
Section II

RIGGING A-22 CARGO BAGS

18-17. Description of Load

The Palletized Load System can be moved from the drop zone and transported on a specially designed truck. Bulk supplies are lashed to the pallet, giving the load integrity for transport. The pallet has swivel rings along the sides for lashing the load. The pallet is lashed to the airdrop platform for low-velocity airdrop. The load shown consists of eight A-22 cargo bags. Adapt these procedures to rig other items of bulk supplies. Ammunition listed in FM 10-500-53/MCRP No 4-3.8/TO 13C7-18-41 and certified for low-velocity airdrop may be rigged using these procedures. The rigged load may not be more than 100 inches high. Refer to FM 10-500-2/TO 13C7-1-5 for parachute requirements.

18-18. Preparing Platform

Prepare a 24-foot, type V airdrop platform as given below:

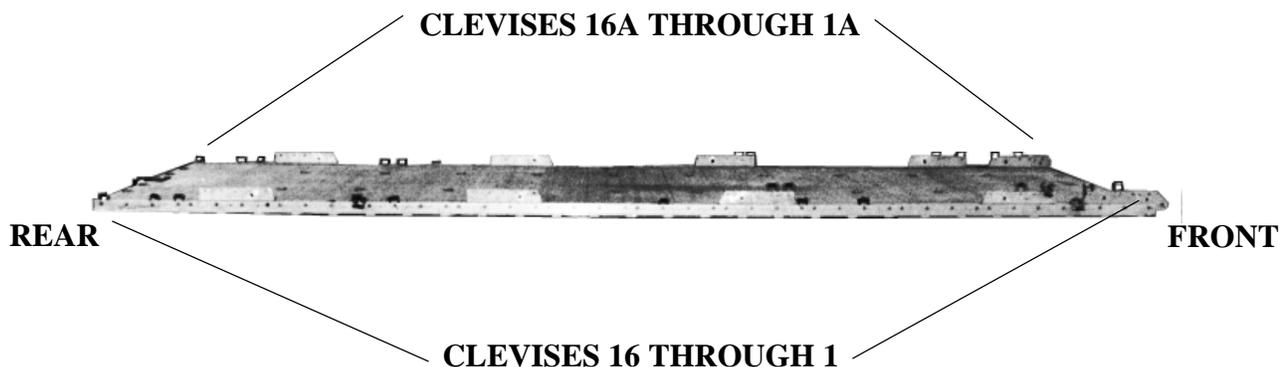
a. Inspecting Platform. Inspect, or assemble and inspect, the platform according to TM 10-1670-268-20&P/TO 13C7-52-22.

b. Installing Suspension Links. Install the suspension links to the platform according to FM 10-500-2/TO 13C7-1-5.

c. Installing Tandem Links. Install two tandem links as shown in Figure 18-22.

d. Attaching and Numbering Clevises. Attach and number 36 clevis assemblies as shown in Figure 18-22.

NOTES: 1. The nose bumper may or may not be installed.
2. Measurements given in this chapter are from the front edge of the platform, NOT from the front edge of the nose bumper.



Step:

1. Install a suspension link in holes 18, 19, and 20 on each platform side rail.
2. Install a suspension link in holes 6, 7, and 8 on each platform side rail.
3. Install a tandem link on the front of each platform side rail using holes 1, 2, and 3.
4. Install a suspension link in holes 29, 30, and 31 on each platform side rail.
5. Install a suspension link in holes 41, 42, and 43 on each platform side rail.
6. Install clevises on bushings 3 and 4 of each front tandem link.
7. Install clevises on bushings 1 and 3 of each first suspension link.
8. Install clevises on bushings 1 and 2 of each second suspension link.
9. Starting at the front of the platform, install clevises on each platform side rail using the bushings bolted on holes 4, 14, 17, 23, 35, 37, 38, 45, 46, and 48.
10. Install one additional clevis on bushings 4 and 37 on each side of the platform.
11. Starting at the front of the platform, number the clevises bolted to the right side of the platform from 1 through 16, and those bolted to the left side from 1A through 16A.

Note: The two additional clevises on each side of the platform function as bridge clevises. Do not number them apart from the clevises bolted on the platform rail bushings.

Figure 18-22. Platform prepared

18-19. Preparing and Positioning Honeycomb Stacks

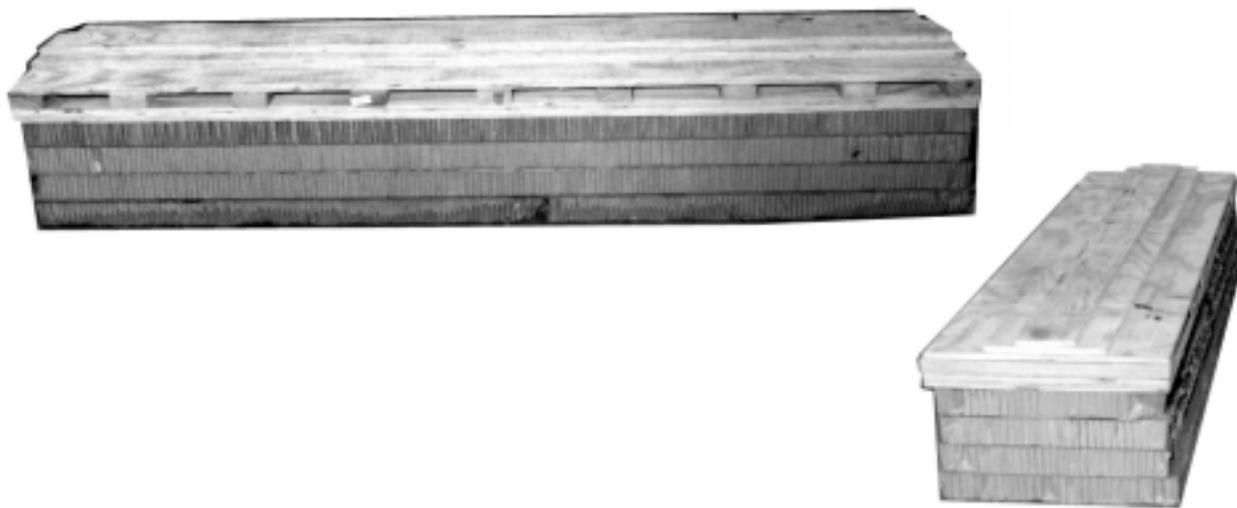
Prepare ten honeycomb stacks as shown in Figures 18-23 through 18-25. Position the stacks on the platform as shown in Figure 18-26.



Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
1, 2, 5, and 6	1	24	76	Honeycomb	Glue plywood flush over honeycomb to form base.
	1	24	76	3/4-inch plywood	
	3	18	76	Honeycomb	Center and glue on base.
	2	18	76	3/4-inch plywood	Glue flush over honeycomb.
	7	18	*3 1/2	2- by 4-inch lumber	Nail one piece flush over each end of the plywood. Center a third piece between the ends. Space two pieces evenly between each end piece and the center piece.
	1	12	76	3/4-inch plywood	Center and nail over lumber.
	1	6	76	3/4-inch plywood	Center and nail over plywood.

* Two- by four-inch lumber is actually 3 1/2 inches wide.

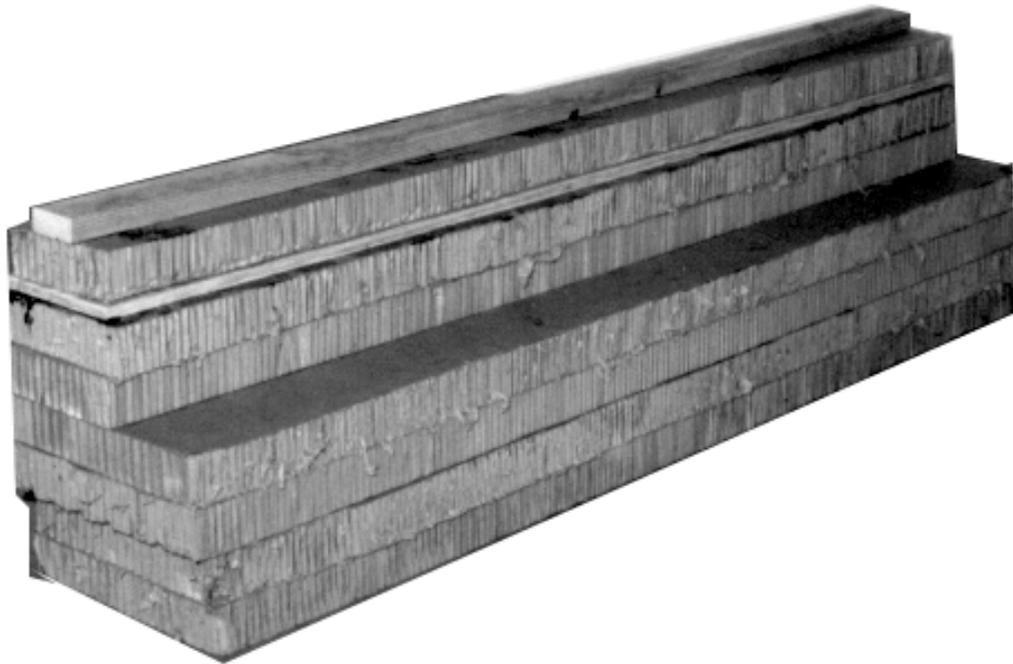
Figure 18-23. Stacks 1,2, 5, and 6 prepared



Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
3 and 4	4	24	96	Honeycomb	Glue flush to form base.
	2	24	96	3/4-inch plywood	Glue flush over honeycomb.
	9	24	*3 1/2	2- by 4-inch lumber	Nail one piece flush over each end of the plywood. Center a third piece between the ends. Space three pieces evenly between each end piece and the center piece.
	1	24	96	3/4-inch plywood	Center and nail over lumber.
	1	12	96	3/4-inch plywood	Center and nail over plywood.
	1	6	96	3/4-inch plywood	Center and nail over plywood.

* Two- by four-inch lumber is actually 3 1/2 inches wide.

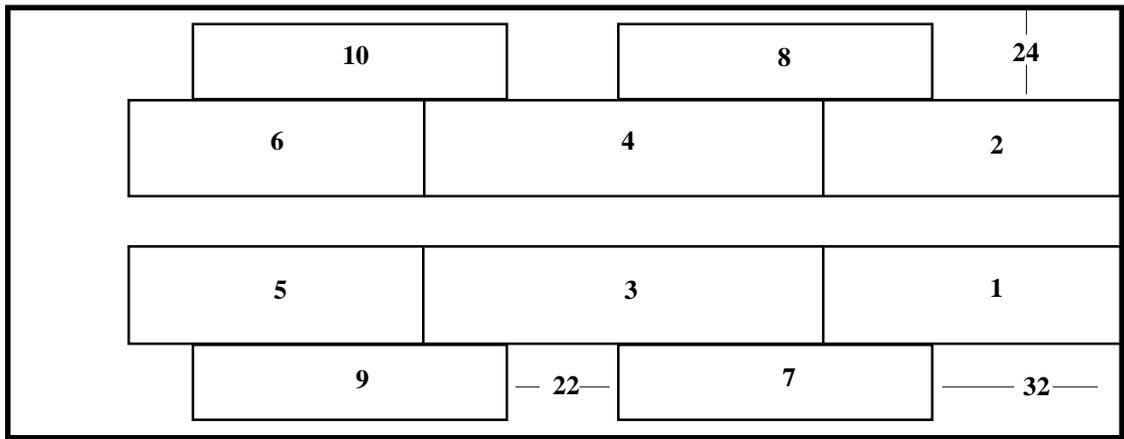
Figure 18-24. Stacks 3 and 4 prepared



Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
7, 8, 9, and 10	4	16	84	Honeycomb	Glue flush to form base.
	2	9	84	Honeycomb	Glue flush on one side of base.
	1	9	84	3/4-inch plywood	Glue flush over honeycomb.
	1	9	84	Honeycomb	Glue flush over plywood.
	1	*3 1/2	84	2- by 4-inch lumber	Center and glue on honeycomb.

Figure 18-25. Stacks 7, 8, 9, and 10 prepared

Notes: 1. This drawing is not to scale.
 2. All dimensions are in inches.

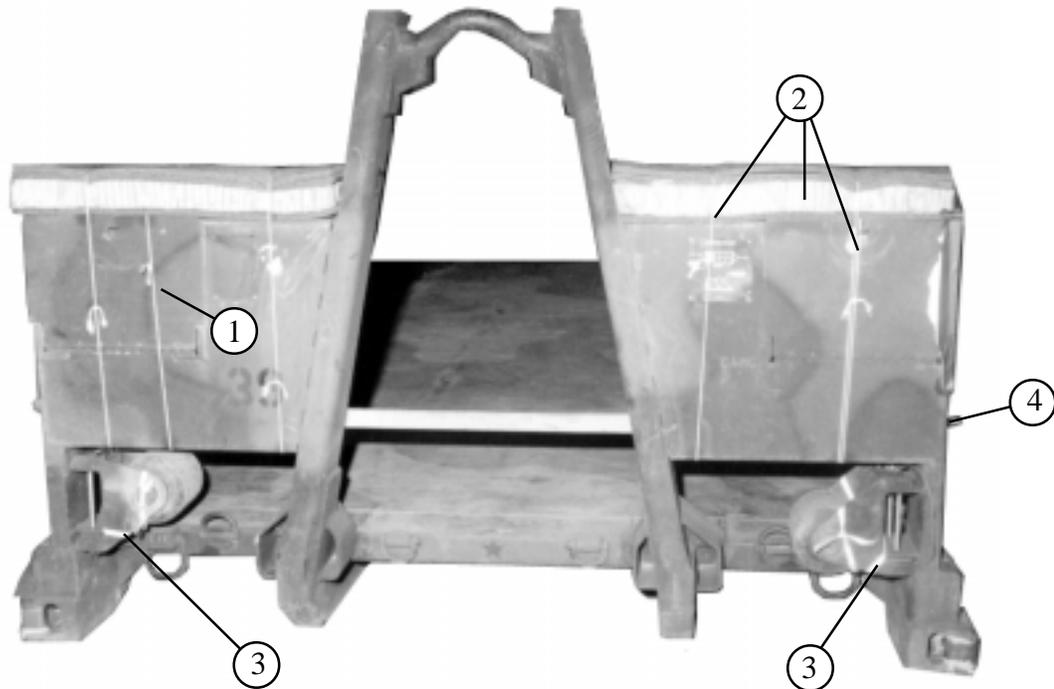


Stack Number	Position of Stack on Platform
1	Place stack: Flush with the front edge of the platform and 24 inches from the right inside platform edge.
2	Flush with the front edge of the platform and 24 inches from the left inside platform edge.
3	Against and aligned behind stack 1.
4	Against and aligned behind stack 2.
5	Against and aligned behind stack 3.
6	Against and aligned behind stack 4.
7	32 inches from the front edge of the platform and flush with the right sides of stacks 1 and 3.
8	32 inches from the front edge of the platform and flush with the left side of stacks 2 and 4.
9	22 inches to the rear of stack 7 and flush with the right side of stacks 3 and 5.
10	22 inches to the rear of stack 8 and flush the the left side of stacks 4 and 6.

Figure 18-26. Honeycomb stacks positioned on platform

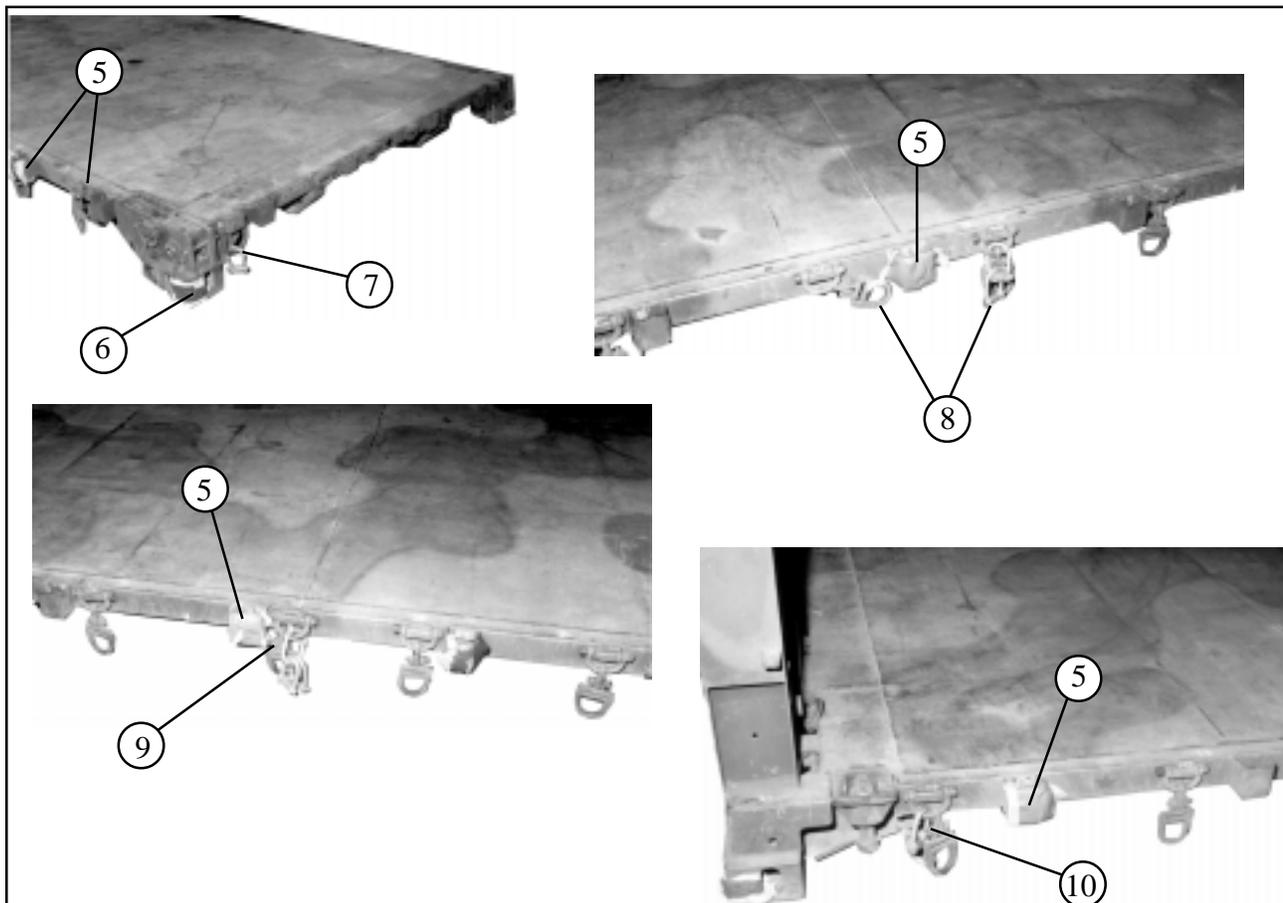
18-20. Preparing PLS Pallet

Prepare the pallet as shown in Figure 18-27.



- ① Tie the storage compartments on each side shut with type III nylon cord.
- ② Pad the top of each box area with a 7- by 30-inch piece of felt, a 7- by 30-inch piece of honeycomb, and two 7- by 30-inch pieces of felt. Tie the padding in place with two lengths of type III nylon cord.
- ③ Remove the wheels and secure them in place with the pins provided. Tie the wheels to their brackets with a length of 1/2-inch tubular nylon webbing.
- ④ Pad the fixtures on the outsides of the boxes with cellulose wadding and tape.

Figure 18-27. Pallet prepared



- ⑤ Pad the first, second, third, fifth, and ninth stake brackets on each side with cellulose wadding and tape.
- ⑥ Pad all four corners of the PLS pallet around the bottom holes with cellulose wadding and tape as shown.
- ⑦ Add a platform clevis to each of the large tie-down brackets at the rear of the PLS pallet.
- ⑧ Place two clevises on the bracket for the sixth swivel ring on each side. Tie the seventh swivel ring to the stake bracket with type I, 1/4-inch cotton webbing.
- ⑨ Add three platform clevises to the fourth swivel ring bracket on each side of the PLS pallet.
- ⑩ Add two clevises to the eleventh swivel ring bracket on each side of the PLS pallet.

Figure 18-27. Pallet prepared (continued)

18-21. Positioning Pallet on Platform

Position the pallet on the platform and install the restraint lashings around the honeycomb stacks as shown in Figure 18-28.

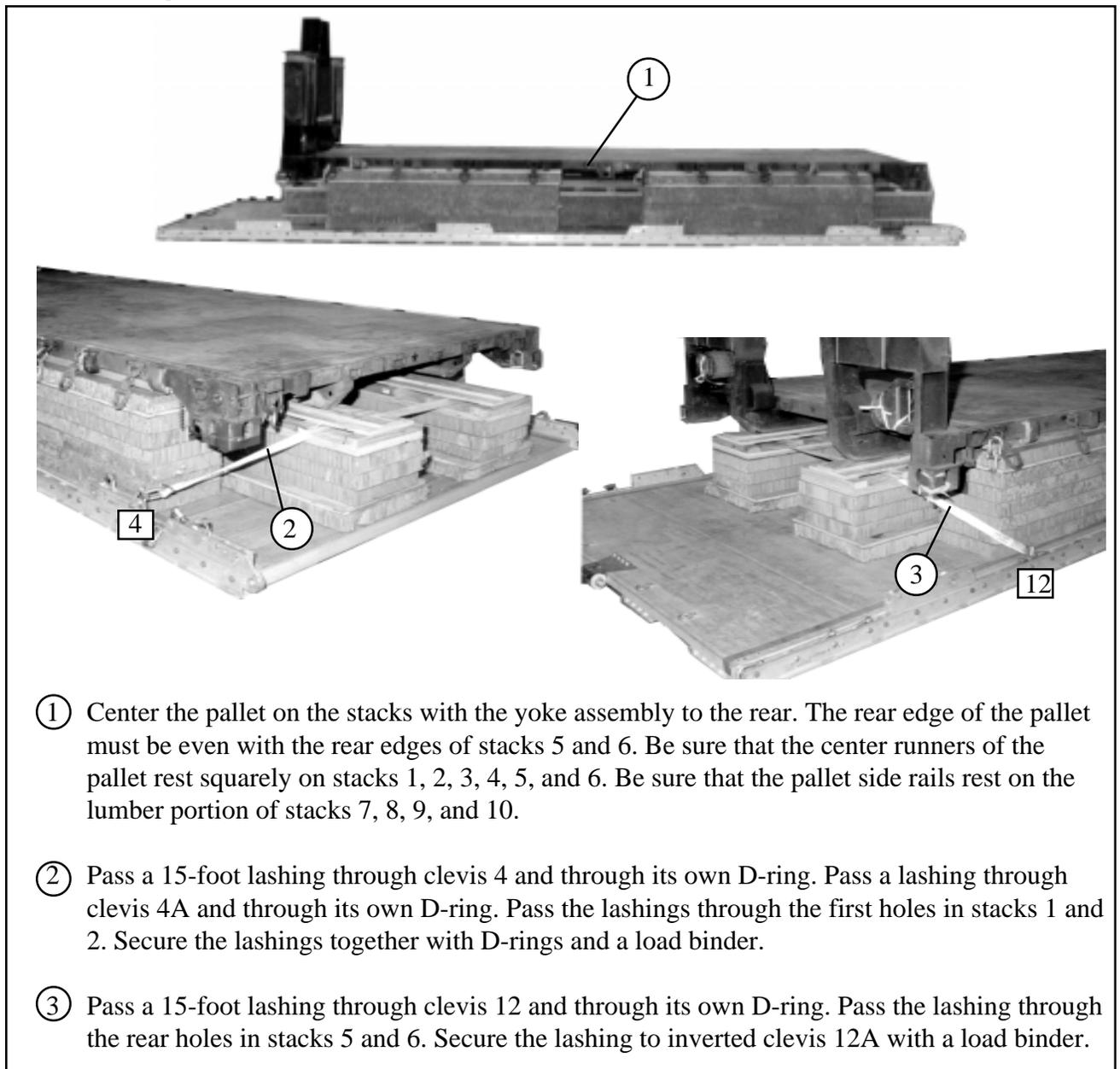
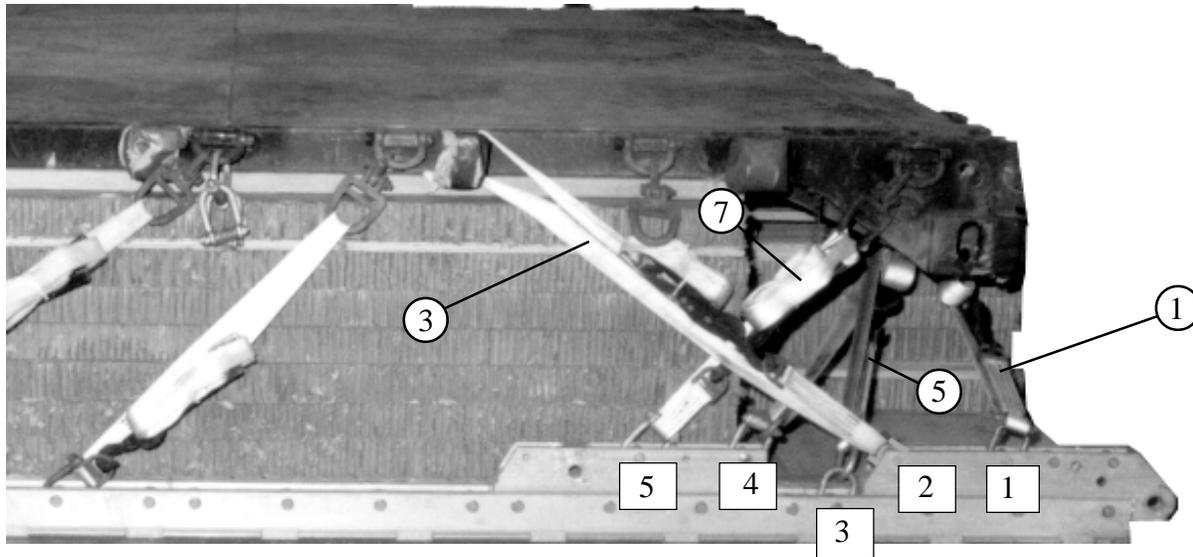


Figure 8-28. Pallet positioned and restraint lashing installed

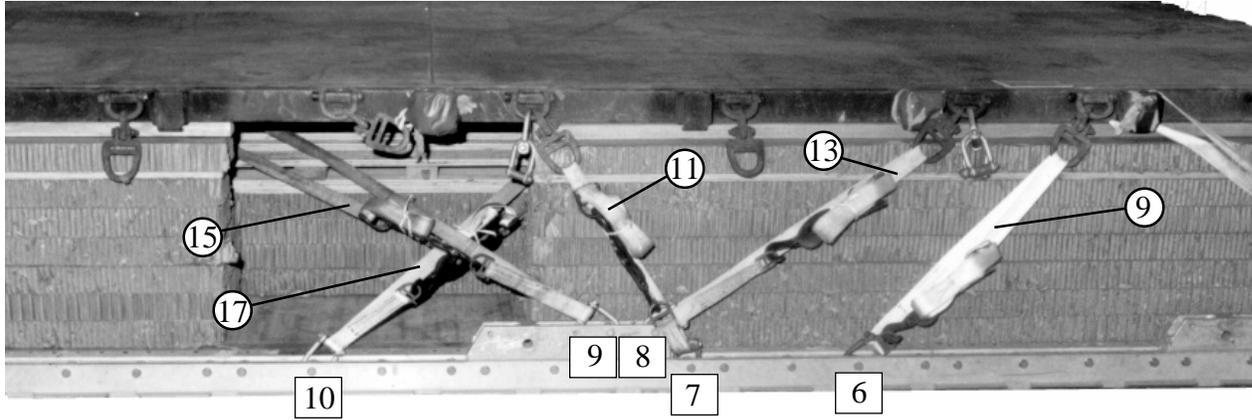
18-22. Lashing PLS Pallet to Platform

Lash the PLS pallet to the platform as shown in Figure 18-29.



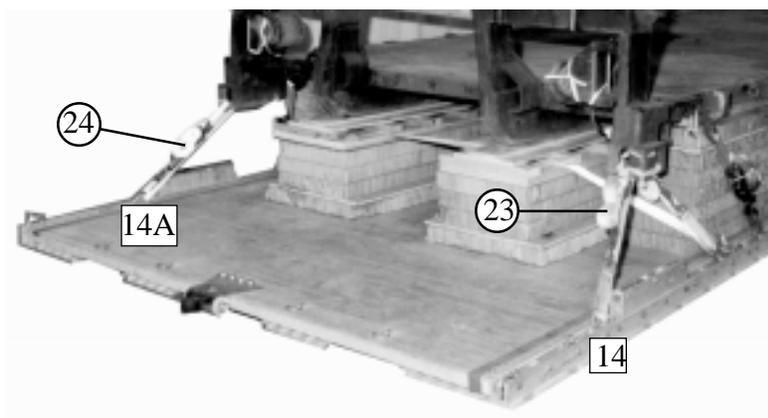
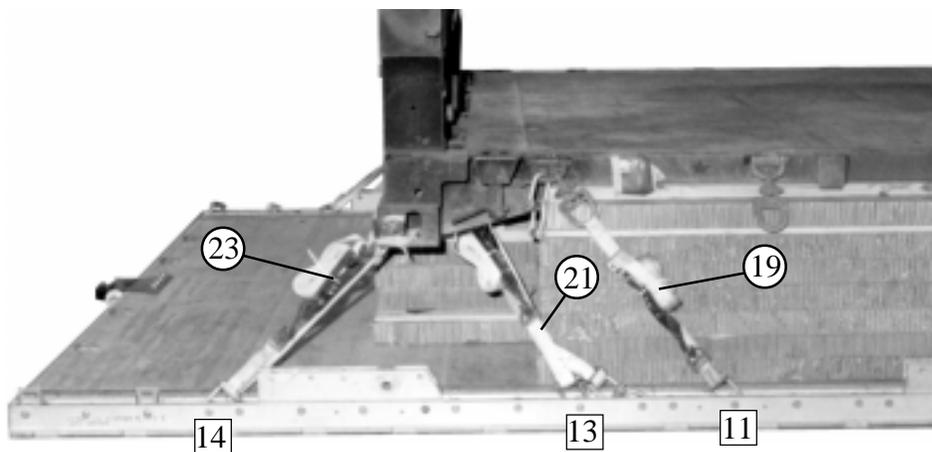
Lashing Number	Tie-down Clevis Number	Instructions
1	1	Pass lashing: Through the right front inside tie-down point.
2	1A	Through the left front inside tie-down point.
3	2	Through the second stake bracket.
4	2A	Through the second stake bracket.
5	3	Through the right front outside tie-down point.
6	3A	Through the left front outside tie-down point.
7	5	Through the first swivel ring.
8	5A	Through the first swivel ring.

Figure 18-29. Pallet lashed to platform



Lashing Number	Tie-down Clevis Number	Instructions
9	6	Pass lashing:
10	6A	Through the third swivel ring.
11	7	Through the third swivel ring.
12	7A	Through the sixth swivel ring.
13	8	Through the sixth swivel ring.
14	8A	Through the fourth swivel ring.
15	9	Through the fourth swivel ring.
16	9A	Through the rear holes in the skid.
17	10	Through the rear holes in the skid.
18	10A	Through the front holes in the skid.

Figure 18-29. Pallet lashed to platform (continued)



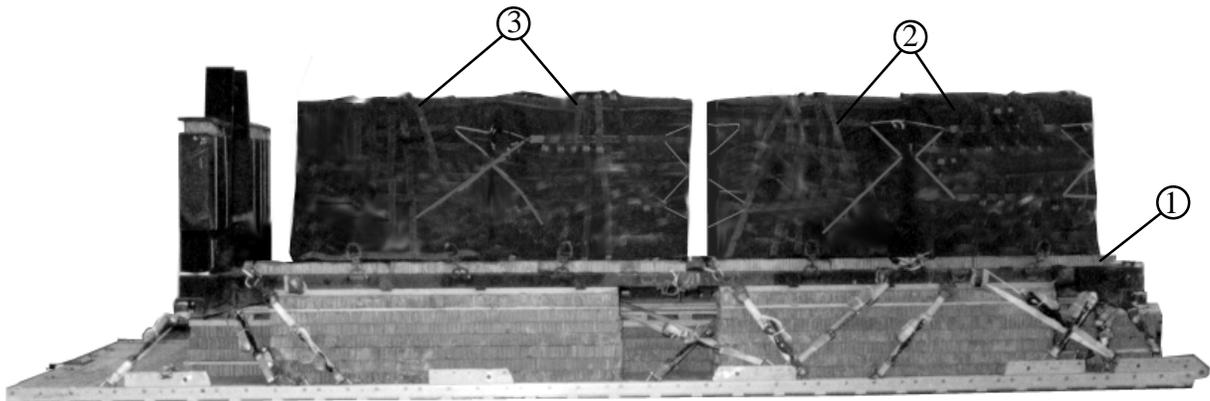
Lashing Number	Tie-down Clevis Number	Instructions
19	11	Pass lashing: Through the eleventh swivel ring.
20	11A	Through the eleventh swivel ring.
21	13	Through the right corner tie-down ring.
22	13A	Through the left corner tie-down ring.
23	14	Through the right corner hole.
24	14A	Through the left corner hole.

Figure 18-29. Pallet lashed to platform (continued)

18-23. Placing and Lashing the Load

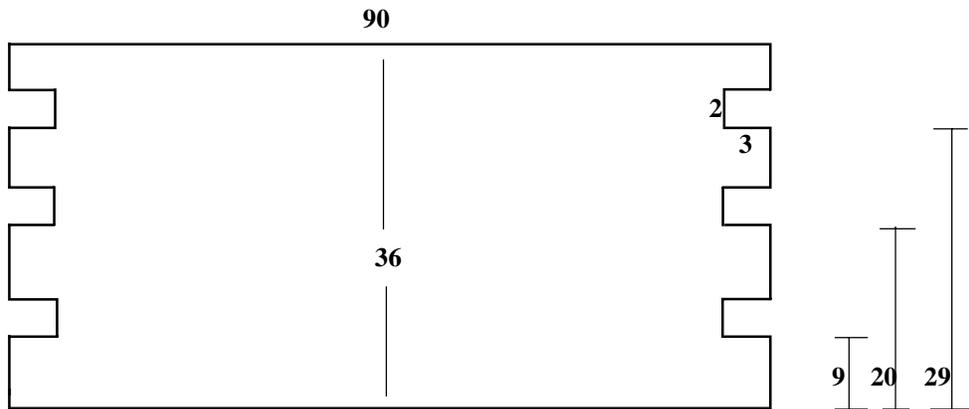
Cover the pallet with a layer of honeycomb and place eight A-22 containers on the pallet as shown in Figure 18-30. Construct four endboards as shown in Figure 18-31. Lash the

containers and endboards to the front section of the pallet as shown in Figure 18-32. Lash the containers and endboards to the rear section of the pallet as shown in Figure 8-33.



- ① Cover the pallet with 96- by 36-inch pieces of honeycomb, beginning 4 1/2 inches from the front edge. Space the third and fourth pieces 8 inches apart.
- ② Place four A-22 containers on the honeycomb, 8 inches from the front edge of the pallet. Allow space for the endboards to rest on the honeycomb.
- ③ Place four A-22 containers on the second section of honeycomb, at least 8 inches from the containers placed in step 2 above. Allow space for the endboards to rest on the honeycomb.

Figure 18-30. Honeycomb and A-22 containers placed on the pallet

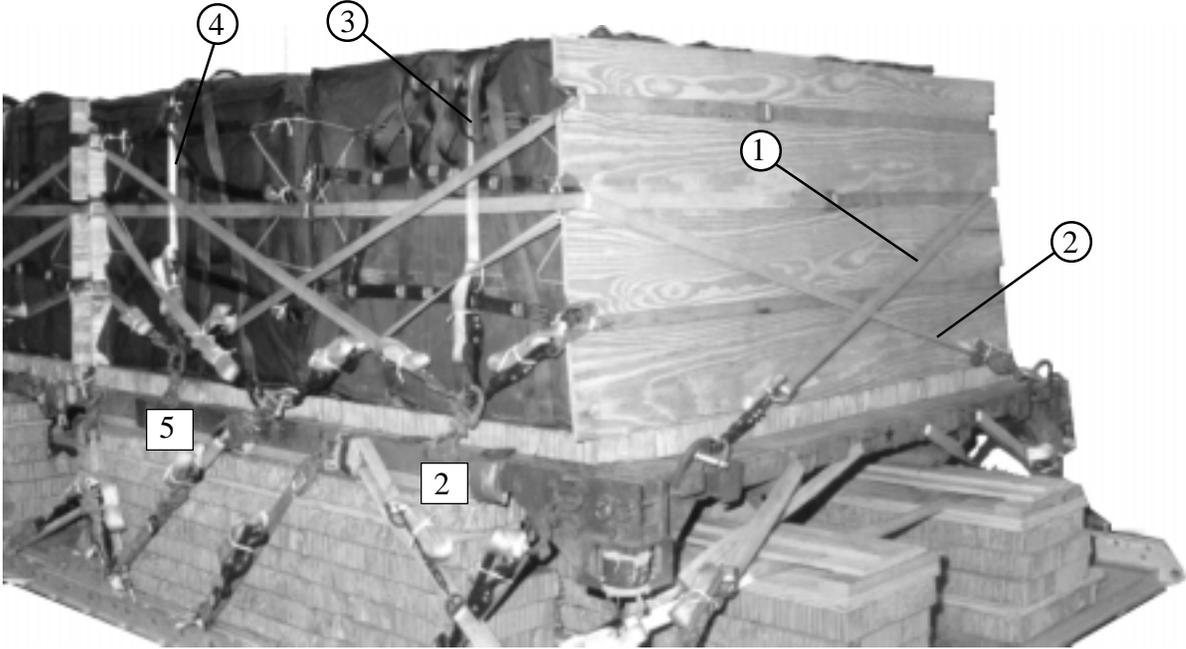


- Notes:**
1. For loads different from that shown in this section, make the endboards the same height as the load configuration.
 2. The instructions given are for one endboard. Four are required for this load.
 3. All dimensions are given in inches.
 4. This drawing is not to scale.

Step:

1. Cut four 90- by 36-inch pieces of 3/4-inch plywood.
2. Make 2- by 3-inch cutouts as shown. Tape the sharp edges of the cutouts.
3. Place an endboard against the front and rear of each of the two groups of containers (not shown).

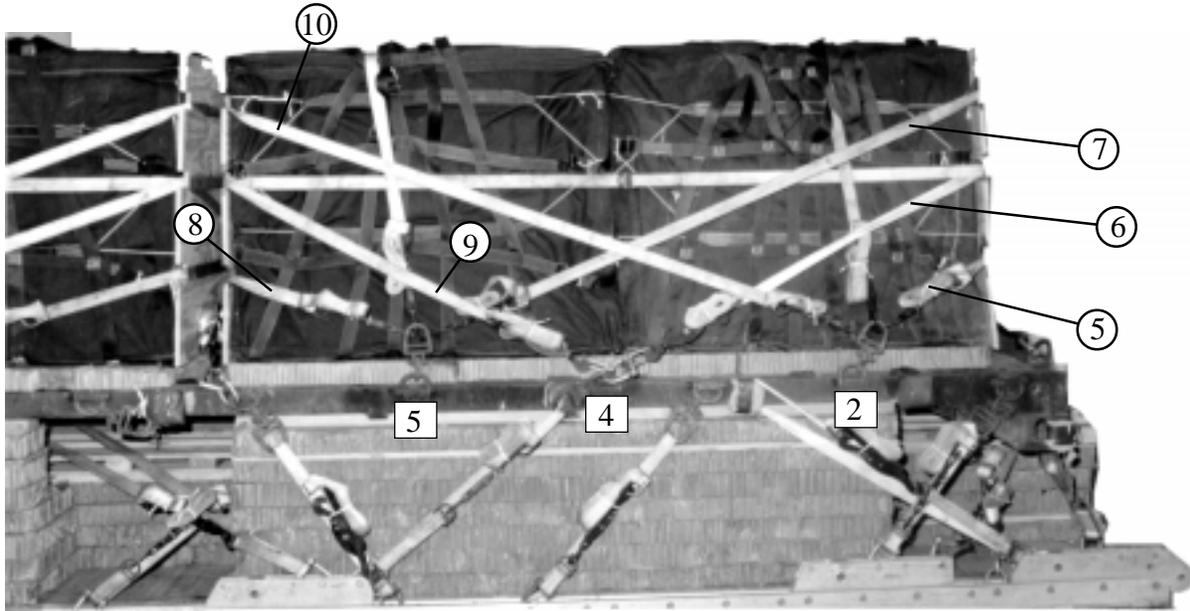
Figure 18-31. Four endboards constructed



Notes: 1. * denotes 30-foot lashing.
 2. Secure all lashings to the pallet with load binders.

Lashing Number	Pallet Ring Number	Instructions
*1		Run the lashing from the right front tie-down to the left middle cutout in the front endboard, and around the left side. Pass the lashing through the left middle cutout in the second endboard. Secure the lashing to the end clevis on the sixth pallet ring on the right side.
*2		Run the lashing from the left front tie-down to the right middle cutout in the front endboard, and around the right side. Pass the lashing through the right middle cutout in the second endboard. Secure the lashing to the end clevis on the sixth pallet ring on the left side.
3	2 and 2A	Run the lashing over the tops of the first two containers.
4	5 and 5A	Run the lashing over the tops of the second two containers.

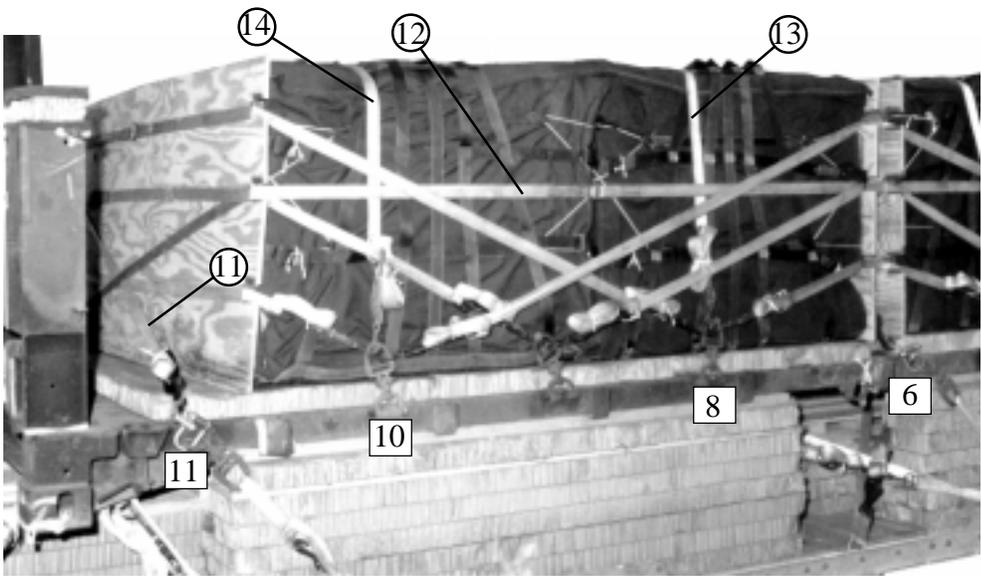
Figure 8-32 . First four containers lashed to pallet



Notes: 1. * denotes 30-foot lashing.
 2. Secure all lashings to the pallet with load binders.

Lashing Number	Pallet Ring Number	Instructions
5	2 and 2A	Run a lashing from the second pallet ring on each side through the lower cutouts in the first endboard.
*6	4 and 4A	Run a lashing from one of the end clevises on the fourth pallet ring on each side through the middle cutouts in the first endboard.
*7	5 and 5A	Run a lashing from the fifth pallet ring on both sides through the upper cutouts in the first endboard.
8	5 and 5A	Run a lashing from the fifth pallet ring on each side through the lower cutouts in the second endboard.
*9	4 and 4A	Run a lashing from the remaining end clevis on the fourth pallet ring on each side through the middle cutouts on the second endboard.
*10	2 and 2A	Run a lashing from the second pallet ring on each side through the upper cutouts in the second endboard.

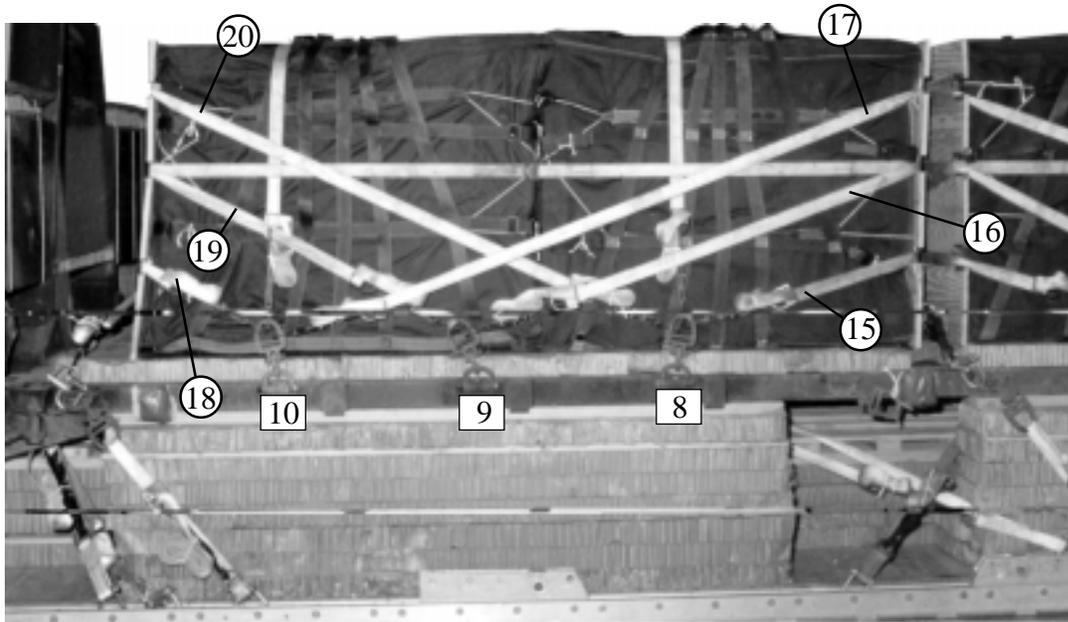
Figure 8-32 . First four containers lashed to pallet (continued)



- Notes:** 1. * denotes 30-foot lashing.
 2. Secure all lashings to the pallet with load binders.

Lashing Number	Pallet Ring Number	Instructions
*11	6 and 11	Run the lashing from the end clevis on the sixth pallet ring to the left middle cutout in the third endboard, and around the left side. Pass the lashing through the left middle cutout in the rear endboard. Secure the lashing to the end clevis on the eleventh pallet ring on the right side.
*12	6A and 11A	Run the lashing from the end clevis on the sixth pallet ring to the right middle cutout in the third endboard, and around the right side. Pass the lashing through the right middle cutout in the rear endboard. Secure the lashing to the end clevis on the eleventh pallet ring on the left side.
13	8 and 8A	Run the lashing over the tops of the first two containers.
14	10 and 10A	Run the lashing over the tops of the second two containers.

Figure 8-33. Second four containers lashed to pallet



Notes: 1. * denotes 30-foot lashing.
 2. Secure all lashings to the pallet with load binders.

Lashing Number	Pallet Ring Number	Instructions
15	8 and 8A	Run a lashing from the eighth pallet ring on each side through the lower cutouts in the third endboard.
*16	9 and 9A	Run a lashing from the ninth pallet ring on each side through the middle cutouts in the third endboard.
*17	10 and 10A	Run a lashing from the tenth pallet ring on both sides through the upper cutouts in the third endboard.
18	10 and 10A	Run a lashing from the tenth pallet ring on each side through the lower cutouts in the rear endboard.
*19	9 and 9A	Run a lashing from the ninth pallet ring on each side through the middle cutouts in the rear endboard.
*20	8 and 8A	Run a lashing from the eighth pallet ring on each side through the upper cutouts in the rear endboard.

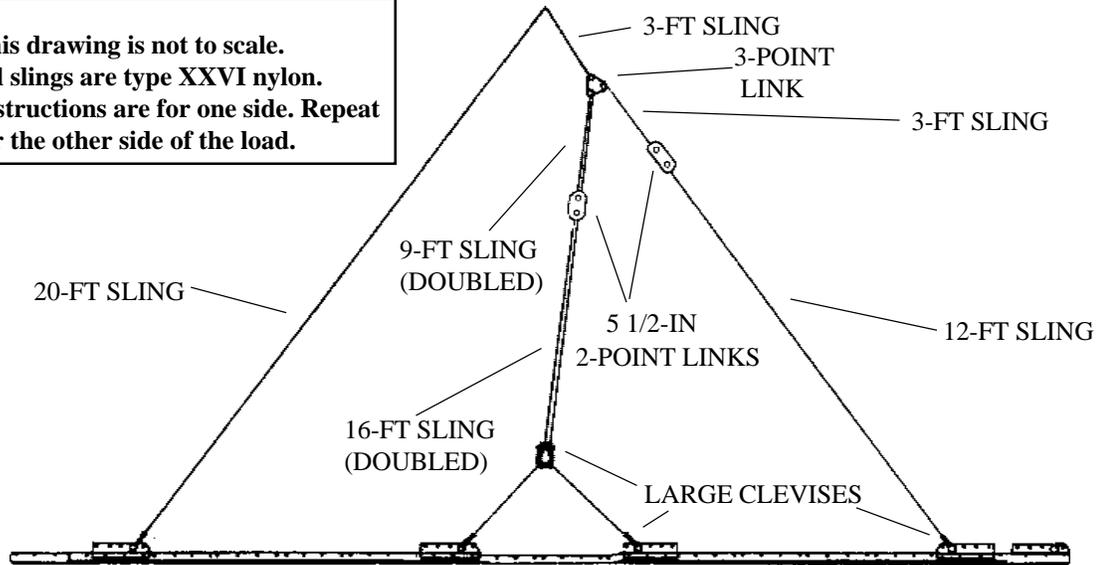
Figure 8-33. Second four containers lashed to pallet (continued)

18-24. Installing and Safetying Suspension Slings

Install the components of the centerline suspension system according to FM 10-500-2/TO 13C7-1-5, and as shown in Figure 18-34. Safety the suspension slings as shown in Figure 18-35.

Notes:

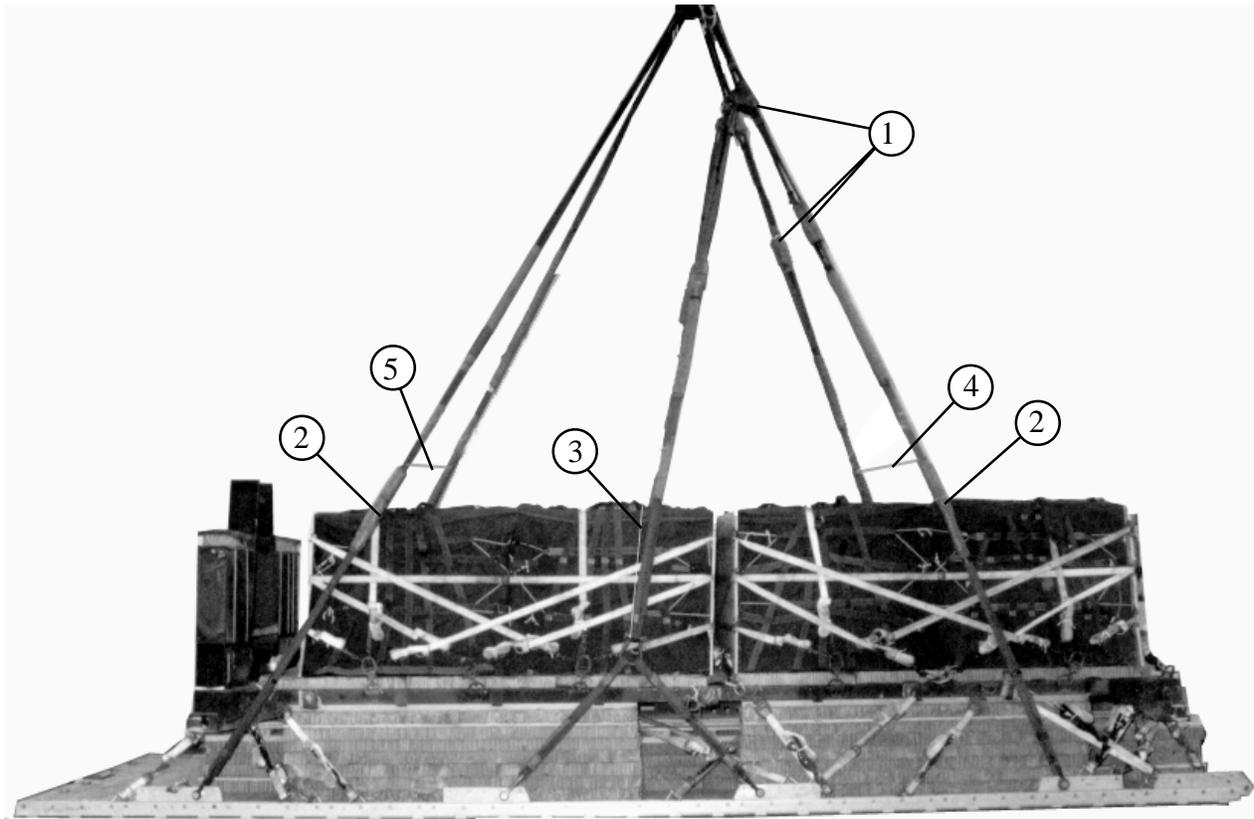
1. This drawing is not to scale.
2. All slings are type XXVI nylon.
3. Instructions are for one side of the load. Repeat for the other side of the load.



Step:

1. Place the end loop of a 12-foot (4-loop) sling in the bell of a large clevis. Bolt the clevis to the front suspension link. Connect the free end of the 12-foot sling to a 3-foot (4-loop) sling with a 5 1/2-inch two-point link.
2. Attach a 3-foot (4-loop) sling to each center suspension link with a large clevis. Place both 3-foot slings in the bell of a large clevis. Pass a 16-foot (2-loop) sling through one spool of a 5 1/2-inch two-point link. Place both ends of the 16-foot sling in the bolt of the large clevis.
3. Pass a 9-foot (2-loop) sling through a spool of a three-point link. Place both ends of the sling in the remaining spool of the two-point link used in step 2 above.
4. Bolt the 3-foot sling used in step 1 above to the three-point link so that the third spool points upward. Bolt a 3-foot (4-loop) sling to the upper spool of the three-point link.
5. Place the end loop of a 20-foot (4-loop) sling in the bell of a large clevis. Bolt the clevis to the rear suspension link.

Figure 18-34. Suspension slings installed



- ① Pad the two-point and three-point links with felt and tape. Raise the suspension slings.
- ② Pad the suspension slings where they pass over the corners of the load with felt and tape.
- ③ Tie a length of type III nylon cord to the center clevis on one side. Pass the cord over the load, and tie it to the center clevis on the other side so that both clevises are supported.
- ④ Tie the front suspension slings to each other 12 inches above the load with 1/2-inch tubular nylon webbing.
- ⑤ Tie the rear suspension slings to each other 12 inches above the load with 1/2-inch tubular nylon webbing.

Figure 18-35. Suspension slings safetied

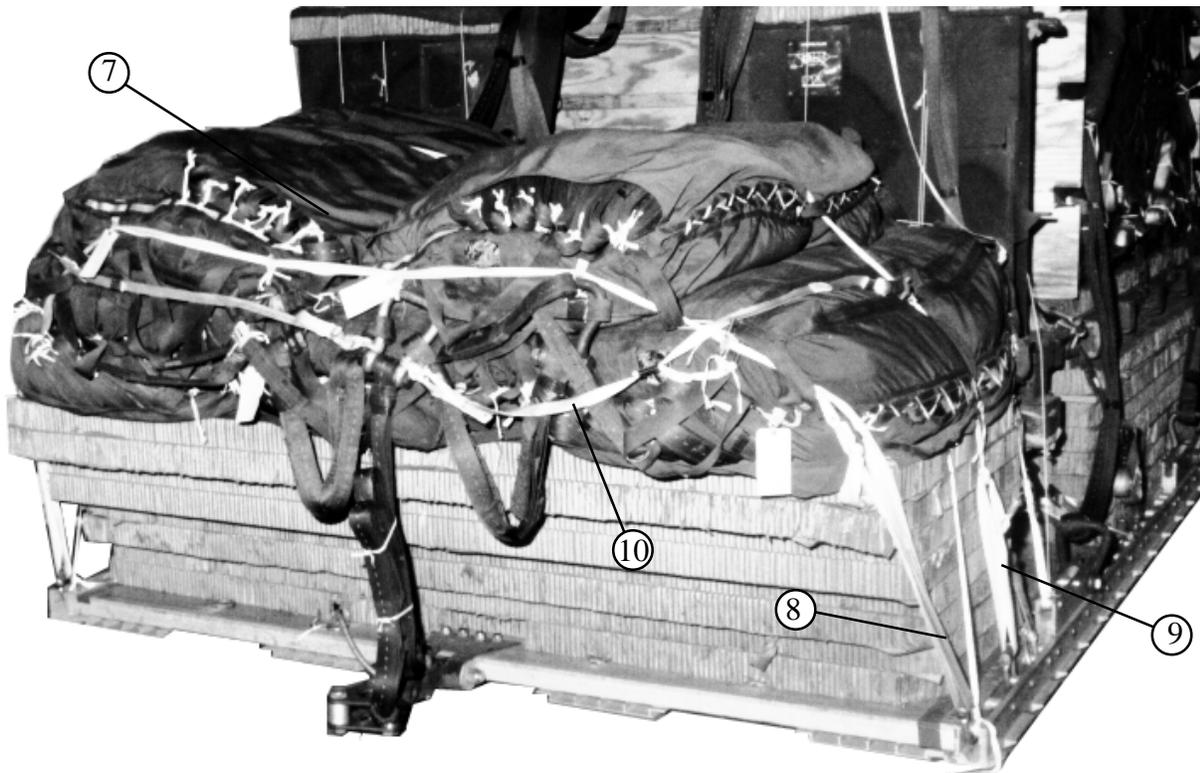
18-25. Building Parachute Stowage Platform and Installing Cargo Parachutes

Build the parachute stowage platform and install five G-11C cargo parachutes as shown in Figure 18-36.



- ① Alternate and glue two 96- by 36-inch and four 96- by 6-inch pieces of honeycomb to form a two-layer base 96- by 42 inches. Cut a channel in the bottom layer of honeycomb to accommodate the EFTC cable.
- ② Alternate and glue two 96- by 36-inch and two 96- by 8-inch pieces of honeycomb to form two 96- by 44-inch pieces. Place these layers over the base and flush with the front edge.
- ③ Alternate and glue two 96- by 36-inch and two 96- by 10-inch pieces of honeycomb to form two 96- by 46-inch pieces. Place these layers over the base and flush with the front edge.
- ④ Cut the front corners of the honeycomb placed in steps 1, 2 and 3 above to allow for the lashings.
- ⑤ Alternate and glue two 96- by 36-inch and two 96- by 12-inch pieces of honeycomb to form two 96- by 48-inch pieces. Place these layers over the base and flush with the front edge.
- ⑥ Secure the parachute stowage platform to the rails with a length of 1/2-inch tubular nylon webbing tied to the fourth bushing on each rear suspension link, and to bushing 48 on each side.

Figure 18-36. Parachute stowage platform built and cargo parachutes installed

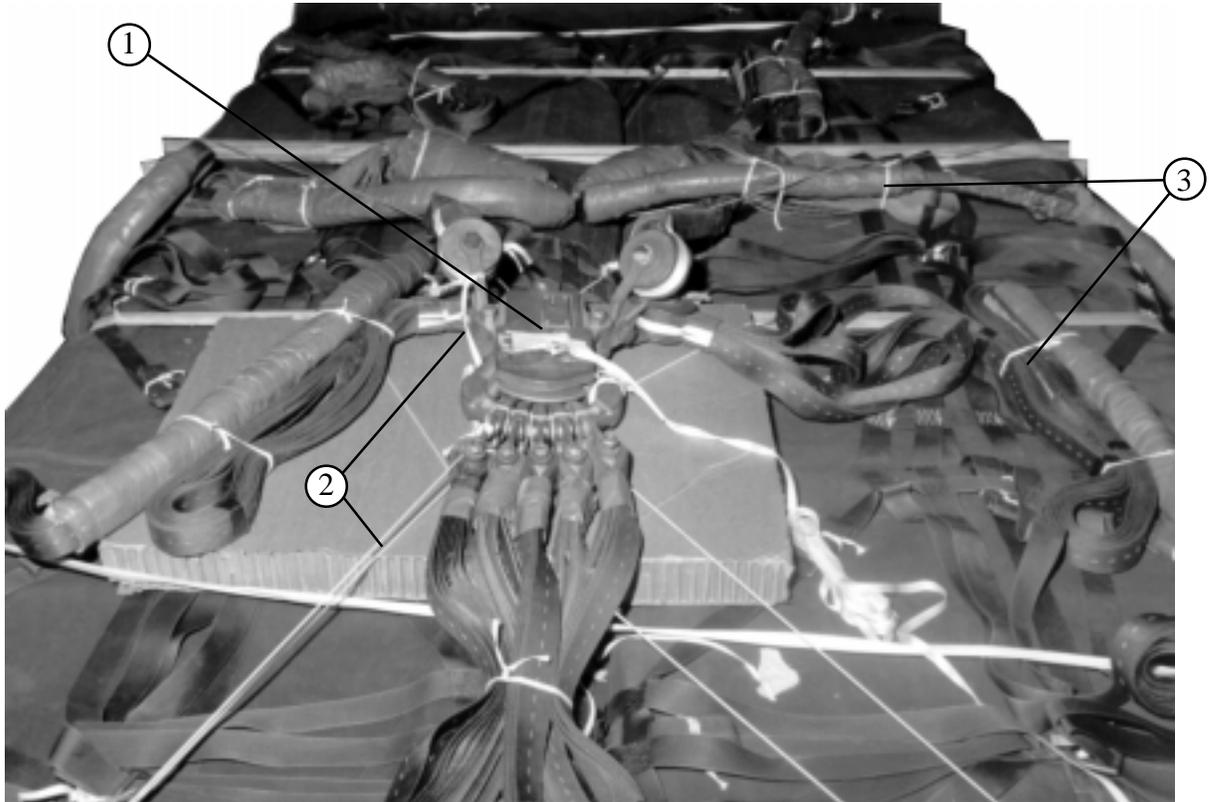


- ⑦ Cluster five G-11C cargo parachutes on the parachute stowage platform.
- ⑧ Tie the rear restraint strap to clevises 16 and 16A.
- ⑨ Tie the front restraint strap to clevises 15 and 15A.
- ⑩ Install the parachute release knives.

Figure 18-36. Parachute stowage platform built and cargo parachutes installed (continued)

18-26. Installing Parachute Release

Prepare and install an M-2 cargo parachute release as shown in Figure 18-37, and according to FM 10-500-2/TO 13C7-1-5.

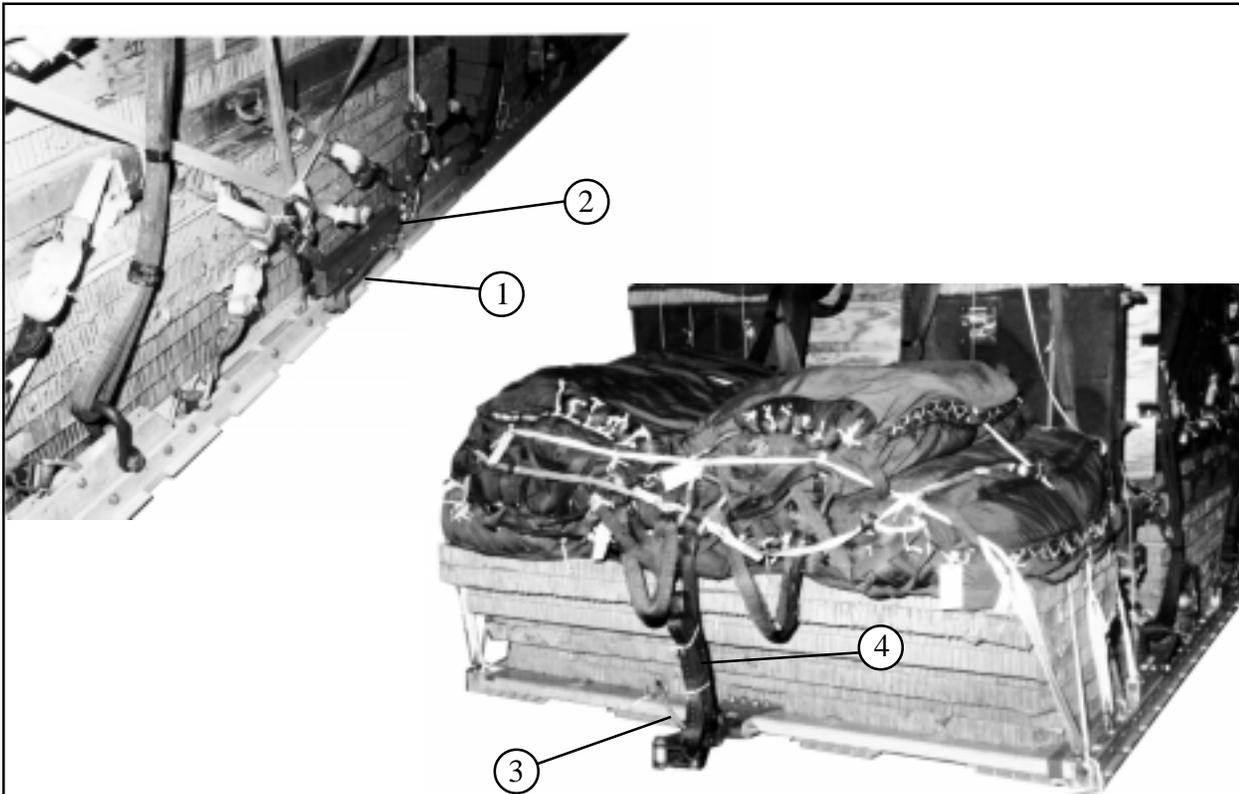


- ① Center a 36- by 24-inch piece of honeycomb on top of the load between the third and fourth endboards. Place the M-2 release on the honeycomb.
- ② Attach the suspension slings and riser extensions to the M-2 release. Secure the release to the load with type III nylon cord.
- ③ S-fold and tie any slack in the suspension slings with type I, 1/4-inch cotton webbing.

Figure 18-37. M-2 release installed

18-27. Installing Extraction System

Prepare and install the EFTC extraction system as shown in Figure 18-38, and according to FM 10-500-2/TO 13C7-1-5.



- ① Install the actuator mounting brackets to the rear holes in the left platform side rail.
- ② Install a 24-foot cable to the actuator. Install the actuator to the brackets.
- ③ Attach the latch assembly to the extraction bracket. Attach the cable to the latch assembly.
- ④ Install a 9-foot (2-loop), type XXVI nylon webbing sling as the deployment line. S-fold and tie the excess in two places with type I, 1/4-inch cotton webbing.

Figure 18-38. EFTC installed

18-28. Installing Provisions for Emergency Restraints

Select and install provisions for emergency restraints according to the emergency aft restraint requirements table in FM 10-500-2/TO 13C7-1-5.

18-29. Placing Extraction Parachute

Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 10-500-2/TO 13C7-1-5. Place the extraction parachute and extraction line on the load for installation in the aircraft.

18-30. Marking Rigged Load

Mark the rigged load according to FM 10-500-2/TO 13C7-1-5, and as shown in Figure 18-39.

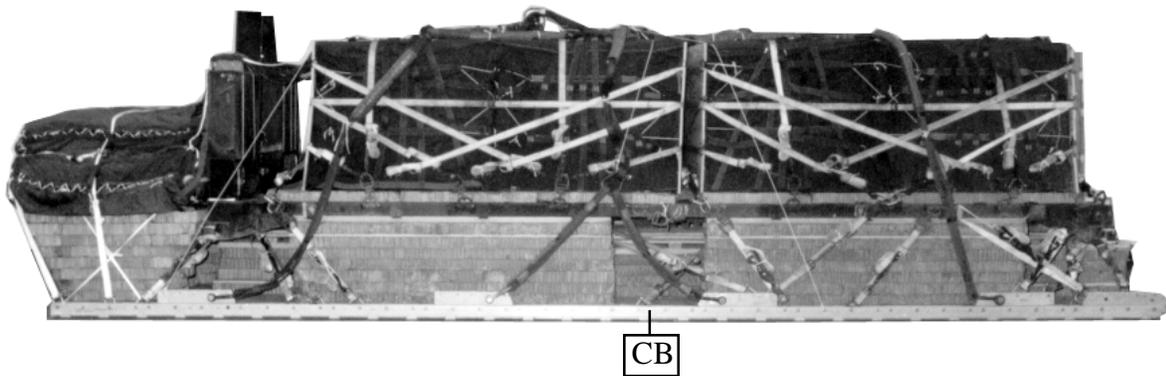
CAUTION

The load weight may vary from the one shown, depending upon the mass supplies being rigged. Be sure that the load is weighed, and the parachute requirements, CB, and tip-off curve recomputed.

18-31. Equipment Required

Use the equipment listed in Table 18-2 to rig this load.

CAUTION
Make the final rigger inspection required by FM 10-500-2/TO 13C7-1-5
before the load leaves the rigging site.



Rigged Load Data

Weight:	Load shown	24,278 pounds
Height		84 inches
Width		108 inches
Length		288 inches
Overhang:	Front	0 inches
	Rear	0 inches
CB (from front edge of platform)		137 inches
Extraction System (adds 18 inches to length of platform)		EFTC

Figure 18-39. PLS pallet with A-22 containers rigged on a 24-foot platform for low-velocity airdrop

Table 18-2. Equipment required for rigging PLS with A-22 containers on a 24-foot, type V platform for low-velocity airdrop

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive paste, 1-gal	As required
4030-00-090-5354	Clevis, suspension, 1-in (large)	14
4020-00-240-2146	Cord, nylon, type III, 550-lb	As required
1670-00-434-5782	Coupling, airdrop, extraction force transfer with cable, 24-ft	1
	Cover:	
1670-00-360-0328	Clevis, large	1
1670-00-360-0329	Link, type IV	6
8305-00-958-3685	Felt, 1/2-in thick	As required
1670-01-183-2678	Leaf, extraction line (line bag)	2
	Line, drogue (for C-17)	
1670-01-062-6313	60-ft (3-loop), type XXVI	1
	Line, extraction	
1670-01-062-6313	For C-130: 60-ft (3-loop), type XXVI	1
1670-01-107-7651	For C-141: 140-ft (3-loop), type XXVI	1
	For C-5:	
1670-01-107-7651	140-ft (3-loop), type XXVI and	1
1670-01-062-6313	60-ft (3-loop), type XXVI	1
1670-01-107-7651	For C-17: 140-ft (3-loop), type XXVI	1
	Link assembly:	
1670-00-006-2752	Four-point	1
1670-01-307-0155	Three-point	2
1670-00-783-5988	Type IV	6
	Two-point, 5 1/2-in	
5306-00-435-8994	Bolt, 1-in diam, 4 in long	10
5310-00-232-5165	Nut, 1-in, hexagonal	10
1670-00-003-1954	Plate, side, 5 1/2-in	10
5365-00-007-3414	Spacer, large	10
	Lumber:	
5510-00-220-6146	2- by 4-in	As required
5315-00-010-4659	Nail, steel wire, 8d	As required

Table 18-2. Equipment required for rigging PLS with A-22 containers on a 24-foot, type V platform for low-velocity airdrop (continued)

National Stock Number	Item	Quantity
1670-00-753-3928	Pad, energy-dissipating, honeycomb 3- by 36- by 96-in	44 sheets
	Parachute:	
1670-01-016-7841	Cargo, G-11C	5
1670-00-040-8135	Cargo extraction, 28-ft	1
1670-01-063-3715	Drogue, 15-ft (for C-17)	1
	Platform, airdrop, type V, 24-foot	
1670-01-353-8425	Bracket assembly, coupling	(1)
1670-01-162-2372	Clevis assembly, type V	(48)
1670-01-353-8424	Extraction bracket assembly	(1)
1670-01-162-2381	Link, tandem, suspension link assembly	(2)
1670-01-247-2389	Link, suspension bracket, type V	(8)
5530-00-128-4981	Plywood, 3/4- by 48- by 96-in	7 sheets
1670-01-097-8817	Release, cargo parachute, M-2	1
	Sling, cargo airdrop	
	For suspension:	
1670-01-062-6306	3-ft (4-loop), type XXVI nylon webbing	8
1670-01-062-6304	9-ft (2-loop), type XXVI nylon webbing	2
1670-01-062-6307	12-ft (4-loop), type XXVI nylon webbing	2
1670-01-063-7761	16-ft (2-loop), type XXVI nylon webbing	2
1670-01-064-4453	20-ft (4-loop), type XXVI nylon webbing	2
	For deployment:	
1670-01-062-6304	9-ft (2-loop), type XXVI nylon webbing	1
	For riser extension:	
1670-01-06-6302	20-ft (2-loop), type XXVI nylon webbing	5
1670-01-062-6313	60-ft (3-loop), type XXVI nylon webbing	5
5340-00-040-8219	Strap, parachute release, multi-cut, comes w/ 3 knives	2
7510-00-266-5016	Tape, adhesive, 2-in	As required
1670-00-937-0271	Tie-down assembly, 15-ft	52
	Webbing:	
8305-00-268-2411	Cotton, 1/4-in, type	As required
8305-00-082-5752	Nylon, tubular, 1/2-in	As required
8305-00-263-3591	Type VIII	As required