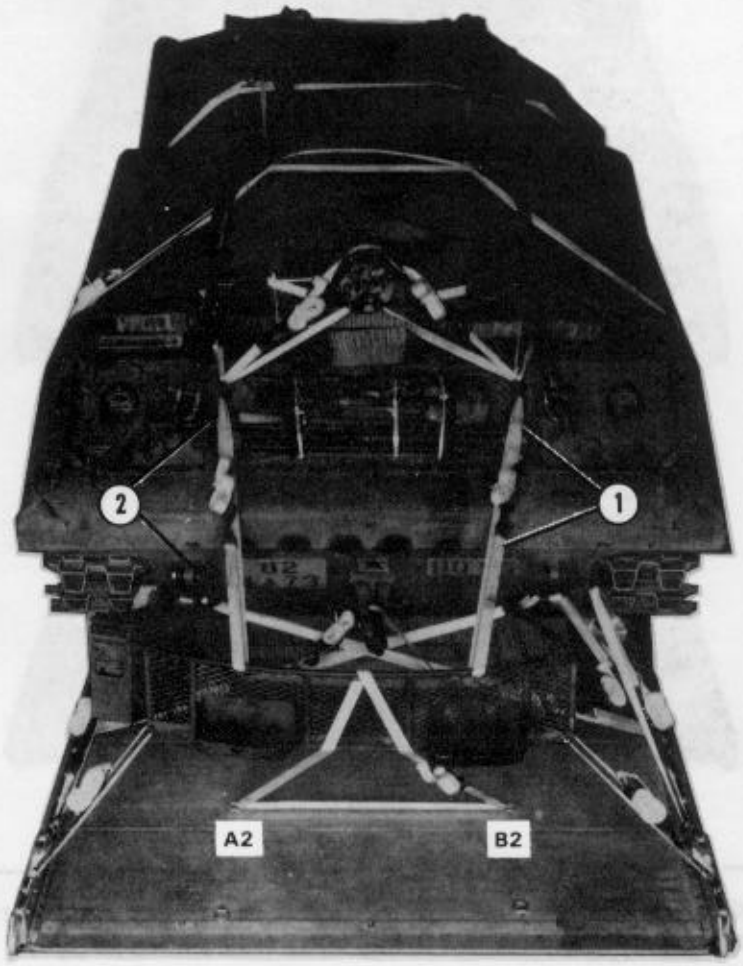


Lashing Number	Tiedown Clevis Number	Instructions
		Pass lashing:
39	22 (front)	To tiedown provision 1.
40	22A (front)	To tiedown provision 1.
41	23 (front)	To front towing clevis.
42	23A (front)	To front towing clevis.

Figure 5-24. Lashings 39 through 42 installed

5-9. Positioning and Lashing Turret Rack

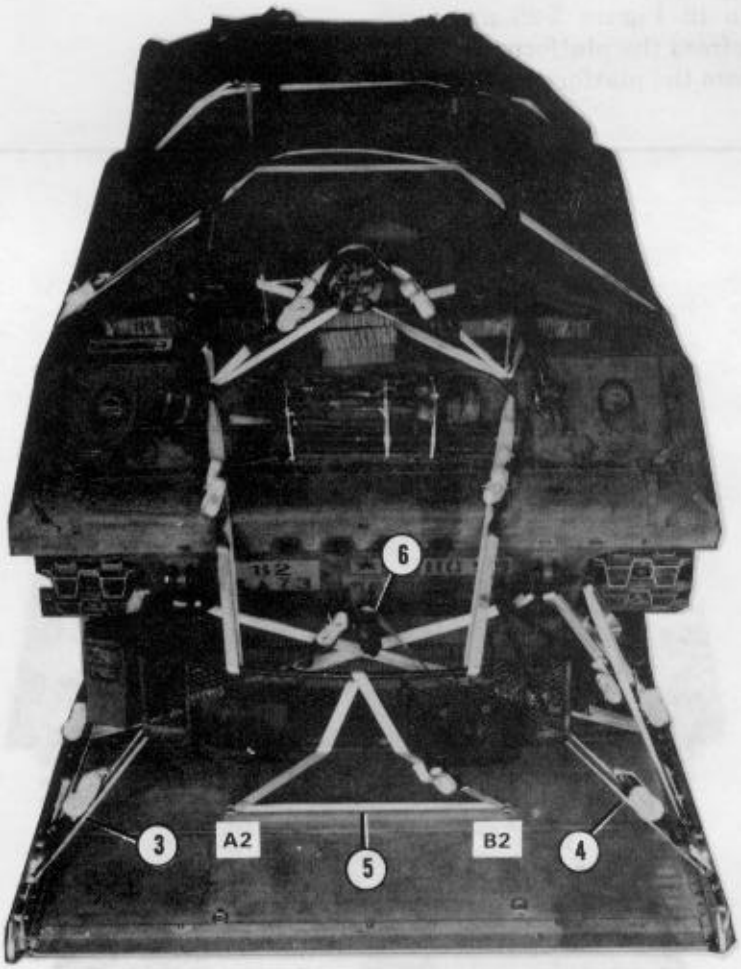
Attach the turret rack to the rear of the vehicle as shown in Figure 5-25 approximately 24 inches from the platform and the front 16 inches from the platform.



(1) Run a 15-foot lashing through the right rear lifting handle and the left rear D-ring fitting on the left rear D-ring on the turret rack. Secure the lashing using a D-ring and a load binder.

(2) Run a 15-foot lashing through the left rear lifting handle and the right rear D-ring fitting on the right rear D-ring on the turret rack. Secure the lashing using a D-ring and a load binder.

Figure 5-25. Turret rack lashed



FRONT

(3) Run a tiedown strap from clevis 1 up and around the lower rear bar of the turret rack frame. Secure the lashing using a D-ring and a load binder.

(4) Run a tiedown strap from clevis 1A up and around the lower rear bar of the turret rack frame. Secure the lashing using a D-ring and a load binder.

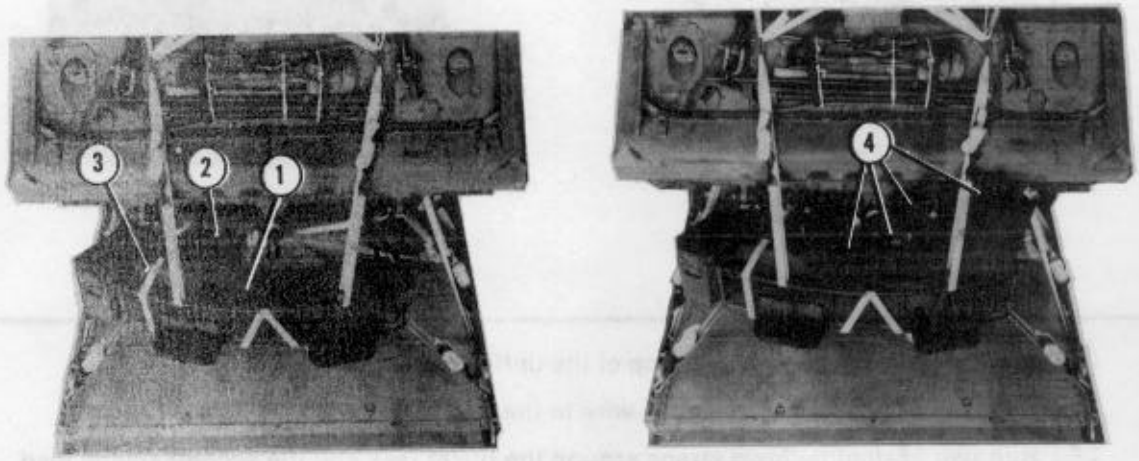
(5) Run a 15-foot lashing from tiedown ring B2, through tiedown ring A2, up and around the rear of the turret rack, through the center D-ring fitting, and over the top of the top bar on the turret rack frame. Secure the lashing using a D-ring and a load binder.

(6) Run a 15-foot tiedown lashing around the towing pintle and around the inner portion of the outside mounting brackets of the turret rack frame, and secure with D-rings and load binder.

Figure 5-25. Turret rack lashed (continued)

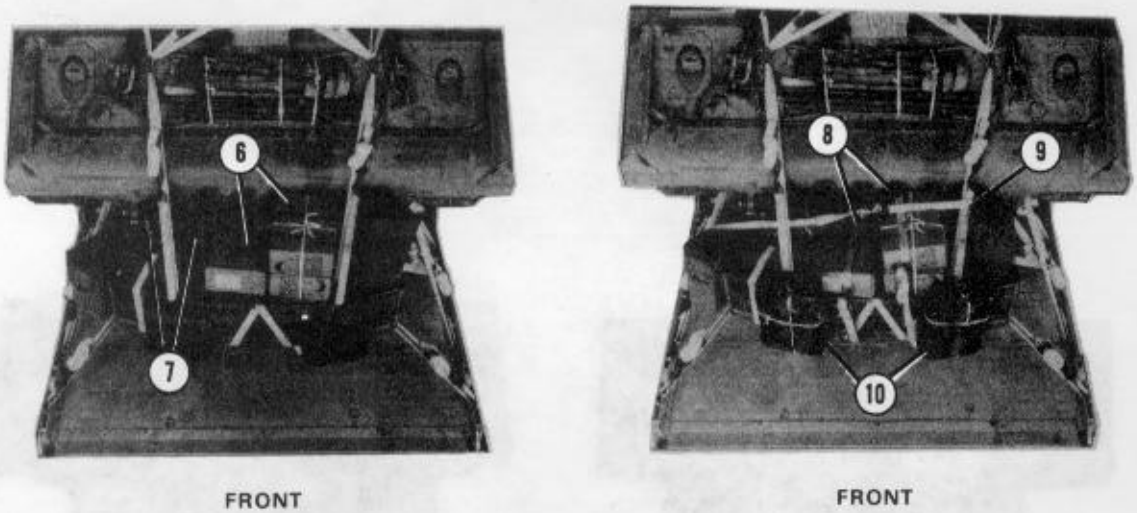
5-10. Loading Turret Rack

Load the turret rack as shown in Figure 5-26.



1. Place a 30- by 36-inch piece of 1/2-inch felt padding on the right side of the turret rack.
2. Place a searchlight on top of the padding on the right side of the turret rack.
3. Run a 15-foot lashing around the turret rack and searchlight. Secure it in place with a D-ring and a load binder.
4. Place four duffel bags into the turret rack.
5. Place signal flagpoles on top of the duffel bags (not shown).

Figure 5-26. Turret rack loaded



(6) Place three boxes of MREs on top of the duffel bags.

(7) Secure a roll of communications wire to the mount brackets of the searchlight.

(8) Run two 15-foot tiedown straps around the turret rack and the accompanying load from the front to the rear. Secure each strap with a D-ring and a load binder.

(9) Run a 15-foot tiedown strap around the turret rack and the accompanying load from side to side.

(10) Place two oilcans in the support racks. Secure them in place with the provided straps. Safety the cans to the rack with 1/2-inch tubular nylon webbing.

Figure 5-26. Turret rack loaded (continued)

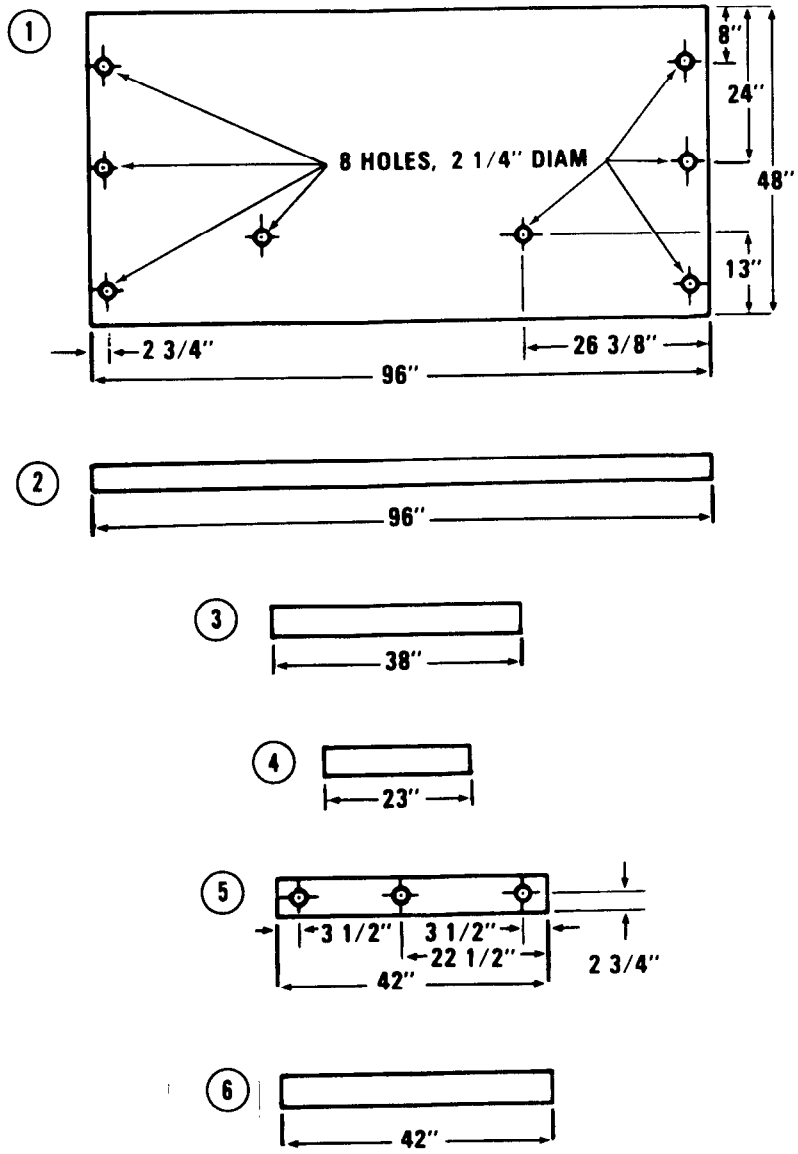
5-11. Building and Installing Cargo Parachute Stowage Platform

Build and install the cargo parachute stowage platform as described below.

NOTE: The honeycomb parachute stowage platform in paragraph 5-25 may be substituted for this wooden parachute stowage platform.

a. Building Cargo Parachute Stowage Platform. Build the platform as shown in Figure 5-27.

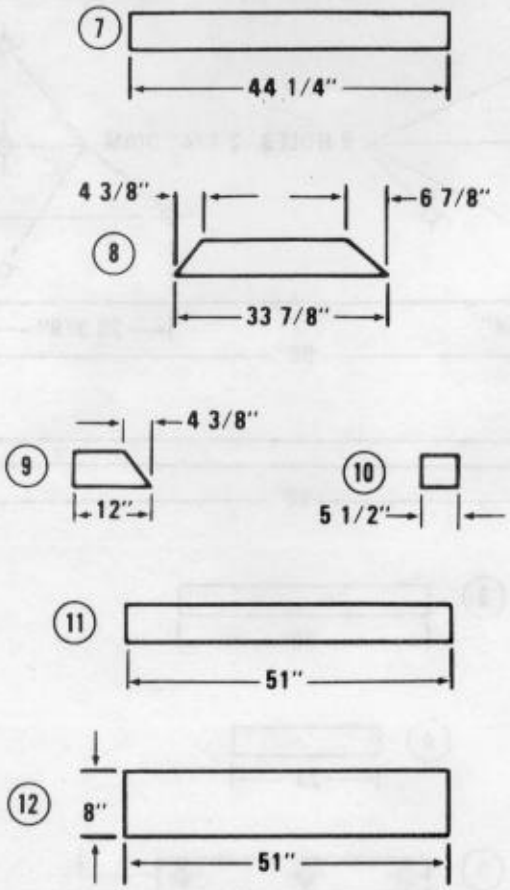
Note: These drawings are not drawn to scale.



Item Number	Pieces	Width (Inches)	Length (Inches)	Material
1	1	48	96	3/4-inch plywood
2	2	4	96	2-inch lumber
3	2	4	38	2-inch lumber
4	4	4	23	2-inch lumber
5	4	6	42	2-inch lumber
6	3	4	42	2-inch lumber

Figure 5-27. Cargo parachute stowage platform constructed

Note: These drawings are not drawn to scale.



Item Number	Pieces	Width (Inches)	Length (Inches)	Material
7	4	6	44 1/4	2-inch lumber
8	2	6	33 7/8	2-inch lumber
9	4	6	12	2-inch lumber
10	2	4	5 1/2	2-inch lumber
11	1	6	51	2-inch lumber
12	1	8	51	3/4-inch plywood

Step:

1. Build the cargo parachute stowage platform using the materials given above and eightpenny and sixteen-penny nails.

2. Drill eight 2 1/4-inch holes through the lumber and plywood after the platform is assembled.

Figure 5-27. Cargo parachute stowage platform constructed (continued)

CAUTION

This stowage platform supports 2,240 pounds of parachutes. Use a generous amount of nails.

Notes: 1. This drawing is not drawn to scale.
2. Platform legs may require adjustment.

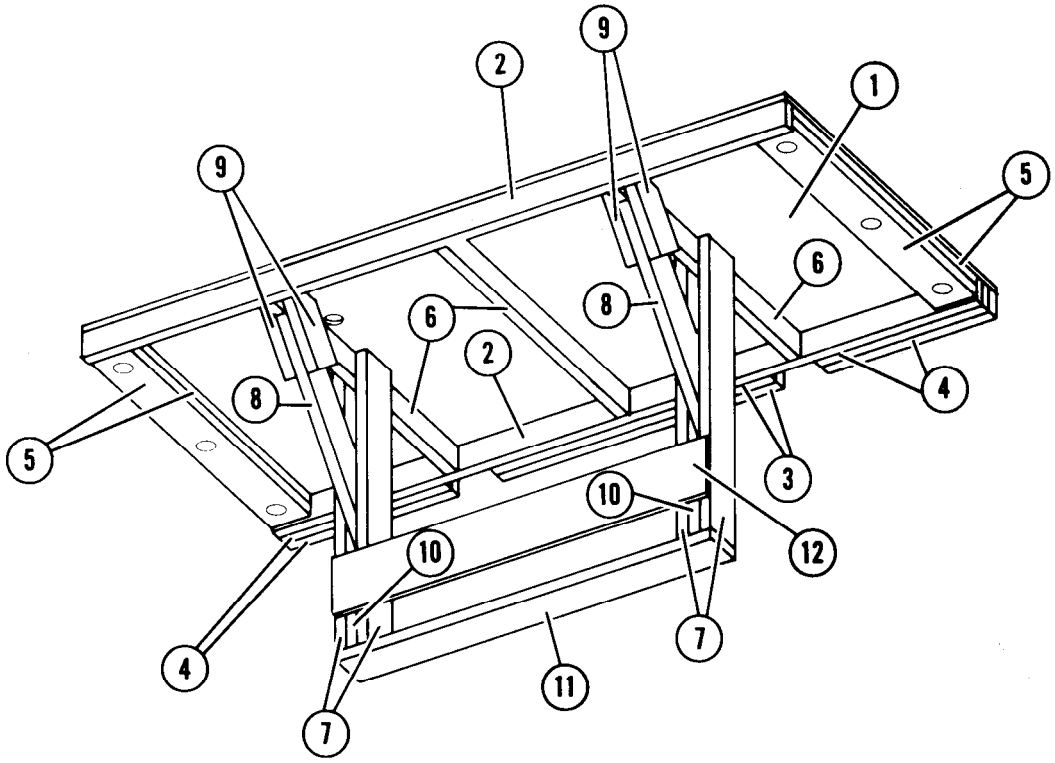


Figure 5-27. Cargo parachute stowage platform constructed (continued)

Note: These drawings are not drawn to scale.

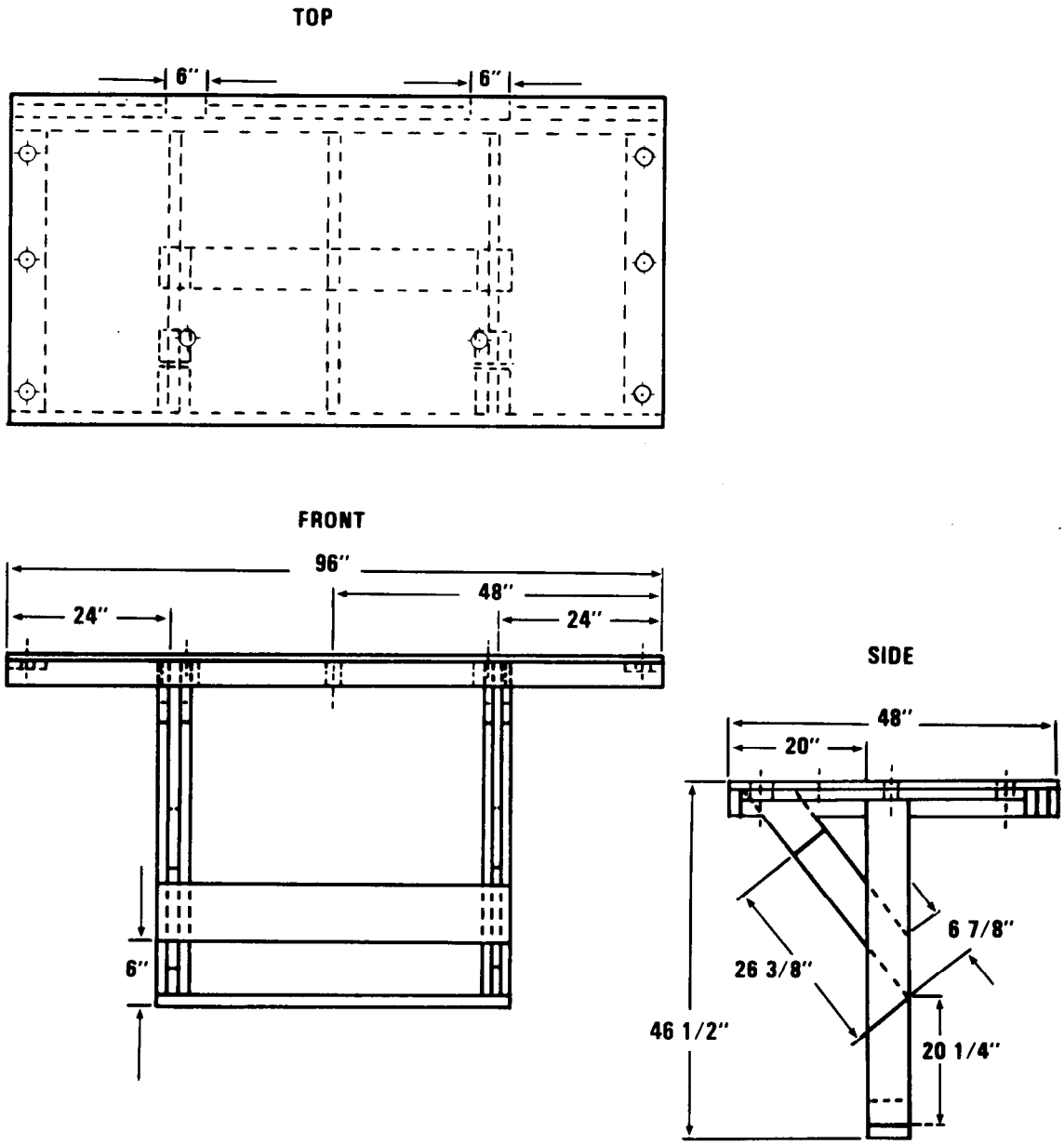
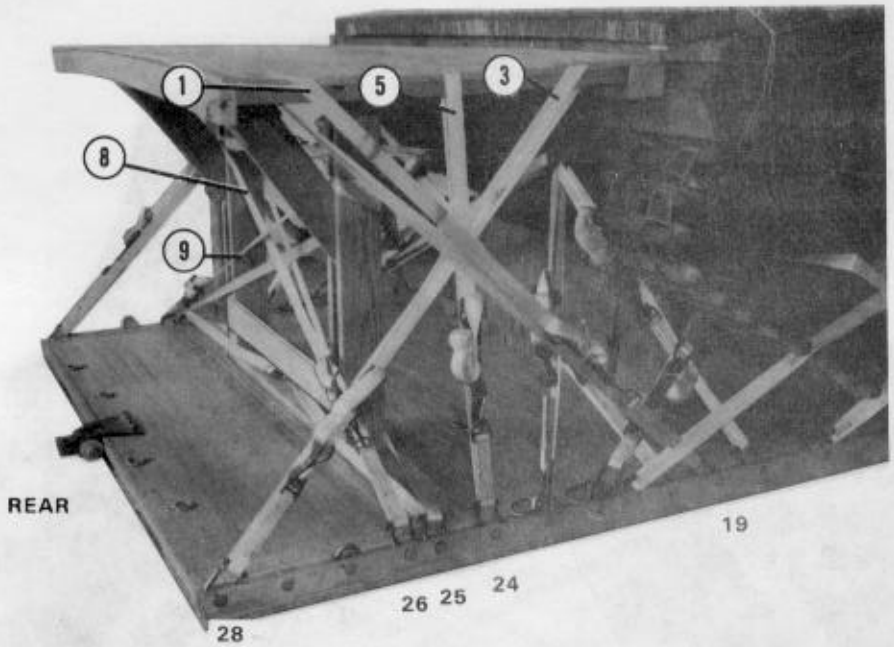


Figure 5-27. Cargo parachute stowage platform constructed (continued)

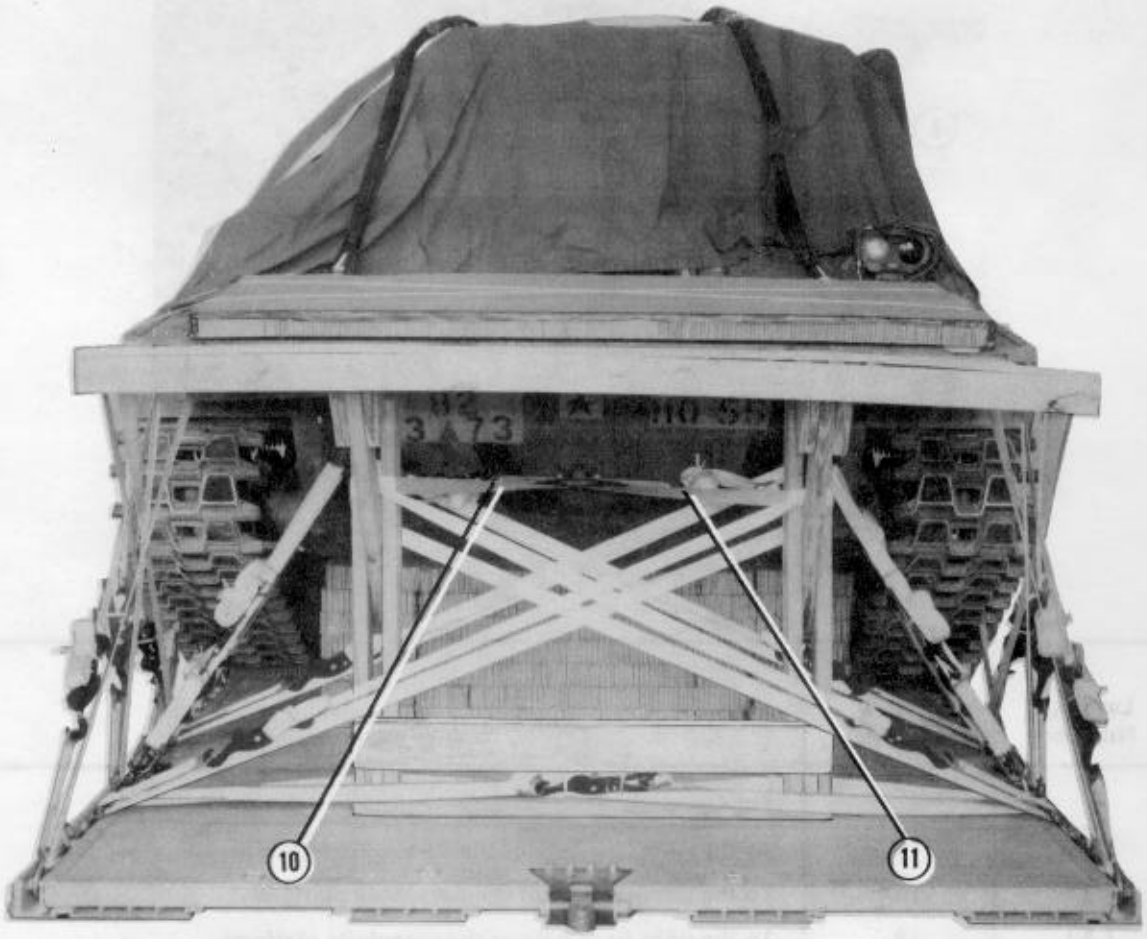
b. Positioning and Lashing Cargo Parachute Stowage Platform. Position the platform flush against the front of the vehicle at the rear of the load. Lash the platform as shown in Figures 5-28 and 5-29.



Lashing Number	Tiedown Clevis Number	Instructions
		Pass lashing:
1	19	To the right rear hole of the parachute platform.
2	19A	To the left rear hole of the parachute platform.
3	28	To the right front hole of the parachute platform.
4	28A	To the left front hole of the parachute platform.
5	24	To the right center hole of the parachute platform.
6	24A	To the left center hole of the parachute platform.
*7	25 and 25A	From the center of the parachute platform stand, run one free end of the lashing around the rear of the right support leg, through clevis 25, and back around the rear of the right support leg. Place a D-ring on the free end. Run the other free end to the front of the left support leg, through clevis 25A, then around to the rear of the left support leg. Place a D-ring on each free end, and secure the lashing with a load binder.
8	26	To the left support leg above the brace of the parachute stowage platform.
9	26A	To the right support leg above the brace of the parachute stowage platform.

*30-foot lashing

Figure 5-28. Lashings 1 through 9 installed



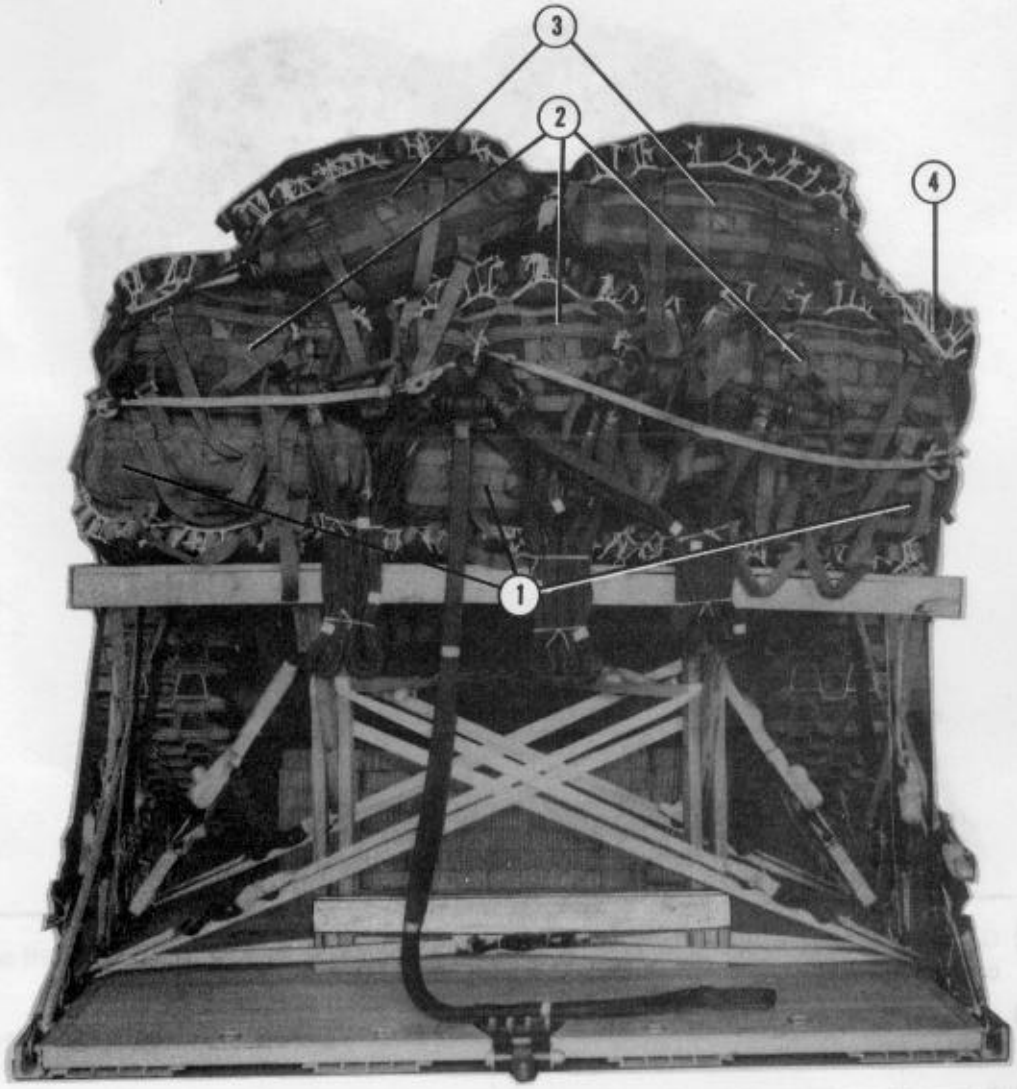
Lashing Number	Tiedown Clevis Number	Instructions
		Pass lashing:
10		Through the front center towing clevis and around the left frame support leg.
11		Through the front center towing clevis and around the right frame support leg.

Figure 5-29. Lashings 10 and 11 installed

5-12. Stowing Cargo Parachutes

Stow eight G-11C cargo parachutes according to FM 10-500/TO 13C7-1-5 and as shown in Figures 5-30 and 5-31.

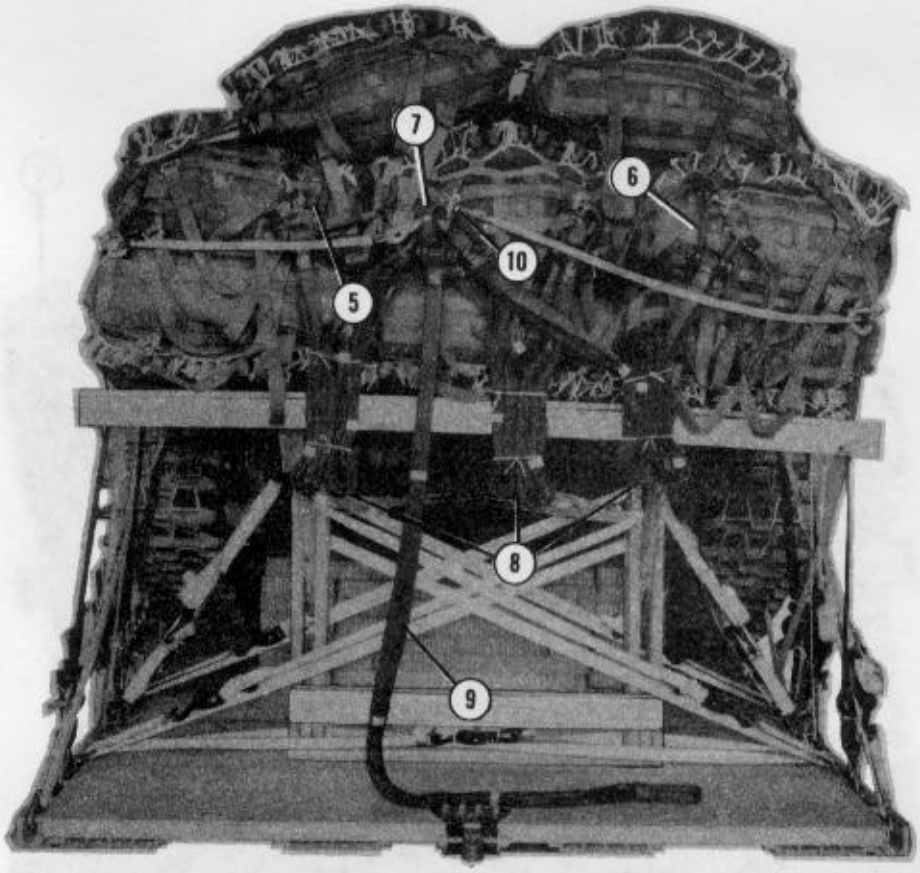
Note: Use either a 120-foot (3-loop), type X or a 120-foot (2-loop), type XXVI nylon webbing riser extension.



1. Set three parachutes side by side on the front of the vehicle with the riser compartments on the bottom.
2. Set three additional parachutes side by side on top of the first layer of parachutes with riser compartments on top.
3. Center the two remaining parachutes side by side on top of the second layer with the riser compartments on top.
4. Cluster the parachutes together with 1/2-inch tubular nylon webbing.

Figure 5-30. Parachutes stowed

Note: Use either a 120-foot (3-loop), type X or a 120-foot (2-loop), type XXVI nylon webbing riser extension.



(5) Group the deployment bag bridle loops of the three cargo parachutes on the left on one large clevis assembly.

(6) Group the deployment bag bridle loops of the three cargo parachutes on the right on a second large clevis assembly.

(7) Group the deployment bag bridle loops of the two center parachutes on a third large clevis assembly.

(8) Attach a 9-foot (2-loop), type XXVI nylon sling deployment line to each of the three large clevis assemblies.

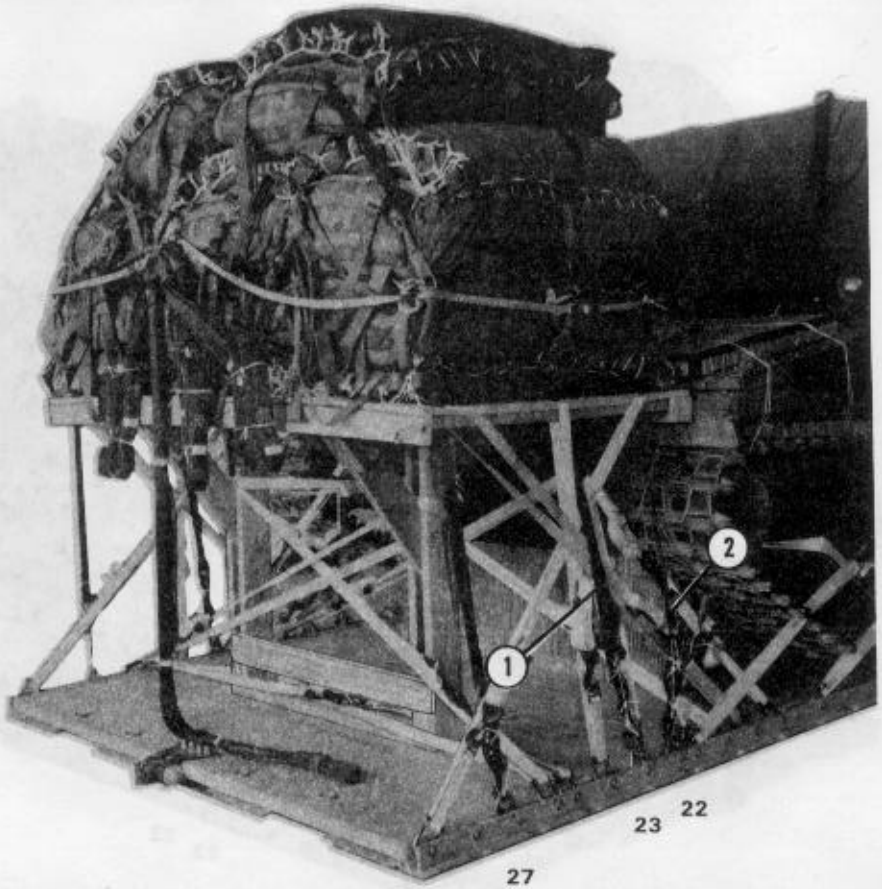
(9) Place the free ends of the deployment lines on the arm of a large clevis assembly, and bolt a 9-foot (4-loop), type XXVI nylon webbing sling to the same clevis.

(10) Tie the clevises to the cargo parachutes with double lengths of 80-pound cotton webbing. Fold the excess in the slings, and tape the folds in place.

Figure 5-30. Parachutes stowed (continued)

CAUTION

The load binders of the parachute restraint straps must be tied to the clevises with lengths of type III nylon cord to prevent loss during airdrop.



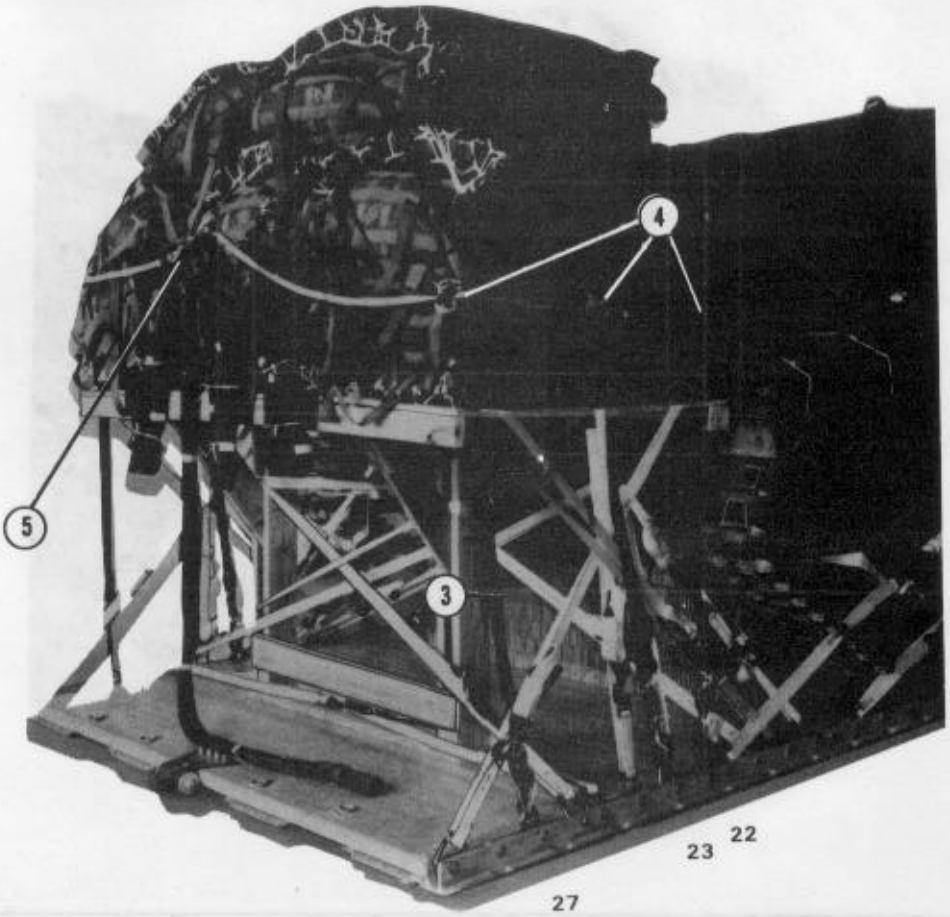
(1) Run an 11-yard length of type X nylon webbing (restraint strap) across the middle of the parachutes, through all available cluster attaching straps (carrying handles) inside and outside, and down through the center holes on the sides of the stowage platform. Attach the ends of the restraint strap to clevises 23 (rear) and 23A (rear) with two D-rings and load binders.

(2) Run a second 11-yard restraint strap across the front end of the parachutes, through the cluster attaching straps, and down through the front holes of the stowage platform. Attach the ends of the restraint strap to clevises 22 (rear) and 22A (rear) with two D-rings and load binders.

Figure 5-31. Release straps installed

CAUTION

The load binders of the parachute restraint straps must be tied to the clevises with lengths of type III nylon cord to prevent loss during airdrop.



(3) Run a third 11-yard restraint strap across the rear of the parachutes, through the cluster attaching loops, through all bridle attaching loops, and down through the rear holes of the stowage platform. Attach the ends of the restraint strap to clevises 27 and 27A with two D-rings and load binders.

(4) Install two multicut parachute release straps with three release knives on each strap as outlined in FM 10-500/TO 13C7-1-5.

Note: Only the multicut parachute release strap may be used on this load.

(5) Tie the free end of the release straps to the deployment line clevis.

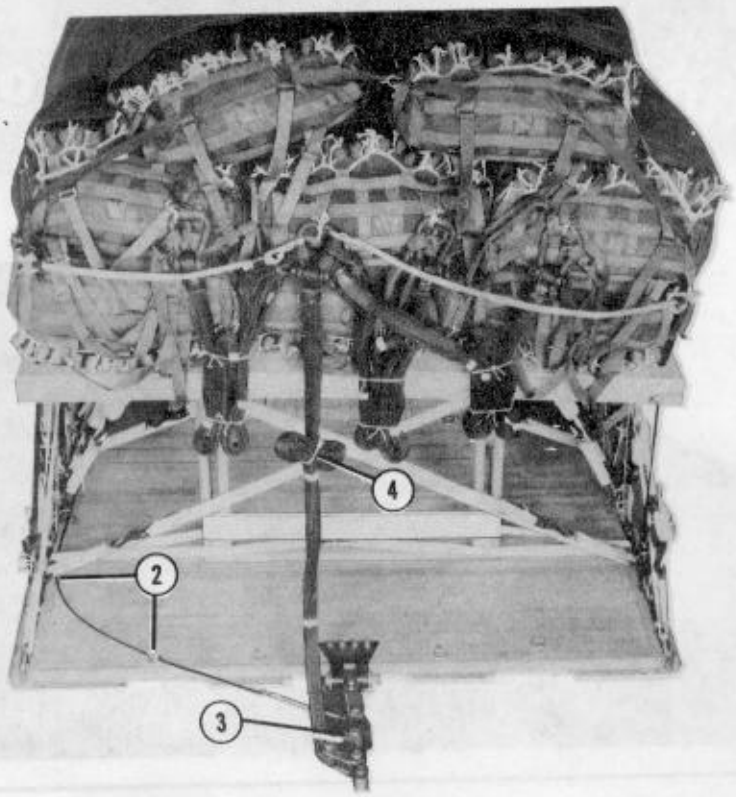
Figure 5-31. Release straps installed (continued)

5-13. Installing Extraction System

Install the components of the EFTC as outlined in FM 10-500/TO 13C7-1-5 and as shown in Figure 5-32.

5-14. Installing Release System

Prepare and attach a modified M-2 cargo parachute release as outlined in FM 10-500/TO 13C7-1-5 and as shown in Figure 5-33.



(1) Bolt the actuator bracket to the front bracket mounting holes on the left side rail (not shown).

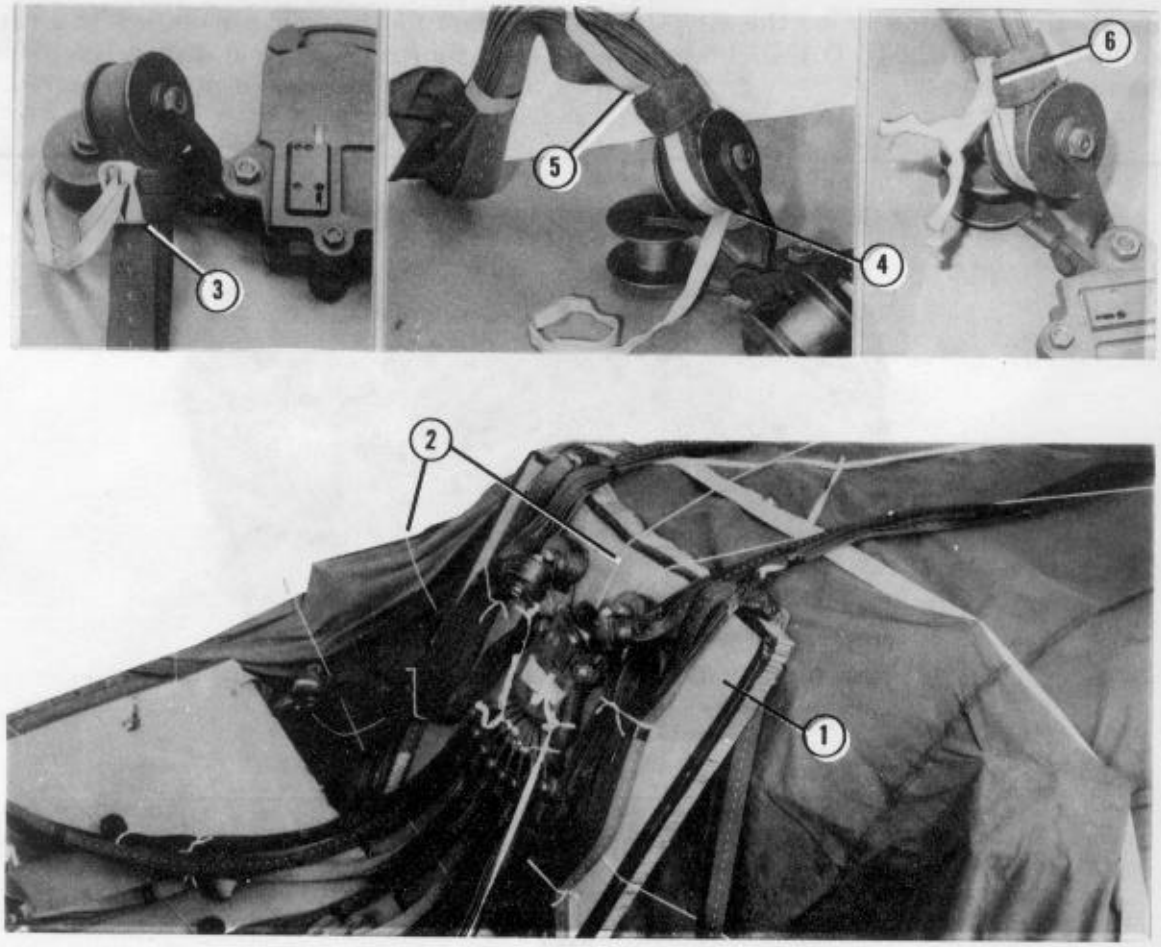
(2) Run a 28-foot release cable from the actuator bracket rearward along the left side rail. Bring the cable up to the top of the platform behind clevis 17A. Tie the cable to clevis 22A and tiedown ring D14 with 80-pound cottom webbing.

(3) Bolt the latch assembly (with the latch assembly adapter attached) to the extraction bracket assembly using a link assembly with spacers. Tighten all bolts securely to prevent movement during extraction.

Note: A link assembly adapter must be used to attach the 6-loop extraction line to the three-point link assembly.

(4) Attach the free end of the 9-foot (4-loop), type XXVI nylon sling deployment line to the top of the link assembly. Fold the deployment line, and tie the folds in place with two turns of 80-pound cotton webbing.

Figure 5-32. Extraction system installed



1. Position and secure a 36- by 54-inch piece of honeycomb on the rear of the turret. Tape the edges of each side of the honeycomb. Safety the honeycomb to the platform with type III nylon cord.
2. Tie the release from the parachute connectors to the tracks on the front of the vehicle with type III nylon cord. Tie the suspension links to the rear suspension points on the vehicle with type III nylon cord.
3. Form a girth hitch around one side of a sliding keeper with a 60-inch length of 1/2-inch tubular nylon webbing. Make sure the running ends are equal.
4. Route both ends around the looped end of the sling and through the lower suspension link.
5. Route one end of the 1/2-inch tubular nylon webbing through the sliding keeper.
6. Slide the keeper as close to the lower suspension link as possible using 1/2-inch tubular nylon webbing. Tie the running ends together with two alternating half hitches and an overhand knot.

Figure 5-33. M-2 cargo parachute release installed on load

5-15. Placing Extraction Parachutes

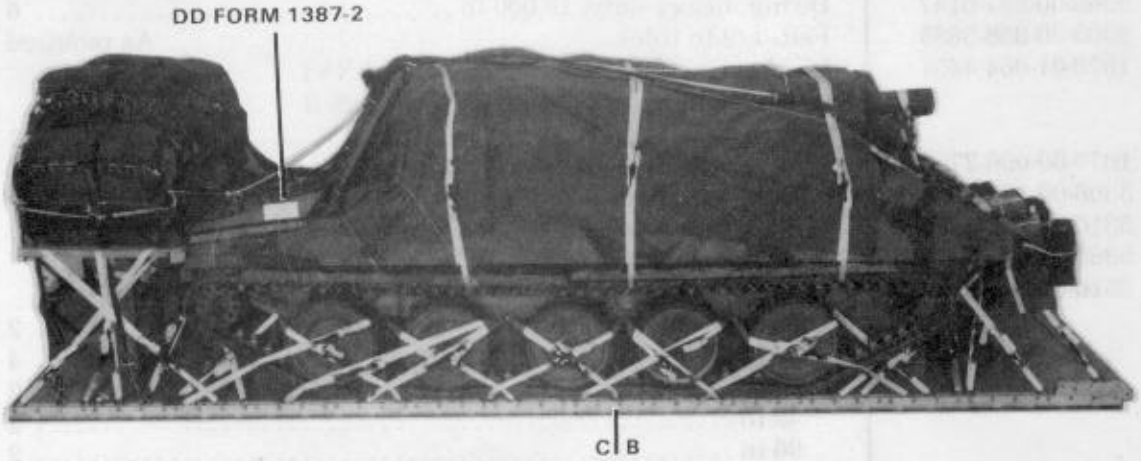
Cluster two 28-foot cargo extraction parachutes as outlined in FM 10-500/TO 13C7-1-5, and position them on the load for installation in the aircraft. Equip the parachutes with a 60-foot (6-loop), type XXVI nylon webbing extraction line.

5-16. Marking Rigged Load

Mark the rigged load as outlined in FM 10-500/TO 13C7-1-5 and as shown in Figure 5-34. Complete DD Form 1387-2 (Special Handling Data/Certification), and securely attach it to the load. Indicate on DD Form 1387-2 that the vehicle fuel tank and battery have been prepared according to AFR 71-4/TM 38-250. If the load varies from the one shown, the weight, height, CB, and parachute requirements must be recomputed.

CAUTION

Make the final rigger inspection required by AFR 55-40/AR 59-4 before the load leaves the rigging site.



RIGGED LOAD DATA

Weight: Load shown	41,800 pounds
Maximum allowed	42,000 pounds
Height	101 1/2 inches
Width	110 inches
Length	346 inches
Overhang: Each side	1 inch
Rear	20 inches
CB (from front of platform)	157 inches
Extraction System	42K EFTC

Figure 5-34. M551A1 ARAAV rigged for low-velocity airdrop on a type V platform

5-17. Equipment Required

Use the equipment listed in Table 5-1 to rig this load.

Table 5-1. Equipment required for rigging the ARAAV for low-velocity airdrop on a type V airdrop platform from a C-130 aircraft

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive, paste, 1-gal	As required
3990-00-937-0272	Binder, load, 10,000-lb	6
4030-00-090-5354	Clevis, suspension, 1-in (large)	4
4030-00-432-2516	Clevis, screw-pin	4
8305-00-242-3593	Cloth, cotton duck, 60-in	As required
4020-00-240-2146	Cord, nylon, type III, 550-lb	As required
1670-00-157-6527	Coupling, airdrop, extraction force transfer w 28-ft cable	1
8135-00-664-6958	Cushioning material, packaging, cellulose wadding	As required
5365-00-937-0147	D-ring, heavy-duty, 10,000-lb	6
8305-00-958-3685	Felt, 1/2-in thick	As required
1670-01-064-4454	Line, extraction, 60-ft (6-loop), type XXVI nylon webbing (for C-130) (Use with 28-ft parachute.)	1
1670-00-006-2752	Link assembly, four-point	1
5306-00-435-8994	Bolt, 1-in diam, 4-in long	
5310-00-232-5165	Nut, 1-in	
5365-00-007-3414	Spacer, large	
5510-00-220-6146	Lumber, 2- by 4-in:	
	5 1/2-in	2
	23-in	4
	38-in	2
	42-in	2
	96-in	2
5510-00-220-6448	Lumber, 2- by 6-in:	
	12-in	4
	37 7/8-in	2
	42-in	2
	44 1/4-in	4
	51-in	1
	Nail, steel wire, common:	
5315-00-010-4659	8d	As required
5315-00-010-4663	16d	As required
1670-00-753-3928	Pad, energy-dissipating, honeycomb,	
	3- by 36- by 96-in:	19 sheets
	7- by 96-in	(14)
	12- by 12-in	(3)
	12- by 16-in	(1)

Table 5-1. Equipment required for rigging the ARAAV for low-velocity airdrop on a type V airdrop platform from a C-130 aircraft (continued)

National Stock Number	Item	Quantity
	12- by 18-in	(14)
	12- by 96-in	(28)
	16- by 24-in	(8)
	16- by 96-in	(4)
	36- by 84-in	(1)
	36- by 96-in	(15)
	43- by 18-in	(7)
	Parachute:	
1670-01-016-7841	Cargo, G-11C	8
1670-00-040-8135	Cargo extraction, 28-ft, heavy-duty	2
	Platform, airdrop, type V, 28-ft:	1
	Bracket:	
1670-01-162-2375	Inside EFTA	(1)
1670-01-162-2374	Outside EFTA	(1)
1670-01-162-2372	Clevis, load tiedown	(58)
1670-01-162-2376	Extraction bracket assembly	(1)
1670-01-162-2381	Tandem link assembly (multipurpose link)	(2)
5530-00-128-4981	Plywood, 3/4- by 48- by 96-in	1
1670-01-097-8817	Release, cargo parachute, M-2, modified	1
	Sling, cargo, airdrop:	
	For deployment lines:	
1670-01-062-6304	9-ft (2-loop), type XXVI nylon webbing	3
1670-01-062-6305	9-ft (4-loop), type XXVI nylon webbing	1
	For riser extensions:	
1670-00-432-2494	120-ft (3-loop), type X nylon webbing	8
	or	
1670-01-062-6311	120-ft (2-loop), type XXVI nylon webbing	8
	For suspension slings:	
1670-00-432-2507	16-ft (4-loop), type XXVI nylon webbing	4
	or	
1670-00-003-7237	16-ft (4-loop), type XXVI nylon webbing	4
	or	
1670-01-062-6308	16-ft (4-loop), type XXVI nylon webbing	4
1670-00-998-0116	Strap, parachute release, multicut comes w 3 knives	2
7510-00-266-5016	Tape, adhesive, 2-in	As required
1670-00-937-0271	Tiedown assembly, 15-ft	84
	Webbing:	
8305-00-268-2411	Cotton, 80-lb	As required
	Nylon:	
8305-00-082-5752	Tubular, 1/2-in, 1,000-lb, natural	As required
8305-00-261-8584	Type X, treated, 8,700-lb, olive drab	As required

Section II

RIGGING ARAAV FOR AIRDROP FROM A C-141 AIRCRAFT

5-18. Description of Load

The M551A1 rigged with equipment, ammunition, and POL weighs 38,490 pounds. This vehicle is rigged with a load similar to that in Section I; however, some items have been deleted or substituted so that the load does not exceed 38,500 pounds for the C-141 aircraft. See paragraph 5-21 for the exceptions.

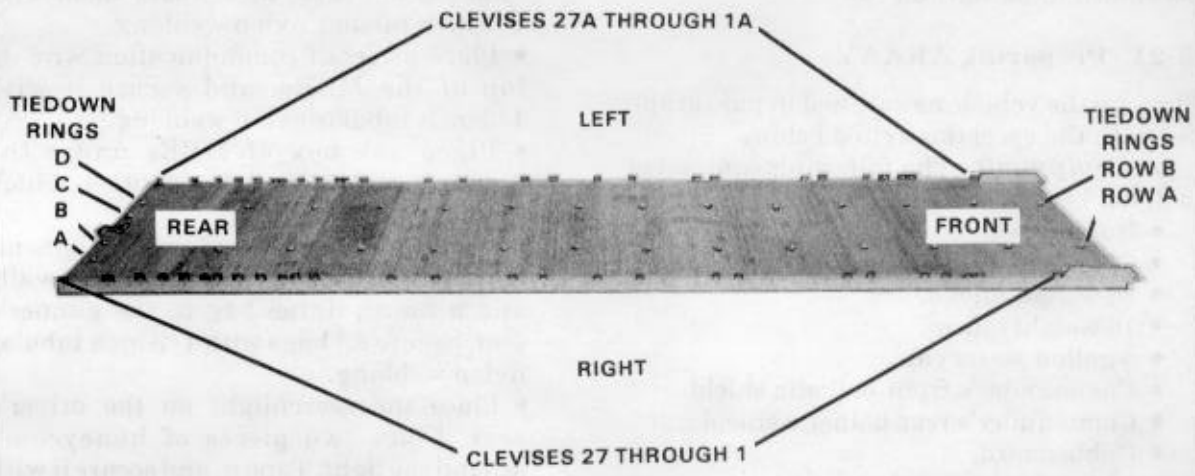
5-19. Preparing Platform

Prepare a 28-foot, type V airdrop platform using two tandem links and 54 tiedown clevises as shown in Figure 5-35.

NOTES:

1. During contingency (wartime) operation, with Air Force approval, the maximum rigged weight of the M551A1 may be increased to 42,000 pounds.

2. The nose bumper must not be installed because of rigged weight limitations.



Step:

1. Inspect, or assemble and inspect, the platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22.

2. Install a tandem link on each platform side rail using bushings 1, 2, and 3.

3. Install clevises on each platform side rail using bushings 4, 8, 9, 10, 11, 14, 15, 21, 22, 26, 28, 31, 33, 37, 39, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 54, and 56.

Note: Clevises in bushings 49, 52, and 54 will be turned upside down for the parachute restraint straps.

4. Starting at the front of the platform, number the clevises bolted to the right side from 1 through 27 and those bolted to the left side from 1A through 27A.

5. Starting at the front of the platform, number the tiedown rings 1 through 14. Label the rows A and B from right to left. Label the tiedown rings on the last panel A, B, C, and D from right to left.

Figure 5-35. Platform prepared

5-20. Building and Placing Honeycomb Stacks

Prepare and position the honeycomb stacks as shown in paragraph 5-3.

5-21. Preparing ARAAV

Prepare the vehicle as outlined in paragraph 5-4 with the exceptions cited below.

a. Equipment. The following equipment will not be dropped with the vehicle:

- Bussel rack.
- Clam shells.
- 30-weight oilcan.
- 10-weight oilcan.
- 5-gallon water can.
- Commander's front ballistic shield.
- Commander's rear ballistic shield.
- Cable guard.
- LRF cable connection guard.
- Laser range finder.
- Track shoes.

b. Ammunition. The following ammunition will be dropped with this load:

NOTE: Substitution of ammunition must not exceed 1,000 pounds.

- Two missiles.
- Five heat ammunition.
- Two APERS rounds.
- 800 rounds of 50-caliber ammunition.
- 2,400 rounds of 7.62-millimeter ammunition.
- One 50-caliber A-frame.
- One coaxial gun in its mount.

c. Turret Rack Changes. Do not attach the turret rack to the rear of the vehicle. Instead, initiate the following changes:

- Place two boxes of MREs on top of the ammunition rack, and secure them with 1/2-inch tubular nylon webbing.
- Place a reel of communication wire on top of the MREs, and secure it with 1/2-inch tubular nylon webbing.
- Place one box of MREs under the gunner's seat, and secure it with 1/2-inch tubular nylon webbing.
- Place three duffel bags (crew equipment) between the rations and the turret walls and a fourth duffel bag in the gunner's seat. Secure all bags with 1/2-inch tubular nylon webbing.
- Place the searchlight on the driver's seat. Place two pieces of honeycomb around the light. Tape it, and secure it with 1/2-inch tubular nylon webbing.

5-22. Installing Load Cover and Track Support Tiedown Straps

Install the load cover and track support tiedown straps as shown in paragraph 5-5.

5-23. Positioning ARAAV on Platform

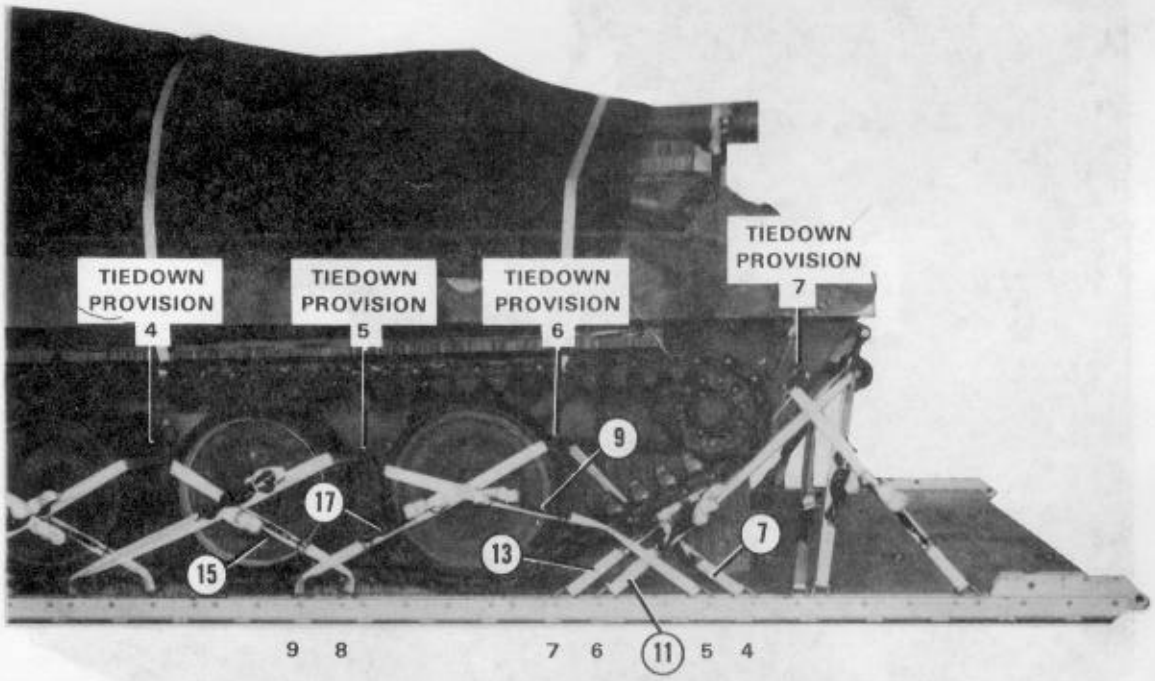
Position the ARAAV on the platform as shown in paragraph 5-7.

5-24. Lashing ARAAV

Lash the ARAAV to the platform with forty-two 15-foot Dacron tiedown assemblies. Install the lashings as shown in Figures 5-36 through 5-39.

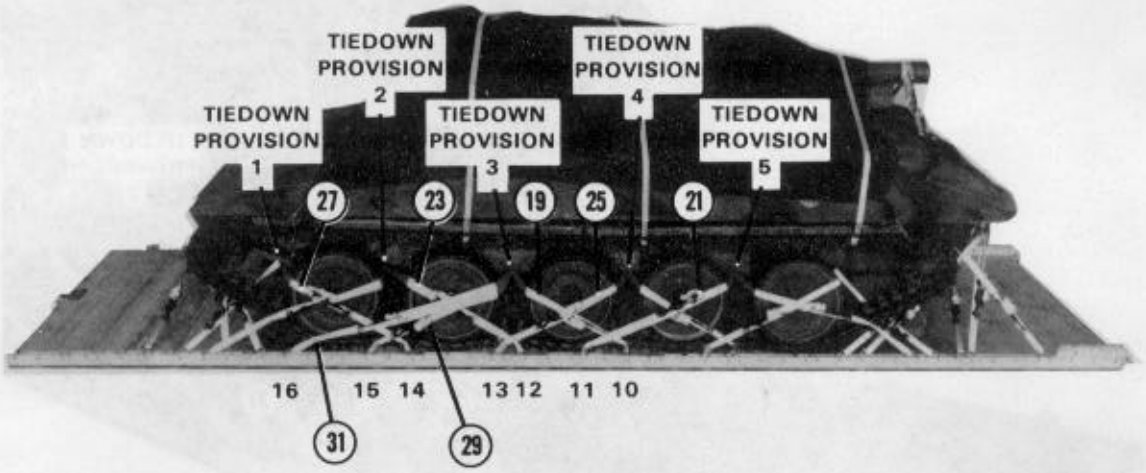
Lashing Number	Tiedown Clevis Number	Instructions
		Pass lashing:
1	1	To tiedown provision 7.
2	1A	To tiedown provision 7.
3	2	To left rear towing clevis.
4	2A	To right rear towing clevis.
5	3	To right rear towing clevis.
6	3A	To left rear towing clevis.

Figure 5-36. Lashings 1 through 6 installed



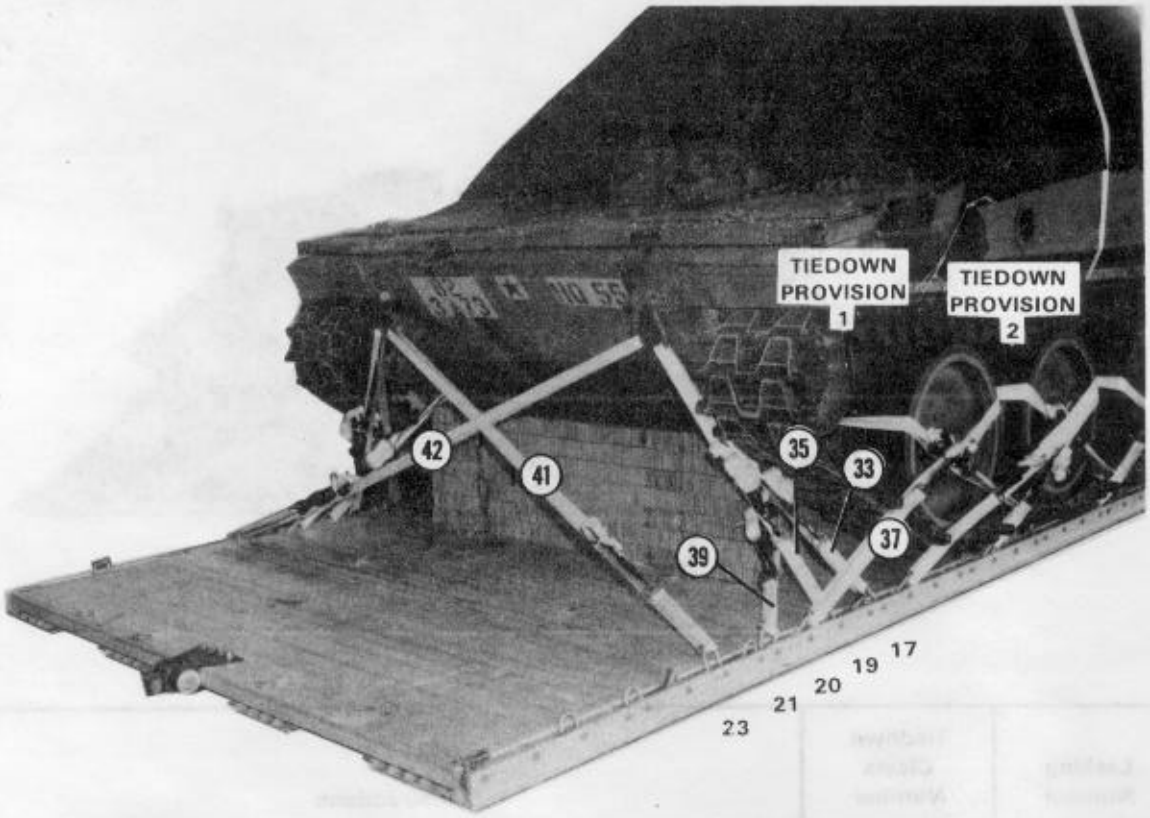
Lashing Number	Tiedown Clevis Number	Instructions
		Pass lashing:
7	4	To tiedown provision 6.
8	4A	To tiedown provision 6.
9	5	To tiedown provision 5.
10	5A	To tiedown provision 5.
11	6	To left towing clevis.
12	6A	To right towing clevis.
13	7	To tiedown provision 7.
14	7A	To tiedown provision 7.
15	8	To tiedown provision 4.
16	8A	To tiedown provision 4.
17	9	To tiedown provision 6.
18	9A	To tiedown provision 6.

Figure 5-37. Lashings 7 through 18 installed



Lashing Number	Tiedown Clevis Number	Instructions
		Pass lashing:
19	10	To tiedown provision 3.
20	10A	To tiedown provision 3.
21	11	To tiedown provision 5.
22	11A	To tiedown provision 5.
23	12	To tiedown provision 2.
24	12A	To tiedown provision 2.
25	13	To tiedown provision 4.
26	13A	To tiedown provision 4.
27	14	To tiedown provision 1.
28	14A	To tiedown provision 1.
29	15	To tiedown provision 3.
30	15A	To tiedown provision 3.
31	16	To tiedown provision 3.
32	16A	To tiedown provision 3.

Figure 5-38. Lashings 19 through 32 installed



Lashing Number	Tiedown Clevis Number	Instructions
		Pass lashing:
33	17	To left front towing clevis.
34	17A	To right front towing clevis.
35	19	To left front towing clevis.
36	19A	To right front towing clevis.
37	20	To tiedown provision 2.
38	20A	To tiedown provision 2.
39	21	To tiedown provision 1.
40	21A	To tiedown provision 1.
41	23	To right front towing clevis.
42	23A	To left front towing clevis.

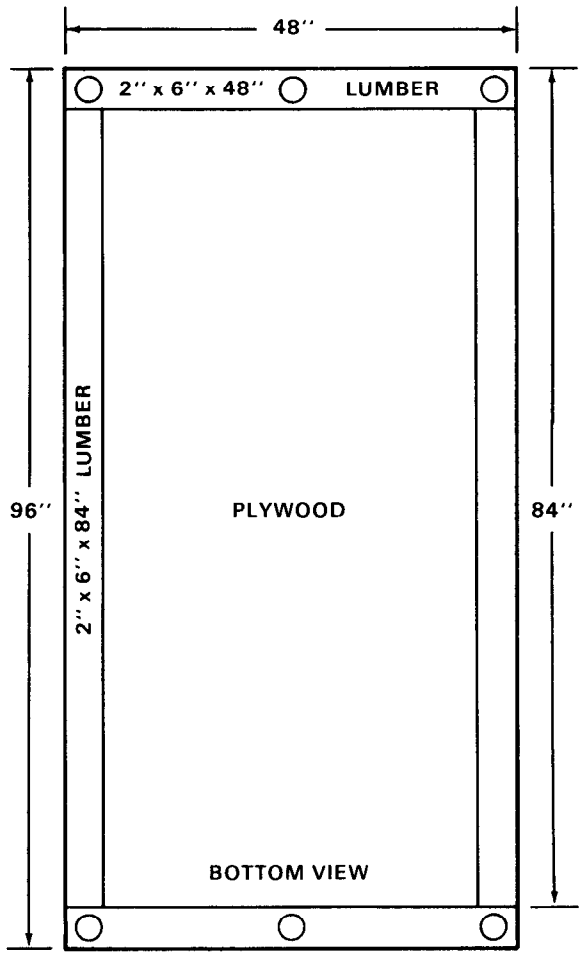
Figure 5-39. Lashings 33 through 42 installed

5-25. Building and Installing Cargo Parachute Stowage Platform

Build and install the cargo parachute stowage platform as described below.

a. Building Cargo Parachute Stowage Platform. Build the platform as shown in Figure 5-40.

Note: This drawing is not drawn to scale.

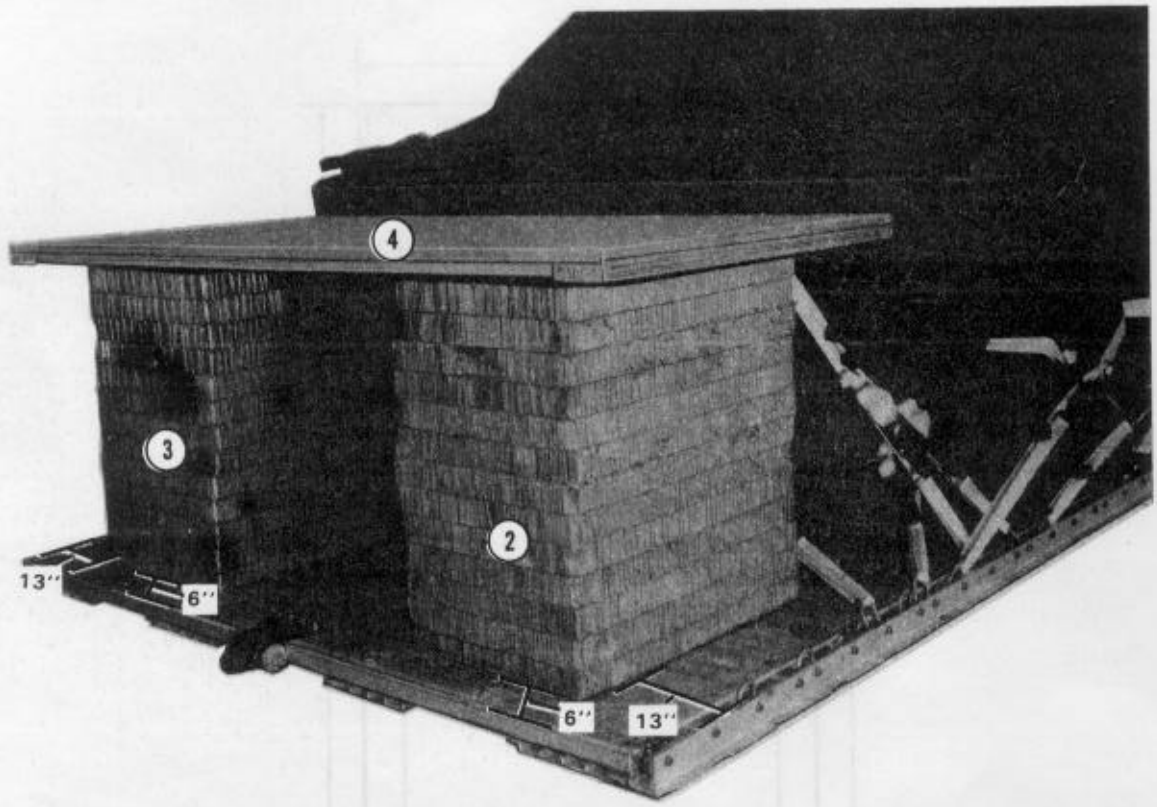


Step:

1. Nail two 2- by 6- by 48-inch and two 2- by 6- by 84-inch pieces of lumber to the bottom edges of a 3/4- by 48- by 96-inch piece of plywood using sixpenny nails.
2. Drill six 2-inch holes centered through the lumber and plywood as shown.

Figure 5-40. Cargo parachute stowage platform constructed

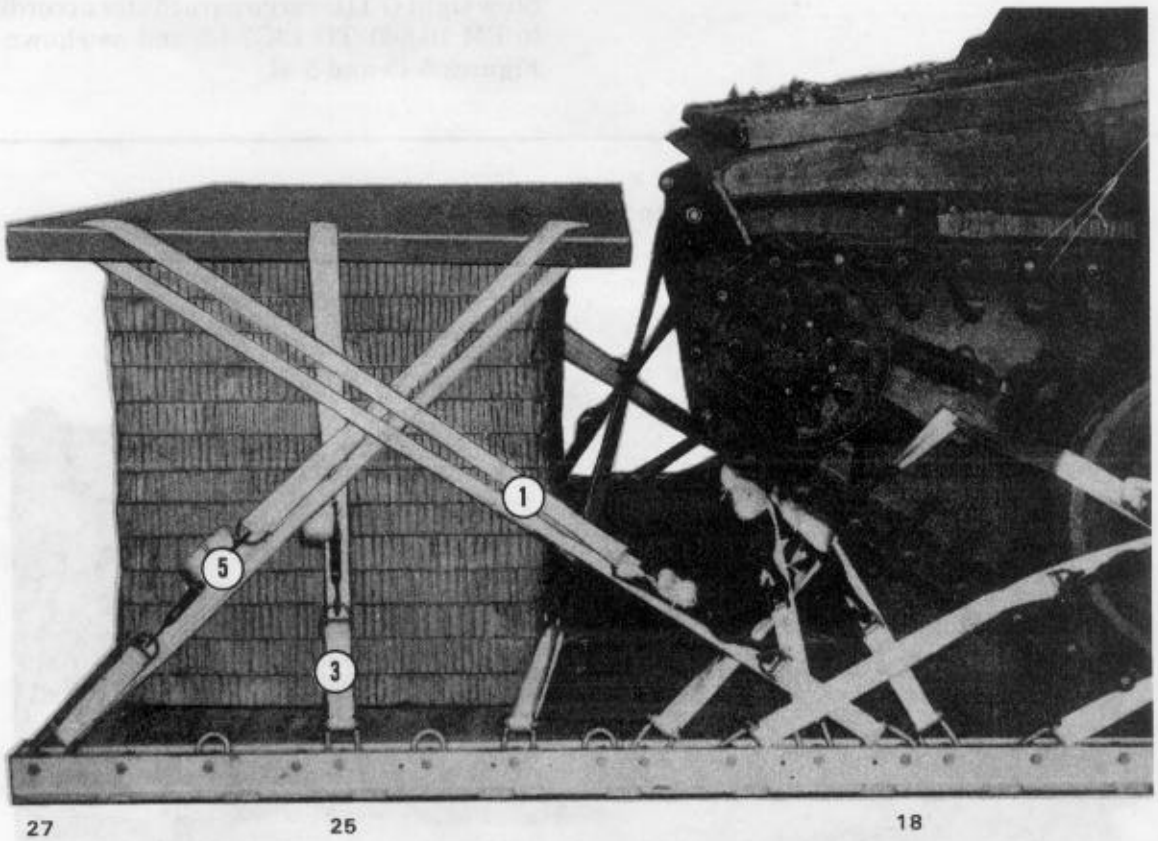
b. Building Honeycomb Stacks and Positioning Cargo Parachute Stowage Platform. Build the honeycomb stacks and install the cargo parachute stowage platform as shown in Figure 5-41.



1. Construct two 13-layer honeycomb stacks using 24-by 36-inch pieces of honeycomb (not shown).
2. Position the first stack 13 inches from the right outside rail and 6 inches from the rear of the platform.
3. Position the second stack 13 inches from the left outside rail and 6 inches from the rear of the platform.
4. Center the cargo parachute stowage platform on top of the honeycomb stacks.

Figure 5-41. Honeycomb stacks and cargo parachute stowage platform positioned

c. Lashing Cargo Parachute Stowage Platform. Lash the platform as shown in Figure 5-42.



Lashing Number	Tiedown Clevis Number	Instructions
		Pass lashing:
1	18	Through rear hole of platform.
2	18A	Through rear hole of platform.
3	25	Through center hole of platform.
4	25A	Through center hole of platform.
5	27	Through front hole of platform.
6	27A	Through front hole of platform.

Figure 5-42. Cargo parachute stowage platform lashed

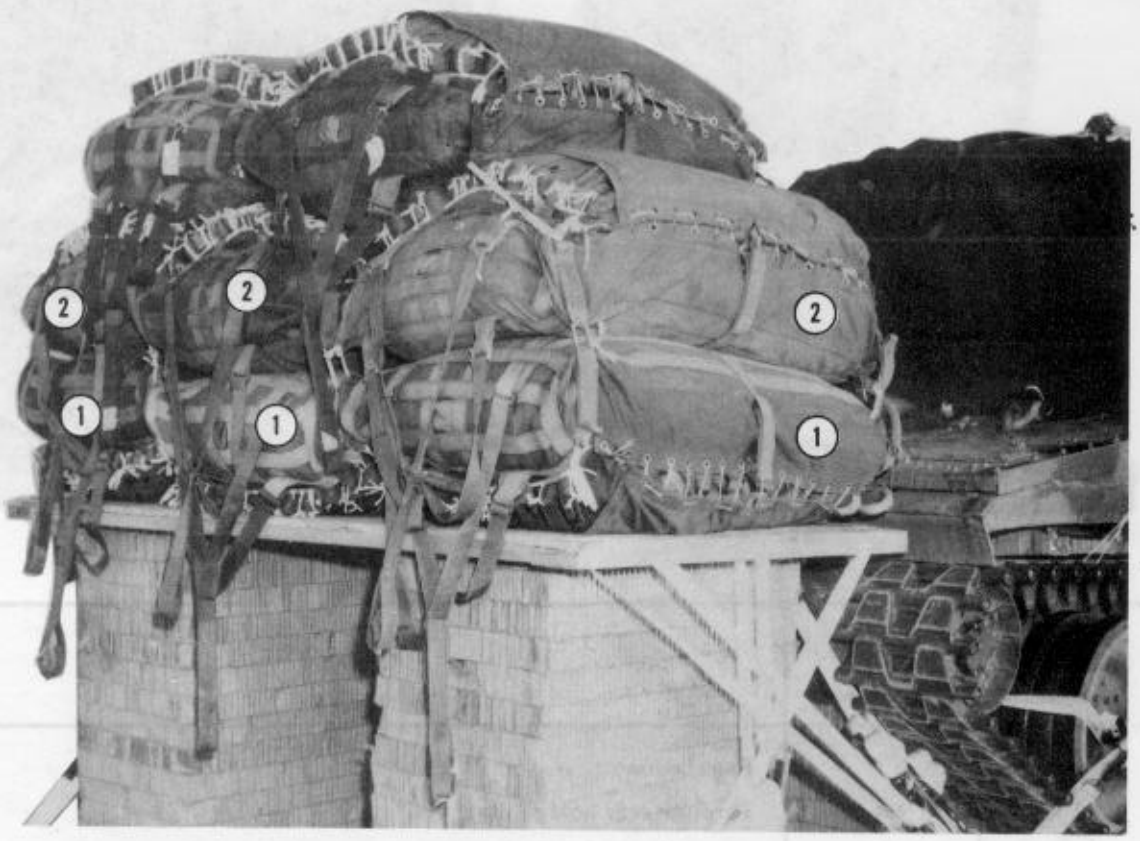
5-26. Installing Suspension Slings and Deadman's Tie

Install the suspension slings and the deadman's tie as shown in paragraph 5-6.

5-27. Stowing Cargo Parachutes

Stow eight G-11C cargo parachutes according to FM 10-500/TO 13C7-1-5 and as shown in Figures 5-43 and 5-44.

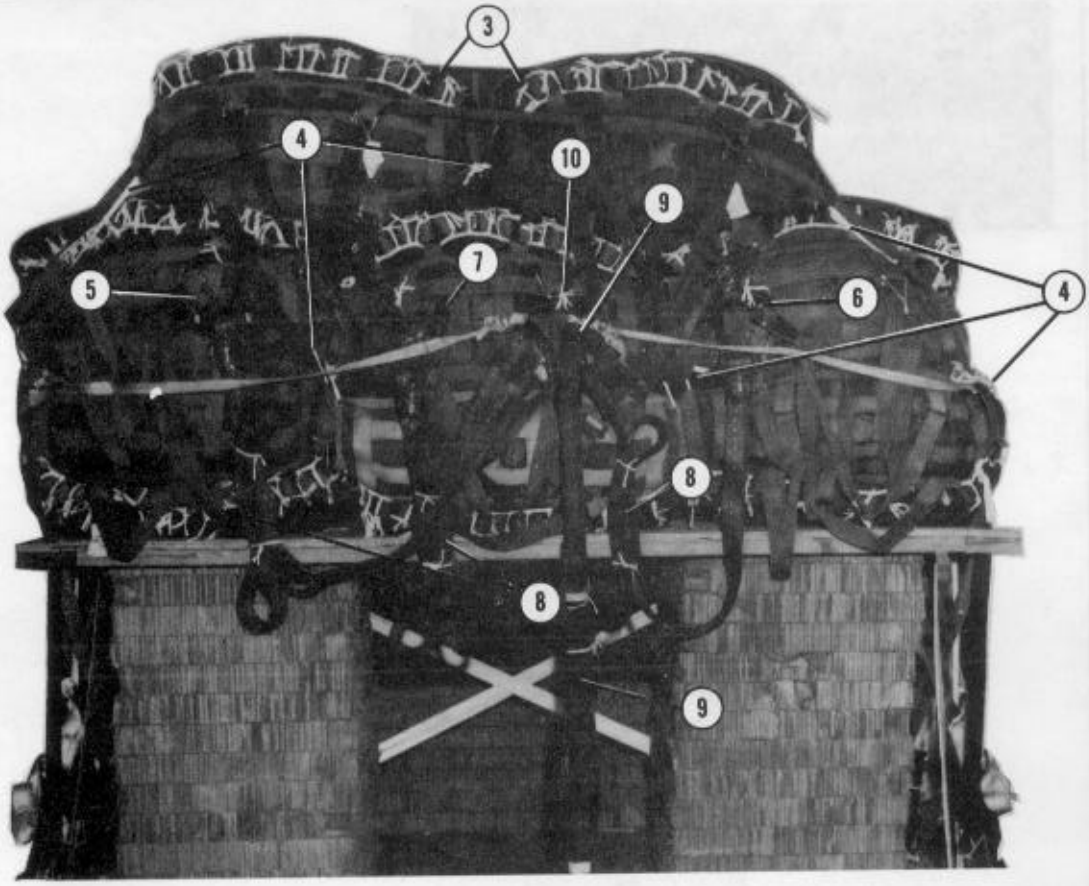
Note: Use either a 120-foot (3-loop), type X or a 120-foot (2-loop), type XXVI nylon webbing riser extension.



(1) Set three parachutes side by side on the parachute stowage tray with the riser compartments on the bottom.

(2) Set three additional parachutes side by side on top of the first layer of parachutes with riser compartments on top.

Figure 5-43. Parachutes stowed



(3) Center the two remaining parachutes side by side on top of the second layer with the riser compartments on top.

(4) Cluster the parachutes together with 1/2-inch tubular nylon webbing.

(5) Group the deployment bag bridle loops of the three cargo parachutes on the left on one large clevis assembly.

(6) Group the deployment bag bridle loops of the three cargo parachutes on the right on a second large clevis assembly.

(7) Group the deployment bag bridle loops of the two center parachutes on a third large clevis assembly.

(8) Attach a 9-foot (2-loop), type XXVI nylon sling deployment line to each of the three large clevis assemblies.

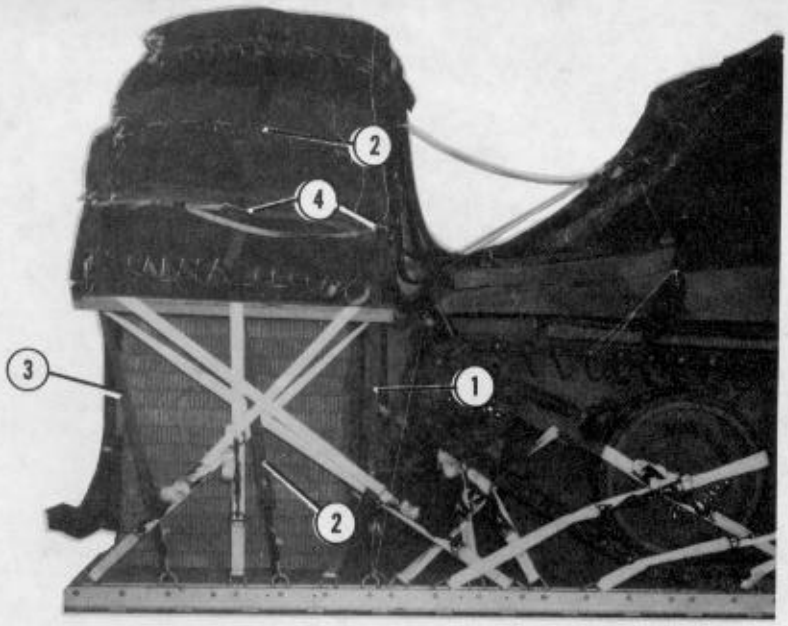
(9) Place the free ends of the deployment lines on the arms of a large clevis assembly, and bolt a 9-foot (4-loop), type XXVI nylon webbing sling to the same clevis.

(10) Tie the clevises (steps 6 through 9) to the cargo parachutes with double lengths of 80-pound cotton webbing. Fold the excess in slings, and tape the folds in place.

Figure 5-43. Parachutes stowed (continued)

CAUTION

The load binders of the parachute restraint straps must be tied to the load with lengths of type III nylon cord to prevent loss during airdrop.



(1) Run an 11-yard length of type X nylon webbing (restraint strap) across the front of the parachutes and through all available cluster attaching straps (carrying handles) inside and outside. Run the ends of the strap through the front holes in the stowage platform, and attach them to clevises 22 and 22A with two D-rings and load binders.

(2) Run an 11-yard restraint strap across the middle of the parachutes and through the cluster attaching straps. Run the ends of the strap through the middle holes in the stowage platform, and attach them to clevises 24 and 24A with two D-rings and load binders.

(3) Run an 11-yard restraint strap across the rear of the parachutes, through the cluster attaching loops, and through all bridle attaching loops. Run the ends of the strap through the middle holes of the stowage platform, and attach them to clevises 26 and 26A with two D-rings and load binders.

(4) Install two multicut parachute release straps with three release knives as outlined in FM 10-500/TO 13C7-1-5.

Note: Only the multicut parachute release strap may be used on this load.

(5) Tie the free ends of the release straps to the deployment line clevis (not shown).

Figure 5-44. Release strap installed

5-28. Installing Extraction System

Install the components of the EFTC as shown in paragraph 5-13.

5-29. Installing Release System

Prepare and attach a modified M-2 cargo parachute release as shown in paragraph 5-14.

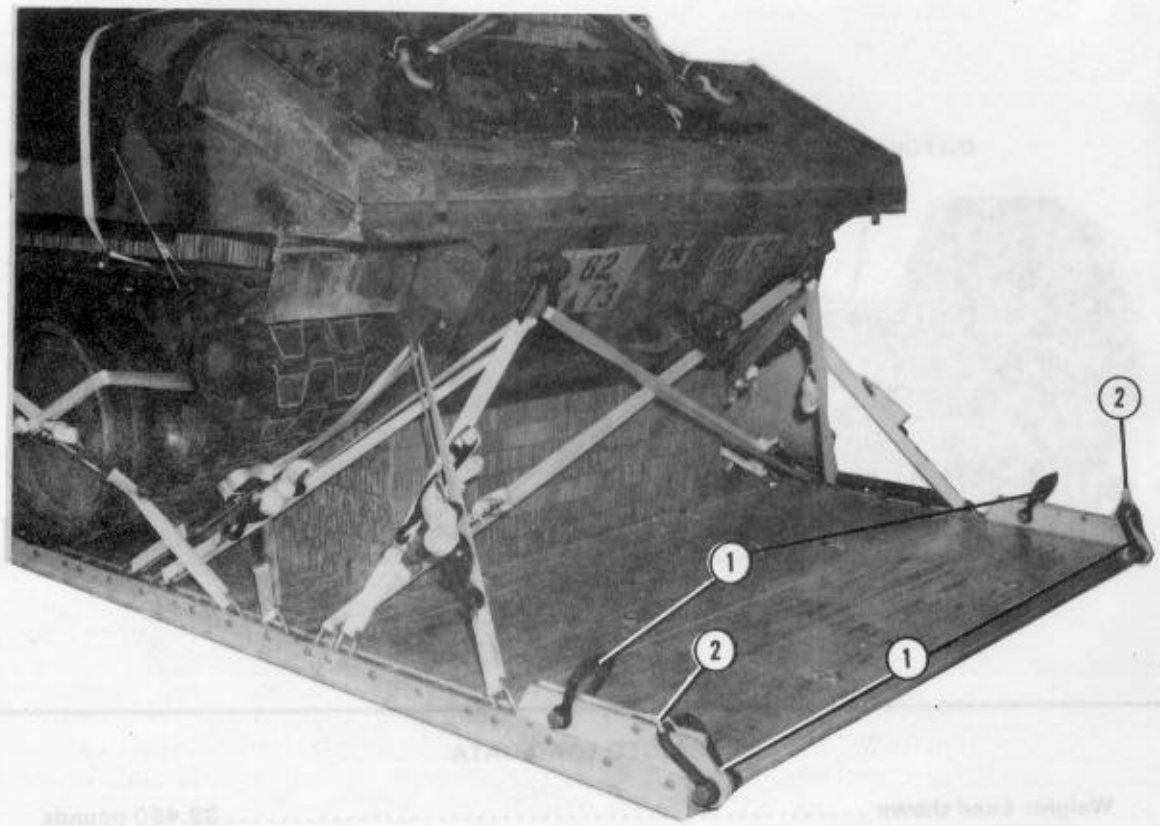
5-30. Placing Extraction Parachutes

Cluster two 28-foot cargo extraction parachutes as outlined in FM 10-500/TO 13C7-1-5 and position them on the load for installation in the aircraft. Equip the parachutes with a 120-foot (6-loop), type XXVI nylon webbing extraction line.

5-31. Installing Provisions for Emergency Restraints

NOTE: This paragraph applies only to the C-141 aircraft.

Install two large clevises on each tandem link as provisions for the emergency restraints as shown in Figure 5-45.



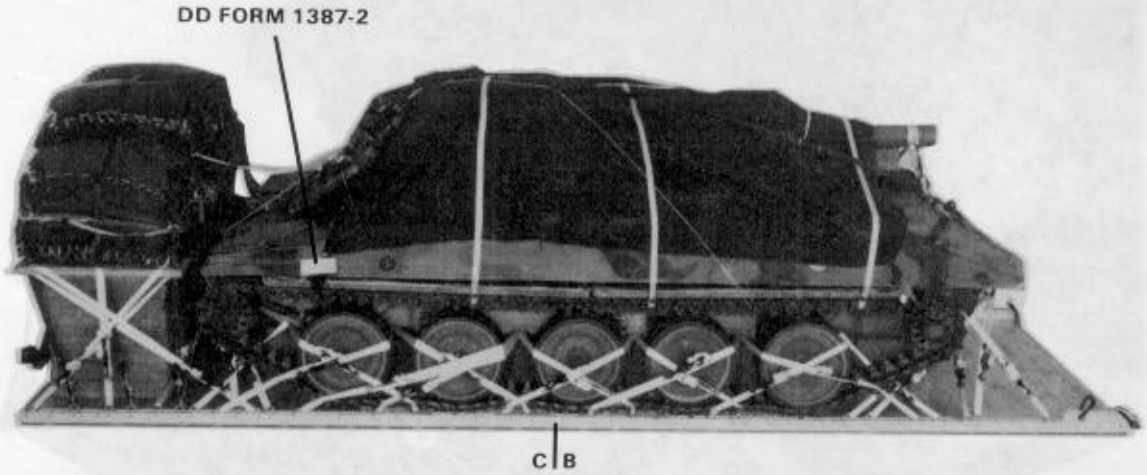
(1) Install two large suspension clevises on each tandem link.

(2) Tie the front clevis on each tandem link down with 1/2-inch tubular nylon webbing.

Figure 5-45. Provisions for emergency restraints installed

5-32. Marking Rigged Load

Mark the rigged load as outlined in FM 10-500/TO 13C7-1-5 and as shown in Figure 5-46. Complete DD Form 1387-2, and securely attach it to the load. Indicate on DD Form 1387-2 that the vehicle fuel tank and battery have been prepared according to AFR 71-4/TM 38-250. If the load varies from the one shown, the weight, height, CB, and parachute requirements must be recomputed.



RIGGED LOAD DATA

Weight: Load shown	38,490 pounds
Maximum allowed	38,500 pounds
Height	101 1/2 inches
Width	110 inches
Length	346 inches
Overhang: (rear)	25 inches
CB (from front edge of platform)	163 inches

Figure 5-46. M551A1 ARAAV rigged for low-velocity airdrop on a type V platform

5-33. Equipment Required

Use the equipment listed in Table 5-2 to rig this load.

Table 5-2. Equipment required for rigging the ARAAV for low-velocity airdrop on a type V airdrop platform from a C-141 aircraft

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive, paste, 1-gal	As required
3990-00-937-0272	Binder, load, 10,000-lb	6
4030-00-090-5354	Clevis, suspension, 1-in (large)	4
4030-00-432-2516	Clevis, screw-pin	4
8305-00-242-3593	Cloth, cotton duck, 60-in	As required
4020-00-240-2146	Cord, nylon, type III, 550-lb	As required
1670-00-157-6527	Coupling, airdrop, extraction force transfer w 28-ft cable	1
8135-00-664-6958	Cushioning material, packaging, cellulose wadding	As required
5365-00-937-0147	D-ring, heavy-duty, 10,000-lb	6
8305-00-958-3685	Felt, 1/2-in thick	As required
1670-01-062-6312	Line, extraction, 120-ft (6-loop), type XXVI nylon webbing (for C-141) (Use with 28-ft parachute.)	1
1670-00-006-2752	Link assembly, four-point	1
5306-00-435-8994	Bolt, 1-in diam, 4-in long	
5310-00-232-5165	Nut, 1-in	
5365-00-007-3414	Spacer, large	
5510-00-220-6448	Lumber, 2- by 6-in:	
	48-in	2
	85-in	2
	Nail, steel wire, common:	
5315-00-010-4657	6d	As required
5315-00-010-4659	8d	As required
5315-00-010-4663	16d	As required
1670-00-753-3928	Pad, energy-dissipating, honeycomb, 3- by 36- by 96-in:	19 sheets
	12- by 12-in	(1)
	12- by 16-in	(1)
	12- by 18-in	(14)
	12- by 96-in	(28)
	16- by 24-in	(8)
	16- by 96-in	(4)
	24- by 36-in	(30)
	36- by 54-in	(1)
	36- by 84-in	(1)
	36- by 96-in	(1)

Table 5-2. Equipment required for rigging the ARAAV for low-velocity airdrop on a type V airdrop platform from a C-141 aircraft (continued)

National Stock Number	Item	Quantity
	43- by 18-in	(7)
	43- by 96-in	(14)
	Parachute:	
1670-01-016-7841	Cargo, G-11C	8
1670-00-040-8135	Cargo extraction, 28-ft, heavy-duty	2
	Platform, airdrop, type V, 28-ft:	1
	Bracket:	
1670-01-162-2375	Inside EFTA	(1)
1670-01-162-2374	Outside EFTA	(1)
1670-01-162-2372	Clevis, load tiedown	(64)
1670-01-162-2376	Extraction bracket assembly	(1)
1670-01-162-2381	Tandem link assembly (multipurpose link)	(2)
5530-00-128-4981	Plywood, 3/4- by 48- by 96-in	1
1670-01-097-8817	Release, cargo parachute, M-2, modified	1
	Sling, cargo, airdrop:	
	For deployment lines:	
1670-01-062-6304	9-ft (2-loop), type XXVI nylon webbing	3
1670-01-062-6305	9-ft (4-loop), type XXVI nylon webbing	1
	For riser extensions:	
1670-00-432-2494	120-ft (3-loop), type X nylon webbing	8
	or	
1670-01-062-6311	120-ft (2-loop), type XXVI nylon webbing	8
	For suspension sling:	
1670-00-432-2507	16-ft (4-loop), type XXVI nylon webbing	4
	or	
1670-00-003-7237	16-ft (4-loop), type XXVI nylon webbing	4
	or	
1670-01-062-6308	16-ft (4-loop), type XXVI nylon webbing	4
1670-00-998-0116	Strap, parachute release, multicut comes w 3 knives	2
7510-00-266-5016	Tape, adhesive, 2-in	As required
1670-00-937-0271	Tiedown assembly, 15-ft	84
	Webbing:	
8305-00-268-2411	Cotton, 80-lb	As required
	Nylon:	
8305-00-082-5752	Tubular, 1/2-in, 1,000-lb, natural	As required
8305-00-261-8584	Type X, treated, 8,700-lb, olive drab	As required

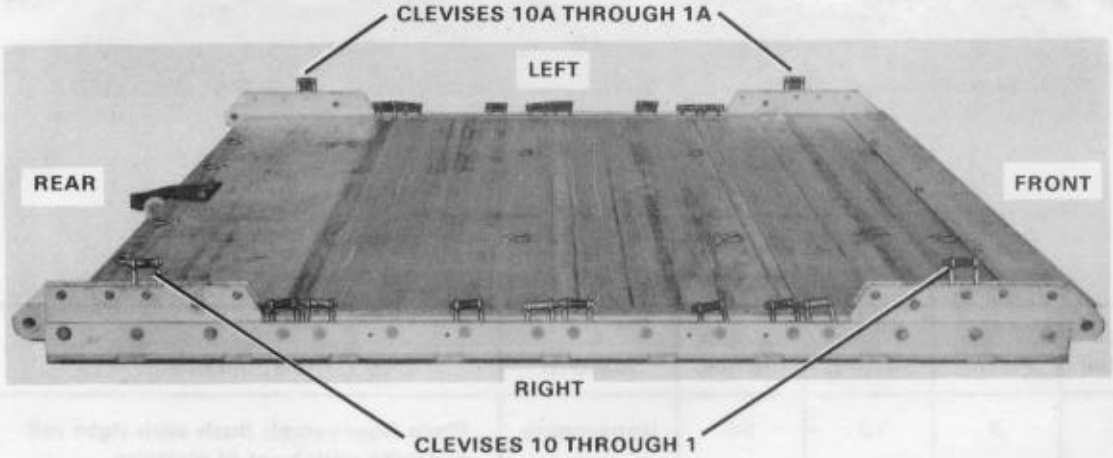
CHAPTER 7 RIGGING SHILLELAGH MISSILES FOR LOW-VELOCITY AIRDROP ON A TYPE V PLATFORM

7-1. Description of Load

Forty-two Shillelagh missiles in their containers are rigged on an 8-foot, type V platform with two G-11A or two G-11B cargo parachutes. Each missile in its container weighs 116 pounds.

7-2. Preparing Platform

Prepare an 8-foot, type V airdrop platform using four tandem links and 20 tiedown clevises as shown in Figure 7-1.



Step:

1. Inspect, or assemble and inspect, the platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22.

2. Install a tandem link on the front of each platform side rail using holes 1, 2, and 3 and on the rear of each platform side rail using holes 14, 15, and 16.

3. Install a clevis on bushing 3 on each front tandem link and on bushing 2 on each rear tandem link.

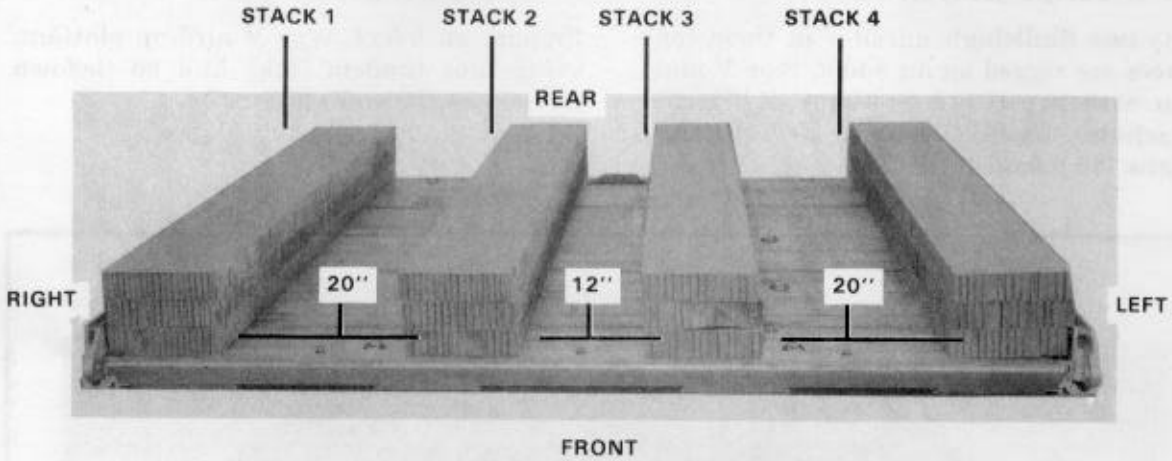
4. Starting at the front of each platform side rail, install clevises on each platform side rail using the bushings bolted on holes 4, 5, 6, 8, 9, 10, 12, and 13.

5. Starting at the front of the platform, number the clevises bolted to the right side from 1 through 10 and those bolted to the left side from 1A through 10A.

Figure 7-1. Platform prepared

7-3. Building and Placing Honeycomb Stacks

Build four honeycomb stacks and place them on the platform as shown in Figure 7-2.

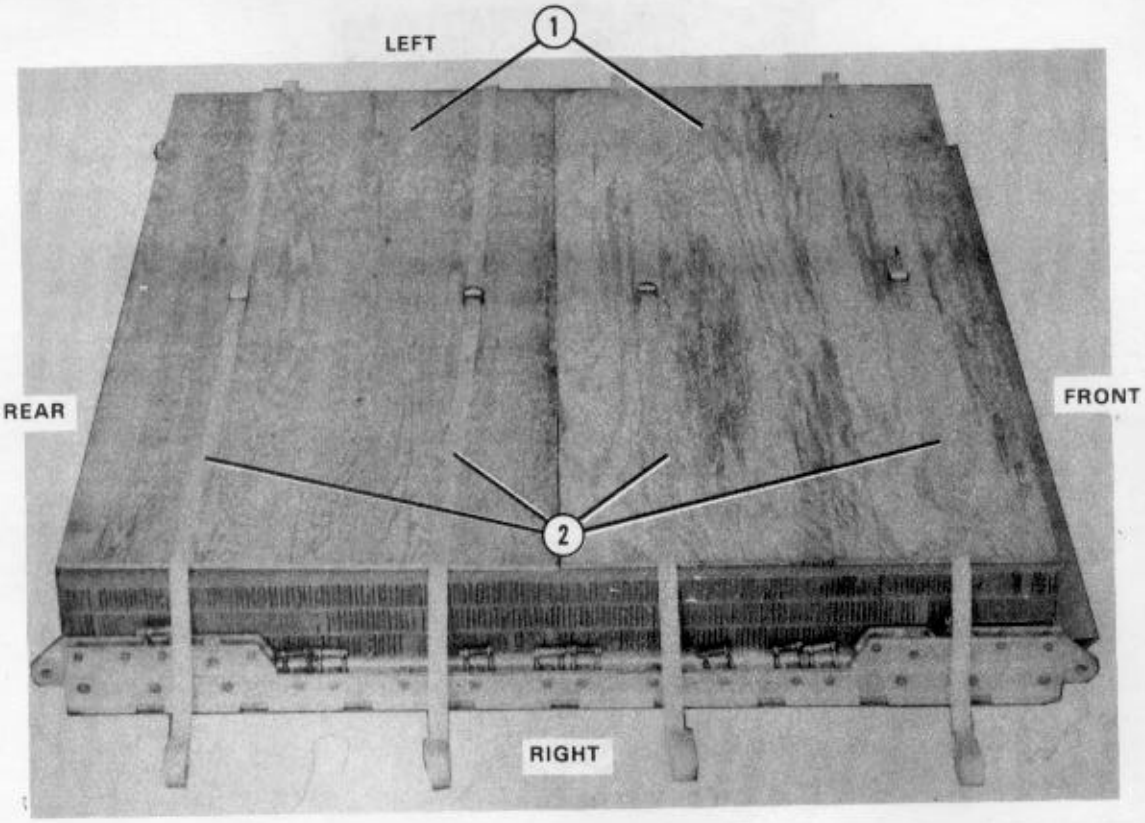


Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
1	3	12	96	Honeycomb	Place honeycomb flush with right rail and even with front of platform.
2	3	12	96	Honeycomb	Place honeycomb 20 inches from stack 1 and even with front of platform.
3	3	12	96	Honeycomb	Place honeycomb 12 inches from stack 2 and even with front of platform.
4	3	12	96	Honeycomb	Place honeycomb 20 inches from stack 3 and even with front of platform.

Figure 7-2. Honeycomb stacks prepared and placed on platform

7-4. Installing Plywood and Lashings

Install plywood and lashings on the honeycomb stacks as shown in Figure 7-3.



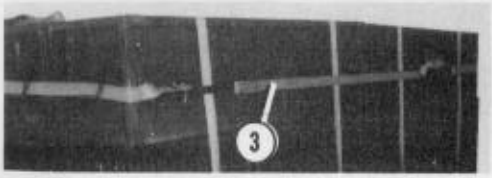
(1) Place two pieces of 1/2- by 48- by 96-inch plywood on the honeycomb stacks.

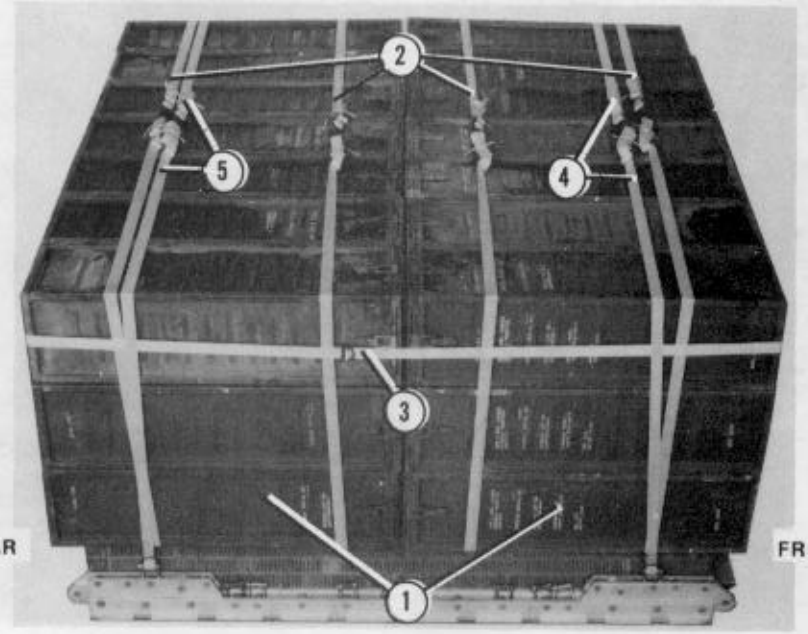
(2) Use eight 15-foot tiedown straps to form four 30-foot lashings according to FM 10-500/TO 13C7-1-5. Space straps evenly over the plywood as shown.

Figure 7-3. Plywood and lashings placed on honeycomb

7-5. Positioning and Lashing Missile Containers

Place the 42 missiles (in their containers) on the platform in rows of three, and bind them as shown in Figure 7-4.





(1) Position 42 missile containers on the platform with the missile containers overhanging the front and rear edges of the platform by 4 1/2 inches.

(2) Bind the missile containers together with the 30-foot lashings. Secure each lashing on top of the containers with two D-rings and a load binder.

(3) Form a 30-foot lashing as outlined in FM 10-500/TO 13C7-1-5. Pass one end of the 30-foot lashing through the top front carrying handles and the other end through the top rear carrying handles. Secure the ends of the 30-foot lashing using a 15-foot tiedown lashing, three D-rings, and two load binders.

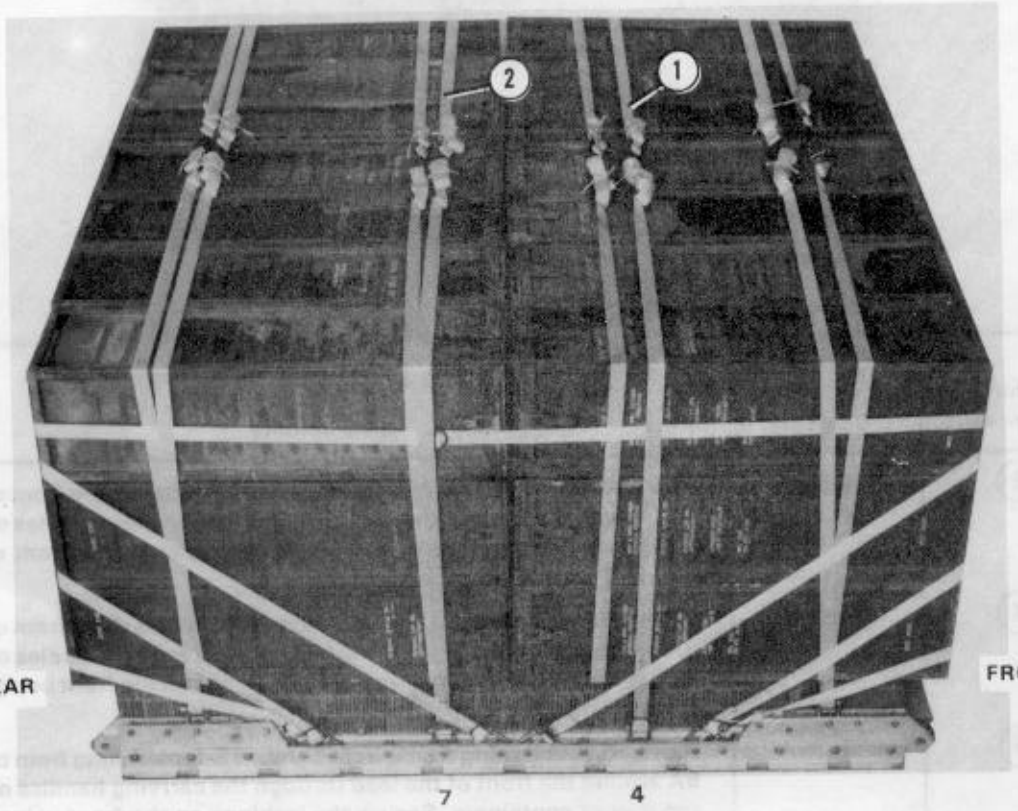
(4) Run a 15-foot lashing from clevis 1 and a 15-foot lashing from clevis 1A over the load. Secure the lashings on top of the load using two D-rings and a load binder.

(5) Run a 15-foot lashing from clevis 10 and a 15-foot lashing from clevis 10A over the load. Secure the lashings on top of the load using two D-rings and a load binder.

Figure 7-4. Missile containers positioned and lashed

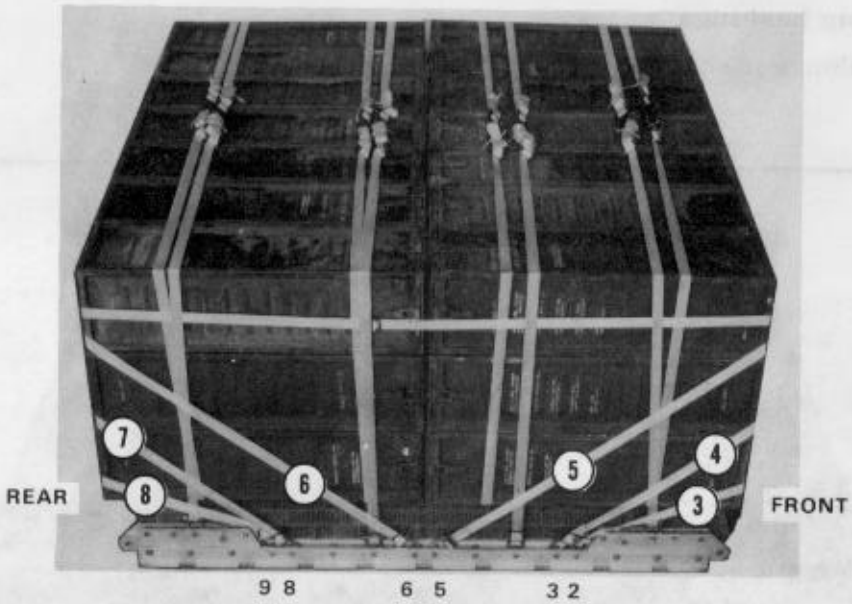
7-6. Installing Lashings

Install the lashings as shown in Figures 7-5 and 7-6.



Lashing Number	Tiedown Clevis Number	Instructions
1	4 and 4A	Run a 15-foot lashing from clevis 4 and a 15-foot lashing from clevis 4A over the load. Secure the lashings on top using two D-rings and a load binder.
2	7 and 7A	Run a 15-foot lashing from clevis 7 and a 15-foot lashing from clevis 7A over the load. Secure the lashings on top using two D-rings and a load binder.

Figure 7-5. Lashings 1 and 2 installed

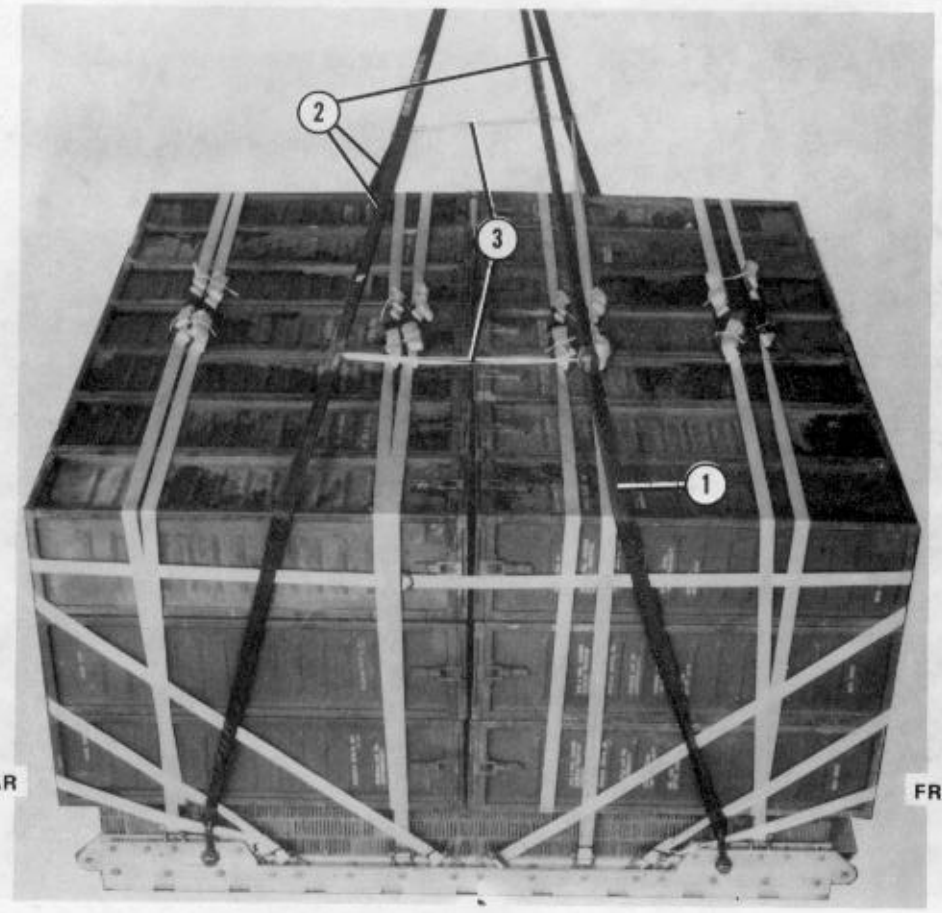


Lashing Number	Tiedown Clevis Number	Instructions
3	2 and 2A	Run a 15-foot lashing from clevis 2 and a 15-foot lashing from clevis 2A around the front of the load through the carrying handles of the bottom row of containers. Secure the lashings on the front using two D-rings and a load binder.
4	3 and 3A	Run a 15-foot lashing from clevis 3 and a 15-foot lashing from clevis 3A around the front of the load through the carrying handles of the center row of containers. Secure the lashings on the front using two D-rings and a load binder.
5	5 and 5A	Run a 15-foot lashing from clevis 5 and a 15-foot lashing from clevis 5A around the front of the load through the carrying handles of the top row of containers. Secure the lashings on the front using two D-rings and a load binder.
6	6 and 6A	Run a 15-foot lashing from clevis 6 and a 15-foot lashing from clevis 6A around the rear of the load through the carrying handles of the top row of containers. Secure the lashings on the rear using two D-rings and a load binder.
7	8 and 8A	Run a 15-foot lashing from clevis 8 and a 15-foot lashing from clevis 8A around the rear of the load through the carrying handles of the center row of containers. Secure the lashings on the rear using two D-rings and a load binder.
8	9 and 9A	Run a 15-foot lashing from clevis 9 and a 15-foot lashing from clevis 9A around the rear of the load through the carrying handles of the bottom row of containers. Secure the lashings on the rear using two D-rings and a load binder.

Figure 7-6. Lashings 3 through 8 installed

7-7. Installing Suspension Slings and Deadman's Tie

Install the suspension slings and the deadman's tie as shown in Figure 7-7.



(1) Attach one 11-foot (4-loop), type XXVI nylon suspension sling to a large clevis. Attach the clevis to one of the tandem links.

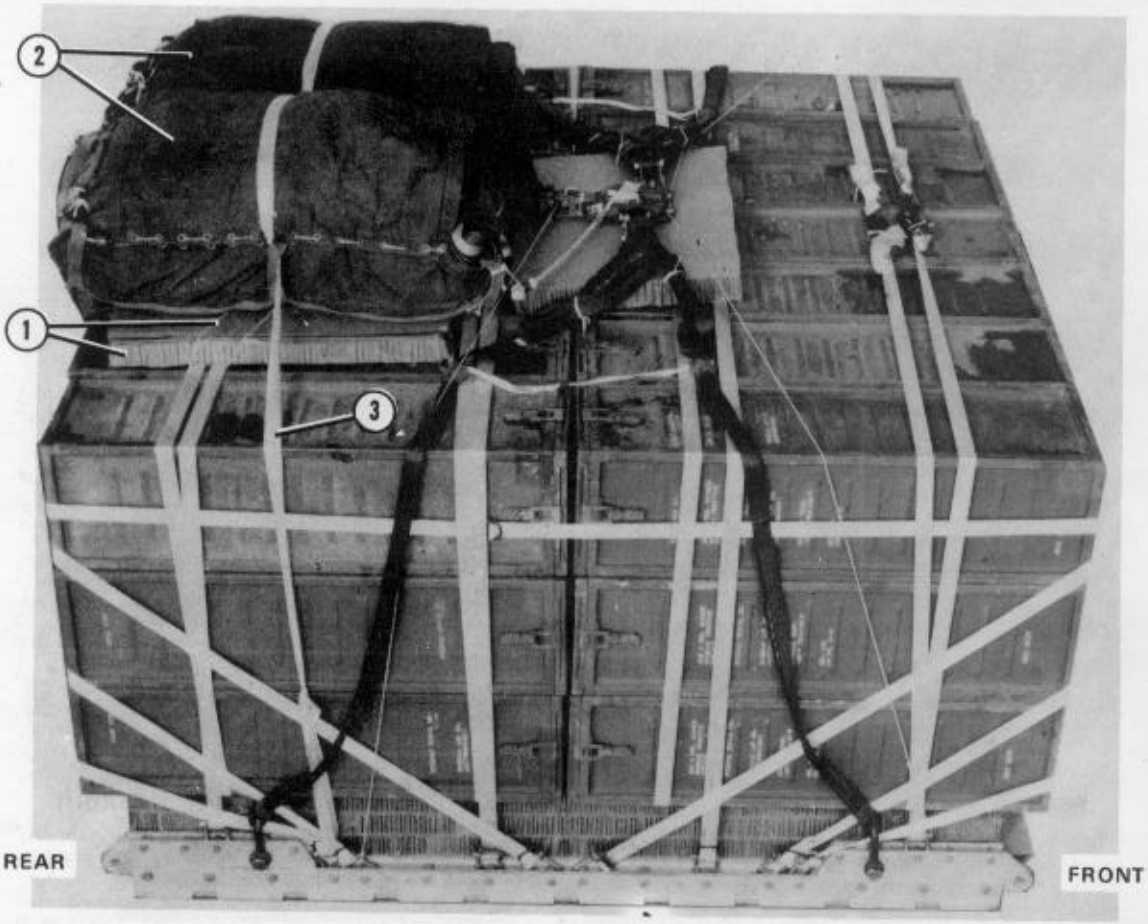
(2) Repeat the same procedure for the other three tandem links.

(3) Raise the four suspension slings above the load, and install a deadman's tie as outlined in FM 10-500/TO 13C7-1-5.

Figure 7-7. Suspension slings and deadman's tie installed

7-8. Stowing Cargo Parachutes

Stow two G-11A or G-11B cargo parachutes according to FM 10-500/TO 13C7-1-5 and as shown in Figure 7-8.



(1) Position a piece of 36- by 71-inch honeycomb on the top rear of the load. Secure the honeycomb with type III nylon cord.

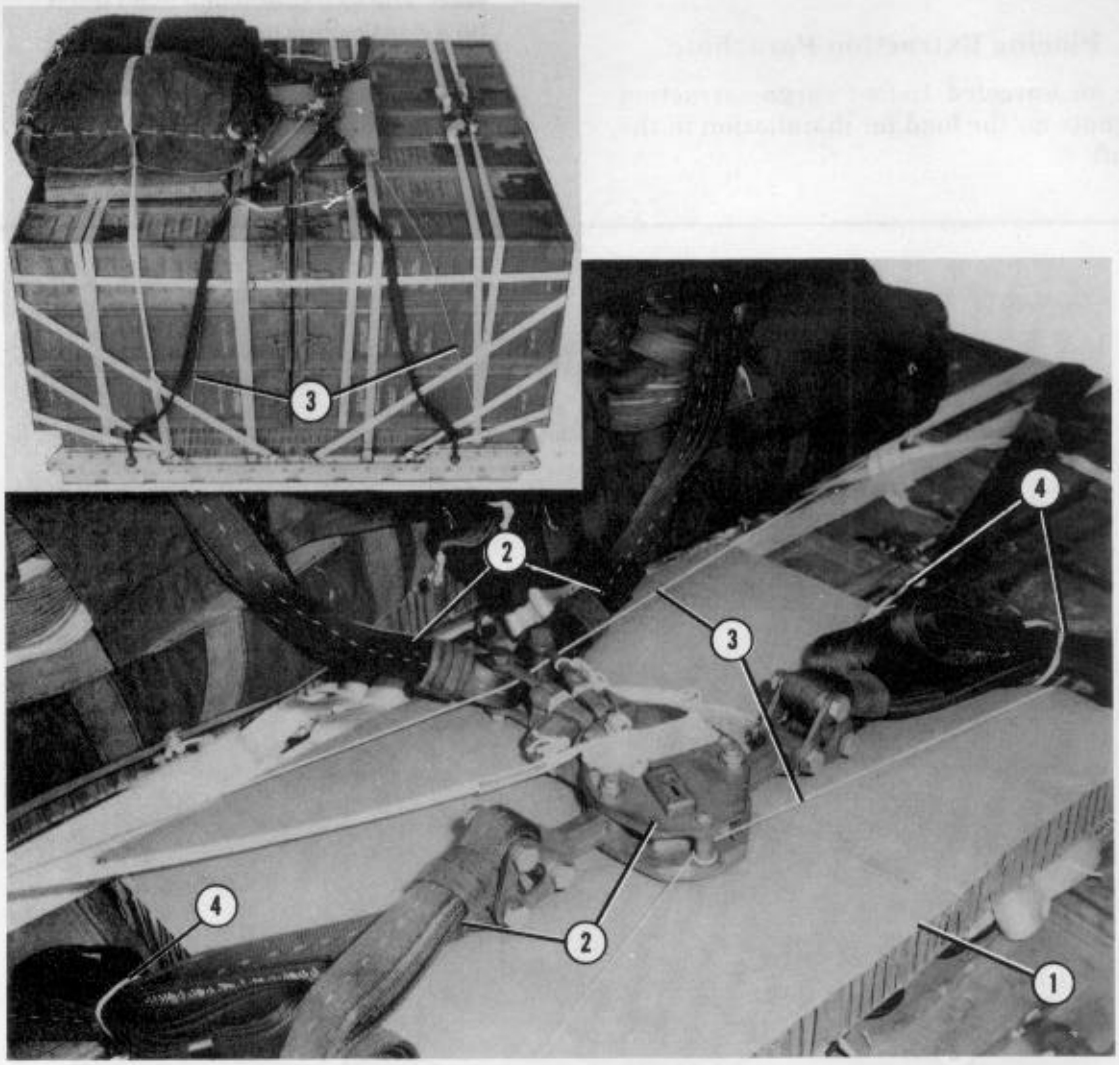
(2) Place two G-11A or two G-11B cargo parachutes on top of the honeycomb, and secure them to the load as outlined in FM 10-500/TO 13C7-1-5.

(3) Tie the parachute restraint strap to clevises 9 and 9A.

Figure 7-8. Parachutes stowed and secured to load

7-9. Installing Release System

Prepare, attach, and safety an M-1 cargo parachute release according to FM 10-500/TO 13C7-1-5 and as shown in Figure 7-9.



1. Position a 25- by 25-inch piece of honeycomb on top of the load, and secure the honeycomb with type III nylon cord.
2. Place the M-1 release on top of the honeycomb, and attach the suspension slings and the parachute riser extensions.
3. Secure the M-1 release to the load with type III nylon cord.
4. S-fold and tape any excess suspension slings.

Figure 7-9. M-1 cargo parachute release installed

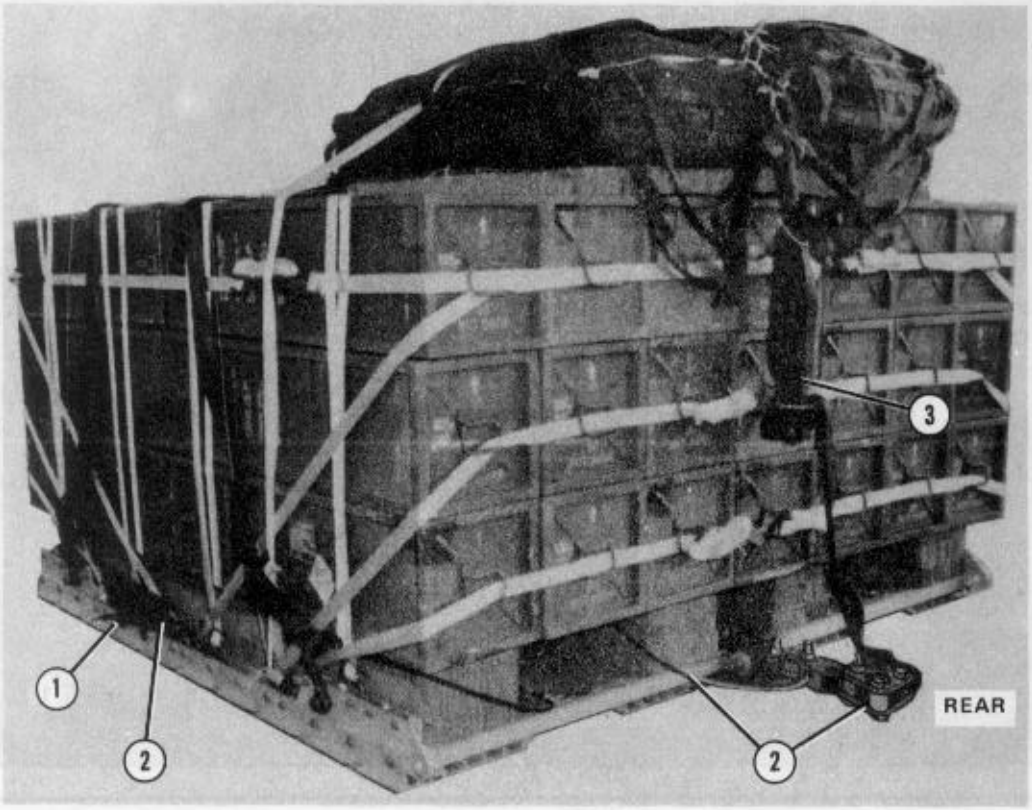
7-10. Installing Extraction System

Attach the EFTC to the load according to FM 10-500/TO 13C7-1-5 and as shown in Figure 7-10.

7-11. Placing Extraction Parachute

Place an unreefed 15-foot cargo extraction parachute on the load for installation in the aircraft.

NOTE: The C-141 aircraft requires that the extraction parachute must be packed with a 36-inch adapter web. The extraction line used must be a continuous length of 160-foot (1-loop), type XXVI nylon webbing extraction line. Shorter lines will not be joined to form this extraction line.



1. Attach the type V actuator bracket to the front mounting holes on the left rail.
2. Install the EFTC according to FM 10-500/TO 13C7-1-5.
3. Use a 12-foot (3-loop), type X or a 12-foot (2-loop), type XXVI nylon sling as a deployment line.

Figure 7-10. EFTC installed

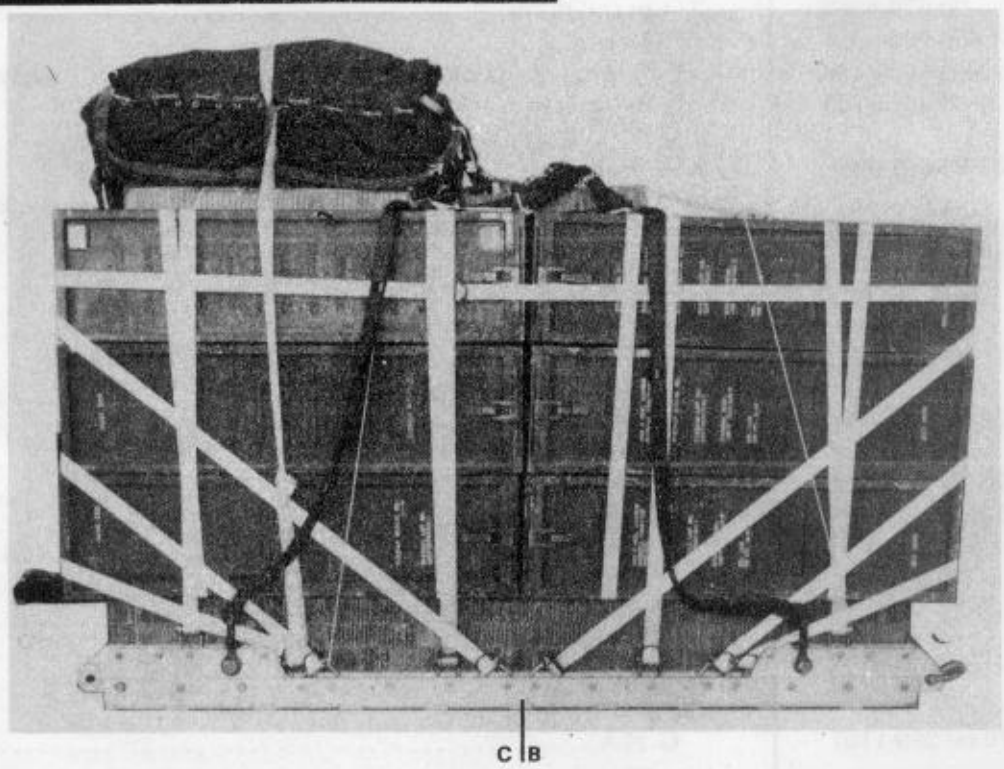
7-12. Installing Provisions for Emergency Restraints

Install one medium clevis in the front hole of each front tandem link as a provision for an emergency restraint.

7-13. Marking Rigged Load

Mark the rigged load as outlined in FM 10-500/TO 13C7-1-5 and as shown in Figure 7-11.

CAUTION
Make the final rigger inspection required by FM 10-500/TO 13C7-1-5 before the load leaves the rigging site.



RIGGED LOAD DATA

Weight: Load shown	6,450 pounds
Maximum allowed	6,900 pounds
Height	53 inches
Width	108 inches
Length	105 inches
Overhang: Front	4 1/2 inches
Rear	4 1/2 inches
CB (from front edge of platform)	51 inches

Figure 7-11. Shillelagh missiles rigged for low-velocity airdrop on a type V platform

7-14. Equipment Required

Use the equipment listed in Table 7-1 to rig this load.

Table 7-1. Equipment required for rigging Shillelagh missiles for low-velocity airdrop on a type V airdrop platform

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive, paste, 1-gal	As required
	Clevis, suspension:	
4030-00-678-8562	3/4-in (medium)	2
4030-00-090-5354	1-in (large)	5
4020-00-240-2146	Cord, nylon, type III, 550-lb	As required
1670-00-434-5783	Coupling, airdrop, extraction force transfer w 12-ft cable	1
8135-00-664-6958	Cushioning material, packaging, cellulose wadding	As required
5365-00-937-0147	D-ring, heavy-duty, 10,000-lb	5
1670-01-183-2678	Leaf, extraction line (sling/extraction line panel)	1
	Line, extraction:	
1670-01-064-4452	60-ft (1-loop), type XXVI nylon webbing (for C-130)	1
1670-01-107-7652	160-ft (1-loop), type XXVI nylon webbing (for C-141)	1
1670-00-783-5988	Link assembly, type IV (Add one for C-141.)	1
1670-00-753-3928	Pad, energy-dissipating, honeycomb, 3- by 36- by 96-in:	6 sheets
	12- by 96-in	(12)
	25- by 25-in	(1)
	36- by 71-in	(1)
	Parachute:	
	Cargo:	
1670-00-269-1107	G-11A	2
	or	
1670-01-016-7841	G-11B	2
	Cargo extraction:	
1670-01-063-3715	15-ft	1
	or	
1670-00-052-1548	15-ft	1
	Platform, airdrop, type V, 8-ft:	1
	Bracket:	
1670-01-162-2375	Inside EFTA	(1)
1670-01-162-2374	Outside EFTA	(1)
1670-01-162-2385	Bumper, nose	(1)
1670-01-162-2372	Clevis, load tiedown	(20)

Table 7-1. Equipment required for rigging Shillelagh missiles for low-velocity airdrop on a type V airdrop platform (continued)

National Stock Number	Item	Quantity
1670-01-162-2376	Extraction bracket assembly	(1)
1670-01-162-2381	Tandem link assembly (Multipurpose link)	(4)
5530-00-129-7777	Plywood, 1/2- by 48- by 96-in	2
1670-01-097-8816	Release, cargo parachute, M-1	1
	Sling, cargo, airdrop:	
	For deployment:	
1670-01-062-6303	12-ft (2-loop), type XXVI nylon webbing	1
	For riser extensions:	
1670-00-753-3794	20-ft (2-loop), type X nylon webbing	2
	or	
1670-01-062-6302	20-ft (2-loop), type XXVI nylon webbing	2
	For suspension slings:	
1670-01-062-6310	11-ft (4-loop), type XXVI nylon webbing	4
1670-00-040-8219	Strap, parachute release, w fastener and release knife	1
7510-00-266-5016	Tape, adhesive, 2-in	As required
1670-00-937-0271	Tiedown assembly, 15-ft	27
	Webbing:	
8305-00-268-2411	Cotton, 80-lb	As required
8305-00-263-3591	Nylon, type VIII, 3,600-lb	7 yd

GLOSSARY

AFB	Air Force base
AFR	Air Force regulation
AFTO	Air Force technical order
ALC	Air Logistics Center
APERS	antipersonnel
AR	Army regulation
ARAAV	armored reconnaissance/ airborne assault vehicle
ATTN	attention
CB	center of balance
cir	circumference
CVC	constant velocity cover
d	penny
DA	Department of the Army
DC	District of Columbia
DD	Department of Defense
diam	diameter
EFTA	extraction force transfer actuator
EFTC	extraction force transfer coupling
FM	field manual
ft	feet/foot
gal	gallon
HQ	headquarters
in	inch
LAPE	low-altitude parachute extraction
lb	pound
LRF	laser range finder
MAC	Military Airlift Command
MREs	meals, ready-to-eat
no	number
NSN	national stock number
POL	petroleum, oils, and lubricants
sec	second
SL/CS	static line/connector strap
TM	technical manual
TO	technical order
TRADOC	United States Army Training and Doctrine Command
TVS	tactical visual system
US	United States
w	with
yd	yard

REFERENCES

AFR 55-40/AR 59-4	Joint Airdrop Inspection Records, Malfunction Investigations and Activity Reporting
AFR 71-4/TM 38-250	Packaging and Materials Handling: Preparing of Hazardous Materials for Military Air Shipments
FM 10-500/TO 13C7-1-5	Airdrop of Supplies and Equipment: Rigging Airdrop Platforms
FM 10-501/TO 13C7-1-11	Airdrop of Supplies and Equipment: Rigging Containers
FM 10-553/TO 13C7-18-41	Airdrop of Supplies and Equipment: Rigging Ammunition
TM 9-2350-230-10	Operator's Manual (Crew) for Armored Reconnaissance/Airborne Assault Vehicle, Full-Tracked, 152-mm Gun/Launcher M551 and M551A1
TM 10-1670-208-20&P/ TO 13C3-4-12	Organizational Maintenance Manual Including Repair Parts and Special Tools List for Platforms, Types II Modular and LAPES/Airdrop Modular
TM 10-1670-286-20/ TO 13C5-2-41	Unit Maintenance Manual for Sling/Extraction Line Panel (Including Stowing Procedures)
TM 10-1670-268-20&P/ TO 13C7-52-22	Organizational Maintenance Manual With Repair Parts and Special Tools List: Type V Airdrop Platform
AFTO Form 22	Technical Order Publication Improvement Report
DA Form 2028	Recommended Changes to Publications and Blank Forms
DD Form 1387-2	Special Handling Data/Certification

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