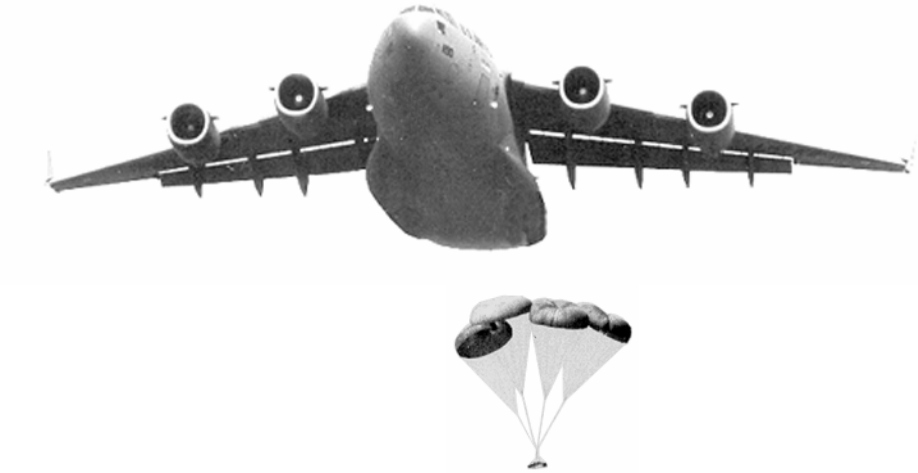
FM 4-20.137 (FM 10-537)
AIR FORCE TO 13C7-1-19



AIRDROP OF SUPPLIES AND EQUIPMENT:

RIGGING FORWARD AREA REFUELING EQUIPMENT (FARE) AND ADVANCED AVIATION FORWARD AREA REFUELING SYSTEM (AAFARS)

JUNE 2003

HEADQUARTERS
DEPARTMENT OF THE ARMY
DEPARTMENT OF THE AIR FORCE

***FM 4-20.137** (FM 10-537)
TO 13C7-1-19

FIELD MANUAL
NO. 4-20.137
TECHNICAL ORDER
NO. 13C7-1-19

HEADQUARTERS
DEPARTMENT OF THE ARMY
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WASHINGTON, DC, 10 June 2003

Airdrop of Supplies and Equipment: Rigging Forward Area Refueling Equipment (FARE) and Advanced Aviation Forward Area Refueling System (AAFARS)

Contents

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Page

Page

Page

Page

Preface

This manual tells and shows how to prepare and rig the following configurations of the Forward Area Refueling Equipment (FARE) Systems, the 4-inch, 350-GPM Wheel-Mounted Pumping Assembly, and the Advanced Aviation Forward Area Refueling System (AAFARS) for low-velocity airdrop from a C-130, C-141, C-17, and C-5 aircraft.

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Introduction

This manual shows and tells how to rig the forward area refueling equipment (FARE), to include the rigging of hazardous material--gasoline, JP4, and diesel fuel. The FARE is rigged with the following:

Trailers. M101, M101A1, 3/4-ton, two-wheel trailers for low-velocity airdrop from C-130, C-141, C-5, and C-17 aircraft.

Two Fuel Drums. Two 500-gallon collapsible fuel drums for low-velocity airdrop from C-130, C-141, C-5, and C-17 aircraft.

Seven Fuel Drums. Seven 500-gallon collapsible fuel drums for low-velocity airdrop from C-130, C-141, C-5, and C-17 aircraft.

Vehicle. M998, 1 1/4-ton truck (HMMWV) for low-velocity airdrop from C-130, C-141, C-5, and C-17 aircraft.

This manual shows and tells how to rig the 4-inch, 350 GPM wheel-mounted pumping assembly, to include the rigging of hazardous material-- gasoline, JP4, and diesel fuel. The 4-inch, 350-GPM wheel-mounted pumping assembly is rigged with the following:

Pumps and Separators. Two 4-inch, 350-GPM wheel-mounted pumping assemblies and two separators are rigged for low-velocity airdrop from C-130, C-141, C-5, and C-17 aircraft.

Three Fuel Drums. Three 500-gallon collapsible fuel drums for low-velocity airdrop from C-130, C-141, C-5, and C-17 aircraft.

Four Fuel Drums. Four 500-gallon collapsible fuel drums for low-velocity airdrop from C-130, C-141, C-5, and C-17 aircraft.

Five Fuel Drums. Five 500-gallon collapsible fuel drums for low-velocity airdrop from C-130, C-141, C-5, and C-17 aircraft.

Six Fuel Drums. Six 500-gallon collapsible fuel drums for low-velocity airdrop from C-130, C-141, C-5, and C-17 aircraft.

This manual shows and tells how to rig the Advanced Aviation Forward Area Refueling System (AAFARS), to include the rigging of hazardous material-- gasoline, JP4, and diesel fuel. The AAFARS is rigged with the following:

Three Fuel Drums. Three 500-gallon collapsible fuel drums for low-velocity airdrop from C-130, C-141, C-5, and C-17 aircraft.

Four Fuel Drums. Four 500-gallon collapsible fuel drums for low-velocity airdrop from C-130, C-141, C-5, and C-17 aircraft.

Five Fuel Drums. Five 500-gallon collapsible fuel drums for low-velocity airdrop from C-130, C-141, C-5, and C-17 aircraft.

Six Fuel Drums. Six 500-gallon collapsible fuel drums for low-velocity airdrop from C-130, C-141, C-5, and C-17 aircraft.

Seven Fuel Drums. Seven 500-gallon collapsible fuel drums for low-velocity airdrop from C-130, C-141, C-5, and C-17 aircraft.

The following conditions must be met when rigging these loads:

CAUTION:
There must be no more than 432 gallons of liquid in each drum when rigged for low-velocity airdrop. Do not pressurize drums with air.

Hazardous Material. When included as a part of these loads, fuel must be packaged, marked, and labeled as described in AFMAN(I) 24-204/TM 38-250.

Weight. Each drum of fuel MUST be weighed to learn its exact weight, as the drum has no gauge to measure the liquid content. For computing liquid weight per US gallon, 6 pounds are used for gasoline, 6.4 pounds for JP4 fuel, 6.7 pounds for JP8 fuel, and 6.68 pounds for diesel fuel. When empty, the drum weighs 250 pounds.

CAUTION:
Because the fuel drum is flexible, it will rebound upon ground impact and the lashings may be broken. This could free the drum and allow it to roll off the platform and create a possible hazard in the immediate area.

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

NOTICE of EXCEPTION:
The procedures in this manual for installing the Suspension Sling Safety Ties may differ from those in FM 4-20.102/ NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. An exception to FM 4-20.102/ NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 is granted. The procedures in this manual **MUST** be followed.

Chapter 1

Rigging FARE For Low -Velocity Airdrop On Type V Platform

SECTION I - RIGGING FARE WITH TWO 500-GALLON FUEL DRUMS

DESCRIPTION OF LOAD

1-1. The Forward Area Refueling Equipment (FARE) is rigged on a 12-foot, type V platform with two G-11 cargo parachutes. There are two collapsible fuel drums as an accompanying load. When empty, each drum weighs 250 pounds. Each drum is filled with 432 gallons of liquid. Overall length is 162 inches. Width is 108 inches. Height is 70 inhes. Center of balance is 72 inches

Notes: 1. For drums filled with a liquid other than gasoline, use Table 1-1 to recompute the weight.
2. If the load varies from the one shown, the weight, height, CB, tipoff curve, and parachute requirements must be recomputed.
3. Do not pressurize drums with air.

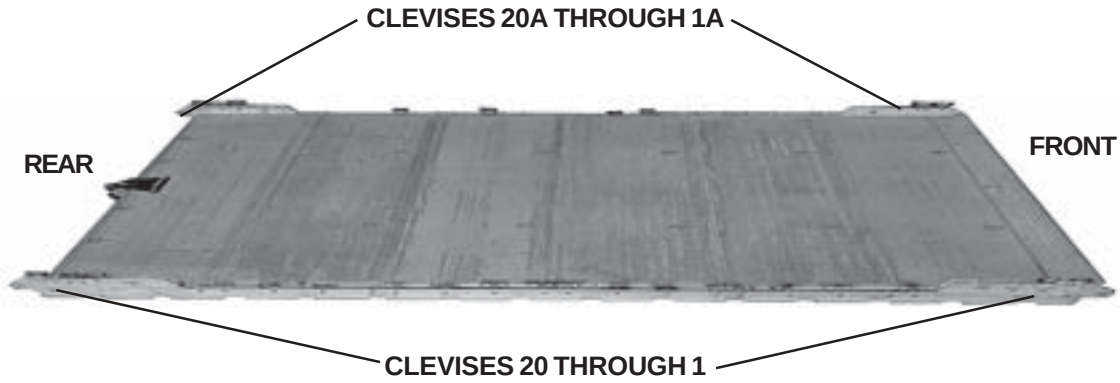
Table 1-1. Weight of Drum When Filled with Liquid

Fuel	Weight Per Gallon	Total Weight of Drum with 432 Gallons of Liquid
Gasoline	6 Pounds	2,842 Pounds
JP-4	6.4 Pounds	3,015 Pounds
JP-8	6.7 Pounds	3,145 Pounds
Diesel	6.68 Pounds	3,136 Pounds
Water	8.3 Pounds	3,835 Pounds

PREPARING PLATFORM

1-2. Prepare a 12-foot type V airdrop platform using four tandem links and 40 tie-down clevises as shown in Figure 1-1.

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



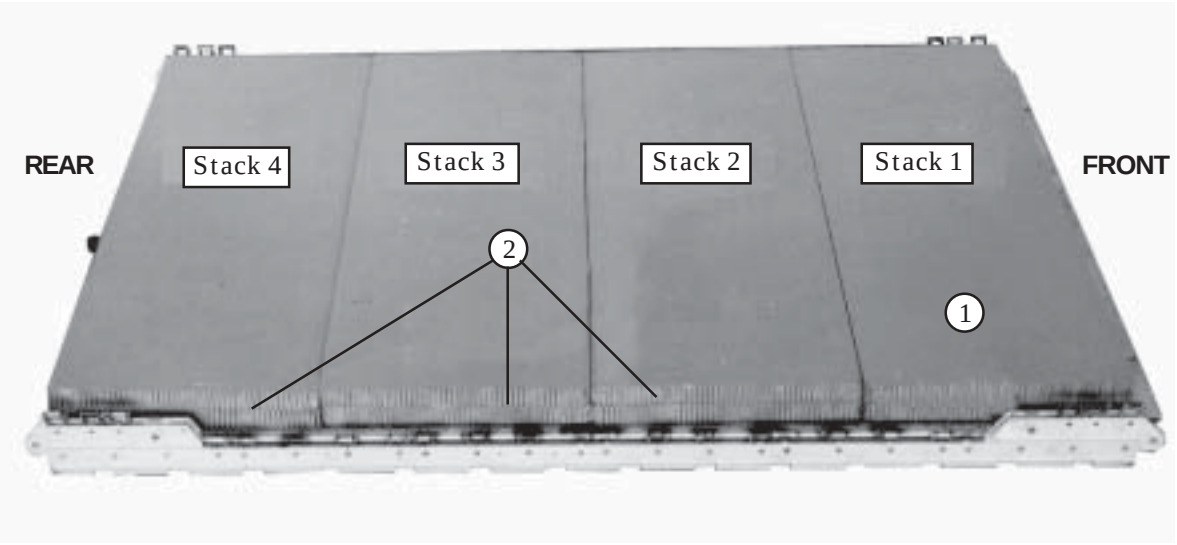
Steps:

1. Inspect, or assemble and inspect, the platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22.
2. Install a tandem link on the front of each platform side rail using holes 1, 2, and 3.
3. Install a tandem link on the rear of each platform side rail using holes 22, 23, and 24.
4. Install a tie-down clevis to bushings 1, 2, and 3 on each front tandem link.
5. Starting at the front of each platform side rail, install a tie-down clevis to the bushings bolted to holes 5, 6, 7, 9, 10, 11, 14, 15, 16, 17, 18, 19, 20, and 21.
6. Install a tie-down clevis to bushings 2, 3, and 4 on each rear tandem link.
7. Starting at the front of the platform, number the clevises bolted to the right side from 1 through 20 and those bolted to the left side from 1A through 20A.

Figure 1-1. Platform Prepared

PREPARING HONEYCOMB

1-3. Place eight 96- by 36-inch pieces of honeycomb on the platform as shown in Figure 1-2.



(1) Place two 96- by 36-inch pieces of honeycomb flush with the front edge of the platform.

(2) Place three more sets of 96- by 36-inch pieces of honeycomb against those placed in step 1 above.

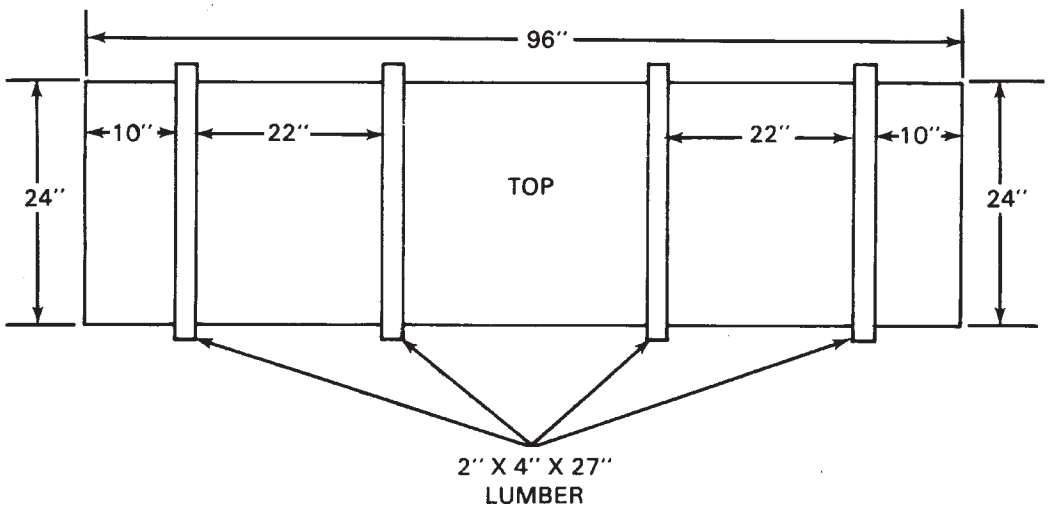
Figure 1-2. Honeycomb Placed on Platform

BUILDING CONTAINER FOR FARE

1-4. Build the container to stow the FARE as described below and as shown in Figure 1-3.

a. BUILDING TOP. Build the top for the container as shown in Figure 1-3.

Note: This drawing is not drawn to scale.



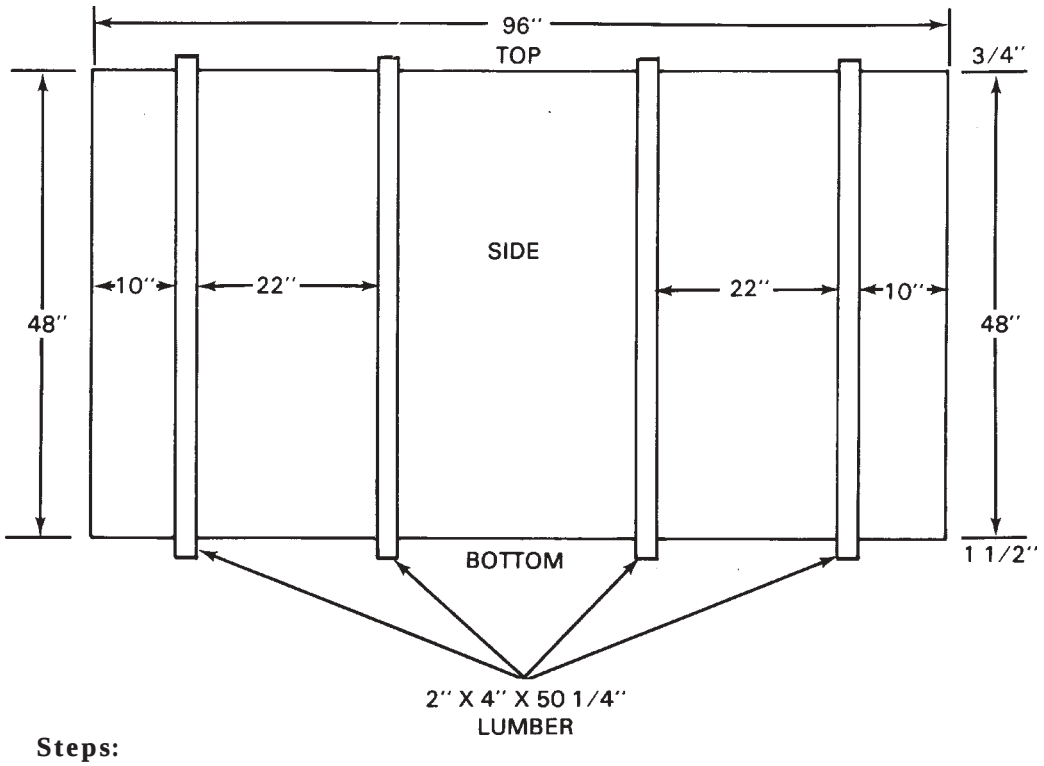
Steps:

1. Cut a 3/4- by 24- by 96-inch piece of plywood.
2. Cut four 2- by 4- by 27-inch pieces of lumber.
3. Place the 2- by 4-inch pieces of lumber so that they overhang on each side about 1 1/2 inches over the plywood.
4. Nail a 2- by 4-inch piece of lumber 10 inches from the 24-inch sides using eightpenny nails.
5. Nail a 2- by 4-inch piece of lumber 22 inches from the lumber placed in step 4 above using eightpenny nails.

Figure 1-3. Top for FARE Container Built

b. BUILDING SIDES. Build the sides for the container as shown in Figure 1-4.

Note: This drawing is not drawn to scale.



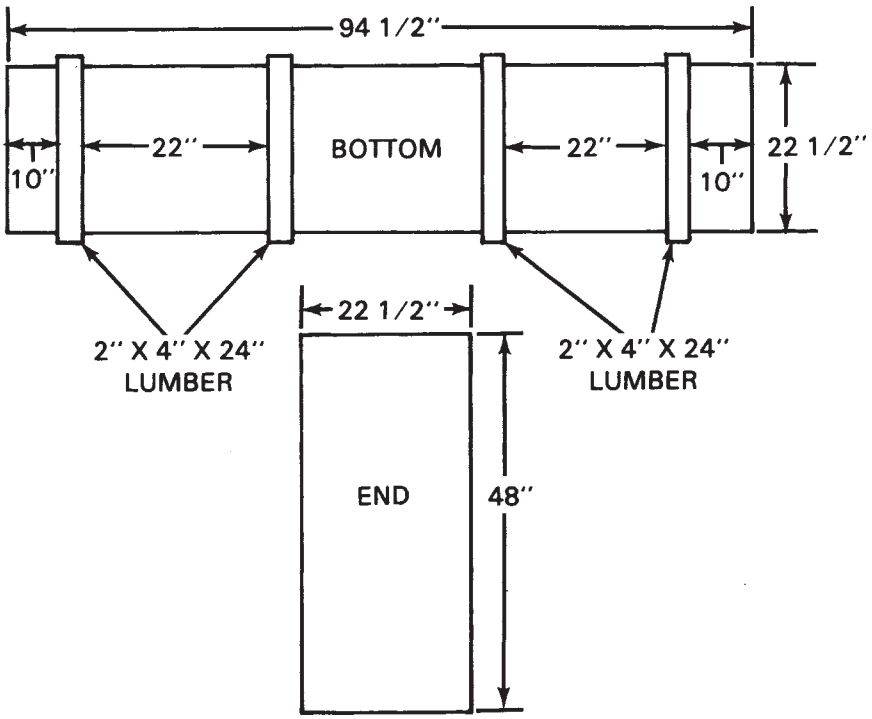
Steps:

1. Use two 3/4- by 48- by 96-inch pieces of plywood.
2. Cut eight 2- by 4- by 50 1/4-inch pieces of lumber.
3. Place the 2- by 4-inch pieces of lumber so that the top overhangs 3/4 inch and the bottom overhangs 1 1/2 inches over the plywood.
4. Nail a 2- by 4-inch piece of lumber 10 inches from the 48-inch sides using eightpenny nails.
5. Nail a 2- by 4-inch piece of lumber 22 inches from the lumber placed in step 4 above using eightpenny nails.

Figure 1-4. Sides for FARE Container Built

c. BUILDING BOTTOM AND ENDS. Build the bottom and ends for the container as shown in Figure 1-5.

Note: This drawing is not drawn to scale.

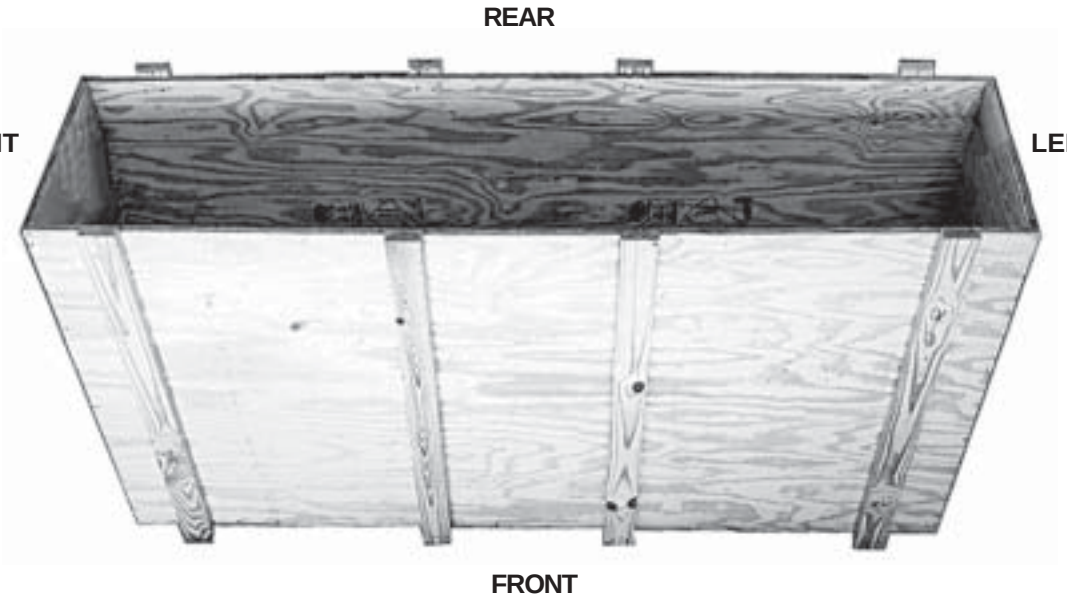


Steps:

1. Cut a 3/4- by 22 1/2- by 94 1/2-inch piece of plywood.
2. Cut four 2- by 4- by 24-inch pieces of lumber.
3. Place the 2- by 4-inch pieces of lumber so that they overhang 3/4 inch over the plywood.
4. Nail a 2- by 4-inch piece of lumber 10 inches from the 22 1/2-inch sides using eightpenny nails.
5. Nail a 2- by 4-inch piece of lumber 22 inches from the lumber placed in step 4 above using eightpenny nails.
6. Cut two 3/4- by 22 1/2- by 48-inch pieces of plywood to be used as end pieces.

Figure 1-5. Bottom and Ends for FARE Container Built

d. ASSEMBLING CONTAINER. Assemble the container for FARE as shown in Figure 1-6.



(1) Place the bottom piece (not shown) on the floor.

(2) Nail the end pieces to the bottom piece.

(3) Nail the side pieces so that the end pieces are inside the sides.

Note: Matching of the lumber is critical to ensure sturdiness.

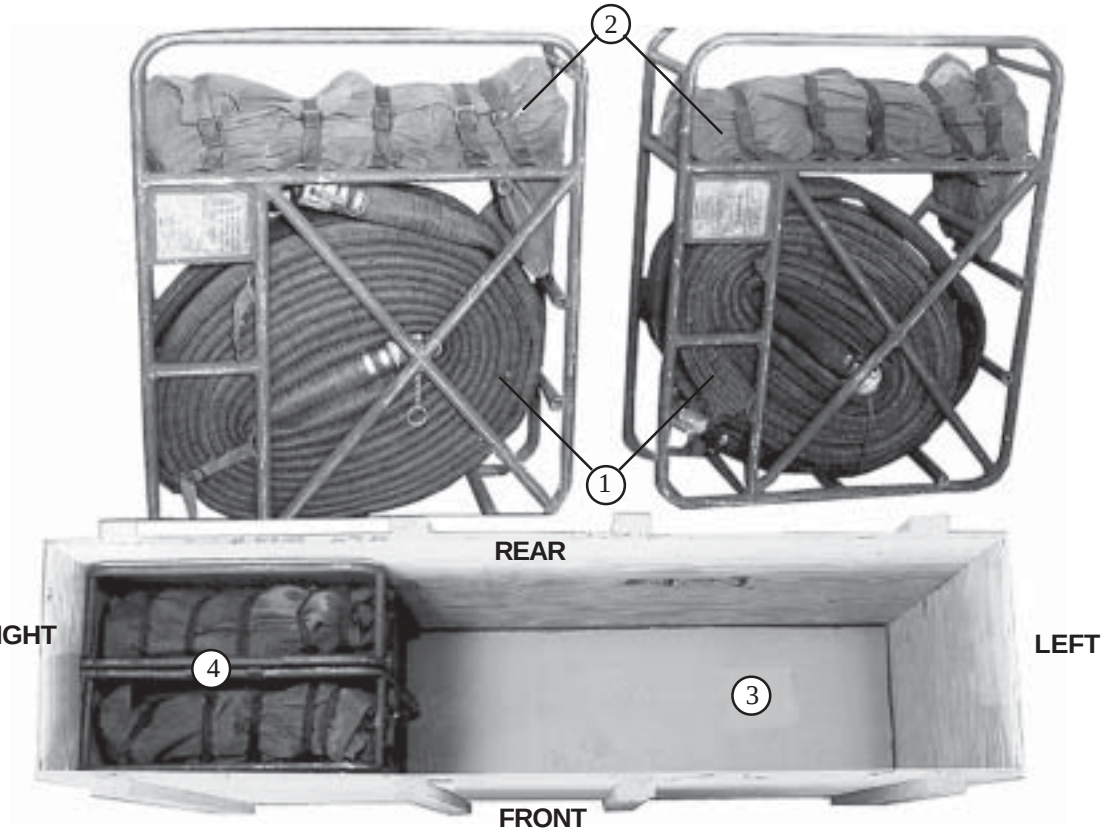
(4) Nail the pieces of lumber on the side pieces to the pieces of lumber on the bottom piece (not shown).

Figure 1-6. Container Assembled

PREPARING AND STOWING FARE IN CONTAINER

1-5. Prepare the components of the FARE and stow them in the container as described below.

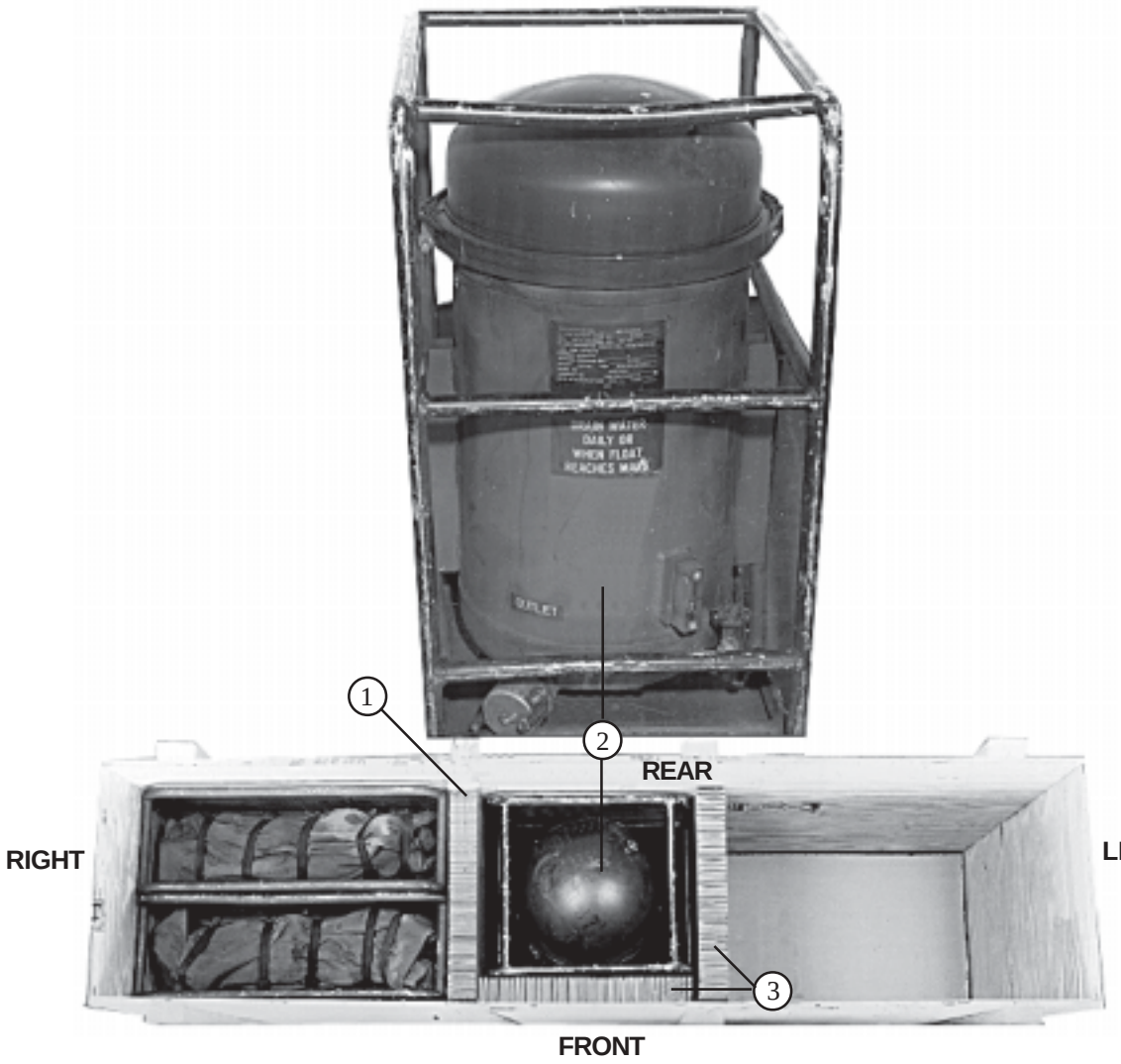
a. PREPARING DISCHARGE HOSE FRAME ASSEMBLY. Prepare the discharge hose frame assemblies, and stow them in the container as shown in Figure 1-7.



1. Roll the discharge hoses and place them in the discharge hose frame assemblies.
2. Place the discharge hose accessory fittings into the accessory fittings storage compartment.
3. Place a 22- by 94-inch piece of honeycomb in the bottom of the container.
4. Place the two discharge hose frame assemblies in the right side of the container.

Figure 1-7. Discharge Hose Frame Assemblies Prepared and Stowed

b. PREPARING FILTER/SEPARATOR ASSEMBLY. Prepare the filter/ separator assembly and stow it in the container as shown in Figure 1-8.



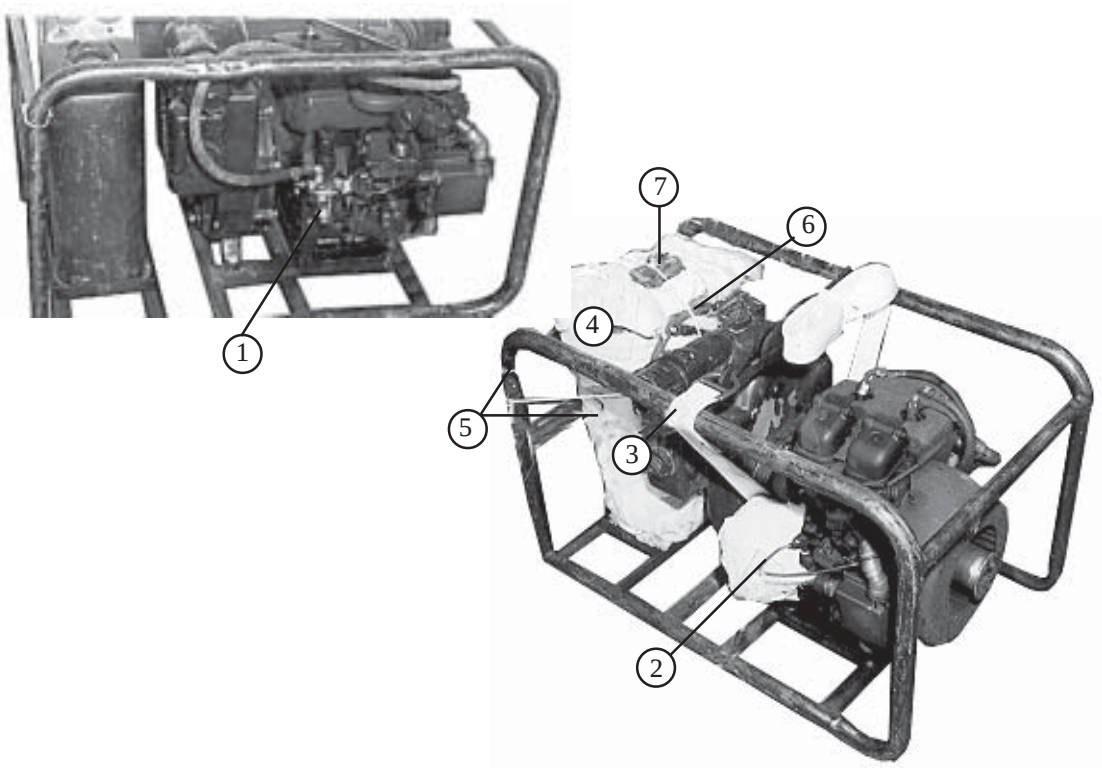
1. Place a 22- by 36-inch piece of honeycomb against the discharge hose frame assemblies.

2. Place the filter/separator assembly in the frame against the rear of the container and flush against the honeycomb placed in step 1 above.

3. Use two 22- by 36-inch pieces of honeycomb. Place one piece in front of the filter/separator assembly frame and another against the left side of the filter/ separator assembly frame.

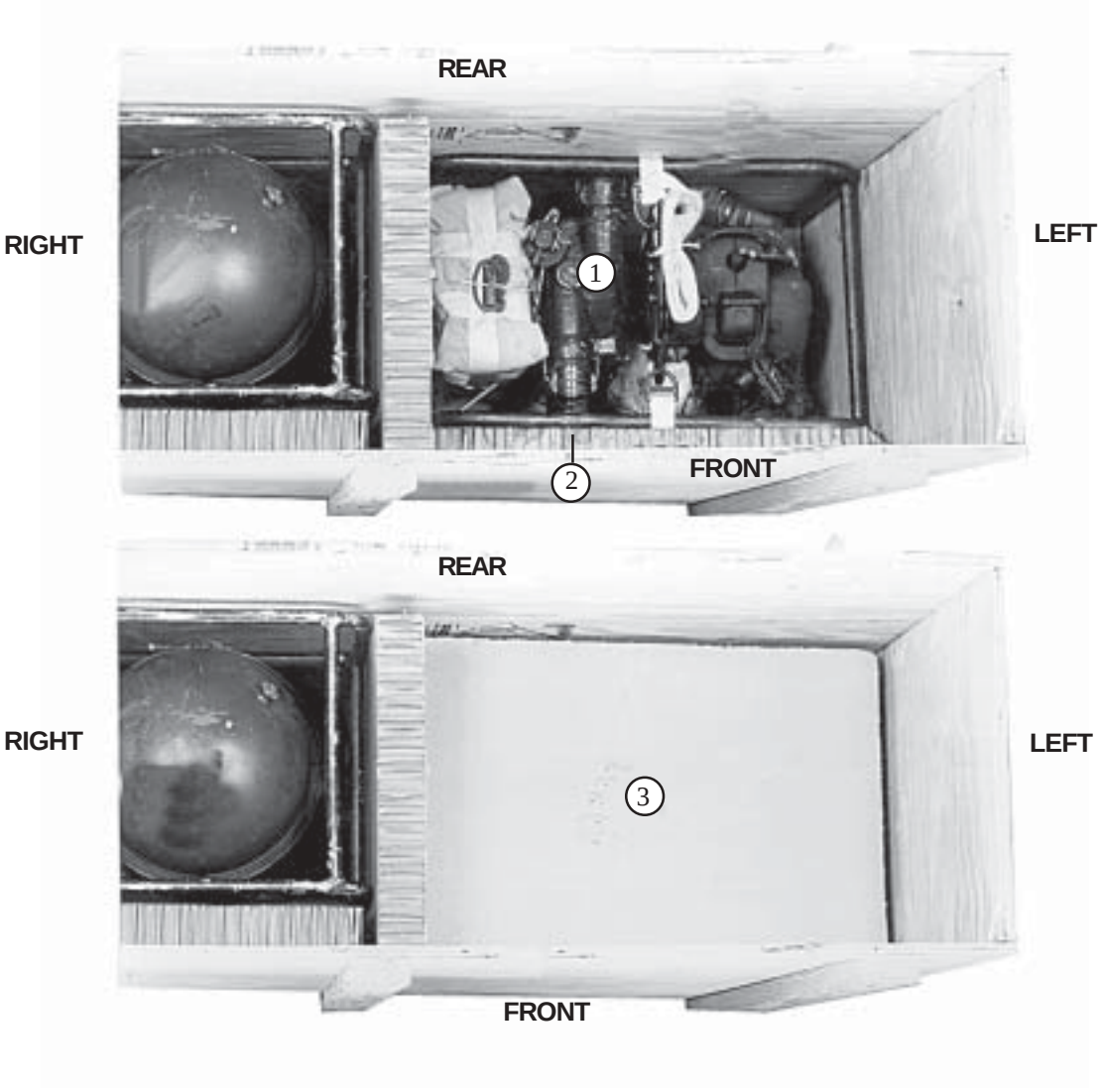
Figure 1-8. Filter/Separator Assembly Prepared and Stowed

c. PREPARING PUMP/ENGINE ASSEMBLY. Prepare the pump/engine assembly for stowing as shown in Figure 1-9 and stow it in the container as shown in Figure 1-10.



1. Remove and drain the liquid from the fuel filter.
2. Replace the filter and wrap it with cellulose wadding. Tape the wadding in place.
3. Pass a 15-foot lashing between the pump and engine. Secure the ends with a D-ring and a load binder on top of the engine assembly frame.
4. Wrap a 5-gallon fuel can with cellulose wadding. Tape the wadding in place.
5. Set the can inside the engine assembly frame. Secure it in place with the retainer lashings or a length of type III nylon cord.
6. Secure the fuel line to the fuel can using a length of type III nylon cord.
7. Secure the starting rope to the top of the fuel can with a length of type III nylon cord.

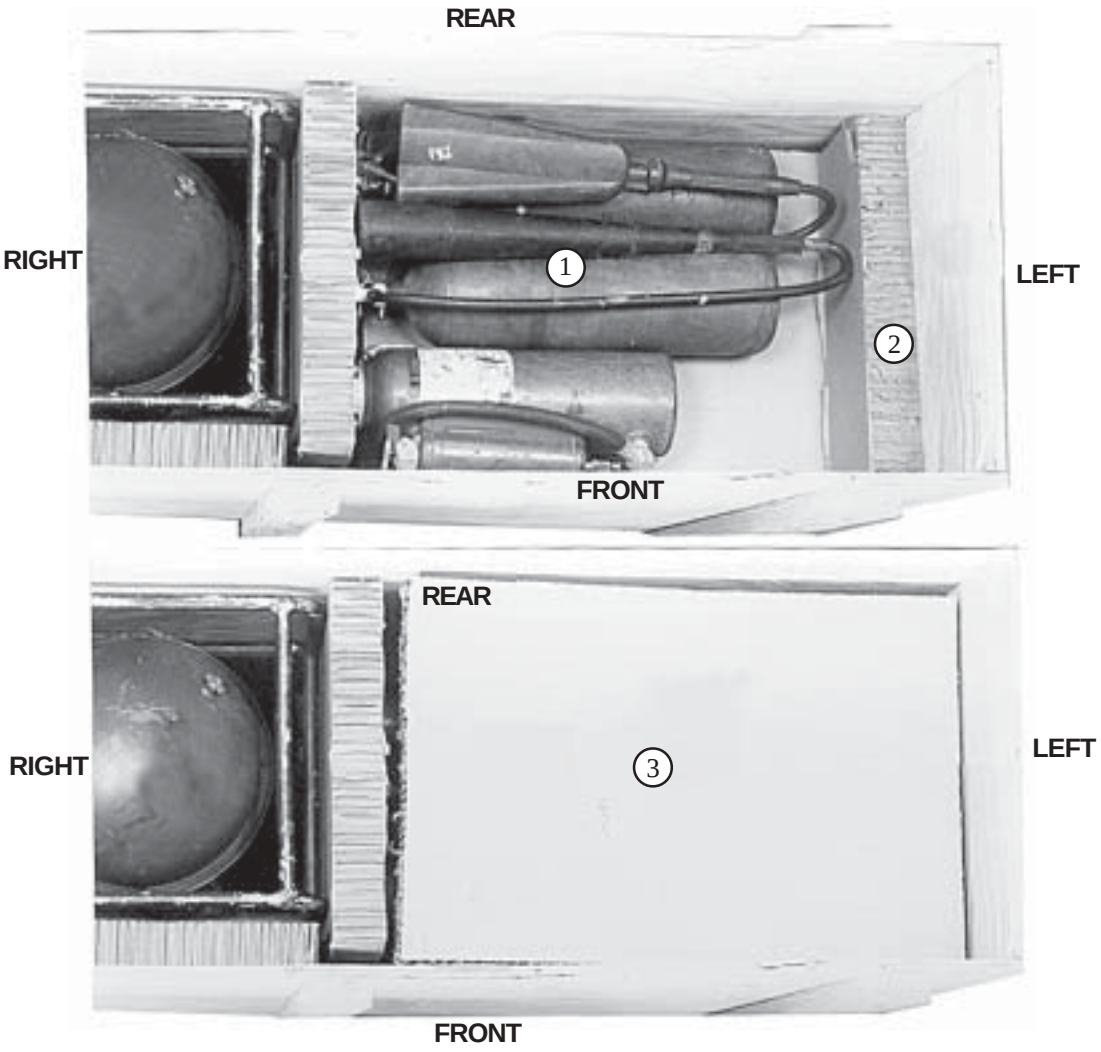
Figure 1-9. Pump/Engine Assembly Prepared



1. Place the pump/engine assembly into the left side of the container.
2. Place a 22- by 32-inch piece of honeycomb between the pump/engine assembly and the front of the container.
3. Place another 22- by 32-inch piece of honeycomb over the pump/engine assembly.

Figure 1-10. Pump/Engine Assembly Stowed

d. STOWING FIRE EXTINGUISHERS. Stow the fire extinguishers in the container as shown in Figure 1-11.



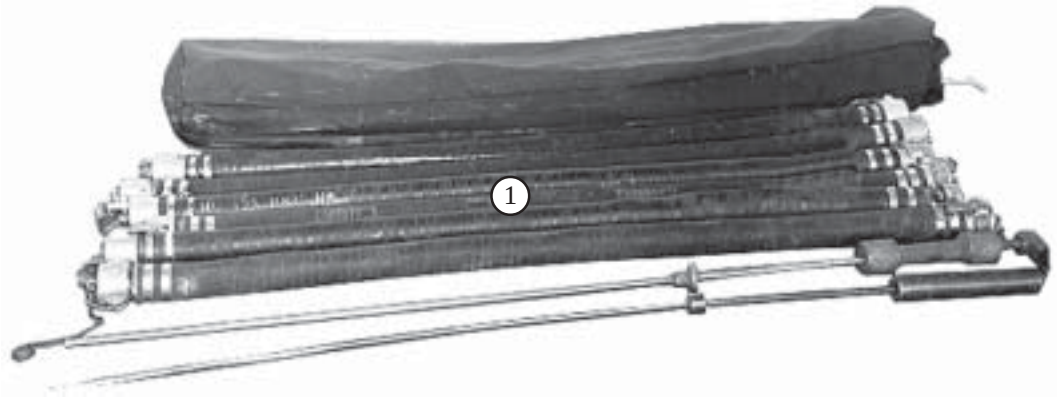
(1) Place three fire extinguishers on the 22- by 32-inch piece of honeycomb.

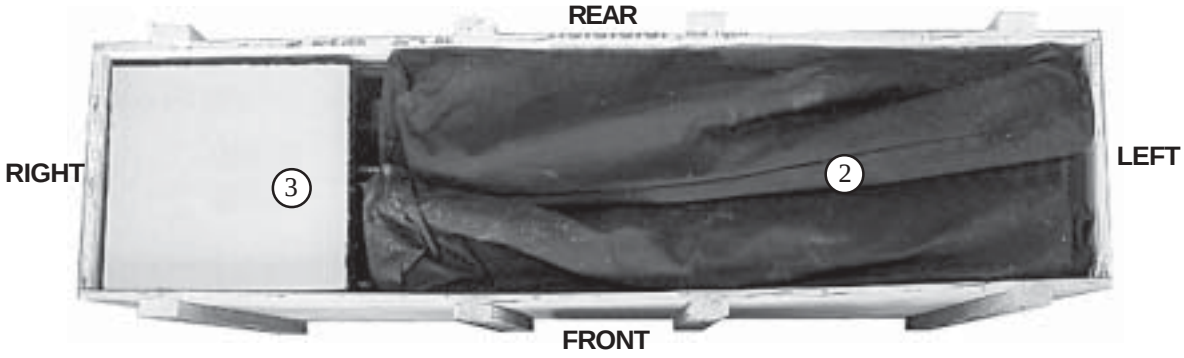
(2) Place an 8- by 22-inch piece of honeycomb between the fire extinguishers and the left side of the container.

(3) Cover the fire extinguishers with a 22- by 32-inch piece of honeycomb.

Figure 1-11. Fire Extinguishers Stowed

e. PREPARING AND STOWING GROUND RODS, SUCTION HOSES, AND SUCTION HOSE BAGS. Prepare the ground rods, suction hoses,and suction hose bags for stowing. Stow the suction hose bags in the container as shown in Figure 1-12.





(1) Place two ground rods and six suction hoses into each suction hose bag.

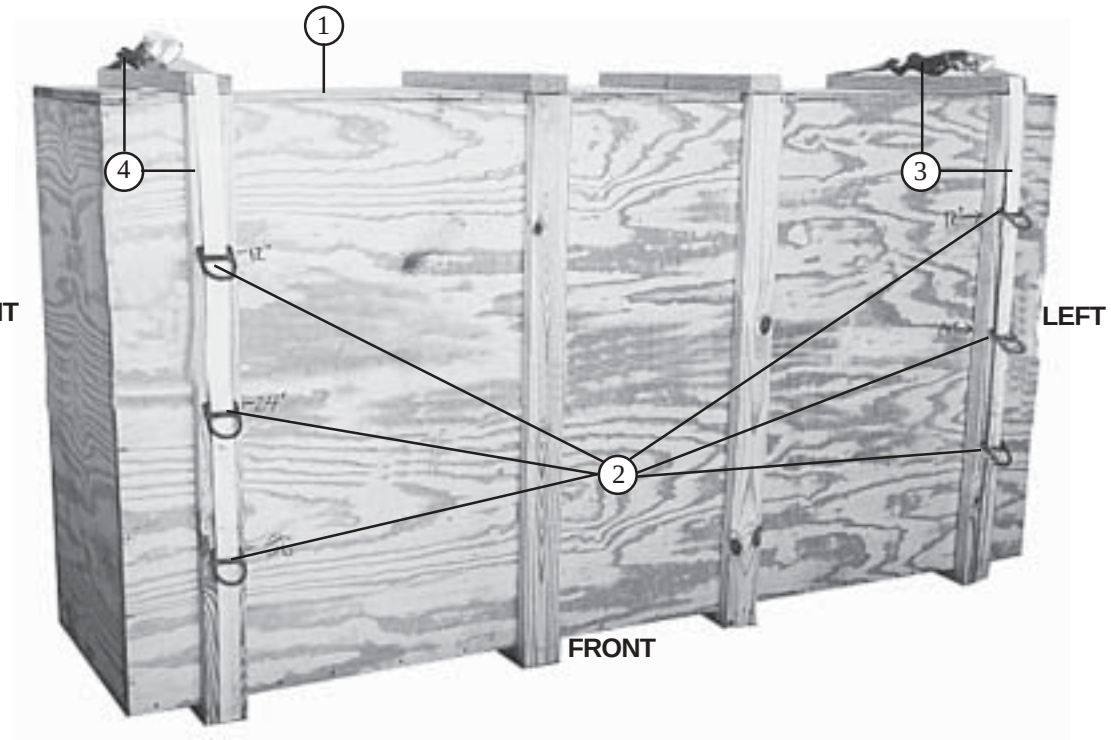
(2) Place the two suction hose bags into the left side of the container.

(3) Place a 22- by 23-inch piece of honeycomb between the suction hose bags and the right side of the container.

Figure 1-12. Ground Rods, Suction Hoses, and Bags Prepared and Stowed

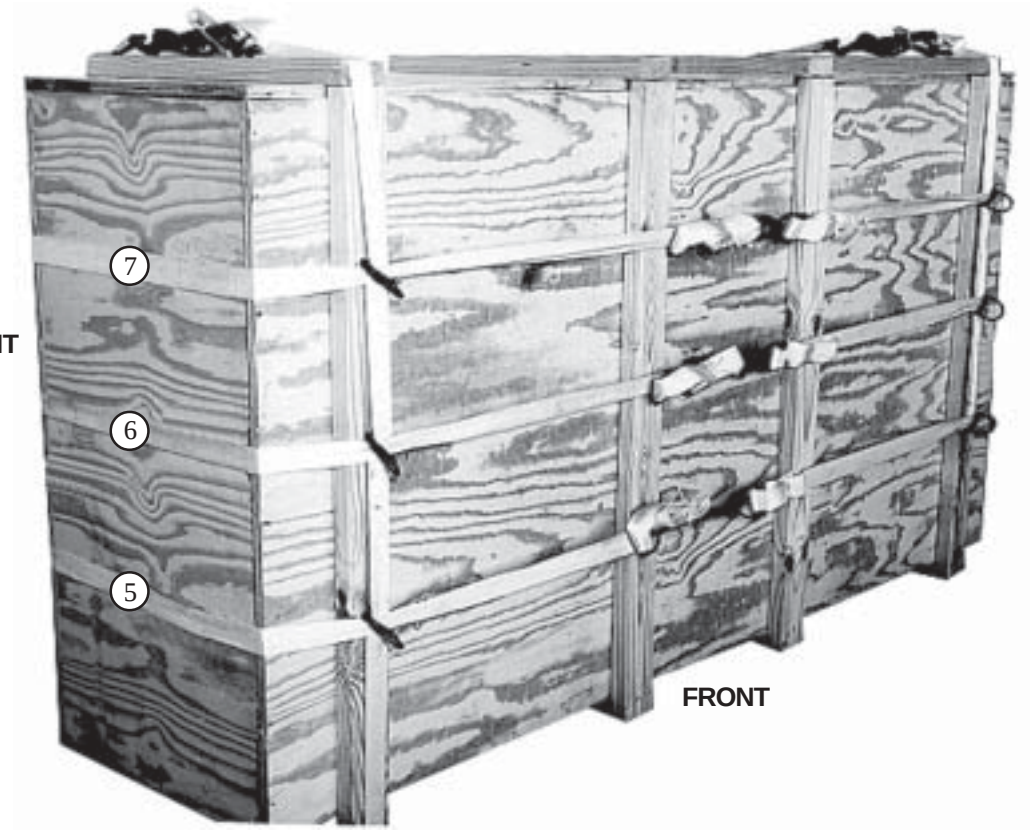
SECURING CONTAINER

1-6. Use ten 15-foot tie-down assemblies to secure the container as shown in Figure 1-13.



1. Set the top (built in Figure 1-3) on the container.
2. Starting at the top of the container, mark 12 inches, 24 inches, and 36 inches along the 2- by 4-inch pieces of lumber on each end of the container. Repeat for the rear of the container.
3. Slide six D-rings on a 30-foot lashing. Run the lashing around the 2- by 4-inch pieces of lumber on the left side of the container. Position a pre-positioned D-ring at the 12-inch, 24-inch, and 36-inch marks on the front and rear of the container. Secure the lashing according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 on top of the container.
4. Repeat step 3 above on the right side of the container. Secure the lashing according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 on top of the container.

Figure 1-13. Container Secured



(5) Form one 30-foot lashing according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. At the 36-inch mark, pass one end of the lashing around the left side of the container through the small opening of the D-ring. Repeat this procedure for the right side of the container. Secure the lashing with a D-ring and a load binder according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 to the front of the container.

(6) Repeat step 5 above at the 24-inch mark.

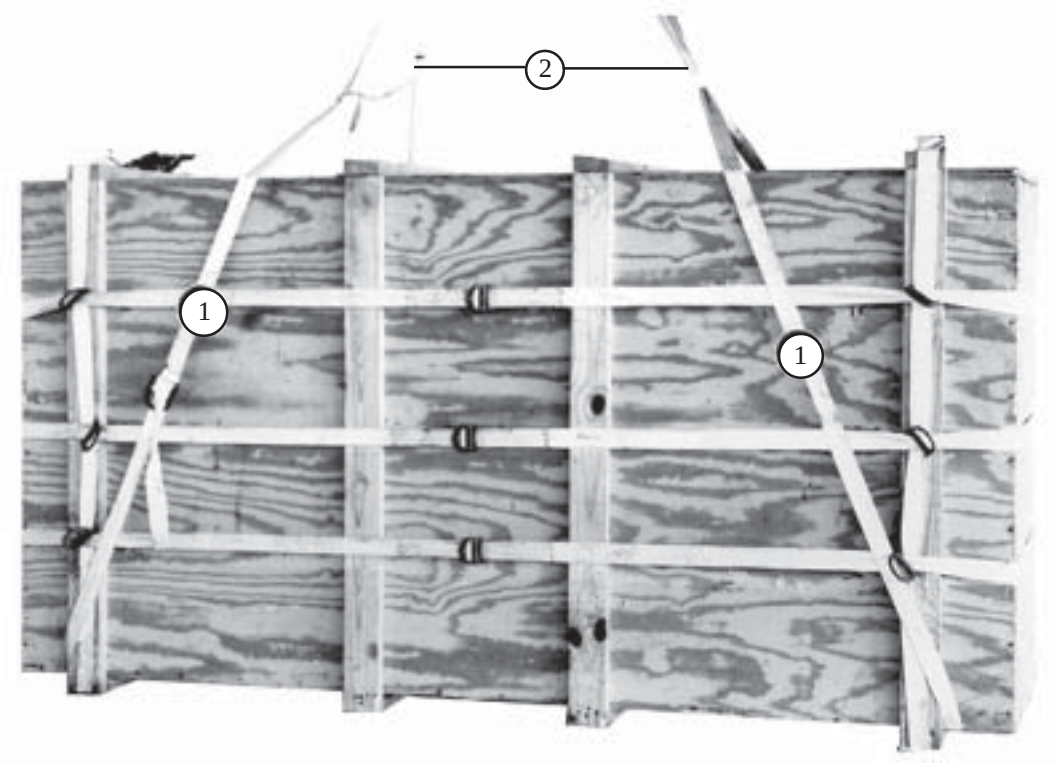
(7) Repeat step 5 above at the 12-inch mark.

Figure 1-13. Container Secured (continued)

POSITIONING AND LASHING CONTAINER

1-7. Position the container and lash it to the platform as described below.

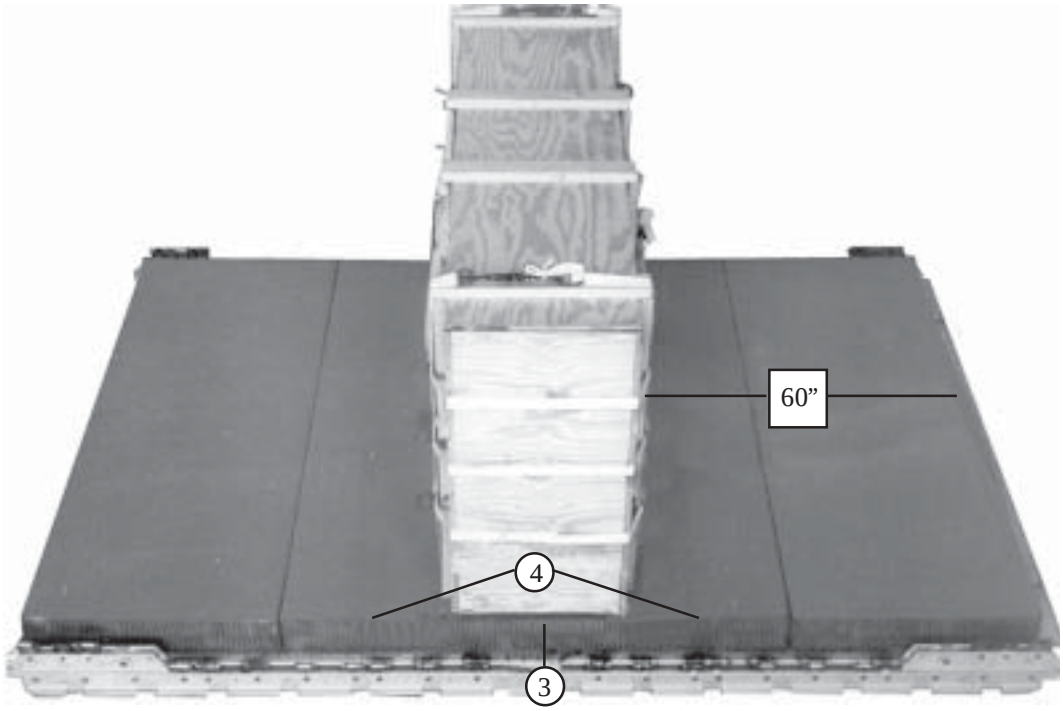
a. POSITIONING CONTAINER. Position the container on the platform as shown in Figure 1-14.



(1) Pass one 15-foot lashing around each end of the container.

(2) Pass the running end through it's own D-ring and secure with two half hitches forming an apex.

Figure 1-14. Container Positioned



(3) Place an 11 1/4-inch mark on both sides on the bottom of the container.

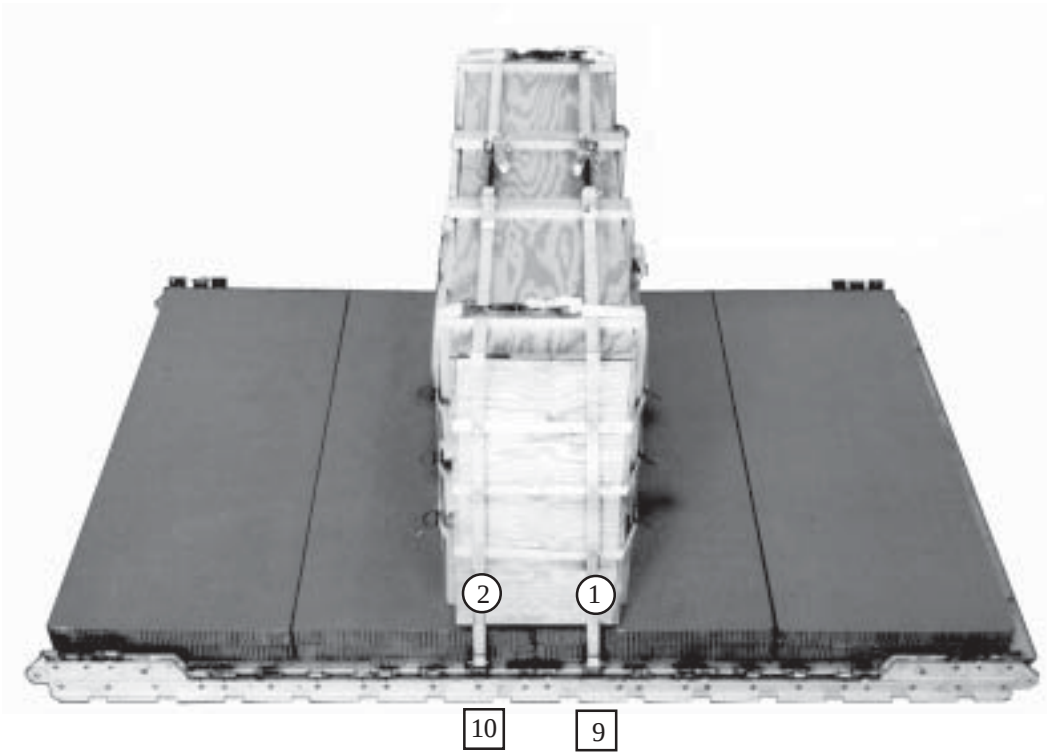
(4) Center the centering marks between honeycomb stacks 2 and 3.

(5) Lift and center the container between honeycomb stacks 2 and 3 (not shown).

(6) Make sure the front of the container is 60 inches from the front edge of honeycomb stack 1.

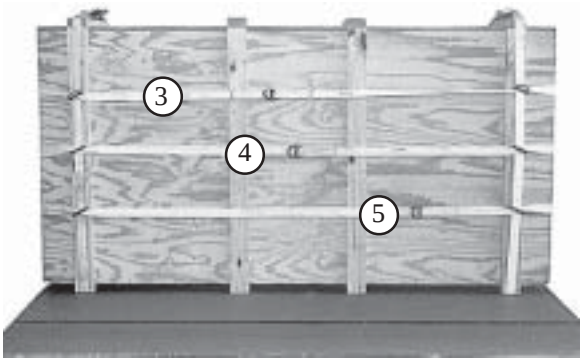
Figure 1-14. Container Positioned (continued)

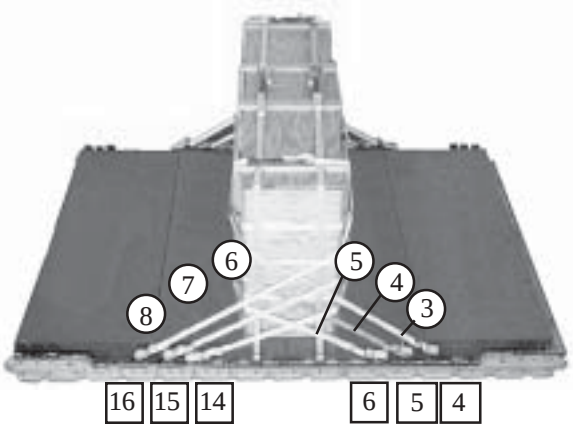
b. LASHING CONTAINER. Use sixteen 15-foot tie-down assemblies to lash the container to the platform as outlined in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 1-15.



Lashing Number	Tie-down Clevis Number	Instructions
		Pass lashing:
1	9	Through clevis and back through its own D-ring.
	9A	Through clevis and back through its own D-ring. Fasten lashing on top of the container with two D-rings and a load binder.
2	10	Through clevis and back through its own D-ring.
	10A	Through clevis and back through its own D-ring. Fasten lashing on top of the container with two D-rings and a load binder.

Figure 1-15. Container Lashed to Platform





Lashing Number	Tie-down Clevis Number	Instructions
		Pass lashing:
3	4 and 4A	Around the rear of the container using the top row of D-rings.
4	5 and 5A	Around the rear of the container using the middle row of D-rings.
5	6 and 6A	Around the rear of the container using the bottom row of D-rings.
6	14 and 14A	Around the front of the container using the bottom row of D-rings.
7	15 and 15A	Around the front of the container using the middle row of D-rings.
8	16 and 16A	Around the front of the container using the top row of D-rings.

Figure 1-15. Container Lashed to Platform (continued)

ATTACHING LIFTING SLINGS

1-8. Attach the lifting slings to each fuel drum using four clevises and two 9-foot (2-loop), type XXVI nylon webbing slings as shown in Figure 1-16.

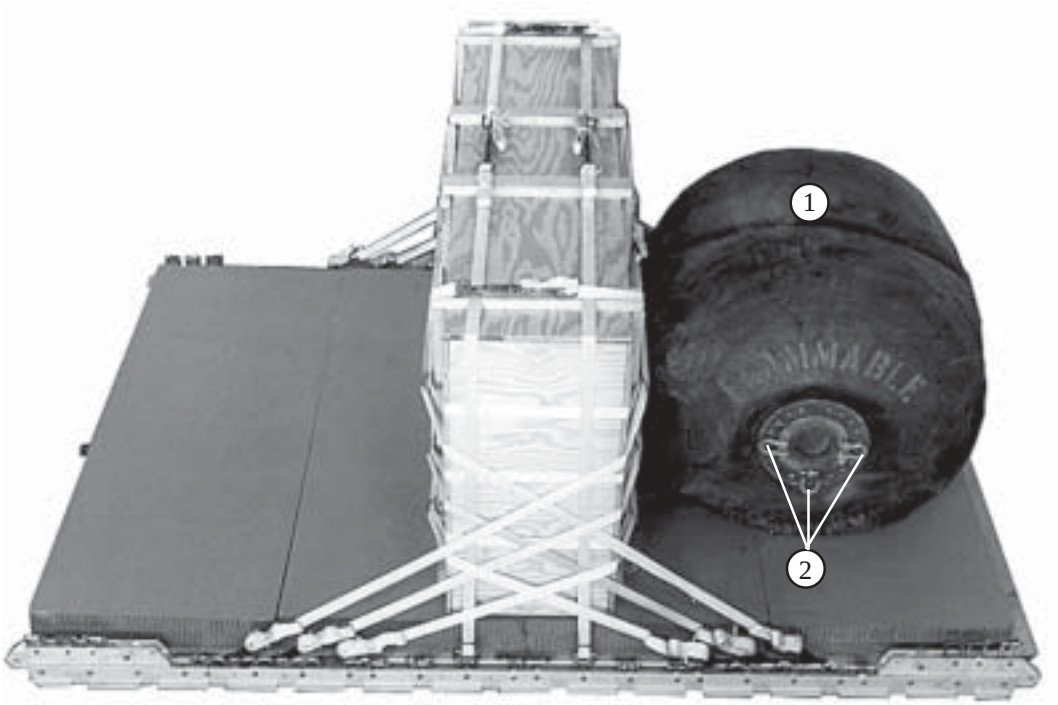
1. Bolt a clevis to the center shackle of the swivel plate.
2. Route a clevis through the center clevis bolted to the shackle. Bolt the clevis to a 9-foot sling.
3. Repeat steps 1 and 2 on the opposite side of the fuel drum and for the remaining fuel drum (not shown).

Figure 1-16. Lifting Slings Installed

PLACING AND LASHING FUEL DRUMS

1-9. Place and lash the fuel drums on the platform as described below.

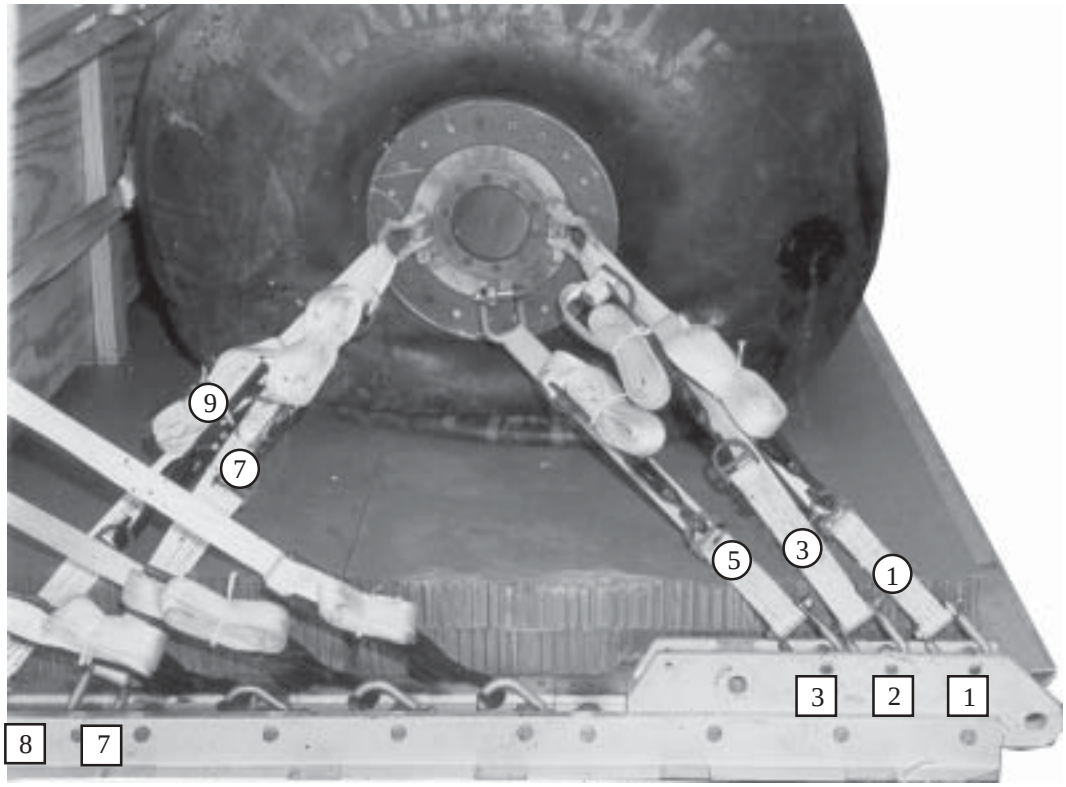
a. FRONT FUEL DRUM. Place the front fuel drum on the platform as shown in Figure 1-17. Lash the front fuel drum to the front of the platform as shown in Figure 1-18. Secure the ends of the lashings with a D-ring and a load binder according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.



(1) Center the drum on the front of the platform. Place the drum flush against the container.

(2) Remove the lifting slings (not shown). Make sure the shackles on the drums are parallel to the platform and the center clevis is in the bottom position.

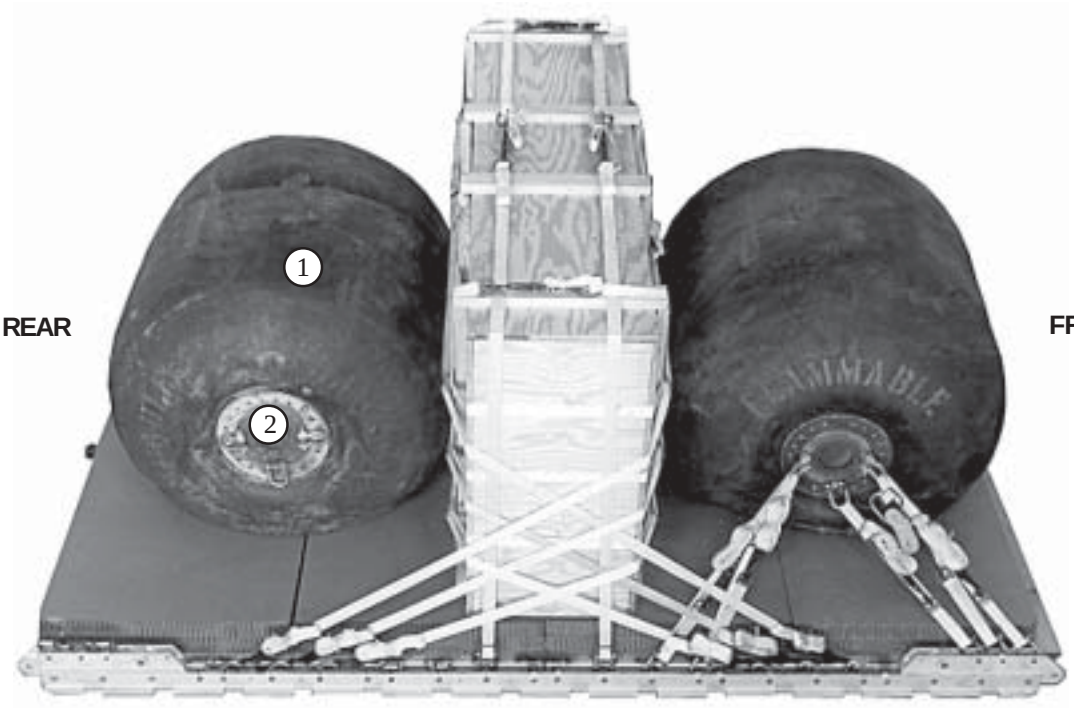
Figure 1-17. Front Fuel Drum Placed on Platform



Lashing Number	Tie-down Clevis Number	Instructions
		Pass lashing:
1	1	Through right front shackle.
2	1A	Through left front shackle.
3	2	Through right front shackle.
4	2A	Through left front shackle.
5	3	Through right center clevis.
6	3A	Through left center clevis.
7	7	Through right rear shackle.
8	7A	Through left rear shackle.
9	8	Through right rear shackle.
10	8A	Through left rear shackle.

Figure 1-18. Front Drum Lashed to Platform

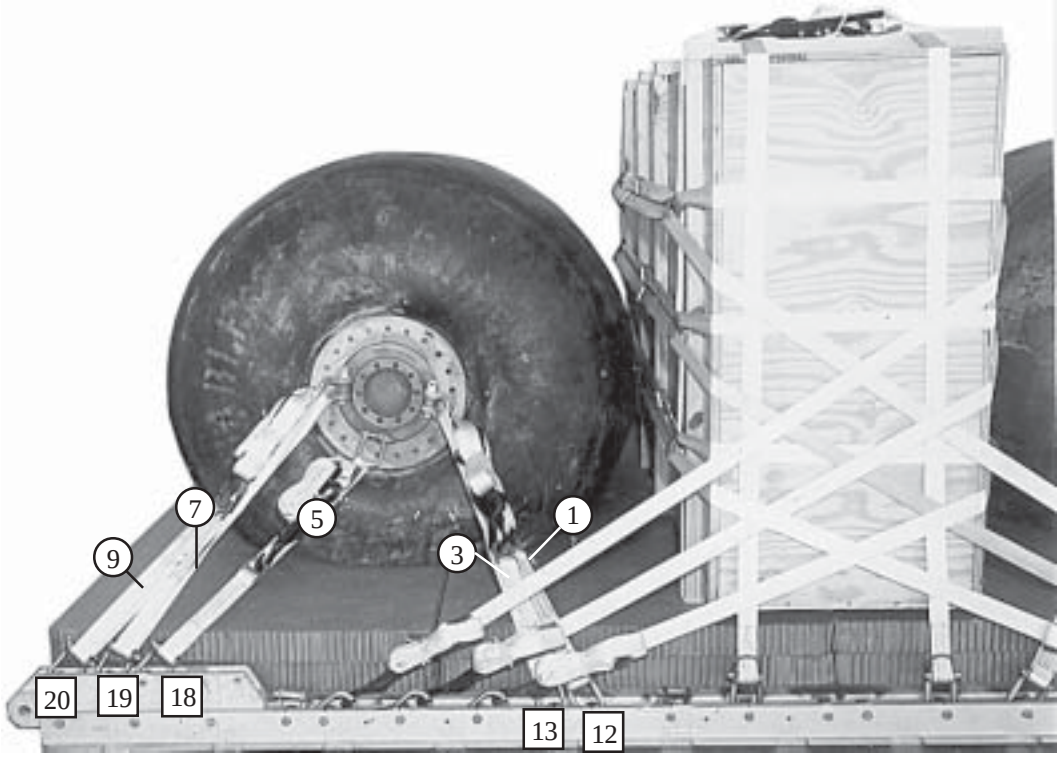
b. REAR FUEL DRUM. Place the rear fuel drum on the platform as shown in Figure 1-19. Lash the rear fuel drum to the rear of the platform as shown in Figure 1-20. Secure the ends of the lashings with a D-ring and a load binder according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/ TO 13C7-1-5.



(1) Center the drum on the rear of the platform. Place it flush against the container.

(2) Remove the lifting slings (not shown). Make sure the shackles on the drums are parallel to the platform and the center clevis is in the bottom position.

Figure 1-19. Rear Fuel Drum Placed on Platform

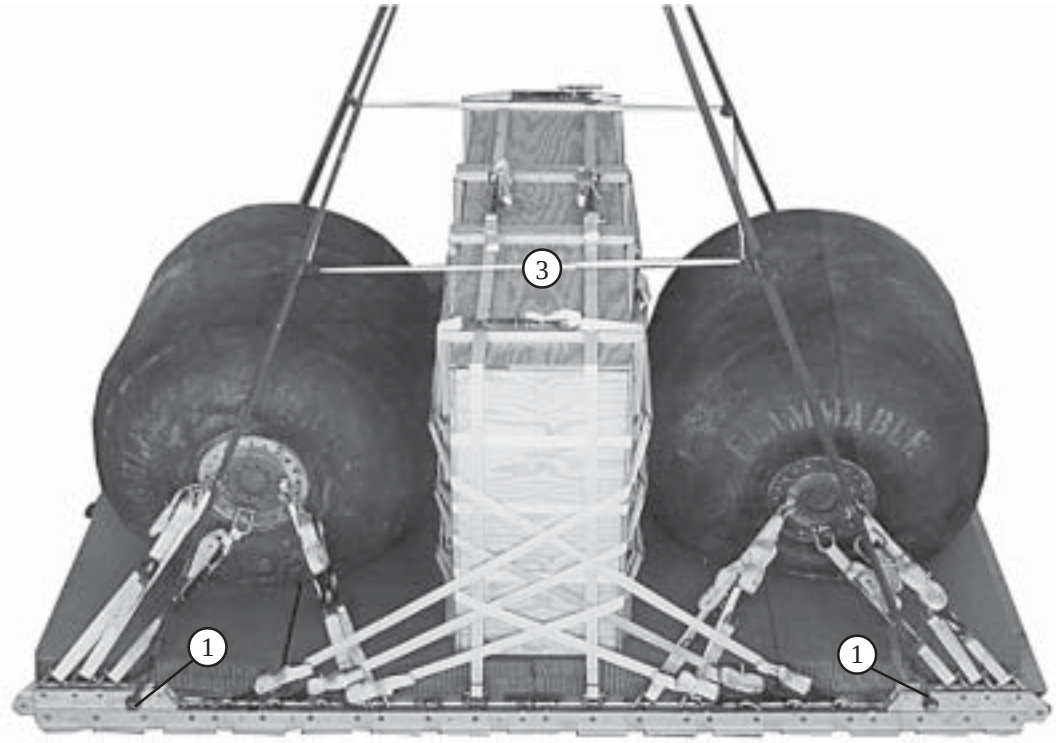


Lashing Number	Tie-down Clevis Number	Instructions
		Pass lashing:
1	12	Through right front shackle.
2	12A	Through left front shackle.
3	13	Through right front shackle.
4	13A	Through left front shackle.
5	18	Through right center clevis.
6	18A	Through left center clevis.
7	19	Through right rear shackle.
8	19A	Through left rear shackle.
9	20	Through right rear shackle.
10	20A	Through left rear shackle.

Figure 1-20. Rear Fuel Drum Lashed to Platform

INSTALLING SUSPENSION SLINGS

1-10. Install four large suspension clevises and four 12-foot (2-loop), type XXVI nylon webbing slings to the tandem links as shown in Figure 1-21.



(1) Bolt a 12-foot sling to each tandem link using a large suspension clevis.

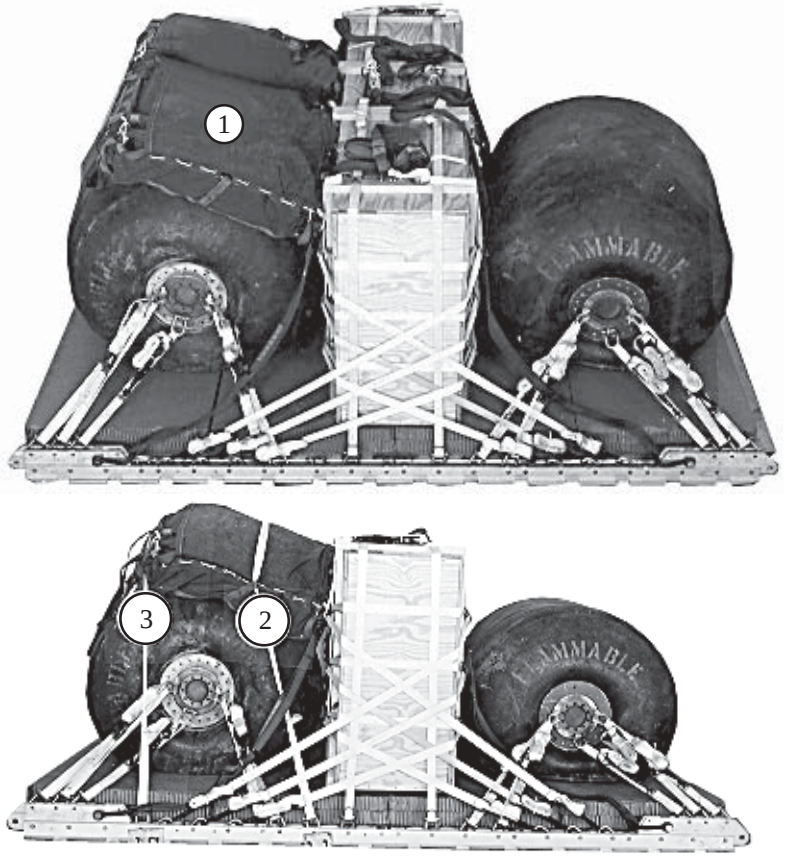
(2) Raise the suspension slings to their full length using a lifting provision (not shown).

(3) Safety the slings with a deadman's tie according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

Figure 1-21. Suspension Slings Installed

STOWING CARGO PARACHUTES

1-11. Prepare, place, and restrain two G-11 cargo parachutes according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 1-22.



(1) Place the cargo parachutes on top of the rear fuel drum.

CAUTION

As an exception to the FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 parachute restraint system, two restraint streaps will be used on this load.

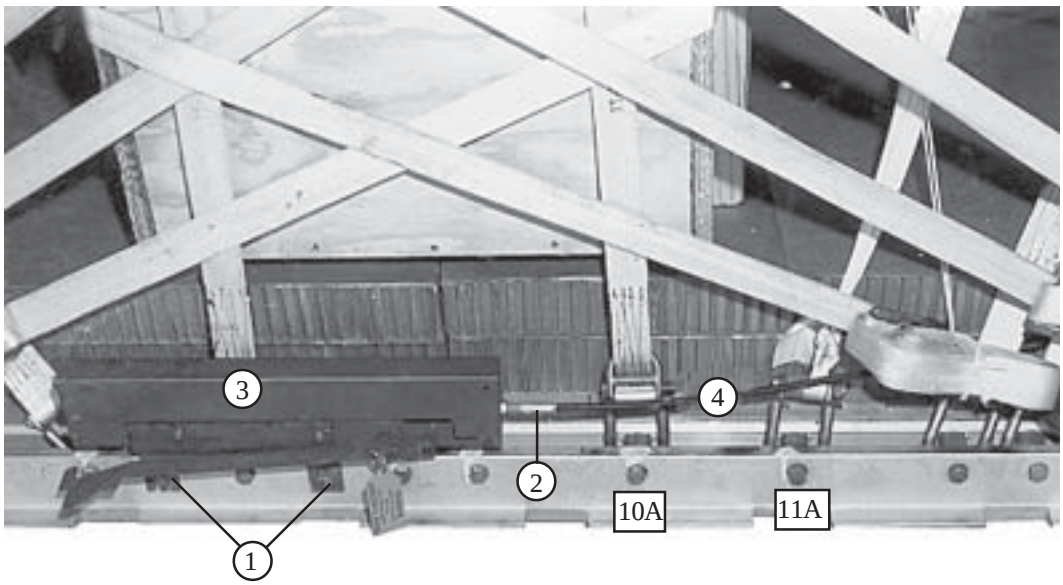
(2) Secure the parachutes according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 using two lengths of type VIII nylon webbing. Attach one length of webbing from clevises 11 and 11A using a trucker's hitch according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

(3) Attach the second length of webbing from clevises 17 and 17A using a trucker's hitch according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

Figure 1-22. Cargo Parachutes Stowed

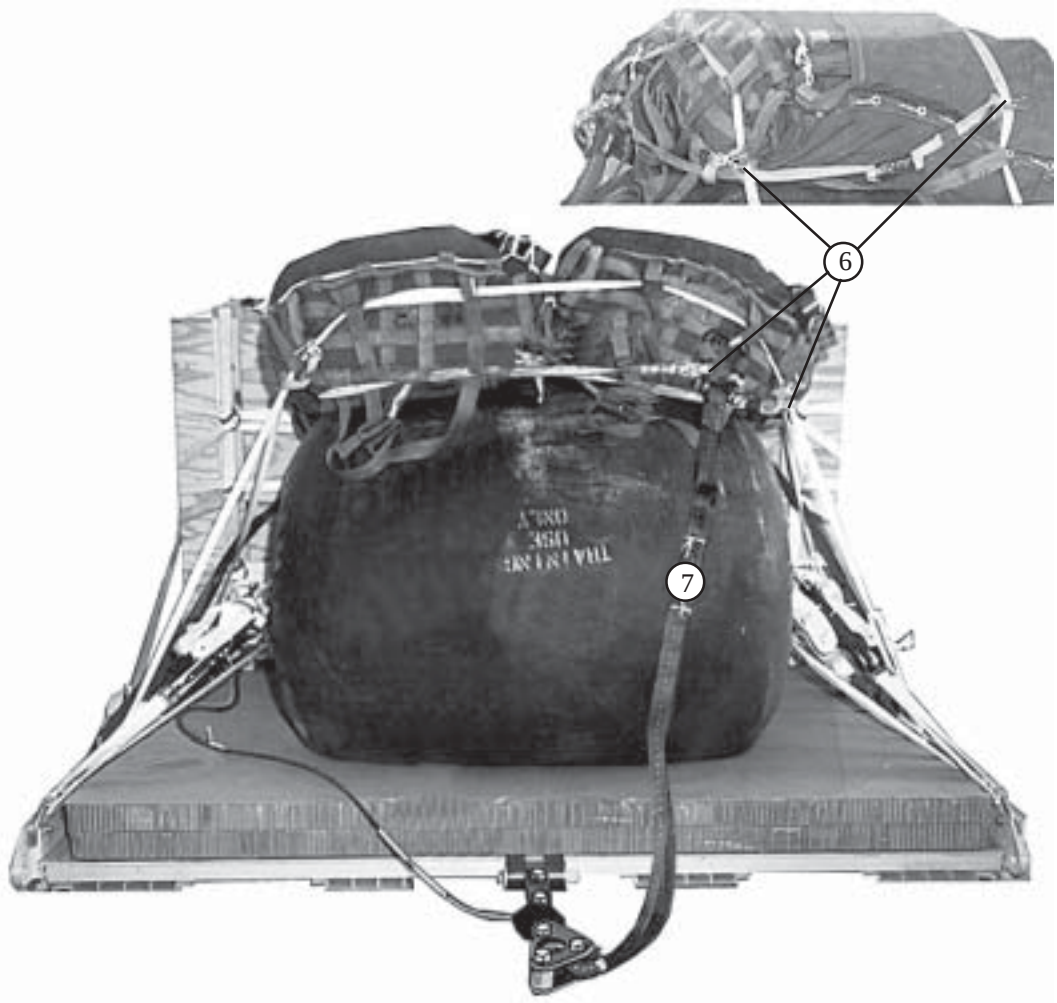
INSTALLING EXTRACTION SYSTEM

1-12. Install the Extraction Force Transfer Coupling (EFTC) extraction system according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 1-23.



1. Install the actuator mounting brackets to the rear EFTC mounting holes on the left side rail.
2. Install a 12-foot cable to the actuator assembly.
3. Attach the actuator assembly to the mounting brackets.
4. Route the cable from the actuator assembly between clevises 11A and 12A toward the rear of the platform.

Figure 1-23. Extraction System Installed



(5) Safety the 12-foot cable to lashing 18A with a piece of type I, 1/4-inch cotton webbing (not shown).

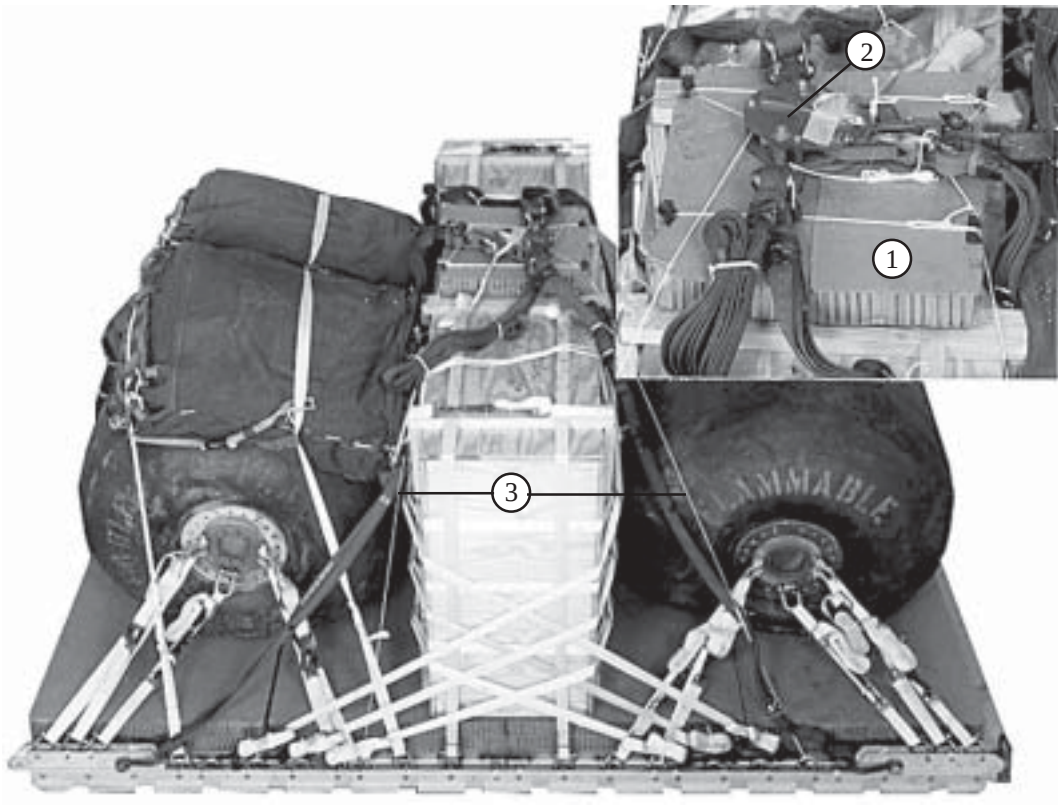
(6) Cluster the parachute bridles on a large clevis, and install the release knives according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

(7) Use a 9-foot (2-loop), type XXVI nylon webbing sling for the deployment line.

Figure 1-23. Extraction System Installed (continued)

INSTALLING PARACHUTE RELEASE SYSTEM

1-13. Prepare and attach an M-1 cargo parachute release according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 1-24.



(1) Place a 24- by 24-inch piece of honeycomb on top of the container.

(2) Place the M-1 cargo parachute release on top of the honeycomb and attach it according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

(3) Secure the M-1 cargo parachute release according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 with a length of type III nylon cord to clevises 4, 4A, 12, and 12A.

Figure 1-24. Parachute Release Attached

PLACING EXTRACTION PARACHUTE

1-14. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Rig the extraction line in an extraction line bag according to TM 10-1670-286-20/TO 13C5-2-41. Place the extraction parachute and extraction line on the load for installation in the aircraft.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

1-15. Select and install the provisions for emergency aft restraints according to the emergency aft restraint requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

MARKING RIGGED LOAD

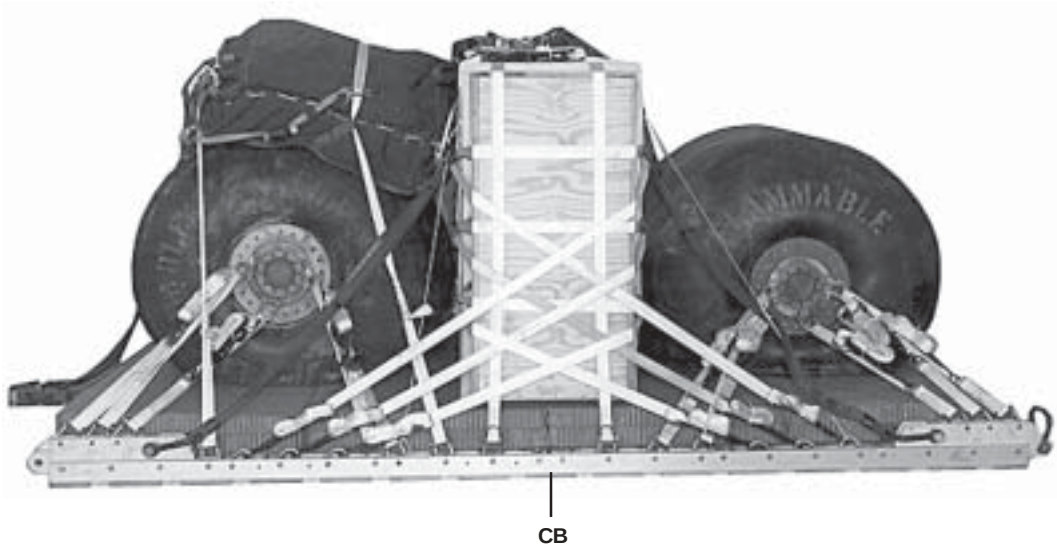
1-16. Mark the rigged load according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 1-25. Complete Shipper's Declaration for Dangerous Goods and affix to the load. If the load varies from the one shown, the weight, height, CB, tipoff curve, and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

1-17. Use the equipment list in Table 1-2 to rig the load shown in Figure 1-25.

CAUTION:

Make the final inspection required by FM 4-20.102/ NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



RIGGED LOAD DATA

Weight	**9,107 pounds**
Maximum Weight	**10,500 pounds**
Height	**70 inches**
Width	**108 inches**
Overall Length	**162 inches**
Overhang: Front	**0 inches**
Rear (EFTC)	**18 inches**
Center of Balance (CB) (from front edge of platform)	**72 inches**
Extraction System	**EFTC**

Figure 1-25. FARE with Two 500-Gallon Fuel Drums Rigged for Low-Velocity Airdrop

Table 1-2 Equipment Required for Rigging FARE with Two 500-Gallon Fuel Drums for Low-Velocity Airdrop

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive, paste, 1-gal	As required
1670-01-035-6054	Bridle, extraction line bag (for DES)	1
4030-00-090-5354	Clevis, large	5
4030-00-678-8562	Clevis, medium	4
8305-00-880-8155	Cloth coated, green, 60-inch	As required
4020-00-240-2146	Cord, nylon, type III, 550-lb	As required
1670-00-434-5783	Coupling, airdrop, extraction force transfer with cable, 12-ft	1
1670-00-360-0328	Cover, Clevis, large	1
8135-00-664-6958	Cushioning material, packaging, cellulose wadding	As required
5365-00-937-0147	D-ring, heavy-duty, 10,000-lb	16
8305-00-958-3685	Felt, 1/2-in thick	As required
1670-00-003-4391	Knife, parachute bag (for DES)	1
1670-01-183-2678	Leaf, extraction line (line bag)(add 2 for DES)	2
	Line, drogue (for DES)	
1670-01-064-4452	60-ft (1-loop), type XXVI	1
	Line, extraction:	1
1670-01-062-6313		1
1670-01-107-7651	For C-141: 140-ft (3-loop), type XXVI	
	For C-5:	1
1670-01-062-6313	60-ft, (3-loop), type XXVI and	1
1670-01-107-7651	140-ft (3-loop), type XXVI	
	For C-17:	1
1670-01-107-7651	140-ft (3-loop), type XXVI	
	Link Assembly: (double the quantity for DES)	
	Two-point:	1
5306-00-435-8994	Bolt, 1-in diam, 4-in long	(2)
5310-00-232-5165	Nut, 1-in, hexagonal	(2)
1670-00-003-1953	Plate, side, 3 3/4-in	(2)
5365-00-007-3414	Spacer, large	(2)
N/A	Link, tow release mechanized (H-Block) C-17 aircraft	1

Table 1-2 Equipment Required for Rigging FARE with Two 500-Gallon Fuel Drums for Low-Velocity Airdrop (continued)

National Stock Number	Item	Quantity
5510-00-220-6146	Lumber, 2- by 4-in:	
	24-inch	4
	27-inch	4
	50 1/4-inch	8
5315-00-010-4659	Nail, steel wire, 8d	As required
1670-00-753-3928	Pad, energy-dissipating (honeycomb)	
	3- by 36- by 96-in	11 sheets
	Parachute:	
	Cargo:	
1670-01-016-7841	G-11B	2
	Cargo extraction:	
1670-01-063-3716	22-ft	1
	Drogue (for DES)	
1670-01-063-3715	15-ft	1
	Platform, airdrop, type V, 12-ft:	
1670-01-353-8425	Bracket assembly, coupling	(1)
1670-01-162-2372	Clevis assembly, type V	(48)
1670-01-162-2376	Extraction bracket assembly	(1)
1670-01-162-2381	Tandem link assembly (Multipurpose link)	(4)
5530-00-128-4981	Plywood, 3/4-in	3 sheets
1670-01-097-8816	Release, cargo parachute, M-1	1
	Sling, cargo, airdrop	
	For suspension:	
1670-01-062-6303	12-ft (2-loop), type XXVI nylon webbing	4
	For lifting:	
1670-01-062-6303	12-ft (2-loop), type XXVI nylon webbing	2
	For deployment:	
1670-01-062-6304	9-ft (2-loop), type XXVI nylon webbing	1
	For riser extension:	
1670-01-062-6302	20-ft (2-loop), type XXVI nylon webbing	2
5340-00-040-8219	Strap, parachute release, multi-cut, comes w/ 3 knives	2
7510-00-266-5016	Tape, adhesive, 2-in	As required
7510-00-266-6710	Tape, masking, 2-in	As required
1670-00-937-0271	Tie-down assembly, 15-foot	55
	Webbing:	
8305-00-268-2411	Cotton, 1/4-in, type I	As required
8305-00-082-5752	Nylon, tubular, 1/2-in	As required
8305-00-263-3591	Type VIII	As required

SECTION II - RIGGING FARE IN AN M101 SERIES , 3/4-TON TRAILER

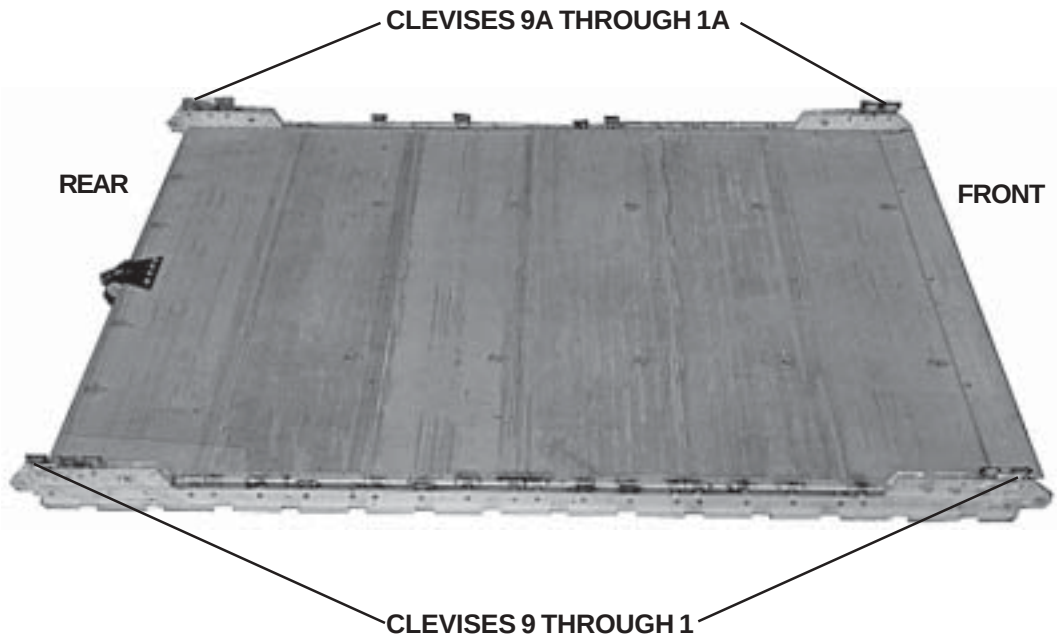
DESCRIPTION OF LOAD

1-18. The FARE, weighing 860 pounds, is stowed as an accompanying load in the M101 or M101A1, 3/4-ton trailer. This load is rigged for low-velocity airdrop on a 12-foot, type V platform. One G-11 cargo parachute is used for this load. The height of the trailer is 83 inches, reducible to 51-inches. It is 71 inches wide and 147 inches long. The trailer may have an additional 640 pounds stowed in it.

PREPARING PLATFORM

1-19. Prepare a 12-foot type V airdrop platform using four tandem links and 18 tie-down clevises as shown in Figure 1-26.

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



Steps:

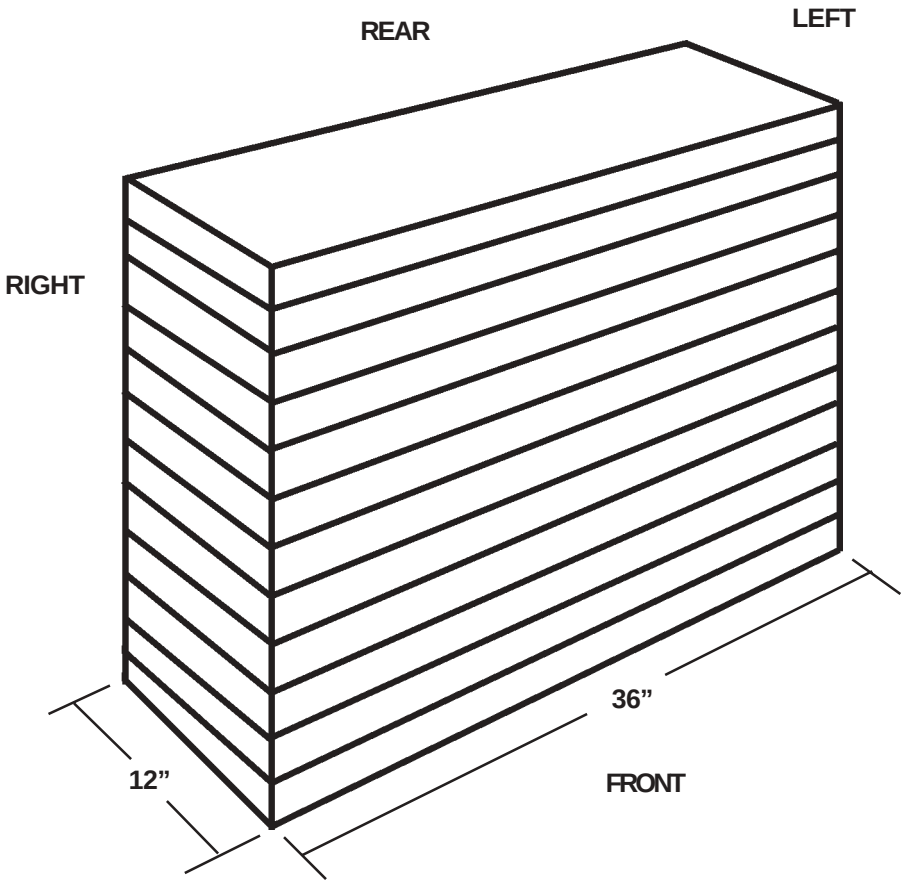
1. Inspect, or assemble and inspect, the platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22.
2. Install a tandem link on the front of each platform side rail using holes 1, 2, and 3.
3. Install a tandem link on the rear of each platform side rail using holes 22, 23, and 24.
4. Install a tie-down clevis to bushings 1and 2 on each front tandem link.
5. Starting at the front of each platform side rail, install a tie-down clevis to the bushings bolted to holes 10, 11, 15, and 18.
6. Install a tie-down clevis to bushings 2, 3, and 4 on each rear tandem link.
7. Starting at the front of the platform, number the clevises bolted to the right side from 1 through 9 and those bolted to the left side from 1A through 9A.

Figure 1-26. Platform Prepared

BUILDING AND PLACING HONEYCOMB STACKS

1-20. Build three honeycomb stacks using the material listed and shown in Figures 1-27, 1-28, and 1-29. Place the stacks on the platform as shown in Figures 1-30 and 1-31.

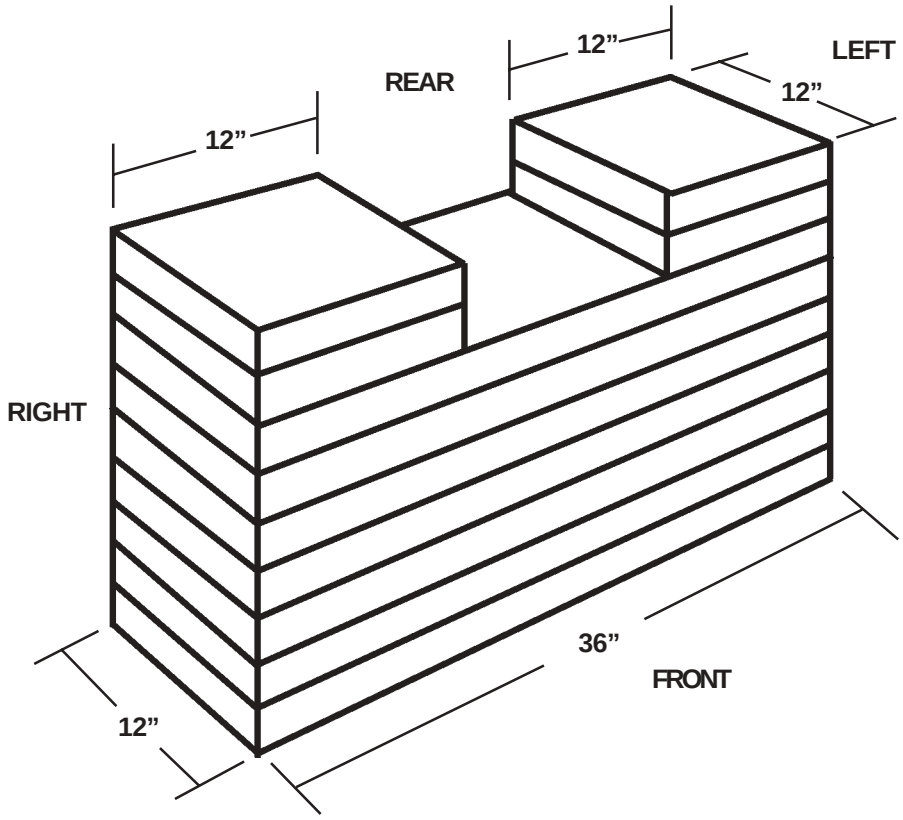
Note: This drawing is not drawn to scale.



Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
1	12	36	12	Honeycomb	Place and glue pieces together to form a stack.

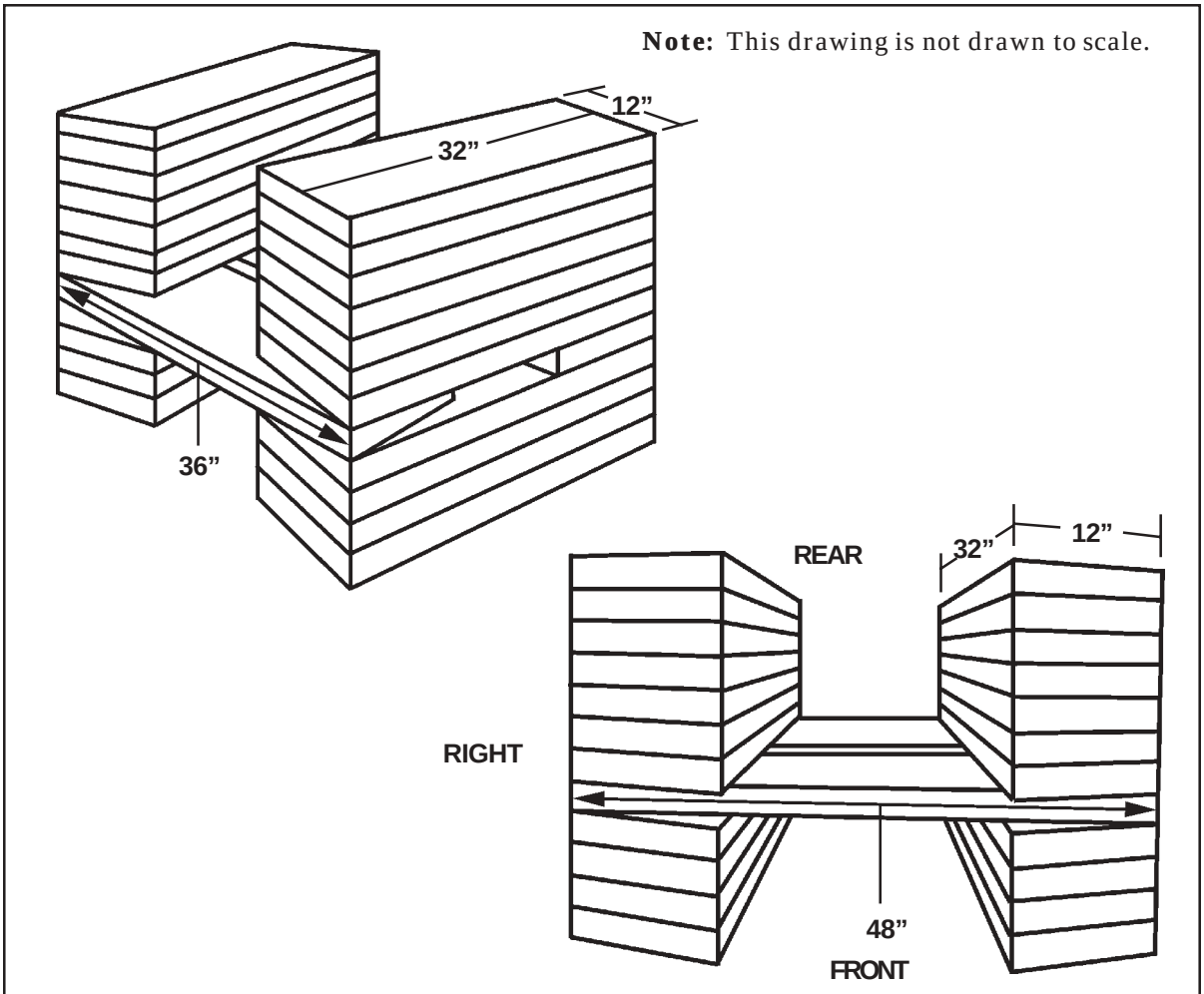
Figure 1-27. Stack 1 Prepared

Note: This drawing is not drawn to scale.



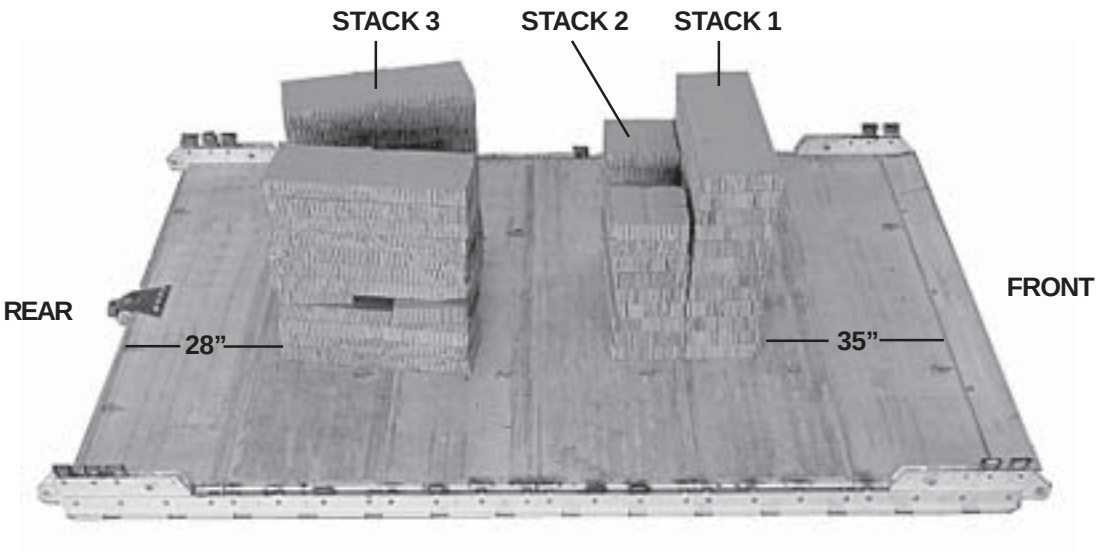
Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
2	7	36	12	Honeycomb	Glue together to form a base.
	4	12	12	Honeycomb	Glue two pieces flush with each side of the base

Figure 1-28. Stack 2 Prepared



Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
3	8	12	32	Honeycomb	Glue four pieces together. Make a base of two stacks.
	1	36	12	Honeycomb	Align and glue to the outside rear corners of the base.
	1	48	12	Honeycomb	Align and glue to the outside front corners of the base
	14	12	32	Honeycomb	Glue seven pieces together . Make two stacks and glue to the bridge flush with the base stack.

Figure 1-29. Stack 3 Prepared

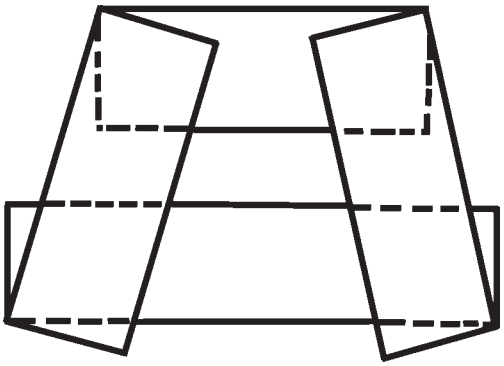


Stack Number	Position on Platform
	Place Stack:
1	Centered 35 inches from the front edge of the platform.
2	Centered flush against stack 1.
3	Centered with outside corner 28 inches from the rear of the platform.

Figure 1-30. Honeycomb Stacks Placed on Platform

Note: This drawing is not drawn to scale.

REAR



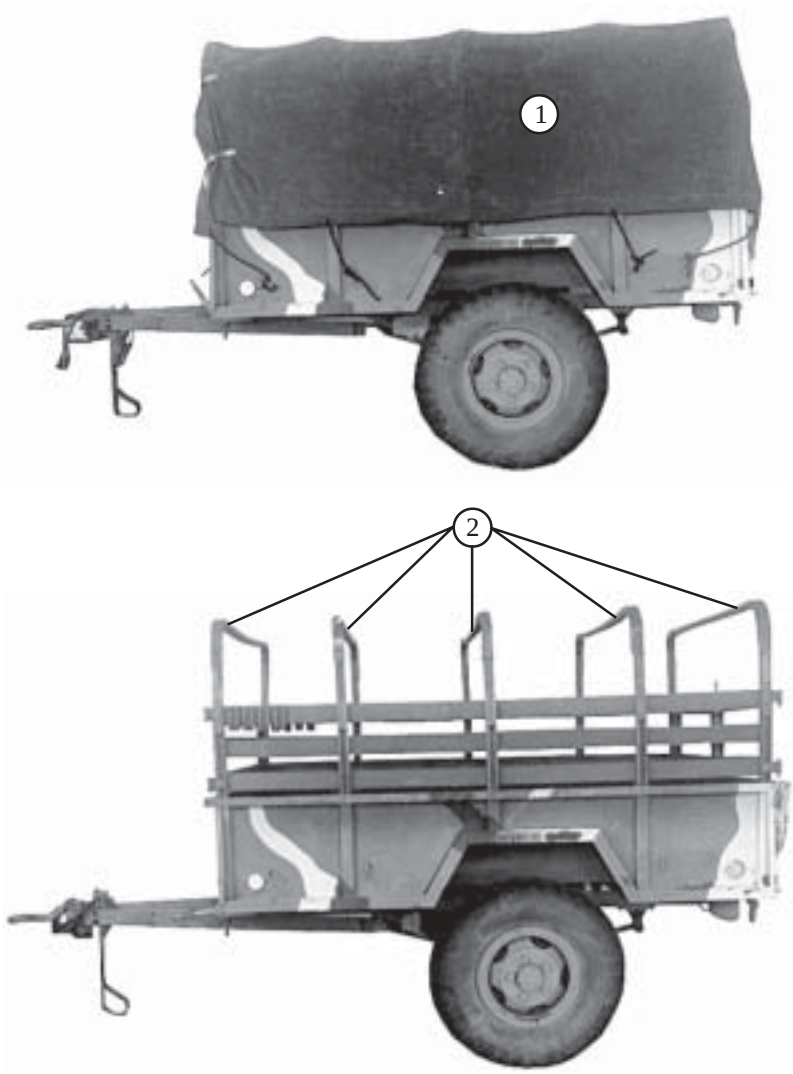
FRONT

Figure 1-31. Top View of Honeycomb Stacks Placed on Platform

PREPARING TRAILER

1-21. Prepare the trailer as described below.

a. REMOVING COMPONENTS. Remove the components from the trailer as shown in Figure 1-32.

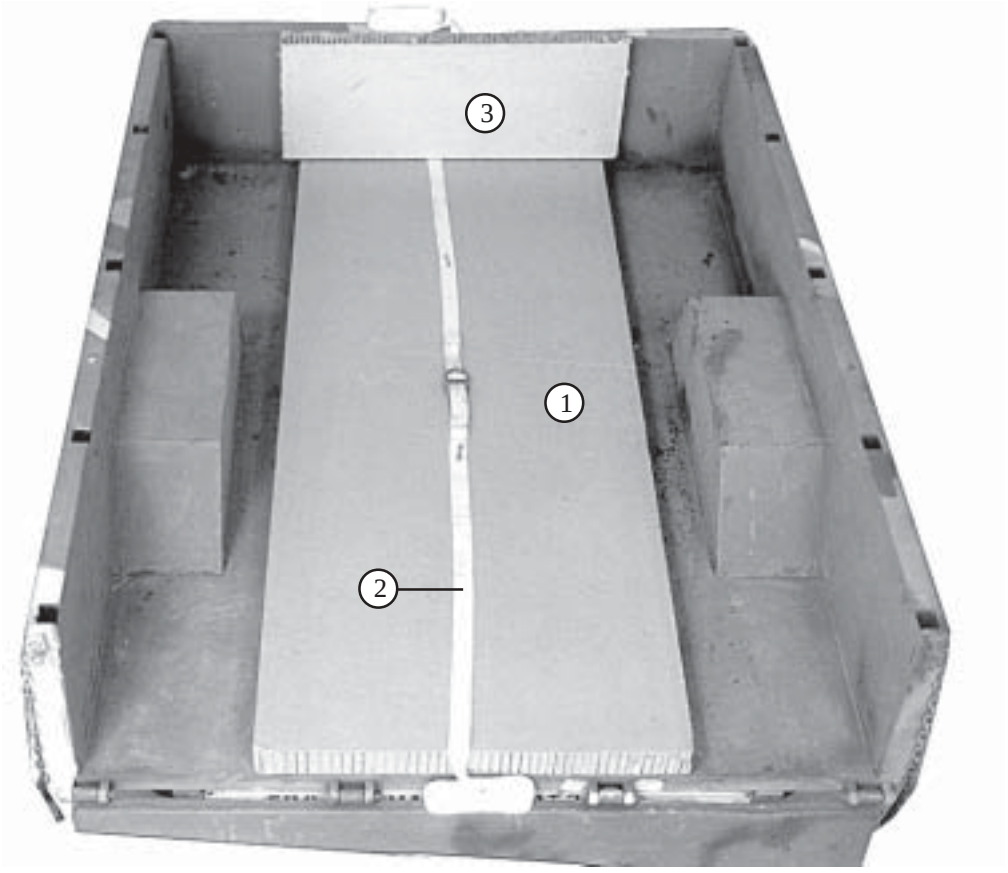


(1) See TM 9-2330-202-14&P for procedures on removing the trailer components (not shown). Remove the tarpaulin from the trailer and place it aside for later use.

(2) Remove the bows from the side racks, then remove the side racks from the trailer. Place these items aside to be placed in the trailer later.

Figure 1-32. Trailer Components Removed

b. PREPARING TRAILER BEFORE POSITIONING. Prepare the trailer, and place the components of the FARE in the cargo bed as shown in Figures 1-33 through 1-41.

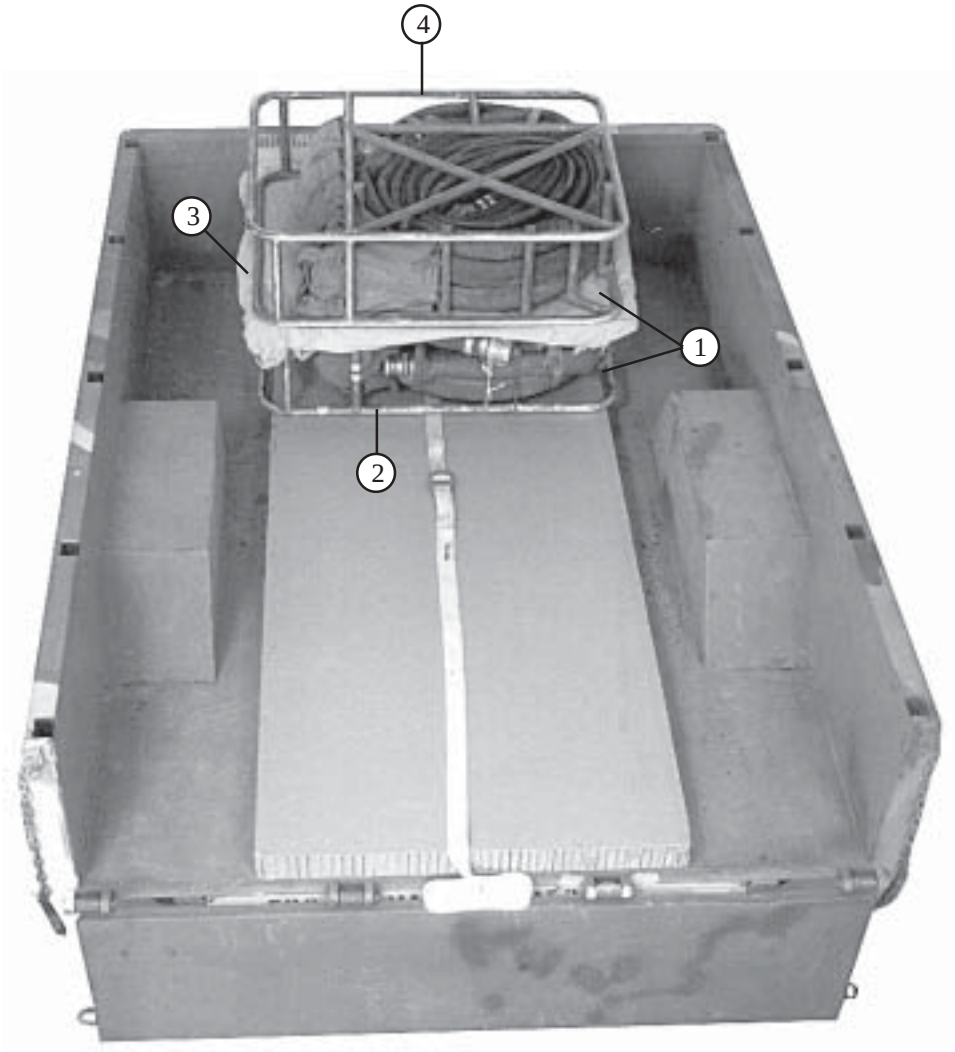


(1) Center a 36- by 96-inch piece of honeycomb in the trailer cargo bed.

(2) Form a 30-foot lashing. Center the lashing on the honeycomb.

(3) Center an 18- by 38-inch piece of honeycomb against the front wall of the cargo bed.

Figure 1-33. Honeycomb Placed in Cargo Bed



1. Prepare the discharge hose frame assemblies as shown in Figure 1-7.

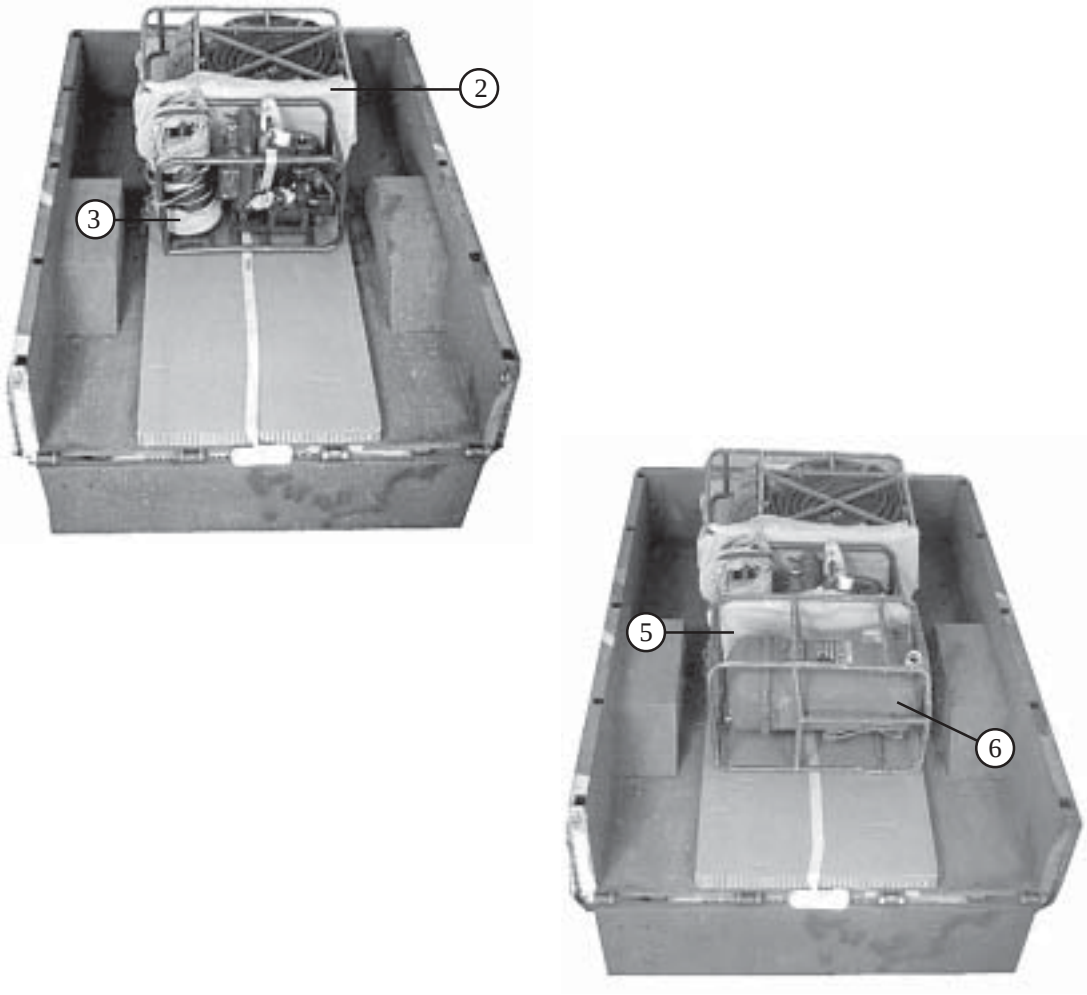
   Note: Ensure the discharge hose accessory fittings placed in the accessory storage compartment are secured to the discharge hose frame.

2. Place a discharge hose assembly flush against the 18- by 38-inch piece of honeycomb.

3. Place a layer of cellulose wadding on top of the discharge hose frame assembly.

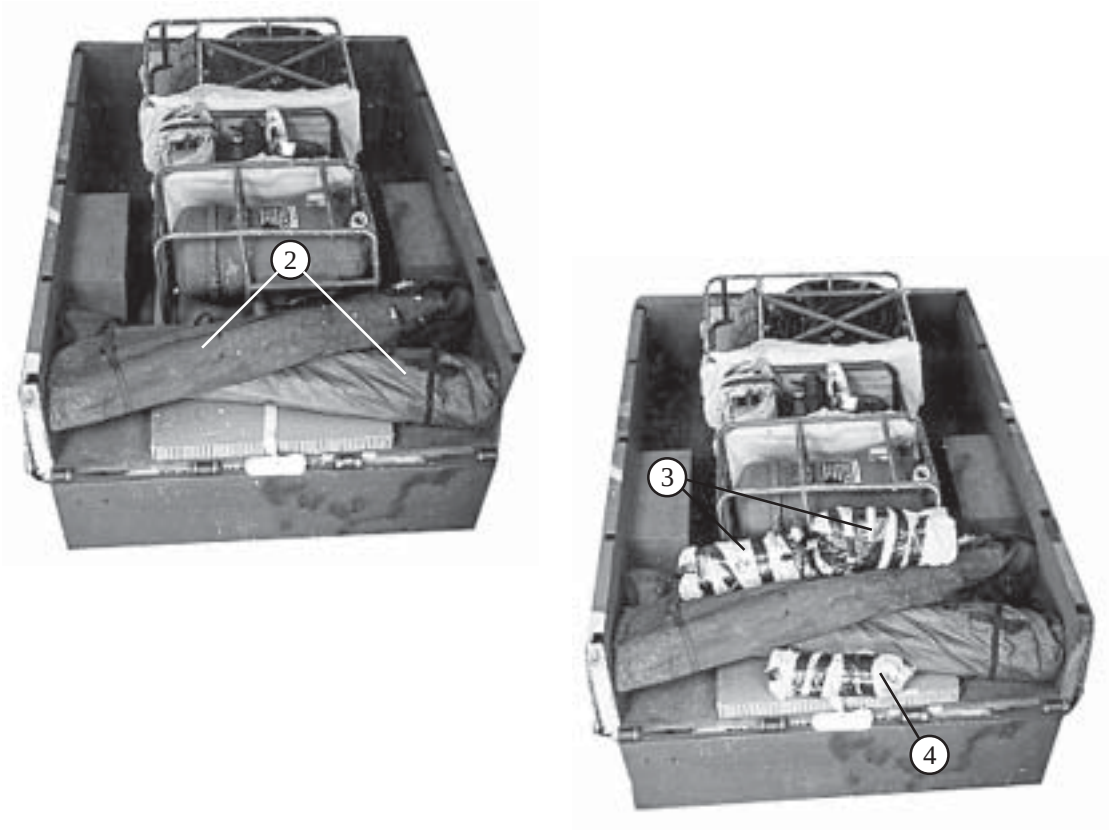
4. Place another discharge hose frame assembly on top of the cellulose wadding and flush against the 18- by 38-inch piece of honeycomb.

Figure 1-34. Discharge Hose Frame Assemblies Placed on Honeycomb



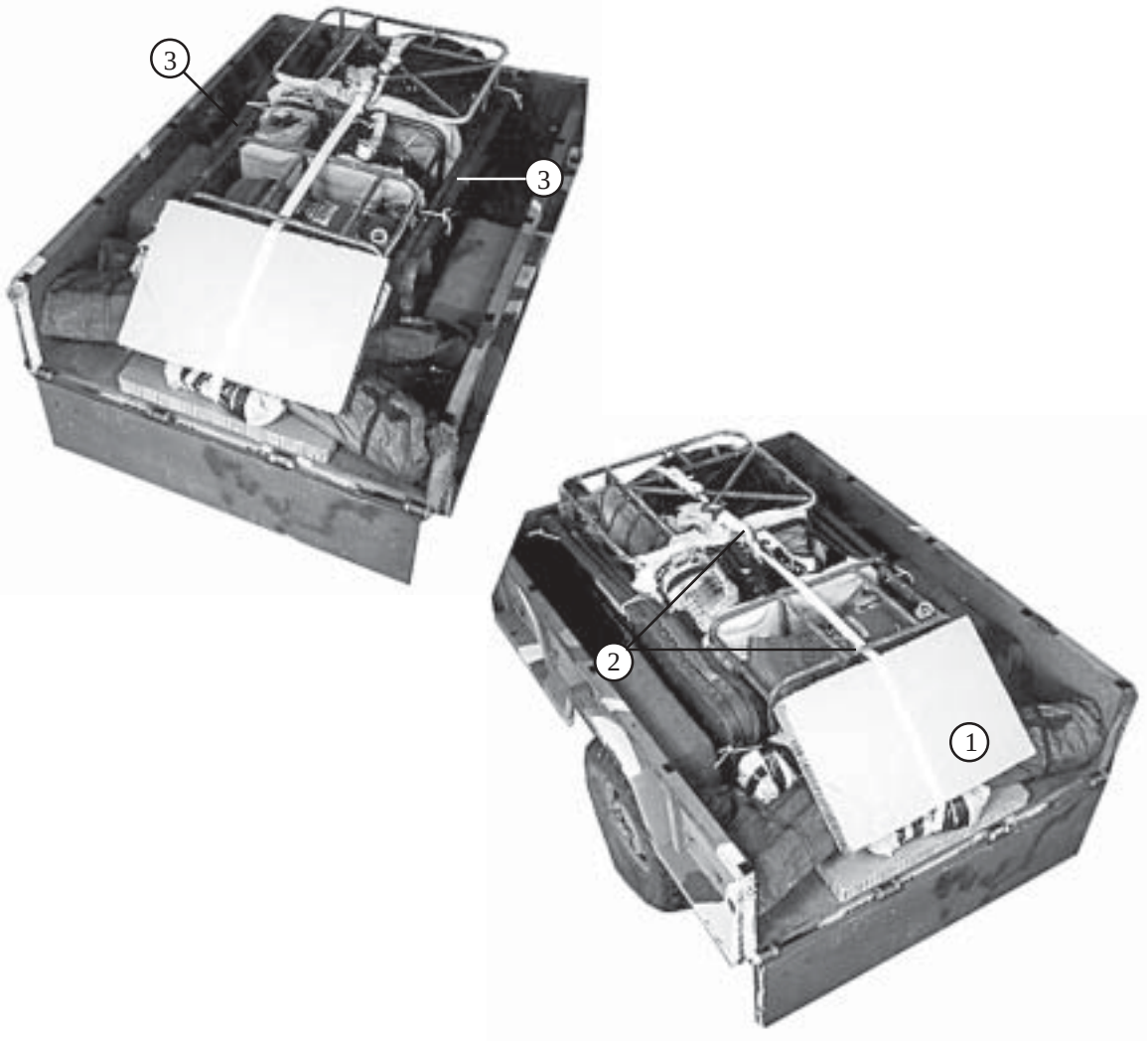
1. Prepare the pump/engine assembly (not shown) according to Figure 1-9.
2. Place a layer of cellulose wadding against the discharge hose frame assembly.
3. Place the pump/engine assembly flush against the discharge hose frame assembly.
4. Prepare the filter/separator assembly (not shown) according to Figure 1-8.
5. Place a layer of cellulose wadding against the pump/engine assembly.
6. Place the filter/separator assembly flush against the pump/engine assembly.

Figure 1-35. Pump/Engine Assembly Stowed



1. Prepare the components of the grounding rods and suction hose kit (not shown) according to Figure 1-12, steps 1 and 2.
2. Place two kits across each other next to the filter/separator.
3. Wrap two fire extinguishers in cellulose wadding, and place them on top of the suction hose kits. Tie the fire extinguishers to the frame of the filter/separator with a length of type III nylon cord.
4. Wrap a fire extinguisher in cellulose wadding and place it on the honeycomb behind the suction hose kits.

Figure 1-36. Ground Rods, Suction Hose Kits, and Fire Extinguisher Placed on Honeycomb

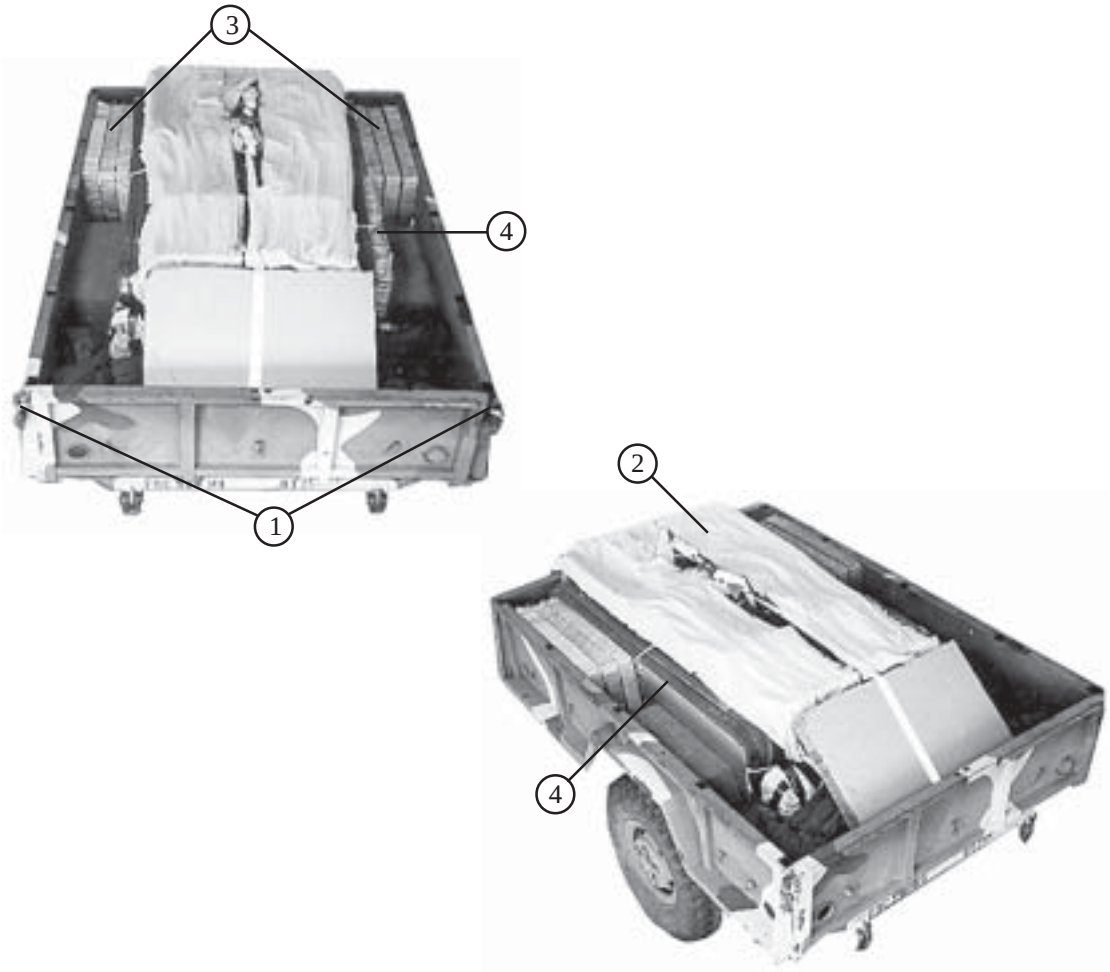


(1) Cover the fire extinguishers with a 24- by 36-inch piece of honeycomb.

(2) Pass one end of the pre-positioned lashing over the honeycomb, under one bar of the filter/separator frame, and over the pump/engine assembly frame. Pass the other end of the lashing through the discharge hose frame assembly. Bind the ends with D-rings and a load binder.

(3) Set two bows on the right side and two on the left side of the trailer. Use a length of type III nylon cord to tie the bows in place to the filter/separator frame, the pump/engine assembly frame, and the discharge hose frame.

Figure 1-37. Lashing Secured and Bows Tied in Place



(1) Close the tailgate and tie the latches with a length of type III nylon cord.

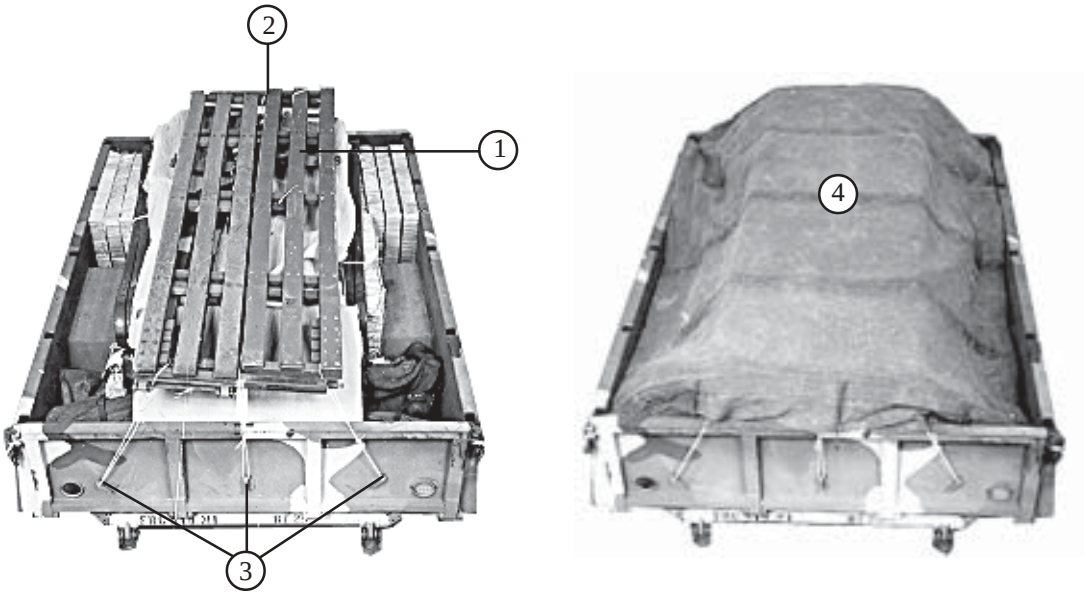
(2) Place a layer of cellulose wadding on top of the FARE system.

(3) Cut eight 18-by 30-inch pieces of honeycomb. Place four pieces of honeycomb with the 30-inch sides against the cargo bed and flush against the discharge hose frame assemblies.

Note: The fourth piece of honeycomb is not seen since it is placed under the right or left set of bows against the discharge hose frame assemblies.

(4) Cut two 18- by 30-inch pieces of honeycomb. Place one piece of honeycomb with the 30-inch side against the cargo bed and between the wheel well and filter/separator frame. Repeat for the other side.

Figure 1-38. Tailgate Secured and Filler Honeycomb Placed in Cargo Bed

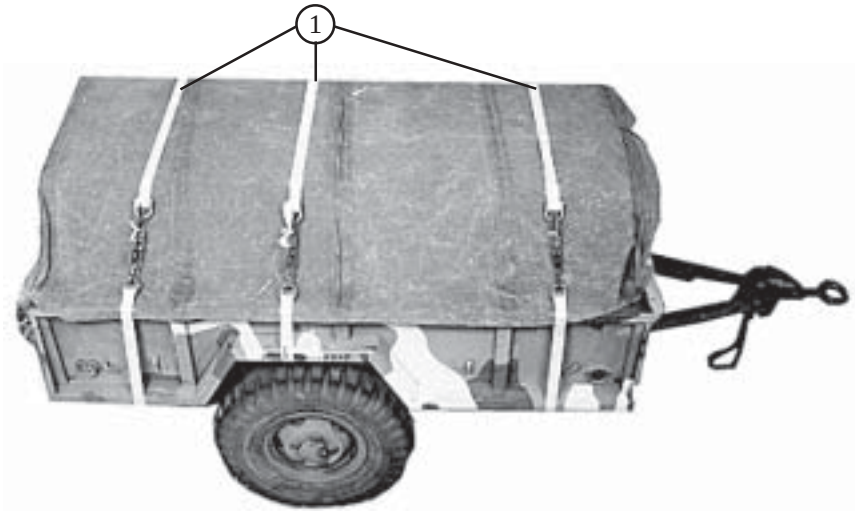


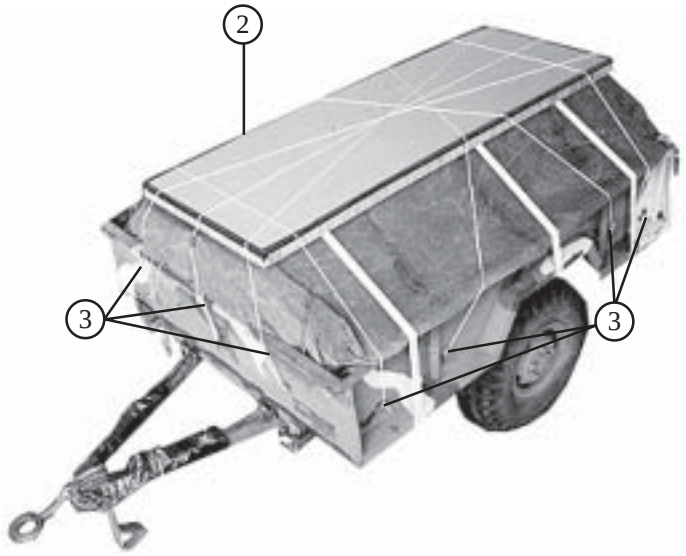
1. Interlock the side rails togther and place them on top of the cellulose wadding.
2. Secure the front of the rails to the discharge hose frame assemblies with a length of type III nylon cord.
3. Secure the rear of the rails to the tarpaulin tie-downs with lengths of type III nylon cord.

   Note: The trucker's hitch, as shown in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5, will be used when the rails are secured to the trailer.

4. Cover the FARE with the trailer tarpaulin.

Figure 1-39. Side Rail and Tarpaulin Secured to Trailer





(1) Pass a 15-foot lashing around the body and frame of the front, center, and rear of the trailer. Secure the ends on the right side of the trailer with D-rings and load binders.

(2) Tape the edges of a 36- by 96-inch piece of honeycomb with cloth-backed tape. Center the honeycomb on top of the tarpaulin.

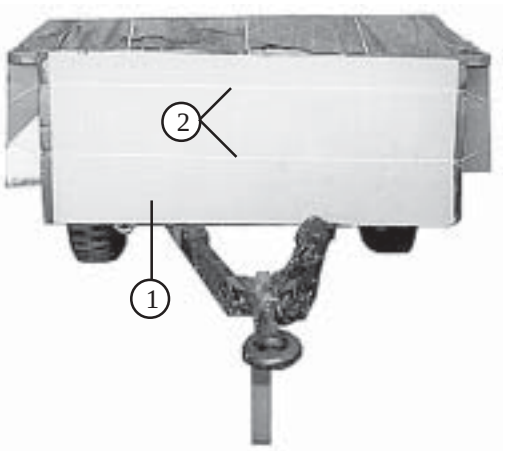
(3) Secure the honeycomb in place with lengths of type III nylon cord. Tie the ends of the nylon cord to the tarpaulin tie-downs.

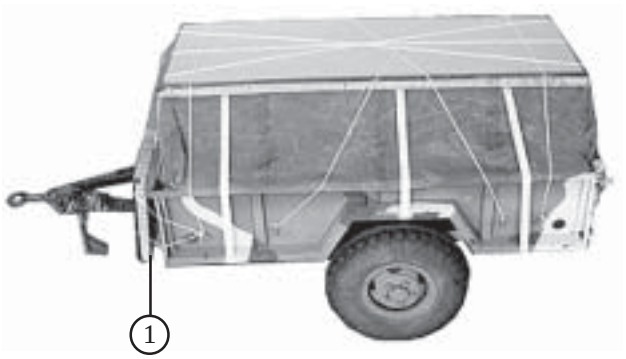
(4) Secure the safety chains and intervehicular cable to the drawbar frame with cloth-backed tape (not shown).

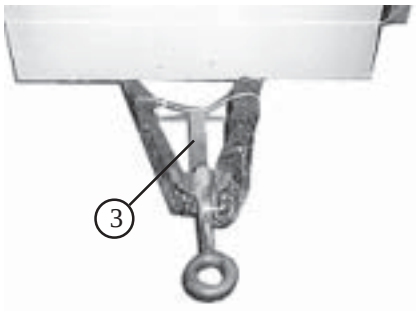
Figure 1-40. FARE Lashed to Trailer and Chains Secured

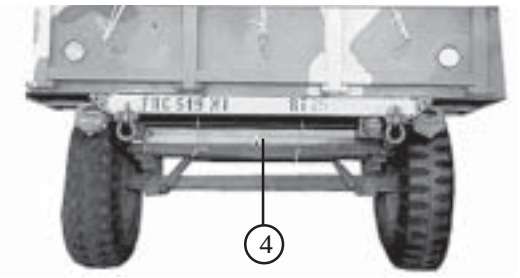
CAUTION

The brake must be in the off position before the honeycomb can be installed.









1. Cut a 24- by 60-inch piece of honeycomb. Tape the 24-inch sides with cloth-backed tape. Place the honeycomb on the drawbar.

2. Secure the honeycomb in place with two lengths of type III nylon cord. Tie the ends of the nylon cord to the tarpaulin tie-downs.

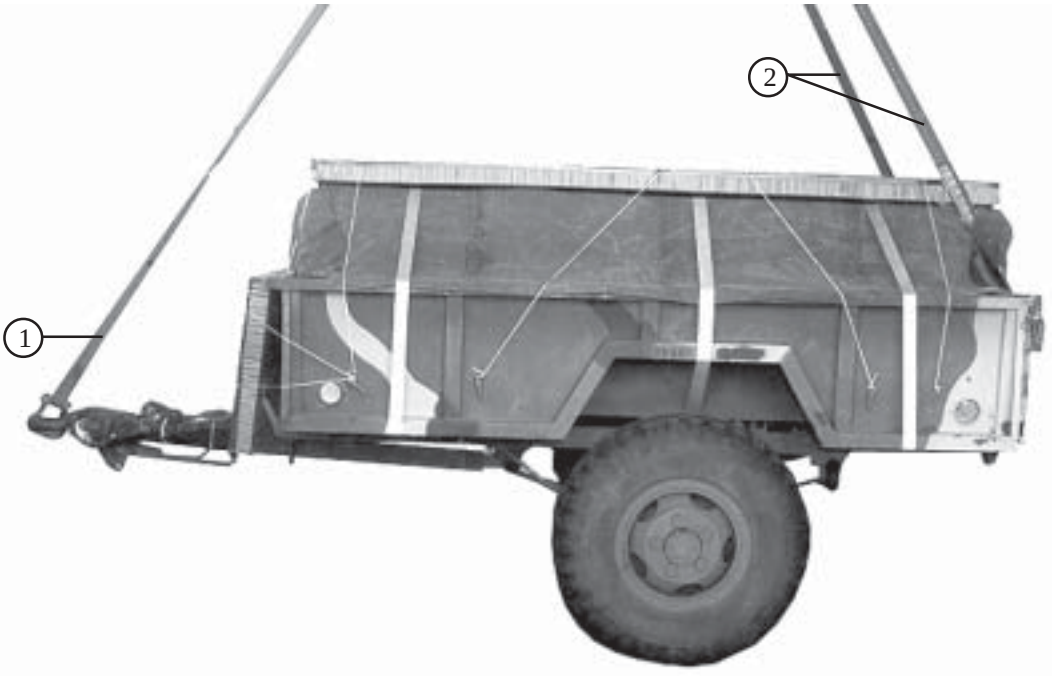
3. Secure the support stand in the UP position with a length of type III nylon cord. Make sure the locking pin is in the LOCK position.

4. Place two 2- by 12- by 46-inch pieces of lumber between the leaf springs and frame and against the shackle bolts. Tie the lumber to the frame with two lengths of type III nylon cord.

Figure 1-41. Support Stand and Leaf Springs Secured

POSITIONING TRAILER

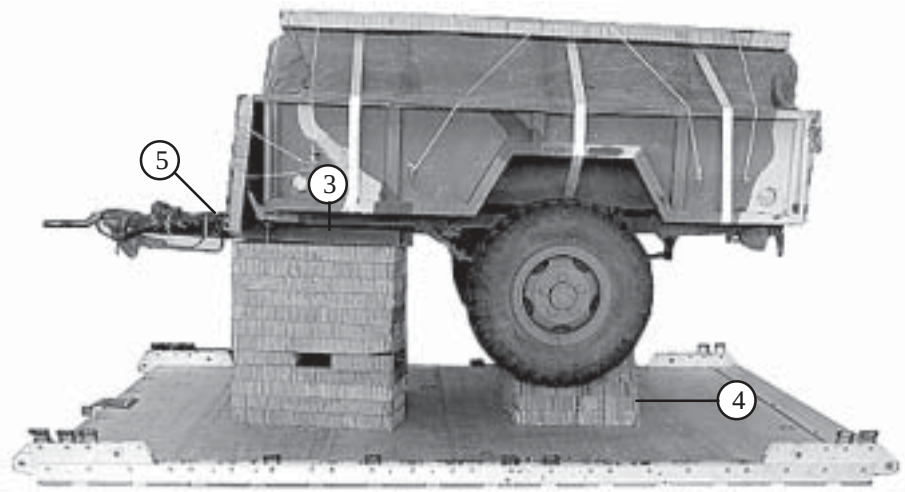
1-22. Position the trailer on the honeycomb stacks using three medium suspension clevises, two 11-foot (2-loop), type XXVI nylon webbing slings, and one 12-foot (2-loop), type XXVI nylon webbing sling for lifting as shown in Figure 1-42.

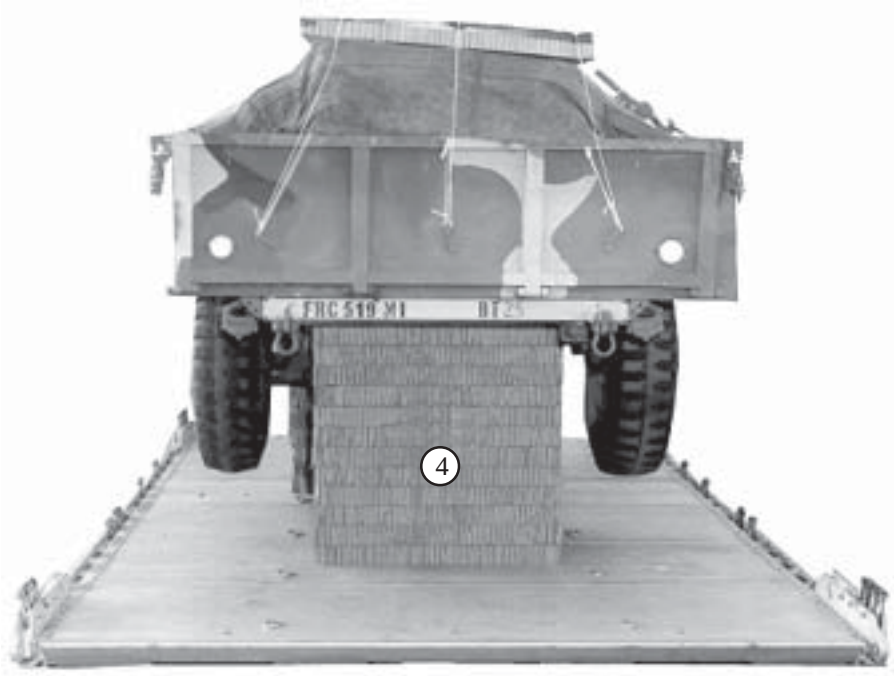


(1) Bolt a 12-foot (2-loop), type XXVI nylon sling to the lunette with a medium clevis.

(2) Bolt an 11-foot (2-loop), type XXVI nylon sling to each rear lifting provision with a medium clevis.

Figure 1-42. Trailer Positioned





(3) Set the trailer on the honeycomb with the frame support board on stack 3.

(4) Set the axle on stack 2.

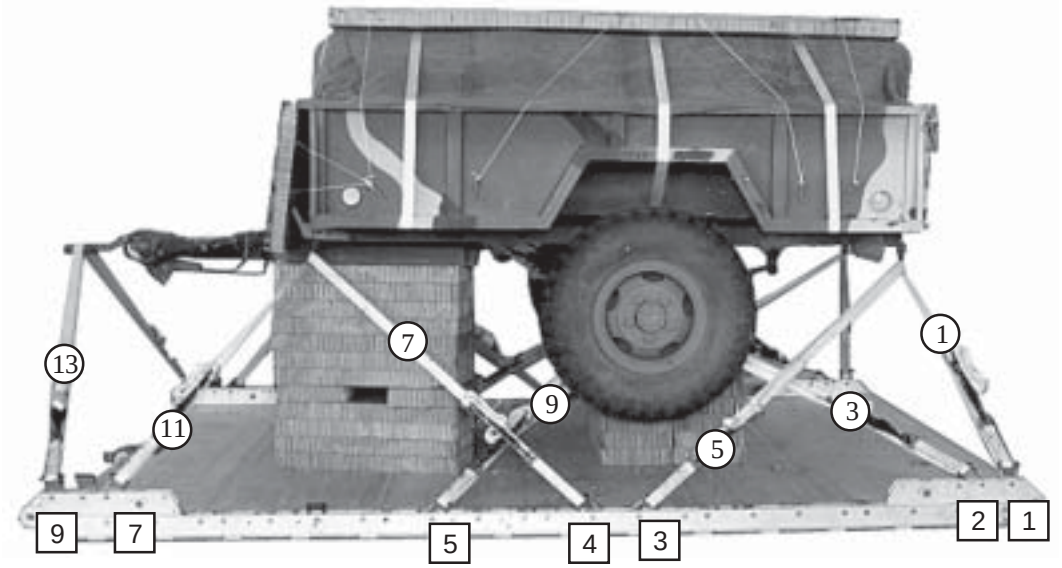
(5) Set the drawbar on stack 3.

(6) Remove the lifting slings (not shown).

Figure 1-42. Trailer Positioned (continued)

LASHING TRAILER

1-23. Lash the trailer to the platform using fourteen 15-foot tie-down assemblies according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 1-43.

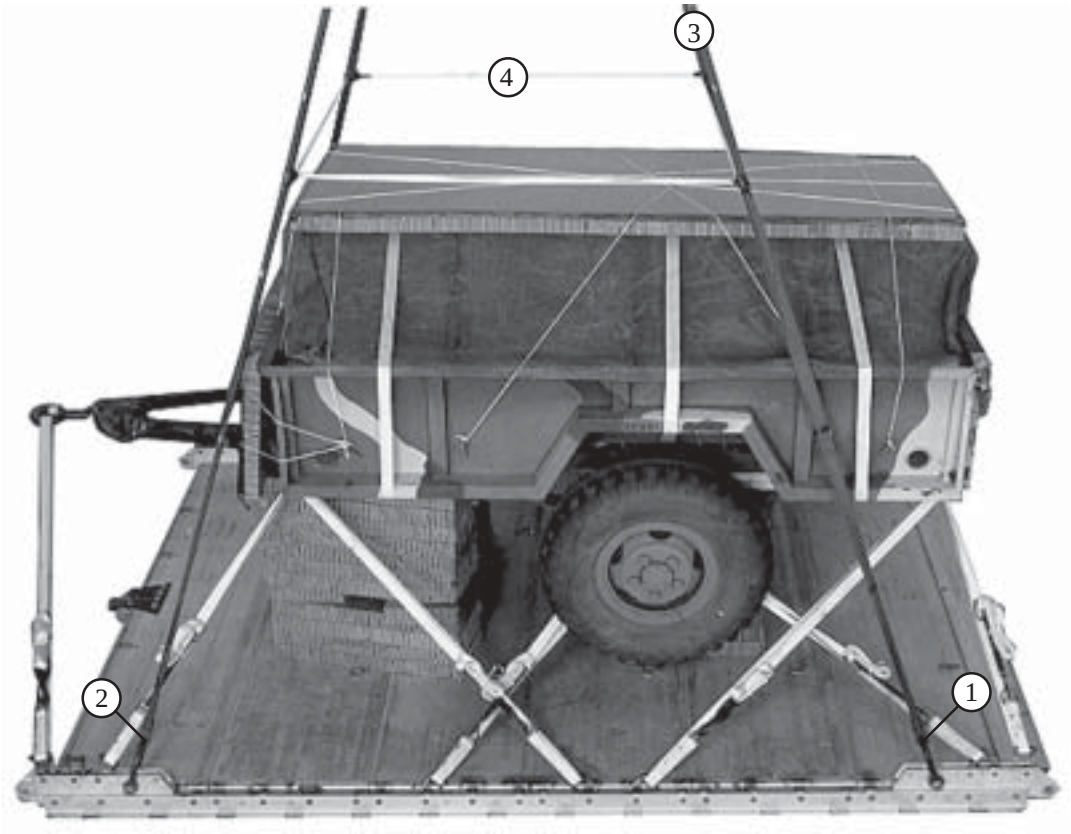


Lashing Number	Tie-down Clevis Number	Instructions
		Pass lashing:
1	1	Through left rear lifting shackle.
2	1A	Through right rear lifting shackle.
3	2	Around left side of the axle.
4	2A	Around right side of the axle.
5	3	Through left rear lifting shackle.
6	3A	Through right rear lifting shackle
7	4	Through left front lifting shackle.
8	4A	Through right front lifting shackle.
9	5	Around left side of the axle.
10	5A	Around right side of the axle.
11	7	Through left front lifting shackle.
12	7A	Through right front lifting shackle.
13	9	Through the left side of the lunette.
14	9A	Through the right side of the lunette.

Figure 1-43. Trailer Lashed to Platform

INSTALLING SUSPENSION SLINGS

1-24. Using four large suspension clevises and four 16-foot (2-loop), type XXVI nylon webbing slings for suspension, bolt and safety the slings to the trailer as shown in Figure 1-44.



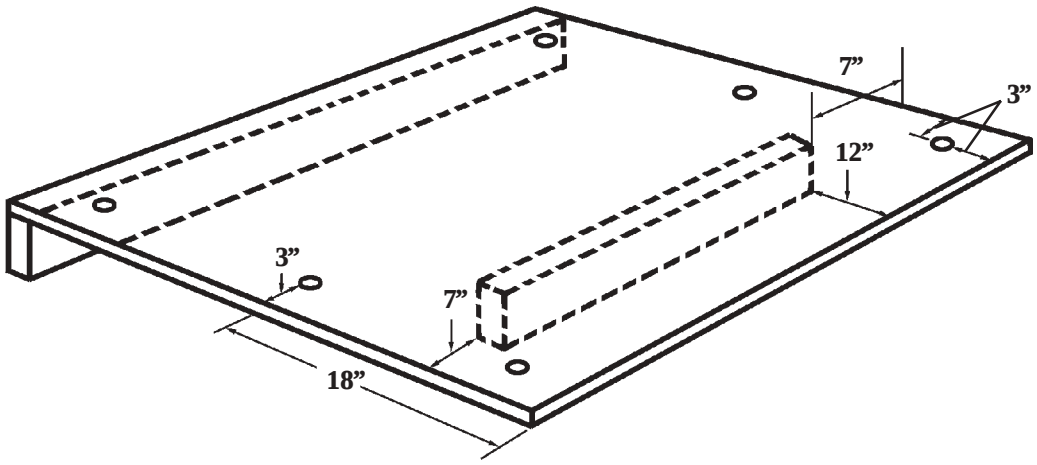
1. Bolt a 16-foot (2-loop), type XXVI nylon webbing sling to each of the front tandem links with a large suspension clevis.
2. Bolt a 16-foot (2-loop), type XXVI nylon webbing sling to each of the rear tandem links with a large suspension clevis.
3. Raise the suspension slings to their full length with a lifting device.
4. Safety the suspension slings with a deadman's tie according to FM 4-20.102/ NAVSEA SS400-AB-MMO-010/TO 13C7-1-5

Figure 1-44. Suspension Slings Installed

BUILDING AND INSTALLING CARGO PARACHUTE STOWAGE PLATFORM

1-25. Build the parachute stowage platform using a 3/4- by 36- by 36-inch piece of plywood, a 2- by 4- by 36-inch piece of lumber, a 2- by 4- by 22-inch piece of lumber, and eightpenny nails as shown in Figure 1-45. Install the parachute stowage platform using 15-foot tie-down assemblies and as shown in Figure 1-46.

Notes: 1. This drawing is not drawn to scale.
2. The pieces of lumber are nailed to the underside of the plywwod.

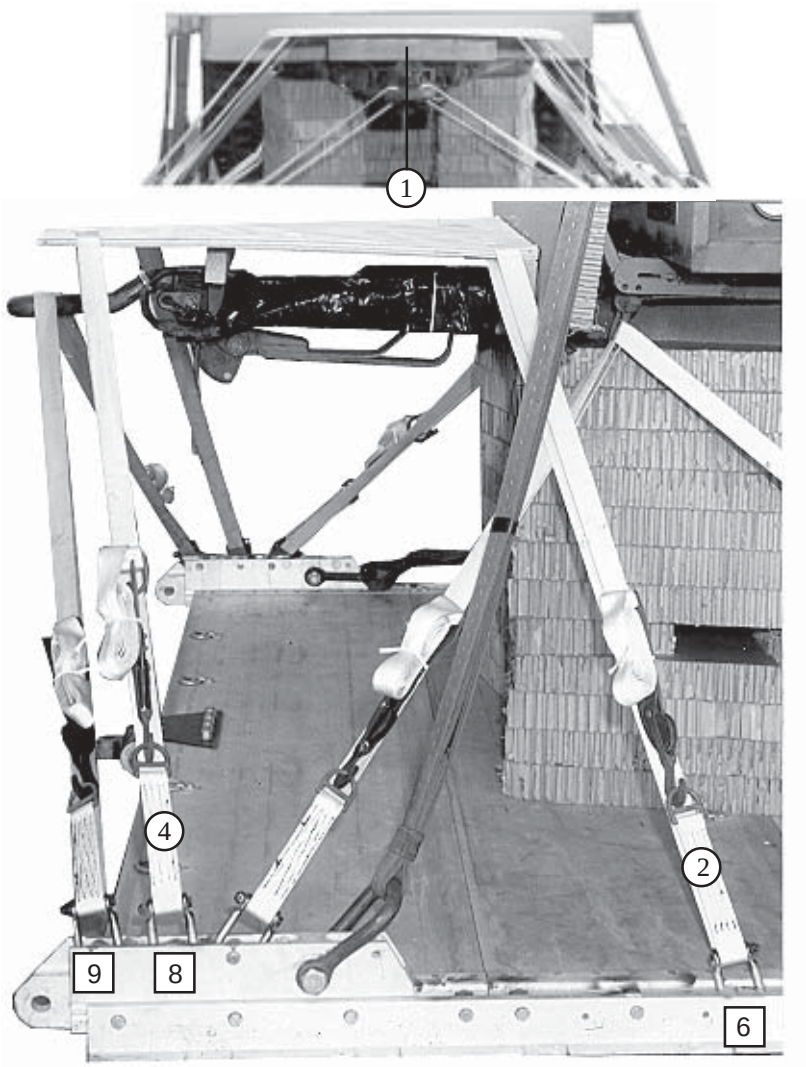


Steps:

1. Drill a 2-inch diameter hole 3 inches from each corner of the 3/4- by 36- by 36-inch plywood.
2. Drill a 2-inch diameter hole centered 3 inches from the sides of the plywood.
3. Place the 2- by 4- by 36-inch lumber on its 2 inch side. Place the lumber on the rear edge of the plywood. Use eightpenny nails to nail the lumber to the plywood.
4. Place the 2- by 4- by 22-inch lumber on its 2 inch side. Center the lumber 12 inches from the front edge of the plywood and 7 inches from each side. Use eightpenny nails to nail the lumber to the plywood.

Figure 1-45. Parachute Stowage Platform Built

Note: Do not tighten the lashing so tight that the plywood bows.

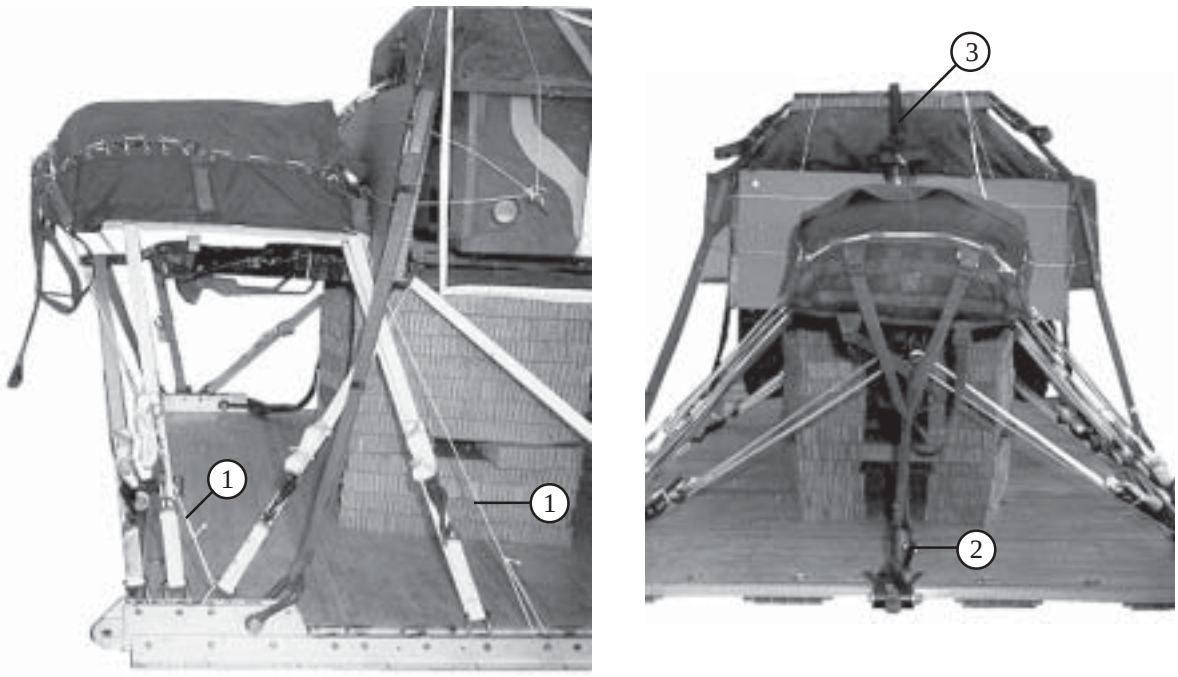


1. Center the parachute stowage platform on the trailer drawbar.
2. Pass a 15-foot lashing from clevis 6 up through the front hole in the parachute stowage platform. Secure the lashing with a D-ring and a load binder.
3. Repeat step 2 above for clevis 6A (not shown).
4. Pass a 15-foot lashing from clevis 8 up through the rear hole in the parachute stowage platform. Secure the lashing with a D-ring and a load binder.
5. Repeat step 4 above for clevis 8A (not shown).

Figure 1-46. Parachute Stowage Platform Installed

STOWING CARGO PARACHUTES

1-26. Stow one G-11 cargo parachute according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 1-47.



(1) Place the parachute on the stowage platform. Secure it to the platform with type III nylon cord.

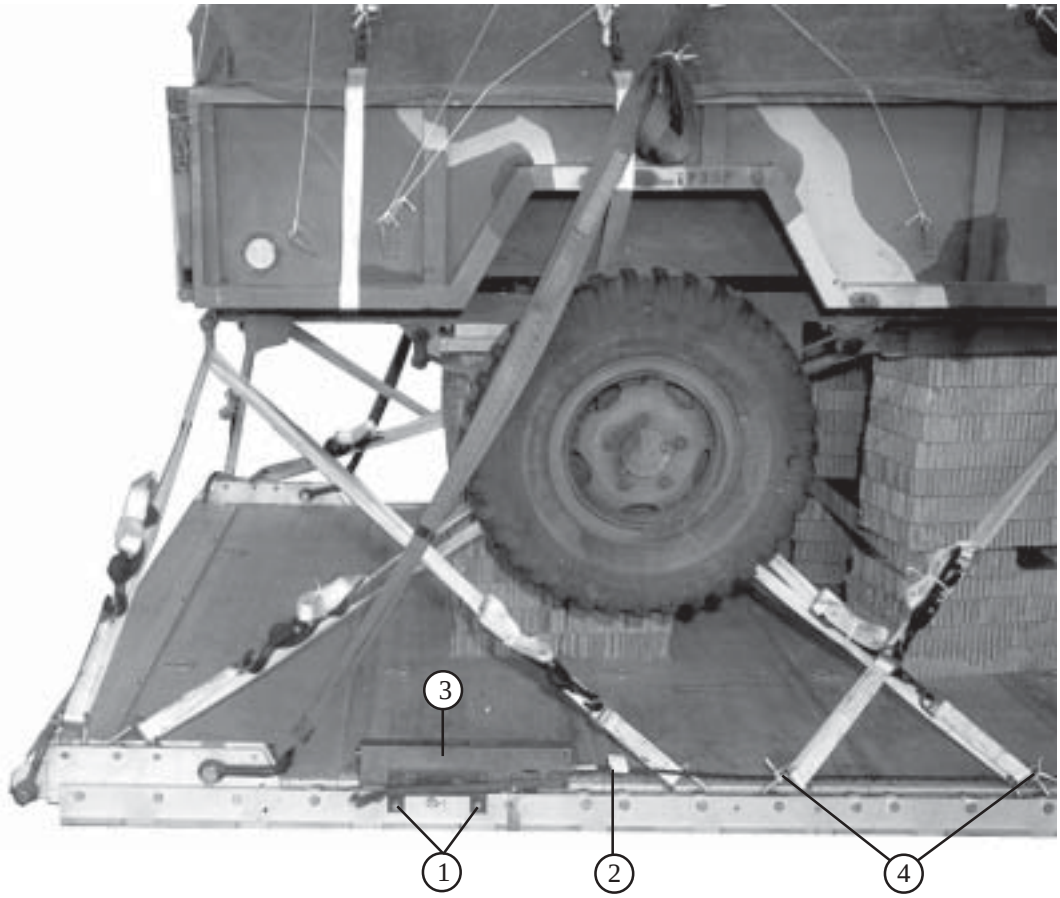
(2) Attach a large clevis to the bridle of the parachute.

(3) Attach a 3-foot (2-loop), type XXVI nylon webbing sling to the parachute riser clevis.

Figure 1-47. Cargo Parachute Stowed

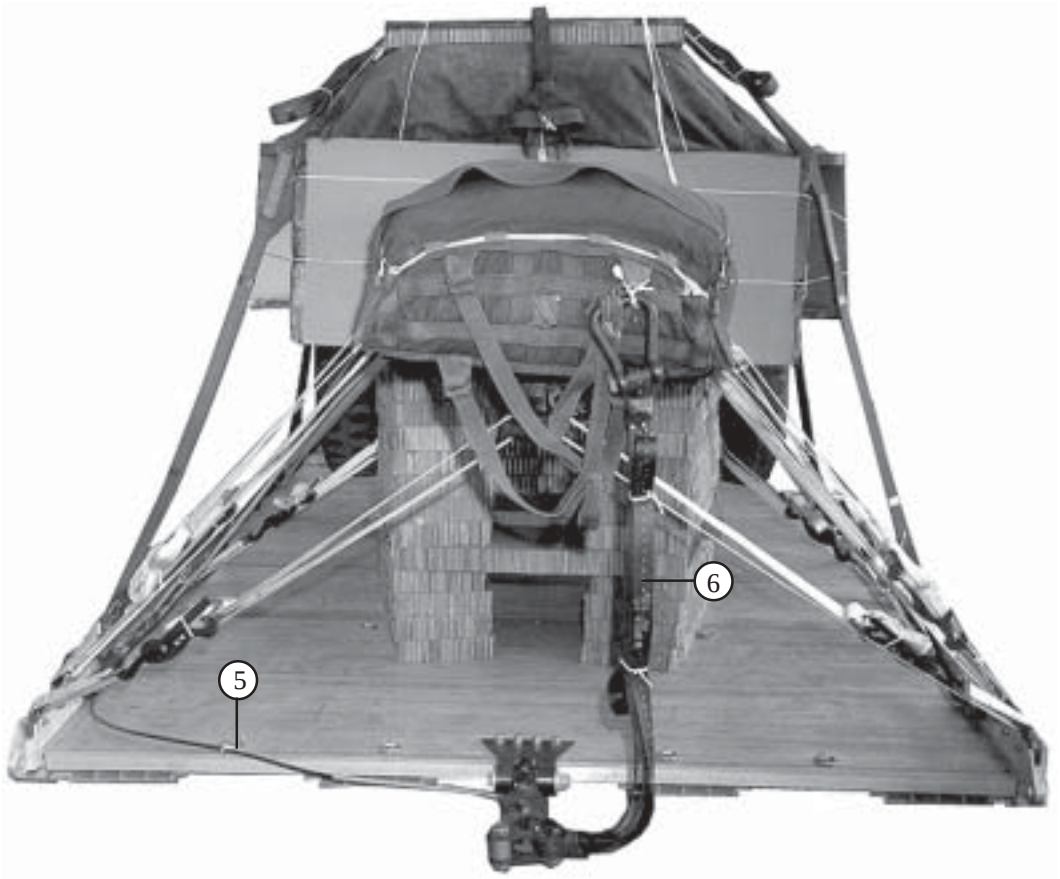
INSTALLING EXTRACTION SYSTEM

1-27. Install the EFTC extraction system according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 1-48.



1. Bolt the actuator bracket to the front EFTC mounting holes on the left platform side rail.
2. Install a 12-foot cable to the actuator assembly.
3. Install the actuator in the actuator mounting brackets.
4. Route the cable along the left rail to the rear of the platform. Tie the cable to clevises 4 and 5 with type I, 1/4-inch cotton webbing.

Figure 1-48. EFTC Installed



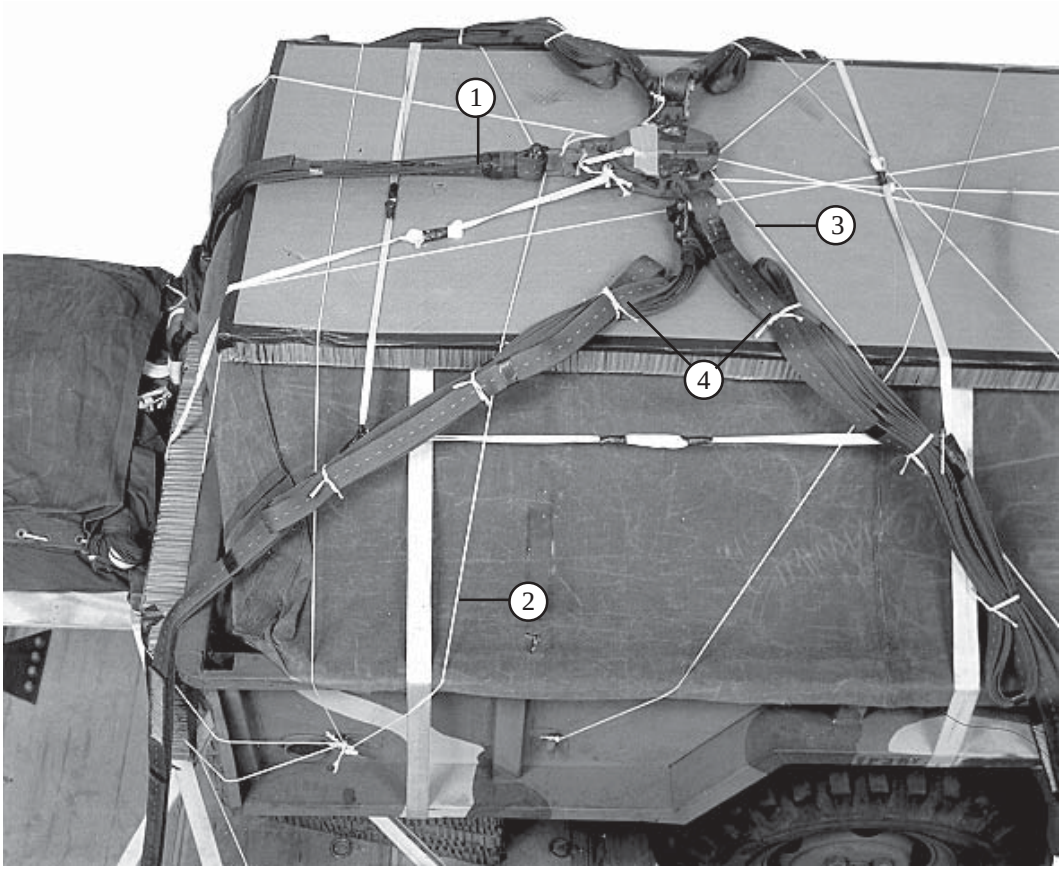
(5) Tie the cable to tie-down ring D6 with type I, 1/4-inch cotton webbing. Bolt the latch assembly to the extraction line as shown in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

(6) Use a 9-foot (2-loop), type XXVI nylon webbing sling for the deployment line.

Figure 1-48. EFTC Installed (continued)

INSTALLING PARACHUTE RELEASE SYSTEM

1-28. Prepare and install the M-1 release assembly according to FM 4-20.102/ NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 1-49.



(1) Attach the pre-positioned 3-foot sling to the M-1 release. Place the release on the honeycomb.

(2) Secure the release to the tarpaulin tie-downs at the front of the trailer with type III nylon cord.

(3) Secure the release to the tarpaulin tie-downs at the rear of the trailer with type III nylon cord.

(4) Attach the 16-foot (2-loop) nylon webbing suspension slings to the release. S-fold and tie the slings in place with type I, 1/4-inch cotton webbing as outlined in FM 4-20.102/ NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

Figure 1-49. M-1 Cargo Parachute Release Installed

PLACING EXTRACTION PARACHUTE

1-29. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Rig the extraction line in an extraction line bag according to TM 10-1670-286-20/TO 13C5-2-41. Place the extraction parachute and extraction line on the load for installation in the aircraft.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

1-30. Select and install the provisions for emergency aft restraints according to the emergency aft restraint requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

MARKING RIGGED LOAD

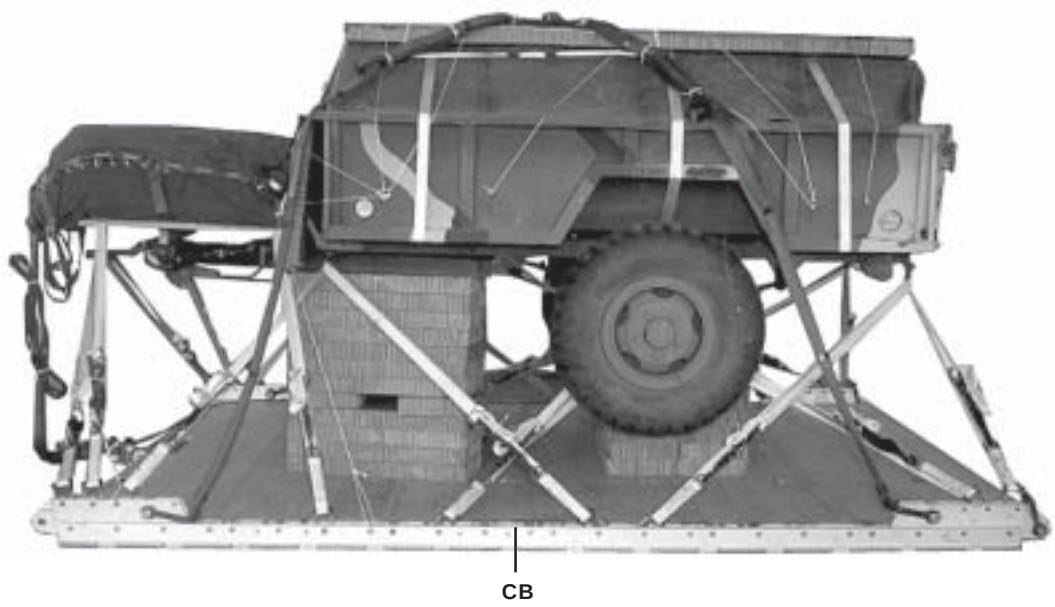
1-31. Mark the rigged load according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 1-50. Complete Shipper's Declaration for Dangerous Goods and affix to the load. If the load varies from the one shown, the weight, height, CB, tipoff curve, and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

1-32. Use the equipment list in Table 1-3 to rig the load shown in Figure 1-50.

CAUTION:

Make the final inspection required by FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



RIGGED LOAD DATA

Weight	**4,050 pounds**
Maximum Weight	**5,000 pounds**
Height	**83 inches**
Width	**108 inches**
Overall Length	**162 inches**
Overhang: Front	**0 inches**
Rear (EFTC)	**18 inches**
Center of Balance (CB) (from front edge of platform)	**72 1/2 inches**
Extraction System	**EFTC**

Figure 1-50. FARE in an M101 Series, 3/4-Ton Trailer Rigged for Low-Velocity Airdrop

Table 1-3. Equipment Required for Rigging FARE in an M101, 3/4-Ton Trailer Low-Velocity Airdrop

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive, paste, 1-gal	As required
1670-01-035-6054	Bridle, extraction line bag (for DES)	1
4030-00-090-5354	Clevis, large	5
4030-00-678-8562	Clevis, medium	2
4020-00-240-2146	Cord, nylon, type III, 550-lb	As required
1670-00-434-5783	Coupling, airdrop, extraction force transfer with cable, 12-ft	1
	Cover:	
1670-00-360-0328	Clevis, large	1
8135-00-664-6958	Cushioning material, packaging, cellulose wadding	As required
5365-00-937-0147	D-ring, heavy-duty, 10,000-lb	2
8305-00-958-3685	Felt, 1/2-in thick	As required
1670-00-003-4391	Knife, parachute bag (for DES)	1
1670-01-183-2678	Leaf, extraction line (line bag)(add 1 for DES)	2
	Line, drogue (for DES)	
1670-01-064-4452	60-ft (1-loop), type XXVI	1
	Line, extraction:	
1670-01-064-4452		1
1670-01-107-7652	For C-141: 160-ft (1-loop), type XXVI	1
	For C-5:	
1670-01-107-7652	160-ft, (1-loop), type XXVI	1
	For C-17:	
1670-01-107-7652	160-ft (1-loop), type XXVI	1
1670-01-483-8259	Link, tow release mechanism (H-Block) C-17 aircraft	1
	Link Assembly: (double the quantity for DES)	
	Two-point:	1
5306-00-435-8994	Bolt, 1-in diam, 4-in long	(2)
5310-00-232-5165	Nut, 1-in, hexagonal	(2)
1670-00-003-1953	Plate, side, 3 3/4-in	(2)
5365-00-007-3414	Spacer, large	(2)
5510-00-220-6146	Lumber, 2- by 4-in:	
	22-inch	1
	36-inch	1
5510-00-220-6250	Lumber, 2- by 12- by46-in	2
5315-00-010-4659	Nail, steel wire, 8d	As required

Table 1-3. Equipment Required for Rigging FARE in an M101, 3/4-Ton Trailer Low-Velocity Airdrop (continued)

National Stock Number	Item	Quantity
1670-00-753-3928	Pad, energy-dissipating (honeycomb) 3- by 36- by 96-in	11 sheets
	Parachute:	
	Cargo:	
1670-01-016-7841	G-11B	1
	Cargo extraction:	
1670-01-063-37165	15-ft	1
1670-01-063-3715	Drogue (for DES) 15-ft	1
	Platform, airdrop, type V, 12-ft:	
1670-01-353-8425	Bracket assembly, coupling	(1)
1670-01-162-2372	Clevis assembly, type V	(44)
1670-01-162-2376	Extraction bracket assembly	(1)
1670-01-162-2381	Tandem link assembly (Multipurpose link)	(4)
5530-00-128-4981	Plywood, 3/4-in	3 sheets
1670-01-097-8816	Release, cargo parachute, M-1	1
	Sling, cargo, airdrop	
	For suspension:	
1670-01-063-7761	16-ft (2-loop), type XXVI nylon webbing	4
	For lifting:	
1670-01-063-7760	11-ft (2-loop), type XXVI nylon webbing	2
1670-01-062-6303	12-ft (2-loop), type XXVI nylon webbing	1
	For deployment:	
1670-01-062-6304	9-ft (2-loop), type XXVI nylon webbing	1
	For riser extension:	
1670-01-062-63021	3-ft (2-loop), type XXVI nylon webbing	1
7510-00-266-5016	Tape, adhesive, 2-in	As required
7510-00-266-6710	Tape, masking, 2-in	As required
1670-00-937-0271	Tie-down assembly, 15-foot	23
	Webbing:	
8305-00-268-2411	Cotton, 1/4-in, type I	As required
8305-00-082-5752	Nylon, tubular, 1/2-in	As required
8305-00-263-3591	Type VIII	As required

SECTION III- RIGGING FARE IN AN M998 , 1 1/4-TON TRUCK (HMMWV)

DESCRIPTION OF LOAD

1-33. The M998, 1 1/4-ton truck is rigged on a 16-foot, type V airdrop platform for low-velocity airdrop. Except for the rigging procedures in this chapter, the truck is rigged according to FM 4-20.117/TO 13C7-1-111. The FARE is stowed in the cargo bed of the truck as an accompanying load. The FARE weighs 860 pounds. The completely rigged load requires two G-11 cargo parachutes. Required equipment is listed Table 1-4.

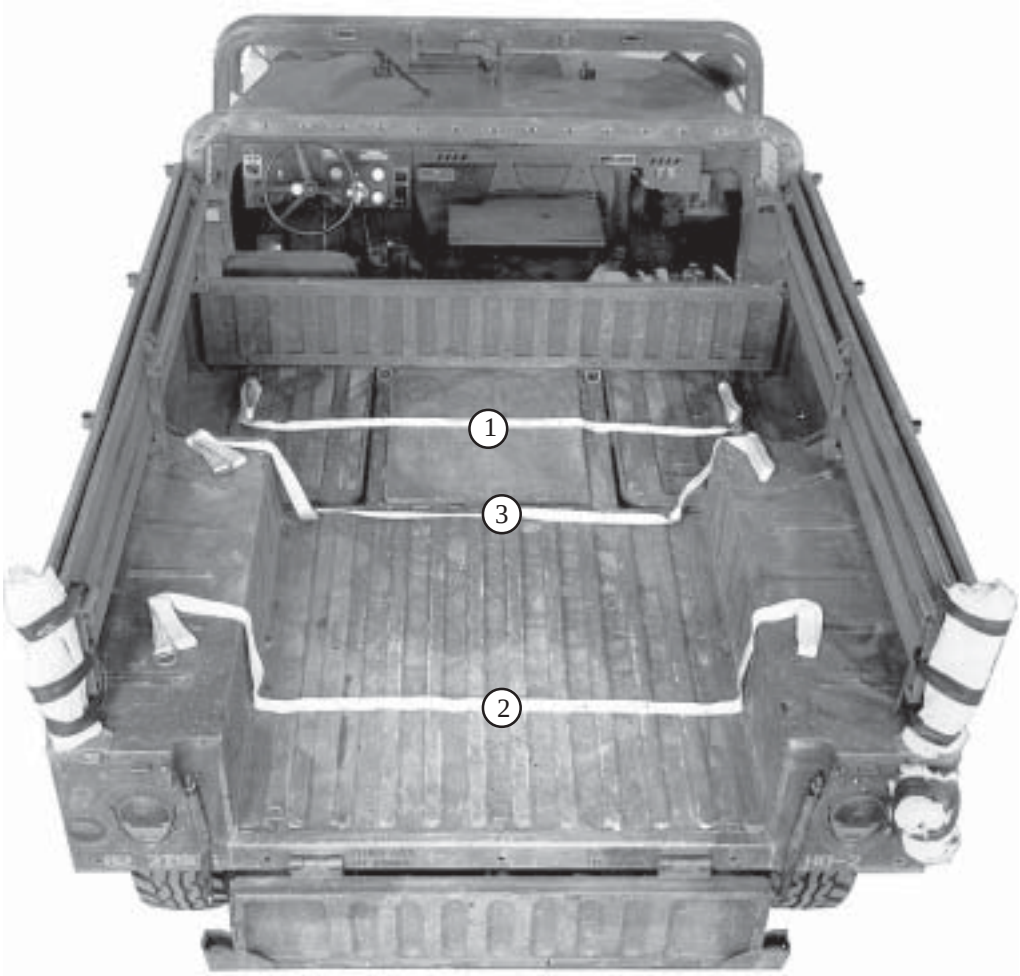
PREPARING PLATFORM AND TRUCK

1-34. Prepare the platform and the M998 truck according to FM 4-20.117/TO 13C7-1-111.

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

PREPARING CARGO BED

1-35. Prepare the cargo bed of the M998 as shown in Figure 1-51.

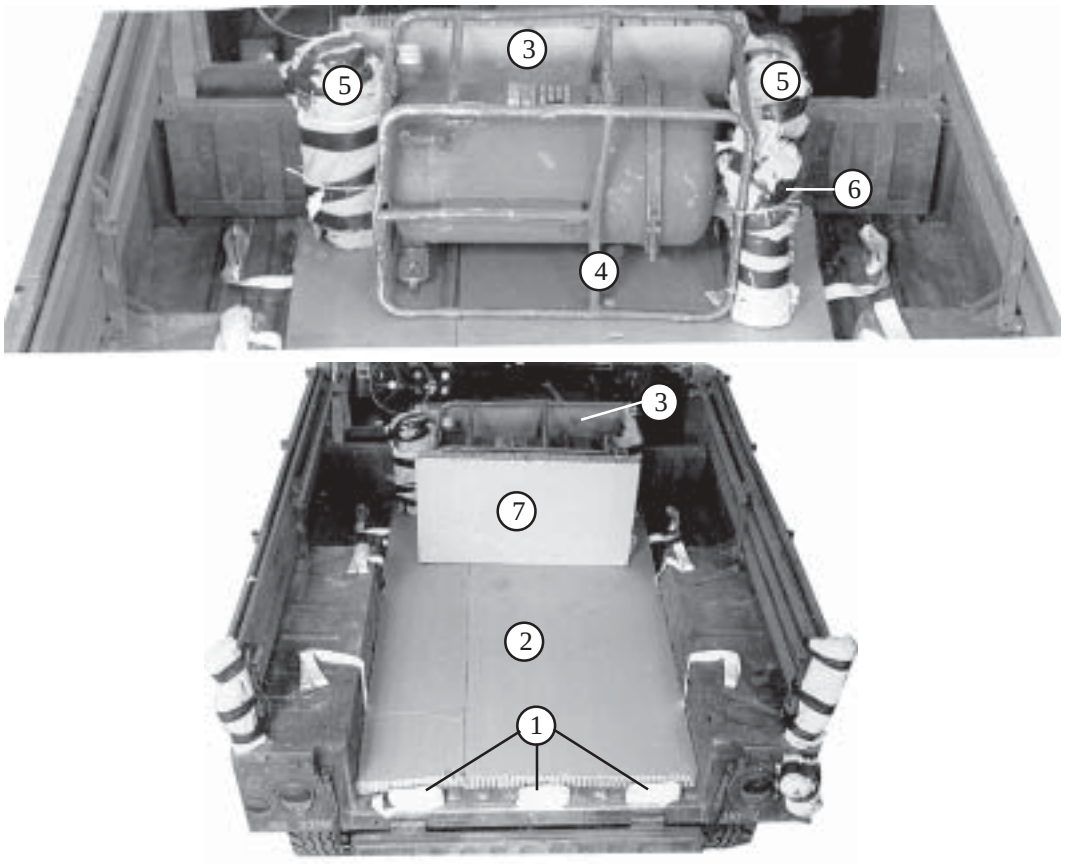


1. Lay a 15-foot lashing across the cargo bed 14 inches from the back of the seats.
2. Lay a 15-foot lashing across the cargo bed 18 inches from the rear edge of the cargo bed.
3. Pass a 15-foot lashing through the center tie-down rings.

Figure 1-51. Cargo Bed Prepared

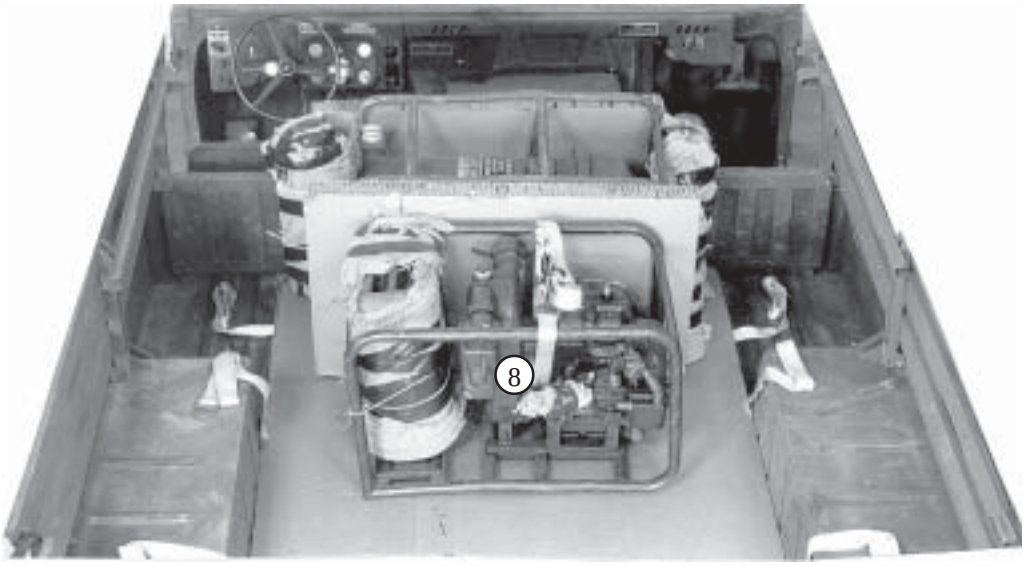
PLACING FARE IN CARGO BED

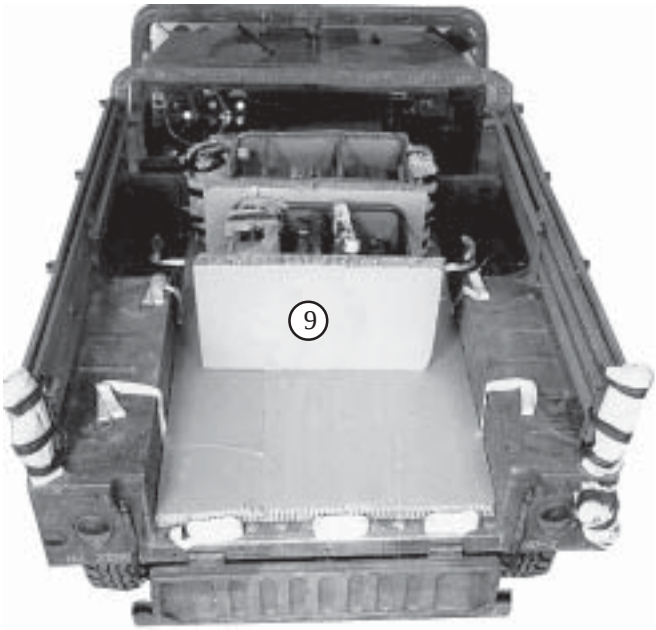
1-36. Place the FARE in the cargo bed of the M998 as shown in Figure 1-52.



1. Pass three lashings through the tie-down rings in the rear of the cargo bed.
2. Place a 36- by 78-inch and a 16- by 78-inch piece of honeycomb on the carrier floor.
3. Position a 24- by 40-inch piece of honeycomb against the front end of the cargo bed.
4. Place the filter/separator assembly in its frame against the 24- by 40-inch piece of honeycomb.
5. Wrap three fire extinguishers in a layer of cellulose wadding. Secure the cellulose wadding with cloth-backed tape.
6. Secure the fire extinguishers to the filter/separator frame with a length of type III nylon cord.
7. Place a 24- by 40-inch piece of honeycomb flush against the filter/separator frame.

Figure 1-52. FARE Placed in Cargo Bed

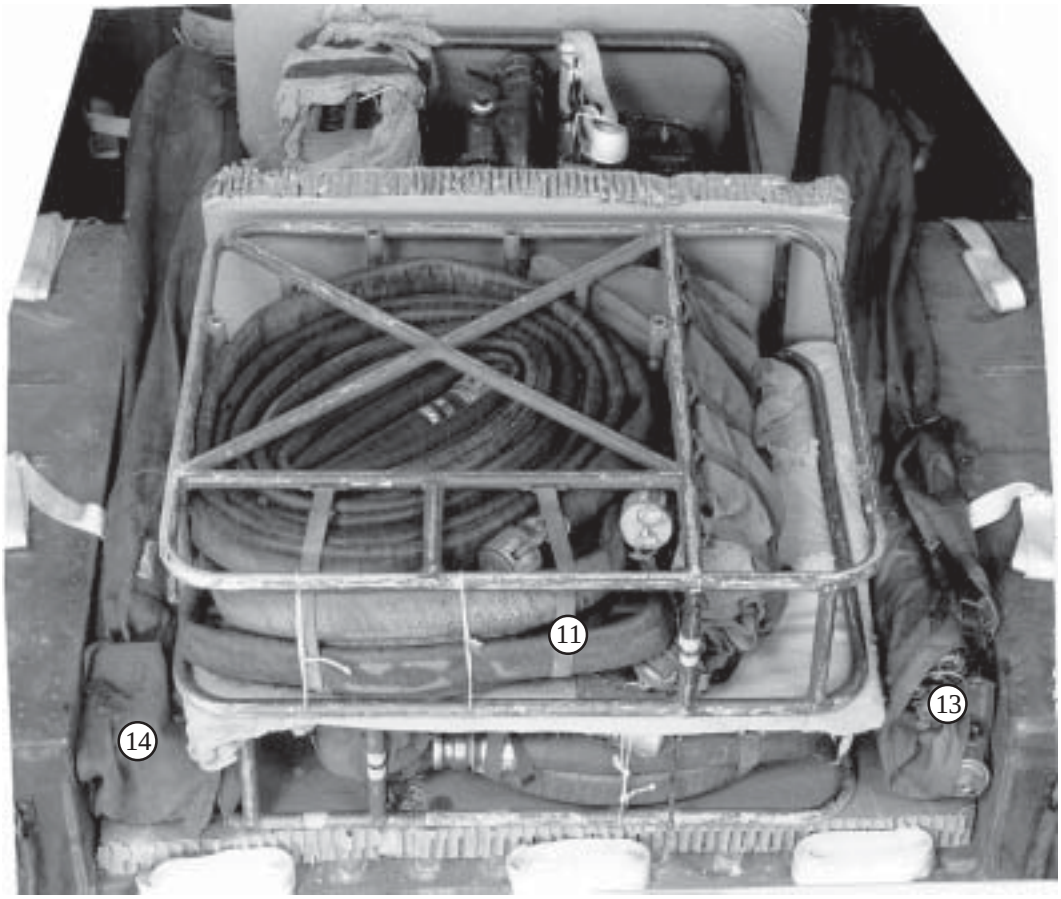




(8) Prepare the pump/engine assembly as shown in Figure 1-9. Place the pump/engine assembly flush against the 24- by 40-inch piece of honeycomb placed in step 7.

(9) Place a 24- by 40-inch piece of honeycomb against the pump/separator assembly.

Figure 1-52. FARE Placed in Cargo Bed (continued)



(10) Prepare the discharge hose assemblies as shown in Figure 1-7, steps 1 and 2.

(11) Place one discharge hose frame assembly on the honeycomb in the cargo bed. Place a layer of cellulose wadding on top of the frame. Place another discharge hose frame assembly on top of the cellulose wadding.

Note: Ensure the discharge hose accessory fittings placed in the accessory storage compartment are secured to the discharge hose frame.

(12) Prepare the ground rods and suction hoses as shown in Figure 1-12, steps 1 and 2.

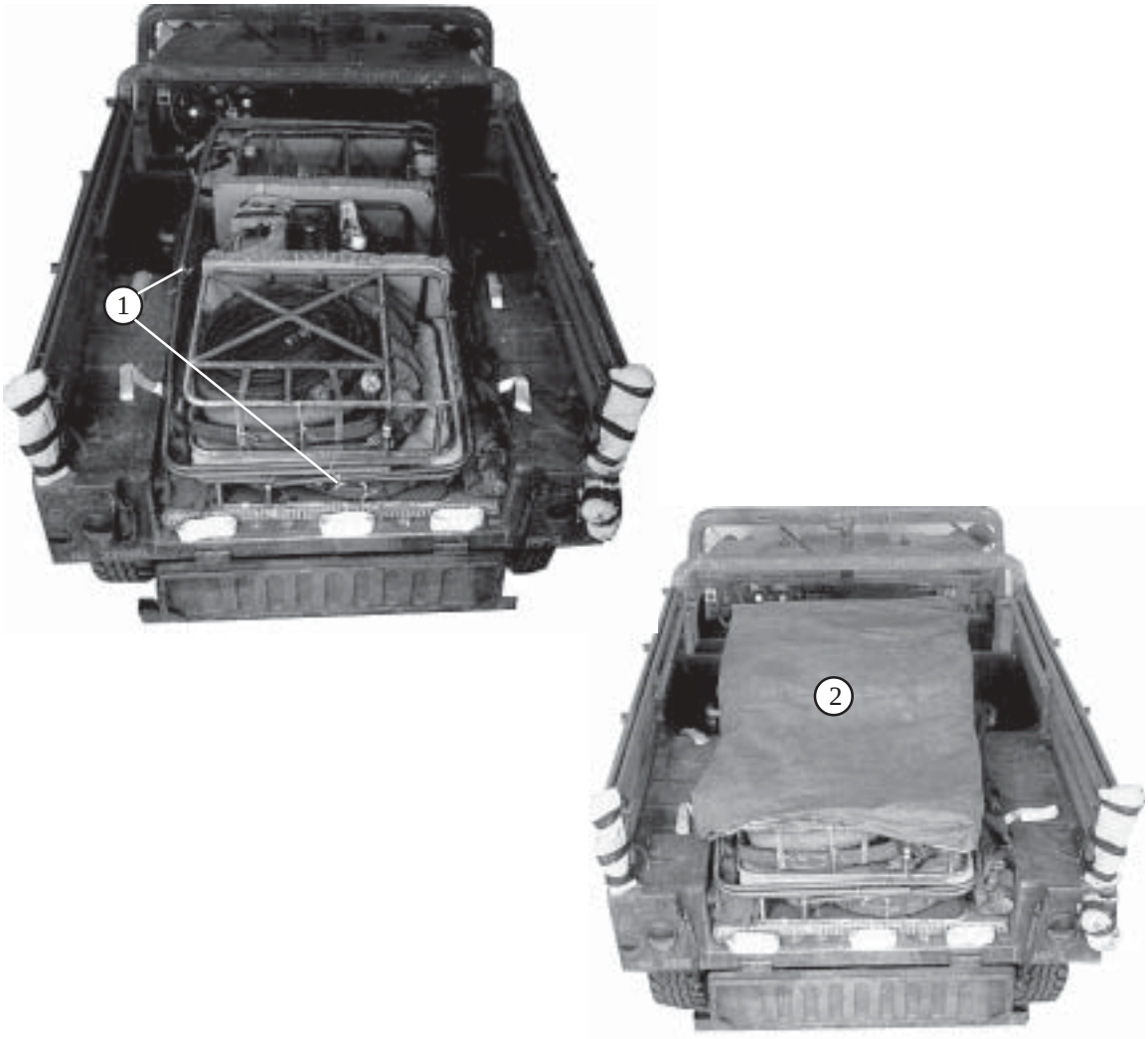
(13) Place a suction hose bag on the right side of the FARE on top of the honeycomb in the cargo bed.

(14) Place a suction hose bag on the left side of the FARE on top of the honeycomb in the cargo bed.

Figure 1-52. FARE Placed in Cargo Bed (continued)

SECURING FARE

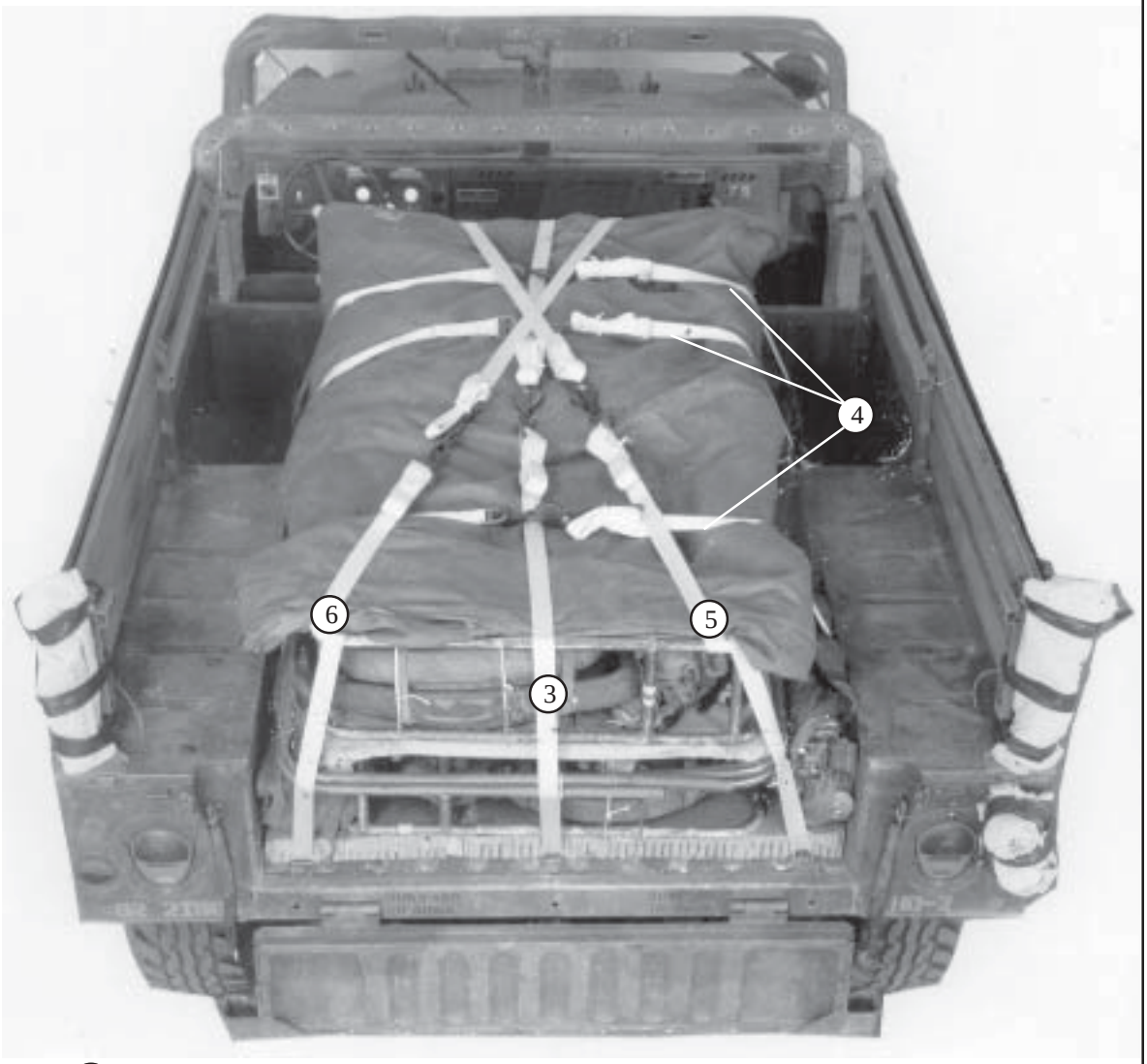
1-37 Secure the FARE in the cargo bed of the M998 using the pre-positioned lashings. Secure the lashings with D-rings and load binders according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 1-53.



(1) Place the truck tarpaulin bows on top of the suction hose bags. Tie the bows together with a length of type III nylon cord.

(2) Place the truck tarpaulin over the FARE. Fold the ends under to ensure a neat appearance.

Figure 1-53. FARE Secured



(3) Pass the end of the center lashing over the top of the tarpaulin, and secure the lashing in place.

(4) Pass the ends of the three horizontal lashings over the top of the tarpaulin, and secure them in place.

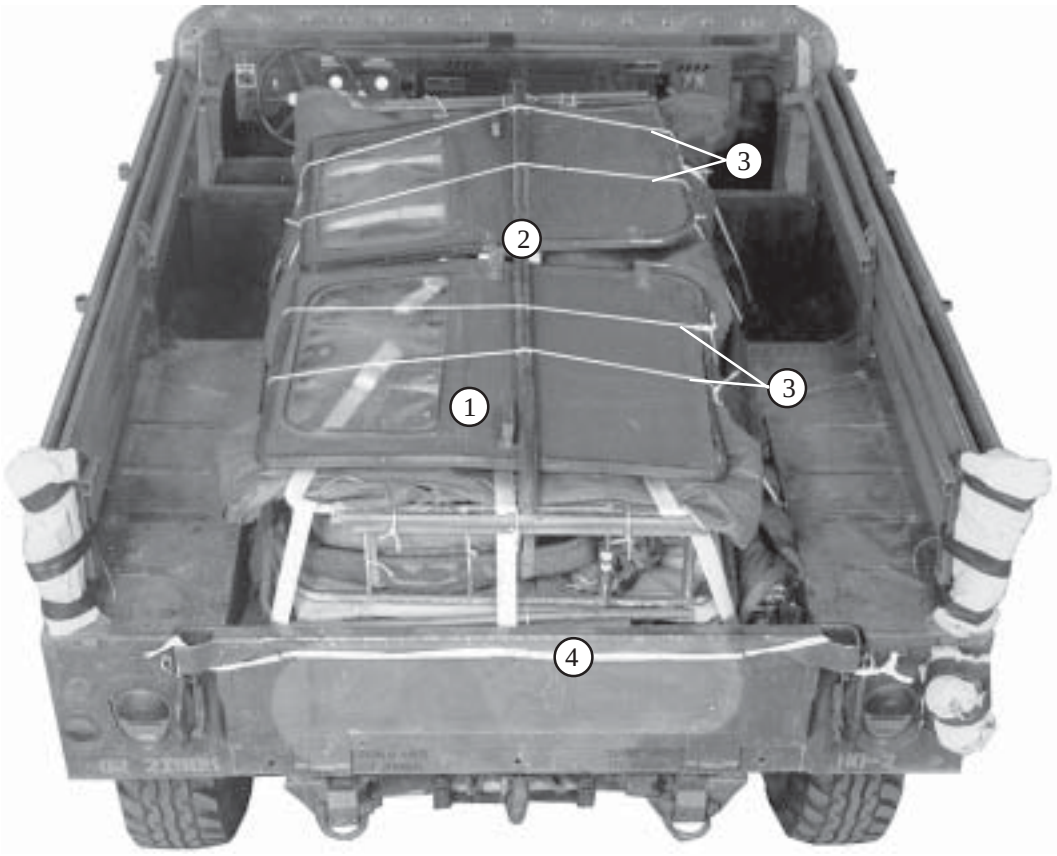
(5) Pass the right rear lashing over and around the discharge hose assembly to the top of the tarpaulin. Pass the left front lashing over the tarpaulin to meet the right rear lashing. Secure the lashing in place.

(6) Pass the left rear lashing over and around the discharge hose assembly to the top of the tarpaulin. Pass the right front lashing over the tarpaulin to meet the left rear lashing. Secure the lashing in place.

Figure 1-53. FARE Secured (continued)

SECURING ACCESSORIES

1-38. Secure the accessories on the tarpaulin as shown in Figure 1-54.



(1) Place the doors on top of the tarpaulin.

(2) Place the frame support on top of the doors.

(3) Secure the doors to the bows using a length of type III nylon cord.

(4) Close the tailgate and secure it in place with a double length of 1/2-inch tubular nylon webbing. Tie the ends using alternating half hitches and an overhand knot in the ends.

Figure 1-54. Accessories Secured

Table 1-4. Equipment Required for Rigging FARE in an M998, 1 1/4-Ton Truck Low-Velocity Airdrop

National Stock Number	Item	Quantity
4020-00-240-2146	Cord, nylon, type III, 550-lb	As required
8135-00-664-6958	Cushioning material, packaging, cellulose	As required
1670-00-753-3928	Pad, energy-dissipating (honeycomb)	
	3- by 36- by 96-in	4 sheets
7510-00-266-5016	Tape, adhesive, 2-in	As required
7510-00-266-6710	Tape, masking, 2-in	As required
1670-00268-2411	Tie-down assembly, 15-ft	6
	Webbing:	
8305-00-268-2411	Cotton, 1/4-in, type I	As required
8305-00-082-5752	Nylon, tubular, 1/2-in	As required
8305-00-263-3591	Type VIII	As required

SECTION IV - RIGGING FARE WITH SEVEN 500-GALLON FUEL DRUMS ON A 32-FOOT PLATFORM

DESCRIPTION OF LOAD

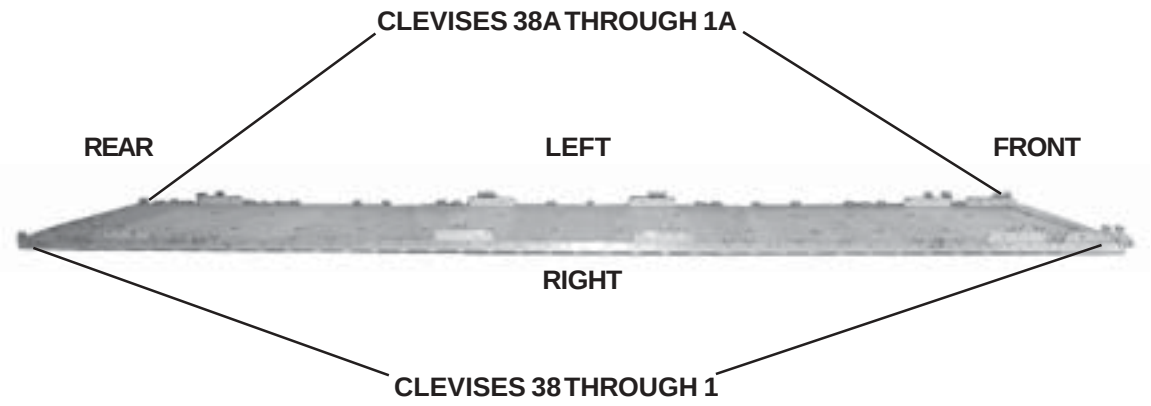
1-39. Two containerized FARE and seven 500-gallon collapsible fuel drums are rigged on a 32-foot platform with six G-11 cargo parachutes. Each drum is filled with 432 gallons of fuel. Each containerized FARE weighs 1,230 pounds. Each gasoline-filled 500 gallon fuel drum weighs 2,842 pounds and is approximately 53-inches in length. The total weight of the seven gasoline-filled drums and the two containerized FARE is 22,354 pounds.

Notes:
1. For drums filled with a liquid other than gasoline, use Table 1-1 to recompute the weight.
2. If the load varies from the one shown, the weight, height, CB, tipoff curve, and parachute requirements must be recomputed.
3. This load may not be rigged using water due to load weight requirements.
4. Do not pressurize drums with air.

PREPARING PLATFORM

1-40. Prepare a 32-foot airdrop platform using two tandem links, eight suspension brackets, and 82 tie-down clevises as shown in Figure 1-55.

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



Steps:

1. Inspect, or assemble and inspect, the platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22.
2. Install a suspension bracket using holes 6, 7, and 8; 26, 27, and 28; 37, 38, and 39; 57, 58, and 59 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 tie-down clevis to bushings 1 and 2 on each tandem link.
5. Install a tie-down clevis to bushings 1 and 3 on the first suspension bracket on each platform side rail.
6. Install a tie-down clevis to bushings 2 and 3 on the second suspension bracket on each platform side rail.
7. Install a tie-down clevis to bushings 2 and 3 on the third suspension bracket on each platform side rail.
8. Install a tie-down clevis to bushings 2 and 4 (doubled) on the fourth suspension bracket on each platform side rail.
9. Starting at the front of each platform side rail, install a tie-down clevis to the bushings bolted to holes 4, 10, 11 (tripled), 12, 16, 19, 22, 23, 31, 34, 41, 42, 46, 48, 53, 54 (tripled), 55 (tripled), 56, 61 (tripled), 62, 63 (tripled), and 64.
10. Starting at the front of the platform, number the clevises bolted to the right side from 1 through 38 and those bolted to the left side from 1A through 38A.

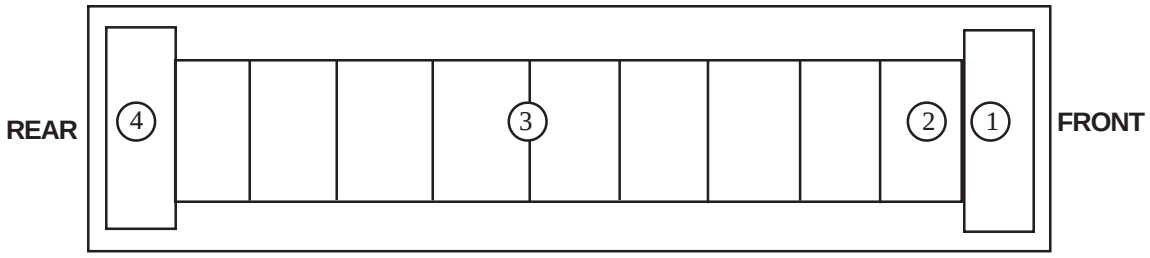
Figure 1-55. Platform Prepared

BUILDING AND POSITIONING HONEYCOMB

1-41. Position the base layers of honeycomb on the platform as shown in Figure 1-56. Build and position three honeycomb stacks on top of the base layers of honeycomb as shown in Figure 1-57.

Note: Do not glue the stacks of honeycomb to the platform.

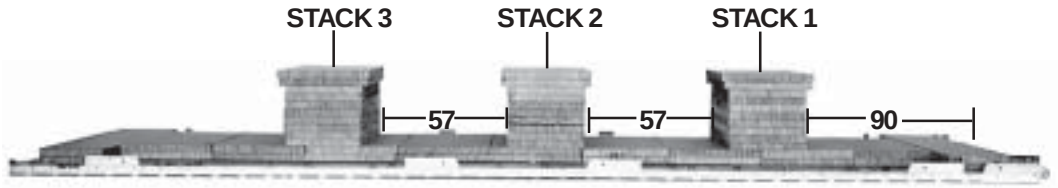
Note: This drawing is not drawn to scale.



1. Center two 96- by 24-inch pieces of honeycomb 9 inches from the front edge of the platform.
2. Center two 60- by 36-inch pieces of honeycomb flush against those positioned in step 1.
3. Center sixteen 60- by 36-inch pieces of honeycomb (eight sets, two pieces each) on the platform. Place the first set flush against the rear edge of the honeycomb positioned in step 2. Place other sets flush against each previous set.
4. Center two 96- by 24-inch pieces of honeycomb flush against the rear of the honeycomb positioned in step 3.

Figure 1-56. Base Layers Positioned

Note: All measurements are given in inches.

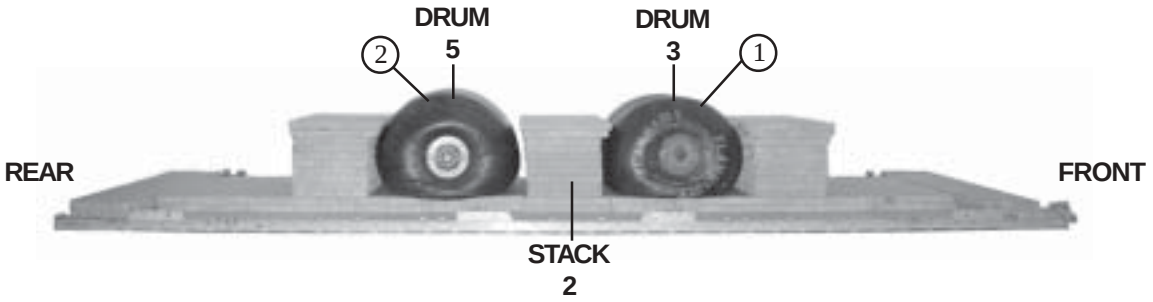


Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
1	8	60	30	Honeycomb	Center and glue on top of base layers 90 inches from the front edge of the platform.
	1	60	34	Honeycomb	Center and glue on top of the base.
	1	60	36	Honeycomb	Center and glue on top of the 60- by 34-inch piece of honeycomb.
2	8	60	30	Honeycomb	Build stack according to stack 1.
	1	60	34	Honeycomb	Center stack 57 inches from the rear edge of stack 1.
	1	60	36	Honeycomb	
3	8	60	30	Honeycomb	Build stack according to stack 1.
	1	60	34	Honeycomb	Center stack 57 inches from the rear edge of stack 2.
	1	60	36	Honeycomb	

Figure 1-57. Honeycomb Stacks Prepared and Positioned

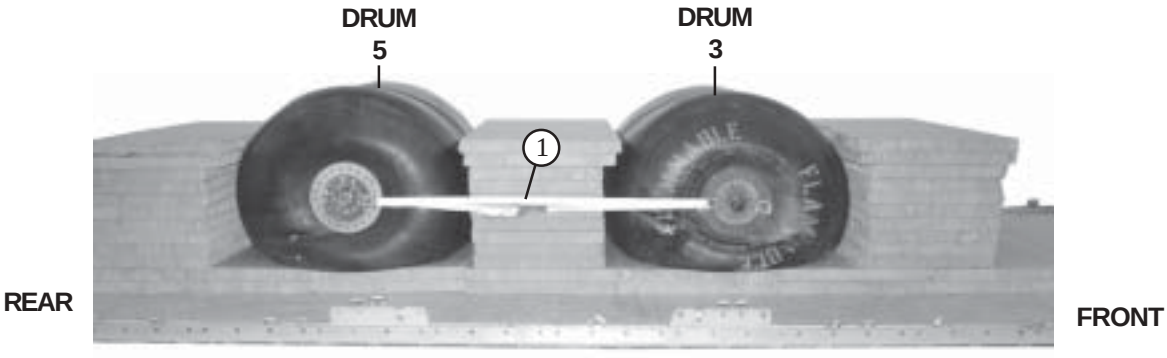
POSITIONING AND LASHING DRUMS

1-42. Before lifting, check each fuel drum and fittings for leaks and damage. Be sure each end of each fuel drum has two lifting shackles. Attach a 9-foot (2-loop), type XXVI nylon webbing sling to the fuel drum lifting shackle by adapting the procedures in paragraph 1-8 and as shown in Figure 1-16. Position the fuel drums as shown in Figure 1-58.



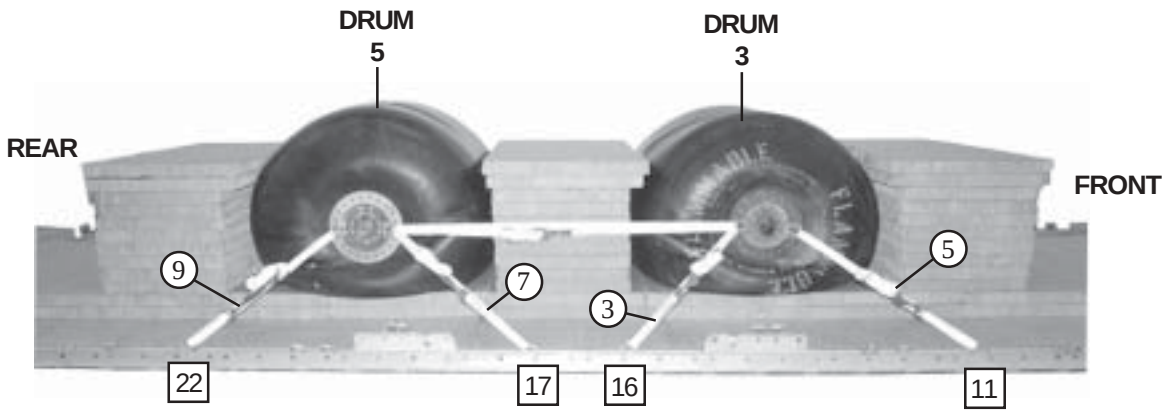
(1) Place drum 3 flush against the front of stack 2.

(2) Place drum 5 flush against the rear of stack 2.



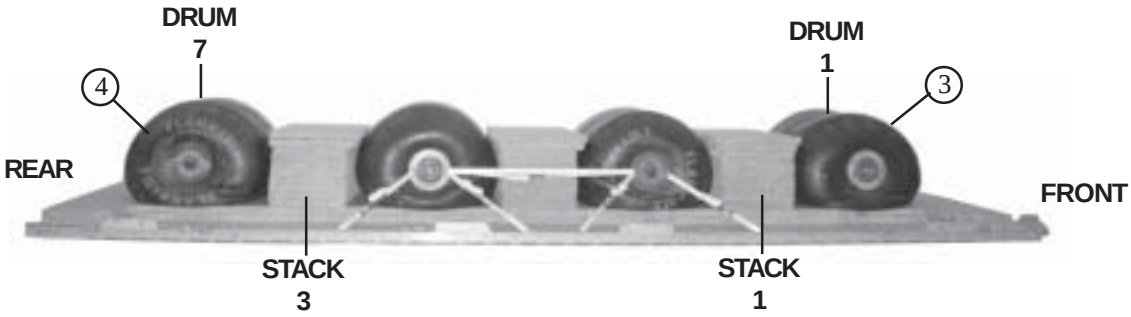
Lashing Number	Tie-down Clevis Number	Instructions
1		Route a lashing from the right rear shackle of drum 3 to the right front shackle of drum 5.
2		Route a lashing from the left rear shackle of drum 3 to the left front shackle of drum 5.

Figure 1-58. Fuel Drums Positioned and Lashed



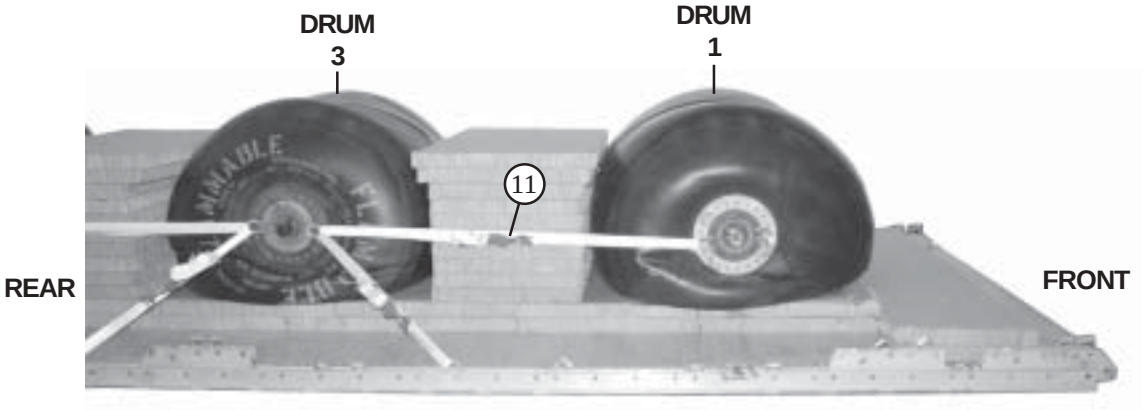
Lashing Number	Tie-down Clevis Number	Instructions
3	16	Route a lashing from clevis 16 to the right rear shackle of drum 3.
4	16A	Route a lashing from clevis 16A to the left rear shackle of drum 3.
5	11	Route a lashing from clevis 11to the right front shackle of drum 3.
6	11A	Route a lashing from clevis 11A to the left front shackle of drum 3.
7	17	Route a lashing from clevis 17 to the right front shackle of drum 5.
8	17A	Route a lashing from clevis 17A to the left front shackle of drum 5.
9	22	Route a lashing from clevis 22 to the right rear shackle of drum 5.
10	22A	Route a lashing from clevis 22A to the left rear shackle of drum 5.

Figure 1-58. Fuel Drums Positioned and Lashed (Continued)



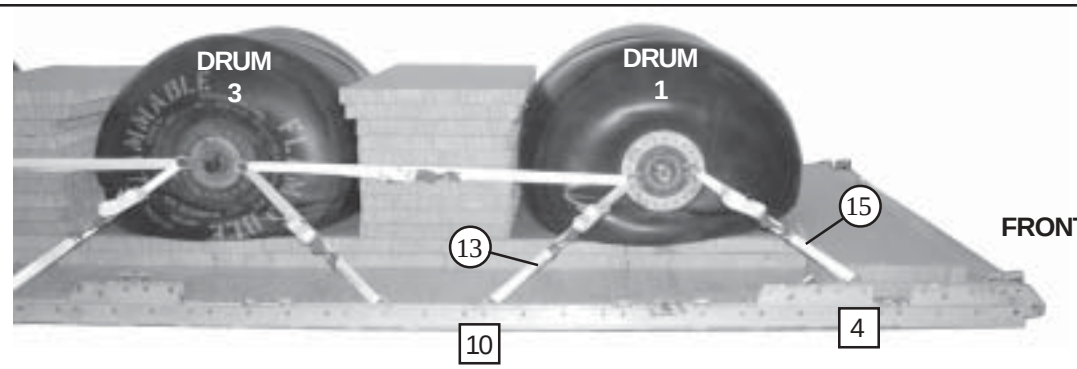
(3) Place drum 1 flush against the front of stack 1.

(4) Place drum 7 flush against the rear of stack 3.

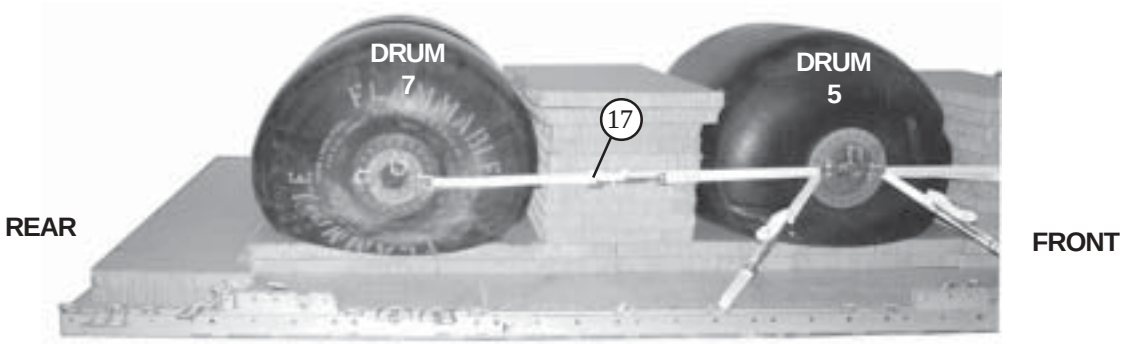


Lashing Number	Tie-down Clevis Number	Instructions
11		Route a lashing from the right rear shackle of drum 1 to the right front shackle of drum 3.
12		Route a lashing from the left rear shackle of drum 1 to the left front shackle of drum 3.

Figure 1-58. Fuel Drums Positioned and Lashed (Continued)

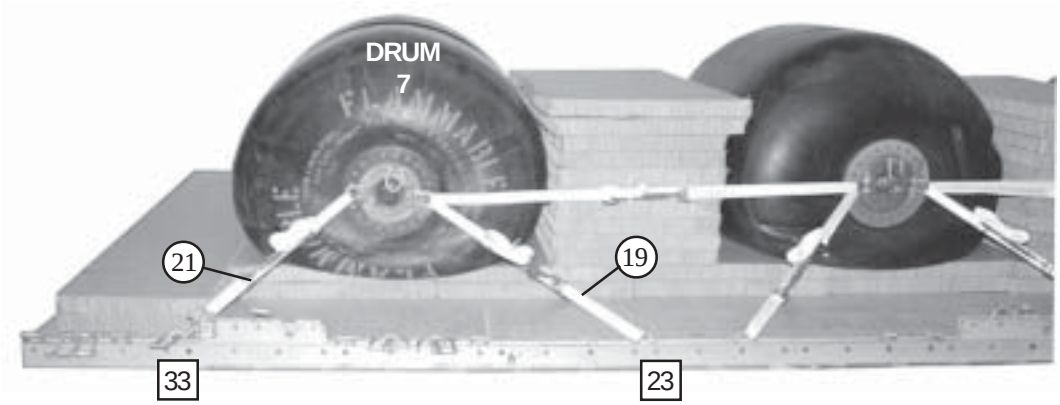


Lashing Number	Tie-down Clevis Number	Instructions
13	10	Route a lashing from clevis 10 to the right rear shackle of drum 1.
14	10A	Route a lashing from clevis 10A to the left rear shackle of drum 1.
15	4	Route a lashing from clevis 4 to the right front shackle of drum 1.
16	4A	Route a lashing from clevis 4A to the left front shackle of drum 1.

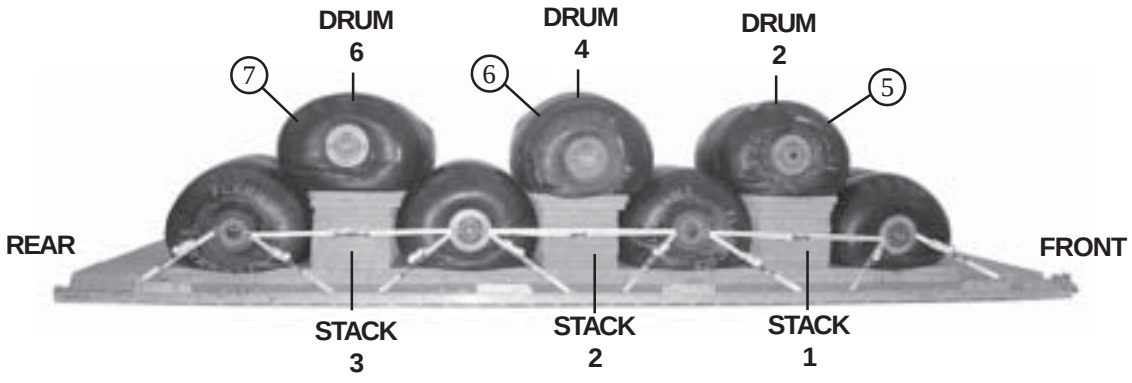


Lashing Number	Tie-down Clevis Number	Instructions
17		Route a lashing from the right rear shackle of drum 5 to the right front shackle of drum 7.
18		Route a lashing from the left rear shackle of drum 5 to the left front shackle of drum 7.

Figure 1-58. Fuel Drums Positioned and Lashed (Continued)



Lashing Number	Tie-down Clevis Number	Instructions
19	23	Route a lashing from clevis 23 to the right front shackle of drum 7.
20	23A	Route a lashing from clevis 23A to the left front shackle of drum 7.
21	33	Route a lashing from clevis 33 to the right rear shackle of drum 7.
22	33A	Route a lashing from clevis 33A to the left rear shackle of drum 7.

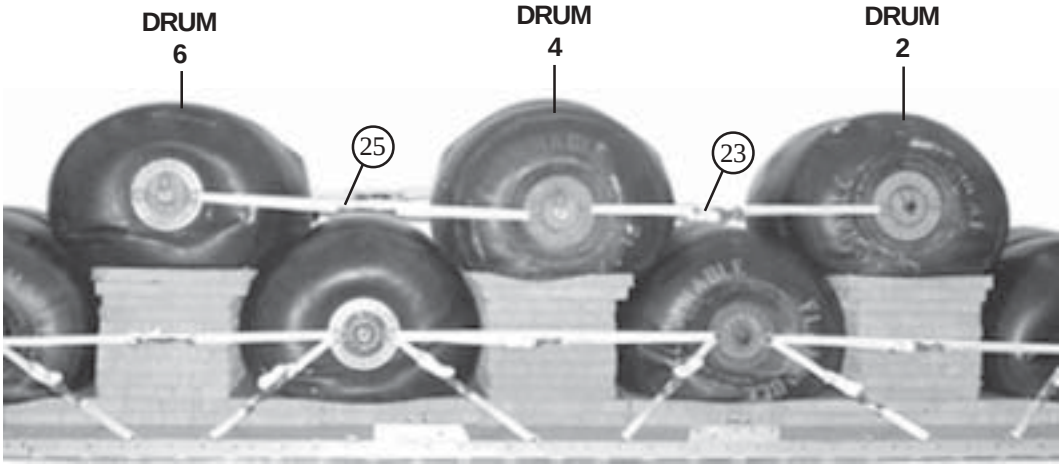


(5) Place drum 2 centered on stack 1.

(6) Place drum 4 centered on stack 2.

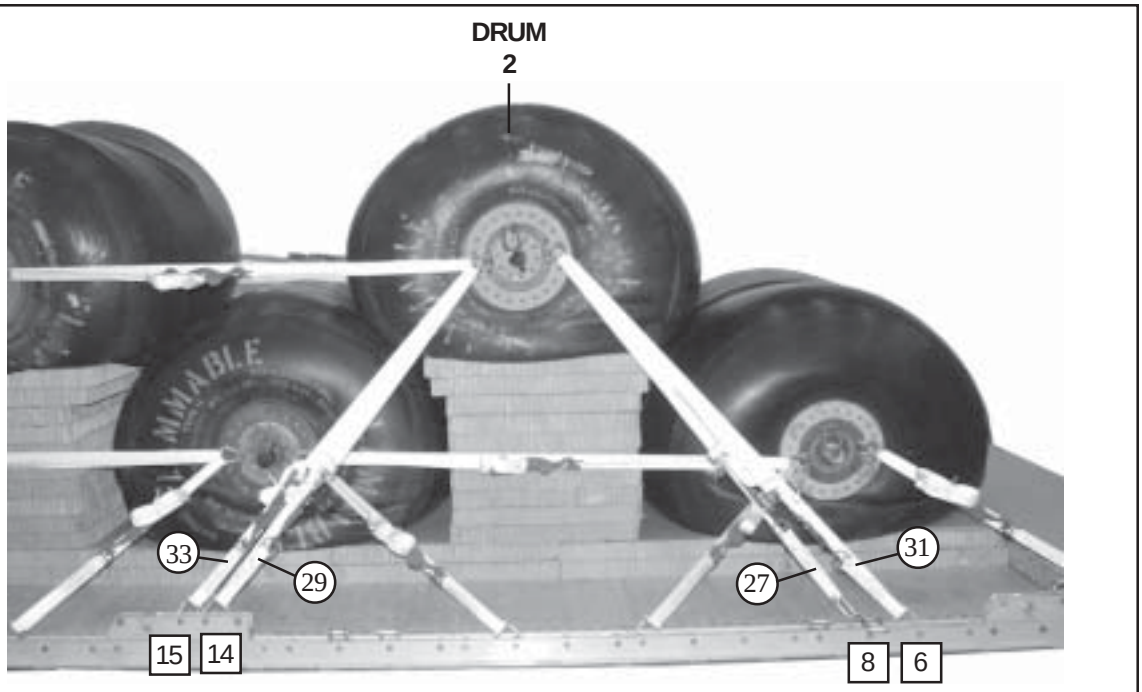
(7) Place drum 6 centered on stack 3.

Figure 1-58. Fuel Drums Positioned and Lashed (Continued)



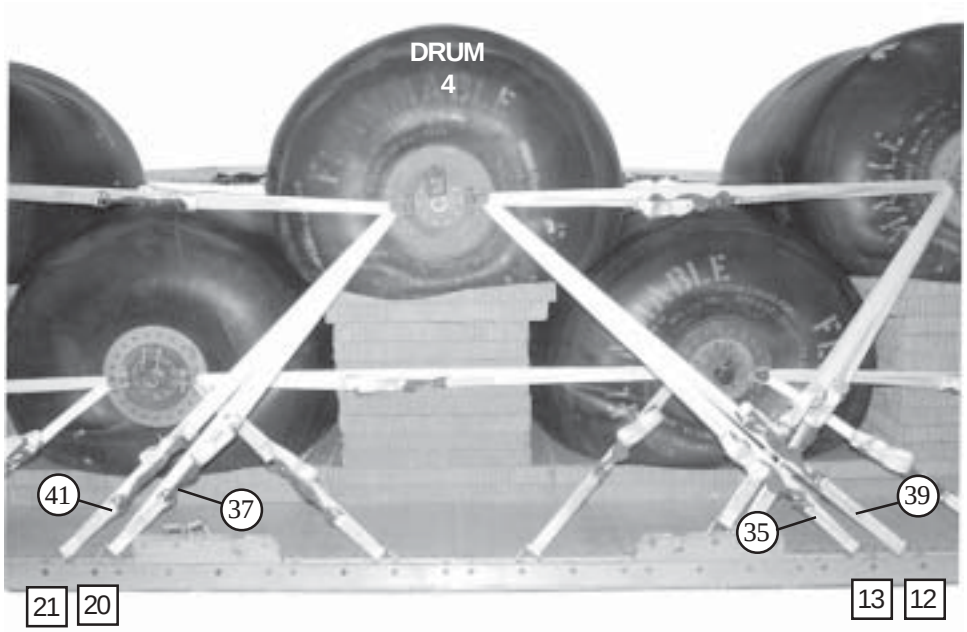
Lashing Number	Tie-down Clevis Number	Instructions
23		Route a lashing from the right rear shackle of drum 2 to the right front front shackle of drum 4.
24		Route a lashing from the left rear shackle of drum 2 to the left front front shackle of drum 4.
25		Route a lashing from the right rear shackle of drum 4 to the right front front shackle of drum 6.
26		Route a lashing from the left rear shackle of drum 4 to the left front front shackle of drum 6.

Figure 1-58. Fuel Drums Positioned and Lashed (Continued)



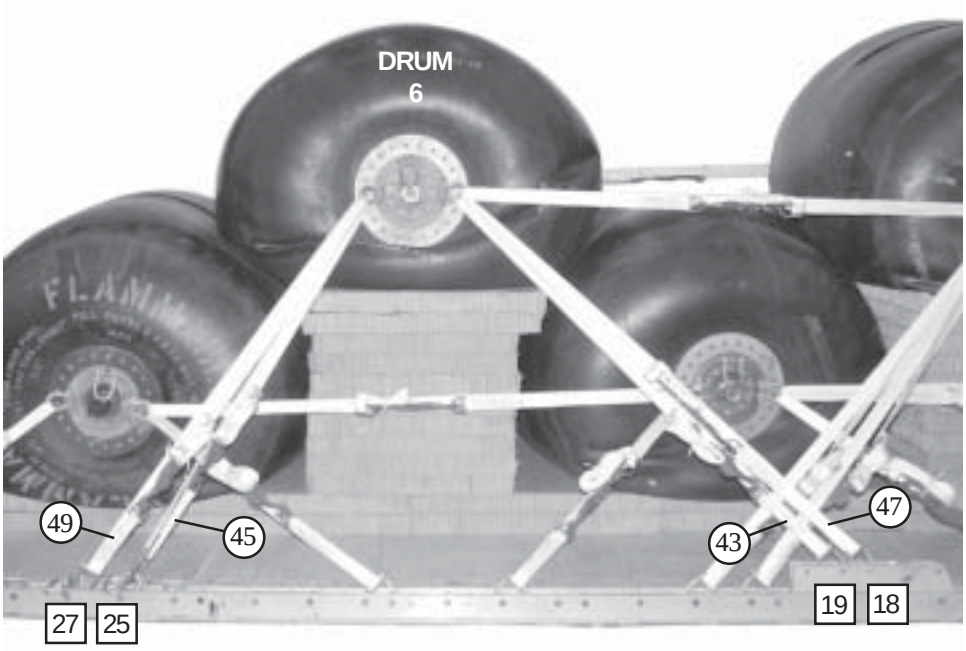
Lashing Number	Tie-down Clevis Number	Instructions
27	8	Route a lashing from clevis 8 to the right front shackle of drum 2.
28	8A	Route a lashing from clevis 8A to the left front shackle of drum 2.
29	14	Route a lashing from clevis 14 to the right front shackle of drum 2.
30	14A	Route a lashing from clevis 14A to the left front shackle of drum 2.
31	6	Route a lashing from clevis 6 to the right rear shackle of drum 2.
32	6A	Route a lashing from clevis 6A to the left rear shackle of drum 2.
33	15	Route a lashing from clevis 15 to the right rear shackle of drum 2.
34	15A	Route a lashing from clevis 15A to the left rear shackle of drum 2.

Figure 1-58. Fuel Drums Positioned and Lashed (Continued)



Lashing Number	Tie-down Clevis Number	Instructions
35	13	Route a lashing from clevis 13 to the right front shackle of drum 4.
36	13A	Route a lashing from clevis 13A to the left front shackle of drum 4.
37	20	Route a lashing from clevis 20 to the right front shackle of drum 4.
38	20A	Route a lashing from clevis 20A to the left front shackle of drum 4.
39	12	Route a lashing from clevis 12 to the right rear shackle of drum 4.
40	12A	Route a lashing from clevis 12 to the left rear shackle of drum 4.
41	21	Route a lashing from clevis 21 to the right rear shackle of drum 4.
42	21A	Route a lashing from clevis 21A to the left rear shackle of drum 4.

Figure 1-58. Fuel Drums Positioned and Lashed (Continued)

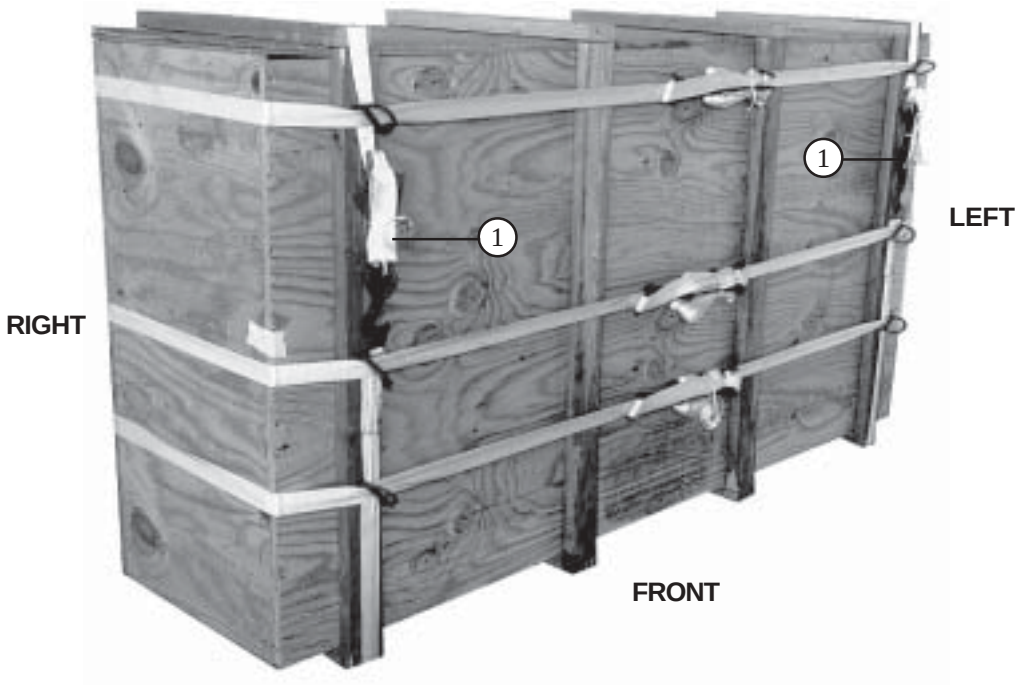


Lashing Number	Tie-down Clevis Number	Instructions
43	19	Route a lashing from clevis 19 to the right front shackle of drum 6.
44	19A	Route a lashing from clevis 19A to the left front shackle of drum 6.
45	25	Route a lashing from clevis 25 to the right front shackle of drum 6.
46	25A	Route a lashing from clevis 25A to the left front shackle of drum 6.
47	18	Route a lashing from clevis 18 to the right rear shackle of drum 6.
48	18A	Route a lashing from clevis 18A to the left rear shackle of drum 6.
49	27	Route a lashing from clevis 27 to the right rear shackle of drum 6.
50	27A	Route a lashing from clevis 27A to the left rear shackle of drum 6.

Figure 1-58. Fuel Drums Positioned and Lashed (Continued)

PREPARING FARE

1-43. Build two containers for the FARE according to paragraph1-4. Prepare the components of the FARE and stow them in the containers according to paragraph 1-5. Secure the container as shown in Figure 1-59.

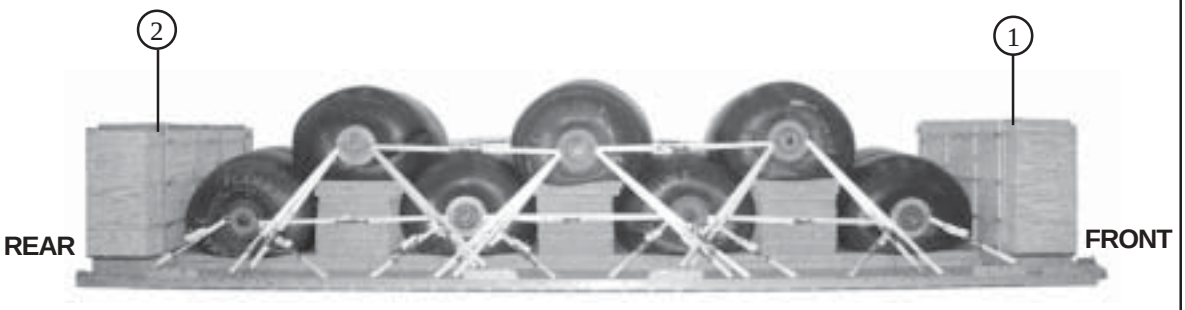


(1) Secure the container according to paragraph 1-6 except position the vertical lashings so that the load binders are on the front side of the container of the front container and on the rear side of the rear container.

Figure 1-59. Container Secured

INSTALLING LIFTING SLINGS AND POSITIONING FARE CONTAINERS

1-44. Install lifting slings to the FARE containers as shown in Figure 1-14. Position the FARE container as shown in Figure 1-60.



NOTES:
1. Containers should be positioned so that the load binders are facing the ends of the platform.
2. There must be no load binders on top of container 2.

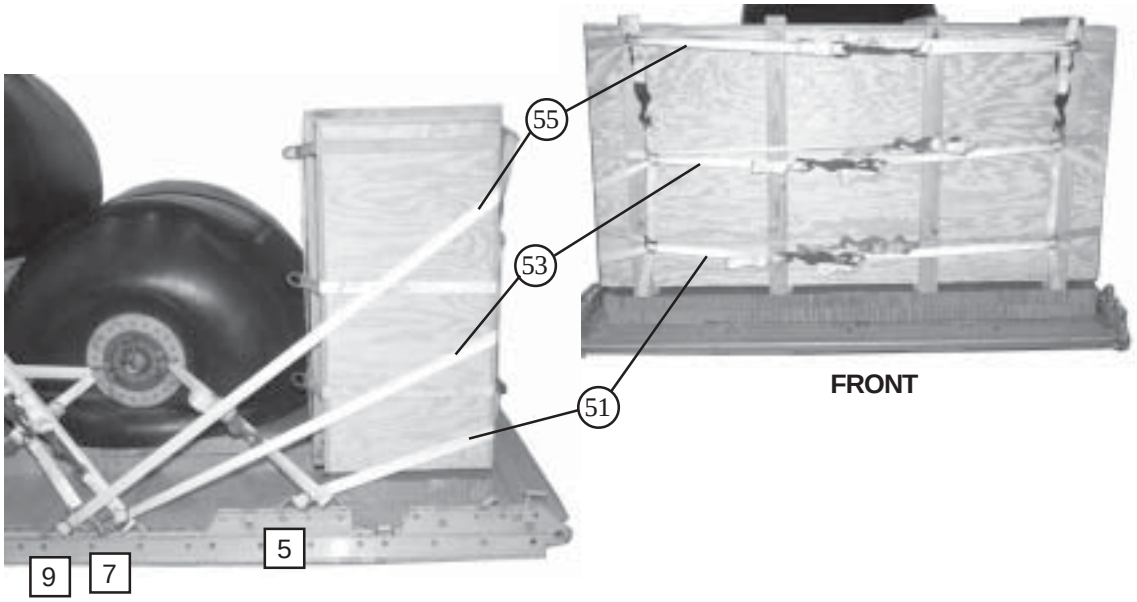
(1) Center container 1 flush with the front edge of the base layers of honeycomb.

(2) Center container 2 flush with the rear edge of the base layers of honeycomb.

Figure 1-60. FARE Containers Positioned

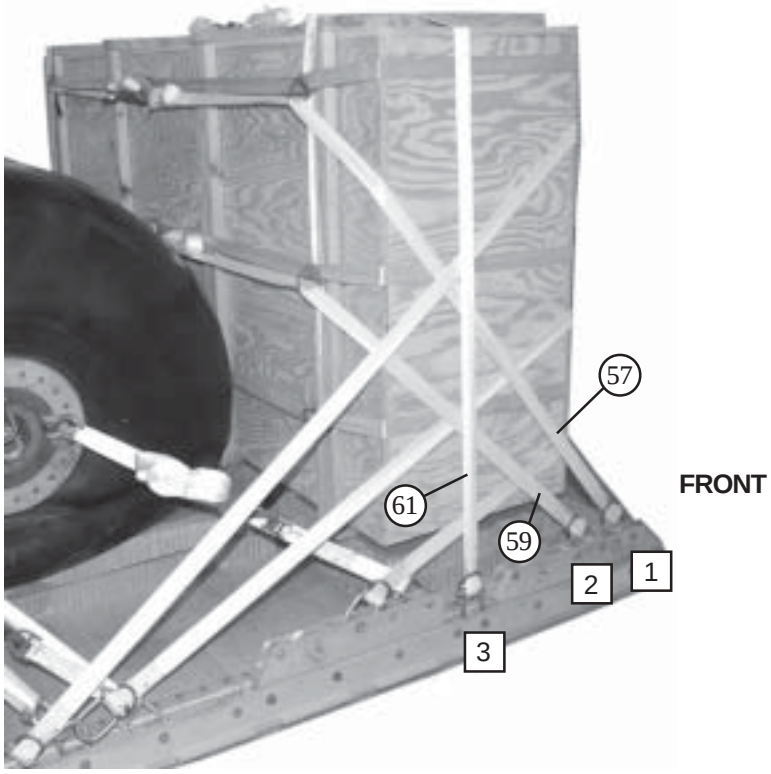
LASHING FARE CONTAINERS TO PLATFORM

1-45. Lash the FARE containers to the platform as shown in Figure 1-61.



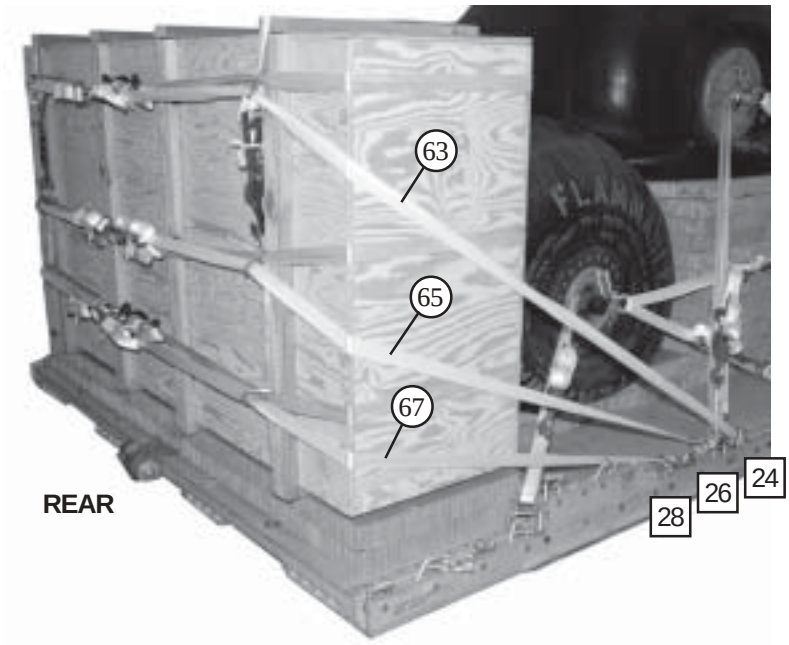
Lashing Number	Tie-down Clevis Number	Instructions
51	5	Route a lashing through it's own D-ring on clevis 5 and through the bottom rings on the front of container 1.
52	5A	Route a lashing through it's own D-ring on clevis 5A and through the bottom rings on the front of container 1. Bind lashing 51 to lashing 52 with two D-rings and a load binder.
53	7	Route a lashing through it's own D-ring on clevis 7 and through the middle rings on the front of container 1.
54	7A	Route a lashing through it's own D-ring on clevis 7A and through the middle rings on the front of container 1. Bind lashing 53 to lashing 54 with two D-rings and a load binder.
55	9	Route a lashing through it's own D-ring on clevis 9 and through the top rings on the front of container 1.
56	9A	Route a lashing through it's own D-ring on clevis 9A and through the top rings on the front of container 1. Bind lashing 55 to lashing 56 with two D-rings and a load binder.

Figure 1-61. FARE Containers Lashed



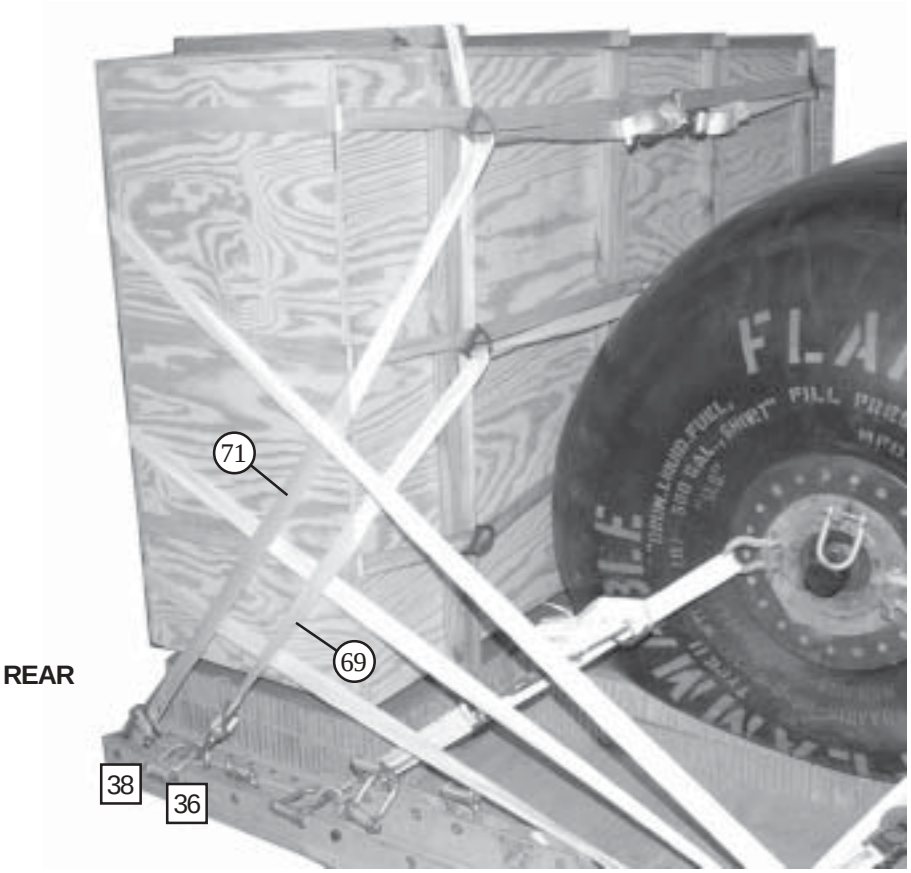
Lashing Number	Tie-down Clevis Number	Instructions
57	1	Route a lashing through it's own D-ring on clevis 1and through the top rings on the rear of container 1.
58	1A	Route a lashing through it's own D-ring on clevis 1A and through the top rings on the rear of container 1. Bind lashing 57 to lashing 58 with two D-rings and a load binder.
59	2	Route a lashing through it's own D-ring on clevis 2 and through the middle rings on the rear of container 1.
60	2A	Route a lashing through it's own D-ring on clevis 2A and through the middle rings on the rear of container 1. Bind lashing 59 to lashing 60 with two D-rings and a load binder.
61	3	Route a lashing through it's own D-ring on clevis 3 and over the top of container 1.
62	3A	Route a lashing through it's own D-ring on clevis 3A and over the top of container 1. Bind lashing 61 to lashing 62 with two D-rings and a load binder.

Figure 1-61. FARE Containers Lashed (Continued)



Lashing Number	Tie-down Clevis Number	Instructions
63	24	Route a lashing through it's own D-ring on clevis 24 and through the top rings on the rear of container 2.
64	24A	Route a lashing through it's own D-ring on clevis 24A and through the top rings on the rear of container 2. Bind lashing 63 to lashing 64 with two D-rings and a load binder.
65	26	Route a lashing through it's own D-ring on clevis 26 and through the middle rings on the rear of container 2.
66	26A	Route a lashing through it's own D-ring on clevis 26A and through the middle rings on the rear of container 2. Bind lashing 65 to lashing 66 with two D-rings and a load binder.
67	28	Route a lashing through it's own D-ring on clevis 28 and through the bottom rings on the rear of container 2.
68	28A	Route a lashing through it's own D-ring on clevis 28A and through the bottom rings on the rear of container 2. Bind lashing 67 to lashing 68 with two D-rings and a load binder.

Figure 1-61. FARE Containers Lashed (Continued)



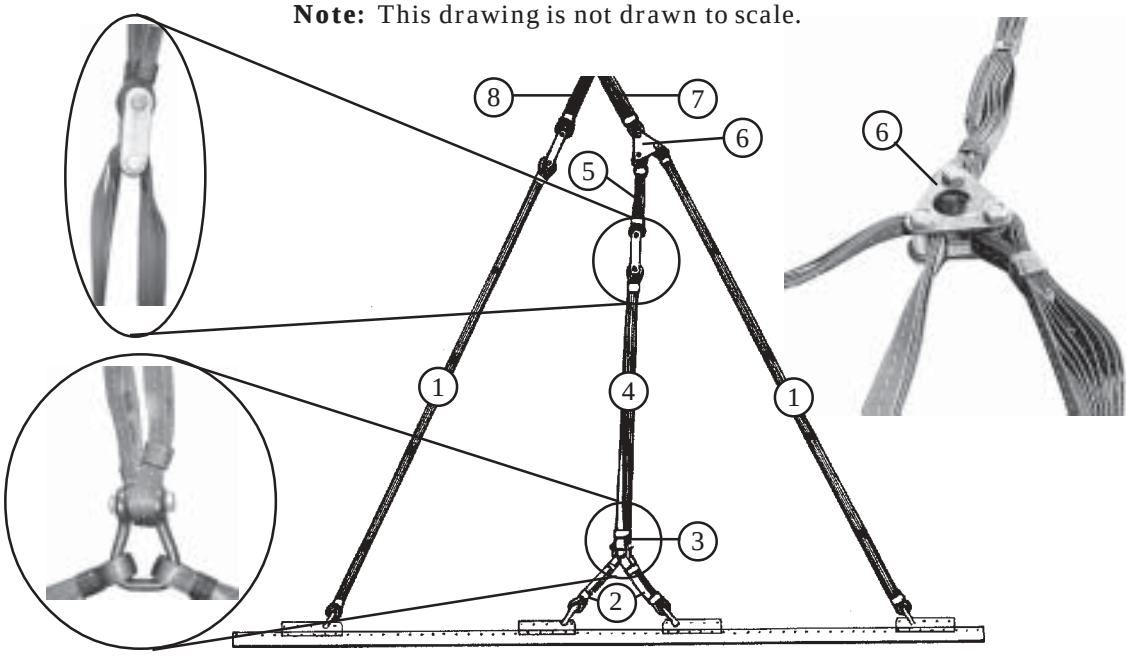
Lashing Number	Tie-down Clevis Number	Instructions
69	36	Route a lashing through it's own D-ring on clevis 36 and through the middle rings on the front of container 2.
70	36A	Route a lashing through it's own D-ring on clevis 36A and through the middle rings on the front of container 2. Bind lashing 69 to lashing 70 with two D-rings and a load binder.
71	38	Route a lashing through it's own D-ring on clevis 38 and through the top rings on the front of container 2.
72	38A	Route a lashing through it's own D-ring on clevis 38A and through the top rings on the front of container 2. Bind lashing 65 to lashing 66 with two D-rings and a load binder.

Figure 1-61. FARE Containers Lashed (Continued)

INSTALLING SUSPENSION SLINGS

1-46. Install suspension slings as shown in Figure 1-62.

Note: This drawing is not drawn to scale.



(1) Attach a 20-foot (4-loop), type XXVI nylon webbing sling to each first and fourth suspension bracket with a large suspension clevis.

(2) Attach a 3-foot (4-loop), type XXVI nylon webbing sling to each second and third suspension bracket with a large suspension clevis.

(3) Place the 3-foot slings on each side of the load in the bell of a large suspension clevis.

(4) Bolt a 16-foot (2-loop), type XXVI nylon webbing sling to each large suspension clevis. Loop the sling to form one half the length of the sling.

(5) Attach a 11-foot (2-loop), type XXVI nylon webbing sling to the 16-foot sling with a 5 1/2-inch, two-point link assembly. Loop the sling to form one half of the length of the sling.

(6) Use a 3-point link to join the center and front suspension slings.

(7) Place a 3-foot (4-loop), type XXVI nylon webbing sling on the top spool of the 3-point link.

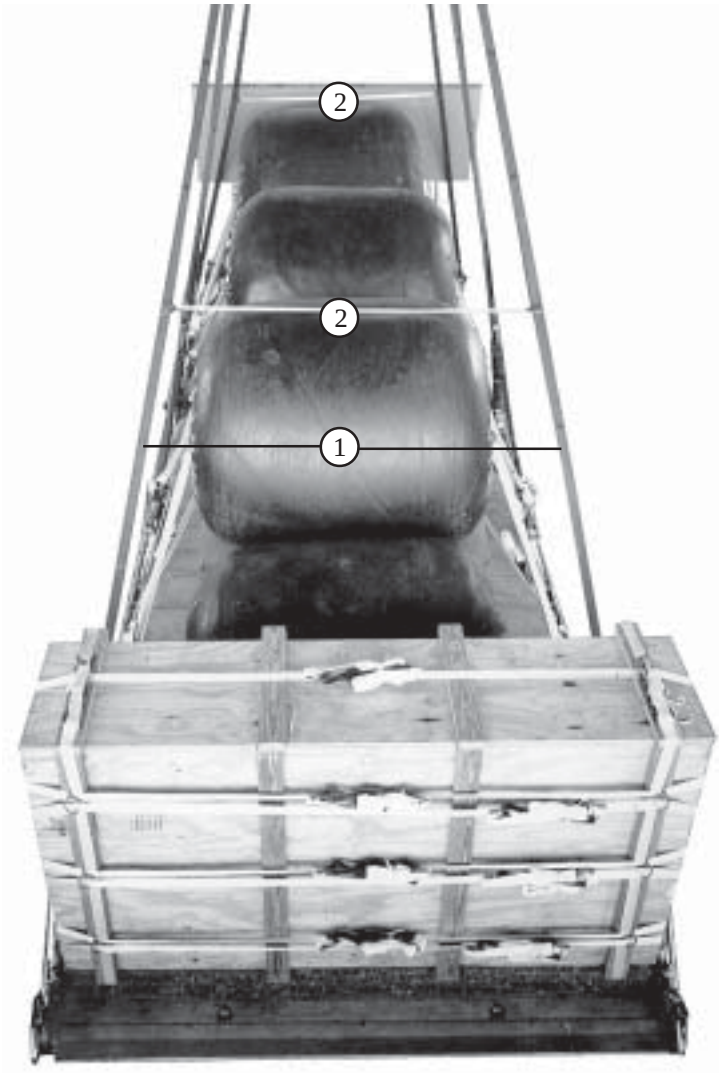
(8) Attach a 3-foot (4-loop), type XXVI nylon webbing sling to each rear suspension sling with a 3 3/4-inch, two-point link assembly.

(9) Place cloth-backed tape around the bolt and nut on all connecting links (not shown).

Figure 1-62. Suspension Slings Installed

SAFETY TIEING SUSPENSION SLINGS

1-47. Safety tie the suspension slings as shown in Figure 1-63. Refer to the Notice of Exception in the Introduction portion of this manual.



(1) Raise the suspension slings.

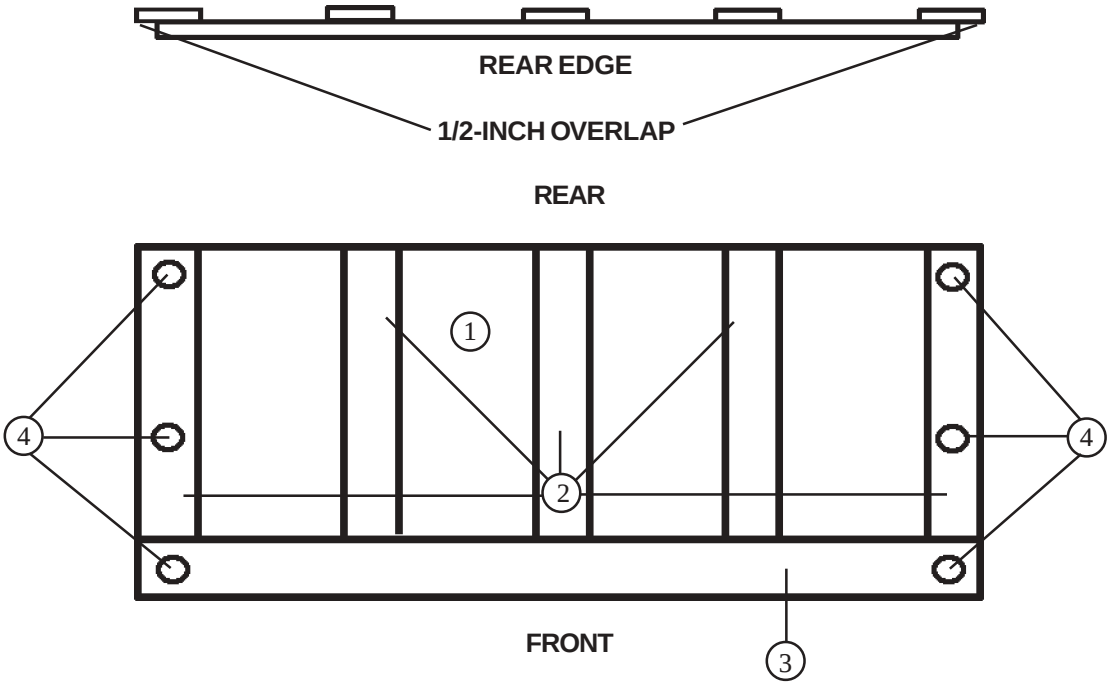
(2) Raise the suspension slings and install the suspension sling safety ties as shown in Appendix A, to the front and rear suspension slings, even with the top of drum 2 and drum 6.

Figure 1-63. Suspension Slings Safety Tied

BUILDING AND INSTALLING CARGO PARACHUTE STOWAGE TRAY

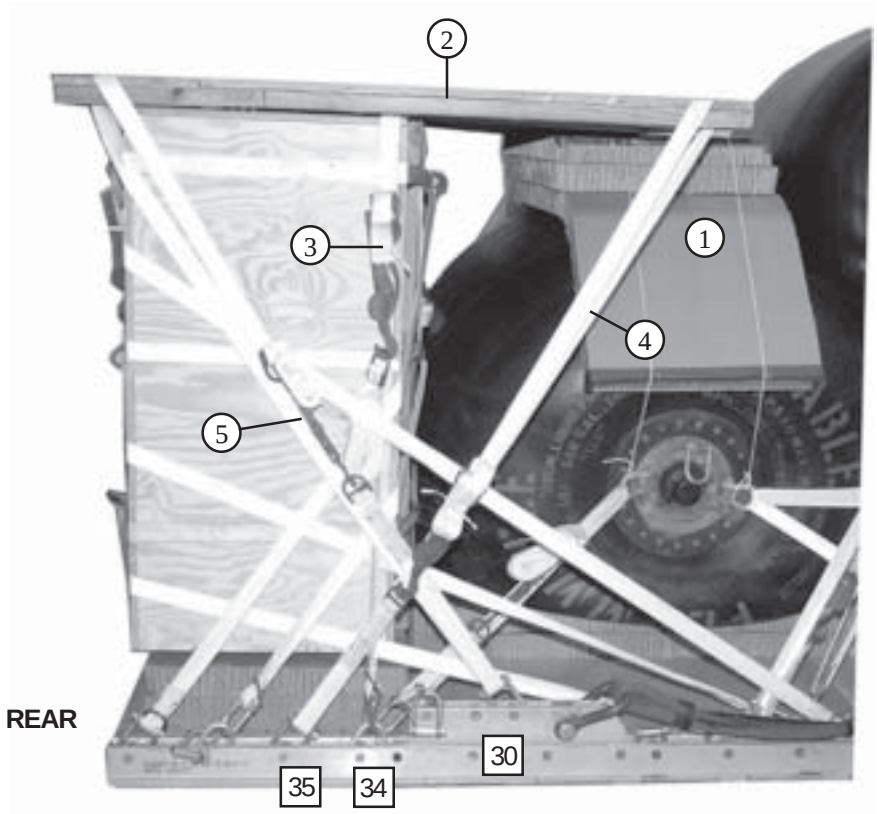
1-48. Build the cargo parachute stowage tray as shown in Figure 1-64. Install the cargo parachute stowage tray as shown in Figure 1-65.

Note: This drawing is not drawn to scale.



1. Lay a 96- by 48- by 3/4-inch and a 96- by 12- by 3/4-inch piece of plywood side by side.
2. Nail five 2- by 6- by 54-12-inch pieces of lumber using eightpenny nails as shown above.
3. Nail a 2- by 6- by 97-inch piece of lumber flush against the vertical pieces of lumber on the front edge of the tray using eightpenny nails.
4. Drill six holes 3 inches on center from the edges of the plywood as shown above.

Figure 1-64. Cargo Parachute Stowage Tray Built



1. Center two 24- by 48-inch pieces of honeycomb on top of a 24- by 96-inch piece of honeycomb over drum 7. Tape the top edges and secure the honeycomb to the drum with type III nylon cord.

2. Center the parachute stowage tray over container 2 with the 2- by 6-by 97-inch piece of lumber resting on the honeycomb over drum 7.

3. Attach 15-foot tie-down assemblies to clevises 34 and 34A by running the straps through their own D-rings. Run the lashing from clevis 34A through the center holes in the tray and secure them together with D-rings and a load binder on the right side.

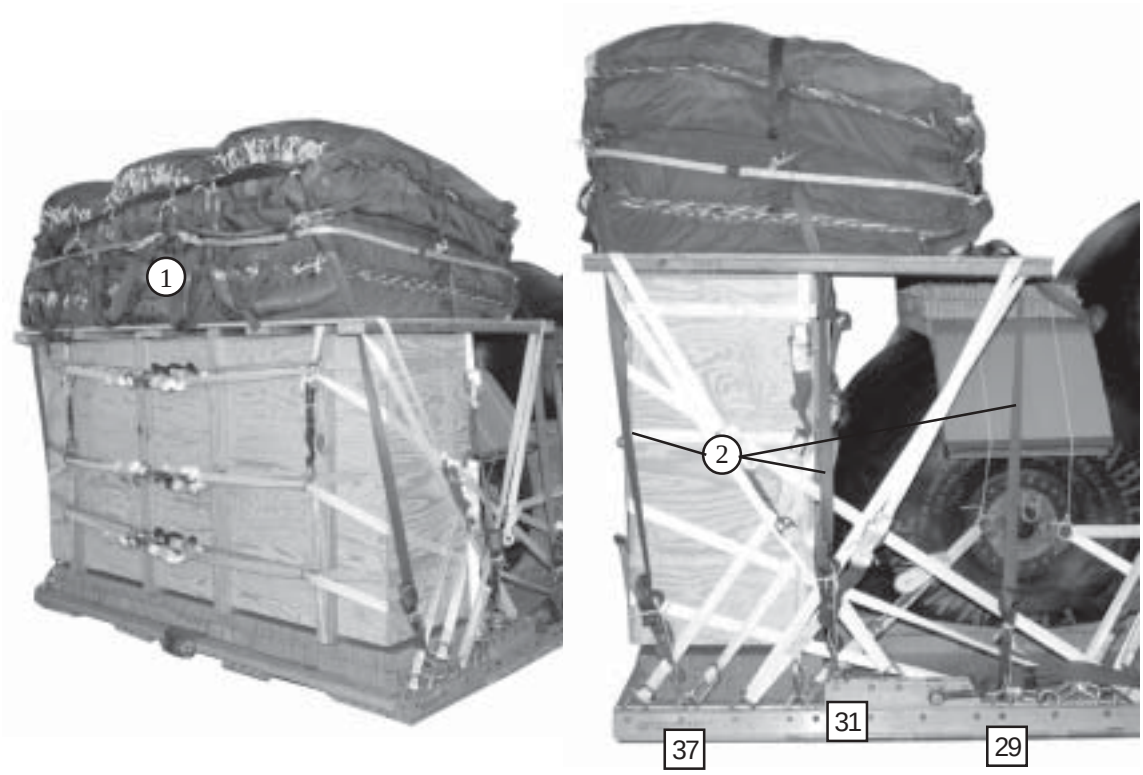
4. Route a lashing through platform clevis 35 through the front hole of the parachute platform. Attach the lashing with a load binder and D-ring. Repeat step for clevis 35A.

5. Route a lashing through platform clevis 30 through the rear hole of the parachute platform. Attach the lashing with a load binder and D-ring. Repeat step for clevis 30A.

Figure 1-65. Cargo Parachute Stowage Tray Installed

PREPARING AND STOWING CARGO PARACHUTES

1-49. Prepare, place, and restrain six G-11 cargo parachutes according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 1-66.



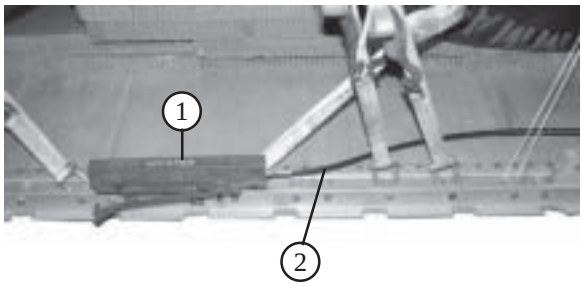
(1) Position and secure six G-11 cargo parachutes according to FM 4-20.102/ NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

(2) Restrain the parachutes using clevises 29, 29A, 31, 31A, 37, 37A.

Figure 1-66. Cargo Parachute Stowed

INSTALLING THE EXTRACTION SYSTEM

1-50. Install the EFTC as shown in Figure 1-67.



(1) Install the mounting brackets of the EFTC to the rear holes on the left platform side rails according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

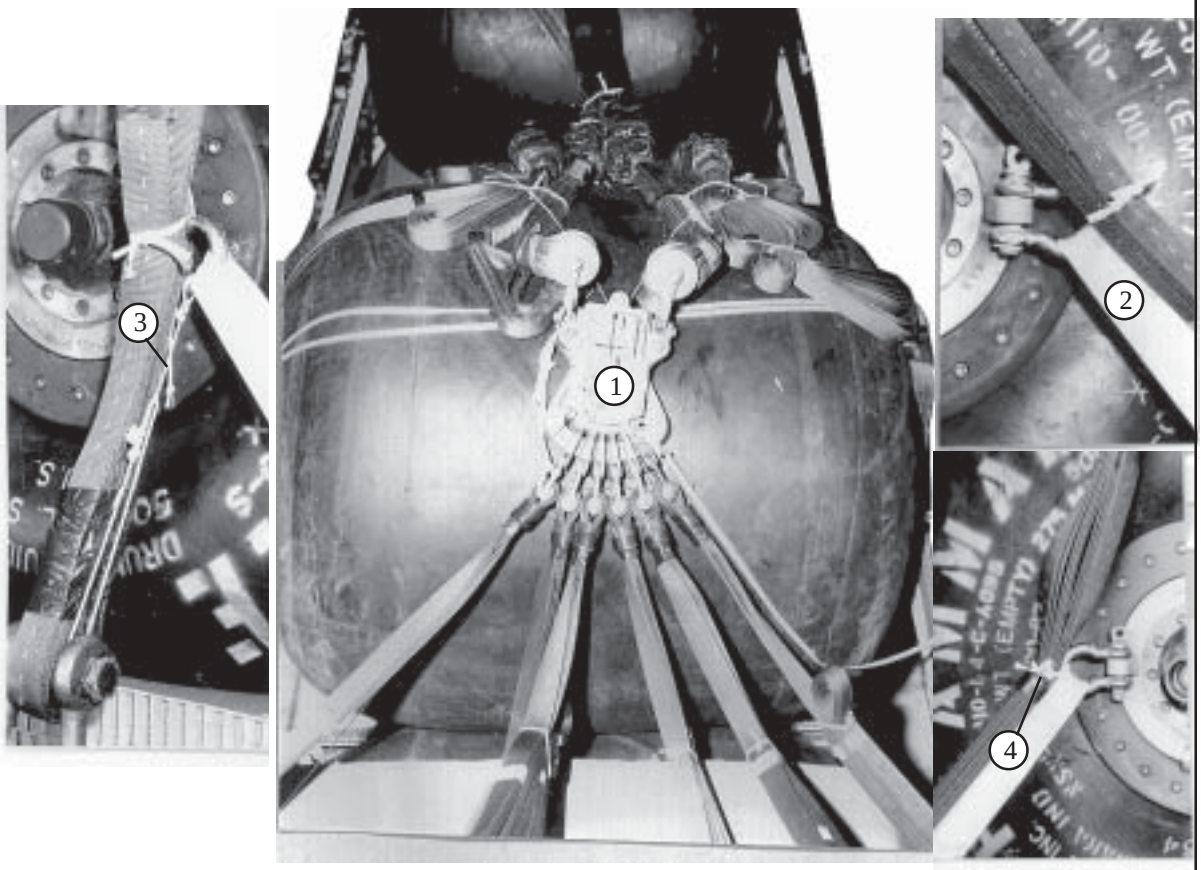
(2) Install a 28-foot cable to the actuator assembly. S-fold the cable to take up the slack according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

(3) Attach a 9-foot (2-loop), type XXVI nylon webbing sling as a deployment line.

Figure 1-67. Extraction System Installed

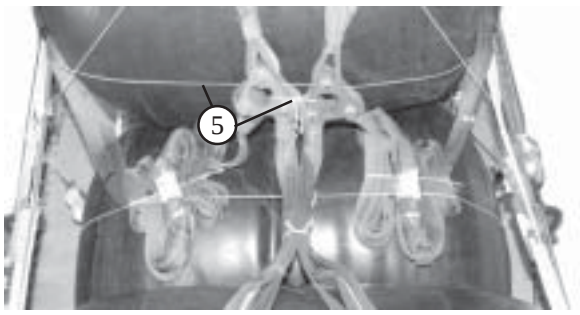
INSTALLING PARACHUTE RELEASE SYSTEM

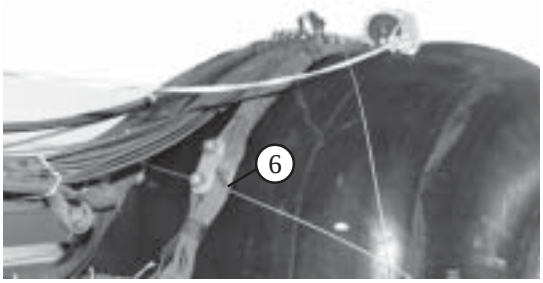
1-51. Install the M-2 cargo parachute release system according to FM 4-20.102/ NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 1-68.



1. Install the M-2 cargo parachute release system according to FM 4-20.102/ NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
2. Tie the front suspension slings to the front shackle on drum 2 on each side using one turn double of type I, 1/4-inch cotton webbing.
3. Tie the center suspension slings to the front shackle on drum 4 on each side using one turn of type III nylon cord.
4. Tie the rear suspension slings to the rear shackle on drum 6 on each side using one turn double of type I, 1/4-inch cotton webbing.

Figure 1-68. M-2 Cargo Parachute Release System Installed





(5) Safety tie both three-point links of the front suspension slings with type III nylon cord from clevises 17 to 17A. Also cluster tie the three-point links together with 1/4-inch cotton webbing.

(6) Safety tie both 3 3/4-inch two-point links of the rear suspension slings with type III nylon cord from clevises 16 to 16A.

Figure 1-68. M-2 Cargo Parachute Release System Installed (Continued)

PLACING EXTRACTION PARACHUTE

1-52. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Rig the extraction line in an extraction line bag according to TM 10-1670-286-20/TO 13C5-2-41. Place the extraction parachute and extraction line on the load for installation in the aircraft.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

1-53. Select and install the provisions for emergency aft restraints according to the emergency aft restraint requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

MARKING RIGGED LOAD

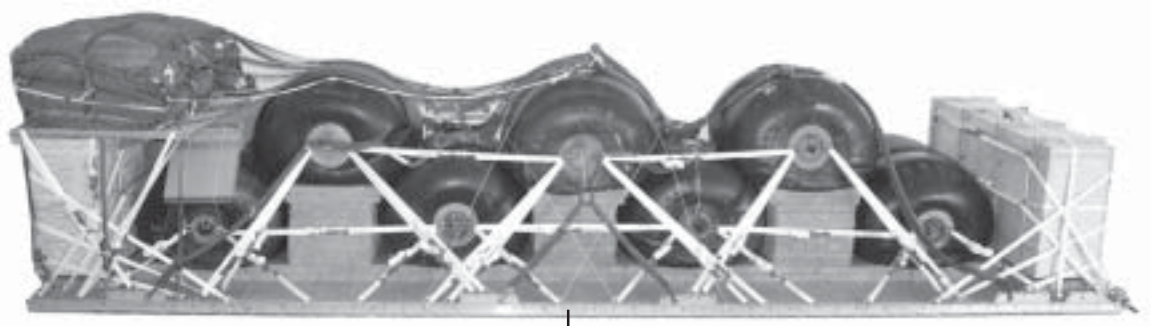
1-54. Mark the rigged load according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 1-69. Complete Shipper's Declaration for Dangerous Goods and affix to the load. If the load varies from the one shown, the weight, height, CB, tipoff curve, and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

1-55. Use the equipment list in Table 1-5 to rig the load shown in Figure 1-69.

CAUTION:

Make the final inspection required by FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



RIGGED LOAD DATA

Weight	**28,000 pounds**
Maximum Weight	**30,000 pounds**
Height	**95 inches**
Width	**108 inches**
Overall Length	**402 inches**
Overhang: Front	**0 inches**
Rear (EFTC)	**18 inches**
Center of Balance (CB) (from front edge of platform)	**202 inches**
Extraction System	**EFTC**

Figure 1-69. FARE with Seven 500-Gallon Fuel Drums Rigged for Low-Velocity Airdrop

Table 1-5. Equipment Required for Rigging FARE with Seven 500-Gallon Fuel Drums for Low-Velocity Airdrop

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive, paste, 1-gal	As required
1670-01-035-6054	Bridle, extraction line bag (for DES)	1
4030-00-090-5354	Clevis, suspension:	
	1-in (large)	10
4020-00-240-2146	Cord, nylon, type III, 550-lb	As required
1670-00-434-5783	Coupling, airdrop, extraction force transfer with cable, 28-ft	1
	Cover:	
1670-00-360-0328	Clevis, large	As required
8135-00-664-6958	Cushioning material, packaging, cellulose wadding	As required
5365-00-937-0147	D-ring, heavy-duty, 10,000-lb	24
1670-00-003-4391	Knife, miniature, cutter (for DES)	1
1670-01-183-2678	Leaf, extraction line (line bag)(add 2 for DES)	2
	Line, drogue (for DES)	
1670-01-062-6313	60-ft (3-loop), type XXVI	1
	Line, extraction:	
1670-01-064-4454	For C-130: 60-ft (6-loop), type XXVI	1
1670-01-062-6312	For C-141: 120-ft (6-loop), type XXVI	
	For C-5:	
1670-01-062-6312	120-ft, (6-loop), type XXVI	
1670-01-064-4454	60-ft, (6-loop), type XXVI	1
	For C-17:	
1670-01-468-9178	140-ft (6-loop), type XXVI	1
1670-01-483-8259	Link, tow release mechanism (H-Block) C-17 aircraft	1
	Link Assembly:	
5306-00-435-8994		(8)
5310-00-232-5165	Nut, 1-in, hexagonal (add 2 for DES)	(8)
1670-00-003-1953	Plate, side, 3 3/4-in (add 2 for DES)	(4)
1670-00-003-1954	Plate, side, 5 1/2-in	(4)
5365-00-007-3414	Spacer, large (add 2 for DES)	(8)
1670-01-307-1055	Three-point	2
1670-00-006-2752	Four-point	1
5510-00-220-6146	Lumber, 2- by 4-in:	
	24-inch	8
	27-inch	8
	50 1/4-inch	16

Table 1-5. Equipment Required for Rigging FARE with Seven 500-Gallon Fuel Drums for Low-Velocity Airdrop (continued)

National Stock Number	Item	Quantity
1670-00-753-3928	Pad, energy-dissipating (honeycomb) 3- by 36- by 96-in	32 sheets
	Parachute: Cargo:	
1670-01-016-7841	G-11C	6
	Cargo extraction:	
1670-00-040-8135	28-ft	2
	Drogue (for DES)	
1670-01-063-3715	15-ft	1
	Platform, airdrop, type V, 32-ft:	
1670-01-353-8425	Bracket assembly, coupling	(1)
1670-01-162-2372	Clevis assembly, type V	(76)
1670-01-162-2376	Extraction bracket assembly	(1)
1670-01-247-2389	Bracket, suspension	(8)
1670-01-162-2381	Tandem link assembly (Multipurpose link)	(2)
5530-00-128-4981	Plywood, 3/4-in	3 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
1670-01-063-7760	11-ft (2-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	4
	For deployment:	
1670-01-062-6304	9-ft (2-loop), type XXVI nylon webbing	1
	For riser extension:	
1670-01-062-6311	120-ft (2-loop), type XXVI nylon webbing	6
	For lifting slings:	
1670-01-062-6304	9-ft (2-loop), type XXVI nylon webbing	2
5340-00-040-8219	Strap, parachute release, multi-cut, comes w/ 3 knives	2
7510-00-266-5016	Tape, adhesive, 2-in	As required
7510-00-266-6710	Tape, masking, 2-in	As required
1670-00-937-0271	Tie-down assembly, 15-foot	96
8310-00-917-3945	Thread, Cotton, Ticket 8/7	As required
	Webbing:	
8305-00-268-2411	Cotton, 1/4-in, type I	As required
8305-00-082-5752	Nylon, tubular, 1/2-in	As required
8305-00-261-8584	Nylon, Type X	As required

Chapter 2

Rigging the 350-GPM Wheel-Mounted POL Pumping Assembly with Filter/ Separator

DESCRIPTION OF LOAD

2-1. The 4-inch, 350-GPM wheel-mounted POL pumping assembly with filter/ separator (Figure 2-1) is rigged on a 16-foot type V platform for low-velocity airdrop with two G-11 cargo parachutes. It consists of two pumps, each weighing 2,100 pounds and two filter/separators each weighing 425 pounds. It is approximately 76 3/4 inches in height, 108 inches in width, and 215 inches in length with an overhang of 5 inches in the front and 18 inches in the rear. The total rigged weight is 7,880 pounds.

PREPARING PLATFORM

2-2. Prepare a 16-foot type V airdrop platform using two tandem links, four suspension brackets, and 16 tie-down clevises as shown in Figure 2-2.

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

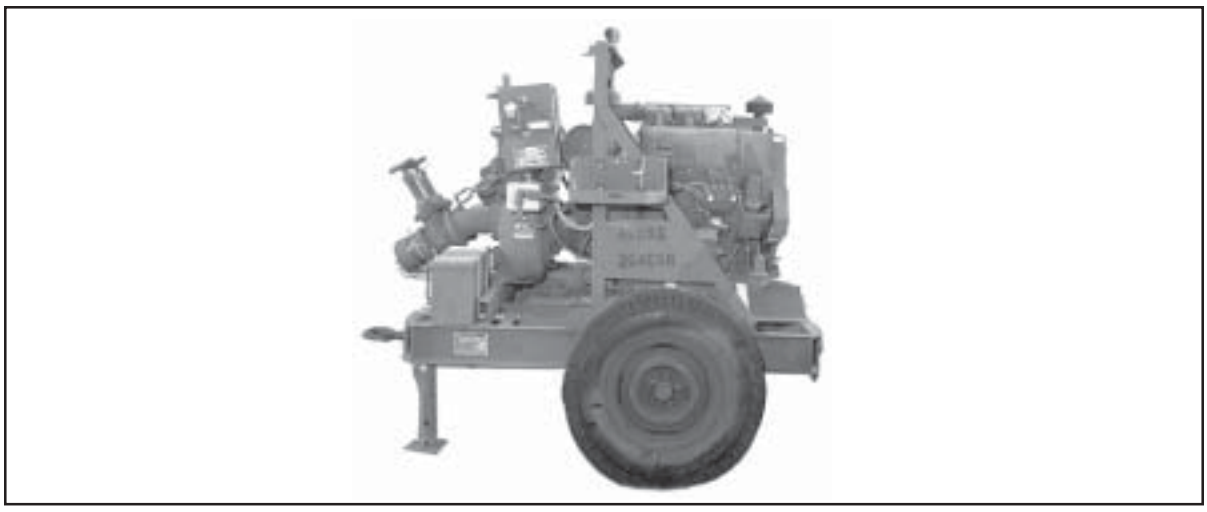
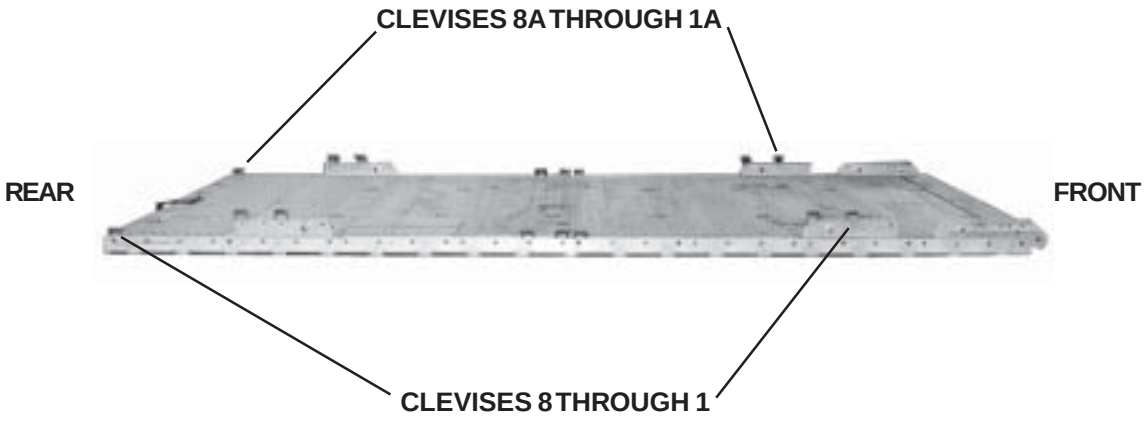


Figure 2-1. Pumping Assembly with Filter/Separator



Steps:

1. Inspect, or assemble and inspect, the platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22.
2. Install a tandem link on the front of each platform side rail using holes 1, 2, and 3.
3. Install suspension brackets to bushings 6, 7, and 8; 25, 26, and 27 on each platform side rail.
4. Install a tie-down clevis to bushings 3 and 4 of each front suspension bracket.
5. Install a tie-down clevis to bushings 2 and 4 of each rear suspension bracket.
6. Starting at the front of each platform side rail, install a tie-down clevis to the bushings bolted to holes 16, 17, 18, and 32.
7. Starting at the front of the platform, number the clevises bolted to the right side from 1 through 8 and those bolted to the left side from 1A through 8A.

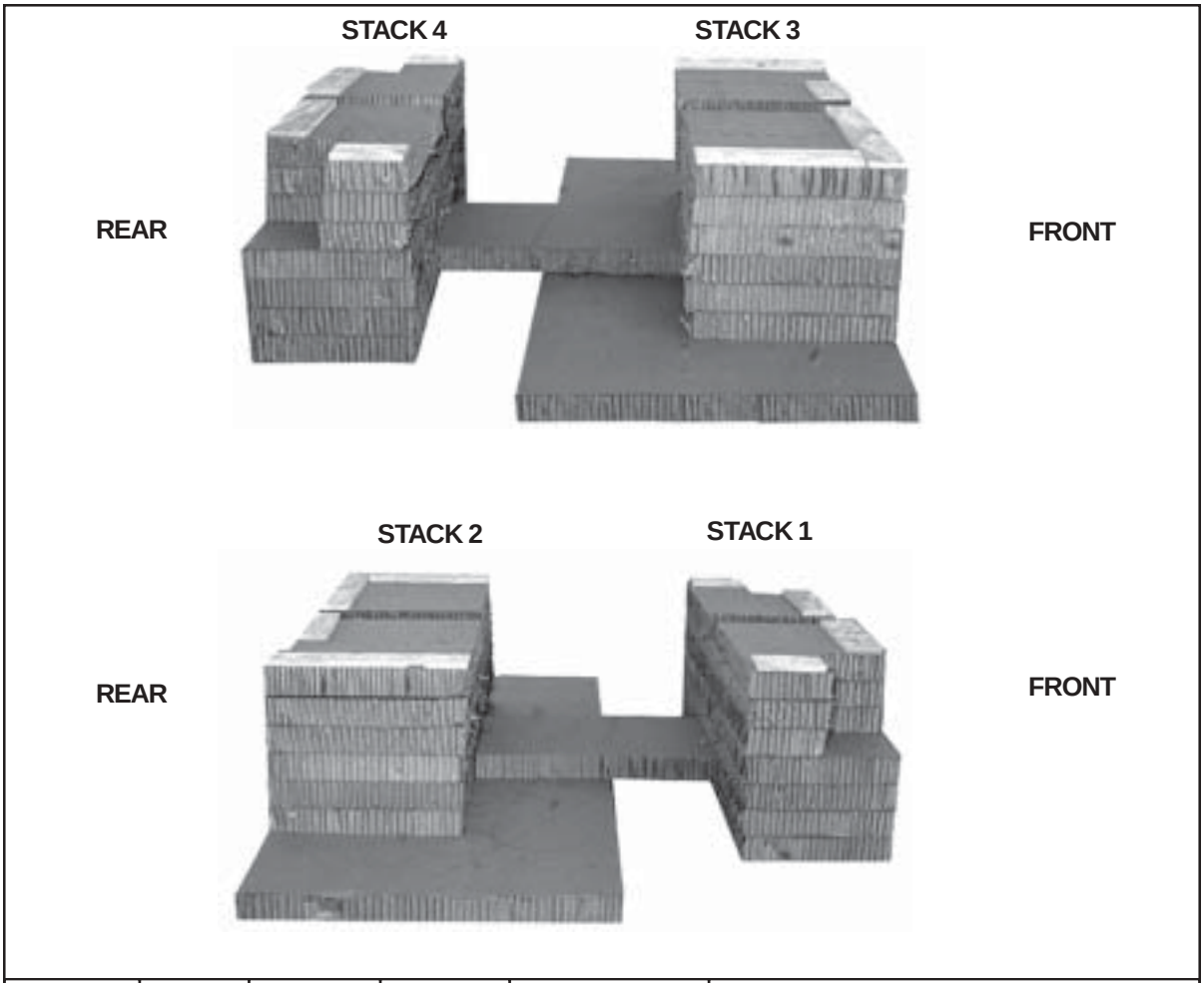
Figure 2-2. Platform Prepared

PREPARING HONEYCOMB

2-3. Build honeycomb stack as shown in Figures 2-3 through 2-6.

Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
1 & 4	1	51	16	Honeycomb	Form a base.
	2	16	16	Honeycomb	Glue one end on each side of the base.
	1	16	64	Honeycomb	Glue one end centered between the 16- by 16-inch pieces and flush with the front edge of the base.
	2	51	16	Honeycomb	Glue on base.
	2	51	16	Honeycomb	Notch the right and left front corner of each piece with an 8- by 8-inch cutout and glue to the base.
	2	23	16	Honeycomb	Notch one corner of each piece with an 8- by 8-inch cutout and glue one on the right and one on the left side of the base.
	2	4	7	3/4-in Plywood	Glue one piece on the right and left side of the base.
	2	14	4	3/4-in Plywood	Glue one piece on the right and left side of the base.

Figure 2-3. Honeycomb Stacks 1 and 4 Prepared



Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
2 & 3	1	80	36	Honeycomb	Form a base. Center and glue the bridge from stack 1 flush with the outside edge of the base. Repeat the step for stack 4.
	2	16	20	Honeycomb	Glue one piece on the right and left sides of the bridge 14 1/2 inches from the right and left sides of the base and flush with the outside edge of the base.
	4	51	20	Honeycomb	Glue to the base.
	2	23	20	Honeycomb	Glue one piece on each side of the base.
	1	4	20	3/4-in Plywood	Glue to the right front edge of the base.
	1	10	4	3/4-in Plywood	Glue to the right rear edge of the base.
	1	23	4	3/4-in Plywood	Glue to the left rear edge of the base.
	1	4	16	3/4-in Plywood	Glue to the left side of the base.

Figure 2-4. Honeycomb Stacks 2 and 3 Prepared

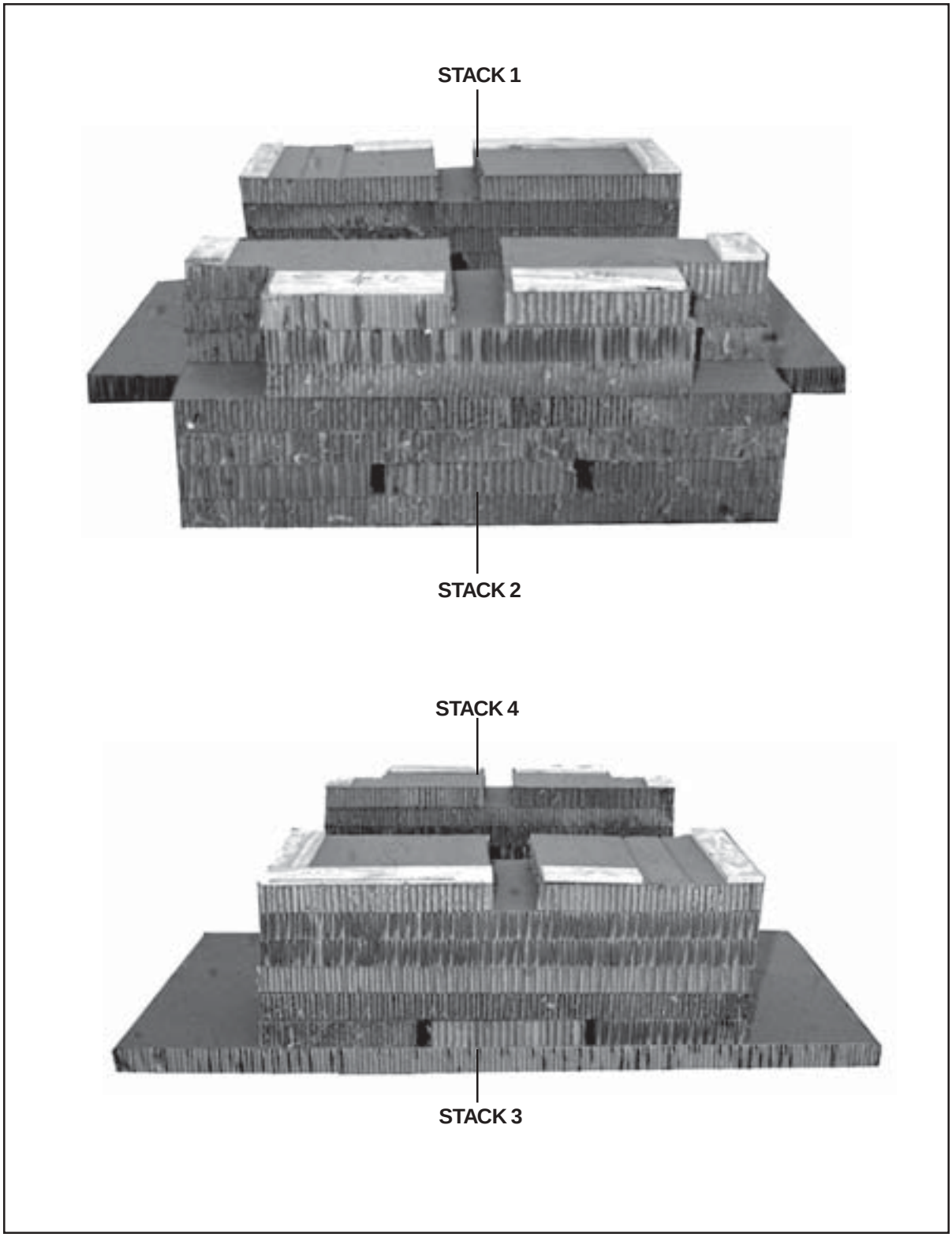
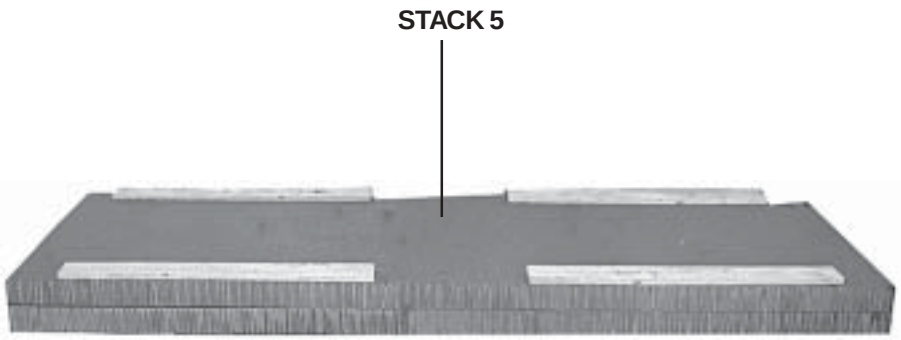


Figure 2-5. Honeycomb Stacks 1, 2, 3, and 4 Prepared

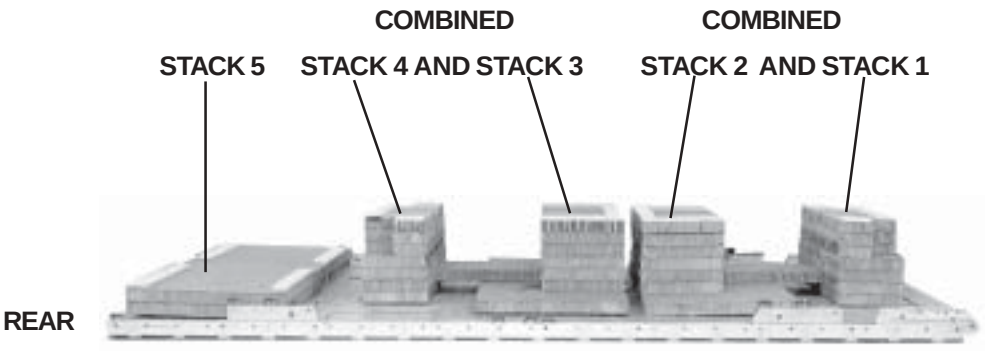


Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
5	2 4	96 34	36 4	Honeycomb 3/4-in Plywood	Glue pieces together to form a base. Glue the plywood pieces flush with the front and rear edges 2 1/2 inches from the left and right sides.

Figure 2-6. Honeycomb Stack 5 Prepared

POSITIONING HONEYCOMB STACKS

2-4. Position honeycomb stacks as shown in Figure 2-7.



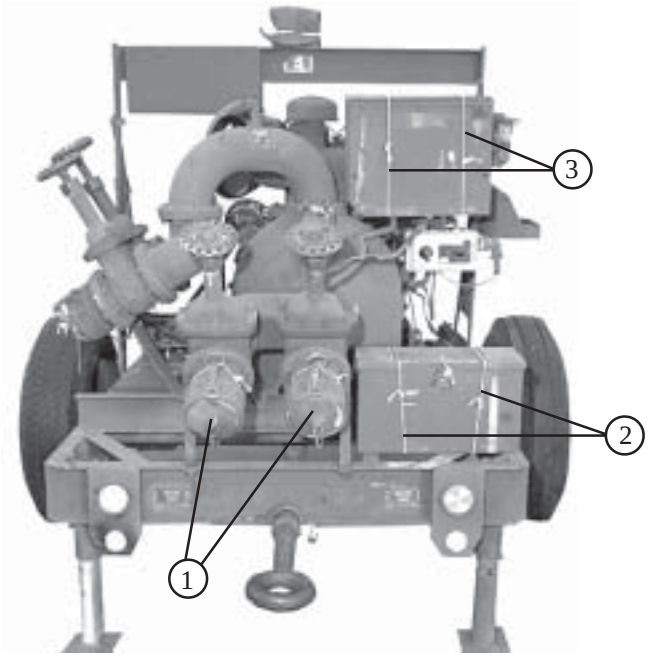
1. Place combined stacks 1 and 2 centered and 6 inches from the front edge of the platform.
2. Place combined stacks 3 and 4 centered and 6 inches from stack 2.
3. Place stack 5 centered and 4 inches from the rear edge of the platform.

Figure 2-7. Honeycomb Stacks Positioned

PREPARING THE PUMP ASSEMBLY AND FILTER/SEPARATOR

2-5. Prepare the pump assembly and filter/separator as shown in Figure 2-8.

Note: The fuel pump must be drained of all fuel and the filter/separator purged and ventilated.

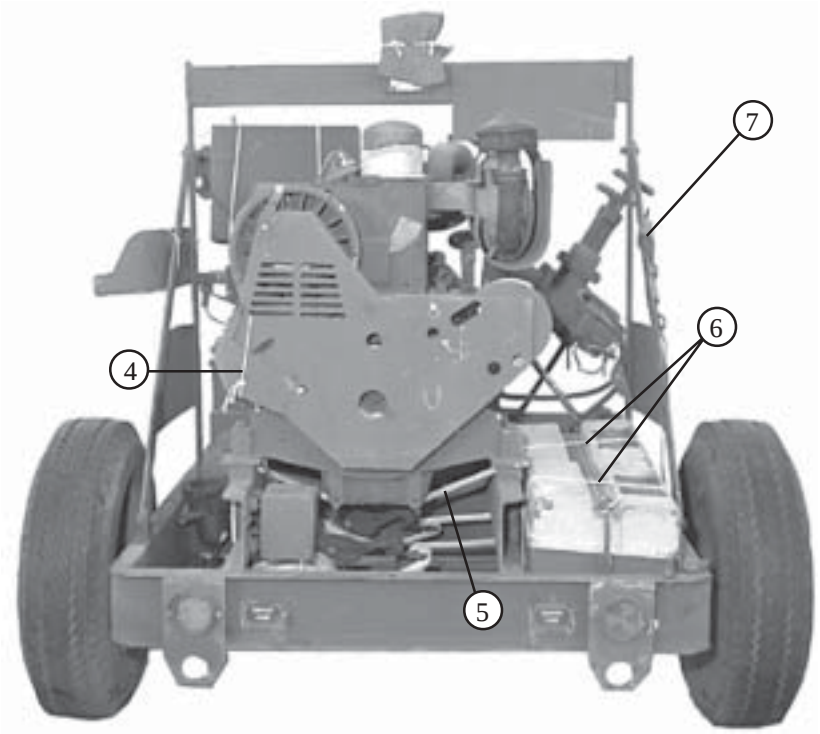


(1) Secure all fuel caps with type III nylon cord.

(2) Secure lid to storage box with type III nylon cord.

(3) Secure cover to control panel with type III nylon cord.

Figure 2-8. Pump Assembly and Filter/Separator Prepared



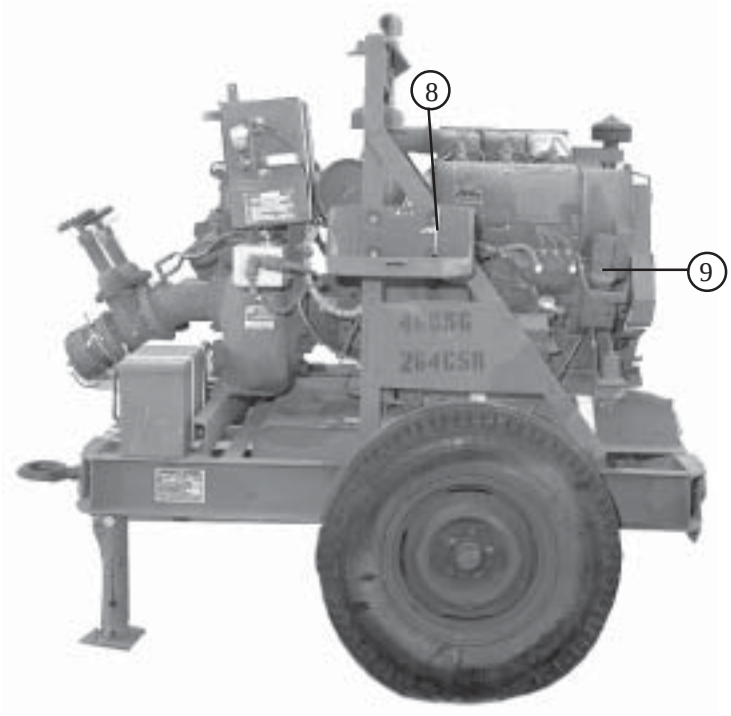
(4) Secure the starter/speed control box to the attaching bracket with type III nylon cord.

(5) Support the engine by running two 15-foot lashings around the frame supports and under the oil pan. Space the lashings to the front and rear of the oil pan.

(6) Remove the battery box lids and secure each battery to its own box with type III nylon cord. Replace the lids and secure in place with 1/2-inch tubular nylon webbing, going around both boxes and bottom supports.

(7) Secure the ground rod in its holder with type III nylon cord.

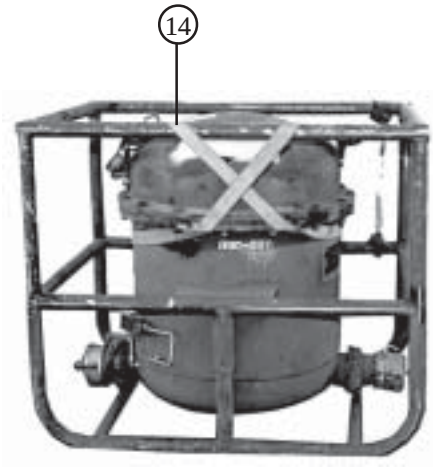
Figure 2-8. Pump Assembly and Filter/Separator Prepared (continued)



(8) Secure fuel can bracket to frame with type III nylon cord.

(9) Tape oil cap in place with cloth-backed adhesive tape.

Figure 2-8. Pump Assembly and Filter/Separator Prepared (continued)



(10) Secure fuel caps on the filter/separator with type III nylon cord.

(11) Secure the ground cable to the frame with cloth-backed adhesive tape.

(12) Pad the small outlet valve with cellulose padding and cloth-backed tape.

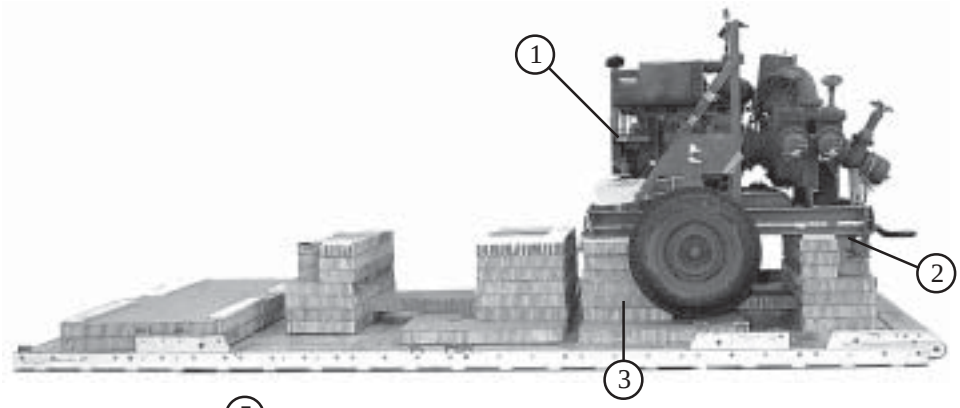
(13) Run a 15-foot lashing around the filter under the bolted top on the inlet side and around the top lateral frame support and secure.

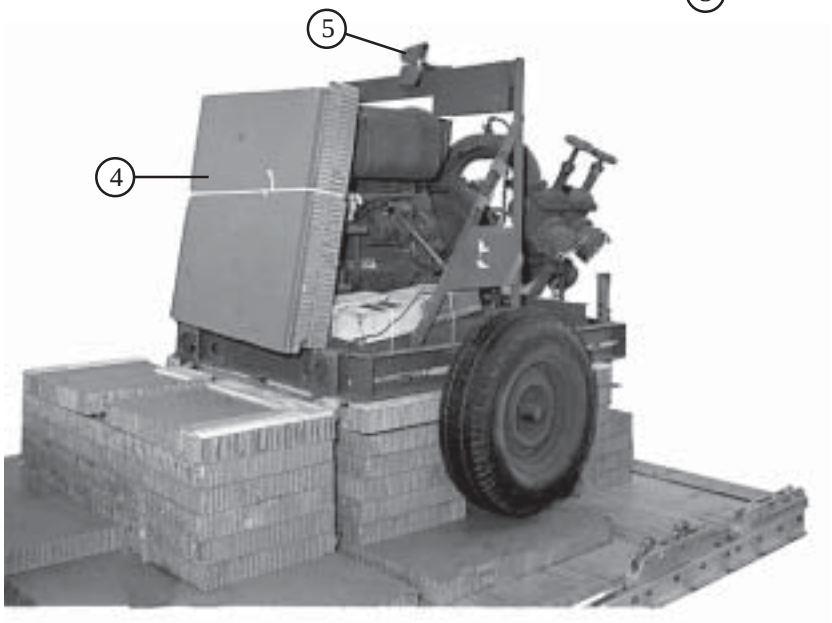
(14) Run a 15-foot lashing around the filter under the bolted top on the outlet side and around the top lateral frame support and secure.

Figure 2-8. Pump Assembly and Filter/Separator Prepared (continued)

POSITIONING THE PUMP ASSEMBLY AND FILTER/SEPARATOR

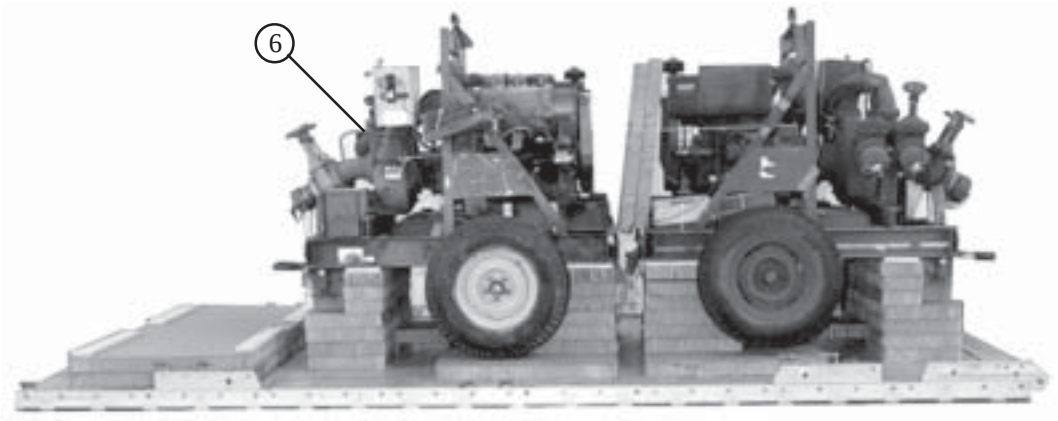
2-6. Position the pump assembly and filter/separator as shown in Figure 2-9.

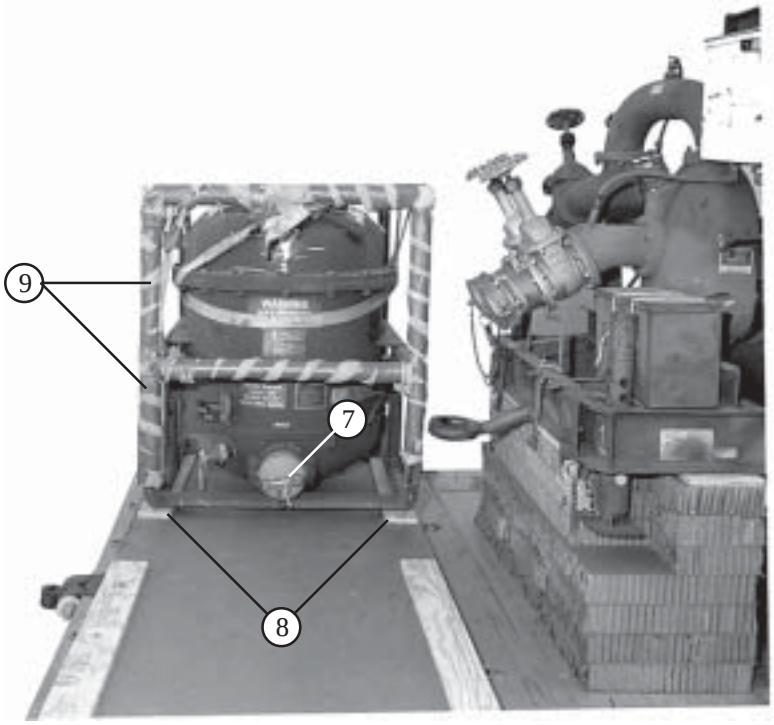




1. Position the first pump assembly with the lunette 4 1/2 inches forward of the front edge of the platform.
2. Retract legs and lunette.
3. Center on honeycomb stacks combination 1 and 2.
4. Cut and tie two pieces of 32- by 36-inch honeycomb to the rear of the pump assembly with type III nylon cord.
5. Cover top lifting point with felt and secure with type III nylon cord.

Figure 2-9. Pump Assembly and Filter/Separator Positioned





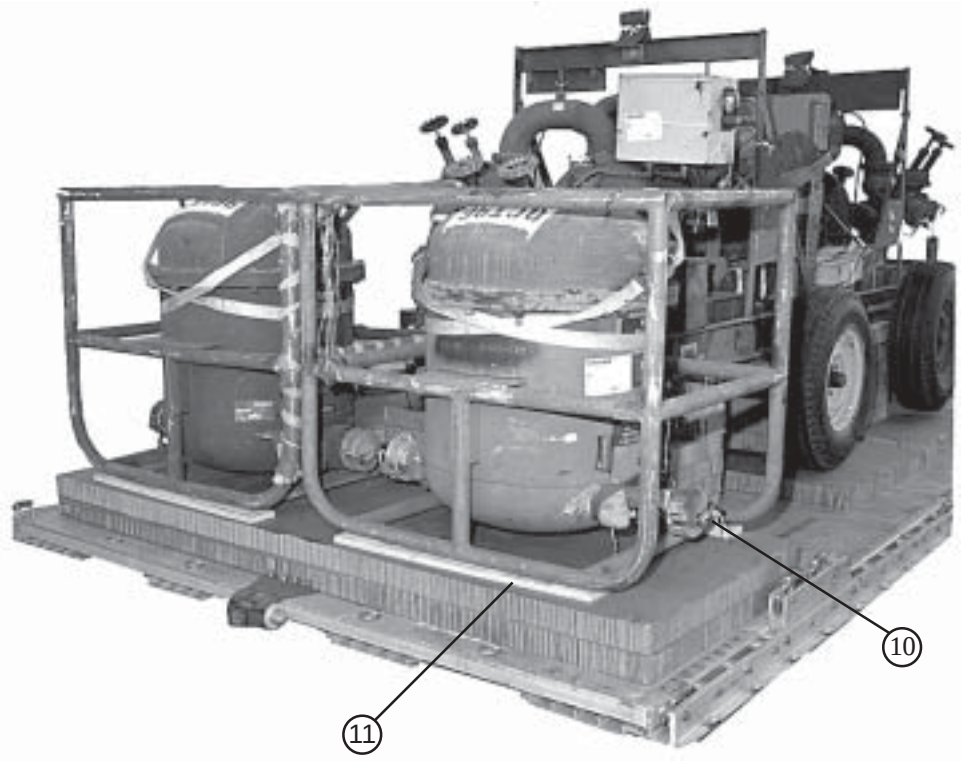
(6) Position the second pump assembly 6 inches (measured from frame to frame) from the front pump and centered on combination honeycomb stacks 3 and 4.

(7) Position one of the filters with the outlet valve to the center of the platform.

(8) Center the filter evenly on the plywood and on the left side of honeycomb stack 5.

(9) Pad the right side of the frame with cellulose wadding and tape in place.

Figure 2-9. Pump Assembly and Filter/Separator Positioned (continued)



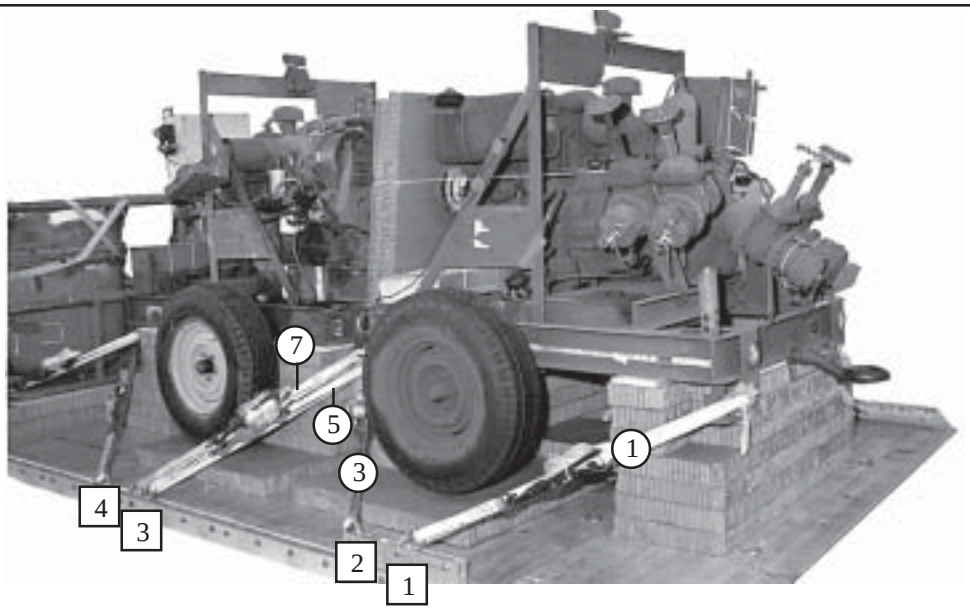
(10) Position the second filter with the outlet valve facing to the right side of the platform.

(11) Center the filter evenly on the plywood and on the right side of honeycomb stack 5.

Figure 2-9. Pump Assembly and Filter/Separator Positioned (continued)

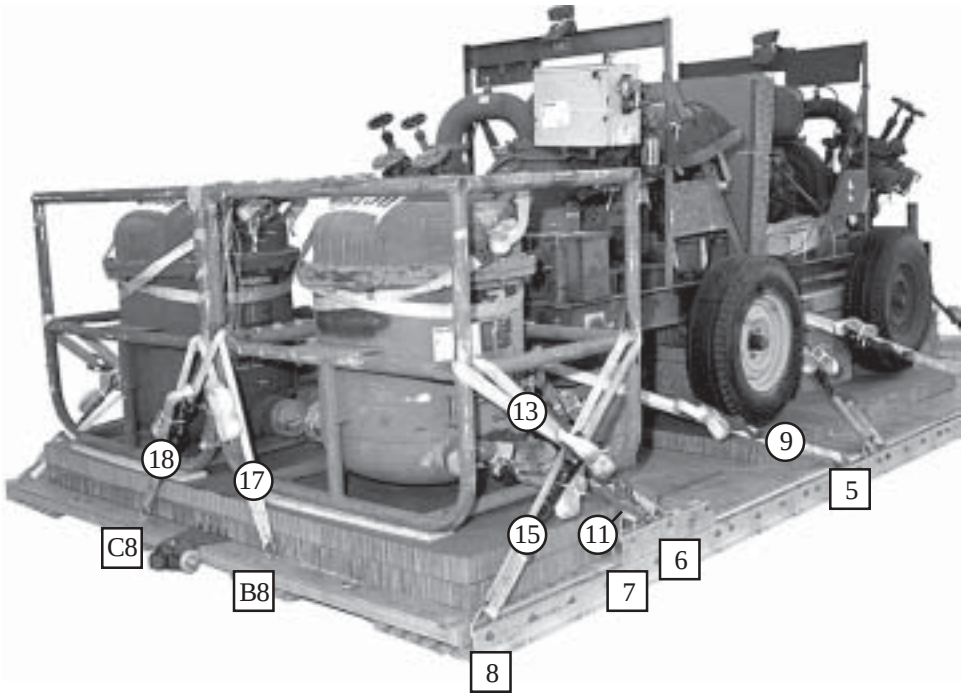
LASHING THE PUMP ASSEMBLY AND FILTER/SEPARATOR TO THE PLATFORM

2-7. Lash the pump assembly and filter/separator to the platform using eighteen 15-foot tie-down assemblies as shown in Figures 2-10 and 2-11.



Lashing Number	Tie-down Clevis Number	Instructions
		Pass lashing:
1	1	Through right front tie-down point on front pump assembly.
2	1A	Through left front tie-down point on front pump assembly.
3	2	Through right rear tie-down point on front pump assembly.
4	2A	Through left rear tie-down point on front pump assembly.
5	3	Through right rear tie-down point on front pump assembly.
6	3A	Through left rear tie-down point on front pump assembly.
7	4	Through left rear tie-down point on rear pump assembly.
8	4A	Through right rear tie-down point on rear pump assembly.

Figure 2-10. Lashings 1 Through 8 Installed

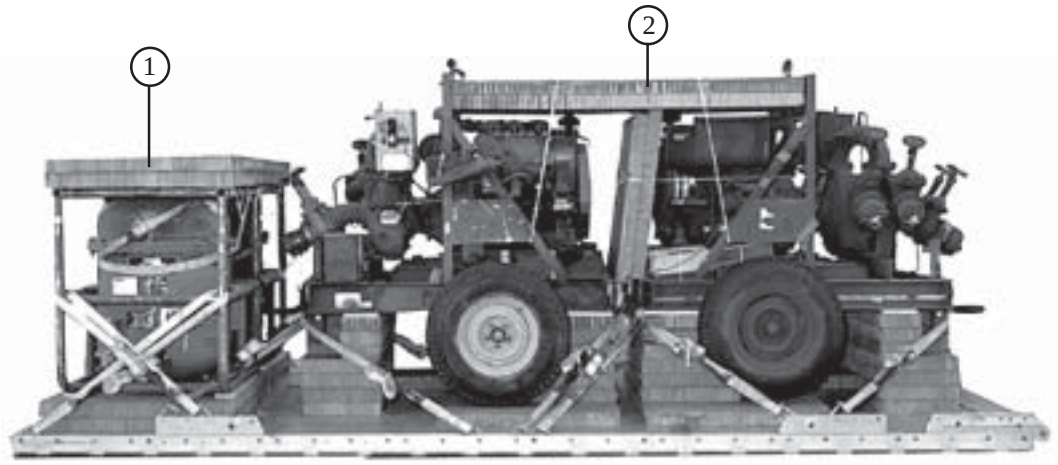


Lashing Number	Tie-down Clevis Number	Instructions
		Pass lashing:
9	5	Through left front tie-down point on rear pump assembly.
10	5A	Through right front tie-down point on rear pump assembly.
11	7	Through left front tie-down point on rear pump assembly.
12	7A	Through right front tie-down point on rear pump assembly.
13	6	Through and around right rear vertical frame.
14	6A	Through and around left rear vertical frame.
15	8	Through and around right front vertical frame.
16	8A	Through and around left front vertical frame.
17	B8	Through and around both rear center vertical frame.
18	C8	Through and around both rear center vertical frame.

Figure 2-11. Lashings 9 Through 18 Installed

CONSTRUCTING THE PARACHUTE STOWAGE TRAY AND LOAD COVER

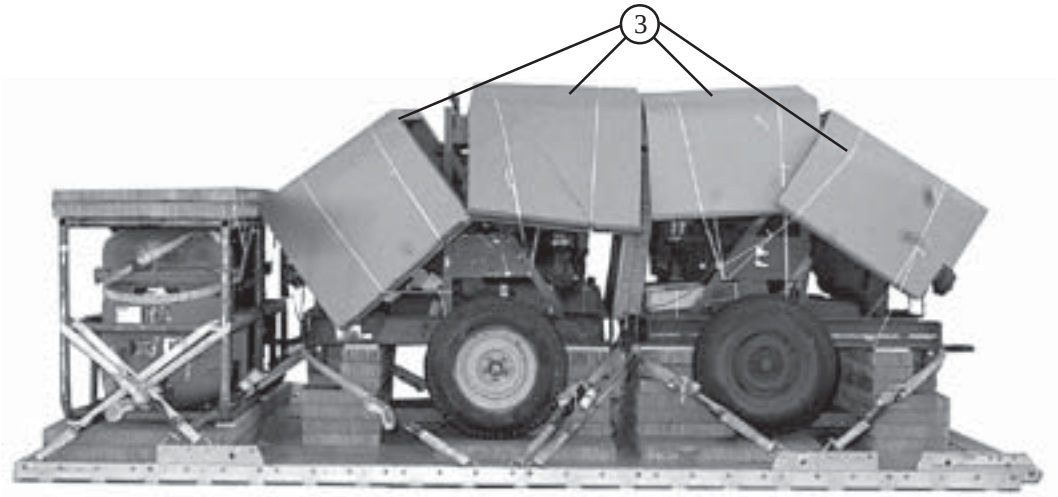
2-8. Construct the parachute stowage tray and load cover as shown in Figure 2-12.

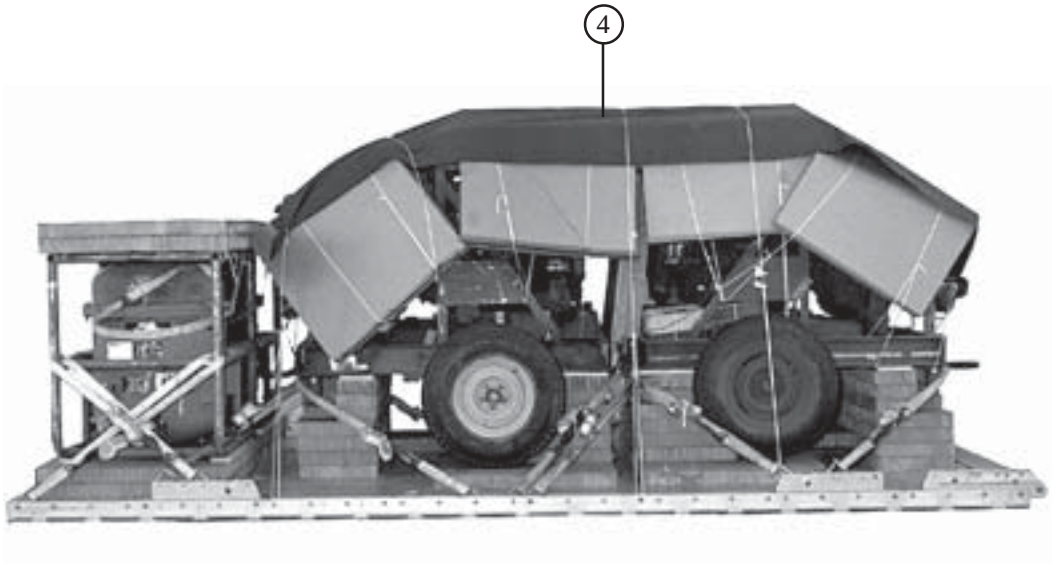


(1) Position two 36- by 96-inch pieces of honeycomb on top of the filters. Tape the edges and secure the honeycomb to the filter frames with type III nylon cord.

(2) Position two 36- by 72-inch pieces of honeycomb on top of the pumps. Tape the edges and secure the honeycomb with type III nylon cord.

Figure 2-12. Parachute Stowage Tray and Load Cover Constructed





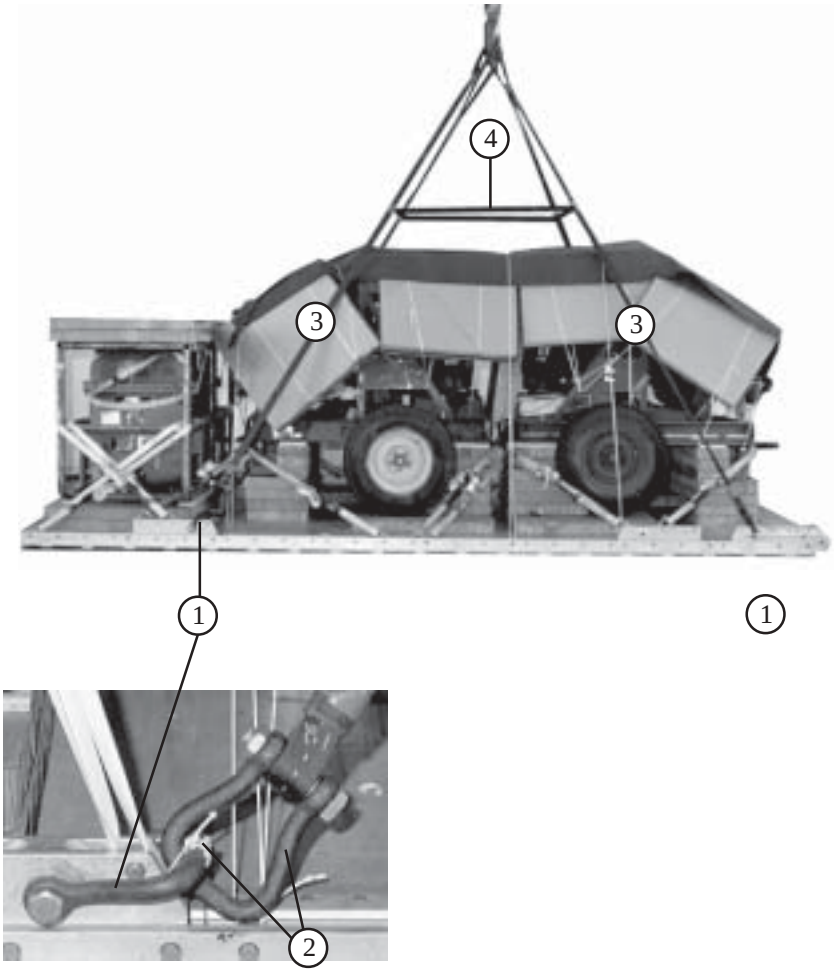
(3) Position and bend 36- by 96-inch pieces of honeycomb over the pumps. Place two pieces of honeycomb over the center of the pumps and one piece over the end of the pumps. Tape the edges and secure with type III nylon cord.

(4) Position a 5-foot by 15-foot load cover over the honeycomb placed in step 3. Secure the cover with type III nylon cord.

Figure 2-12. Parachute Stowage Tray and Load Cover Constructed (continued)

INSTALLING THE SUSPENSION SLINGS AND DEADMAN'S TIE

2-9. Install the suspension slings and deadman's tie as shown in Figure 2-13.



(1) Attach a large suspension clevis to each front and rear suspension link.

(2) Attach an additional large suspension clevis to each rear suspension clevis. Tie the two clevises together with type III nylon cord.

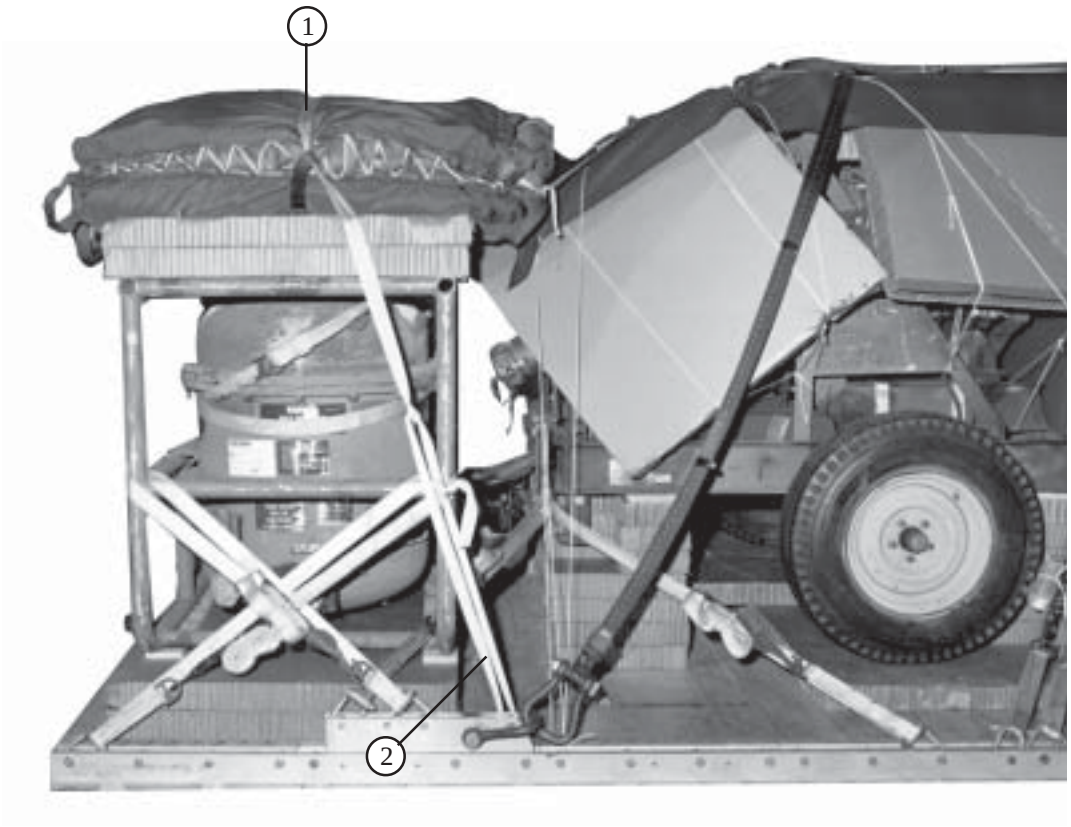
(3) Attach a 12-foot (2-loop), type XXVI nylon webbing sling to each front suspension clevis and each rear set of suspension clevises.

(4) Raise the slings and install the deadman's tie according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

Figure 2-13. Suspension Slings and Deadman's Tie Installed

PREPARING, STOWING, AND RESTRAINING CARGO PARACHUTES

2-10. Prepare, stow, and restrain two G-11 cargo parachutes on the parachute stowage tray according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 2-14.



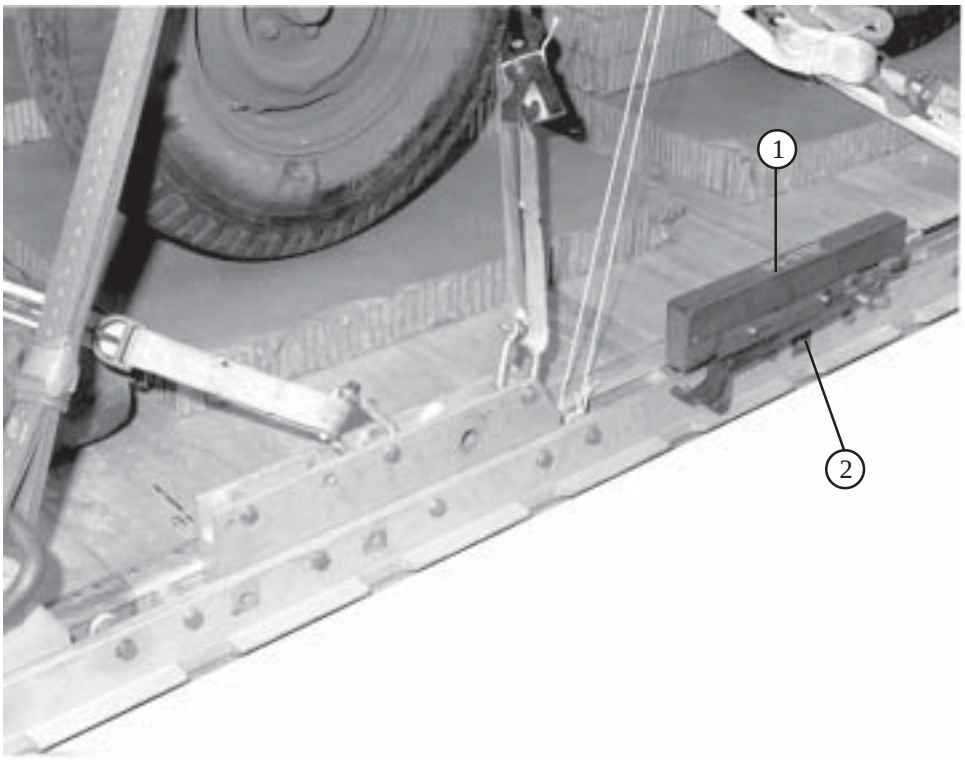
(1) Prepare, stow, and restrain two G-11 cargo parachutes on the parachute stowage tray according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

(2) Restrain the parachutes using bushing 1 on each rear suspension link.

Figure 2-14. Cargo Parachutes Stowed

INSTALLING THE EXTRACTION SYSTEM

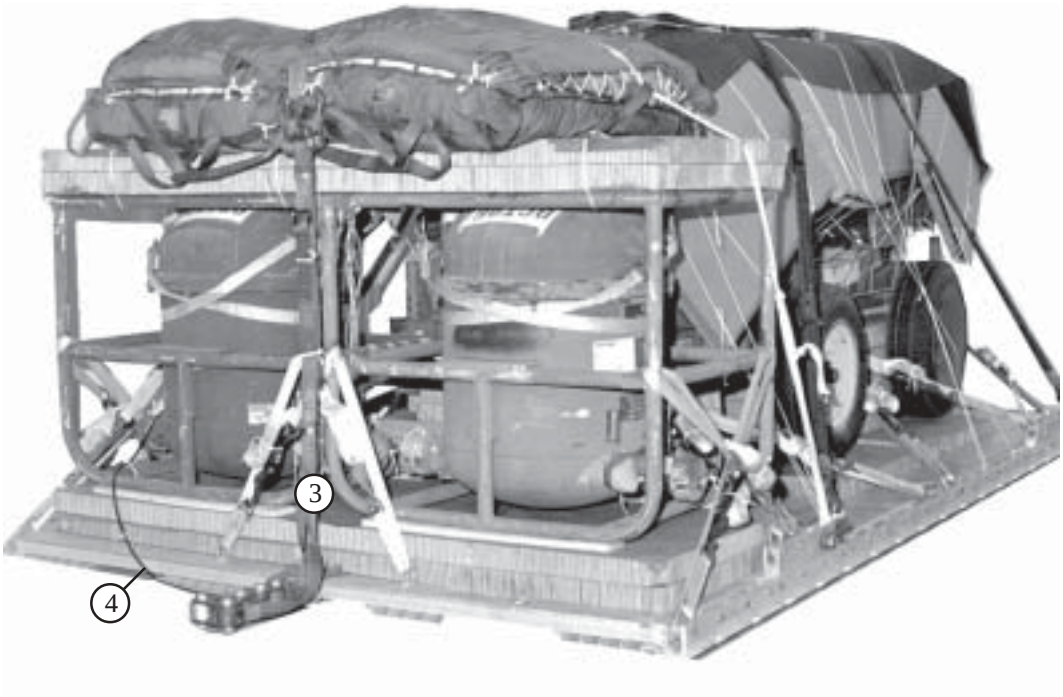
2-11. Install the components of the extraction force transfer coupling according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 2-15.



(1) Install the components of the EFTC according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

(2) Install the EFTC actuator mounting brackets in the rear holes on the left platform side rail according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

Figure 2-15. Extraction System Installed



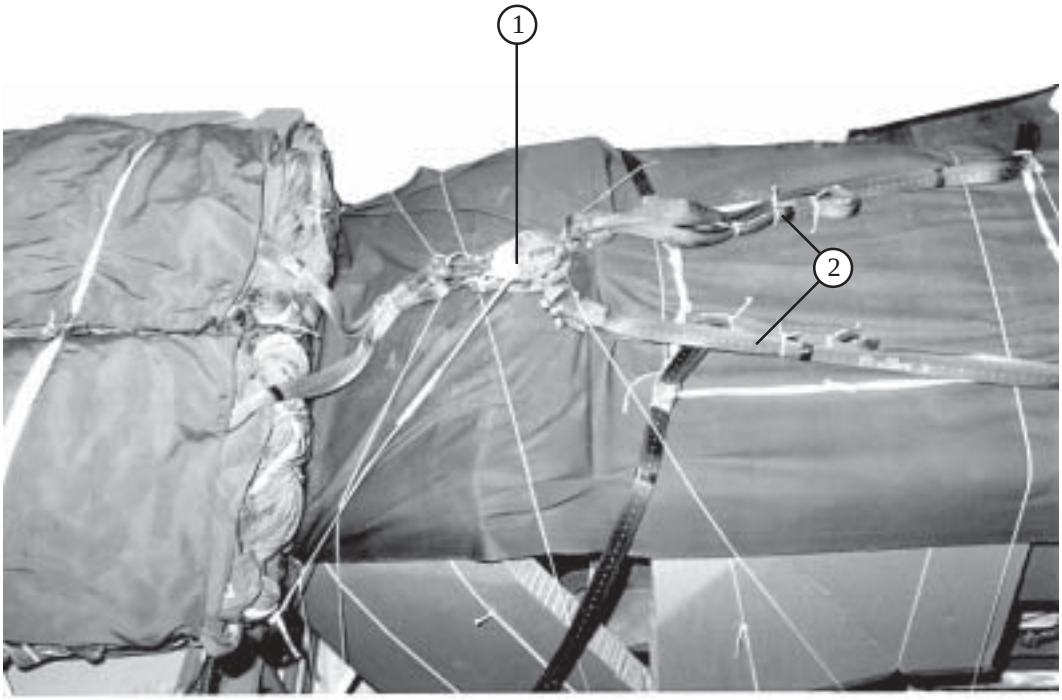
(3) Attach a 9-foot (2-loop), type XXVI nylon webbing sling to be used as a deployment line.

(4) Use a 16-foot EFTC cable and safety the cable to tie-down ring D-8 using one turn of type I, 1/4-inch cotton webbing.

Figure 2-15. Extraction System Installed (continued)

INSTALL PARACHUTE RELEASE SYSTEM

2-12. Install the M-1 parachute release system according to FM 4-20.102/ NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 2-16.



(1) Position and install the M-1 parachute release assembly according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Safety tie the M-1 parachute release assembly to convenient points on the load.

(2) S-fold and tie any slack in the suspension slings with type I, 1/4-inch cotton webbing.

Figure 2-16. M-1 Cargo Parachute Release System Installed

PLACING EXTRACTION PARACHUTE

2-13. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Rig the extraction line in an extraction line bag according to TM 10-1670-286-20/TO 13C5-2-41. Place the extraction parachute and extraction line on the load for installation in the aircraft.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

2-14. Select and install the provisions for emergency aft restraints according to the emergency aft restraint requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

MARKING RIGGED LOAD

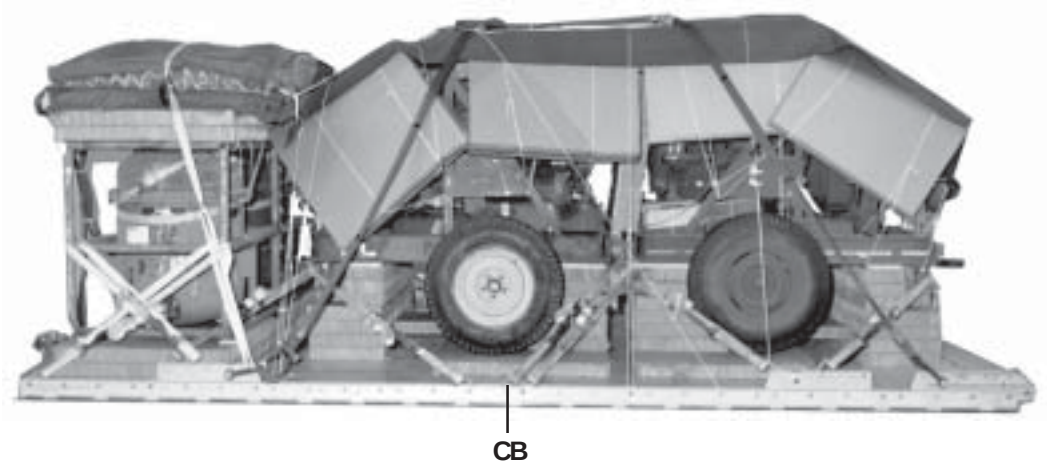
2-15. Mark the rigged load according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 2-17. Complete Shipper's Declaration for Dangerous Goods and affix to the load. If the load varies from the one shown, the weight, height, CB, tipoff curve, and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

2-16. Use the equipment list in Table 2-1 to rig the load shown in Figure 2-17.

CAUTION:

Make the final inspection required by FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



RIGGED LOAD DATA

Weight	**7,880 pounds**
Maximum Weight	**10,000 pounds**
Height	**77 inches**
Width	**108 inches**
Overall Length	**214.5 inches**
Overhang: Front (lunette on front pump)	**4.5 inches**
Rear (EFTC)	**18 inches**
Center of Balance (CB) (from front edge of platform)	**100 inches**
Extraction System	**EFTC**

Figure 2-17. 350-GPM Wheel-Mounted POL Pumping Assembly with Filter/Separator Rigged for Low-Velocity Airdrop

Table 2-1. Equipment Required for 350-GPM Wheel-Mounted POL Pumping Assembly with Filter/ Separator

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive, paste, 1-gal	As required
1670-01-035-6054	Bridle, extraction line bag (for DES)	1
4030-00-090-5354	Clevis, large	7
4030-00-678-8562	Clevis, medium	6
8305-00-880-8155	Cloth, coated, 60-inch	As required
4020-00-240-2146	Cord, nylon, type III, 550-lb	As required
1670-00-434-5785	Coupling, airdrop, extraction force transfer with 16-ft cable	1
1670-00-360-0328	Cover, clevis, large	2
8135-00-664-6958	Cushioning material, packaging, cellulose wadding	As required
5365-00-937-0147	D-ring, heavy duty, 10,000-lb	68
8305-00-958-3685	Felt, 1/2-in thick	As required
1670-00-003-4391	Knife, parachute bag (for DES)	1
1670-01-183-2678	Leaf, extraction line (line bag)(add 2 for DES)	2
	Line, drogue (for DES):	
1670-01-062-6313	60-foot (1-loop), type XXVI	1
	Line extraction:	
1670-01-064-4452	For C-130: 60-ft (1-loop), type XXVI	1
1670-01-107-7651	For C-141, C-5, and C-17: 140-ft, (3-loop), type XXVI	1
1670-01-483-8259	Link, tow release mechanism (H-Block) C-17	1
	Link assembly:	
	Two point: (double the quantity for DES)	
5306-00-435-8994	Bolt, 1-in diam, 4-in long	(2)
5310-00-232-5165	Nut, 1-in, hexagonal	(2)
1670-00-003-1953	Plate, side, 3 3/4-in	(2)
5365-00-007-3414	Spacer, large	(2)
1670-00-753-3928	Pad, energy dissipating, honeycomb, 3-by 36- by 96-in	20

Table 2-1. Equipment Required for 350-GPM Wheel-Mounted POL Pumping Assembly with Filter/ Separator (continued)

National Stock Number	Item	Quantity
	Parachute:	
1670-01-016-7841	Cargo, G-11B	2
1670-01-063-3715	Drogue, 15-ft (for DES)	1
1670-01-063-3716	Extraction, 22-ft	1
	Platform, airdrop, type V, 16-ft:	
1670-01-353-8425	Bracket assembly, coupling	1
1670-01-162-2372	Clevis assembly, type V	16
1670-01-353-8424	Extraction bracket assembly	1
1670-01-247-2389	Bracket, suspension	4
1670-01-162-2389	Tandem link	2
5530-00-128-4981	Plywood, 3/4- by 48- by 96-in	1
1670-01-097-8816	Release, cargo parachute, M-1	1
	Sling, cargo, airdrop:	
	For suspension and lifting:	
1670-01-062-6303	12-ft (2-loop), type XXVI nylon webbing	4
	For deployment:	
1670-01-062-6304	9-ft (2-loop), type XXVI nylon webbing	1
1670-00-040-8219	Strap, parachute release	1
7510-00-266-5016	Tape, cloth back, adhesive	As required
7510-00-266-6710	Tape, masking, 2-in	As required
1670-00-937-0271	Tie-down assembly, 15-ft	38
	Webbing:	
8305-00-268-2411	Cotton, 1/4-in, type I	As required
8305-00-082-5752	Nylon, yubular, 1/2-in	As required
8305-00-263-3591	Type VIII	As required

Chapter 3

Rigging 500-Gallon Drums with the 350-GPM Wheel-Mounted POL Pumping Assembly, Filter/Separator Assembly, and Hose Box

SECTION I - RIGGING THREE 500-GALLON DRUMS

DESCRIPTION OF LOAD

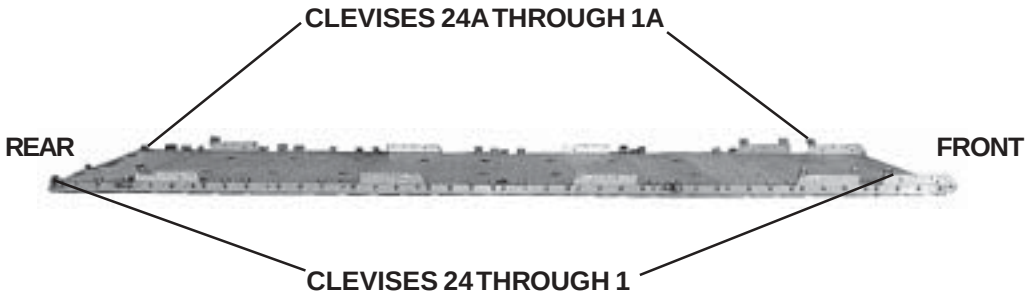
3-1. The three collapsible drums are rigged on a 24-foot platform with four G-11 cargo parachutes. Each drum is filled with a maximum of 432 gallons of liquid. When empty, each drum weighs 250 pounds and is 62 inches long and 53 inches in diameter. The 350-GPM pump with filter/separator and hose box are accompanying loads. The total rigged load has a maximum rigged weight of 21,000 pounds with a width of 108 inches and a length of 324 inches. It has an overhang of 18 inches in the front and 18 inches in the rear.

Notes: 1. For drums filled with a liquid other than water, use Table 1-1 to recompute the weight.
2. If the load varies from the one shown, the weight, height, CB, tipoff curve, and parachute requirements must be recomputed.
3. Do not pressurize drums with air.

PREPARING PLATFORM

3-2. Prepare a 24-foot type V airdrop platform using two tandem links, eight suspension brackets, and 48 tie-down clevises as shown in Figure 3-1.

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



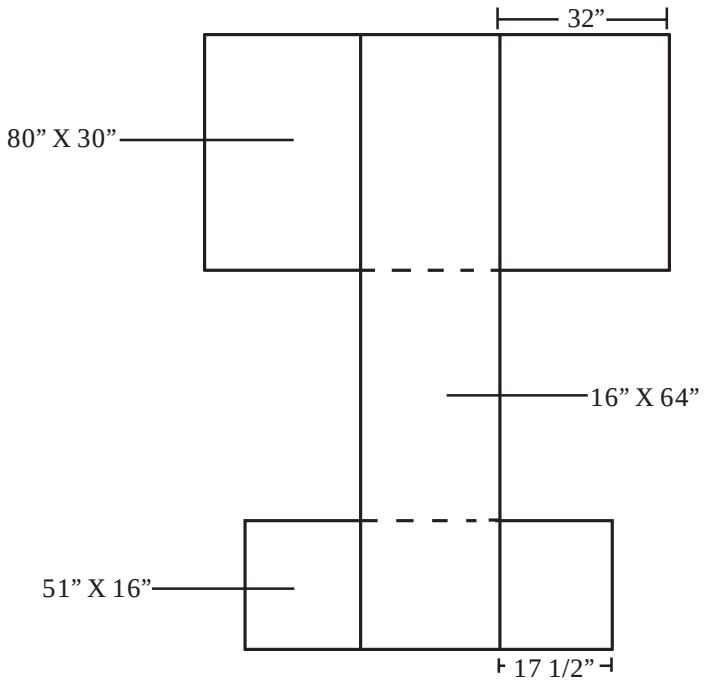
Steps:

1. Inspect, or assemble and inspect, the platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22.
2. Install a tandem link on the front of each platform side rail using holes 1, 2, and 3.
3. Install a suspension bracket to bushings 6, 7, and 8 on each platform side rail.
4. Install a suspension bracket to bushings 18, 19, and 20 on each platform side rail.
5. Install a suspension bracket to bushings 29, 30, and 31 on each platform side rail.
6. Install a suspension bracket to bushings 41, 42, and 43 on each platform side rail.
7. Install a tie-down clevis to bushing 4 of each tandem link.
8. Install a tie-down clevis to bushings 1 and 4 of each first suspension bracket.
9. Install a double clevis to bushing 4 of the fourth suspension bracket.
10. Starting at the front of each platform side rail, install a tie-down clevis to the bushings bolted to holes 9, 10, 15 (triple), 16, 23, 24, 25, 26, 33, 34, 38, 39, 40, 44 (triple), 45, 46, and 48 (double).
11. Starting at the front of the platform, number the clevises bolted to the right side from 1 through 24 and those bolted to the left side from 1A through 24A.
12. Number the clevis on bushing 48 as clevis 24 and 24A and the doubled clevis as 23 and 23A.

Figure 3-1. Platform Prepared

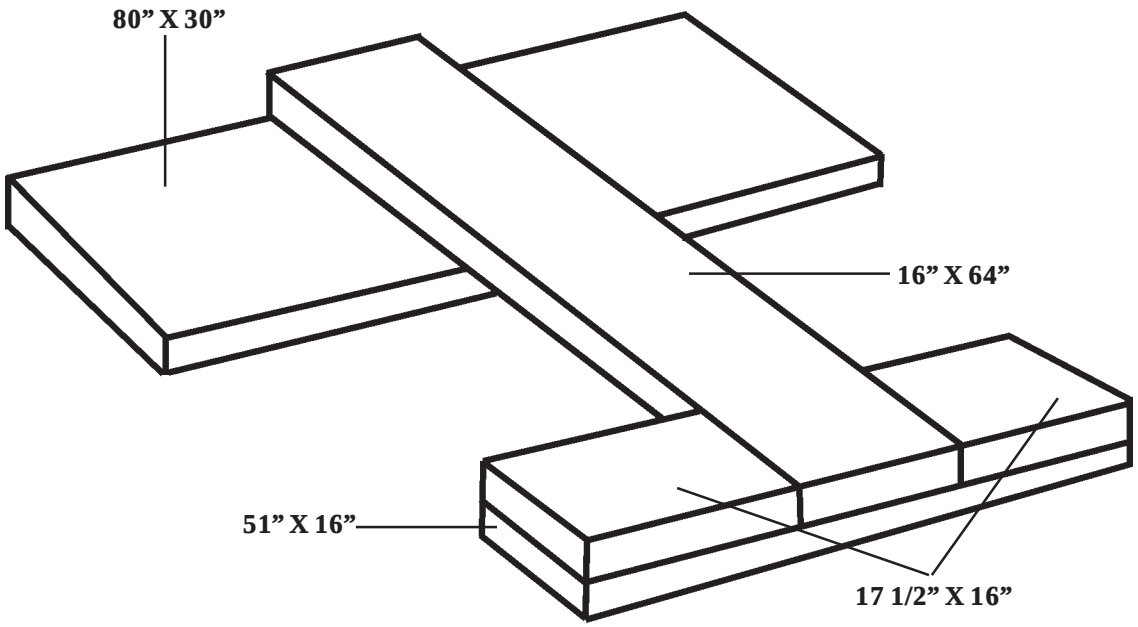
PREPARING HONEYCOMB

3-3. Build honeycomb stack as shown in Figures 3-2 and 3-3.



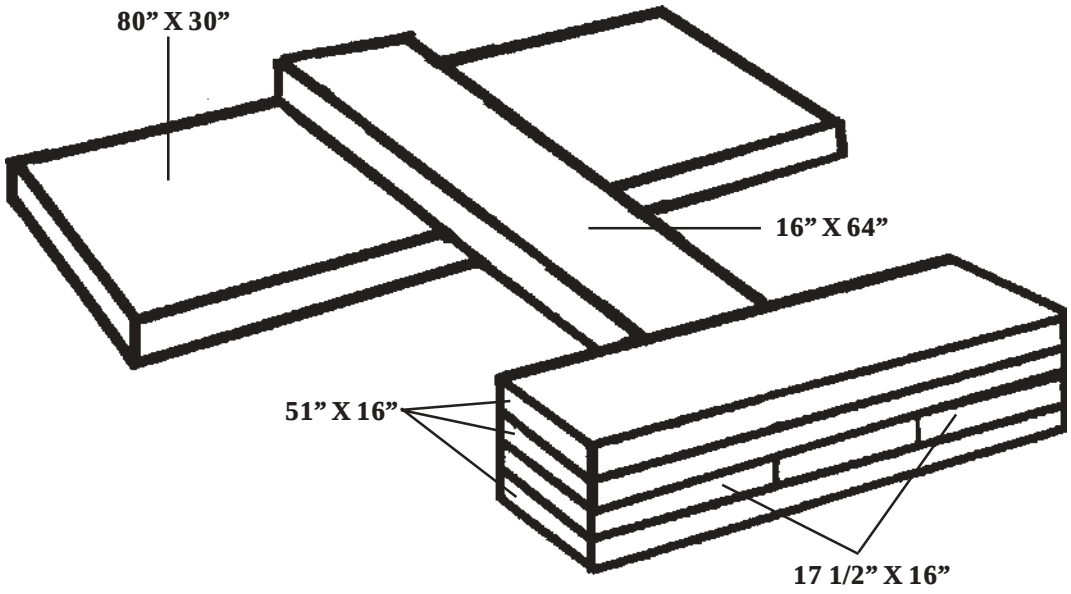
Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
1	1	80	30	Honeycomb	Position the honeycomb on the floor.
	1	16	64	Honeycomb	Center and glue the honeycomb on top of the 80- by 30-inch piece of honeycomb.
	1	51	16	Honeycomb	Center and glue the honeycomb under the 16- by 64-inch piece of honeycomb.

Figure 3-2. Honeycomb Stack 1 Prepared



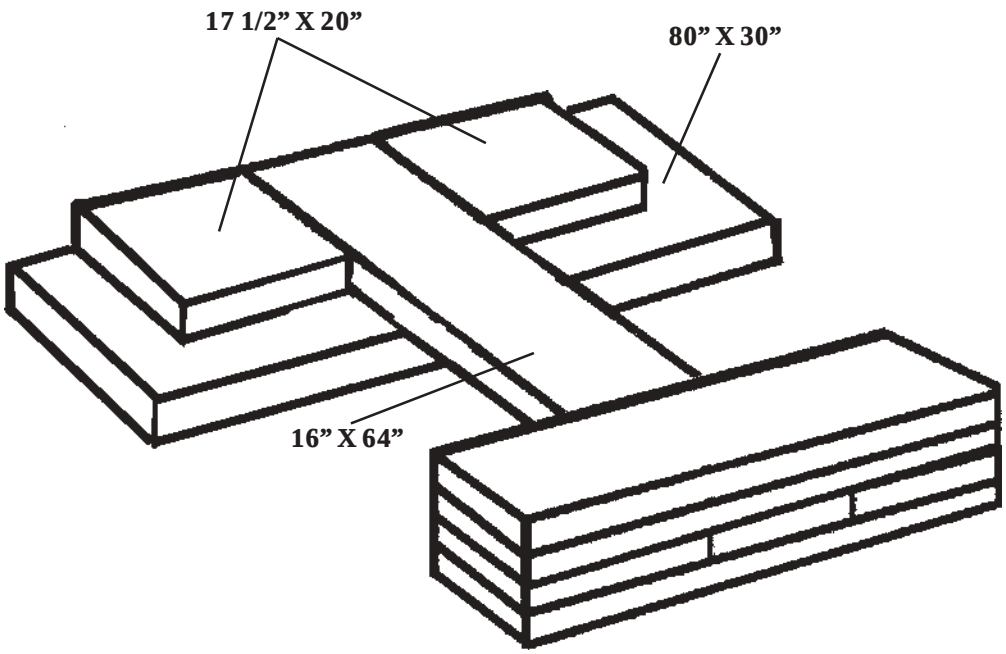
Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
1	2	17 1/2	16	Honeycomb	Position and glue the honeycomb pieces on top of the 51- by 16-inch piece of honeycomb and on each side of the 16- by 64-inch piece of honeycomb.

Figure 3-2. Honeycomb Stack 1 Prepared (continued)



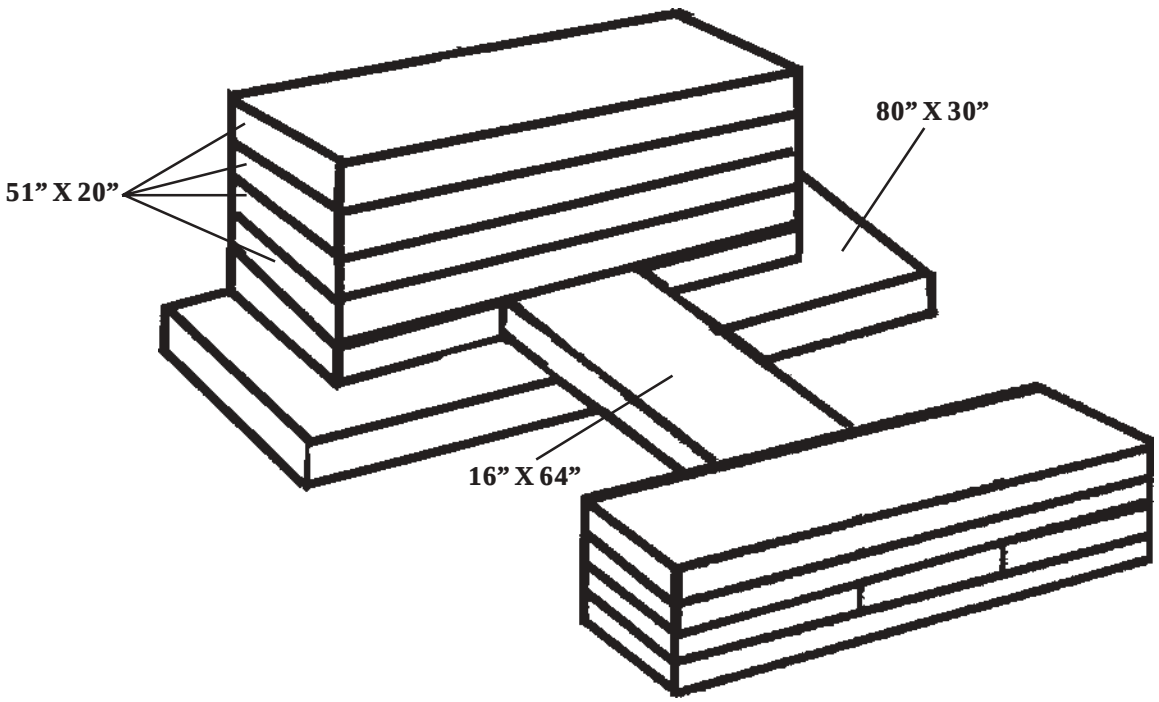
Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
1	2	51	16	Honeycomb	Position and glue the honeycomb pieces on top of the 17 1/2- by 16-inch piece of honeycomb .

Figure 3-2. Honeycomb Stack 1 Prepared (continued)



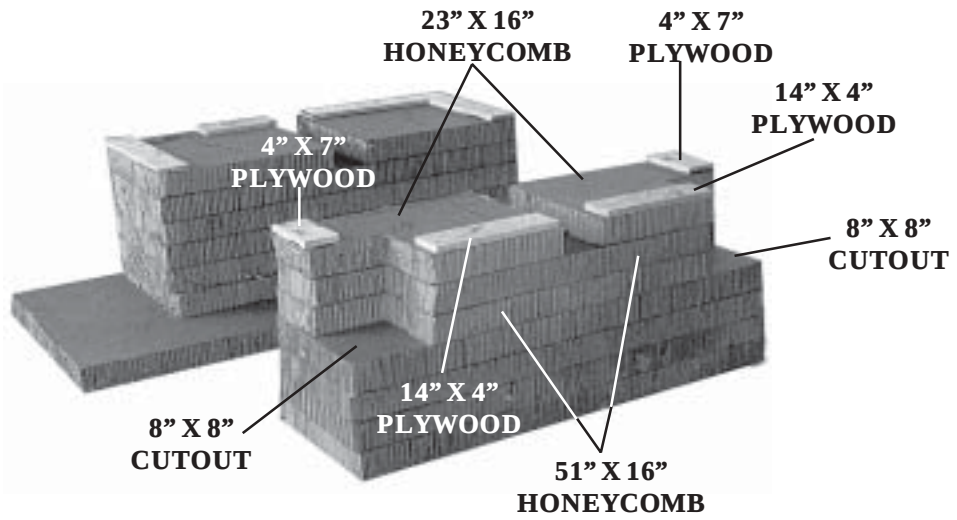
Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
1	2	17 1/2	20	Honeycomb	Position and glue the honeycomb pieces flush with the rear and on top of the 80- by 30-inch piece of honeycomb on each side of the 16- by 64-inch piece of honeycomb.

Figure 3-2. Honeycomb Stack 1 Prepared (continued)



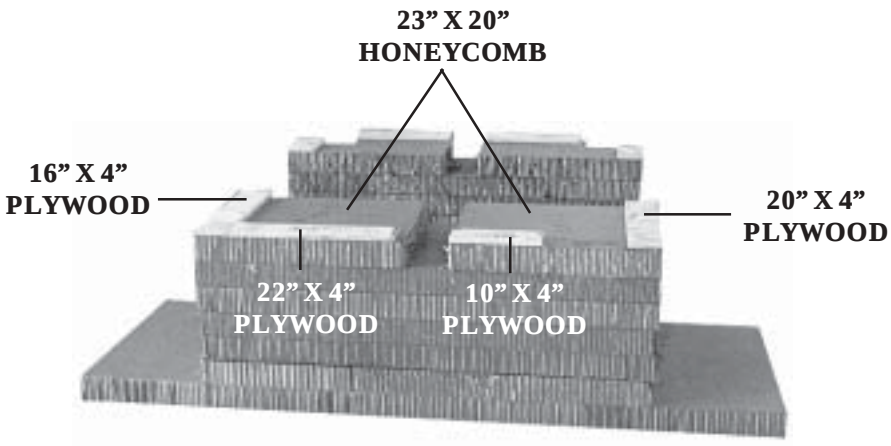
Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
1	4	51	20	Honeycomb	Position and glue the honeycomb pieces on top of the 17 1/2- by 20-inch piece of honeycomb .

Figure 3-2. Honeycomb Stack 1 Prepared (continued)



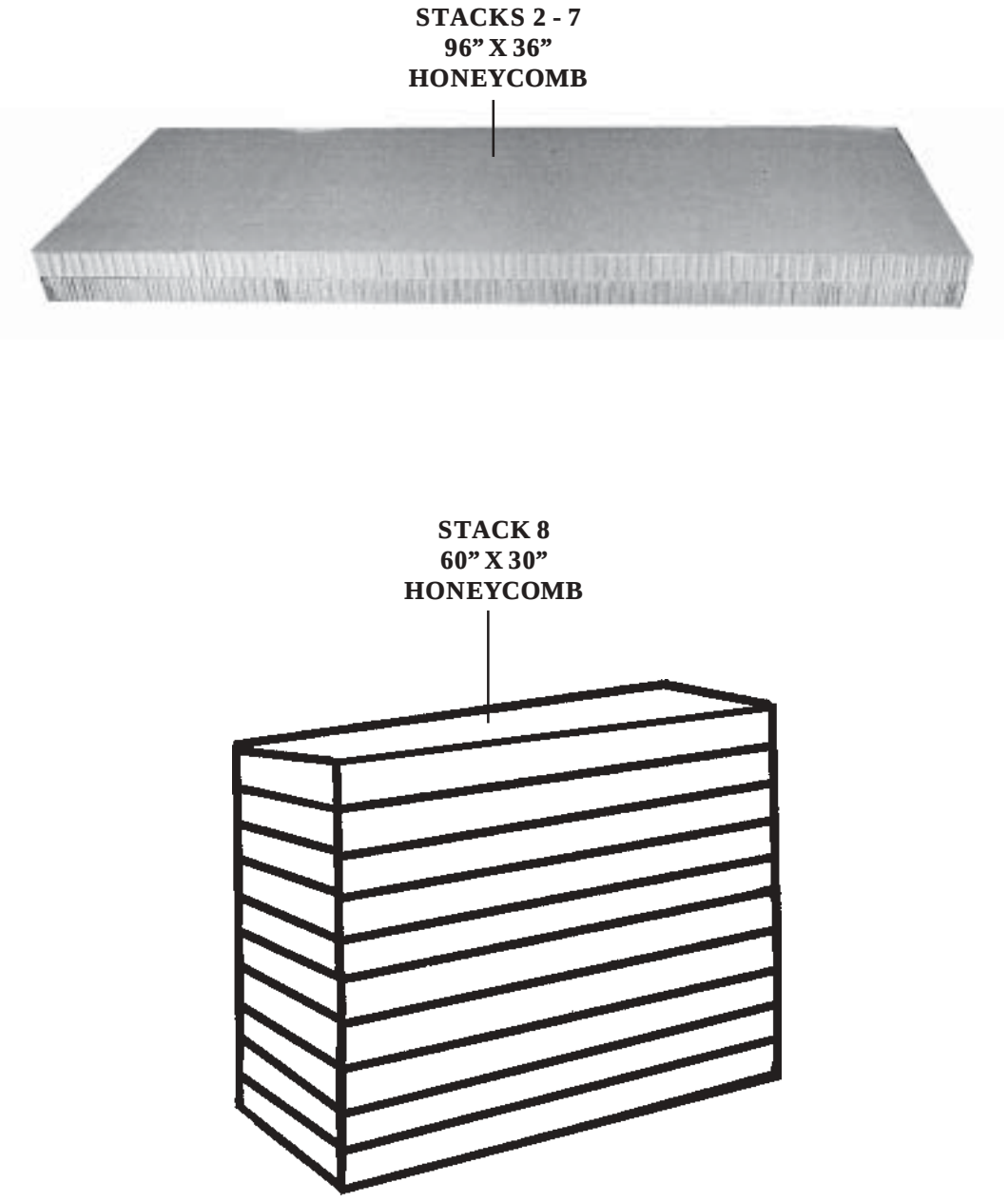
Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
1	2	51	16	Honeycomb	Cut an 8- by 8-inch cutout on each piece of honeycomb. Position and glue the two 51- by 16-inch pieces with cutouts on top of the 51- by 16-inch pieces of honeycomb.
	2	23	16	Honeycomb	Cut an 8- by 8-inch cutout on each piece of honeycomb. Position the pieces on top of the 51- by 16-inch pieces. Align the cutouts and glue.
	2	4	7	3/4-in Plywood	Center and glue the plywood on the sides of the 23- by 16-inch pieces of honeycomb.
	2	14	4	3/4-in Plywood	Center and glue the plywood on the front edge of the 23- by 16-inch pieces of honeycomb.

Figure 3-2. Honeycomb Stack 1 Prepared (continued)



Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
1	2	23	20	Honeycomb	Position and glue the two 23- by 20-inch pieces of honeycomb on top of the 51- by 20-inch pieces of honeycomb aligning the outside edges.
	1	4	20	3/4-in Plywood	Position and glue the plywood on the right outside edge of the right 23- by 20-inch piece of honeycomb.
	1	10	4	3/4-in Plywood	Position and glue the plywood on the left rear edge of the right 23- by 20-inch piece of honeycomb.
	1	22	4	3/4-in Plywood	Position and glue the plywood on the rear edge of the left 23- by 20-inch piece of honeycomb.
	1	4	16	3/4-in Plywood	Position and glue the plywood on the left outside edge of the left 23- by 20-inch piece of honeycomb.

Figure 3-2. Honeycomb Stack 1 Prepared (continued)

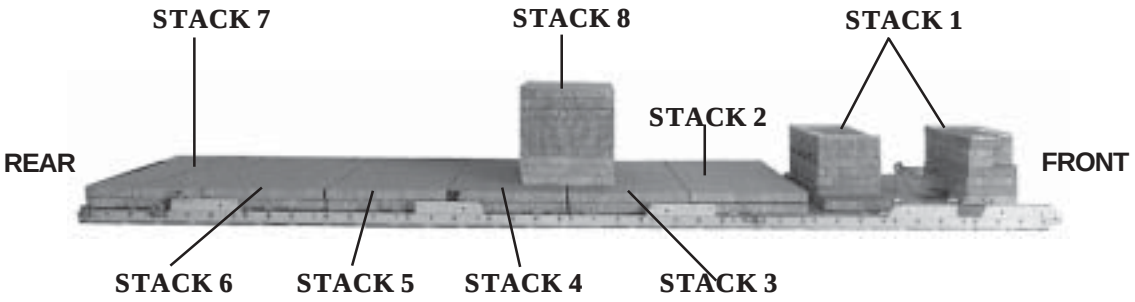


Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
2 - 7	2	96	36	Honeycomb	Glue layers together .
8	10	60	30	Honeycomb	Glue layers together .

Figure 3-3. Honeycomb Stacks 2 Through 8 Prepared

POSITIONING HONEYCOMB STACKS

3-4. Position honeycomb stacks as shown in Figure 3-4.



1. Center stack 1 on the front edge of the platform.
2. Center stack 7 on the rear edge of the platform.
3. Place stack 6 against and in front of stack 7.
4. Place stack 5 against and in front of stack 6.
5. Place stack 4 against and in front of stack 5.
6. Place stack 3 against and in front of stack 4.
7. Place stack 2 against and in front of stack 3.
8. Center stack eight 144 inches from the front edge of the platform.

Figure 3-4. Honeycomb Stacks Positioned

BUILDING THE EQUIPMENT HOSE BOX

3-5. Build the equipment hose box as shown in Figure 3-5.

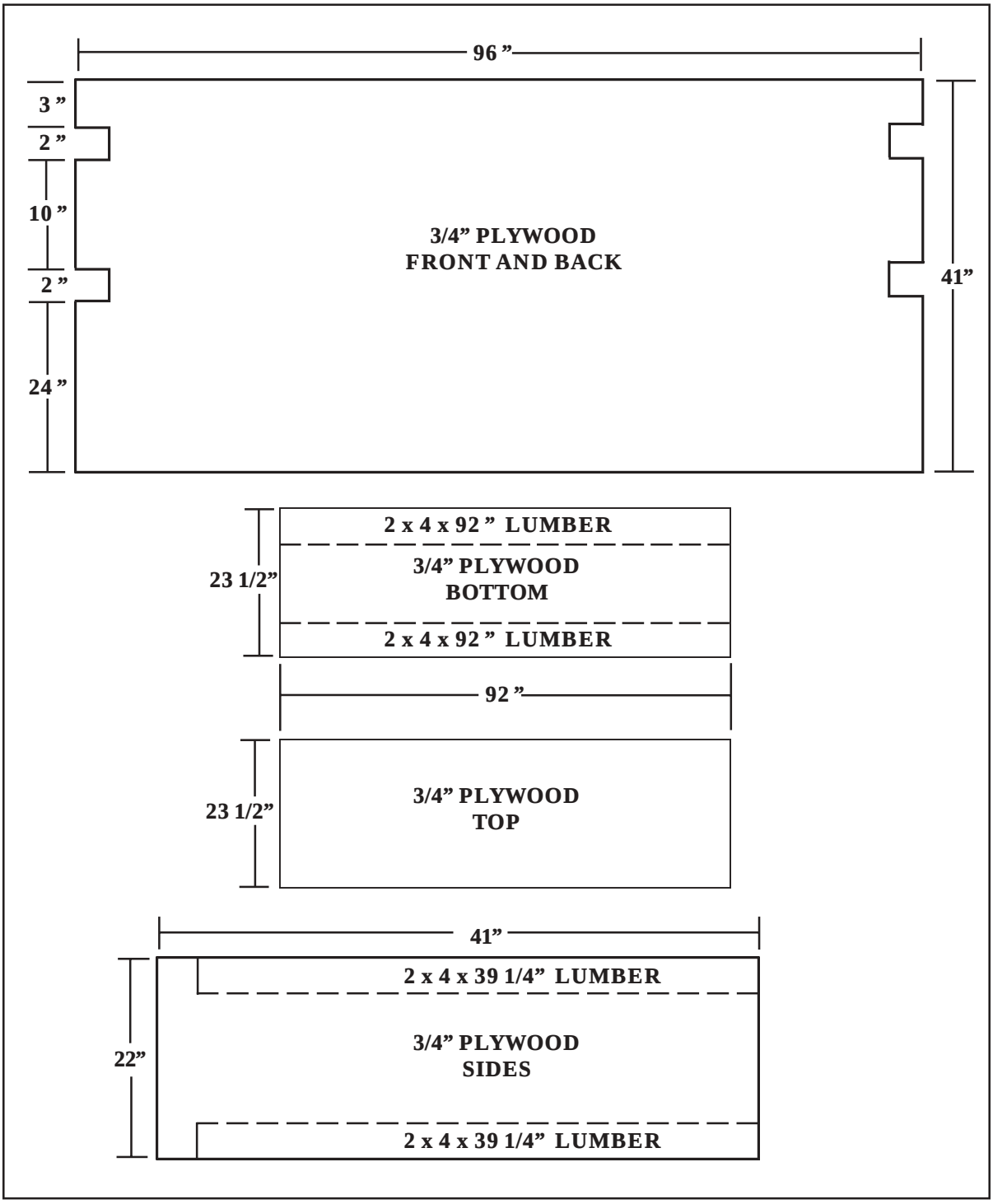
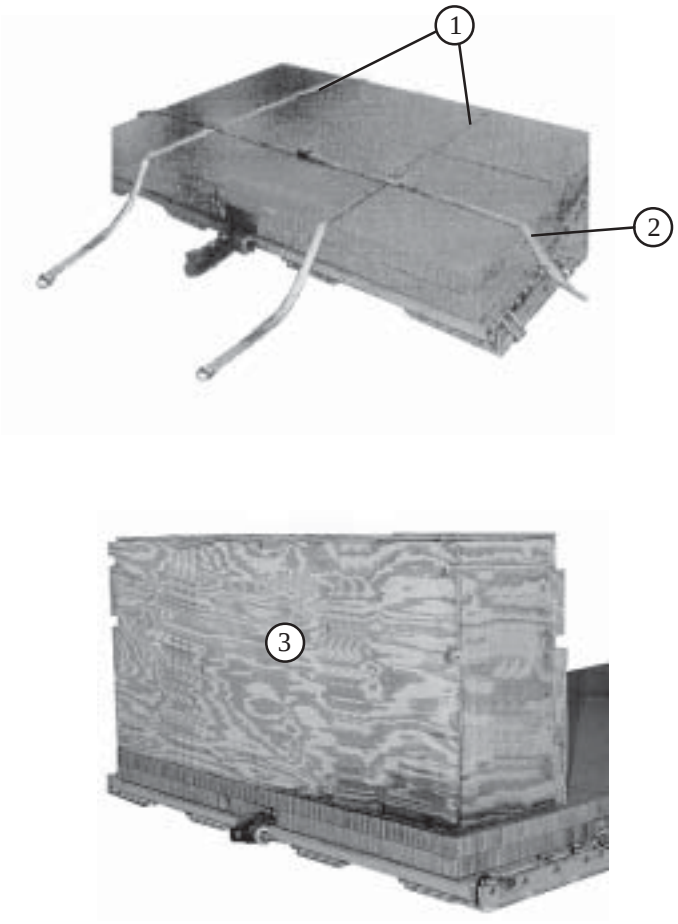


Figure 3-5. Equipment Hose Box Built

POSITIONING EQUIPMENT HOSE BOX

3-6. Position the equipment hose box on the platform as shown in Figure 3-6.



(1) Position two 15- foot lashings across honeycomb stack 7 approximately 16 inches from the outside edges.

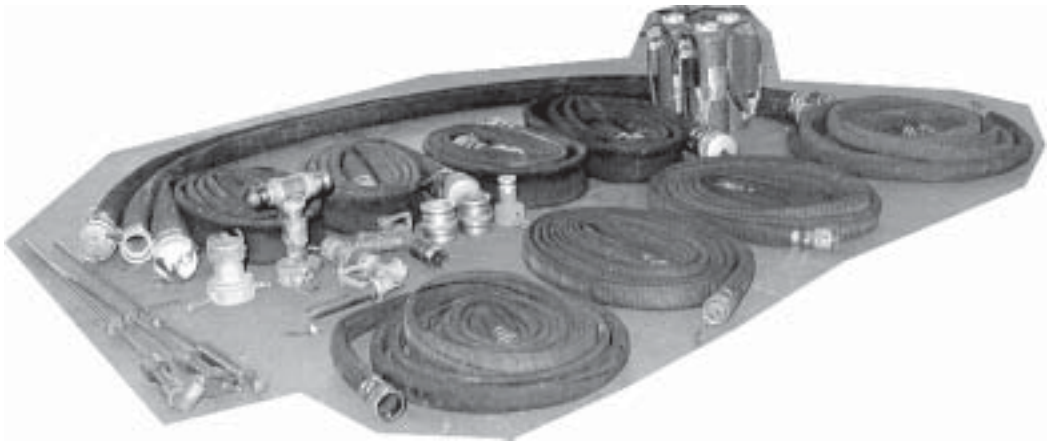
(2) Center a 30-foot lashing lengthwise across honeycomb stack 7.

(3) Position the equipment hose box on the rear edge of the platform.

Figure 3-6. Equipment Hose Box Positioned on Platform

STORING EQUIPMENT IN EQUIPMENT HOSE BOX

3-7. Store equipment in the equipment hose box on the platform as shown in Figure 3-7.



Item Description	Quantity
25-foot, 4-inch hose	4
Aircraft nozzle	1
Elbow coupler	1
2-inch to 3-inch adapter	2
10-foot, 3-inch hose	2
3-inch to 4-inch adapter	2
4-inch to 2-inch reducer	1
WYE adapter	1
50-foot, 2-inch hose	4
Open port nozzle	1
Grounding rod	3

(1) Place a 91- by 23-inch piece of honeycomb in the bottom of the equipment hose box.

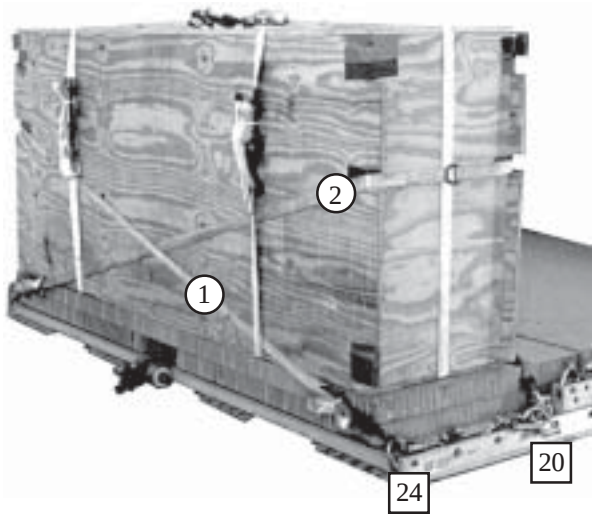
(2) Wrap all metal fittings in cellulose wadding. Place all items in the equipment hose box.

(3) Secure the equipment hose box top with eightpenny nails. Secure the equipment hose box with lashings installed in Figure 3-6.

Figure 3-7. Equipment Hose Box Positioned on Platform

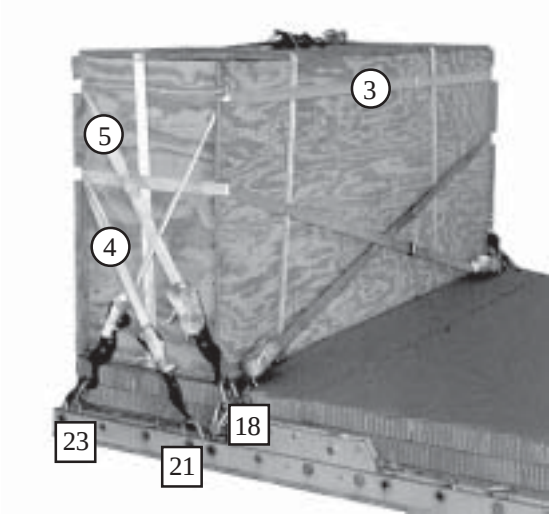
LASHING EQUIPMENT HOSE BOX TO PLATFORM

3-8. Lash the equipment hose box to the platform as shown in Figures 3-8 and 3-9.



Lashing Number	Tie-down Clevis Number	Instructions
1	24 and 20	Route a 30-foot lashing from clevis 24 around the rear of the equipment hose box, through the left bottom notches of the box to clevis 20.
2	24A and 20A	Route a 30-foot lashing from clevis 24A around the rear of the equipment hose box, through the right bottom notches of the box to clevis 20A.

Figure 3-8. Lashings 1 and 2 Installed

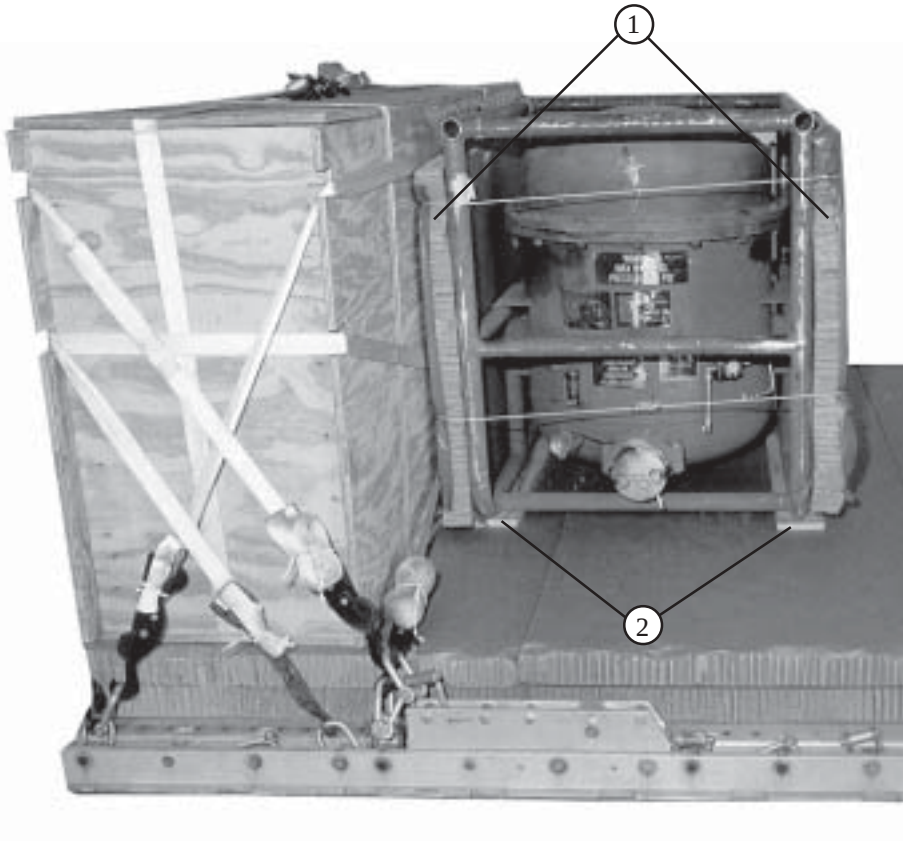


Lashing Number	Tie-down Clevis Number	Instructions
3	23 and 23A	Route a 15-foot lashing through its own D-ring on clevis 23A, around the front top cutouts and load bind on clevis 23.
4	21 and 21A	Route a 15-foot lashing through its own D-ring on clevis 21A, around the rear bottom cutouts and load bind on clevis 21.
5	18 and 18A	Route a 30-foot lashing through the rear top notches of the equipment hose box. Ensure the lashings are routed under the load binders on the rear of the box. Load bind to clevises 18 and 18A.

Figure 3-9. Lashings 3 through 5 Installed

PREPARING AND POSITIONING FUEL SEPARATOR

3-9. Prepare and position the fuel separator as shown in Figure 3-10.



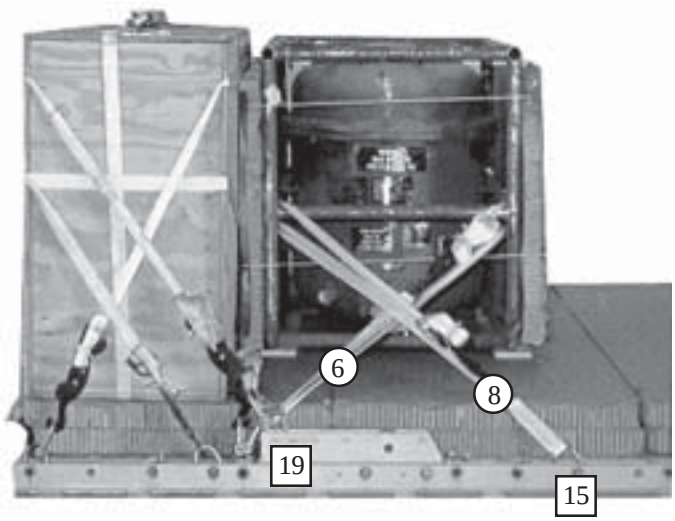
(1) Secure a 49- by 41-inch piece of honeycomb to the front and rear of the separator with type III nylon cord. Secure a 64- by 33-inch piece of honeycomb to the top of the separator with type III nylon cord (not shown).

(2) Center the separator against and in front of the equipment hose box. Place a 3/4- by 4 3/4-by 36 1/2-inch piece of plywood under each frame rail.

Figure 3-10. Fuel Separator Prepared and Positioned

LASHING FUEL SEPARATOR TO PLATFORM

3-10. Lash the fuel separator to the platform as shown in Figure 3-11.

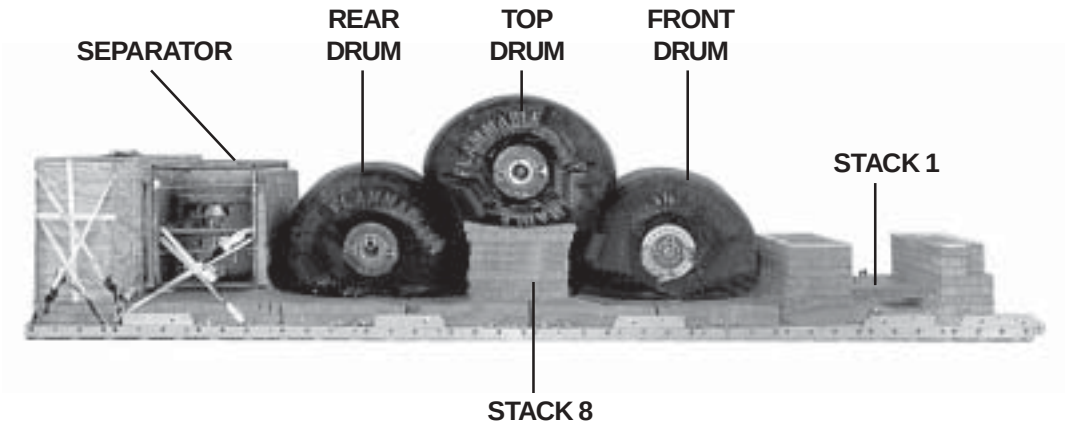


Lashing Number	Tie-down Clevis Number	Instructions
6	19	Route a 15-foot lashing around the front right middle cross member.
7	19A	Route a 15-foot lashing around the front left middle cross member.
8	15	Route a 15-foot lashing around the right rear middle cross member.
9	15A	Route a 15-foot lashing around the left rear middle cross member.

Figure 3-11. Lashings 6 through 9 Installed

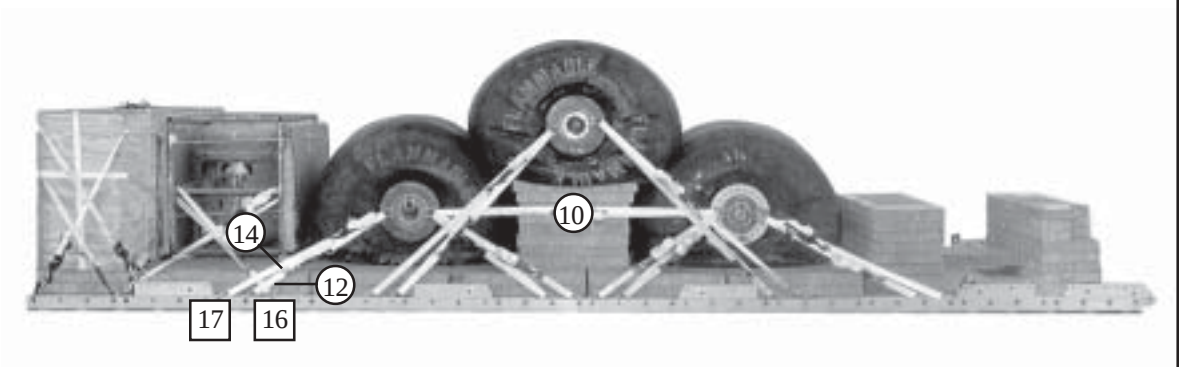
POSITIONING AND LASHING THE DRUMS

3-11. Position and lash the fuel drums to the platform as shown in Figure 3-12 and 3-13.



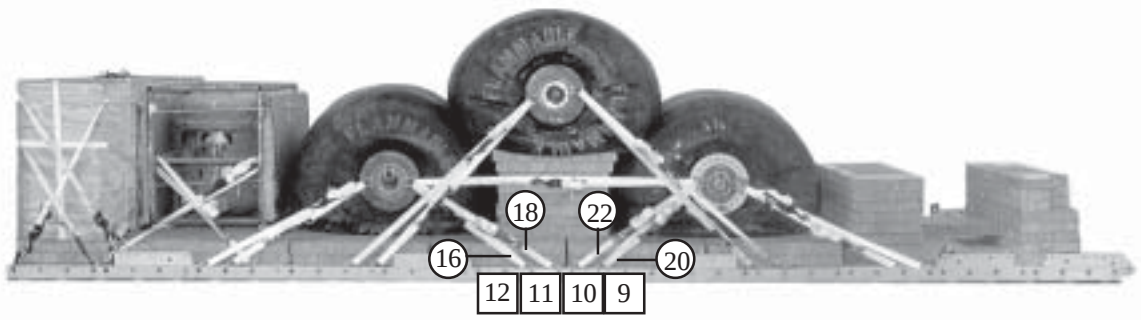
1. Place a platform clevis on one end of two 9-foot (2-loop), type XXVI nylon webbing slings. Attach the slings to each side of the drum (for lifting purposes only) and remove after the drum is positioned (not shown).
2. Position the rear drum next to the fuel separator and centered on the platform.
3. Position the front drum in front of stack 8 centered on the platform. There should be 6 inches between the drum and stack 1. Stack 8 may need to be adjusted for placement.
4. Position the top drum centered on top of stack 8, between the front and rear drums.

Figure 3-12. Fuel Drums Positioned



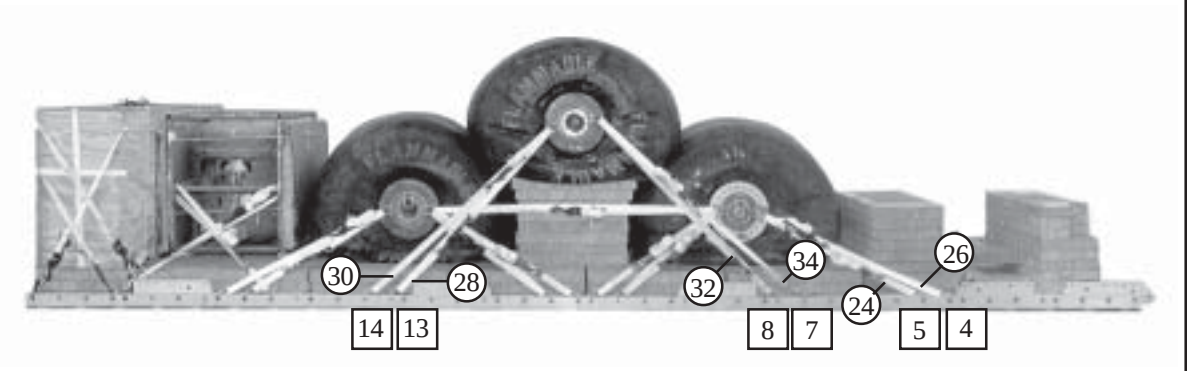
Lashing Number	Tie-down Clevis Number	Instructions
10		Route a lashing from the front shackle of the rear drum to the rear shackle of the front drum on the right side.
11		Route a lashing from the front shackle of the rear drum to the rear shackle of the front drum on the left side.
12	16	Route a lashing through the right rear shackle of the rear drum.
13	16A	Route a lashing through the left rear shackle of the rear drum.
14	17	Route a lashing through the right rear shackle of the rear drum.
15	17A	Route a lashing through the left rear shackle of the rear drum.

Figure 3-13. Lashings 10 through 35 Installed



Lashing Number	Tie-down Clevis Number	Instructions
16	12	Route a lashing through the right front shackle of the rear drum.
17	12A	Route a lashing through the left front shackle of the rear drum.
18	11	Route a lashing through the right front shackle of the rear drum.
19	11A	Route a lashing through the left front shackle of the rear drum.
20	9	Route a lashing through the right rear shackle of the front drum.
21	9A	Route a lashing through the left rear shackle of the front drum.
22	10	Route a lashing through the right rear shackle of the front drum.
23	10A	Route a lashing through the left rear shackle of the front drum.

Figure 3-13. Lashings 10 through 35 Installed (continued)

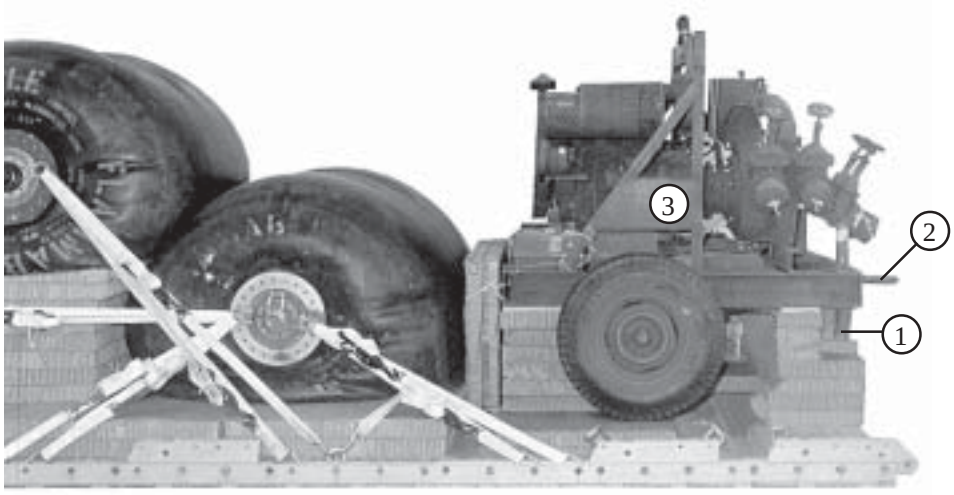


Lashing Number	Tie-down Clevis Number	Instructions
24	5	Route a lashing through the right front shackle of the front drum.
25	5A	Route a lashing through the left front shackle of the front drum.
26	4	Route a lashing through the right front shackle of the front drum.
27	4A	Route a lashing through the left front shackle of the front drum.
28	13	Route a lashing through the right rear shackle of the top drum.
29	13A	Route a lashing through the left rear shackle of the top drum.
30	14	Route a lashing through the right rear shackle of the top drum.
31	14A	Route a lashing through the left rear shackle of the top drum.
32	8	Route a lashing through the right front shackle of the top drum.
33	8A	Route a lashing through the left front shackle of the top drum.
34	7	Route a lashing through the right front shackle of the top drum.
35	7A	Route a lashing through the left front shackle of the top drum.

Figure 3-13. Lashings 10 through 35 Installed (continued)

PREPARING AND POSITIONING THE PUMP

3-12. Prepare the pump according to paragraph 2-5 and as shown in Figure 2-8. Position the load as shown in Figure 3-14.



(1) Raise the legs and secure with the pins.

(2) Retract the lunette.

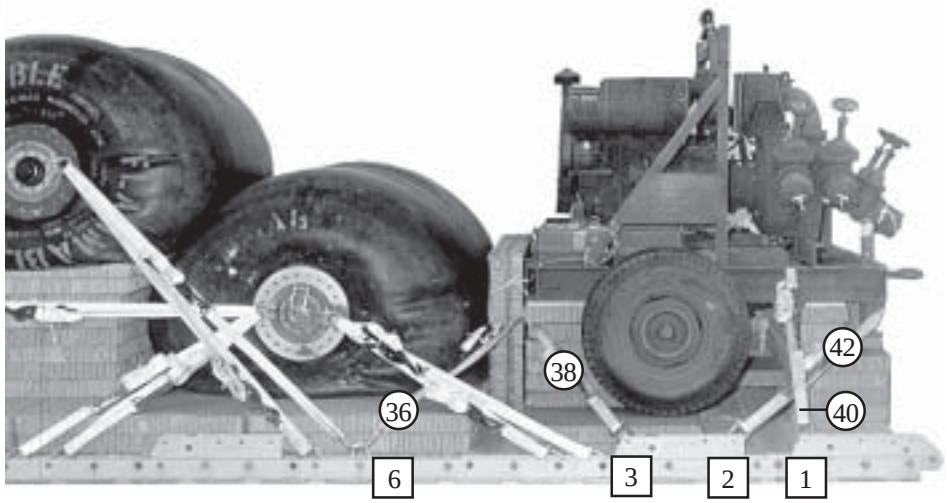
(3) Position the pump on stack 1 and align the front frame edge with the front edge of the platform.

(4) Pad the tie-down points with cellulose wadding and tape (not shown).

Figure 3-14. Pump Prepared and Positioned on Platform

LASHING PUMP TO THE PLATFORM

3-13. Lash the pump to the platform as shown in Figure 3-15.

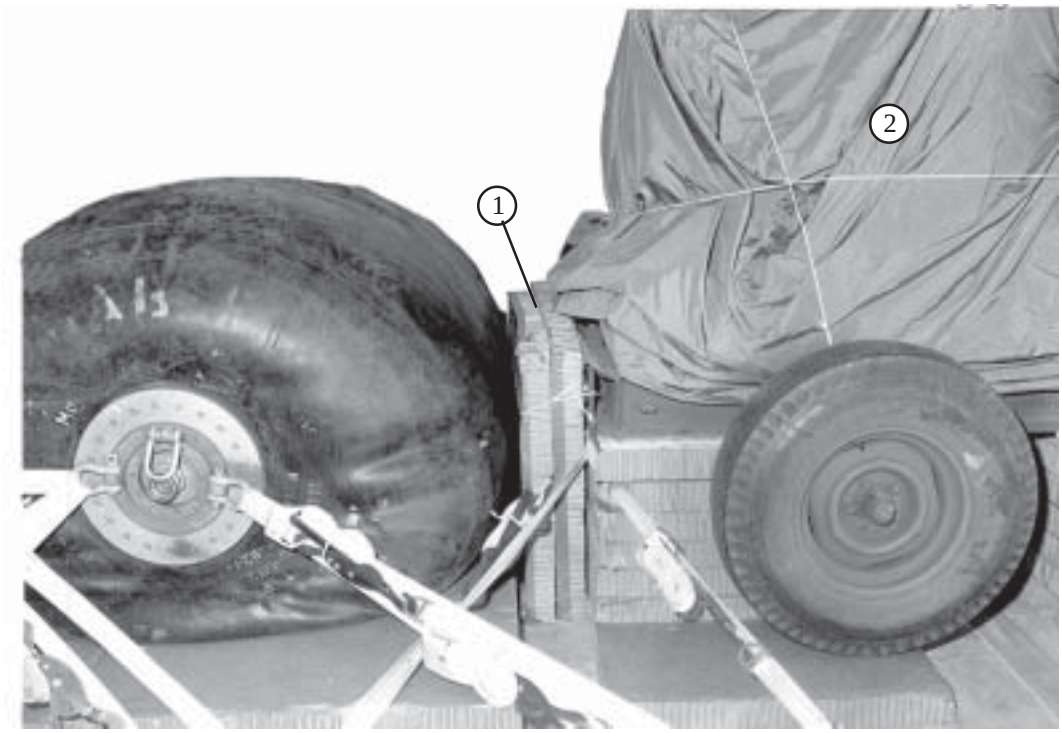


Lashing Number	Tie-down Clevis Number	Instructions
36	6	Route a lashing through the right rear tie-down point.
37	6A	Route a lashing through the left rear tie-down point.
38	3	Route a lashing through the right rear tie-down point.
39	3A	Route a lashing through the left rear tie-down point.
40	2	Route a lashing through the right front tie-down point.
41	2A	Route a lashing through the left front tie-down point.
42	1	Route a lashing around the right side frame.
43	1A	Route a lashing around the left side frame.

Figure 3-15. Lashings 36 through 43 Installed

COVERING THE PUMP

3-14. Place a canvas cover over the pump as shown in Figure 3-16.



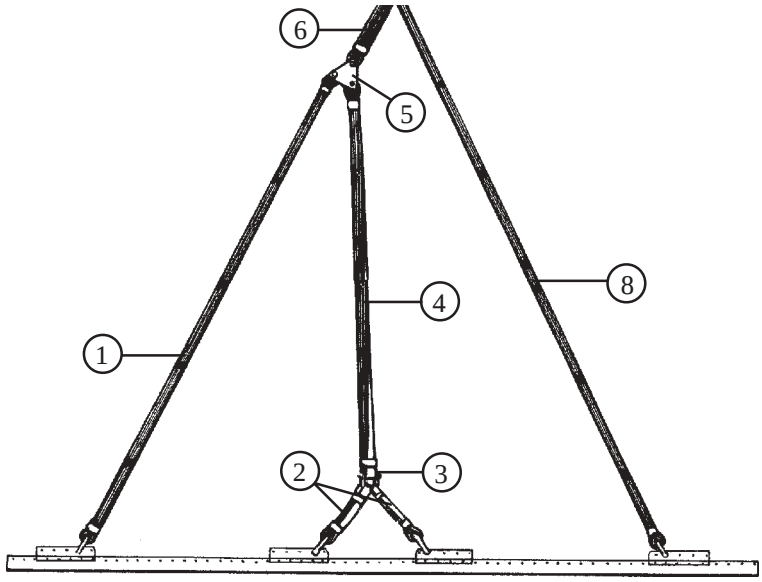
(1) Place two pieces of 48- by 28-inch honeycomb between the pump and the drum. Secure the honeycomb to the pump with type III nylon cord.

(2) Cover the pump with a canvas cover and secure the cover with type III nylon cord.

Figure 3-16. Pump Covered and Secured

INSTALLING SUSPENSION SLINGS AND SAFETY TIES

3-15. Install suspension slings and safety ties as shown in Figure 3-17.

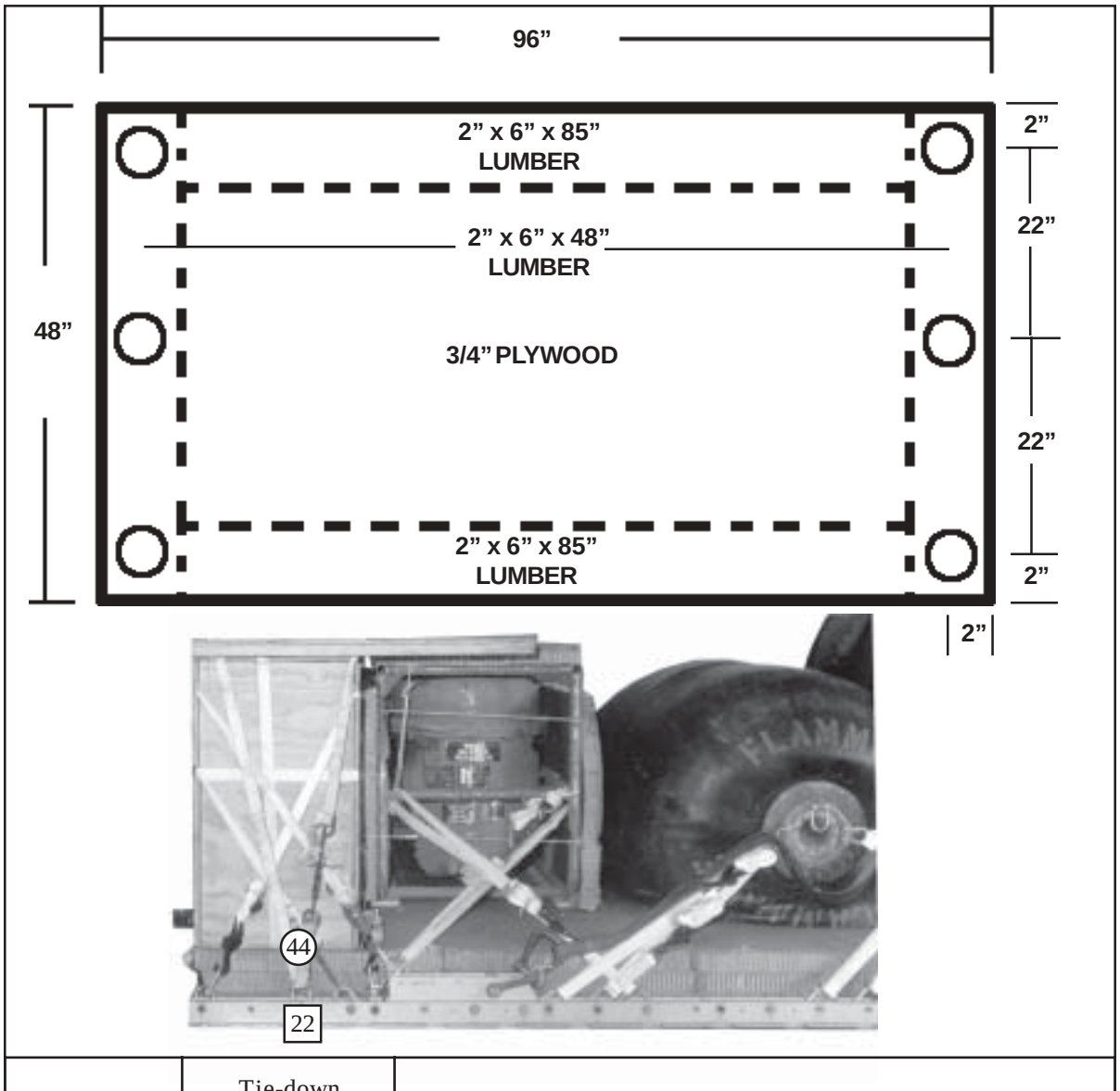


1. Attach a 16-foot (4-loop), type XXVI nylon webbing sling to each rear suspension bracket with a large clevis.
2. Attach a 3-foot (4-loop), type XXVI nylon webbing sling to each second and third suspension bracket with a large suspension clevis.
3. Place the 3-foot slings on each side of the load in the bell of a large suspension clevis.
4. Bolt a 9-foot (4-loop), type XXVI nylon webbing sling to each large suspension clevis. Tie the large suspension clevises to the top drum with type III nylon cord (not shown).
5. Join the rear and center suspension slings together with a 3-point link on each side of the load.
6. Attach a 3-foot (4-loop), type XXVI nylon webbing sling to the top point on the 3-point links.
7. Pad and tape the link assemblies (not shown).
8. Attach a 20-foot (4-loop), type XXVI nylon webbing sling to each front suspension bracket with a large suspension clevis.
9. Raise the suspension slings and install the suspension sling safety ties as shown in Appendix A, to the front and rear suspension slings, six to eight inches above the highest point of the load (not shown).

Figure 3-17. Suspension Slings and Safety Ties Installed

BUILDING AND POSITIONING PARACHUTE STOWAGE PLATFORM

3-16. Build and stow the parachute stowage platform as shown in Figure 3-18. Align the rear edge of the stowage platform on the rear edge of the box.

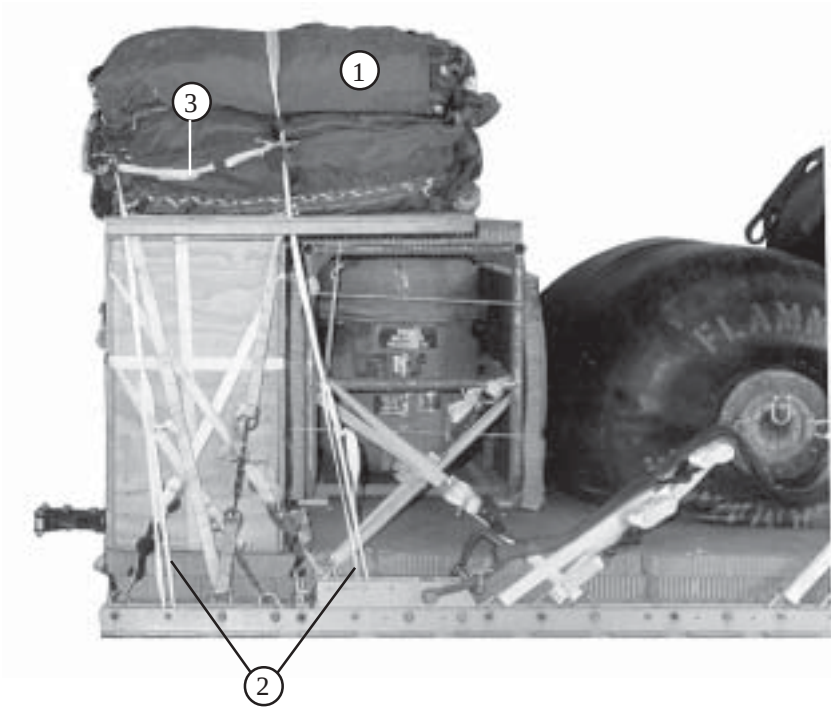


Lashing Number	Tie-down Clevis Number	Instructions
44	22	Route a 15-foot lashing through both right rear holes in the stowage platform.
45	22A	Route a 15-foot lashing through both left rear holes in the stowage platform.

Figure 3-18. Parachute Stowage Platform Built and Positioned

PREPARING AND STOWING CARGO PARACHUTES

3-17. Prepare and stow four G-11 cargo parachutes as shown in Figure 3-19.

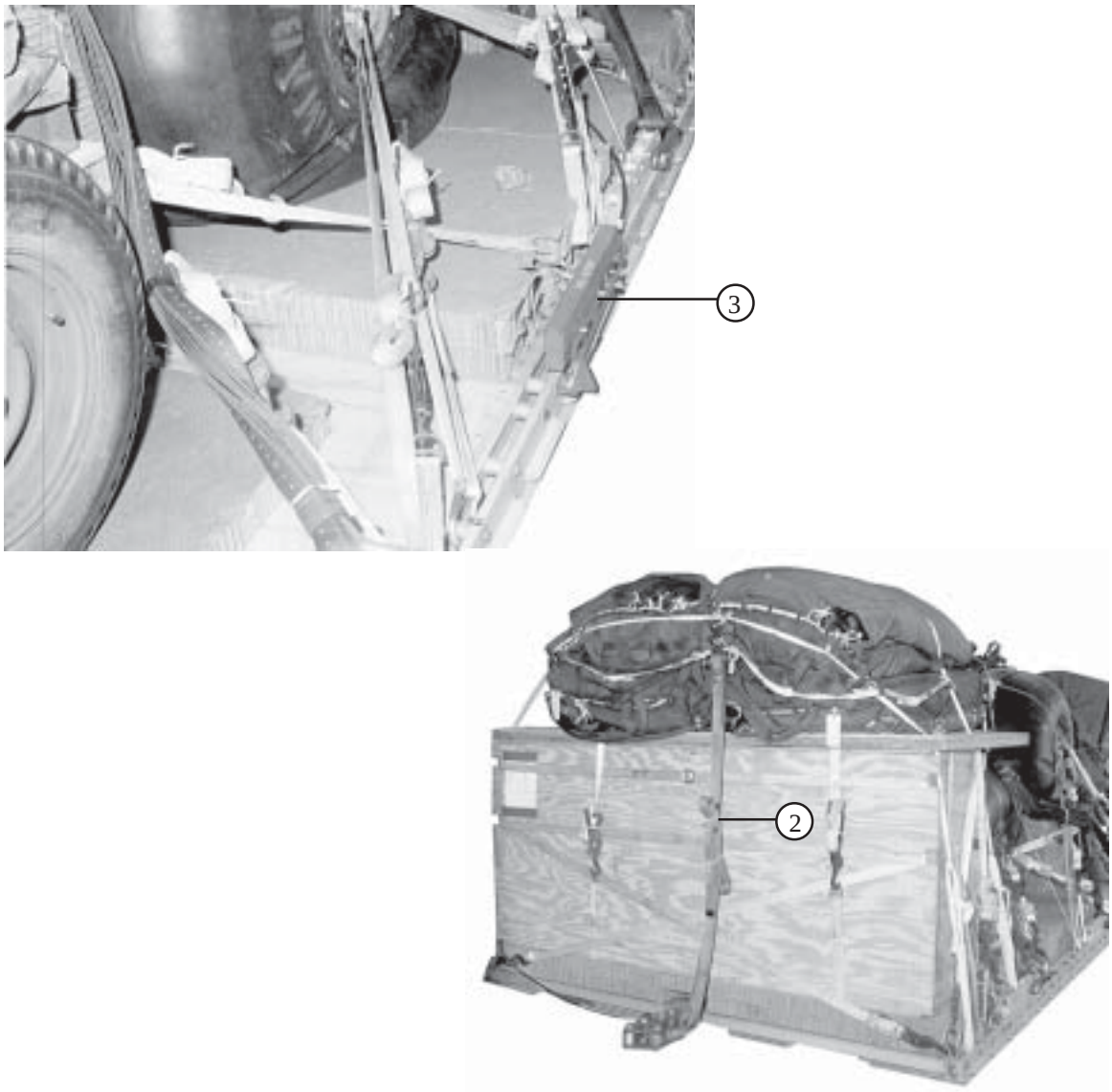


1. Prepare and stow four G-11 cargo parachutes according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
2. Restrain the parachutes according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 by using bushings 47 and 47A on the platform and bushings 3 and 3A on the rear suspension link.
3. Install the multicut parachute release strap according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

Figure 3-19. Cargo Parachutes Prepared and Stowed

INSTALLING THE EXTRACTION SYSTEM

3-18. Install the extraction system as shown in Figure 3-20.



(1) Install the EFTC according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

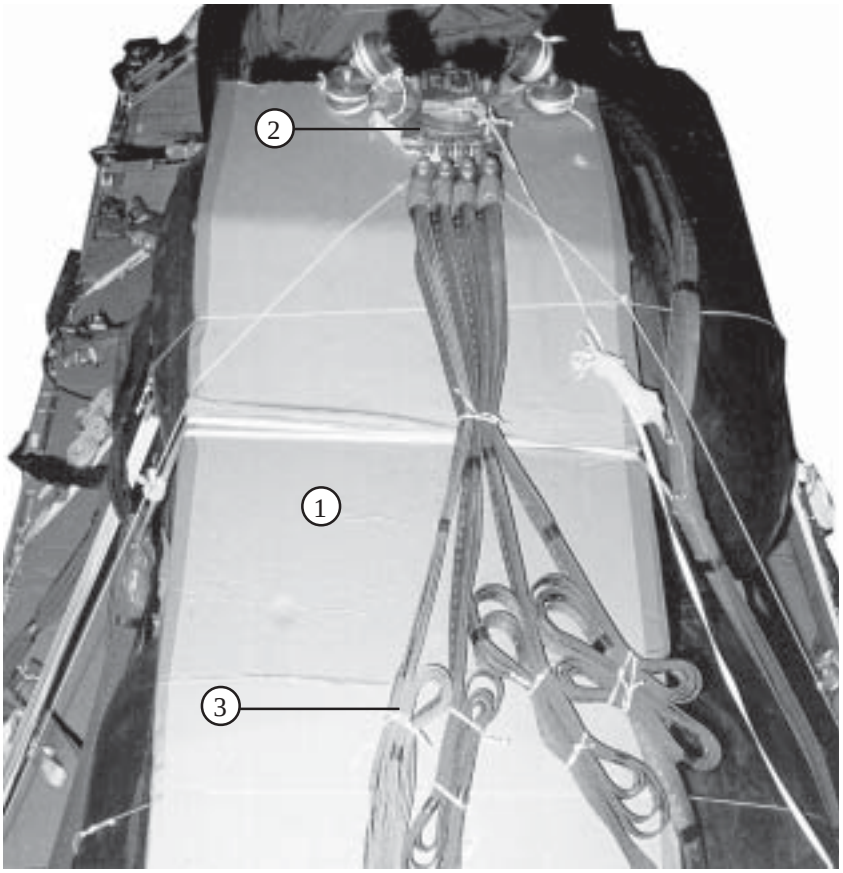
(2) Attach a 9-foot (2-loop), type XXVI nylon webbing sling for use as the deployment line.

(3) Use the rear mounting holes for the EFTC actuator mounting bracket and a 24-foot cable.

Figure 3-20. Extraction System Installed

INSTALLING THE CARGO PARACHUTE RELEASE SYSTEM

3-19. Install the M-2 cargo parachute release system as shown in Figure 3-21.



(1) Place a 96- by 24-inch piece of honeycomb from the separator to the top of the top drum. Secure the honeycomb with type III nylon cord.

(2) Place the M-2 cargo parachute release on the honeycomb placed on top of the top drum. Attach the suspension slings and the parachute riser extension to the M-2 cargo parachute release according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Secure the cargo parachute release 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 3-21. Cargo Parachute Release Installed

PLACING EXTRACTION PARACHUTE

3-20. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Rig the extraction line in an extraction line bag according to TM 10-1670-286-20/TO 13C5-2-41. Place the extraction parachute and extraction line on the load for installation in the aircraft.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

3-21. Select and install the provisions for emergency aft restraints according to the emergency aft restraint requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

MARKING RIGGED LOAD

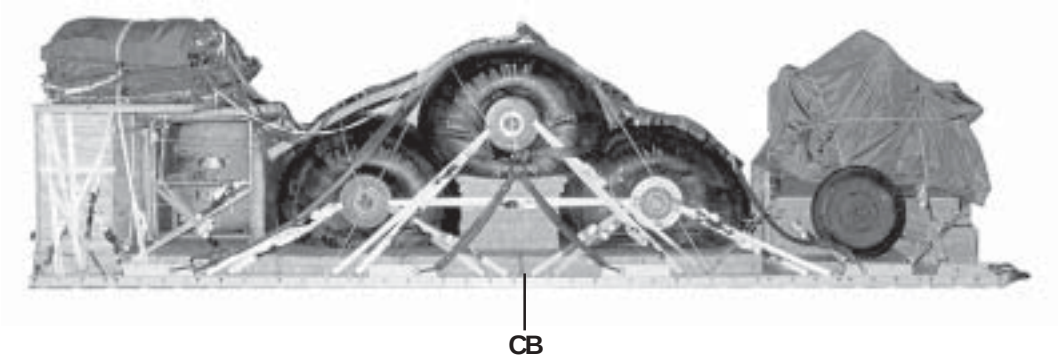
3.22. Mark the rigged load according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 3-22. Complete Shipper's Declaration for Dangerous Goods and affix to the load. If the load varies from the one shown, the weight, height, CB, tipoff curve, and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

3-23. Use the equipment list in Table 3-1 to rig the load shown in Figure 3-22.

CAUTION:

Make the final inspection required by FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



RIGGED LOAD DATA

Weight	**19,689 pounds**
Maximum Weight	**21,000 pounds**
Height	**89 inches**
Width	**108 inches**
Overall Length	**315 inches**
Overhang: Front (Tongue of Pump)	**9 inches**
Rear (EFTC)	**18 inches**
Center of Balance (CB) (from front edge of platform)	**144 inches**
Extraction System	**EFTC**

Figure 3-22. Three 500-Gallon Drums with Pump and Separator Rigged for Low-Velocity Airdrop

Table 3-1. Equipment Required for Rigging Three 500-Gallon Drums with Pump and Separator

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive, paste, 1-gal	As required
1670-01-035-6054	Bridle, extraction line bag (for DES)	1
4030-00-090-5354	Clevis, large	9
4030-00-678-8562	Clevis, medium	6
8305-00-880-8155	Cloth coated, green, 60-inch	As required
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
1670-00-360-0328	Cover, Clevis, large	4
8135-00-664-6958	Cushioning material, packaging, cellulose wadding	As required
5365-00-937-0147	D-ring, heavy-duty, 10,000-lb	24
8305-00-958-3685	Felt, 1/2-in thick	As required
1670-00-003-4391	Knife, miniature, cutter (for DES)	1
1670-01-183-2678	Leaf, extraction line (line bag)(add 1 for FOR DES)	2
1670-01-064-4452	Line, drogue (for DES) 60-ft (1-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, C-5, C-17: 140-ft (3-loop), type XXVI	1
	Link Assembly:	
	Two-point:	
5306-00-435-8994	Bolt, 1-in diam, 4-in long (add 2 for DES)	(2)
5310-00-232-5165	Nut, 1-in, hexagonal (add 2 for DES)	(2)
1670-00-003-3454	Plate, side, 5 1/2-in	(2)
1670-00-003-1953	Plate, side, 3 3/4-in (for DES)	(2)
5365-00-007-3414	Spacer, large (add 2 for DES)	(2)
1670-01-307-1055	Three-point	2
1670-01-483-8259	Link, tow release mechanism (H-Block) C-17 aircraft	1
5510-00-220-6146	Lumber, 2- by 4- by 96-in:	4
5510-00-220-6148	Lumber, 2- by 6 by 96-in:	3
5315-00-010-4659	Nail, steel wire, 8d	As required

Table 3-1. Equipment Required for Rigging Three 500-Gallon Drums with Pump and Separator (continued)

National Stock Number	Item	Quantity
1670-00-753-3928	Pad, energy-dissipating (honeycomb), 3- by 36- by 96-in	30 sheets
	Parachute:	
	Cargo:	
1670-01-016-7841	G-11B	4
	Cargo extraction:	
1670-00-040-8135	28-ft	1
	Drogue (for DES)	
1670-01-063-3715	15-ft	1
	Platform, airdrop, type V, 24-ft:	
1670-01-353-8425	Bracket assembly, coupling	(1)
1670-01-162-2372	Clevis assembly, type V	(53)
1670-01-162-2376	Extraction bracket assembly	(1)
1670-01-247-2389	Bracket, suspension	(8)
1670-01-162-2381	Tandem link assembly (Multipurpose link)	(2)
5530-00-128-4981	Plywood, 3/4-in	4 sheets
1670-01-097-8817	Release, cargo parachute, M-2	1
	Sling, cargo, airdrop	
	For suspension and lifting:	
1670-01-062-6306	3-ft (4-loop), type XXVI nylon webbing	6
1670-01-062-6305	9-ft (4-loop), type XXVI nylon webbing	2
1670-01-062-6308	16-ft (4-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:	
1670-01-062-6313	60-ft (3-loop), type XXVI nylon webbing	4
5340-00-040-8219	Strap, parachute release, multi-cut, comes w/ 2 knives	2
7510-00-266-5016	Tape, adhesive, 2-in	As required
1670-00-266-6710	Tape, masking, 2-in	As required
1670-00-937-0271	Tie-down assembly, 15-foot	53
8310-00-917-3945	Thread, Cotton, Ticket 8/7	As required
	Webbing:	
8305-00-268-2411	Cotton, 1/4-in, type I	As required
8305-00-082-5752	Nylon, tubular, 1/2-in	As required
8305-00-263-3591	Nylon, Type VIII	As required

SECTION II - RIGGING FOUR 500-GALLON DRUMS

DESCRIPTION OF LOAD

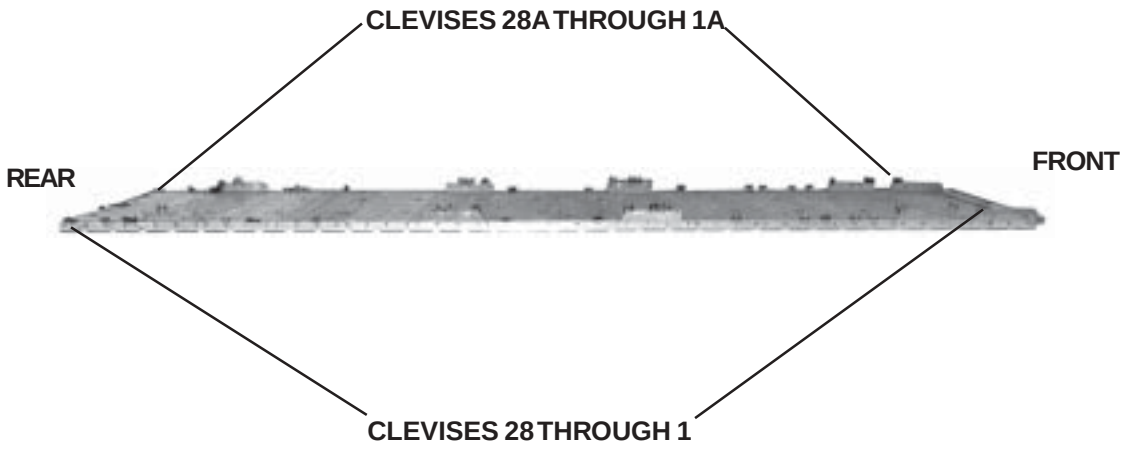
3-24. The four collapsible drums are rigged on a 28-foot platform with five G-11 cargo parachutes. Each drum is filled with a maximum of 432 gallons of liquid. When empty, each drum weighs 250 pounds and is 62 inches long and 53 inches in diameter. The 350-GPM pump with filter/separator and hose box are accompanying loads. The total rigged load has a maximum rigged weight of 25,700 pounds with a width of 108 inches and a length of 372 inches. It has an overhang of 18 inches in the front and 9 inches in the rear. The load has a center of balance of 172 inches from the front of the platform.

Notes: 1. For drums filled with liquid other than water, use Table 1-1 to recompute the weight.
2. If the load varies from the one shown, the weght, height, CB, tipoff curve, and parachute requirements must be recomputed.
3. Do not pressurze drums with air.

PREPARING PLATFORM

3-25. Prepare a 28-foot type V airdrop platform using two tandem links, eight suspension brackets, and 68 tie-down clevises as shown in Figure 3-23.

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



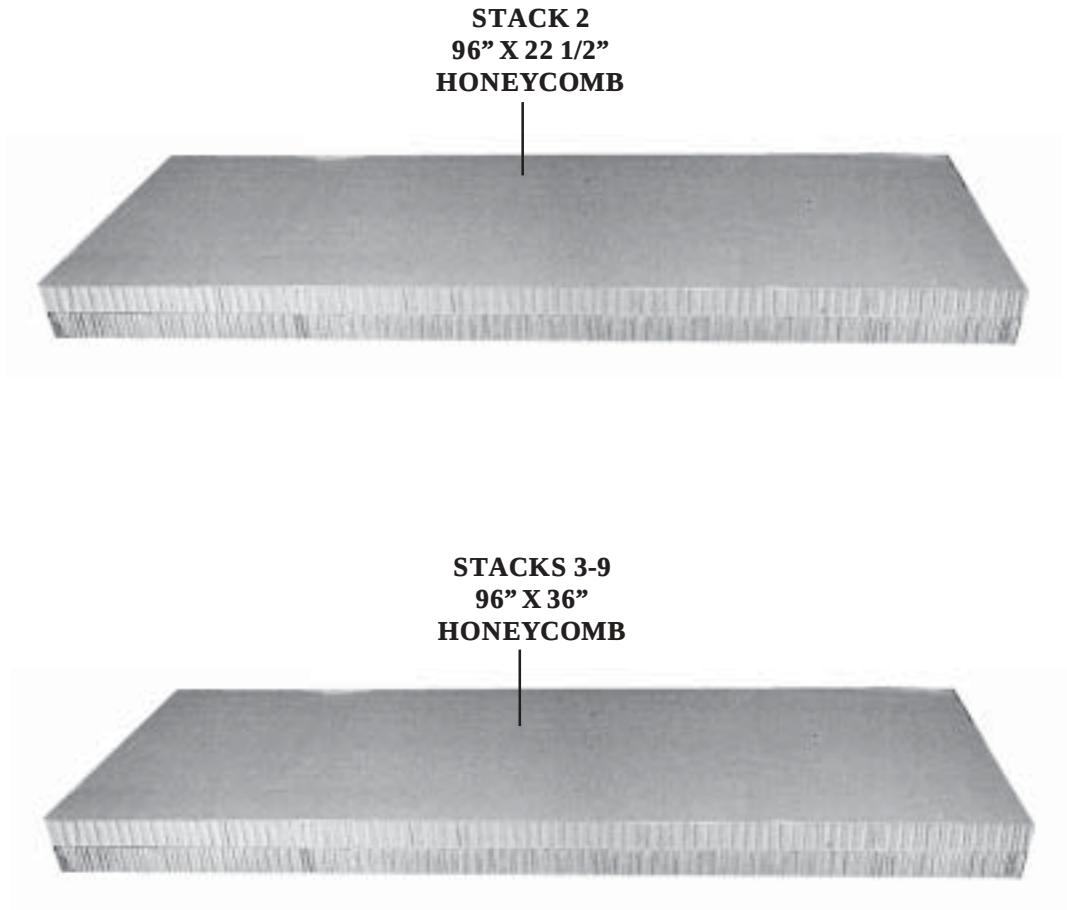
Steps:

1. Inspect, or assemble and inspect, the platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22.
2. Install a tandem link on the front of each platform side rail using holes 1, 2, and 3.
3. Install a suspension bracket to bushings 6, 7, and 8 on each platform side rail.
4. Install a suspension bracket to bushings 22, 23, and 24 on each platform side rail.
5. Install a suspension bracket to bushings 33, 34, and 35 on each platform side rail.
6. Install a suspension bracket to bushings 49, 50, and 51 on each platform side rail.
7. Install a tie-down clevis to bushing 4 of each tandem link.
8. Install a tie-down clevis to bushings 1 and 4 of each first suspension bracket.
9. Install a tie-down clevis to bushings 2, 3, and 4 of each second suspension bracket.
10. Install a tie-down clevis to bushings 1, 2, and 3 of each third suspension bracket.
11. Install a tie-down clevis to bushing 3 of the fourth suspension bracket.
12. Starting at the front of each platform side rail, install a tie-down clevis to the bushings bolted to holes 10, 11, 13, 14, 18, 26, 31, 42, 43, 46 (doubled), 47, 52 (tripled), 53, 54, and 56 (doubled).
13. Starting at the front of the platform, number the clevises bolted to the right side from 1 through 28 and those bolted to the left side from 1A through 28A.
14. Number the clevis on bushing 46 as clevis 20, and 20A and the doubled clevis as 19 and 19A.
15. Number the clevis on bushing 56 as clevis 28, and 28A and the doubled clevis as 27 and 27A.

Figure 3-23. Platform Prepared

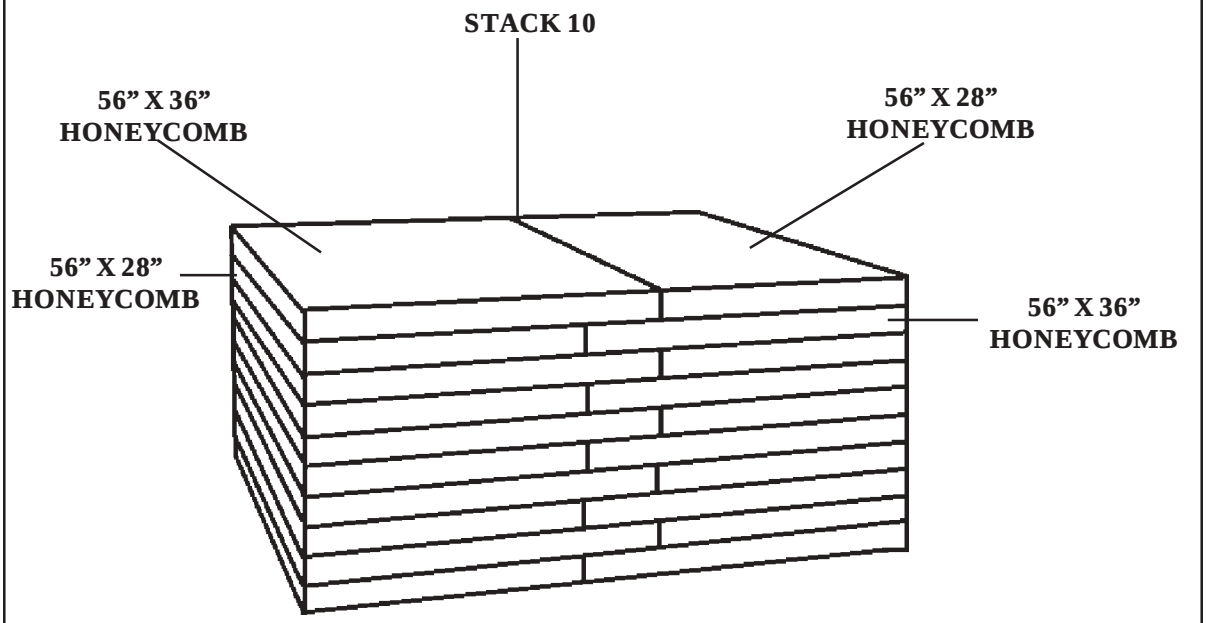
PREPARING HONEYCOMB

3-26. Build honeycomb stacks as shown in Figure 3-2 and Figures 3-24 and 3-25.



Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
1					Prepare as shown in Figure 3-2.
2	2	96	22 1/2	Honeycomb	Glue layers together.
3-9	2	96	36	Honeycomb	Glue layers together.

Figure 3-24. Honeycomb Stacks 1 through 9 Prepared

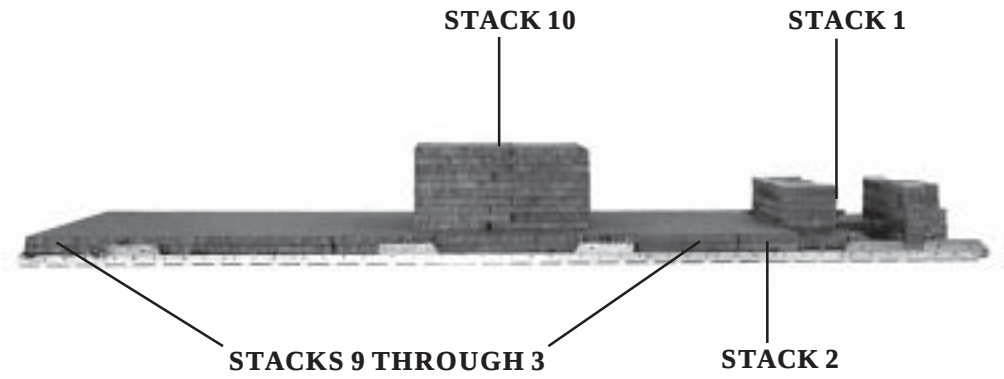


Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
10	10	56	36	Honeycomb	Form a stack of 10 layers by placing a 56 x 36-inch piece of honeycomb and a 56 x 28-inch piece of honeycomb side by side. Alternate and glue the pieces to the previous layer.
	10	56	28	Honeycomb	Same as above.

Figure 3-25. Honeycomb Stack 10 Prepared

POSITIONING HONEYCOMB STACKS

3-27. Position honeycomb stacks as shown in Figure 3-26.



1. Center stack 1 on the front edge of the platform.
2. Center stack 9 on the rear edge of the platform.
3. Place stack 8 against and in front of stack 8.
4. Place stack 7 against and in front of stack 8.
5. Place stack 6 against and in front of stack 7.
6. Place stack 5 against and in front of stack 6.
7. Place stack 4 against and in front of stack 5.
8. Place stack 3 against and in front of stack 4.
9. Place stack 2 against and in front of stack 3.
10. Center stack ten 172 inches from the front edge of the platform. Ensure the 64-inch length is aligned with the platform side rails.

Figure 3-26. Honeycomb Stacks Positioned

BUILDING EQUIPMENT HOSE BOX

3-28. Build the equipment hose box as shown in Figure 3-5.

POSITIONING EQUIPMENT HOSE BOX

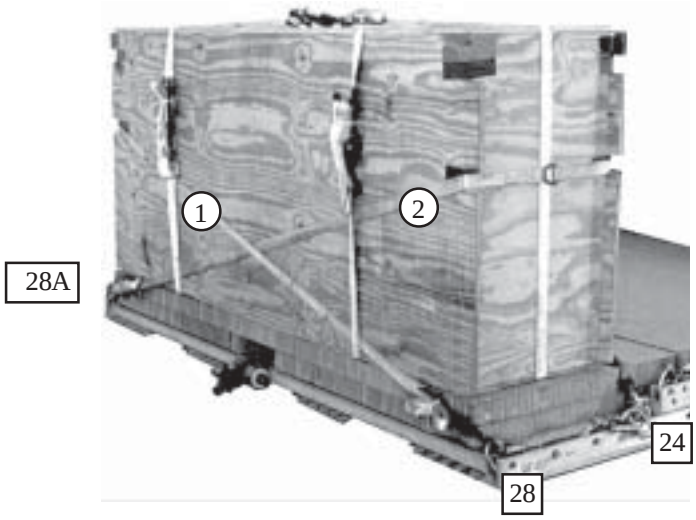
3-29. Position the equipment hose box on stack 9 as shown in Figure 3-6.

STORING EQUIPMENT IN THE EQUIPMENT HOSE BOX

3-30. Store the equipment in the equipment hose box as shown in Figure 3-7.

LASHING EQUIPMENT HOSE BOX TO PLATFORM

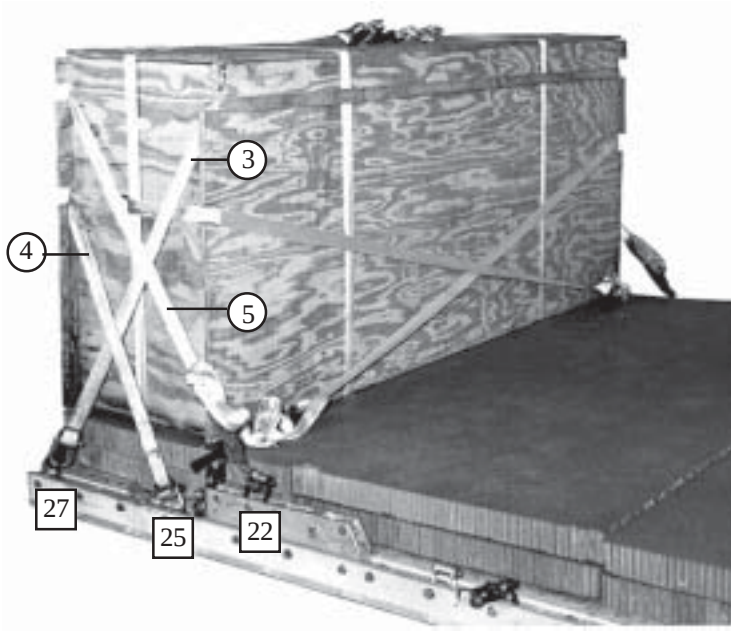
3-31. Lash the equipment hose box to the platform as shown in Figures 3-27 and 3-28.



Note: Ensure lashings 1 and 2 are routed under the load binders on the rear of the box.

Lashing Number	Tie-down Clevis Number	Instructions
1	28 and 24	Route a 30-foot lashing from clevis 28 around the rear of the equipment hose box, through the left bottom notches of the box to clevis 24.
2	28A and 24A	Route a 30-foot lashing from clevis 28A around the rear of the equipment hose box, through the right bottom notches of the box to clevis 24A.

Figure 3-27. Lashings 1 and 2 Installed



Lashing Number	Tie-down Clevis Number	Instructions
3	27 and 27A	Route a 15-foot lashing through its own D-ring on clevis 27, around the front top cutouts and load bind on clevis 27A.
4	25 and 25A	Route a 15-foot lashing through its own D-ring on clevis 25, around the rear bottom cutouts and load bind on clevis 25A.
5	22 and 22A	Route a 30-foot lashing through the rear top cutouts of the equipment hose box. Ensure the lashing is routed under the load binders on the rear of the box. Load bind to clevises 22 and 22A.

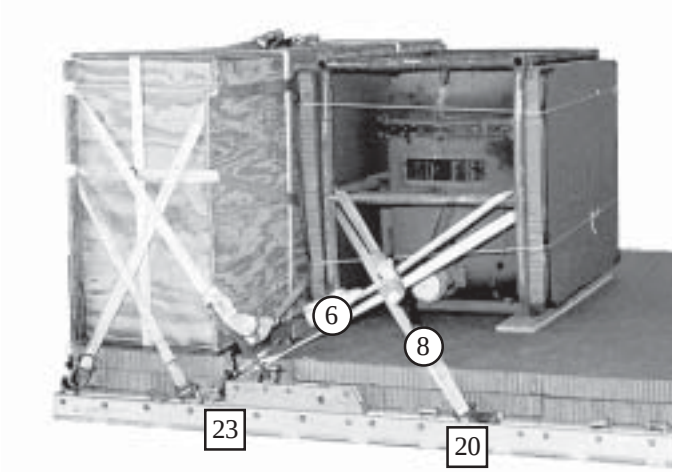
Figure 3-28. Lashings 3 through 5 Installed

PREPARING AND POSITIONING FUEL SEPARATOR

3-32. Prepare and position the fuel separator as shown in Figure 3-10.

LASHING FUEL SEPARATOR TO PLATFORM

3-33. Lash the fuel separator to the platform as shown in Figure 3-29.

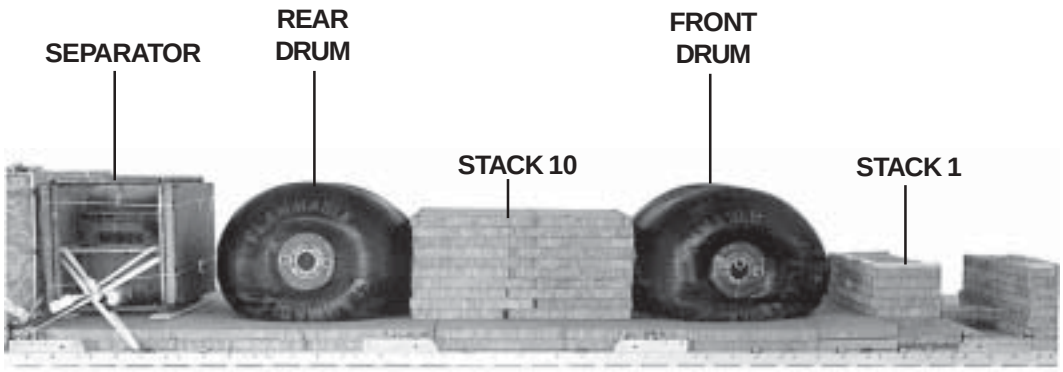


Lashing Number	Tie-down Clevis Number	Instructions
6	23	Route a 15-foot lashing around the front right middle cross member.
7	23A	Route a 15-foot lashing around the front left middle cross member.
8	20	Route a 15-foot lashing around the right rear middle cross member.
9	20A	Route a 15-foot lashing around the left rear middle cross member.

Figure 3-29. Lashings 6 through 9 Installed

POSITIONING AND LASHING THE DRUMS

3-34. Position and lash the fuel drums to the platform as shown in Figures 3-30 through 3-35.

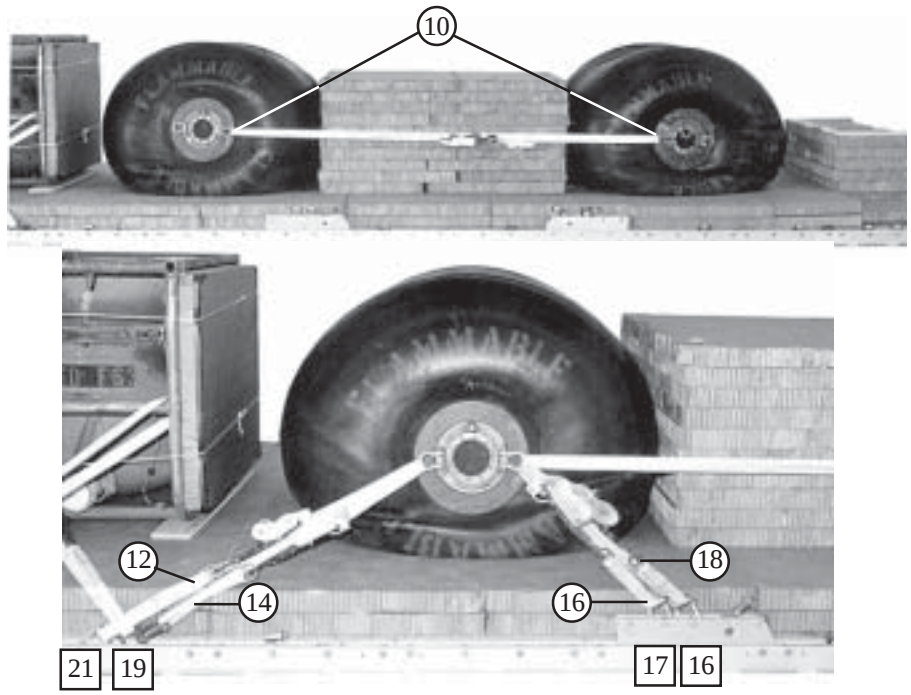


1. Place a platform clevis on one end of two 9-foot (2-loop), type XXVI nylon webbing slings. Attach the slings to each side of the drum (for lifting purposes only) and remove after the drum is positioned (not shown).

2. Position the rear drum next to the fuel separator and centered on the platform. Stack 10 may need to be moved for placement. There should be 6 inches between the drum and the separator.

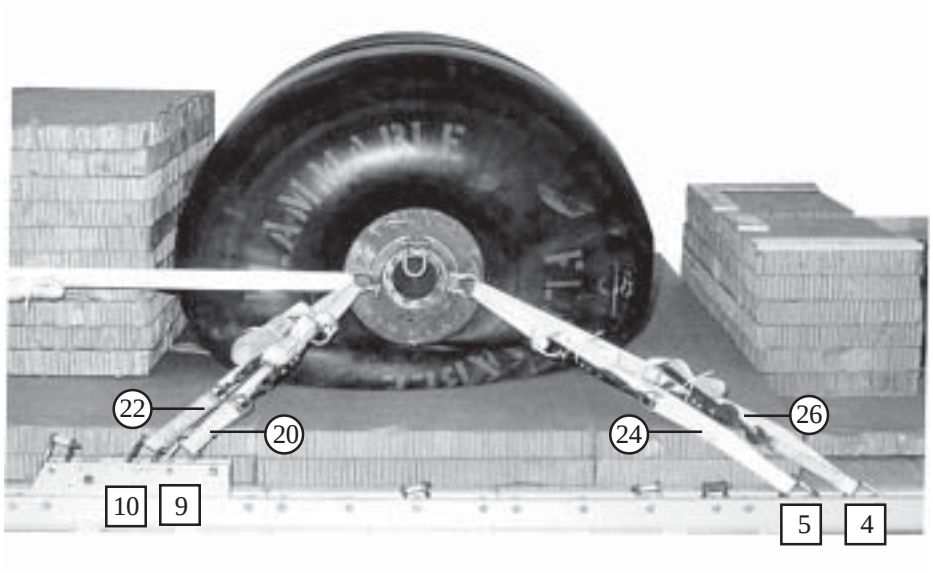
3. Position the front drum in front of stack 10 centered on the platform. There should be 6 inches between the drum and stack 1.

Figure 3-30. Front and Rear Drums Positioned



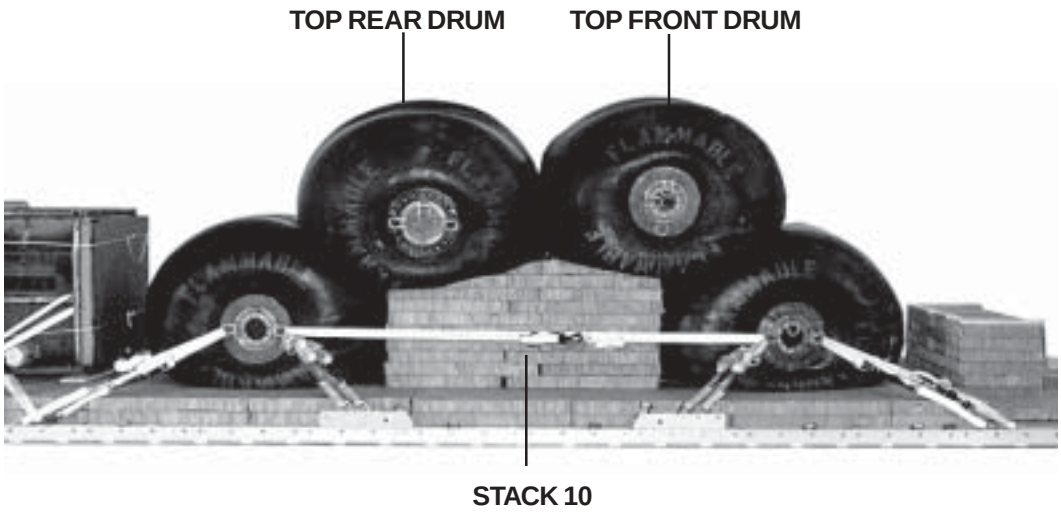
Lashing Number	Tie-down Clevis Number	Instructions
10		Route a lashing from the front shackle of the rear drum to the rear shackle of the front drum on the right side.
11		Route a lashing from the front shackle of the rear drum to the rear shackle of the front drum on the left side.
12	21	Route a lashing through the right rear shackle of the rear drum.
13	21A	Route a lashing through the left rear shackle of the rear drum.
14	19	Route a lashing through the right rear shackle of the rear drum.
15	19A	Route a lashing through the left rear shackle of the rear drum.
16	17	Route a lashing through the right front shackle of the rear drum.
17	17A	Route a lashing through the left front shackle of the rear drum.
18	16	Route a lashing through the right front shackle of the rear drum.
19	16A	Route a lashing through the left front shackle of the rear drum.

Figure 3-31. Lashings 10 through 19 Installed



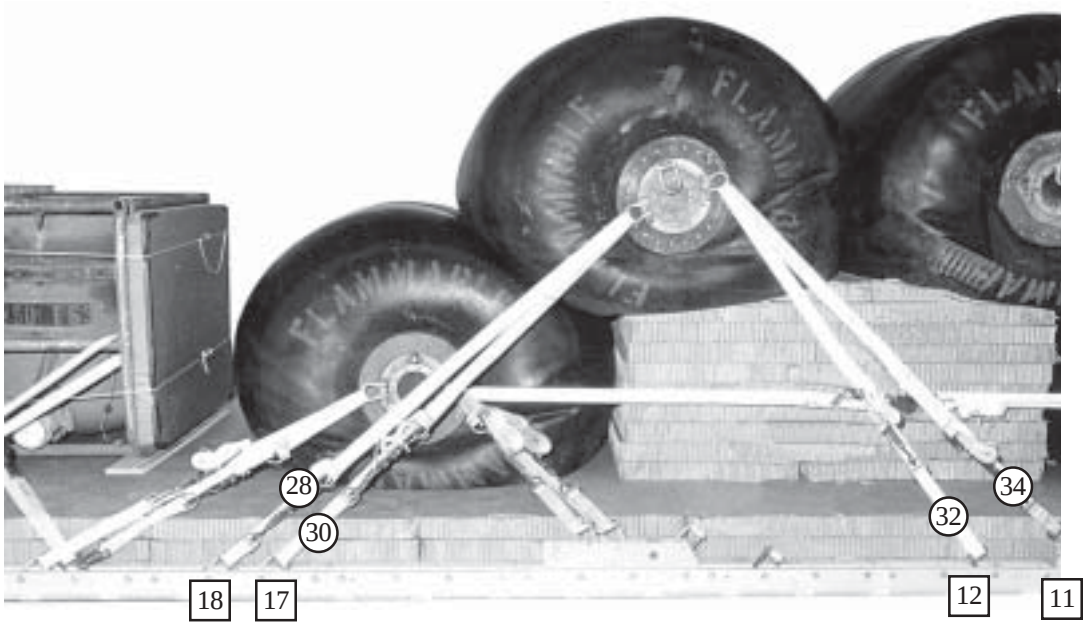
Lashing Number	Tie-down Clevis Number	Instructions
20	9	Route a lashing through the right rear shackle of the front drum.
21	9A	Route a lashing through the left rear shackle of the front drum.
22	10	Route a lashing through the right rear shackle of the front drum.
23	10A	Route a lashing through the left rear shackle of the front drum.
24	5	Route a lashing through the right front shackle of the front drum.
25	5A	Route a lashing through the left front shackle of the front drum.
26	4	Route a lashing through the right front shackle of the front drum.
27	4A	Route a lashing through the left front shackle of the front drum.

Figure 3-32. Lashings 20 through 27 Installed



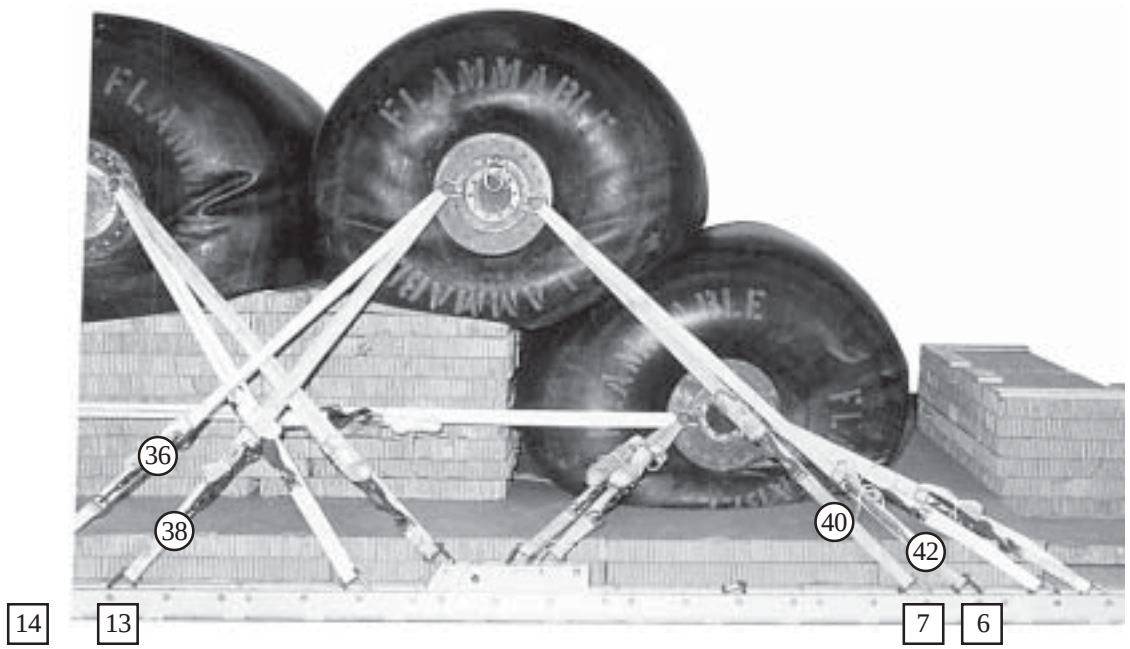
1. Position the top rear drum to the rear of stack 10.
2. Position the top front drum to the front of stack 10. Ensure each drum is equally placed on stack 10.

Figure 3-33. Top Rear and Top Front Drums Positioned



Lashing Number	Tie-down Clevis Number	Instructions
28	18	Route a lashing through the right rear shackle of the top rear drum.
29	18A	Route a lashing through the left rear shackle of the top rear drum.
30	17	Route a lashing through the right rear shackle of the top rear drum.
31	17A	Route a lashing through the left rear shackle of the top rear drum.
32	12	Route a lashing through the right front shackle of the top rear drum.
33	12A	Route a lashing through the left front shackle of the top rear drum.
34	11	Route a lashing through the right front shackle of the top rear drum.
35	11A	Route a lashing through the left front shackle of the top rear drum.

Figure 3-34. Lashings 28 through 35 Installed



Lashing Number	Tie-down Clevis Number	Instructions
36	14	Route a lashing through the right rear shackle of the top front drum.
37	14A	Route a lashing through the left rear shackle of the top front drum.
38	13	Route a lashing through the right rear shackle of the top front drum.
39	13A	Route a lashing through the left rear shackle of the top front drum.
40	6	Route a lashing through the right front shackle of the top front drum.
41	6A	Route a lashing through the left front shackle of the top front drum.
42	7	Route a lashing through the right front shackle of the top front drum.
43	7A	Route a lashing through the left front shackle of the top front drum.

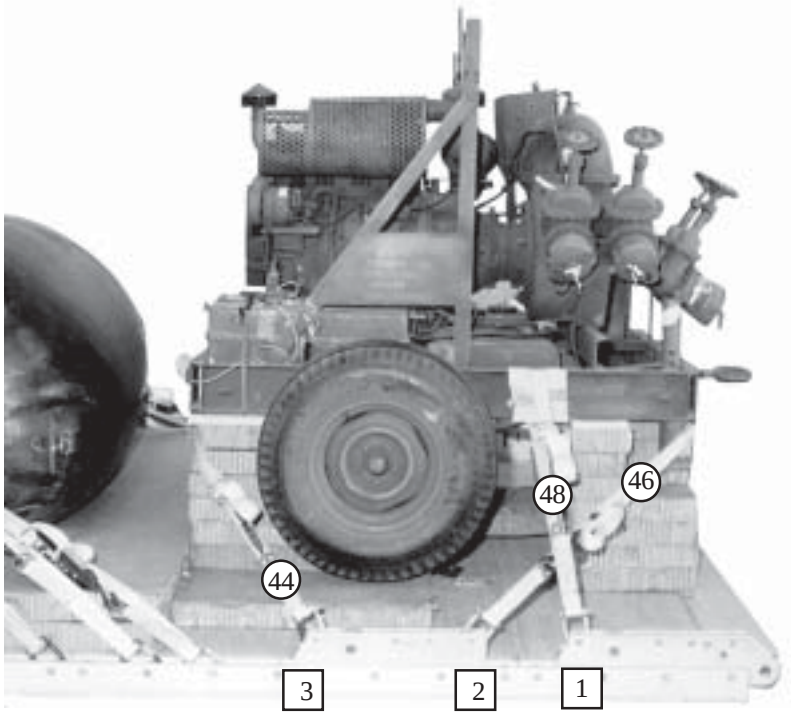
Figure 3-35. Lashings 36 through 43 Installed

PREPAING AND POSITIONING THE PUMP

3-35. Prepare the pump according to paragraph 2-5 and as shown in Figure 2-8. Position the pump as shown in Figure 3-14.

LASHING THE PUMP TO THE PLATFORM

3-36. Lash the pump to the platform as shown in Figure 3-36.



Lashing Number	Tie-down Clevis Number	Instructions
44	3	Route a lashing through the right rear tiedown point.
45	3A	Route a lashing through the left rear tiedown point.
46	2	Route a lashing through the right front tiedown point.
47	2A	Route a lashing through the left front tiedown point.
48	1	Route a lashing around the right side frame.
49	1A	Route a lashing around the left side frame.
50	8	Route a lashing through the right rear tiedown point (not shown).
51	8A	Route a lashing through the right rear tiedown point.

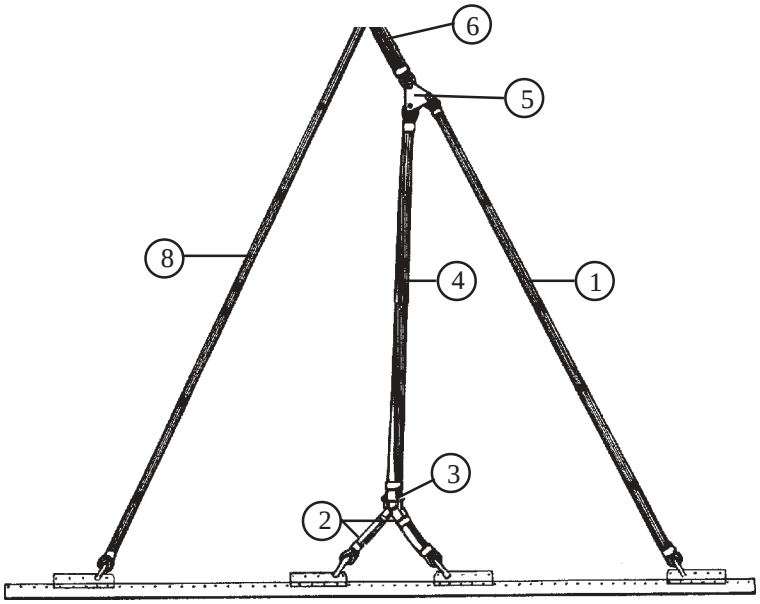
Figure 3-36. Lashings 44 through 51 Installed

COVERING THE PUMP

3-37. Place a canvas cover over the pump as shown in Figure 3-16. Position the pump as shown in Figure 3-14.

INSTALLING SUSPENSION SLINGS AND SAFETY TIES

3-38. Install suspension slings and safety ties as shown in Figure 3-37.

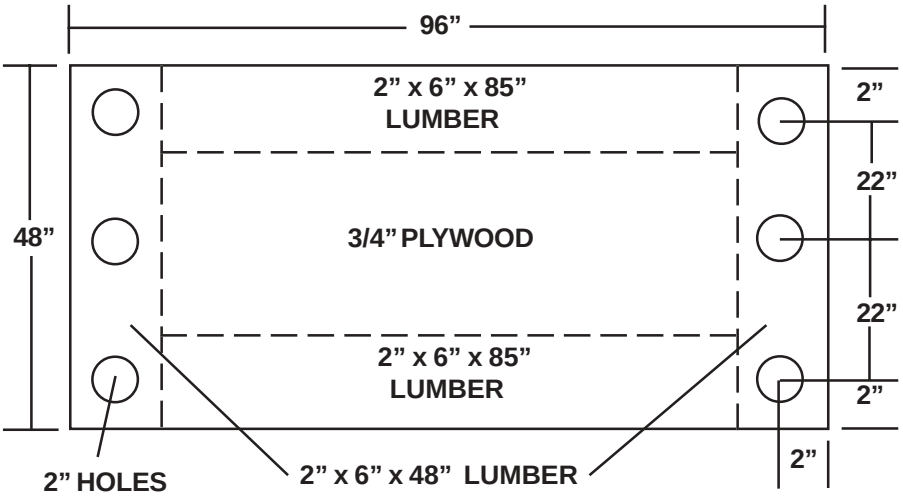


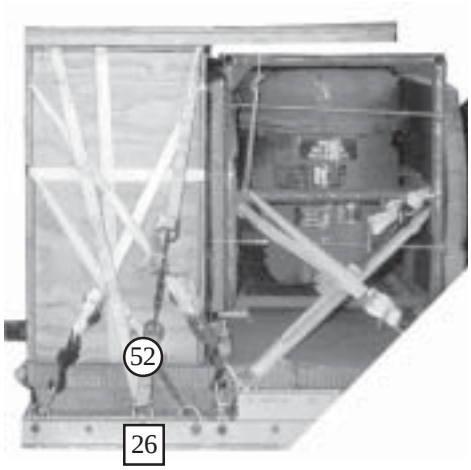
1. Attach a 16-foot (4-loop), type XXVI nylon webbing sling to each front suspension bracket with a large clevis.
2. Attach a 3-foot (4-loop), type XXVI nylon webbing sling to each second and third suspension bracket with a large suspension clevis.
3. Place the 3-foot slings on each side of the load in the bell of a large suspension clevis.
4. Bolt a 9-foot (4-loop), type XXVI nylon webbing sling to each large suspension clevis. Tie the large suspension clevises to both top drums with type III nylon cord (not shown).
5. Join the front and center suspension slings together with a 3-point link on each side of the load.
6. Attach a 3-foot (4-loop), type XXVI nylon webbing sling to the top point on the 3-point links.
7. Pad and tape the link assemblies (not shown).
8. Attach a 20-foot (4-loop), type XXVI nylon webbing sling to each rear suspension bracket with a large suspension clevis.
9. Raise the suspension slings and install the suspension sling safety ties as shown in Appendix A, to the front and rear suspension slings, six to eight inches above the highest point of the load (not shown).

Figure 3-37. Suspension Slings and Safety Ties Installed

BUILDING AND POSITIONING PARACHUTE STOWAGE PLATFORM

3-39. Build and stow the parachute stowage platform as shown in Figure 3-38. Align the rear edge of the stowage platform on the rear edge of the box.



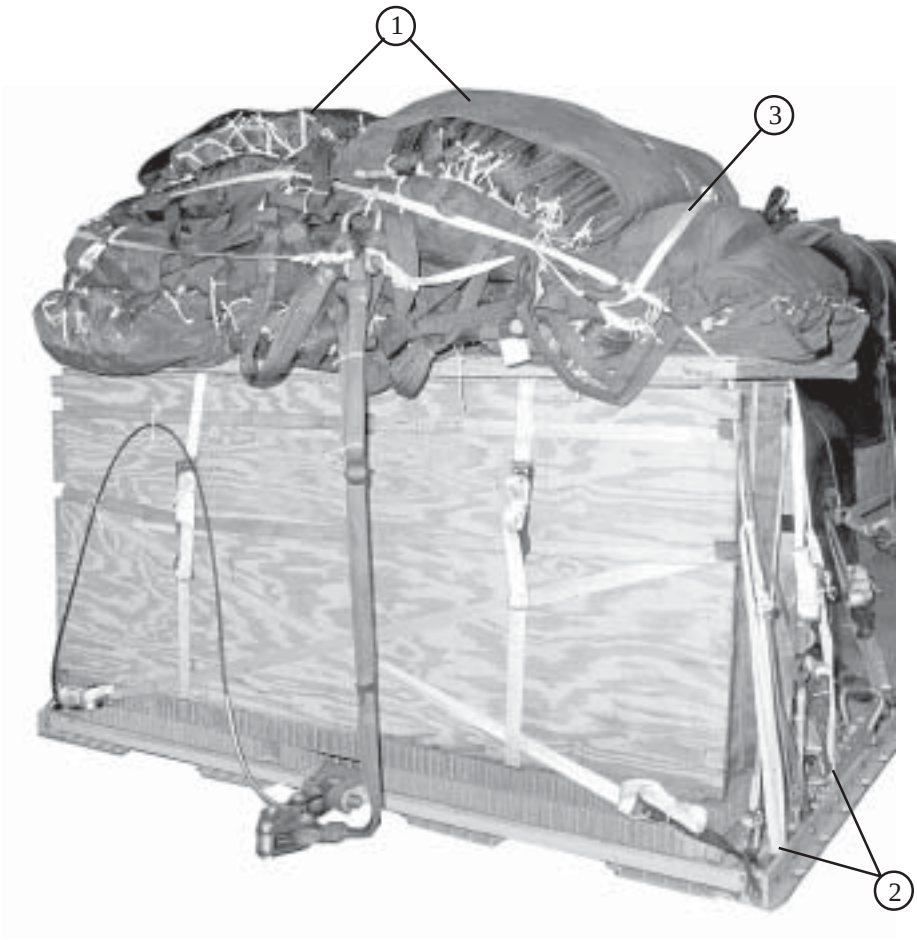


Lashing Number	Tie-down Clevis Number	Instructions
52	26	Route a lashing from clevis 26 through the rear and center right holes of the stowage platform.
53	26A	Route a lashing from clevis 26A through the rear and center left holes in the stowage platform.

Figure 3-38. Parachute Stowage Platform Built and Positioned

PREPARING AND STOWING CARGO PARACHUTES

3-40. Prepare and stow cargo parachutes as shown in Figure 3-39.

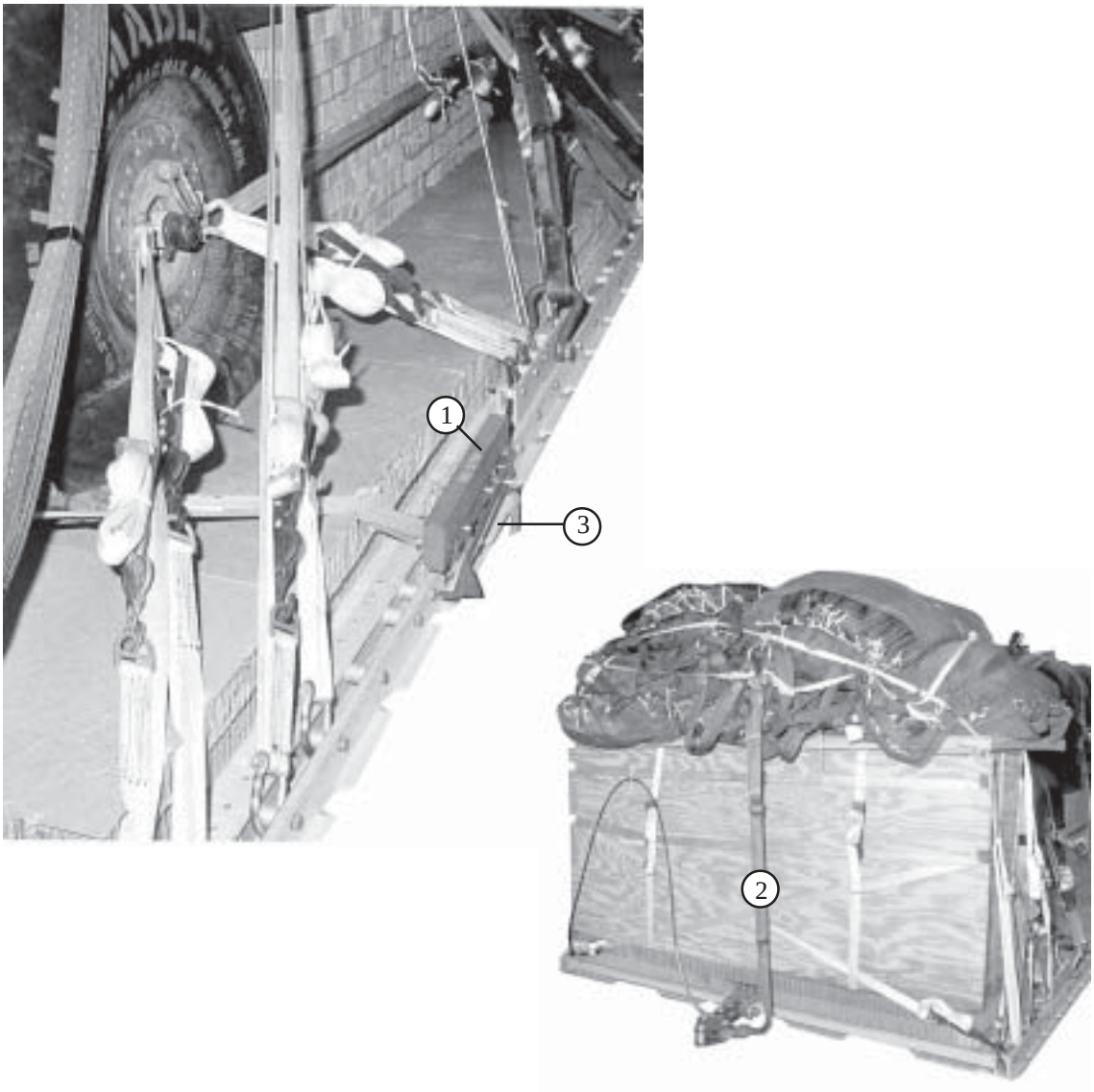


1. Prepare and position five G-11 parachutes according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
2. Restrain the parachutes using bushings 55 and 55A on the platform and bushings 4 and 4A on the rear suspension link.
3. Install the multicut parachute release strap according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

Figure 3-39. Parachute Stowage Platform Built and Positioned

INSTALLING THE EXTRACTION SYSTEM

3-41. Install the extraction system as shown in Figure 3-40.



(1) Install the extraction force transfer coupling according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

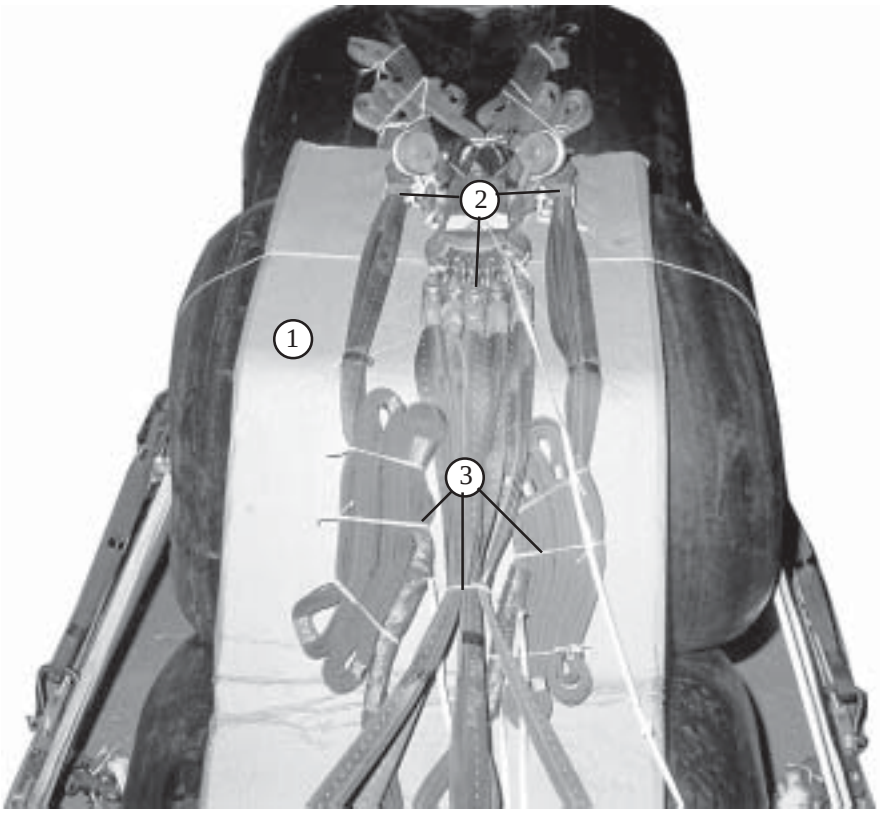
(2) Install a 9-foot (2-loop), type XXVI nylon sling as the deployment line.

(3) Use the rear mounting holes for the EFTC actuator mounting bracket and a 28-foot cable.

Figure 3-40. Extraction System Installed

INSTALLING THE PARACHUTE RELEASE SYSTEM

3-42. Install the parachute release system as shown in Figure 3-41.



(1) Place and secure a 96- by 24-inch piece of honeycomb from the separator to the top of the top rear drum.

(2) Position and secure the M-2 parachute release assembly on the honeycomb. Attach the suspension slings and the parachute riser extensions to the M-2 parachute release assembly according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

(3) S-fold and tie any slack in the suspension slings with type I, 1/4-inch cotton webbing. Tie the riser extentions together with type I, 1/4-inch cotton webbing.

Figure 3-41. Parachute Release Assembly Installed

PLACING EXTRACTION PARACHUTE

3-43. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Rig the extraction line in an extraction line bag according to TM 10-1670-286-20/TO 13C5-2-41. Place the extraction parachute and extraction line on the load for installation in the aircraft.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

3-44. Select and install the provisions for emergency aft restraints according to the emergency aft restraint requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

MARKING RIGGED LOAD

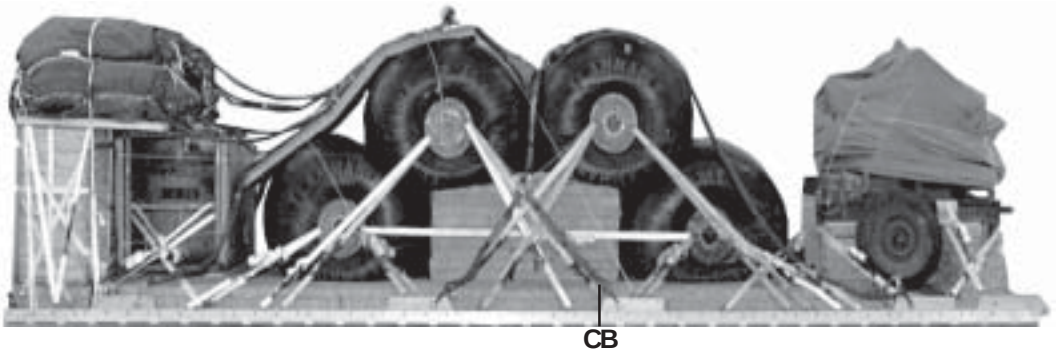
3-45. Mark the rigged load according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 3-42. Complete Shipper's Declaration for Dangerous Goods and affix to the load. If the load varies from the one shown, the weight, height, CB, tipoff curve, and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

3-46. Use the equipment list in Table 3-2 to rig the load shown in Figure 3-42.

CAUTION:

Make the final inspection required by FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



RIGGED LOAD DATA

Weight	**24,408 pounds**
Maximum Weight	**25,700 pounds**
Height	**89 inches**
Width	**108 inches**
Overall Length	**363 inches**
Overhang: Front (Tongue of Pump)	**9 inches**
Rear (EFTC)	**18 inches**
Center of Balance (CB) (from front edge of platform)	**172 inches**
Extraction System	**EFTC**

Figure 3-42. Four 500-Gallon Drums with Pump and Separator Rigged for Low-Velocity Airdrop

Table 3-2. Equipment Required for Rigging Four 500-Gallon Drums with Pump and Separator

Table 3-2. Equipment Required for Rigging Four 500-Gallon Drums with Pump and Separator (continued)

National Stock Number	Item	Quantity
1670-00-753-3928	Pad, energy-dissipating (honeycomb), 3- by 36- by 96-in	30 sheets
	Parachute:	
	Cargo:	
1670-01-016-7841	G-11C	5
	Cargo extraction:	
1670-00-040-8135	28-ft	1
	Drogue (for DES)	
1670-01-063-3715	15-ft	1
	Platform, airdrop, type V, 28-ft:	
1670-01-353-8425	Bracket assembly, coupling	(1)
1670-01-162-2372	Clevis assembly, type V	(68)
1670-01-162-2376	Extraction bracket assembly	(1)
1670-01-247-2389	Bracket, suspension	(8)
1670-01-162-2381	Tandem link assembly (Multipurpose link)	(2)
5530-00-128-4981	Plywood, 3/4-in	4 sheets
1670-01-097-8817	Release, cargo parachute, M-2	1
	Sling, cargo, airdrop	
	For suspension and lifting:	
1670-01-062-6306	3-ft (4-loop), type XXVI nylon webbing	6
1670-01-062-6305	9-ft (4-loop), type XXVI nylon webbing	2
1670-01-062-6308	16-ft (4-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:	
1670-01-062-6311	120-ft (2-loop), type XXVI nylon webbing	5
5340-00-040-8219	Strap, parachute release, multi-cut, comes w/ 2 knives	2
7510-00-266-5016	Tape, adhesive, 2-in	As required
1670-00266-6710	Tape, masking, 2-in	As required
1670-00-937-0271	Tie-down assembly, 15-foot	68
8310-00-917-3945	Thread, Cotton, Ticket 8/7	As required
	Webbing:	
8305-00-268-2411	Cotton, 1/4-in, type I	As required
8305-00-082-5752	Nylon, tubular, 1/2-in	As required
8305-00-263-3591	Nylon, Type VIII	As required

SECTION III- RIGGING FIVE 500-GALLON DRUMS

DESCRIPTION OF LOAD

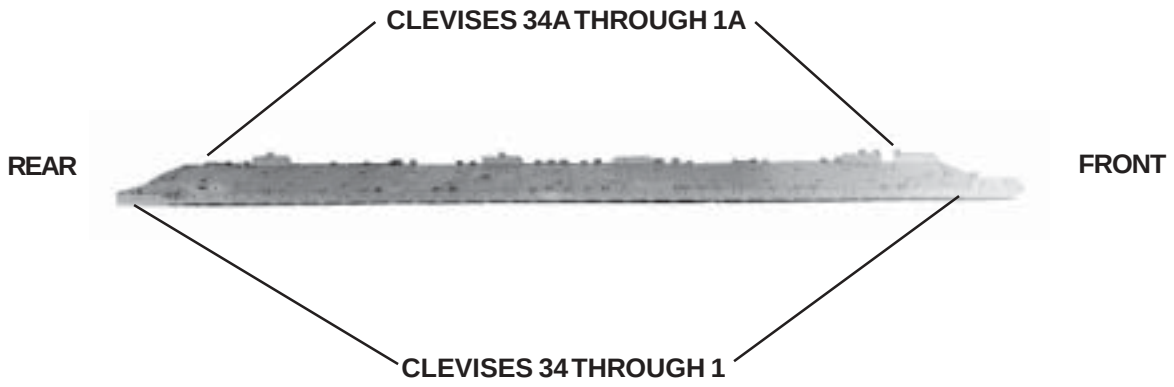
3-47. The five collapsible fuel drums are rigged on a 32-foot, type V platform with six G-11 cargo parachutes. Each drum is filled with 432 gallons of liquid. When empty, each drum weighs 250 pounds and is 62 inches long and 53 inches in diameter. The five drums also have a 350-GPM pump with a separator and hose box as an accompanying load. The total rigged load has a maximum weight of 30,355 pounds with a width of 108 inches and length of 411 inches. It has an overhang of 18 inches in the front and 18 inches in the rear.

Notes: 1. For drums filled with a liquid other than water, use Table 1-1 to recompute the weight.
2. If the load varies from the one shown, the weight, height, CB, tipoff curve, and parachute requirements must be recomputed.
3. Do not pressurize drums with air.

PREPARING PLATFORM

3-48. Prepare a 32-foot type V airdrop platform using two tandem links, eight suspension brackets and 72 tie-down clevises as shown in Figure 3-43.

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



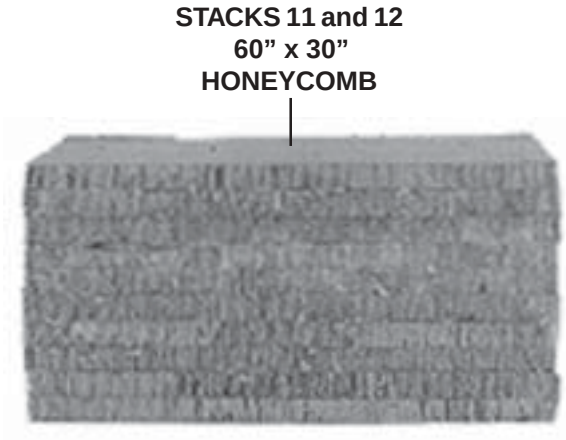
Steps:

1. Inspect, or assemble and inspect, the platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22.
2. Install a tandem link on the front of each platform side rail using holes 1, 2, and 3.
3. Install a suspension bracket to each platform side rail using holes 6, 7, and 8.
4. Install a suspension bracket to each platform side rail using holes 26, 27, and 28.
5. Install a suspension bracket to each platform side rail using holes 37, 38, and 39.
6. Install a suspension bracket to each platform side rail using holes 57, 58, and 59.
7. Install a tie-down clevis to bushing 4 on each front tandem link.
8. Install a tie-down clevis to bushings 1 and 3 on each of the first suspension brackets.
9. Install a tie-down clevis to bushing 2 of each of the third suspension brackets.
10. Install a tie-down clevis to bushing 2 (doubled) of each of the fourth suspension brackets.
11. Starting at the front of each platform side rail, install a tie-down clevis to the bushings bolted to holes 9, 10, 15, 16, 18, 22, 23, 24, 25, 30, 31, 33, 34, 35, 41, 42, 46, 47, 50, 53, 54 (doubled), 60 (tripled), 61, 62, 63, and 64 (doubled).
12. Starting at the front of the platform, number the clevises bolted to the right side from 1 through 34 and those bolted to the left side from 1A through 34A.

Figure 3-43. Platform Prepared

PREPARING HONEYCOMB

3-49. Build honeycomb stacks as shown in Figure 3-44.

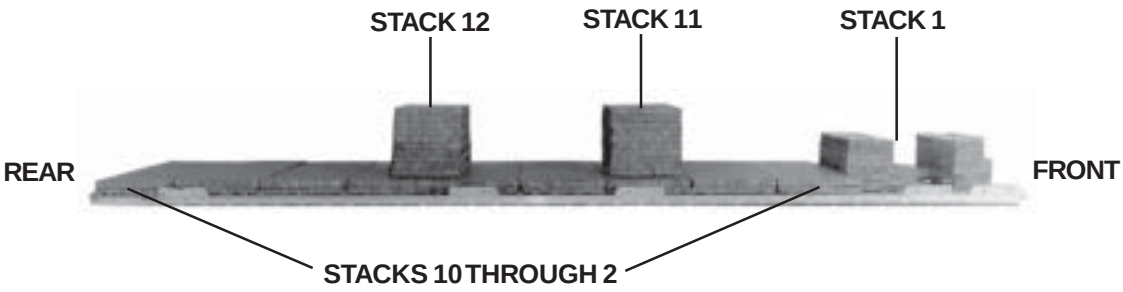


STACK NUMBER	PIECES	WIDTH (INCHES)	LENGTH (INCHES)	MATERIAL	INSTRUCTIONS
1					Prepare honeycomb stack 1 as shown in Figure 3-2.
2-10	2	96	36	Honeycomb	Glue layers together.
11-12	10	60	30	Honeycomb	Glue layers together.

Figure 3-44. Honeycomb Stacks Prepared

POSITIONING HONEYCOMB STACKS

3-50. Position honeycomb stacks as shown in Figure 3-45.



1. Position stack 1 on the front edge of the platform and centered.
2. Position stacks 2 through 10 flush on the rear edge of stack 1 and flush with each other.
3. Position stack 11 on top of stack 4 centered left to right and ensure the 30 inch length is aligned with the side rails (do not glue).
4. Position stack 12 on top of stacks 6 and 7 centered left to right and ensure the 30 inch length is aligned with the side rails (do not glue).

NOTE: Stacks 11 and 12 may need to be adjusted to allow for placement of the drums.

Figure 3-45. Honeycomb Stacks Positioned

BUILDING EQUIPMENT HOSE BOX

3-51. Build the equipment box as shown in Figure 3-5.

POSITIONING EQUIPMENT HOSE BOX

3-52. Position the equipment hose box as shown in Figure 3-6.

STORING EQUIPMENT IN THE EQUIPMENT HOSE BOX

3-53. Store the equipment in the equipment hose box as shown in Figure 3-7.

LASHING EQUIPMENT HOSE BOX TO PLATFORM

3-54. Lash the equipment hose box to the platform as shown in Figures 3-46 and 3-47.

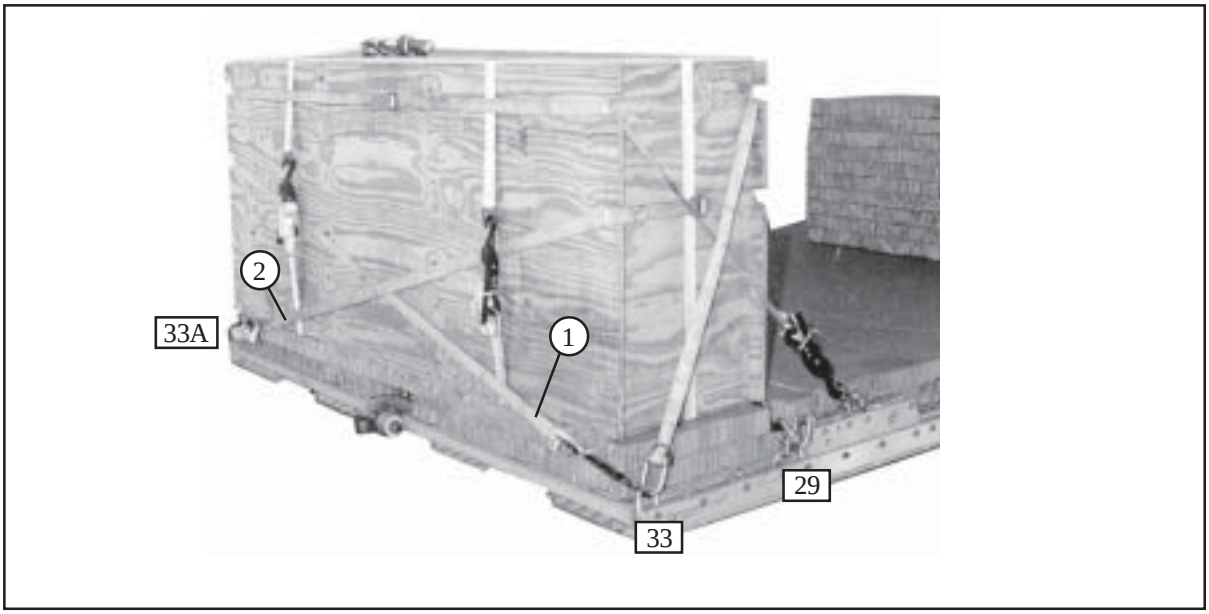
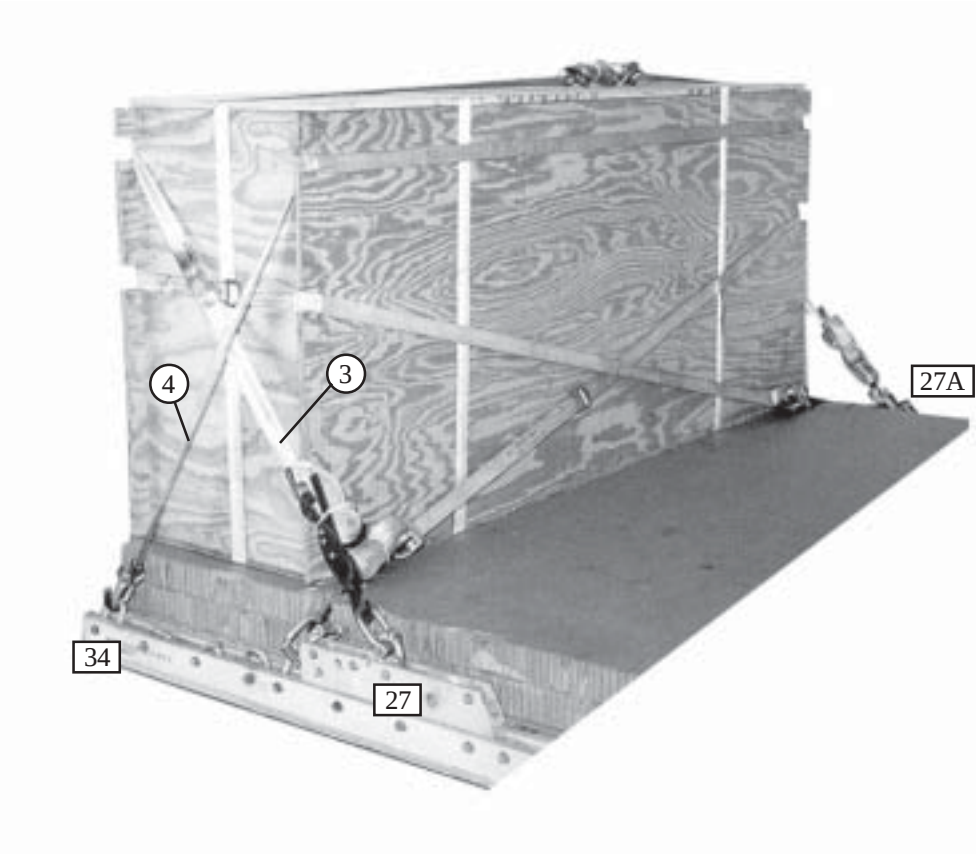


Figure 3-46. Lashings 1 and 2 Installed



Lashing Number	Tie-down Clevis Number	Instructions
3	27 and 27A	Route a 30-foot lashing from clevis 27 to the rear top cutouts to clevis 27A. Load bind to both clevises.
4	34 and 34A	Route a lashing through it's own D-ring on clevis 34 to the top front cutouts to clevis 34A.

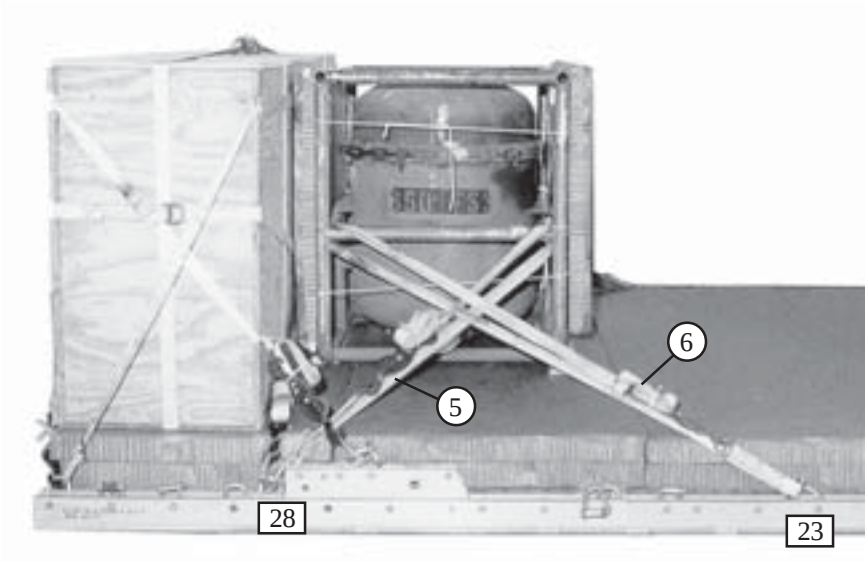
Figure 3-47. Lashings 3 and 4 Installed

PREPARING AND POSITIONING FUEL SEPARATOR

3-55. Prepare and position the fuel separator as shown in Figure 3-10.

LASHING FUEL SEPARATOR TO PLATFORM

3-56. Lash fuel separator to the platform as shown in Figure 3-48.

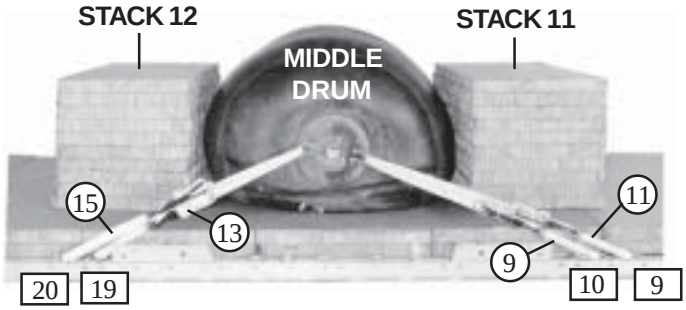


Lashing Number	Tie-down Clevis Number	Instructions
5	28	Route a lashing from clevis 28 around the front right middle cross member.
6	28A	Route a lashing from clevis 28A around the front left middle cross member.
7	23	Route a lashing from clevis 23 around the rear right middle cross member.
8	23A	Route a lashing from clevis 23A around the rear left middle cross member.

Figure 3-48. Lashings 5 through 8 Installed

POSITIONING AND LASHING THE DRUMS

3-57. Position and lash the drums to the platform as shown in Figures 3-49 through 3-55.

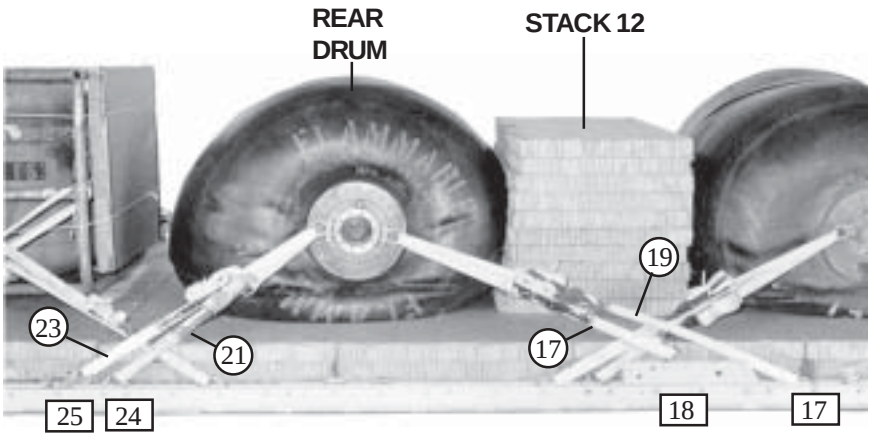


1. Place a platform clevis on one end of two 9-foot (2-loop), type XXVI nylon webbing slings. Attach the slings to each side of the drum (for lifting purpose only) and remove after the drum is positioned (not shown).

2. Position the middle drum centered between stacks 11 and 12, and left to right on the platform. Stacks 11 and 12 may need to be moved during placement.

Lashing Number	Tie-down Clevis Number	Instructions
9	10	Route a lashing from clevis 10 to the right front shackle of the drum.
10	10A	Route a lashing from clevis 10A to the left front shackle of the drum.
11	9	Route a lashing from clevis 9 to the right front shackle of the drum.
12	9A	Route a lashing from clevis 9A to the left front shackle of the drum.
13	19	Route a lashing from clevis 19 to the right rear shackle of the drum.
14	19A	Route a lashing from clevis 19A to the left rear shackle of the drum.
15	20	Route a lashing from clevis 20 to the right rear shackle of the drum.
16	20A	Route a lashing from clevis 19A to the left rear shackle of the drum.

Figure 3-49. Lashings 9 Through 16 Installed



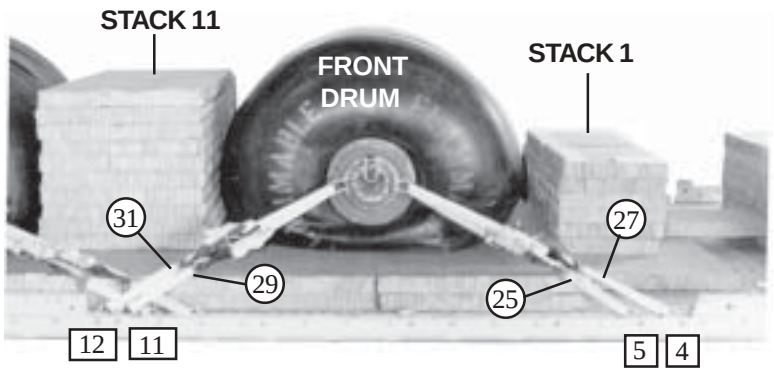
Steps:

1. Place a platform clevis on one end of two 9-foot (2-loop), type XXVI nylon webbing slings. Attach the slings to each side of the drum, for lifting purpose only, and remove after the drum is positioned (not shown).

2. Position the rear drum to the rear of stack 12 centered, and left to right on the platform.

Lashing Number	Tie-down Clevis Number	Instructions
17	18	Route a lashing from clevis 18 to the right front shackle of the drum.
18	18A	Route a lashing from clevis 18A to the left front shackle of the drum.
19	17	Route a lashing from clevis 17 to the right front shackle of the drum.
20	17A	Route a lashing from clevis 17A to the left front shackle of the drum.
21	24	Route a lashing from clevis 24 to the right rear shackle of the drum.
22	24A	Route a lashing from clevis 24A to the left rear shackle of the drum.
23	25	Route a lashing from clevis 25 to the right rear shackle of the drum.
24	25A	Route a lashing from clevis 25A to the left rear shackle of the drum.

Figure 3-49. Lashings 17 Through 24 Installed



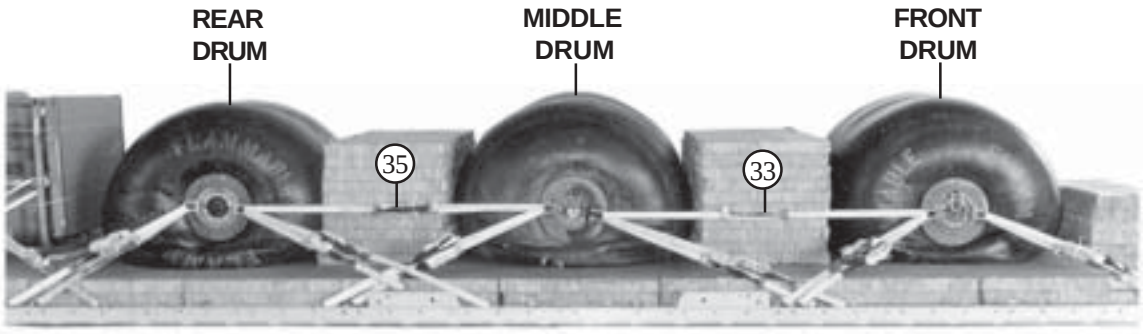
Steps:

1. Place a platform clevis on one end of two 9-foot (2-loop), type XXVI nylon webbing slings. Attach the slings to each side of the drum (for lifting purpose only) and remove after the drum is positioned (not shown).

2. Position the front drum between stacks 1 and 11 and centered from left to right on the platform. Stacks 11 and 12 may need to be moved during placement.

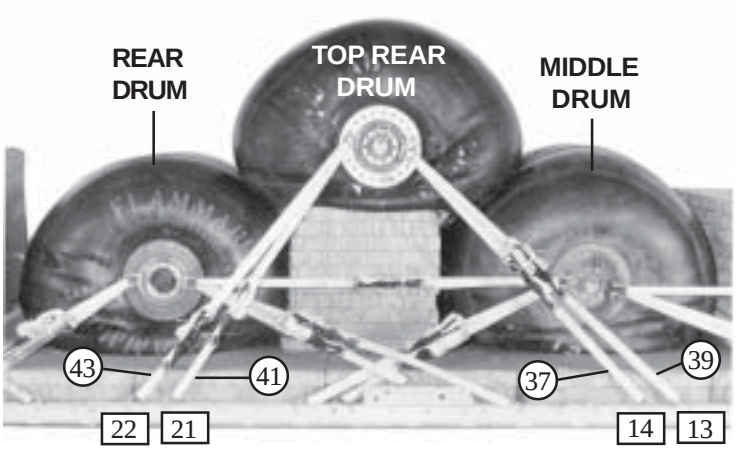
Lashing Number	Tie-down Clevis Number	Instructions
25	5	Route a lashing from clevis 5 to the right front shackle of the drum.
26	5A	Route a lashing from clevis 5A to the left front shackle of the drum.
27	4	Route a lashing from clevis 4 to the right front shackle of the drum.
28	4A	Route a lashing from clevis 4A to the left front shackle of the drum.
29	11	Route a lashing from clevis 11 to the right rear shackle of the drum.
30	11A	Route a lashing from clevis 11A to the left rear shackle of the drum.
31	12	Route a lashing from clevis 12 to the right rear shackle of the drum.
32	12A	Route a lashing from clevis 12A to the left rear shackle of the drum.

Figure 3-51. Lashings 25 Through 32 Installed



Lashing Number	Tie-down Clevis Number	Instructions
33		Route a lashing from the right front shackle of the middle drum to the right rear shackle of the front drum.
34		Route a lashing from the left front shackle of the middle drum to the left rear shackle of the front drum.
35		Route a lashing from the right rear shackle of the middle drum to the right front shackle of the rear drum.
36		Route a lashing from the left rear shackle of the middle drum to the left front shackle of the rear drum.

Figure 3-52. Lashings 33 Through 36 Installed



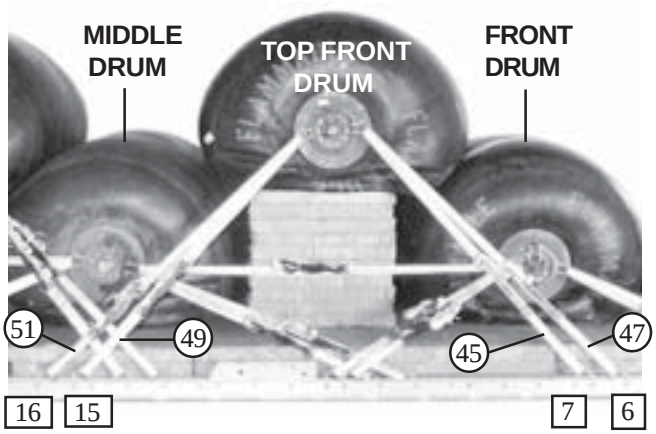
Steps:

1. Place a platform clevis on one end of two 9-foot (2-loop), type XXVI nylon webbing slings. Attach the slings to each side of the drum (for lifting purpose only) and remove after the drum is positioned (not shown).

2. Position the top rear drum on stack 12 and centered from left to right on the platform.

Lashing Number	Tie-down Clevis Number	Instructions
37	14	Route a lashing from clevis 14 to the right front shackle of the drum.
38	14A	Route a lashing from clevis 14A to the left front shackle of the drum.
39	13	Route a lashing from clevis 13 to the right front shackle of the drum.
40	13A	Route a lashing from clevis 13A to the left front shackle of the drum.
41	21	Route a lashing from clevis 21 to the right rear shackle of the drum.
42	21A	Route a lashing from clevis 21A to the left rear shackle of the drum.
43	22	Route a lashing from clevis 22 to the right rear shackle of the drum.
44	22A	Route a lashing from clevis 22A to the left rear shackle of the drum.

Figure 3-53. Lashings 37 Through 44 Installed



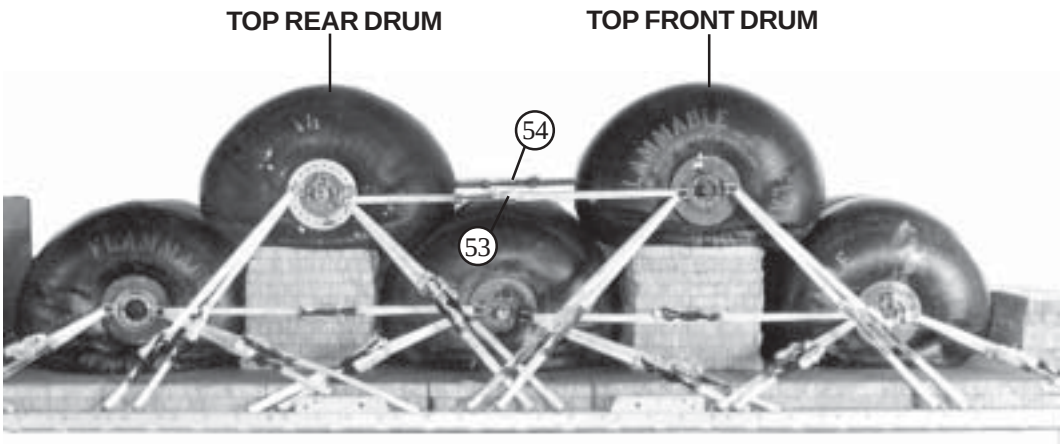
Steps:

1. Place a platform clevis on one end of two 9-foot (2-loop), type XXVI nylon webbing slings. Attach the slings to each side of the drum (for lifting purpose only) and remove after the drum is positioned (not shown).

2. Position the top front drum on stack 11 and centered from left to right on the platform.

Lashing Number	Tie-down Clevis Number	Instructions
45	7	Route a lashing from clevis 7 to the right front shackle of the drum.
46	7A	Route a lashing from clevis 7A to the left front shackle of the drum.
47	6	Route a lashing from clevis 6 to the right front shackle of the drum.
48	6A	Route a lashing from clevis 6A to the left front shackle of the drum.
49	15	Route a lashing from clevis 15 to the right rear shackle of the drum.
50	15A	Route a lashing from clevis 15A to the left rear shackle of the drum.
51	16	Route a lashing from clevis 16 to the right rear shackle of the drum.
52	16A	Route a lashing from clevis 16A to the left rear shackle of the drum.

Figure 3-54. Lashings 45 Through 52 Installed



Lashing Number	Tie-down Clevis Number	Instructions
53		Route a lashing from the right front shackle of the top rear drum to the right rear shackle of the top front drum.
54		Route a lashing from the left front shackle of the top rear drum to the left rear shackle of the top front drum.

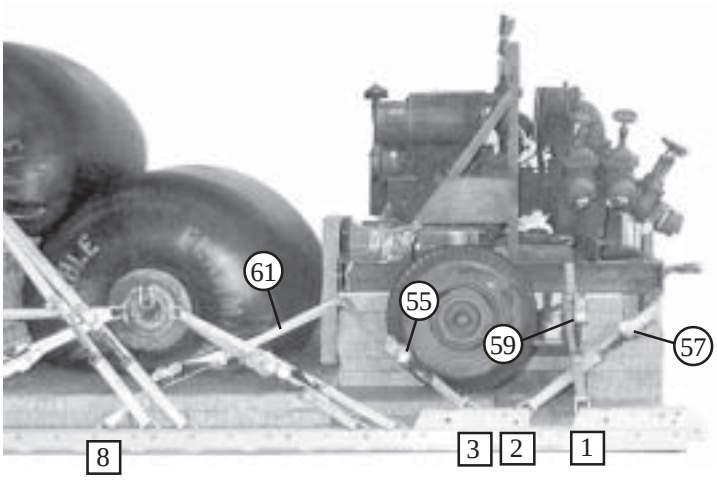
Figure 3-55. Lashings 53 and 54 Installed

PREPARING AND POSITIONING PUMP

3-58. Prepare the pump according to paragraph 2-5 and as shown in Figure 2-8. Position the pump as shown in Figure 3-14.

LASHING THE PUMP TO THE PLATFORM

3-59. Lash the pump to the platform as shown in Figure 3-56.

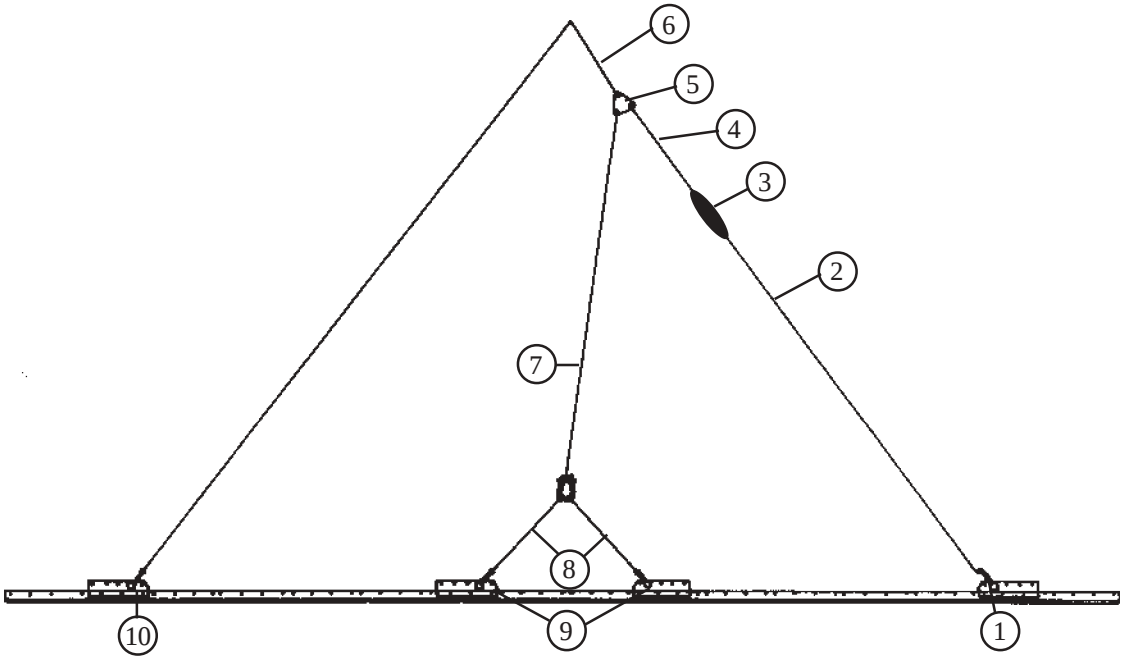


Lashing Number	Tie-down Clevis Number	Instructions
55	3	Route a lashing from clevis 3 to the right rear tiedown point.
56	3A	Route a lashing from clevis 3A to the left rear tiedown point.
57	2	Route a lashing from clevis 2 to the right front tiedown point.
58	2A	Route a lashing from clevis 2A to the left front tiedown point.
59	1	Route a lashing from clevis 1 to the right side frame.
60	1A	Route a lashing from clevis 1A to the left side frame.
61	8	Route a lashing from clevis 8 to the right rear tiedown point.
62	8A	Route a lashing from clevis 8A to the left rear tiedown point.

Figure 3-56. Lashings 55 Through 62 Installed

INSTALLING SUSPENSION SLINGS AND SAFETY TIES

3-60. Install suspension slings and safety ties as shown in Figure 3-57.



1. Attach a large clevis to the first right suspension bracket.
2. Place a large clevis in one end of a 12-foot (4-loop), type XXVI nylon suspension sling. Attach the clevis to the clevis in step 1. Safety them together with type III nylon cord using an hourglass tie.
3. Attach the running end of the 12-foot sling to a 5 1/2-inch 2-point link.
4. Attach a 3-foot (4-loop), type XXVI nylon suspension sling to the 2-point link.
5. Attach a 3-point link to the 3-foot sling.
6. Attach a 3-foot (4-loop), type XXVI nylon suspension sling to the 3-point link.
7. Fold in half a 20-foot (2-loop), type XXVI nylon suspension sling on the final corner of the 3-point link.
8. Attach two 3-foot (4-loop), type XXVI nylon suspension slings to a large clevis and attach this clevis to the running ends of the folded 20-foot sling.

Figure 3-57. Suspension Slings and Safety Ties Installed

⑨ Attach one large clevis to each running end of the two 3-foot slings and attach one clevis to each second and third suspension brackets.

⑩ Place a large clevis in one end of a 20-foot (4-loop), type XXVI nylon suspension sling and attach the clevis to the right rear suspension bracket.

⑪ Repeat steps 1 through 10 for the left side of the platform.

⑫ Raise the suspension slings and install the suspension sling safety ties as shown in Appendix A, to the front and rear suspension slings, six to eight inches above the highest point of the load (not shown).

⑬ Pad and tape the link assemblies (not shown).

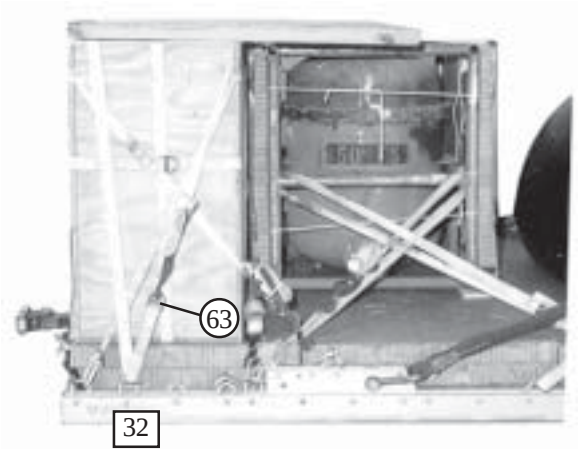
Figure 3-57. Suspension Slings and Safety Ties Installed (Continued)

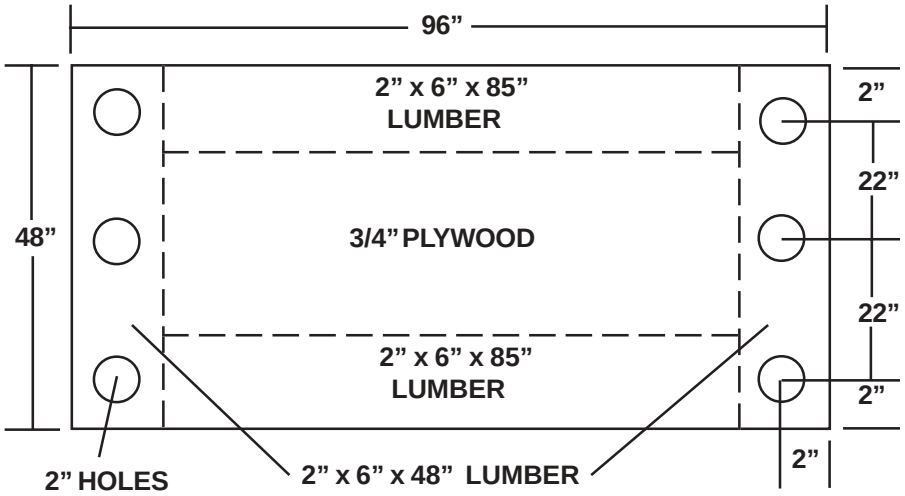
COVERING THE PUMP

3-61. Place a canvas cover over the pump as shown in Figure 3-16.

BUILDING AND POSITIONING PARACHUTE STOWAGE PLATFORM

3-62. Build and position stowage platform as shown in Figure 3-58. Align the rear edge of the stowage platform on the rear edge of the box.



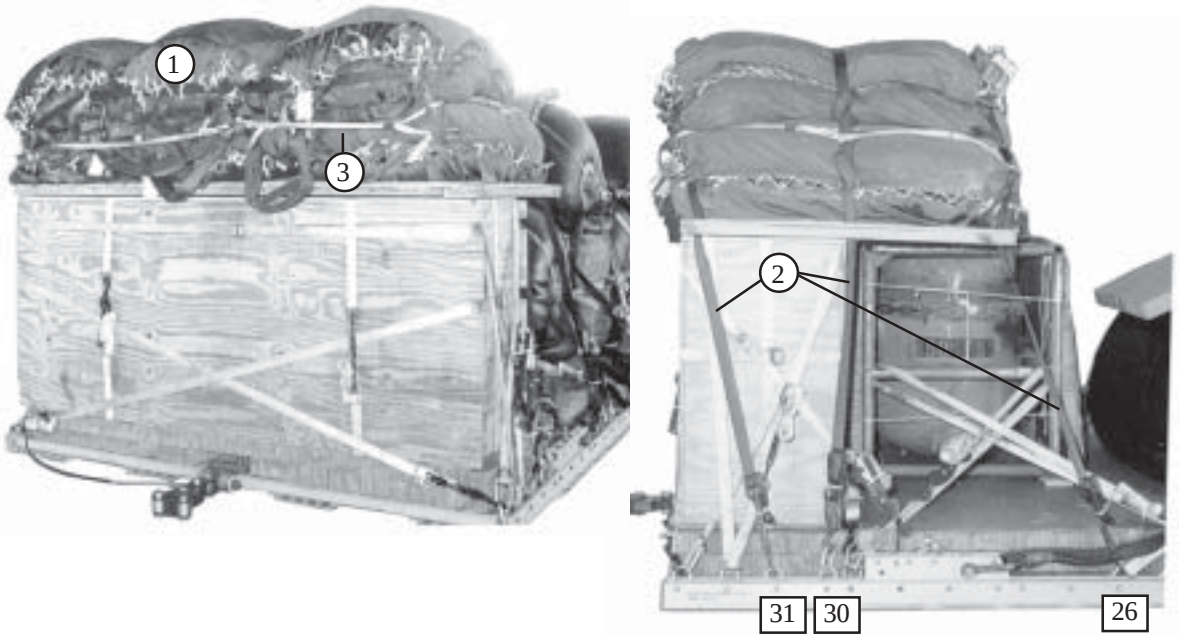


Lashing Number	Tie-down Clevis Number	Instructions
63	32	Route a lashing from clevis 32 through the rear and center right holes in the stowage platform.
64	32A	Route a lashing from clevis 32A through the rear and center left holes in the stowage platform.

Figure 3-58. Parachute Stowage Platform Built and Positioned

PREPARING AND STOWING CARGO PARACHUTES

3-63. Prepare and stow cago parachutes as shown in Figure 3-59.

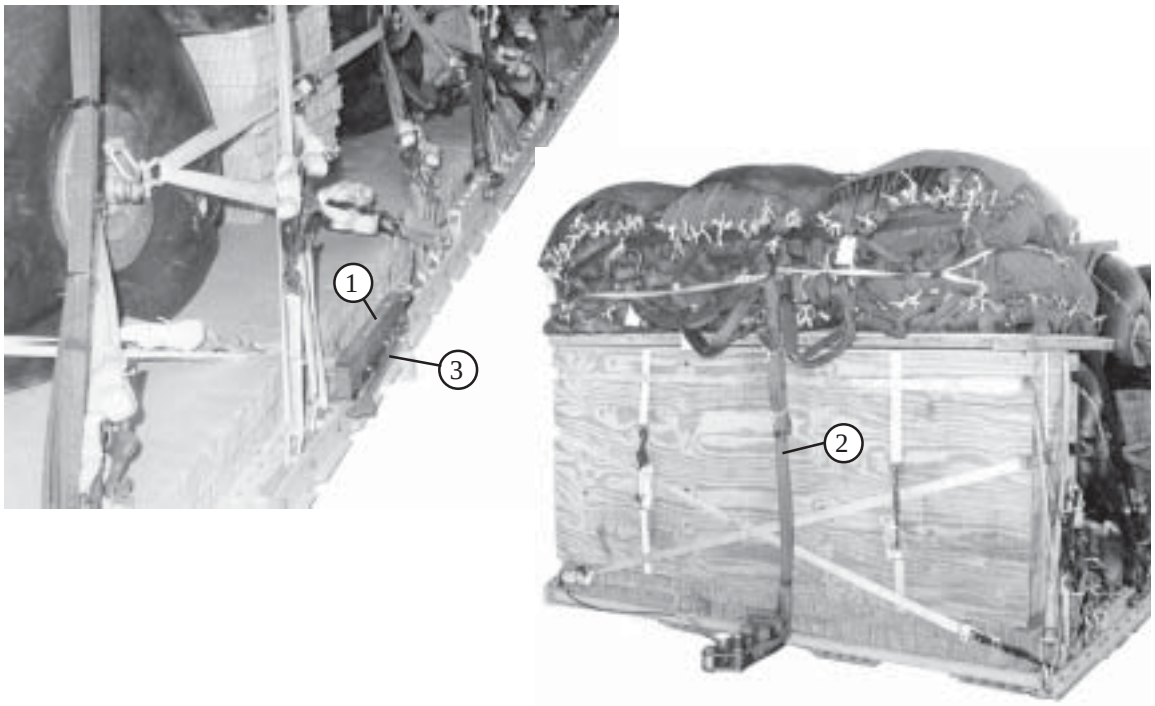


1. Prepare and position six G-11 cargo parachutes according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
2. Restrain the parachutes according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 using clevises 26, 26A, 30, 30A, 31, and 31A.
3. Install the multicut parachute release strap according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

Figure 3-59. Cargo Parachutes Prepared and Stowed

INSTALLING THE EXTRACTION SYSTEM

3-64. Install the extraction system as shown in Figure 3-60.



(1) Install the extraction force transfer coupling according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

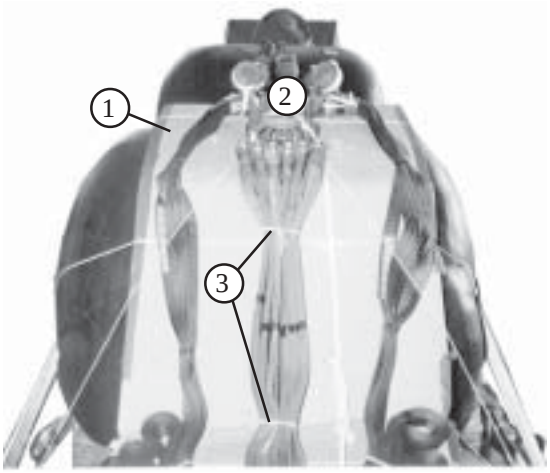
(2) Install a 9-foot (2-loop) type XXVI nylon sling as the deployment line.

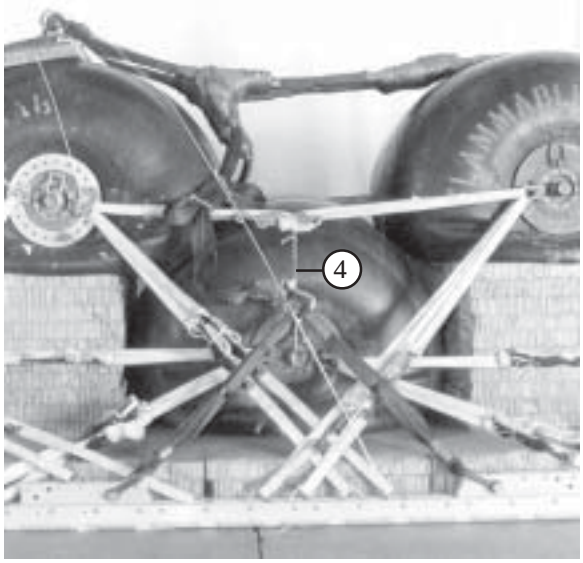
(3) Use the rear mounting holes for the EFTC actuator mounting bracket and a 28-foot cable.

Figure 3-60. Extraction System Installed

INSTALLING THE PARACHUTE RELEASE SYSTEM

3-65. Install the release system as shown in Figure 3-61.





(1) Place and secure a 96-inch by 36-inch piece of honeycomb from the separator to the top of the rear drum, securing it with type III nylon cord.

(2) Position and secure the M-2 parachute release assembly on the honeycomb. Attach the suspension slings and the parachute riser extensions to the M-2 parachute release assembly according to FM 4-20.102/NAVSEA SS400-AB MMO-010/TO 13C7-1-5.

(3) S-fold and tie any slack in the suspension slings with type I, 1/4-inch cotton webbing (not shown). Tie the riser extensions together with type I, 1/4-inch cotton webbing.

(4) Secure the large clevis attached to the folded 20-foot suspension sling to the lashing installed between the top two drums with a piece of type III nylon cord.

Figure 3-61. Release System Installed

PLACING EXTRACTION PARACHUTE

3-66. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Rig the extraction line in an extraction line bag according to TM 10-1670-286-20/TO 13C5-2-41. Place the extraction parachute and extraction line on the load for installation in the aircraft.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

3-67. Select and install the provisions for emergency aft restraints according to the emergency aft restraint requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

MARKING RIGGED LOAD

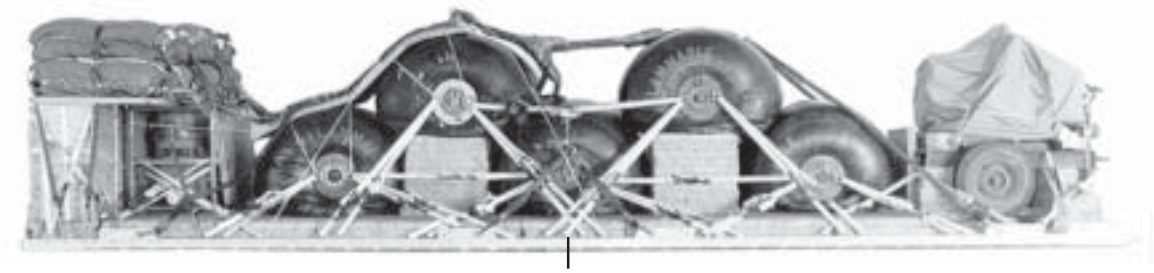
3-68. Mark the rigged load according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 3-62. Complete Shipper's Declaration for Dangerous Goods and affix to the load. If the load varies from the one shown, the weight, height, CB, tipoff curve, and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

3-69. Use the equipment list in Table 3-3 to rig the load shown in Figure 3-62.

CAUTION

Make the final inspection required by FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



RIGGED LOAD DATA

Weight ..... 28,855 pounds

Maximum Weight ..... 30,355 pounds

Height ..... 75 inches

Width ..... 108 inches

Overall Length ..... 411 inches

Overhang: Front (Tongue of pump) ..... 9 inches
Rear (EFTC) ..... 18 inches

Center of Balance (CB) (from the front edge of the platform) ..... 198 inches

Figure 3-62. Five 500-Gallon Drums With Pump and Separator Rigged for Low-Velocity Airdrop

Table 3-3. Equipment Required for Rigging Five 500-Gallon Drums with Pump and Separator

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive paste, 1-gal	As required
1670-01-035-6054	Bridle, extraction line bag (for DES)	1
4030-00-090-5354	Clevis, large	13
4030-00-678-8562	Clevis, medium	6
8305-00-880-8155	Cloth coated, green, 60-inch	As required
4020-00-240-2146	Cord, nylon, type III, 550-lb	As required
1670-01-326-7309	Coupling, airdrop, extraction force transfer w/28-ft	1
1670-00-360-0328	Cover, clevis, large	6
8135-00-664-6958	Cushioning material, packaging, cellulose wadding	As required
1670-01-183-2678	Leaf, extraction line (line bag)(add 2 for DES)	2
	Line, drogue (for C-17)	
1670-01-064-4452	60-foot (1-loop), type XXVI	1
	Line, deployment:	
1670-01-062-6304	9-foot (2-loop), type XXVI	1
	Line, extraction:	
1670-01-062-6313	For C-130: 60-foot (3-loop), type XXVI	1
1670-01-107-7651	For C-141,C-5, C-17: 140-foot (3-loop), type XXVI	1
	Link assembly:	
	Two-point:	
5306-00-435-8994	Bolt, 1-in diam, 4-in long	4
5310-00-232-5165	Nut, 1-in, hexagonal	4
1670-00-003-1954	Plate, side, 5 1/2-in	4
5365-00-007-3414	Spacer, large	4
	Two-point: (for DES)	
5306-00-435-8994	Bolt, 1-in diam, 4-in long	2
5310-00-232-5165	Nut, 1-in, hexagonal	2
1670-00-003-1953	Plate, side, 3 3/4-in	2
5365-00-007-3414	Spacer, large	2

Table 3-3. Equipment Required for Rigging Five 500-Gallon Drums with Pump and Separator (Continued)

National Stock Number	Item	Quantity
1670-01-307-1055	Three-point	2
1670-00-006-2752	Four-point	1
1670-01-483-8259	Link, tow release mechanism (H-Block) C-17 aircraft	1
	Lumber:	
5510-00-220-6146	2- by 4-in	As required
5510-00-220-6148	2- by 6-in	As required
5315-00-010-4659	Nail, steel wire, common, 8d	As required
1670-00-753-3928	Pad, energy dissipating, honeycomb, 3- by 36- by 96-in	38 sheets
	Parachute:	
1670-01-016-7841	Cargo, G-11C	6
1670-00-040-8135	Cargo, extraction, 28ft	2
1670-01-063-3715	Drogue, 15ft (for DES)	1
	Platform, airdrop, type V, 32-foot:	
1670-01-353-8425	Bracket assembly, component, (EFTC)	(1)
167001-247-2389	Bracket, suspension	(8)
1670-01-162-2372	Clevis assembly, type V	(72)
1670-01-353-8424	Extraction bracket assembly	(1)
1670-01-162-2381	Link, tandem, suspension link assembly	(2)
5530-00-618-8073	Plywood, 3/4- by 48- by 96-in	4 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
1670-01-062-6307	12-ft (4-loop), type XXVI nylon webbing	2
1670-01-064-4453	20-ft (4-loop), typeXXVI nylon webbing	2
1670-01-062-6302	20-ft (2-loop), type XXVI nylon webbing	2
	For riser extension:	
1670-01-062-6311	120-ft (2-loop), type XXVI nylon webbing	6
1670-00-040-8219	Strap, parachute release, multicut	2

Table 3-3. Equipment Required for Rigging Five 500-Gallon Drums with Pump and Separator (Continued)

National Stock Number	Item	Quantity
7510-00-266-5016	Tape, adhesive, 2-in	As required
7510-00-266-6710	Tape, masking, 2-in	As required
1670-00-937-0271	Tie-down assembly, 15-ft	61
	Webbing:	
8305-00-268-2411	Cotton, 1/4-in, type I	As required
8305-00-082-5752	Nylon, tubular, 1/2-in	As required
8305-00-260-6890	Type X	As required

SECTION IV- RIGGING SIX 500-GALLON DRUMS

DESCRIPTION OF LOAD

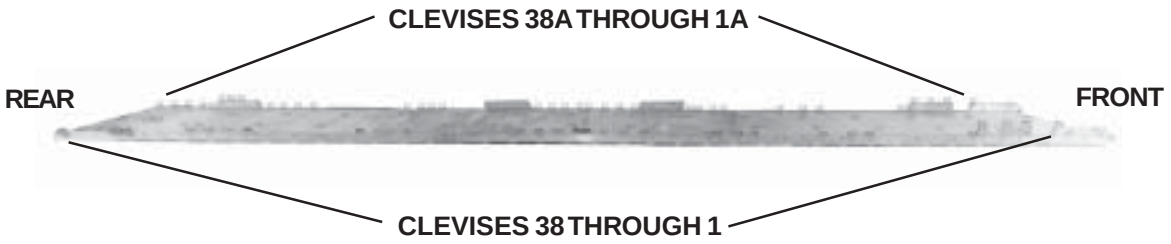
3-70. The six collapsible fuel drums are rigged on a 32-foot, type V platform with seven G-11 cargo parachutes. Each drum is filled with 432 gallons of liquid. When empty, each drum weighs 250 pounds and is 62 inches long and 53 inches in diameter. The six drums also have a 350-GPM pump with a separator and hose box as an accompanying load. The total rigged load has a maximum weight of 34,480 pounds with a width of 108 inches and length of 411 inches. It has an overhang of 9 inches in the front and 18 inches in the rear.

Notes: 1. For drums filled with liquid other than water, use Table 1-1 to recompute the weight.
2. If the load varies from the shown, the weight, height, CB, tipoff curve, and parachute requirements must be recomputed.
3. Do not pressurize drums with air.

PREPARING PLATFORM

3-71. Prepare a 32-foot type V airdrop platform using two tandem links, eight suspension brackets and 80 tie-down clevises as shown in Figure 3-63.

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



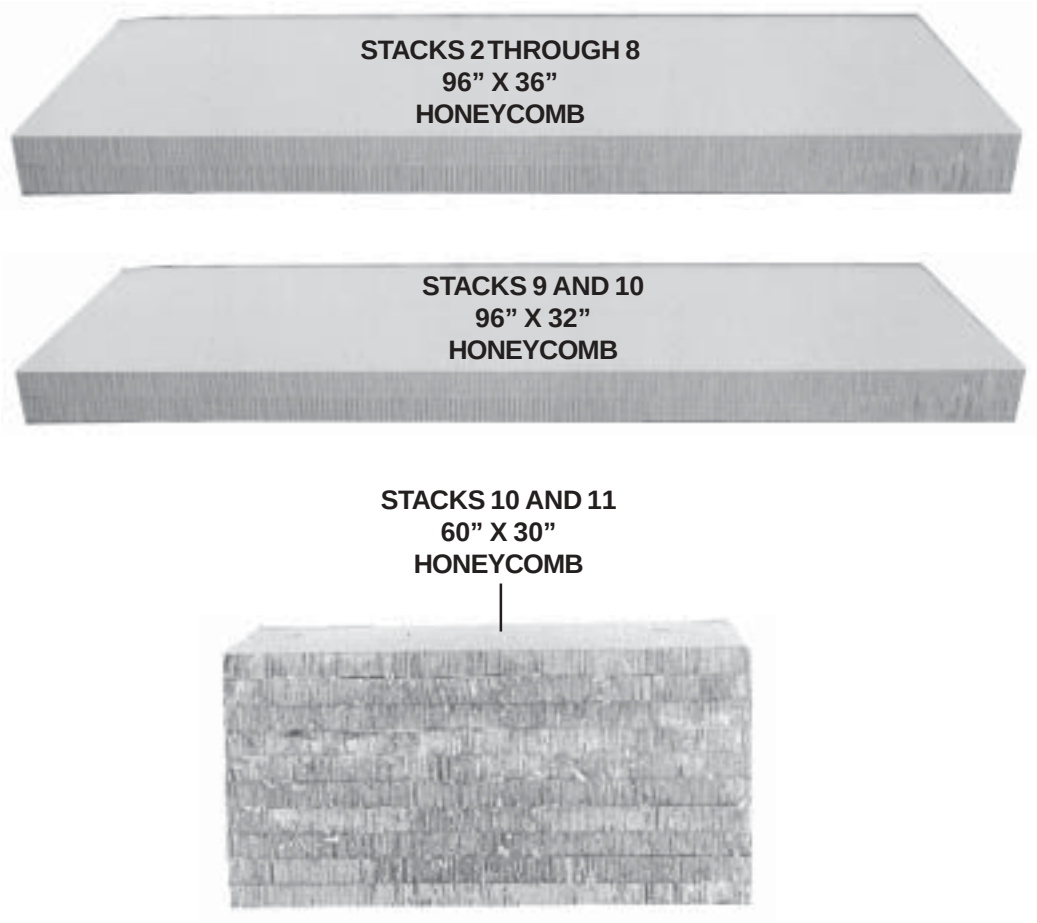
Steps:

1. Inspect, or assemble and inspect, the platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22.
2. Install a tandem link on the front of each platform side rail using holes 1, 2, and 3.
3. Install a suspension bracket to each platform side rail using holes 6, 7, and 8.
4. Install a suspension bracket to each platform side rail using holes 26, 27, and 28.
5. Install a suspension bracket to each platform side rail using holes 37, 38, and 39.
6. Install a suspension bracket to each platform side rail using holes 57, 58, and 59.
7. Install a tie-down clevis to bushings 4 on each front tandem link.
8. Install a tie-down clevis to bushings 1, 3 and 4 on each of the first suspension brackets.
9. Install a tie-down clevis to bushings 2, 3, and 4 of each of the fourth suspension brackets.
10. Starting at the front of each platform side rail, install a tie-down clevis to the bushings bolted to holes 9, 15, 16, 18, 22, 23, 24, 25, 29, 30, 31, 32, 33, 34, 35, 36, 43, 44, 45, 46, 53, 54, 55, 56, 60 (doubled), 61 (tripled), 62, 63, and 64 (doubled).
11. Starting at the front of the platform, number the clevises bolted to the right side from 1 through 38 and those bolted to the left side from 1A through 38A.

Figure 3-63. Platform Prepared

PREPARING HONEYCOMB

3-72. Build honeycomb stacks as shown in Figure 3-64.

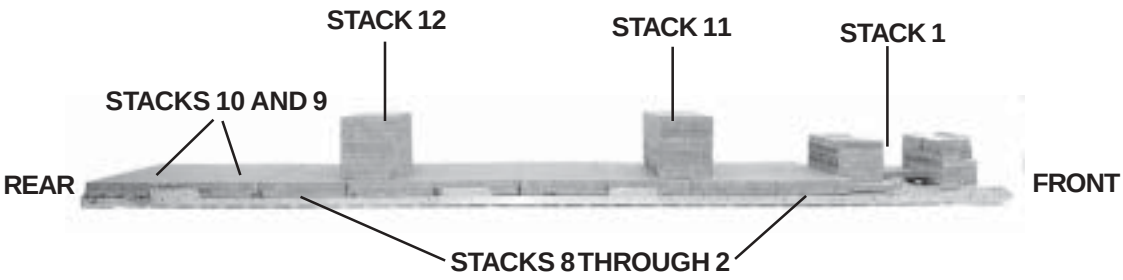


STACK NUMBER	PIECES	WIDTH (INCHES)	LENGTH (INCHES)	MATERIAL	INSTRUCTIONS
1					Prepare honeycomb stack 1 as shown in Figure 3-2.
2-8	2	96	36	Honeycomb	Glue layers together.
9-10	2	96	32	Honeycomb	Glue layers together.
11-12	10	60	30	Honeycomb	Glue layers together.

Figure 3-64. Honeycomb Stacks Prepared

POSITIONING HONEYCOMB STACKS

3-73. Position honeycomb stacks as shown in Figure 3-65.



1. Position stack 1 on the front edge of the platform and centered.
2. Position stacks 2 through 10 flush on the rear edge of stack 1 and flush with each other.
3. Position stack 11 at 122 inches from the front of the platform and centered left to right. Ensure the 30 inch length is aligned with the side rails (do not glue).
4. Position stack 12 at 257 inches from the front of the platform and centered left to right. Ensure the 30 inch length is aligned with the side rails (do not glue).

NOTE: Stacks 11 and 12 may need to be adjusted to allow for placement of the drums.

Figure 3-65. Honeycomb Stacks Positioned

BUILDING EQUIPMENT HOSE BOX

3-74. Build the equipment boxe as shown in Figure 3-5.

POSITIONING EQUIPMENT HOSE BOX

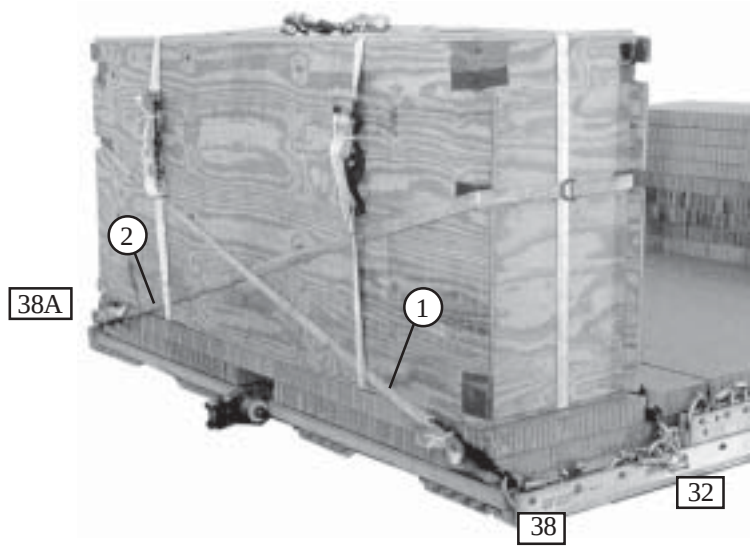
3-75. Position the equipment hose box as shown in Figure 3-6.

STORING EQUIPMENT IN THE EQUIPMENT HOSE BOX

3-76. Store the equipment in the equipment hose box as shown in Figure 3-7.

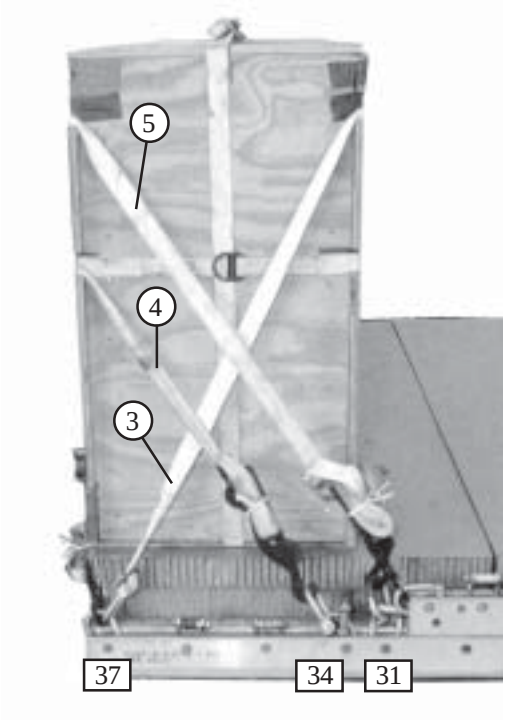
LASHING EQUIPMENT HOSE BOX TO PLATFORM

3-77. Lash the equipment hose box to the platform as shown in Figures 3-66 and 3-67.



Lashing Number	Tie-down Clevis Number	Instructions
1	38 and 32	Route a 30-foot lashing from clevis 38 to the rear bottom left cutout, to the front bottom left cutout, to clevis 32. Ensure lashing is routed under the load binders on the rear of box.
2	38A and 32A	Route a 30-foot lashing from clevis 38A to the rear bottom right cutout, to the front bottom right cutout, to clevis 32A. Ensure lashing is routed under the load binders on the front of the box.

Figure 3-66. Lashings 1 and 2 Installed

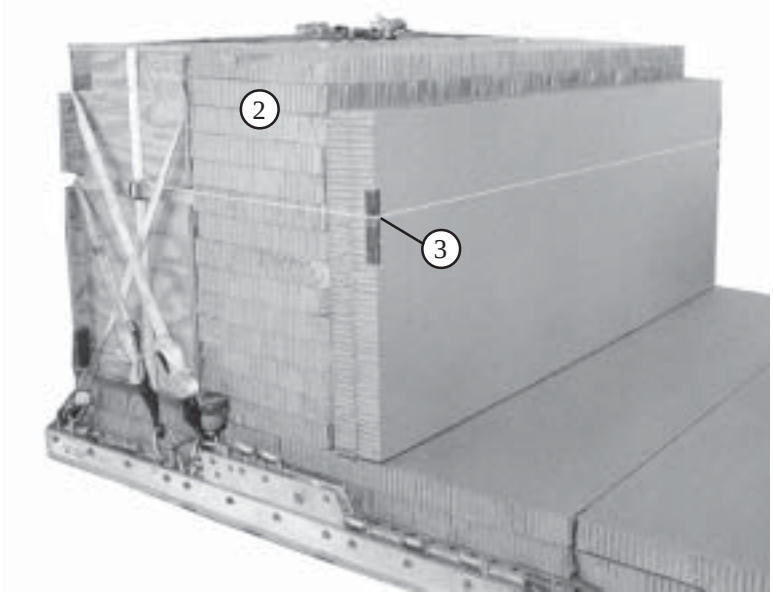


Lashing Number	Tie-down Clevis Number	Instructions
3	37 and 37A	Route a lashing through clevis 37 and back through it's own D-ring. Repeat for clevis 37A. Route lashings through top front cutouts and load bind in center of equipment box.
4	34A and 34	Route a lashing through clevis 34A and back through it's own D-ring to the bottom rear cutouts to clevis 34.
5	31A and 31	Route a 30-foot lashing through the rear top cutouts and load bind to clevises 31 and 31A.

Figure 3-67. Lashings 3, 4, and 5 Installed

POSITIONING AND SECURING PARACHUTE STACK

3-78. Position and secure parachute stack as shown in Figure 3-68.

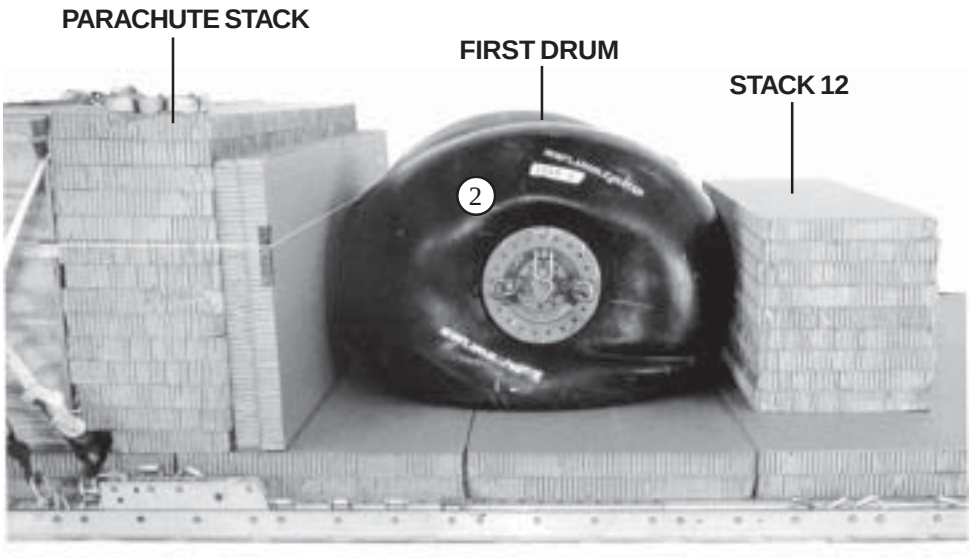


1. Cut 14 pieces of 96-inch by 18-inch honeycomb and glue them together.
2. Position the parachute stack flush against the front of the equipment hose box.
3. Place two pieces of 96-inch by 36-inch honeycomb on edge in front of the parachute stack. Tape the edge and secure with type III nylon cord.

Figure 3-68. Parachute Stack Positioned

POSITIONING AND LASHING THE DRUMS

3-79. Position and lash the drums as shown in Figures 3-69 through 3-77.

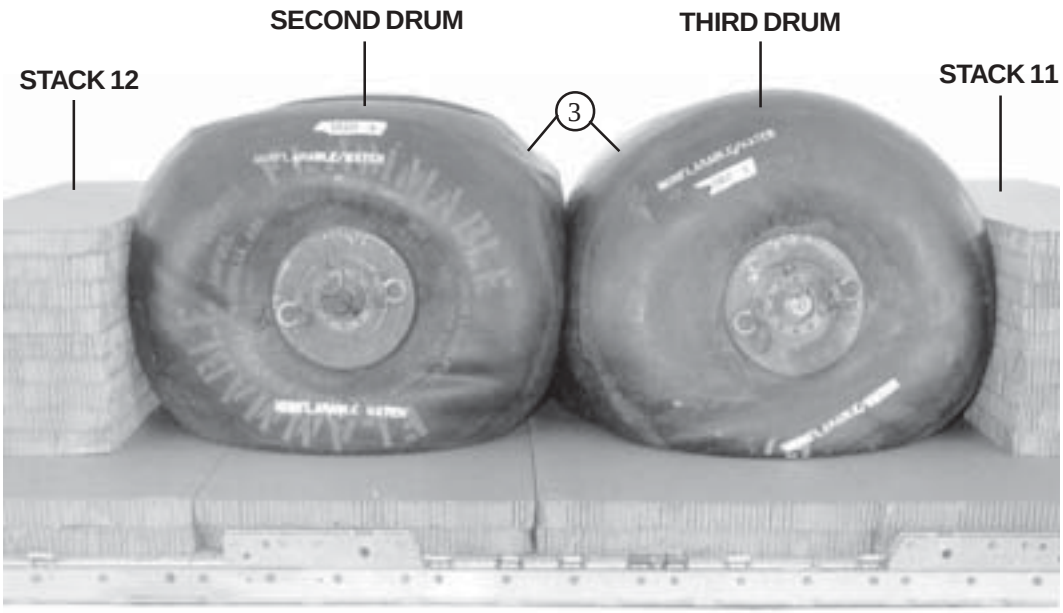


NOTE: Stacks 11 and 12 may need to be moved during placement of drums.

(1) Place a platform clevis on one end of two 9-foot (2-loop), type XXVI nylon slings. Attach sling to each side of the drum (for lifting purposes only) and remove after positioning (not shown).

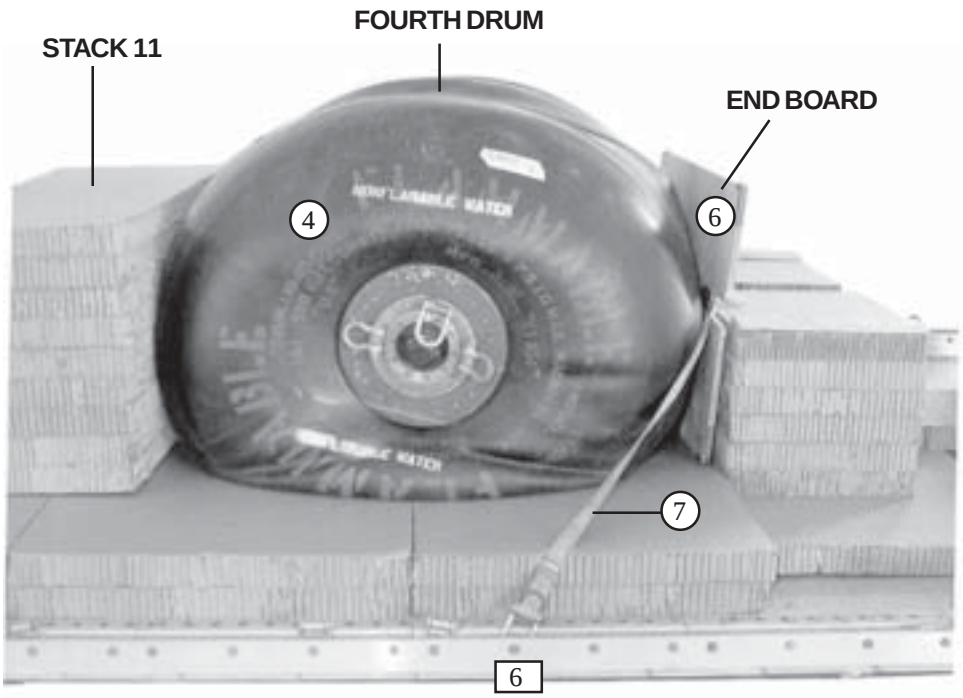
(2) Position the first drum centered left to right on the platform and in front of the parachute stack.

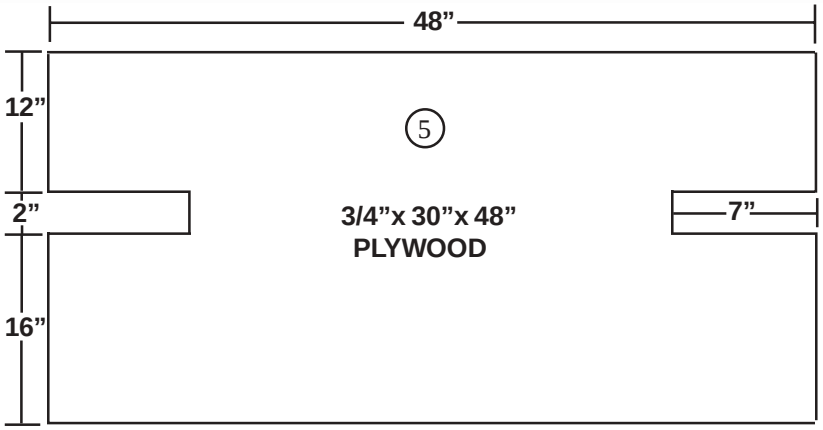
Figure 3-69. Drums Positioned on Platform



(3) Position the second and third drums centered between honeycomb stacks 11 and 12.

Figure 3-69. Drums Positioned on Platform (Continued)





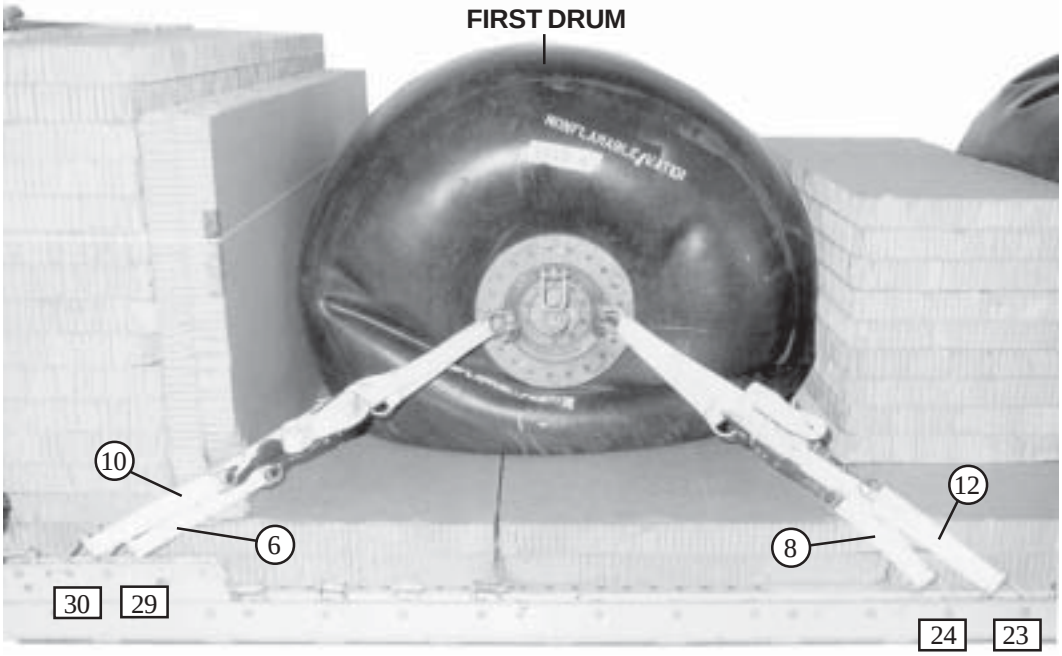
(4) Position the fourth drum centered and in front of stack 11.

(5) Construct the end board as shown above.

(6) Place the end board in front of the fourth drum.

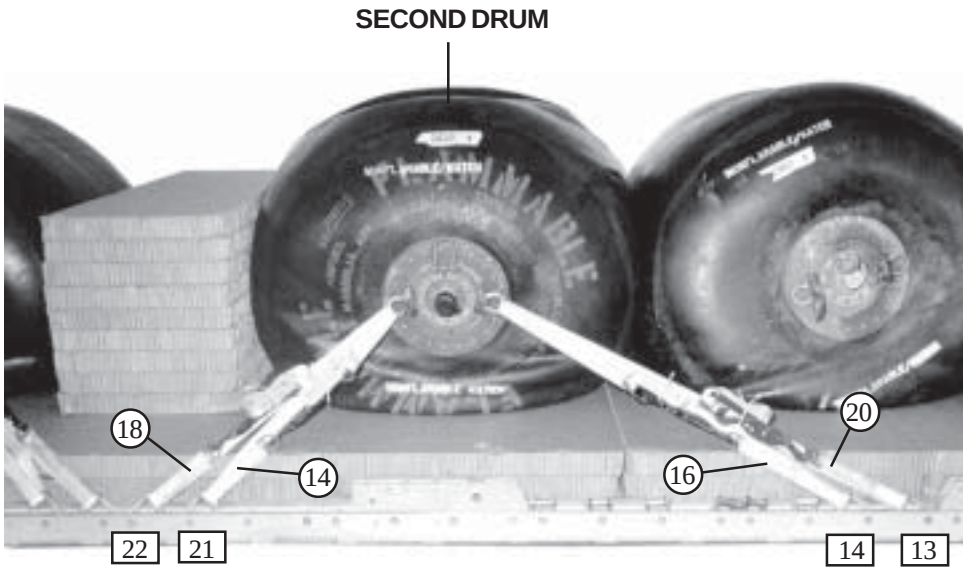
(7) Route a lashing through clevis 6 and back through it's own D-ring through the cutouts of the end board to clevis 6A (this is a temporary lashing).

Figure 3-69. Drums Positioned on Platform (Continued)



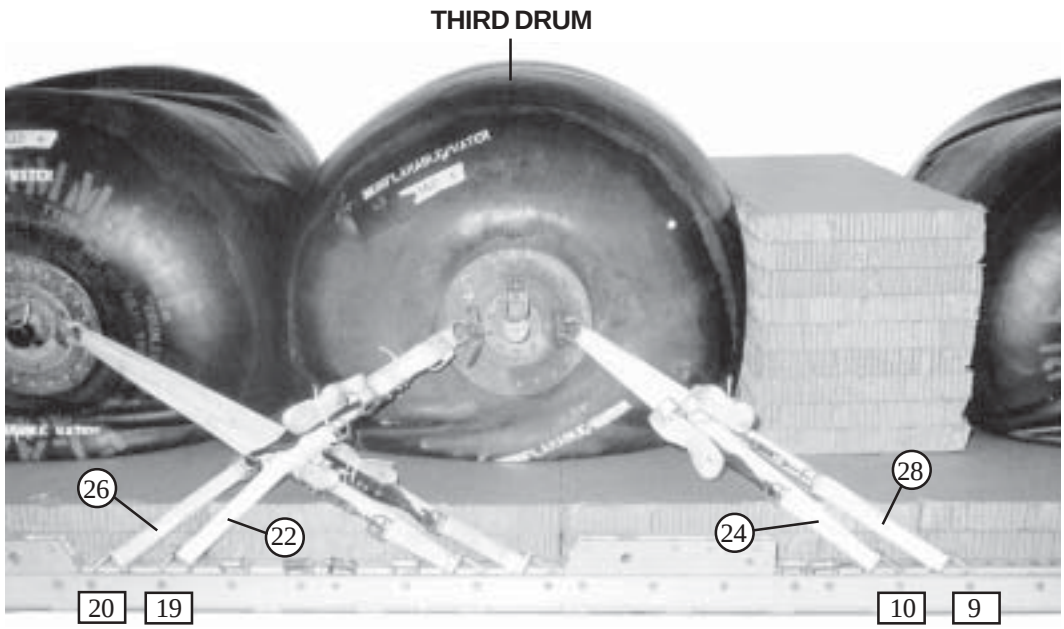
Lashing Number	Tie-down Clevis Number	Instructions
6	29	Route a lashing from clevis 29 to the right rear shackle of the first drum.
7	29A	Route a lashing from clevis 29A to the left rear shackle of the first drum.
8	24	Route a lashing from clevis 24 to the right front shackle of the first drum.
9	24A	Route a lashing from clevis 24A to the left front shackle of the first drum.
10	30	Route a lashing from clevis 30 to the right rear shackle of the first drum.
11	30A	Route a lashing from clevis 30A to the left rear shackle of the first drum.
12	23	Route a lashing from clevis 23 to the right front shackle of the first drum.
13	23A	Route a lashing from clevis 23A to the left front shackle of the first drum.

Figure 3-70. Lashings 6 Through 13 Installed



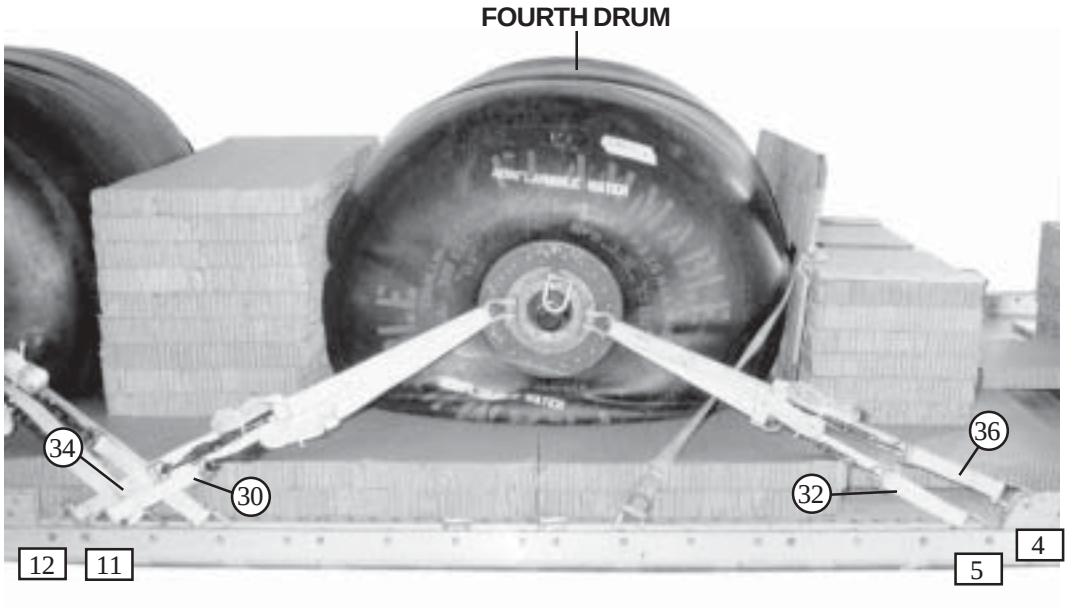
Lashing Number	Tie-down Clevis Number	Instructions
14	21	Route a lashing from clevis 21 to the right rear shackle of the second drum.
15	21A	Route a lashing from clevis 21A to the left rear shackle of the second drum.
16	14	Route a lashing from clevis 14 to the right front shackle of the second drum.
17	14A	Route a lashing from clevis 14A to the left front shackle of the second drum.
18	22	Route a lashing from clevis 22 to the right rear shackle of the second drum.
19	22A	Route a lashing from clevis 22A to the left rear shackle of the second drum.
20	13	Route a lashing from clevis 13 to the right front shackle of the second drum.
21	13A	Route a lashing from clevis 13A to the left front shackle of the second drum.

Figure 3-71. Lashings 14 Through 21 Installed



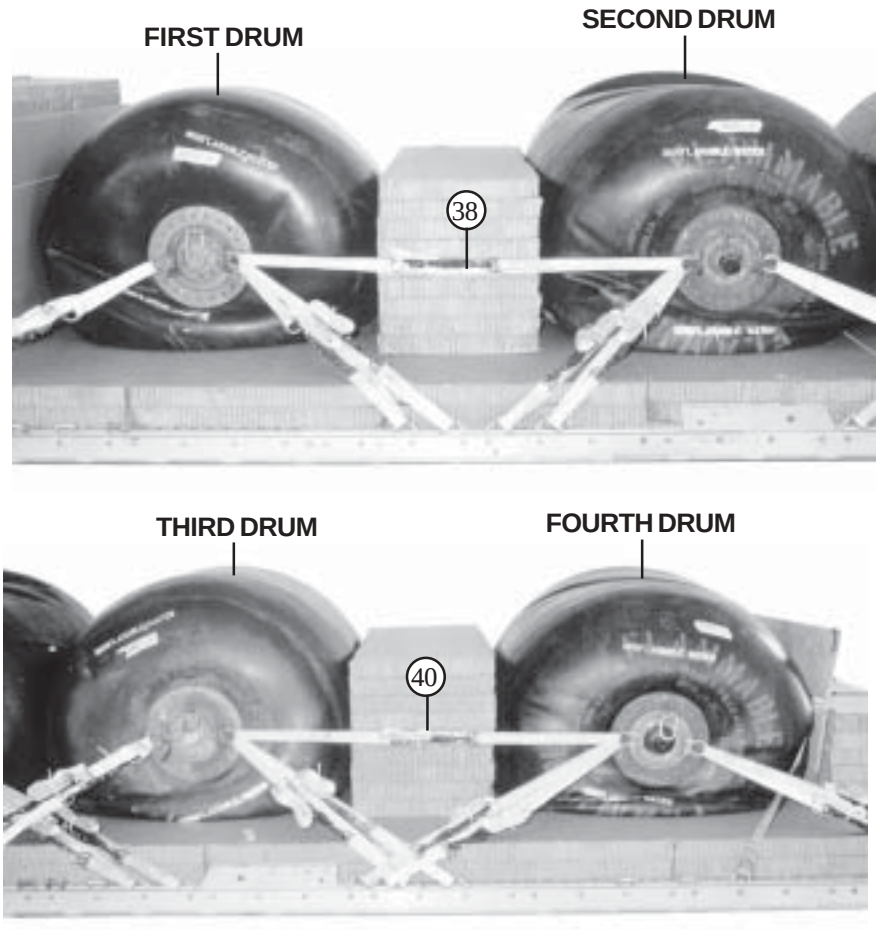
Lashing Number	Tie-down Clevis Number	Instructions
22	19	Route a lashing from clevis 19 to the right rear shackle of the third drum.
23	19A	Route a lashing from clevis 19A to the left rear shackle of the third drum.
24	10	Route a lashing from clevis 10 to the right front shackle of the third drum.
25	10A	Route a lashing from clevis 10A to the left front shackle of the third drum.
26	20	Route a lashing from clevis 20 to the right rear shackle of the third drum.
27	20A	Route a lashing from clevis 20A to the left rear shackle of the third drum.
28	9	Route a lashing from clevis 9 to the right front shackle of the third drum.
29	9A	Route a lashing from clevis 9A to the left front shackle of the third drum.

Figure 3-72. Lashings 22 Through 29 Installed



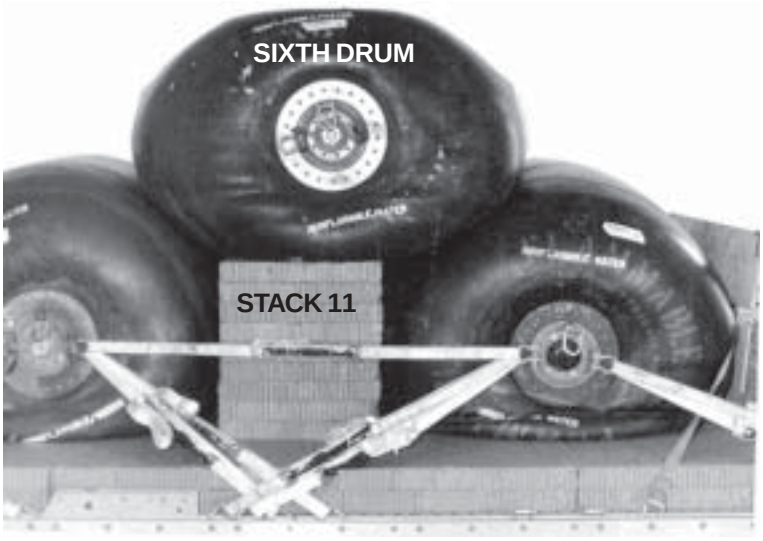
Lashing Number	Tie-down Clevis Number	Instructions
30	11	Route a lashing from clevis 11 to the right rear shackle of the fourth drum.
31	11A	Route a lashing from clevis 11A to the left rear shackle of the fourth drum.
32	5	Route a lashing from clevis 5 to the right front shackle of the fourth drum.
33	5A	Route a lashing from clevis 5A to the left front shackle of the fourth drum.
34	12	Route a lashing from clevis 12 to the right rear shackle of the fourth drum.
35	12A	Route a lashing from clevis 12A to the left rear shackle of the fourth drum.
36	4	Route a lashing from clevis 4 to the right front shackle of the fourth drum.
37	4A	Route a lashing from clevis 4A to the left front shackle of the fourth drum.

Figure 3-73. Lashings 30 Through 37 Installed



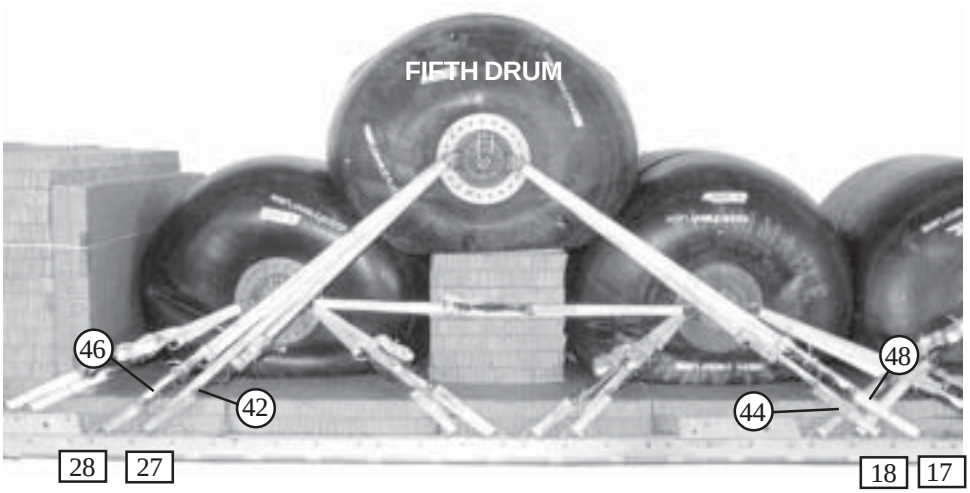
Lashing Number	Tie-down Clevis Number	Instructions
38		Route a lashing from the front shackle of the first drum to the rear shackle of the second drum on the right side.
39		Route a lashing from the front shackle of the first drum to the rear shackle of the second drum on the left side.
40		Route a lashing from the front shackle of the third drum to the rear shackle of the fourth drum on the right side.
41		Route a lashing from the front shackle of the third drum to the rear shackle of the fourth drum on the left side.

Figure 3-74. Lashings 38 Through 41 Installed



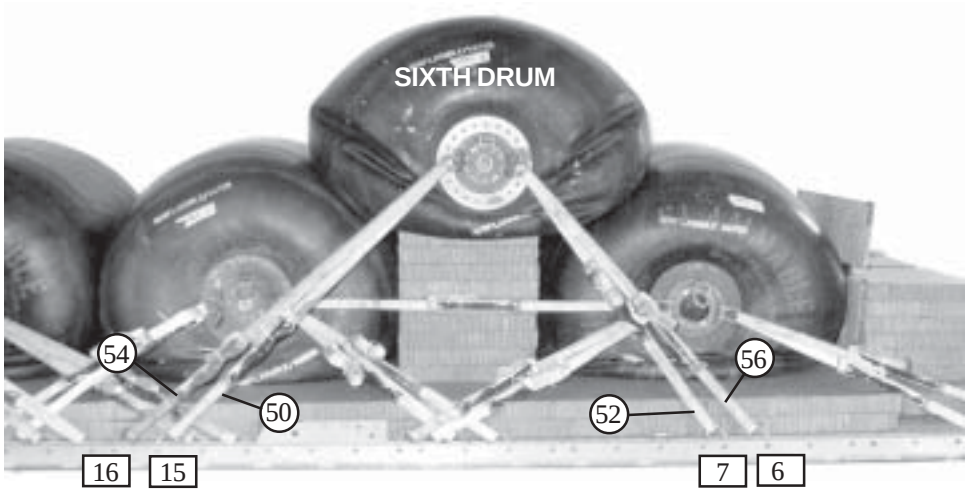
1. Position the fifth drum centered on top of stack 12.
2. Position the sixth drum centered on top of stack 11.

Figure 3-75. Drums Positioned on Platform



Lashing Number	Tie-down Clevis Number	Instructions
42	27	Route a lashing from clevis 27 to the right rear shackle of the fifth drum.
43	27A	Route a lashing from clevis 27A to the left rear shackle of the fifth drum.
44	18	Route a lashing from clevis 18 to the right front shackle of the fifth drum.
45	18A	Route a lashing from clevis 18A to the left front shackle of the fifth drum.
46	28	Route a lashing from clevis 28 to the right rear shackle of the fifth drum.
47	28A	Route a lashing from clevis 28A to the left rear shackle of the fifth drum.
48	17	Route a lashing from clevis 17 to the right front shackle of the fifth drum.
49	17A	Route a lashing from clevis 17A to the left front shackle of the fifth drum.

Figure 3-76. Lashings 42 Through 49 Installed



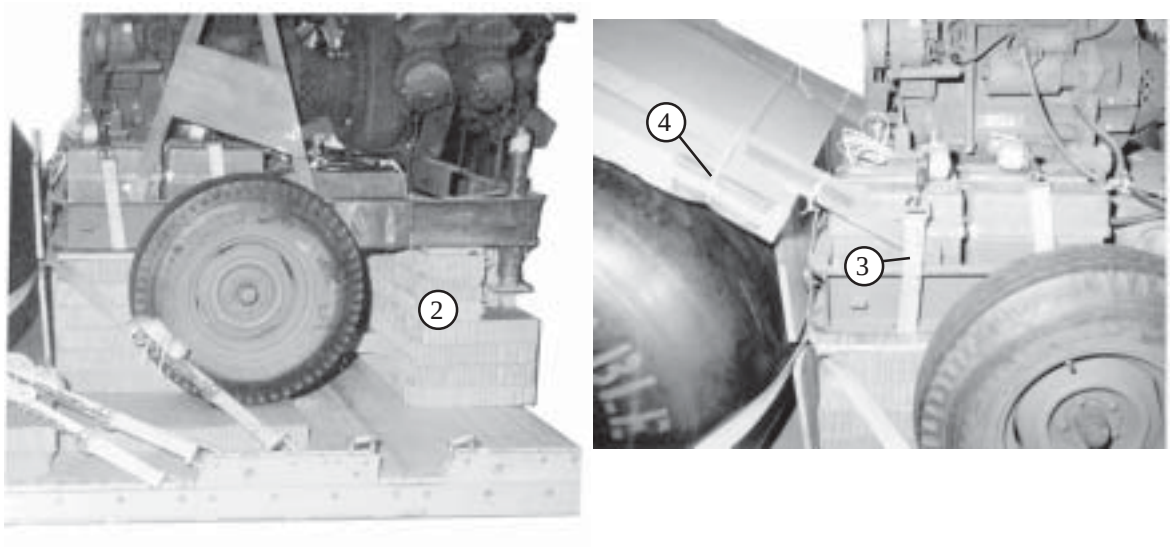
NOTE: Remove the temporary end board lashing on clevises 6 and 6A.

Lashing Number	Tie-down Clevis Number	Instructions
50	15	Route a lashing from clevis 15 to the right rear shackle of the sixth drum.
51	15A	Route a lashing from clevis 15A to the left rear shackle of the sixth drum.
52	7	Route a lashing from clevis 7 to the right front shackle of the sixth drum.
53	7A	Route a lashing from clevis 7A to the left front shackle of the sixth drum.
54	16	Route a lashing from clevis 16 to the right rear shackle of the sixth drum.
55	16A	Route a lashing from clevis 16A to the left rear shackle of the sixth drum.
56	6	Route a lashing from clevis 6 to the right front shackle of the sixth drum.
57	6A	Route a lashing from clevis 6A to the left front shackle of the sixth drum.

Figure 3-77. Lashings 50 Through 57 Installed

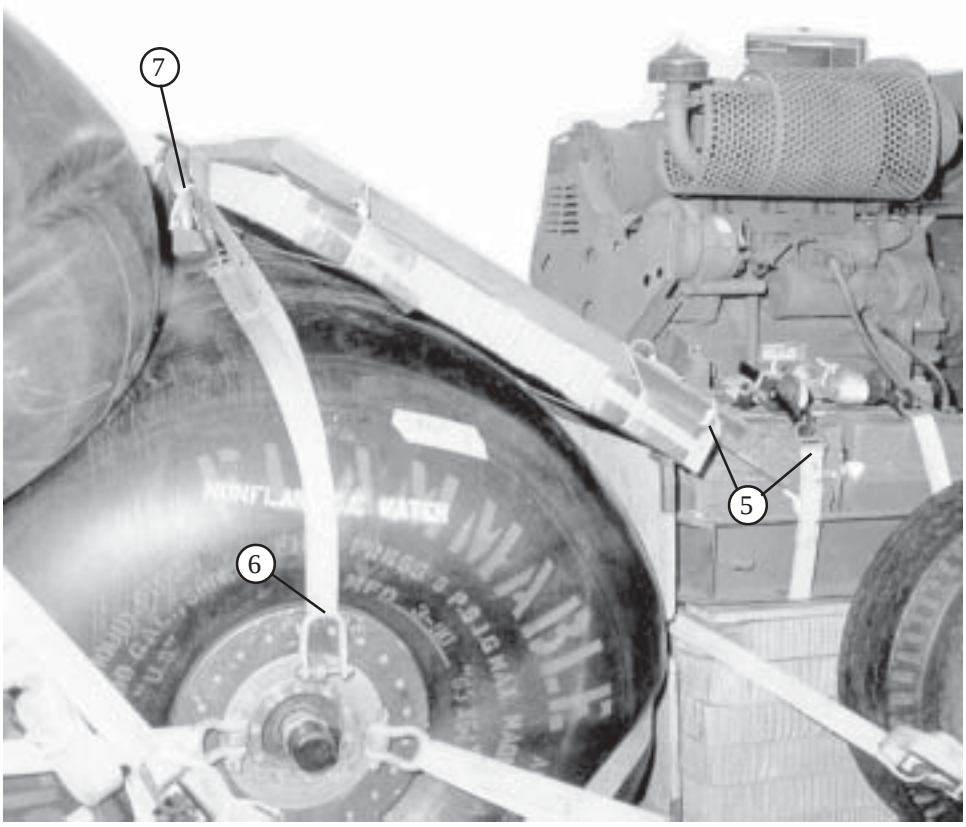
PREPARING AND POSITIONING THE PUMP

3-80. Prepare the pump as shown in Figure 2-8. Position the pump as shown in Figure 3-78.



1. Preposition two lashings in each of the rear tie down points on the pump (not shown).
2. Position the pump on honeycomb stack 1 aligning the front frame edge with the front edge of the platform.
3. Unbolt the lower arm of the pump lifting frame and secure it to the frame with type III nylon cord and disconnect the lashing around the battery box.
4. Tape the edges of a 53-inch by 36-inch piece of honeycomb and secure it to the rear lifting frame with type III nylon cord.

Figure 3-78. Pump Prepared and Positioned



(5) Position the lifting frame on the fourth drum and reconnect the lashing around the battery box.

(6) Route a lashing through the top right shackle on the fourth drum over and through the lifting point on the frame. Continue to route the same lashing through the top left shackle on the fourth drum back over and through the lifting point on the frame. Secure the load binder and D-ring.

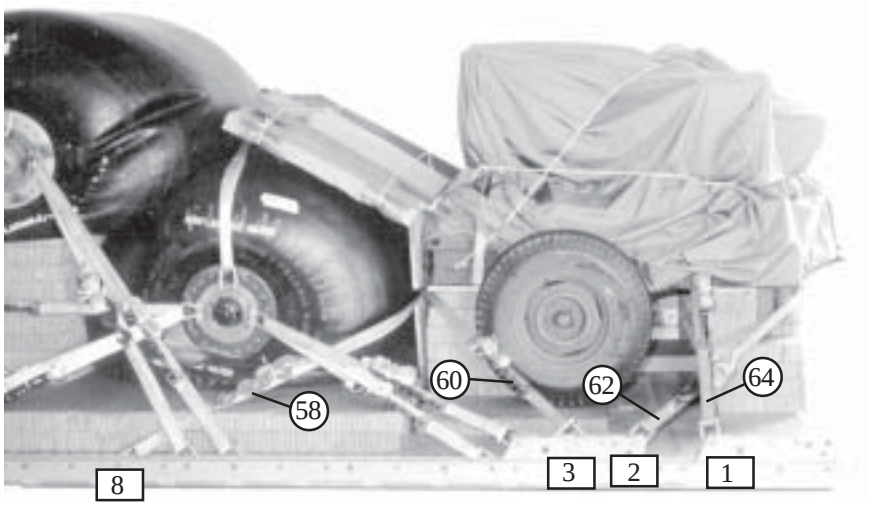
(7) Secure a piece of felt on the lifting point with type III nylon cord.

(8) Secure a canvas cover over the pump and secure with type III nylon cord (not shown).

Figure 3-78. Pump Prepared and Positioned (Continued)

LASHING PUMP TO PLATFORM

3-81. Lash the pump to the platform as shown in Figure 3-79.



Lashing Number	Tie-down Clevis Number	Instructions
58	8	Route the prepositioned lashing from the right rear tiedown point through the cutout in the endboard to clevis 8.
59	8A	Route a prepositioned lashing from the left rear tiedown point through the cutout in the endboard to clevis 8A.
60	3	Route a prepositioned lashing from the right rear tiedown point to clevis 3.
61	3A	Route a prepositioned lashing from the left rear tiedown point to clevis 3A.
62	2	Route a lashing from clevis 2 to the right front tiedown point.
63	2A	Route a lashing from clevis 2A to the left front tiedown point.
64	1	Route a lashing from clevis 1 to the right side frame.
65	1A	Route a lashing from clevis 1A to the left side frame.

Figure 3-79. Lashings 58 Through 65 Installed

BUILDING, POSITIONING, AND LASHING THE SEPARATOR BOX TO THE PLATFORM

3-82. Build the separator box as shown in Figure 3-80. Place the separator in the box as shown in Figure 3-81. Prepare, position, and lash the separator box as shown in Figures 3-82 and 3-83.

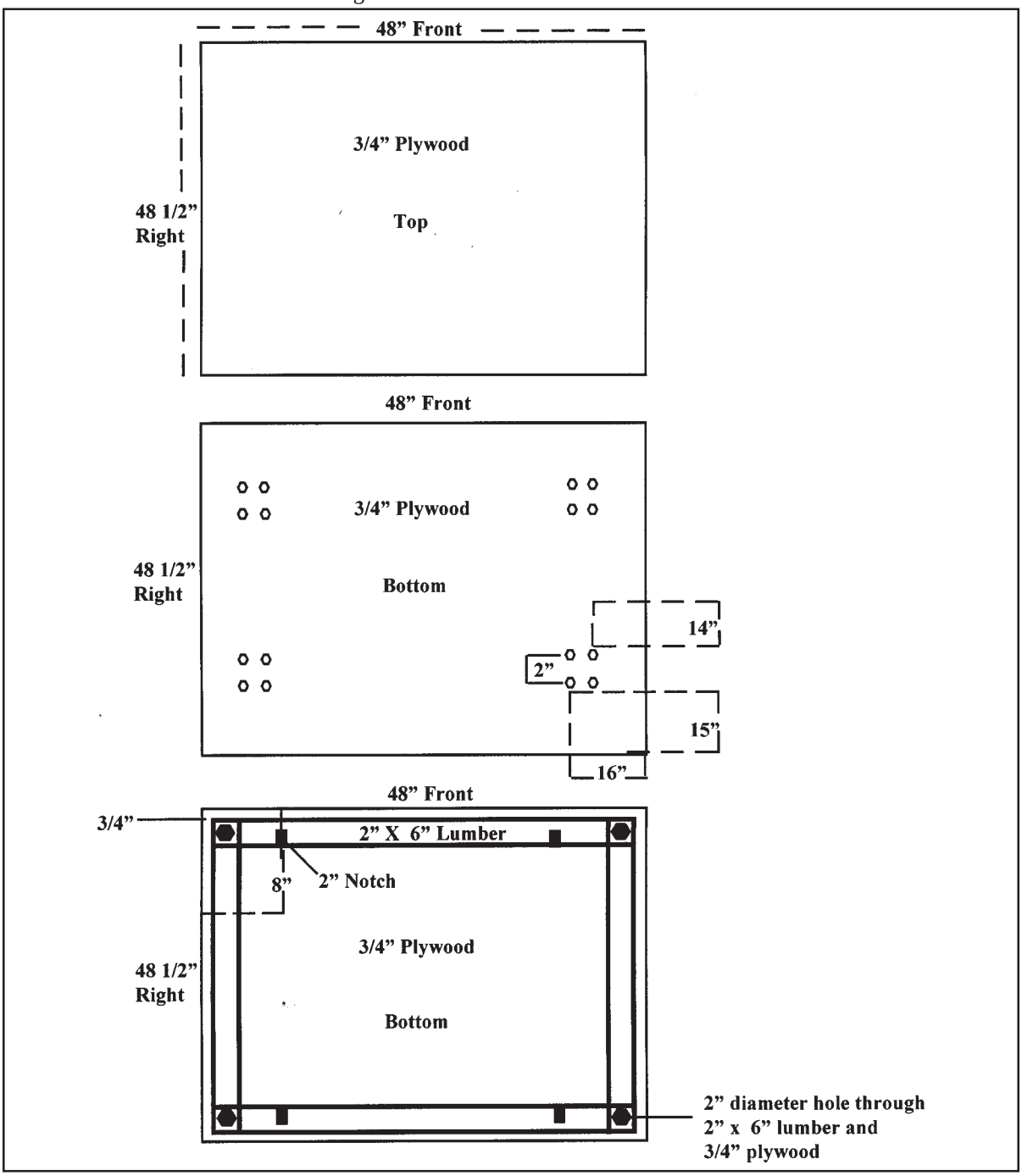


Figure 3-80. Separator Box Built

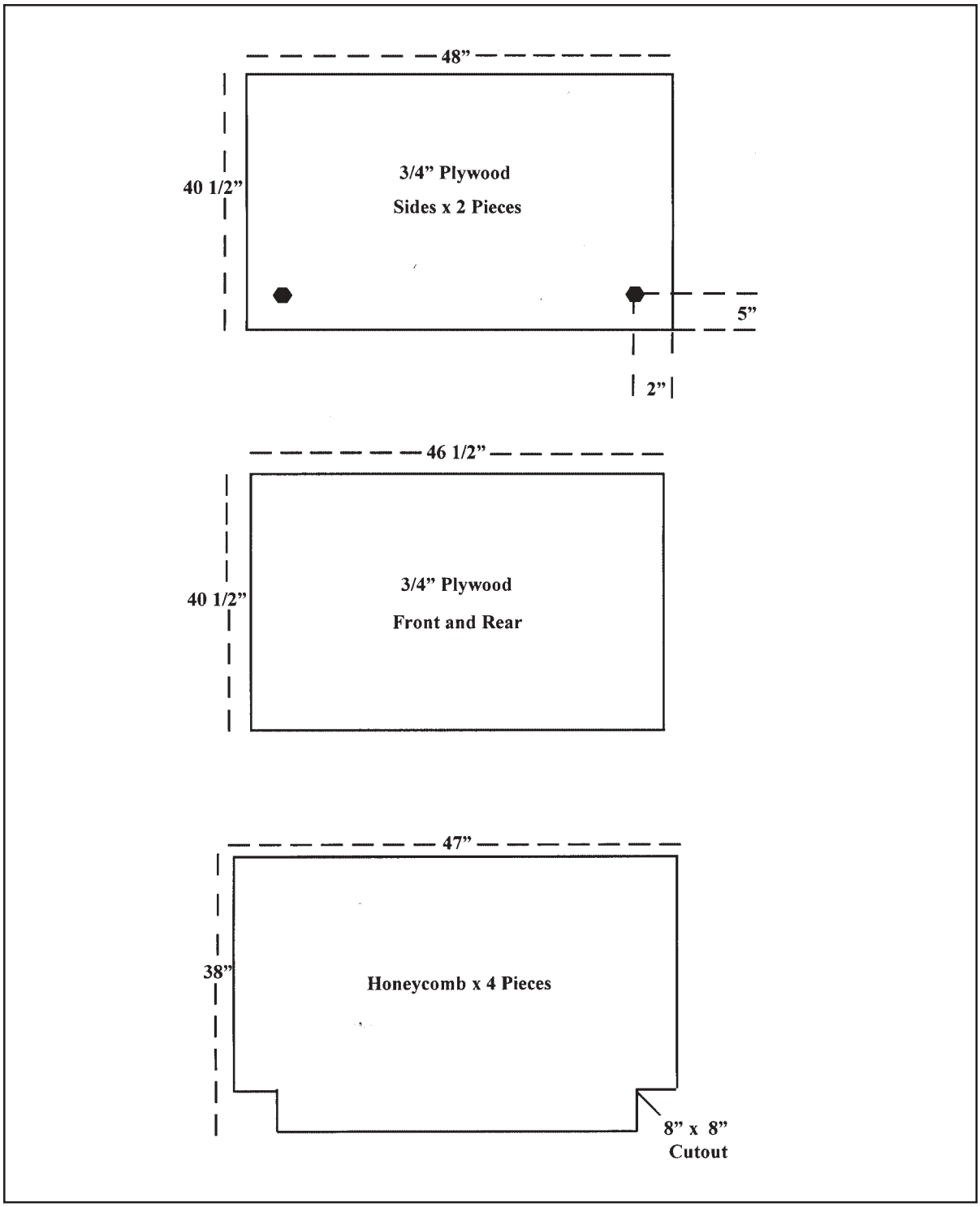
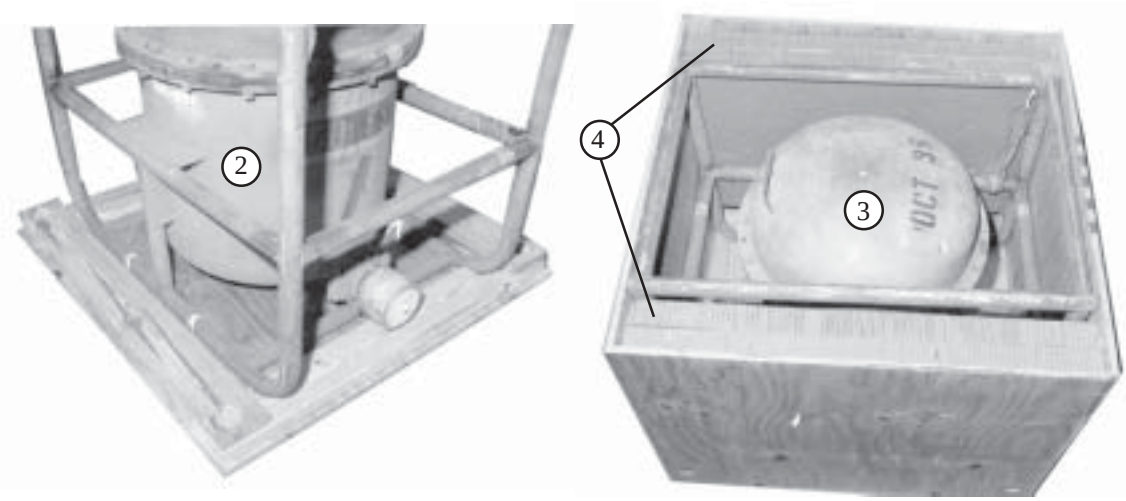
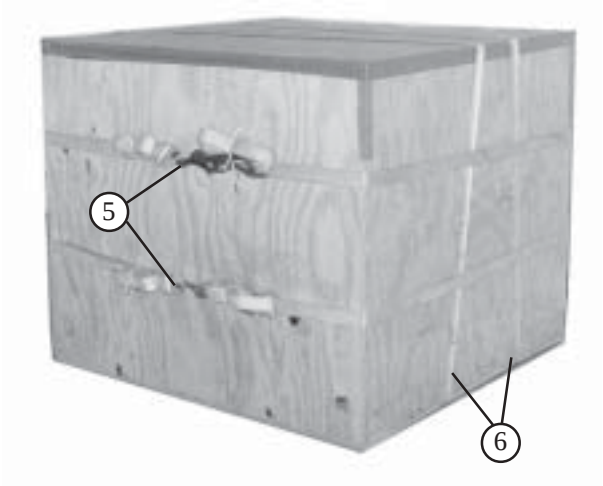


Figure 3-80. Separator Box Built (Continued)



1. Place a piece of 1/2-inch tubular nylon webbing through the hole on the bottom piece of the separator box (not shown).
2. Place the fuel separator in the box aligning the separator frame with the notched cutouts in the 2-inch by 6-inch piece of lumber.
3. Secure the separator with 1/2-inch tubular nylon webbing through the holes in the bottom piece.
4. Place four 47-inch by 38-inch pieces of honeycomb with notched corners (two per side), next to the separator in the box.

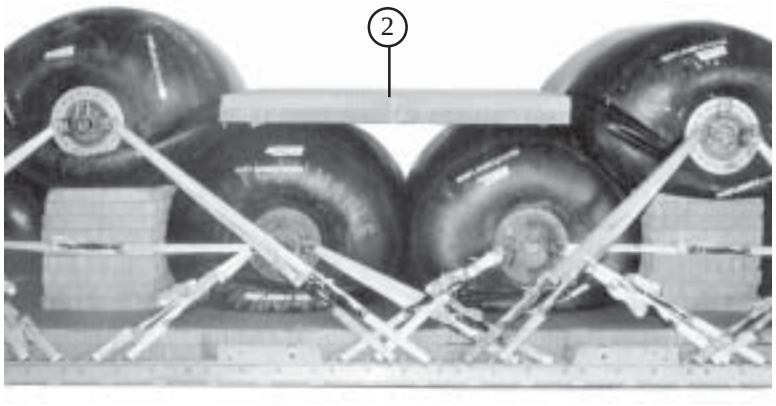
Figure 3-81. Separator Placed In Box



(5) Use two lashings to secure the box. Place each lashing approximately 16 inches in from the top and bottom of the box.

(6) Use two lashings to secure the box from front to rear. Place each lashing approximately 16 inches in from each side of the box.

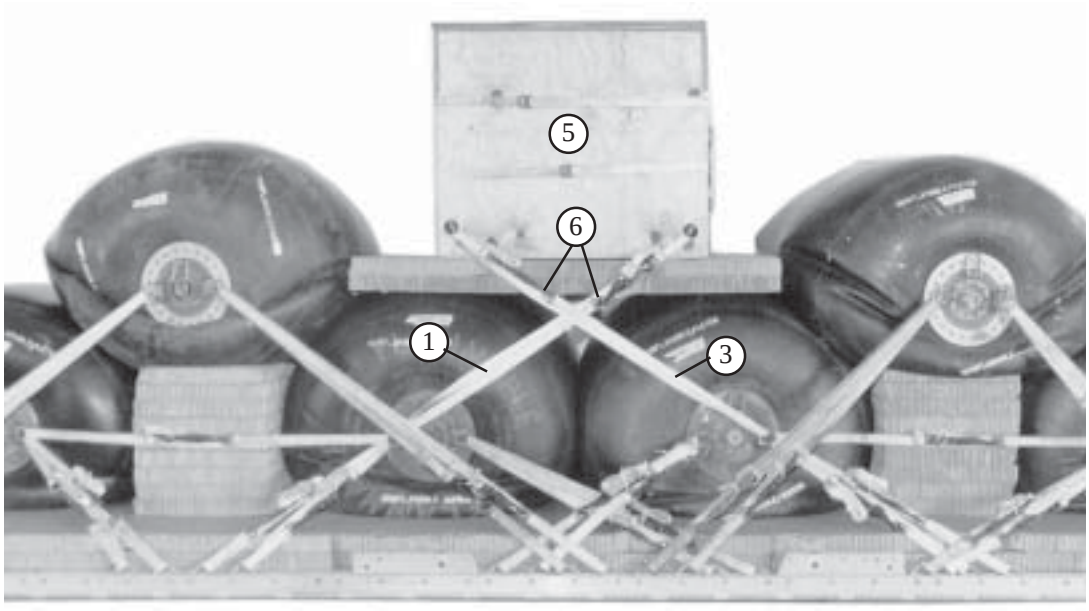
Figure 3-81. Separator Placed In Box (Continued)



(1) Alternate two pieces of 96-inch by 36-inch honeycomb and two pieces of 17-inch by 36-inch honeycomb to make a two layer 96-inch by 53-inch base. Glue the layers together.

(2) Cut the stack to fit tightly between the fifth and sixth drums.

Figure 3-82. Honeycomb Stack for Separator Box Prepared



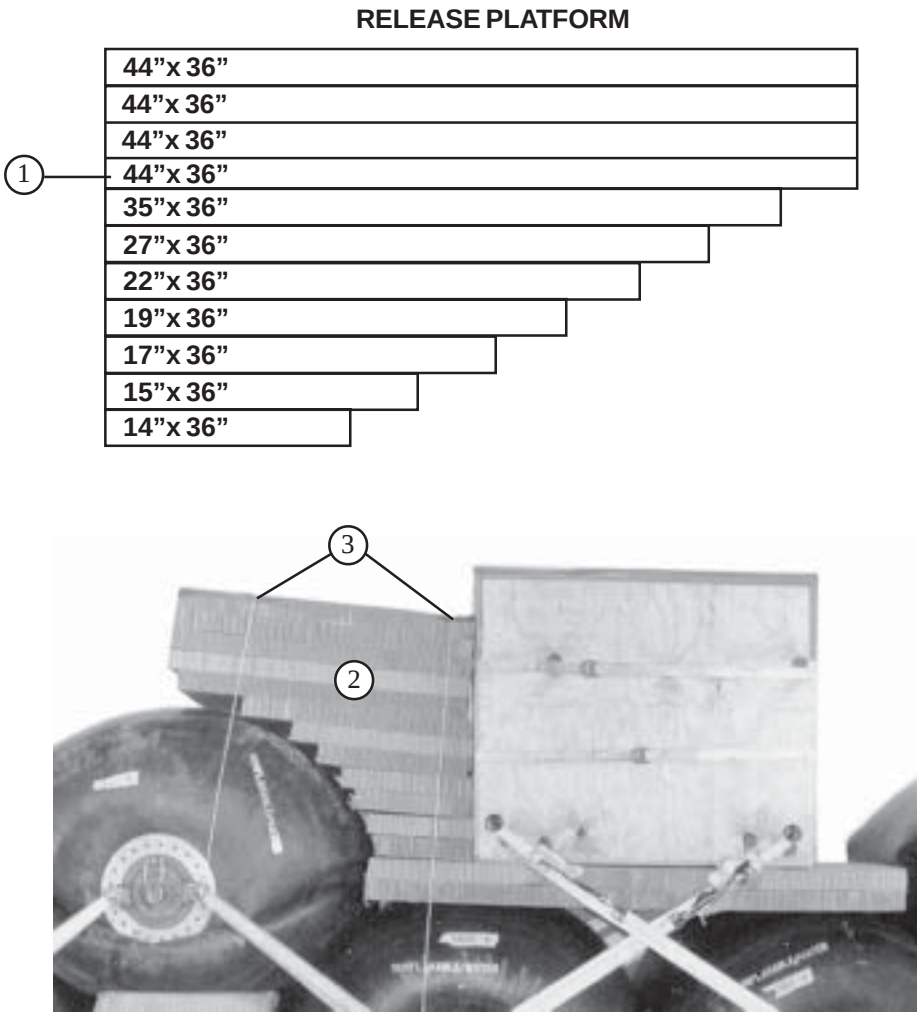
NOTE: The separator box must be suspended to complete the routing of the lashings.

1. Route a lashing from the right rear shackle of the second drum up through the bottom right front hole and out the side right front hole of the box.
2. Repeat step 1 for the left side.
3. Route a lashing from the right front shackle of the third drum up through the bottom right rear hole and out the side right rear hole of the box.
4. Repeat step 3 for the left side.
5. Lower and position the separator box centered on the honeycomb between the drums. Remove lifting slings.
6. Secure separator box lashings and safety tie the lower hooks of the load binders to the lower D-rings with a single length of type III nylon cord.

Figure 3-83. Separator Box Positioned and Secured to Load

CONSTRUCTING AND POSITIONING THE RELEASE PLATFORM

3-83. Construct and position the release platform as shown in Figure 3-84.

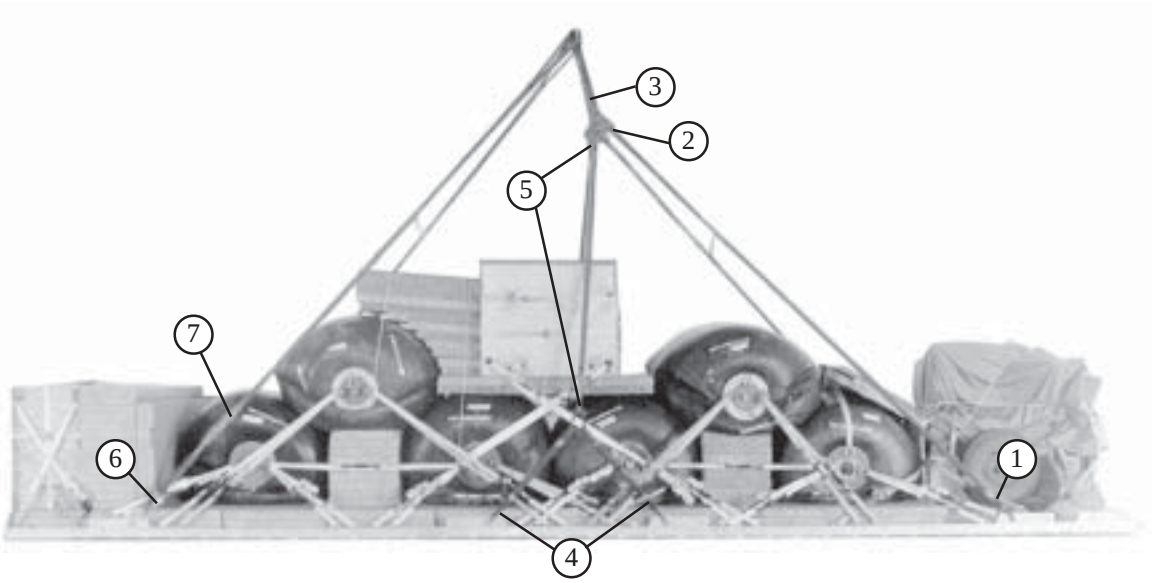


1. Construct and glue the release platform.
2. Position the release platform to the rear of the separator box and on top of the fifth drum.
3. Tape the top edges and secure with type III nylon cord to a convenient location on the load.

Figure 3-84. Release Platform Constructed and Positioned

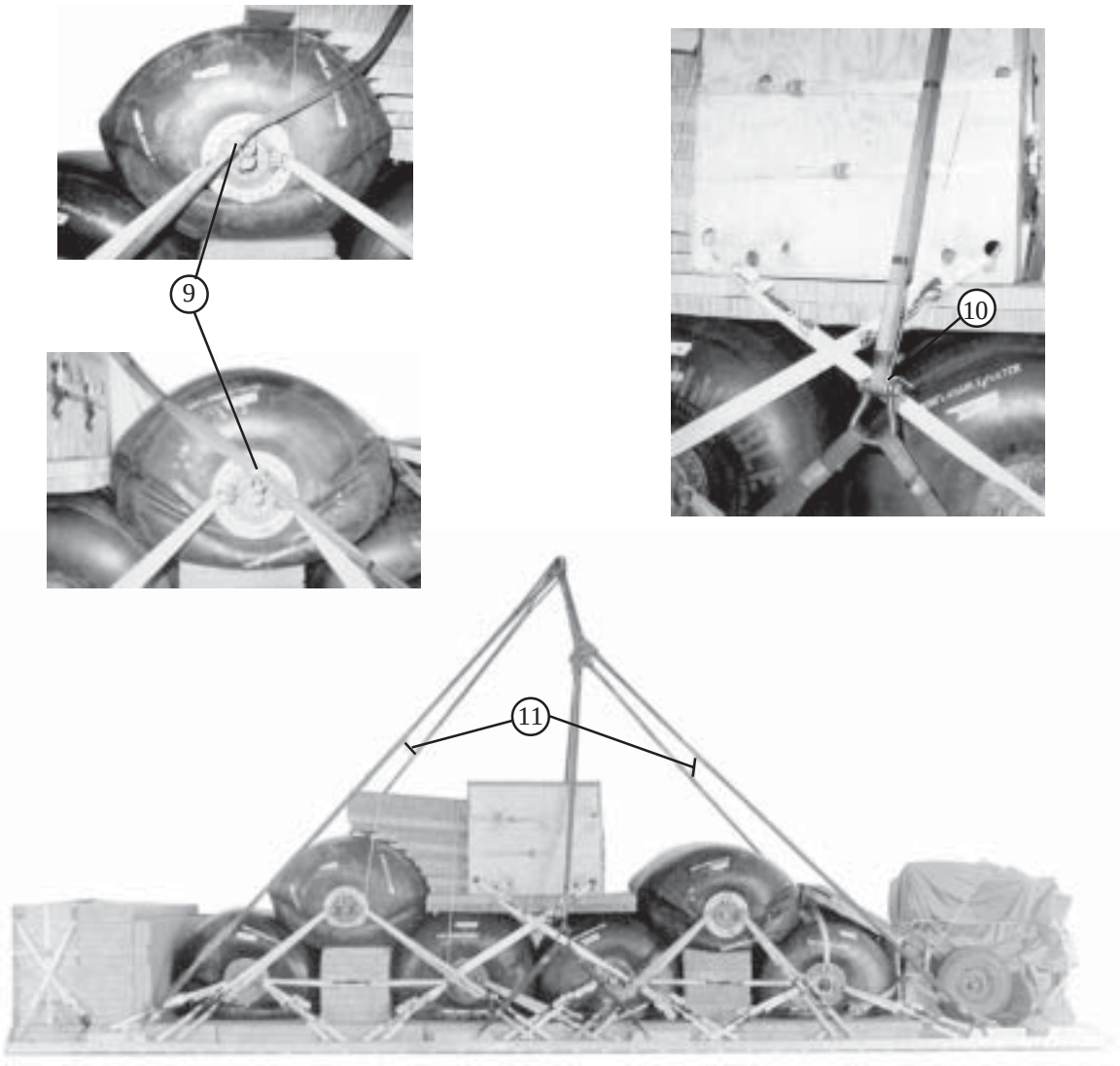
INSTALLING SUSPENSION SLINGS AND SAFETY TIES

3-84. Install suspension slings and safety ties as shown in Figure 3-85.



1. Place a large clevis to one end of a 16-foot (4-loop), type XXVI nylon suspension sling. Attach the clevis to the front right suspension bracket.
2. Attach the running end of the 16-foot sling to a 3-point link.
3. Attach a 3-foot (4-loop), type XXVI nylon suspension sling to the 3-point link.
4. Attach one large clevis to each running end of two 3-foot (4-loop), type XXVI nylon suspension slings. Attach a large clevis to the running ends of each 3-foot sling and attach the large clevises to the center right two suspension brackets.
5. Attach a 9-foot (4-loop), type XXVI nylon suspension sling to the 3-point link. Attach the running end to the large clevis at the ends of the two 3-foot slings.
6. Place a large clevis in one end of a 3-foot (4-loop), type XXVI nylon suspension sling. Attach the clevis to the right rear suspension bracket.
7. Attach a 5 1/2-inch 2-point link to the 3-foot sling and attach a 16-foot (4-loop), type XXVI nylon suspension sling to the running end of the link.
8. Repeat steps 1 through 7 for the left side (not shown).

Figure 3-85. Suspension Slings and Safety Ties Installed



(9) Safety the front and rear slings to the load with type I, 1/4-inch cotton webbing.

(10) Secure the center slings with type III nylon cord.

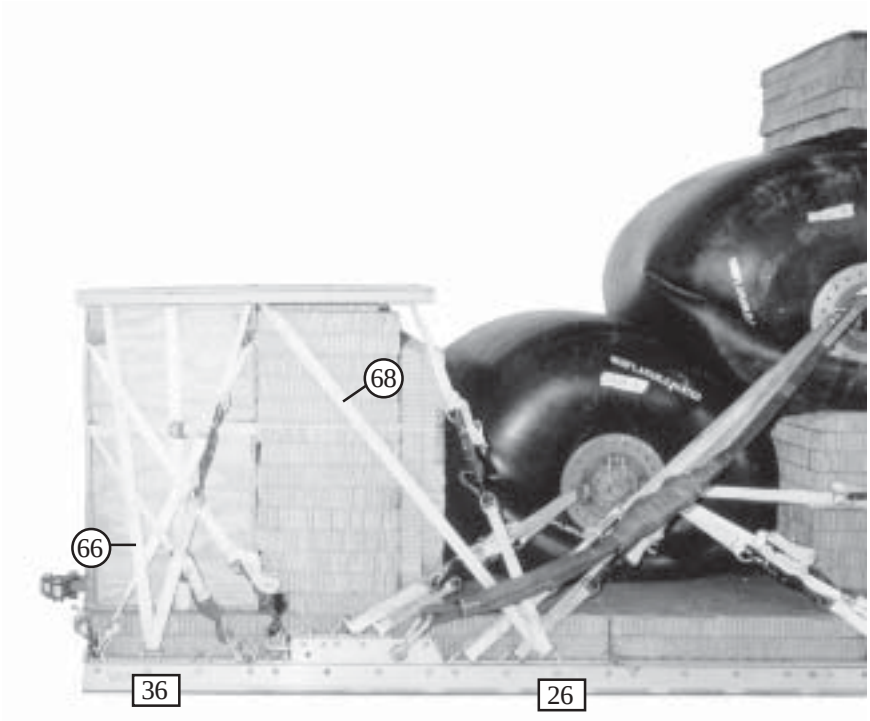
(11) Raise the suspension slings and install the suspension sling safety ties as shown in Appendix A, to the front and rear suspension slings, six to eight inches above the highest point of the load (not shown).

(12) Pad and tape all link assemblies (not shown).

Figure 3-85. Suspension Slings and Safety Ties Installed (Continued)

BUILDING AND POSITIONING PARACHUTE STOWAGE PLATFORM

3-85. Build the parachute stowage platform as shown in Figure 3-18. Position a 85-inch by 17-inch piece of honeycomb on top of the parachute stack. Position the stowage platform on top of the equipment hose box and parachute stack. Lash the parachute stowage platform as shown in Figure 3-86.

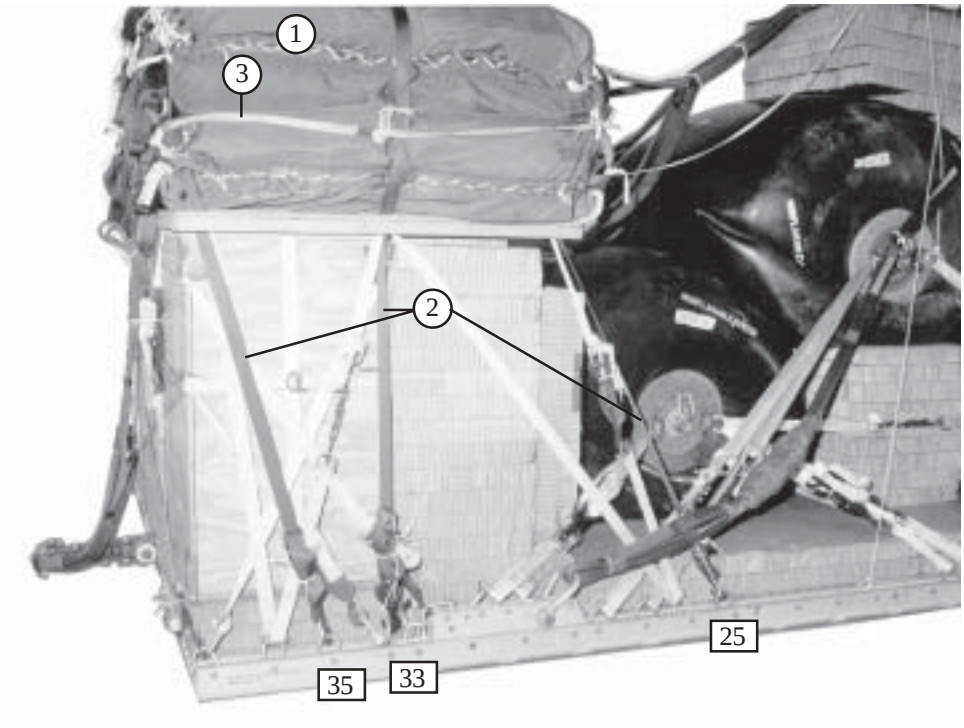


Lashing Number	Tie-down Clevis Number	Instructions
66	36	Route a lashing from clevis 36 through the rear and center right holes in the parachute stowage platform.
67	36A	Route a lashing from clevis 36A through the rear and center left holes in the parachute stowage platform.
68	26	Route a lashing from clevis 26 through the center and front right holes in the parachute stowage platform.
69	26A	Route a lashing from clevis 26A through the center and front left holes in the parachute stowage platform.

Figure 3-86. Parachute Stowage Platform Built and Positioned

PREPARING AND STOWING CARGO PARACHUTES

3-86. Prepare and stow the cargo parachutes as shown in Figure 3-87.



(1) Prepare and stow seven G-11 cargo parachutes according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

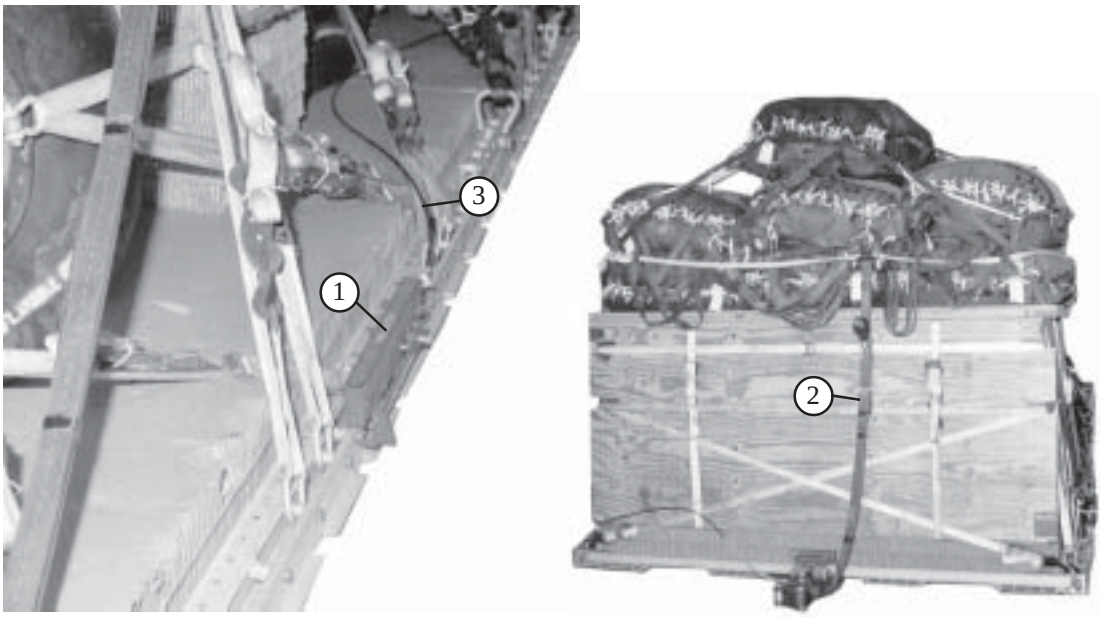
(2) Restrain the parachutes according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 using platform clevises 25, 25A, 33, 33A, 35 and 35A.

(3) Install the multicut parachute release straps according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

Figure 3-87. Cargo Parachutes Prepared and Stowed

INSTALLING THE EXTRACTION SYSTEM

3-87. Install the extraction system as shown in Figure 3-88.



(1) Using the rear holes, install the extraction force transfer coupling (EFTC) according to FM 4-20.102/NASEA SS400-AB-MMO-010/TO 13C7-1-5.

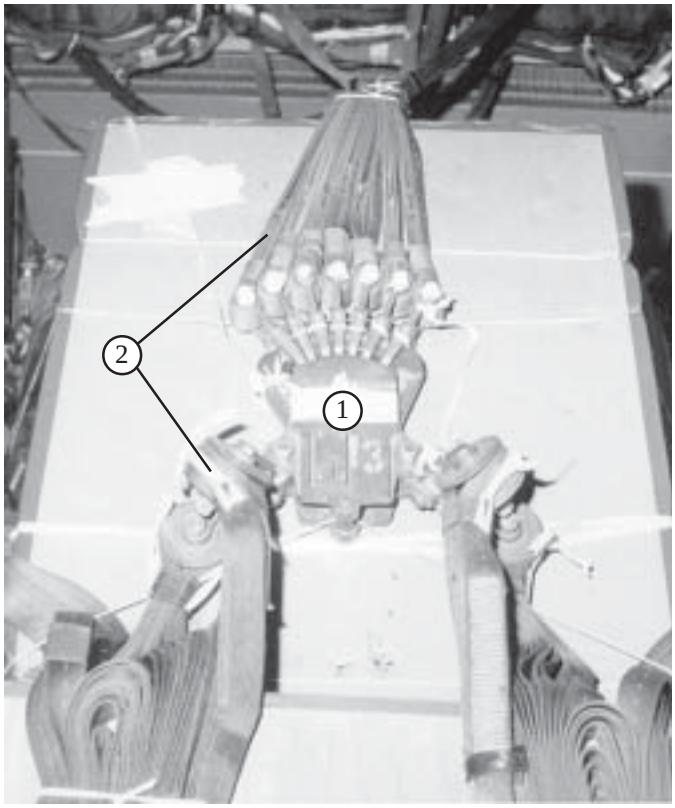
(2) Use a 9-foot (2-loop), type XXVI nylon webbing sling for use as a deployment line.

(3) Using a 28-foot EFTC cable, safety the cable using one turn type I, 1/4-inch cotton webbing.

Figure 3-88. Extraction System Installed

INSTALLING THE PARACHUTE RELEASE SYSTEM

3-88. Install the cargo parachute release as shown in Figure 3-89.



(1) Position the M-2 release on the release platform.

(2) Attach the suspension slings and the riser extensions to the M-2 release and secure release according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

(3) S-fold and tie any slack in the suspension slings with one turn type I, 1/4-inch cotton webbing (not shown).

Figure 3-89. Parachute Release Installed

PLACING EXTRACTION PARACHUTE

3-89. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Rig the extraction line in an extraction line bag according to TM 10-1670-286-20/TO 13C5-2-41. Place the extraction parachute and extraction line on the load for installation in the aircraft.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

3-90. Select and install the provisions for emergency aft restraints according to the emergency aft restraint requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

MARKING RIGGED LOAD

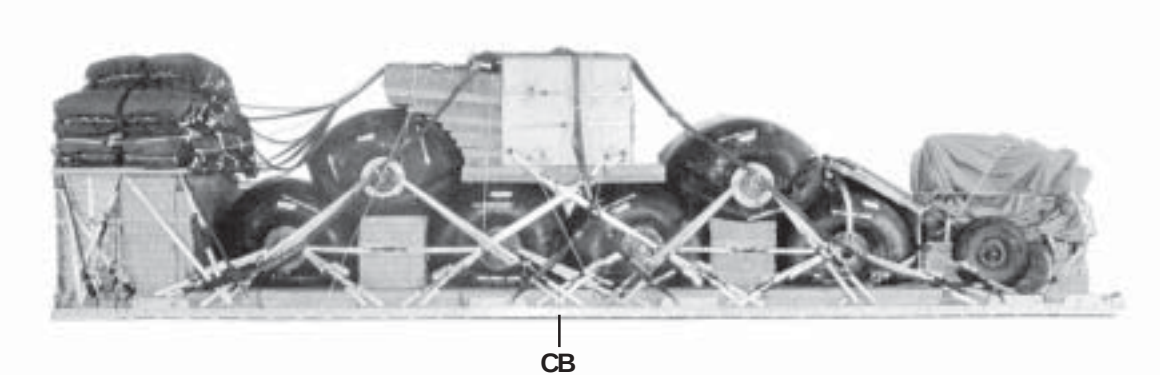
3-91. Mark the rigged load according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 3-90. Complete Shipper's Declaration for Dangerous Goods and affix to the load. If the load varies from the one shown, the weight, height, CB, tipoff curve, and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

3-92. Use the equipment list in Table 3-4 to rig the load shown in Figure 3-90.

CAUTION

Make the final inspection required by FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



RIGGED LOAD DATA

Weight ..... 32,730 pounds

Maximum Weight ..... 35,000 pounds

Height ..... 97 inches

Width ..... 108 inches

Overall Length ..... 411 inches

Overhang: Front (Tongue of pump) ..... 9 inches
Rear (EFTC) ..... 18 inches

Center of Balance (CB) (from the front edge of the platform) ..... 201 inches

Figure 3-90. Six 500-Gallon Drums With Pump and Separator Rigged for Low-Velocity Airdrop

Table 3-4. Equipment Required for Rigging Six 500-Gallon Drums with Pump and Separator

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive paste, 1-gal	As required
1670-01-035-6054	Bridle, extraction line bag (for DES)	1
4030-00-090-5354	Clevis, large	13
4030-00-678-8562	Clevis, medium	4
8305-00-880-8155	Cloth coated, green, 60-inch	As required
4020-00-240-2146	Cord, nylon, type III, 550-lb	As required
1670-01-326-7309	Coupling, airdrop, extraction force transfer w/28-ft	1
1670-00-360-0328	Cover, clevis, large	7
8135-00-664-6958	Cushioning material, packaging, cellulose wadding	As required
1670-00-003-4391	Knife, parachute bag (for DES)	2
1670-01-183-2678	Leaf, extraction line (line bag)(add 1 for DES)	2
	Line, drogue (for DES)	
1670-01-064-4452	60-foot (1-loop), type XXVI	1
	Line, deployment:	
1670-01-062-6304	9-foot (2-loop), type XXVI	1
	Line, extraction:	
1670-01-064-4454	For C-130: 60-foot (6-loop), type XXVI	1
1670-01-468-9178	For C-17: 140-foot (6-loop), type XXVI	1
1670-01-062-6312	For C-141, C-5: 120-foot (6-loop), type XXVI	1
	Link assembly:	
	Two-point:	
5306-00-435-8994	Bolt, 1-in diam, 4-in long	4
5310-00-232-5165	Nut, 1-in, hexagonal	4
1670-00-003-1954	Plate, side, 5 1/2-in	4
5365-00-007-3414	Spacer, large	4
	Two-point: (for DES)	
5306-00-435-8994	Bolt, 1-in diam, 4-in long	2
5310-00-232-5165	Nut, 1-in, hexagonal	2
1670-00-003-1953	Plate, side, 3 3/4-in	2
5365-00-007-3414	Spacer, large	2

Table 3-4. Equipment Required for Rigging Six 500-Gallon Drums with Pump and Separator (Continued)

National Stock Number	Item	Quantity
1670-01-307-1055	Three-point	2
1670-00-006-2752	Four-point	2
1670-01-483-8259	Link, tow release mechanism (H-Block) C-17 aircraft	1
	Lumber:	
5510-00-220-6146	2- by 4-in	As required
5510-00-220-6148	2- by 6-in	As required
5315-00-010-4659	Nail, steel wire, common, 8d	As required
1670-00-753-3928	Pad, energy dissipating, honeycomb, 3- by 36- by 96-in	45 sheets
	Parachute:	
1670-01-016-7841	Cargo, G-11C	7
1670-00-040-8135	Cargo, extraction, 28ft	2
1670-01-063-3715	Drogue, 15ft (for C-17)	1
	Platform, airdrop, type V, 32-foot:	
1670-01-353-8425	Bracket assembly, component, (EFTC)	(1)
1670-01-247-2389	Bracket, suspension	(8)
1670-01-162-2372	Clevis assembly, type V	(88)
1670-01-353-8424	Extraction bracket assembly	(1)
1670-01-162-2381	Link, tandem, suspension link assembly	(2)
5530-00-618-8073	Plywood, 3/4- by 48- by 96-in	4 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
1670-01-062-6305	9-ft (4-loop), type XXVI nylon webbing	2
1670-01-062-6308	16-ft (4-loop), typeXXVI nylon webbing	4
	For riser extension:	
1670-01-062-6311	120-ft (2-loop), type XXVI nylon webbing	7

Table 3-4. Equipment Required for Rigging Six 500-Gallon Drums with Pump and Separator (Continued)

National Stock Number	Item	Quantity
7510-00-266-5016	Tape, adhesive, 2-in	As required
7510-00-266-6710	Tape, masking, 2-in	As required
1670-00-937-0271	Tie-down assembly, 15-ft	88
	Webbing:	
8305-00-268-2411	Cotton, 1/4-in, type I	As required
8305-00-082-5752	Nylon, tubular, 1/2-in	As required
8305-00-260-6890	Type X	As required

Chapter 4

Rigging AAFARS For Low-Velocity Airdrop On Type V Platform

SECTION I- RIGGING AAFARS WITH THREE 500-GALLON FUEL DRUMS

DESCRIPTION OF LOAD

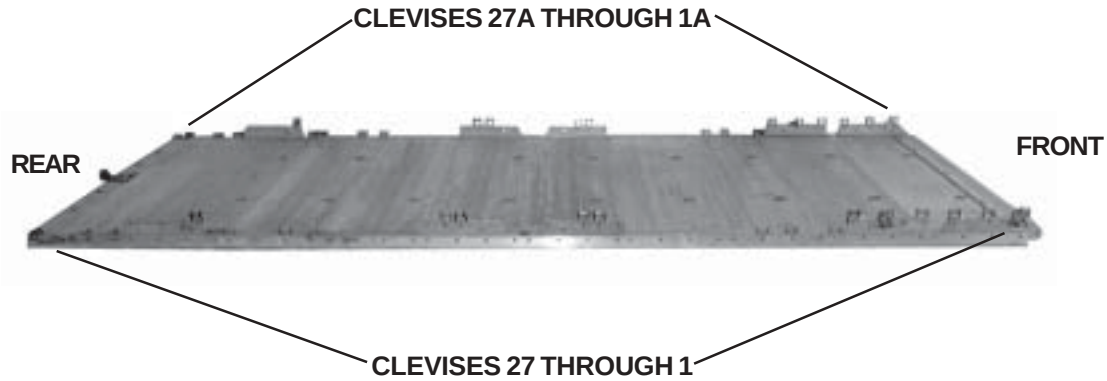
4-1. The Advanced Aviation Forward Area Refueling System (AAFARS) is rigged on a 20-foot type V platform with four G-11 cargo parachutes. The AAFARS is designed for forward area refueling of up to four aircraft at a time with a minimum of 55 GPM. There are three collapsible fuel drums as an accompanying load. Each drum is filled with 432 gallons of liquid. When empty, each drum weighs 250 pounds and is 62 inches long and 53 inches in diameter. The total rigged overall length is 258 inches. Width is 108 inches. Height is 88 inches. Center of balance is 121 inches.

Note: 1. For drums filled with liquid other than gasoline, use Table 1-1 to recompute the weight.
2. If the load varies from the one shown, the weight, height, CB, tipoff curve, and parachute requirements must be recomputed.
3. Do not pressurize drums with air.

PREPARING PLATFORM

4-2. Prepare a 20-foot type V airdrop platform using two tandem links, eight suspension brackets and 54 tie-down clevises as shown in Figure 4-1.

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



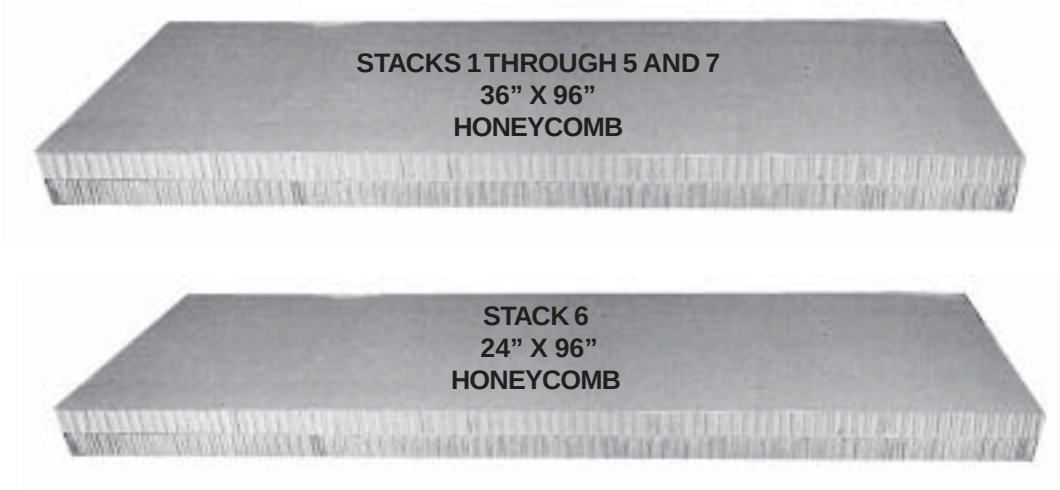
Steps:

1. Inspect, or assemble and inspect, the platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22.
2. Install a tandem link on the front of each platform side rail using holes 1, 2, and 3.
3. Install a suspension bracket to each platform side rail using holes 5, 6, and 7.
4. Install a suspension bracket to each platform side rail using holes 17, 18, and 19.
5. Install a suspension bracket to each platform side rail using holes 22, 23, and 24.
6. Install a suspension bracket to each platform side rail using holes 34, 35, and 36.
7. Install a tie-down clevis to bushings 1 (doubled), 3, and 4 on each front tandem link.
8. Install a tie-down clevis to bushings 1, 3 (doubled), and 4 on each of the first suspension brackets.
9. Install a tie-down clevis to bushings 2 and 3 of each of the second suspension brackets.
10. Install a tie-down clevis to bushings 2 and 3 of each of the third suspension brackets.
11. Install a tie-down clevis to bushing 1 (doubled) of each of the fourth suspension brackets.
12. Starting at the front of each platform side rail, install a tie-down clevis to the bushings bolted to holes 8, 10, 11, 29, 30, 32, 33, 37 (doubled), 38 (doubled), and 40 (doubled).
13. Starting at the front of the platform, number the clevises bolted to the right side from 1 through 27 and those bolted to the left side from 1A through 27A.

Figure 4-1. Platform Prepared

PREPARING HONEYCOMB

4-3. Build honeycomb stacks as shown in Figure 4-2.

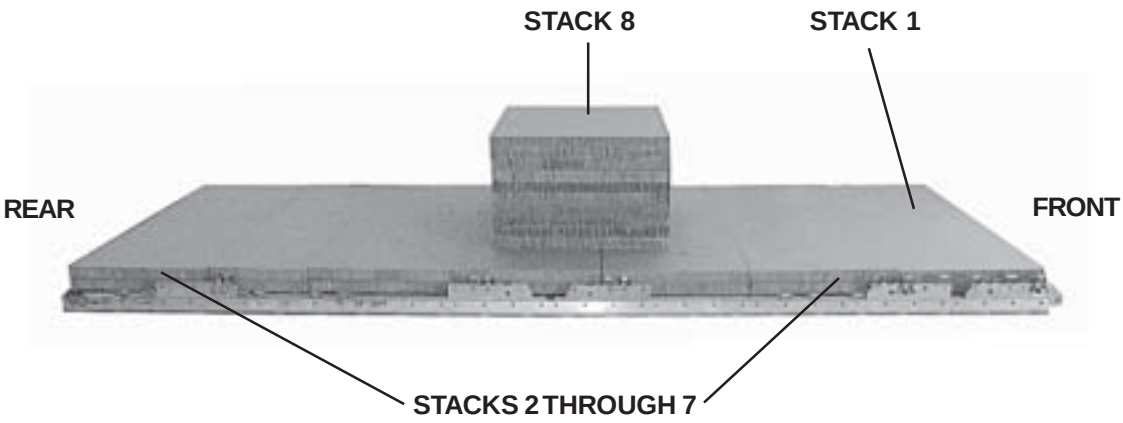


STACK NUMBER	PIECES	WIDTH (INCHES)	LENGTH (INCHES)	MATERIAL	INSTRUCTIONS
1-5	2	36	96	Honeycomb	Do not glue together.
6	2	24	96	Honeycomb	Do not glue together.
7	2	36	96	Honeycomb	Do not glue together.
8	10	36	46	Honeycomb	Lay on floor beside a 19 x 46 piece forming a 46 x 55 base. Alternate the pieces and glue on top of the base forming a stack of 10 layers.
	10	19	46	Honeycomb	See above.

Figure 4-2. Honeycomb Stacks Prepared

POSITIONING HONEYCOMB STACKS

4-4. Position honeycomb stacks as shown in Figure 4-3.



1. Position stack 1 on the front edge of the platform and centered.
2. Position stacks 2 through 7 flush on the rear edge of stack 1. Place them flush with each other.
3. Position stack 8 centered left to right and 90 inches from the front edge of the platform. Ensure the 46 inch length is aligned with the side rails and the 55 inch length is across the platform.

Figure 4-3. Honeycomb Stacks Positioned

BUILDING THE EQUIPMENT BOXES

4-5. Build the front and rear equipment boxes as shown in Figures 4-4 and 4-5.

a. Build the front equipment box using 16d nails and as shown in Figure 4-4.

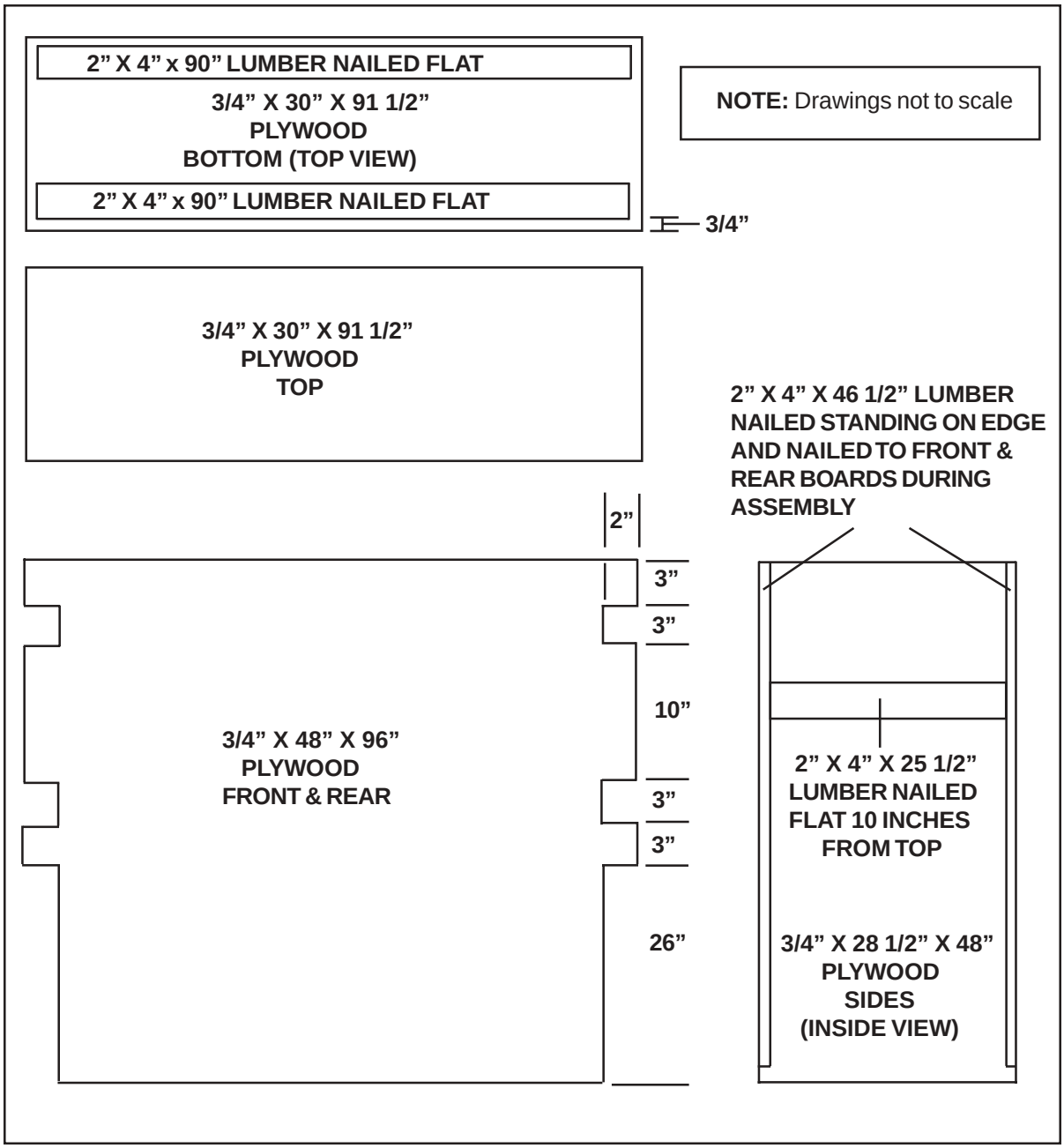


Figure 4-4. Front Equipment Box Built

b. Build the rear equipment box using 16d nails and as shown in Figure 4-5.

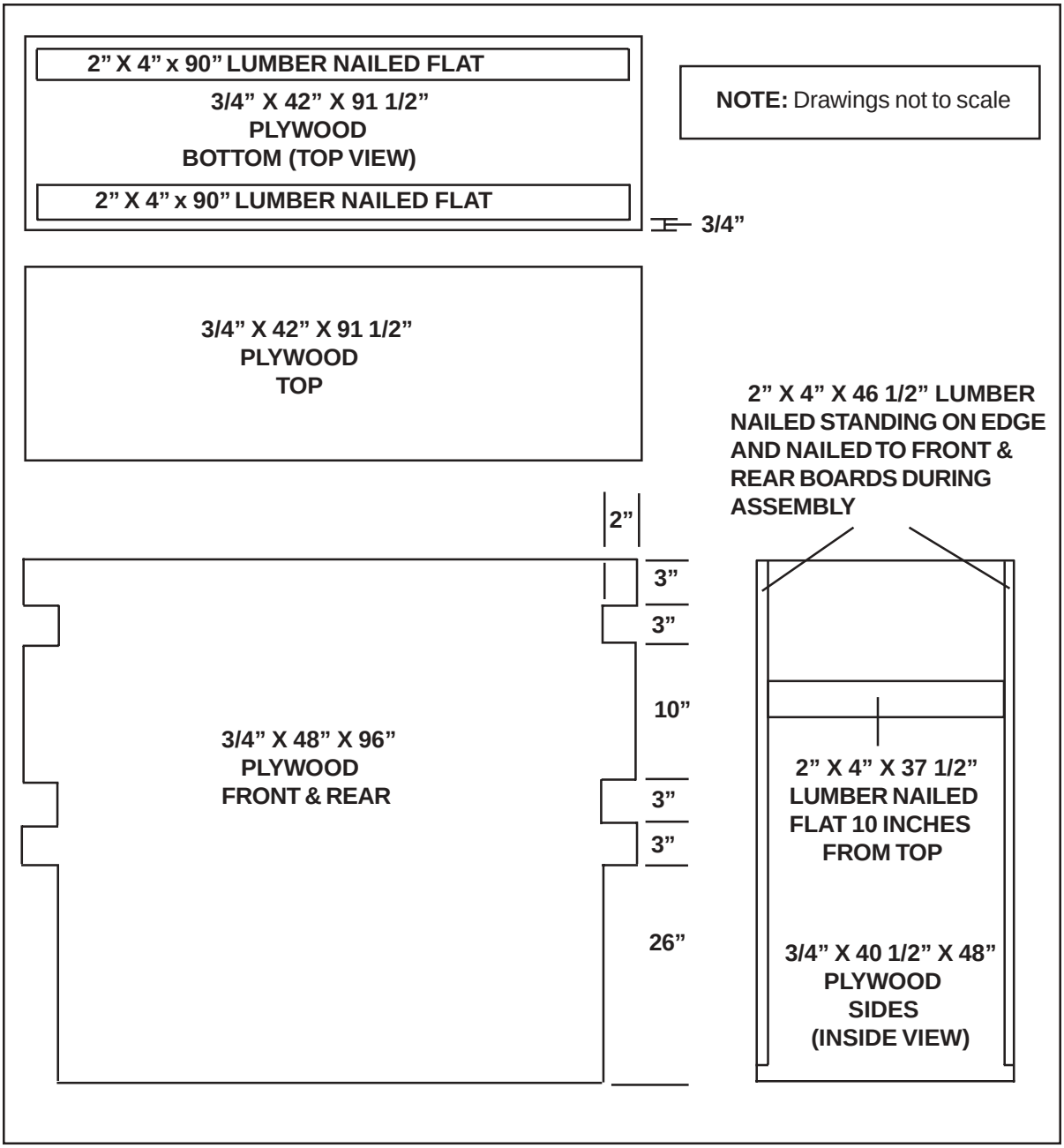


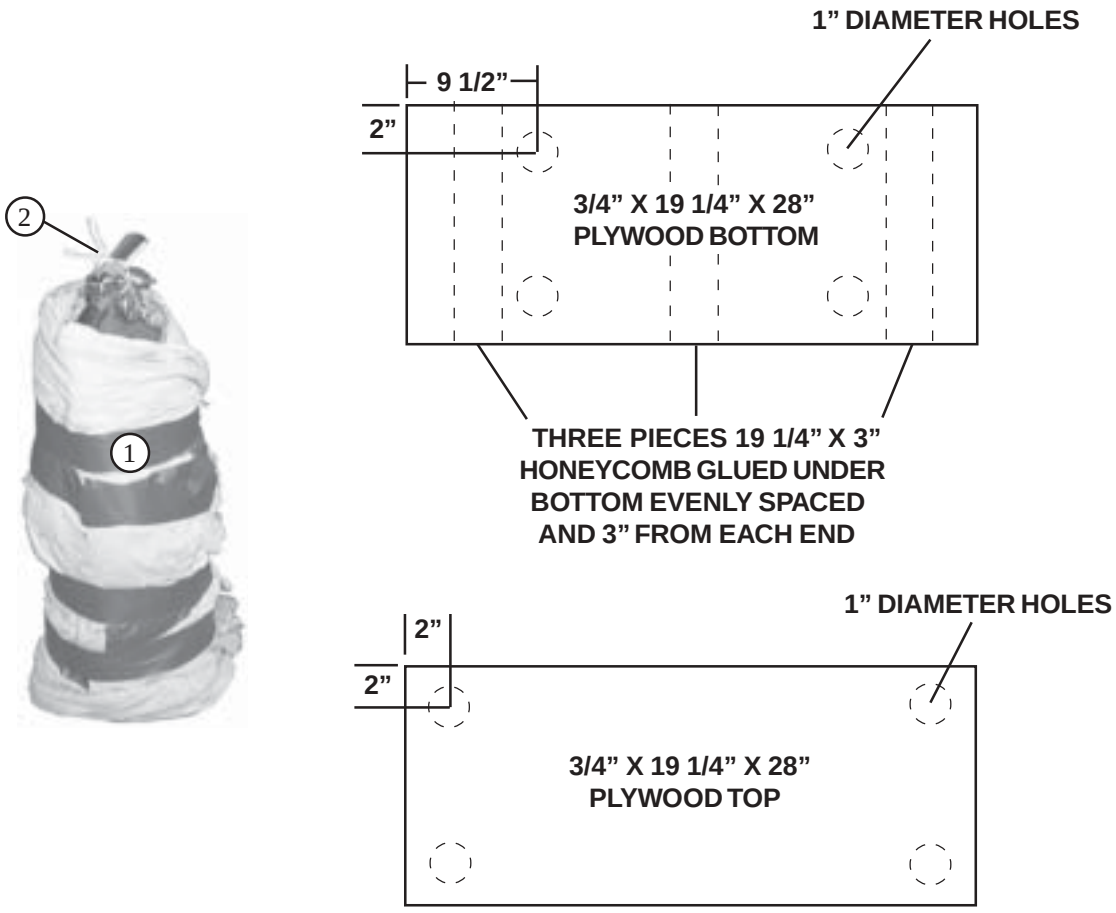
Figure 4-5. Rear Equipment Box Built

PREPARING EQUIPMENT FOR EQUIPMENT BOXES

4-6. Prepare the equipment for the equipment boxes as shown in Figures 4-6 through 4-12.

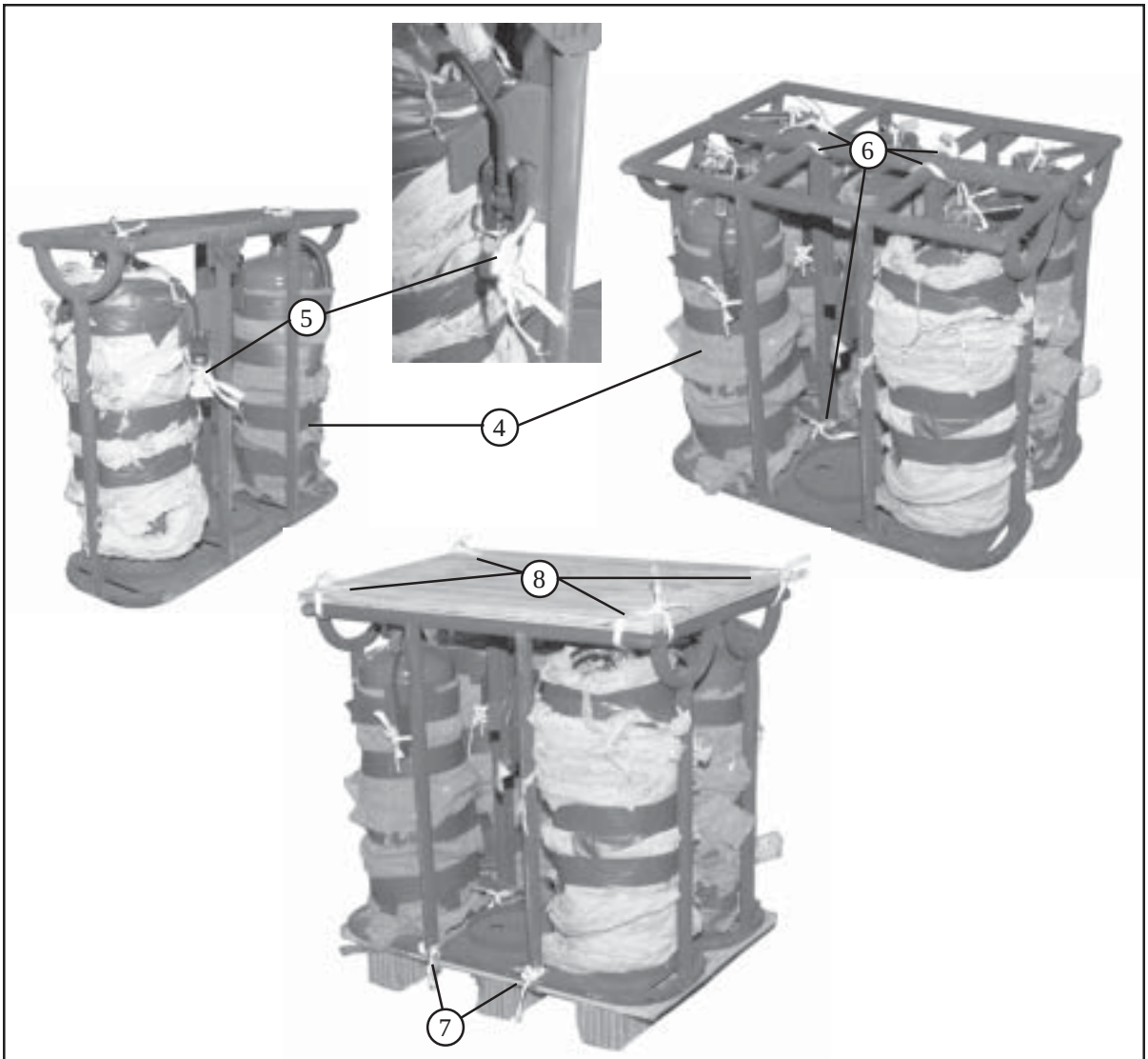
a. Prepare and secure five fire extinguishers as shown in Figure 4-6.

NOTE: Drawings not to scale



1. Wrap cellulose wadding around the five fire extinguishers and tape.
2. Secure the pull handles with 1/4-inch cotton webbing.
3. Cut the honeycomb and plywood for the fire extinguisher guard according to diagram above.

Figure 4-6. Fire Extinguishers Prepared



(4) Place the five fire extinguishers in the racks. Place three in one rack and two in the other rack.

(5) Lock the safety latches and secure them with 1/2-inch tubular nylon webbing.

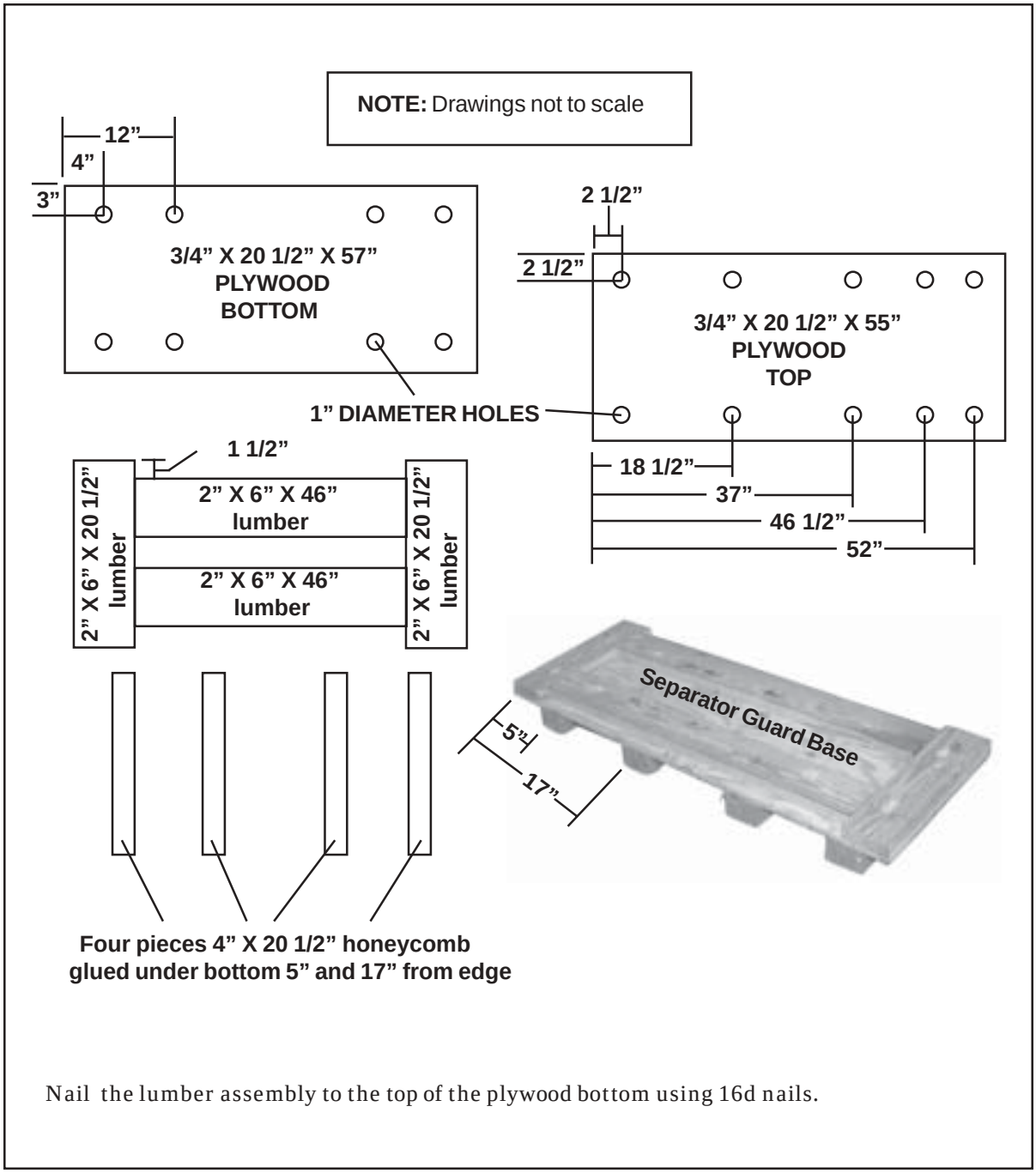
(6) Tie the racks together at two points each with 1/2-inch tubular nylon webbing on the top and bottom rails.

(7) Position the racks on the bottom piece of plywood and honeycomb and secure them with 1/2-inch tubular nylon webbing using the 1-inch holes and inside rails.

(8) Place the top piece of plywood on the racks and secure it with 1/2-inch tubular nylon webbing using the 1-inch hole and the outside rails.

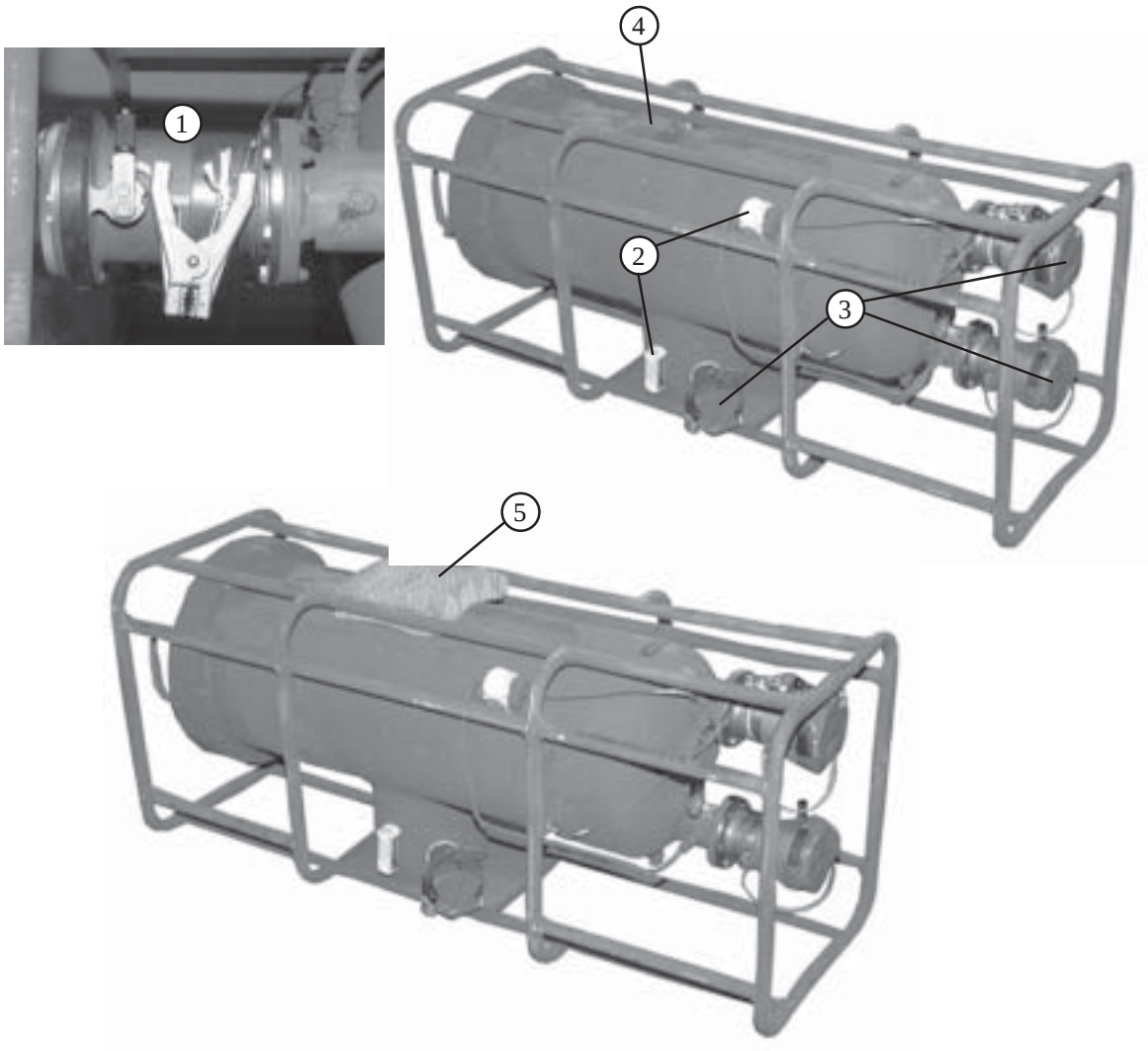
Figure 4-6. Fire Extinguishers Prepared (Continued)

b. Prepare and secure the filter separator as shown in Figure 4-7.



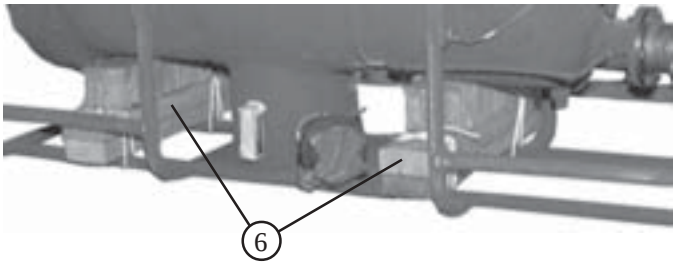
Nail the lumber assembly to the top of the plywood bottom using 16d nails.

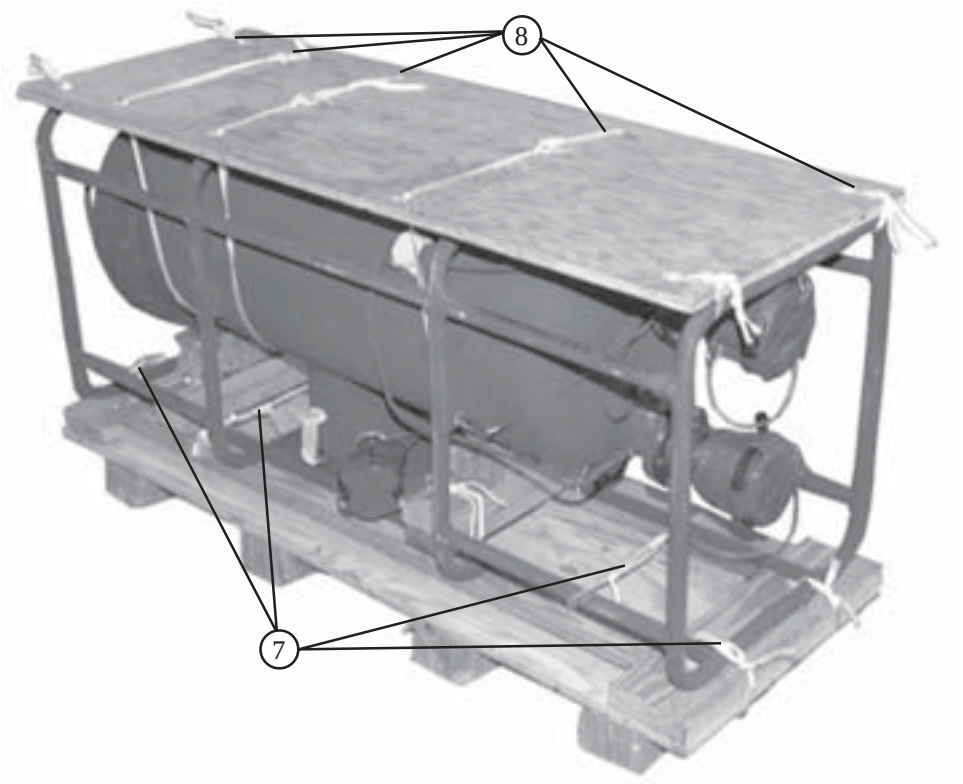
Figure 4-7. Filter Separator Secured



1. Wrap the ground wire around the outlet tube and secure with 1/4-inch cotton webbing.
2. Place masking tape over all gauges.
3. Place cloth-backed tape over all valve caps.
4. Place cloth-backed tape over relief valve.
5. Cut a 9-inch by 9-inch piece of honeycomb. Cut its thickness to 1 1/2 inches and place over relief valve.

Figure 4-7. Filter Separator Secured (Continued)





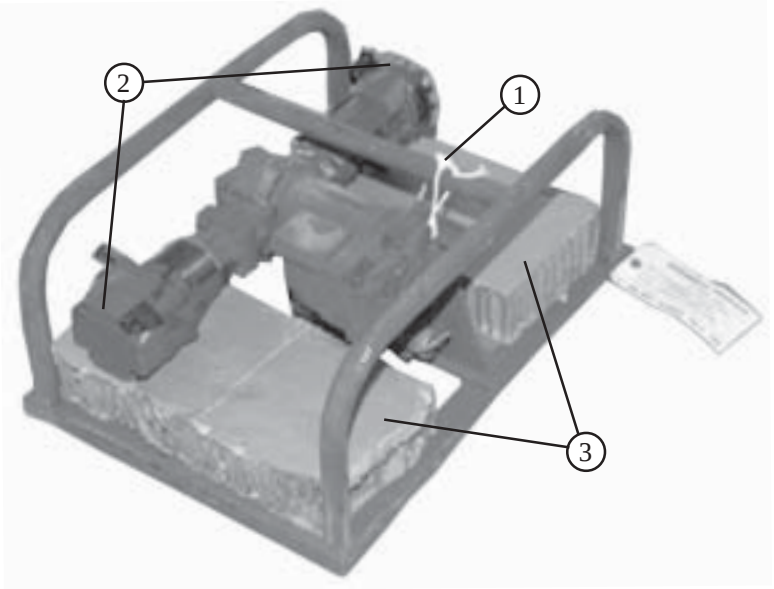
(6) Cut four pieces of 2-inch by 4-inch by 17 1/4-inch lumber and two pieces of 3 1/2-inch by 12-inch honeycomb. Nail two pieces of lumber together and glue one piece of honeycomb on top forming a support for the separator. Repeat forming another support. Place them on the rails and under the separator tank. Secure them with type III nylon cord.

(7) Place the separator on the base and secure with 1/2-inch tubular nylon webbing. Route the webbing over both rails using the inside 1 inch holes and around the rail using the outside 1 inch holes.

(8) Place the top plywood on the separator and secure with 1/2-inch tubular nylon webbing. Route the webbing around the tank using the inside 1 inch holes. Ensure routing is under all tubes and around the rails using the outside 1 inch holes.

Figure 4-7. Filter Separator Secured (Continued)

c. Prepare and secure the explosion-proof motor as shown in Figure 4-8.



(1) Secure the handle with type III nylon cord.

(2) Place cloth-backed tape over valve motors.

(3) Place an 8-inch by 14-inch piece of honeycomb under each valve.

Figure 4-8. Explosion-Proof Motor Secured

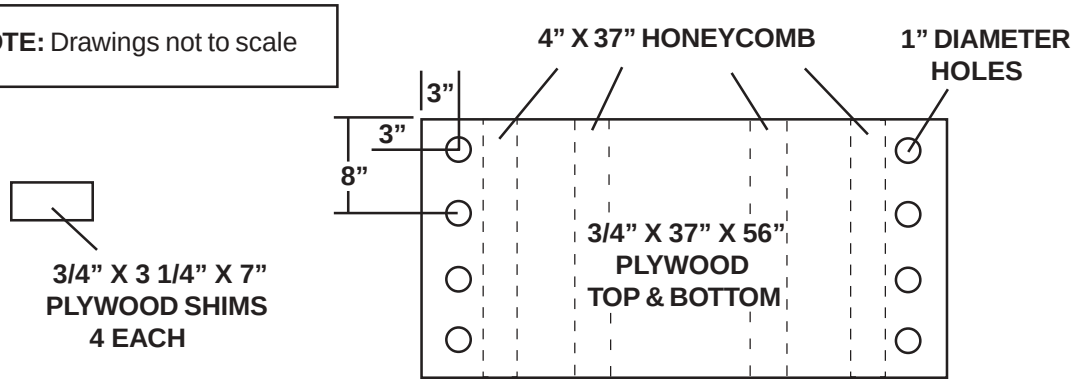
d. Prepare and secure the hose and equipment bags as shown in Figure 4-9.

(1) Place hoses, adapters, rods, and nozzles in their bags according to bag content markings (all bags not shown).

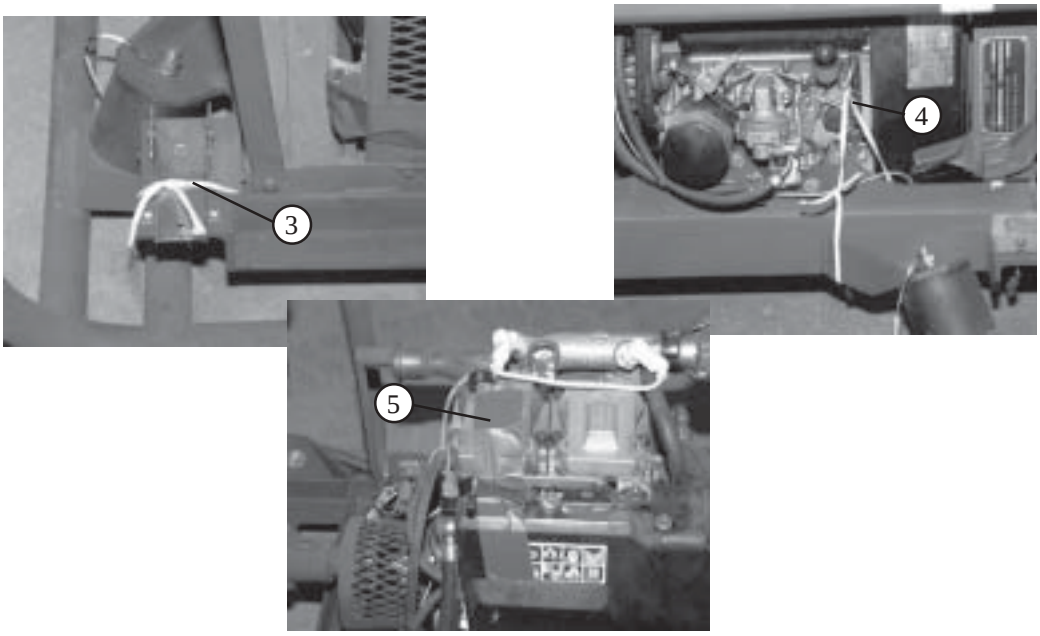
Figure 4-9. Equipment Bags Secured

e. Prepare and secure the pump as shown in Figure 4-10.

NOTE: Drawings not to scale

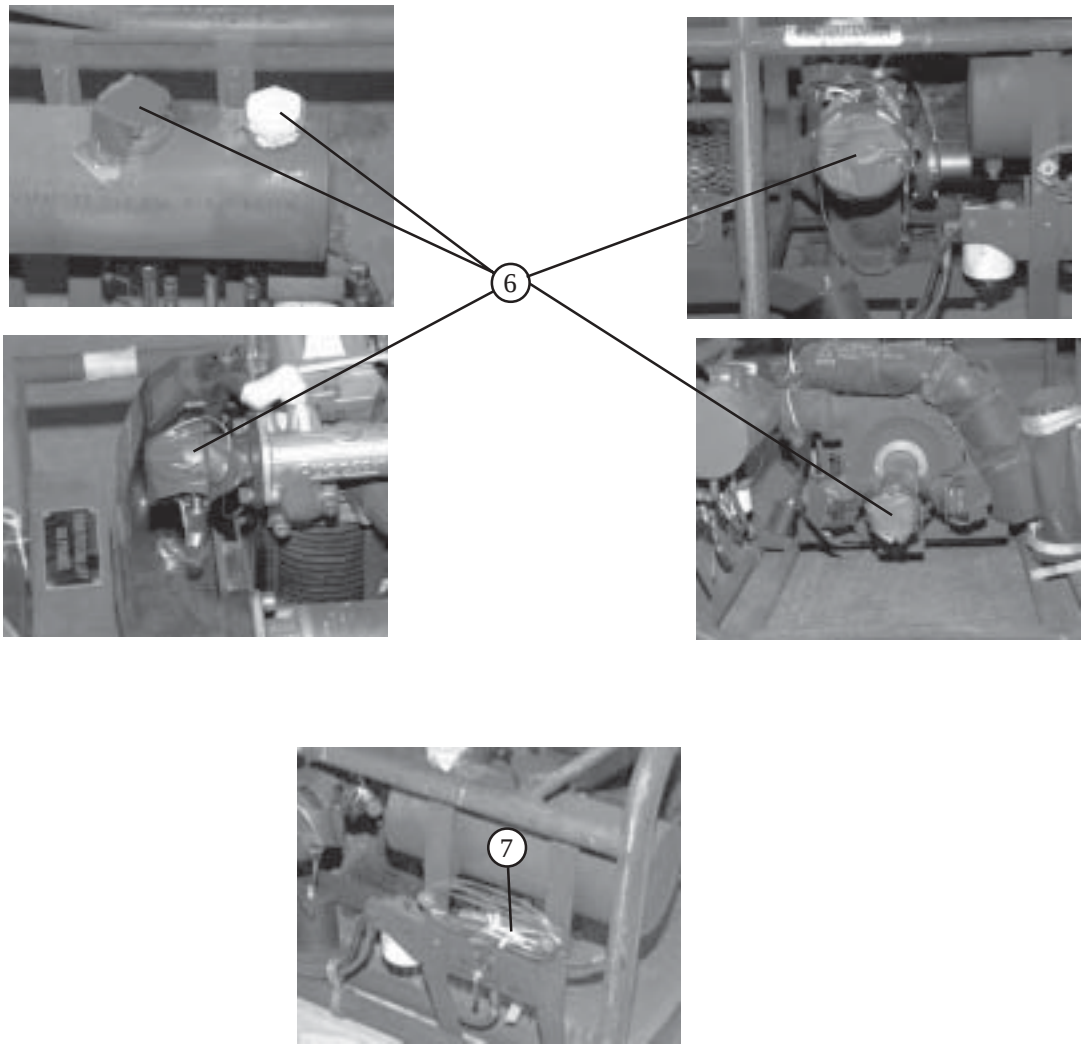


1. Cut the plywood for the pump guard as shown above.
2. Cut four pieces of honeycomb 4 inches by 37 inches and glue evenly spaced to underside of bottom board only.



3. Secure all latches with tape or 1/4-inch cotton webbing.
4. Secure the dipstick with 1/4-inch cotton webbing.
5. Secure the flow control handle with tape.

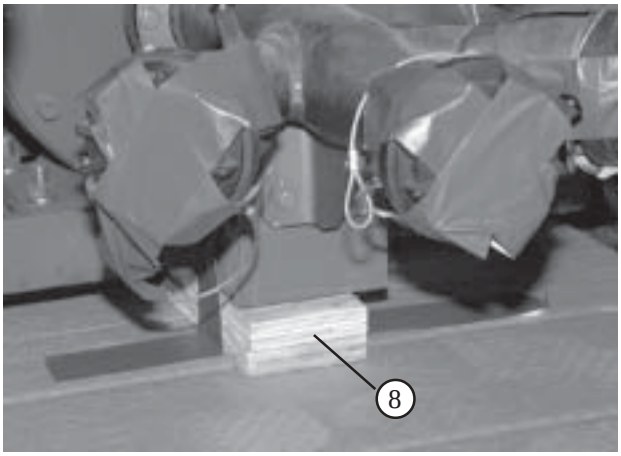
Figure 4-10. Pump Secured

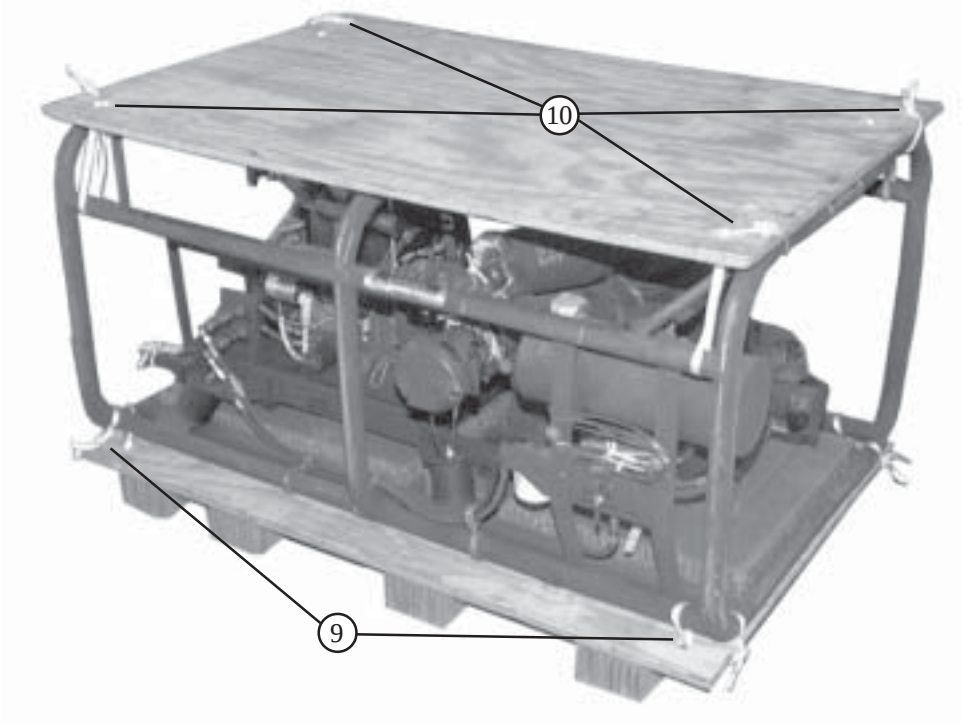


(6) Place cloth-backed tape over all inlets, outlets, and valve caps.

(7) Wrap the ground wire and secure with 1/4-inch cotton webbing.

Figure 4-10. Pump Secured (Continued)





(8) Cut two honeycomb pieces 22 1/2 inches by 26 inches and place inside the frame under the pump. Place the shims under the pump body and tape them to the honeycomb.

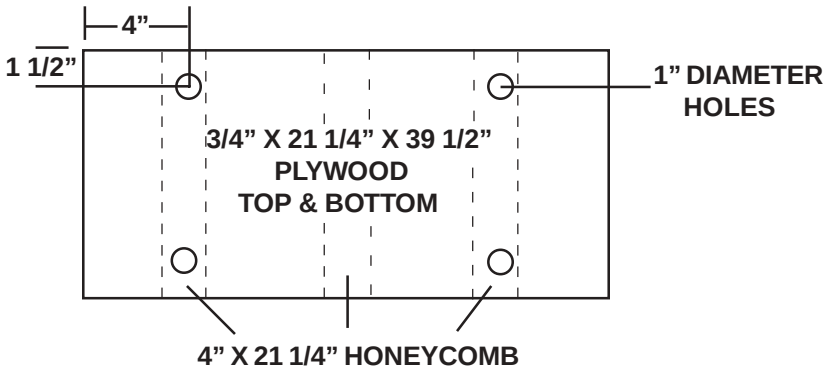
(9) Place the pump onto the base and secure with 1/2-inch tubular nylon webbing. Route the webbing around both rails.

(10) Place the top plywood on the pump and secure with 1/2-inch tubular nylon webbing. Route the webbing around both rails.

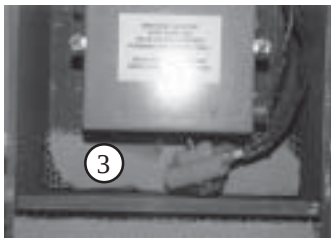
Figure 4-10. Pump Secured (Continued)

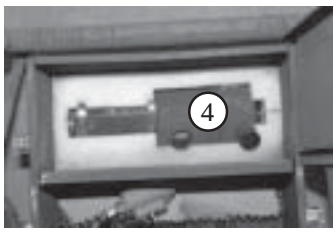
f. Prepare and secure the battery box as shown in Figure 4-11.

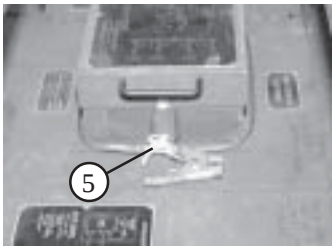
NOTE: Drawings not to scale



1. Cut the plywood for the battery box as shown above.
2. Cut three pieces of honeycomb 4 inches x 21 1/4 inches and glue evenly spaced to underside of bottom board only.

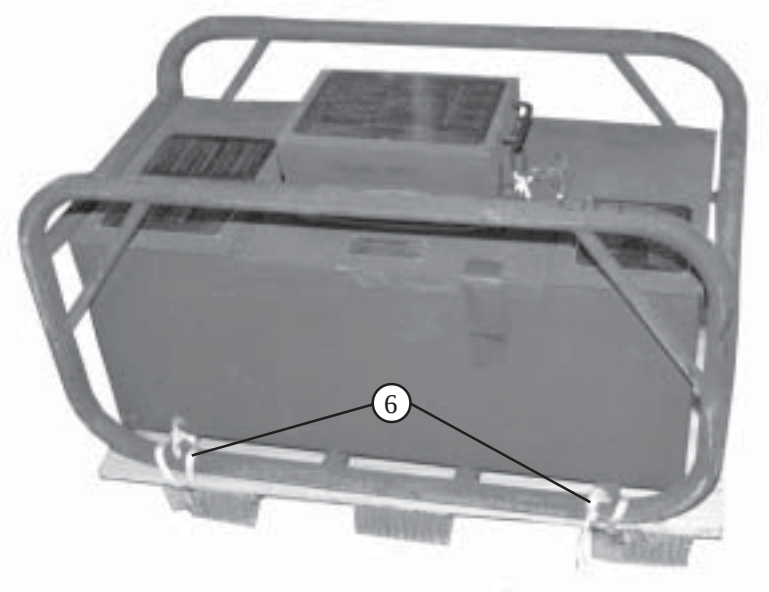




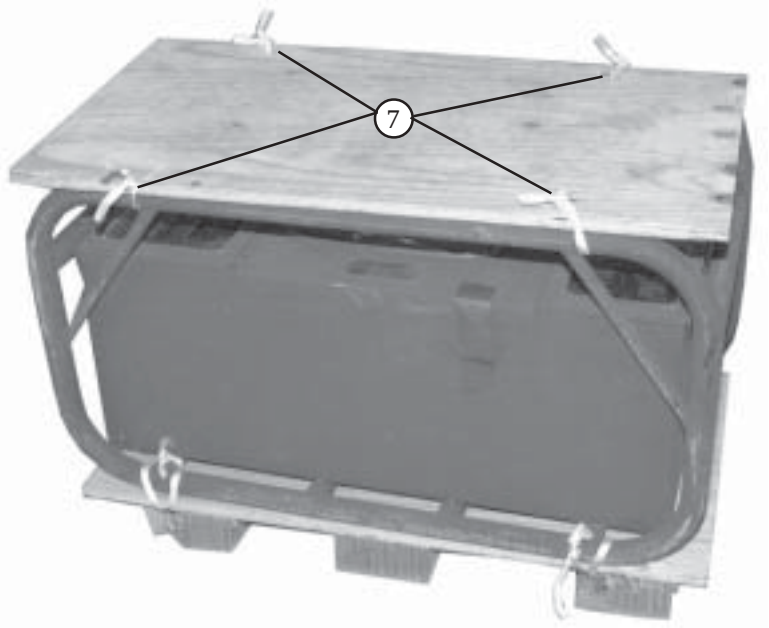


3. Place honeycomb filler against the battery to prevent movement.
4. Ensure the intake filter is in the Styrofoam. Place a piece of honeycomb on top of it to prevent movement.
5. Wrap the grounding wire around the top of the box and secure with 1/4-inch cotton webbing. Close all latches and secure them with tape (not shown).

Figure 4-11. Battery Box Secured



(6) Place the battery box on the base plywood and secure with 1/2-inch tubular nylon webbing around the rails.



(7) Place the plywood top on the battery box and secure it with 1/2-inch tubular nylon webbing around the rails.

Figure 4-11. Battery Box Secured (Continued)

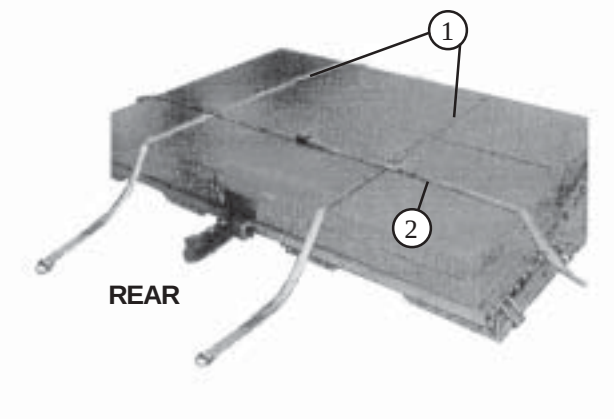
g. Prepare and secure the manuals and toolkit as shown in Figure 4-12.

(1) Secure the manuals and toolkit together using cloth-backed tape.

Figure 4-12. Manuals and Toolkit Secured

POSITIONING EQUIPMENT BOXES

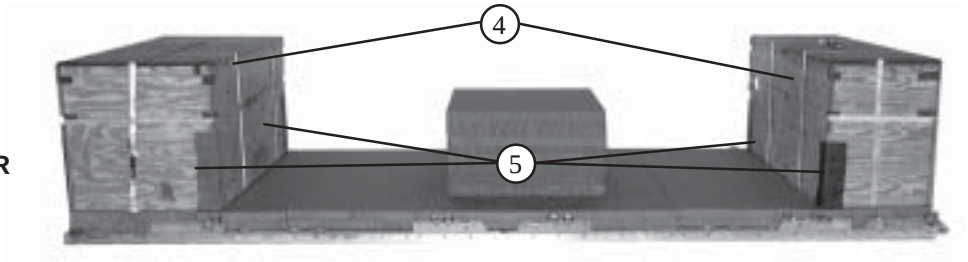
4-7. Position the front and rear equipment boxes on the platform as shown in Figure 4-13.



1. Pre-position two 15-foot lashings lengthwise across the end honeycomb stacks on each end of platform 16-inches from the outside edges (rear edge shown).

2. Pre-position a 30-foot lashing across the width of the rear honeycomb stack 21 inches in from the rear honeycomb edge.

3. Position a 30-foot lashing across the width of the front honeycomb stack 15 inches in from the front honeycomb edge (not shown).



4. Position the front and rear equipment boxes on the edges of the front and rear edges of the honeycomb stacks.

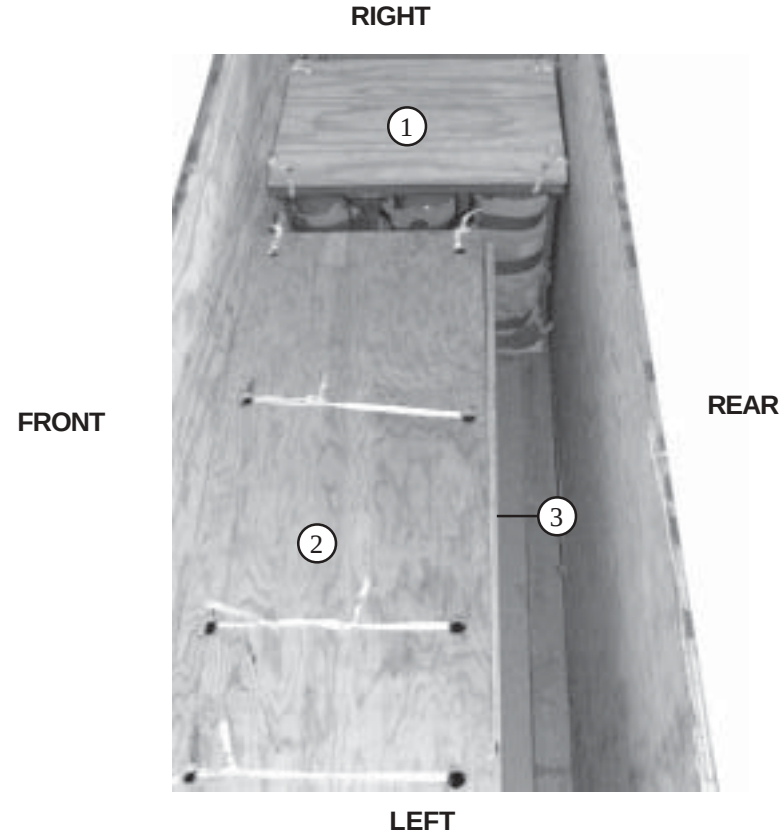
5. Attach four 1/2-inch by 10-inch by 25-inch pieces of felt on the two bottom inboard corners of the boxes as shown above.

Figure 4-13. Equipment Boxes Positioned

POSITIONING AND SECURING EQUIPMENT IN EQUIPMENT BOXES

4-8. Position and secure equipment in equipment boxes as shown in Figures 4-14 and 4-15.

a. Prepare the front equipment box by placing a 22-inch by 82-inch piece of honeycomb in the floor of the box and a 23-inch by 35-inch piece of honeycomb against each end of box below the 2 x 4 lumber. Position equipment in front equipment box as shown in Figure 4-14.

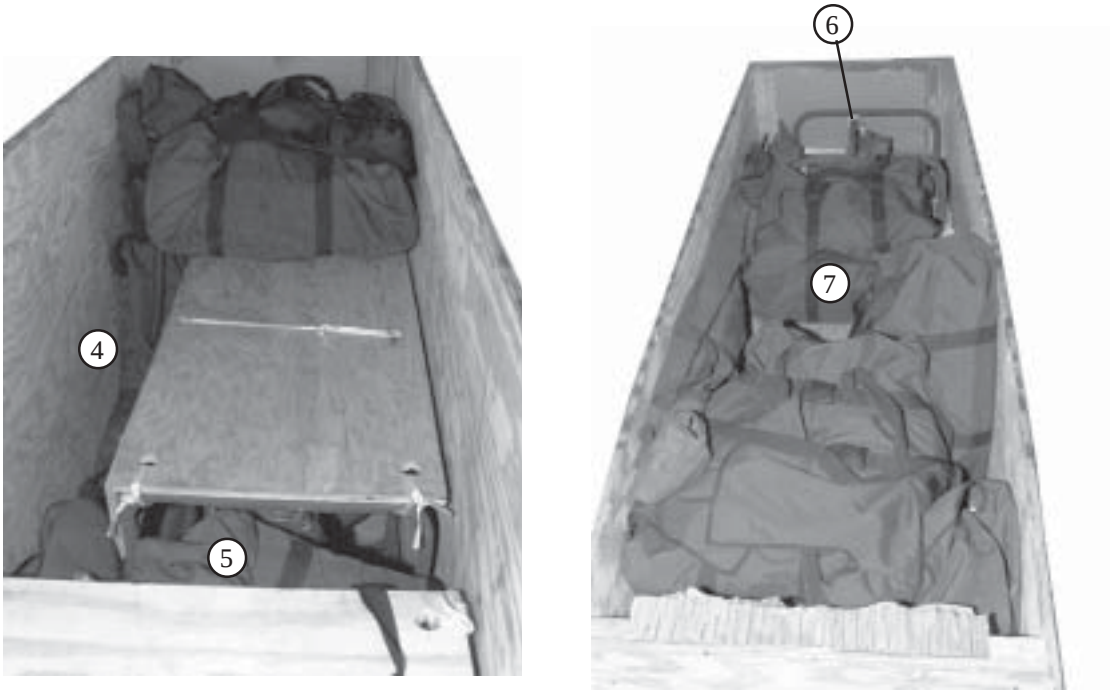


(1) Place the fire extinguishers in the right side of the box with the three extinguishers sides toward the inside.

(2) Place the filter separator in the front left side of the box.

(3) Place a 3/4-inch by 28 1/4-inch by 55-inch piece of plywood against the rear of the filter separator.

Figure 4-14. Equipment Positioned and Secured in Front Box



(4) Place the suction hose bags in the space to the rear of the filter separator.

(5) Place a bag containing one 50-foot by 3-inch and one 6-foot by 3-inch discharge hoses between the filter separator and fire extinguishers.

(6) Place the explosion-proof motor on top of the fire extinguishers.

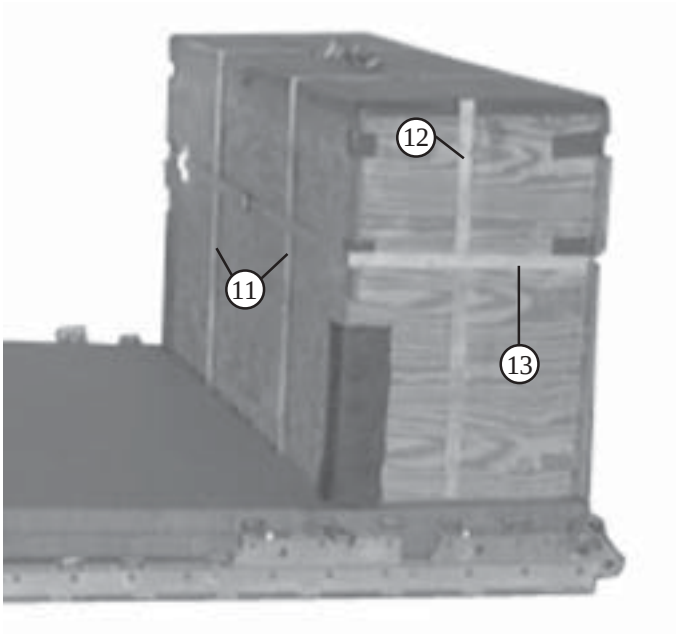
(7) Place the remaining hose bags to the rear and on top of the filter separator.

(8) Place the ground rods on top of the hose bags (not shown).

(9) Fill in remaining space with honeycomb to prevent movement (not shown).

(10) Nail the top on box (not shown).

Figure 4-14. Equipment Positioned and Secured in Front Box (Continued)



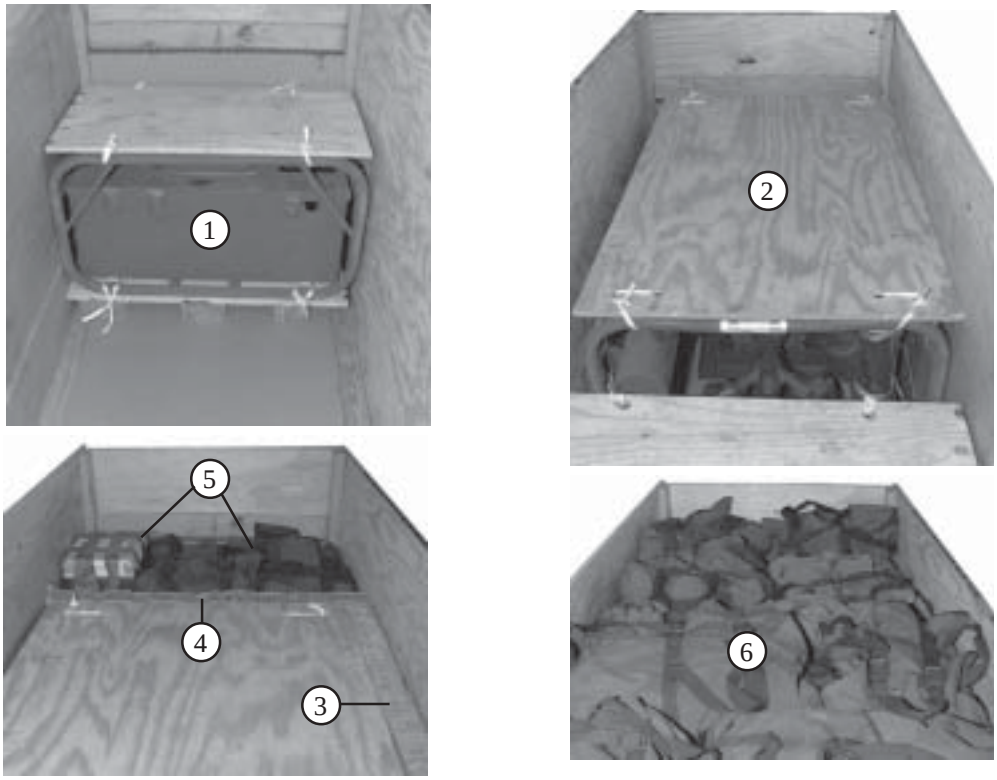
(11) Secure the box from front to rear using the two pre-positioned 15-foot lashings. Load bind at front of the box.

(12) Secure the box from left to right using the pre-positioned 30-foot lashing. Load bind on top of the box.

(13) Route a 30-foot lashing around the box using the bottom cutouts. Load bind on the front of the box.

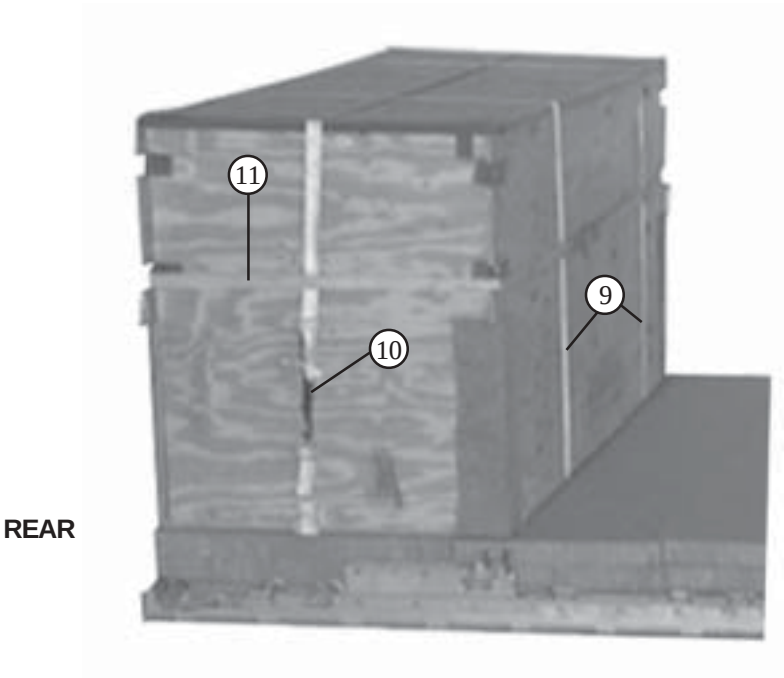
Figure 4-14. Equipment Positioned and Secured in Front Box (Continued)

b. Prepare the rear equipment box by placing a 34-inch by 82-inch piece of honeycomb in the floor of the box and a 37 1/2-inch by 35-inch piece of honeycomb against each end of box below the 2 x 4 lumber. Position equipment in front equipment box as shown in Figure 4-15.



1. Place the battery box in the left side of the box.
2. Place the pump in the right front side of the box.
3. Place a 34-inch by 56-inch piece of honeycomb against the rear pump.
4. Place a 34-inch by 38-inch piece of honeycomb between the pump and the battery box.
5. Place the manuals/toolkit and two bags containing three nozzles each on top of the battery box.
6. Place the remaining bags on top.
7. Place a 36-inch by 90-inch piece of honeycomb on top to prevent movement (not shown).
8. Nail the top on the box (not shown).

Figure 4-15. Equipment Positioned and Secured in Rear Box



(9) Secure the box from front to rear using the two pre-positioned 15-foot lashings. Load bind at rear of the box.

(10) Secure the box from left to right using the pre-positioned 30-foot lashing. Load bind on side of the box.

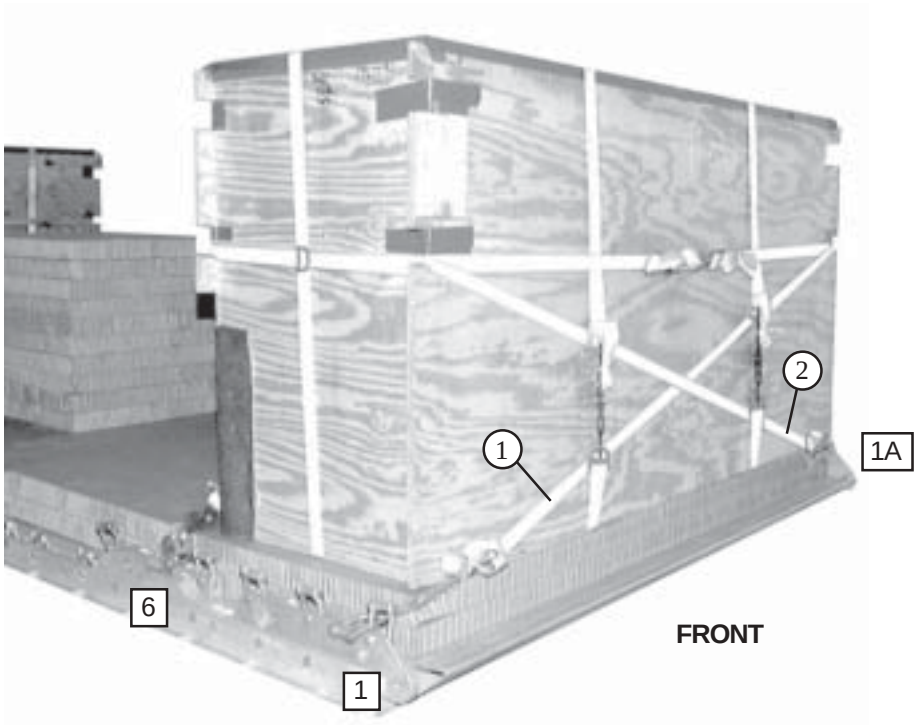
(11) Route a 30-foot lashing around the box using the bottom cutouts. Load bind on the front of the box.

Figure 4-15. Equipment Positioned and Secured in Rear Box (Continued)

LASHING THE EQUIPMENT BOXES TO THE PLATFORM

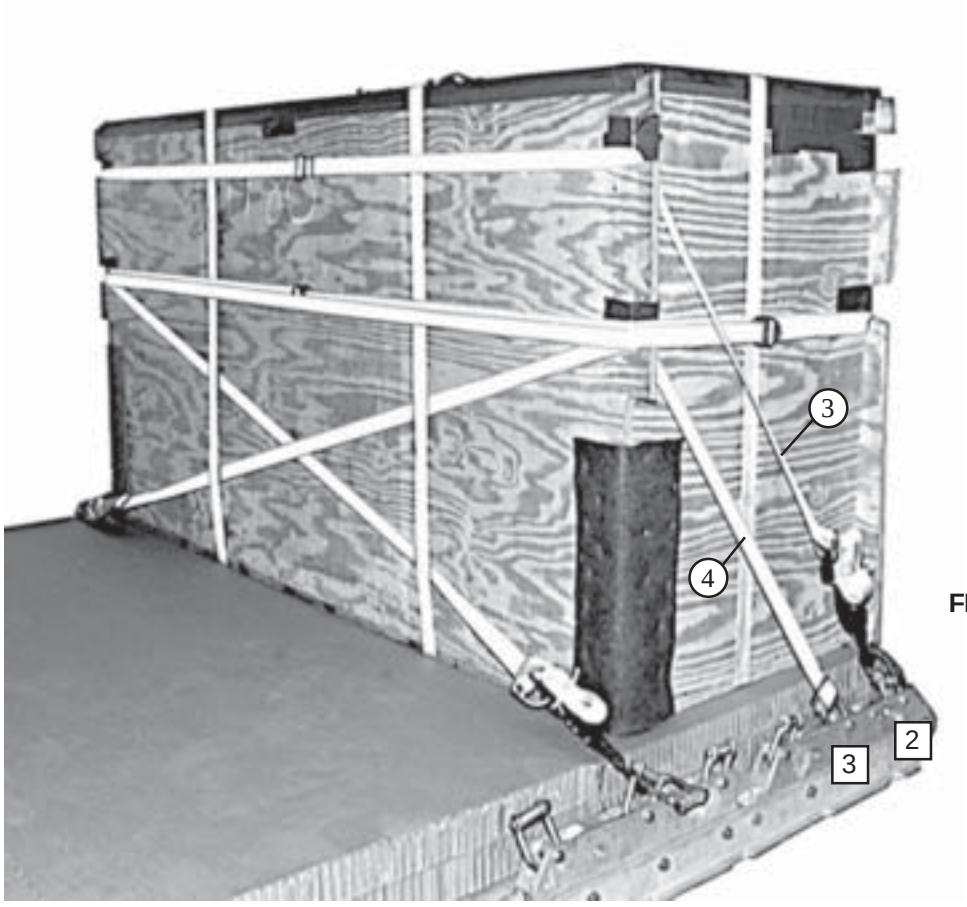
4-9. Lash the equipment boxes as shown in Figures 4-16 through 4-21.

a. Lash the front equipment box to the platform as shown in Figures 4-16 through 4-18.



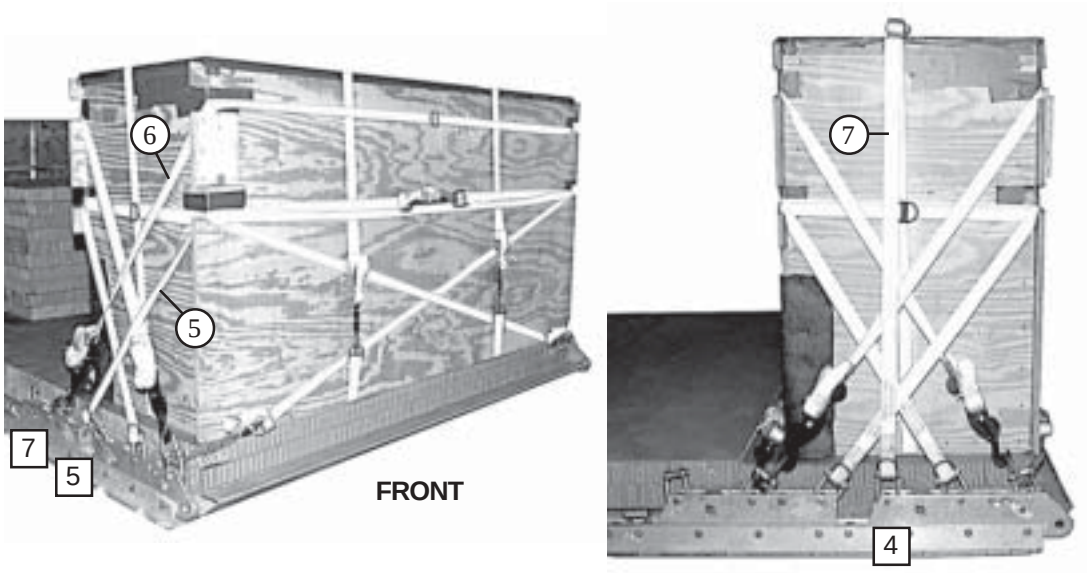
Lashing Number	Tie-down Clevis Number	Instructions
1	1 and 6	Route a 30-foot lashing from clevis 1to the front bottom left cutout, to the rear bottom left cutout, to clevis 6.
2	1A and 6A	Route a 30-foot lashing from clevis 1A to the front bottom right cutout, to the rear bottom right cutout, to clevis 6A.

Figure 4-16. Lashings 1 and 2 Installed



Lashing Number	Tie-down Clevis Number	Instructions
3	2 and 2A	Route a 30-foot lashing through it's own D-ring on clevis 2 to the rear top right cutout, to the rear top left cutout, to clevis 2A.
4	3 and 3A	Route a lashing through it's own D-ring on clevis 3 to the rear bottom left cutout, to the rear bottom right cutout, to clevis 3A.

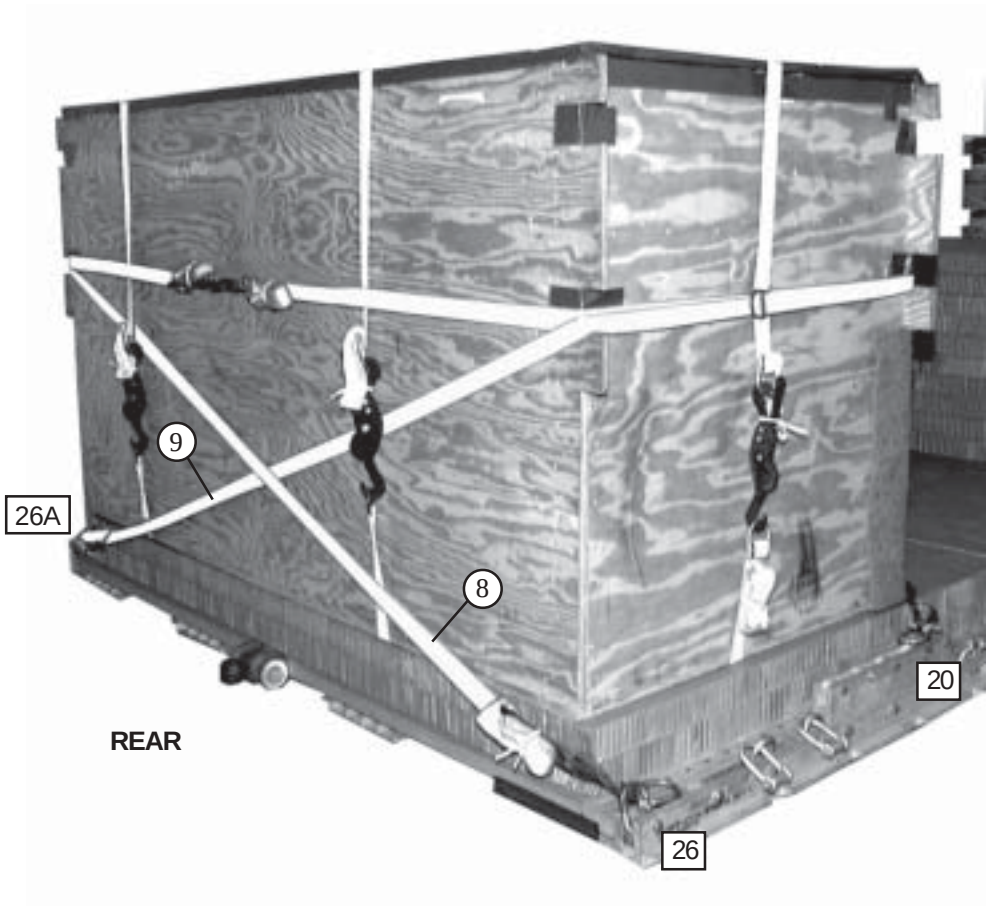
Figure 4-17. Lashings 3 and 4 Installed



Lashing Number	Tie-down Clevis Number	Instructions
5	5 and 5A	Route a lashing through it's own D-ring on clevis 5 to the front bottom right cutout, to the front bottom left cutout, to clevis 5A.
6	7 and 7A	Route a 30-foot lashing from clevis 7 to the front top right cutout, to the front top left cutout, to clevis 7A.
7	4 and 4A	Route a lashing through it's own D-ring on clevis 4, repeat on clevis 4A and load bind them together on top of the box.

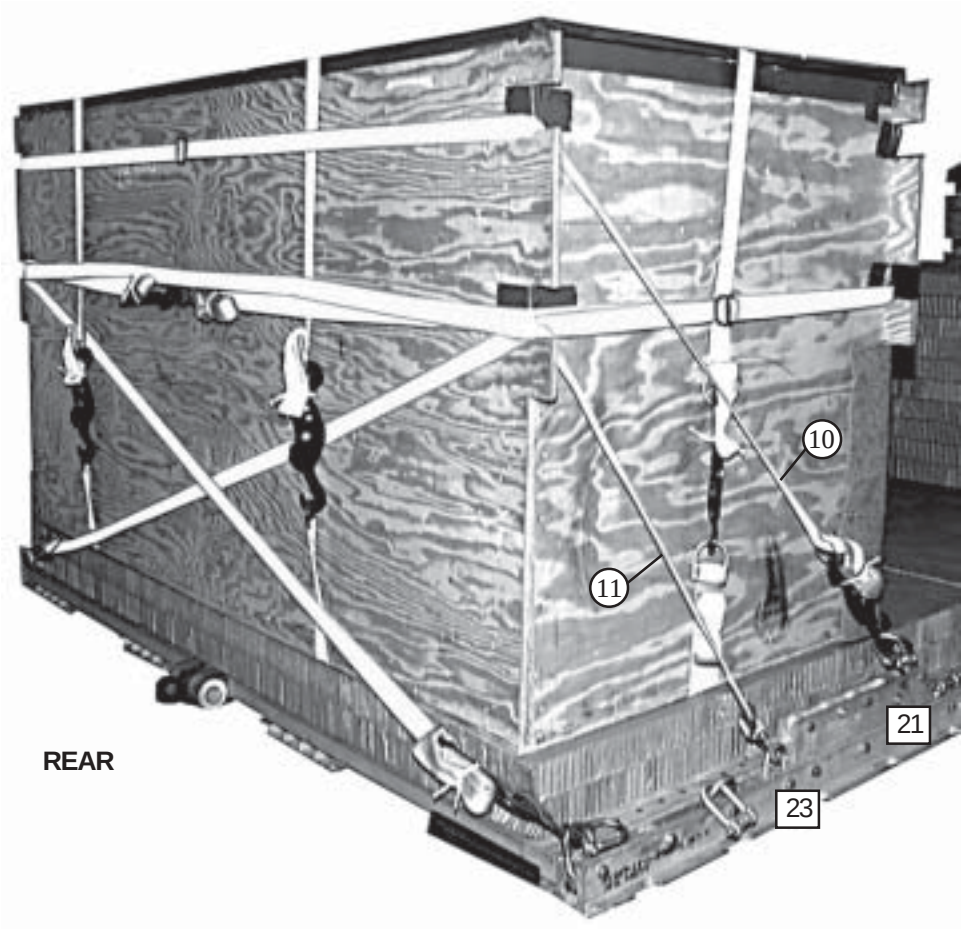
Figure 4-18. Lashings 5 through 7 Installed

b. Lash the rear equipment box to the platform as shown in Figures 4-19 through 4-21.



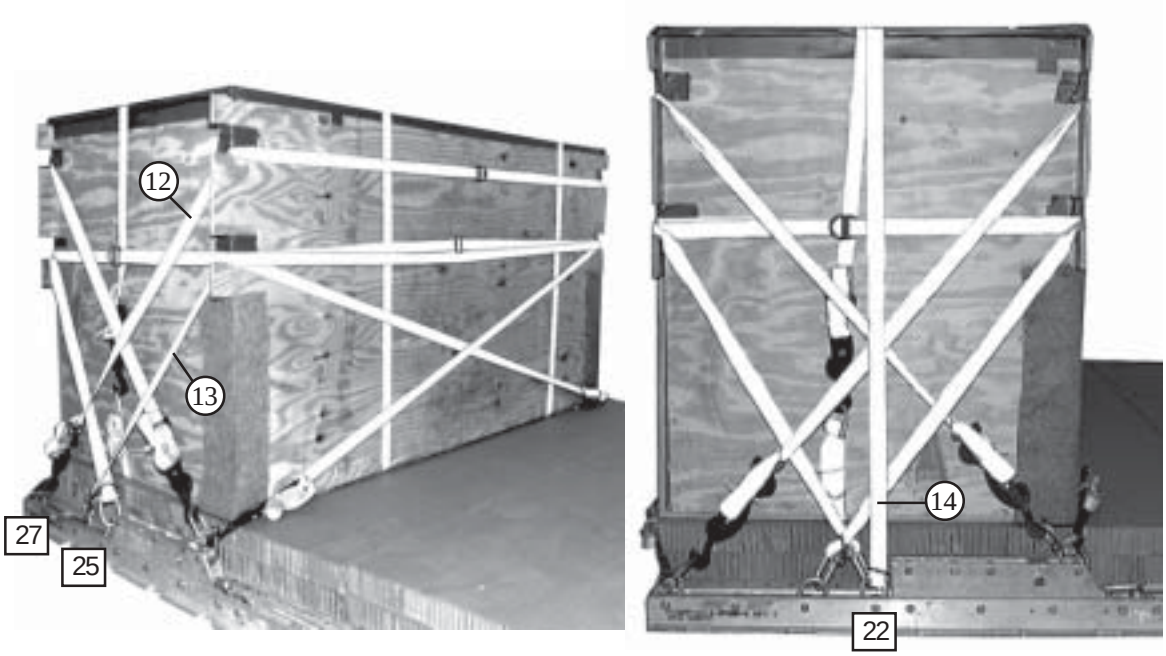
Lashing Number	Tie-down Clevis Number	Instructions
8	20 and 26	Route a 30-foot lashing from clevis 20 to the front lower left cutout, to the rear lower left cutout, to clevis 26.
9	20A and 26A	Route a 30-foot lashing from clevis 20A to the front lower right cutout, to the rear lower right cutout, to clevis 26A.

Figure 4-19. Lashings 8 and 9 Installed



Lashing Number	Tie-down Clevis Number	Instructions
10	21 and 21A	Route a 30-foot lashing from clevis 21 to the rear top right cutout, to the rear top left cutout, to clevis 21A.
11	23 and 23A	Route a lashing through it's own D-ring on clevis 23 to the rear bottom right cutout, to the rear bottom left cutout to clevis 23A.

Figure 4-20. Lashings 10 and 11 Installed

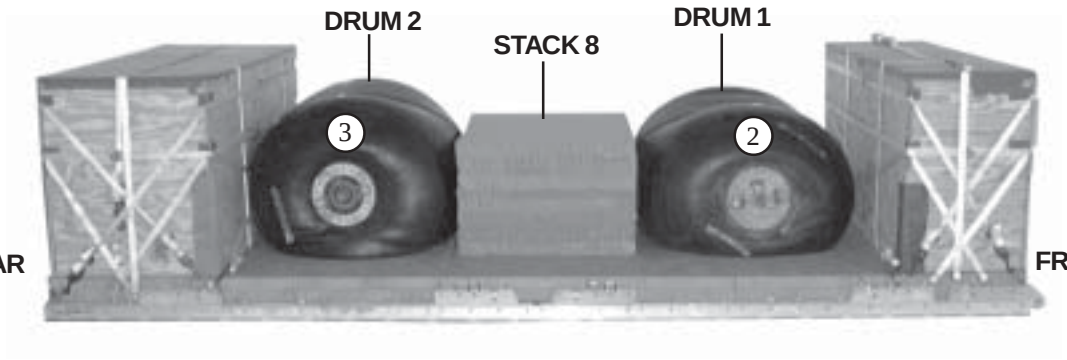


Lashing Number	Tie-down Clevis Number	Instructions
12	27 and 27A	Route a 30-foot lashing from clevis 27 to the front top cutouts, to clevis 27A.
13	25 and 25A	Route a lashing through it's own D-ring on clevis 25 to the front bottom right cutout, to the front bottom left cutout to clevis 25A.
14	22 and 22A	Route a lashing through it's own D-ring on clevis 22, repeat on clevis 22A and load bind on the left side of the box.

Figure 4-21. Lashings 12 Through 14 Installed

POSITIONING AND LASHING THE DRUMS

4-10. Position and lash the fuel drums to the platform as shown in Figures 4-22 through 4-29.



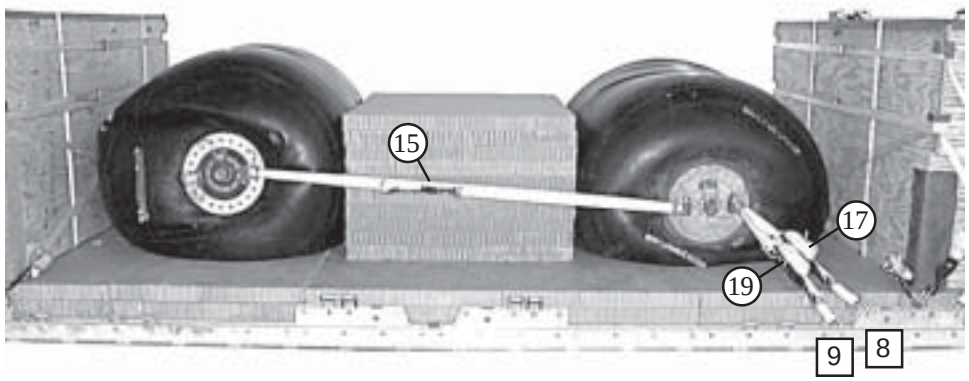
(1) Place a platform clevis on one end of two 9-foot (2-loop), type XXVI nylon webbing slings. Attach a sling to each side of the drum (for lifting purposes only) and remove after the drum is positioned (not shown).

(2) Position drum 1 in front of and against stack 8 and centered on the platform.

(3) Position drum 2 to the rear of and against stack 8 and centered on the platform.

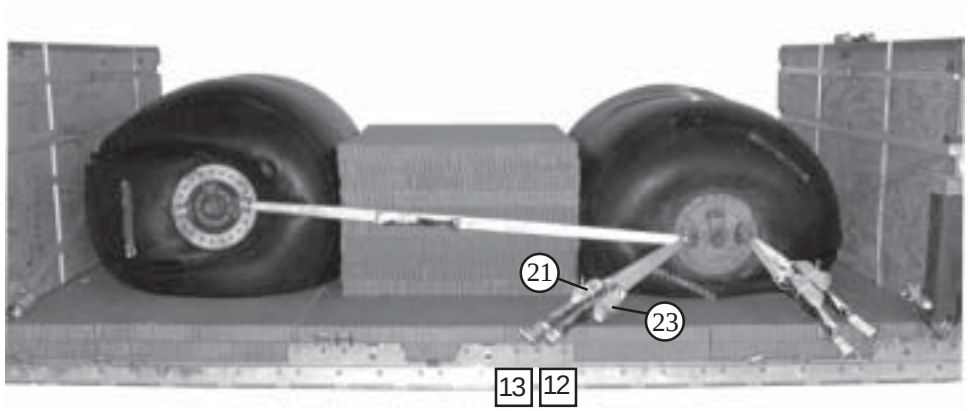
NOTE: There should be a 3 inch to 4 inch gap between the drums and the equipment boxes.

Figure 4-22. Fuel Drums 1 and 2 Positioned



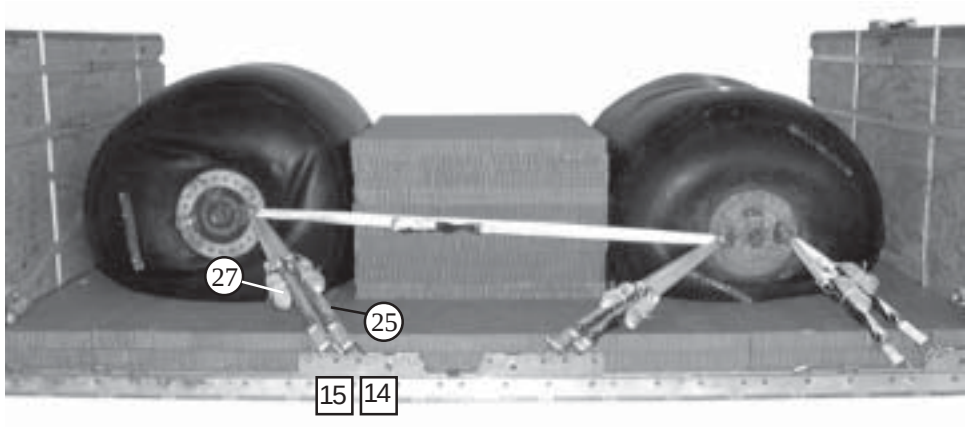
Lashing Number	Tie-down Clevis Number	Instructions
15		Route a lashing from the rear shackle of drum 1 to the front shackle of drum 2 on the right side.
16		Route a lashing from the rear shackle of drum 1 to the front shackle of drum 2 on the left side.
17	8	Route a lashing from clevis 8 to the front right shackle on drum 1.
18	8A	Route a lashing from clevis 8A to the front left shackle on drum 1.
19	9	Route a lashing from clevis 9 to the front right shackle of drum 1.
20	9A	Route a lashing from clevis 9A to the left front shackle of drum 1.

Figure 4-23. Lashings 15 through 20 Installed



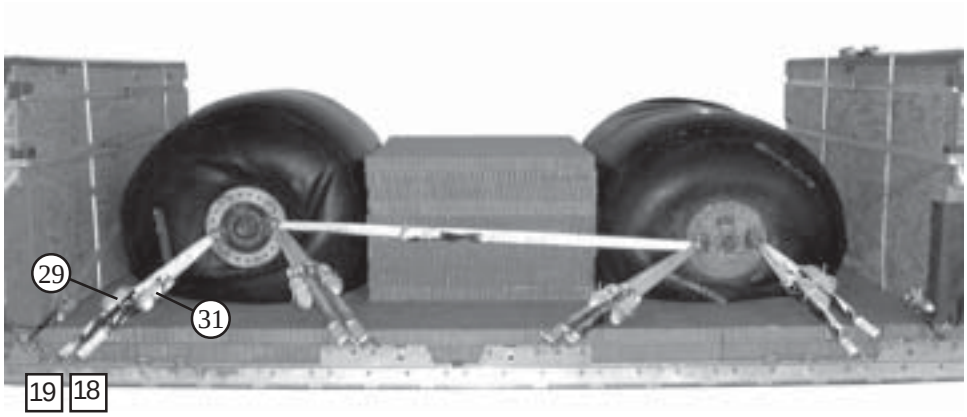
Lashing Number	Tie-down Clevis Number	Instructions
21	13	Route a lashing from clevis 13 to the rear right shackle on drum 1.
22	13A	Route a lashing from clevis 13A to the rear left shackle on drum 1.
23	12	Route a lashing from clevis 12 to the rear right shackle on drum 1.
24	12A	Route a lashing from clevis 12A to the rear left shackle on drum 1.

Figure 4-24. Lashings 21 through 24 Installed



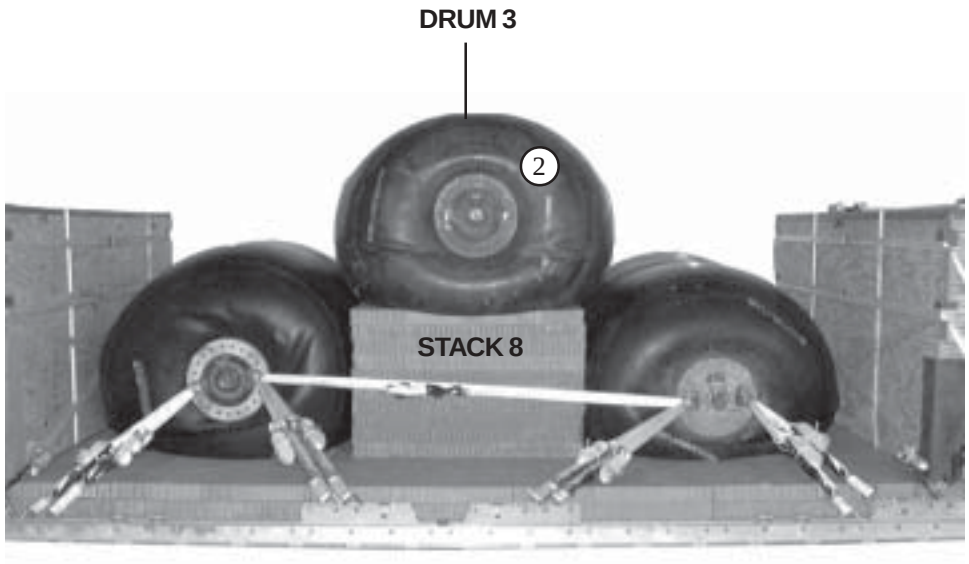
Lashing Number	Tie-down Clevis Number	Instructions
25	14	Route a lashing from clevis 14 to the front right shackle on drum 2.
26	14A	Route a lashing from clevis 14A to the front left shackle on drum 2.
27	15	Route a lashing from clevis 15 to the front right shackle on drum 2.
28	15A	Route a lashing from clevis 15A to the front left shackle on drum 2.

Figure 4-25. Lashings 25 through 28 Installed



Lashing Number	Tie-down Clevis Number	Instructions
29	19	Route a lashing from clevis 19 to the rear right shackle on drum 2.
30	19A	Route a lashing from clevis 19A to the rear left shackle on drum 2.
31	18	Route a lashing from clevis 18 to the rear right shackle on drum 2.
32	18A	Route a lashing from clevis 18A to the rear left shackle on drum 2.

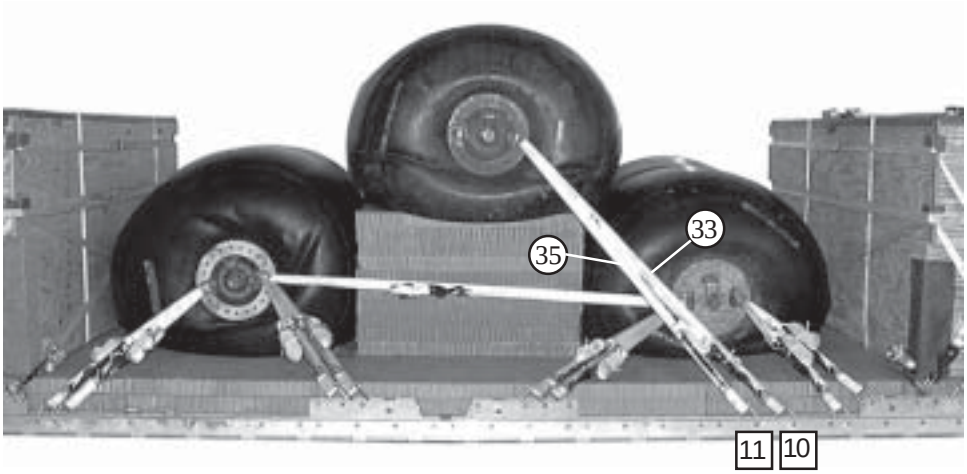
Figure 4-26. Lashings 29 through 32 Installed



(1) Place a platform clevis on one end of two 9-foot (2-loop), type XXVI nylon webbing slings. Attach a sling to each side of the drum (for lifting purposes only) and remove after the drum is positioned (not shown).

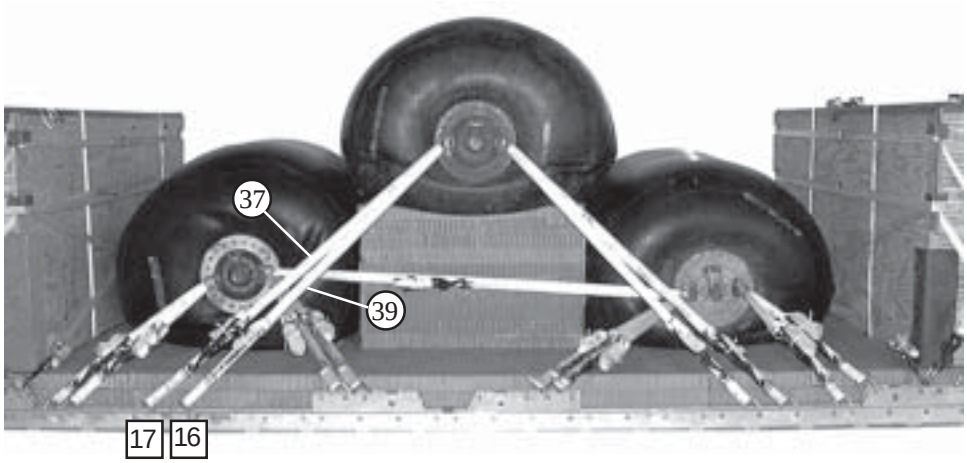
(2) Position drum 3 centered on stack 8.

Figure 4-27. Fuel Drum 3 Positioned



Lashing Number	Tie-down Clevis Number	Instructions
33	10	Route a lashing from clevis 10 to the front right shackle on drum 3.
34	10A	Route a lashing from clevis 10A to the front left shackle on drum 3.
35	11	Route a lashing from clevis 11 to the front right shackle on drum 3.
36	11A	Route a lashing from clevis 11A to the front left shackle on drum 3.

Figure 4-28. Lashings 33 through 36 Installed

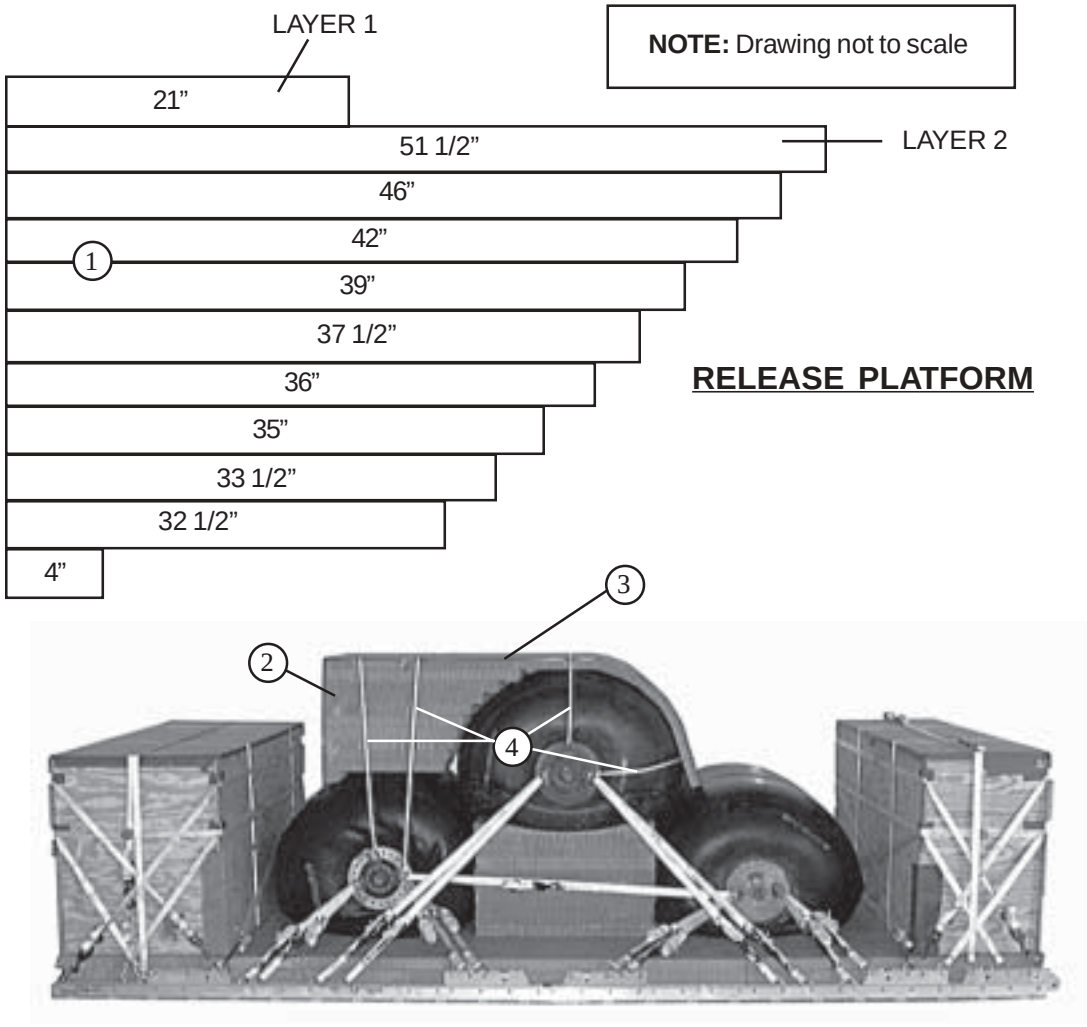


Lashing Number	Tie-down Clevis Number	Instructions
37	17	Route a lashing from clevis 17 to the rear right shackle on drum 3.
38	17A	Route a lashing from clevis 17A to the rear left shackle on drum 3.
39	16	Route a lashing from clevis 16 to the rear right shackle on drum 3.
40	16A	Route a lashing from clevis 16A to the rear left shackle on drum 3.

Figure 4-29. Lashings 37 through 40 Installed

BUILDING AND POSITIONING RELEASE PLATFORM

4-11. Build and position the release platform as shown in Figure 4-30.

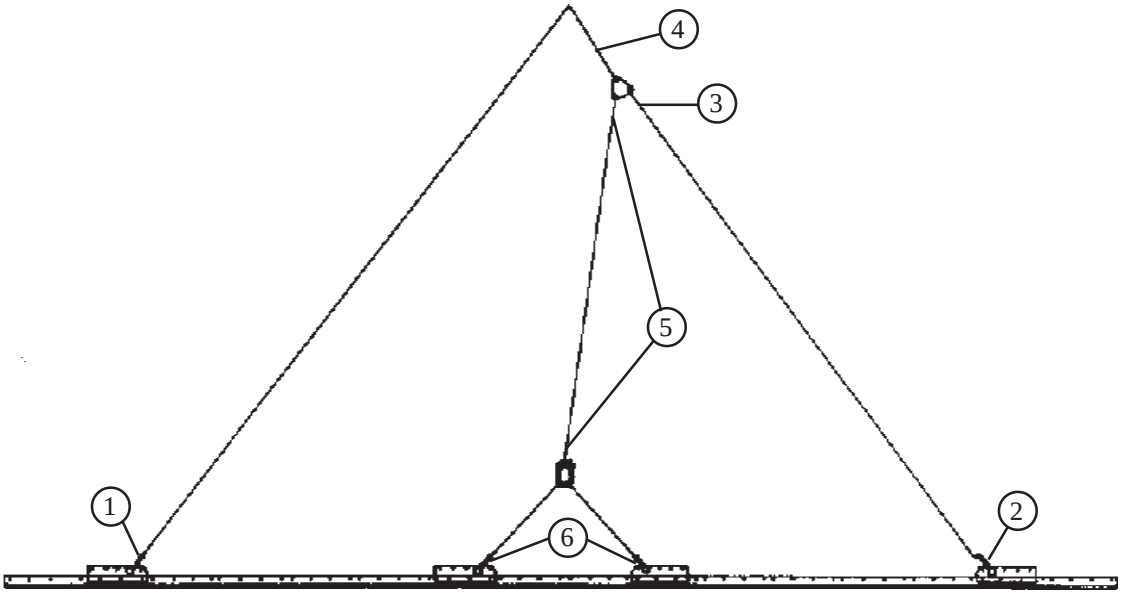


1. Build the release platform as shown above with all lengths 36 inches wide.
2. Place the release stack on top of drum 2 and against drum 3, centered.
3. Place a 36-inch by 96-inch piece of honeycomb on top of layer 2 and against layer 1. Shape it around drum 3. Tape the top edges where the honeycomb fits together.
4. Secure the release stack with 1/2-inch tubular nylon webbing to the drum shackles.

Figure 4-30. Release Platform Built and Positioned

INSTALLING SUSPENSION SLINGS AND SAFETY TIES

4-12. Install suspension slings and safety ties as shown in Figure 4-31.

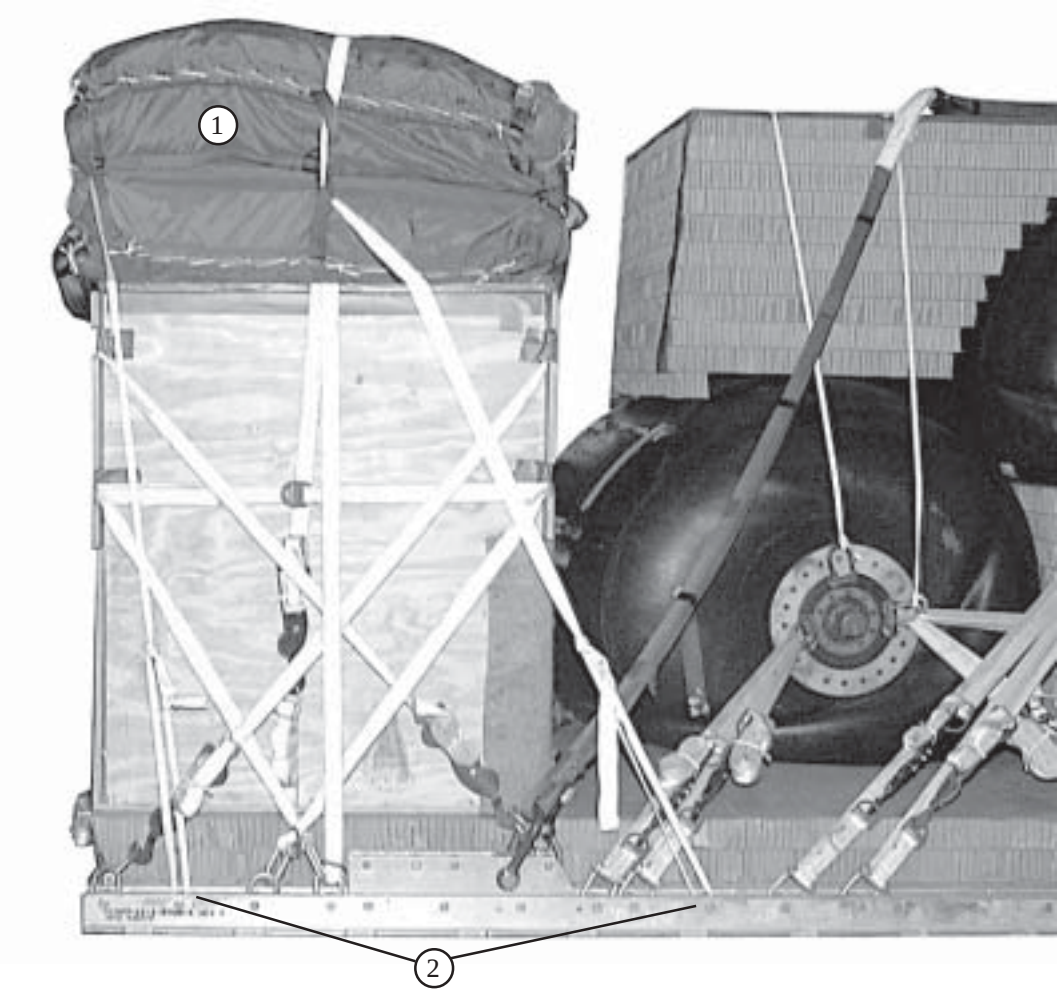


1. Place a large clevis in one end of a 16-foot (4-loop), type XXVI nylon suspension sling. Attach the clevis to the right rear suspension bracket.
2. Place two large clevises on one end of a 12-foot (4-loop), type XXVI nylon suspension sling. Attach the clevis to the right front supension bracket.
3. Attach the running end of the 12-foot sling to a 3-point link.
4. Place a 3-foot (4-loop), type XXVI nylon suspension sling on the 3-point link.
5. Place one end of a 20-foot (4-loop), type XXVI nylon suspension sling on a 3-foot (4-loop), type XXVI nylon suspension sling. Route the running end of the 20-foot sling through the remaining point on the 3-point link and place it on the 3-foot sling.
6. Attach large clevises to each running end of the 3-foot sling and attach the clevises to the right center suspension brackets.
7. Repeat steps 1 through 6 for the left side (not shown).
8. Raise the suspension slings and install the suspension sling safety ties to the front and rear suspension slings using doubled 1/2-inch tubular nylon webbing six to eight inches above the highest point of the load (not shown). Refer to the Notice of Exception in the Introduction of this manual.
9. Pad and tape the link assemblies (not shown).

Figure 4-31. Suspension Slings and Safety Ties Installed

PREPARING AND STOWING CARGO PARACHUTES

4-13. Prepare and stow four G-11 cargo parachutes as shown in Figure 4-32.



(1) Prepare and stow four G-11 cargo parachutes on the rear equipment box according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

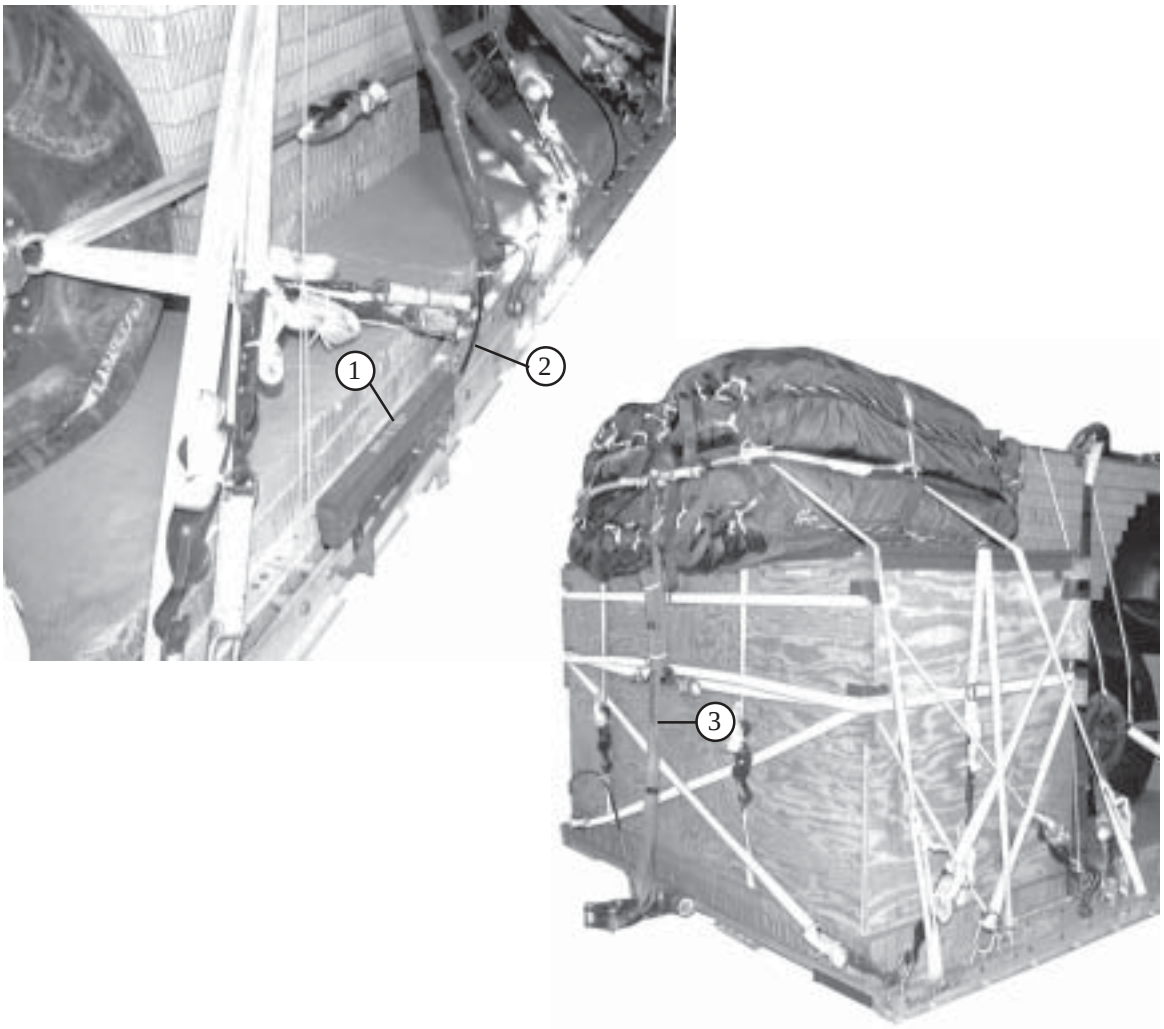
(2) Restrain the parachutes according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 using bushings 31,31A,39, and 39A on the platform.

(3) Install the multicut parachute release strap according to FM 4-20.102/NAVSEA SS400-AB- MMO-010/TO 13C-1-5 (not shown).

Figure 4-32. Cargo Parachutes Prepared and Stowed

INSTALLING THE EXTRACTION SYSTEM

4-14. Install the extraction system as shown in Figure 4-33.

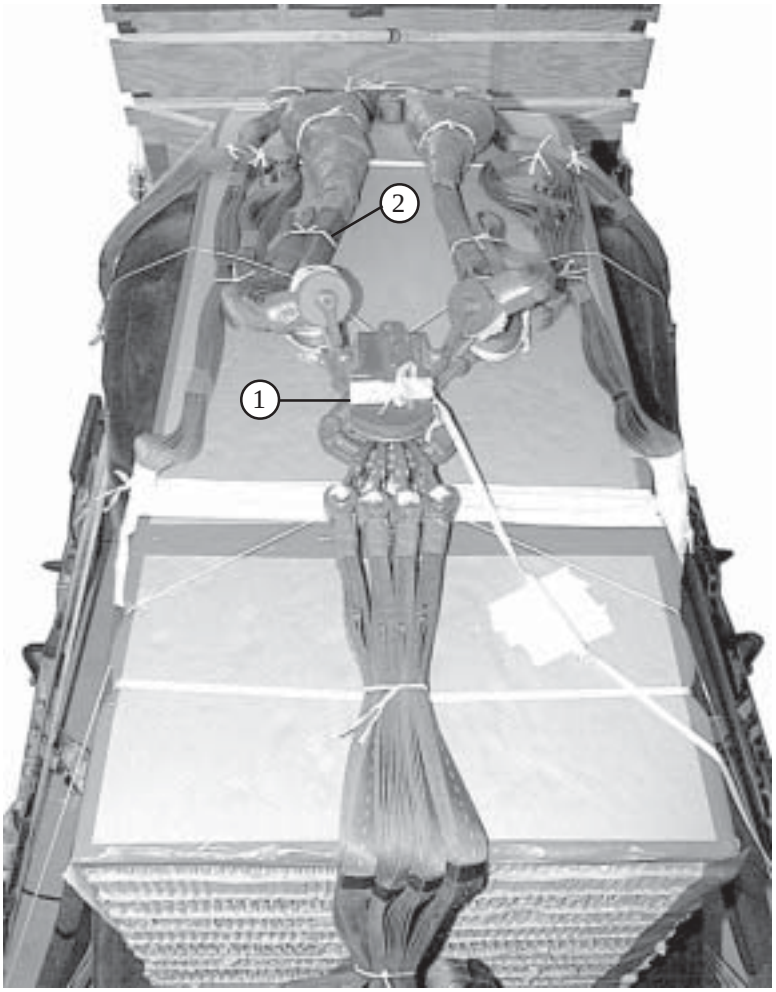


1. Using the rear holes, install the extraction force transfer coupling (EFTC) according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
2. Using a 24-foot EFTC cable, safety the cable using one turn type I, 1/4-inch cotton webbing.
3. Attach a 9-foot (2-loop), type XXVI nylon webbing sling for use as a deployment line.

Figure 4-33. Extraction System Installed

INSTALLING THE CARGO PARACHUTE RELEASE SYSTEM

4-15. Install the M-2 cargo parachute release system as shown in Figure 4-34.



(1) Place the M-2 release on the release platform. Attach the suspension slings and the parachute riser extensions to the M-2 cargo parachute release according to FM 4-20.102/ NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Secure the cargo parachute release with type III nylon cord.

(2) S-fold and tie any slack in the suspension slings with 1/4-inch cotton webbing.

Figure 4-34. Cargo Parachute Release Installed

PLACING EXTRACTION PARACHUTE

4-16. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Rig the extraction line in an extraction line bag according to TM 10-1670-286-20/TO 13C5-2-41. Place the extraction parachute and extraction line on the load for installation in the aircraft.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

4-17. Select and install the provisions for emergency aft restraints according to the emergency aft restraint requirements table in FM 4-20.102/NAVSEA SS400 -AB-MMO-010/TO 13C7-1-5.

MARKING RIGGED LOAD

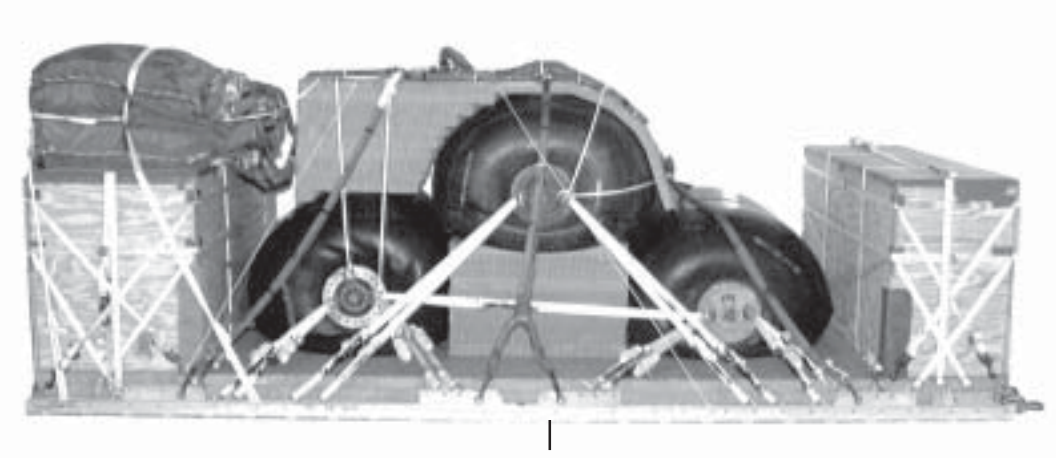
4-18. Mark the rigged load according to FM 4-20.102/NAVSEA SS400-AB-MMO -010/TO 13C7-1-5 and as shown in Figure 4-35. Complete Shipper's Declaration for Dangerous Goods and affix to the load. If the load varies from the one shown, the weight, height, CB, tipoff curve, and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

4-19. Use the equipment list in Table 4-2 to rig the load shown in Figure 4-35.

CAUTION

Make the final inspection required by FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



RIGGED LOAD DATA

Weight ..... 18,501 pounds

Maximum Weight ..... 20,000 pounds

Height ..... 88 inches

Width ..... 108 inches

Overall Length ..... 258 inches
Overhang: Front ..... 0 inches
Overhang: Rear ..... 18 inches

Center of Balance (CB) (from front edge of platform) ..... 121 inches

Figure 4-35. AAFARS withThree 500-Gallon Drums Rigged

Table 4-2. Equipment Required for Rigging AAFARS With Three 500-Gallon Drums

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive paste, 1-gal	As required
1670-01-035-6054	Bridle, extraction line bag (C-17 only)	1
4030-00-090-5354	Clevis, large	11
4030-00-678-8562	Clevis, medium	4
4020-00-240-2146	Cord, nylon, type III, 550-lb	As required
1670-00-360-0328	Cover, clevis, large	4
8305-00-958-3685	Felt sheet, 1/2-inch	As required
1670-00-003-4391	Knife, parachute bag for DES)	1
1670-01-183-2678	Leaf, extraction line (line bag)(add 1 for DES)	2
	Line, drogue (for C-17)	
1670-01-064-4452	60-foot (1-loop), type XXVI	1
1670-01-062-6304	Line, deployment:	
	9-foot (2-loop), type XXVI	1
	Line, extraction:	
1670-01-062-6313	For C-130: 60-foot (3-loop), type XXVI	1
1670-01-107-7651	For C-141: 140-foot (3-loop), type XXVI	1
1670-01-107-7651	For C-17: 140-foot (3-loop), type XXVI	1
	Link assembly:	
	Two-point:	
5306-00-435-8994	Bolt, 1-in diam, 4-in long	2
5310-00-232-5165	Nut, 1-in, hexagonal	2
1670-00-003-3454	Plate, side, 5 1/2-in	2
5365-00-007-3414	Spacer, large	2
	Two-point, 3 3/4-in (for DES)	
5306-00-435-8994	Bolt, 1-in diam, 4-in long	2
5310-00-232-5165	Nut, 1-in, hexagonal	2
1670-00-003-1953	Plate, side, 3 3/4-in	2
5365-00-007-3414	Spacer, large	2
1670-01-307-1055	Three-point	2
1670-01-483-8259	Link, tow release mechanism (H-Block) C-17 aircraft	1

Table 4-2. Equipment Required for Rigging AAFARS With Three 500-Gallon Drums (Continued)

National Stock Number	Item	Quantity
	Lumber:	
5510-00-220-6146	2- by 4-in	As required
5315-00-753-3885	Nail, steel wire, common, 16d	As required
1670-00-753-3928	Pad, energy dissipating, honeycomb, 3- by 36- by 96-in	24 sheets
	Parachute:	
1670-01-016-7841	Cargo, G-11B	4
1670-00-040-8135	Cargo, extraction, 28ft	1
1670-01-063-3715	Drogue, 15ft (for C-17)	1
	Platform, airdrop, type V, 20-foot:	
1670-01-353-8425	Bracket assembly, component, (EFTC)	(1)
1670-01-247-2389	Bracket, suspension	(8)
1670-01-162-2372	Clevis assembly, type V	(54)
1670-01-353-8424	Extraction bracket assembly	(1)
1670-01-162-2381	Link, tandem, suspension link assembly	(2)
5530-00-618-8073	Plywood, 3/4- by 48- by 96-in	11 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	4
1670-01-062-6307	12-ft (4-loop), type XXVI nylon webbing	2
1670-01-062-6308	16-ft (4-loop), Type XXVI nylon webbing	2
1670-01-064-4453	20-ft (4-loop), typeXXVI nylon webbing	2
	For riser extension:	
1670-01-062-6313	60-ft (3-loop), type XXVI nylon webbing	4
1670-00-040-8219	Strap, parachute release, multicut	2
7510-00-266-5016	Tape, adhesive, 2-in	As required
7510-00-266-6710	Tape, masking, 2-in	As required
1670-00-937-0271	Tie-down assembly, 15-ft	61
	Webbing:	
8305-00-268-2411	Cotton, 1/4-in, type I	As required
8305-00-082-5752	Nylon, tubular, 1/2-in	As required
8305-00-263-3591	Type VIII	As required

SECTION II - RIGGING AAFARS WITH FOUR 500-GALLON FUEL DRUMS

DESCRIPTION OF LOAD

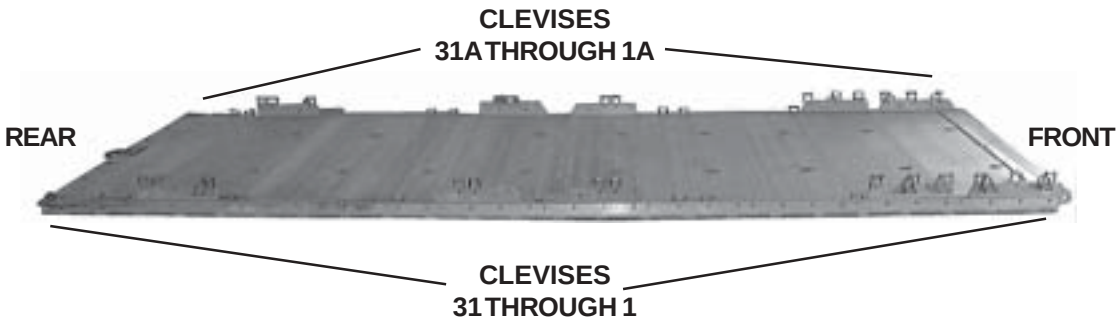
4-20. The Advanced Aviation Forward Area Refueling System (AAFARS) is rigged on a 20-foot, type V airdrop platform with five G-11 parachutes. The AAFARS is designed for forward area refueling of up to four aircraft at a time with a minimum output of 55 GPM. There are four collapsible fuel drums as an accompanying load. Each drum is filled with 432 gallons of liquid. When empty, each drum weighs 250 pounds and is 62 inches long and 53 inches in diameter. The overall length of the load is 258 inches. The load is 88 inches high. Its center of balance is 121 inches.

Notes:
1. For drums filled with a liquid other than water, use Table 1-1 to recompute the weight.
2. If the load varies from the one shown, the weight, height, CB, tipoff curve, and parachute requirements must be recomputed.
3. Do not pressurize drums with air.

PREPARING PLATFORM

4-21. Prepare a 20-foot type V airdrop platform using two tandem links, eight suspension brackets and 62 tie-down clevises as shown in Figure 4-36.

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



Steps:

1. Inspect, or assemble and inspect, the platform as outlined in TM 10-1670-268-20&P/ TO 13C7-52-22.
2. Install a tandem link on the front of each platform side rail using holes 1, 2, and 3.
3. Install a suspension bracket to each platform side rail using holes 5, 6, and 7.
4. Install a suspension bracket to each platform side rail using holes 17, 18, and 19.
5. Install a suspension bracket to each platform side rail using holes 22, 23, and 24.
6. Install a suspension bracket to each platform side rail using holes 34, 35, and 36.
7. Install a tie-down clevis to bushings 1 (doubled), 3, and 4 (doubled) on each front tandem link.
8. Install a tie-down clevis to bushings 1 (doubled), 3 (doubled), and 4 on each of the first suspension brackets.
9. Install a tie-down clevis to bushings 2 and 3 of each of the second suspension brackets.
10. Install a tie-down clevis to bushings 2 and 3 of each of the third suspension brackets.
11. Install a tie-down clevis to bushings 1 (doubled), 3 and 4 of each of the fourth suspension brackets.
12. Starting at the front of each platform side rail, install a tie-down clevis to the bushings bolted to holes 8, 14, 15, 26, 27, 32, 33, 37 (doubled), 38 (doubled), and 40 (doubled).
13. Starting at the front of the platform, number the clevises bolted to the right side from 1 through 31 and those bolted to the left side from 1A through 31A.

Figure 4-36. Platform Prepared

PREPARING AND POSITIONING HONEYCOMB STACKS

4-22. Prepare the honeycomb stacks as shown in Figure 4-2. Place the honeycomb stacks on the platform as shown in Figure 4-3.

BUILDING THE EQUIPMENT BOXES

4-23. Build the front and rear equipment boxes as shown in Figures 4-4 and 4-5.

PREPARING EQUIPMENT FOR EQUIPMENT BOXES

4-24. Prepare the fire extinguishers, filter separator, explosion proof motor, pumps, battery box, manuals and toolkit as explained and shown in paragraph 4-6. Using the lists printed on the equipment bags, place the equipment indicated on each list into its bag.

POSITIONING EQUIPMENT BOXES

4-25. Pre-position three lashings at each end of the platform as shown in Figure 4-13, steps 1 through 3. Position the equipment boxes flush over the ends of the honeycomb as shown in Figure 4-13, step 4. Pad the inside lower box corners as shown in Figure 4-13, step 5.

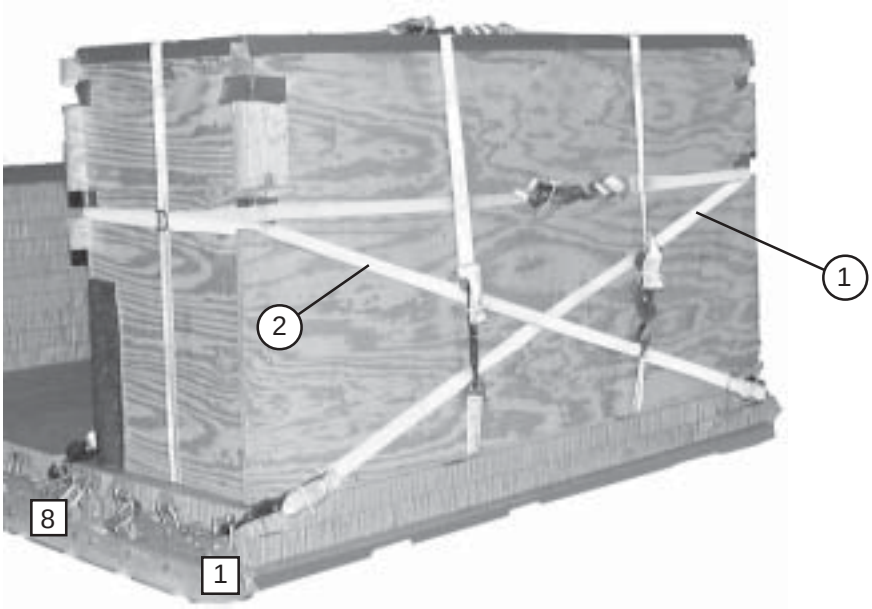
POSITIONING EQUIPMENT IN EQUIPMENT BOXES AND SECURING BOXES

4-26. Position and secure the equipment in the equipment boxes, and secure the boxes and lids as explained in paragraph 4-8, and as shown in Figures 4-14 and 4-15.

LASHING THE EQUIPMENT BOXES TO THE PLATFORM

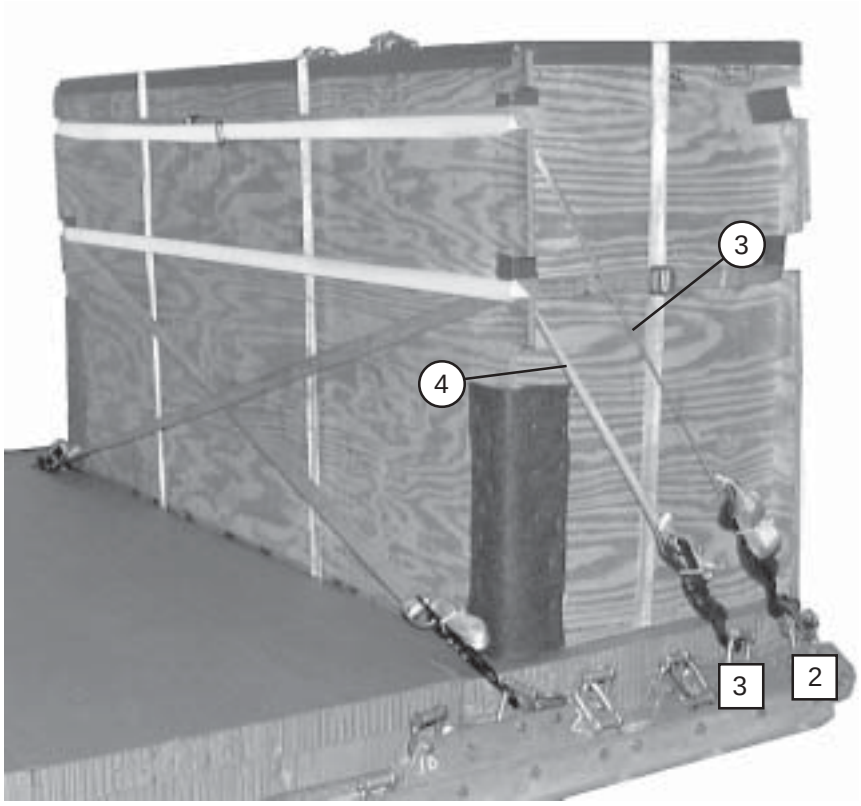
4-27. Lash the equipment boxes to the platform as given below.

a. Lash the front equipment box to the platform as shown in Figures 4-37 through 4-39.



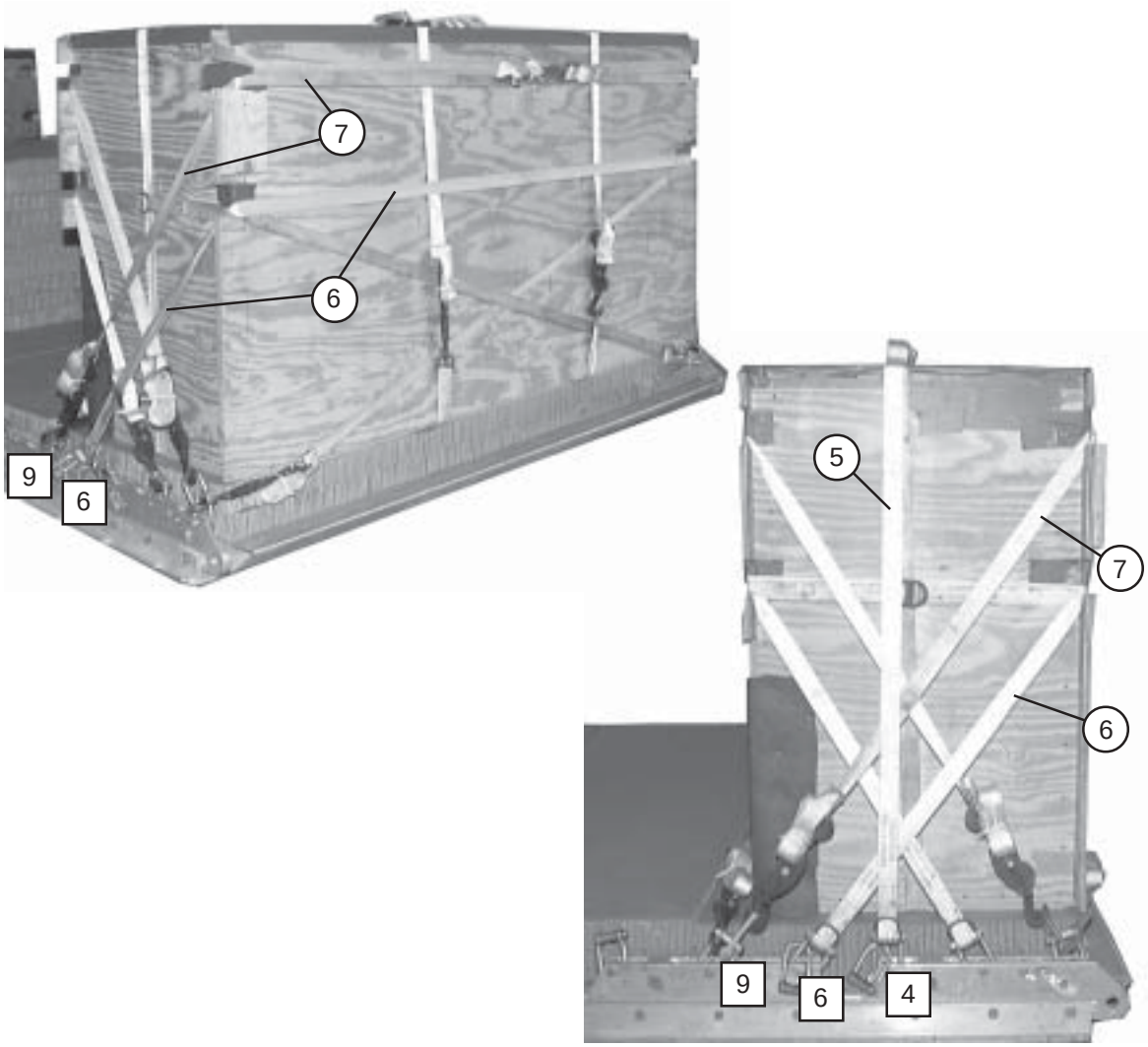
Lashing Number	Tie-down Clevis Number	Instructions
1	1 and 8	Route a 30-foot lashing from clevis 1 to the front bottom left cutout, to the rear bottom left cutout, to clevis 8.
2	1A and 8A	Route a 30-foot lashing from clevis 1A to the front bottom right cutout, to the rear bottom right cutout, to clevis 8A.

Figure 4-37. Lashings 1 and 2 Installed



Lashing Number	Tie-down Clevis Number	Instructions
3	2 and 2A	Route a 30-foot lashing from clevis 2 to the rear top right cutout, to the rear top left cutout, to clevis 2A.
4	3 and 3A	Route a lashing from clevis 3A and through its own D-ring to the rear bottom left cutout, to the rear bottom right cutout, to clevis 3.

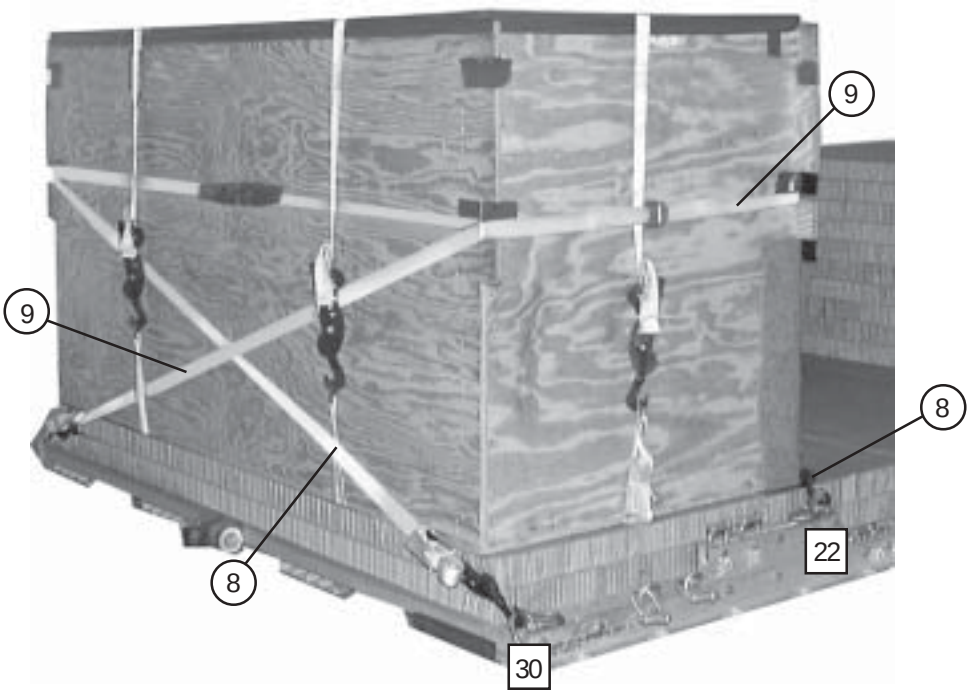
Figure 4-38. Lashings 3 and 4 Installed



Lashing Number	Tie-down Clevis Number	Instructions
5	4 and 4A	Route a lashing through it's own D-ring on clevis 4, repeat on clevis 4A and load bind them together on top of the box.
6	6 and 6A	Route a lashing through it's own D-ring on clevis 6 to the front bottom right cutout, to the front bottom left cutout, to clevis 6A.
7	9 and 9A	Route a 30-foot lashing from clevis 9 to the front top right cutout, to the front top left cutout, to clevis 9A.

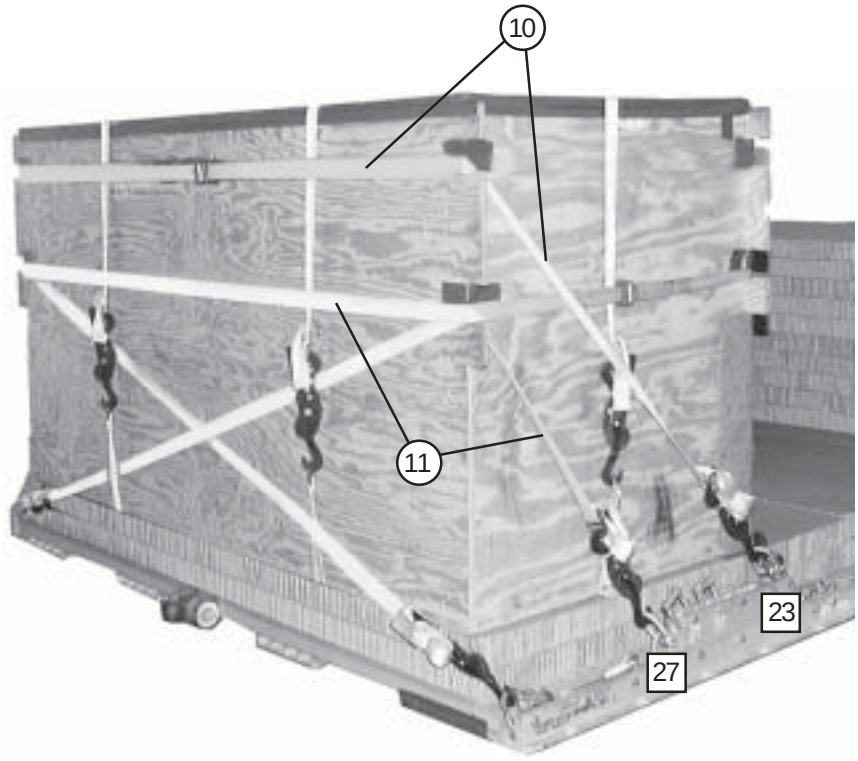
Figure 4-39. Lashings 5 through 7 Installed

b. Lash the rear equipment box to the platform as shown in Figures 4-40 through 4-42.



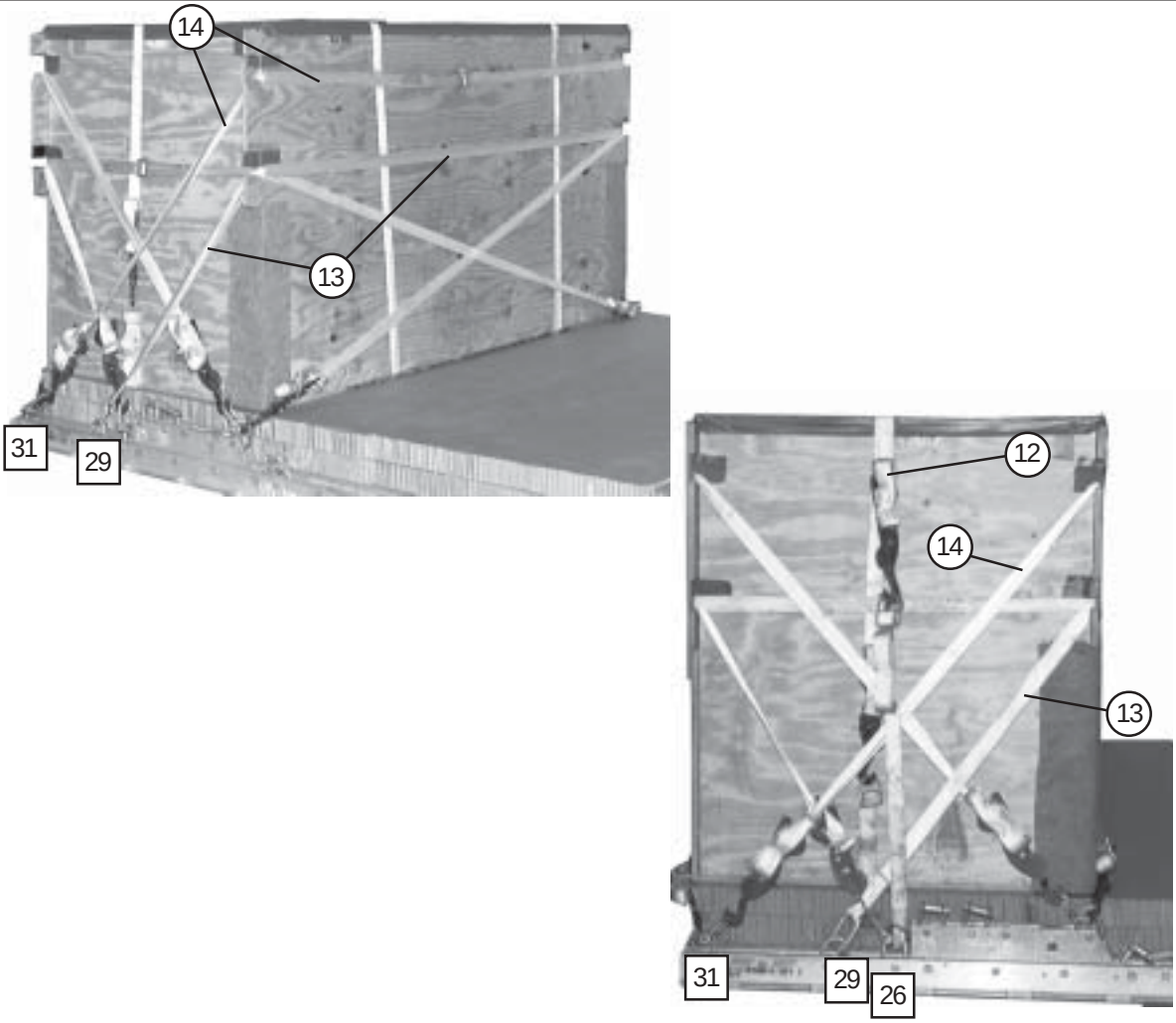
Lashing Number	Tie-down Clevis Number	Instructions
8	22 and 30	Route a 30-foot lashing from clevis 22 to the front lower left cutout, to the rear lower left cutout, to clevis 30.
9	22A and 30A	Route a 30-foot lashing from clevis 22A to the front lower right cutout, to the rear lower right cutout, to clevis 30A.

Figure 4-40. Lashings 8 and 9 Installed



Lashing Number	Tie-down Clevis Number	Instructions
10	23 and 23A	Route a 30-foot lashing from clevis 23 to the rear top right cutout, to the rear top left cutout, to clevis 23A.
11	27 and 27A	Route a lashing through it's own D-ring on clevis 27A to the rear bottom left cutout, to the rear bottom right cutout to clevis 27.

Figure 4-41. Lashings 10 and 11 Installed

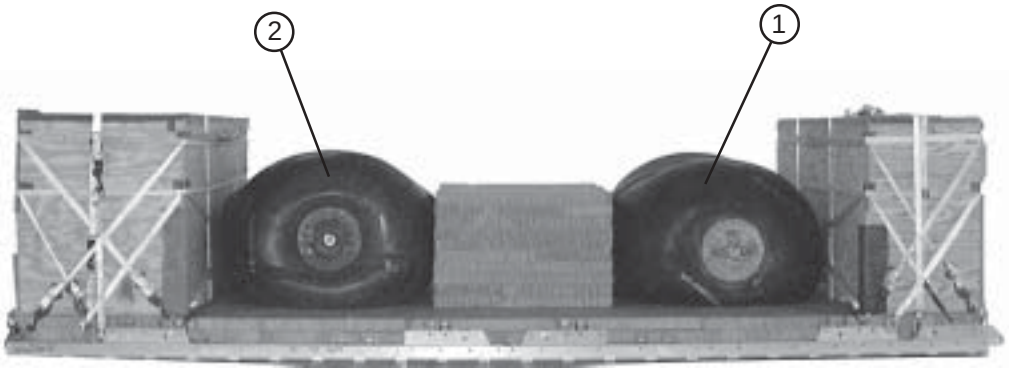


Lashing Number	Tie-down Clevis Number	Instructions
12	26 and 26A	Route a lashing through it's own D-ring on clevis 26, repeat on clevis 26A and load bind on the side of the box.
13	29 and 29A	Route a lashing through it's own D-ring on clevis 29 to the front bottom right cutout, to the front bottom left cutout to clevis 29A.
14	31 and 31A	Route a 30-foot lashing from clevis 31 to the front top right cutout to the front top left cutout, and to clevis 31A.

Figure 4-42. Lashings 12 through 14 Installed

POSITIONING AND LASHING DRUMS

4-28. Position four fuel drums and lash them to the platform as shown in Figures 4-43 through 4-49.

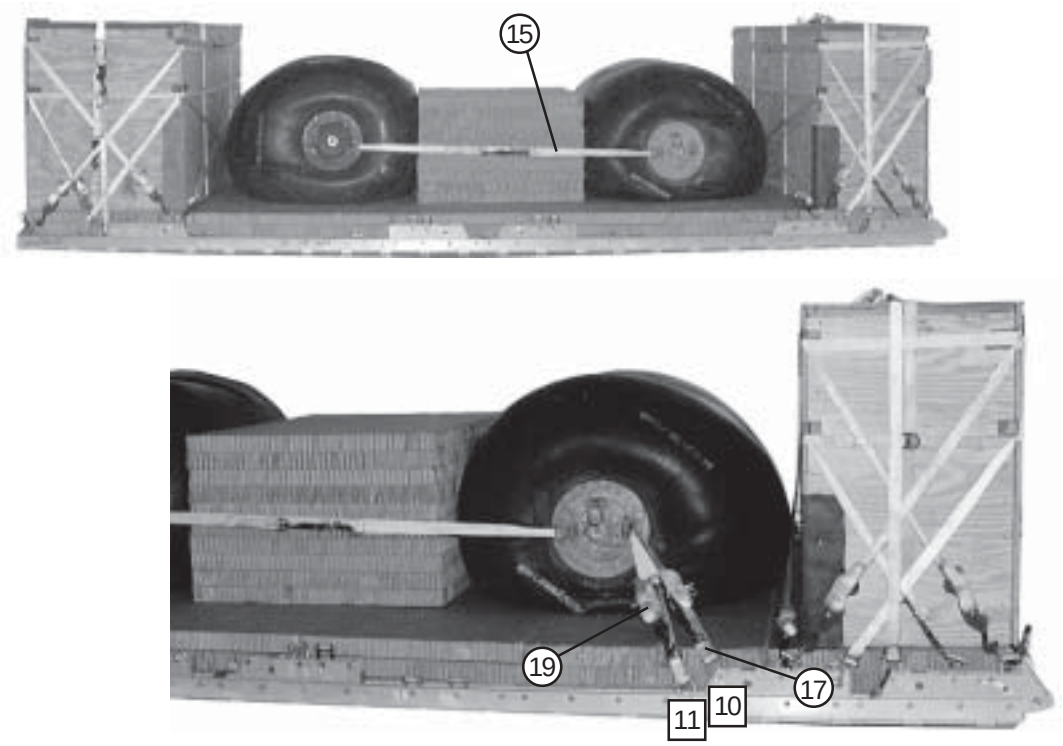


(1) Place drum 1 centered across the platform and between the front box and the center stack.

(2) Place drum 2 centered across the platform and between the rear box and the center stack.

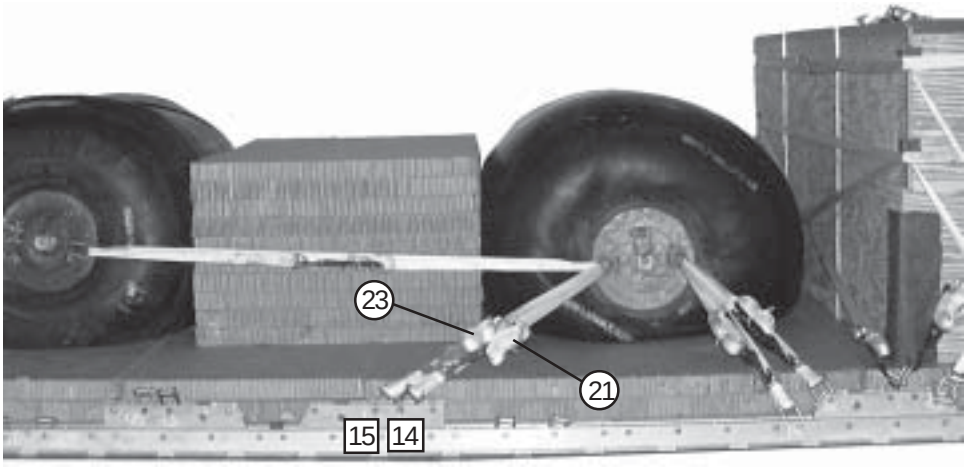
NOTE: There should be a 3-inch to 4-inch gap between the drums and the equipment boxes

Figure 4-43. Drums 1 and 2 Placed



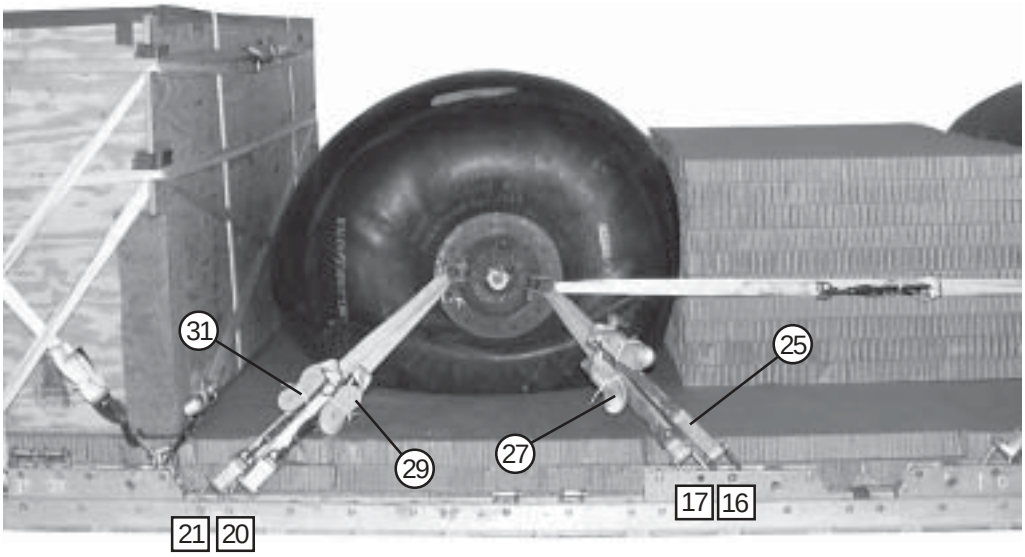
Lashing Number	Tie-down Clevis Number	Instructions
15		Route a lashing from the rear shackle of drum 1 to the front shackle of drum 2 on the right side.
16		Route a lashing from the rear shackle of drum 1 to the front shackle of drum 2 on the left side.
17	10	Route a lashing from clevis 10 to the front right shackle on drum 1.
18	10A	Route a lashing from clevis 10A to the front left shackle on drum 1.
19	11	Route a lashing from clevis 11 to the front right shackle on drum 1.
20	11A	Route a lashing from clevis 11A to the front left shackle on drum 1.

Figure 4-44. Lashings 15 through 20 Installed



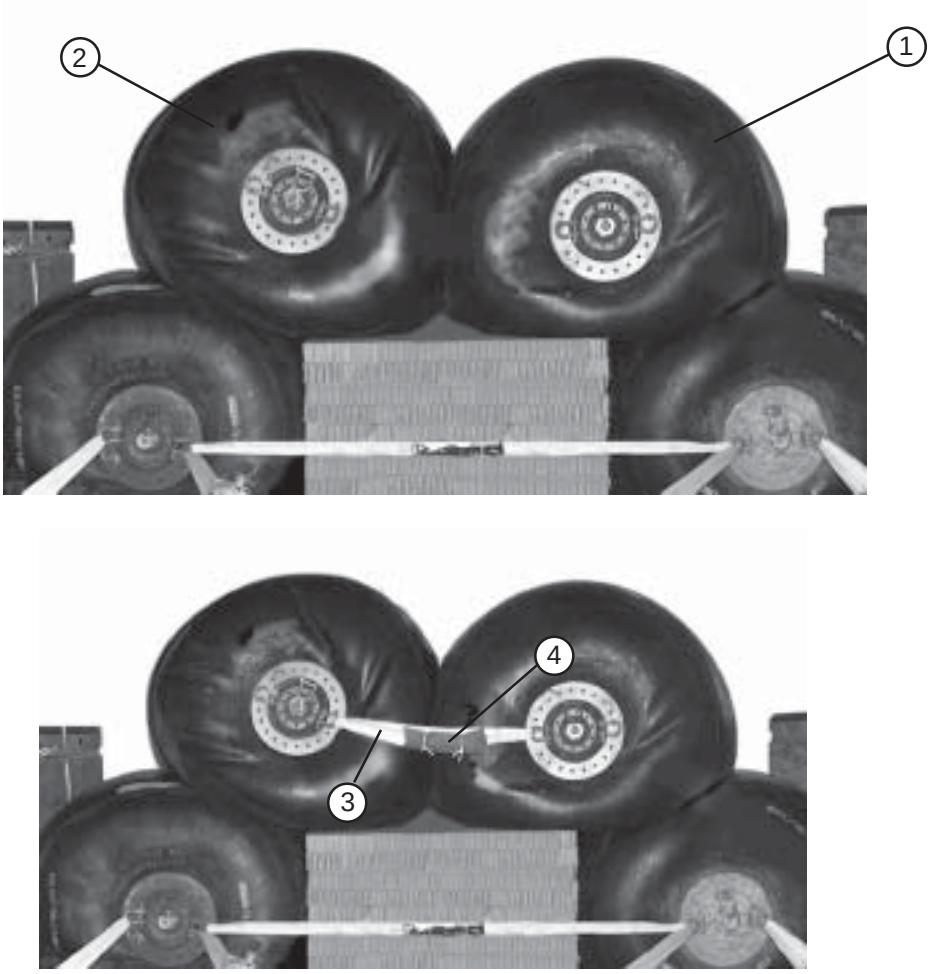
Lashing Number	Tie-down Clevis Number	Instructions
21	14	Route a lashing from clevis 14 to the rear right shackle on drum 1.
22	14A	Route a lashing from clevis 14A to the rear left shackle on drum 1.
23	15	Route a lashing from clevis 15 to the rear right shackle on drum 1.
24	15A	Route a lashing from clevis 15A to the rear left shackle on drum 1.

Figure 4-45. Lashings 21 through 24 Installed



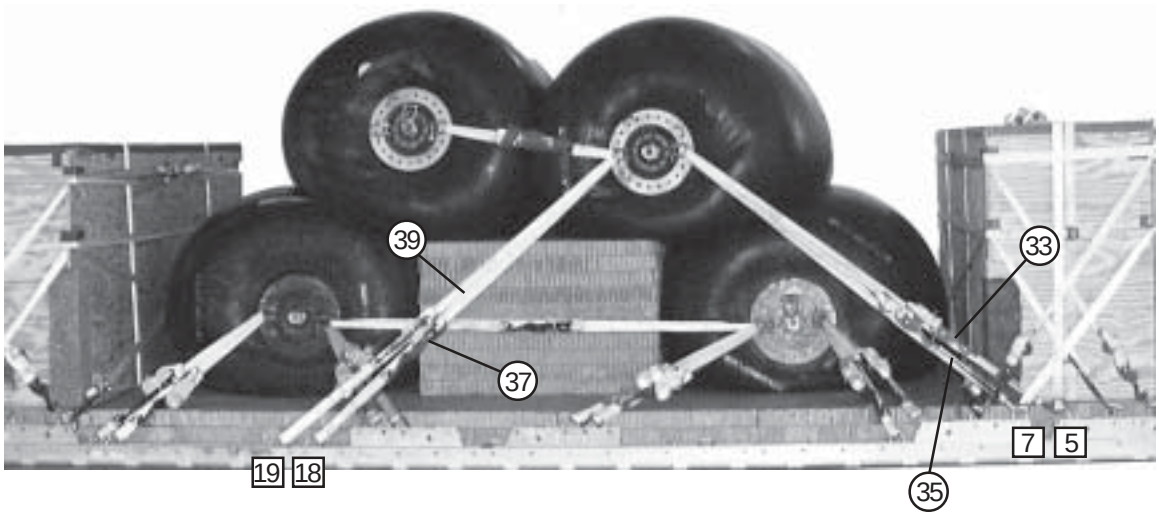
Lashing Number	Tie-down Clevis Number	Instructions
25	16	Route a lashing from clevis 16 to the front right shackle on drum 2.
26	16A	Route a lashing from clevis 16A to the front left shackle on drum 2.
27	17	Route a lashing from clevis 17 to the front right shackle on drum 2.
28	17A	Route a lashing from clevis 17A to the front left shackle on drum 2.
29	20	Route a lashing from clevis 20 to the rear right shackle on drum 2.
30	20A	Route a lashing from clevis 20A to the rear left shackle on drum 2.
31	21	Route a lashing from clevis 21 to the rear right shackle on drum 2.
32	21A	Route a lashing from clevis 21A to the rear left shackle on drum 2.

Figure 4-46. Lashings 25 through 32 Installed



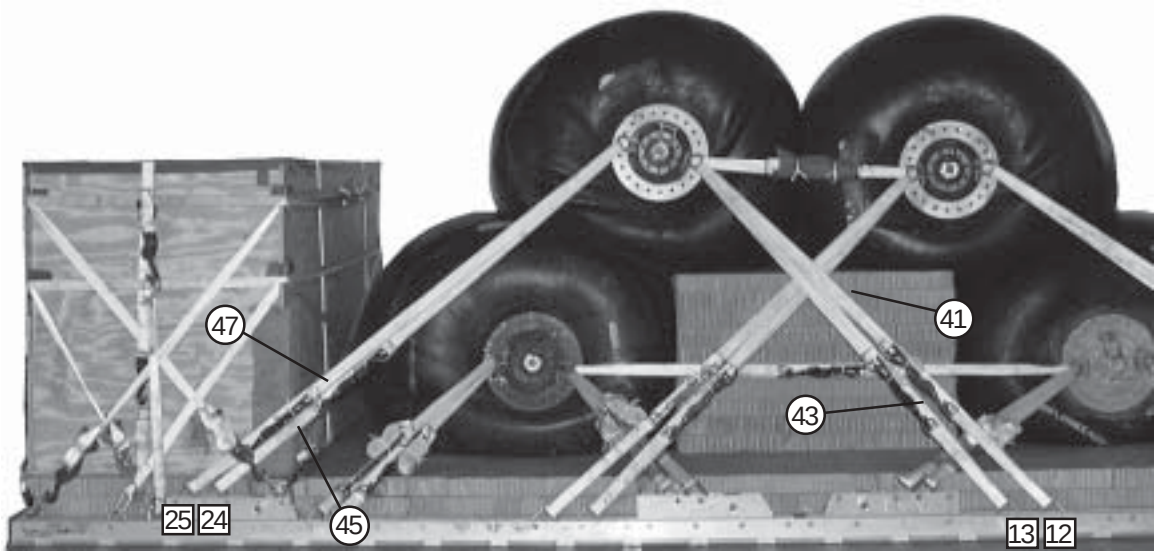
1. Position drum 3 at the front of the center stack, resting against drum 1.
2. Position drum 4 at the rear of the center stack, resting against drum 2.
3. Lash drums 3 and 4 together on each side, using the inside shackles and a 15-foot lashing.
4. Pad each load binder with a 10- by 15-inch piece of felt. Tie the felt in place with two lengths of type I, 1/4-inch cotton webbing.

Figure 4-47. Drums 3 and 4 Positioned



Lashing Number	Tie-down Clevis Number	Instructions
33	5	Route a lashing from clevis 5 to the front right shackle on drum 3.
34	5A	Route a lashing from clevis 5A to the front left shackle on drum 3.
35	7	Route a lashing from clevis 7 to the front right shackle on drum 3.
36	7A	Route a lashing from clevis 7A to the front left shackle on drum 3.
37	18	Route a lashing from clevis 18 to the rear right shackle on drum 3.
38	18A	Route a lashing from clevis 18A to the rear left shackle on drum 3.
39	19	Route a lashing from clevis 19 to the rear right shackle on drum 3.
40	19A	Route a lashing from clevis 19A to the rear left shackle on drum 3.

Figure 4-48. Lashings 33 through 40 Installed

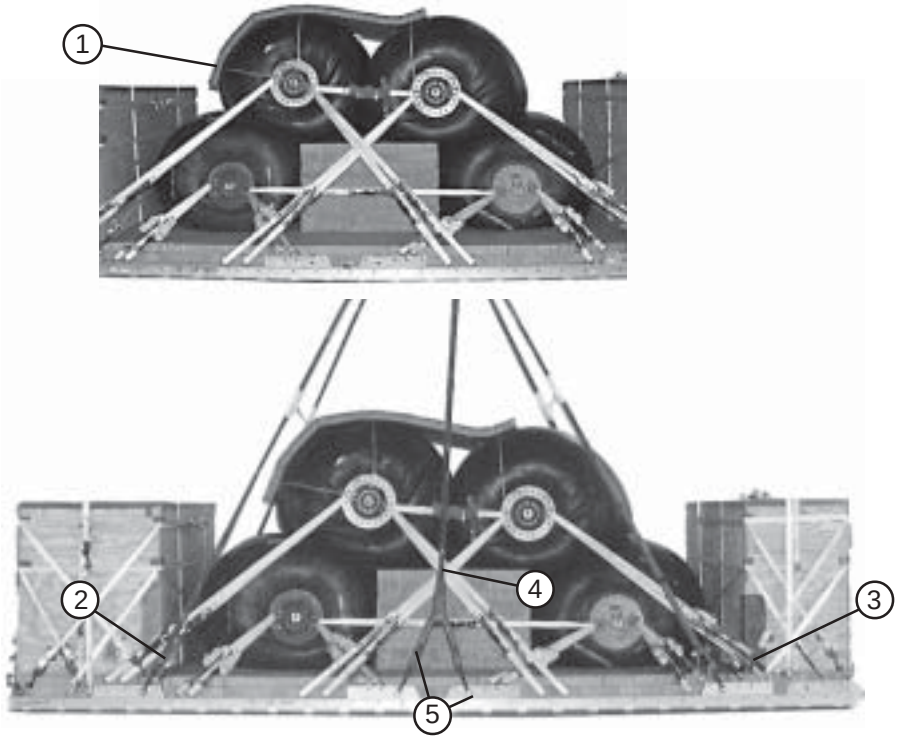


Lashing Number	Tie-down Clevis Number	Instructions
41	12	Route a lashing from clevis 12 to the front right shackle on drum 4.
42	12A	Route a lashing from clevis 12A to the front left shackle on drum 4.
43	13	Route a lashing from clevis 13 to the front right shackle on drum 4.
44	13A	Route a lashing from clevis 13A to the front left shackle on drum 4.
45	24	Route a lashing from clevis 24 to the rear right shackle on drum 4.
46	24A	Route a lashing from clevis 24A to the rear left shackle on drum 4.
47	25	Route a lashing from clevis 25 to the rear right shackle on drum 4.
48	25A	Route a lashing from clevis 25A to the rear left shackle on drum 4.

Figure 4-49. Lashings 41 through 48 Installed

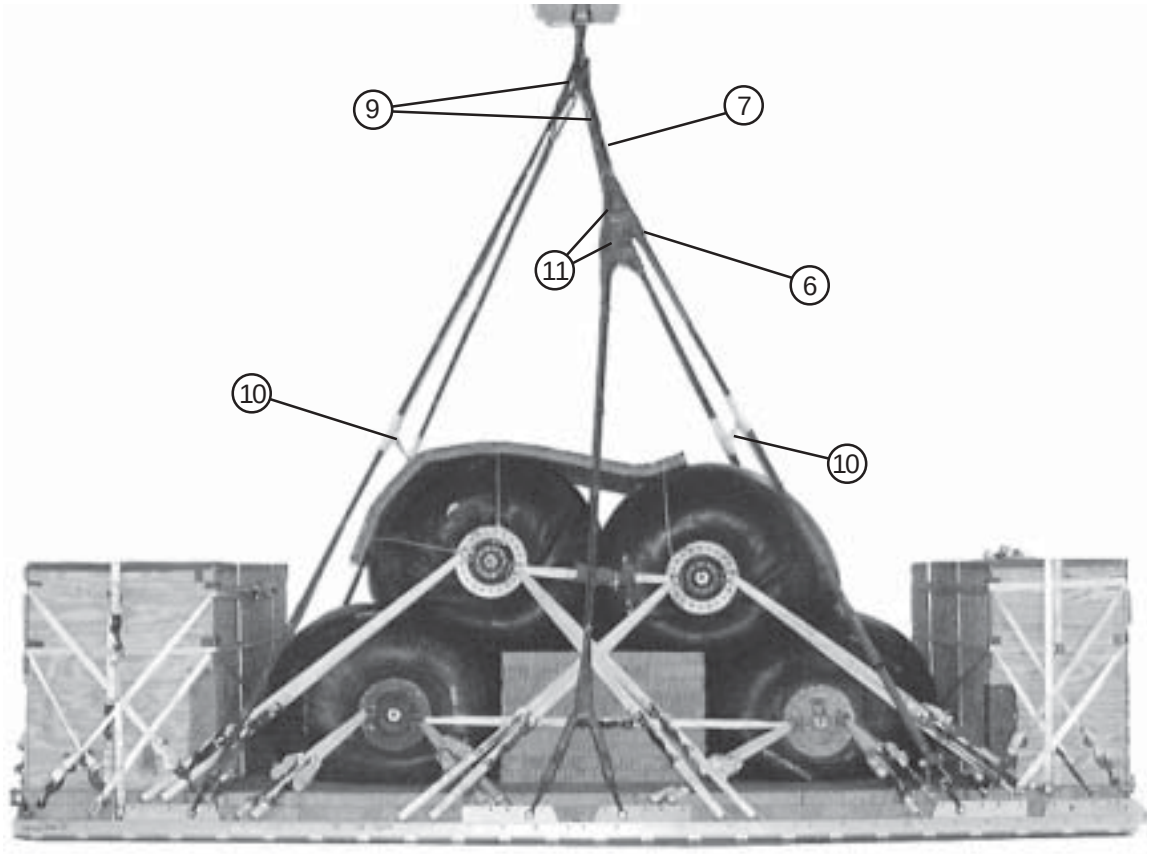
INSTALLING RELEASE PLATFORM, SUSPENSION SLINGS AND SAFETY TIES

4-29. Install the release platform, suspension slings and safety ties as shown in Figure 4-50.



1. Tie a 36- by 96-inch piece of honeycomb over drums 3 and 4 as shown with type III nylon cord. Tape edges of honeycomb.
2. Place a large clevis in one end of a 16-foot (4-loop), type XXVI nylon suspension sling. Attach the clevis to the right rear suspension bracket.
3. Place two large clevises on one end of a 12-foot (4-loop), type XXVI nylon suspension sling. Attach the lower clevis to the right front suspension bracket. Safety tie them together with type III nylon cord using an hourglass tie.
4. Place one end of a 20-foot (4-loop), type XXVI nylon suspension sling on a 3-foot (4-loop), type XXVI nylon suspension sling. Route the running end of the 20-foot sling through a point on a 3-point link and place it on the 3-foot sling.
5. Attach large clevises to each running end of the 3-foot sling and attach the clevises to the right center suspension brackets.

Figure 4-50. Release Platform, Suspension Slings and Safety Ties Installed



(6) Attach the running end of the front suspension sling to the 3-point link.

(7) Place a 3-foot (4-loop), type XXVI nylon suspension sling on the remaining spool of the 3-point link.

(8) Repeat steps 2 through 7 for the left side (not shown).

(9) Attach the rear suspension slings and the three-foot sling on the 3-point link to the crane hook. Raise the suspension slings.

(10) Install the suspension sling safety ties to the front and rear pairs of suspension slings using doubled 1/2-inch tubular nylon webbing six to eight inches above the highest point of the load. Refer to the Notice of Exception in the Introduction of this manual.

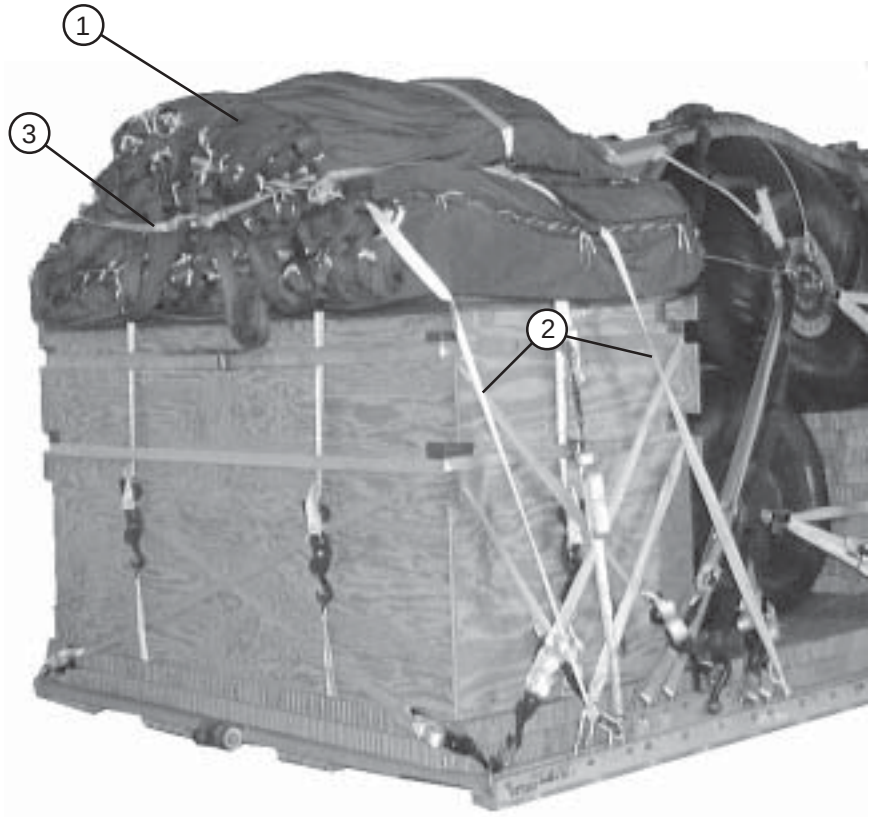
(11) Pad the 3-point links with felt and tape.

(12) Remove the slack from the center suspension and safety tie to to a convenient point on the load using one turn doubled type I, 1/4-inch, cotton webbing (not shown).

Figure 4-50. Release Platform, Suspension Slings and Safety Ties Installed (continued)

PREPARING AND STOWING CARGO PARACHUTES

4-30. Prepare and stow five G-11 cargo parachutes as shown in Figure 4-51.

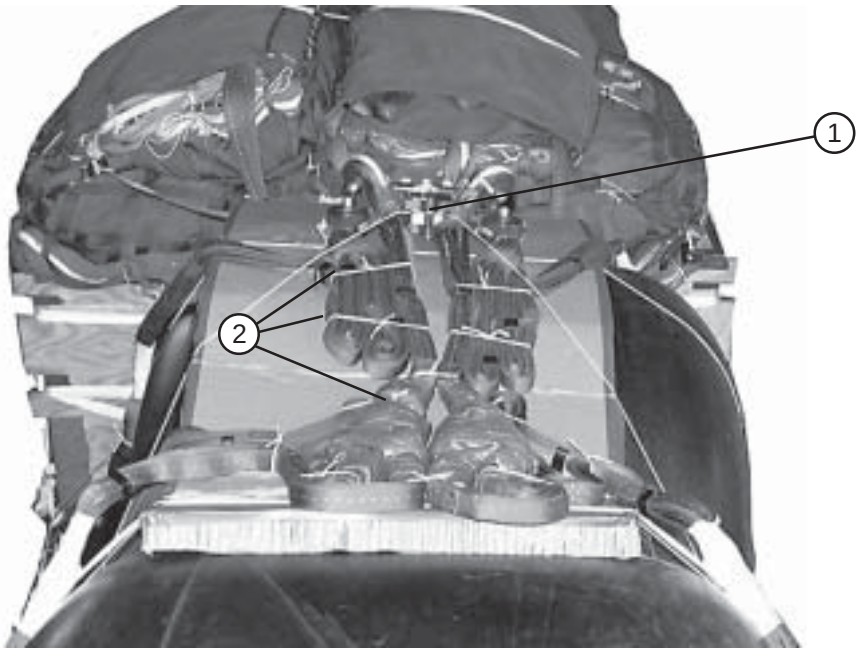


1. Prepare and stow five G-11 cargo parachutes on the rear equipment box acording to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
2. Restrain the parachutes according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5, and using bushings 29 and 29A, and 31 and31A.
3. Install the multicut parachute release strap according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

Figure 4-51. Cargo Parachutes Prepared and Stowed

INSTALLING THE CARGO PARACHUTE RELEASE SYSTEM

4-31. Install the parachute release as shown in Figure 4-52.



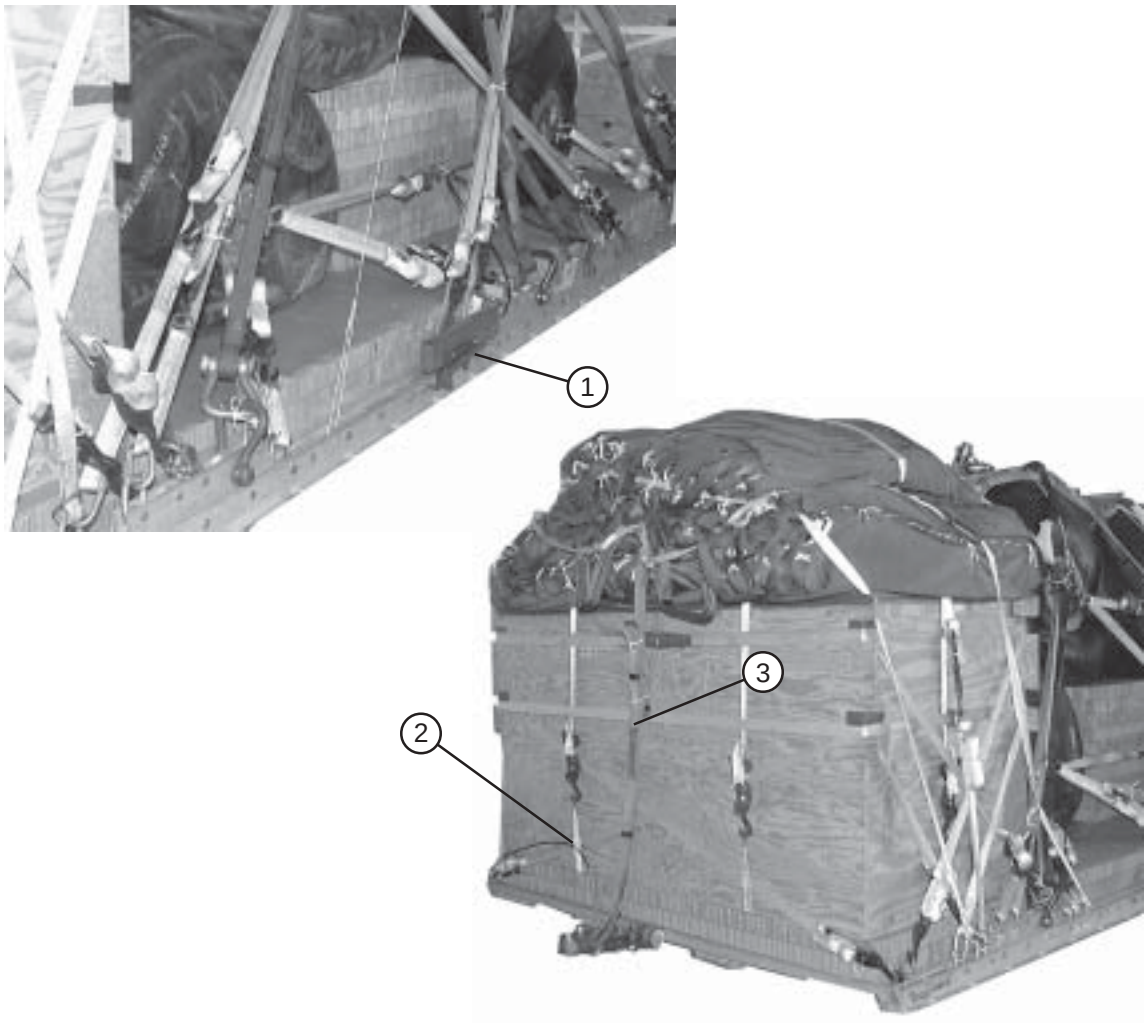
(1) Place the M-2 release on the release platform. Attach the suspension slings and the parachute riser extensions to the M-2 cargo parachute release according to FM 4-20.102/ NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Secure the cargo parachute release with type III nylon cord.

(2) S-fold and tie any slack in the suspension slings with 1/4-inch cotton webbing.

Figure 4-52. Cargo Parachute Release Release Installed

INSTALLING THE EXTRACTION SYSTEM

4-32. Install the components of the EFTC system as shown in Figure 4-53.



1. Using the rear holes, install the extraction force transfer coupling (EFTC) according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
2. Using a 24-foot EFTC cable, safety the cable using one turn type I, 1/4-inch cotton webbing.
3. Attach a 9-foot (2-loop), type XXVI nylon webbing sling for use as a deployment line.

Figure 4-53. Extraction System Installed

PLACING EXTRACTION PARACHUTE

4-33. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Rig the extraction line in an extraction line bag according to TM 10-1670-286-20/TO 13C5-2-41. Place the extraction parachute and extraction line on the load for installation in the aircraft.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

4-34. Select and install the provisions for emergency aft restraints according to the emergency aft restraint requirements table in FM 4-20.102/NAVSEA SS400 -AB-MMO-010/TO 13C7-1-5.

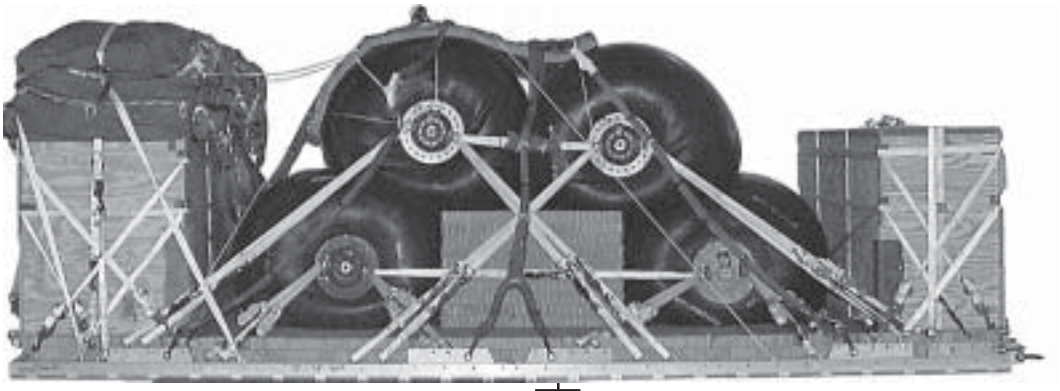
MARKING RIGGED LOAD

4-35. Mark the rigged load according to FM 4-20.102/NAVSEA SS400-AB-MMO -010/TO 13C7-1-5 and as shown in Figure 4-54. Complete Shipper's Declaration for Dangerous Goods and affix to the load. If the load varies from the one shown, the weight, height, CB, tipoff curve, and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

4-36. Use the equipment list in Table 4-3 to rig the load shown in Figure 4-54.

CAUTION
Make the final inspection required by FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



RIGGED LOAD DATA

Weight ..... 22,630 pounds

NOTE: The rigged weight for this load is using water as the liquid. Use the weight conversion table for the actual rigged weight for any other liquids used.

NOTE: The G-11 requirements may need to be recomputed for lighter liquids.

Maximum Weight ..... 24,000 pounds

Height ..... 88 inches

Width ..... 108 inches

Overall Length ..... 258 inches

Overhang: Front ..... 0 inches
Rear (EFTC) ..... 18 inches

Center of Balance (CB) (from front edge of platform) ..... 121 inches

Figure 4-54. AAFARS Rigged with Four 500-Gallon Drums for Low-Velocity Airdrop

Table 4-3. Equipment Required for Rigging AAFARS with Four Drums on 20-foot Type V Platform

Table 4-3. Equipment Required for Rigging AAFARS with Four Drums on 20-foot Type V Platform (continued)

National Stock Number	Item	Quantity
1670-01-307-1055	Link assembly: Three-point	2
1670-01-483-8259	Link, tow release mechanism (H-Block) C-17	1
	Lumber:	
5510-00-220-6146	2- by 4-in	As required
5510-00-220-6148	2- by 6-in	As required
	Nail, steel wire, common,	
5315-00-010-4659	8d	As required
5315-00-010-4662	12d	As required
5315-00-753-3885	16d	As required
1670-00-753-3928	Pad, energy dissipating, honeycomb, 3- by 36- by 96-in	25 sheets
	Parachute:	
	Cargo:	
1670-01-016-7841	G-11C	5
	Cargo extraction:	
1670-00-040-8135	28-foot	1
	Drogue: (for DES)	
1670-01-063-3715	15-ft	1
	Platform, airdrop, Type V, 20-foot	
1670-01-353-8425	Bracket assembly, EFTC	1
1670-01-162-2376	Bracket assembly, extraction	1
1670-01-162-2372	Clevis assembly	62
1670-01-247-2389	Bracket, suspension	8
1670-01-162-2381	Tandem link assembly (multipurpose link)	2
5530-00-128-4981	Plywood, 3/4-in	11 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	4
1670-01-062-6307	12-ft (4-loop), type XXVI nylon webbing	2
1670-01-062-6308	16-ft (4-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:	
1670-01-062-6311	120-ft (2-loop), type XXVI	5
5340-00-040-8219	Strap, parachute release, multicut, comes w/ 3 knives	2
7510-00-266-5016	Tape, adhesive, 2-in	As required
7510-00-266-6710	Tape, masking, 2-in	As required
1670-00-937-0271	Tie-down assembly, 15-foot	62
	Webbing:	
8305-00-268-2411	Cotton, 1/4-in, type I	As required
8305-00-082-5752	Nylon, tubular, 1/2-in	As required
8305-00-263-3591	Type VIII	As required

SECTION III- RIGGING AAFARS WITH FIVE 500-GALLON FUEL DRUM

DESCRIPTION OF LOAD

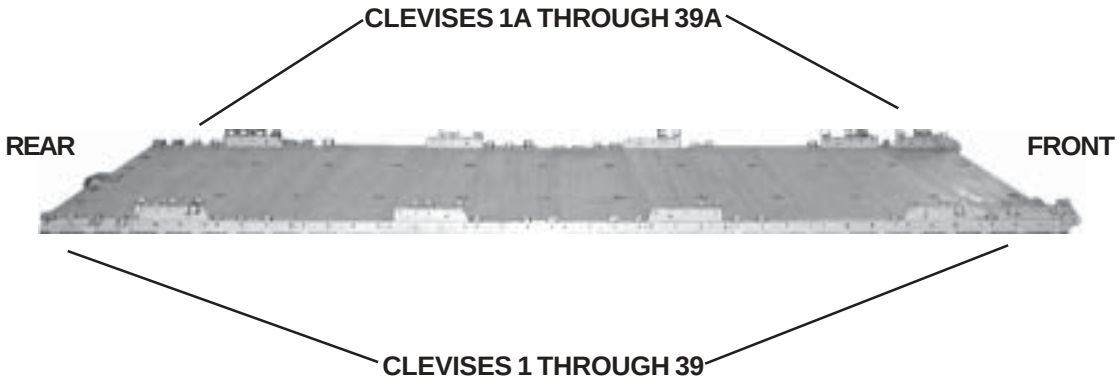
4-37. The Advanced Aviation Forward Area Refueling System (AAFARS) is rigged on a 24-foot type, V platform with six G-11 cargo parachutes. The AAFARS is designed for forward area refueling of up to four aircraft at a time with a minimum of 55 GPM. There are five collapsible fuel drums as an accompanying load. Each drum is filled with 432 gallons of liquid. When empty, each drum weighs 250 pounds and is 62 inches long and 53 inches in diameter. The total rigged overall length is 288 inches. Width is 108 inches. Height is 96 inches. Center of balance is 146 inches.

Notes:
1. For drums filled with a liquid other than water, use Table 1-1 to recompute the weight.
2. If the load varies from the one shaown, the weight, height, CB, tipoff curve, and parachute requirements must be recomputed
3. Do not pressurize drums with air.

PREPARING PLATFORM

4-38. Prepare a 24-foot type V airdrop platform using two tandem links, eight suspension brackets, and 80 tie-down clevises as shown in Figure 4-55.

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



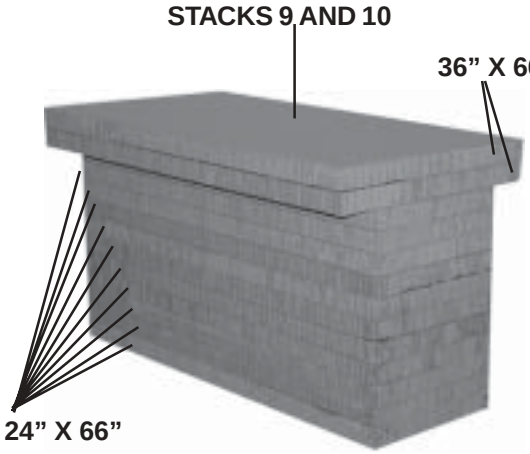
Steps:

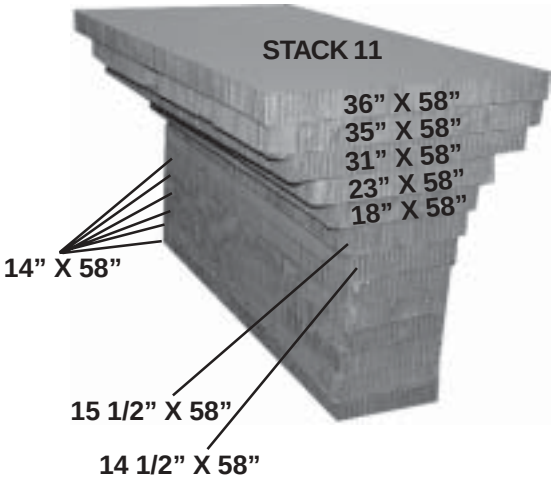
1. Inspect, or assemble and inspect, the platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22.
2. Install a tandem link on the front of each platform side rail using holes 1, 2, and 3.
3. Install a suspension bracket to each platform side rail using holes 6, 7, and 8.
4. Install a suspension bracket to each platform side rail using holes 18, 19, and 20.
5. Install a suspension bracket to each platform side rail using holes 29, 30, and 31.
5. Install a suspension bracket to each platform side rail using holes 41, 42, and 43.
6. Install a tie-down clevis to bushings 1 (doubled), 3, and 4 (doubled) on each front tandem links.
7. Install a tie-down clevis to bushings 2 (doubled), 3, and 4 on each of the first suspension brackets.
8. Install a tie-down clevis to bushings 1 and 2 of each of the second suspension brackets.
9. Install a tie-down clevis to bushings 1, 2, and 3 of each of the third suspension brackets.
10. Install a tie-down clevis to bushings 1 (doubled), 2, 3, and 4 (doubled) of each of the fourth suspension brackets.
11. Starting at the front of each platform side rail, install a tie-down clevis to the bushings bolted to holes 4, 9, 15, 16, 21, 22, 25, 26, 28, 38, 39, 40, 45 (doubled), 46 (doubled), 47, and 48 (doubled).
12. Starting at the front of the platform, number the clevises bolted to the right side from 1 through 39 and those bolted to the left side from 1A through 39A.

Figure 4-55. Platform Prepared

PREPARING HONEYCOMB

4-39. Build honeycomb stacks as shown in Figures 4-56 and 4-57.



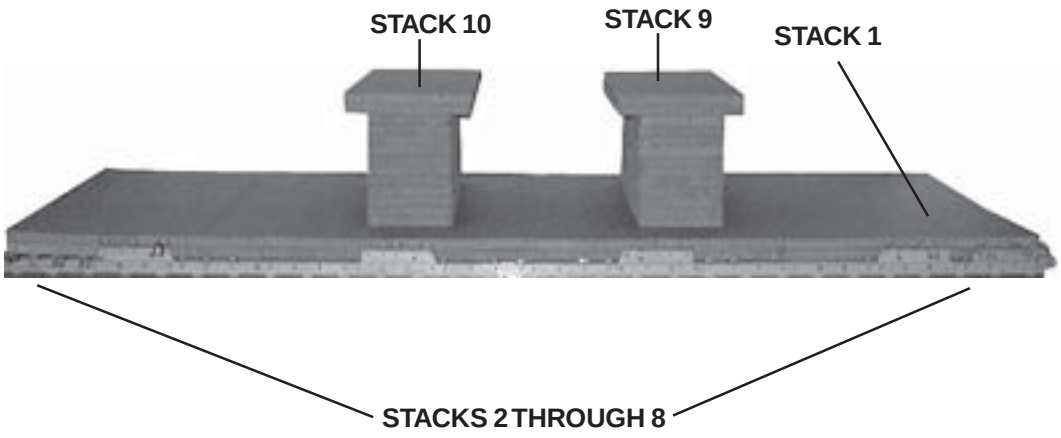


STACK NUMBER	PIECES	WIDTH (INCHES)	LENGTH (INCHES)	MATERIAL	INSTRUCTIONS
1-8	2	36	96	Honeycomb	Do not glue together.
9 and 10	11	24	66	Honeycomb	Glue together forming a base.
	2	36	66	Honeycomb	Glue together and glue onto base.
11	6	14	58	Honeycomb	Glue together forming a base.
	1	14 1/2	58	Honeycomb	Glue onto base.
	1	15 1/2	58	Honeycomb	Glue onto base.
	1	18	58	Honeycomb	Glue onto base.
	1	23	58	Honeycomb	Glue onto base.
	1	31	58	Honeycomb	Glue onto base.
	1	35	58	Honeycomb	Glue onto base.
	1	36	58	Honeycomb	Glue onto base.

Figure 4-56. Honeycomb Stacks Prepared

POSITIONING HONEYCOMB STACKS

4-40. Position honeycomb stacks as shown in Figure 4-57.



1. Position stack 1 on the front edge of the platform and centered.
2. Position stacks 2 through 8 flush on the rear edge of stack1 placed flush with each other.
3. Position stack 9 centered left to right and at 88 inches from the front edge of the platform. Ensure the 66 inch length is across the platform.
4. Position stack 10 centered left to right and 54 inches from the rear edge of stack 9. Ensure the 66 inch length is across the platform.

Figure 4-57. Positioning Honeycomb Stacks

BUILDING THE EQUIPMENT BOXES

4-41. Build the front and rear equipment boxes as shown in Figures 4-4 and 4-5.

PREPARING EQUIPMENT FOR EQUIPMENT BOXES

4-42. Prepare the fire extinguishers, filter separator, explosion proof motor, pumps, battery box, manuals and toolkit as explained and shown in paragraph 4-6 and Figures 4-6 through 4-12. Using the list printed on the equipment bags, place the equipment indicated on each list into it's bag.

POSITIONING EQUIPMENT BOXES

4-43. Pre-position lashings decribed and shown in Figure 4-13, steps 1 through 3. Place the boxes over the lashings and flush with the edges of the honeycomb as decribed and shown in Figure 4-13, steps 4 and 5.

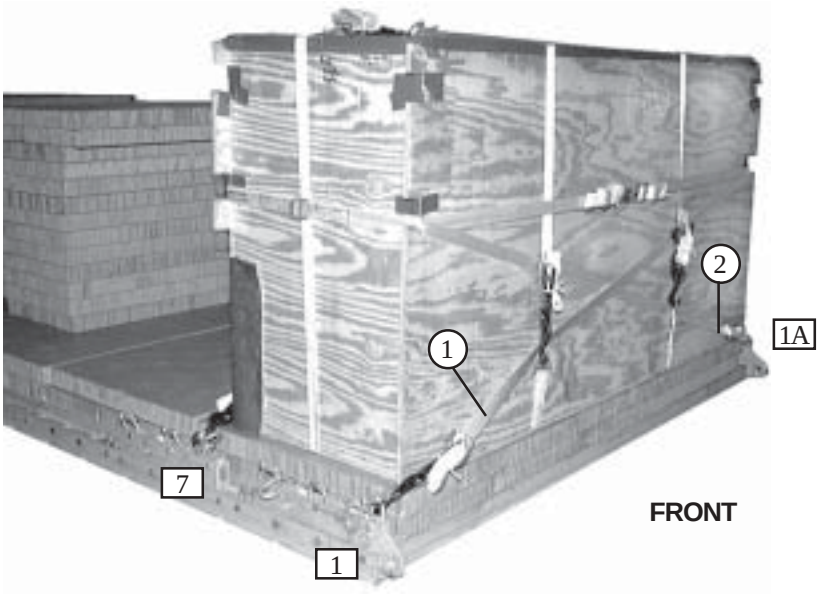
POSITIONING EQUIPMENT IN EQUIPMENT BOXES AND SECURING BOXES

4-44. Position and secure equipment in equipment boxes as shown in Figures 4-14 and 4-15.

LASHING THE EQUIPMENT BOXES TO THE PLATFORM

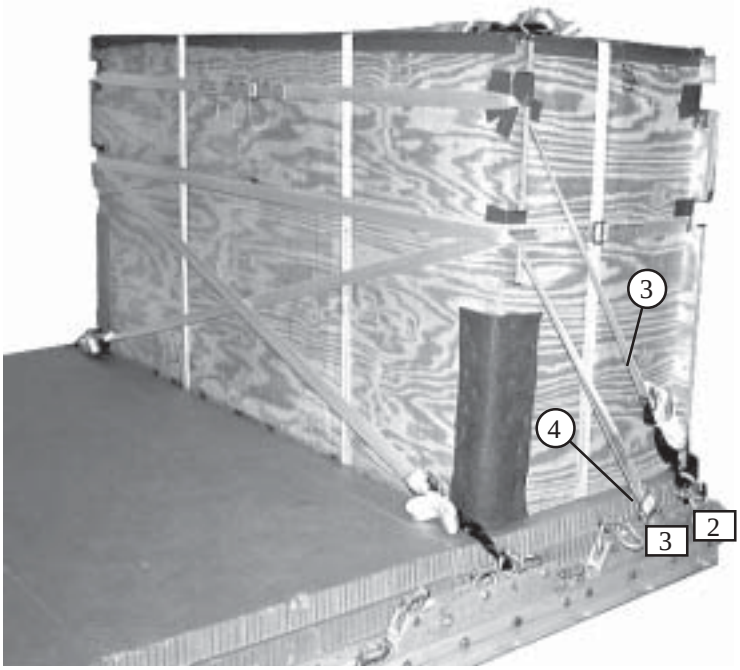
4-45. Lash the equipment boxes as shown in Figures 4-58 through 4-63.

a. Lash the front equipment box to the platform as shown in Figures 4-58 through 4-60.



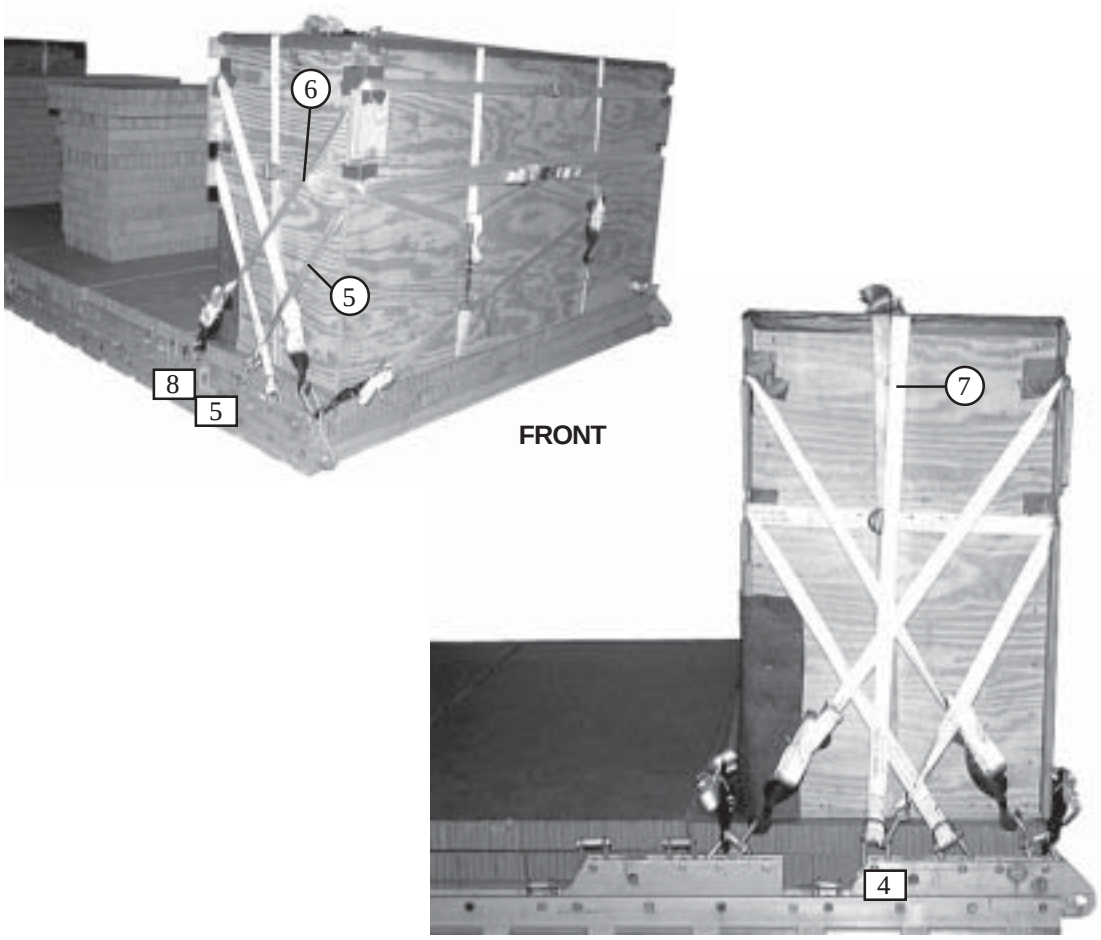
Lashing Number	Tie-down Clevis Number	Instructions
1	1 and 7	Route a 30-foot lashing from clevis 1 to the front bottom left cutout, to the rear bottom left cutout, to clevis 7.
2	1A and 7A	Route a 30-foot lashing from clevis 1A to the front bottom right cutout, to the rear bottom right cutout, to clevis 7A.

Figure 4-58. Lashings 1 and 2 Installed



Lashing Number	Tie-down Clevis Number	Instructions
3	2 and 2A	Route a 30-foot lashing from clevis 2 to the rear top right cutout, to the rear top left cutout, to clevis 2A.
4	3 and 3A	Route a lashing through it's own D-ring on clevis 3 to the rear bottom right cutout, to the rear bottom left cutout, to clevis 3A.

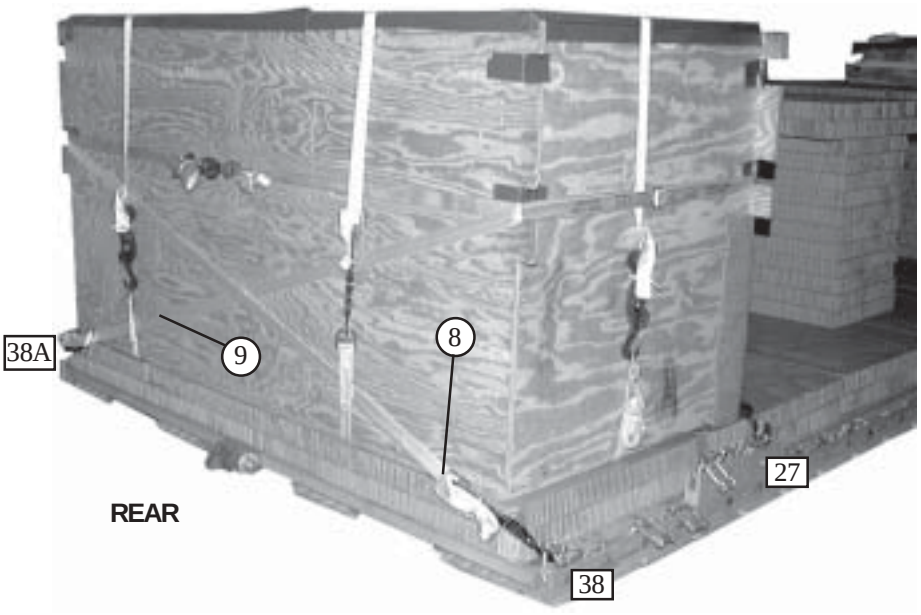
Figure 4-59. Lashings 3 and 4 Installed



Lashing Number	Tie-down Clevis Number	Instructions
5	5 and 5A	Route a lashing through it's own D-ring on clevis 5 to the front bottom right cutout, to the front bottom left cutout, to clevis 5A.
6	8 and 8A	Route a 30-foot lashing from clevis 8 to the front top right cutout, to the front top left cutout, to clevis 8A.
7	4 and 4A	Route a lashing through it's own D-ring on clevis 4, repeat on clevis 4A and load bind them together on top of the box.

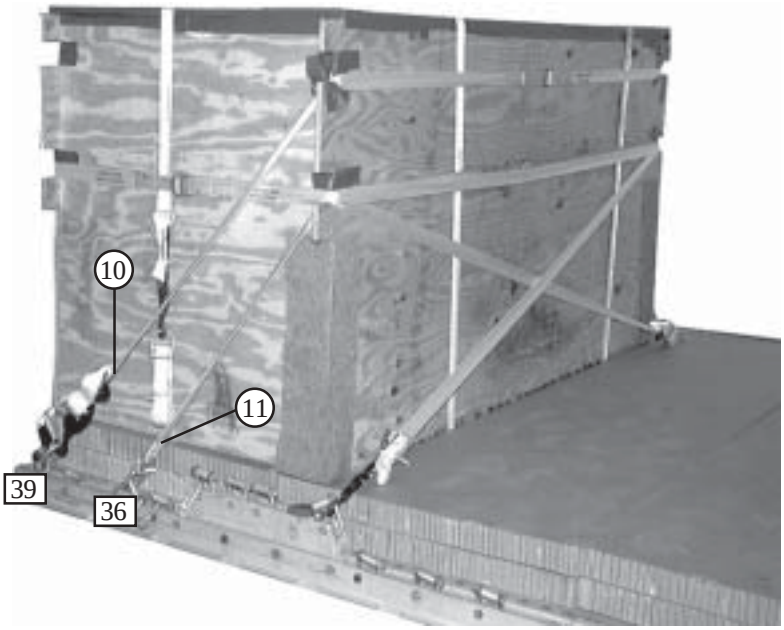
Figure 4-60. Lashings 5 through 7 Installed

b. Lash the rear equipment box to the platform as shown in Figures 4-61 through 4-63.



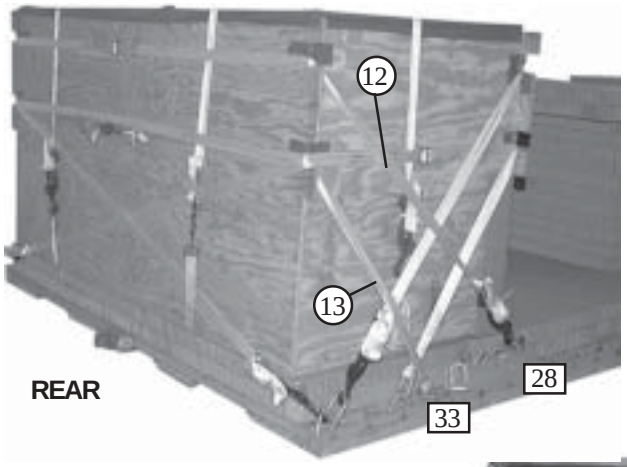
Lashing Number	Tie-down Clevis Number	Instructions
8	27 and 38	Route a 30-foot lashing from clevis 27 to the front lower left cutout, to the rear lower left cutout, to clevis 38.
9	27A and 38A	Route a 30-foot lashing from clevis 27A to the front lower right cutout, to the rear lower right cutout, to clevis 38A.

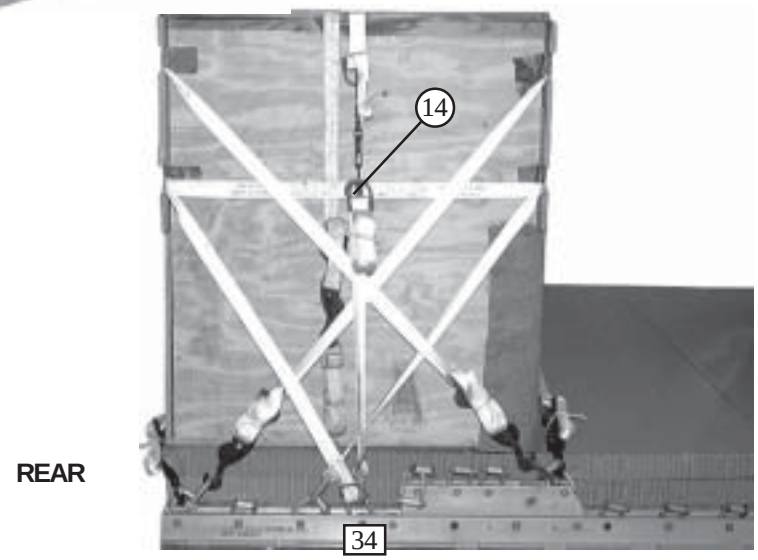
Figure 4-61. Lashings 8 and 9 Installed



Lashing Number	Tie-down Clevis Number	Instructions
10	39 and 39A	Route a 30-foot lashing from clevis 39 to the front top right cutout, to the front top left cutout, to clevis 39A.
11	36 and 36A	Route a lashing through it's own D-ring on clevis 36 to the front bottom right cutout, to the bottom left cutout, to clevis 36A.

Figure 4-62. Lashings 10 and 11 Installed



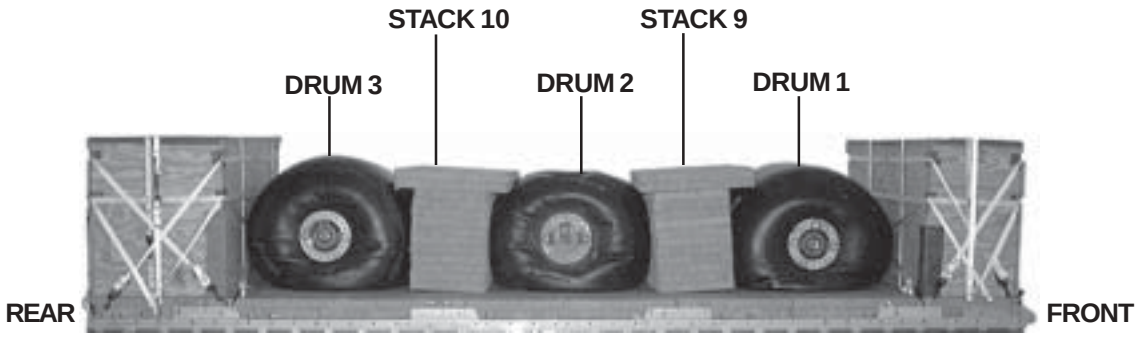


Lashing Number	Tie-down Clevis Number	Instructions
12	28 and 28A	Route a 30-foot lashing from clevis 28 to the rear top right cutout, to the rear top left cutout, to clevis 28A.
13	33 and 33A	Route a lashing through it's own D-ring on clevis 33 to the rear bottom right cutout, to the rear bottom left cutout, to clevis 33A.
14	34 and 34A	Route a lashing through it's own D-ring on clevis 34, repeat on clevis 34A and load bind on the right side of the box .

Figure 4-63. Lashings 12 through 14 Installed

POSITIONING AND LASHING THE DRUMS

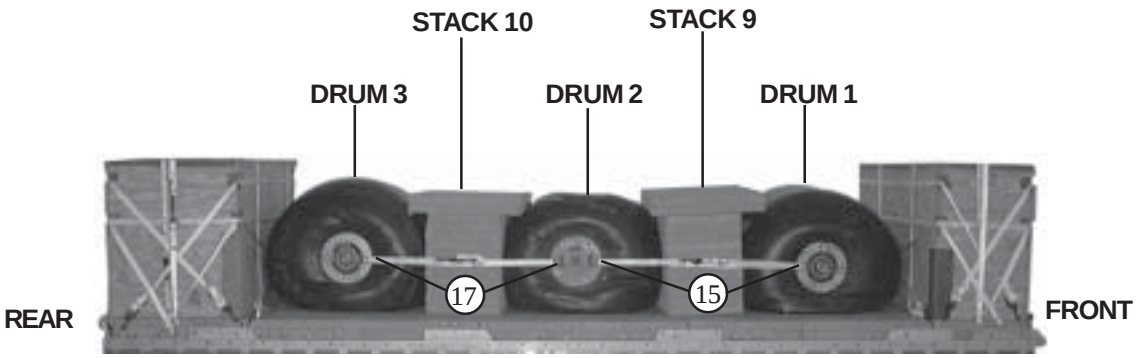
4-46. Position and lash the drums to the platform as shown in Figures 4-64 through 4-71.



1. Place a platform clevis on one end of two 9-foot (2-loop), type XXVI nylon webbing slings. Attach a sling to each side of the drum (for lifting purposes only) and remove after the drums are positioned (not shown).
2. Position drum 1 in front of and against stack 9 and centered on the platform.
3. Position drum 2 to the rear of and against stack 9 and centered on the platform.
4. Position drum 3 to the rear of and against stack 10 and centered on the platform.

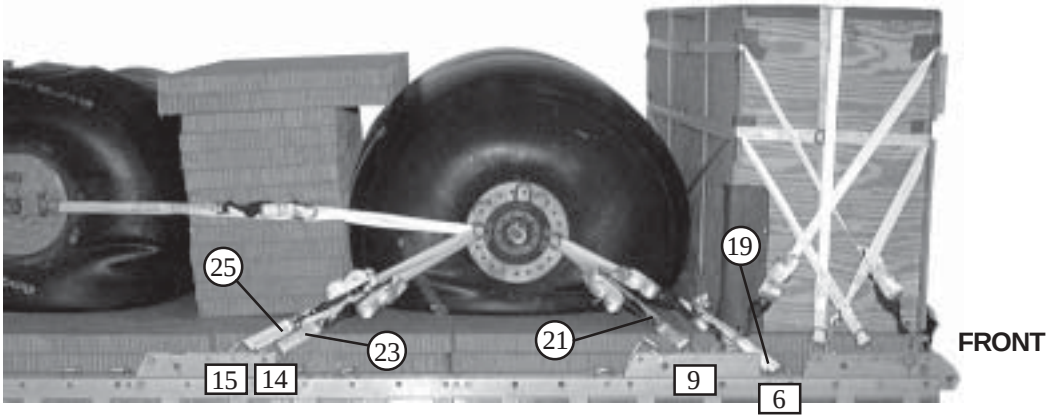
NOTE: There should be a 3 to 4 inch gap between the drums and the equipment boxes.

Figure 4-64. Fuel Drums 1 through 3 Positioned



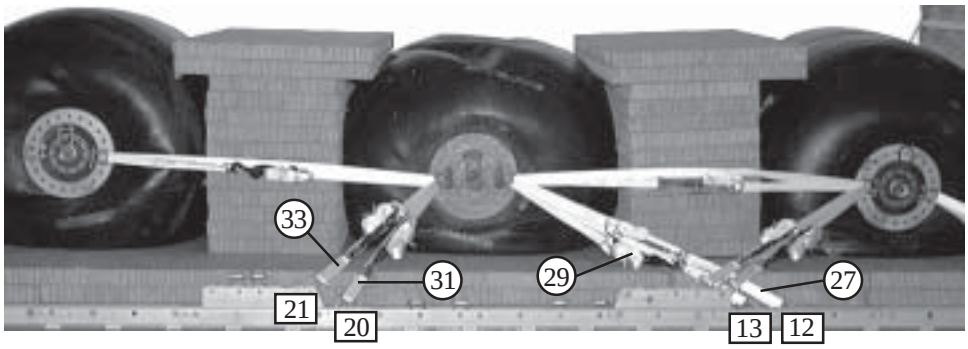
Lashing Number	Tie-down Clevis Number	Instructions
15		Route a lashing from the rear shackle of drum 1 to the front shackle of drum 2 on the right side.
16		Route a lashing from the rear shackle of drum 1 to the front shackle of drum 2 on the left side.
17		Route a lashing from the rear shackle of drum 2 to the front shackle of drum 3 on the right side.
18		Route a lashing from the rear shackle of drum 2 to the front shackle of drum 3 on the left side.

Figure 4-65. Lashings 15 through 18 Installed



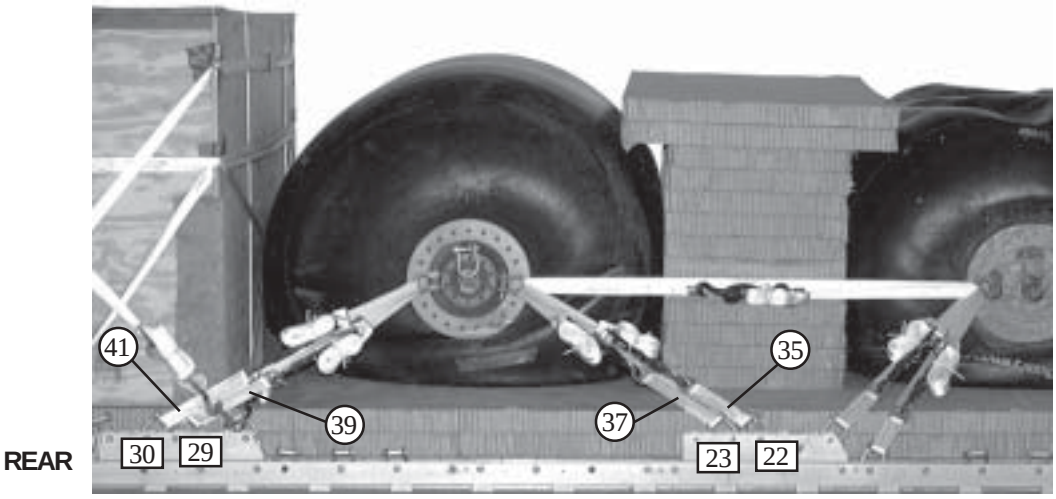
Lashing Number	Tie-down Clevis Number	Instructions
19	6	Route a lashing from clevis 6 to the front right shackle on drum 1.
20	6A	Route a lashing from clevis 6A to the front left shackle on drum 1.
21	9	Route a lashing from clevis 9 to the front right shackle on drum 1.
22	9A	Route a lashing from clevis 9A to the front left shackle on drum 1.
23	14	Route a lashing from clevis 14 to the rear right shackle on drum 1.
24	14A	Route a lashing from clevis 14A to the rear left shackle on drum 1.
25	15	Route a lashing from clevis 15 to the rear right shackle on drum 1.
26	15A	Route a lashing from clevis 15A to the rear left shackle on drum 1.

Figure 4-66. Lashings 19 through 26 Installed



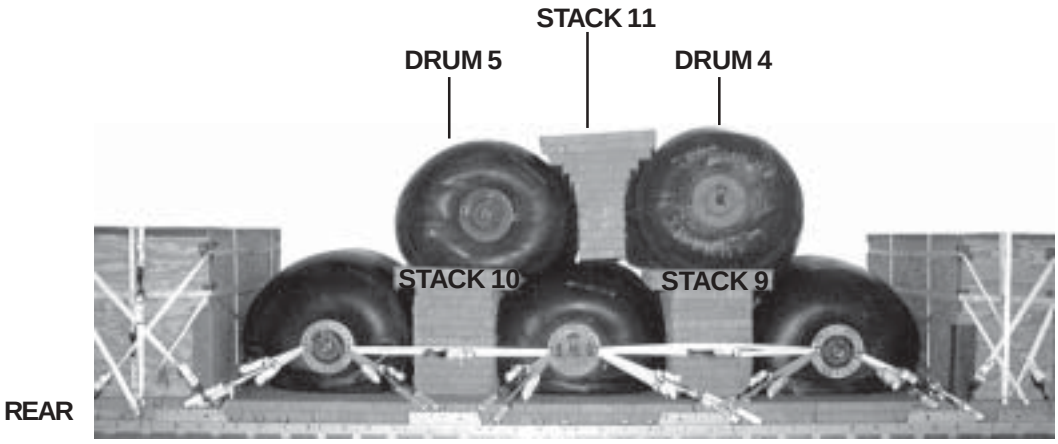
Lashing Number	Tie-down Clevis Number	Instructions
27	12	Route a lashing from clevis 12 to the front right shackle on drum 2.
28	12A	Route a lashing from clevis 12A to the front left shackle on drum 2.
29	13	Route a lashing from clevis 13 to the front right shackle on drum 2.
30	13A	Route a lashing from clevis 13A to the front left shackle on drum 2.
31	20	Route a lashing from clevis 20 to the rear right shackle on drum 2.
32	20A	Route a lashing from clevis 20A to the rear left shackle on drum 2.
33	21	Route a lashing from clevis 21 to the rear right shackle on drum 2.
34	21A	Route a lashing from clevis 21A to the rear left shackle on drum 2.

Figure 4-67. Lashings 27 through 34 Installed



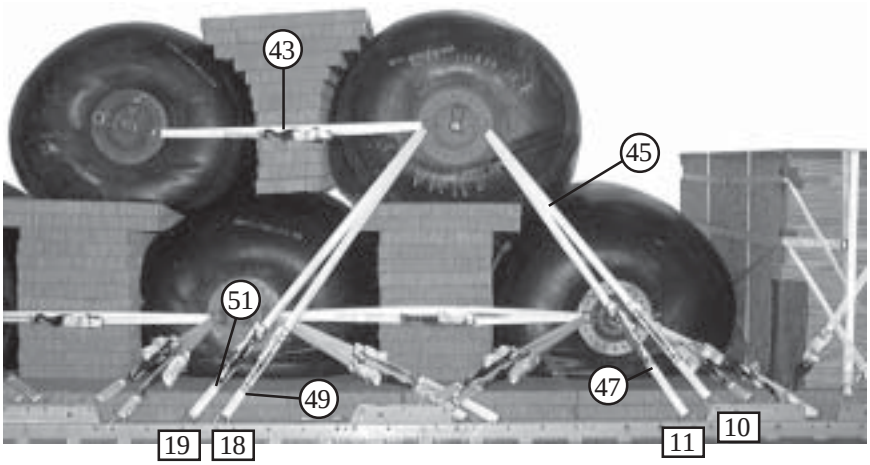
Lashing Number	Tie-down Clevis Number	Instructions
35	22	Route a lashing from clevis 22 to the front right shackle on drum 3.
36	22A	Route a lashing from clevis 22A to the front left shackle on drum 3.
37	23	Route a lashing from clevis 23 to the front right shackle on drum 3.
38	23A	Route a lashing from clevis 23A to the front left shackle on drum 3.
39	29	Route a lashing from clevis 29 to the rear right shackle on drum 3.
40	29A	Route a lashing from clevis 29A to the rear left shackle on drum 3.
41	30	Route a lashing from clevis 30 to the rear right shackle on drum 3.
42	30A	Route a lashing from clevis 30A to the rear left shackle on drum 3.

Figure 4-68. Lashings 35 through 42 Installed



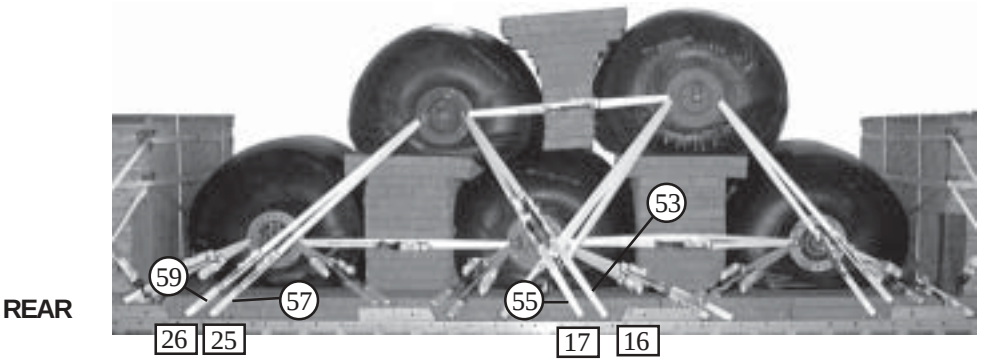
1. Position drum 4 centered on stack 9.
2. Position drum 5 centered on stack 10.
3. Position stack 11 between drums 4 and 5.

Figure 4-69. Fuel Drums 4 and 5 Positioned



Lashing Number	Tie-down Clevis Number	Instructions
43		Route a lashing from the rear shackle of drum 4 to the front shackle of drum 5 on the right side.
44		Route a lashing from the rear shackle of drum 4 to the front shackle of drum 5 on the left side.
45	10	Route a lashing from clevis 10 to the front right shackle on drum 4.
46	10A	Route a lashing from clevis 10A to the front left shackle on drum 4.
47	11	Route a lashing from clevis 11 to the front right shackle on drum 4.
48	11A	Route a lashing from clevis 11A to the front left shackle on drum 4.
49	18	Route a lashing from clevis 18 to the rear right shackle on drum 4.
50	18A	Route a lashing from clevis 18A to the rear left shackle on drum 4.
51	19	Route a lashing from clevis 19 to the rear right shackle on drum 4.
52	19A	Route a lashing from clevis 19A to the rear left shackle on drum 4.

Figure 4-70. Lashings 43 through 52 Installed



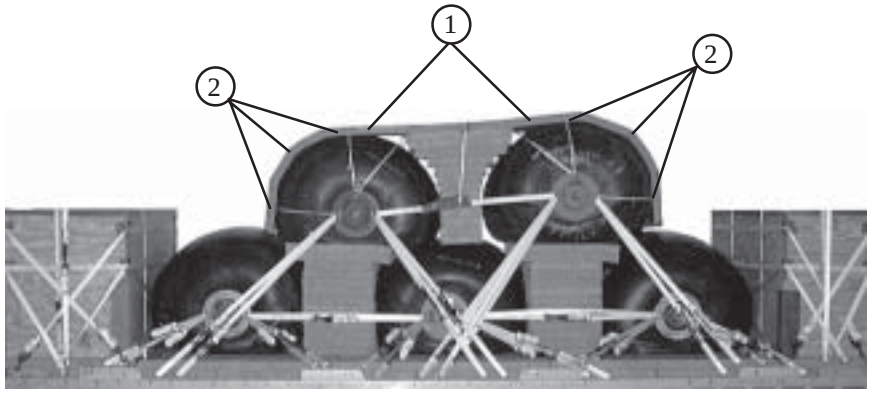
NOTE: Wrap the load binder between drums 4 and 5 with a 1/2-inch- by 12-inch- by 17-inch piece of felt and secure it with type III nylon cord (not shown).

Lashing Number	Tie-down Clevis Number	Instructions
53	16	Route a lashing from clevis 16 to the front right shackle on drum 5.
54	16A	Route a lashing from clevis 16A to the front left shackle on drum 5.
55	17	Route a lashing from clevis 17 to the front right shackle on drum 5.
56	17A	Route a lashing from clevis 17A to the front left shackle on drum 5.
57	25	Route a lashing from clevis 25 to the rear right shackle on drum 5.
58	25A	Route a lashing from clevis 25A to the rear left shackle on drum 5.
59	26	Route a lashing from clevis 26 to the rear right shackle on drum 5.
60	26A	Route a lashing from clevis 26A to the rear left shackle on drum 5.

Figure 4-71. Lashings 53 through 60 Installed

BUILDING AND POSITIONING RELEASE PLATFORM

4-47. Build and position the release platform as shown in Figure 4-72.



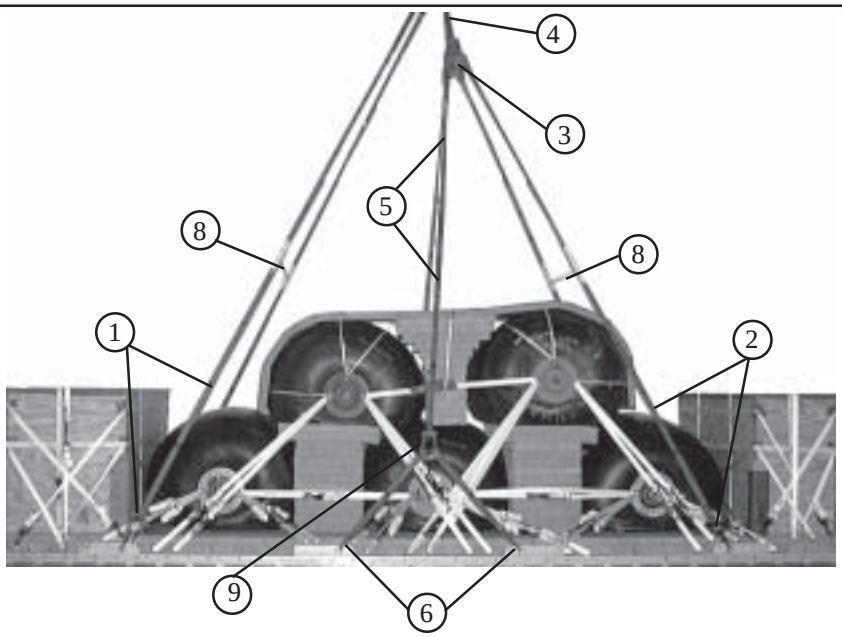
(1) Place two sheets of 36-inch by 96-inch honeycomb over drums 4 and 5.

(2) Tape the upper edges of the honeycomb and secure it to the shackles and felted load binder with 1/2-inch tubular nylon webbing.

Figure 4-72. Release Platform Built and Positioned

INSTALLING SUSPENSION SLINGS AND SAFETY TIES

4-48. Install suspension slings and safety ties as shown in Figure 4-73.



1. Place two large clevises on one end of a 20-foot (4-loop), type XXVI nylon suspension sling. Attach the lower clevis to the right rear suspension bracket.

2. Place two large clevises on one end of a 16-foot (4-loop), type XXVI nylon suspension sling. Attach the lower clevis to the right front suspension bracket. Safety tie them together with type III nylon webbing using an hourglass tie (not shown).

3. Attach the running end of the 16-foot sling to a 3-point link.

4. Place a 3-foot (4-loop), type XXVI nylon suspension sling on the 3-point link.

5. Attach a 12-foot (4-loop), type XXVI nylon suspension sling on the 3-point link. Place a large clevis on the running end of the 12-foot (4-loop), type XXVI nylon suspension sling.

6. Attach two 3-foot (4-loop), type XXVI nylon suspension slings to the large clevis on the 12-foot sling that was installed in step 5. Attach large clevises to each running end of the 3-foot slings and attach the clevises to the right center suspension brackets.

7. Repeat steps 1 through 6 for the left side (not shown).

8. Raise the suspension slings and install the suspension sling safety ties to the front and rear suspension slings doubled 1/2-inch tubular nylon webbing 6 to 8 inches above highest point on the load. Refer to the Notice of Exception in the Introduction of this manual.

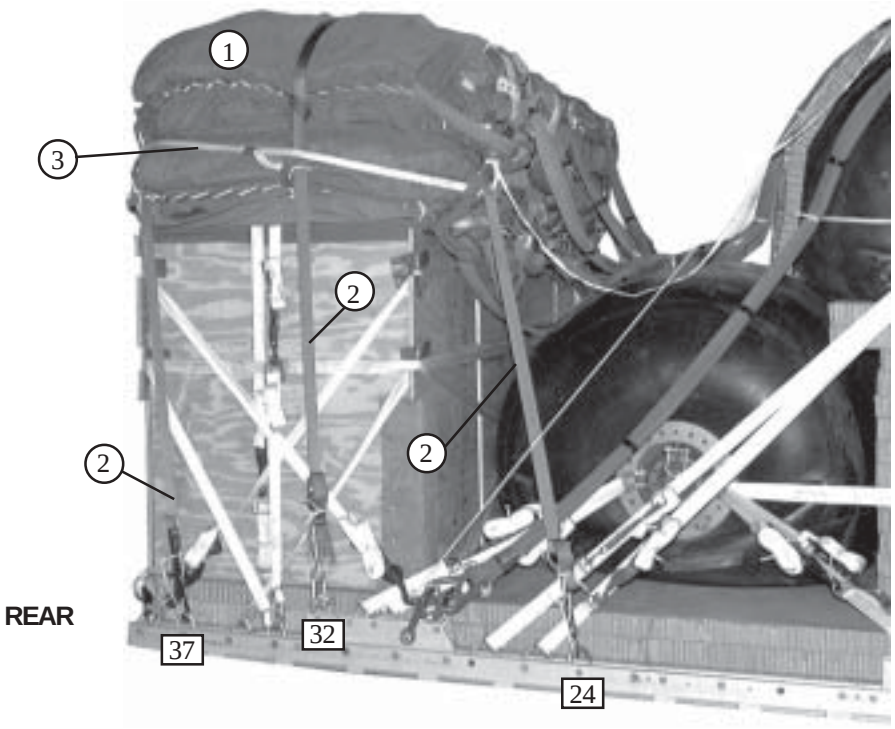
9. Safety tie upper clevis to a convient point on the load using type III nylon cord.

10. Paid and tape link assemblies (not shown).

Figure 4-73. Suspension Slings and Safety Ties Installed

PREPARING AND STOWING CARGO PARACHUTES

4-49. Prepare and stow six G-11 cargo parachute as shown in Figure 4-74.



(1) Prepare and stow six G-11 cargo parachutes on the rear equipment box according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

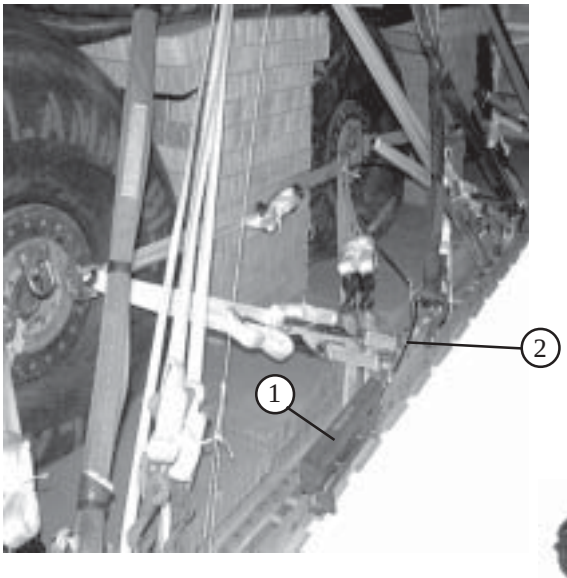
(2) Restrain the parachutes according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 using platform clevises 24, 24A, 32, 32A, 37 and 37A on the platform.

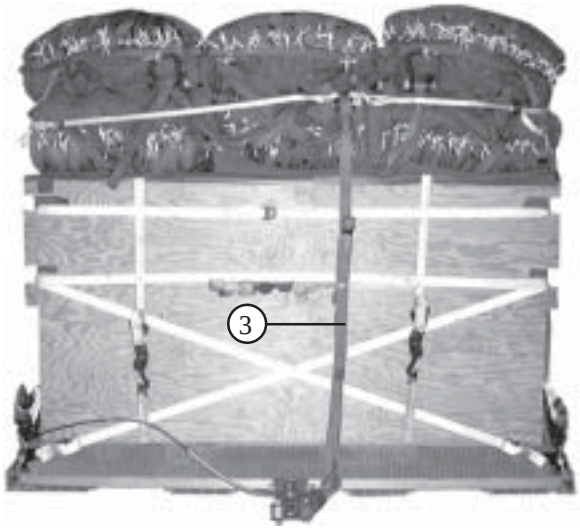
(3) Install the multicut parachute release straps according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

Figure 4-74. Cargo Parachutes Prepared and Stowed

INSTALLING THE EXTRACTION SYSTEM

4-50. Install the extraction system as shown in Figure 4-75.





(1) Using the rear holes, install the extraction force transfer coupling (EFTC) according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

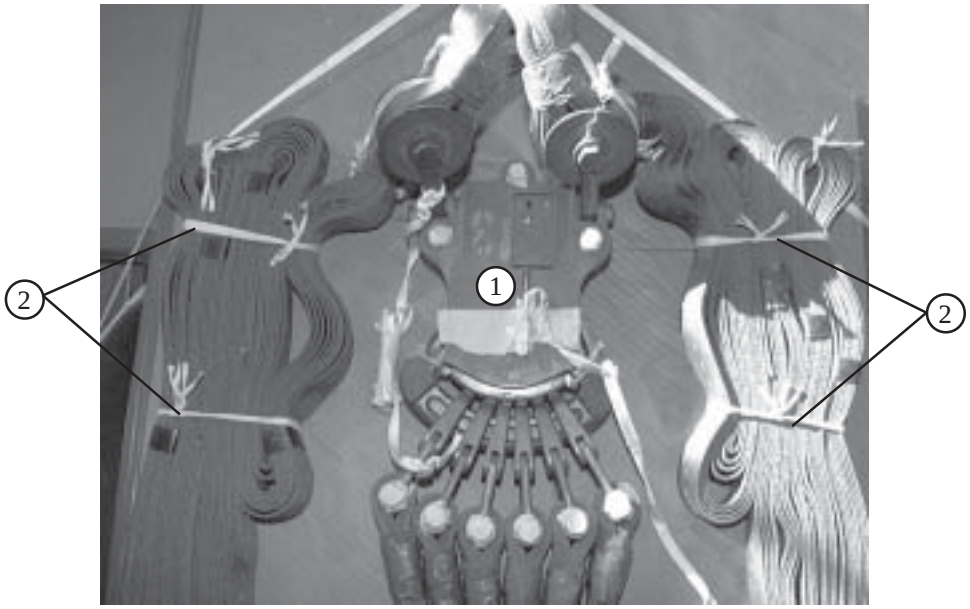
(2) Using a 24-foot EFTC cable, safety the cable using one turn type I, 1/4-inch cotton webbing.

(3) Attach a 9-foot (2-loop), type XXVI nylon webbing sling for use as a deployment line.

Figure 4-75. Extraction System Installed

INSTALLING THE CARGO PARACHUTE RELEASE SYSTEM

4-51. Install the M-2 cargo parachute release system as shown in Figure 4-76.



(1) Place the M-2 release on the release platform. Attach the suspension slings and the parachute riser extensions to the M-2 cargo release according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Secure the cargo parachute release with type III nylon cord.

(2) S-fold and tie any slack in the suspension slings with type I, 1/4-inch cotton webbing.

Figure 4-76. Cargo Parachute Release Installed

PLACING EXTRACTION PARACHUTE

4-52. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Rig the extraction line in an extraction line bag according to TM 10-1670-268-20/TO 13C5-2-41. Place the extraction parachute and extraction line on the load for installation in the aircraft.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

4-53. Select and install the provisions for emergency aft restraints according to the emergency aft restraint requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

MARKING RIGGED LOAD

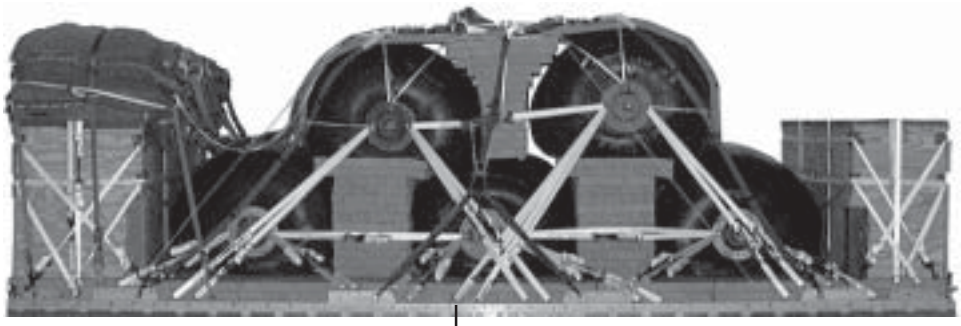
4-54. Mark the rigged load according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 4-77. Complete Shipper's Declaration for Dangerous Goods and affix to the load. If the load varies from the one shown, the weight, height, CB, tipoff curve, and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

4-55. Use the equipment list in Table 4-4 to rig the load shown in Figure 4-77.

CAUTION

Make the final inspection required by FM 4-20.102/ NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



RIGGED LOAD DATA

Weight ..... 27,292 pounds

Maximum Weight ..... 30,000 pounds

Height ..... 96 inches

Width ..... 108 inches

Overall Lenght ..... 306 inches
Overhang: Front ..... 0 inches
Overhang: Rear (EFTC) ..... 18 inches

Center of Balance (CB) (from front edge of platform) ..... 146 inches

Figure 4-77. AAFARS With Five 500-Gallon Drums Rigged for Low Velocity Airdrop

Table 4-4. Equipment Required for Rigging AAFARS with Five 500-Gallon Drums

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive paste, 1-gal	As required
1670-01-035-6054	Bridle, extraction line bag (for DES)	1
4030-00-090-5354	Clevis, large	20
4030-00-678-8562	Clevis, medium	6
4020-00-240-2146	Cord, nylon, type III, 550-lb	As required
1670-00-434-5783	Coupling, airdrop, extraction force transfer with cable, 24-ft	1
1670-00-360-0328	Cover, clevis, large	6
8305-00-958-3685	Felt sheet, 1/2-inch	As required
1670-01-183-2678	Leaf, extraction line (line bag)	2
	Line, drogue (for DES)	
1670-01-064-4452	60-foot (1-loop), type XXVI	1
	Line, extraction:	
1670-01-062-6313	For C-130: 60-foot (3-loop), type XXVI	1
1670-01-107-7651	For C-141: 140-foot (3-loop), type XXVI	1
1670-01-107-7651	For C-17: 140-foot (3-loop), type XXVI	1
	For C-5:	
1670-01-062-6313	60-ft, (3-loop), type XXVI	1
1670-01-107-7651	140-ft, (3-loop), type XXVI	1
	Link assembly:	1
	Two-point, 3 3/4-in	2
5306-00-435-8994	Bolt, 1-in diam, 4-in long	2
5310-00-232-5165	Nut, 1-in, hexagonal	2
1670-00-003-1953	Plate, side, 3 3/4-in	2
5365-00-007-3414	Spacer, large	
	Two-point, 3 3/4-in (for DES)	1
5306-00-435-8994	Bolt, 1-in diam, 4-in long	2
5310-00-232-5165	Nut, 1-in, hexagonal	2
1670-00-003-1953	Plate, side, 3 3/4-in	2
5365-00-007-3414	Spacer, large	2
1670-01-307-1055	Three-point	2
1670-01-483-8259	Link, tow release mechanism (H-Block) C-17 aircraft	1
	Lumber:	
5510-00-220-6146	2- by 4-in	As required

Table 4-4. Equipment Required for Rigging AAFARS with Five 500-Gallon Drums (Continued)

National Stock Number	Item	Quantity
5315-00-753-3885	Nail, steel wire, common, 16d	As required
1670-00-753-3928	Pad, energy dissipating, honeycomb, 3- by 36- by 96-in	32 sheets
	Parachute:	
1670-01-016-7841	Cargo, G-11C	6
1670-00-040-8135	Cargo, extraction, 28ft	1
1670-01-063-3715	Drogue, 15ft (for DES)	1
	Platform, airdrop, type V, 24-foot:	
1670-01-353-8425	Bracket assembly, coupling, (EFTC)	(1)
1670-01-247-2389	Bracket, suspension	(8)
1670-01-162-2372	Clevis assembly, type V	(80)
1670-01-353-8424	Extraction bracket assembly	(1)
1670-01-162-2381	Tandem link assembly	(2)
5530-00-618-8073	Plywood, 3/4- by 48- by 96-in	11 sheets
1670-01-097-8817	Release, cargo parachute, M-2	1
	Sling, cargo airdrop:	
	For deployment line:	
1670-01-062-6304	9-ft (2-loop), type XXVI nylon webbing	1
	For suspension:	
1670-01-062-6306	3-ft (4-loop), type XXVI nylon webbing	6
1670-01-062-6307	12-ft (4-loop), type XXVI nylon webbing	2
1670-01-062-6308	16-ft (4-loop), Type XXVI nylon webbing	2
1670-01-064-4453	20-ft (4-loop), typeXXVI nylon webbing	2
	For riser extension:	
1670-01-062-6311	120-ft (2-loop), type XXVI nylon webbing	6
1670-00-040-8219	Strap, parachute release, multicut	2
7510-00-266-5016	Tape, adhesive, 2-in	As required
7510-00-266-6710	Tape, masking, 2-in	As required
1670-00-937-0271	Tie-down assembly, 15-ft	70
	Webbing:	
8305-00-268-2411	Cotton, 1/4-in, type I	As required
8305-00-082-5752	Nylon, tubular, 1/2-in	As required
8305-00-260-6890	Type X	As required

SECTION IV- RIGGING AAFARS WITH SIX 500-GALLON FUEL DRUMS

DESCRIPTION OF LOAD

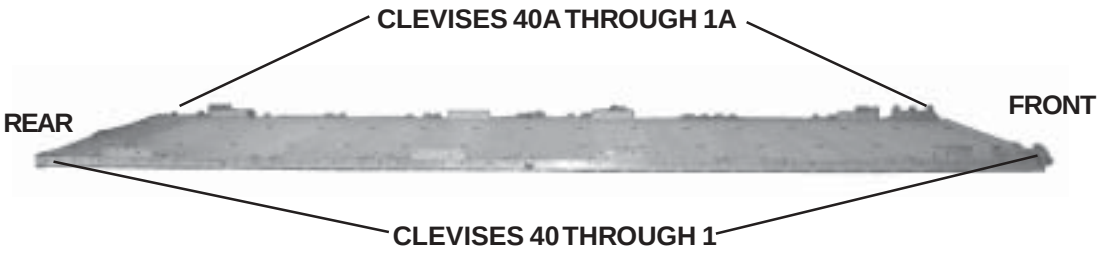
4-56. The Advanced Aviation Forward Area Refueling System (AAFARS) is rigged on a 32-foot type, V platform with seven G-11 cargo parachutes. The AAFARS is designed for forward area refueling of up to four aircraft at a time with a minimum of 55 GPM. There are six collapsible fuel drums as an accompanying load. Each drum is filled with 432 gallons of liquid. When empty, each drum weighs 250 pounds and is 62 inches long and 53 inches in diameter. The total rigged overall length is 402 inches. Width is 108 inches. Height is 94 inches. Center of balance is 195 inches.

Notes:
1. For drums filled with a liquid other than water, use Table 1-1 to recompute the weight.
2. If the load varies from the one shaown, the weight, height, CB, tipoff curve, and parachute requirements must be recomputed
3. Do not pressurize drums with air.

PREPARING PLATFORM

4-57. Prepare a 32-foot type V airdrop platform using two tandem links, eight suspension brackets and 84 tie-down clevises as shown in Figure 4-78.

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



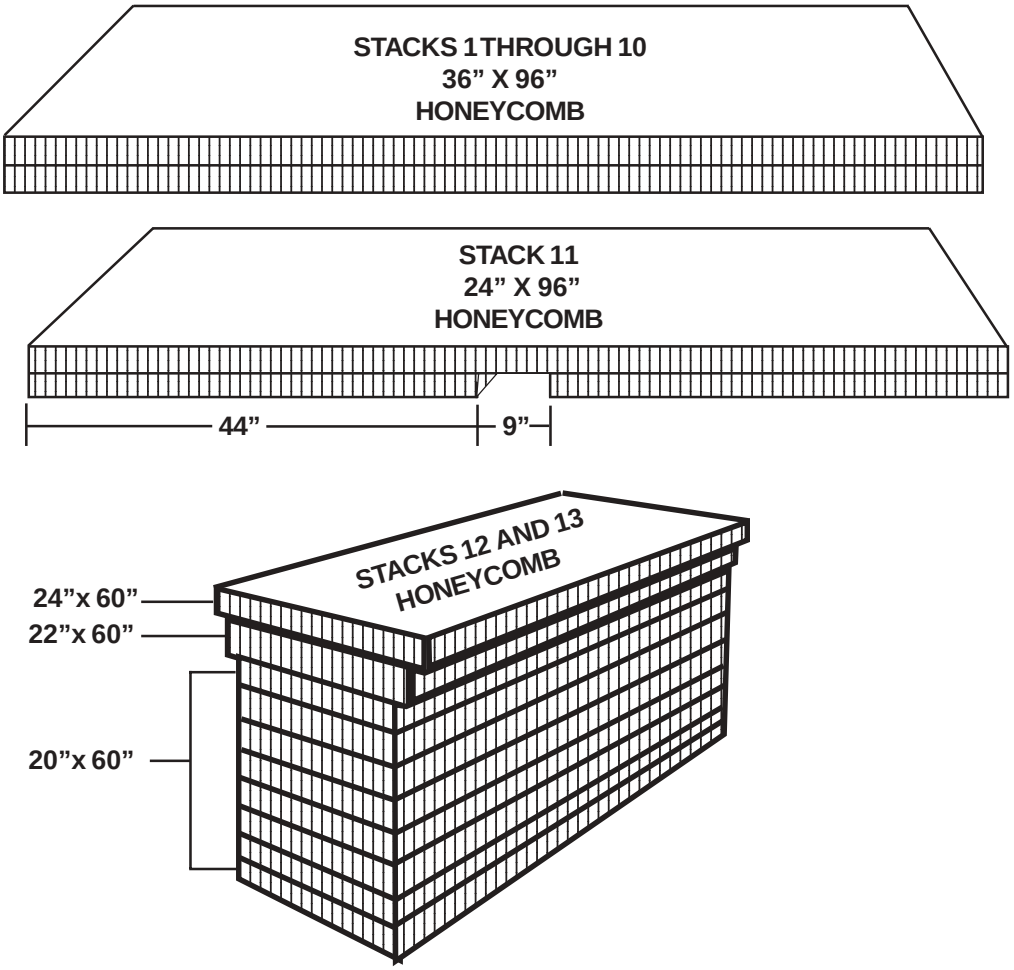
Steps:

1. Inspect, or assemble and inspect, the platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22.
2. Install a tandem link on the front of each platform side rail using holes 1, 2, and 3.
3. Install a suspension bracket to each platform side rail using holes 6, 7, and 8.
4. Install a suspension bracket to each platform side rail using holes 26, 27, and 28.
5. Install a suspension bracket to each platform side rail using holes 37, 38, and 39.
6. Install a suspension bracket to each platform side rail using holes 57, 58, and 59.
7. Install a tie-down clevis to bushings 1 (doubled), 3, and 4 (doubled) on each front tandem link.
8. Install a tie-down clevis to bushings 1(doubled), 2, and 3 on each of the first suspension brackets.
9. Install a tie-down clevis to bushings 2 and 3 of each of the second suspension bracket.
10. Install a tie-down clevis to bushings 2 (doubled), 3, and 4 of each of the fourth suspension links.
11. Starting at the front of each platform side rail, install a tie-down clevis to the bushings bolted to holes 9, 10, 17, 18, 20, 21, 29, 30, 32, 33 (tripled), 34, 41, 42 (tripled), 43, 49, 50, 55, 56 (doubled), 61, 63, 64 (doubled).
12. Starting at the front of the platform, number the clevises bolted to the right side from 1 through 40 and those bolted to the left side from 1A through 40A.

Figure 4-78. Platform Prepared

PREPARING HONEYCOMB

4-58. Prepare and build honeycomb stacks as shown in Figure 4-79.

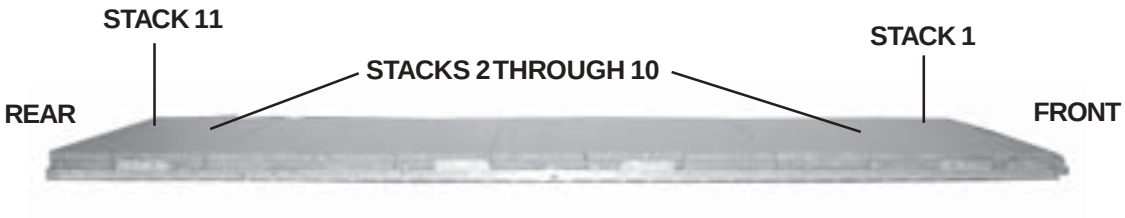


STACK NUMBER	PIECES	WIDTH (INCHES)	LENGTH (INCHES)	MATERIAL	INSTRUCTIONS
1-10	2	36	96	Honeycomb	Glue together.
11	2	24	96	Honeycomb	Glue together. Cut a notch out in the bottom layer starting 44-inches in from the 96-inch edge, 9-inches wide, 5-inches in length.
12-13	8	20	60	Honeycomb	Glue together to form a base.
	1	22	60	Honeycomb	Glue and center on base.
	1	24	60	Honeycomb	Glue and center on top of 22 x 60-inch piece.

Figure 4-79. Honeycomb Stacks Prepared

POSITIONING HONEYCOMB STACKS

4-59. Position honeycomb stacks 1 through 11 as shown in Figure 4-80.

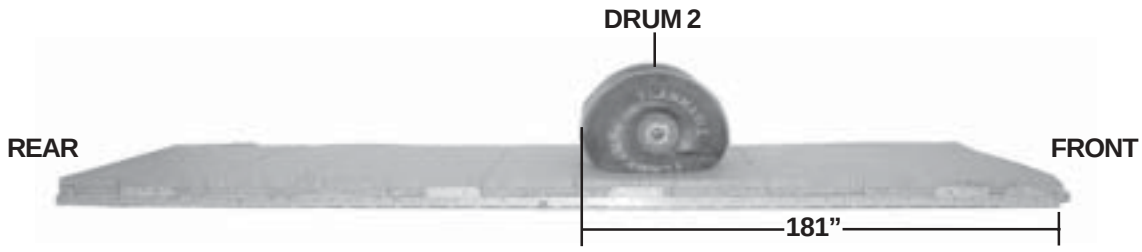


1. Position stack 1 on the front edge of the platform and centered.
2. Position stacks 2 through 10 flush on the rear edge of stack 1. Place them flush with each other.
3. Position stack 11 flush against the rear of stack 10 with the 5 x 9-inch cutout to the rear of the platform.

Figure 4-80. Positioning Honeycomb Stacks 1 through 11 Positioned

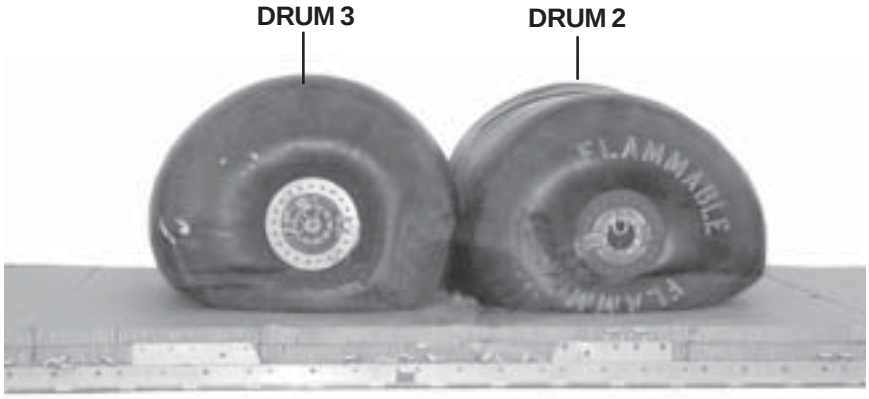
POSITIONING AND LASHING THE DRUMS

4-60. Position and lash the drums to the platform as shown in Figures 4-81 through 4-92.



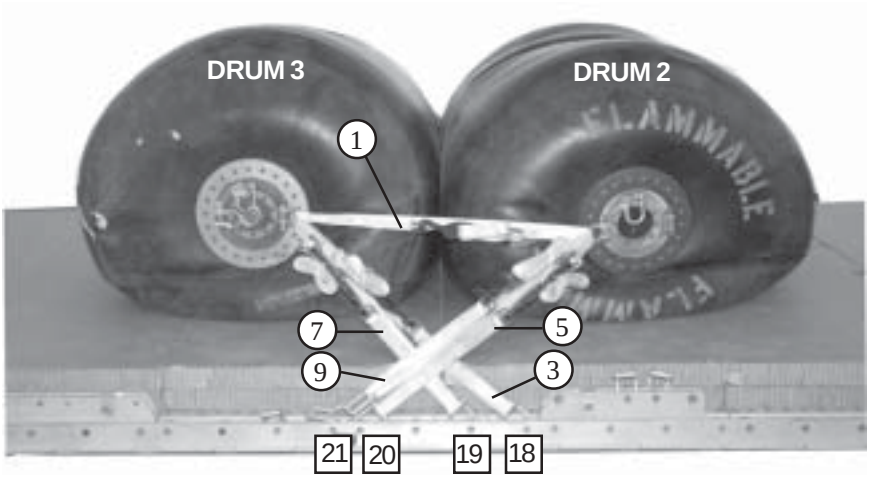
1. Place a platform clevis on one end of two 9-foot (2-loop), type XXVI nylon webbing slings. Attach a sling to each side of the drum (for lifting purposes only) and remove after the drums are positioned (not shown).

2. Position drum 2 centered on the platform with the rear edge 181 inches from the front edge of the platform.



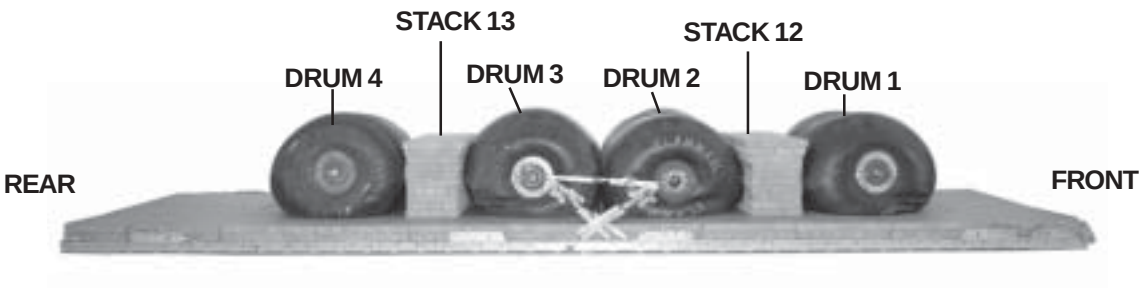
3. Position drum 3 centered on the platform flush against the rear of drum 2.

Figure 4-81. Fuel Drums 2 and 3 Positioned



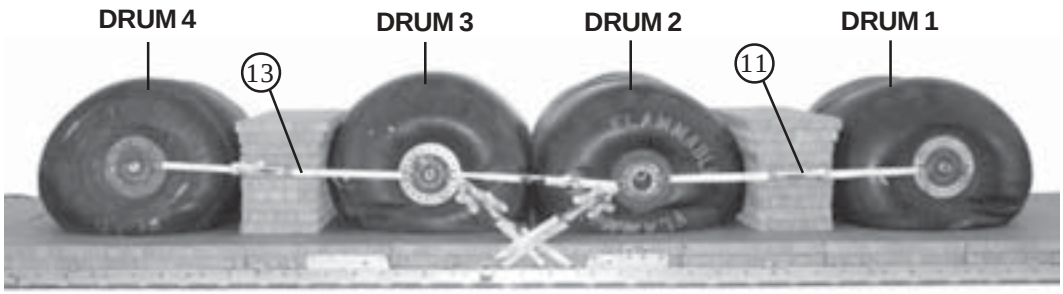
Lashing Number	Tie-down Clevis Number	Instructions
1		Route a lashing from the rear shackle of drum 2 to the front shackle of drum 3 on the right side.
2		Route a lashing from the rear shackle of drum 2 to the front shackle of drum 3 on the left side.
3	18	Route a lashing from clevis 18 to the front right shackle on drum 3.
4	18A	Route a lashing from clevis 18A to the front left shackle on drum 3.
5	20	Route a lashing from clevis 20 to the rear right shackle on drum 2.
6	20A	Route a lashing from clevis 20A to the rear left shackle on drum 2.
7	19	Route a lashing from clevis 19 to the front right shackle on drum 3.
8	19A	Route a lashing from clevis 19A to the front left shackle on drum 3.
9	21	Route a lashing from clevis 21 to the rear right shackle on drum 2.
10	21A	Route a lashing from clevis 21A to the rear left shackle on drum 2.

Figure 4-82. Lashings 1 through 10 Installed



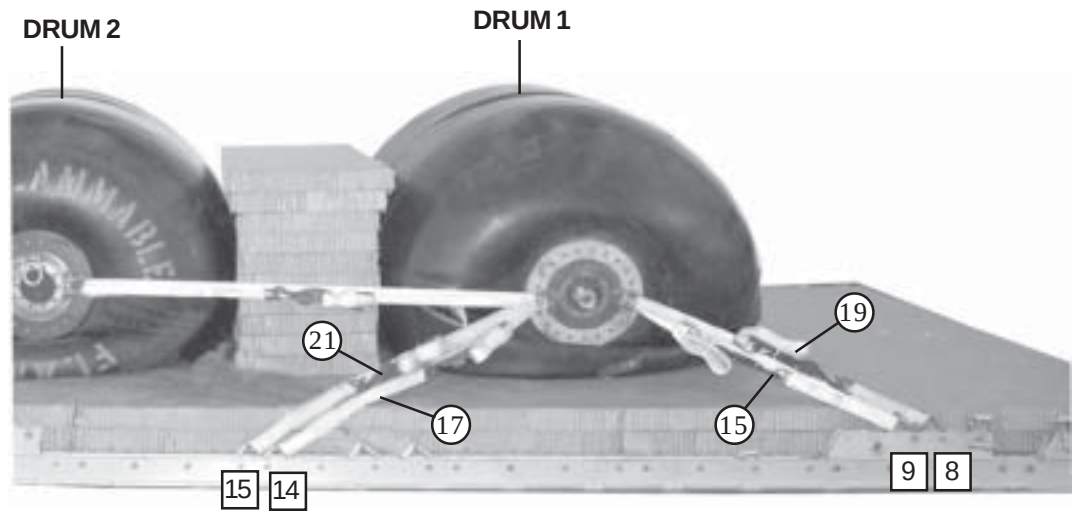
1. Position stack 12 flush and centered against the front of drum 2.
2. Position stack 13 flush and centered against the rear of drum 3.
3. Position drum 1 centered on the platform and flush against the front of stack 12.
4. Position drum 4 centered on the platform and flush against the rear of stack 13.

Figure 4-83. Fuel Drums 1 and 4 Positioned



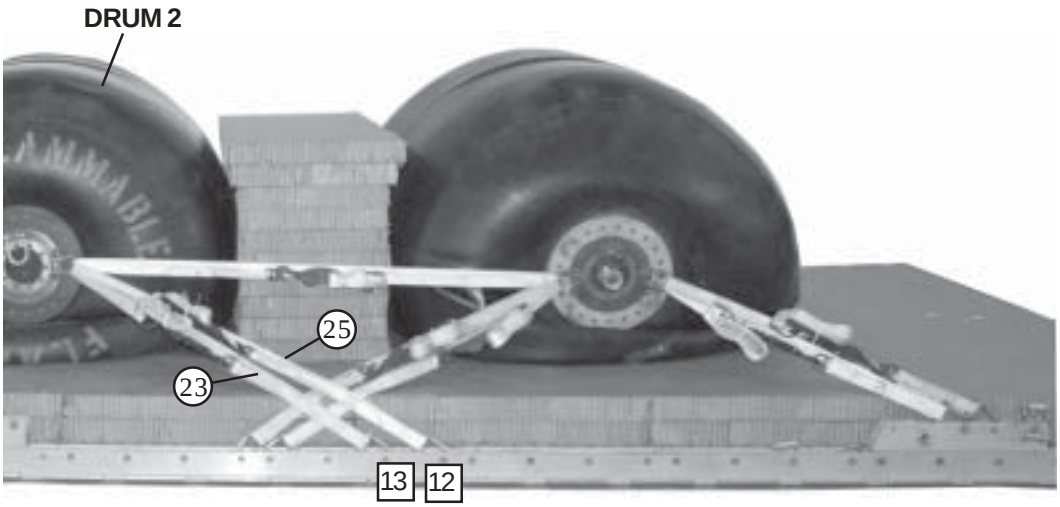
Lashing Number	Tie-down Clevis Number	Instructions
11		Route a lashing from the rear shackle of drum 1 to the front shackle of drum 2 on the right side.
12		Route a lashing from the rear shackle of drum 1 to the front shackle of drum 2 on the left side.
13		Route a lashing from the rear shackle of drum 3 to the front shackle of drum 4 on the right side.
14		Route a lashing from the rear shackle of drum 3 to the front shackle of drum 4 on the left side.

Figure 4-84. Lashings 11 through 14 Installed



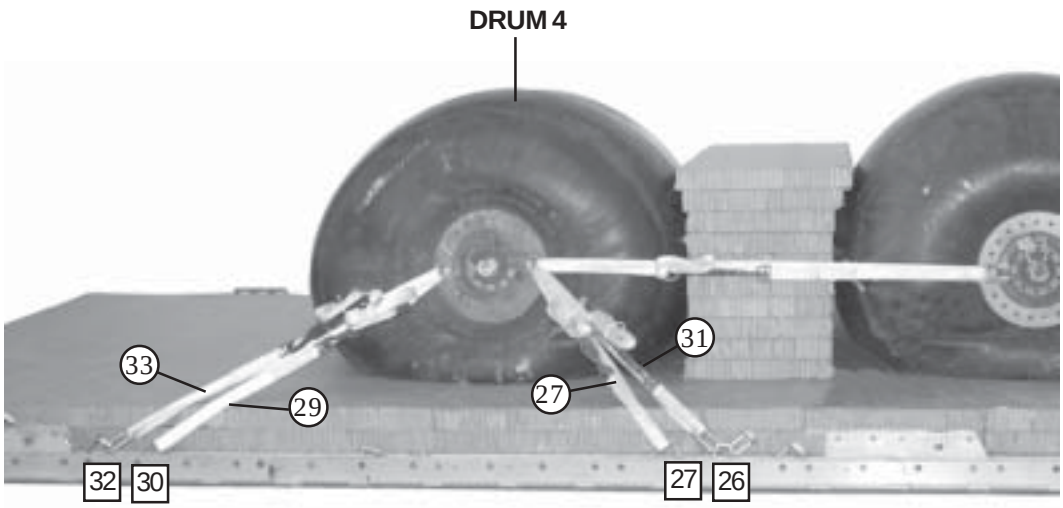
Lashing Number	Tie-down Clevis Number	Instructions
15	9	Route a lashing from clevis 9 to the front right shackle on drum 1.
16	9A	Route a lashing from clevis 9A to the front left shackle on drum 1.
17	14	Route a lashing from clevis 14 to the rear right shackle on drum 1.
18	14A	Route a lashing from clevis 14A to the rear left shackle on drum 1.
19	8	Route a lashing from clevis 8 to the front right shackle on drum 1.
20	8A	Route a lashing from clevis 8A to the front left shackle on drum 1.
21	15	Route a lashing from clevis 15 to the rear right shackle on drum 1.
22	15A	Route a lashing from clevis 15A to the rear left shackle on drum 1.

Figure 4-85. Lashings 15 through 22 Installed



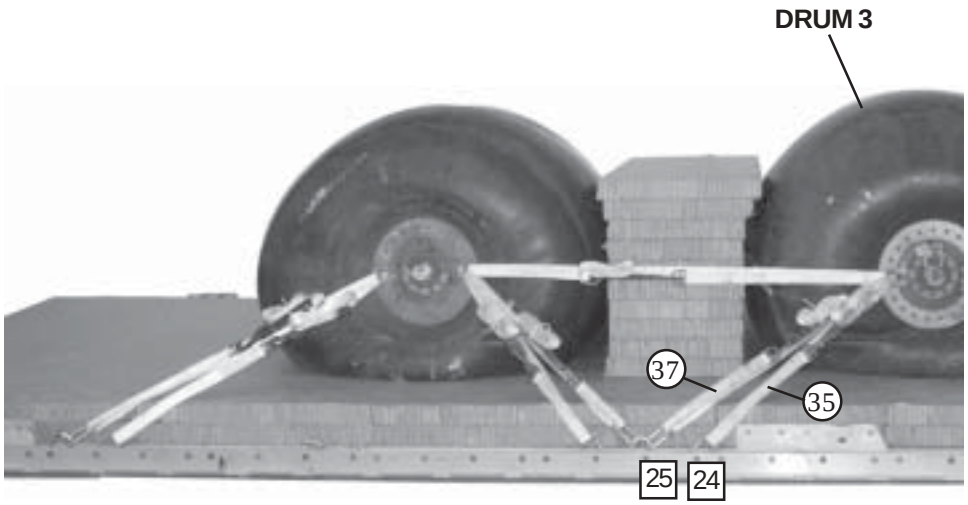
Lashing Number	Tie-down Clevis Number	Instructions
23	13	Route a lashing from clevis 13 to the front right shackle on drum 2.
24	13A	Route a lashing from clevis 13A to the front left shackle on drum 2.
25	12	Route a lashing from clevis 12 to the front right shackle on drum 2.
26	12A	Route a lashing from clevis 12A to the front left shackle on drum 2.

Figure 4-86. Lashings 23 through 26 Installed



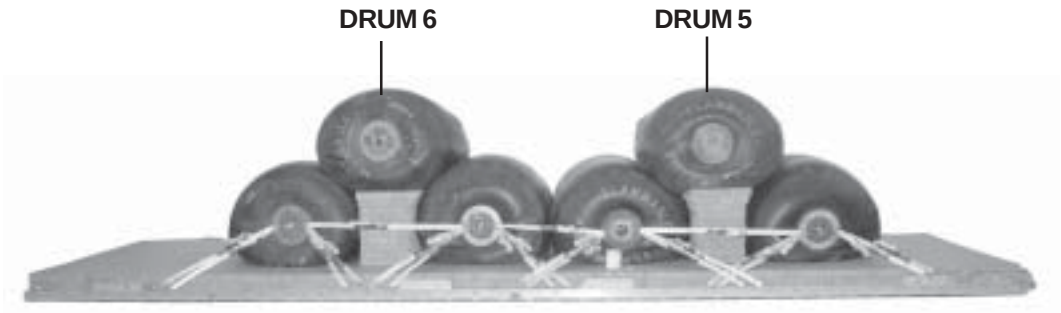
Lashing Number	Tie-down Clevis Number	Instructions
27	27	Route a lashing from clevis 27 to the front right shackle on drum 4.
28	27A	Route a lashing from clevis 27A to the front left shackle on drum 4.
29	30	Route a lashing from clevis 30 to the rear right shackle on drum 4.
30	30A	Route a lashing from clevis 30A to the rear left shackle on drum 4.
31	26	Route a lashing from clevis 26 to the front right shackle on drum 4.
32	26A	Route a lashing from clevis 26A to the front left shackle on drum 4.
33	32	Route a lashing from clevis 32 to the rear right shackle on drum 4.
34	32A	Route a lashing from clevis 32A to the rear left shackle on drum 4.

Figure 4-87. Lashings 27 through 34 Installed



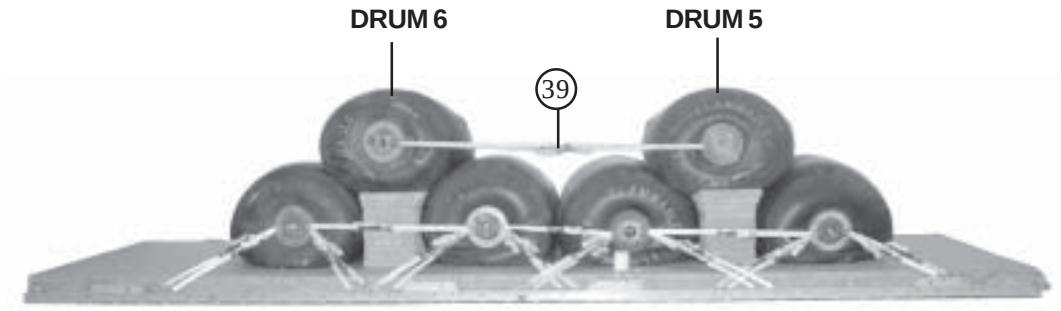
Lashing Number	Tie-down Clevis Number	Instructions
35	24	Route a lashing from clevis 24 to the rear right shackle on drum 3.
36	24A	Route a lashing from clevis 24A to the rear left shackle on drum 3.
37	25	Route a lashing from clevis 25 to the rear right shackle on drum 3.
38	25A	Route a lashing from clevis 25A to the rear left shackle on drum 3.

Figure 4-88. Lashings 35 through 38 Installed



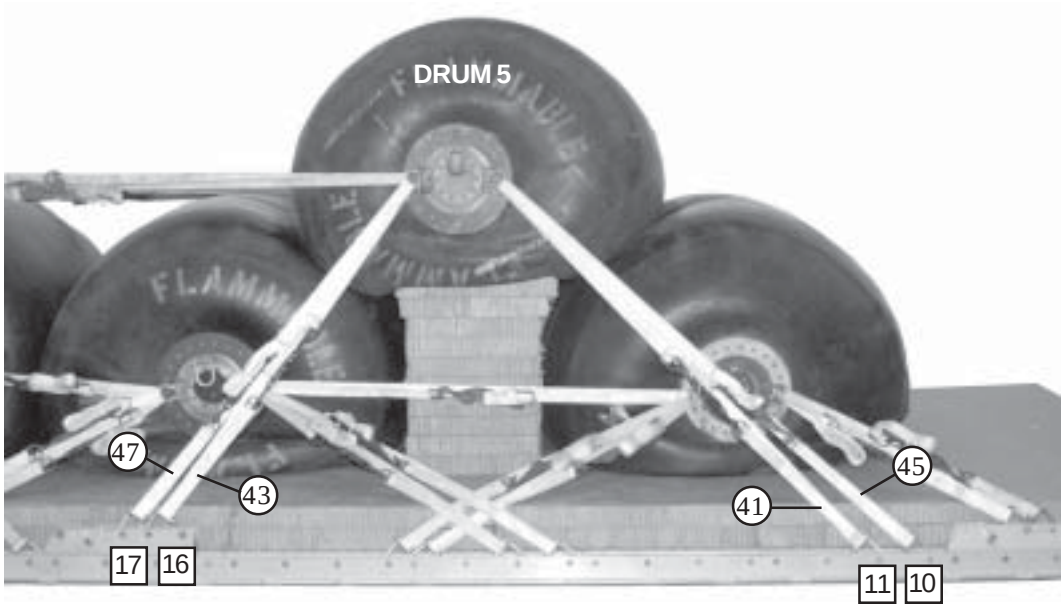
1. Position drum 5 centered on stack 12.
2. Position drum 6 centered on stack 13.

Figure 4-89. Fuel Drums 5 and 6 Positioned



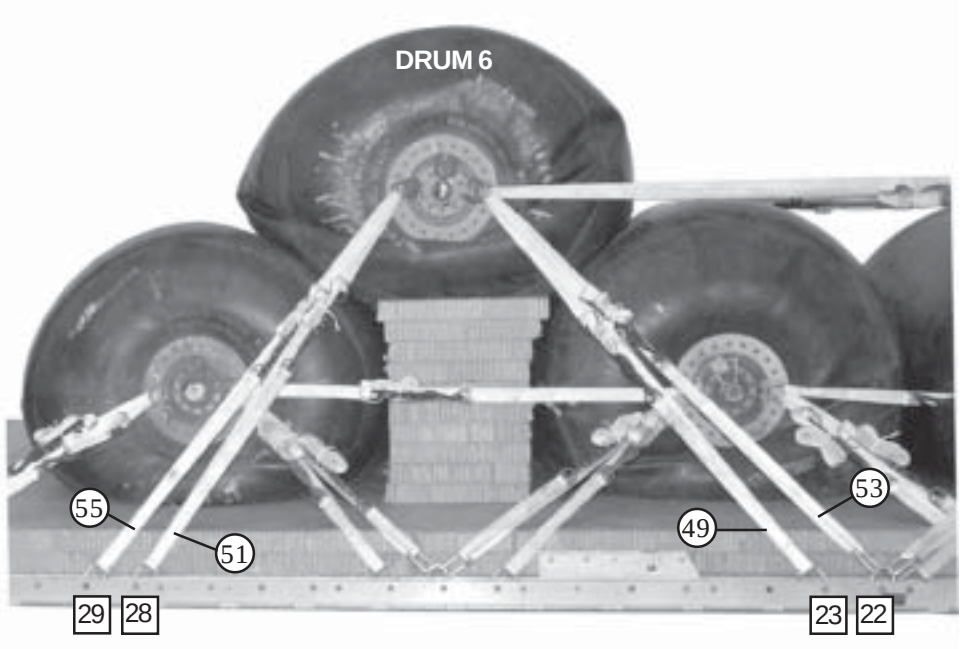
Lashing Number	Tie-down Clevis Number	Instructions
39		Route a lashing from the rear shackle of drum 5 to the front shackle of drum 6 on the right side.
40		Route a lashing from the rear shackle of drum 5 to the front shackle of drum 6 on the left side.

Figure 4-90. Lashings 39 and 40 Installed



Lashing Number	Tie-down Clevis Number	Instructions
41	11	Route a lashing from clevis 11 to the front right shackle on drum 5.
42	11A	Route a lashing from clevis 11A to the front left shackle on drum 5.
43	16	Route a lashing from clevis 16 to the rear right shackle on drum 5.
44	16A	Route a lashing from clevis 16A to the rear left shackle on drum 5.
45	10	Route a lashing from clevis 10 to the front right shackle on drum 5.
46	10A	Route a lashing from clevis 10A to the front left shackle on drum 5.
47	17	Route a lashing from clevis 17 to the rear right shackle on drum 5.
48	17A	Route a lashing from clevis 17A to the rear left shackle on drum 5.

Figure 4-91. Lashings 41 through 48 Installed



Lashing Number	Tie-down Clevis Number	Instructions
49	23	Route a lashing from clevis 23 to the front right shackle on drum 6.
50	23A	Route a lashing from clevis 23A to the front left shackle on drum 6.
51	28	Route a lashing from clevis 28 to the rear right shackle on drum 6.
52	28A	Route a lashing from clevis 28A to the rear left shackle on drum 6.
53	22	Route a lashing from clevis 22 to the front right shackle on drum 6.
54	22A	Route a lashing from clevis 22A to the front left shackle on drum 6.
55	29	Route a lashing from clevis 29 to the rear right shackle on drum 6.
56	29A	Route a lashing from clevis 29A to the rear left shackle on drum 6.

Figure 4-92. Lashings 49 through 56 Installed

BUILDING THE EQUIPMENT BOXES

4-61. Build the front and rear equipment boxes as shown in Figures 4-93 and 4-94.

a. Build the front equipment box using 16d nails and as shown in Figure 4-93.

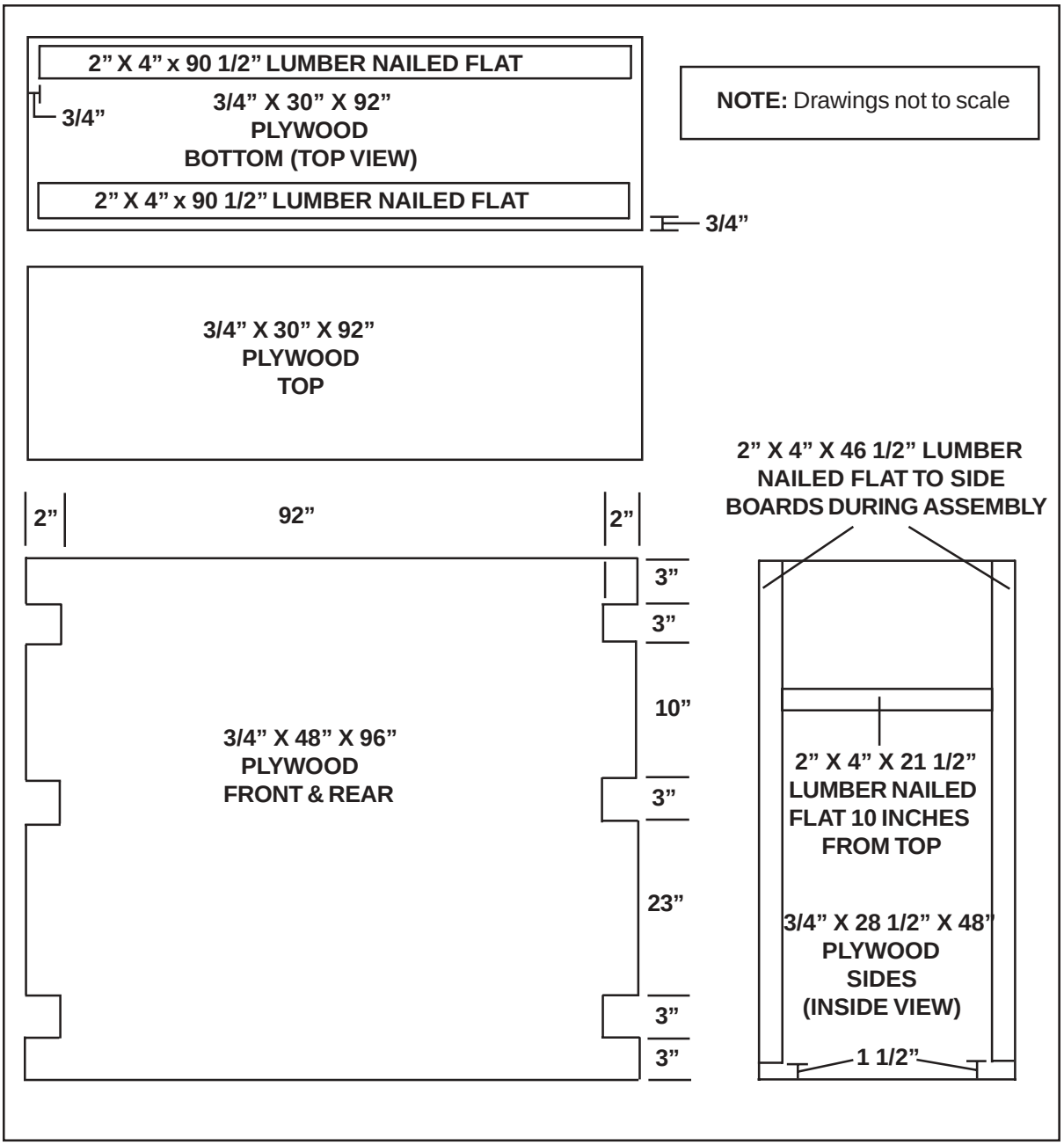


Figure 4-93. Front Equipment Box Built

b. Build the rear equipment box using 16d nails and as shown in Figure 4-94.

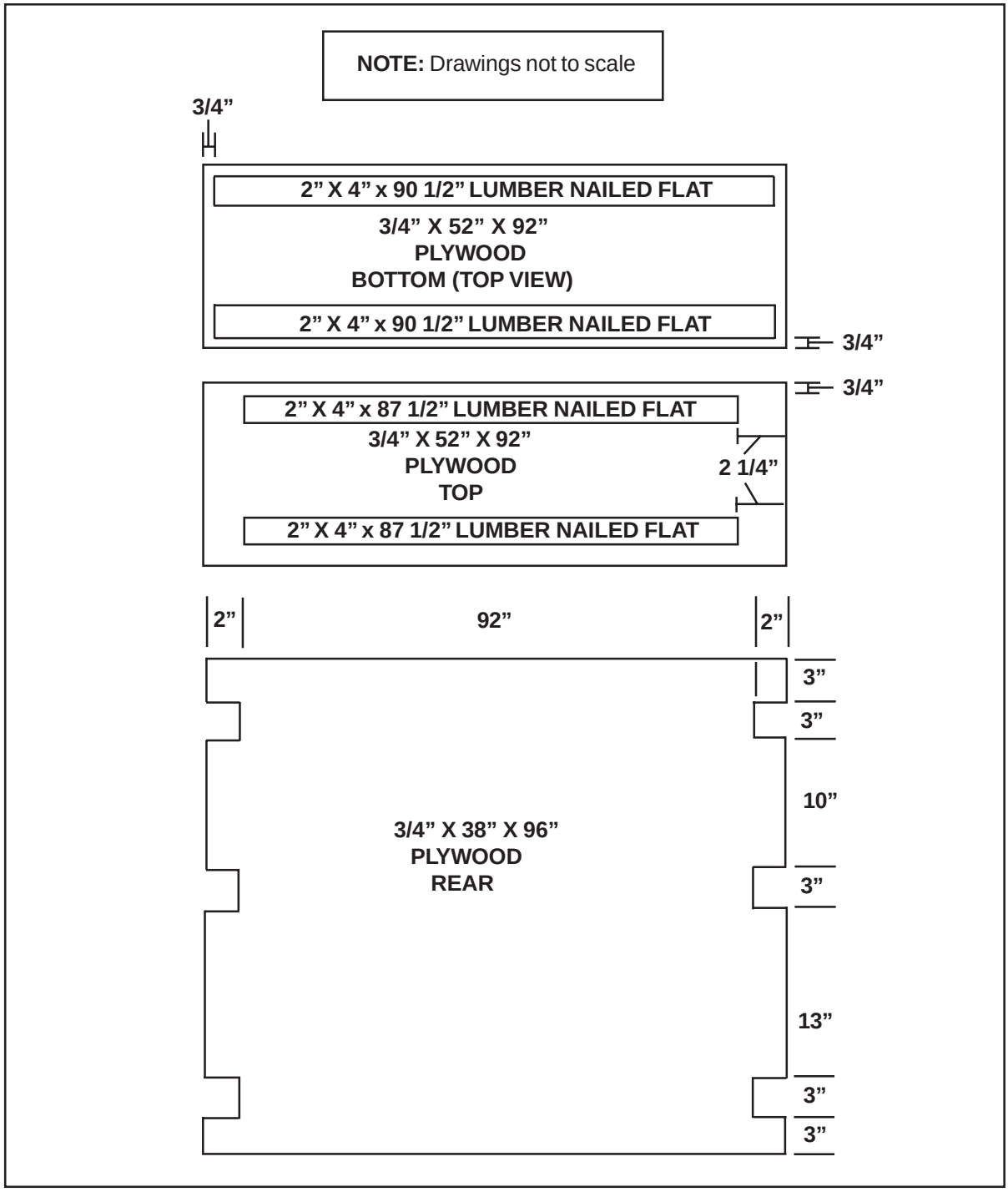


Figure 4-94. Rear Equipment Box Built

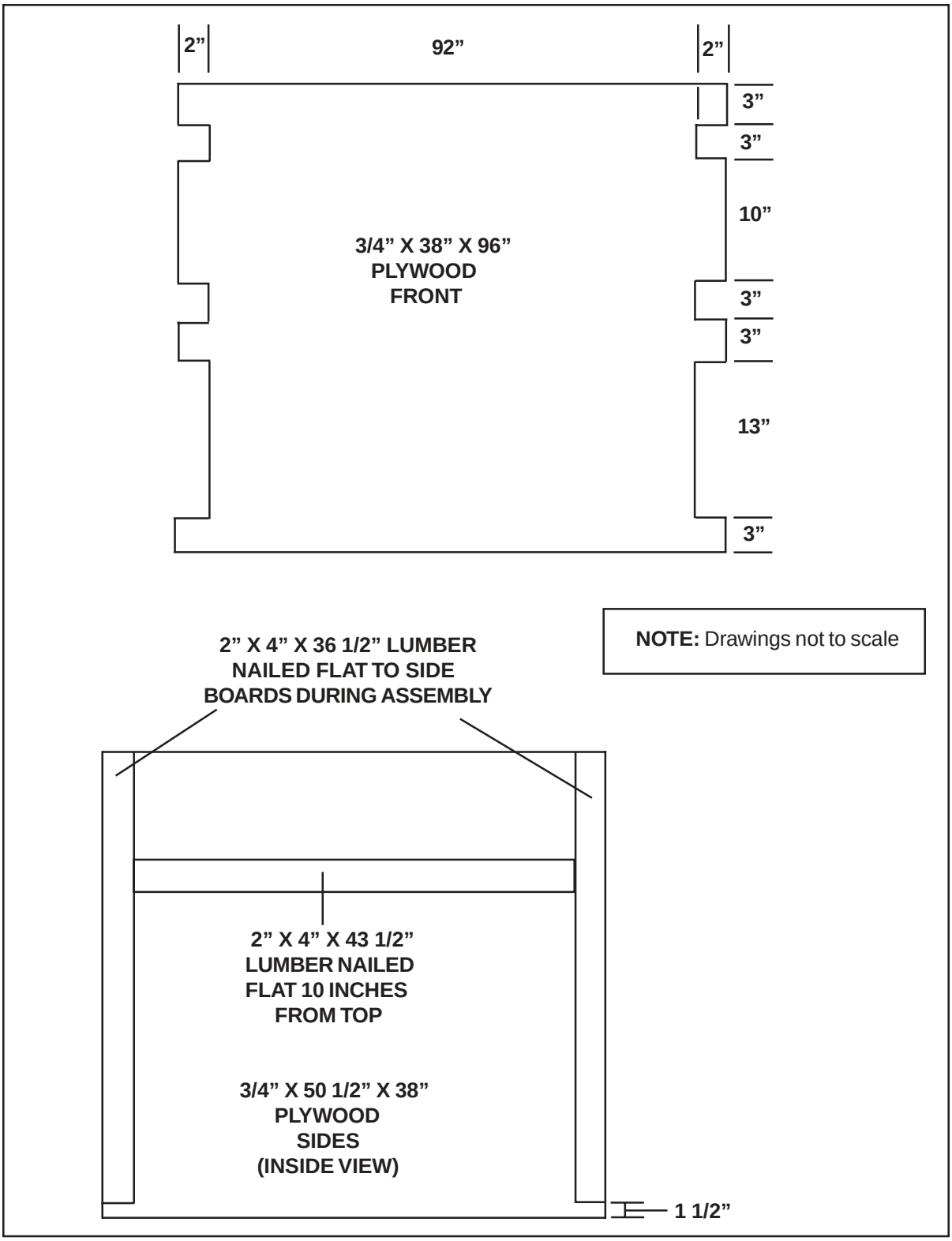
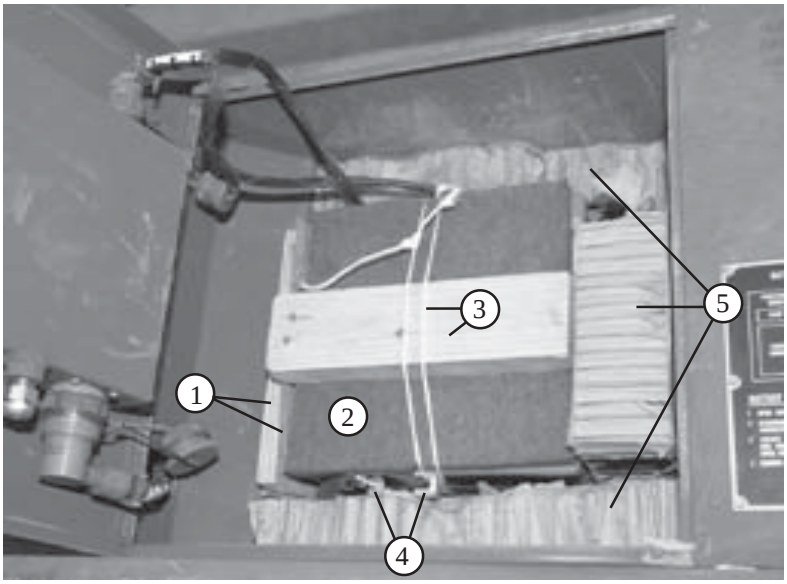


Figure 4-94. Rear Equipment Box Built (Continued)

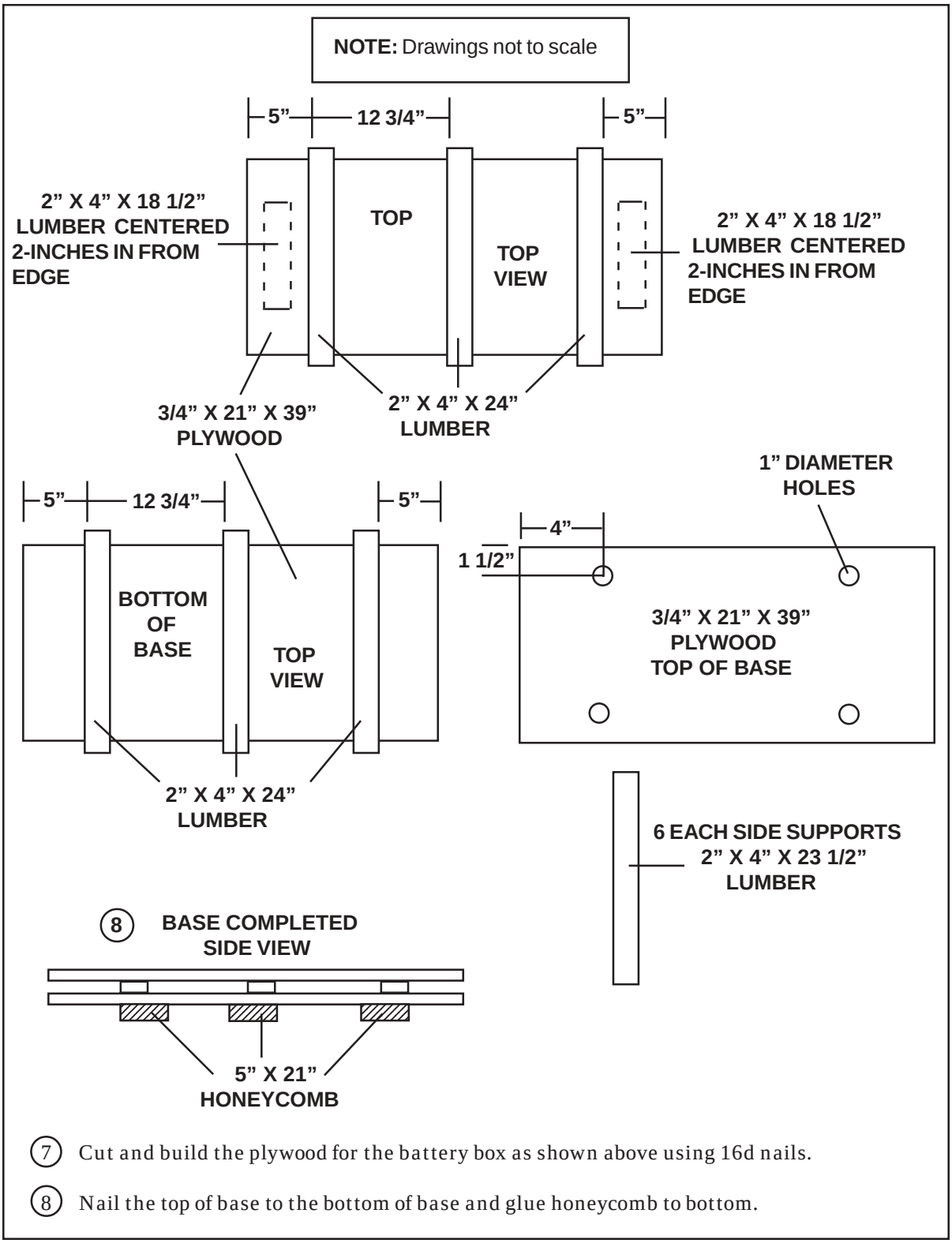
PREPARING EQUIPMENT FOR EQUIPMENT BOXES

4-62. Prepare the fire extinguishers, filter separator, explosion proof motor, pumps, manuals and toolkit as explained and shown in paragraph 4-6. Using the lists printed on the equipment bags, place the equipment indicated on each list into its bag. Prepare and secure the battery box as shown in Figure 4-95.



1. Place a 3/4-inch by 10-inch by 10-inch piece of plywood behind the battery inside the compartment. Place a 1/4-inch by 10-inch by 10-inch piece of felt between the plywood and the battery.
2. Place a 1/4-inch by 10-inch 10-inch piece of felt on top of the battery.
3. Place a 2-inch by 4-inch by 10-inch piece of lumber on top of the felt. Secure it with type III nylon cord.
4. Place cellulose wadding around the battery cap. Disconnect the battery, hold down rods and lay aside.
5. Fill the remainder of the compartment with pieces of honeycomb. Close and secure lid (not shown).
6. Secure the intake filter and grounding wire as shown in Figure 4-11, steps 4 and 5.

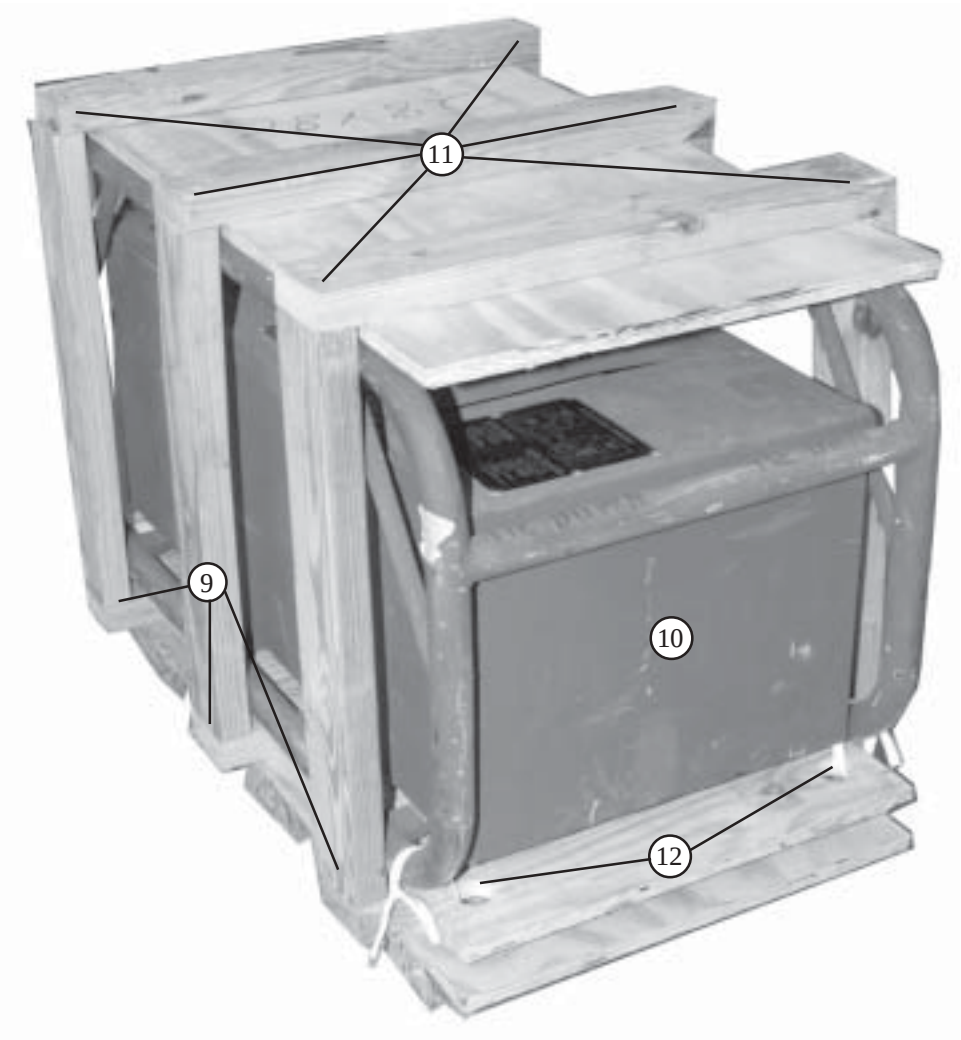
Figure 4-95. Battery Box Secured



(7) Cut and build the plywood for the battery box as shown above using 16d nails.

(8) Nail the top of base to the bottom of base and glue honeycomb to bottom.

Figure 4-95. Battery Box Secured (Continued)



(9) Nail the six 2-inch by 4-inch by 23 1/2-inch lumber side supports to the 2 X 4 lumber extending from the sides of the base using 16d nails.

(10) Position the battery box inside the frame centered.

(11) Position the top board on top of the battery box centered and nail to the six lumber side supports using 16d nails.

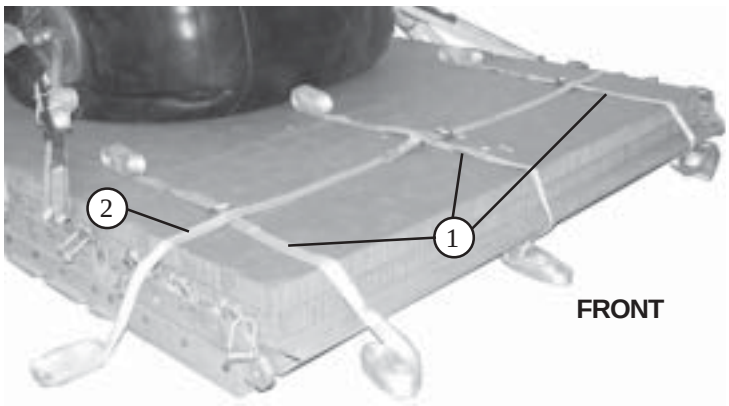
(12) Using four lengths of single 1/2-inch tubular nylon, tie the base to the frame of the battery box using the four corner holes.

Figure 4-95. Battery Box Secured (Continued)

POSITIONING EQUIPMENT BOXES

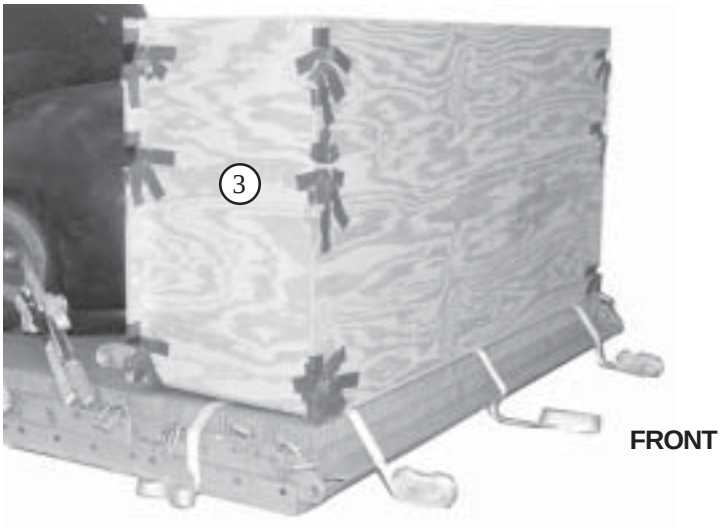
4-63. Prepare and position the front and rear equipment boxes as shown in Figures 4-96 and 4-97.

a. Prepare and position the front equipment box as shown in Figure 4-96.



(1) Pre-position three 30-foot lashings lengthwise across the end honeycomb stacks on the front of the platform. Place the two outside lashings 15-inches in from the outside edges of the honeycomb stacks. Place the third lashing centered on the honeycomb stacks.

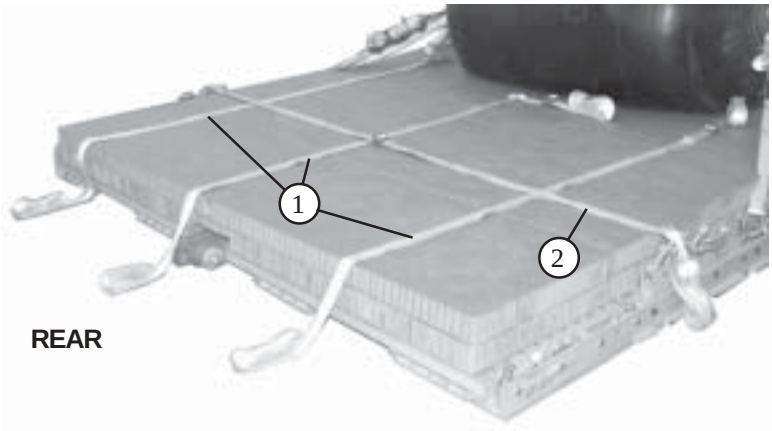
(2) Pre-position a 30-foot lashing across the width of the front honeycomb stacks 21-inches in from the front honeycomb edge.



(3) Position the front equipment box flush with the front honeycomb edge and centered. Pad and tape all cutouts using cellulose wadding.

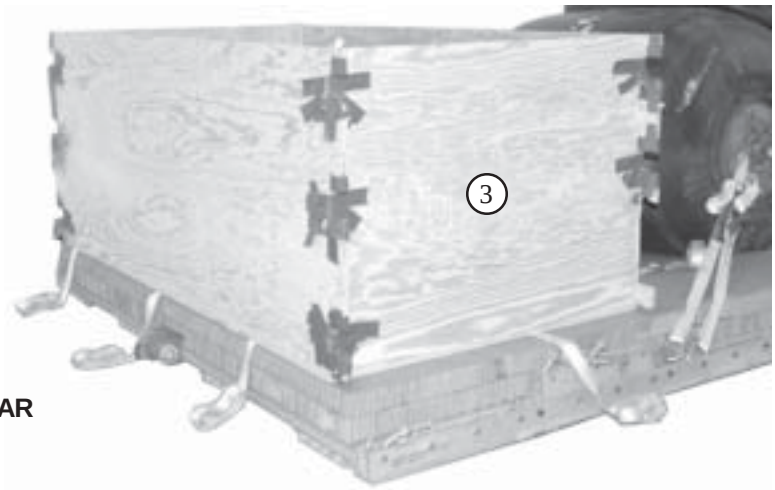
Figure 4-96. Front Equipment Box Positioned

b. Prepare and position the rear equipment box as shown in Figure 4-97.



(1) Pre-position three 30-foot lashings lengthwise across the end honeycomb stacks on the rear of the platform. Place the two outside lashings 15 inches in from the outside edges of the honeycomb stacks. Place the third lashing centered on the honeycomb stacks. Ensure the D-rings are placed behind drum 4 and not under the box.

(2) Pre-position a 30-foot lashing across the width of the rear honeycomb stacks 26 inches in from the front honeycomb edge.



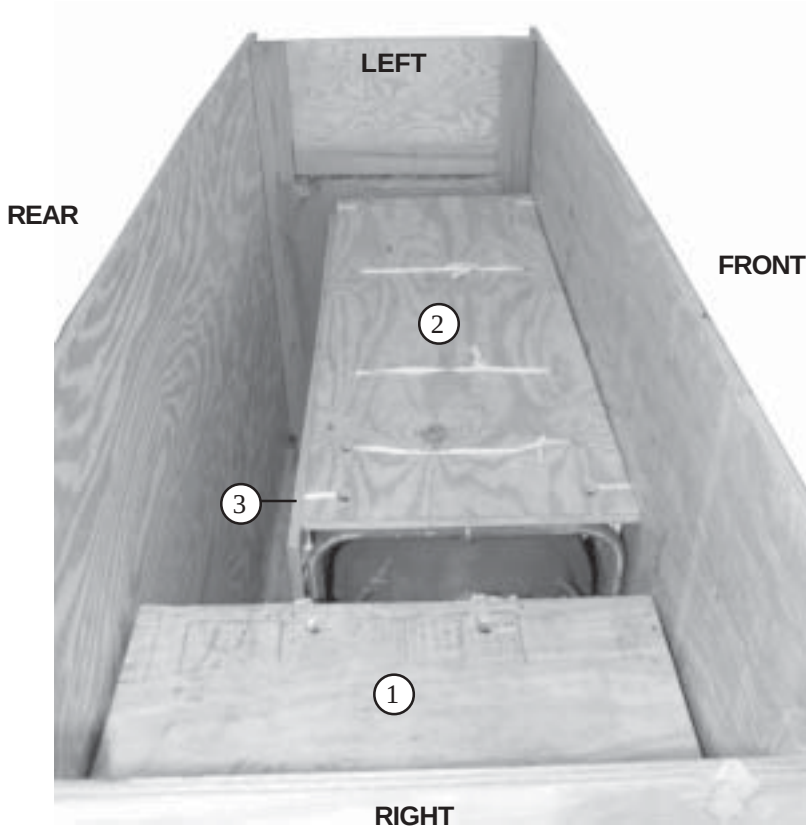
(3) Position the rear equipment box flush with the rear honeycomb edge and centered. Pad and tape all cutouts using cellulose wadding.

Figure 4-97. Rear Equipment Box Positioned

POSITIONING AND SECURING EQUIPMENT IN EQUIPMENT BOXES

4-64. Position and secure equipment in equipment boxes as shown in Figures 4-98 and 4-99.

a. Prepare the front equipment box by placing a 22-inch by 82-inch piece of honeycomb in the floor of the box and a 23-inch by 35-inch piece of honeycomb against each end of the box below the 2x4 lumber. Position equipment in the front equipment box as shown in Figure 4-98.

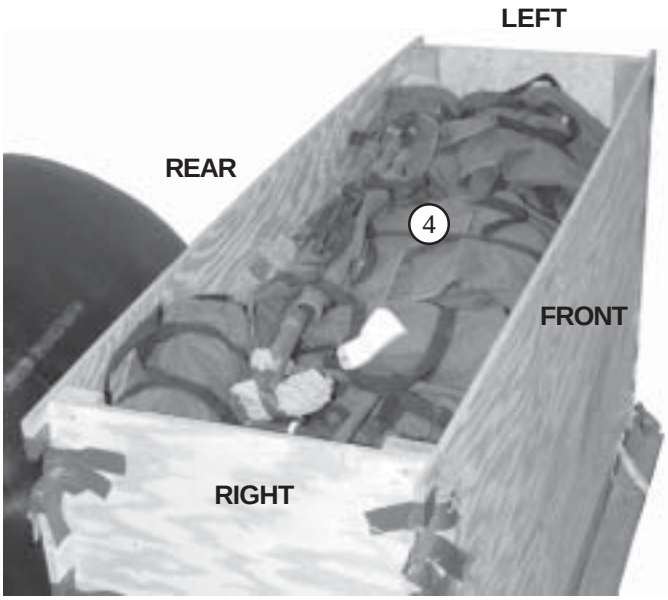


(1) Place the fire extinguishers against the right side of the equipment box.

(2) Place the filter separator in the front left corner of the equipment box.

(3) Place a 3/4-inch by 28 1/4-inch by 55 3/4-inch piece of plywood against the rear of the filter separator.

Figure 4-98. Equipment Positioned and Secured in Front Box



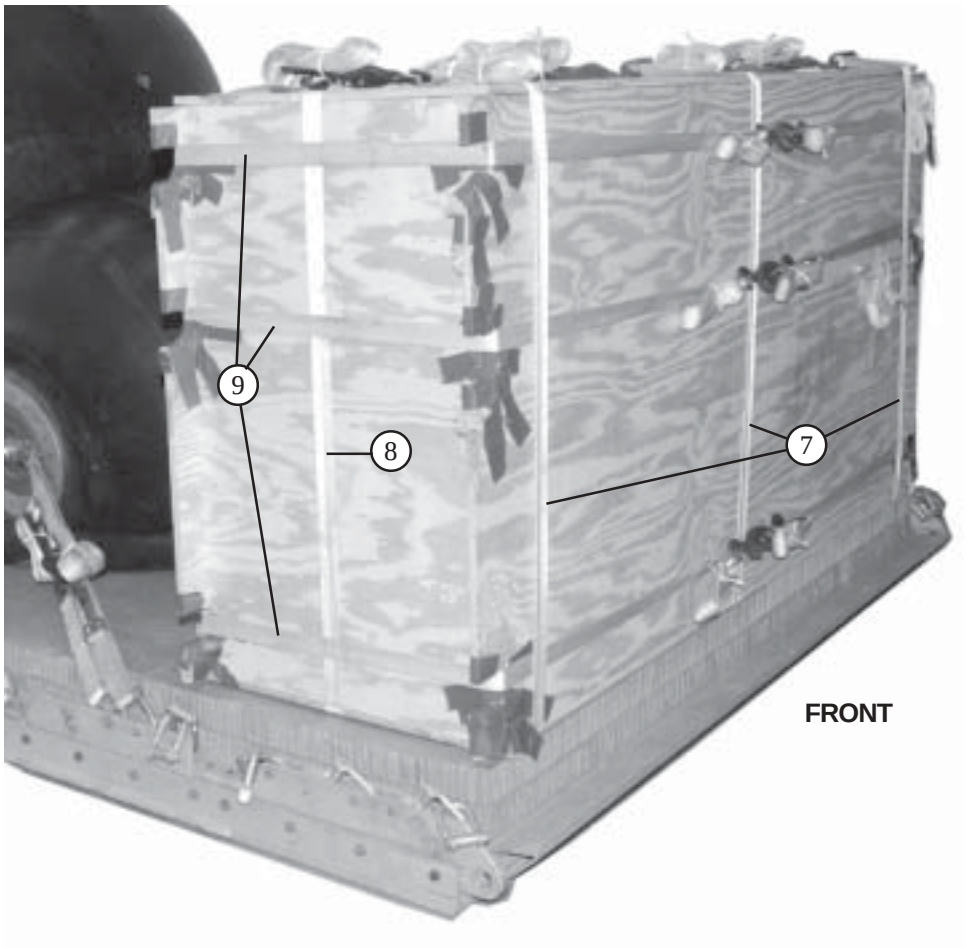
(4) Place the following items in the front equipment box.

a) One bag containing three 50-foot x 2-inch hoses.
b) Two bags containing one 50-foot x 2-inch and one 12-foot x 2-inch discharge hose in each bag.
c) One bag containing a 50-foot x 3-inch discharge fitting.
d) Two bags containing five suction hoses each.
e) One bag containing four grounding rods.
f) Tow bar.
g) Four bags containing three nozzles each.

(5) Fill the remaining space with honeycomb to prevent movement (not shown).

(6) Nail the top on the box (not shown).

Figure 4-98. Equipment Positioned and Secured in Front Box (Continued)



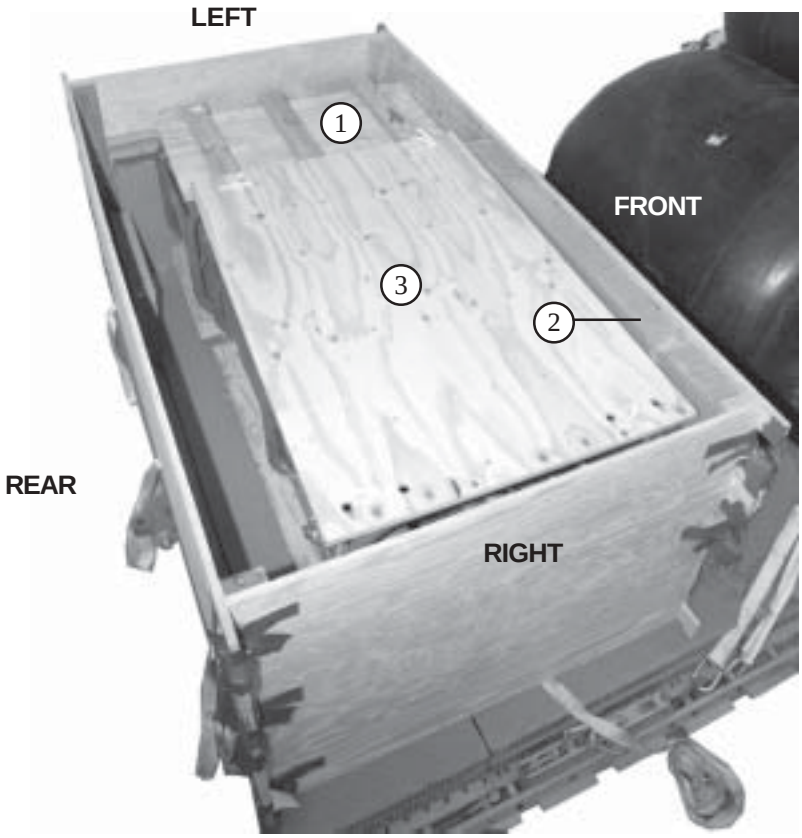
(7) Secure the box from front to rear using the three pre-positioned 30-foot lashings. Load bind on top of the box.

(8) Secure the box from left to right using the pre-positioned 30-foot lashing. Load bind on top of the box.

(9) Route three 30-foot lashings around the box using the bottom, middle, and top cut outs. Load bind on the front of the box.

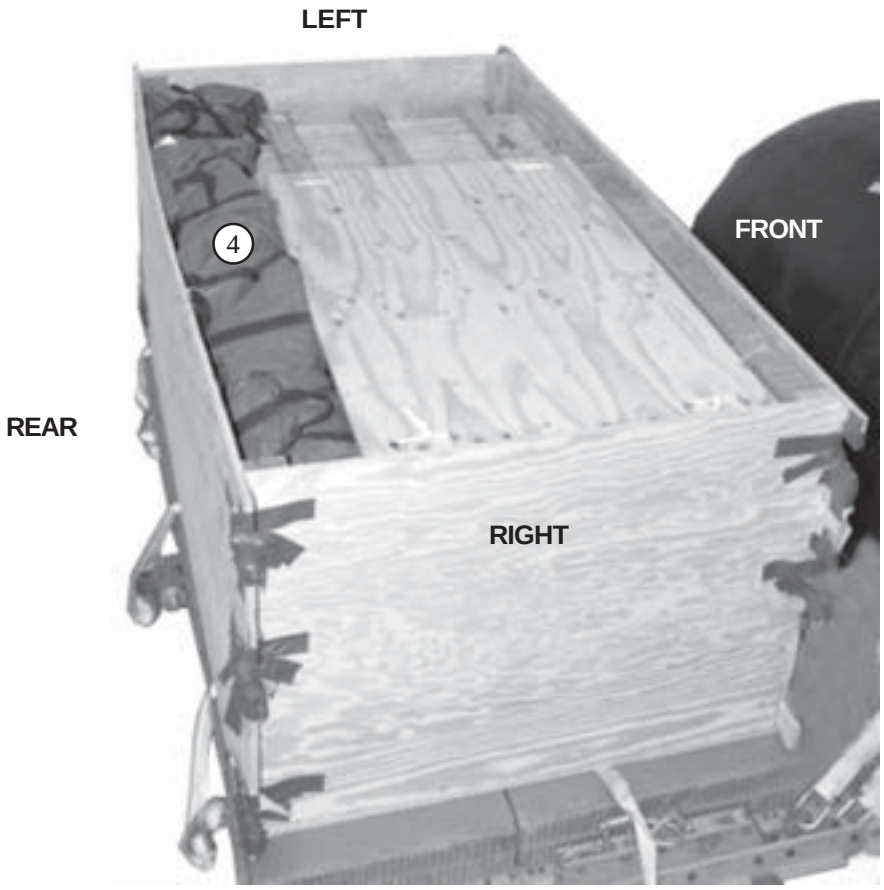
Figure 4-98. Equipment Positioned and Secured in Front Box (Continued)

b. Prepare the rear equipment box by placing a 36-inch by 86-inch and a 7-inch by 86-inch piece of honeycomb in the floor of the box. Position a 36-inch by 43-inch piece of honeycomb against each end of the box below the 2x4 lumber. Position equipment in the rear equipment box as shown in Figure 4-99.



1. Place the battery box against the left front side of the box.
2. Place a 34-inch by 56-inch piece of honeycomb against the front right side of the box.
3. Place the pump, with the inlet valves forward, against the front right side of the box.

Figure 4-99. Equipment Positioned and Secured in Rear Box



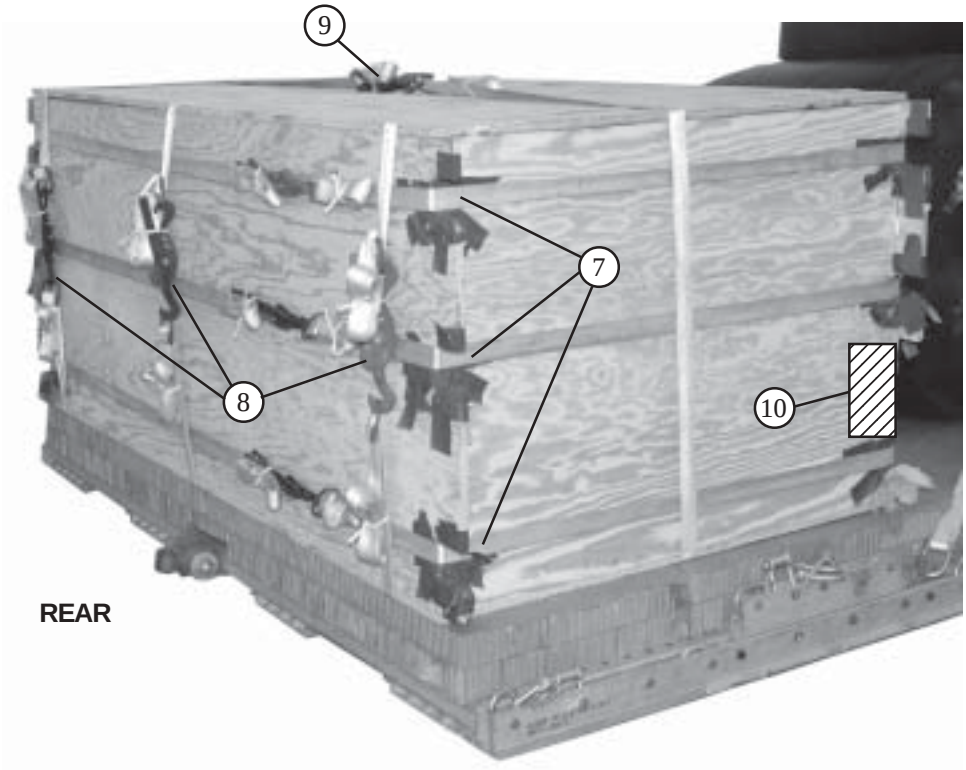
(4) Place the following items in the rear equipment box.

a) One bag containing a 50-foot x 3-inch discharge hose.
b) Two bags containing two 50-foot x 2-inch discharge hoses each.
c) One bag containing seven discharge fittings.
d) One bag containing 14 adapters.
e) One bag containing 19 drum fittings.

(5) Fill the remaining space with honeycomb to prevent movement (not shown).

(6) Nail the top on the box (not shown).

Figure 4-99. Equipment Positioned and Secured in Rear Box (Continued)



(7) Route three 30-foot lashings around the box using the bottom, middle, and top cut outs. Load bind on the front of the box.

(8) Secure the box from front to rear using the three pre-positioned 30-foot lashings. Load bind on the front of the box.

(9) Secure the box from left to right using the pre-positioned 30-foot lashing. Load bind on top of the box.

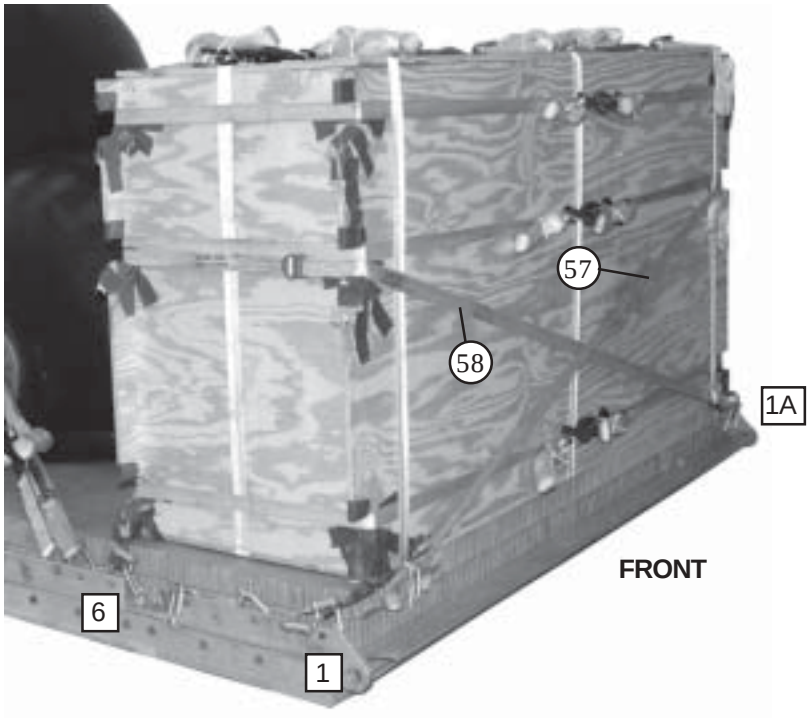
(10) Pad and tape the lower two front corners of the equipment box above the bottom lashing to the top of the cutout on each side with 1/2-inch by 10-inch by 25-inch felt.

Figure 4-99. Equipment Positioned and Secured in Rear Box (Continued)

LASHING THE EQUIPMENT BOXES TO THE PLATFORM

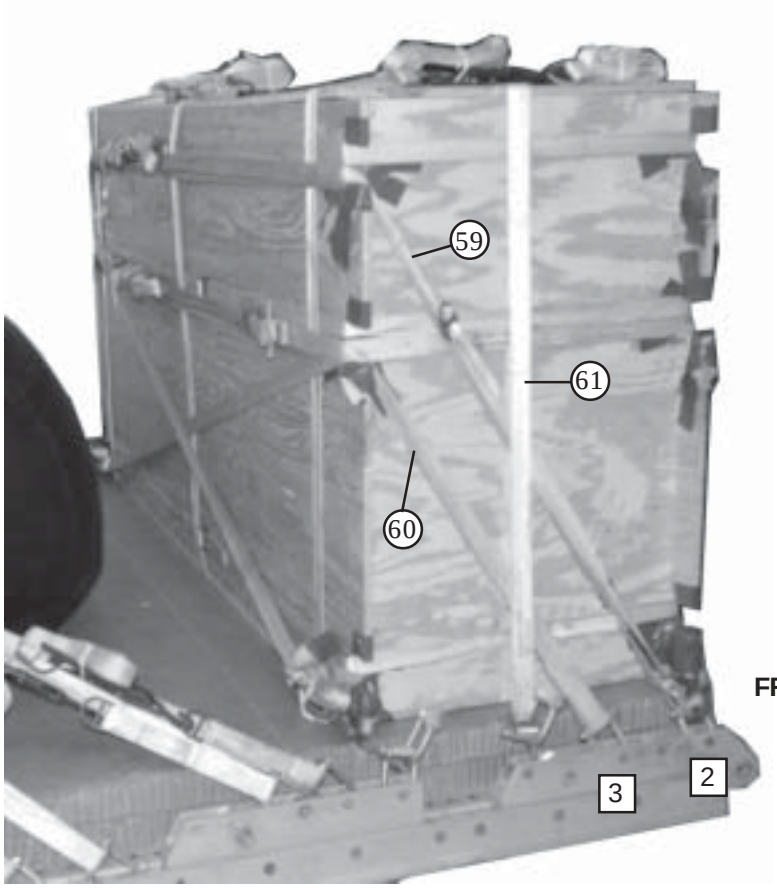
4-65. Lash the equipment boxes as shown in Figures 4-100 through 4-105.

a. Lash the front equipment box to the platform as shown in Figures 4-100 through 4-102.



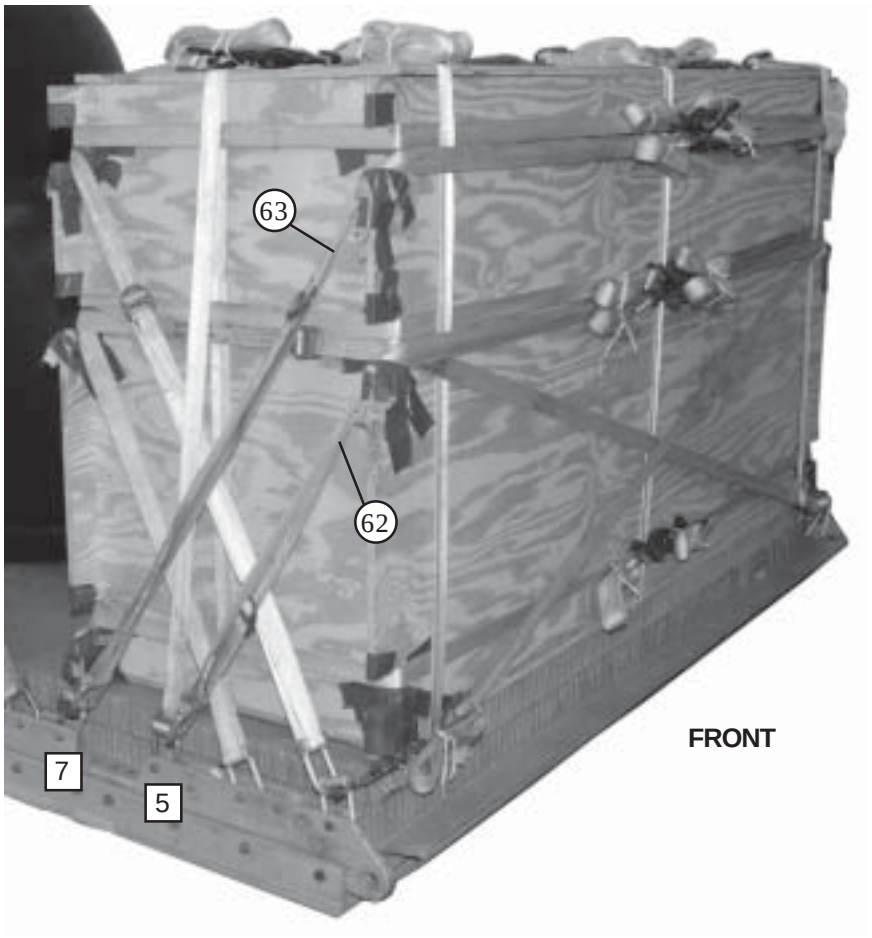
Lashing Number	Tie-down Clevis Number	Instructions
57	1 and 6	Route a 30-foot lashing from clevis 1 to the front middle left cutout, to the rear middle left cutout, to clevis 6.
58	1A and 6A	Route a 30-foot lashing from clevis 1A to the front middle right cutout, to the rear middle right cutout, to clevis 6A.

Figure 4-100. Lashings 57 and 58 Installed



Lashing Number	Tie-down Clevis Number	Instructions
59	2 and 2A	Route a 45-foot lashing through clevis 2 to the rear top right cutout, to the rear top left cutout, through clevis 2A and load bind on the rear of the box.
60	3 and 3A	Route a 45-foot lashing through clevis 3 to the rear middle right cutout, to the rear middle left cutout, through clevis 3A and load bind on the rear of the box.
61	4 and 4A	Route a lashing through it's own D-ring on clevis 4, repeat on clevis 4A and load bind them together on top of the box.

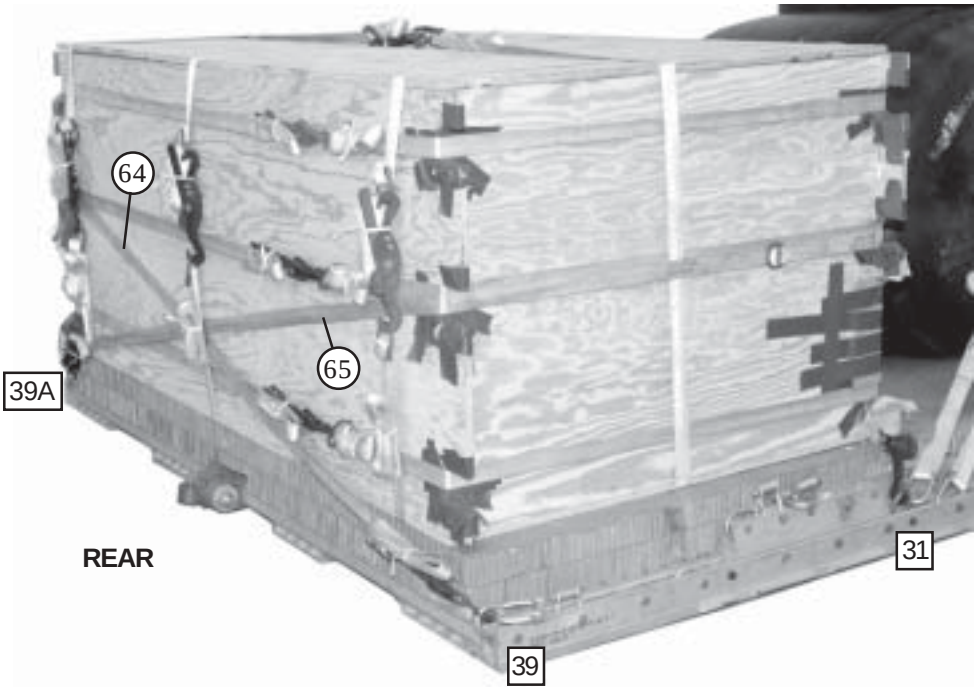
Figure 4-101. Lashings 59 through 61 Installed



Lashing Number	Tie-down Clevis Number	Instructions
62	5 and 5A	Route a 45-foot lashing through clevis 5 to the front middle right cutout, to the front middle left cutout, through clevis 5A and load bind on the front of the box.
63	7 and 7A	Route a 45-foot lashing through clevis 7 to the front top right cutout, to the front top left cutout, through clevis 7A and load bind on the front of the box.

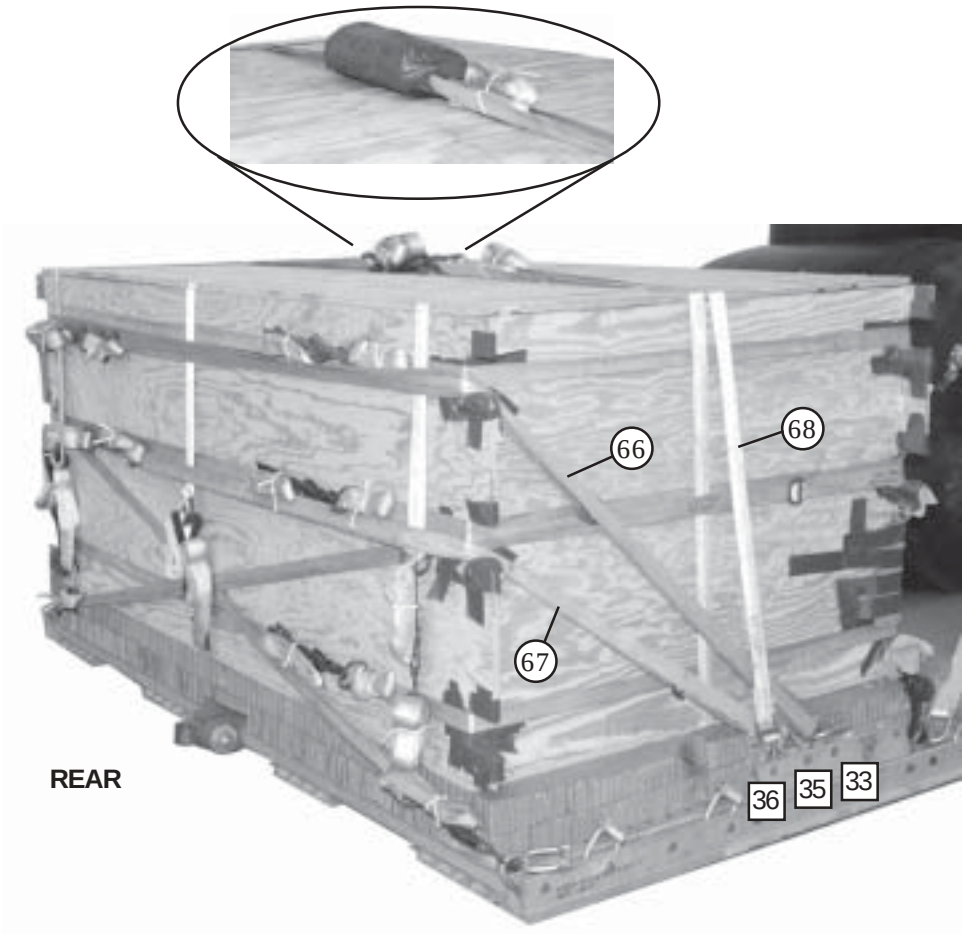
Figure 4-102. Lashings 62 and 63 Installed

b. Lash the rear equipment box to the platform as shown in Figures 4-103 through 4-105.



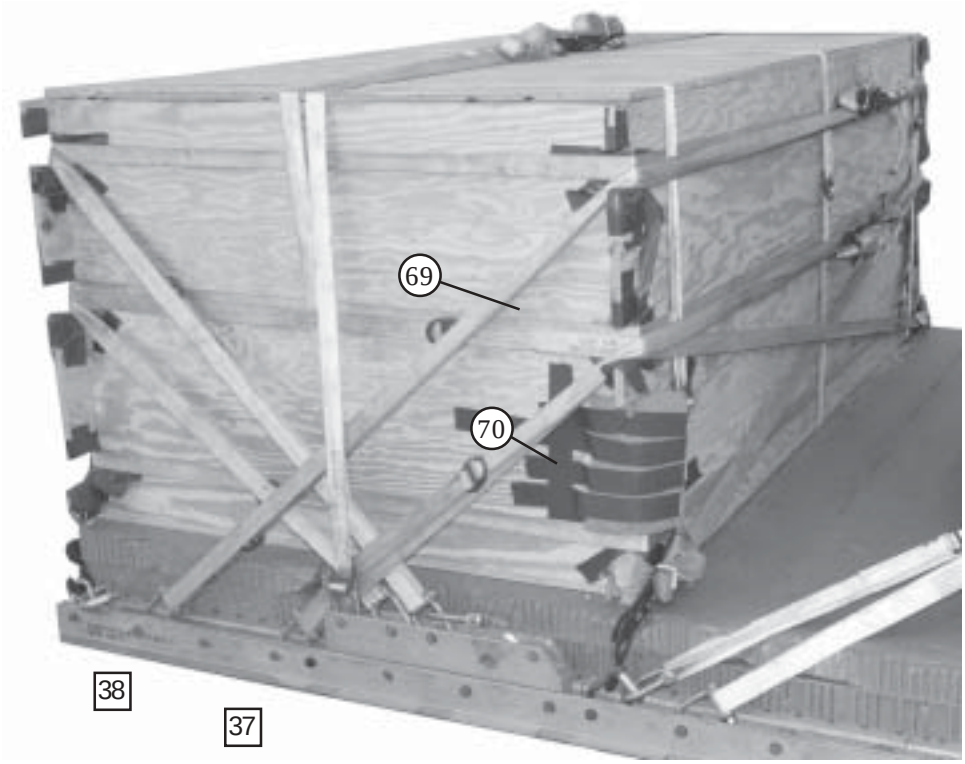
Lashing Number	Tie-down Clevis Number	Instructions
64	31 and 39	Route a 30-foot lashing from clevis 31 to the front middle left cutout, to the rear middle left cutout, to clevis 39. Ensure lashing is routed under the load binders on the rear of box.
65	31A and 39A	Route a 30-foot lashing from clevis 31A to the front middle right cutout, to the rear middle right cutout, to clevis 39A. Ensure lashing is routed under the load binders on the front of the box.

Figure 4-103. Lashings 64 and 65 Installed



Lashing Number	Tie-down Clevis Number	Instructions
66	33 and 33A	Route a 45-foot lashing through clevis 33 to the rear top right cutout, to the rear top left cutout, through clevis 33A and load bind on the rear of the box.
67	35 and 35A	Route a 45-foot lashing through clevis 35 to the rear middle right cutout, to the rear middle left cutout, through clevis 35A and load bind on the rear of the box.
68	36 and 36A	Route a lashing through clevis 36 and through it's own D-ring, repeat on clevis 36A and load bind them together on top of box. Wrap 1/4-inch felt around the load binders located on top of the equipment box and secure them with tape.

Figure 4-104. Lashings 66 through 68 Installed

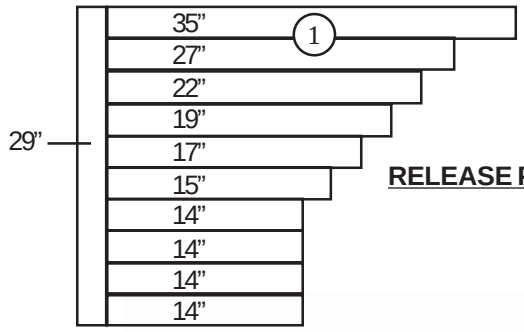


Lashing Number	Tie-down Clevis Number	Instructions
69	37 and 37A	Route a 45-foot lashing through clevis 37 to the front middle right cutout, to the front middle left cutout, through clevis 37A and load bind on the front of the box.
70	38 and 38A	Route a 45-foot lashing through clevis 38 to the front top right cutout, to the front top left cutout, through clevis 38A and load bind on the front of the box.

Figure 4-105. Lashings 69 and 70 Installed

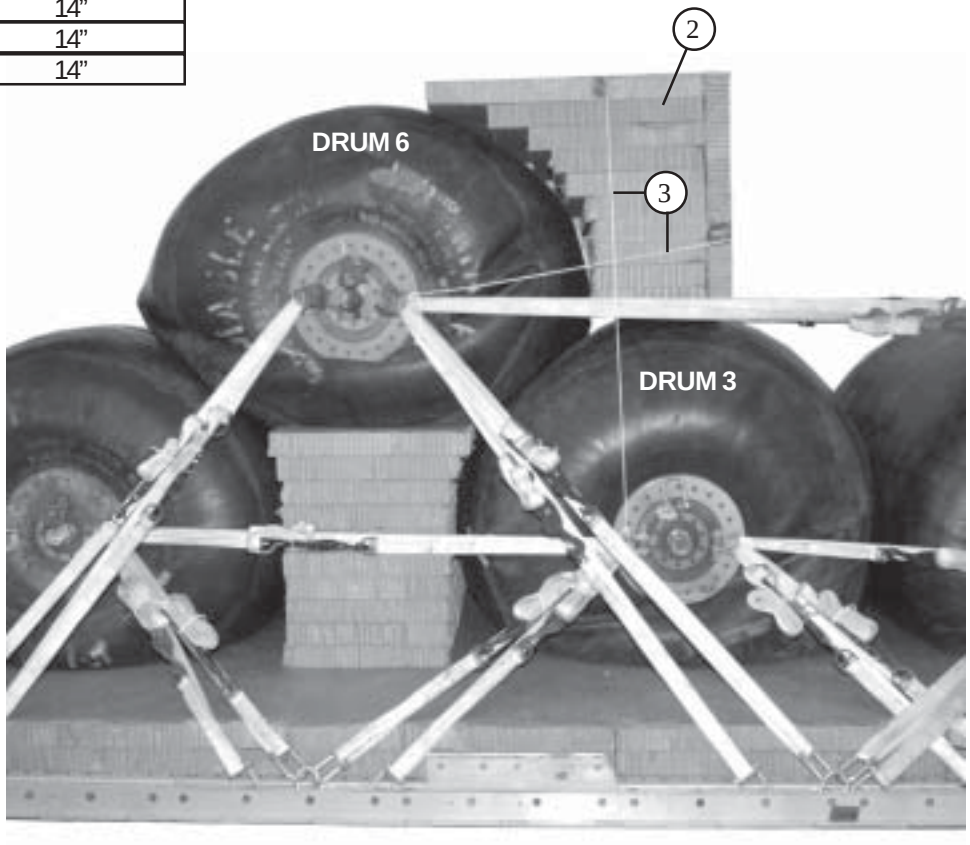
BUILDING AND POSITIONING RELEASE PLATFORM

4-66. Build and position the release platform as shown in Figure 4-106.



NOTE: Drawing not to scale

RELEASE PLATFORM



(1) Build the release platform as shown above with all honeycomb lengths 36 inches wide.

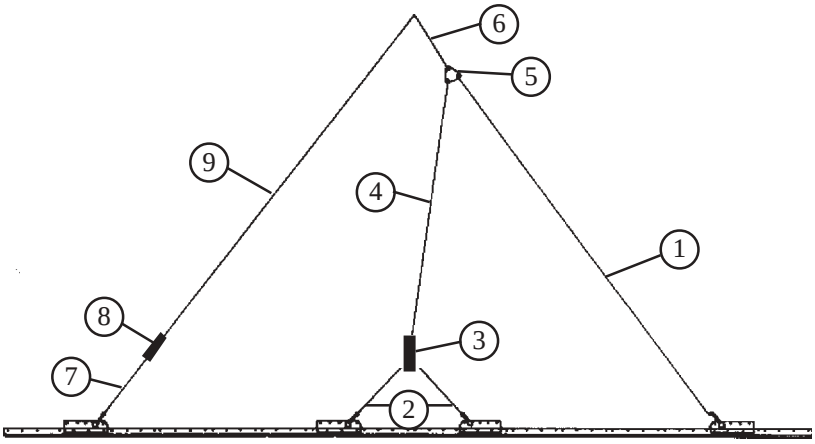
(2) Place the release stack on top of drum 3 and against drum 6, centered.

(3) Secure the release stack with two lengths of type III nylon cord to the drum shackles. Tape the stack in the area where the type III nylon cord makes contact with the stack.

Figure 4-106. Release Platform Built and Positioned

INSTALLING SUSPENSION SLINGS AND SAFETY TIES

4-67. Install suspension slings and safety ties as shown in Figure 4-107.

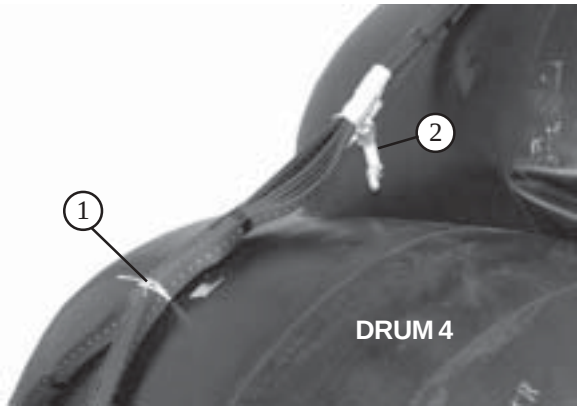


1. Place a large clevis in one end of a 20-foot (4-loop), type XXVI nylon suspension sling. Attach the clevis to the right front suspension bracket.
2. Place a large clevis on each end of a 9-foot (4-loop), type XXVI nylon suspension sling. Attach the clevises to the right side second and third suspension brackets.
3. Attach a 5 1/2-inch 2-point link to the center of the 9-foot sling.
4. Attach a 12-foot (4-loop), type XXVI nylon suspension sling on the other end of the 5 1/2-inch 2-point link.
5. Attach the running ends of the 20-foot suspension sling and the 12-foot suspension sling to a 3-point link.
6. Attach a 3-foot (4-loop), type XXVI nylon suspension sling to the top of the 3-point link.
7. Attach a 3-foot (4-loop), type XXVI nylon suspension sling to the fourth suspension bracket with a large clevis.
8. Attach a 5 1/2-inch 2-point link to the running end of the 3-foot sling.
9. Attach a 20-foot (4-loop), type XXVI nylon suspension sling to the 5 1/2-inch 2-point link.
10. Repeat steps 1 through 8 for the left side (not shown).
11. Raise the suspension slings and install the suspension sling safety ties to the front and rear suspension slings using doubled 1/2-inch tubular nylon webbing six to eight inches above the highest point of the load (not shown). Refer to the Notice of Exception in the Introduction of this manual.
12. Pad and tape the link assemblies (not shown).

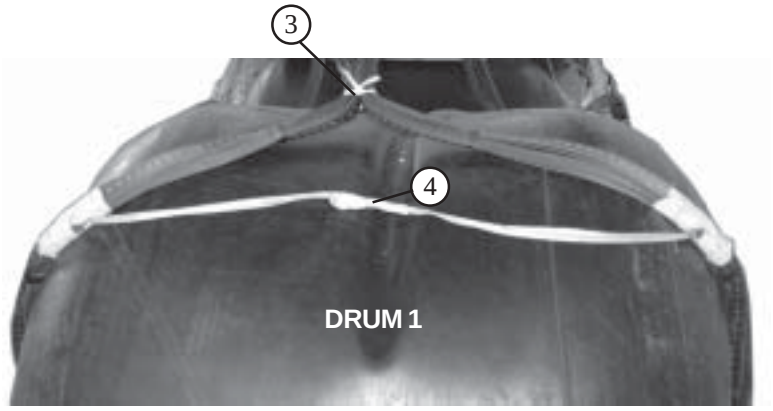
Figure 4-107. Suspension Slings and Safety Ties Installed

SECURING THE SUSPENSION SLINGS

4-68. Make the following suspension slings securing ties as shown in Figure 4-108.

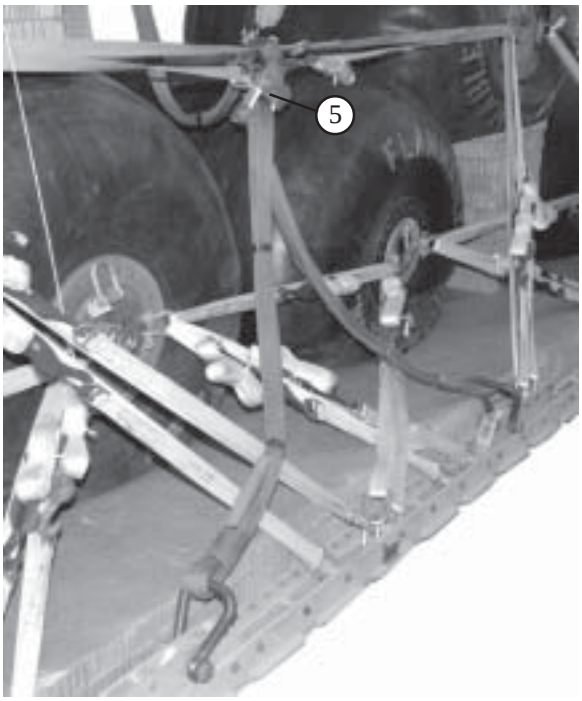


1. Lower the suspension slings to the point where the front and rear suspension slings can lay on top of the drums and touch in the middle. Bring the rear suspension slings together on top of drum 4. Secure the slings together with one turn doubled 1/4-inch cotton webbing.
2. S-fold and tape the excess safety tie with masking tape.

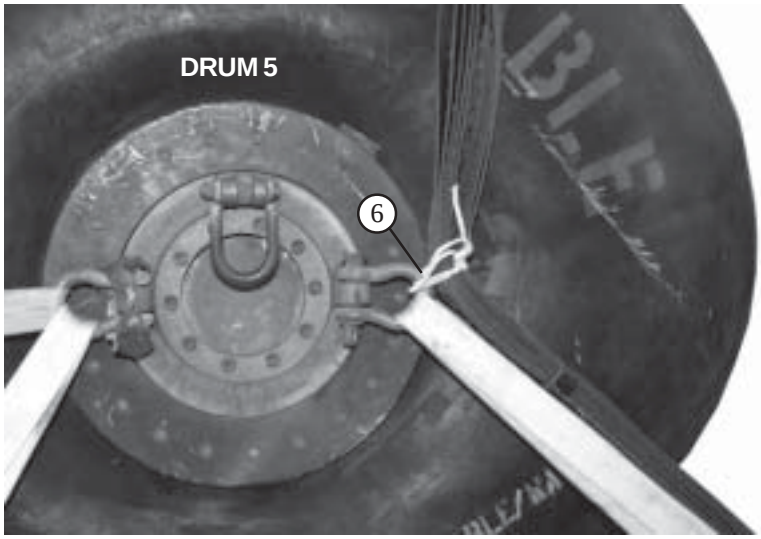


3. Bring the front suspension slings together on top of drum 1. Secure the slings together with one turn doubled 1/4-inch cotton webbing.
4. S-fold and tape the excess safety tie with masking tape.

Figure 4-108. Suspension Slings Secured

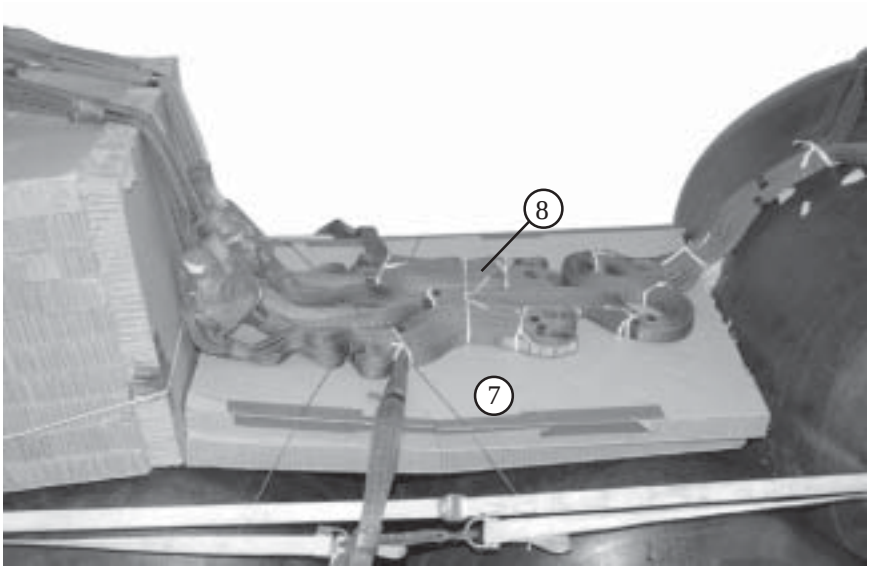


(5) Secure the middle suspension sling and 5 1/2-inch 2-point link on the right and left sides to the top lateral lashing D-rings with one turn doubled 1/4-inch cotton webbing.



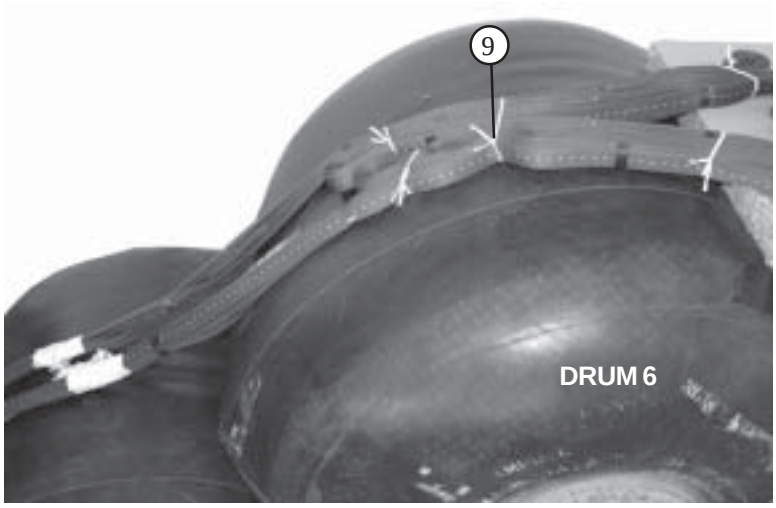
(6) Secure the front suspension slings to the right and left front shackles of drum 5 with one turn doubled 1/4-inch cotton webbing.

Figure 4-108. Suspension Slings Secured (Continued)



(7) Place two 56-inch by 36-inch pieces of honeycomb on top of drums 3 and 4 against the front base of the release platform. Tape the top right and left sides and secure to a convenient point on the load with type III nylon cord.

(8) Lower the suspension slings. S-fold and secure the front suspension slings on the 56-inch by 36-inch piece of honeycomb with one turn single 1/4-inch cotton webbing. Make one tie around both sets of front suspension slings to hold them together with one turn single 1/4-inch cotton webbing.

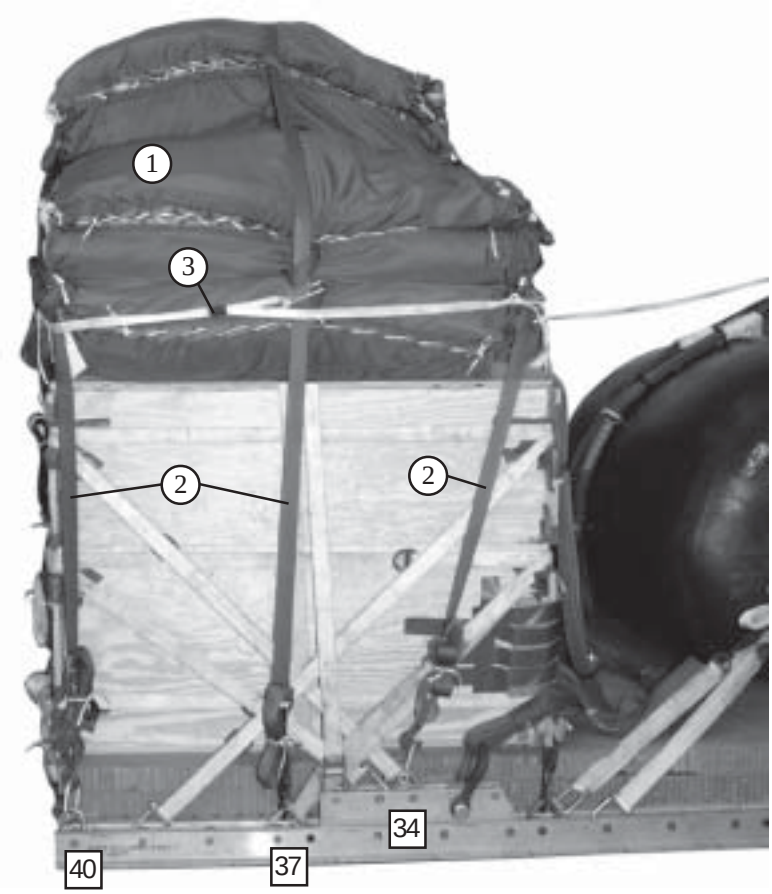


(9) S-fold the rear suspension slings on top of drum 6 and secure with one turn single 1/4-inch cotton webbing. Make one tie around both sets of rear suspension slings to hold them together with one turn single 1/4-inch cotton webbing.

Figure 4-108. Suspension Slings Secured (Continued)

PREPARING AND STOWING CARGO PARACHUTES

4-69. Prepare and stow seven G-11 cargo parachutes as shown in Figure 4-109.

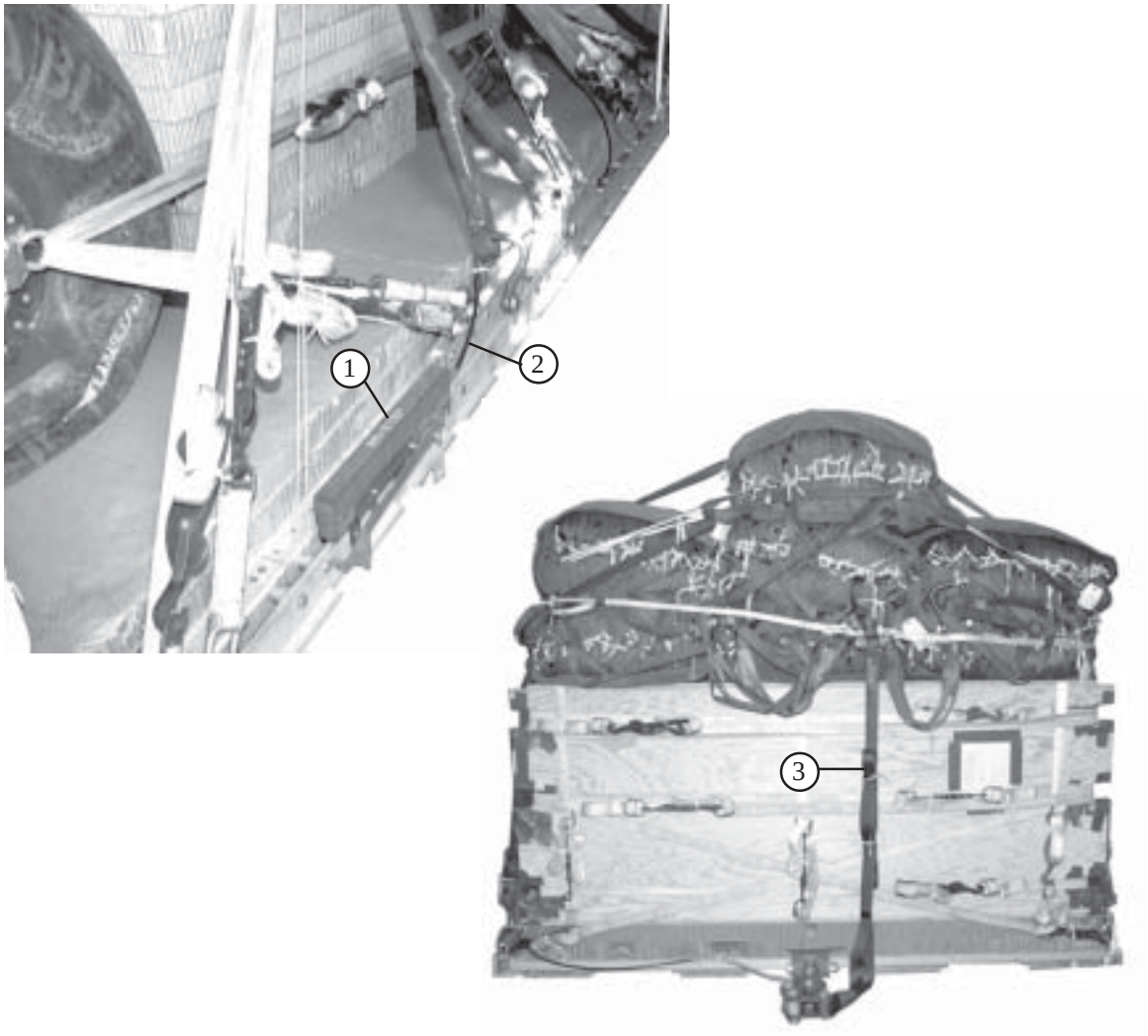


1. Prepare and stow seven G-11 cargo parachutes on the rear equipment box according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
2. Restrain the parachutes according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 using platform clevises 34, 34A, 37, 37A, 40 and 40A on the platform.
3. Install the multicut parachute release strap according to FM 4-20.102/NAVSEA SS400-AB- MMO-010/TO 13C-1-5.

Figure 4-109. Cargo Parachutes Prepared and Stowed

INSTALLING THE EXTRACTION SYSTEM

4-70. Install the extraction system as shown in Figure 4-110.



(1) Using the rear holes, install the extraction force transfer coupling (EFTC) according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

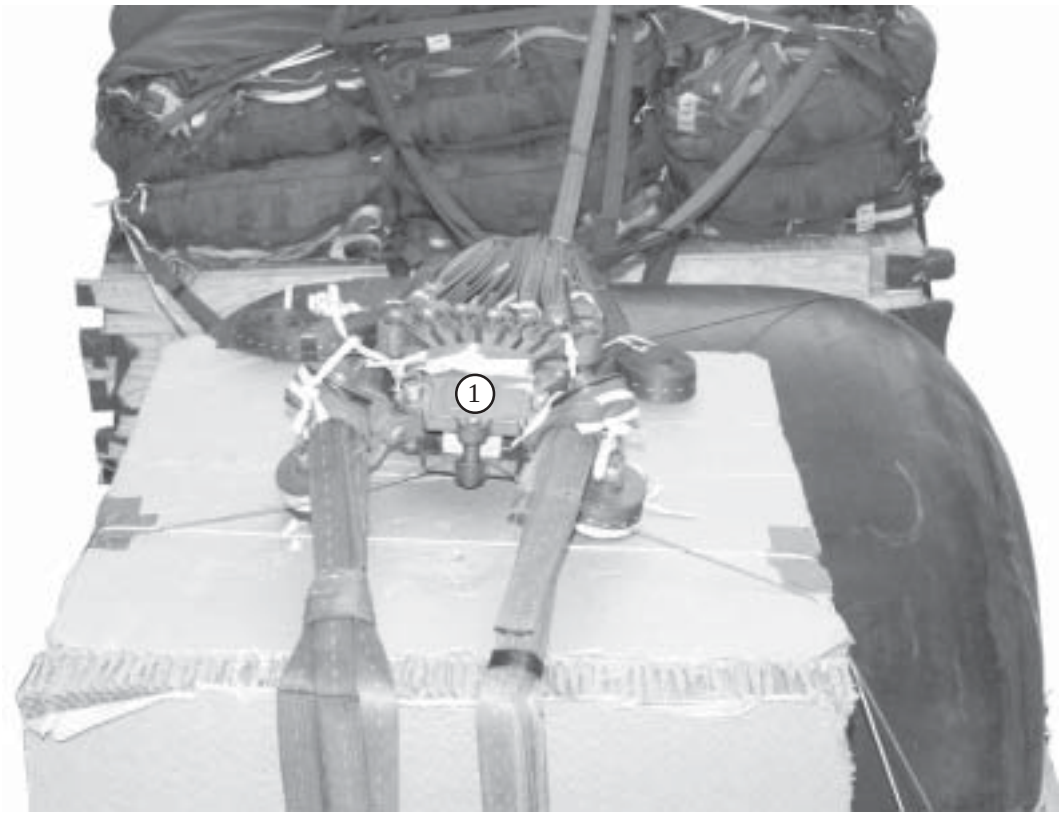
(2) Using a 28-foot EFTC cable, safety the cable using one turn single type I, 1/4-inch cotton webbing.

(3) Attach a 9-foot (2-loop), type XXVI nylon webbing sling for use as a deployment line.

Figure 4-110. Extraction System Installed

INSTALLING THE CARGO PARACHUTE RELEASE SYSTEM

4-71. Install the M-2 cargo parachute release system as shown in Figure 4-111.



(1) Place the M-2 release on the release platform. Attach the suspension slings and the parachute riser extensions to the M-2 cargo parachute release according to FM 4-20.102/ NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Secure the cargo parachute release with type III nylon cord.

Figure 4-111. Cargo Parachute Release Installed

PLACING EXTRACTION PARACHUTE

4-72. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Rig the extraction line in an extraction line bag according to TM 10-1670-286-20/TO 13C5-2-41. Place the extraction parachute and extraction line on the load for installation in the aircraft.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

4-73. Select and install the provisions for emergency aft restraints according to the emergency aft restraint requirements table in FM 4-20.102/NAVSEA SS400 -AB-MMO-010/TO 13C7-1-5.

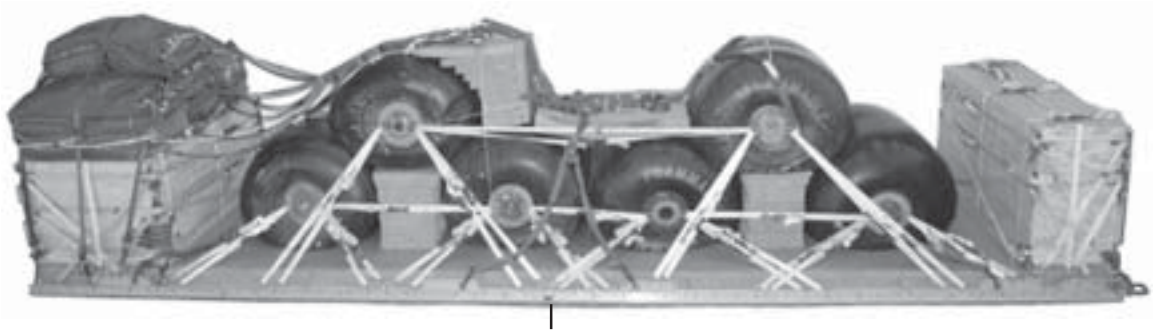
MARKING RIGGED LOAD

4-74. Mark the rigged load according to FM 4-20.102/NAVSEA SS400-AB-MMO -010/TO 13C7-1-5 and as shown in Figure 4-112. Complete Shipper's Declaration for Dangerous Goods and affix to the load. If the load varies from the one shown, the weight, height, CB, tipoff curve, and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

4-75. Use the equipment list in Table 4-5 to rig the load shown in Figure 4-112.

CAUTION
Make the final inspection required by FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



RIGGED LOAD DATA

Weight ..... 32,480 pounds

NOTE: The rigged weight for this load is using water as the liquid. Use the weight conversion table for the actual rigged weight for any other liquids used.

NOTE: The G-11 requirements may need to be recomputed for lighter liquids.

Maximum Weight ..... 34,000 pounds

Height ..... 94 inches

Width ..... 108 inches

Overall Length ..... 402 inches

Overhang: Front ..... 0 inches
Rear (EFTC) ..... 18 inches

Center of Balance (CB) (from front edge of platform) ..... 195 inches

Figure 4-112. AAFARS Rigged with Six 500-Gallon Drums for Low-Velocity Airdrop

Table 4-5. Equipment Required for Rigging AAFARS With Six 500-Gallon Drums

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive paste, 1-gal	As required
1670-01-035-6054	Bridle, extraction line bag (for DES)	1
4030-00-090-5354	Clevis, large	12
4030-00-678-8562	Clevis, medium	6
4020-00-240-2146	Cord, nylon, type III, 550-lb	As required
1670-00-326-7309	Coupling assembly, airdrop, extraction force transfer w/ cable, 28-ft	1
1670-00-360-0328	Cover, clevis, large	7
8135-00-664-6958	Cushioning material, packaging, cellulose wadding	As required
8305-00-958-3685	Felt, 1/2-in thick	As required
1670-00-003-4391	Knife, parachute bag (for DES)	1
1670-01-183-2678	Leaf, extraction line (line bag)(add1 for DES)	2
	Line, drogue (for DES)	
1670-01-064-4452	60-foot (1-loop), type XXVI	1
	Line, extraction	
1670-01-064-4454	For C-130: 60-ft (6-loop), type XXVI	1
1670-01-062-6312	For C-141: 120-ft (6-loop), type XXVI	1
	For C5:	
	(between fuselage station 1667-1971)	
1670-01-062-6312	120-ft (6-loop), type XXVI	1
	(between fuselage station 947-1666)	
1670-01-062-6312	120-ft (6-loop), type XXVI and a	1
1670-01-064-4454	60-ft (6-loop), type XXVI	1
	(between fuselage station 574-947)	
1670-01-062-6312	120-ft (6-loop), type XXVI	2
1670-01-468-9178	For C-17: 140-ft (6-loop), type XXVI	
	Link assembly:	
	Two-point: (for DES)	
5306-00-435-8994	Bolt, 1-in diam, 4-in long	2
5310-00-232-5165	Nut, 1-in, hexagonal	2
1670-00-003-1953	Plate, side, 3 3/4-in	2
5365-00-007-3414	Spacer, large	2

Table 4-5. Equipment Required for Rigging AAFARS With Six 500-Gallon Drums (Continued)

National Stock Number	Item	Quantity
	Two-point:	
5306-00-435-8994	Bolt, 1-in diam, 4-in long	10
5310-00-232-5165	Nut, 1-in, hexagonal	10
1670-00-003-3454	Plate, side, 5 1/2-in	10
5365-00-007-3414	Spacer, large	10
1670-01-307-1055	Link assembly: Three-point	2
1670-01-483-8259	Link, tow release mechanism (H-Block) C-17	1
	Lumber:	
5510-00-220-6146	2- by 4-in	As required
5510-00-220-6148	2- by 6-in	As required
	Nail, steel wire, common,	
5315-00-010-4659	8d	As required
5315-00-010-4662	12d	As required
5315-00-753-3885	16d	As required
1670-00-753-3928	Pad, energy dissipating, honeycomb, 3- by 36- by 96-in	37 sheets
	Parachute:	
	Cargo:	
1670-01-016-7841	G-11C	7
	Cargo extraction:	
1670-00-040-8135	28-foot	2
	Drogue: (for DES)	
1670-01-063-3715	15-ft	1
	Platform, airdrop, Type V, 32-foot	
1670-01-353-8425	Bracket assembly, EFTC	1
1670-01-162-2376	Bracket assembly, extraction	1
1670-01-162-2372	Clevis assembly	84
1670-01-247-2389	Bracket, suspension	8
1670-01-162-2381	Tandem link assembly (multipurpose link)	2
5530-00-128-4981	Plywood, 3/4-in	11 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	4
1670-01-062-6305	9-ft (4-loop), type XXVI nylon webbing	2
1670-01-062-6307	12-ft (4-loop), type XXVI nylon webbing	2
1670-01-064-4453	20-ft (4-loop), type XXVI nylon webbing	4

Table 4-5. Equipment Required for Rigging AAFARS With Six 500-Gallon Drums (Continued)

National Stock Number	Item	Quantity
	For deployment:	
1670-01-062-6304	9-ft (2-loop), type XXVI nylon webbing	1
	For riser extension:	
1670-01-062-6311	120-ft (2-loop), type XXVI	7
5340-00-040-8219	Strap, parachute release, multicut, comes w/ 3 knives	2
7510-00-266-5016	Tape, adhesive, 2-in	As required
7510-00-266-6710	Tape, masking, 2-in	As required
1670-00-937-0271	Tie-down assembly, 15-foot	118
	Webbing:	
8305-00-268-2411	Cotton, 1/4-in, type I	As required
8305-00-082-5752	Nylon, tubular, 1/2-in	As required
8305-00-260-6890	Type X	As required

SECTION V- RIGGING AAFARS WITH SEVEN 500-GALLON FUEL DRUMS

DESCRIPTION OF LOAD

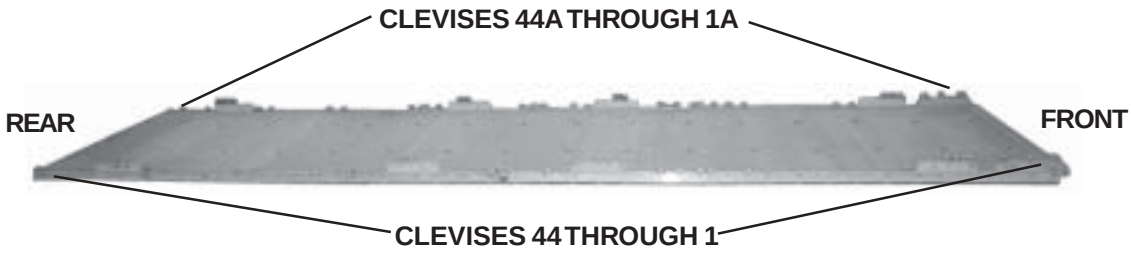
4-76. The Advanced Aviation Forward Area Refueling System (AAFARS) is rigged on a 32-foot type, V platform with seven G-11 cargo parachutes. The AAFARS is designed for forward area refueling of up to four aircraft at a time with a minimum of 55 GPM. There are six collapsible fuel drums as an accompanying load. Each drum is filled with 432 gallons of liquid. When empty, each drum weighs 250 pounds and is 62 inches long and 53 inches in diameter. The total rigged overall length is 402 inches. Width is 108 inches. Height is 96 inches. Center of balance is 192 inches.

Notes:
1. For drums filled with a liquid other than water, use Table 1-1 to recompute the weight.
2. If the load varies from the one shaown, the weight, height, CB, tipoff curve, and parachute requirements must be recomputed
3. Do not pressurize drums with air.

PREPARING PLATFORM

4-77. Prepare a 32-foot type V airdrop platform using two tandem links, eight suspension brackets and 92 tie-down clevises as shown in Figure 4-113.

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



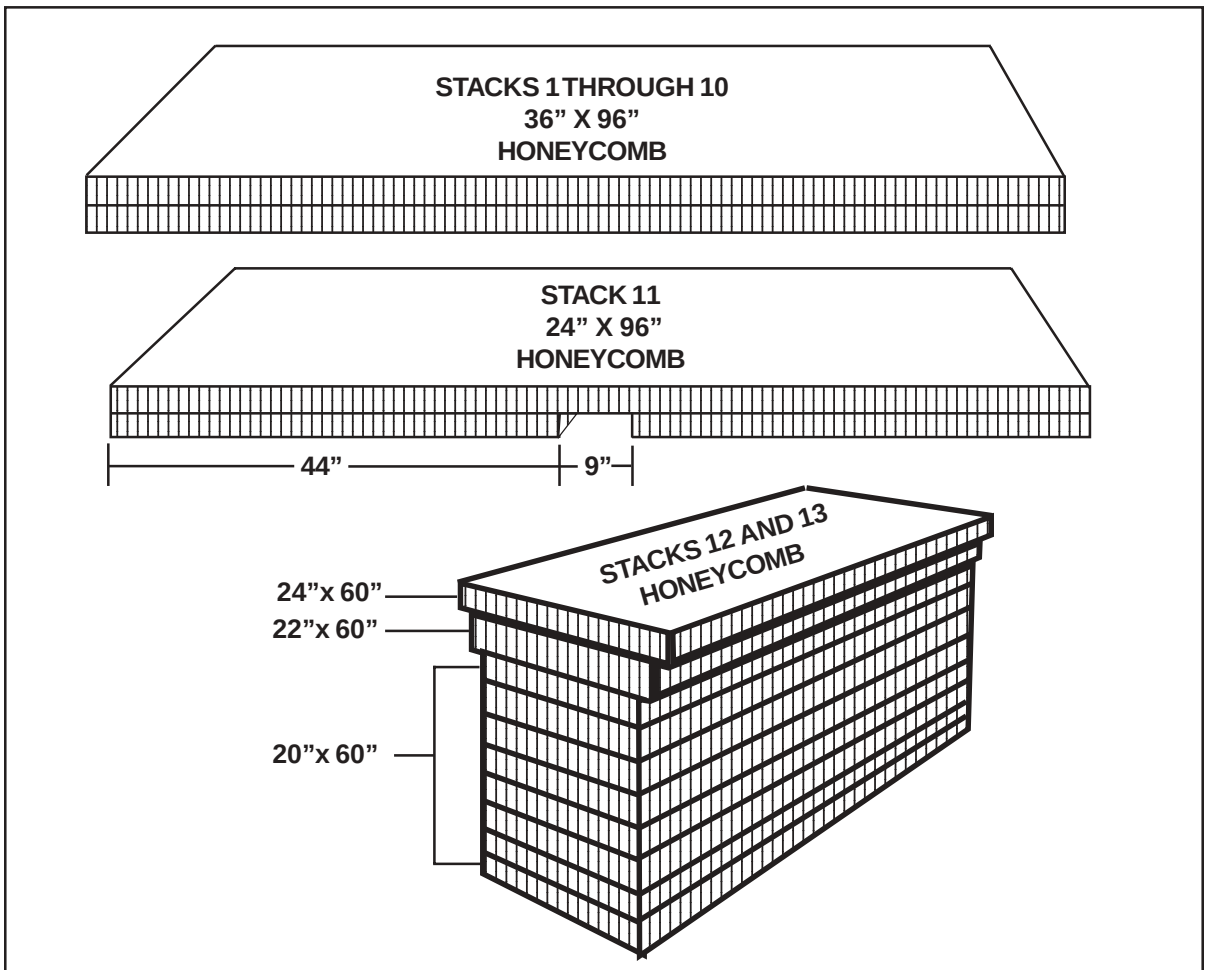
Steps:

1. Inspect, or assemble and inspect, the platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22.
2. Install a tandem link on the front of each platform side rail using holes 1, 2, and 3.
3. Install a suspension bracket to each platform side rail using holes 6, 7, and 8.
4. Install a suspension bracket to each platform side rail using holes 26, 27, and 28.
5. Install a suspension bracket to each platform side rail using holes 37, 38, and 39.
6. Install a suspension bracket to each platform side rail using holes 57, 58, and 59.
7. Install a tie-down clevis to bushings 1 (doubled), 3, and 4 (doubled) on each front tandem link.
8. Install a tie-down clevis to bushings 1(doubled), 2, and 3 on each of the first suspension brackets.
9. Install a tie-down clevis to bushings 2 and 3 of each of the second suspension brackets.
10. Install a tie-down clevis to bushings 2 and 3 of each of the third suspension brackets.
11. Install a tie-down clevis to bushings 2 (doubled), 3, and 4 of each of the fourth suspension brackets.
12. Starting at the front of each platform side rail, install a tie-down clevis to the bushings bolted to holes 9, 10, 17, 18, 20, 21, 22, 23, 29, 30, 32, 33 (tripled), 34, 41, 42 (tripled), 43, 49, 50, 55, 56 (doubled), 61, 63, 64 (doubled).
13. Starting at the front of the platform, number the clevises bolted to the right side from 1 through 44 and those bolted to the left side from 1A through 44A.

Figure 4-113. Platform Prepared

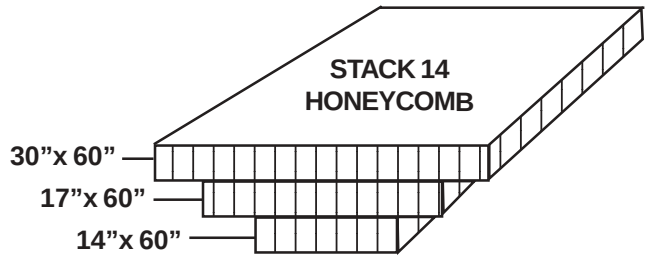
PREPARING HONEYCOMB

4-78. Prepare and build honeycomb stacks as shown in Figure 4-114.



STACK NUMBER	PIECES	WIDTH (INCHES)	LENGTH (INCHES)	MATERIAL	INSTRUCTIONS
1-10	2	36	96	Honeycomb	Glue together.
11	2	24	96	Honeycomb	Glue together. Cut a notch out in the bottom layer starting 44-inches in from the 96-inch edge, 9-inches wide, 5-inches in length.
12-13	8	20	60	Honeycomb	Glue together to form a base.
	1	22	60	Honeycomb	Glue and center on base.
	1	24	60	Honeycomb	Glue and center on top of 22 x 60-inch piece.

Figure 4-114. Honeycomb Stacks Prepared



STACK NUMBER	PIECES	WIDTH (INCHES)	LENGTH (INCHES)	MATERIAL	INSTRUCTIONS
14	1 1 1	14 17 30	60 60 60	Honeycomb Honeycomb Honeycomb	Base. Glue and center on base. Glue and center on top of 17- by 60-inch piece.

Figure 4-114. Honeycomb Stacks Prepared (Continued)

POSITIONING HONEYCOMB STACKS

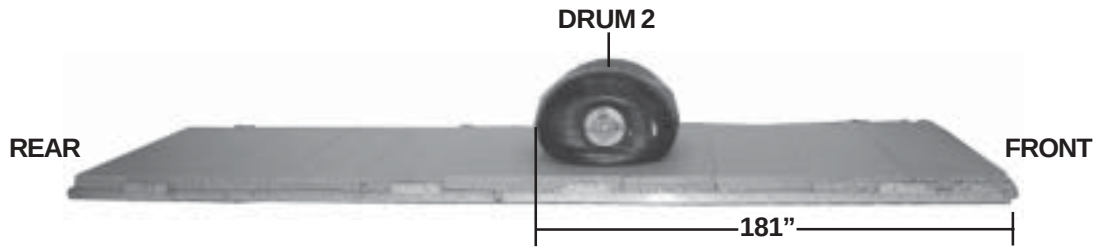
4-79. Position honeycomb stacks 1 through 11 as shown in Figure 4-115.

1. Position stack 1 on the front edge of the platform and centered.
2. Position stacks 2 through 10 flush on the rear edge of stack 1. Place them flush with each other.
3. Position stack 11 flush against the rear of stack 10 with the 5 x 9-inch cutout to the rear of the platform.

Figure 4-115. Positioning Honeycomb Stacks 1 through 11 Positioned

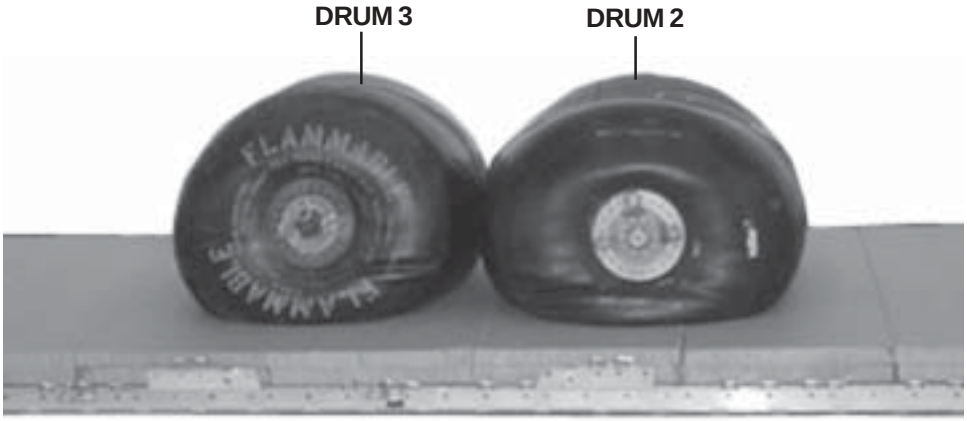
POSITIONING AND LASHING THE DRUMS

4-80. Position and lash the drums to the platform as shown in Figures 4-116 through 4-128.



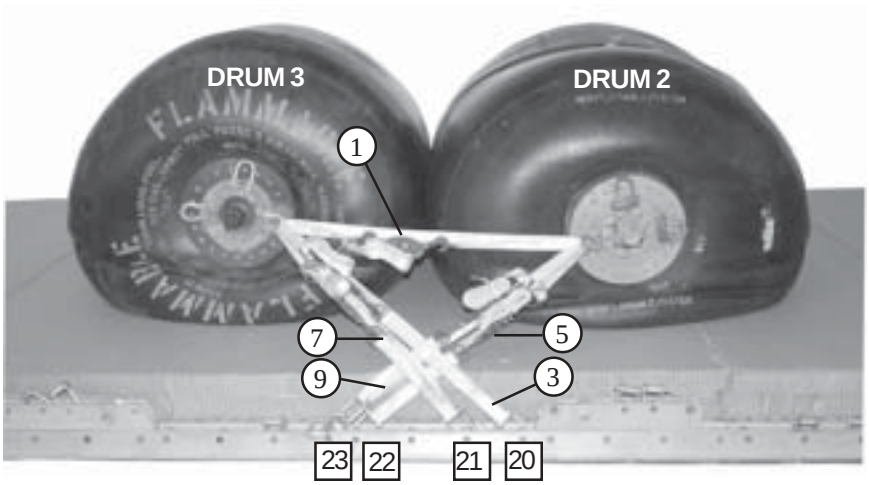
1. Place a platform clevis on one end of two 9-foot (2-loop), type XXVI nylon webbing slings. Attach a sling to each side of the drum (for lifting purposes only) and remove after the drums are positioned (not shown).

2. Position drum 2 centered on the platform with the rear edge 181 inches from the front edge of the platform.



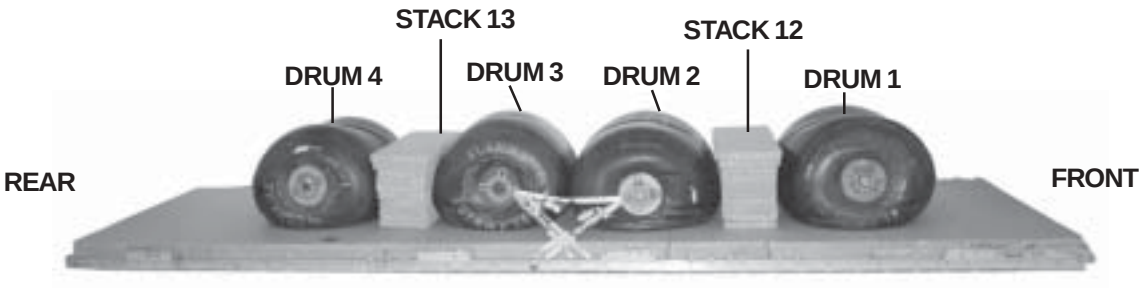
3. Position drum 3 centered on the platform flush against the rear of drum 2.

Figure 4-116. Fuel Drums 2 and 3 Positioned



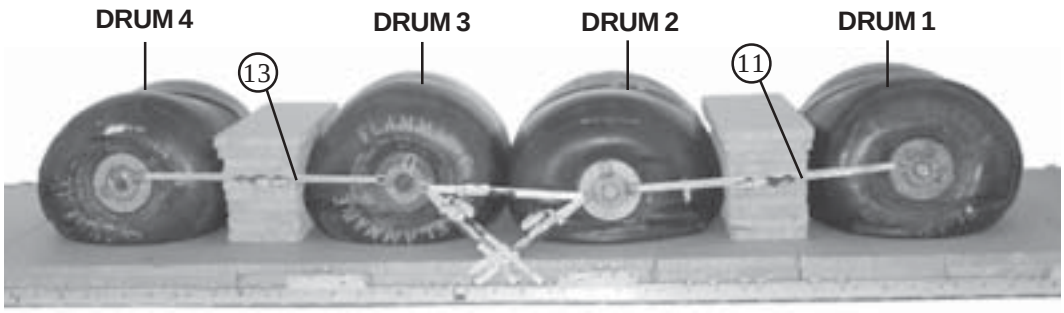
Lashing Number	Tie-down Clevis Number	Instructions
1		Route a lashing from the rear shackle of drum 2 to the front shackle of drum 3 on the right side.
2		Route a lashing from the rear shackle of drum 2 to the front shackle of drum 3 on the left side.
3	20	Route a lashing from clevis 20 to the front right shackle on drum 3.
4	20A	Route a lashing from clevis 20A to the front left shackle on drum 3.
5	22	Route a lashing from clevis 22 to the rear right shackle on drum 2.
6	22A	Route a lashing from clevis 22A to the rear left shackle on drum 2.
7	21	Route a lashing from clevis 21 to the front right shackle on drum 3.
8	21A	Route a lashing from clevis 21A to the front left shackle on drum 3.
9	23	Route a lashing from clevis 23 to the rear right shackle on drum 2.
10	23A	Route a lashing from clevis 23A to the rear left shackle on drum 2.

Figure 4-117. Lashings 1 through 10 Installed



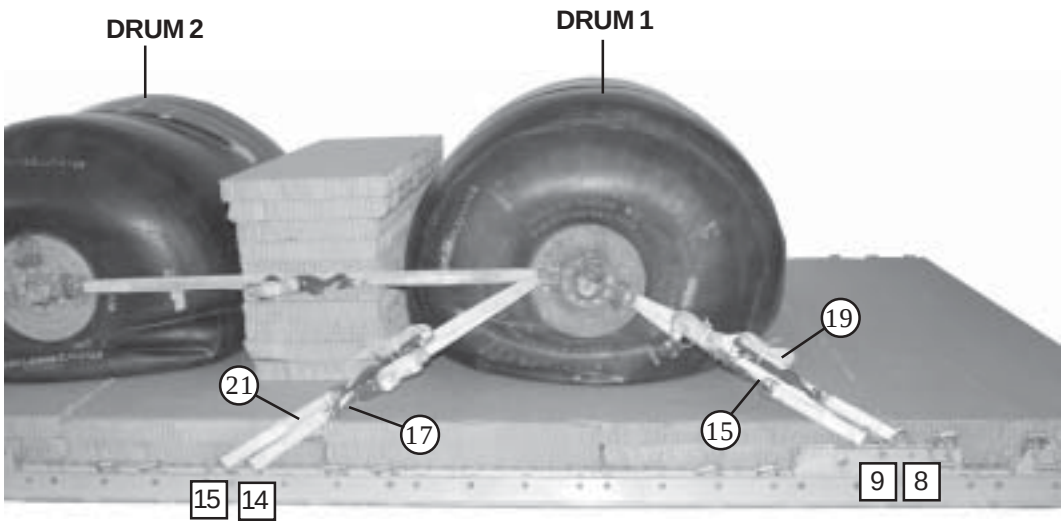
1. Position stack 12 flush and centered against the front of drum 2.
2. Position stack 13 flush and centered against the rear of drum 3.
3. Position drum 1 centered on the platform and flush against the front of stack 12.
4. Position drum 4 centered on the platform and flush against the rear of stack 13.

Figure 4-118. Fuel Drums 1 and 4 Positioned



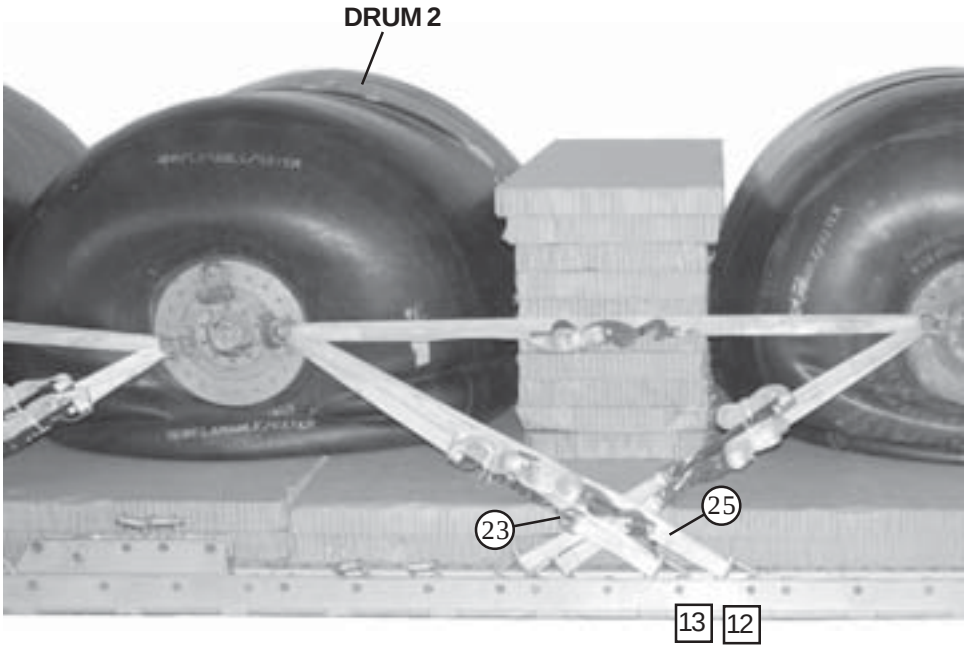
Lashing Number	Tie-down Clevis Number	Instructions
11		Route a lashing from the rear shackle of drum 1 to the front shackle of drum 2 on the right side.
12		Route a lashing from the rear shackle of drum 1 to the front shackle of drum 2 on the left side.
13		Route a lashing from the rear shackle of drum 3 to the front shackle of drum 4 on the right side.
14		Route a lashing from the rear shackle of drum 3 to the front shackle of drum 4 on the left side.

Figure 4-119. Lashings 11 through 14 Installed



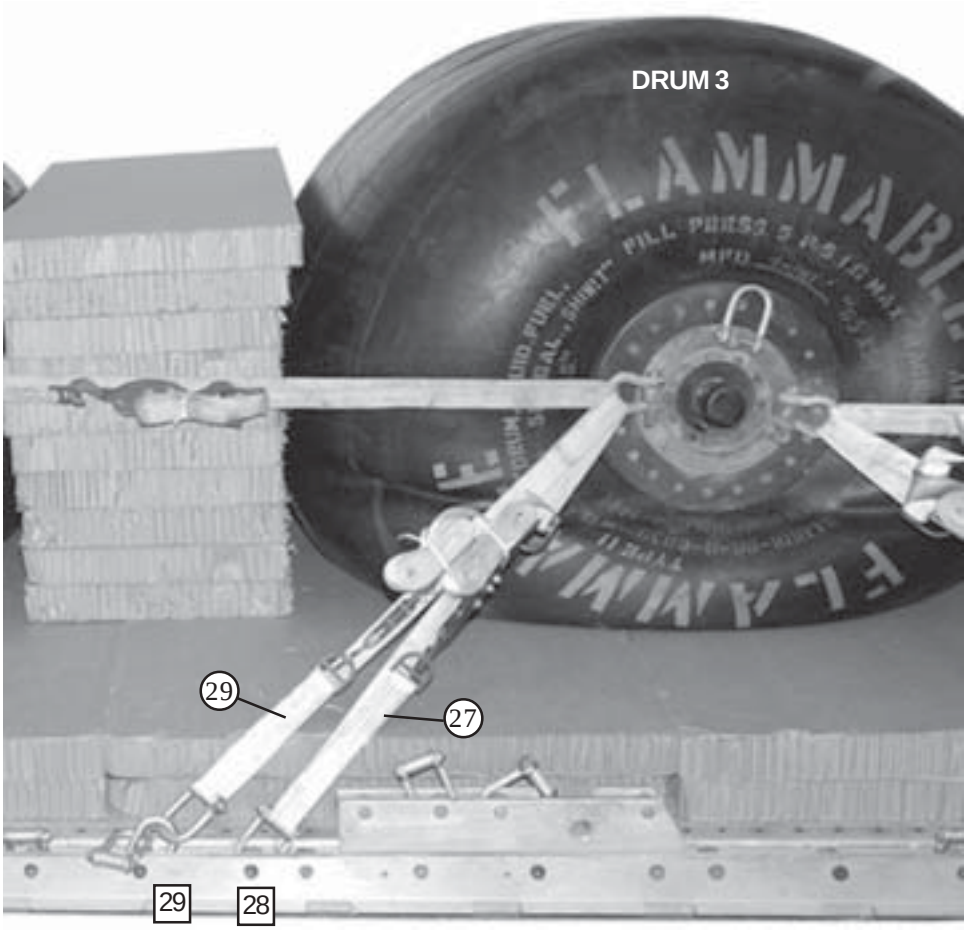
Lashing Number	Tie-down Clevis Number	Instructions
15	9	Route a lashing from clevis 9 to the front right shackle on drum 1.
16	9A	Route a lashing from clevis 9A to the front left shackle on drum 1.
17	14	Route a lashing from clevis 14 to the rear right shackle on drum 1.
18	14A	Route a lashing from clevis 14A to the rear left shackle on drum 1.
19	8	Route a lashing from clevis 8 to the front right shackle on drum 1.
20	8A	Route a lashing from clevis 8A to the front left shackle on drum 1.
21	15	Route a lashing from clevis 15 to the rear right shackle on drum 1.
22	15A	Route a lashing from clevis 15A to the rear left shackle on drum 1.

Figure 4-120. Lashings 15 through 22 Installed



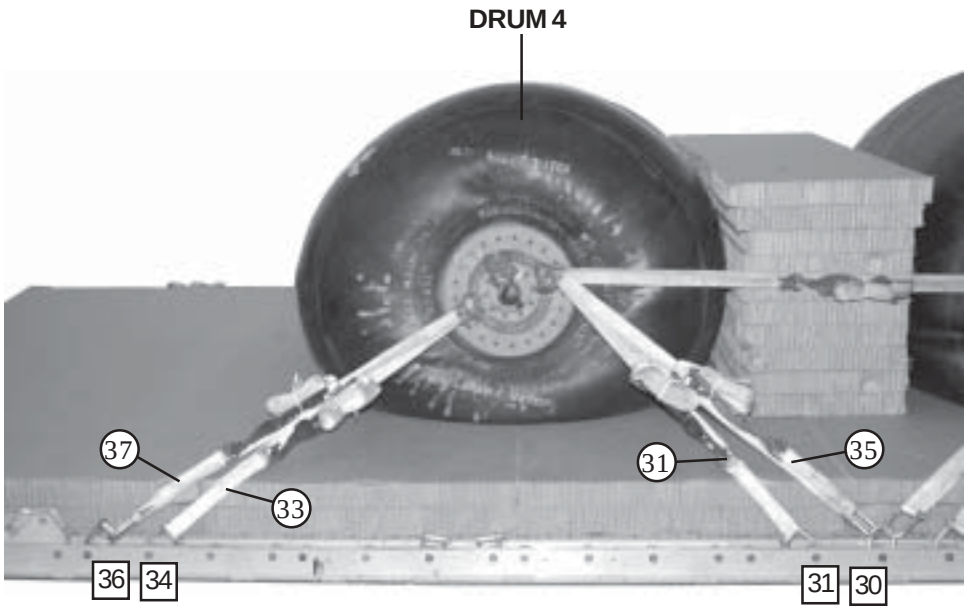
Lashing Number	Tie-down Clevis Number	Instructions
23	13	Route a lashing from clevis 13 to the front right shackle on drum 2.
24	13A	Route a lashing from clevis 13A to the front left shackle on drum 2.
25	12	Route a lashing from clevis 12 to the front right shackle on drum 2.
26	12A	Route a lashing from clevis 12A to the front left shackle on drum 2.

Figure 4-121. Lashings 23 through 26 Installed



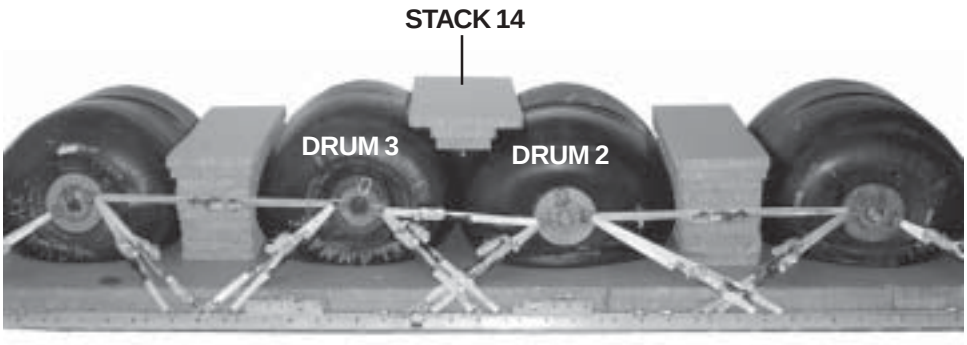
Lashing Number	Tie-down Clevis Number	Instructions
27	28	Route a lashing from clevis 28 to the rear right shackle on drum 3.
28	28A	Route a lashing from clevis 28A to the rear left shackle on drum 3.
29	29	Route a lashing from clevis 29 to the rear right shackle on drum 3.
30	29A	Route a lashing from clevis 29A to the rear left shackle on drum 3.

Figure 4-122. Lashings 27 through 30 Installed

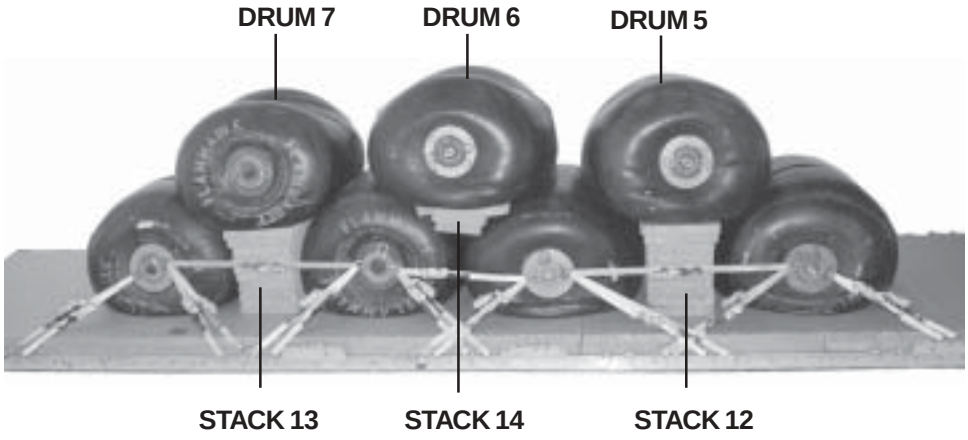


Lashing Number	Tie-down Clevis Number	Instructions
31	31	Route a lashing from clevis 31 to the front right shackle on drum 4.
32	31A	Route a lashing from clevis 31A to the front left shackle on drum 4.
33	34	Route a lashing from clevis 34 to the rear right shackle on drum 4.
34	34A	Route a lashing from clevis 34A to the rear left shackle on drum 4.
35	30	Route a lashing from clevis 30 to the front right shackle on drum 4.
36	30A	Route a lashing from clevis 30A to the front left shackle on drum 4.
37	36	Route a lashing from clevis 36 to the rear right shackle on drum 4.
38	36A	Route a lashing from clevis 36A to the rear left shackle on drum 4.

Figure 4-123. Lashings 31 through 38 Installed

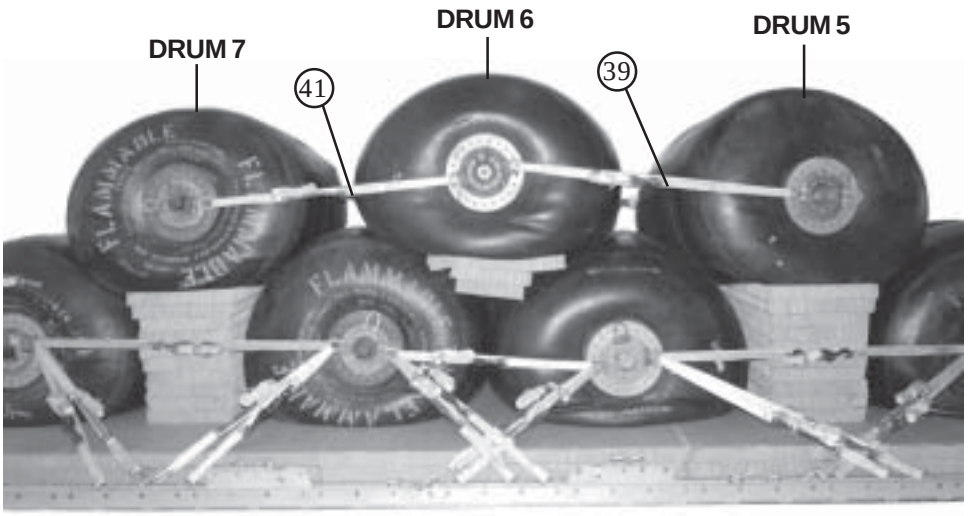


1. Position stack 14 on top and centered between drums 2 and 3.



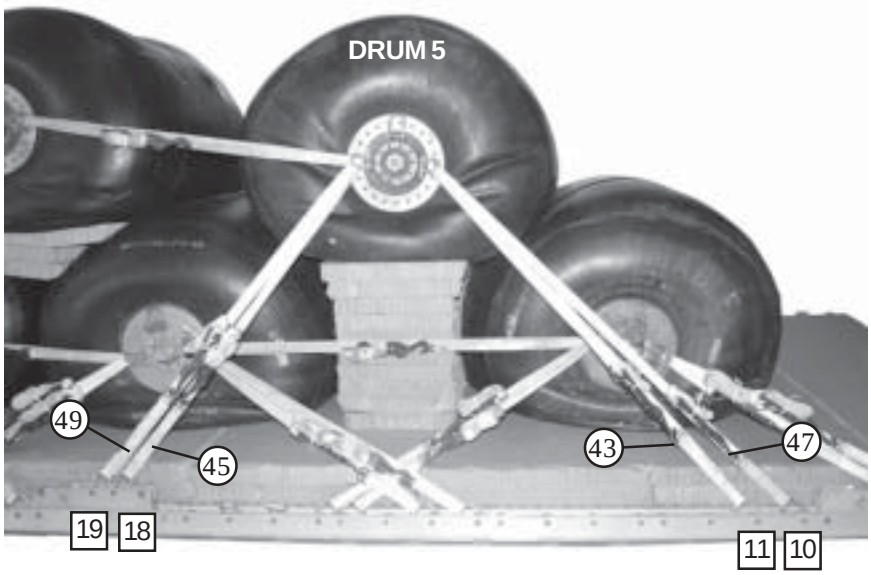
2. Position drum 5 centered on stack 12.
3. Position drum 6 centered on stack 14.
4. Position drum 7 centered on stack 13.

Figure 4-124. Fuel Drums 5 through 7 Positioned



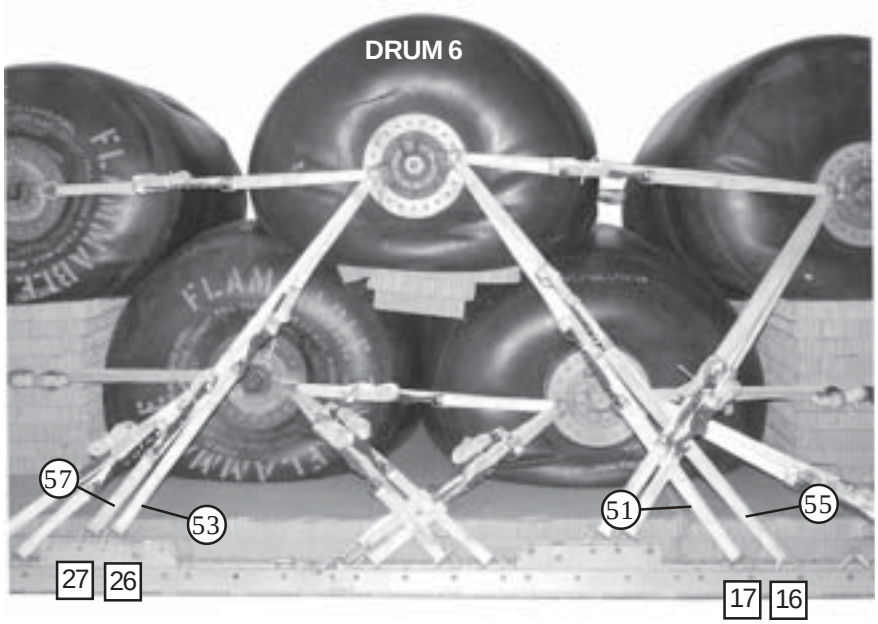
Lashing Number	Tie-down Clevis Number	Instructions
39		Route a lashing from the rear shackle of drum 5 to the front shackle of drum 6 on the right side.
40		Route a lashing from the rear shackle of drum 5 to the front shackle of drum 6 on the left side.
41		Route a lashing from the rear shackle of drum 6 to the front shackle of drum 7 on the right side.
42		Route a lashing from the rear shackle of drum 6 to the front shackle of drum 7 on the left side.

Figure 4-125. Lashings 39 through 42 Installed



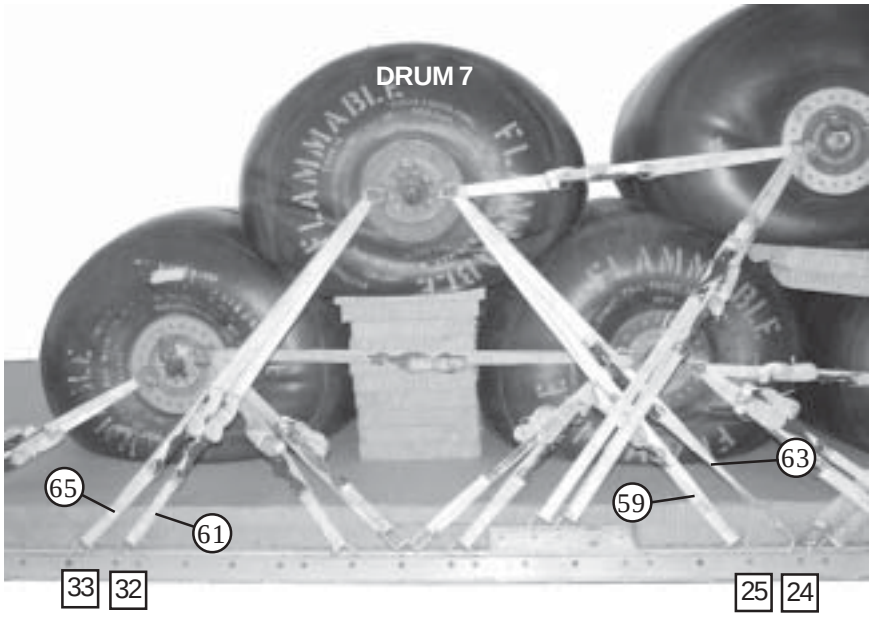
Lashing Number	Tie-down Clevis Number	Instructions
43	11	Route a lashing from clevis 11 to the front right shackle on drum 5.
44	11A	Route a lashing from clevis 11A to the front left shackle on drum 5.
45	18	Route a lashing from clevis 18 to the rear right shackle on drum 5.
46	18A	Route a lashing from clevis 18A to the rear left shackle on drum 5.
47	10	Route a lashing from clevis 10 to the front right shackle on drum 5.
48	10A	Route a lashing from clevis 10A to the front left shackle on drum 5.
49	19	Route a lashing from clevis 19 to the rear right shackle on drum 5.
50	19A	Route a lashing from clevis 19A to the rear left shackle on drum 5.

Figure 4-126. Lashings 43 through 50 Installed



Lashing Number	Tie-down Clevis Number	Instructions
51	17	Route a lashing from clevis 17 to the front right shackle on drum 6.
52	17A	Route a lashing from clevis 17A to the front left shackle on drum 6.
53	26	Route a lashing from clevis 26 to the rear right shackle on drum 6.
54	26A	Route a lashing from clevis 26A to the rear left shackle on drum 6.
55	16	Route a lashing from clevis 16 to the front right shackle on drum 6.
56	16A	Route a lashing from clevis 16A to the front left shackle on drum 6.
57	27	Route a lashing from clevis 27 to the rear right shackle on drum 6.
58	27A	Route a lashing from clevis 27A to the rear left shackle on drum 6.

Figure 4-127. Lashings 51 through 58 Installed



Lashing Number	Tie-down Clevis Number	Instructions
59	25	Route a lashing from clevis 25 to the front right shackle on drum 7.
60	25A	Route a lashing from clevis 25A to the front left shackle on drum 7.
61	32	Route a lashing from clevis 32 to the rear right shackle on drum 7.
62	32A	Route a lashing from clevis 32A to the rear left shackle on drum 7.
63	24	Route a lashing from clevis 24 to the front right shackle on drum 7.
64	24A	Route a lashing from clevis 24A to the front left shackle on drum 7.
65	33	Route a lashing from clevis 33 to the rear right shackle on drum 7.
66	33A	Route a lashing from clevis 33A to the rear left shackle on drum 7.

Figure 4-128. Lashings 59 through 66 Installed

BUILDING THE EQUIPMENT BOXES

4-81. Build the front and rear equipment boxes as shown in Figures 4-93 and 4-94.

PREPARING EQUIPMENT FOR EQUIPMENT BOXES

4-82. Prepare the fire extinguishers, filter separator, explosion proof motor, pumps, manuals and toolkit as explained and shown in paragraph 4-6. Using the lists printed on the equipment bags, place the equipment indicated on each list into its bag. Prepare and secure the battery box as shown in Figure 4-95.

POSITIONING EQUIPMENT BOXES

4-83. Prepare and position the front and rear equipment boxes as shown in Figures 4-96 and 4-97.

POSITIONING AND SECURING EQUIPMENT IN EQUIPMENT BOXES

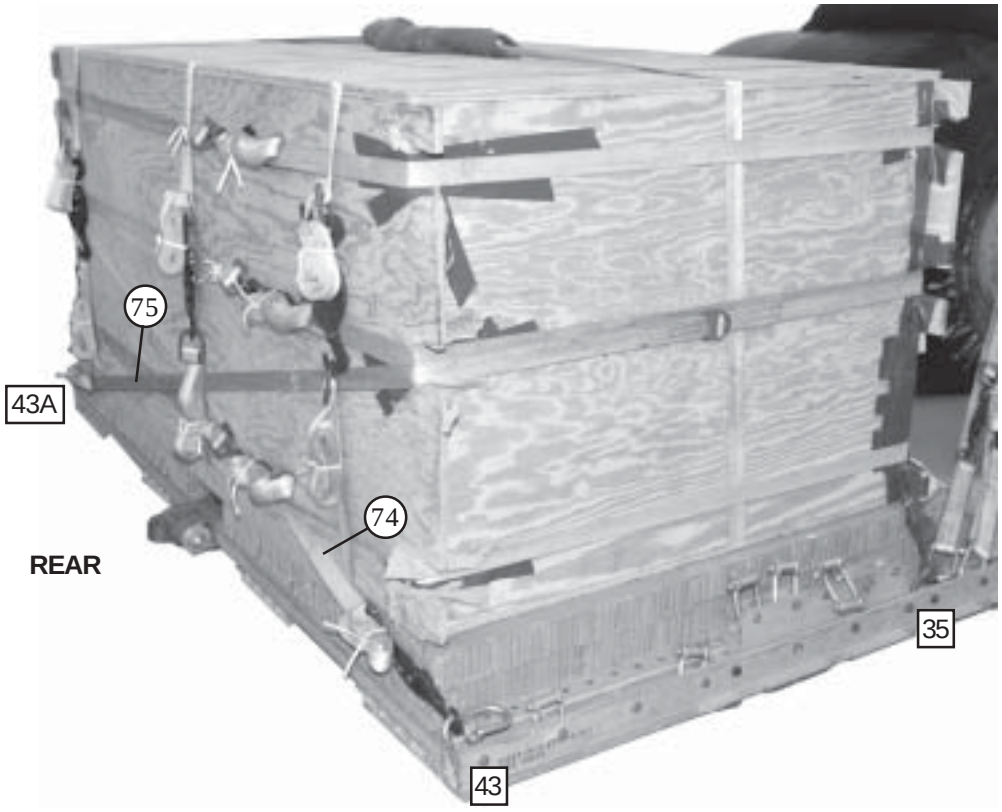
4-84. Position and secure equipment in equipment boxes as shown in Figures 4-98 and 4-99.

LASHING THE EQUIPMENT BOXES TO THE PLATFORM

4-85. Lash the equipment boxes as shown in Figures 4-100 through 4-102 and Figures 4-129 through 4-131.

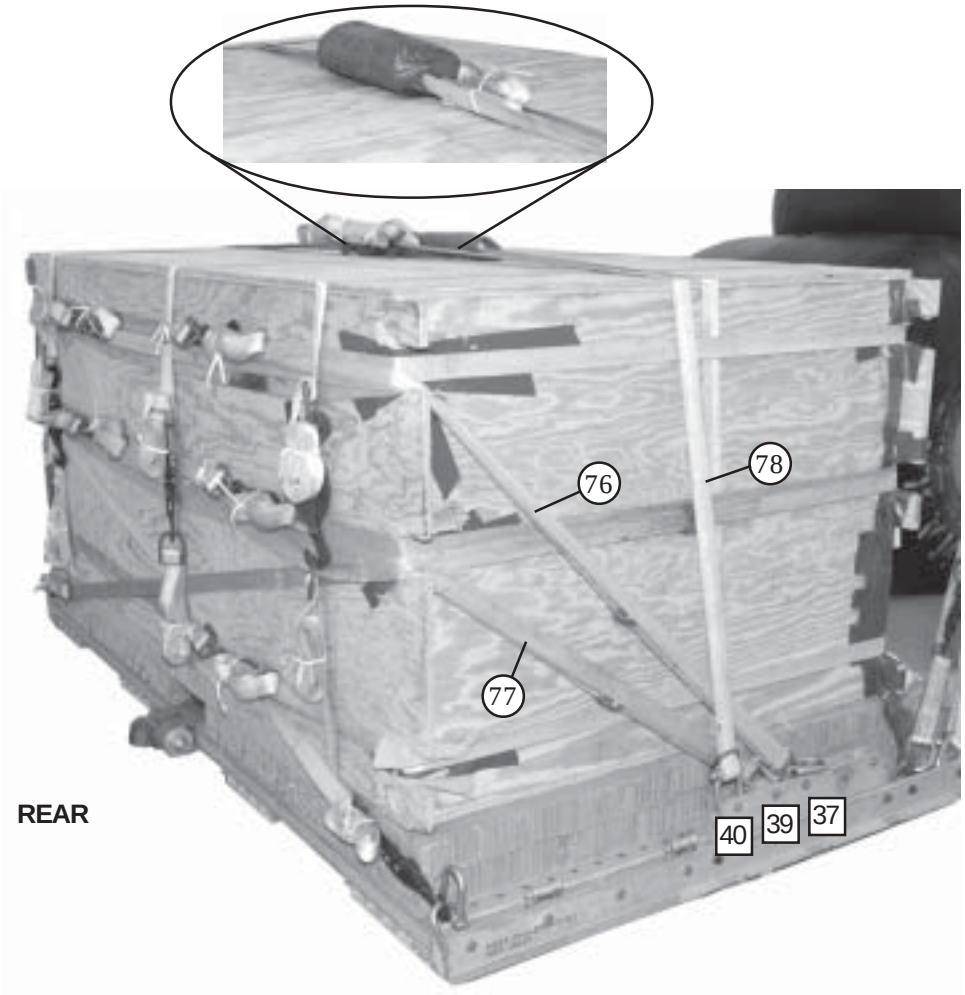
a. Lash the front equipment box to the platform as shown in Figures 4-100 through 4-102.

b. Lash the rear equipment box to the platform as shown in Figures 4-129 through 4-131.



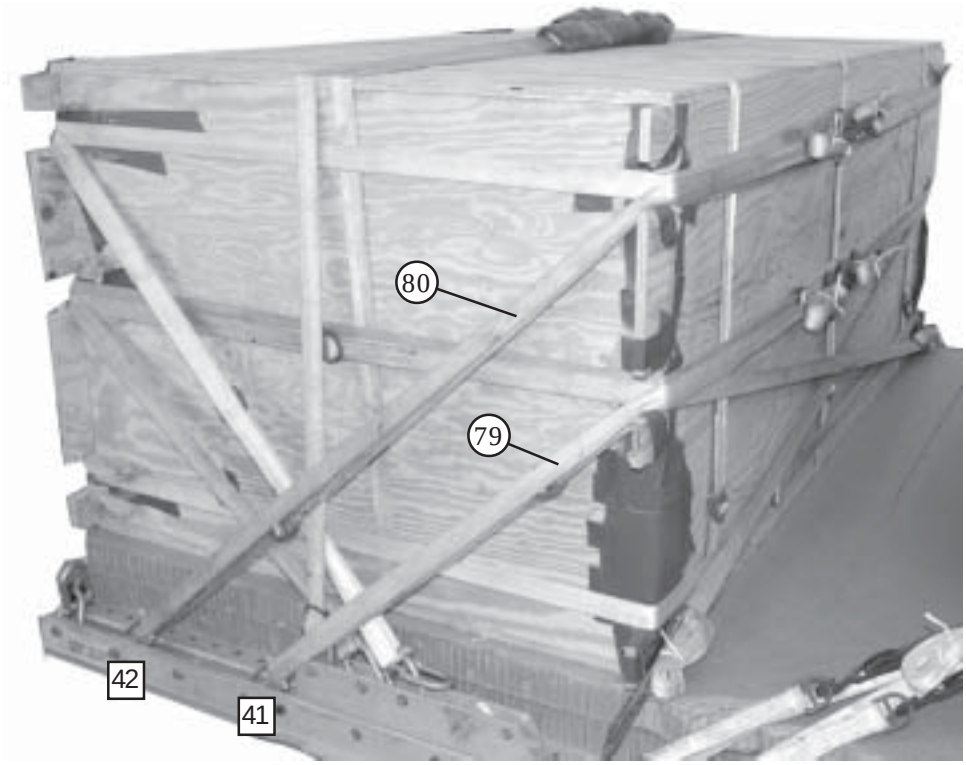
Lashing Number	Tie-down Clevis Number	Instructions
74	35 and 43	Route a 30-foot lashing from clevis 35 to the front middle left cutout, to the rear middle left cutout, to clevis 43. Ensure lashing is routed under the load binders on the rear of box.
75	35A and 43A	Route a 30-foot lashing from clevis 35A to the front middle right cutout, to the rear middle right cutout, to clevis 43A. Ensure lashing is routed under the load binders on the rear of the box.

Figure 4-129. Lashings 74 and 75 Installed



Lashing Number	Tie-down Clevis Number	Instructions
76	37 and 37A	Route a 45-foot lashing through clevis 37 to the rear top right cutout, to the rear top left cutout, through clevis 37A and load bind on the rear of the box.
77	39 and 39A	Route a 45-foot lashing through clevis 39 to the rear middle right cutout, to the rear middle left cutout, through clevis 39A and load bind on the rear of the box.
78	40 and 40A	Route a lashing through clevis 40 and through it's own D-ring, repeat on clevis 40A and load bind them together on top of box. Wrap 1/4-inch felt around the load binders located on top of the equipment box and secure them with tape.

Figure 4-130. Lashings 76 through 78 Installed



Lashing Number	Tie-down Clevis Number	Instructions
79	41 and 41A	Route a 45-foot lashing through clevis 41 to the front middle right cutout, to the front middle left cutout, through clevis 41A and load bind on the front of the box.
80	42 and 42A	Route a 45-foot lashing through clevis 42 to the front top right cutout, to the front top left cutout, through clevis 42A and load bind on the front of the box.

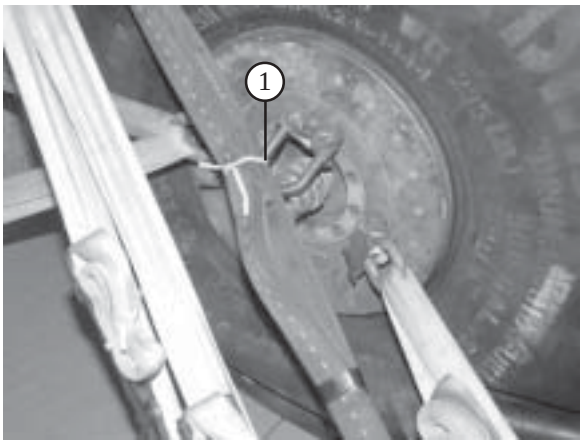
Figure 4-131. Lashings 79 and 80 Installed

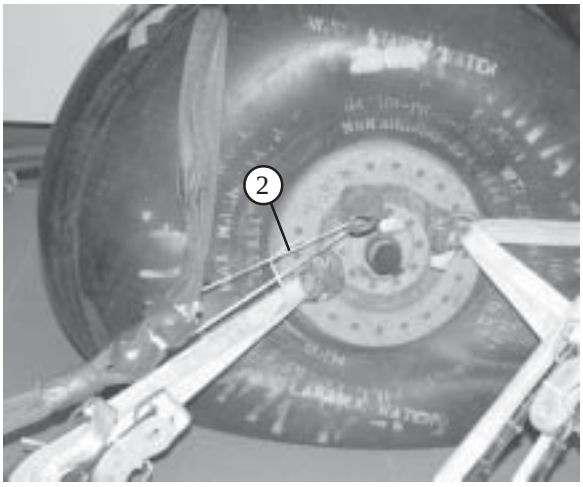
INSTALLING SUSPENSION SLINGS AND SAFETY TIES

4-86. Install suspension slings as shown in Figure 4-107. Install the suspension sling safety ties as shown in Appendix A, to the front and rear supension slings, six to eight inches above drum 1 and drum 4. (not shown)

SECURING THE SUSPENSION SLINGS

4-87. Make the following suspension slings securing ties as shown in Figure 4-132.

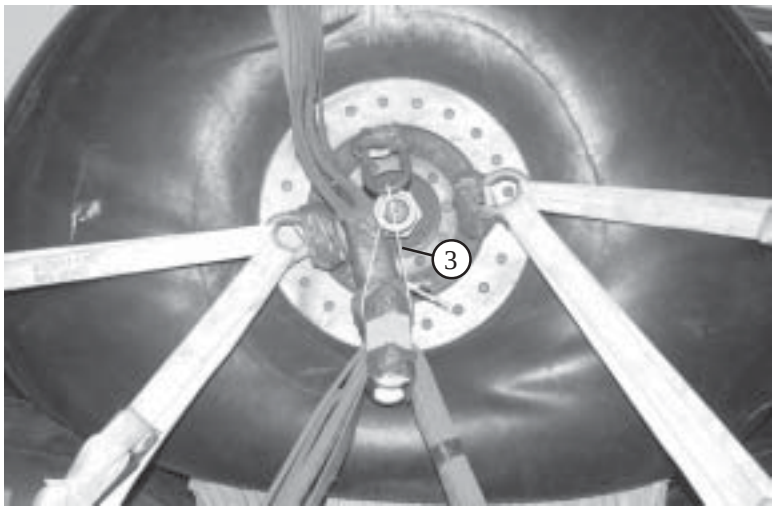




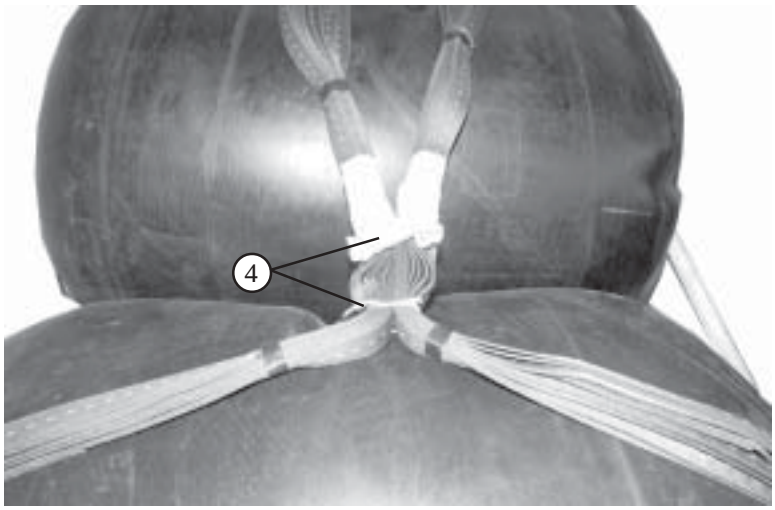
(1) Secure the front right suspension sling to the right side top shackle of fuel drum 1 with one turn single type I, 1/4-inch cotton webbing. Repeat for the left side.

(2) Secure the rear right 5 1/2-inch 2 point link to the right side top shackle of fuel drum 4 with one turn single type III, nylon cord. Repeat for the left side.

Figure 4-132. Suspension Slings Secured



(3) Secure the center right 5 1/2-inch 2 point link to the right side top shackle on drum 6 with a single length of type III, nylon cord. Repeat for left side.

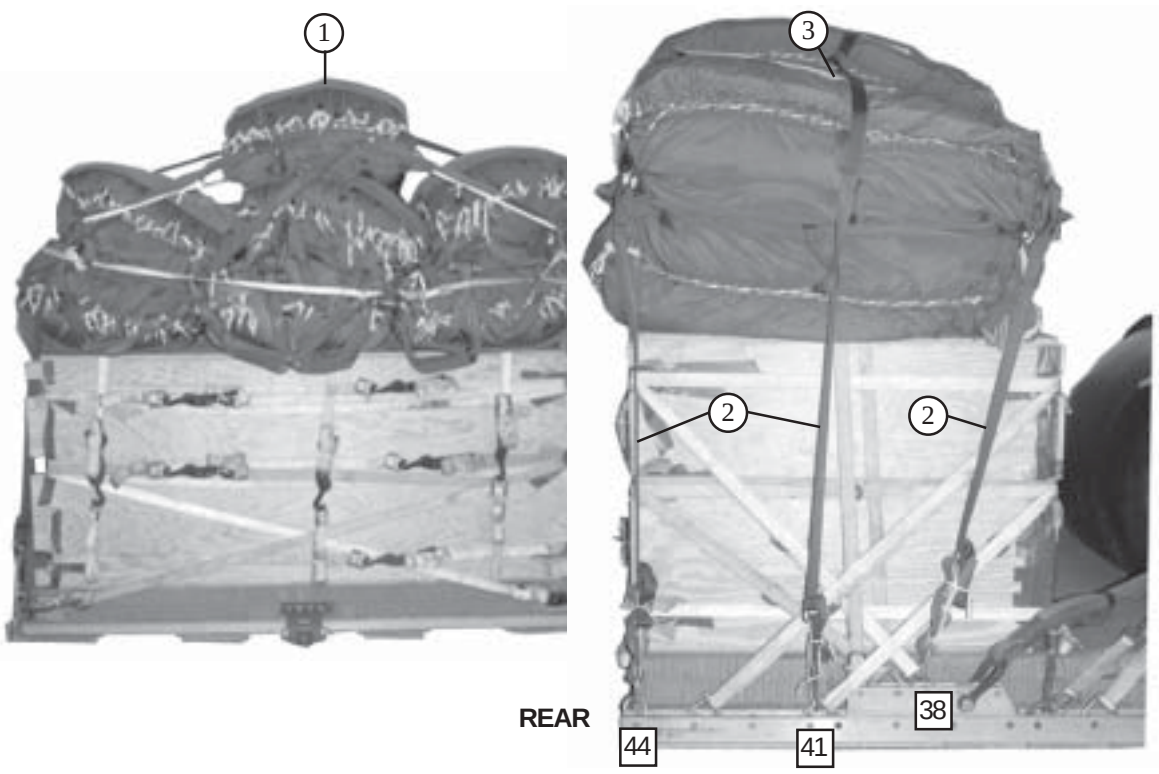


(4) Secure the rear slings together on top of fuel drum 4 with one turn single type I, 1/4-inch cotton webbing. S-fold and secure the safety tie with masking tape.

Figure 4-132. Suspension Slings Secured (Continued)

PREPARING AND STOWING CARGO PARACHUTES

4-88. Prepare and stow seven G-11 cargo parachutes as shown in Figure 4-133.



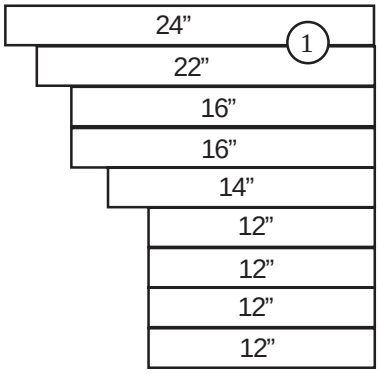
1. Prepare and stow seven G-11 cargo parachutes on the rear equipment box according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
2. Restrain the parachutes according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 using platform clevises 38, 38A, 41, 41A, 44 and 44A on the platform.
3. Install the multicut parachute release strap according to FM 4-20.102/NAVSEA SS400-AB- MMO-010/TO 13C-1-5.

Figure 4-133. Cargo Parachutes Prepared and Stowed

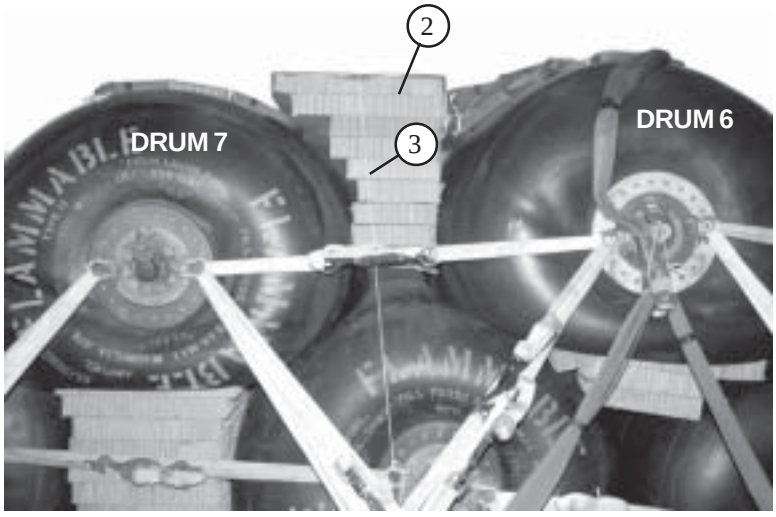
BUILDING AND POSITIONING RELEASE PLATFORM

4-89. Build and position the release platform as shown in Figure 4-134.

NOTE: Drawing not to scale



RELEASE PLATFORM



(1) Build the release platform as shown above with all honeycomb widths 36 inches.

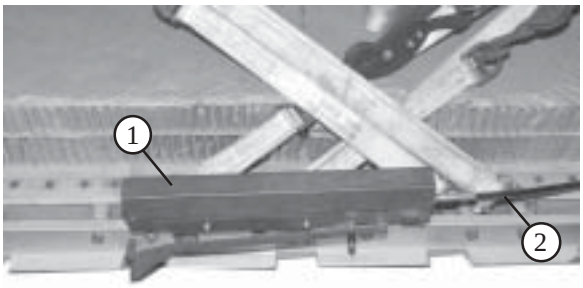
(2) Place the release stack between drums 6 and 7, centered.

(3) Secure the release stack with a length of type III nylon cord to a convenient point on the load. Tape the stack in the area where the type III nylon cord makes contact with the stack.

Figure 4-134. Release Platform Built and Positioned

INSTALLING THE EXTRACTION SYSTEM

4-90. Install the extraction system as shown in Figure 4-135.



(1) Using the rear holes, install the extraction force transfer coupling (EFTC) according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

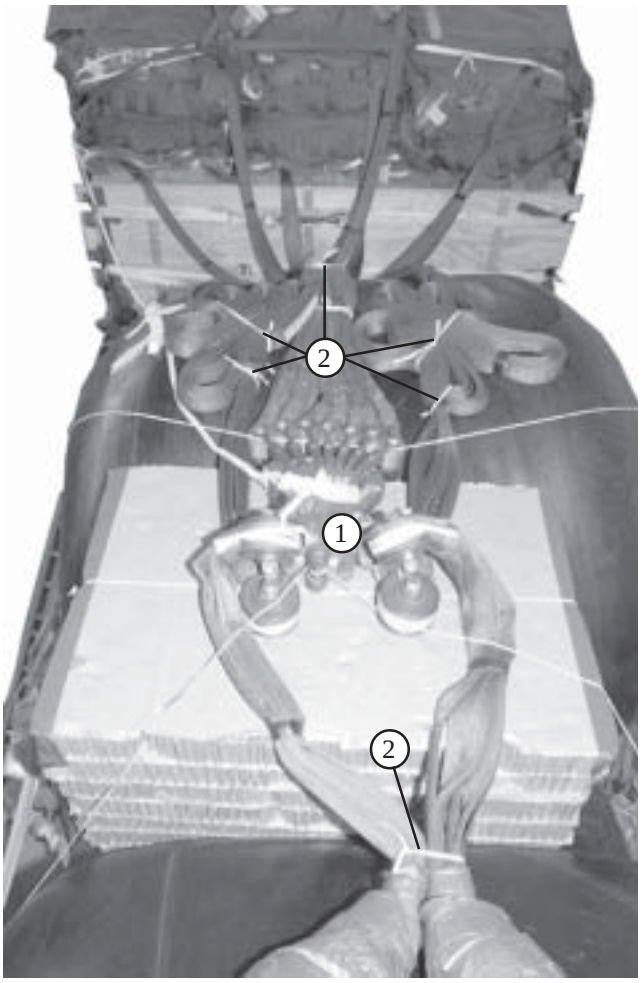
(2) Using a 28-foot EFTC cable, safety the cable using one turn single type I, 1/4-inch cotton webbing.

(3) Attach a 9-foot (2-loop), type XXVI nylon webbing sling for use as a deployment line.

Figure 4-135. Extraction System Installed

INSTALLING THE CARGO PARACHUTE RELEASE SYSTEM

4-91. Install the M-2 cargo parachute release system as shown in Figure 4-136.



(1) Place the M-2 release on the release platform. Attach the suspension slings and the parachute riser extensions to the M-2 cargo parachute release according to FM 4-20.102/ NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Secure the cargo parachute release with type III nylon cord.

(2) Secure the excess suspension slings and parachute risers extensions with one turn type I, 1/4-inch cotton webbing.

(3) S-fold and secure the front safety tie with paper tape (not shown).

Figure 4-136. Cargo Parachute Release Installed

PLACING EXTRACTION PARACHUTE

4-92. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Rig the extraction line in an extraction line bag according to TM 10-1670-286-20/TO 13C5-2-41. Place the extraction parachute and extraction line on the load for installation in the aircraft.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

4-93. Select and install the provisions for emergency aft restraints according to the emergency aft restraint requirements table in FM 4-20.102/NAVSEA SS400 -AB-MMO-010/TO 13C7-1-5.

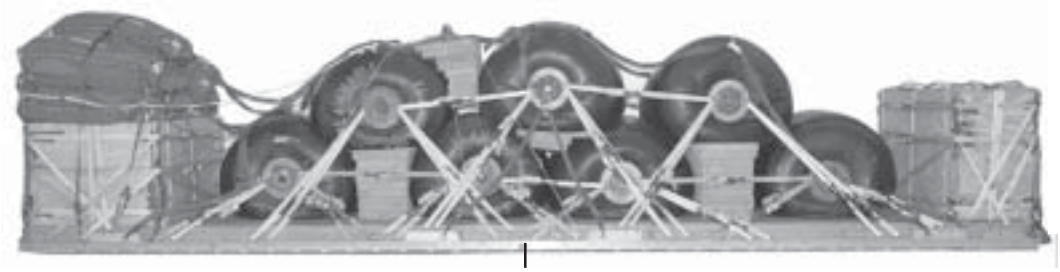
MARKING RIGGED LOAD

4-94. Mark the rigged load according to FM 4-20.102/NAVSEA SS400-AB-MMO -010/TO 13C7-1-5 and as shown in Figure 4-137. Complete Shipper's Declaration for Dangerous Goods and affix to the load. If the load varies from the one shown, the weight, height, CB, tipoff curve, and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

4-95. Use the equipment list in Table 4-6 to rig the load shown in Figure 4-137.

CAUTION
Make the final inspection required by FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 before the load leaves the rigging site.



RIGGED LOAD DATA

Weight ..... 36,480 pounds

NOTE: The rigged weight for this load is using water as the liquid. Use the weight conversion table for the actual rigged weight for any other liquids used.

NOTE: The G-11 requirements may need to be recomputed for lighter liquids.

Maximum Weight ..... 36,750 pounds

Height ..... 96 inches

Width ..... 108 inches

Overall Length ..... 402 inches

Overhang: Front ..... 0 inches
Rear (EFTC) ..... 18 inches

Center of Balance (CB) (from front edge of platform) ..... 191 inches

Figure 4-137. AAFARS Rigged with Seven 500-Gallon Drums for Low-Velocity Airdrop

Table 4-6. Equipment Required for Rigging AAFARS With Seven 500-Gallon Drums

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive paste, 1-gal	As required
1670-01-035-6054	Bridle, extraction line bag (for DES)	1
4030-00-090-5354	Clevis, large	12
4030-00-678-8562	Clevis, medium	6
4020-00-240-2146	Cord, nylon, type III, 550-lb	As required
1670-00-326-7309	Coupling assembly, airdrop, extraction force transfer w/ cable, 28-ft	1
1670-00-360-0328	Cover, clevis, large	7
8135-00-664-6958	Cushioning material, packaging, cellulose wadding	As required
8305-00-958-3685	Felt, 1/2-in thick	As required
1670-00-003-4391	Knife, parachute bag (for DES)	1
1670-01-183-2678	Leaf, extraction line (line bag)(add1 for DES)	2
	Line, drogue (for DES)	
1670-01-064-4452	60-foot (1-loop), type XXVI	1
	Line, extraction	
1670-01-064-4454	For C-130: 60-ft (6-loop), type XXVI	1
1670-01-062-6312	For C-141: 120-ft (6-loop), type XXVI	1
	For C5:	
	(between fuselage station 1667-1971)	
1670-01-062-6312	120-ft (6-loop), type XXVI	1
	(between fuselage station 947-1666)	
1670-01-062-6312	120-ft (6-loop), type XXVI and a	1
1670-01-064-4454	60-ft (6-loop), type XXVI	1
	(between fuselage station 574-947)	
1670-01-062-6312	120-ft (6-loop), type XXVI	2
1670-01-468-9178	For C-17: 140-ft (6-loop), type XXVI	
	Link assembly:	
	Two-point: (for DES)	
5306-00-435-8994	Bolt, 1-in diam, 4-in long	2
5310-00-232-5165	Nut, 1-in, hexagonal	2
1670-00-003-1953	Plate, side, 3 3/4-in	2
5365-00-007-3414	Spacer, large	2

Table 4-6. Equipment Required for Rigging AAFARS With Seven 500-Gallon Drums (Continued)

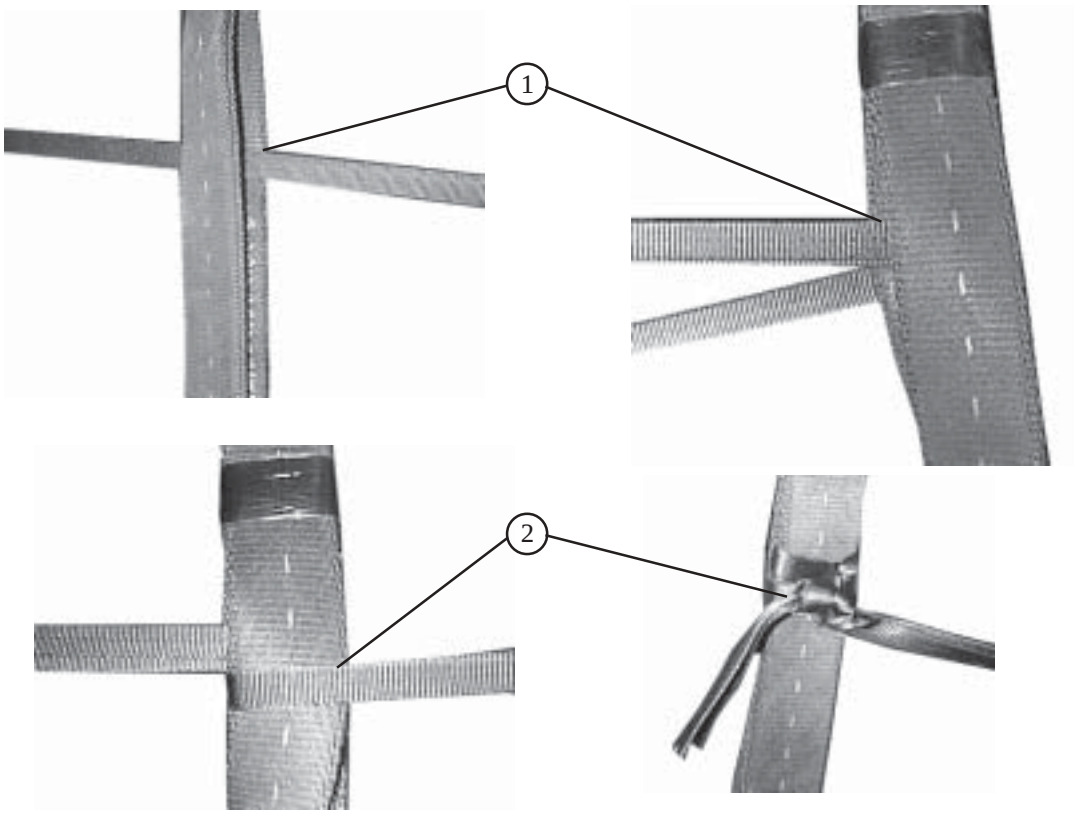
Table 4-6. Equipment Required for Rigging AAFARS With Seven 500-Gallon Drums (Continued)

National Stock Number	Item	Quantity
	For deployment:	
1670-01-062-6304	9-ft (2-loop), type XXVI nylon webbing	1
	For riser extension:	
1670-01-062-6311	120-ft (2-loop), type XXVI	7
5340-00-040-8219	Strap, parachute release, multicut, comes w/ 3 knives	2
7510-00-266-5016	Tape, adhesive, 2-in	As required
7510-00-266-6710	Tape, masking, 2-in	As required
1670-00-937-0271	Tie-down assembly, 15-foot	128
	Webbing:	
8305-00-268-2411	Cotton, 1/4-in, type I	As required
8305-00-082-5752	Nylon, tubular, 1/2-in	As required
8305-00-260-6890	Type X	As required

Appendix A

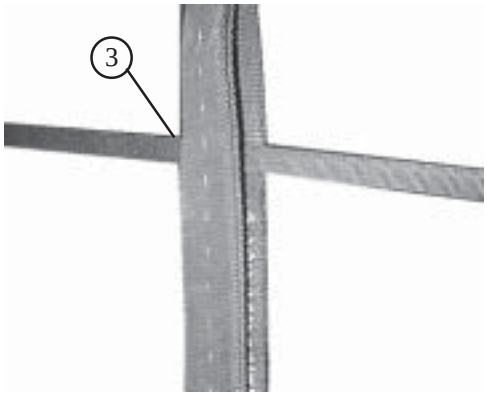
INSTALLING SUSPENSION SLING SAFETY TIES

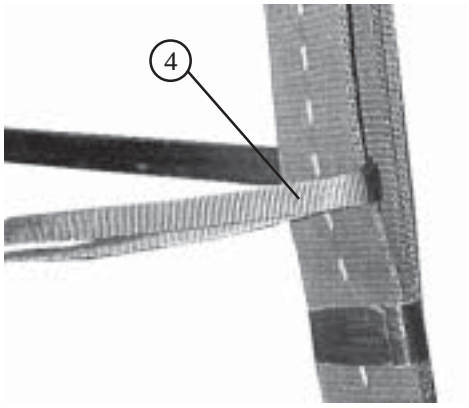
Installing the Suspension Sling Safety Ties keeps the suspension slings from making contact with the load. **The procedures in this Appendix are different from those in FM 4-20.102/ NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. An exception to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 is granted. The procedures in this Appendix must be followed.** Safety tie the front and rear suspension slings according to instructions shown below.

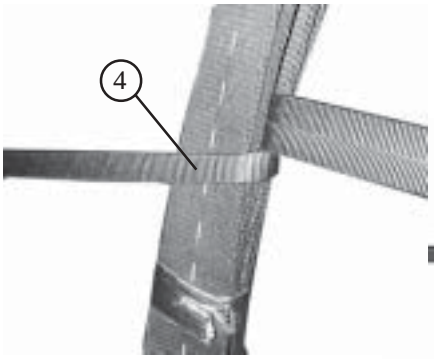


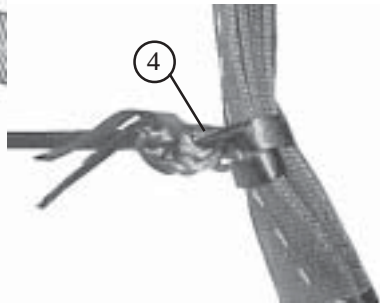
① Cut two lengths of 1/2-inch tubular nylon webbing, making each long enough to reach from the left front suspension sling to the right front suspension sling plus 8 feet. Split the plies of the left front suspension sling. Route two lengths of the 1/2-inch tubular webbing through the plies of the sling from inboard to outboard about 3 feet.

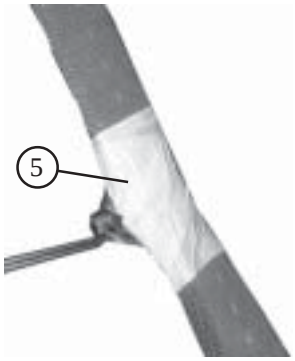
② Route the 3 foot running end from outboard to inboard around the inside plies and around the outboard plies from inboard to outboard. Tie it in place on the inboard side with three alternating half-hitches with an overhand knot in the running end.











③ Split the plies of the right front suspension sling and route the running ends of the two lengths of 1/2-inch tubular nylon webbing through the plies of the sling from inboard to outboard. Pass enough of the webbing through the sling to take the slack out, but not enough to keep the slings from hanging in their natural position.

④ Route the running end from outboard to inboard around the inside plies and around the outboard plies from inboard to outboard. Tie it in place on the inboard side with three alternating half-hitches with an overhand knot in the running end.

⑤ Tape the webbing to the slings with masking tape.

⑥ Repeat steps 1 through 5 on the rear suspension slings. (not shown)

⑦ When using four-loop, type XXVI suspension slings, wrap each four plies with a 10-by 10-inch piece of cotton muslin. Secure each wrap with one single turn of 1/4-inch cotton webbing. (not shown)

Glossary

AAFARS	Advanced Aviation Forward Area Refueling System
AFB	Air Force Base
AFMAN(I)	Air Force Joint Manual
AFTO	Air Force Technical Order
AFSOC	Air Force Special Operations Command
ALC	Airlift Logistics Center
AMC	Air Mobility Command
CB	center of balance
d	penny
DA	Department of Army
DC	District of Columbia
DES	Drogue Extraction System
diam	diameter
EFTC	extraction force transfer coupling
FARE	forward area refueling equipment
FM	field manual
ft	foot/feet
GPM	gallons per minute
HMMWV	high mobility multipurpose wheeled vehicle
HQ	headquarters
in	inch
lb	pound
No	number

POL	petroleum, oils, and lubricants
TRADOC	US Army Training and Doctrine Command
USA	United States of America
TM	technical manual
TO	technical order

References

AFR 55-40/AR 59-4	Joint Airdrop Inspection Records, Malfunction Investigations and Activity Reporting. 1 May 1998.
***AFMAN(I) 24-204/ TM 38-250**	Preparing Hazardous Materials for Military Air Shipments. December 2001.
****FM 4-20.102/NAVSEA SS400-AB-MMO-010/ TO 13C7-1-5**	Airdop of Supplies and Equipment: Rigging Airdrop Platforms. 22 August 2001.
FM 4-20.117/ TO 13C7-1-111	Airdrop of Supplies and Equipment: Rigging High-Mobility Multipurpose Wheeled Vehicles. 1 October 2001
TM 9-2330-202-14&P	Operator's, Unit, Direct Support, and General Support Maintenance Manual (Including Repair Parts and Special Tools List) for Trailer, Cargo, 3/4-Ton, 2 wheel M101A2, M1010 OIA3, Trailer, Chassis, 3/ 4-Ton, 2-Wheel M116A2, M116A2E1, Trailer, Chassis, 1-Ton, 2-wheel M116A3. May 1997
TM 10-1670-268-20&P/ TO 13C7-52-22	Organizational Maintenance Manual with Repair Parts and Special Tools List: Type V Airdrop Platform. 1 June 1986.
TM 10-1670-277-23&P/ TO 13C5-28-2/ NAVAIR 13-1-30	Unit and Direct Support (DS) Maintenance Manual (Including Repair Parts and Special Tools List) for Parachute, Cargo Type: 28-ft Diam,Cargo Extraction Parachute. 10 October 1990.
TM 10-1670-278-23&P/ TO 13C5-26-2/NAVAIR 13-1-27	Unit and Intermediate Direct Support (DS) Maintenance Manual (Including RepairParts and Special Tools List) for Parachute, Cargo Type: 15-ft Diam,Cargo Extraction Parachute. 6 November 1989.
TM 10-1670-279-23&P/TO 13C5-27-2/NAVAIR 13-1-28	Unit and Intermediate Direct Support (DS) Maintenance Manual (Including Repair Parts and Special Tools List) for Parachute, Cargo Type: 22-ft Diam, Cargo Extraction Parachute 30 August 1989.
TM 10-1670-280-23&P/TO 13C5-31-2/NAVAIR 13-1-31	Unit and Intermediate Direct Support (DS) Mantenance Manual (Including RepairParts and Special Tools List) for Parachute, Cargo Type: 100-ft Diam, Model G-11A, Model G-11B, and Model G-11C, 5 August 1991.

***AFMAN(I) 24-204/TM 38-250 has superseded AFJMAN 24-204/TM 38-250 (25 November 1994).**
**** FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 has superseded FM 10-500-2/TO 13C7-1-5 (1 November 1990).**

TM 10-1670-286-20/ TO 13C5-2-41	Unit Mantenance Manual for Sling/Extraction Line Panel (Including Stowing Procedures). 15 March 2001.
TM 10-1670-296-20&P/ TO 13C7-49-2	Unit Mantenance Manual Including Repair Parts and Special Tools List for Ancillary Equipment for Low-Velocity Airdrop Systems (LVADS). 15 September 1995.
AFTO Form 22	Technical Order Publication Improvement Report
DA Form 2028	Recommended Changes to Publication and Blank Forms. February 1974.
*** Shipper's Declaration for Dangerous Goods**	Locally Procured Form.

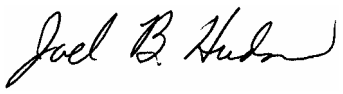
*** Shipper's Declaration for Dangerous Goods has superseded DD Form 1387-2 (February 1982).**

FM 4-20.137 (FM 10-537)
TO 13C7-1-19
10 JUNE 2003

By Order of the Secretary of the Army and the Air Force:

ERIC K. SHINSEKI
General, United States Army
Chief of Staff

Official:



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