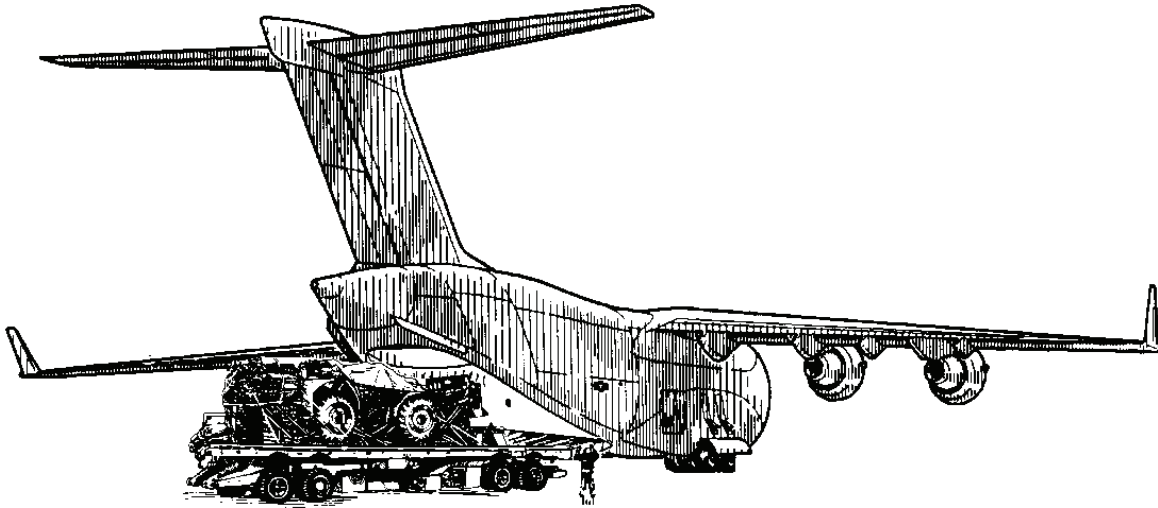


**TM 4-48.14 (FM 4-20.147)**  
**TO 13C7-37-31**  
**April 2012**

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**Airdrop of Supplies and Equipment:  
Humanitarian Airdrop**

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**Headquarters  
Department of the Army  
Department of the Air Force**

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Technical Manual  
No. 4-48.14  
Technical Order  
No. 13C7-37-31

Headquarters  
Department of the Army  
Department of the Air Force  
Washington, DC, 23 April 2012

# **AIRDROP OF SUPPLIES AND EQUIPMENT: HUMANITARIAN AIRDROP**

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## Preface

This manual tells and shows how to prepare and rig the following configurations of Humanitarian loads. Extended Tri-Wall Airdrop System (TRIADS), Low Cost High Velocity Container Delivery System (LCADS), Double A-22 Cargo Bag for High Velocity Airdrop and Quadruple A-22 Cargo Bag for High Velocity Airdrop from a C-17 and C-130 aircraft.

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## **Preface**

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## Chapter 1

# General Rigging Information Humanitarian Airdrop Loads

## SECTION I - DESCRIPTION OF HUMANITARIAN LOADS

### HUMANITARIAN AIRDROP METHODS

1-1. Humanitarian airdrop utilizes the Container Delivery System (CDS), some variation of the system, or TRIADS, a special method of free drop. Many factors can influence the delivery method used.

- **EXTENDED TRI-WALL AERIAL DELIVERY SYSTEM (TRIADS).** The TRIADS system is a corrugated tri-wall box rigged for static line deployment off the ramp of an aircraft using CDS procedures. Typical loads include loose Meals-Ready-to-Eat (MREs) or Humanitarian Daily Rations (HDRs). Following deployment the caps of the box separate from the sleeve allowing the container's content to scatter and freefall to the ground. TRIADS has a 1,375 pound load capacity. Chapter 2 of this manual covers rigging TRIADS for airdrop.
- **LOW-COST AERIAL DELIVERY SYSTEM (LCADS).** LCADS is a modified, lightweight A-22 system with no scuff pad, cover, or friction adapters on the lateral bands. It is rigged like a high velocity A-22 load, but uses one of several special parachutes. LCADS is used for high-volume delivery of non-fragile items where airdrop is not recoverable. LCADS has a 2,200 pound capacity.
- **DOUBLE A-22 CONTAINER.** The double A-22 container consists of two A-22 sling assemblies. The covers may or may not be used. Only six of the suspension webs are used. The double A-22 cargo bag has a 3,375 pound load capacity. Chapter 4 of this manual covers rigging the double A-22 cargo bag.
- **QUADRUPLE A-22 CONTAINER.** The quadruple A-22 container consists of four standard A-22 sling assemblies which can be laced together to form one large container, or can be individually rigged and then configured side-by-side for unitized delivery of four loads. The quadruple A-22 cargo bag has a 4,375 pound load capacity. Chapter 5 of this manual covers rigging the quadruple A-22 container.

## SECTION II - PARACHUTE REQUIREMENTS AND PACKING PROCEDURES

### PARACHUTE REQUIREMENTS

1-2. Special considerations for this manual are given below.

- **EXTENDED TRI-WALL AERIAL DELIVERY SYSTEM (TRIADS).** There is no parachute used for TRIADS. The TRIADS uses the free drop method.
- **LOW COST AERIAL DELIVERY SYSTEM (LCADS).** LCADS employs a 26-foot low cost parachute for high-velocity (HV) airdrop. The 26-foot low cost parachute is made from more readily available and more economical materials than the standard 26-foot ringslot parachute except the low cost parachute is designed for reuse. The low cost parachute is pre-packed and ready to attach to the load. Like the standard 26-foot parachute, the low cost parachute is deployed using a breakaway static line for high altitude operations. The 26-foot low cost parachute can support suspended weights from 501 to 2,200 pounds.

- **DOUBLE A-22 CONTAINER.** The double A-22 container employs a reefed G-12 parachute with both skirt and vent reefing. The reefing of the G-12 parachute provides for high-velocity ballistics similar to the standard HV CDS. A standard 68-inch pilot parachute is used to deploy the reefed G-12 and a breakaway static line is used to deploy the 68-inch pilot parachute. The reefed G-12 parachute can support suspended weights from 2,201 to 3,375 pounds. The reefed G-12 and 68-inch pilot parachutes are packed according to Chapter 1, Section II, paragraphs 1-3 through 1-5 of this manual.
- **QUADRUPLE A-22 CONTAINER.** The quadruple A-22 container employs the same reefed G-12 parachute (skirt and vent reefing) that is used with the double A-22 container. A standard 68-inch pilot parachute is also used to deploy the reefed G-12 and a breakaway static line is used to deploy the 68-inch pilot parachute. When the reefed G-12 parachute is used with the quadruple A-22 it can support suspended weights from 3,375 to 4,375 pounds. The reefed G-12 and 68-inch pilot parachutes are packed according to Chapter 1, Section II, paragraphs 1-3 through 1-5 of this manual.

## PACKING THE REEFED G-12 AND 68-INCH DIAMETER PILOT PARACHUTES

1-3. The packing procedures for the reefed G-12 parachute are described below.

- **PREPARING PARACHUTE FOR PROPER LAYOUT.** Prepare parachute for proper layout in accordance with TM 10-1670-281-23&P.
- **SERVICING THE CANOPY VENT.** Service the canopy vent in accordance with TM-10-1670-281-23&P. The wrap of type II cotton muslin cloth is not necessary if dropping for one-time use. If not used, the canopy vent lines should still be tied off with two turns single of ¼-inch, type I cotton webbing.
- **REEFING THE CANOPY VENT.** Remove the bridle loop from the stationary post. With a sharp rigging knife, cut a small slit (approximately 1 ½ inches in length) in the gore material of every fourth gore, directly below the upper lateral band, as shown in Figure 1-1.

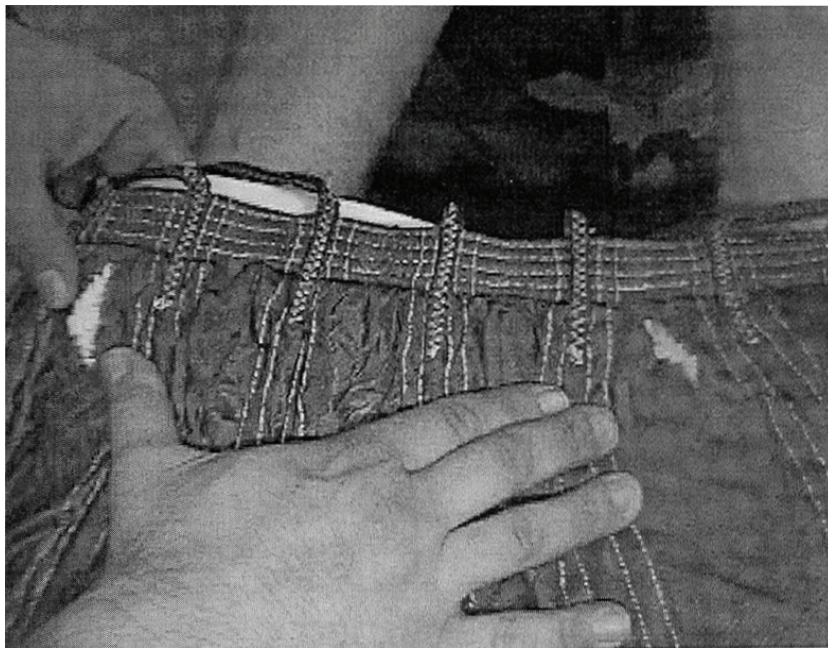


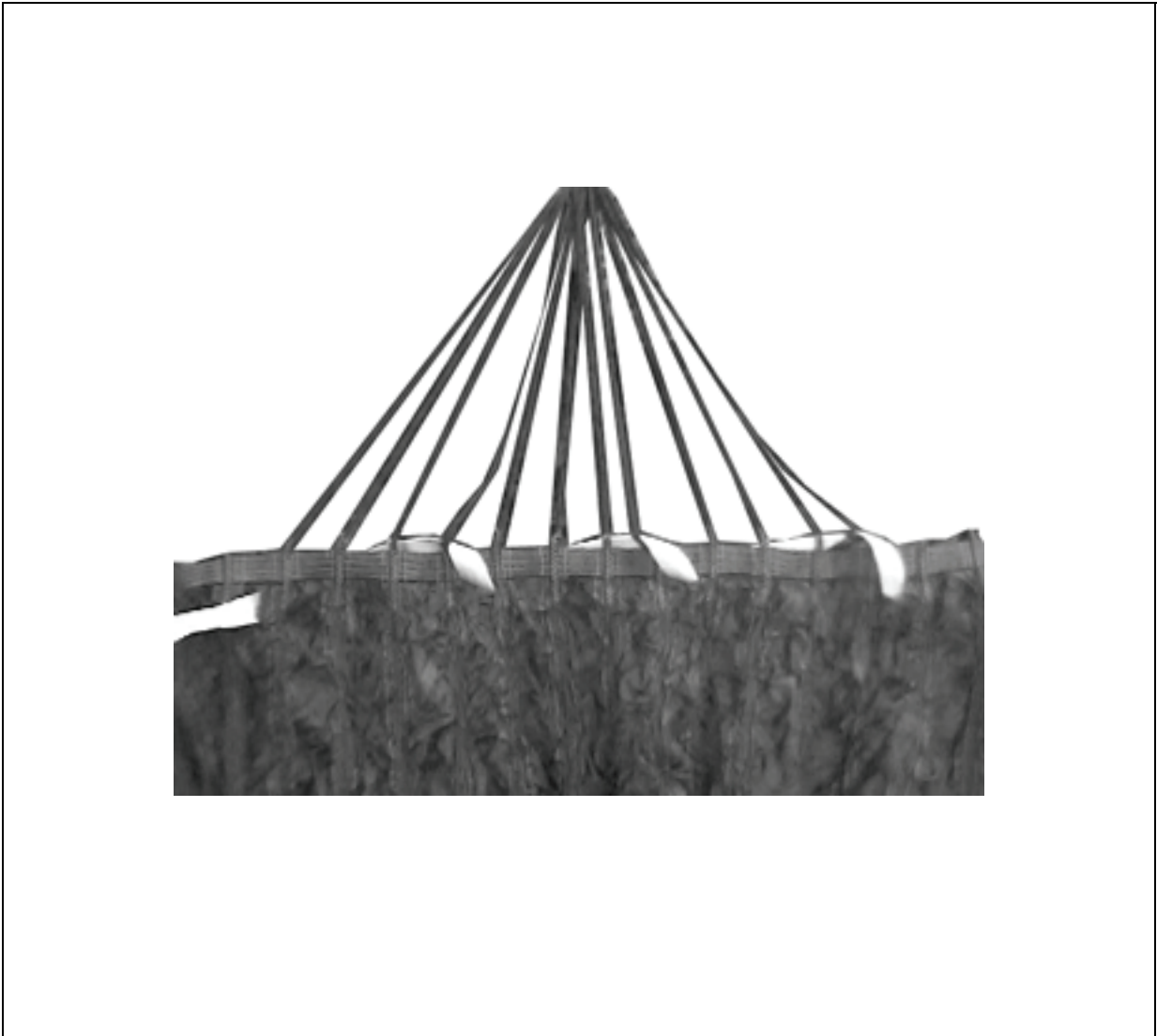
Figure 1-1. Gore holes cut below upper lateral band

- Route a 4-foot long vent reefing line made of 1-inch tubular nylon from the outside of the gore into the first gore hole as shown in Figure 1-2. Alternate material for the vent reefing line is 1 23/32-inch wide, type VIII nylon webbing or one turn triple of 9/16-inch tubular nylon.



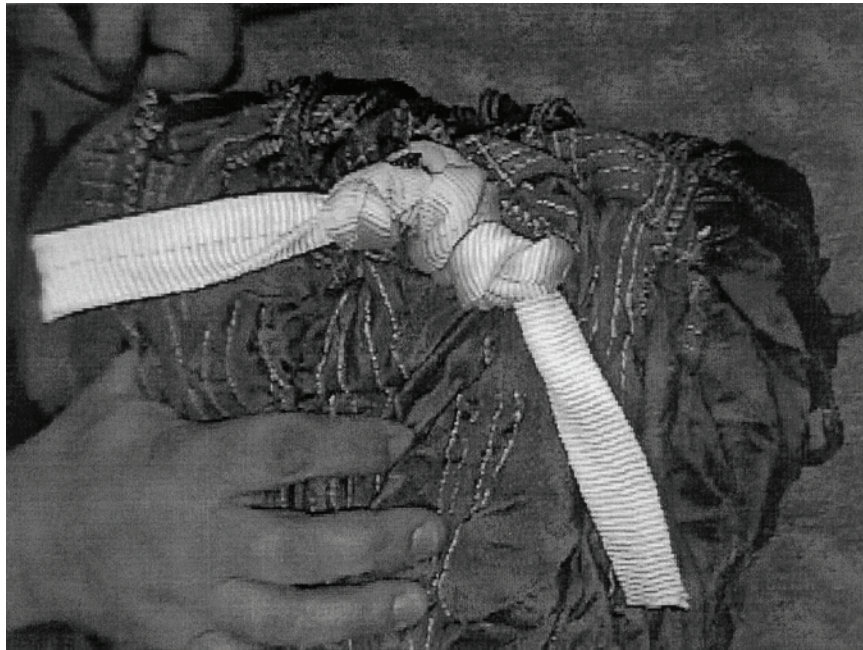
**Figure 1-2. Vent reefing line routed into first gore hole**

- Run the line to the right, over the upper lateral band and down into the next gore hole as shown in Figure 1-3. Follow Figure 1-1 for cutting gore holes every fourth gore. Repeat this procedure until the vent reefing line has run through all 16 gore holes.



**Figure 1-3. Vent reefing line routed around upper lateral band**

- Pull the vent reefing line tight to close off the vent. Tie the two running ends of the vent reefing line together with a surgeon's knot and locking knot, and overhand knots in the running ends. Trim each running end at a point 2-inches from the surgeon's knot and locking knot as shown in Figure 1-4.



**Figure 1-4. Vent reefing line pulled tight and tied off**

## APPLYING TENSION

- 1-4. Apply tension in accordance with TM 10-1670-281-23&P.

## FOLDING THE GORES AND REEFING THE CANOPY SKIRT

- 1-5. Position the large line separator, throw the right suspension line group over the left group of gores and lines, and position the large pedestal fan in accordance with TM-10-1670-281-23&P.

- Lay out a single 47-foot length of 1 tubular nylon webbing or a doubled 47-foot length of 1-inch tubular webbing. Remove twists and apply a small amount of tension (just enough to remove slack). While under tension, measure 2 feet in from both ends and mark the tubular nylon. Fold the webbing length back unto itself and line up the marks. While holding the marks together, pull the line out straight, apply a small amount of tension, and locate and mark the center of the line. This tubular nylon length will be the skirt of the reefing line.

---

*Note:* When fabricating the skirt reefing lines in large quantities, recommend marks on the floor or on a packing table be made at 2 feet, 23 ½ feet, 45 feet and 47 feet. Use these marks to assist in marking or cutting reefing lines. All measurements should be within ± 1 inch.

---

- Route one free running end of the skirt reefing line down through the right side of the suspension line 33 pocket band, behind suspension line 33, and back up through the left side of the pocket band. Pull the line through until the center mark on the skirt reefing line is lined up with suspension line 33 as shown Figure 1-5. Tie a temporary slip knot in the reefing line onto suspension line 33 to keep the reefing line from moving off the mark.

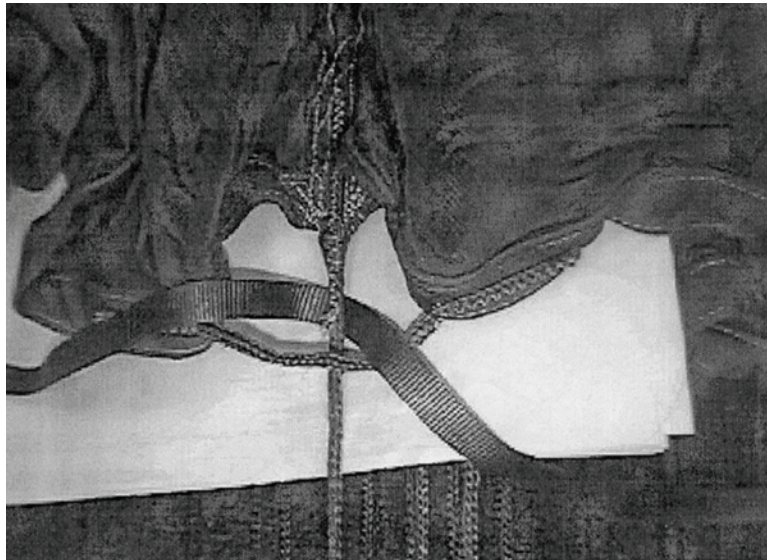


Figure 1-5. Skirt reefing line routed and centered on suspension line 33

- Begin to fold the right gore group (lines 33 through 64) in accordance with the TM procedures. As each suspension line is passed over, route the reefing line through the pocket band, behind the suspension line and back up through the pocket band of the suspension line being passed over in the same manner as shown in Figure 1-5. Repeat for every suspension line, leaving about 8 inches of slack in the reefing line between each suspension line. Tie a temporary slip knot in the end of the skirt reefing line onto suspension line 64 to keep the reefing line from slipping out of position.
- Throw the left group of gores over the folded right group of gores. Untie the temporary slip knot in the reefing line on suspension line 33. Fold the left gore group (lines 32 through 1) in accordance with the TM and route the other end of the reefing line through pocket bands 32 through 2 and behind suspension lines 32 through 2 in the same manner as lines 33 through 64.
- Untie the temporary slip knot in the reefing line on suspension line 64. Run both ends of the reefing line down through pocket band 1 and behind suspension line 1. Line up both marks on the reefing line directly behind suspension line 1. Wrap each end of the reefing line around suspension line 1 one time as shown in Figure 1-6. Tie the ends of the reefing lines together with a surgeon's knot and locking knot and overhand knot in the running ends. Trim each running end two inches from the surgeon's knot and locking knot. The skirt reefing is now complete. Complete gore folding in accordance with TM 10-1670-281-23&P.

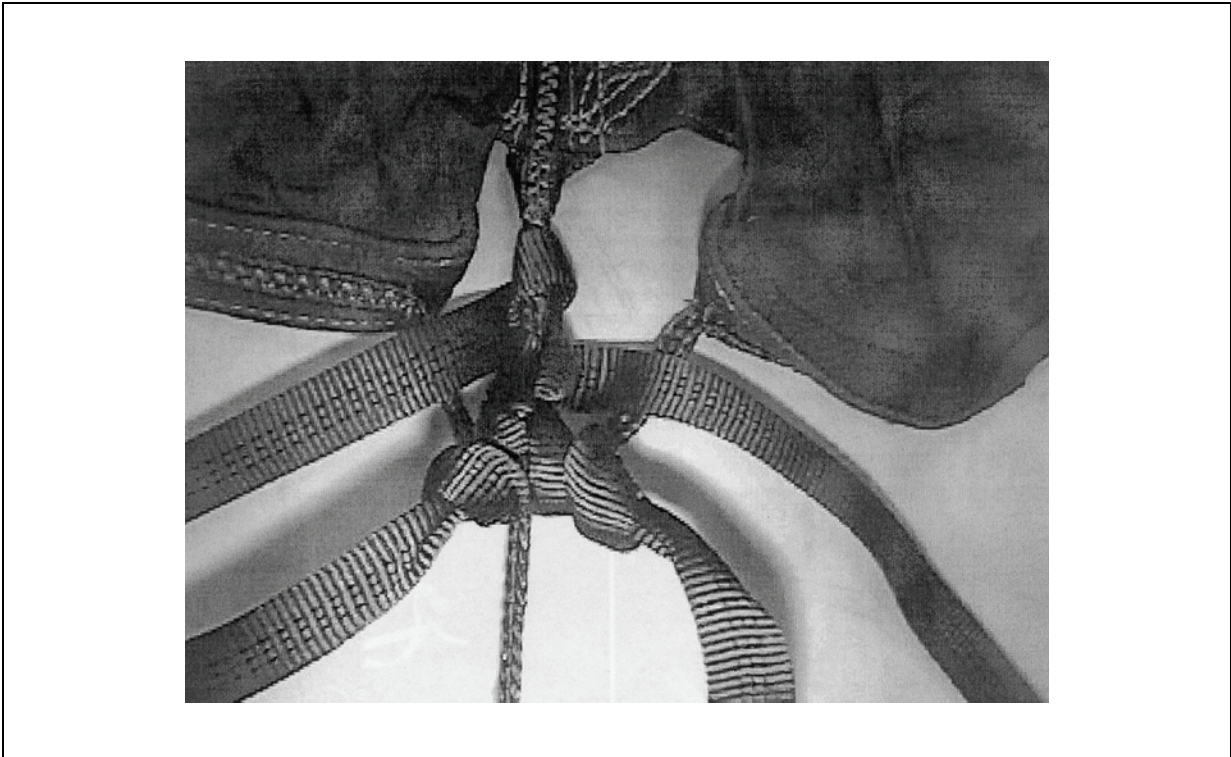


Figure 1-6. Ends of skirt reefing line wrapped around and tied off at suspension line 1



- **Complete Packing Of The Reefed G-12.** Tie the canopy and suspension lines and tie the connector link assemblies. The break cord tie will be IAW the instructions in the first subparagraph below. Stow the canopy, suspension lines and risers, and close the deployment bag in accordance with TM 10-1670-281-23&P.
  - Connect the G-12 deployment bag bridle to the parachute apex loop with a 60-inch strap as shown in Figure 1-7. This is necessary to keep the 68-inch pilot parachute permanently attached to the apex of the canopy. The following alternate materials are authorized for use for the 60-inch strap:
    - A 60-inch loop, single turn of type VIII nylon webbing.
    - A 60-inch loop, single turn of 1-inch tubular nylon webbing.
    - A 60-inch loop, single turn of 3/4 - inch tubular nylon webbing.
    - A 60-inch loop, one turn double of 9/16 tubular nylon webbing.
    - The standard 60-inch connector strap, without using L-bar connector links.

---

**Note:** When installing the 60-inch connector strap without using the L-bar connector links, use the same materials and number of turns shown above to connect one end of the strap to the bag bridle and one end to the apex loop. Use the length required to tie the strap, leaving no slack between the strap and the bridle, or the strap and the apex loop.

---

- The ties defined in the above paragraph must be tied at the bag bridle center loop as follows: Run the material through the apex loop, pass the running ends through the top of the deployment bag and then through the bag bridle center loop from opposite directions. Tie the first part of a surgeon's knot inside the center loop, then tie two double overhand knots on the outside of the center loop with knots in the running ends. Tape the 60-inch loop at the apex loop and the bag bridle center loop using several turns of cloth duct tape. When tying the 60-inch connector strap without using the L-Bar connector links, use the same tie as described at both the apex loop and the bag bridle center loop.

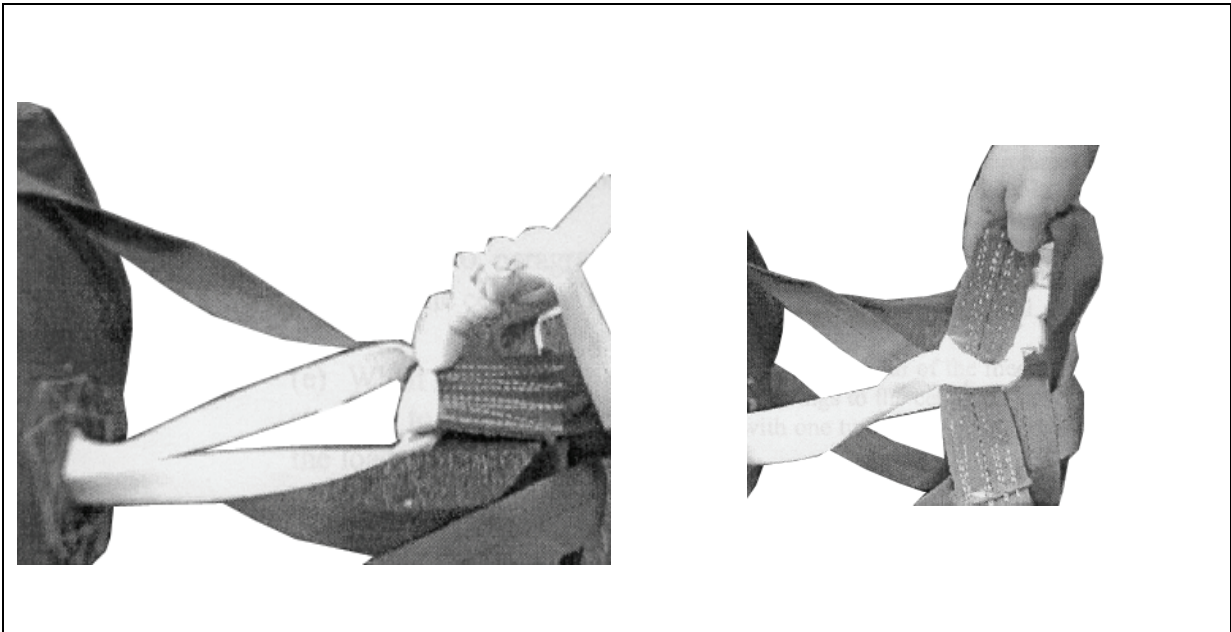


Figure 1-7. 60-inch strap connecting G-12 deployment bag to parachute apex loop completed

- **Packing and Rigging the 68-inch Diameter Pilot Parachute.** Pack and rig the 68-inch pilot parachute for breakaway in accordance with TM 10-1670-281-23&P, except the static line breakcord tie will be made as follows: Cut a 24-inch length of  $\frac{1}{4}$ -inch type I cotton webbing (in lieu of the standard type of III nylon). Fold the length of cotton webbing in half and pass it through the clevis and insure the running ends are aligned. Pass each running end of the cotton webbing through the static line attaching loop from opposite directions forming a 4-inch loop of one turn double between the clevis pin and the attaching loop as shown in Figure 1-8. Secure the cotton webbing ends on top of the static line attaching loop with a surgeon's knot and a locking knot. Trim each running end at a point 2 inches from the surgeon's knot and locking knot.

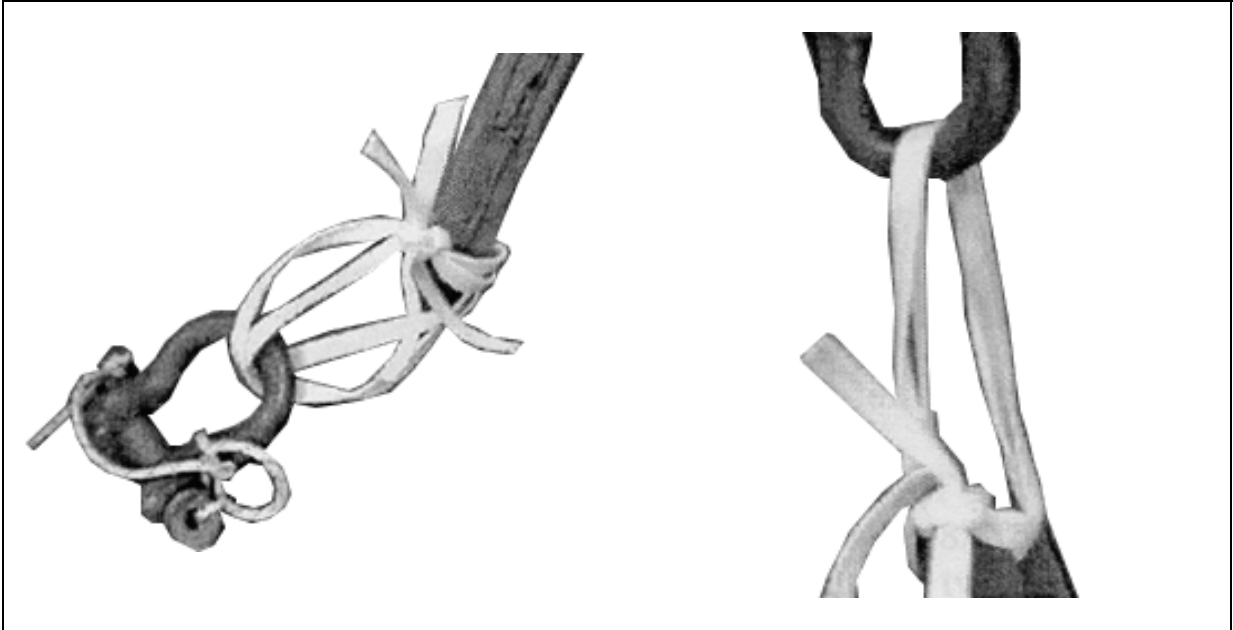


Figure 1-8. Breakaway static line breakcord tie for 68-inch diameter pilot parachute secured

## POSITIONING PILOT PARACHUTE

1-6. Place the packed pilot parachute on top of the G-12 deployment bag bridle assembly. Use a single loop of ticket number 8/7 cotton thread to secure the pilot parachute onto the reefed G-12 parachute in two places. The first loop of ticket number 8/7 cotton thread will be routed through the pilot parachute D-bag tiedown loops on one side of the pilot parachute D-bag and through the same two tiedown loops on one side of the G-12 bag that are normally used to tie the pilot D-bag. The other loop will be secured in the same manner on the opposite side as shown in Figure 1-9.



Figure 1-9. 68-inch diameter pilot parachute secured to G-12 deployment bag

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## Chapter 2

# Rigging Extended Tri-Wall Aerial Delivery System (TRIADS)

### SECTION I - GENERAL RIGGING INFORMATION FOR EXTENDED TRIADS

#### TRIAD SYSTEM COMPONENTS

2-1. The TRIAD system, shown in Figure 2-1, is constructed from corrugated tri-wall cardboard. An 80-inch tall sleeve is enclosed by two 12-inch tall end caps. A vertical strap with break cord secures the load for transport. The static line, rigged to the break cord, releases the end caps after deployment from the aircraft permitting the contents of the load to free-fall to the ground.

#### TRIADS SKID BOARD

2-2. The skid board is made of ¼- by 48- by 40-inch plywood. If ¼ -inch plywood is not available, 3/16 or 5/16-inch plywood may be substituted. The skid board will be secured to the container using glue and 1-inch staples.



Figure 2-1. Fully rigged TRIAD System with gate suspension loops

## TRIADS CONTAINER LIMITATION

2-3. The TRIADS container has a weight restriction of 747 to 1,375 pounds. Ensure that the load weighs a minimum of 28 pounds per square foot IAW FM 4-20.103/MCRP 4-11.3C/TO 13C7-1-11.

### CAUTION

When dropping MREs or HDRs the maximum load is dependent on the drop altitude. Refer to Table 2-1 for the system capacity.

## ASSEMBLY LINE RIGGING

2-4. When assembly line rigging is used for TRIADS loads, six stations are needed. The stations are: preparing the caps, preparing honeycomb and skid board, assembly, filling container, strap and static line installation, and final inspection.

## INSPECTION OF LOAD

2-5. The TRIADS load must be inspected by a qualified rigger. While being rigged this load should be supervised or rigged by a parachute rigger. DD Form 1748-1 (*Joint Airdrop Inspection Record [Containers]*) must be completed before airdrop.

## PARACHUTE USED

2-6. No parachute is used for this system.

## AFT RESTRAINT

2-7. Release gate suspension loops and additional honeycomb kits are required for TRIADS containers at pre-determined release gate locations in the aircraft. Prepare the honeycomb and straps as shown in Figure 2-6.

---

*Note:* Installation of the release gate suspension loops and the honeycomb kit must be completed prior to filling the container with MREs and HDRs.

---

## SECTION II - RIGGING EXTENDED TRIADS CONTAINERS

### SYSTEM DESCRIPTION

2-8. The TRIAD System is a corrugated tri-wall box rigged for static line deployment off the ramp of an aircraft. Typical loads include loose MREs or HDRs. Following deployment, the caps of the box separate from the sleeve allowing the container's content to scatter and free-fall to the ground.

### PREPARING ITEMS AND SKID BOARD

2-9. Refer to paragraph 2-2 for preparation of the skid board. HDRs or MREs must be removed from their shipping containers before loading.

### PREPARING HONEYCOMB BASE

2-10. Prepare the honeycomb base as shown in Figure 2-2. The honeycomb layers will be glued together but not to the base cap.

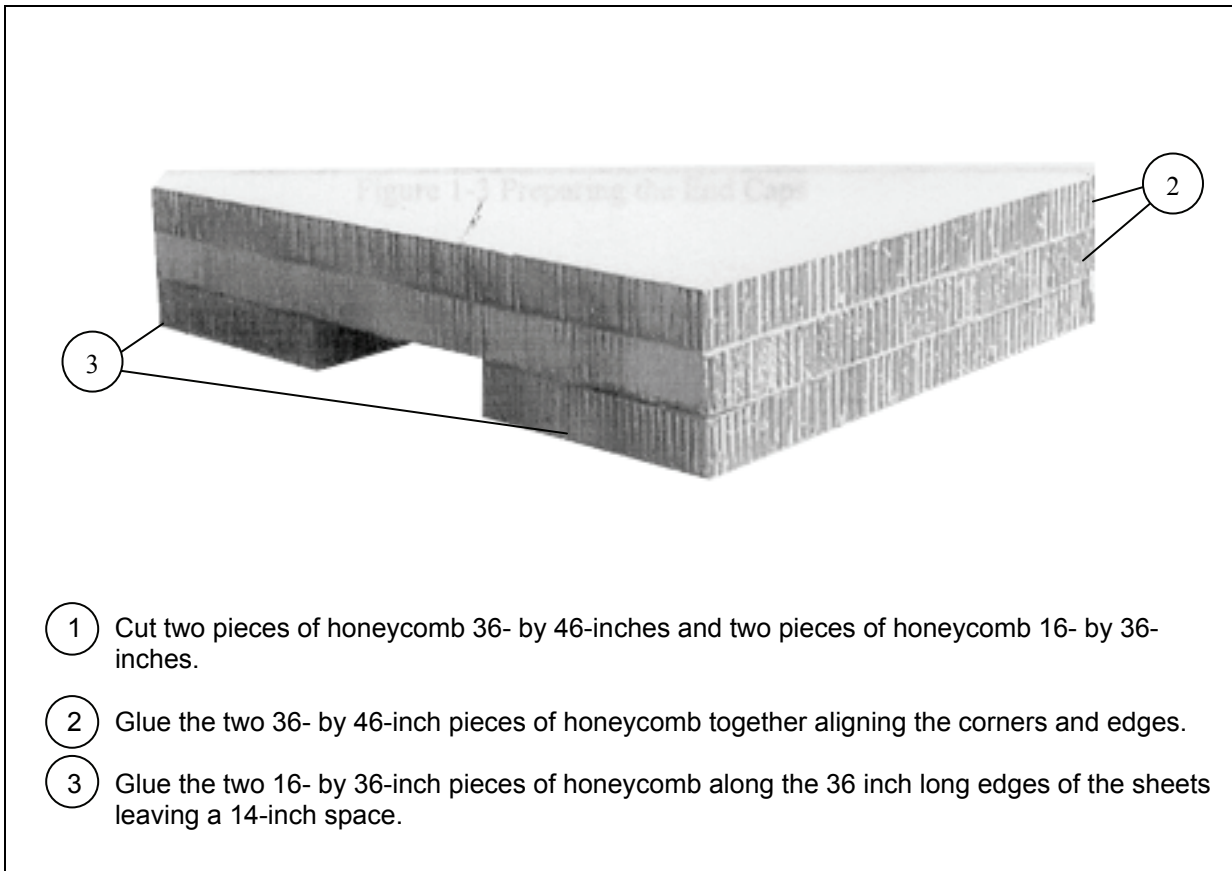


Figure 2-2. Honeycomb base prepared

## PREPARING STRAPS AND STATIC LINE

2-11. Prepare the straps and static line as described below.

- Cut one length of type VIII nylon webbing 288 inches long. Measure 20 inches from both ends and place a mark. Fold the type VIII nylon webbing at the 20 inch marks and place a double overhand knot, forming a 4-inch loop in the ends. Place an overhand knot in the running ends.
- Cut one length of type III nylon cord, 36 inches long and remove the core threads.
- Cut one length of 1 inch tubular nylon webbing 228 inches long. Measure 15 inches from one end of the nylon and place a mark. Fold the 1 inch tubular nylon webbing at the mark and tie a double overhand knot to form a 4 inch loop. Tie an overhand knot in the running end. Install a G-14 clevis in the loop. From the opposite end of the 1 inch tubular nylon webbing, measure 24 inches and make a mark.
- Cut four pieces of type VIII nylon webbing (1/2 tubular webbing may be used as a substitute) 40 inches long.
- Cut two pieces of 1 inch tubular nylon webbing 36 inches long.

## PREPARING END CAPS

2-12. Prepare the straps and static line as described.

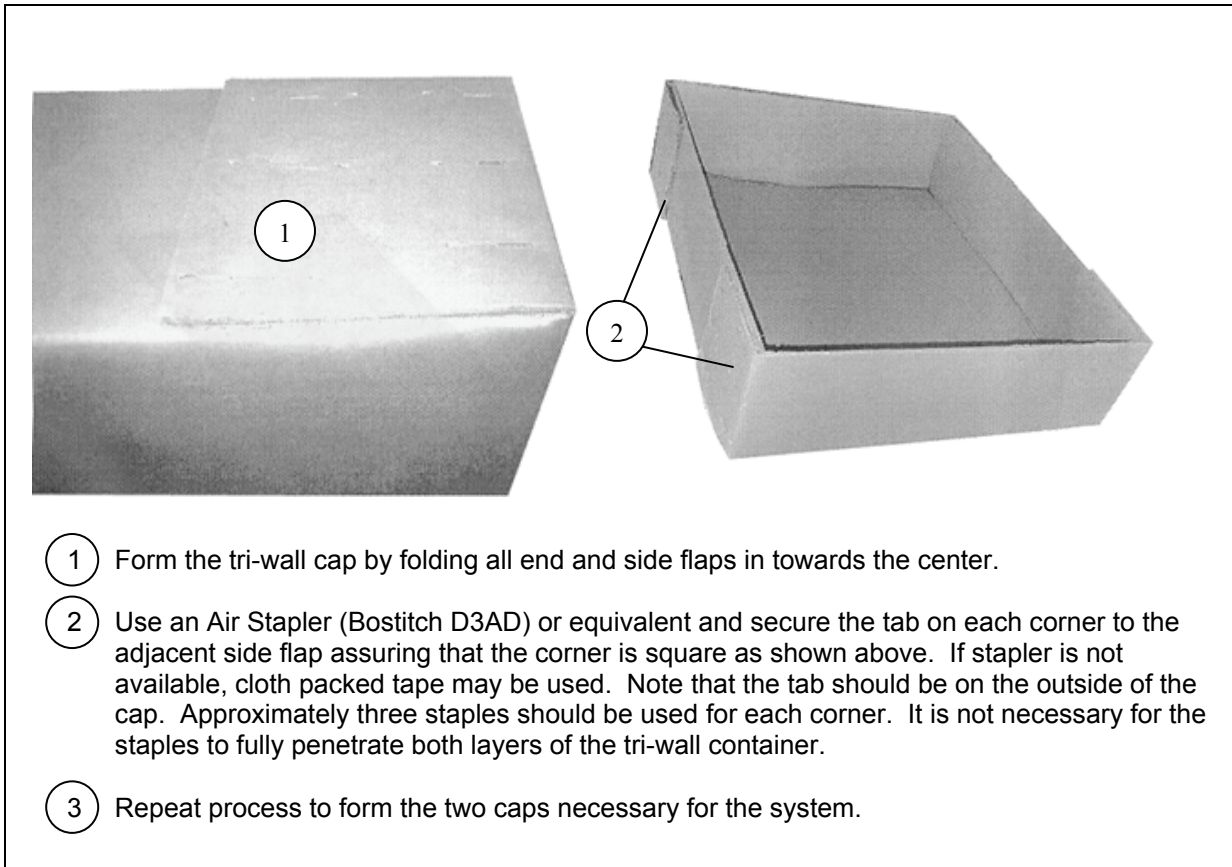


Figure 2-3. End caps prepared



## INSTALLING SKID BOARD

2-13. Install the skid board on the base cap as shown in Figure 2-4.

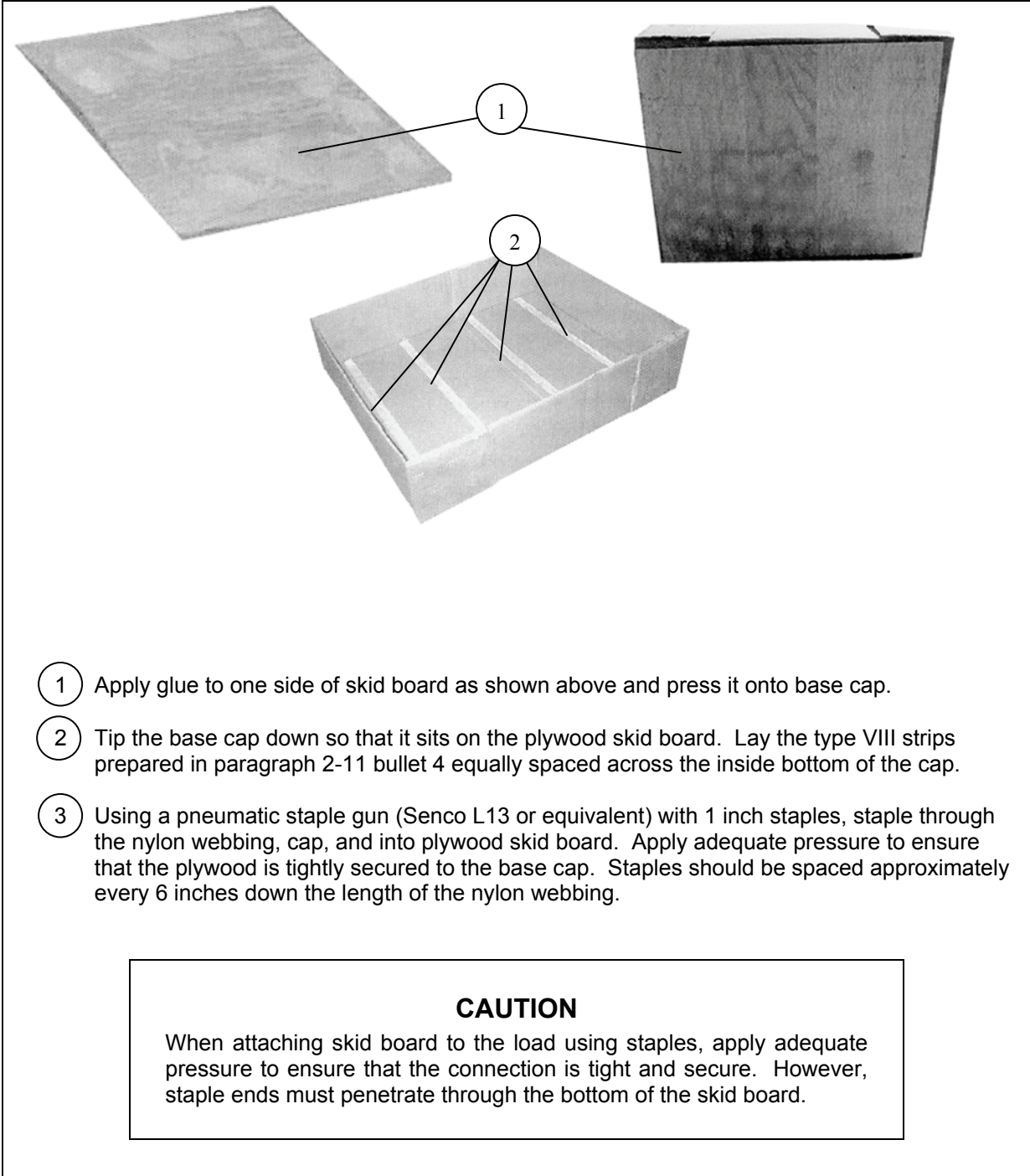


Figure 2-4. Skid board attached to base cap

## ASSEMBLING THE BOX

2-14. Assemble the TRIADS container as shown in Figure 2-5.

## GATE SUSPENSION LOOPS AND HONEYCOMB KIT

2-15. TRIADS containers located at release gate locations must have release gate suspension loops installed and honeycomb reinforcement positioned inside the box. Construct and install the release gate suspension loops and honeycomb as shown in Figure 2-6.

## FILLING THE TRIADS CONTAINER

2-16. Fill the box with the appropriate weight of HDRs or MREs. Table 2-1 must be used to determine the maximum weight for the drop altitude. Once filled, install the end cap over the top of the sleeve.

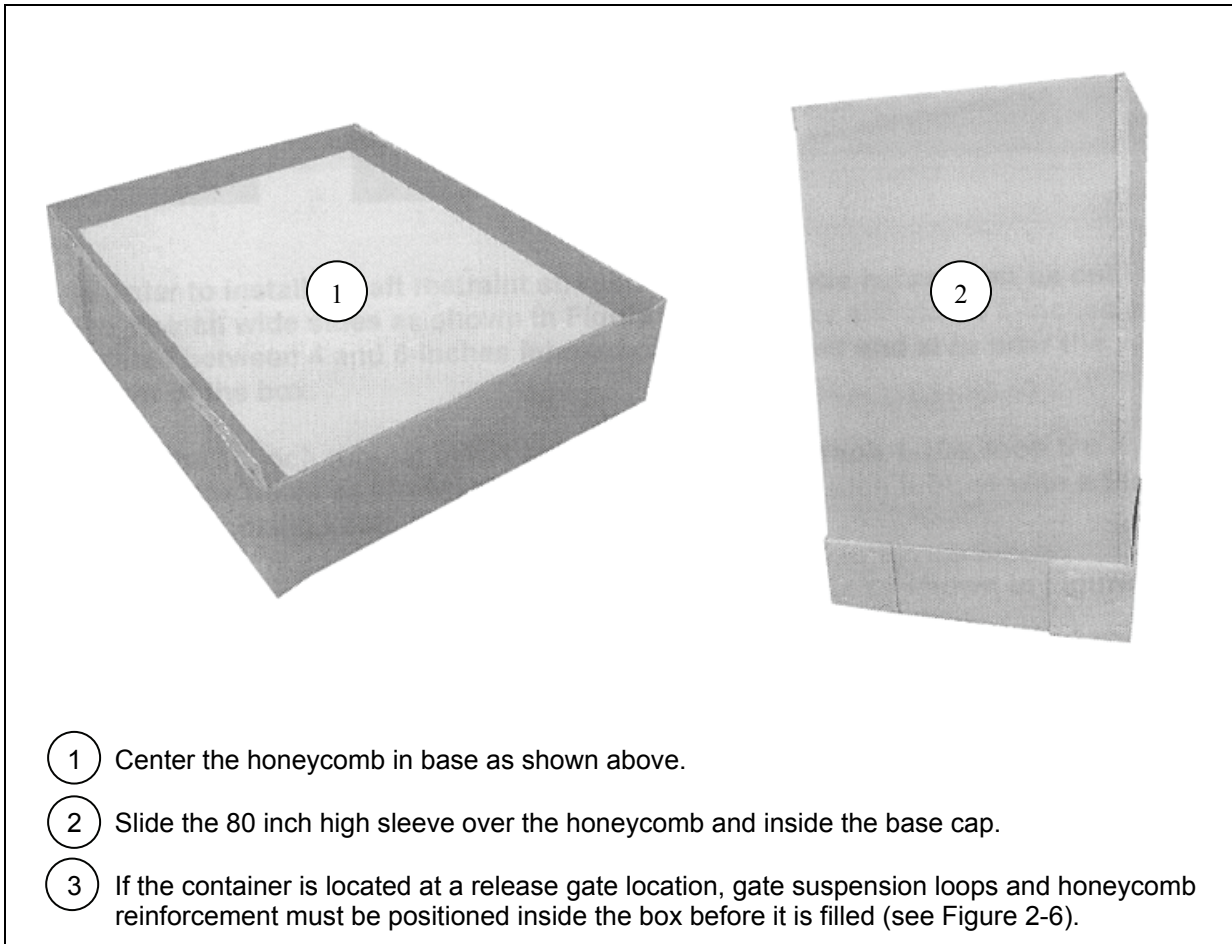
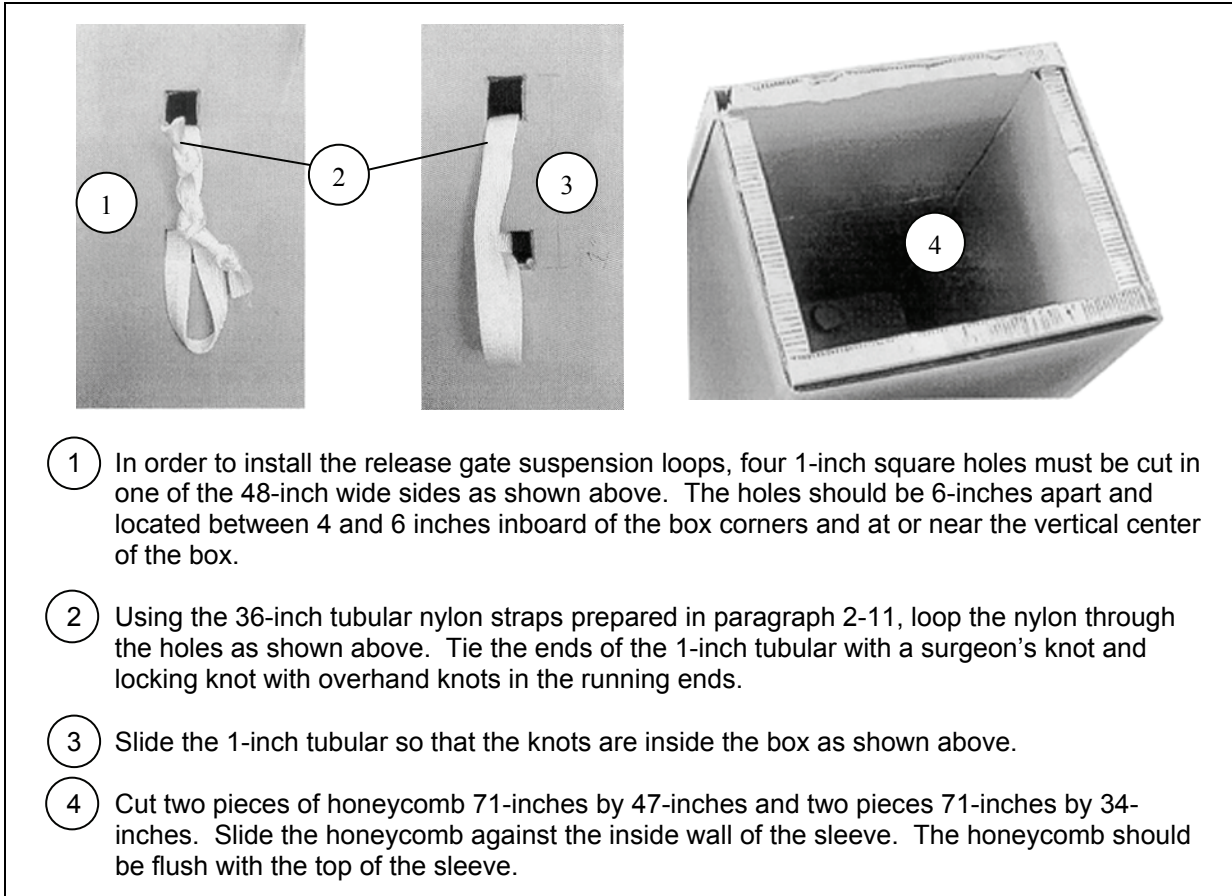


Figure 2-5. TRIADS container



**Figure 2-6. Release gate suspension loops and honeycomb kit installed**

**Table 2-1. Maximum fill capacity for desired drop altitude**

<i>Altitude (MSL)</i>	<i>Number of HDR's (cases)</i>	<i>Number of MRE's (cases)</i>	<i>Weight (lb)</i>
1,000	610 (61)	816 (68)	1,373
1,500	480 (48)	648 (54)	1,080
20,000	470 (47)	636 (53)	1,060
25,000	470 (47)	624 (52)	1,060
30,000	460 (46)	612 (51)	1,035
35,000	450 (45)	600 (50)	1,012
40,000	440 (44)	588 (49)	990

## INSTALLING VERTICAL STRAP AND STATIC LINE

2-17. Install the vertical strap and static line as shown in Figure 2-7.

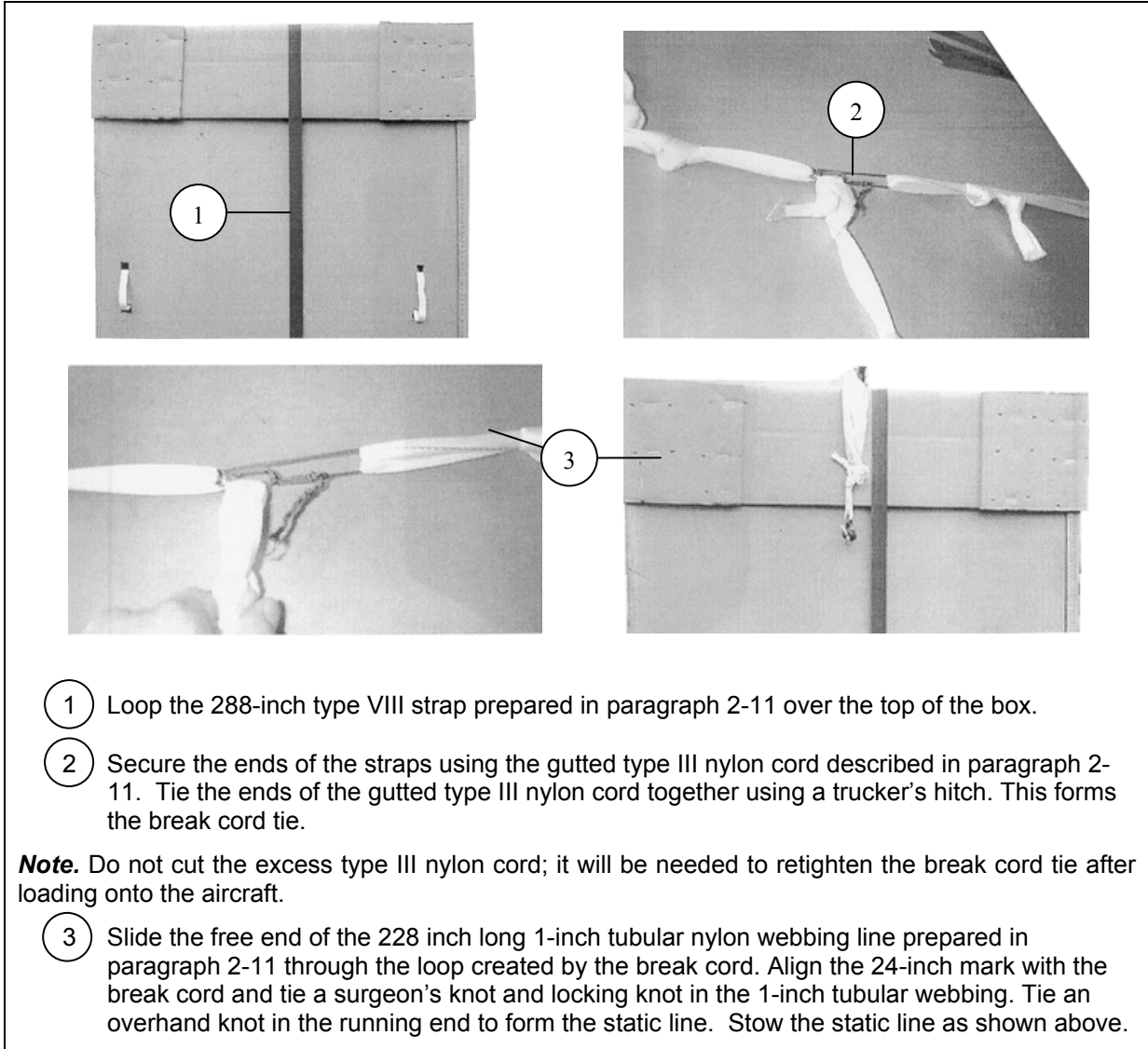



Figure 2-7. Vertical strap and static line installed

**MARKING RIGGED LOAD**

2-18. Mark the rigged load according to FM 4-20.103/MCRP 4-11.3C/TO 13C7-1-11 and as shown in Figure 2-8. Compute the rigged load data.

**EQUIPMENT REQUIRED**

2-19. Use the equipment listed in Table 2-2 to rig the load shown in Figure 2-8.



**RIGGED LOAD DATA**

Weight:	Minimum load allowed.....	747 pounds
	Maximum load allowed.....	1,375 pounds
Height:	.....	.80 inches
Width:	.....	.42 inches
Length:	.....	.50 inches

**Figure 2-8. Fully rigged extended TRIADS**

**Table 2-2. Equipment required for rigging extended TRIADS**

<b>National Stock Number</b>	<b>Item</b>	<b>Quantity</b>
No NSN	Tri-Wall Sleeve 40- by 48- by 80-inch	1
No NSN	Tri-Wall Cap 40- by 48- by 12-inch	2
5530-00-128-5419	Plywood ¼- by 48- by 40-inch	1
No NSN	Senco SLS20-L Narrow Crown Stapler, or equivalent	1
No NSN	1-inch Staples, Senco L13, or equivalent	As required
No NSN	Bostitch D30AD Air Stapler, or equivalent	1
No NSN	1 ½ inch Staples, Bostitch SW9060, or equivalent	As required
8040-00-273-8713	Adhesive Paste	As required
1670-00-753-3928	Pad, energy dissipating, honeycomb 36- by 96- by 3-inches (If TRIADS is positioned in a release gate location, 5 sheets are required).	1 sheet
4020-00-240-2146	Cord, nylon type III	1 Yd
8305-00-263-3591	Webbing, nylon type VIII	13 Yds
8305-00-268-2455	Webbing, tubular nylon, 1-inch	7 Yds
8305-00-082-5752	Webbing, tubular nylon, ½-inch	As required
1670-00-678-8560	Clevis, small, G-14	1
8305-00-074-5124	Tape, adhesive, 2-inch	As required

## Chapter 3

# Rigging Low Cost Aerial Delivery System (LCADS)

## SECTION I - GENERAL INFORMATION FOR LCADS

### LCADS SYSTEM COMPONENTS

3-1. The LCADS shown in Figure 3-1 employs a low cost version of the A-22 sling assembly and low cost version of the 26-foot ringslot parachute that can be readily procured if needed. The low cost sling assembly uses a more readily available and more economical material and eliminates much of the hardware as compared to the standard A-22 sling assembly.

### LCADS SKID BOARD

3-2. Like the standard high velocity CDS, the sling assembly is secured to a  $\frac{3}{4}$ - or 1- by 48- by 48-inch plywood (Grade AC) skid board with  $\frac{1}{2}$ -inch tubular nylon webbing. Honeycomb is positioned between the container and the skid board for impact cushioning.



Figure 3-1. Fully rigged LCADS System for high velocity airdrop

## **LCADS CONTAINER LIMITATIONS**

3-3. The LCADS container has a weight restriction of 501 to 2,200 pounds. However, it is recommended that the maximum load be limited to 1,750 to insure load survivability.

## **INSPECTION OF LOAD**

3-4. The LCADS load must be inspected by a qualified rigger. While being rigged this load should be supervised or rigged by a parachute rigger. DD Form 1748-1 must be completed before airdrop.

## **PARACHUTE USED**

3-5. LCADS employs a 26-foot HV low cost parachute. The 26-foot low cost parachute performs identically to the standard 26-foot HV parachute except the low cost parachute is designed for one-time use, whereas the standard 26-foot HV is designed for reuse. The low cost parachute may be pre-packed and ready to attach to the load. The standard 26-foot HV parachute may be used if the low cost is not available.



## SECTION II - RIGGING HIGH VELOCITY LCADS

### SYSTEM DESCRIPTION

3-6. The LCADS System is rigged as a typical A-22 high-velocity load. Typical loads include rations, water, and other small items. LCADS container loads must weigh at least 501 pounds but not exceed 2,200 pounds, excluding the weight of the parachute. The load is rigged with a 26-foot low cost parachute.

### PREPARING ITEMS AND SKID BOARD

3-7. Refer to Figure 3-2 for preparation of the skid board. Prepare the drop items according to the load's sensitivity. Items must be well padded to prevent damage during airdrop.

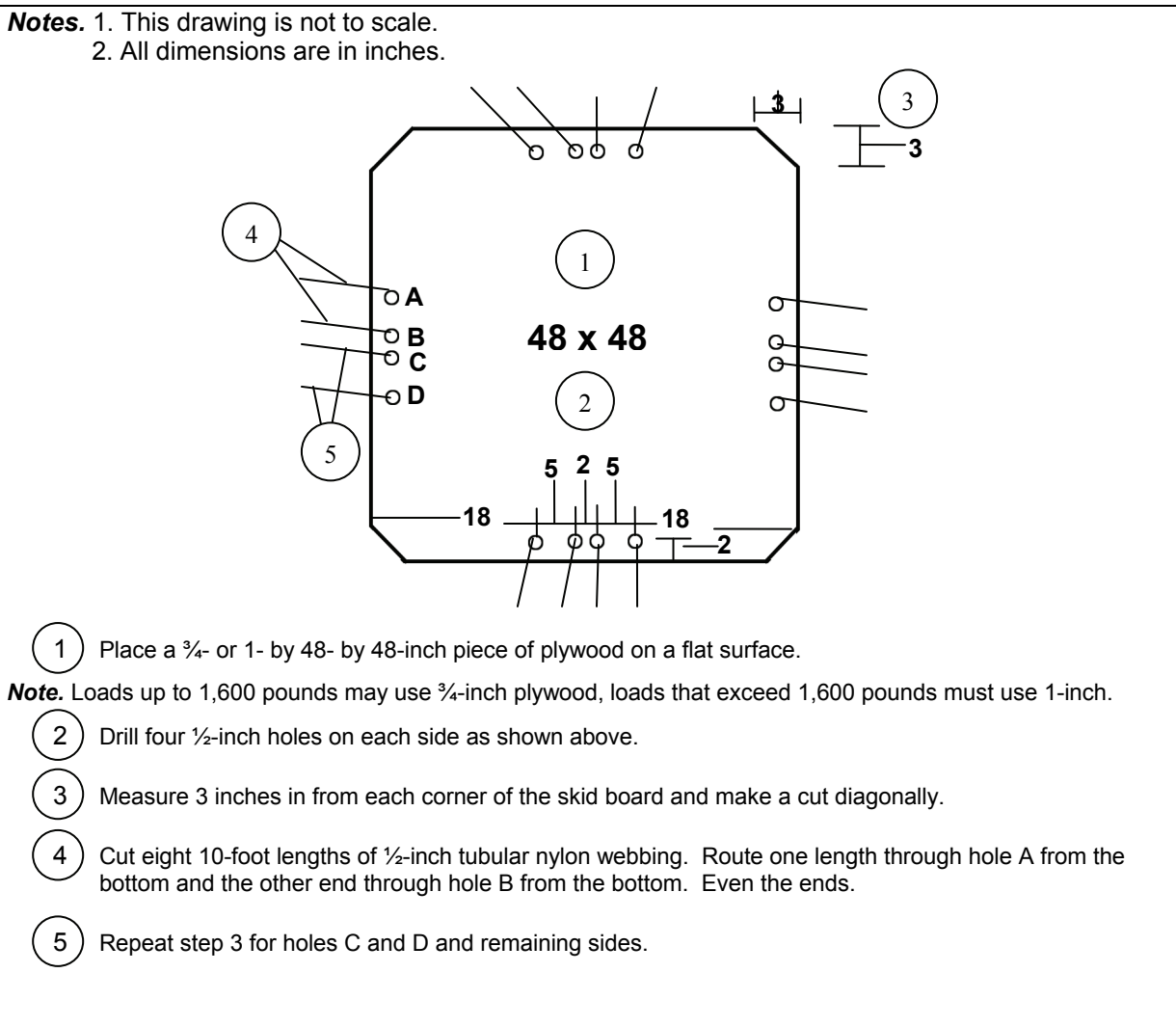
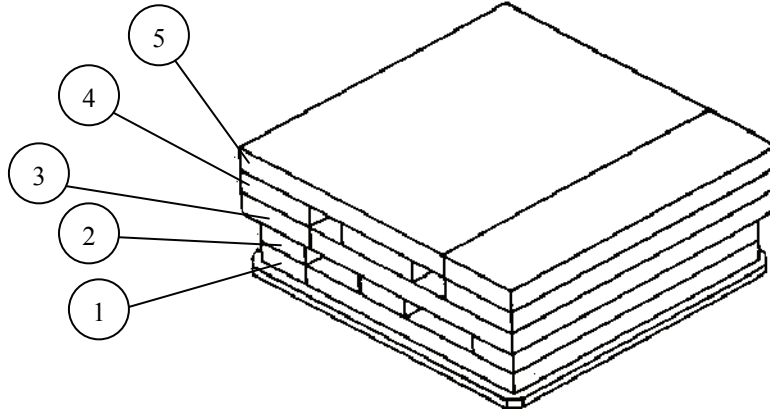


Figure 3-2. Preparing the skid board

## PREPARING AND PLACING HONEYCOMB

3-8. Prepare and place the honeycomb as shown in Figure 3-3.

**Note.** This drawing is not to scale.



- 1 Center a 36- by 44-inch and an 8- by 44-inch piece of honeycomb side by side on the skid board. Make sure the layer is 2 inches in from all sides.
- 2 Cut three 8- by 44-inch pieces of honeycomb. Center one piece on top of the first layer of honeycomb. Place one piece of honeycomb even with each side edge.
- 3 Center a 36- by 48-inch and 12- by 48-inch piece of honeycomb side by side on top of the second layer of honeycomb.
- 4 Cut three 12- by 48-inch pieces of honeycomb. Center one piece on top of the third layer of honeycomb. Place one piece of honeycomb even with each side edge.
- 5 Repeat step 3 for the fifth layer of honeycomb.

**Figure 3-3. Preparing and placing honeycomb**

## POSITIONING SLING ASSEMBLY

3-9. Center the sling assembly over the honeycomb and skid board as shown in Figure 3-4.

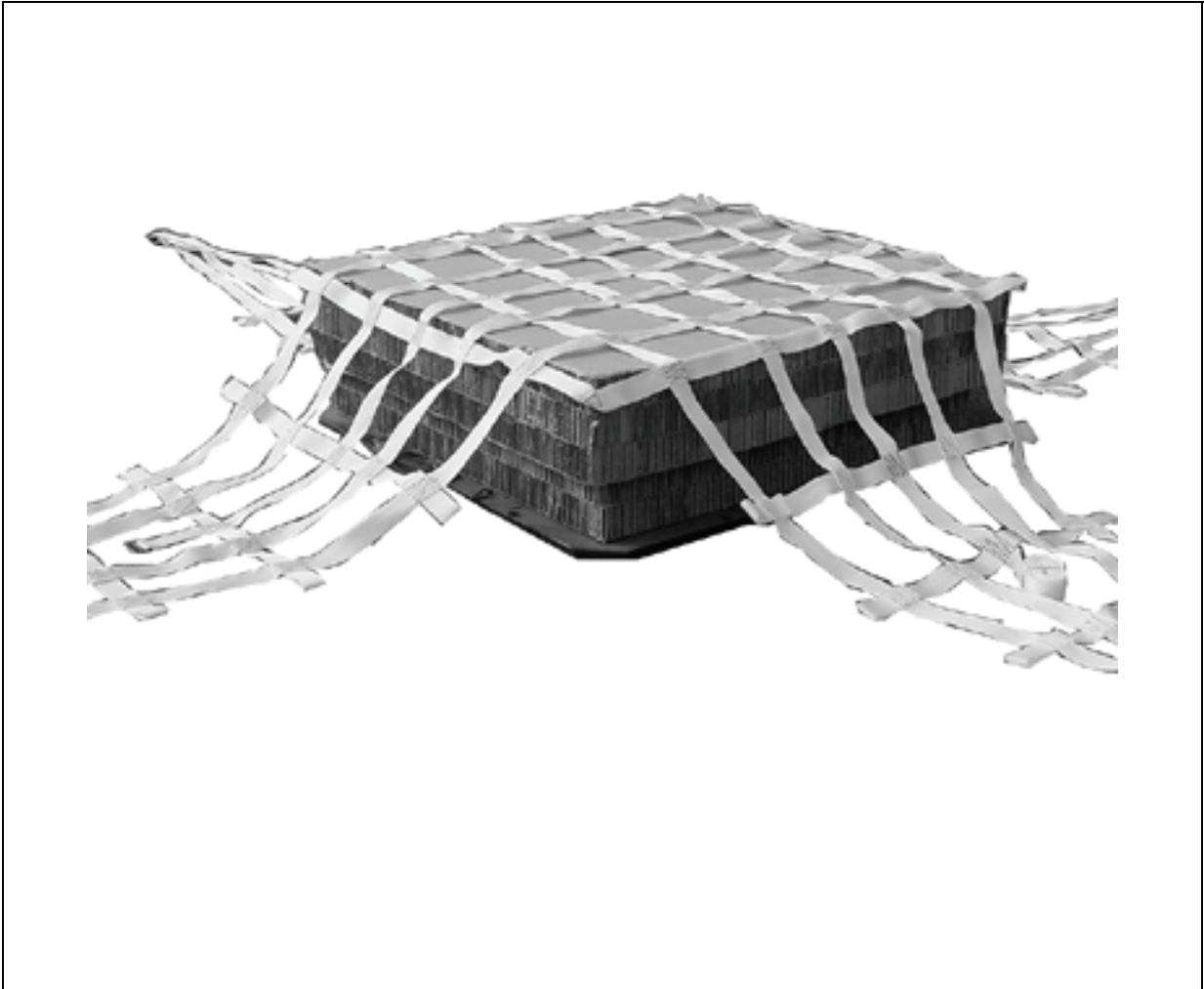
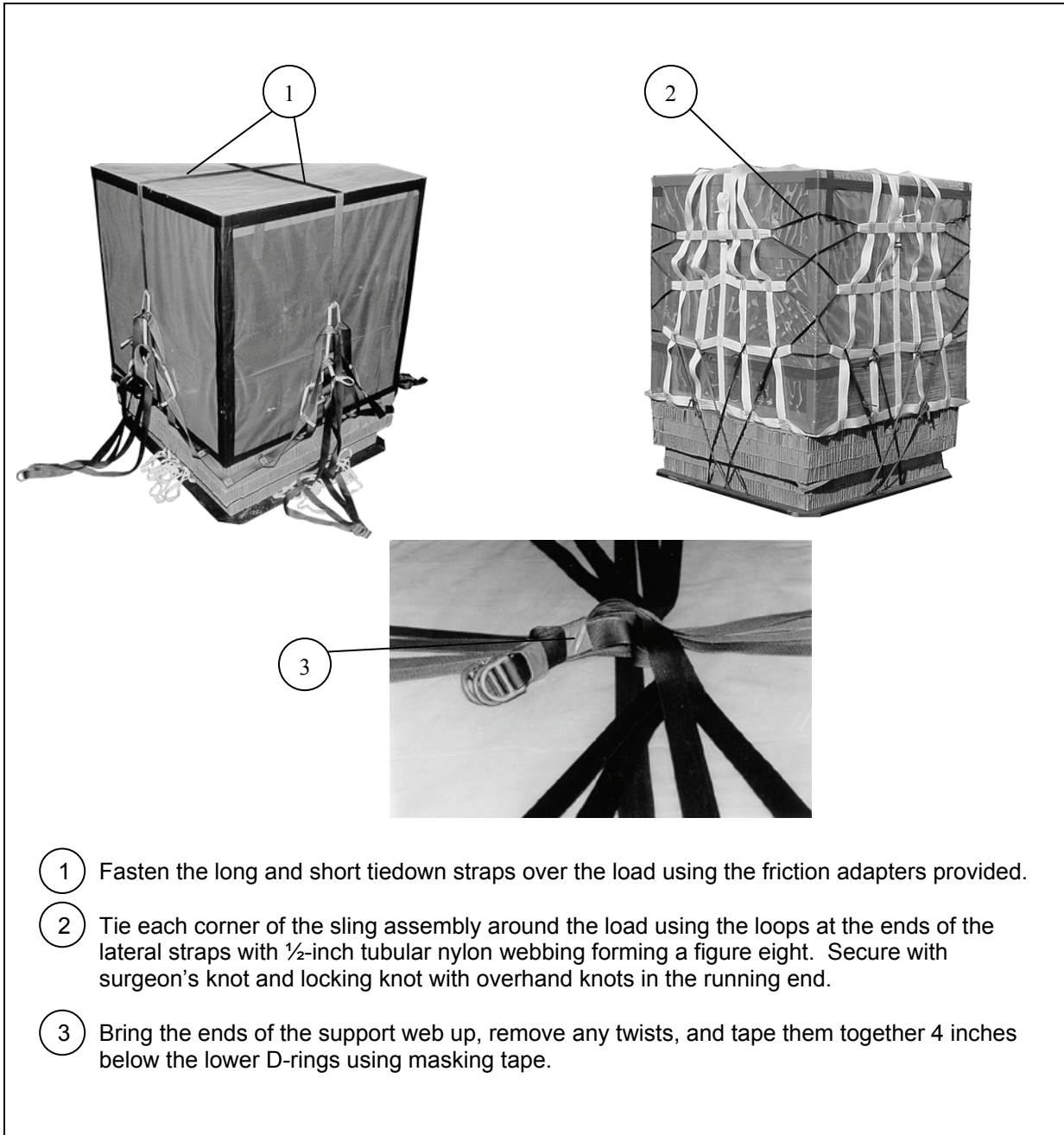


Figure 3-4. Sling assembly positioned

## POSITIONING LOAD AND SECURING SLING ASSEMBLY

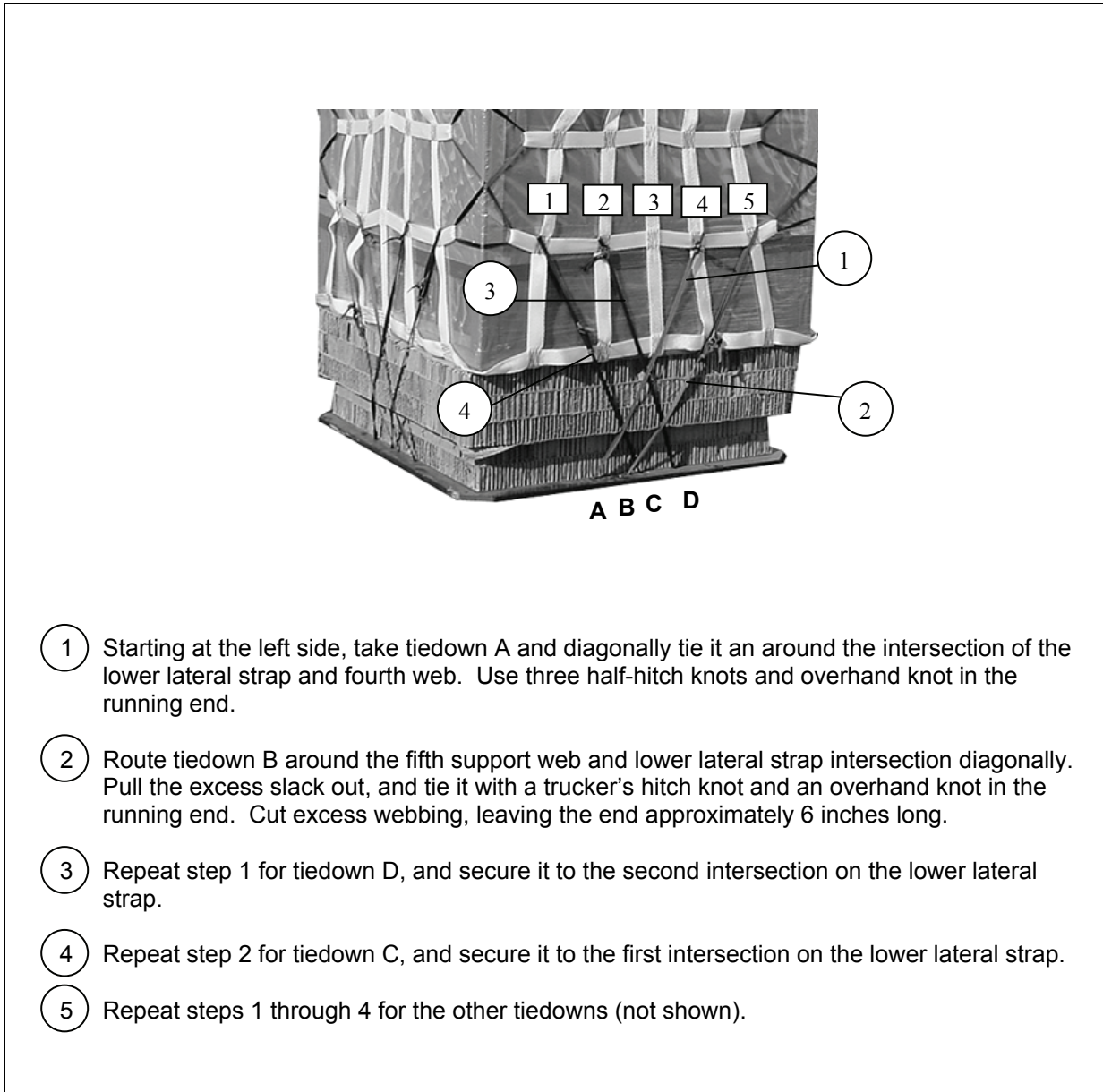
3-10. After centering the load on the sling assembly and honeycomb, cover the load with a plastic bag, shrink wrap or if that is not available, an A-22 cargo cover. Secure and tie sling assembly as shown in Figure 3-5.



**Figure 3-5. Load positioned and sling assembly secured**

## SECURING SLING ASSEMBLY TO SKID BOARD

3-11. Tie the sling assembly to the skid board as shown in Figure 3-6.



- ① Starting at the left side, take tiedown A and diagonally tie it around the intersection of the lower lateral strap and fourth web. Use three half-hitch knots and overhand knot in the running end.
- ② Route tiedown B around the fifth support web and lower lateral strap intersection diagonally. Pull the excess slack out, and tie it with a trucker's hitch knot and an overhand knot in the running end. Cut excess webbing, leaving the end approximately 6 inches long.
- ③ Repeat step 1 for tiedown D, and secure it to the second intersection on the lower lateral strap.
- ④ Repeat step 2 for tiedown C, and secure it to the first intersection on the lower lateral strap.
- ⑤ Repeat steps 1 through 4 for the other tiedowns (not shown).

**Figure 3-6. Skid board secured to sling assembly**

## INSTALLING PARACHUTE

3-12. Install the 26-foot low cost parachute as shown in Figure 3-7.

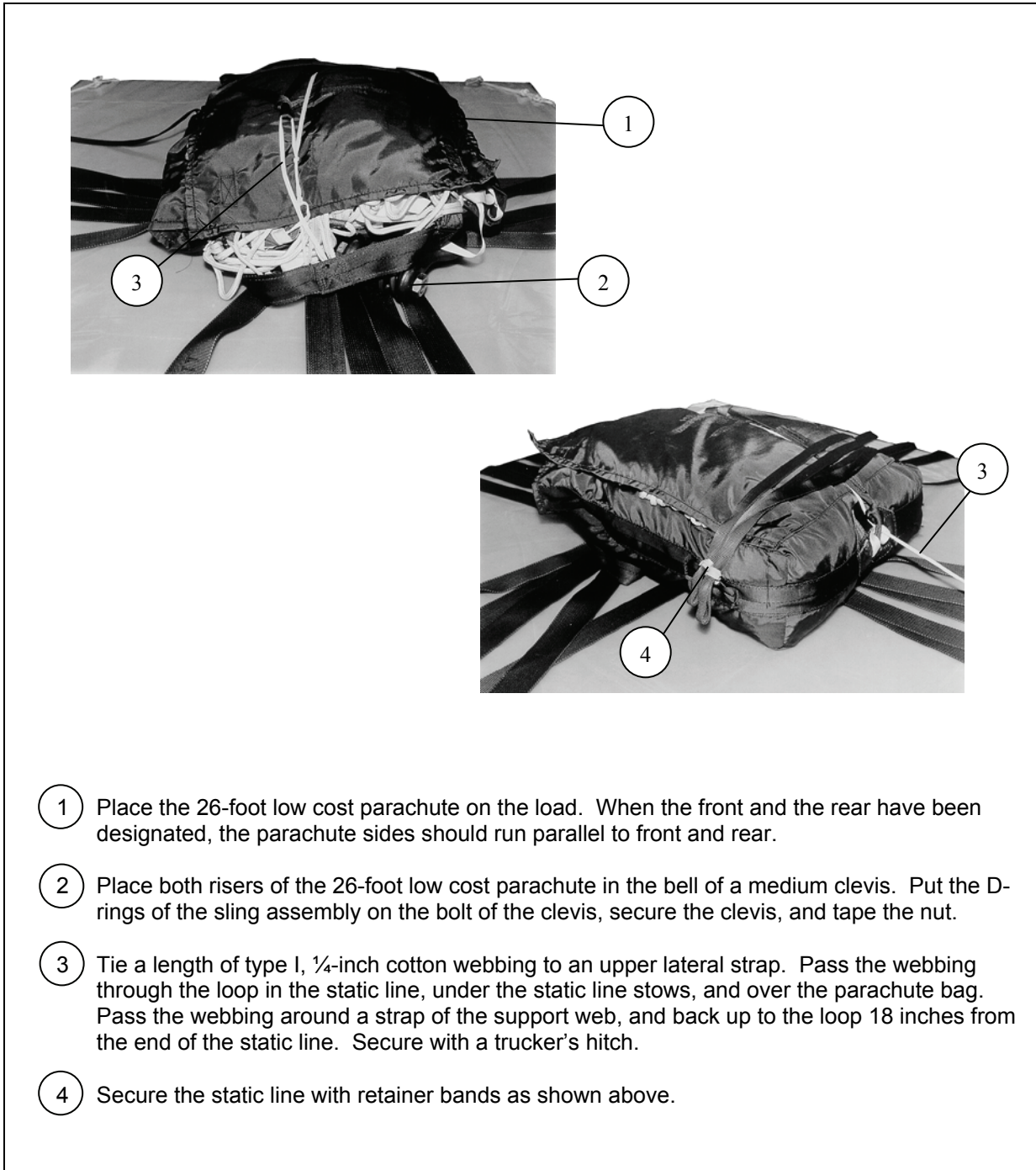



Figure 3-7. 26-foot low cost parachute installed

### MARKING RIGGED LOAD

3-13. Mark the rigged load according to FM 4-20.103/MCRP 4-11.3C/TO 13C7-1-11 and as shown in Figure 3-8. Compute the rigged load data.

### EQUIPMENT REQUIRED

3-14. Use the equipment listed in Table 3-1 to rig the load shown in Figure 3-8.



#### RIGGED LOAD DATA

Weight:	Minimum load allowed.....	501 pounds
	Maximum load allowed.....	2,200 pounds
Height:	.....	.83 inches
Width:	.....	.48 inches
Length:	.....	.48 inches

**Figure 3-8. Fully rigged LCADS**

Table 3-1. Equipment required for rigging LCADS

<b>National Stock Number</b>	<b>Item</b>	<b>Quantity</b>
8040-00-273-8713	Adhesive Paste	As required
	Bag, cover, 4 mil polyethylene (54- by 52- by 60-inches)	As required
	Shrink wrap	As required
	Sling assembly	1
4030-00-678-8562	Clevis, suspension, 3/4-inch (medium)	1
4020-00-240-2146	Cord, nylon type III	As required
1670-00-753-3928	Pad, energy dissipating, honeycomb 36- by 96- by 3-inches	3 sheets
No NSN	Parachute: Cargo, high-velocity, 26 ft, low cost	1
5530-00-128-4981	Plywood, 3/4- by 48- by 96-inch	1 sheet
	or	
5530-00-914-5118	Plywood, 1- by 48- by 96-inch	1 sheet
7510-00-266-6710	Tape, masking, 2-inch	As required
8310-01-102-4478	Thread, cotton, ticket number 8/7	As required
	Webbing:	
8305-00-268-2411	Cotton, 1/4-inch type I	As required
8305-00-082-5752	Nylon, tubular, 1/2-inch	As required



## SECTION III - RIGGING LOW VELOCITY LCADS

### SYSTEM DESCRIPTION

3-15. The LCADS is rigged as a typical A-22 low-velocity load. Typical loads include rations, repair parts, water and/or other small items. Items may be dropped in their original configuration or repackaged for greater protection. The LCADS container loads must weigh at least 501 pounds but not exceed 2,200 pounds excluding the parachute. The load is rigged with a G-12E cargo parachute.

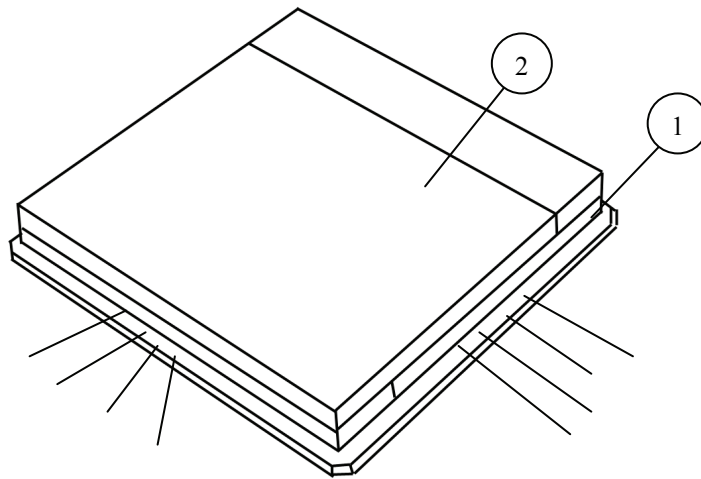
### PREPARING ITEMS AND SKID BOARD

3-16. Prepare the skid board using Figure 3-2. Prepare the items to be dropped according to load's sensitivity. Items must be well padded to prevent damage during airdrop.

### PREPARING AND PLACING HONEYCOMB

3-17. Prepare and place the honeycomb as shown in Figure 3-9.

**Note.** Glue all honeycomb in place.

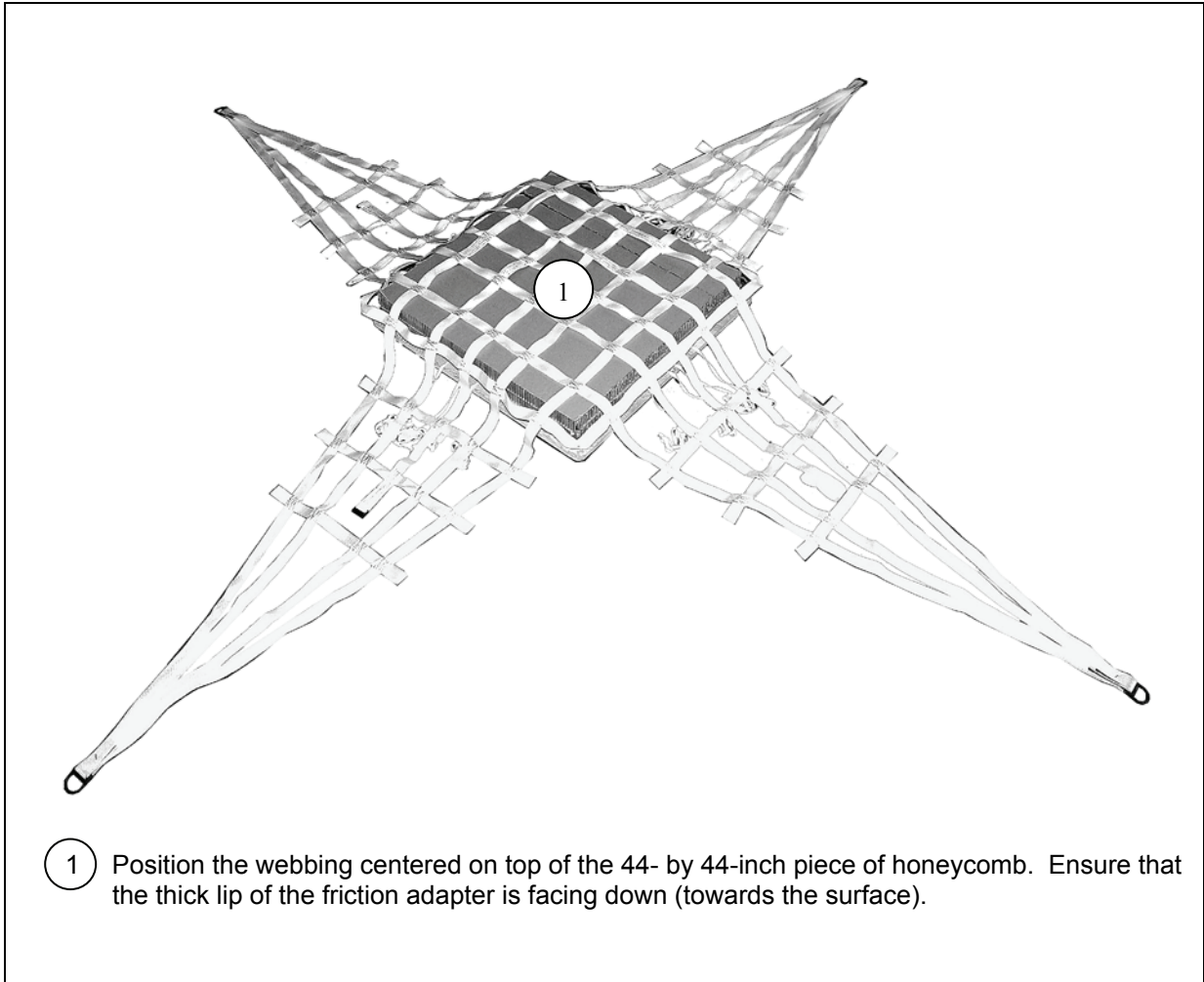


- ① Center a 36- by 44-inch and an 8- by 44-inch piece of honeycomb side by side on the skid board. Make sure the layer is 2 inches in from all sides.
- ② Repeat step 1 for a second layer of honeycomb; alternating the pieces of honeycomb.

**Figure 3-9. Honeycomb placed and prepared**

## POSITIONING SLING ASSEMBLY

3-18. Center the sling assembly over the honeycomb and skid board as shown in Figure 3-10. The dimension of the webbing is 222- by 222-inches.



**Figure 3-10. Sling assembly positioned**

## POSITIONING LOAD AND SECURING SLING ASSEMBLY

3-19. Center and secure the load on the sling assembly and honeycomb. If a cover is available, cover the load with a plastic bag, shrink wrap or an A-22 cargo cover. A cover is not required. Secure and tie the sling assembly as shown in Figures 3-5 and 3-11.

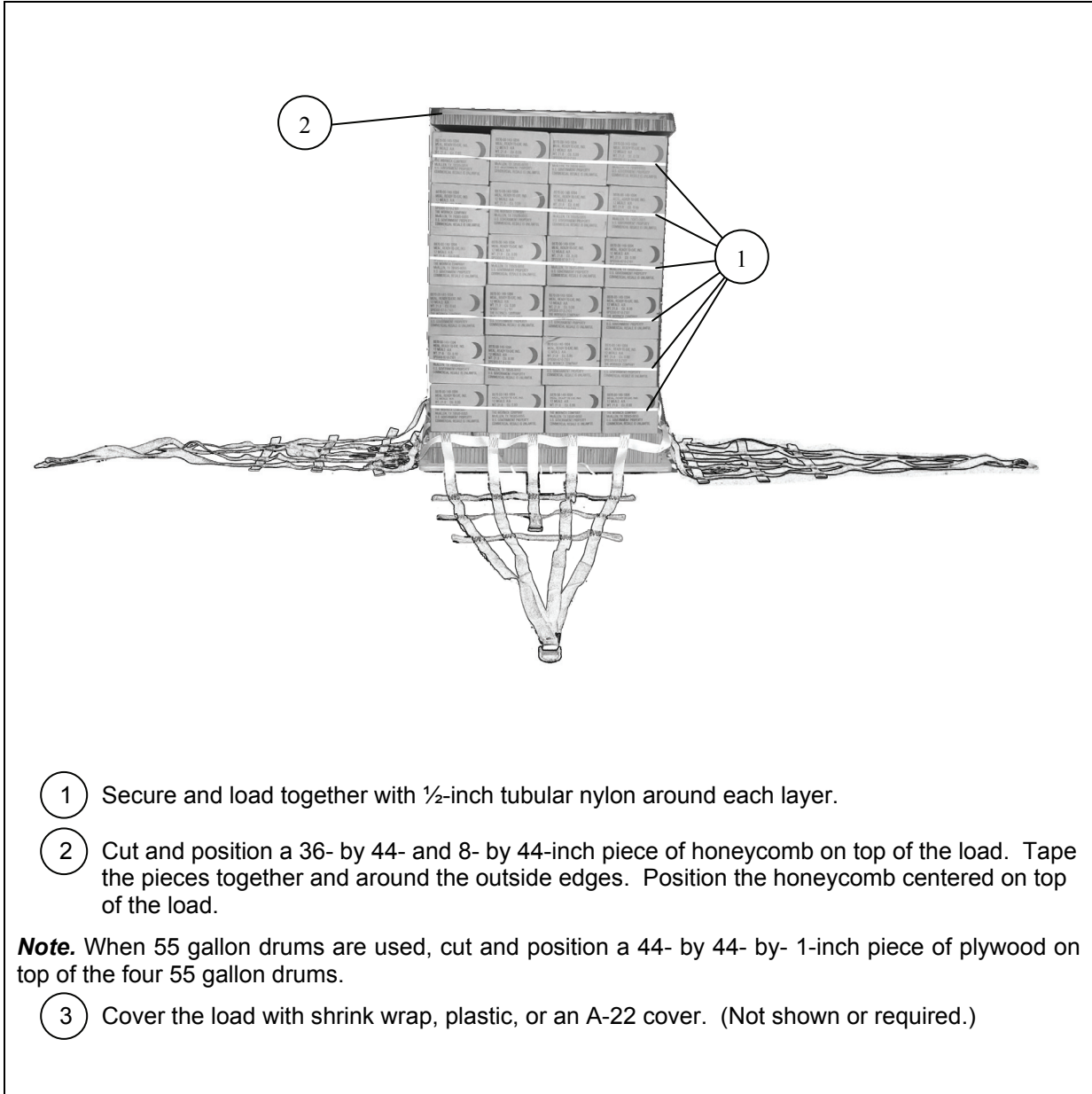
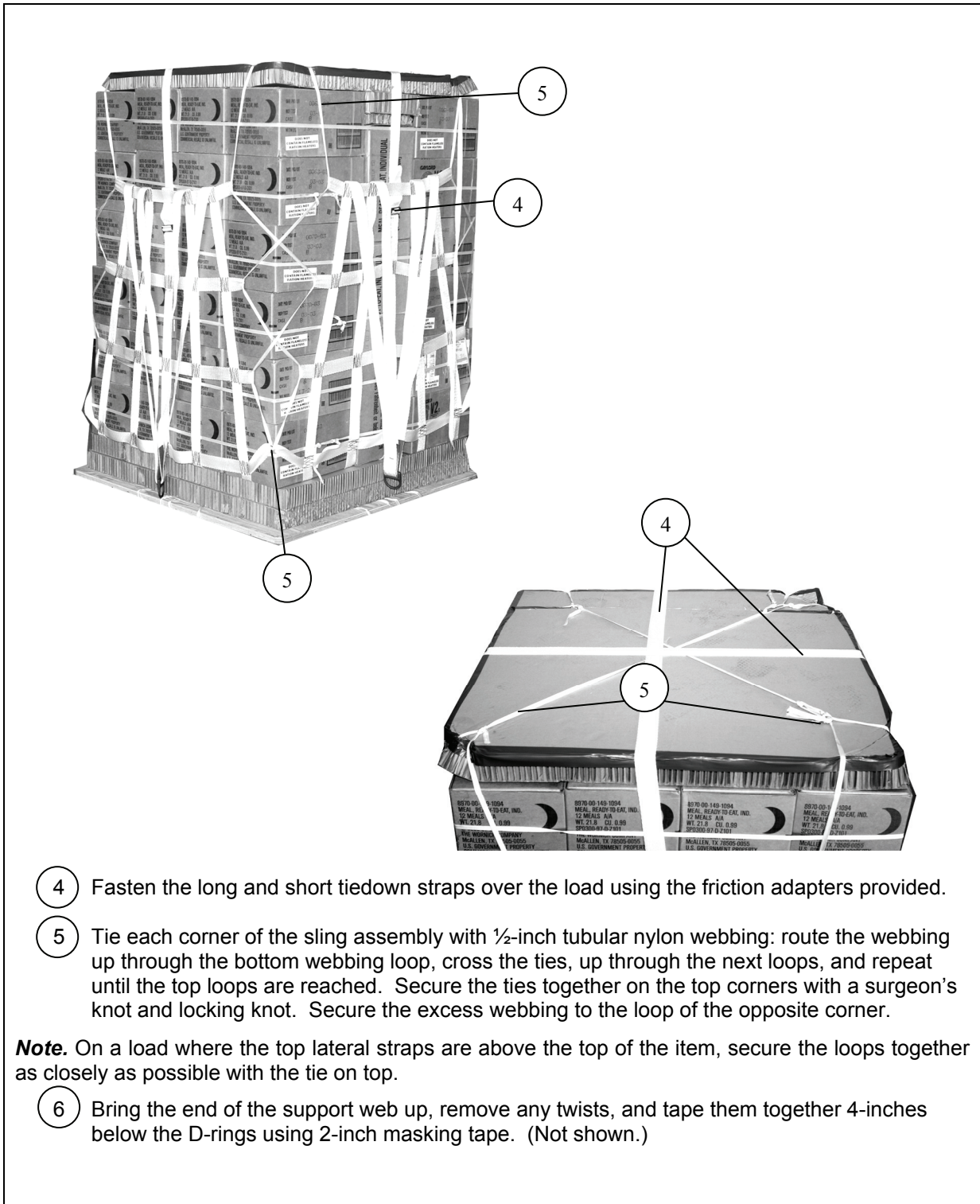


Figure 3-11. Load positioned and sling secured



- 4 Fasten the long and short tiedown straps over the load using the friction adapters provided.
- 5 Tie each corner of the sling assembly with ½-inch tubular nylon webbing: route the webbing up through the bottom webbing loop, cross the ties, up through the next loops, and repeat until the top loops are reached. Secure the ties together on the top corners with a surgeon's knot and locking knot. Secure the excess webbing to the loop of the opposite corner.

**Note.** On a load where the top lateral straps are above the top of the item, secure the loops together as closely as possible with the tie on top.

- 6 Bring the end of the support web up, remove any twists, and tape them together 4-inches below the D-rings using 2-inch masking tape. (Not shown.)

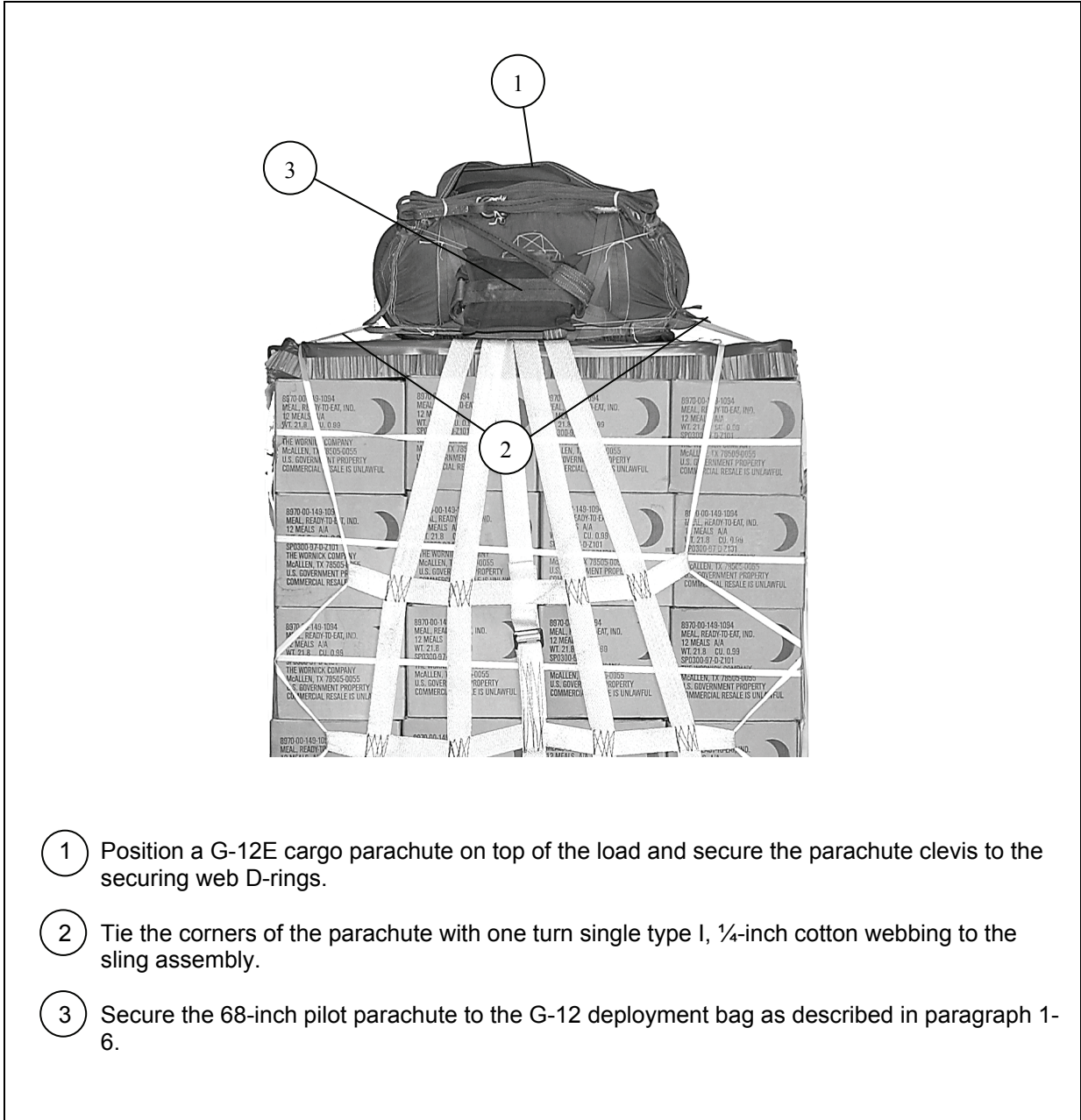
Figure 3-11. Load positioned and sling secured (continued)

## SECURING SLING ASSEMBLY TO SKID BOARD

3-20. Tie the sling assembly to the skid board as shown in Figure 3-6.

## INSTALLING PARACHUTE

3-21. Install the G-12E cargo parachute as shown in Figure 3-12.



- 1 Position a G-12E cargo parachute on top of the load and secure the parachute clevis to the securing web D-rings.
- 2 Tie the corners of the parachute with one turn single type I, 1/4-inch cotton webbing to the sling assembly.
- 3 Secure the 68-inch pilot parachute to the G-12 deployment bag as described in paragraph 1-6.

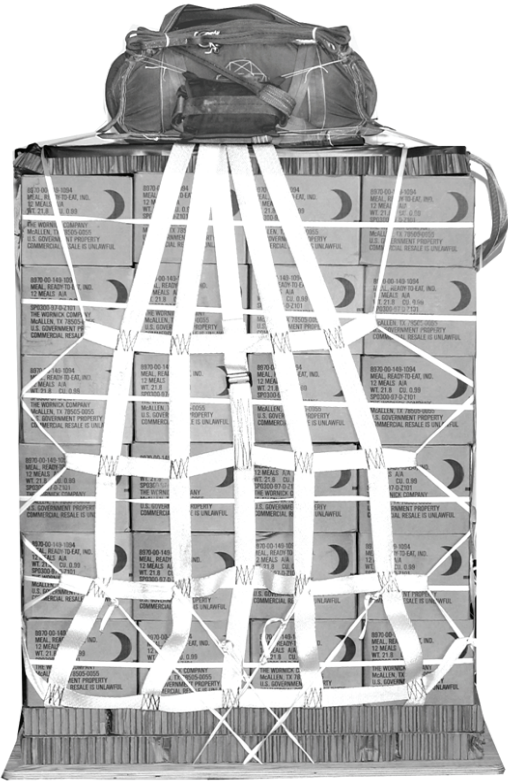
Figure 3-12. G-12E cargo parachute installed

## MARKING RIGGED LOAD

3-22. Mark the rigged load according to FM 4-20.103/MCRP 4-11.3C/TO 13C7-1-11 and as shown in Figure 3-13. Compute the rigged load data.

## EQUIPMENT REQUIRED

3-23. Use the equipment listed in Table 3-2 to rig the load shown in Figure 3-13.



<b>RIGGED LOAD DATA</b>	
Weight:	Minimum load allowed.....501 pounds Maximum load allowed.....2,200 pounds
Height:	.....80 inches
Width:	.....48 inches
Length:	.....48 inches

Figure 3-13. Low-velocity LCADS rigged

**Table 3-2. Equipment required for rigging low-velocity LCADS**

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive paste	As required
	Bag, cover, 4 mil polyethylene (54- by 52- by 60-inches)	As required
	Shrink wrap	As required
	Sling assembly, LCADS	1
4030-00-678-8562	Clevis, suspension, 3/4-inch (medium)	1
4020-00-240-2146	Cord, nylon type III	As required
1670-00-753-3928	Pad, energy dissipating, honeycomb 36- by 96- by 3-inches	3 sheets
	Parachute:	
1670-00-893-2371	Cargo, G-12E	1
1670-00-216-7297	Pilot, 68 inch diameter	1
5530-00-128-4981	Plywood, 3/4- by 48- by 96-inch or	1 sheet
5530-00-914-5118	Plywood, 1- by 48- by 96-inch or	1 sheet
1670-01-342-5913	Skid board, 1- by 48- by 48-inch or	1
1670-00-883-1654	Skid board, 3/4- by 48- by 48-inch	1
7510-00-266-6710	Tape, masking, 2-inch	As required
8310-01-102-4475	Thread, cotton, ticket number 8/7	As required
	Webbing:	
8305-00-268-2411	Cotton, 1/4-inch, type I	As required
8305-00-082-5752	Nylon, tubular, 1/2-inch	As required

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## Chapter 4

# Rigging Double A-22 Container for High Velocity Airdrop

## SECTION I - GENERAL INFORMATION FOR THE DOUBLE A-22 CONTAINER

### DOUBLE A-22 CONTAINER COMPONENTS

4-1. The double A-22 container, shown in Figure 4-1, employs two standard A-22 sling assemblies which can be laced together to form a larger container, or which can be individually rigged and configured side by side as described in Section III of this chapter. This system employs a reefed G-12 parachute.

### DOUBLE A-22 CONTAINER SKID BOARD

4-2. The sling assemblies are secured to a 1- by 48- by 96-inch plywood (Grade AC) skid board with ½-inch tubular nylon webbing. Honeycomb is positioned between the container and the skid board for impact cushioning.

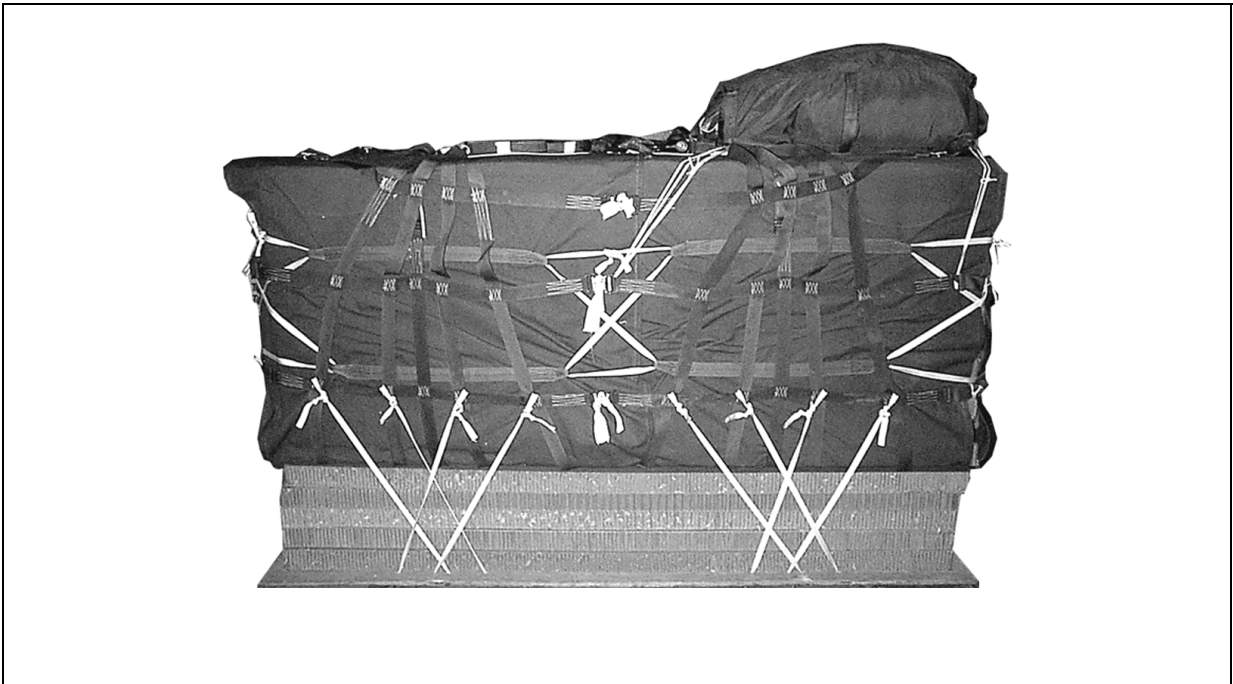


Figure 4-1. Fully rigged double A-22 container system

## **DOUBLE A-22 CONTAINER LIMITATIONS**

4-3. The double A-22 container has a weight restriction of 2,201 to 3,375 pounds. Ensure the load weighs a minimum of 28 pounds per square foot IAW FM 4-20.103/MCRP 4-11.3C/TO 13C7-1-11.

## **ASSEMBLY LINE RIGGING**

4-4. When assembly line rigging is used for double A-22 container loads, five stations are needed. The stations are: laying out containers and preparing base, positioning load, rigging load, installing parachute, and inspecting the rigged load.

## **INSPECTION OF LOAD**

4-5. The double A-22 container load must be inspected by a qualified rigger. While being rigged, this load should be supervised or rigged by a parachute rigger. DD Form 1748-1 must be completed before the airdrop.

## **PARACHUTE USED**

4-6. The system employs a reefed G-12 parachute with both skirt and vent reefing. Procedures for packing the reefed G-12 parachute can be found in Chapter 1, Section II of this manual.

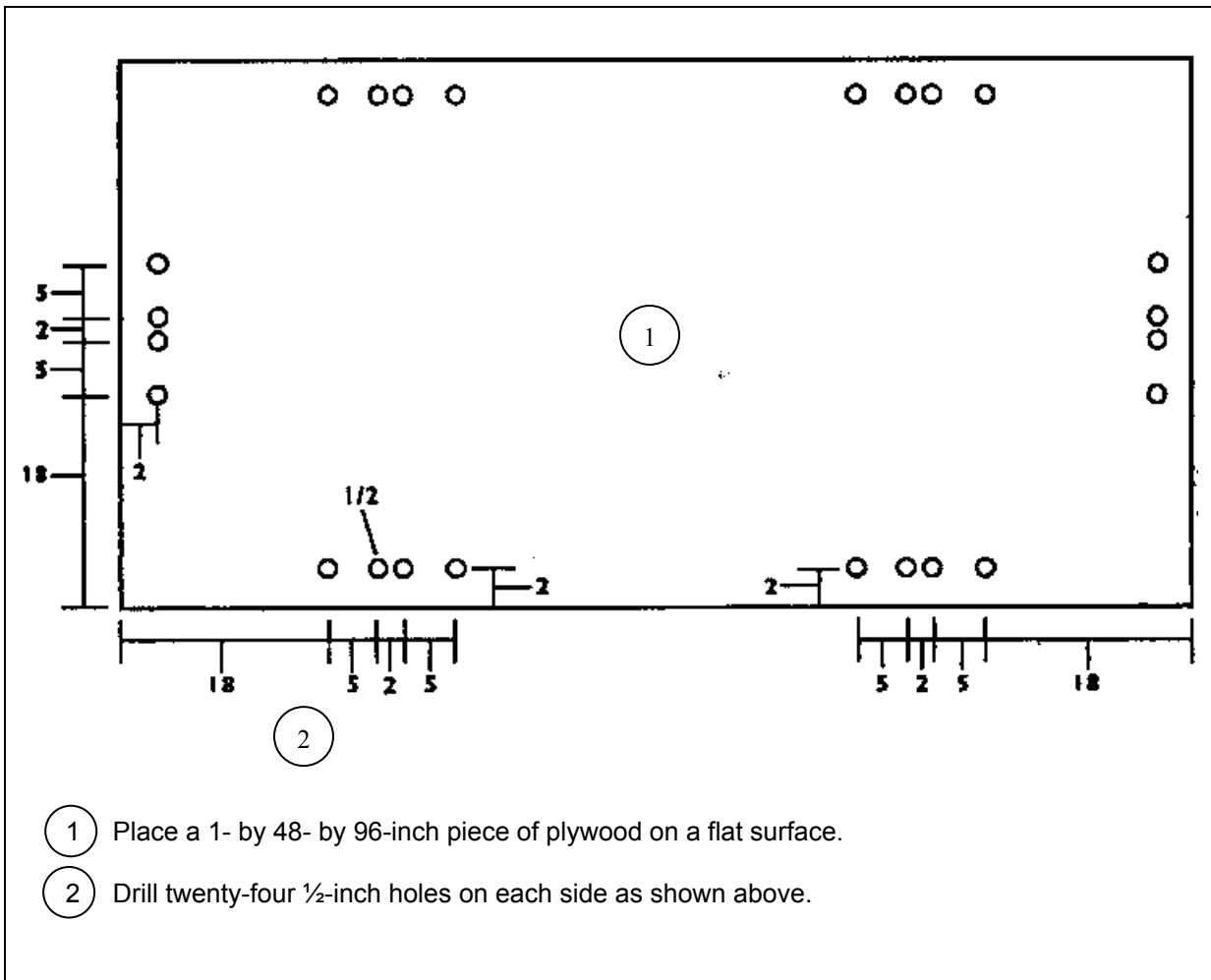
**SECTION II - RIGGING DOUBLE A-22 CONTAINER**

**SYSTEM DESCRIPTION**

4-7. A typical load is rigged for high-velocity airdrop using a double A-22 container. The double container is made by using two A-22 sling assemblies. Shrink wrap or plastic sheeting can be used in lieu of the standard A-22 cargo cover. Double A-22 cargo bag container loads must weigh at least 2,201 pounds but not exceed 3,375 pounds, excluding the weight of the parachute. The load is rigged with a reefed G-12 parachute.

**PREPARING ITEMS AND SKID BOARD**

4-8. Prepare the skid board according to Figure 4-2. Prepare the drop items according to the load's sensitivity. Items must be well padded to prevent damage during airdrop.

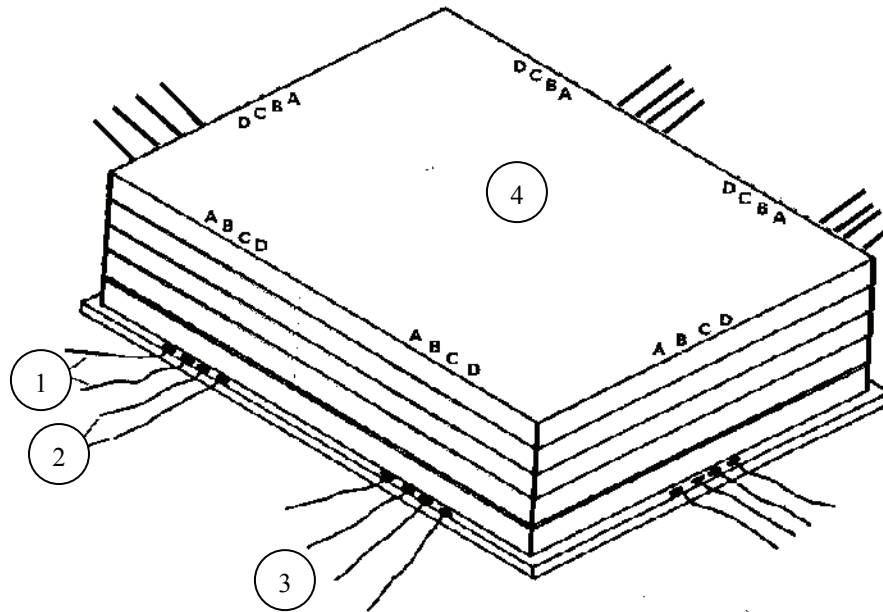


- ① Place a 1- by 48- by 96-inch piece of plywood on a flat surface.
- ② Drill twenty-four 1/2-inch holes on each side as shown above.

**Figure 4-2. Skid board prepared**

## PREPARING SKID BOARD TIES AND PLACING HONEYCOMB

4-9. Prepare the skid board ties and place the honeycomb as shown in Figure 4-3.



- 1 Cut twelve 10-foot lengths of  $\frac{1}{2}$ -inch tubular nylon webbing. Route one end through hole A and the other through hole B, from bottom to top.
- 2 Repeat step 1 for holes C and D.
- 3 Repeat steps 1 and 2 for the other five sets of holes.
- 4 Determine the size of the honeycomb needed according to the size of the load. Cut and center the honeycomb on the skid board. Make sure the honeycomb is moved in 2-inches from all sides.

**Note.** All double A-22 container loads will use a minimum of five layers of honeycomb. The two bottom layers will not exceed 44- by 92-inches and the top layers will be the size of the load.

Figure 4-3. Skid board ties prepared and honeycomb placed

## POSITIONING A-22 SLING ASSEMBLIES

4-10. Position two A-22 sling assemblies on the double A-22 load as shown in Figure 4-4.

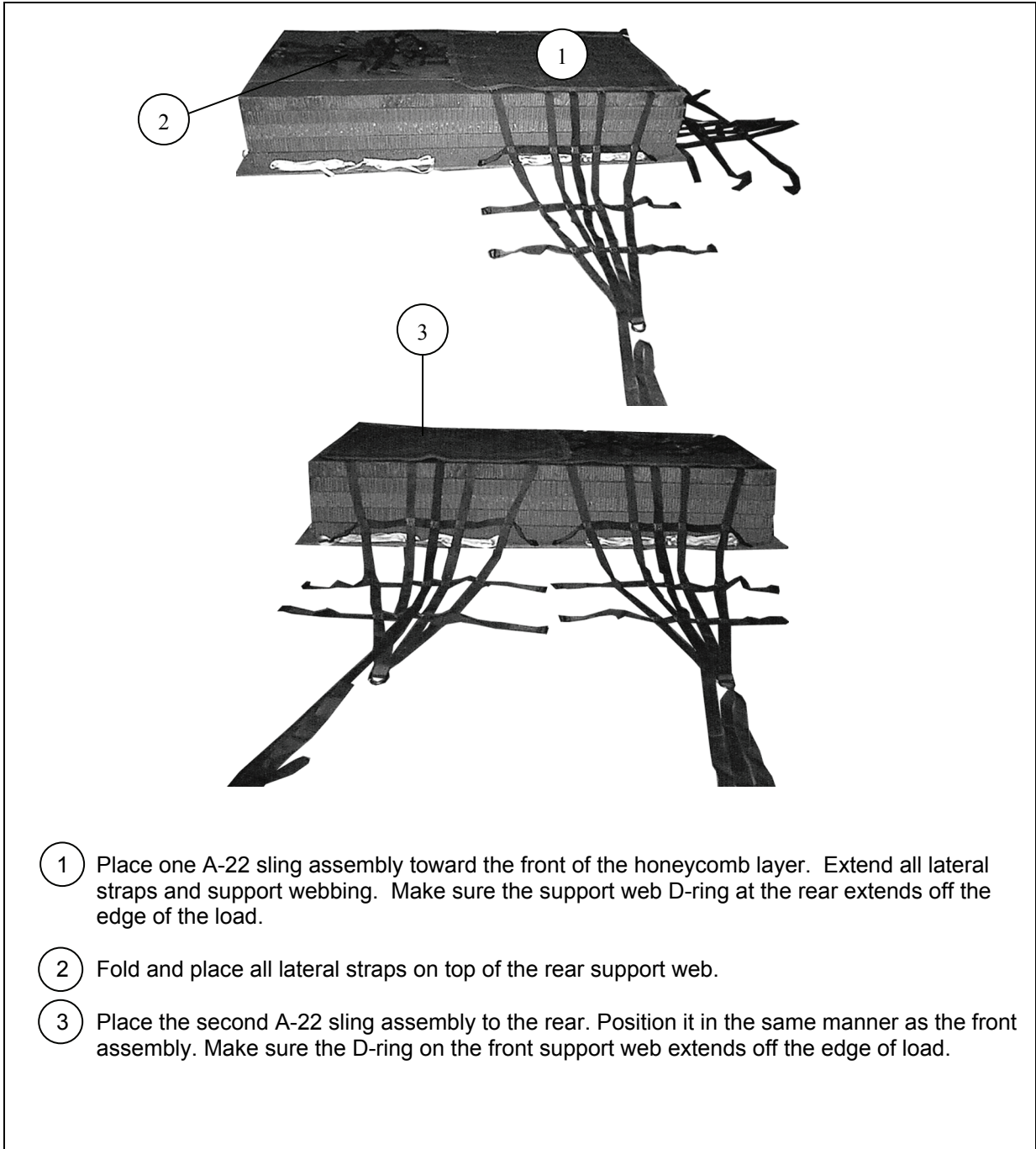


Figure 4-4. Sling assemblies positioned

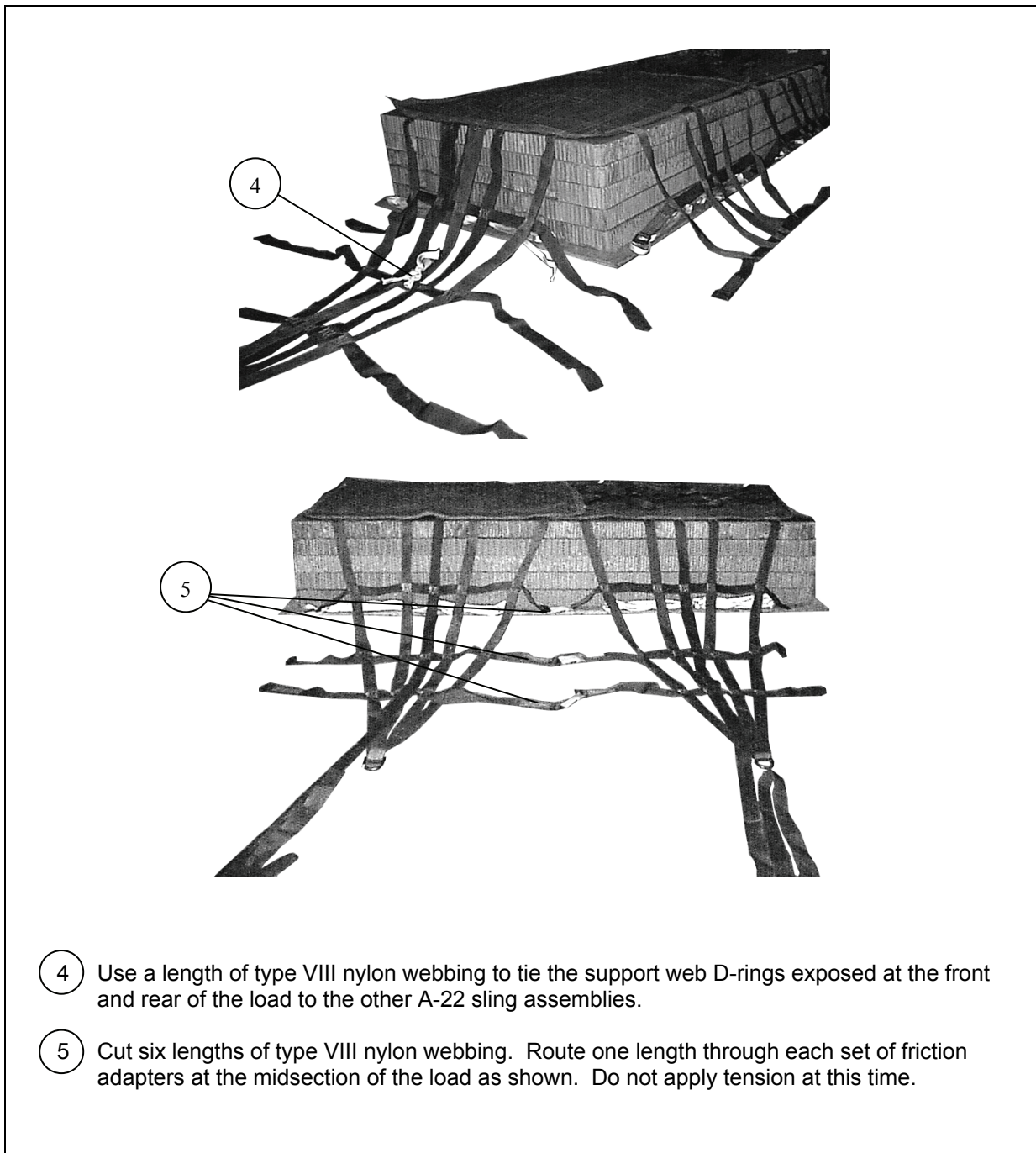


Figure 4-4. A-22 sling assemblies positioned (continued)

## POSITIONING COVERS AND HONEYCOMB

4-11. Use two A-22 cargo bag covers when rigging this load, if needed. Position the covers shown in Figure 4-5. Placing an additional layer of honeycomb on top of the covers as shown is recommended but not required.

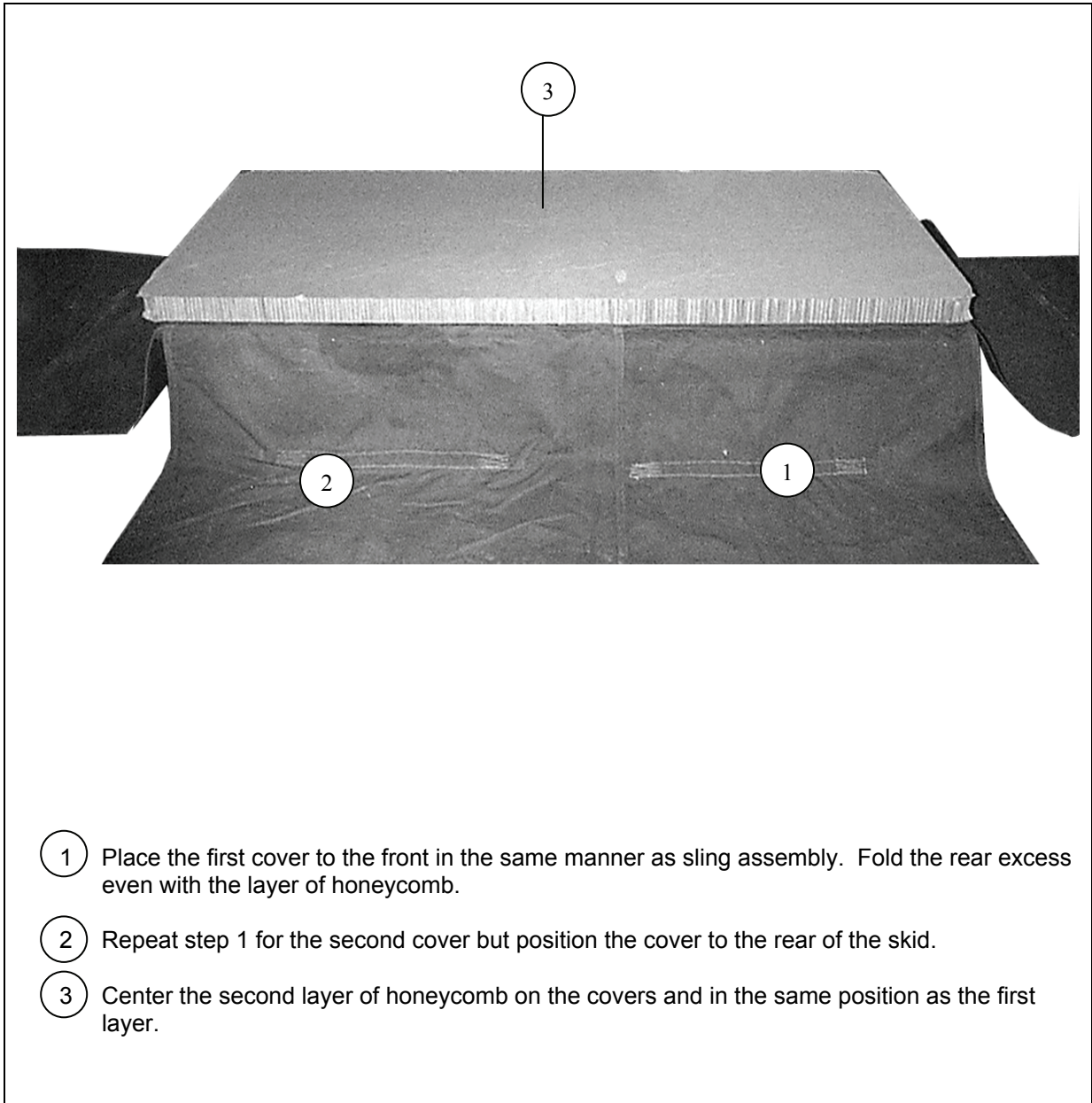


Figure 4-5. Covers and honeycomb positioned

## POSITIONING LOAD AND CLOSING BAG COVERS

4-12. Center the load so that the weight of the load is evenly distributed. Use honeycomb and cellulose wadding to protect the items. Use cord, rope, or steel strapping to keep the load from shifting. Close the bag as shown in Figure 4-6.

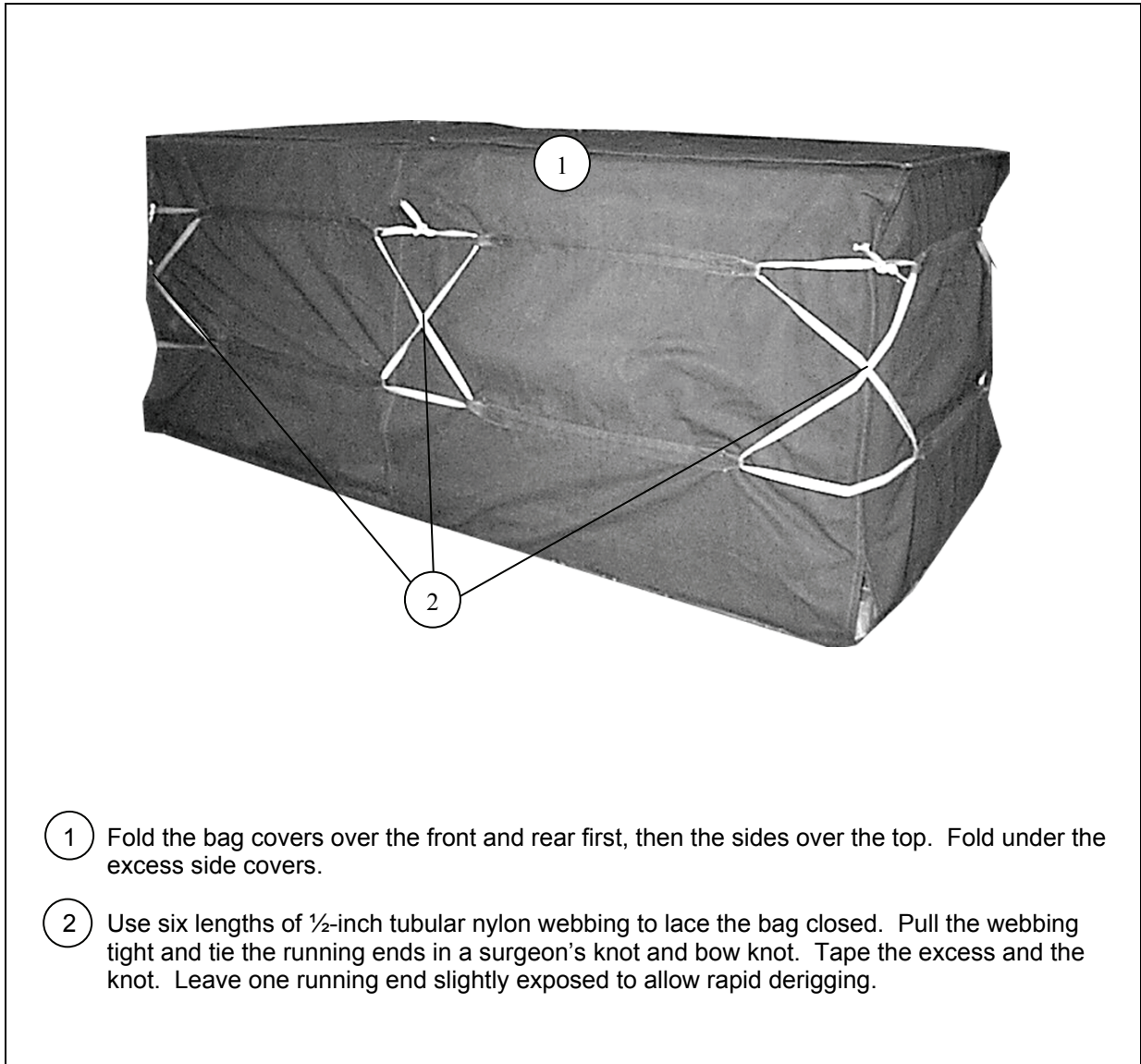


Figure 4-6. A-22 cargo bag covers closed



## SECURING TIEDOWN STRAPS

4-13. Secure the tiedown straps as shown in Figure 4-7.

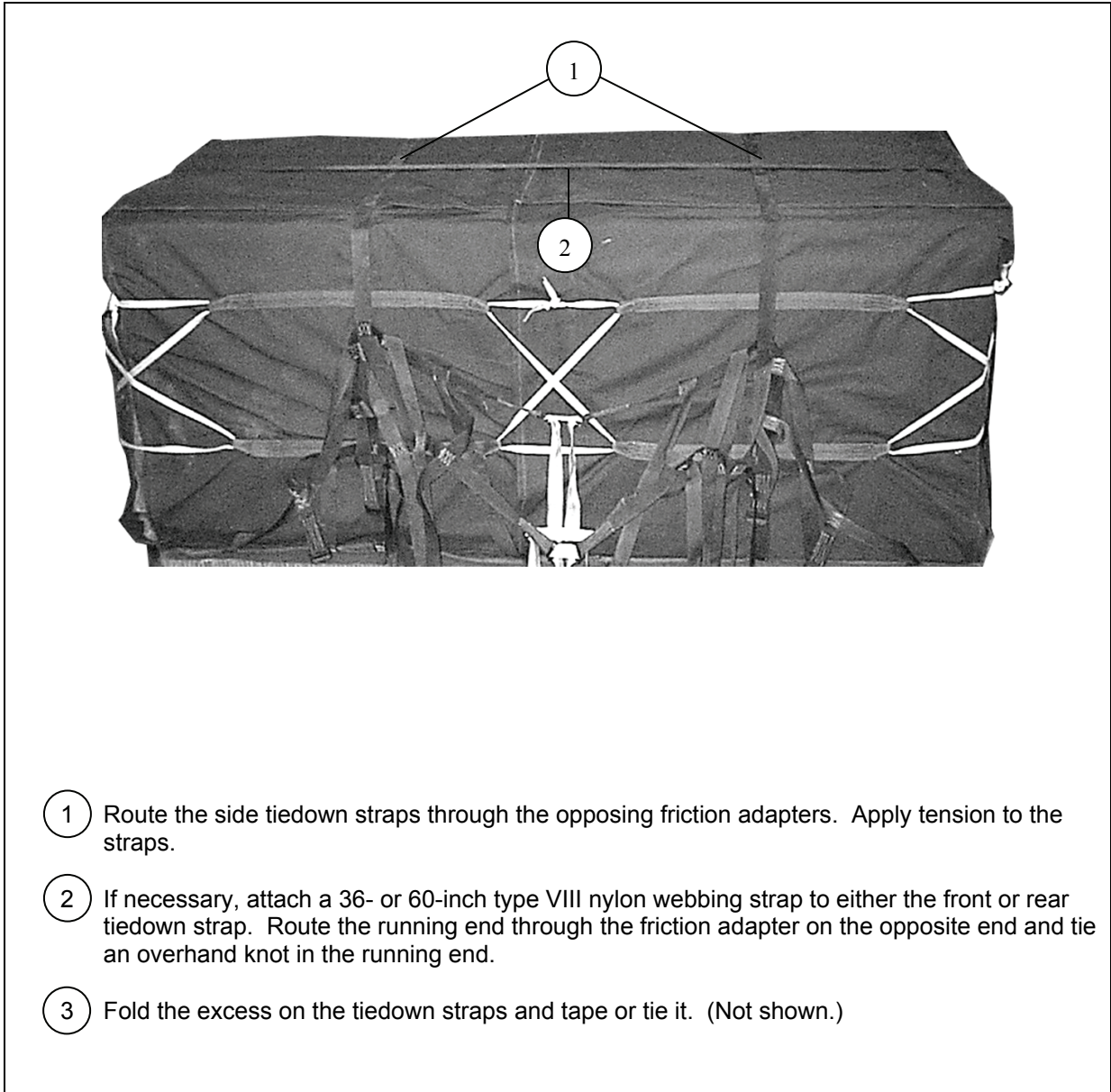
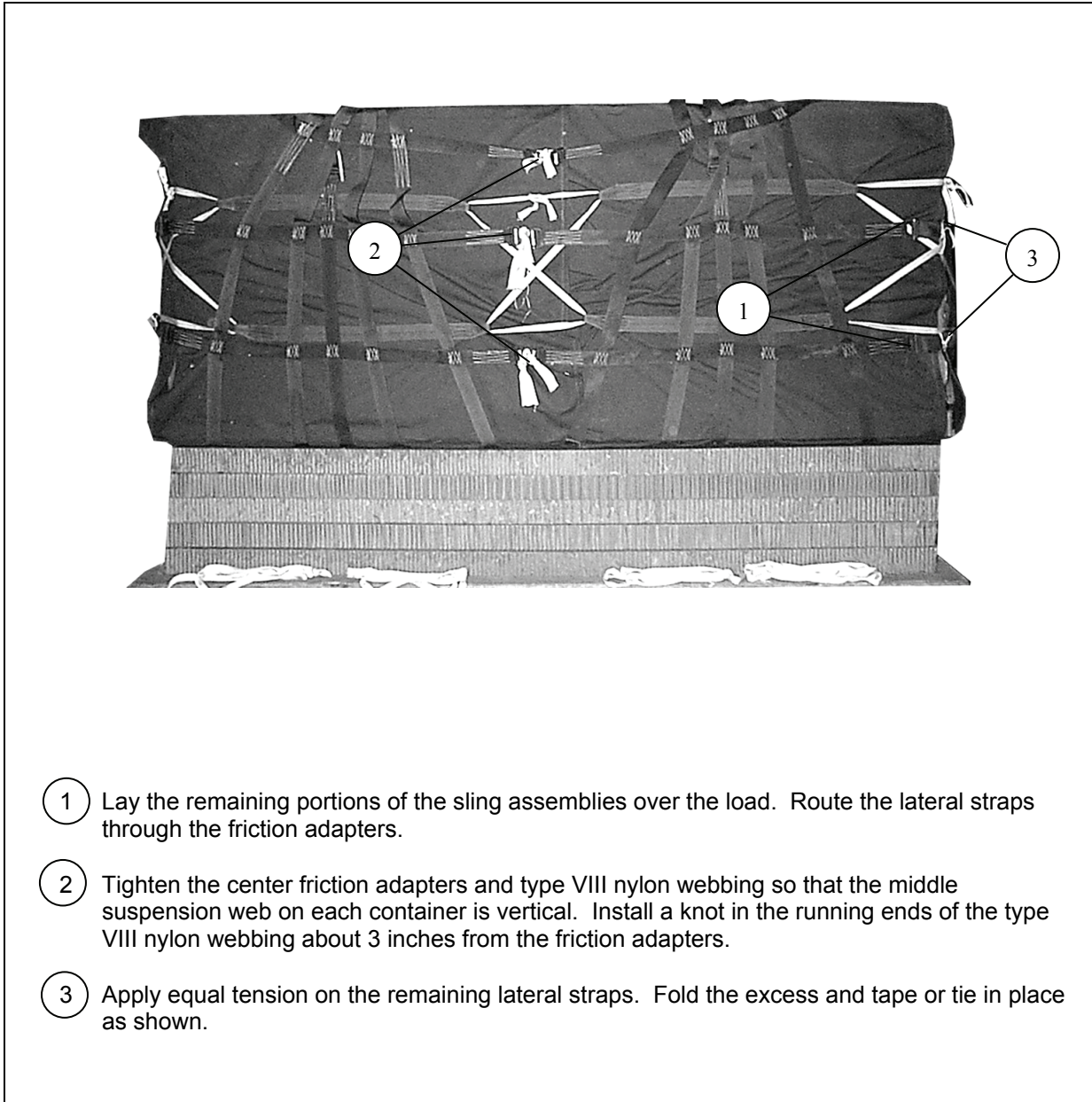


Figure 4-7. Tiedown straps secured

## SECURING LATERAL STRAPS

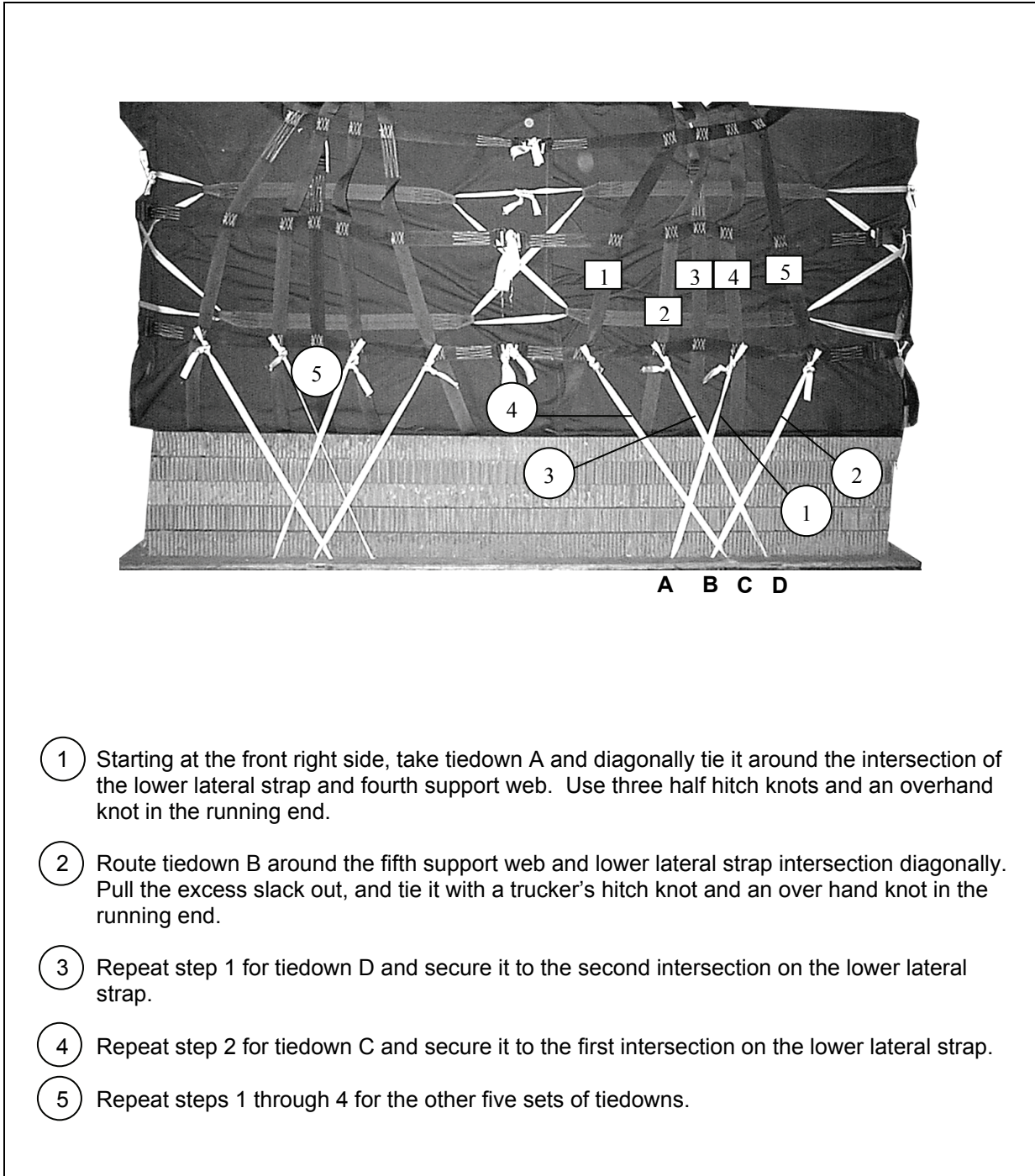
4-14. Secure the lateral straps as shown in Figure 4-8.



**Figure 4-8. Lateral straps secured**

## SECURING SKID BOARD TIES

4-15. Secure the skid board ties as shown in Figure 4-9.

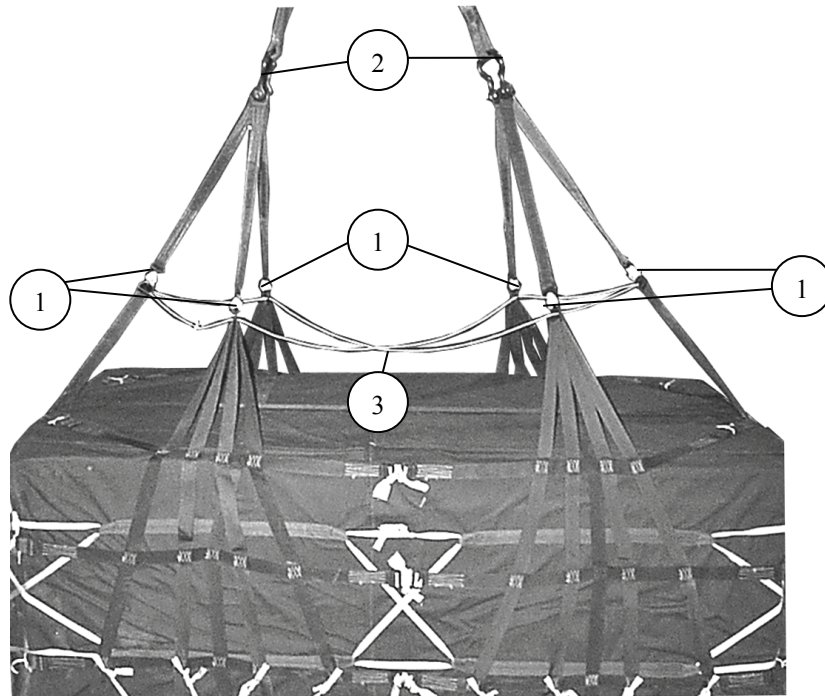


- ① Starting at the front right side, take tiedown A and diagonally tie it around the intersection of the lower lateral strap and fourth support web. Use three half hitch knots and an overhand knot in the running end.
- ② Route tiedown B around the fifth support web and lower lateral strap intersection diagonally. Pull the excess slack out, and tie it with a trucker's hitch knot and an over hand knot in the running end.
- ③ Repeat step 1 for tiedown D and secure it to the second intersection on the lower lateral strap.
- ④ Repeat step 2 for tiedown C and secure it to the first intersection on the lower lateral strap.
- ⑤ Repeat steps 1 through 4 for the other five sets of tiedowns.

Figure 4-9. Skid board ties secured

## INSTALLING SUSPENSION SLINGS

4-16. Install suspension slings using six suspension webs, two 3/4-inch cargo suspension clevises, and two 3-foot (2 loop), type XXVI nylon webbing slings as shown in Figure 4-10.

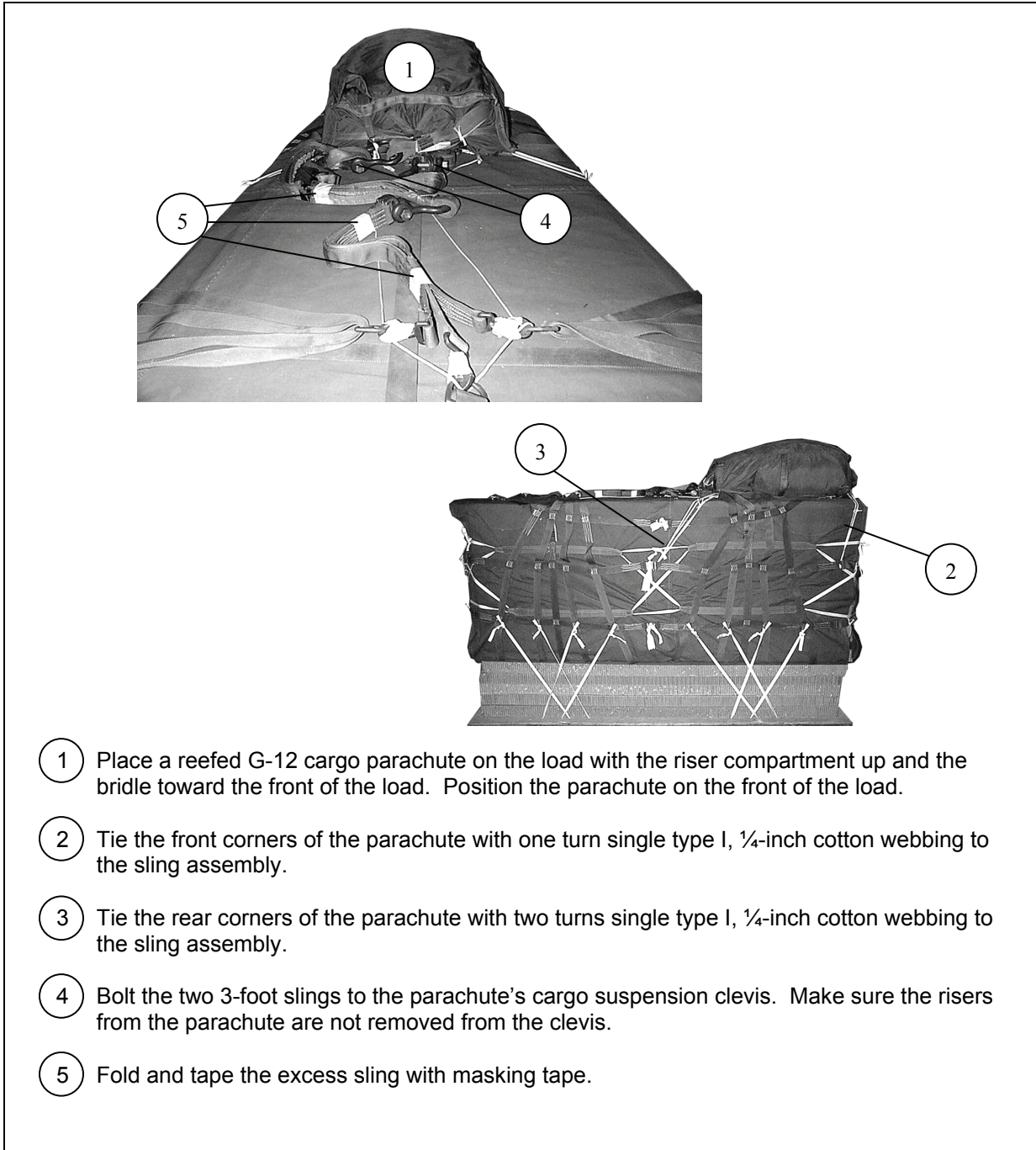


- ① Attach one suspension web to each of the six D-rings. Route the snap hook from outside to inside. Wrap each hook with masking tape.
- ② Place a 3-foot sling on each clevis. Bolt the three suspension webs at the front of the load to one clevis. Repeat step for the rear set.
- ③ Route a length of type III nylon cord through the six D-rings as shown above. Tie the ends together. Make sure the tie has excess to allow suspension sling movement.

**Figure 4-10. Suspension slings installed**

## INSTALLING PARACHUTE

4-17. Install a reefed G-12 cargo parachute as shown in Figure 4-11.



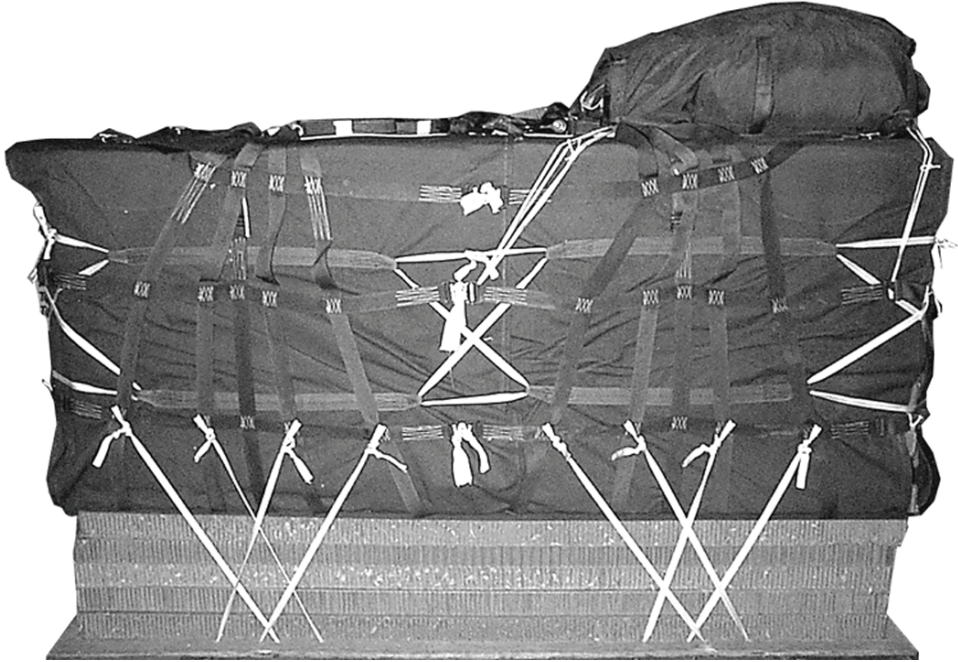
**Figure 4-11. Reefed G-12 cargo parachute installed**

## MARKING RIGGED LOAD

4-18. Mark the rigged load according to FM 4-20.103/MCRP 4-11.3C/TO 13C7-1-11 and as shown in Figure 4-12. Compute the rigged load data.

## EQUIPMENT REQUIRED

4-19. Use the equipment listed in Table 4-1 to rig the load shown in Figure 4-12.



RIGGED LOAD DATA	
Weight:	Minimum load allowed.....2,201 pounds Maximum load allowed.....3,375 pounds
Height:	.....83 inches
Width:	.....48 inches
Length:	.....96 inches

Figure 4-12. Fully rigged double A-22 container

**Table 4-1. Equipment required for rigging double A-22 container**

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive Paste	As required
1670-00-587-3521	Bag, cargo, A-22	2
4030-00-678-8562	Clevis, suspension, 3/4-inch (medium)	2
4020-00-240-2146	Cord, nylon type III	As required
1670-00-753-3928	Pad, energy dissipating, honeycomb 36- by 96- by 3-inches	6 sheets
No NSN	Parachute:	
	Cargo, G-12 Reefed	1
1670-00-216-7297	Pilot, 68-in diam	1
5530-00-914-5118	Plywood, 1- by 48- by 96-inch	1 sheet
1670-01-062-6301	Sling, cargo, airdrop, 3-ft (2 loop), type XXVI nylon webbing	2
7510-00-266-6710	Tape, masking, 2-inch	As required
8310-01-102-4478	Thread, cotton, ticket number 8/7	As required
	Webbing:	
8305-00-268-2411	Cotton, 1/4-inch, type I	As required
8305-00-082-5752	Nylon, tubular, 1/2-inch	As required
8305-00-263-3591	Nylon, Type VIII	As required

### SECTION III - ALTERNATE RIGGING METHOD FOR DOUBLE A-22 CONTAINER

#### BUILDING AND POSITIONING A-22 CONTAINERS

4-20. Build two individual A-22 containers in accordance with FM 4-20.103/MCRP 4-11.3C/TO 13C7-1-11 of the same dimensions. Position the two A-22 containers on top of the double skid board and the honeycomb kit prepared in Figure 4-3.

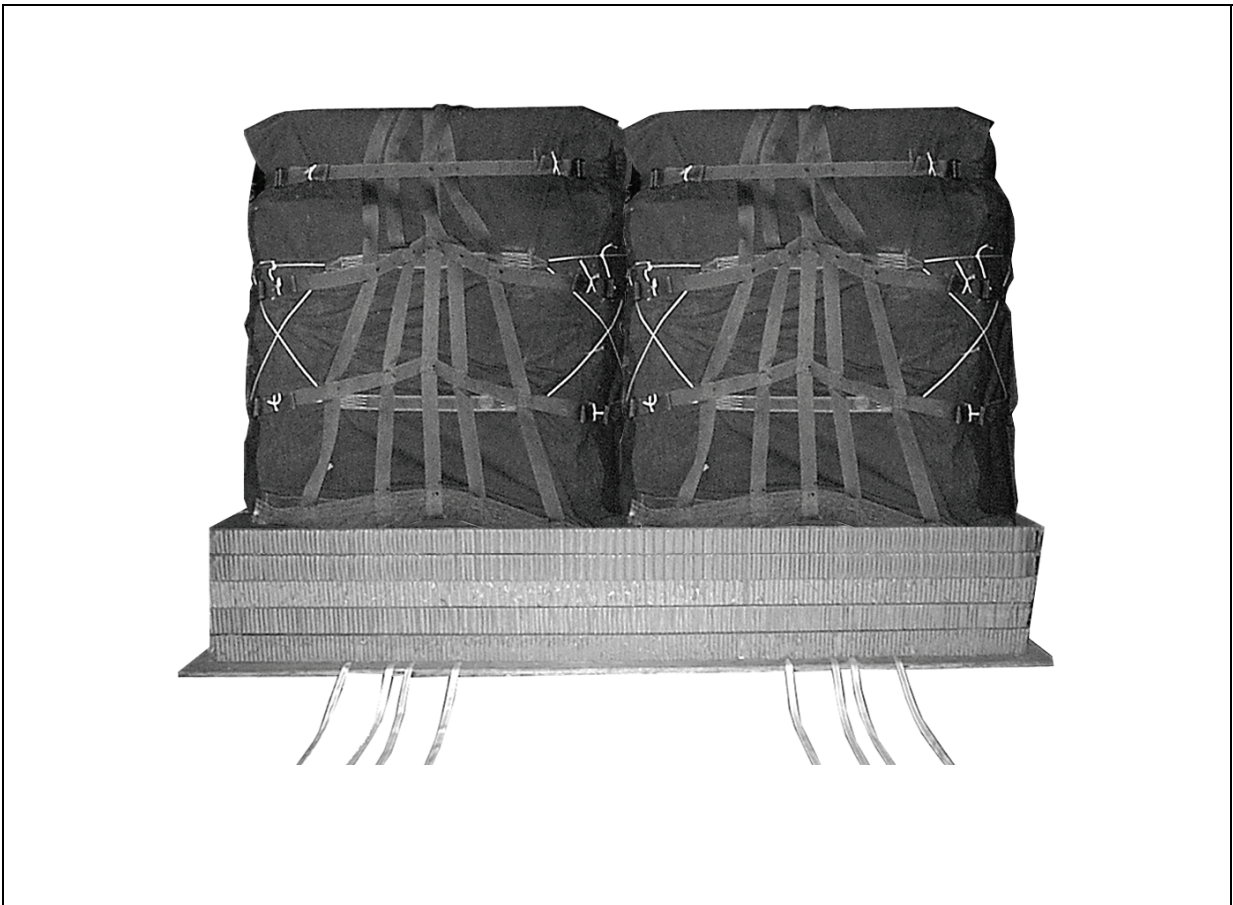


Figure 4-13. A-22 containers positioned



## JOINING A-22 CONTAINERS

4-21. Join the two assemblies at the mid-section on each side of the load as shown in Figure 4-14.

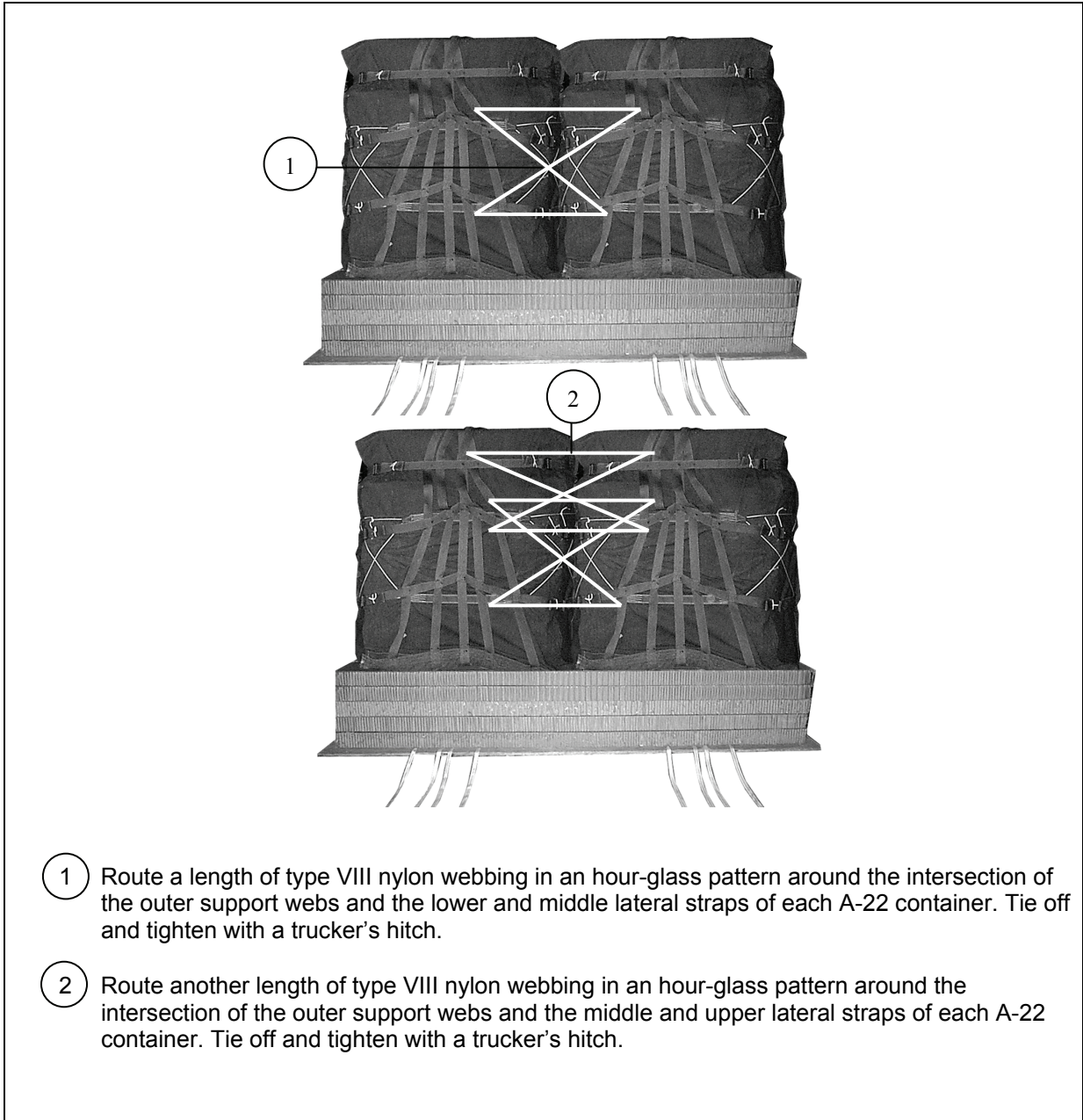
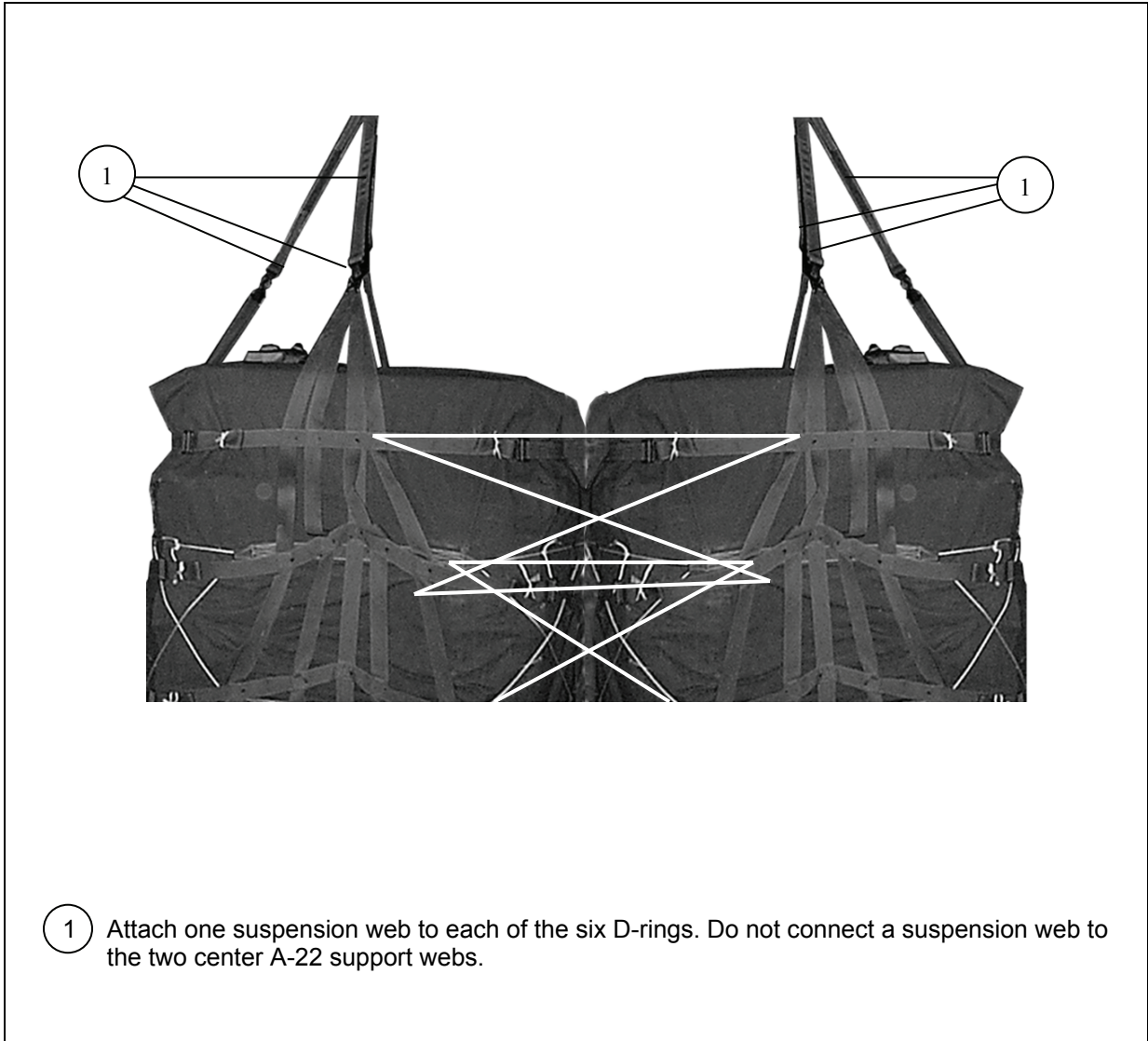


Figure 4-14. A-22 containers joined

## ATTACHING SUSPENSION WEBS

4-22. Attach suspension webs to the two containers as shown in Figure 4-15.



**Figure 4-15. Suspension webs attached**

## TYING OFF UNUSED SUSPENSION WEBS

4-23. Fold each unused suspension web on top of the half of the load to which it was originally rigged as shown in Figure 4-16.

## INSTALLING SUSPENSION SLINGS

4-24. Install the suspension slings and complete the rest of the rigging in accordance with procedures for a reefed G-12 parachute on a double A-22 container.

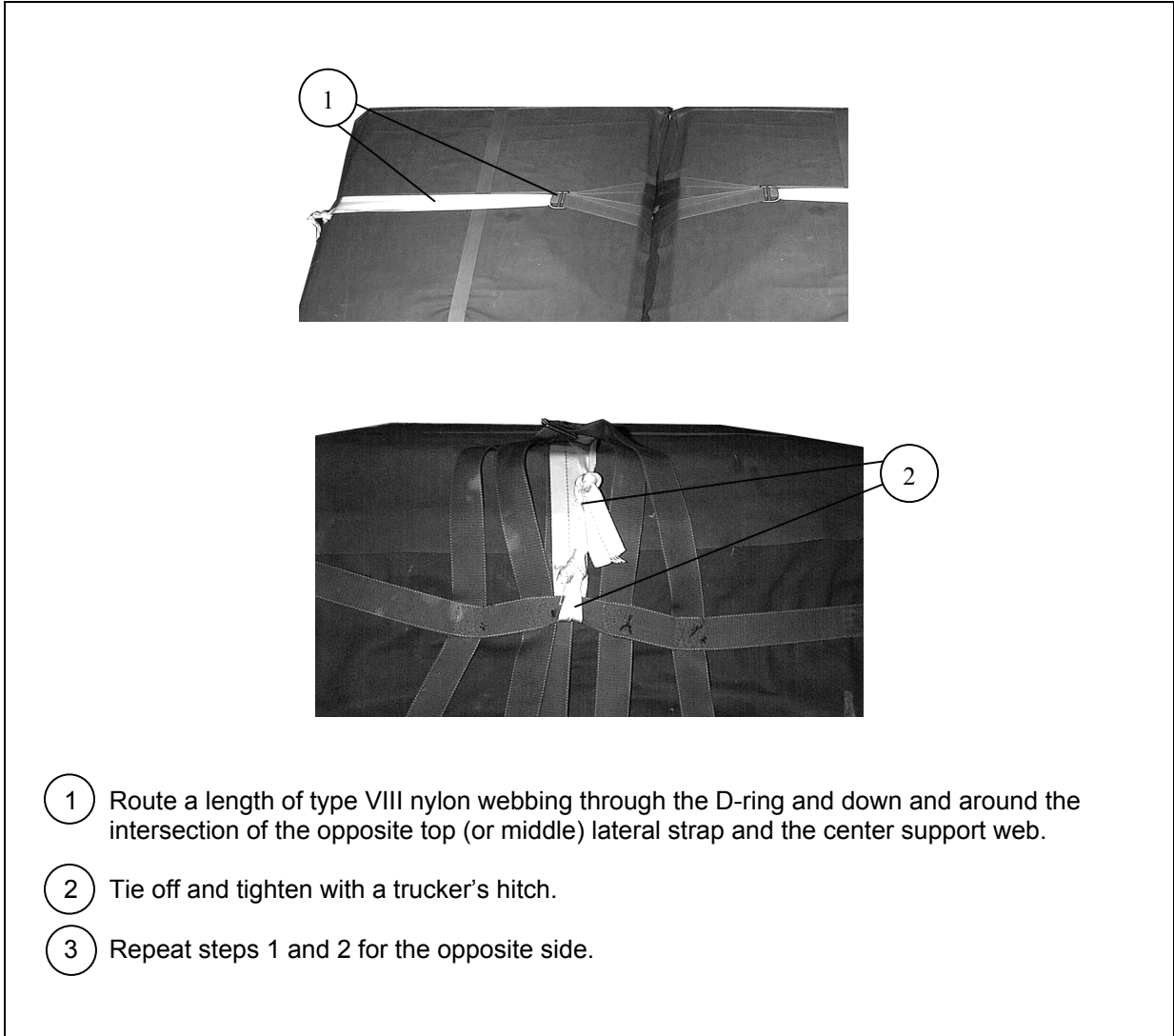


Figure 4-16. Unused suspension webs tied off

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## Chapter 5

# Rigging Quadruple A-22 Container Loads for High Velocity Airdrop

## SECTION I - GENERAL INFORMATION FOR QUADRUPLE A-22 CONTAINER

### QUADRUPLE A-22 CONTAINER COMPONENTS

5-1. The quadruple A-22 container, shown in figure 5-1, employs four standard A-22 sling assemblies which can be laced together to form a larger container. The system employs a reefed G-12 parachute.

### QUADRUPLE A-22 CONTAINER SKID BOARD

5-2. The sling assemblies are secured to a 1 ½- or 2- by 96- by 96-inch plywood (Grade AC) skid board with ½-inch tubular nylon webbing. Honeycomb is positioned between the container and the skid board for impact cushioning.

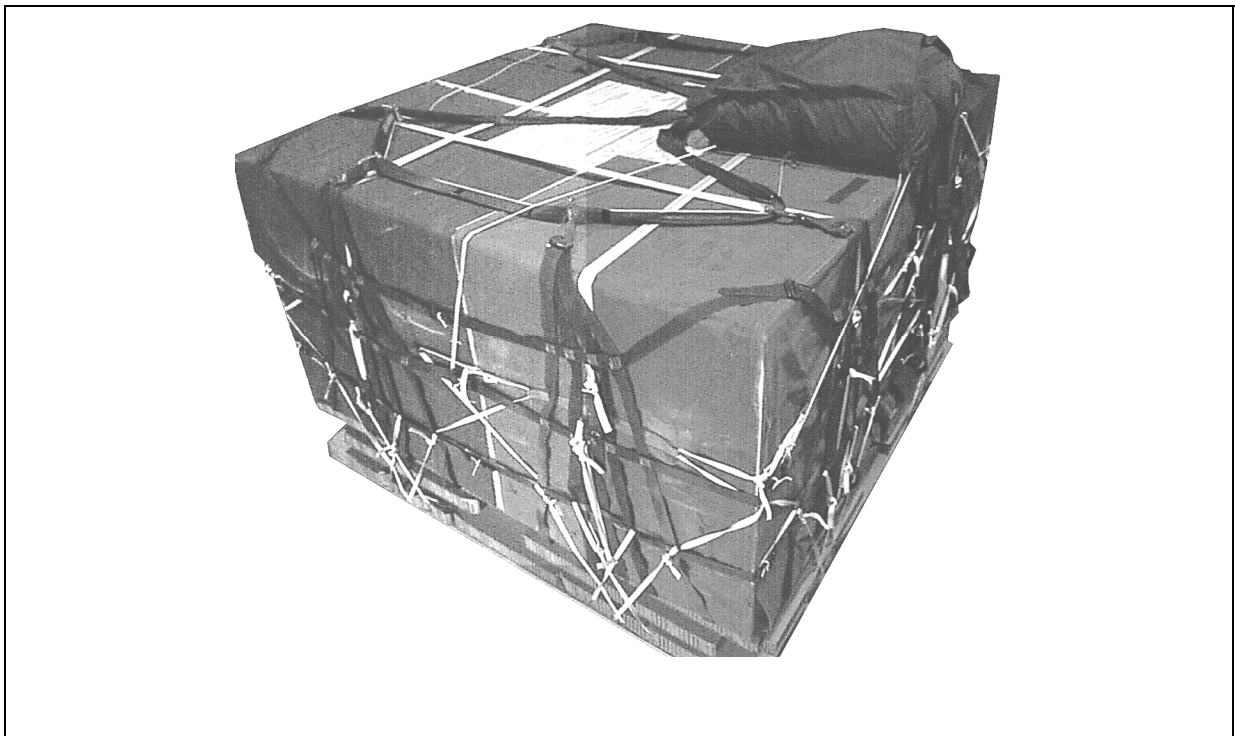


Figure 5-1. Fully rigged quadruple A-22 container system

## **QUADRUPLE A-22 CONTAINER LIMITATION**

5-3. The quadruple A-22 container has a weight restriction of 3,500 to 4,375 pounds, excluding the weight of the parachute.

## **ASSEMBLY LINE RIGGING**

5-4. When assembly line rigging is used for quadruple A-22 container loads, five stations are needed. The stations are: laying out containers and preparing base, positioning load, rigging load, installing parachute, and inspecting the rigged load.

## **INSPECTION OF LOAD**

5-5. The quadruple A-22 container load must be inspected by a qualified rigger. While being rigged, this load should be supervised or rigged by a parachute rigger. DD Form 1748-1 must be completed before airdrop.

## **PARACHUTE USED**

5-6. The system employs a reefed G-12 parachute with both skirt and vent reefing. Procedures for packing the G-12 reefed parachute can be found in Chapter 1, Section II of this manual.

## SECTION II - GENERAL RIGGING OVERSIZED ITEMS IN QUADRUPLE A-22 CONTAINER

### SYSTEM DESCRIPTION

5-7. A typical load is rigged for high-velocity airdrop using four A-22 sling assemblies. Quadruple A-22 loads must weigh at least 3,500 pounds but not exceed 4,375 pounds, excluding the weight of the parachute. The load is rigged with a reefed G-12 parachute. Typical oversized items include winterization kits which include stoves, tents, long rolls of plastic, sleeping bags, blankets, etc.

### PREPARING ITEMS AND SKID BOARD

5-8. The skid board will consist of four 1- by 48- by 96-inch sheets of plywood. At least two sheets must be AC grade plywood. The other two sheets can be Grade D or better. Prepare the skid board according to Figure 5-2. Prepare the drop items according to the load's sensitivity. Items must be well padded to prevent damage during airdrop.

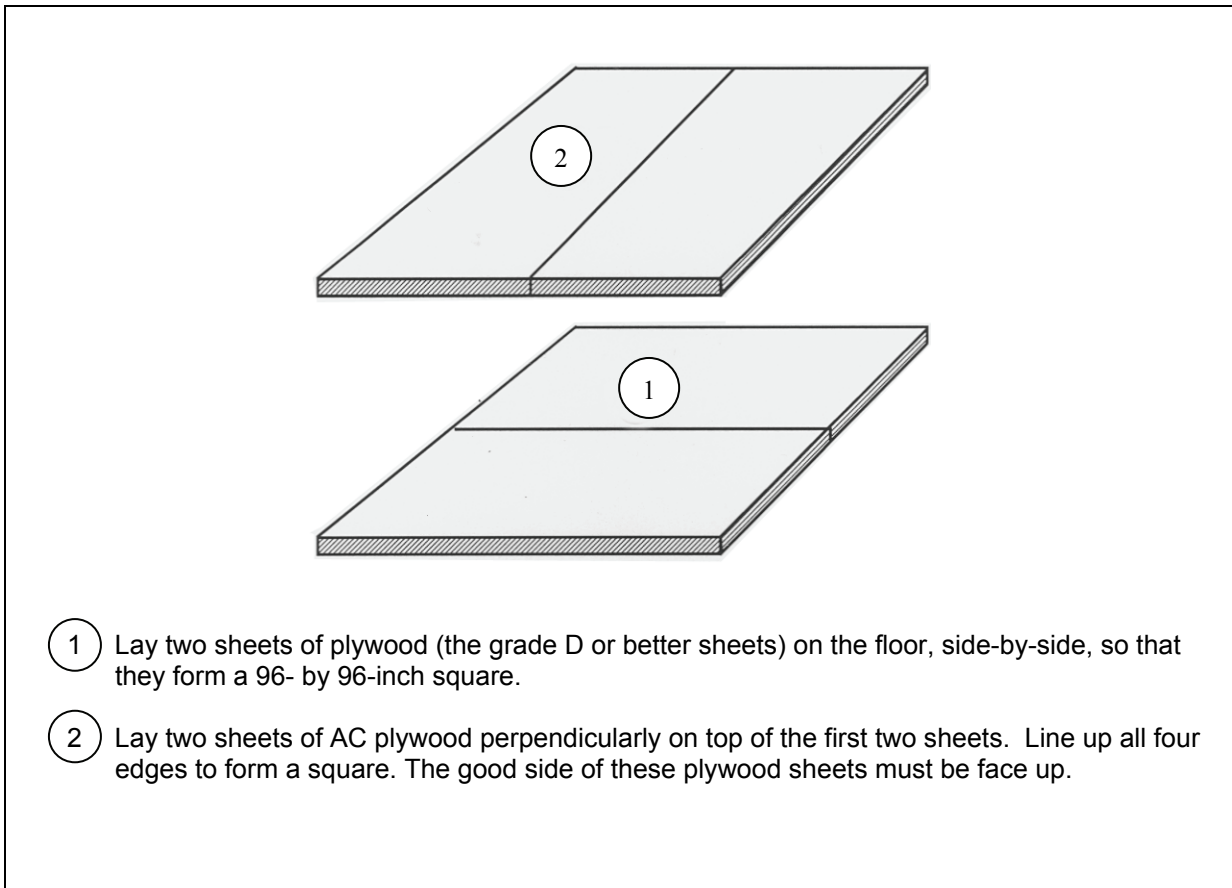
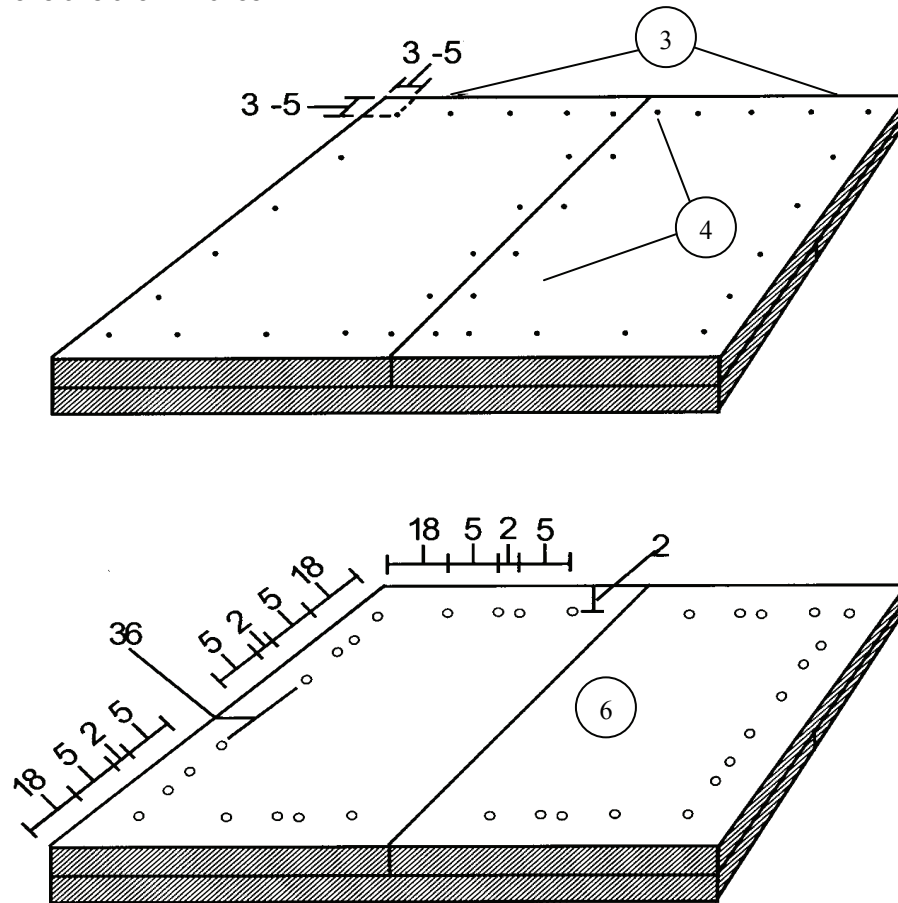


Figure 5-2. Skid board prepared

**Note.** All dimensions are in inches.



**Notes.** 1. If AC plywood is not available, then BC grade plywood may be substituted. All loose knots and splinters must be removed from plywood before rigging. Use 1-inch thick plywood. Do not mix 1-inch and  $\frac{3}{4}$ -inch sheets on the same skid.

2. The skid board must be loaded into the aircraft so that the bottom sheets (grade A) are lengthwise and parallel to the direction of flight. The seam on the bottom must run parallel to the aircraft roller conveyor.

- ③ Nail the plywood (into the good side of the AC sheets that are facing up) along the edges approximately 1 foot apart using 12d nails. The nails should be 3 to 5 inches from the edges. Ensure each nail head is sunk below the surface of the plywood.
- ④ Nail along the seam on both sheets of plywood at 1-foot intervals using 12d nails. Ensure that each nail head is sunk below the surface of the plywood.
- ⑤ Flip the skid board upside-down. Bend over all exposed nails (not shown).
- ⑥ Drill thirty-two  $\frac{1}{2}$ -inch diameter holes as shown above.

**Figure 5-2. Skid board prepared (continued)**



## PREPARING SKID BOARD TIES AND PLACING HONEYCOMB

5-9. Prepare the skid board ties and place the honeycomb as shown in Figure 5-3.

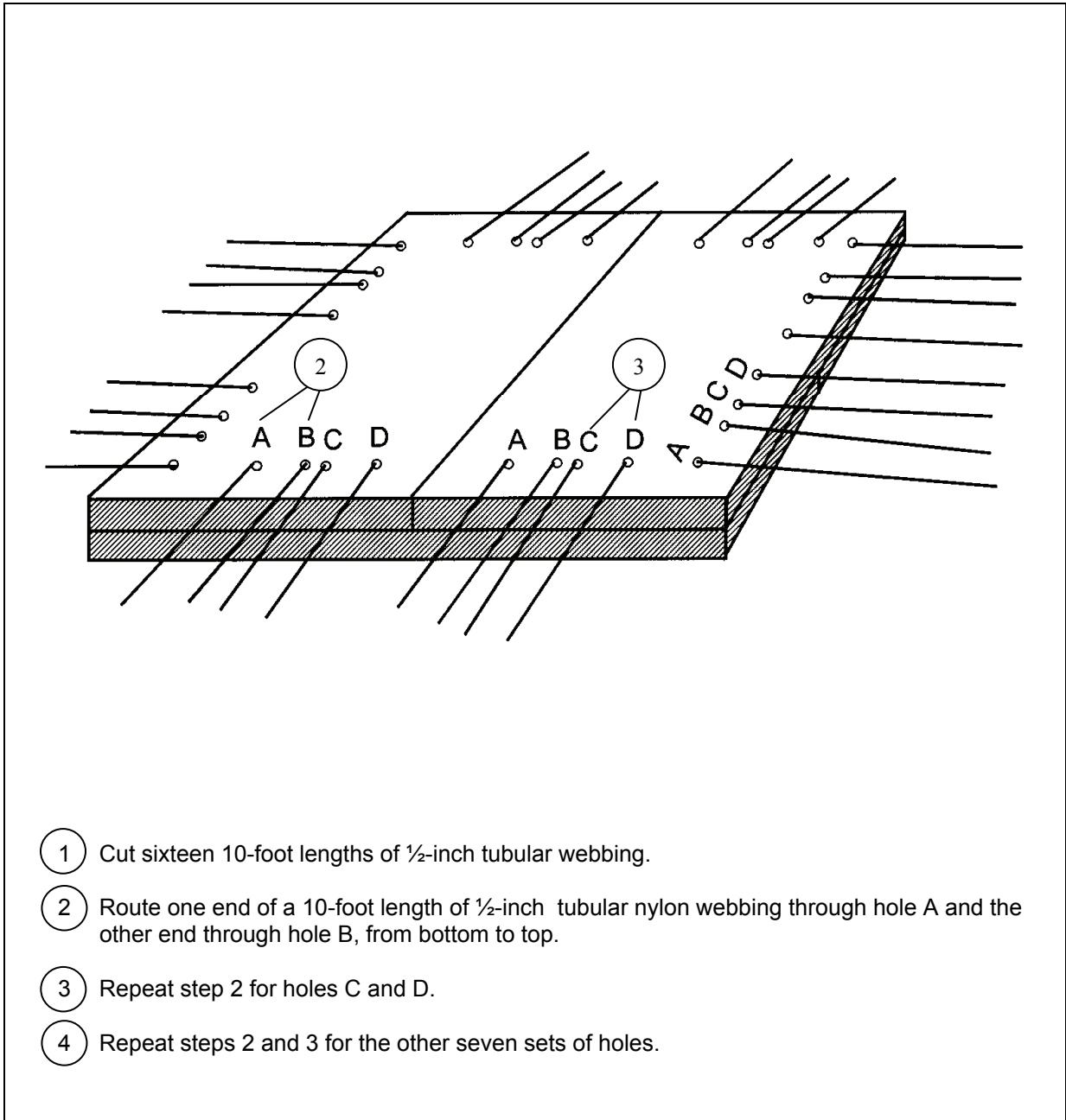


Figure 5-3. Skid board ties prepared and honeycomb placed

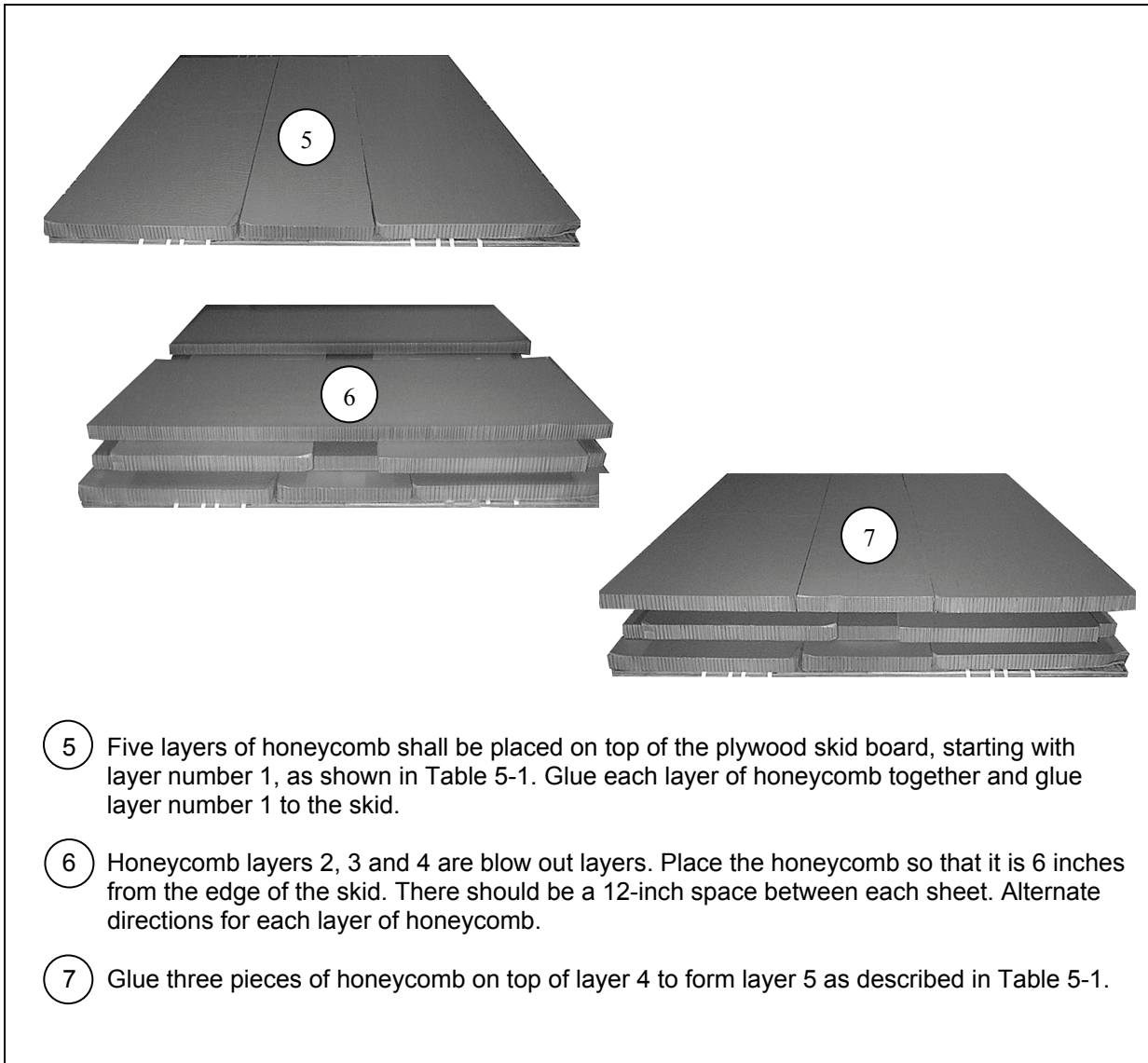


Figure 5-3. Skid board ties prepared and honeycomb placed (continued)

Table 5-1. Honeycomb layers for high velocity quad A-22 loads

<b>Layer Number</b>	<b>Pieces</b>	<b>Length (inches)</b>	<b>Width (inches)</b>
1	2	96	36
	1	96	24
2	2	96	36
3	2	96	36
4	2	96	36
5	2	96	36
	1	96	24

## POSITIONING A-22 SLING ASSEMBLIES

5-10. Position four A-22 sling assemblies on the quad A-22 load as shown in Figure 5-4.

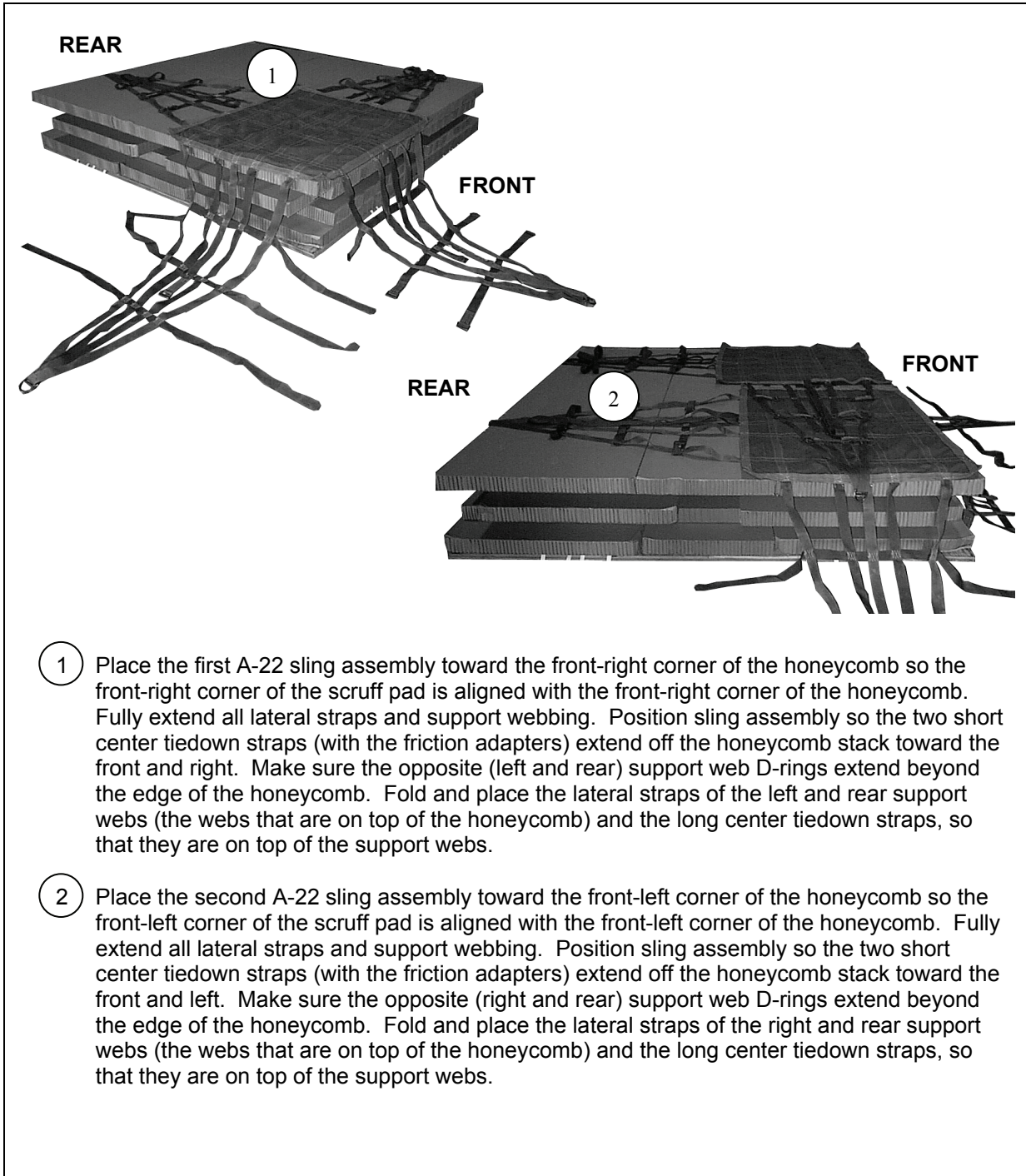


Figure 5-4. A-22 sling assemblies positioned

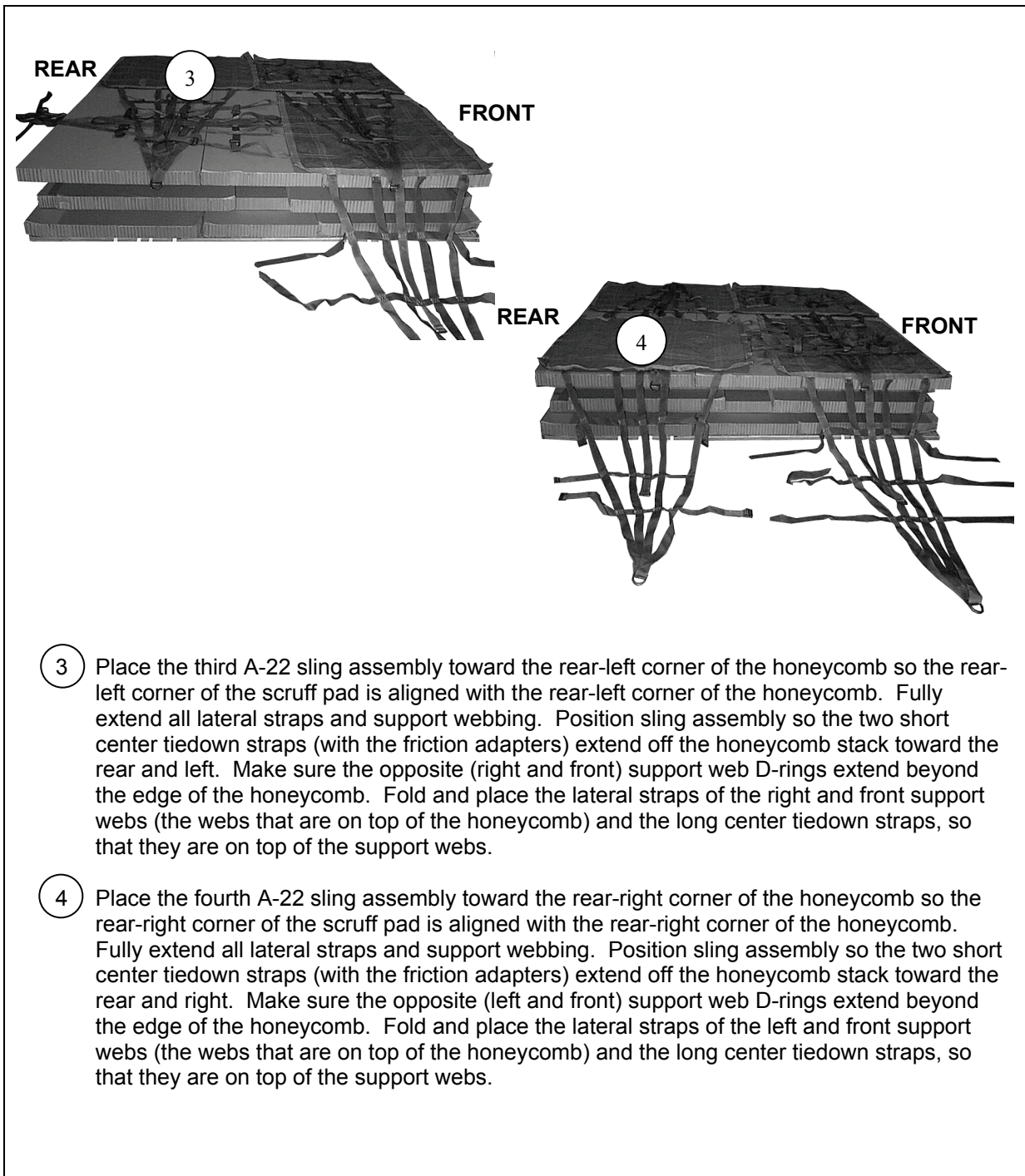
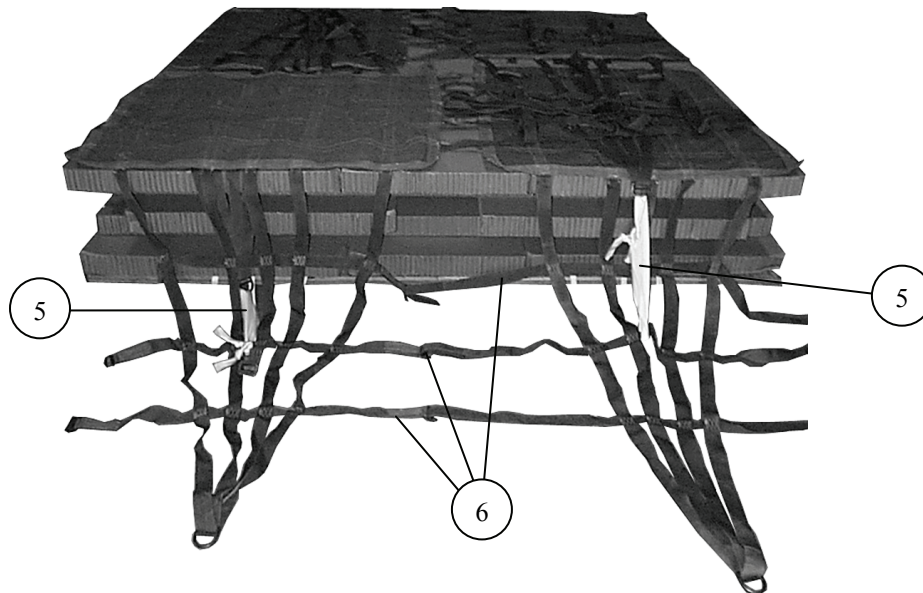


Figure 5-4. A-22 sling assemblies positioned (continued)



- 5 Use lengths of type VIII nylon webbing to tie the eight support web D-rings (that extend beyond the edge of the honeycomb) to the second lateral strap. Ensure that there is no slack between the support web D-ring and the second lateral strap.
- 6 Route the 12 lateral straps at the four midsections of the load through each opposing friction adapter. Do not apply tension at this time.

**Figure 5-4. A-22 sling assemblies positioned (continued)**

## POSITIONING A-22 COVERS

5-11. Use four A-22 cargo bag covers when rigging this load. Position the covers as shown in Figure 5-5.

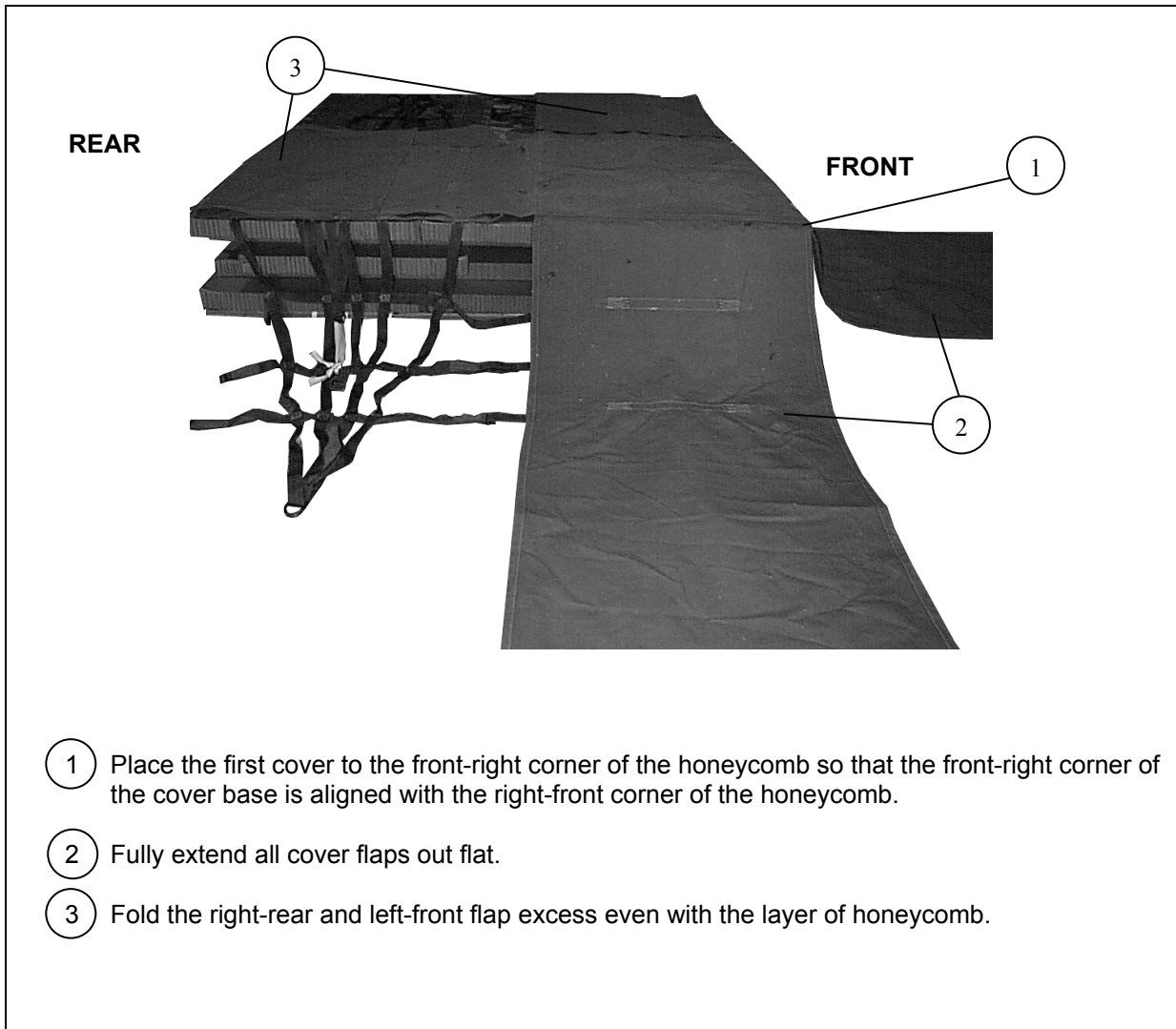
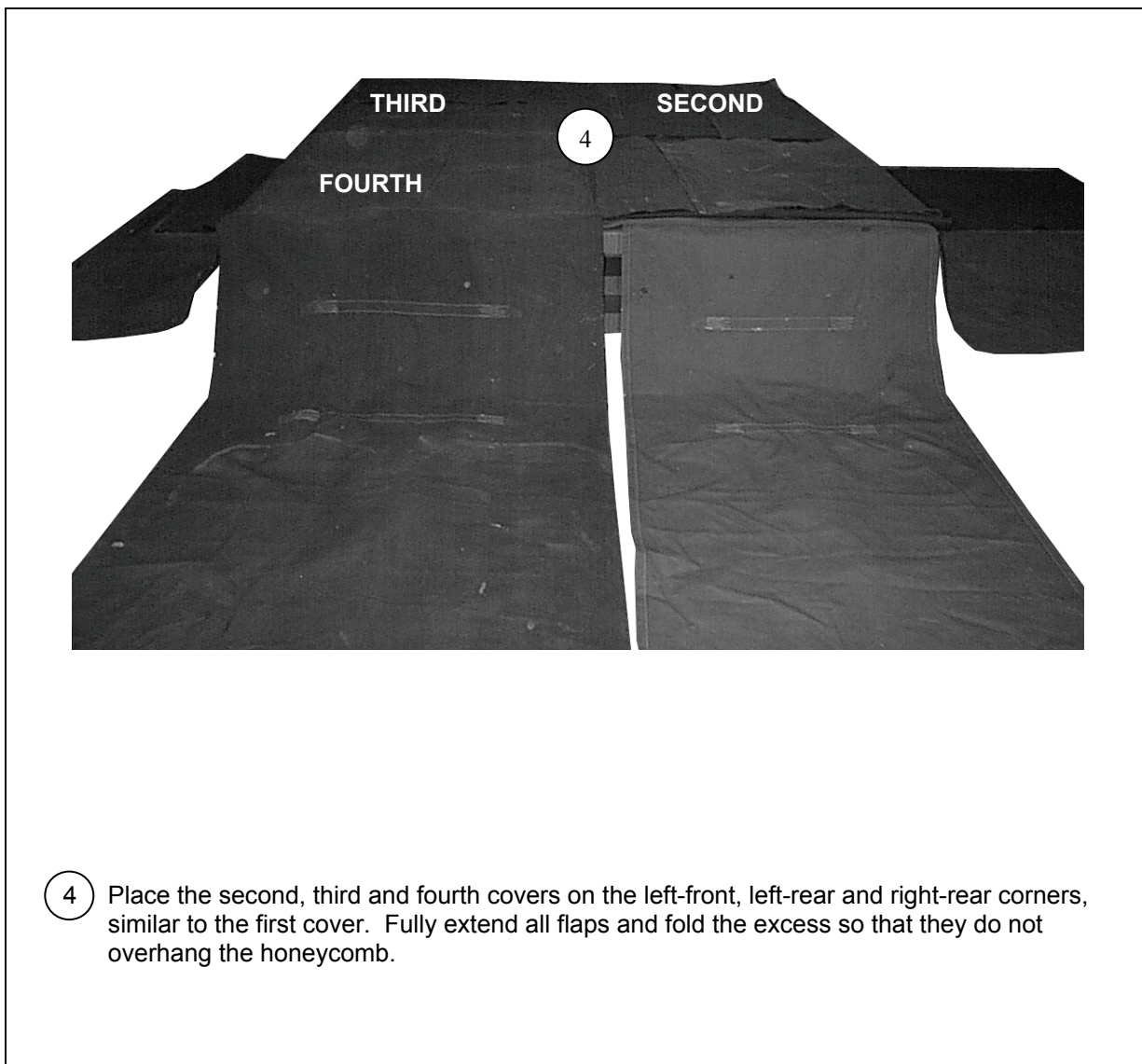


Figure 5-5. A-22 covers positioned



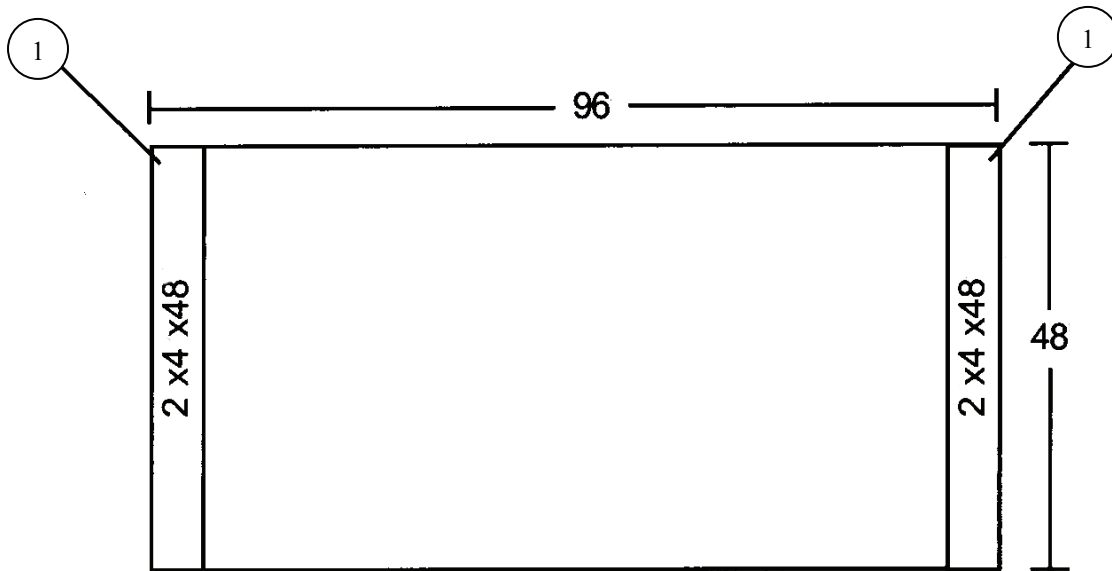
- 4 Place the second, third and fourth covers on the left-front, left-rear and right-rear corners, similar to the first cover. Fully extend all flaps and fold the excess so that they do not overhang the honeycomb.

Figure 5-5. A-22 covers positioned (continued)

## CONSTRUCTING STORAGE BOX AND PREPARING OVERSIZED ITEM LOAD

5-12. Construct a 96- by 96-inch plywood box using four sheets of  $\frac{3}{4}$ - by 48- by 96-inch plywood as shown in Figure 5-6. Prepare the drop items according to the load's sensitivity.

**Note.** All dimensions are in inches.



- 1 Using 6d nails at 1 foot intervals, nail a 2- by 4- by 48-inch piece of lumber onto each one of the 48 inch edges of a  $\frac{3}{4}$ - by 48- by 96-inch plywood sheet.
- 2 Repeat step 1 with an additional sheet of plywood.

**Figure 5-6. Storage box constructed and oversized item load prepared**



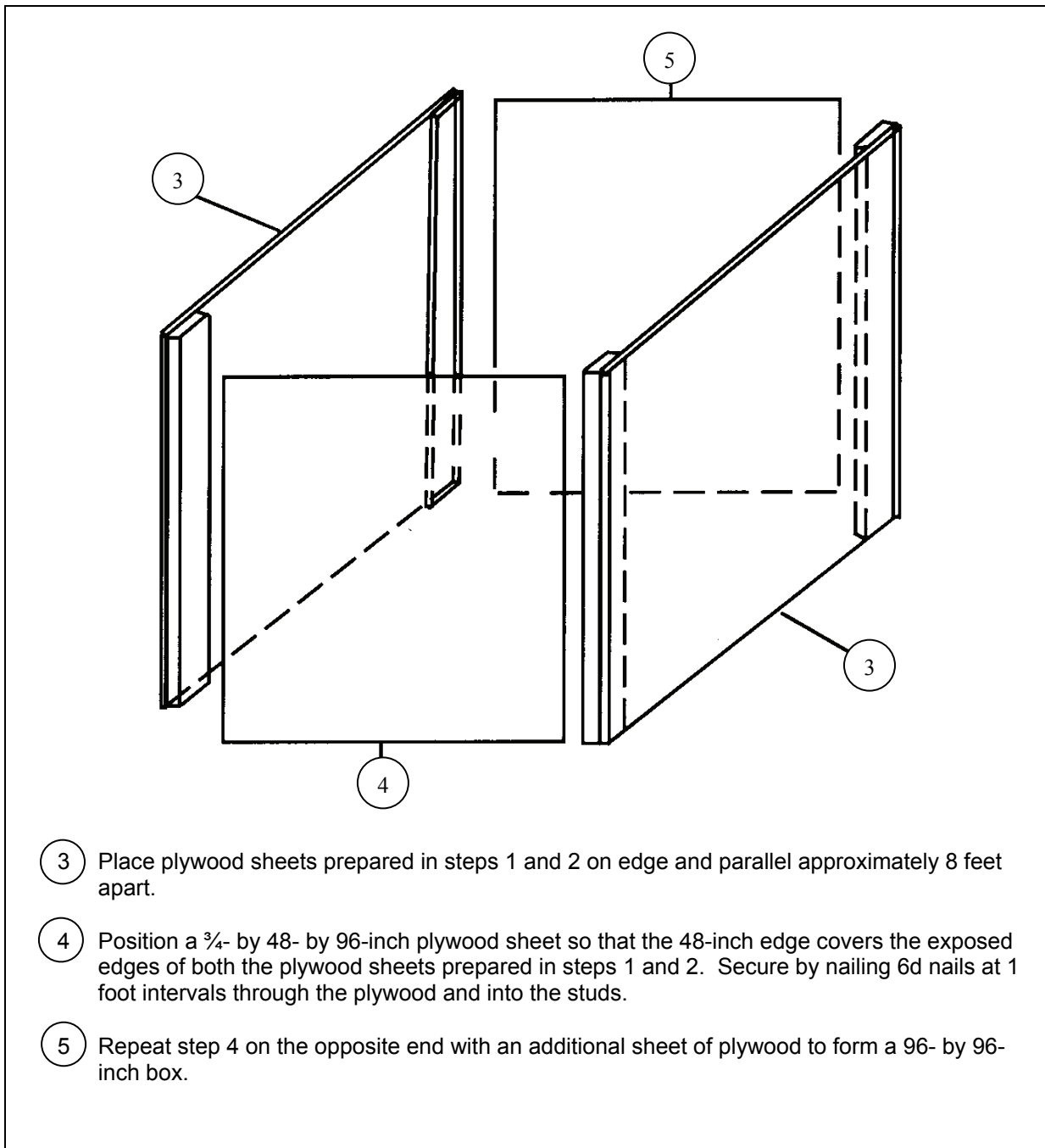
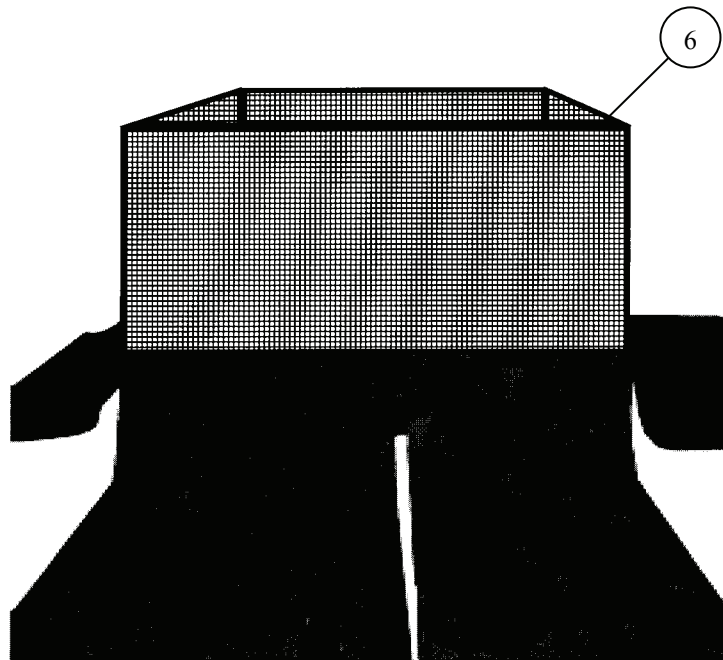


Figure 5-6. Storage box constructed and oversized item load prepared (continued)



- 6 Center the 96- by 96-inch box on top of the prepositioned A-22 cargo bag covers. Large, bulky or heavy items may be placed on the center of the covers prior to positioning the box.

**Note.** Heavy items must be placed on the bottom. The items must be placed so that the weight of the load is evenly distributed. Place lighter items around and on top of the heavy items.

**Figure 5-6. Storage box constructed and oversized item load prepared (continued)**

## POSITIONING LOAD AND CLOSING BAG COVERS

5-13. Center the load so that the weight of the load is evenly distributed. Pad items with cellulose wadding or bubble wrap. Place additional items into the box so that the box is completely cubed out. Place additional honeycomb pieces inside the box as necessary to form a level top. Close the bag covers as shown in Figure 5-7.

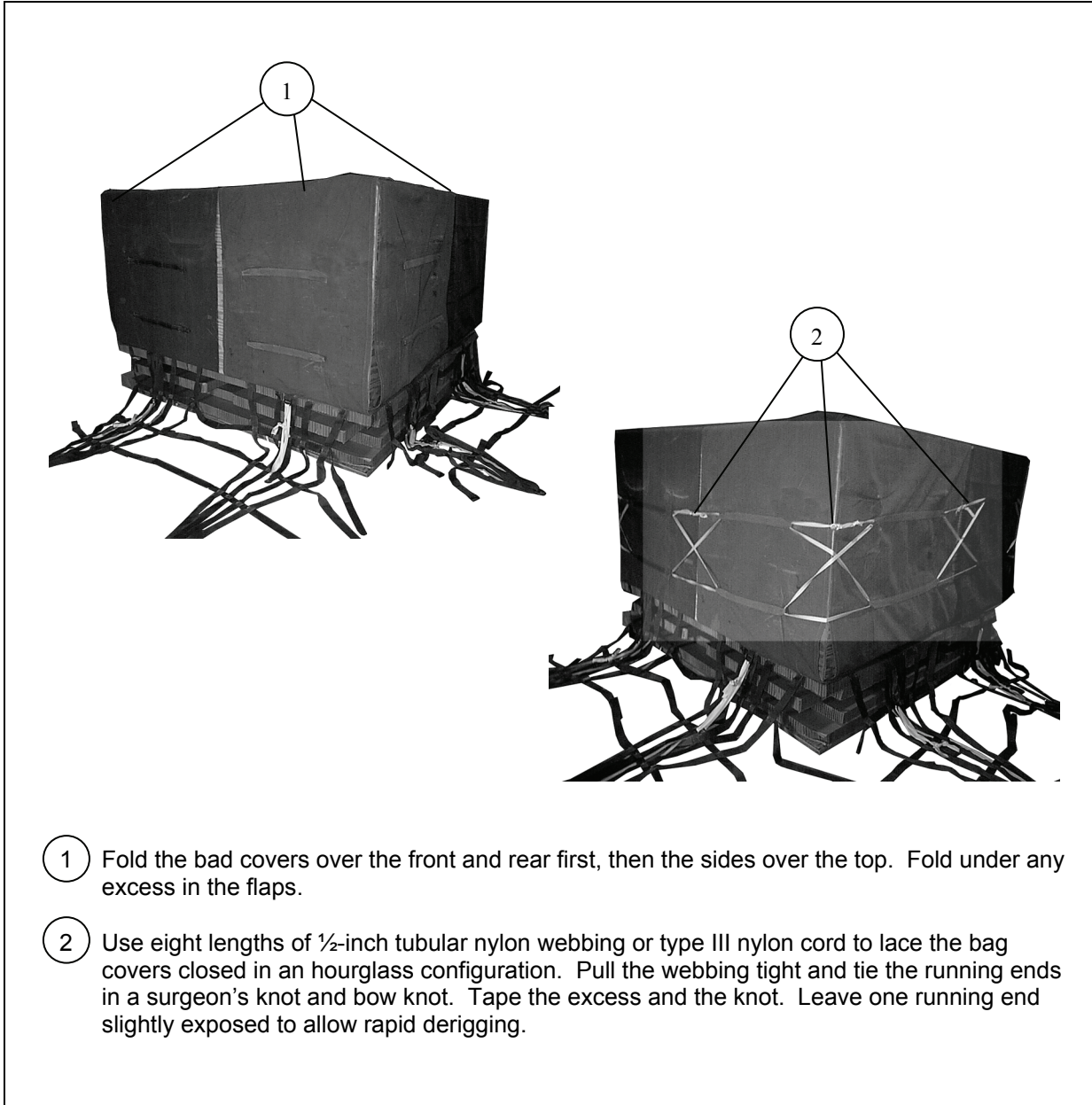


Figure 5-7. A-22 cargo bag covers closed

## SECURING TIEDOWN STRAPS

5-14. Secure the tiedown straps as shown in Figure 5-8.

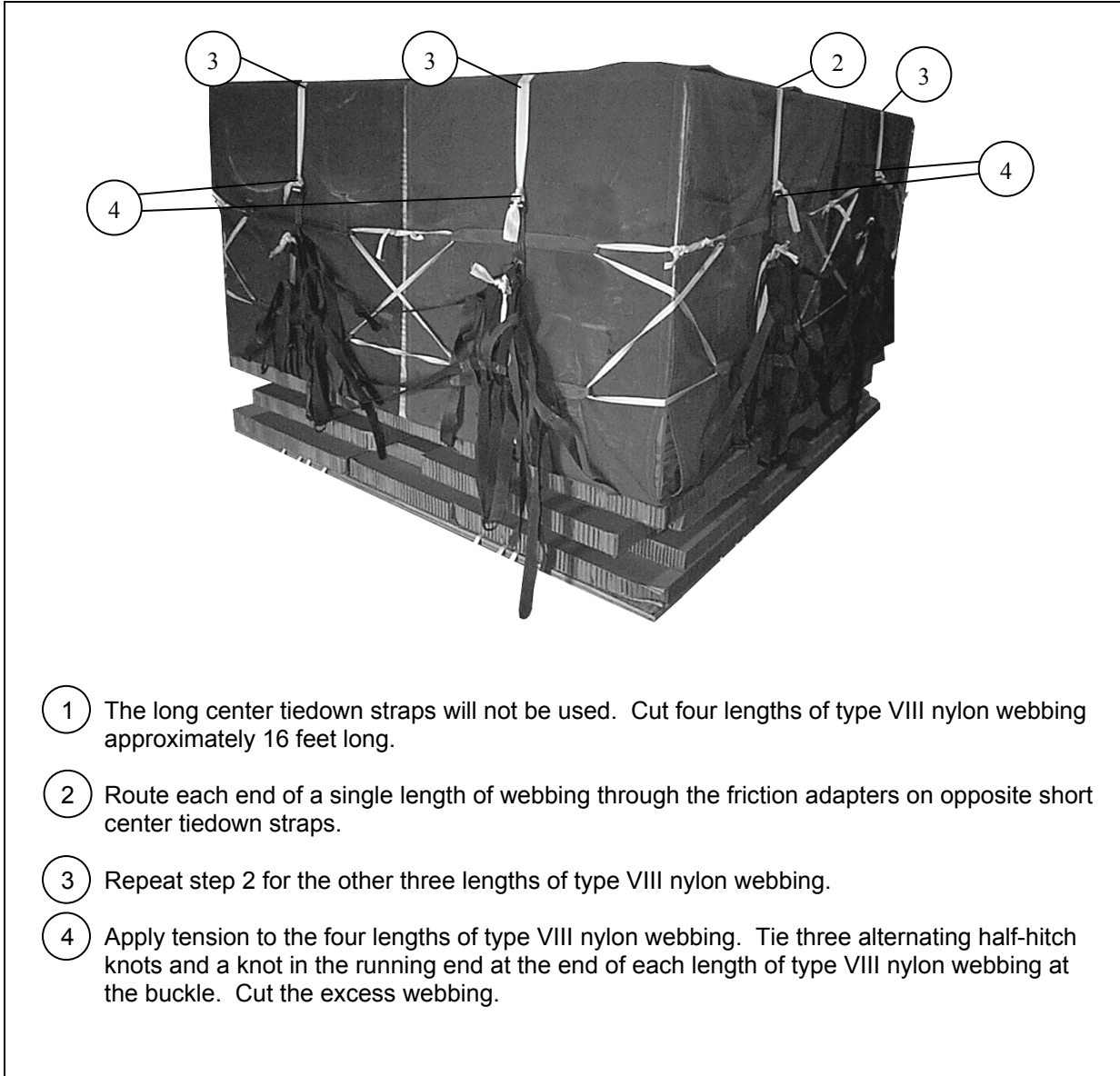


Figure 5-8. Tiedown straps secured

## SECURING LATERAL STRAPS

5-15. Secure the lateral straps as shown in Figure 5-9.

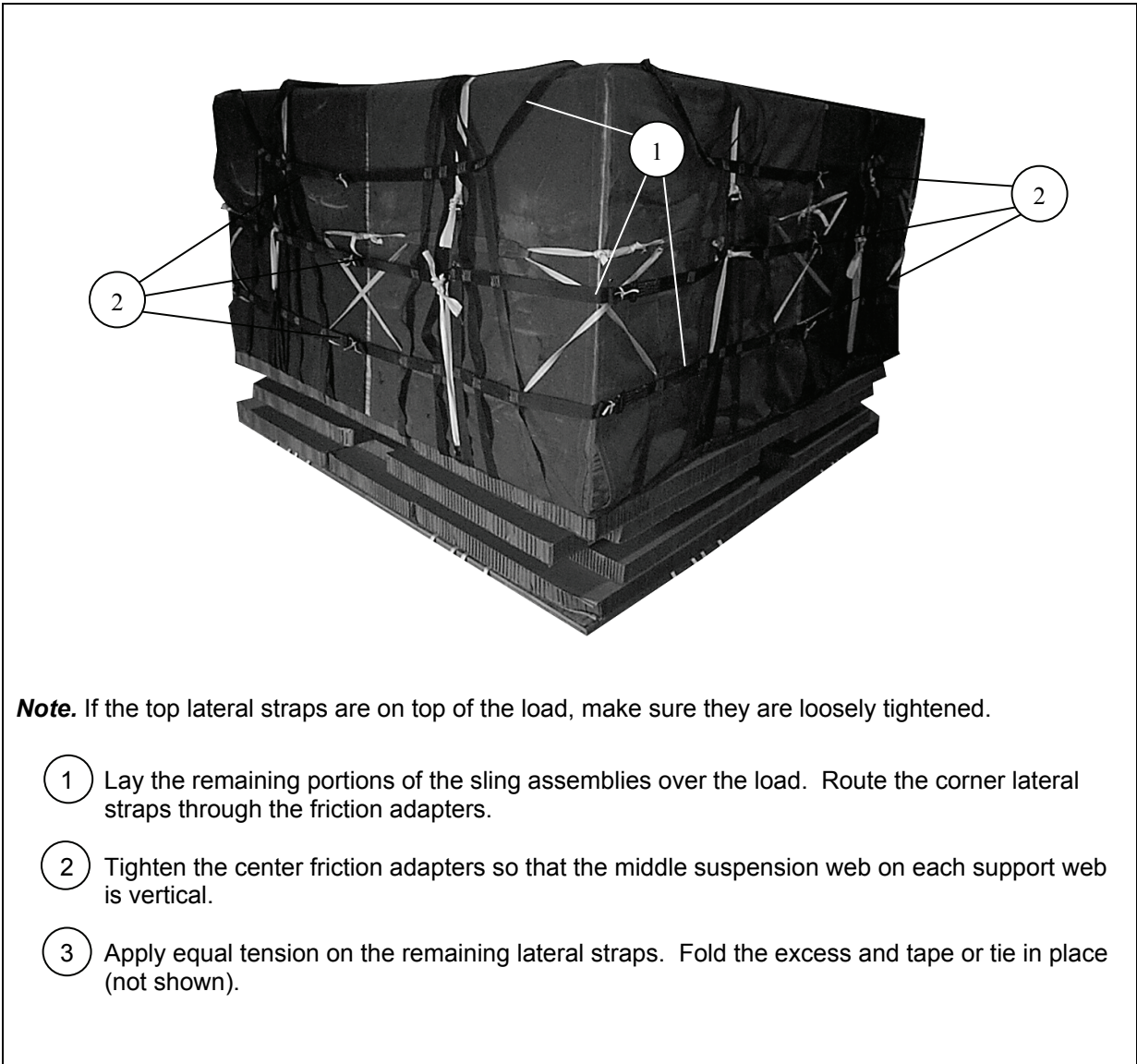
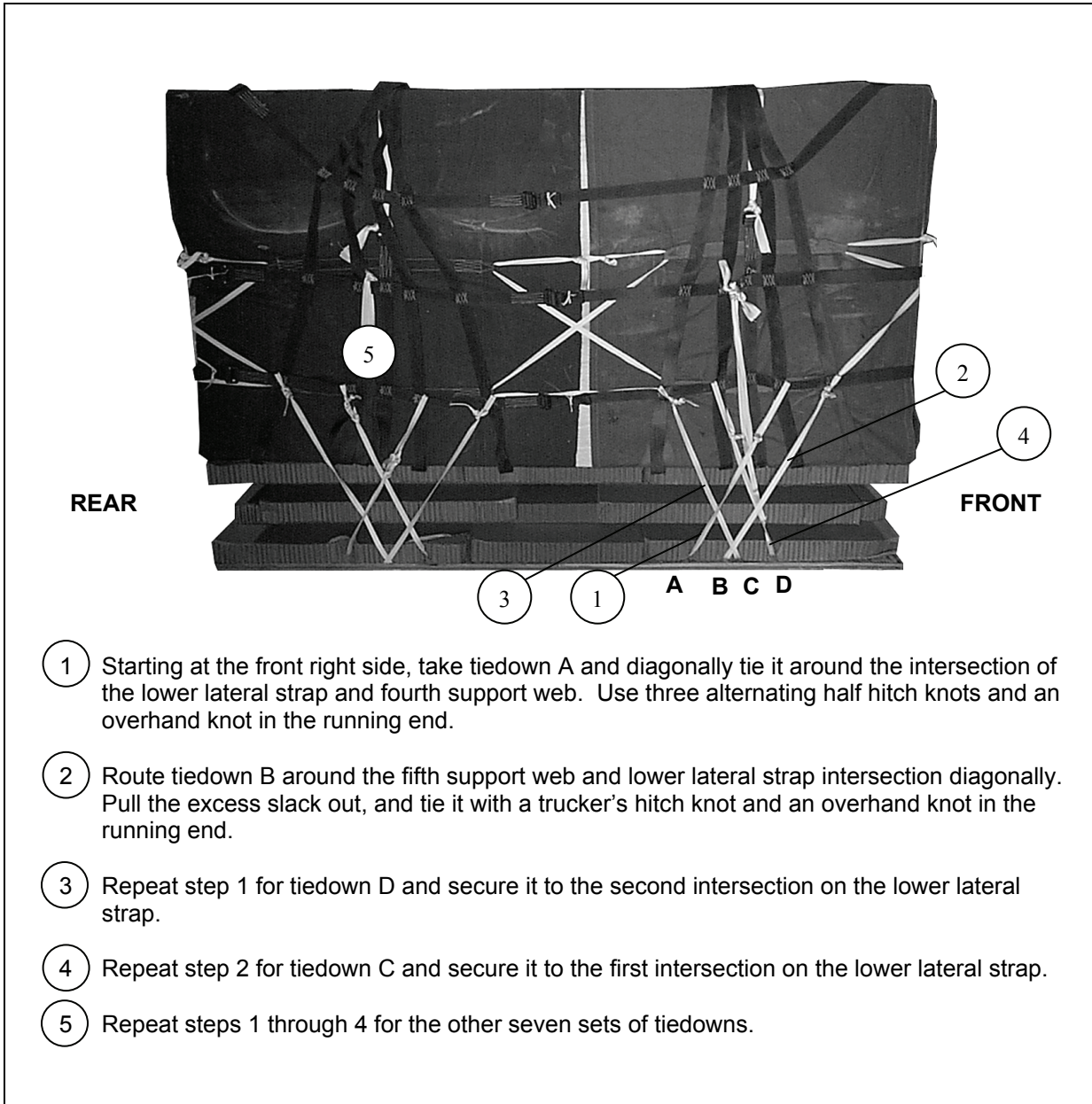


Figure 5-9. Tiedown straps secured

## SECURING SKID BOARD TIES

5-16. Secure the skid board ties as shown in Figure 5-10.



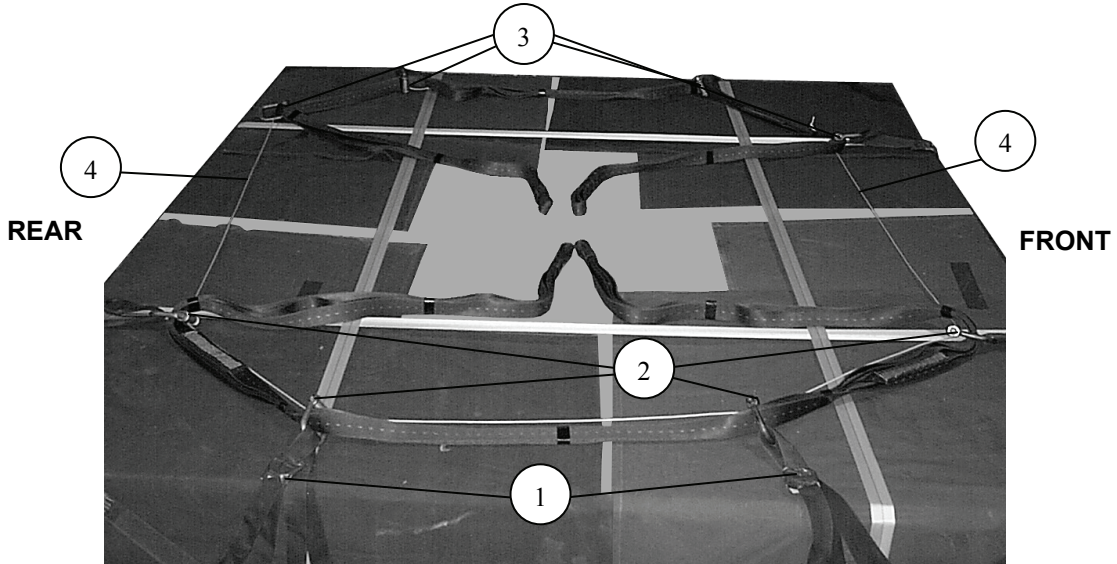
- ① Starting at the front right side, take tiedown A and diagonally tie it around the intersection of the lower lateral strap and fourth support web. Use three alternating half hitch knots and an overhand knot in the running end.
- ② Route tiedown B around the fifth support web and lower lateral strap intersection diagonally. Pull the excess slack out, and tie it with a trucker's hitch knot and an overhand knot in the running end.
- ③ Repeat step 1 for tiedown D and secure it to the second intersection on the lower lateral strap.
- ④ Repeat step 2 for tiedown C and secure it to the first intersection on the lower lateral strap.
- ⑤ Repeat steps 1 through 4 for the other seven sets of tiedowns.

**Figure 5-10. Skid board ties secured**

## INSTALLING SUSPENSION SLINGS

5-17. Install suspension slings using support webs, type V platform clevises, and two 20-foot (2-loop), type XXVI nylon webbing slings as shown in Figure 5-11. Two 12-foot (2-loop), type XXVI nylon webbing slings girth hitched together may also be used to form a single 24 foot sling as a substitute.

**Note.** Do not mix 12-foot and 20-foot slings on the same load.

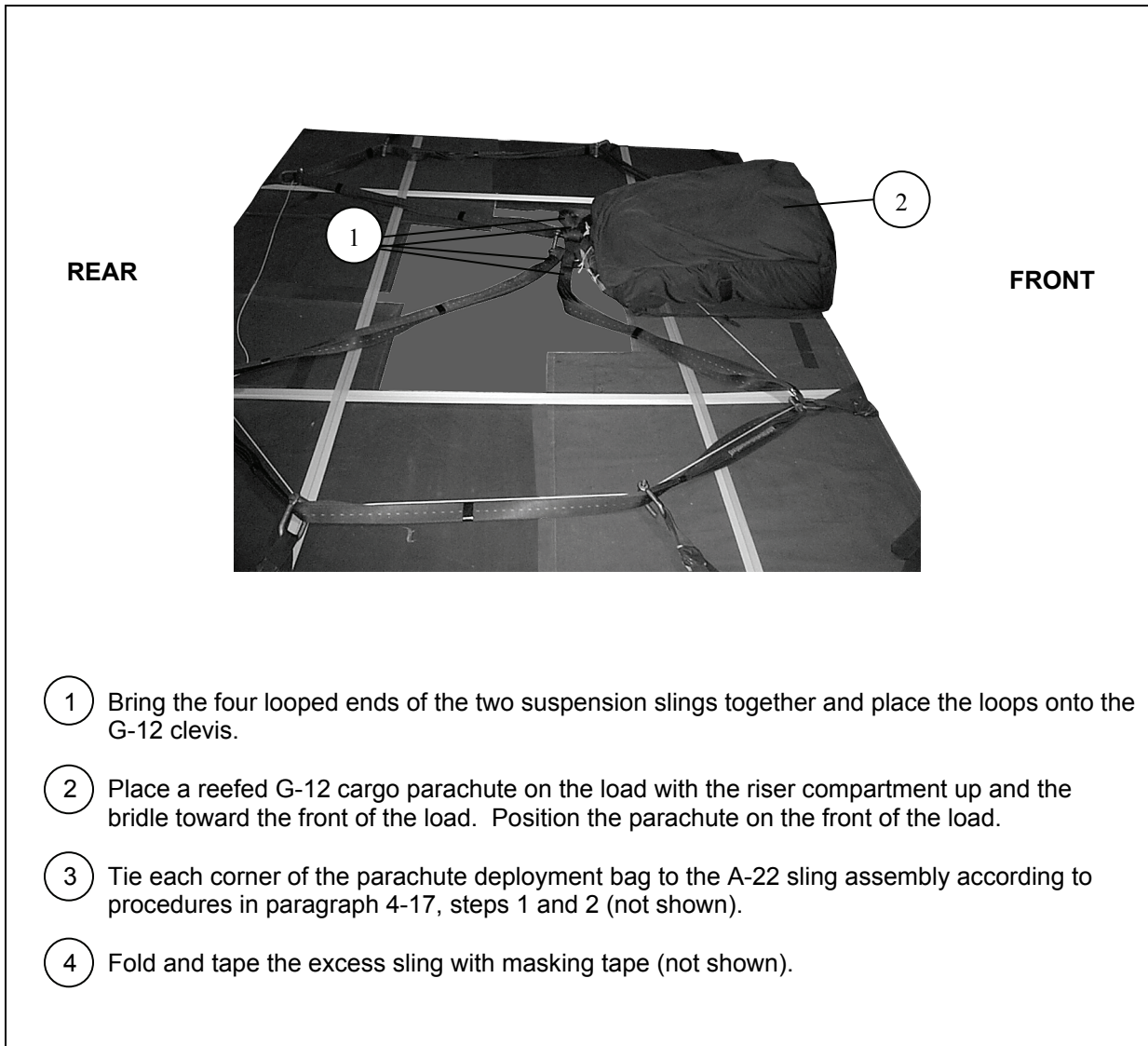


- ① Move the D-ring on the support webs down and tape in place. Install a type V platform clevis on each support web, at the former location of the D-rings.
- ② Run a single type XXVI nylon suspension sling through the four type V platform clevises of the front-right and rear-right support webs.
- ③ Repeat step 2 for the rear-left and front-left support webs.
- ④ Route a length of type III nylon cord through the eight type V platform clevises as shown above. Tie the ends together. Make sure the tie has excess to allow suspension sling movement.

**Figure 5-11. Suspension slings installed**

## INSTALLING PARACHUTE

5-18. Install a reefed G-12 cargo parachute as shown in Figure 5-12.



**Figure 5-12. Reefed G-12 cargo parachute installed**

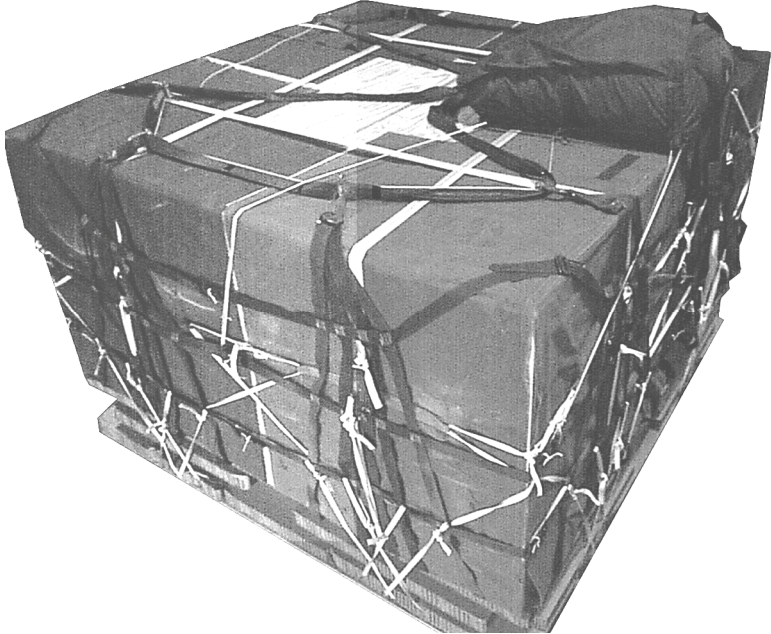


## MARKING RIGGED LOAD

5-19. Mark the rigged load according to FM 4-20.103/MCRP 4-11.3C/TO 13C7-1-11 and as shown in Figure 5-13. Compute the rigged load data.

## EQUIPMENT REQUIRED

5-20. Use the equipment listed in Table 5-2 to rig the load shown in Figure 5-13.



**RIGGED LOAD DATA**

Weight:	Minimum load allowed.....	3,500 pounds
	Maximum load allowed.....	4,375 pounds
Height:	.....	.83 inches
Width:	.....	.96 inches
Length:	.....	.96 inches

**Figure 5-13. Fully rigged quadruple A-22 container**

**Table 5-2. Equipment required for rigging oversized items in quadruple A-22 container**

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive paste	As required
1670-01-162-2372	Clevis, cargo, type V	8
1670-00-587-3521	Bag, cargo, A-22	4
1670-01-062-6302	Sling, cargo, airdrop, 20-ft (2 loop), type XXVI nylon webbing	2
1670-01-062-6303	Sling, cargo, airdrop, 12-ft (2 loop), type XXVI nylon webbing	4
	Nail, steel, wire, common:	
5315-00-010-4657	6d	As required
5315-00-010-4659	12d	As required
1670-00-753-3928	Pad, energy dissipating, honeycomb 36- by 96- by 3-inches	17 sheets
	Parachute:	
No NSN	Cargo, G-12 Reefed	1
1670-00-216-7297	Pilot, 68-in diam	1
4030-00-678-8562	Clevis, suspension, 3/4 inch (medium)	1
5530-00-128-4981	Plywood, 3/4- by 48- by 96-inch (box)	4 sheets
5530-00-914-5118	Plywood, 1- by 48- by 96-inch	4 sheets
5510-00-220-6446	2- by 4- by 48-inch lumber	4
7510-00-266-6710	Tape, masking, 2-inch	As required
8310-01-102-4478	Thread, cotton, ticket number 8/7	As required
	Webbing:	
8305-00-268-2411	Cotton, 1/4-inch, type I	As required
8305-00-082-5752	Nylon, tubular, 1/2-inch	As required
8305-00-263-3591	Type VIII	As required
4020-00-240-2146	Cord, nylon type III	As required

## **SECTION III - RIGGING FOOD AND MEDICAL ITEMS IN QUADRUPLE A-22 CONTAINER FOR HIGH VELOCITY AIRDROP**

### **PREPARING AND POSITIONING FOOD AND MEDICAL LOADS**

5-21. Prepare and position food and medical items in accordance with Section II, paragraphs 5-7 through 5-11 and paragraphs 5-13 through 5-19 and Table 5-3. Paragraphs 5-12 will be replaced with the following steps.

#### **FOOD ITEMS**

- Place a 40- by 40-inch piece of honeycomb in the bottom of the box. Place food items into tri-wall box. The box should have a base of approximately 43- by 43-inches and should be between 40 and 50 inches high. Heavy bulk food must be placed on the bottom of the box. The items must be placed so that the weight of the load is evenly distributed. Lighter items should then be placed around and on top of the heavy items. Place additional light items into the box so that the box is completely cubed out. Pad items with cellulose wadding or bubble wrap. Wrap items in shrink wrap and/or place additional honeycomb pieces inside box for protection.
- Fill three additional boxes with food items.
- Place and center the four boxes on top of the A-22 covers. Standard warehouse pallets may be rigged under the box for handling ease. If there are gaps between the boxes, fill the gaps with pieces of honeycomb.

#### **MEDICAL ITEMS**

- Place four 100-pound clothing/blanket bundles on each quadrant of the quadruple A-22. Fill any gaps with light non-fragile items. Shrink wrap or otherwise protect each group of four clothing/blanket bundles.
- Shrink wrap or otherwise protect all four of the bundles together. Place one pre-configured box of medical supplies (specially packaged for airdrop) on each corner of the load and on top of the clothing/blanket bundles.

**Table 5-3. Equipment required for rigging food and medical items in quadruple A-22 container**

National Stock Number	Item	Quantity
1670-01-162-2372	Clevis, cargo, type V	8
1670-00-587-3521	Bag, cargo, A-22	4
1670-01-062-6302	Sling, cargo, airdrop, 20-ft (2 loop), type XXVI nylon webbing	2
1670-01-062-6303	Sling, cargo, airdrop, 12-ft (2 loop), type XXVI nylon webbing	4
1670-00-753-3928	Pad, energy dissipating, honeycomb 36- by 96- by 3-inches 24- by 96- by 3-inches	10 sheets 2 sheets
No NSN	Shrink wrap	17 sheets As required
No NSN	Parachute:	
	Cargo, G-12 Reefed	1
1670-00-216-7297	Pilot, 68-in diam	1
4030-00-678-8562	Clevis, suspension, 3/4-inch (medium)	1
8310-01-102-4478	Thread, cotton, ticket number 8/7	4 sheets
	Webbing:	
8305-00-268-2411	Cotton, 1/4-inch, type I	As required
8305-00-082-5752	Nylon, tubular, 1/2-inch	As required
8305-00-263-3591	Type VIII	As required
4020-00-240-2146	Cord, nylon type III	As required

# Glossary

<b>AD</b>	Airdrop
<b>AFB</b>	Air Force Base
<b>AFMAN</b>	Air Force manual
<b>AFR</b>	Air Force Regulation
<b>AFTO</b>	Air Force technical order
<b>AR</b>	Army Regulation
<b>attn</b>	attention
<b>CB</b>	center of balance
<b>cap</b>	capacity
<b>chap</b>	chapter
<b>d</b>	penny
<b>DA</b>	Department of the Army
<b>DC</b>	District of Columbia
<b>DD</b>	Department of Defense
<b>diam</b>	diameter
<b>EFTC</b>	extraction force transfer coupling
<b>FAST</b>	Forward Area Surgical Team
<b>FM</b>	field manual
<b>HQ</b>	headquarters
<b>IAW</b>	in accordance with
<b>in</b>	inch
<b>lb</b>	pound
<b>LV</b>	low-velocity
<b>MACS PAC</b>	Modular Artillery Charge System Package
<b>mm</b>	millimeter
<b>NAVSEA</b>	Naval Sea Systems Command
<b>no</b>	number
<b>NSN</b>	national stock number
<b>PLS</b>	palletized load system
<b>sec</b>	second
<b>TM</b>	technical manual
<b>TO</b>	technical order
<b>TRADOC</b>	United States Army Training and Doctrine Command
<b>w</b>	with
<b>yd</b>	yard

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### DOCUMENTS NEEDED

- AFTO Form 22. *Technical Order Publication Improvement Report*.
- DA Form 2028. *Recommended Changes to Publication and Blank Forms*.
- DD Form 1748-1. *Joint Airdrop Inspection Record (Containers)*.

### NOTES

- \*AFMAN (I) 24-204/TM 38-250 has superseded AFJMAN 24-204/TM 38-250 (25 November 1994).
- \*\*TM 4-48.02/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 has superseded FM 10-500-2/TO 13C7-1-5 (1 November 1990).

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