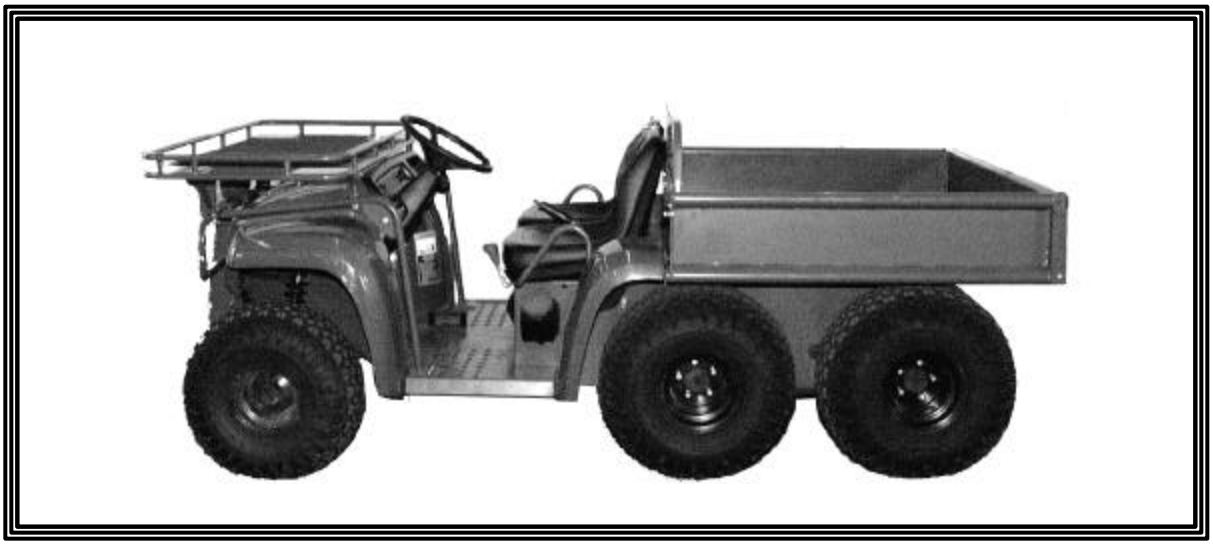
ARMY FM 4-20.108 (FM 10-508)
AIR FORCE TO 13C7-2-491

AIRDROP OF SUPPLIES AND EQUIPMENT:

RIGGING MILITARY UTILITY VEHICLE (M-GATOR)



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DEPARTMENT OF THE ARMY
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C1, FM 4-20.108/TO 13C7-2-491

CHANGE NO. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
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WASHINGTON, DC, 7 May 2004

AIRDROP OF SUPPLIES AND EQUIPMENT:

RIGGING MILITARY UTILITY VEHICLE

(M-GATOR)

This change adds the procedures for Building the Equipment Box and Rigging One Military Utility Vehicle (M-Gator) With The First Response Expeditionary (FRE) Fire Vehicle and an A-22 Cargo Bag on a 12-foot Platform for Low-Velocity Airdrop.

FM 4-20.108/TO 13C7-2-491, 29 June 2001, is changed as follows:

1. New or changed material is identified by a vertical bar (▮) in the margin opposite the changed material.

2. File this transmittal sheet in front of the publication for reference purpose.

3. Remove old page and insert new page as indicated below:

Remove old pages:	**Insert new pages:**
i-v	**i-v**
2-5 and 2-6	**2-5 and 2-6**
3-5 and 3-6	**3-5 and 3-6**
	4-1 through 4-41
Glossary-1	**Glossary-1**
References-1	**References-1**

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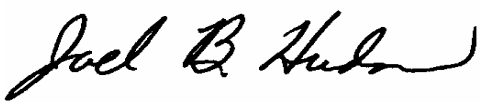

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No 4-20.108
Tecnical Order
No 13C7-2-491

Headquarters
Department of the Army
and the Air Force
Washington, DC, 29 June 2001

Airdrop of Supplies and Equipment: Rigging Military Utility Vehicle (M-Gator)

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Preface

This manual tells and shows how to prepare and rig the following configurations of the Military Utility Vehicle (M-Gator) for low-velocity airdrop from a C-130, C-141, C-17, and C-5 aircraft:

a. One M-Gator on an 8-foot platform.
b. Two M-Gators and equipment box on a 20-foot platform.
c. One M-Gator and A-22 Cargo Bag on a 12-foot platform.
d. One M-Gator w/FRE and A-22 Cargo Bag on a 12-foot platform.

User Information

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Introduction

Description of Items

The description of the items rigged in this manual is given below:

a. Military Utility Vehicle (M-Gator): The M-Gator is 108 inches long, 60 inches wide and 43.6 inches high. The weight of the M-Gator is 1,450 pounds, including fuel and fluids. Maximum payload for the M-Gator is 1,400 pounds to include passengers.

b. A-22 Cargo Bag Assembly: The A-22 cargo bag assembly is an adjustable cotton duck cloth/nylon and nylon webbing container. For this application, the A-22 bag assembly will not exceed a maximum rigged weight of 1,000 pounds due to the M-Gator payload restrictions. The minimum rigged weight is 800 pounds. Maximum height for the rigged A-22 is 83 inches.

NOTE: The only exception to these weight restrictions is the A-22 cargo bag limitations on the Military Utility Vehicle (M-Gator) with the First Response Expeditionary (FRE) Fire Vehicle and an A-22 cargo bag assembly load. The A-22 cargo bag on this load will weigh 1200 pounds.

c. Military Utility Vehicle (M-Gator) with the First Response Expeditionary (FRE) Fire Vehicle: The M-Gator with FRE basic platform is a standard M-Gator modified with the cargo bed removed and replaced with an ultra high pressure system fire fighting equipment mounted in the cargo bed's place. The M-Gator W/FRE is 120 inches long, 63 inches wide, and 62 inches high. The weight of the M-Gator W/FRE is 2,280 pounds.

Special Considerations

CAUTION
Only ammunition listed in FM 10-500-53/MCRP 4-3.8/
TO 13C7-18-41 may be airdropped.

The loads covered in this manual may include hazardous materials as defined in AFJMAN 24-204/TM 38-250. If included, the hazardous material must be packaged, marked, and labeled as required by AFJ MAN 24-204/TM 38-250.

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

CHAPTER 1

Rigging One Military Utility Vehicle (M-Gator) on an 8-Foot Platform for Low-Velocity Airdrop

DESCRIPTION OF LOAD

1-1. This load consists of one John Deere Diesel, which has been named the Military Utility Vehicle (M-Gator)(Figure1-1). It is rigged on an 8-foot platform. The load shown has a rigged weight of 3120 pounds. It has a length of 125 inches, width of 108 inches, and height of 78 inches, with a center of balance of 49 inches. The load is rigged with one G-11 cargo parachute.

PREPARING PLATFORM

1-2. Inspect, or assemble and inspect, an 8-foot platform as outlined in TM 10-1670- 268-20&P/TO 13C7-52-22. Prepare an 8-foot platform using 14 tiedown clevises as shown in Figure1-2.

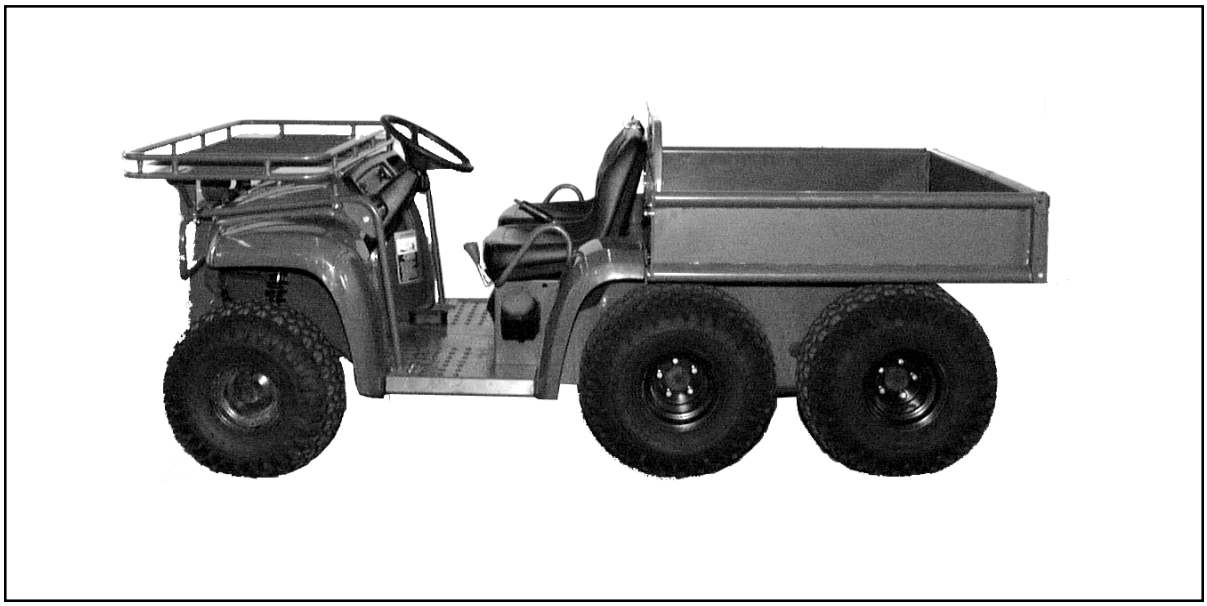
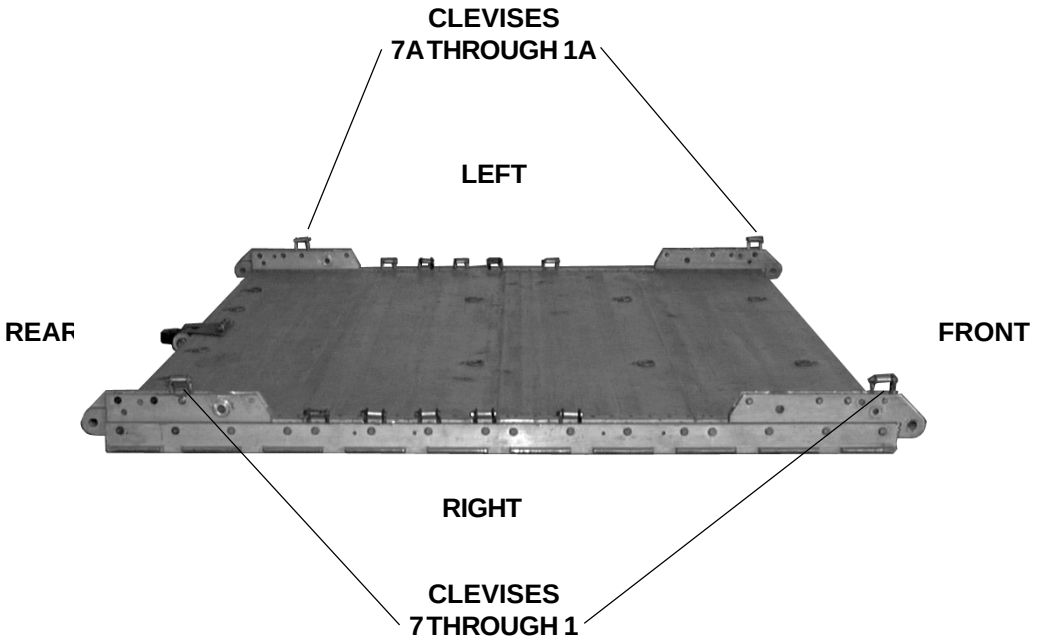


Figure 1-1. Military Utility Vehicle (M-Gator)



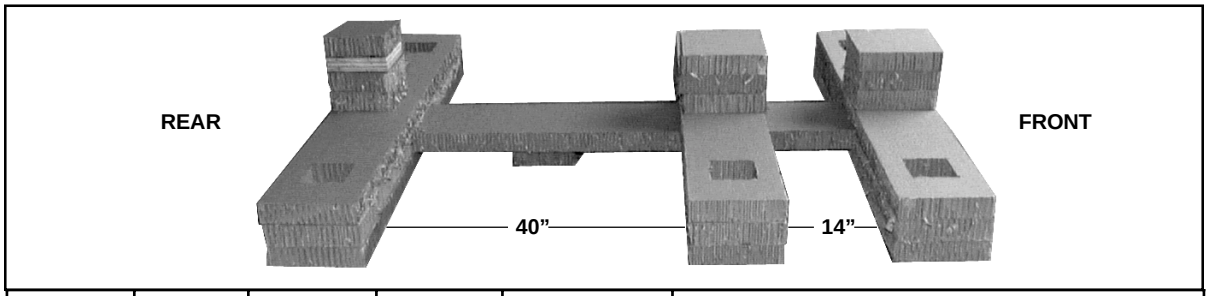
Step:

1. Install a tandem link to the front of each platform side rail using holes 1,2, and 3.
2. Install a tandem link to the rear of each platform side rail using holes 14, 15, and 16.
3. Install a clevis on bushing 1 of each front tandem link.
4. Install a clevis on bushing 2 of each rear tandem link.
5. Starting at the front of each platform side rail, install clevises on the bushings bolted on holes 7, 9, 10, 11, and 12.
6. Starting at the front of the platform, number the clevises 1 through 7 on the right side and 1A through 7A on the left side.
7. Label the tie-down rings according to FM 10-500-2/TO 13C7-1-5.

Figure 1-2. Platform Prepared

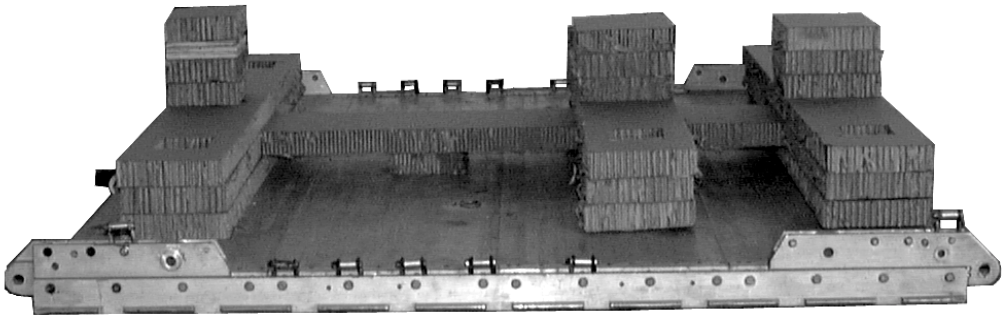
BUILDING AND PLACING HONEYCOMB STACK

1.3. Prepare the honeycomb stack for the M-Gator as shown in Figure1-3. Position the honeycomb stack as shown in Figure1-4.



Stack Number	Pieces	Width (inches)	Length (inches)	Material	Instructions
1	3	72	12	Honeycomb	Position on floor with the second piece 14 inches from the first and the third piece 40 inches from the second. Cut a 6-inch by 6-inch hole in each piece of honeycomb 6 inches from the sides and centered.
	1	9	9	Honeycomb	Centered and 16 inches from the rear of the second piece of honeycomb.
	1	12	90	Honeycomb	Center and glue across first four pieces of honeycomb.
	6	30	12	Honeycomb	Cut 6-inch by 6-inch holes, 6 inches from one side, in the center of each piece. Line holes up on base and glue in place.
	3	72	12	Honeycomb	Cut 6-inch by 6-inch holes on each side of honeycomb, 6 inches from the side and centered. Line holes up on base and glue in place.
	6	12	12	Honeycomb	Center and glue three pieces on the first and second sections.
	2	9	9	Honeycomb	Center and glue on the third sections rear edge.
	3	9	9	3/4-inch Plywood	Glue on the 9-inch by 9-inch honeycomb stack.
	1	9	9	Honeycomb	Glue on the 9-inch by 9-inch honeycomb and plywood stack.

Figure1-3. Honeycomb Stack Prepared

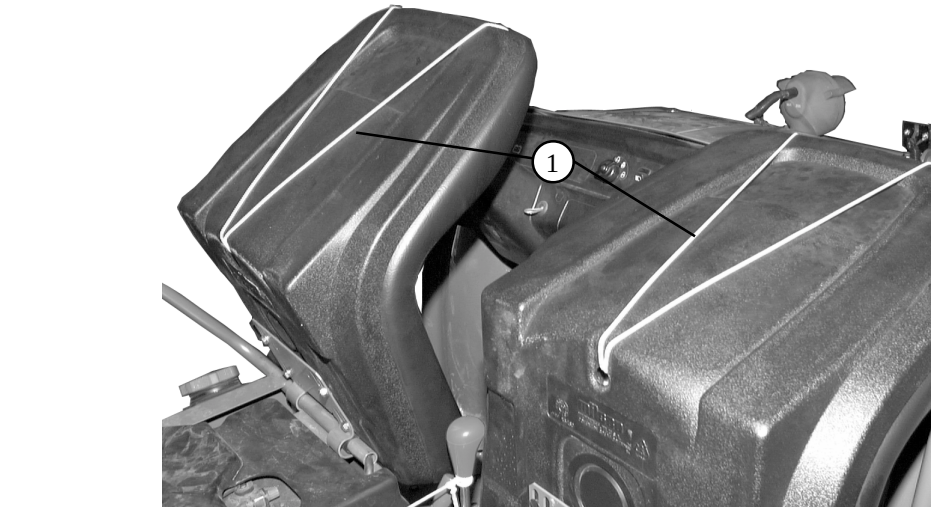


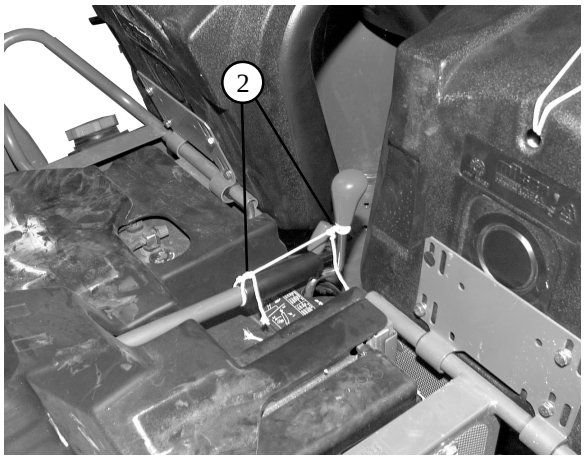
Stack Number	Position of Stack on Platform
1	Place stack: Centered on platform and even with front edge of platform.

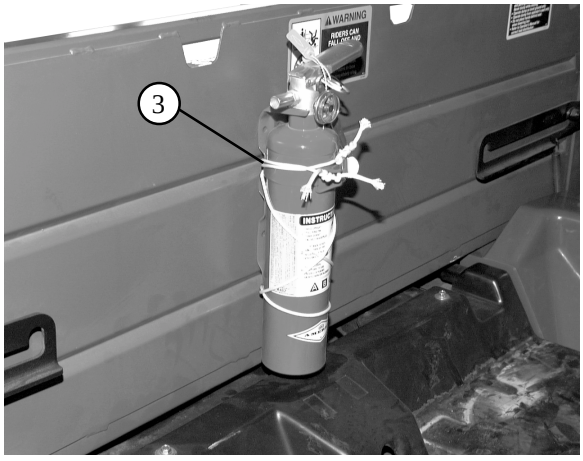
Figure1-4. Honeycomb Stack Positioned on Platform

PREPARING THE M-GATOR

1-4. Prepare the M-Gator according to Figure1-5.





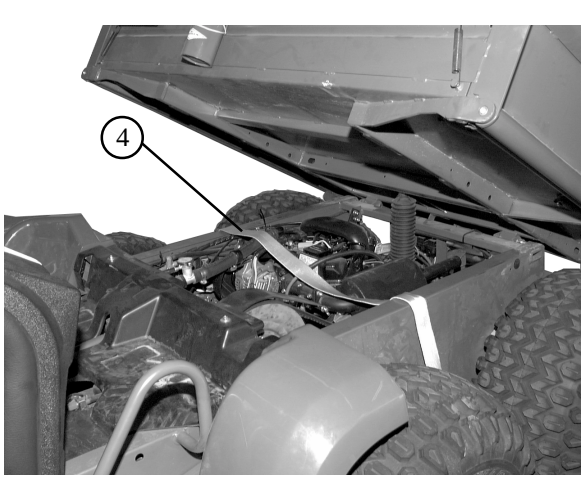


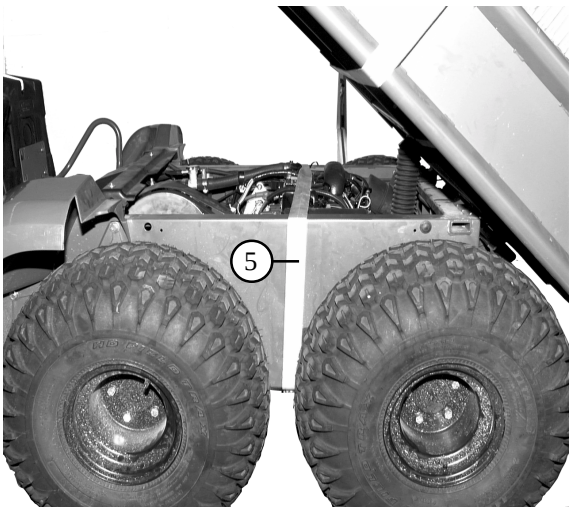
(1) Bring the seats forward and secure them with Type III nylon cord.

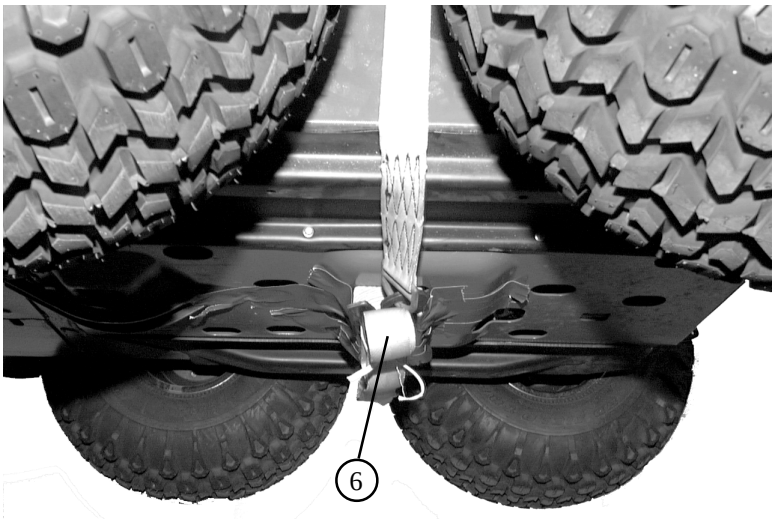
(2) Secure the gear stick to the emergency brake with Type III nylon cord.

(3) Secure the fire extinguisher to the mounting bracket with Type III nylon cord.

Figure1-5. M-Gator Prepared





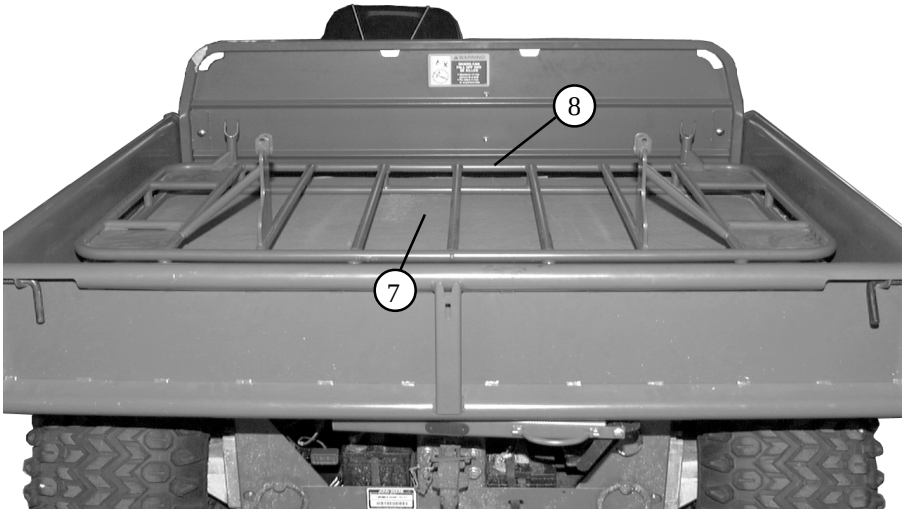


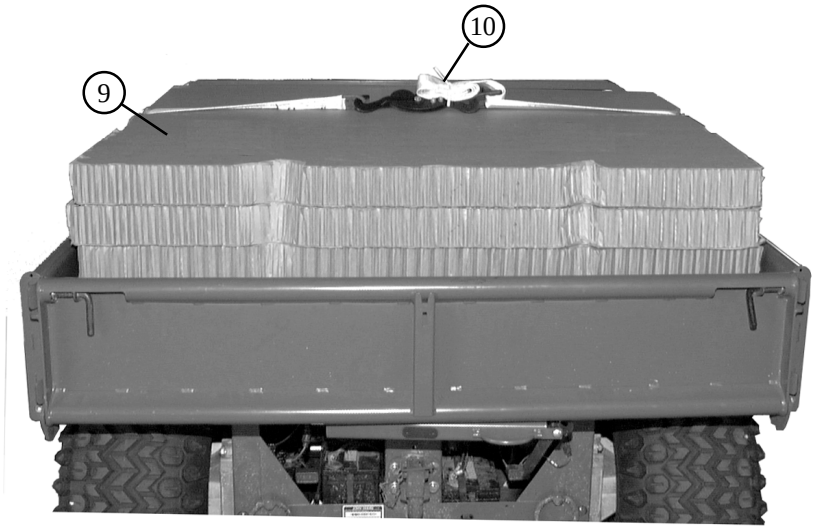
(4) Raise the bed and position a lashing across the frame, centered between the rear tires.

(5) Route lashing around the frame and the engine.

(6) Secure a piece of 2-inch by 4-inch by 8 1/2-inch lumber, laterally, under the engine. Lumber may be temporarily secured using cloth backed tape. Position the load binder against the lumber. Preposition another lashing across the top of the frame to be used in step 10 (not shown).

Figure 1-5. M-Gator Prepared (Continued)





(7) Lower the bed and place one layer of 36-inch by 56-inch honeycomb in it.

(8) Remove the litter from the M-Gator and place the litter upside down and centered on the honeycomb.

(9) Place three more 36-inch by 56-inch honeycomb pieces on the litter and force them all the way down.

(10) Secure the litter and honeycomb to the bed with the prepositioned lashing.

Figure 1-5. M-Gator Prepared (Continued)

POSITIONING LOAD

1-5. Using four 12-foot (2-loop), type XXVI, nylon suspension slings, lift and position the M-Gator. Attach large clevis assemblies to each sling. Using two front and two rear lifting points, attach one clevis to each lifting point. Position the M-Gator with the rear of the vehicle facing the front of the platform. Align the rear edge of the M-Gator frame with the front edge of the honeycomb stack and center. Each tire will be centered over a cutout in the honeycomb stack according to Figure1-6.

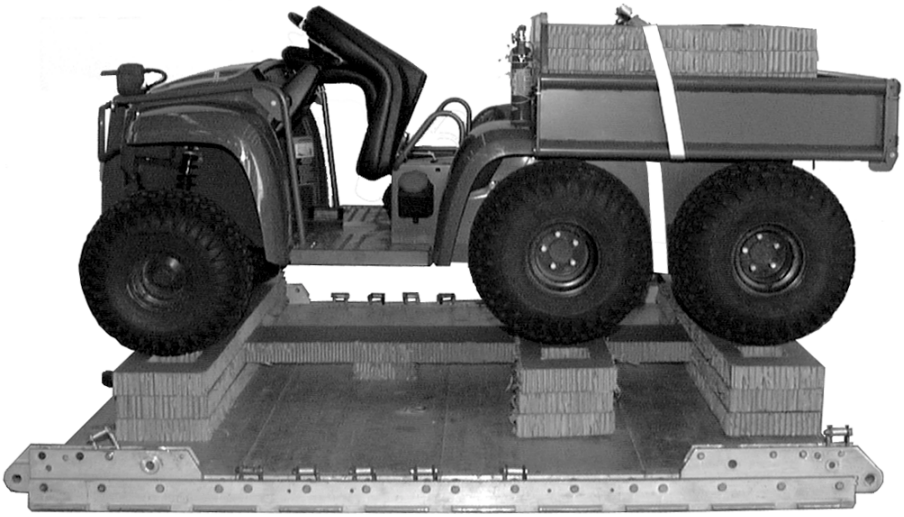
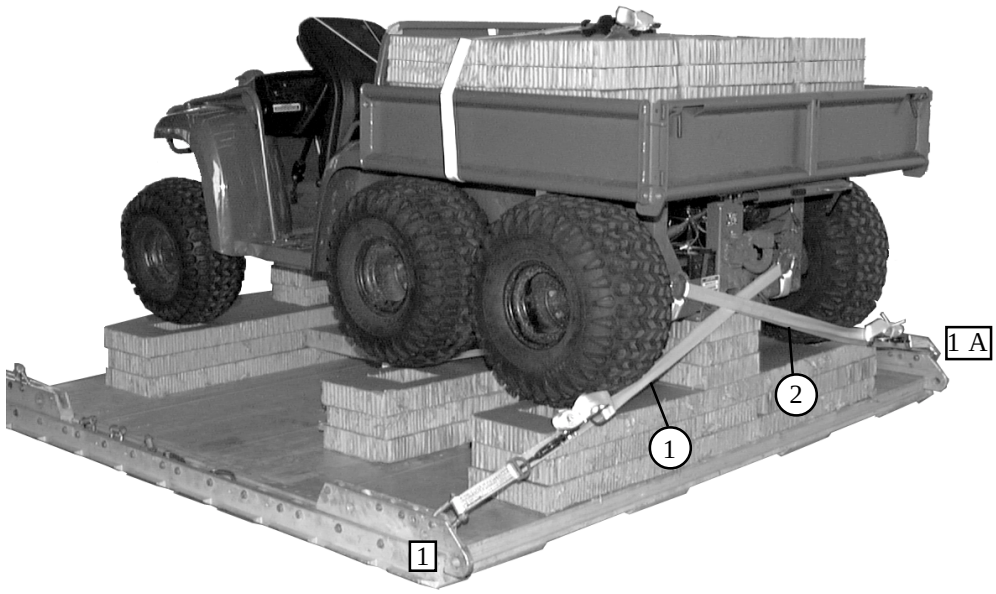


Figure1-6. M-Gator Positioned

LASHING M-GATOR

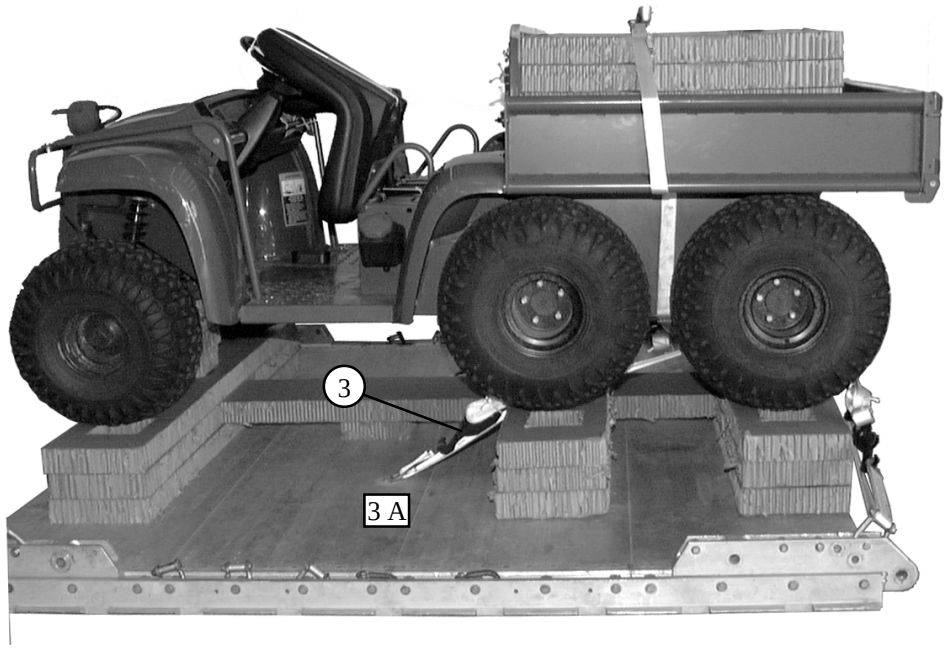
1-6. Lash the M-Gator to the platform according to FM 10-500-2/TO 13C7-1-5 and as shown in Figures 1-7 through 1-9.

NOTE: Place all load binders near the platform in case adjustments to the lashings are needed.



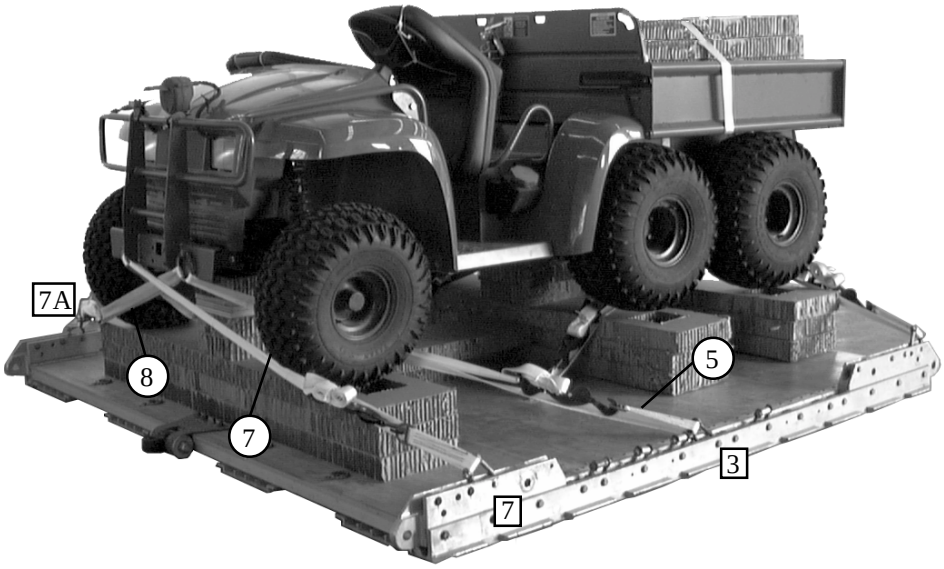
Lashing Number	**Tiedown** Clevis Number	**Instructions**
		Pass lashing through:
1	1	Right rear tiedown point.
2	1A	Left rear tiedown point.

Figure1-7. Lashings 1 and 2 Installed



Lashing Number	**Tiedown** Clevis Number	**Instructions**
		Pass lashing through:
3	Tiedown-ring 3A	Left rear tiedown point
4	Tiedown-ring 3B	Right rear tiedown point

Figure 1-8. Lashings 3 and 4 Installed



Lashing Number	**Tiedown** Clevis Number	**Instructions**
		Pass lashing through:
5	3	Front left tiedown point
6	3A	Front right tiedown point
7	7	Front right tiedown point
8	7A	Front left tiedown point

Figure 1-9. Lashings 5, 6, 7, and 8 Installed

BUILDING M-GATOR BOX

1-7. Build the M-Gator box using 8d common nails as shown in Figure 1-10.

NOTE: Use wood glue and 1 1/2 inch long, #4 wood screws to sturdy box for multiple airdrop use.

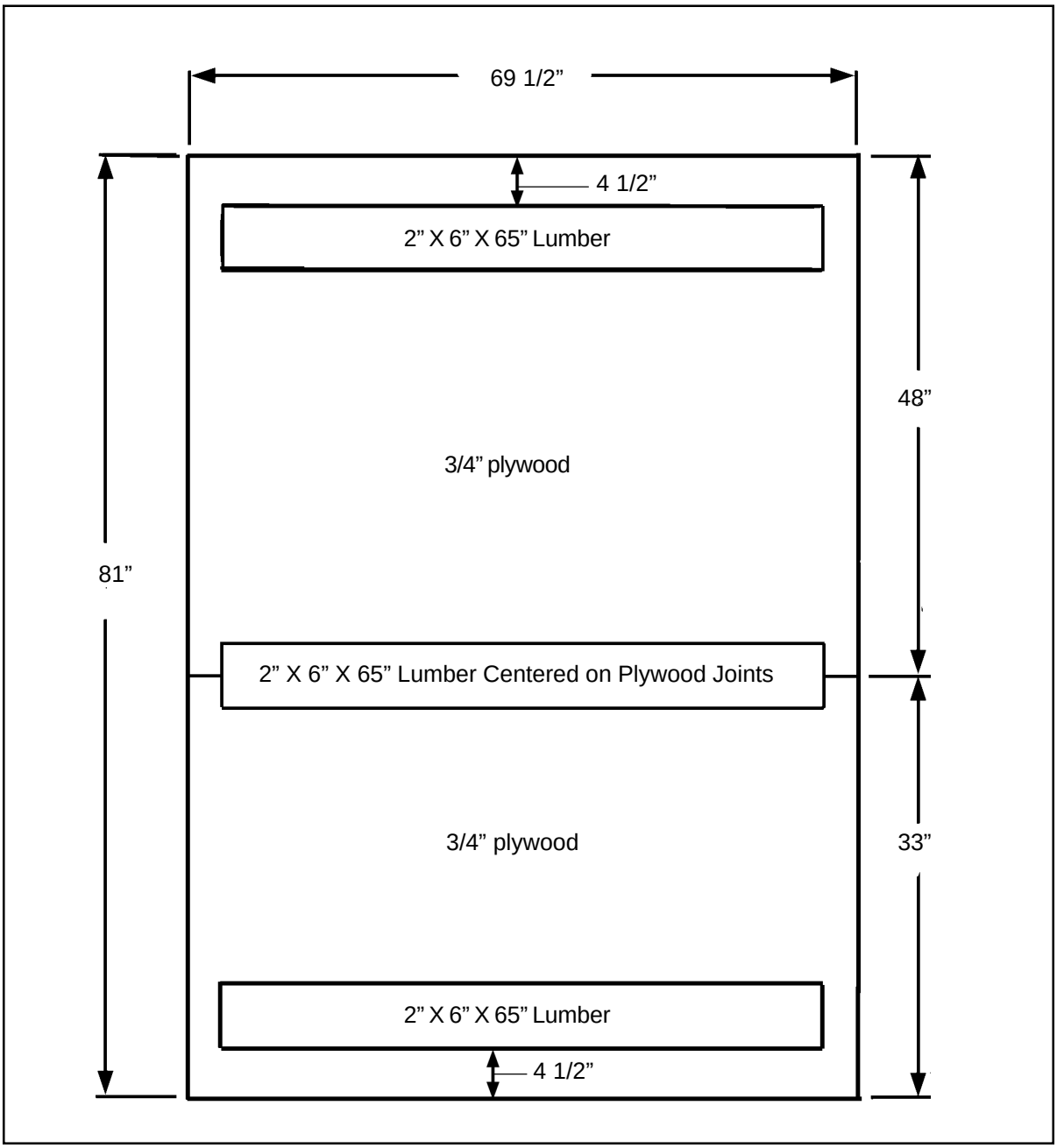


Figure 1-10. M-Gator Box Built (Top Board)

ONE RIGHT AND ONE LEFT SIDEBOARD IS REQUIRED TO BUILD BOX

NOTE: Diagram not drawn to scale. Sides are not symmetrical.

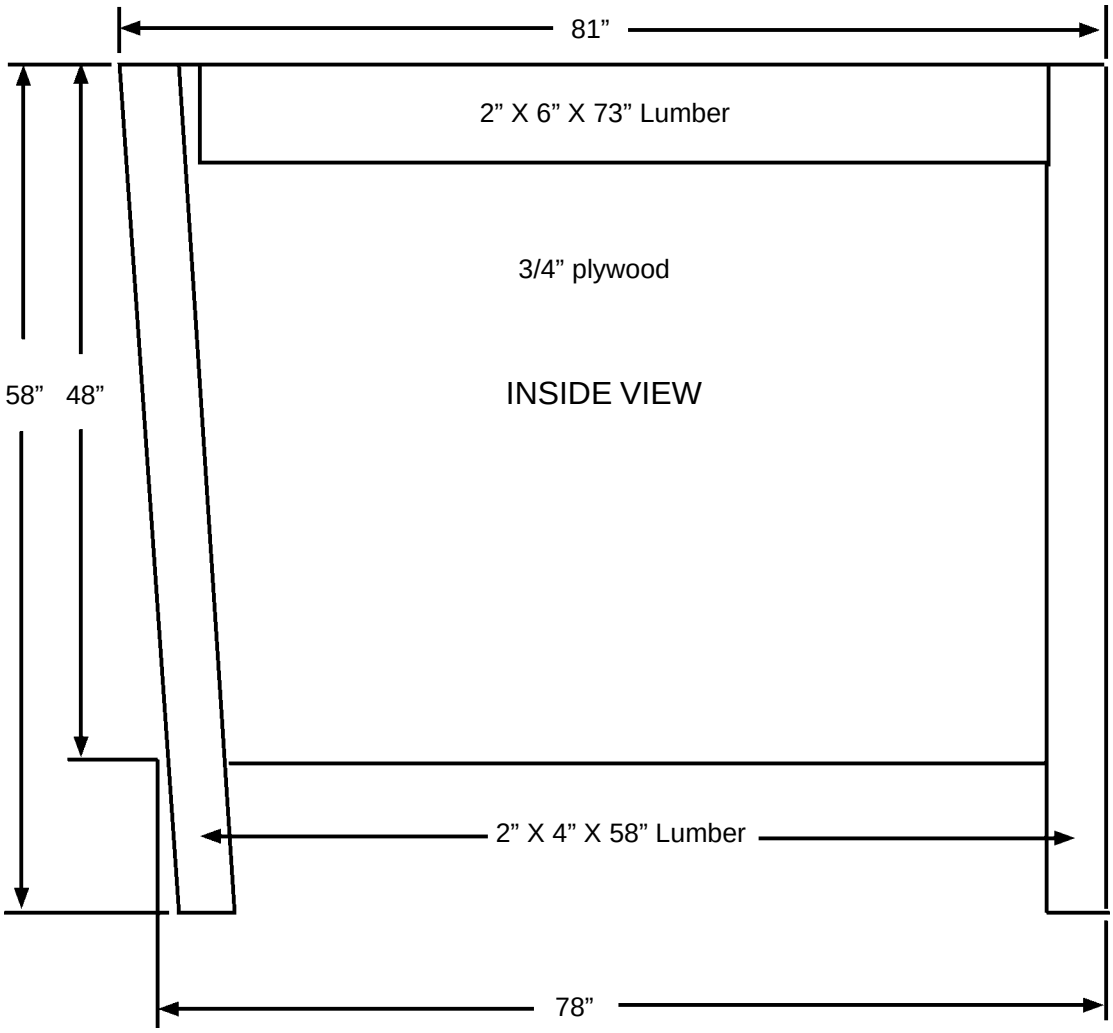


Figure 1-10. M-Gator Box Built (Side Boards) (Continued)

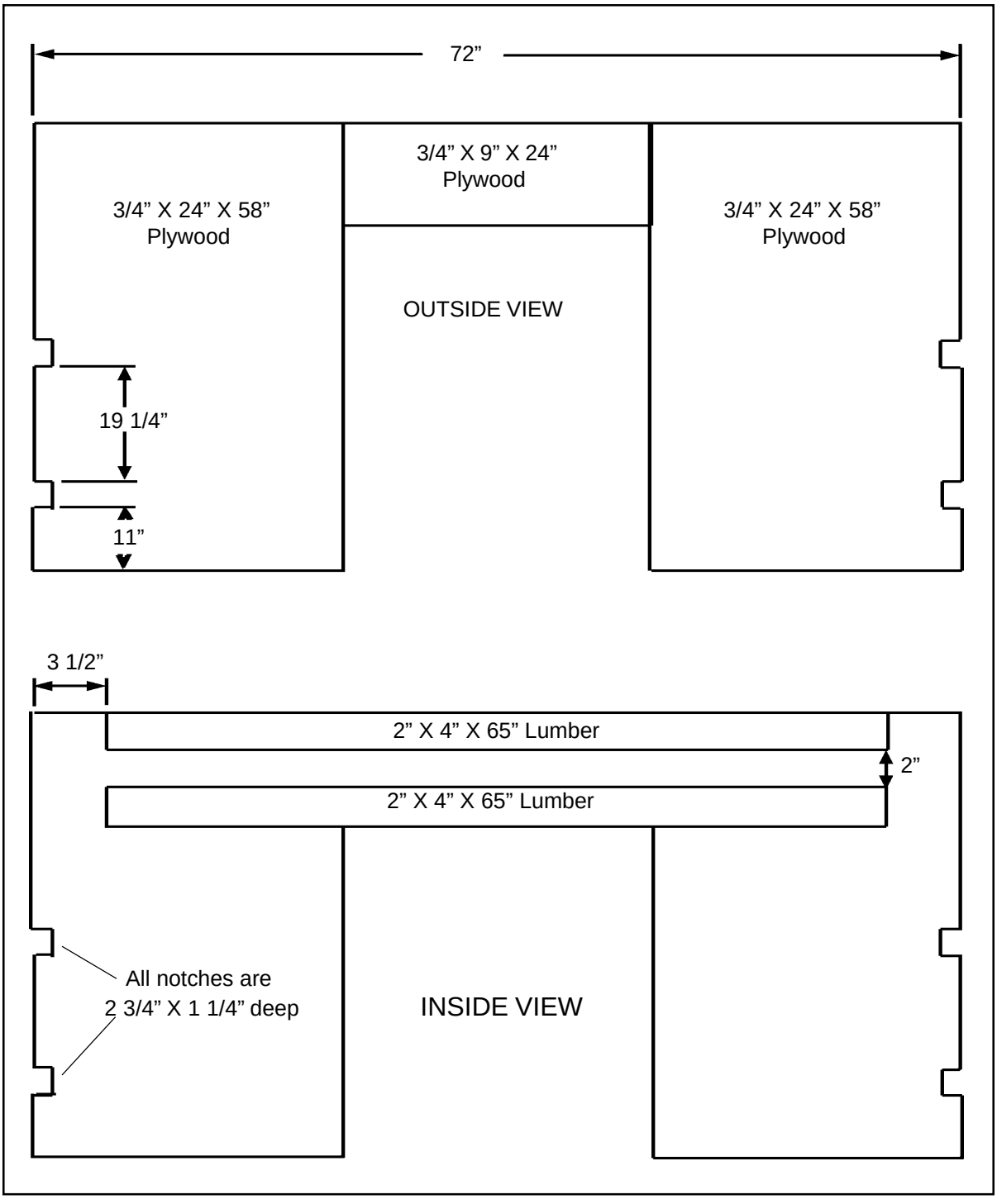
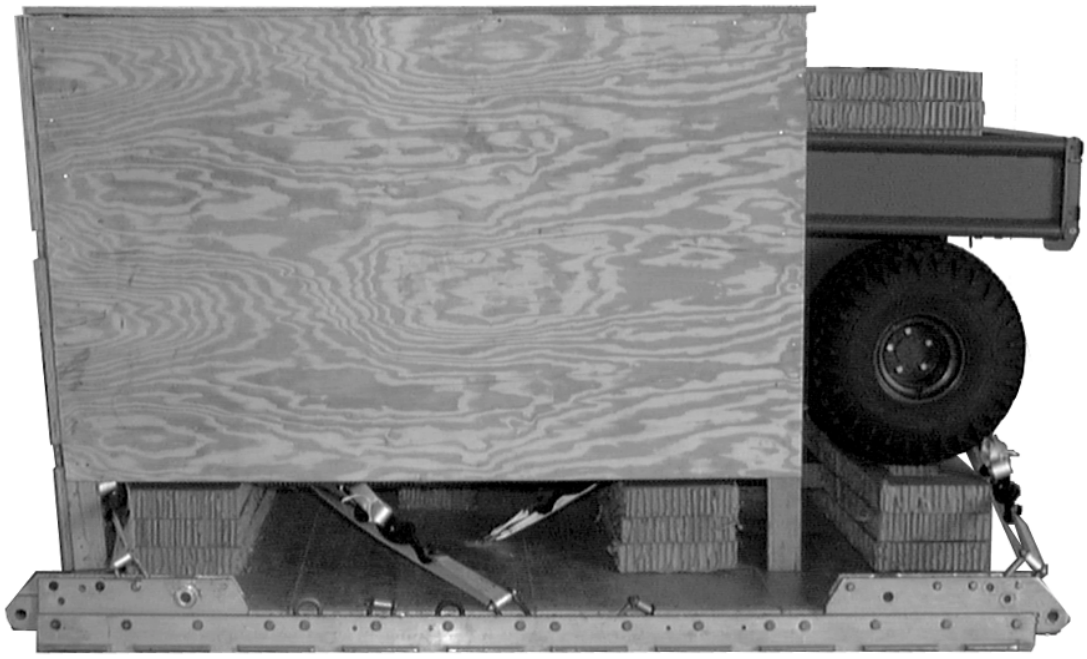


Figure 1-10. M-Gator Box Built (Front Board) (Continued)

POSITIONING M-GATOR BOX

1-8. Position M-Gator box as shown in Figure 1-11.

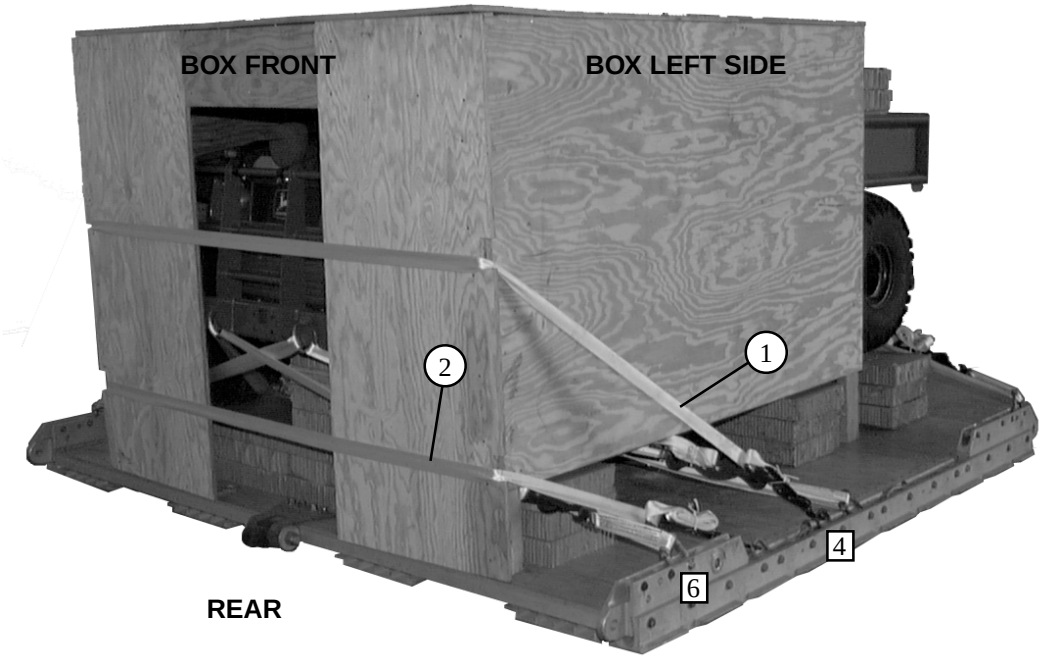


Position the box on the platform, aligning the front bottom edge of the box with the platform rear edge.

Figure 1-11. M-Gator Box Positioned

LASHING M-GATOR BOX

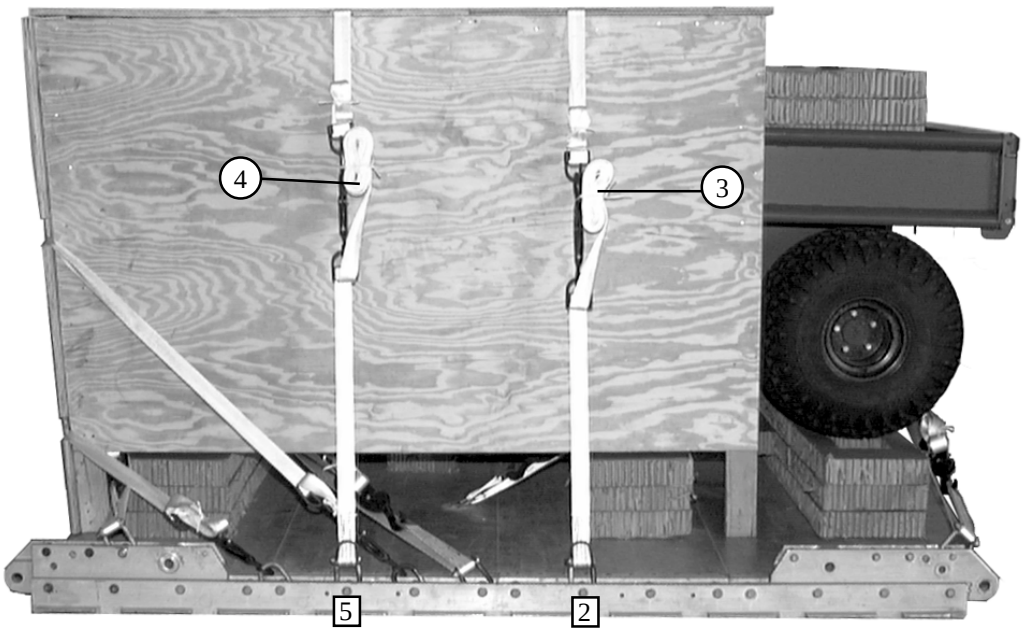
1-9. Lash the M-Gator box to the platform according to FM 10 500-2/TO 13C7-1-5 and as shown in Figure 1-12.



Route a lashing through clevis 4A and back through it's own D-ring, and pull the strap taut. Repeat the same steps for clevis 6A.

Lashing Number	**Tiedown** Clevis Number	**Instructions**
		Pass lashing through:
1	4A and 4	Top front cutouts of box
2	6A and 6	Bottom front cutouts of box

Figure 1-12. M-Gator Box Lashed



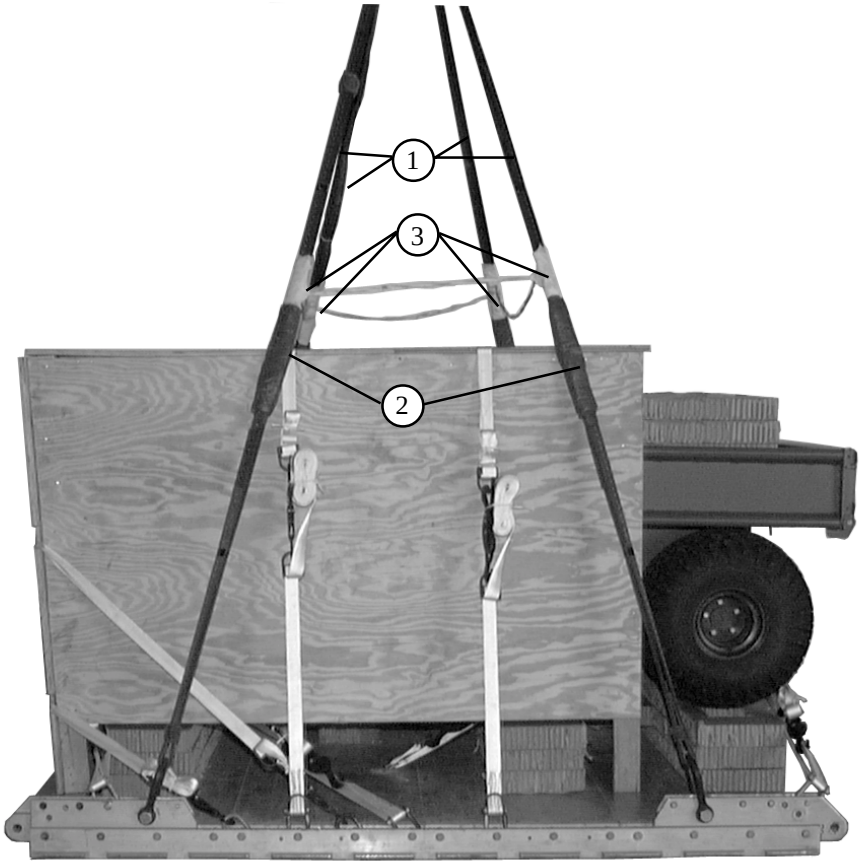
Route a lashing through clevis 2 and back through it's own D-ring, and pull strap taut. Repeat the same steps for clevises 2A, 5, and 5A.

Lashing Number	**Tiedown** Clevis Number	**Instructions**
		Pass lashing:
3	2 and 2A	Over top of box and bind on left side of box.
4	5 and 5A	Over top of box and bind on left side of box.

Figure 1-12. M-Gator Box Lashed (Continued)

INSTALLING SUSPENSION SLINGS

1-10. Install four 12-foot (2 loop), type XXVI nylon slings as suspension slings according to FM 10-500-2/TO 13C7-1-5 and as shown in Figure1-13.



(1) Attach a 12-foot (2-loop), type XXVI nylon sling to each of the four tandem links using a large clevis.

(2) Felt and tape each sling where they make contact with the box.

(3) Raise the slings above the load and install the deadman's tie as outlined in FM 10-500-2/ TO 13C7-1-5.

Figure 1-13. Suspension Slings Installed

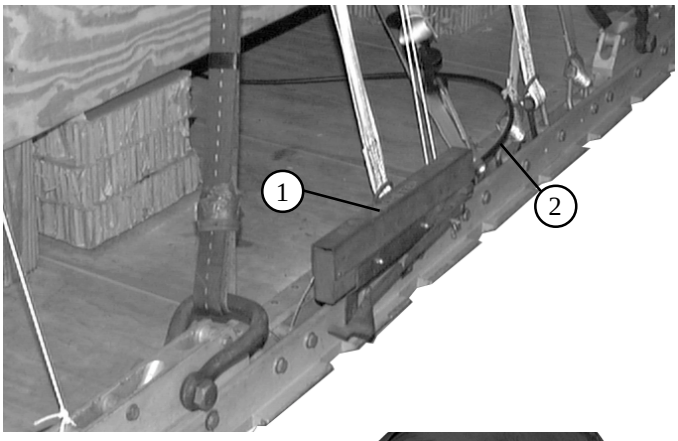
STOWING CARGO PARACHUTE

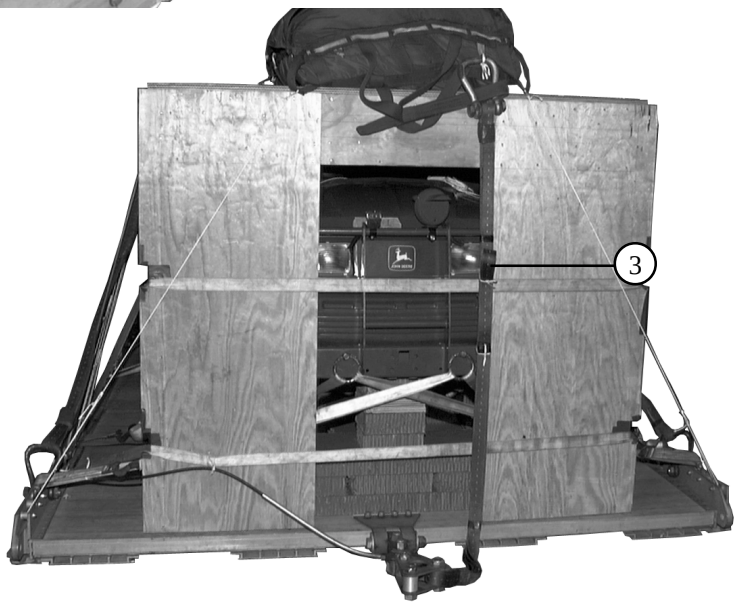
1-11. Prepare, stow, and restrain one G-11 cargo parachute on the front edge of the M-Gator box according to FM 10-500-2/TO 13C7-1-5 and as shown in Figure 1-14.

Figure 1-14. Cargo Parachute Stowed

INSTALLING EXTRACTION SYSTEM

1-12. Install the Extraction Force Transfer Coupling (EFTC) according to FM 10-500-2/TO13C7-1-5 and as shown in Figure1-15.





(1) Install EFTC actuator mounting bracket using front mounting holes.

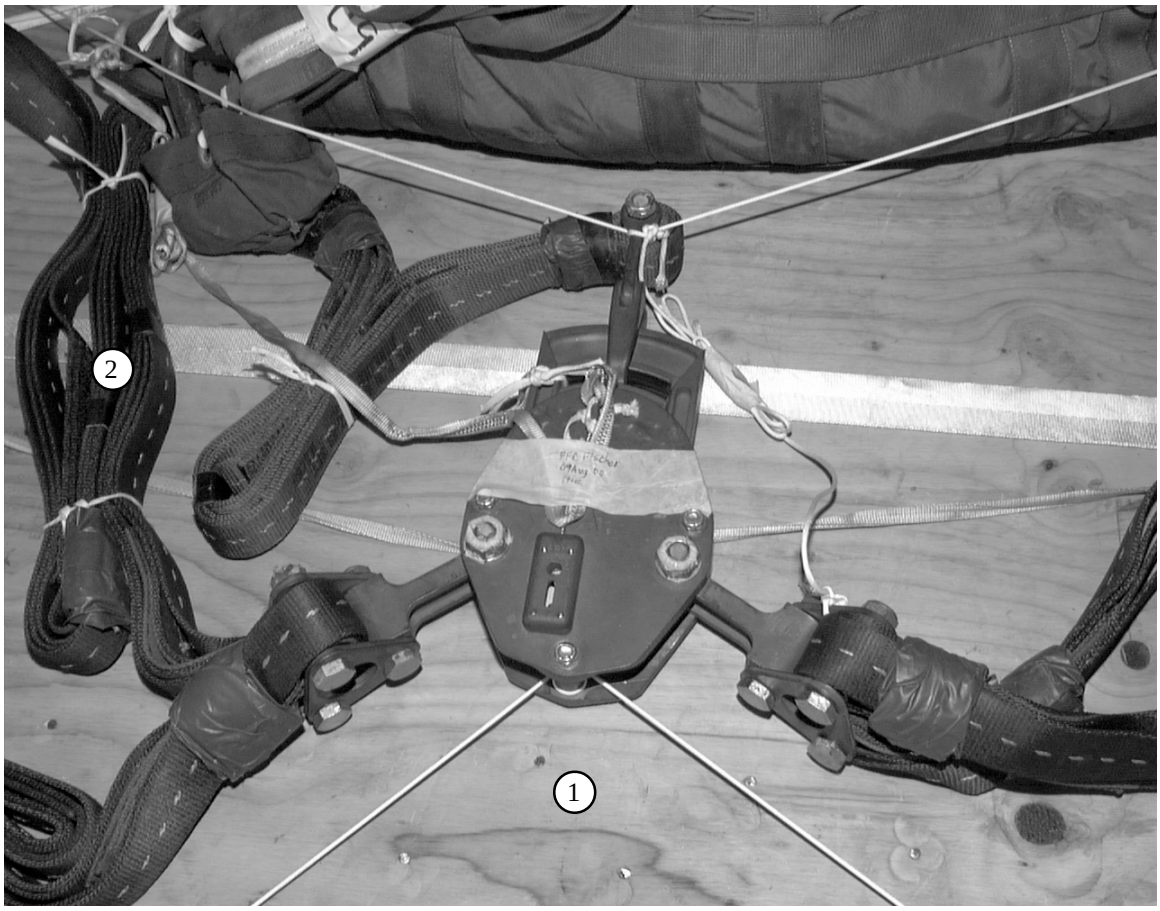
(2) Install a 12-foot cable.

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

Figure 1-15. Extraction System Installed

INSTALLING PARACHUTE RELEASE

1-13. Prepare and install an M-1 cargo parachute release system according to FM 10-500-2/TO 13C7-1-5, and as shown in Figure1-16.



(1) Place the M-1 release on the M-Gator box, and safety it to a convenient place on the load.

(2) Fold and secure any slack in the suspension slings.

Figure 1-16. Parachute Release System Installed

POSITIONING EXTRACTION PARACHUTE

1-14. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 10-500-2/TO 13C7-1-5. Place the extraction parachute and extraction line on the load for installation inside aircraft.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

1-15. Select and install provisions for emergency restraints according to the emergency aft restraints requirements in FM 10-500-2/TO 13C7-1-5.

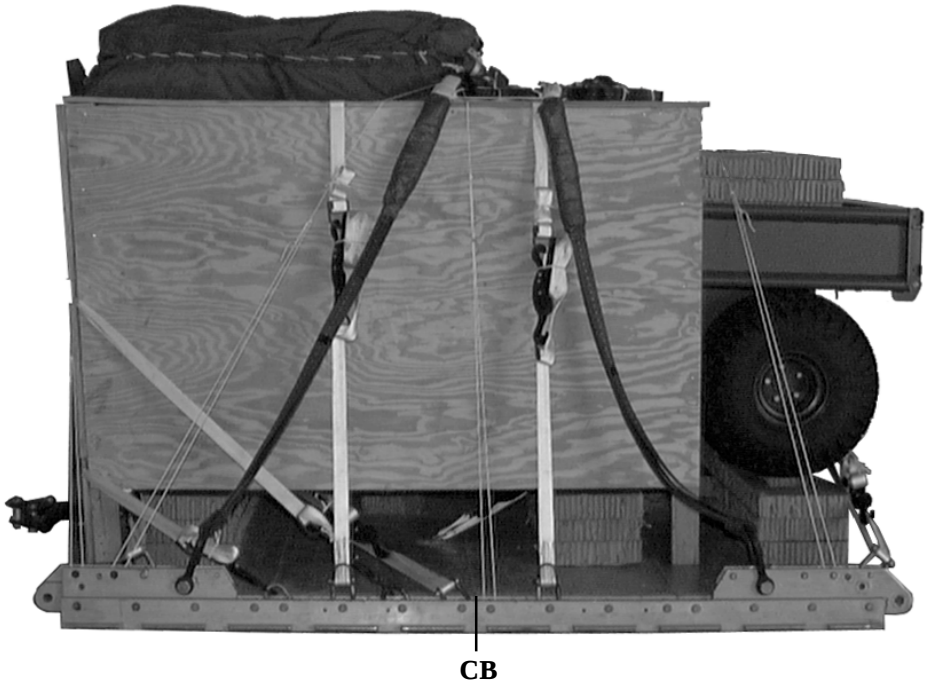
MARKING RIGGED LOAD

1-16. Mark the rigged load according to FM 10-500-2/TO 13C7-1-5 and as shown in Figure1-17. Complete the Shipper's Declaration for Dangerous Goods. If the load varies from the one shown, the weight, height, tip-off curve, CB, and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

1-17. The equipment required to rig this load is listed in Table 1-1.

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



RIGGED LOAD

Weight	3,120 pounds
Height	78 inches
Width	108 inches
Overall Length	125 inches
Overhang: Front (bed)	11 inches
Rear (EFTC)	18 inches
Center of Balance (from front edge of platform)	49 inches

Figure 1-17. M-Gator Rigged on a 8-Foot Platform for Low- Velocity Airdrop

Table1-1. Equipment required for rigging M-Gator on an 8-foot platform 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 (C-17)	1
4030-00-090-5354	Clevis, suspension, 1-in (large)	5
4020-00-240-2146	Cord, nylon, type III, 550-lb	As required
1670-00-434-5783	Coupling, airdrop, extraction force transfer with cable, 12-ft	1
	Cover:	
1670-00-360-0328	Clevis, large	1
1670-01-183-2678	Leaf, extraction line (line bag)	2
	Line, drogue (for C-17)	
1670-01-064-4452	60-ft (1-loop), type XXVI	1
	Line, extraction:	
1670-01-064-4452	For C-130: 60-ft (1-loop), type XXVI	1
1670-01-107-7652	For C-141: 160-ft (1-loop), type XXVI	1
1670-01-107-7652	For C-5: 160-ft (1-loop), type XXVI	1
1670-01-107-7652	For C-17: 160-ft (1-loop), type XXVI	1
	Link assembly:	
	Two-point, 3 3/4-in	1
5306-00-435-8994	Bolt, 1-in diam, 4-in long	(2)
5310-00-232-5165	Nut, 1-in, hexagonal	(2)
1670-00-003-1954	Plate, side, 3 3/4-in	(2)
5365-00-007-3414	Spacer, large	(2)
	Two-point, 3 3/4-in (for C-17)	1
5306-00-435-8994	Bolt, 1-in diam, 4-in long	(2)
5310-00-232-5165	Nut, 1-in, hexagonal	(2)
1670-00-003-1954	Plate, side, 3 3/4-in	(2)
5365-00-007-3414	Spacer, large	(2)
N/A	Link, towed mechanized release (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	9 sheets

Table 1-1. Equipment required for rigging M-Gator on an 8-foot platform for low-velocity airdrop (continued)

National Stock Number	Item	Quantity
	Parachute:	
1670-01-016-7841	Cargo, G-11B	1
1670-01-063-3715	Cargo, extraction, 15ft	1
1670-01-063-3715	Drogue, 15ft (for C-17)	1
	Platform, airdrop, type V, 8-foot:	
1670-01-353-8425	Bracket assembly, coupling	(1)
1670-01-162-2372	Clevis assembly, type V	(14)
1670-01-353-8424	Extraction bracket assembly	(1)
1670-01-162-2381	Link, tandem, suspension link assembly	(4)
5530-00-128-4981	Plywood, 3/4- by 48- by 96-in	6 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 deployment:	
1670-01-062-6304	9-ft (2-loop), type XXVI nylon webbing	1
	For riser extention:	
1670-01-062-6301	3-ft (2-loop), type XXVI nylon webbing	1
7510-00-266-5016	Tape, adhesive, 2-in	As required
1670-00-937-0271	Tie-down assembly, 15-ft	16
	Webbing:	
8305-00-268-2411	Cotton, 1/4-in, type I	As required
8305-00-082-5725	Nylon, tubular, 1/2-in	As required

CHAPTER 2

Rigging Two Military Utility Vehicles (M-Gator) And Equipment Box on a 20-Foot Platform for Low-Velocity Airdrop

DESCRIPTION OF LOAD

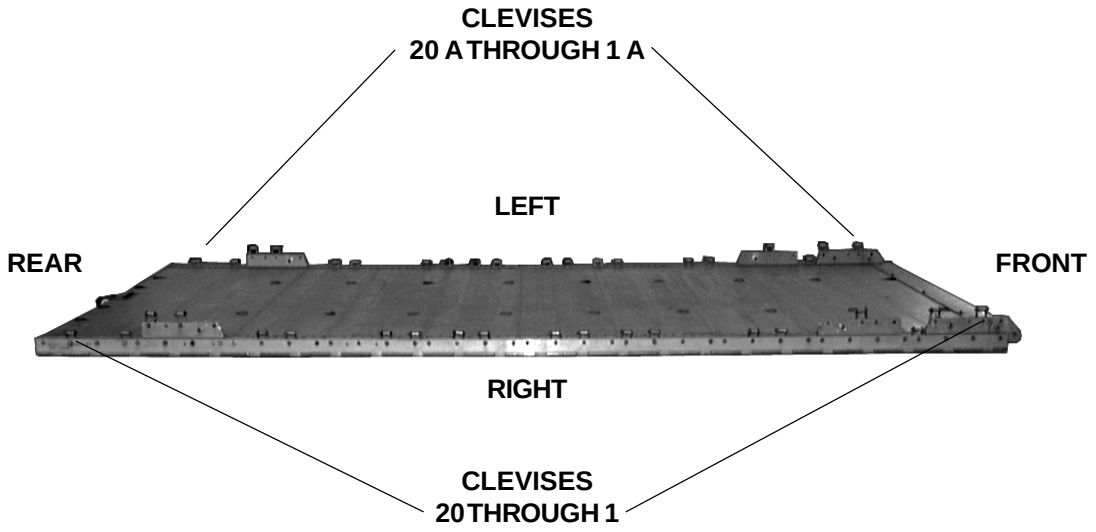
2-1. This load consists of two John Deere Diesels, which have been named M-Gator and an equipment box weighing 1,600 pounds minimum or 2000 pounds maximum of unit specific equipment. It is rigged on a 20-foot platform. The load shown has a rigged weight of 8,520 pounds. It has a length of 258 inches, width of 108 inches, and height of 78 inches, with a center of balance of 124 inches. The load is rigged with two G-11 cargo parachutes.

PREPARING PLATFORM

2-2. Inspect, or assemble and inspect, a 20-foot platform as outlined in TM 10-1670- 268-20&P/TO 13C7-52-22. Prepare a 20-foot platform using 40 tiedown clevises as shown in Figure 2-1.

BUILDING M-GATOR BOXES

2-3. Build two M-Gator boxes as outlined in chapter 1, paragraph 1-7.



Step:

1. Install a tandem multi-purpose link to the front of each platform side rail using holes 1,2, and 3.
2. Install a suspension link to each platform side rail using holes 6, 7, and 8.
3. Install a suspension link to each platform side rail using holes 33, 34, and 35.
4. Install a clevis on bushings 2 and 4 of each tandem link.
5. Install a clevis on bushing 3 of each front suspension link.
6. Install a clevis on bushings 2 and 4 of each rear suspension link.
7. Starting at the front of each platform side rail, install clevises on the bushings bolted on holes 4, 10, 11, 15, 16, 18, 19, 22, 23, 25, 26, 30,31, 37, and 39.
8. Starting at the front of the platform, number the clevises 1 through 20 on the right side and 1A through 20A on the left side.
9. Label the tie-down rings according to FM 10-500-2/TO 13C7-1-5.

Figure 2-1. Platform Prepared

BUILDING HONEYCOMB STACKS

2-4. Refer to paragraph 1-3 for building honeycomb stacks 1 and 3. Build honeycomb stack 2 as in Figure 2-2.

Stack Number	Pieces	Width (inches)	Length (inches)	Material	Instructions
2	2	96	36	Honeycomb	Glue and place one on top of the other.

Figure 2-2. Honeycomb Stack Prepared

POSITIONING HONEYCOMB STACK 2

2-5. Position honeycomb stack 2 centered on platform and as shown in Figure 2-3.

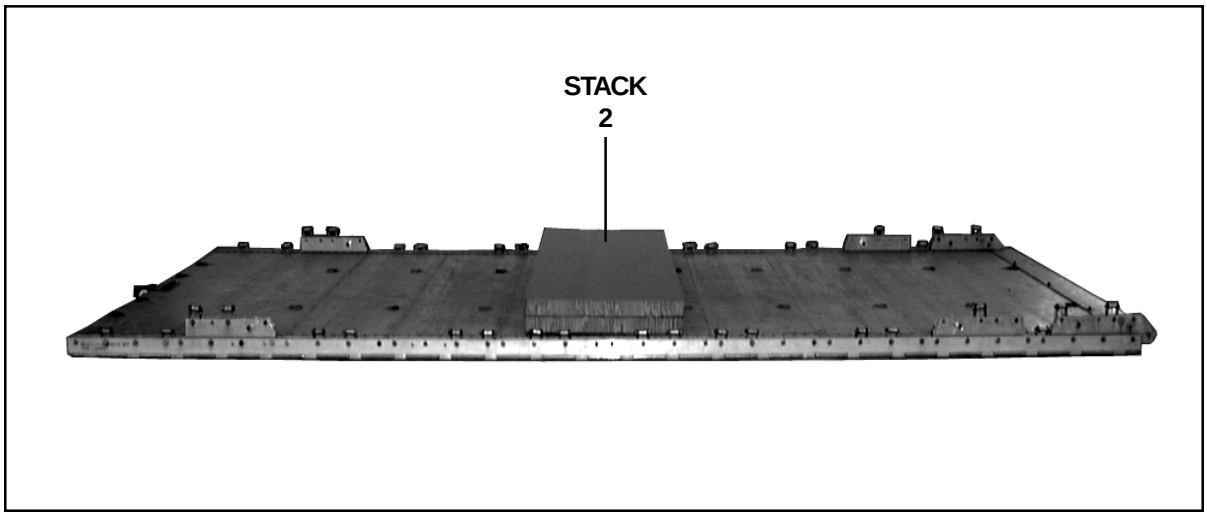
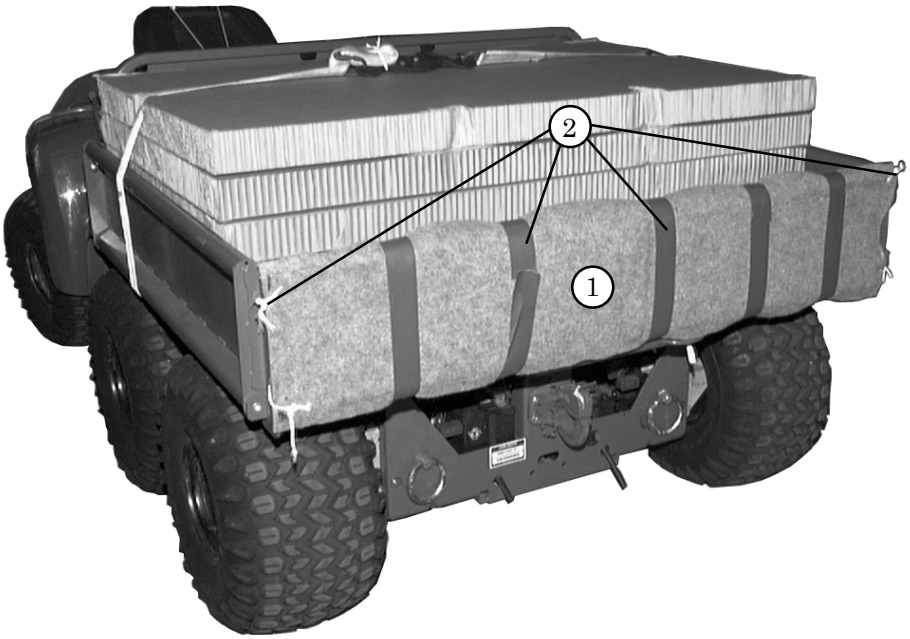


Figure 2-3. Honeycomb Stack 2 Positioned

PREPARING THE M-GATORS

2-6. Prepare the M-Gators according to chapter 1, paragraph 1-4 with the exception of padding the tailgate as shown in Figure 2-4.



(1) Pad the tailgate with a 1/2-inch by 11 1/2-inch by 57-inch piece of felt.

(2) Secure the felt with pressure sensitive tape and Type III nylon cord.

Figure 2-4. M-Gators Prepared

BUILDING EQUIPMENT BOX

2-7. Build the equipment box as shown in Figure 2-5.

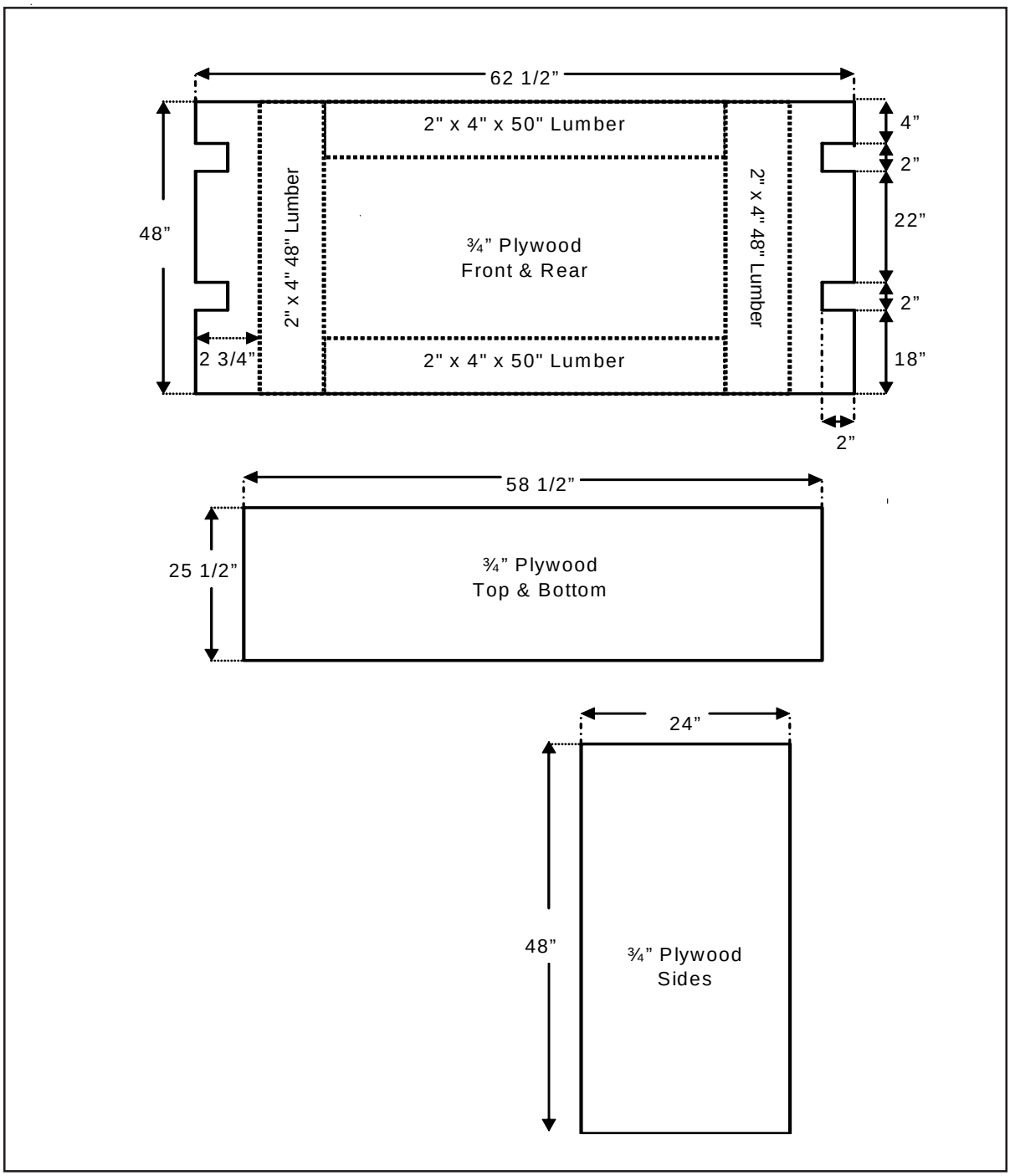
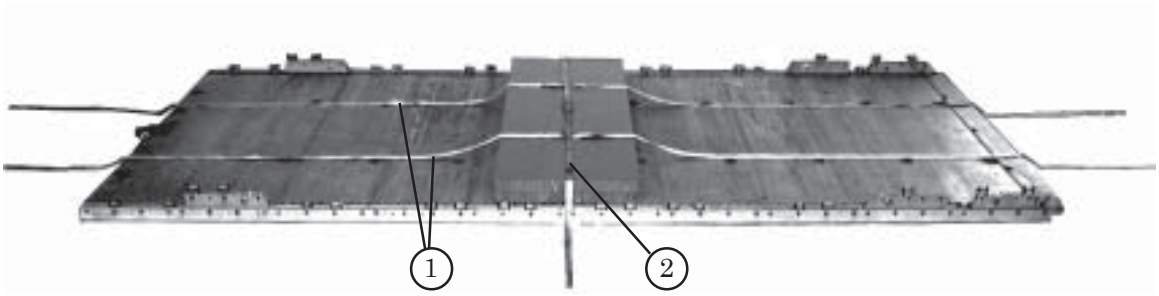


Figure 2-5. Equipment Box Built

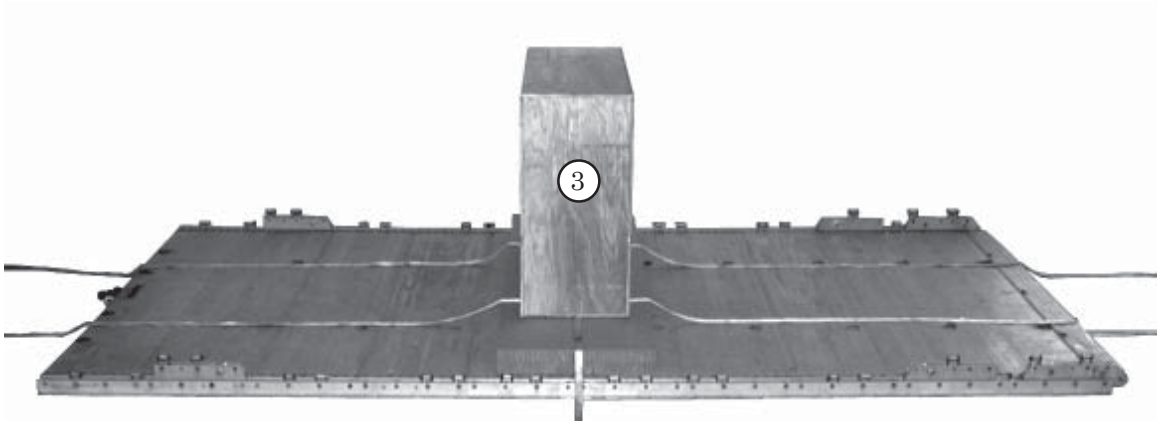
POSITIONING AND LASHING THE EQUIPMENT BOX

2-8. Position the lashings and the equipment box as shown in Figure 2-6.



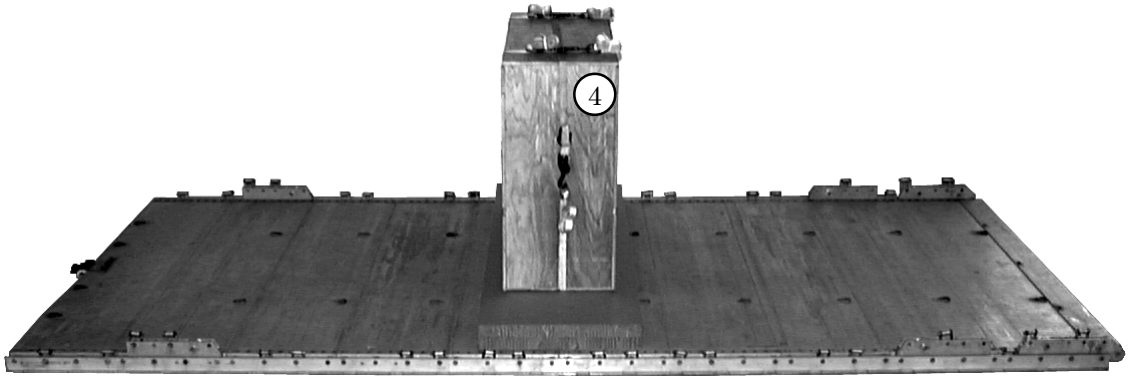
(1) Position two 30 foot lashings 28 inches from each edge on stack 2, running the length of the platform.

(2) Position a 30 foot lashing centered on stack 2, running the width of the platform.

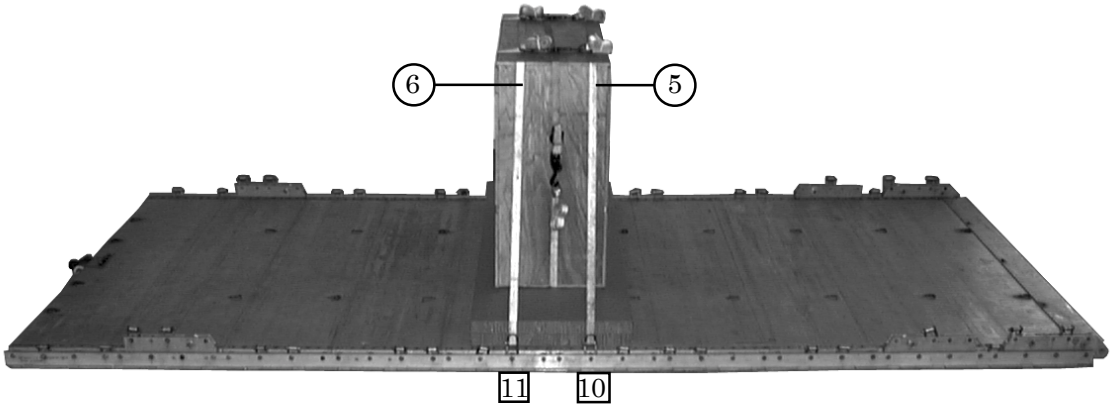


(3) Position the box centered on stack 2.

Figure 2-6. Equipment Box Positioned and Lashed



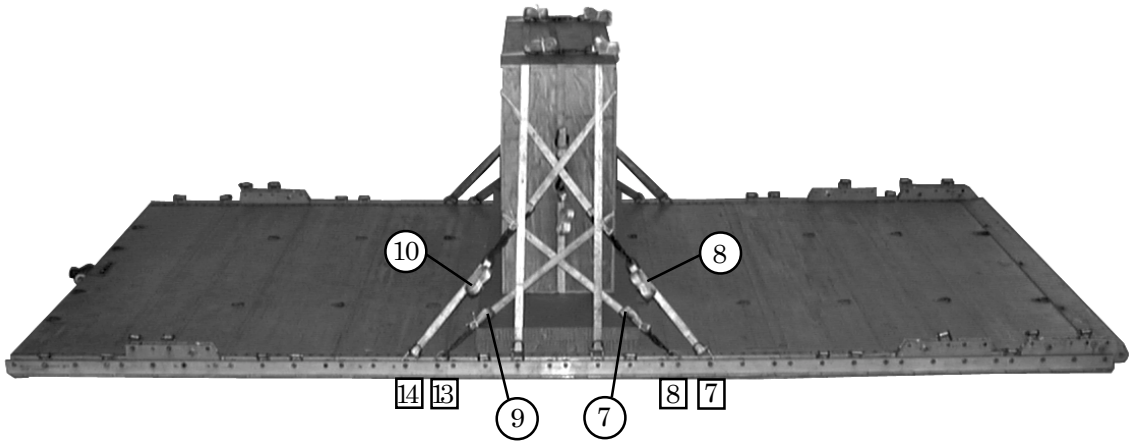
(4) Secure the previously positioned lashings on top and side of the box.



(5) Route a lashing through clevis 10 and back through it's own D-ring, over the box and load bind to clevis 10A.

(6) Route a lashing through clevis 11 and back through it's own D-ring, over the box and load bind to clevis 11A.

Figure 2-6. Equipment Box Positioned and Lashed (Continued)



(7) Route a lashing through clevis 8A and back through it's own D-ring, through the lower rear cutouts of the box, load bind to clevis 8.

(8) Route a lashing through clevis 7A and back through it's own D-ring, through the upper rear cutouts of the box, route a lashing through 7 and back through it's own D-ring and load bind the lashings together.

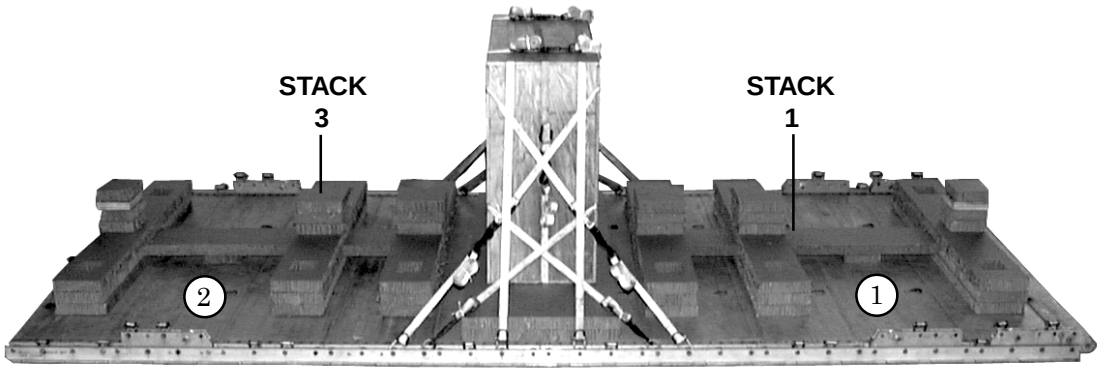
(9) Route a lashing through clevis 13A and back through it's own D-ring, through the lower front cutouts of the box, load bind to clevis 13.

(10) Route a lashing through clevis 14A and back through it's own D-ring, through the upper front cutouts of the box. Route a lashing through clevis 14 and back through it's own D-ring. Load bind the lashings together.

Figure 2-6. Equipment Box Positioned and Lashed (Continued)

POSITIONING M-GATOR HONEYCOMB STACKS

2-9. Position honeycomb stacks 1 and 3 on the platform as shown in Figure 2-7.



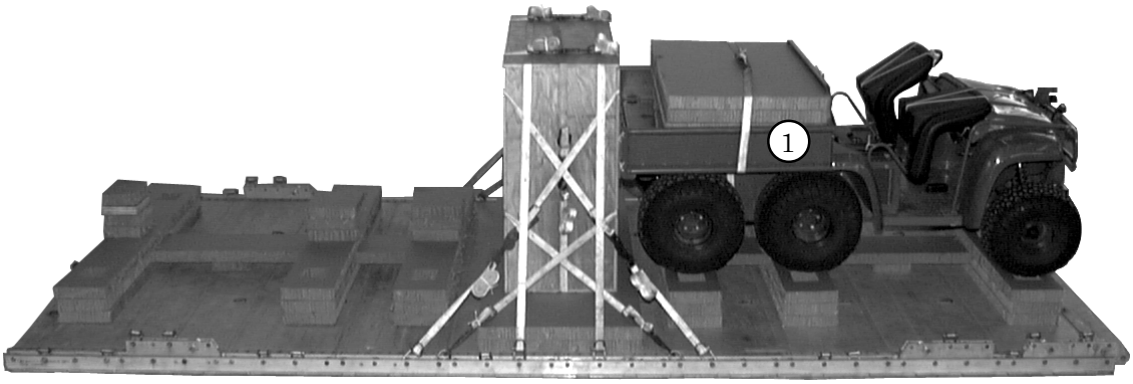
(1) Pre-position honeycomb stack 1 behind the tiedown rings on the front panel and cen tered left to right.

(2) Pre-position honeycomb stack 3 in front of extraction bracket bolts on the rear edge of the platform and centered left to right.

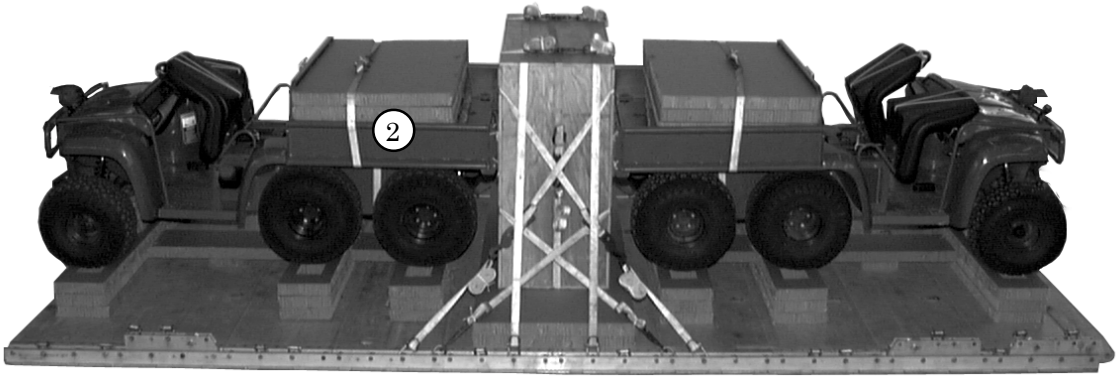
Figure 2-7. Honeycomb Stacks 1 and 3 Positioned on Platform

POSITIONING LOAD

2-10. Use four 12-foot (2-loop), type XXVI, nylon slings to lift and position the M-Gator. Attach large clevis assemblies to each sling. Using two front and two rear lifting points, attach one clevis to each lifting point. Position the M-Gators as shown in Figure 2-8.



(1) Position the front M-Gator on honeycomb stack 1 ensuring the felt tailgate is against the center equipment box. Adjust the honeycomb stack so each tire will be centered over a cutout in the honeycomb stack.



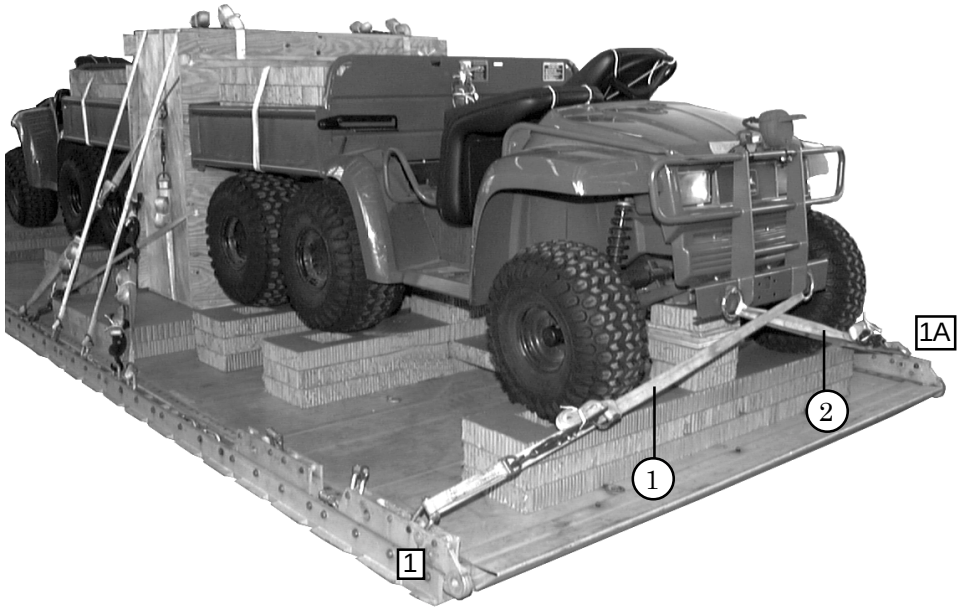
(2) Position the rear M-Gator on honeycomb stack 3 ensuring the felt tailgate is against the center equipment box. Each tire will be centered over a cutout in the honeycomb stack.

Figure 2-8. M-Gators Positioned

LASHING M-GATORS

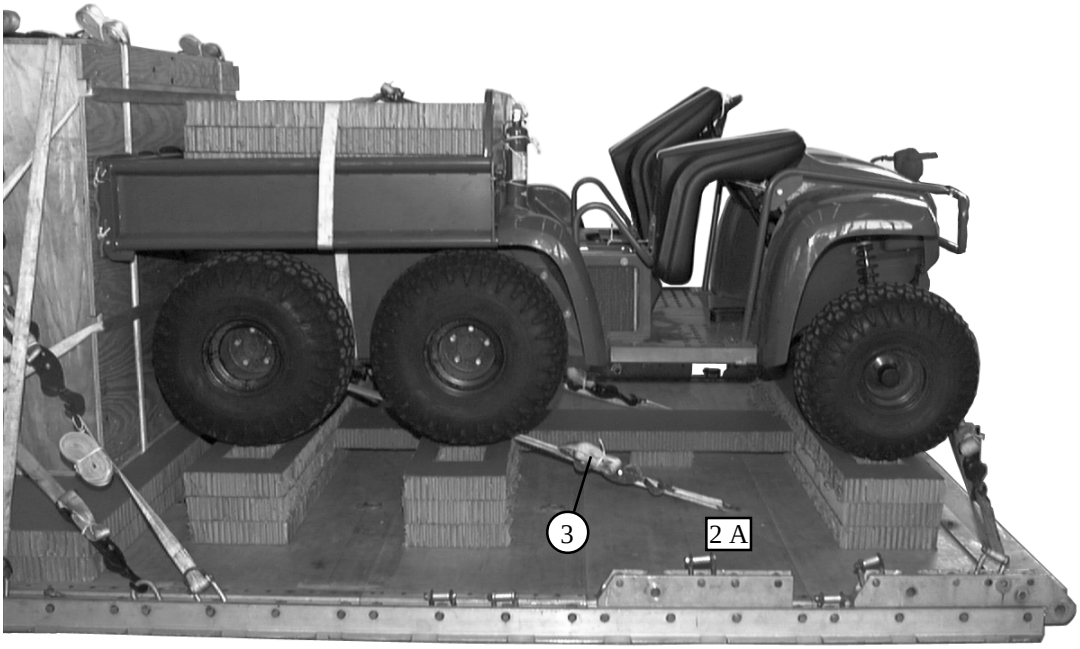
2-11. Lash the M-Gators to the platform according to FM 10-500-2/TO 13C7-1-5 and as shown in Figures 2-9 through 2-15.

NOTE: Place all load binders near the platform in case adjustments to the lashings are needed.



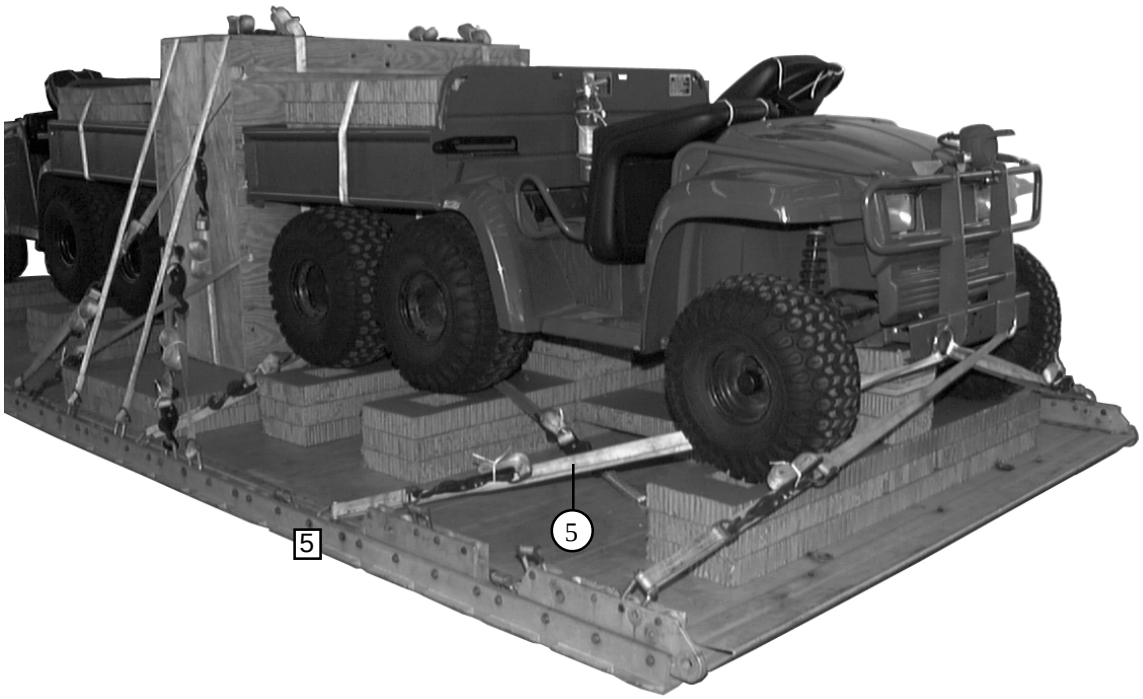
Lashing Number	**Tiedown** Clevis Number	**Instructions**
		Pass lashing through:
1	1	Front left tiedown point
2	1A	Front right tiedown point

Figure 2-9. Lashings 1 and 2 Installed



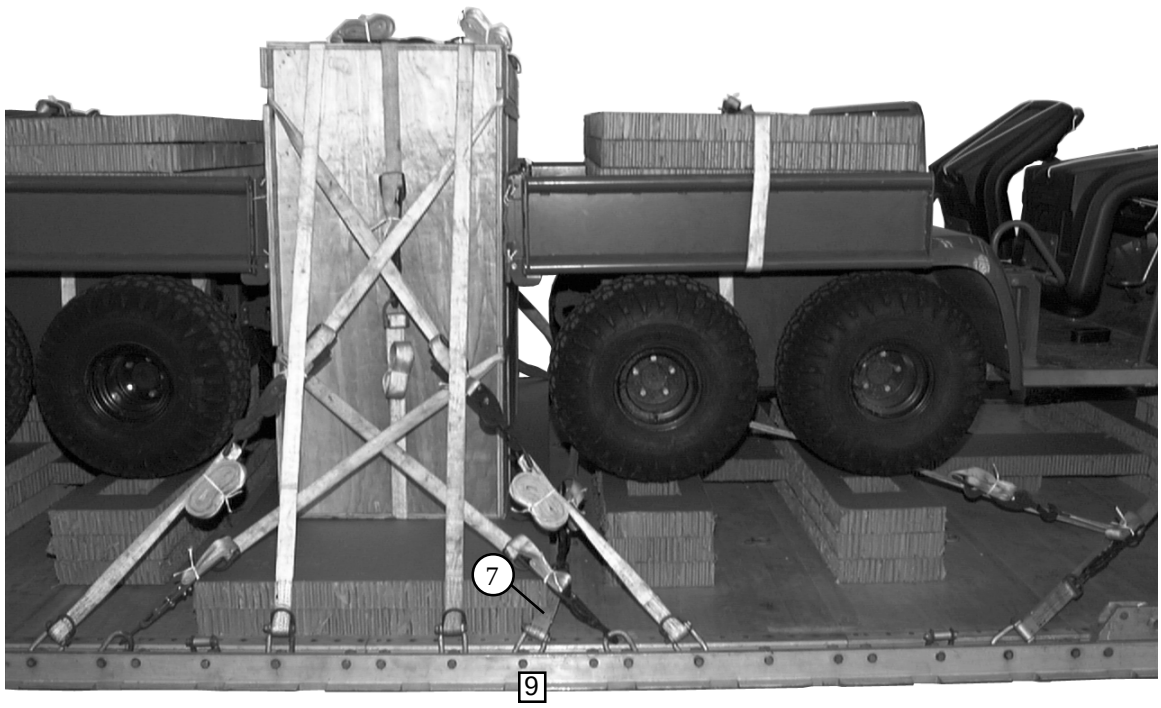
Lashing Number	**Tiedown** Clevis Number	**Instructions**
		Pass lashing through:
3	Tiedown-ring 2A	Right rear tiedown point
4	Tiedown-ring 2B	Left rear tiedown point

Figure 2-10. Lashings 3 and 4 Installed



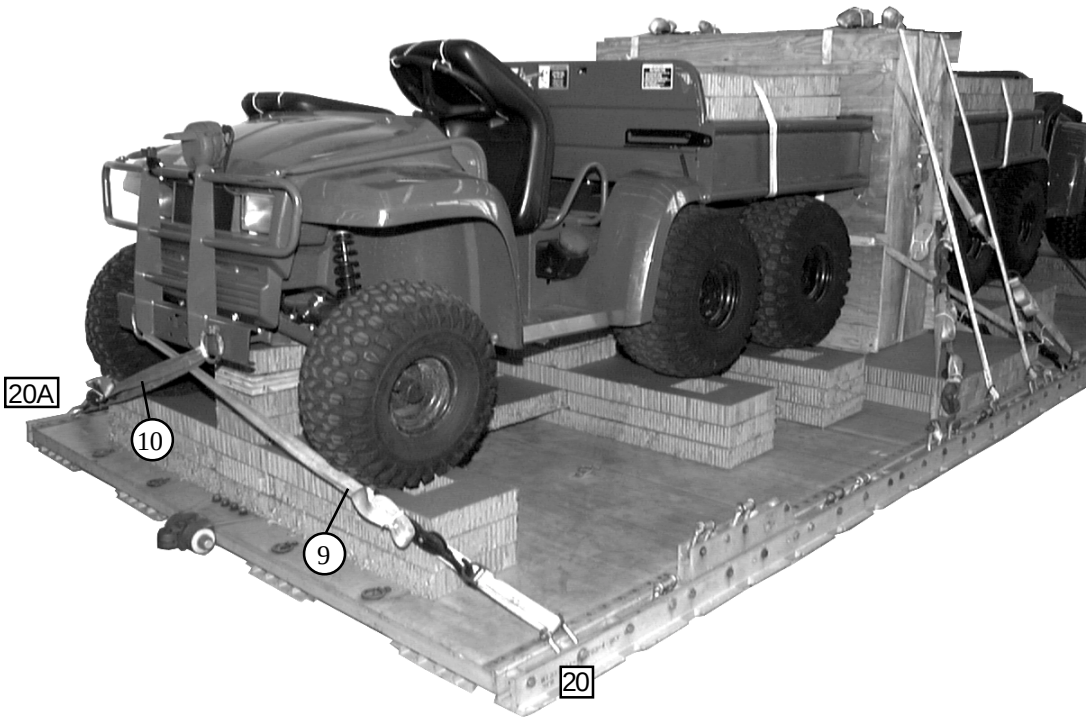
Lashing Number	**Tiedown** Clevis Number	**Instructions**
		Pass lashing through:
5	5	Front right tiedown point
6	5A	Front left tiedown point

Figure 2-11. Lashings 5 and 6 Installed



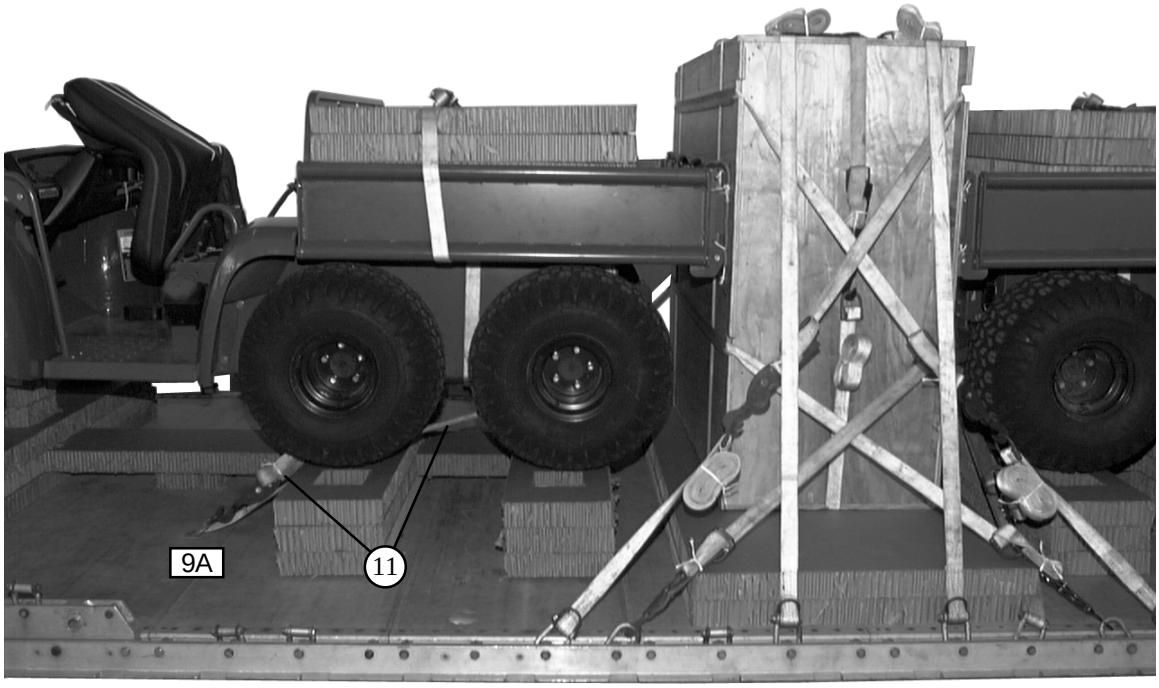
Lashing Number	**Tiedown** Clevis Number	**Instructions**
		Pass lashing through:
7	9	Rear left tiedown point
8	9A	Rear right tiedown point

Figure 2-12. Lashings 7and 8 Installed



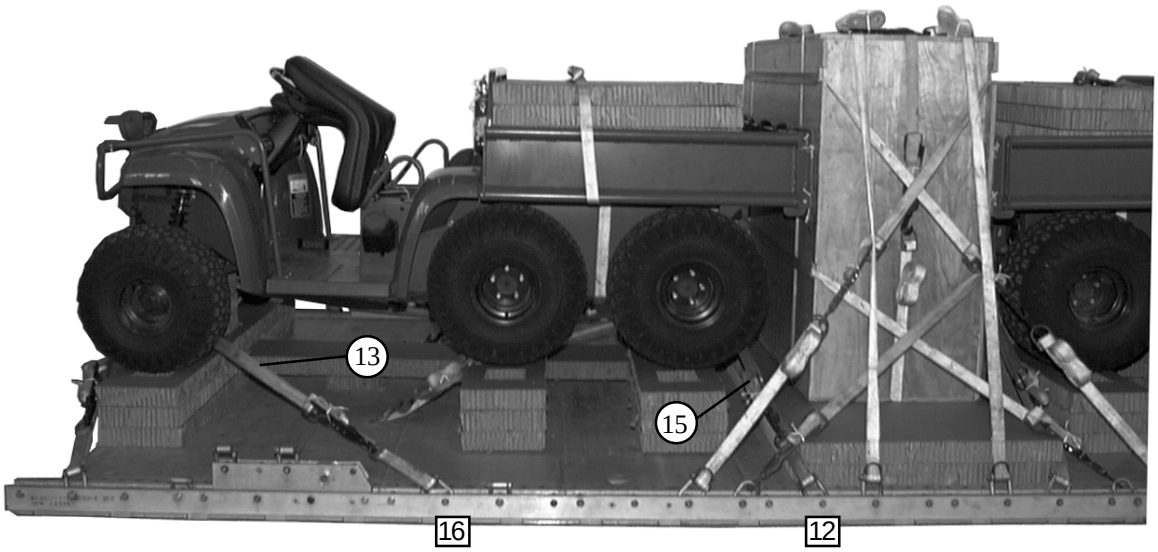
Lashing Number	**Tiedown** Clevis Number	**Instructions**
		Pass lashing through:
9	20	Front right tiedown point
10	20A	Front left tiedown point

Figure 2-13. Lashings 9 and 10 Installed



Lashing Number	**Tiedown** Clevis Number	**Instructions**
		Pass lashing through:
11	Tiedown-ring 9A	Left rear tiedown point
12	Tiedown-ring 9B	Right rear tiedown point

Figure 2-14. Lashings 11 and 12 Installed

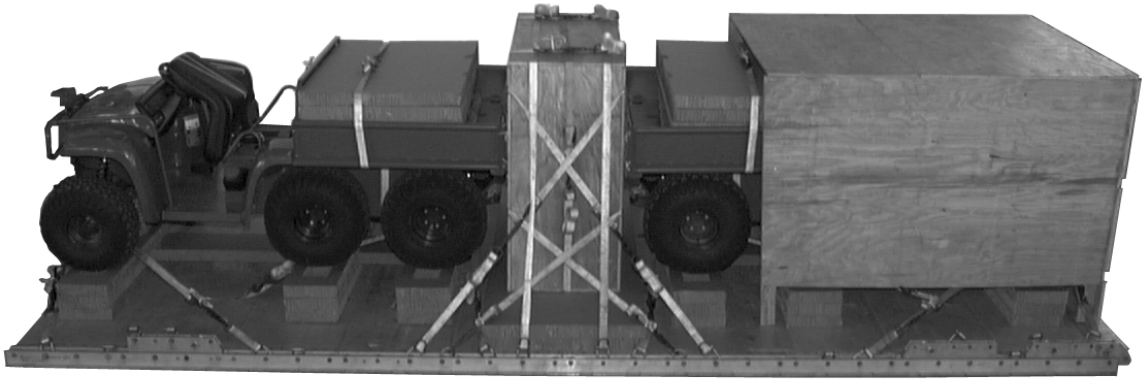


Lashing Number	**Tiedown** Clevis Number	**Instructions**
		Pass lashing through:
13	16	Front left tiedown point
14	16A	Front right tiedown point
15	12	Right rear tiedown point
16	12A	Left rear tiedown point

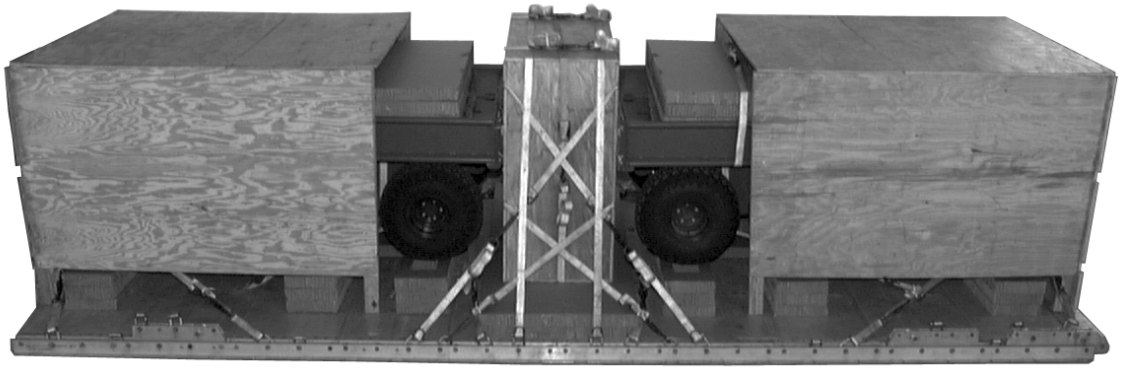
Figure 2-15. Lashings 13 and 14 Installed

POSITIONING M-GATOR BOXES

2-12. Position M-Gator boxes as shown in Figure 2-16.



Position the front box over the front M-Gator aligning the bottom front edge of the box with the front edge of the platform.

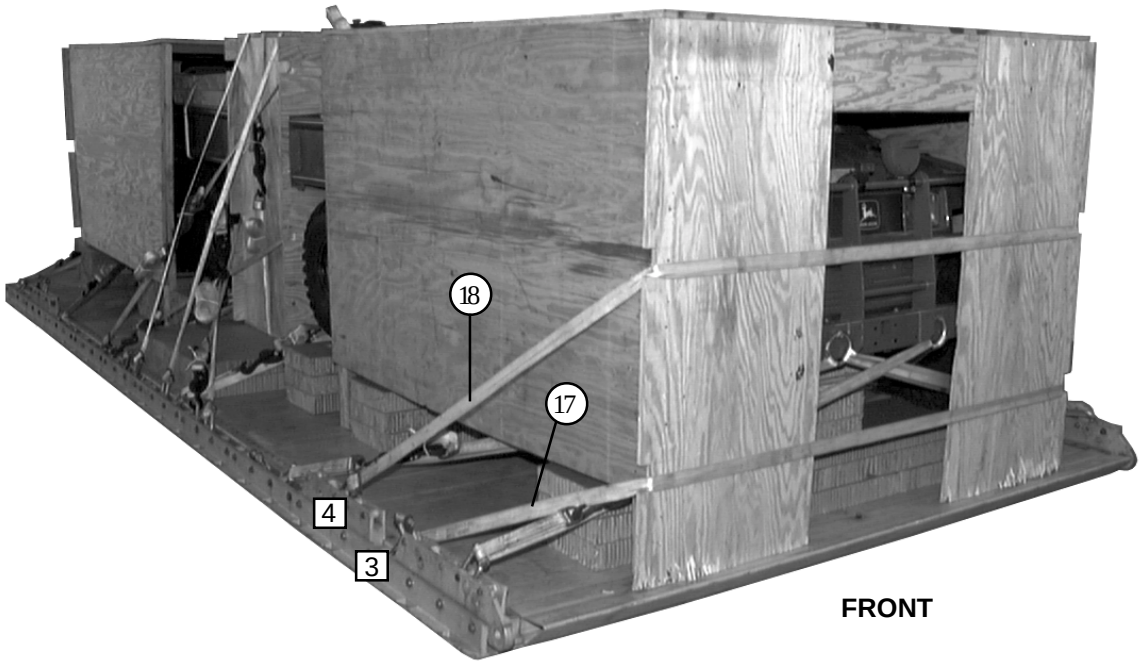


Position the rear box over the rear M-Gator aligning the bottom front edge of the box with the rear edge of the platform.

Figure 2-16. M-Gator Boxes Positioned

LASHING M-GATOR BOXES

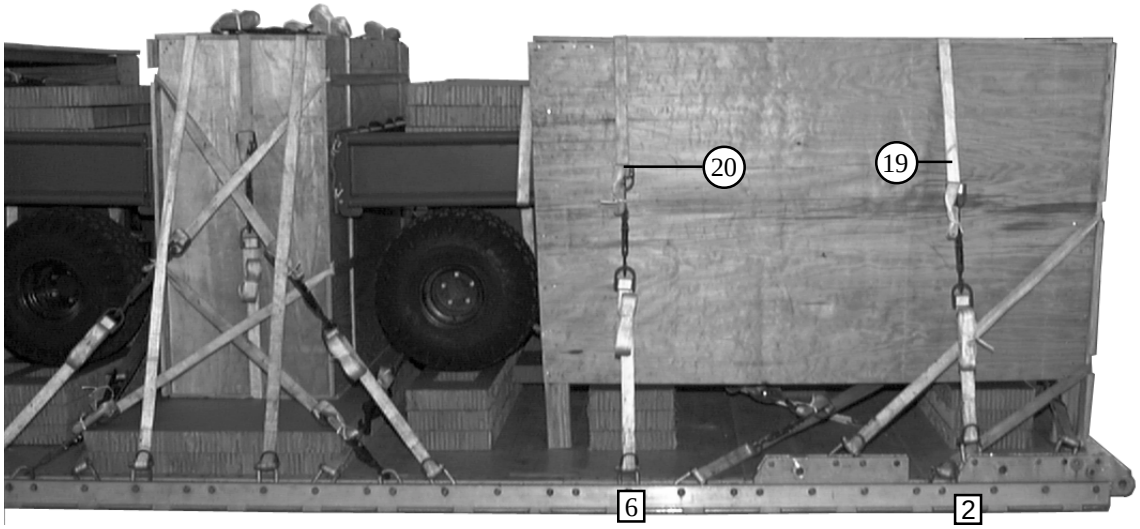
2-13. Lash the M-Gator boxes to the platform according to FM 10-500-2/TO 13C7-1-5 and as shown in Figure 2-17.



Route a lashing through clevis 3 and back through it's own D-ring, and pull strap taut. Repeat the same steps for clevis 4. Bind to clevises 3A and 4A.

Lashing Number	**Tiedown** Clevis Number	**Instructions**
		Pass lashing through:
17	3 and 3A	Front lower cutouts of front box
18	4 and 4A	Front upper cutouts of front box

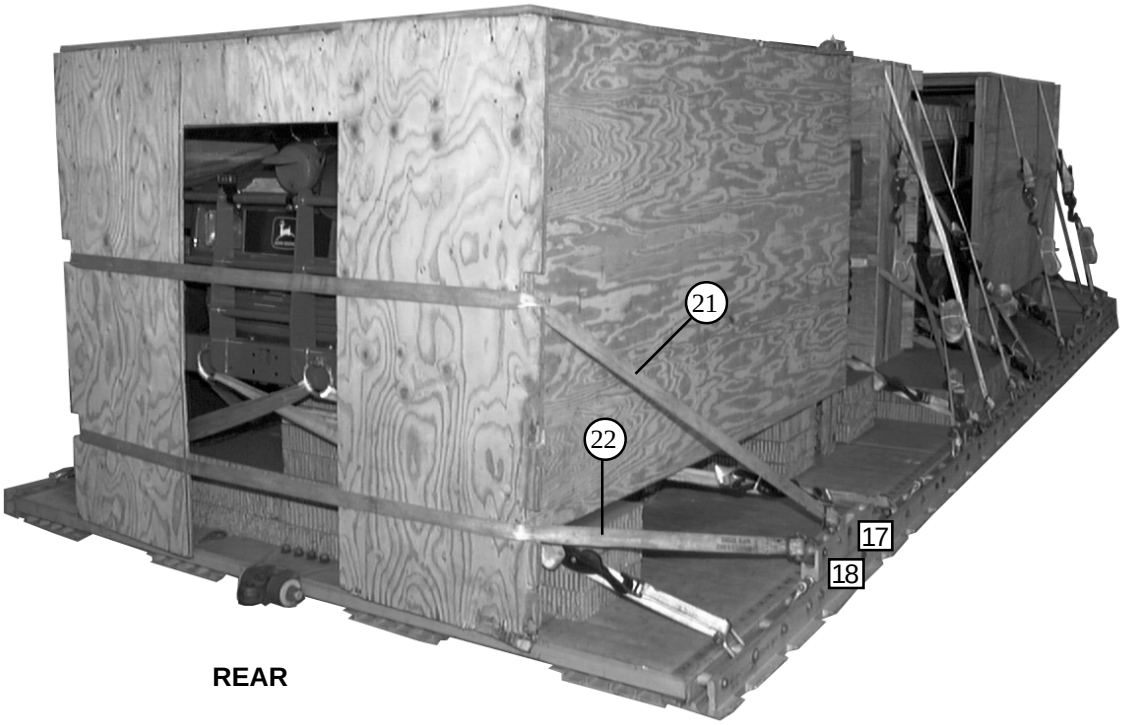
Figure 2-17. M-Gator Boxes Lashed



Route a lashing through clevis 2 and back through it's own D-ring, and pull strap taut. Repeat the same steps for clevises 2A, 6, and 6A.

Lashing Number	**Tiedown** Clevis Number	**Instructions**
		Pass lashing through:
19	2 and 2A	Over top of box and bind on right side of box.
20	6 and 6A	Over top of box and bind on right side of box.

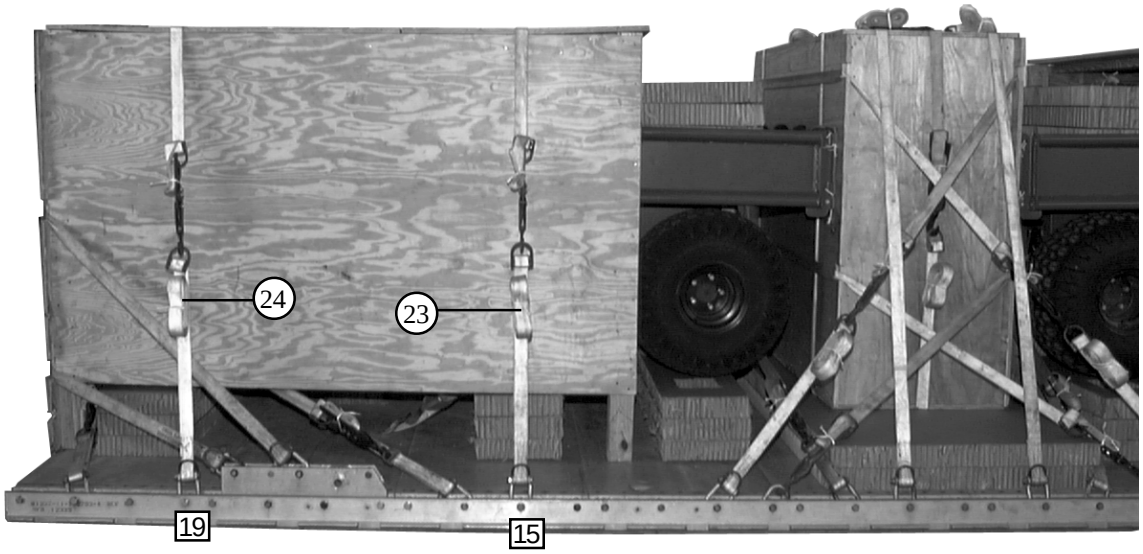
Figure 2-17. M-Gator Boxes Lashed (continued)



Route a lashing through clevis 17 and back through it's own D-ring, and pull the strap taut. Repeat the same steps for 17A, 18, and 18A. Bind to clevises 17A and 18A.

Lashing Number	**Tiedown** Clevis Number	**Instructions**
21 22	17 and 17A 18 and 18A	Pass lashing through: Front upper cutouts of rear box. Front lower cutouts of rear box.

Figure 2-17. M-Gator Boxes Lashed (continued)



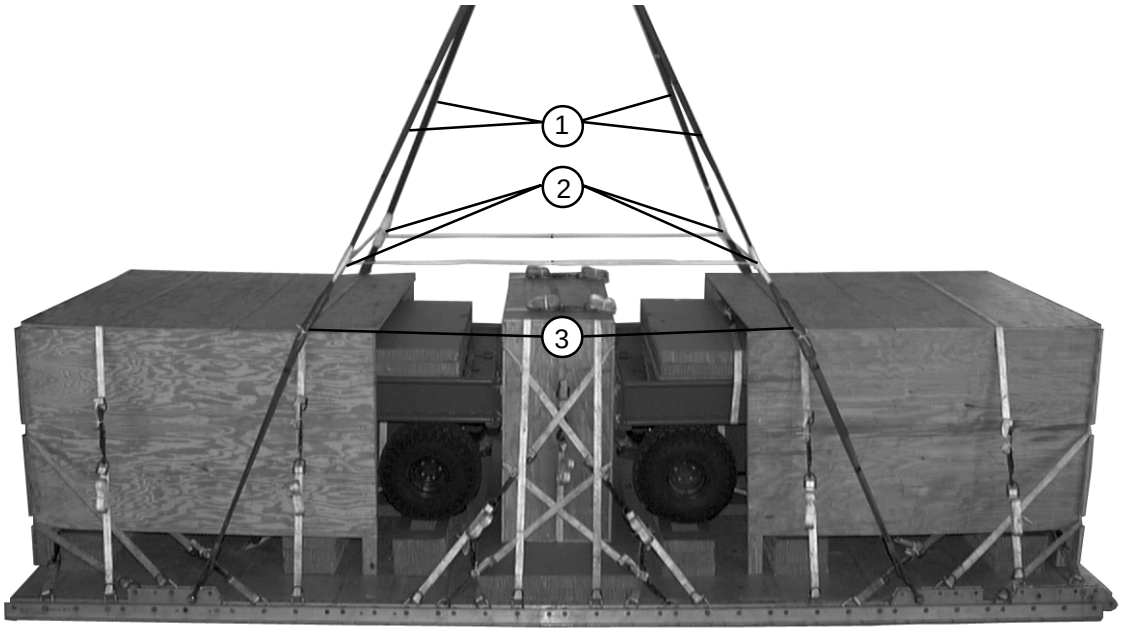
Route a lashing through clevis 15 and back through it's own D-ring, and pull strap taut. Repeat the same steps for clevises 15A, 19, and 19A.

Lashing Number	**Tiedown** Clevis Number	**Instructions**
		Pass lashing:
23	15 and 15A	Over top of box and bind on left side of box.
24	19 and 19A	Over top of box and bind on left side of box.

Figure 2-17. M-Gator Boxes Lashed (continued)

INSTALLING SUSPENSION SLINGS

2-14. Install four 16-foot (2-loop), type XXVI nylon slings as suspension slings according to FM 10-500-2/TO 13C7-1-5 and as shown in Figure 2-18.



(1) Attach a 16-foot (2-loop), type XXVI nylon sling to each of the four suspension links using a large clevis.

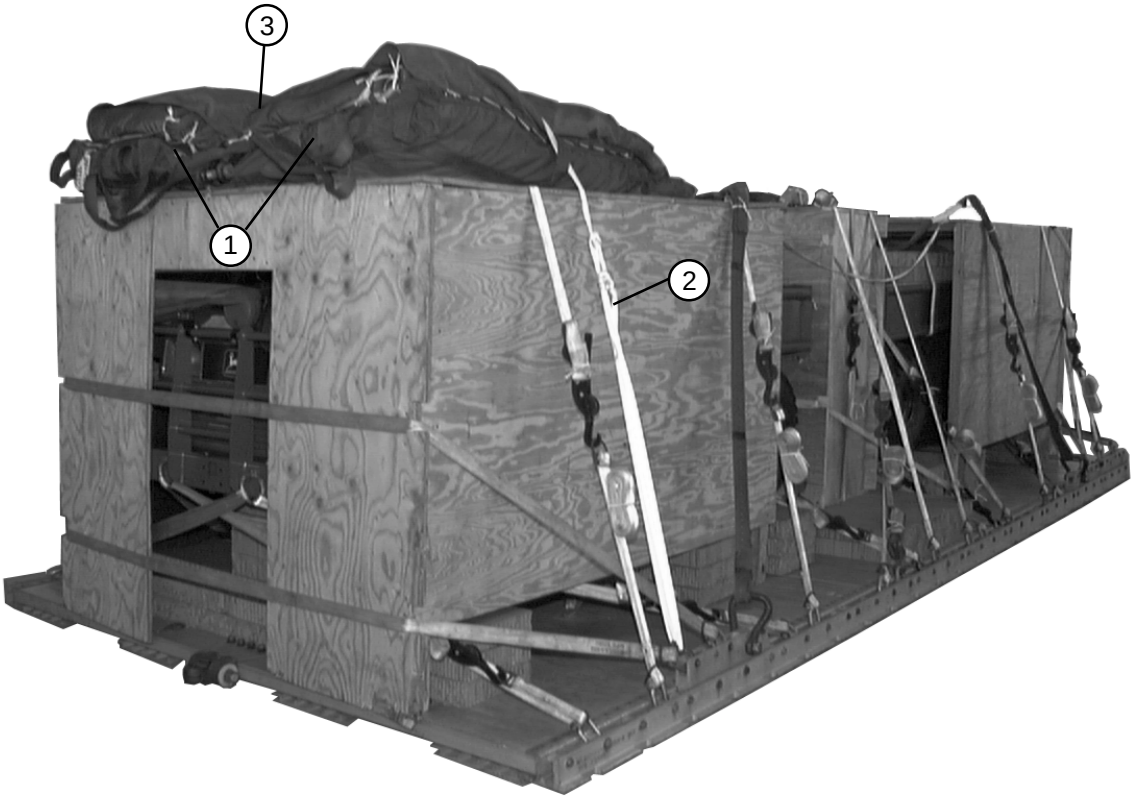
(2) Raise the slings above the load and install the deadman's tie as outlined in FM 10-500-2/TO 13C7-1-5.

(3) Felt and tape each sling where they make contact with the boxes.

Figure 2-18. Suspension Slings Installed

STOWING CARGO PARACHUTES

2-15. Prepare, stow, and restrain two G-11 cargo parachutes according to FM 10-500-2/TO 13C7-1-5 and as shown in Figure 2-19.

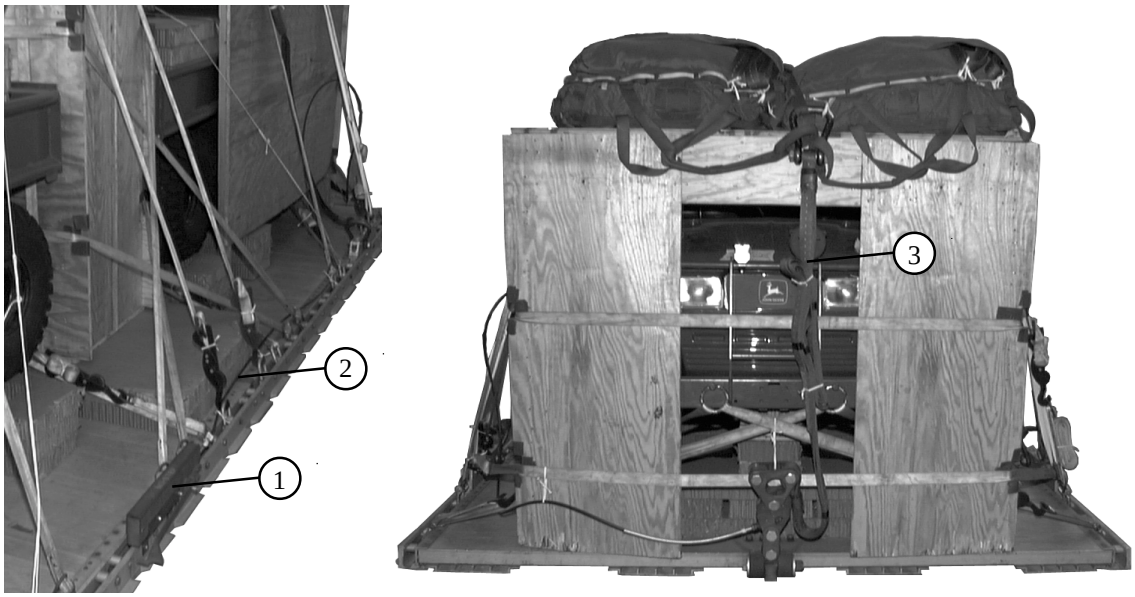


1. Place two G-11 cargo parachutes on the front edge of the rear M-Gator box.
2. Restrain the parachutes with type VIII nylon webbing to clevises 18 and 18A.
3. Install the parachute release strap according to FM 10-500-2/TO 13C7-1-5.

Figure 2-19. Cargo Parachutes Stowed

INSTALLING EXTRACTION SYSTEM

2-16. Install the Extraction Force Transfer Coupling (EFTC) according to FM 10-500-2/TO 13C7-1-5 and as shown in Figure 2-20.

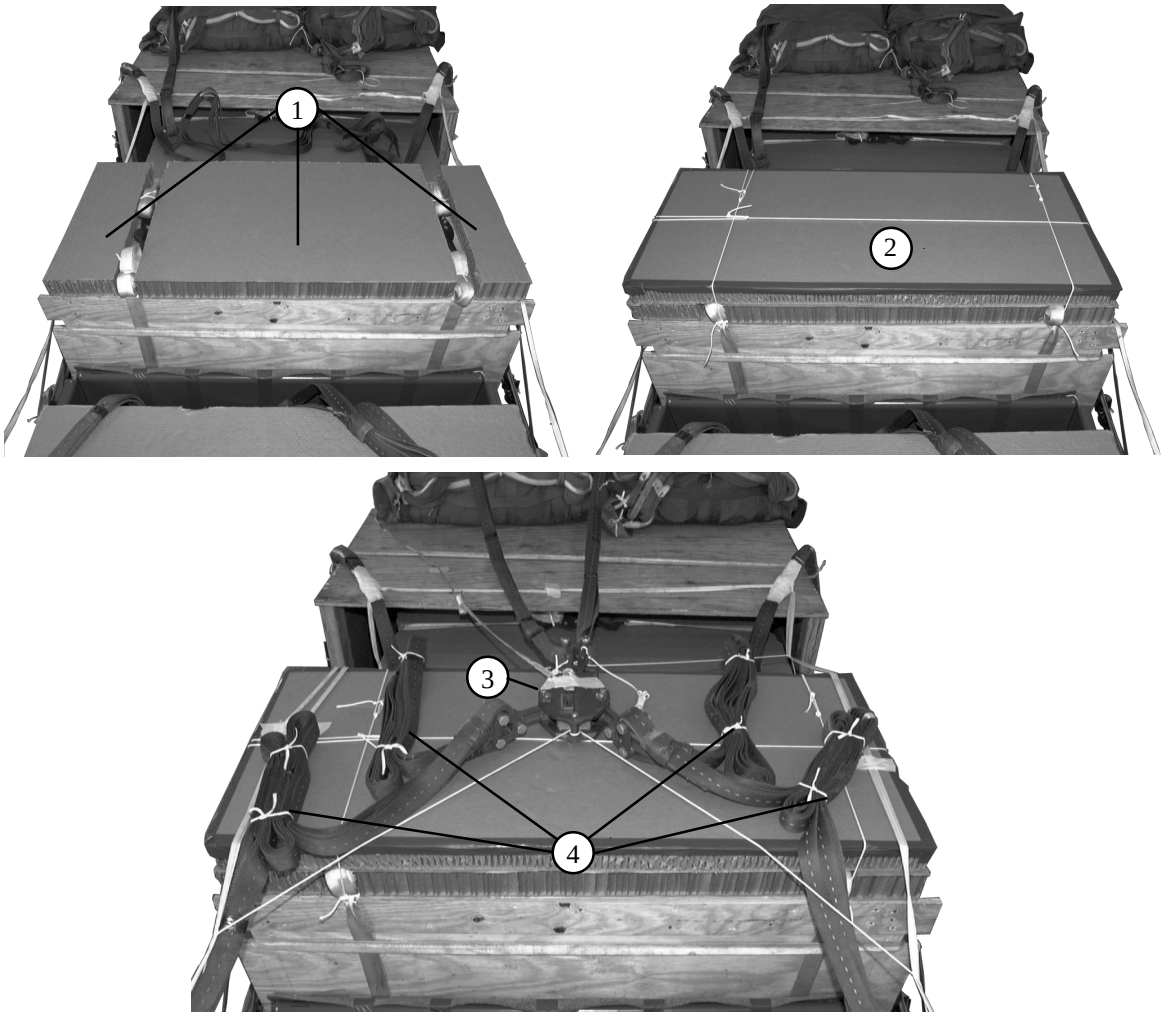


1. Install EFTC actuator mounting brackets using rear mounting holes.
2. Install a 20-foot cable.
3. Attach a 9-foot (2-loop), type XXVI nylon sling for the deployment line.

Figure 2-20. Extraction System Installed

INSTALLING PARACHUTE RELEASE

2-17. Prepare and install an M-1 cargo parachute release system according to FM 10-500-2/TO 13C7-1-5 and as shown in Figure 2-21.



1. Cut one piece of honeycomb to fit between the lashings and two pieces to fit outside the lashings on top of the equipment box. Each piece will be 25 1/2-inches wide.
2. Cut a 58 1/2-inch by 25 1/2-inch piece of honeycomb and place it on top of the three pieces previously placed on top of the equipment box. Tape the outer edges and secure with type III nylon cord.
3. Place the M-1 release on the equipment box and safety it to convenient places on the load.
4. Fold and secure any slack in the suspension slings.

Figure 2-21. Parachute Release Installed

POSITIONING EXTRACTION PARACHUTE

2-18. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 10-500-2/TO 13C7-1-5. Place the extraction parachute and extraction line on the load for installation inside aircraft.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

2-19. Select and install provisions for emergency restraints according to the emergency aft restraint requirements in FM 10-500-2/TO 13C7-1-5.

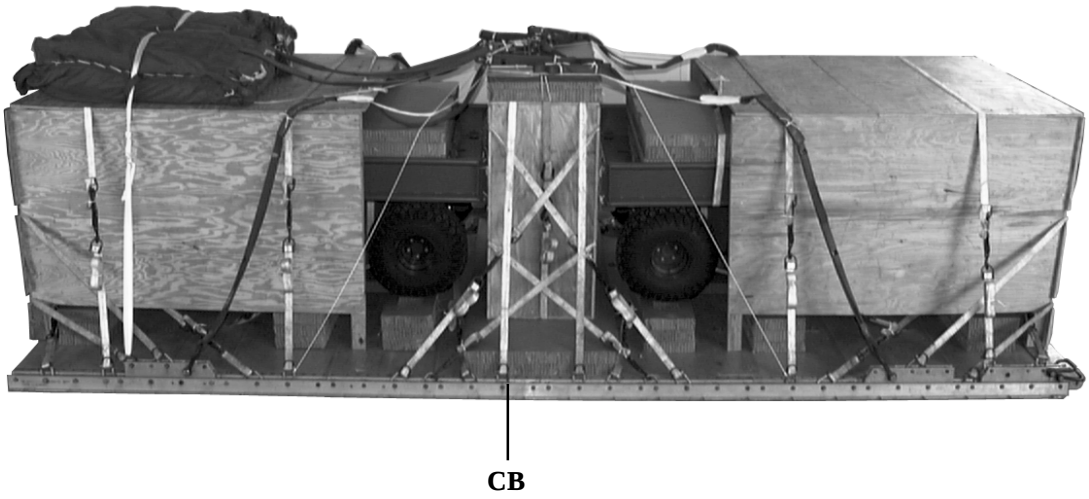
MARKING RIGGED LOAD

2-20. Mark the rigged load according to FM 10-500-2/TO 13C7-1-5 and as shown in Figure 2-22. Complete the Shipper's Declaration for Dangerous Goods. If the load varies from the one shown, the weight, height, CB, and must be recomputed.

EQUIPMENT REQUIRED

2-21. The equipment required to rig this load is listed in Table 2-1.

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



RIGGED LOAD

Weight	8,520 pounds
Height	78 inches
Width	108 inches
Overall Length	258 inches
Overhang: Front (Box)	2 1/2 inches
Rear (EFTC)	18 inches
Center of Balance (from front edge of platform)	124 inches

Figure 2-22. M-Gator Rigged on a 20-Foot Platform for Low-Velocity Airdrop

Table 2-1. Equipment required for rigging M-Gator on a 20-foot platform 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 (C-17)	1
4030-00-090-5354	Clevis, suspension, 1-in (large)	5
4020-00-240-2146	Cord, nylon, type III, 550-lb	As required
1670-00-434-5783	Coupling, airdrop, extraction force transfer with cable, 20ft	1
	Cover:	
1670-00-360-0328	Clevis, large	2
1670-01-183-2678	Leaf, extraction line (line bag)	2
	Line, drogue (for C-17)	
1670-01-064-4452	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: 140-ft (3-loop), type XXVI	1
1670-01-107-7652	For C-5: 160-ft (1-loop), type XXVI	1
1670-01-107-7651	For C-17: 140-ft (3-loop), type XXVI	1
	Link assembly:	
	Two-point, 3 3/4-in	1
5306-00-435-8994	Bolt, 1-in diam, 4-in long	(2)
5310-00-232-5165	Nut, 1-in, hexagonal	(2)
1670-00-003-1954	Plate, side, 3 3/4-in	(2)
5365-00-007-3414	Spacer, large	(2)
	Two-point, 3 3/4-in (for C-17)	1
5306-00-435-8994	Bolt, 1-in diam, 4-in long	(2)
5310-00-232-5165	Nut, 1-in, hexagonal	(2)
1670-00-003-1954	Plate, side, 3 3/4-in	(2)
5365-00-007-3414	Spacer, large	(2)
N/A	Link, towed mechanized release (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	20 sheets

Table 2-1. Equipment required for rigging M-Gator on a 20-foot platform for low-velocity airdrop (continued)

National Stock Number	Item	Quantity
	Parachute:	
1670-01-016-7841	Cargo, G-11B	2
1670-01-063-3716	Cargo, extraction, 22-ft (for C-130 and C-17)	1
1670-01-063-3715	Drogue, 15-ft (for C-17)	1
	Platform, airdrop, type V, 20-foot:	
1670-01-353-8425	Bracket assembly, coupling	(1)
1670-01-162-2372	Clevis assembly, type V	(40)
1670-01-353-8424	Extraction bracket assembly	(1)
1670-01-162-2381	Link, tandem, suspension link assembly	(2)
1670-01-247-2389	Link, suspension	(4)
5530-00-128-4981	Plywood, 3/4- by 48- by 96-in	9 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 deployment:	
1670-01-062-6304	9-ft (2-loop), type XXVI nylon webbing	1
	For riser extention:	
1670-01-062-6302	20-ft (2-loop), type XXVI nylon webbing	2
7510-00-266-5016	Tape, adhesive, 2-in	As required
1670-00-937-0271	Tie-down assembly, 15-ft	46
	Webbing:	
8305-00-268-2411	Cotton, 1/4-in, type I	As required
8305-00-082-5725	Nylon, tubular, 1/2-in	As required
8305-00-261-8585	Type VIII	As required

CHAPTER 3

Rigging One Military Utility Vehicle (M-Gator) and an A-22 Cargo Bag on a 12-Foot Platform for Low-Velocity Airdrop

DESCRIPTION OF LOAD

3-1. This load consists of one John Deere Diesel, which has been named the M-Gator and one A-22 cargo bag. The minimum the A-22 cargo bag can weigh is 800 pounds and the maximum weight is 1,000 pounds. It is rigged on a 12-foot platform. The load shown has a rigged weight of 4,630 pounds. It has an overall length of 162 inches, width of 108 inches, and height of 78 inches, with a center of balance of 68 inches. The load is rigged with one G-11 cargo parachute.

PREPARING PLATFORM

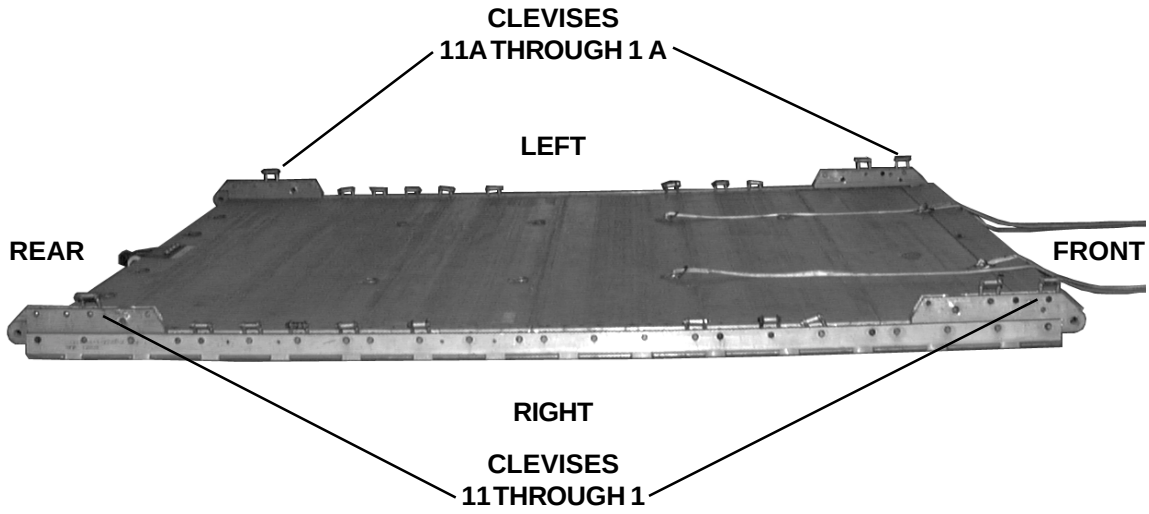
3-2. Inspect, or assemble and inspect, a 12-foot platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22. Prepare a 12-foot platform using 22 tiedown clevises as shown in Figure 3-1.

BUILDING M-GATOR BOX

3-3. Build the M-Gator box as outlined in chapter 1, paragraph 1-7.

PREPARING M-GATOR

3-4. Prepare the M-Gator according to chapter 1, paragraph 1-4 and chapter 2, paragraph 2-5.



Step:

1. Install a tandem multi-purpose link to the front of each platform side rail using holes 1,2, and 3.
2. Install a tandem multi-purpose link to the rear of each platform side rail using holes 22, 23, and 24.
3. Install a clevis on bushings 1 and 3 of each front tandem link.
4. Install a clevis on bushing 2 of each rear tandem link.
5. Starting at the front of each platform side rail, install clevises on the bushings bolted on holes 6, 7, 9, 15, 17, 18, 19, and 20.
6. Starting at the front of the platform number the clevises 1 through 11 on the right side and 1A through 11A on the left side.
7. Label the tie-down rings according to FM 10-500-2/TO 13C7-1-5.
8. Route a lashing through tie-down ring 1A and back through it's own D-ring, repeat for tie-down rings 1B, 3A, and 3B.

Figure 3-1. Platform Prepared

BUILDING HONEYCOMB STACKS

3-5. Refer to paragraph 1-3 for building honeycomb stack 1. Build honeycomb stack 2 as shown in Figure 3-2.

Stack Number	Pieces	Width (inches)	Length (inches)	Material	Instructions
2	2	51	36	Honeycomb	Glue and place one on top of the other.

Figure 3-2. Honeycomb Stack Prepared

POSITIONING HONEYCOMB STACK 1

3-6. Position honeycomb stack 1 centered left to right and 47 1/2 inches from the front edge of the platform and as shown in Figure 3-3.

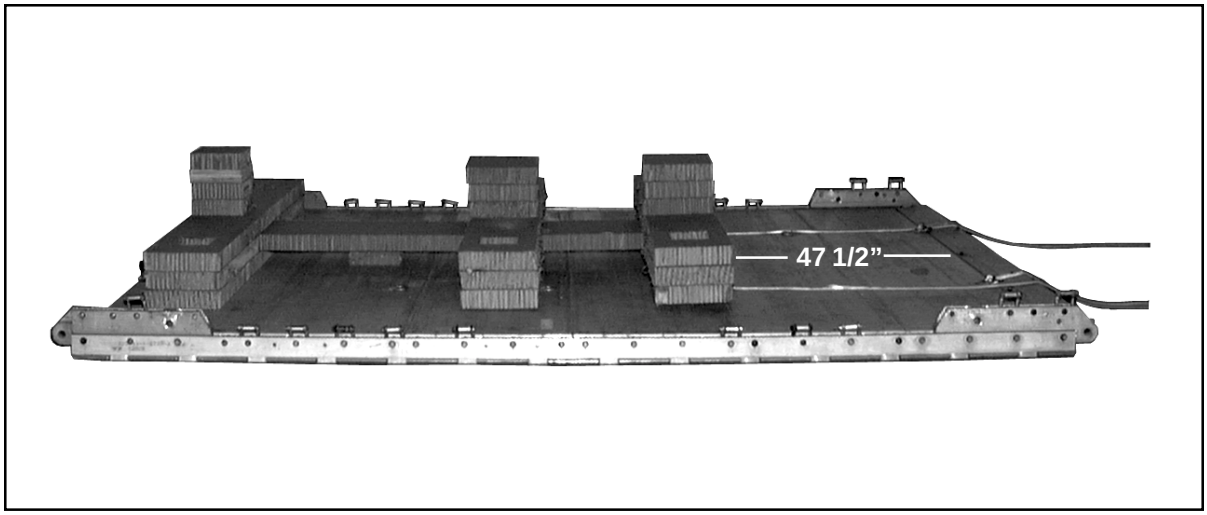


Figure 3-3. Honeycomb Stack 1 Positioned

POSITIONING LOAD

3-7. Use four 12-foot (2-loop), type XXVI, nylon suspension slings to lift and position the M-Gator. Attach large clevis assemblies to each sling. Using two front and two rear lifting points, attach one clevis to each lifting point. Position the M-Gator with the rear of the vehicle facing the front of the platform. Align the rear edge of the M-Gator frame with the front edge of the honeycomb stack and center. Each tire will be centered over a cutout in the honeycomb stack as shown in Figure 3-4.

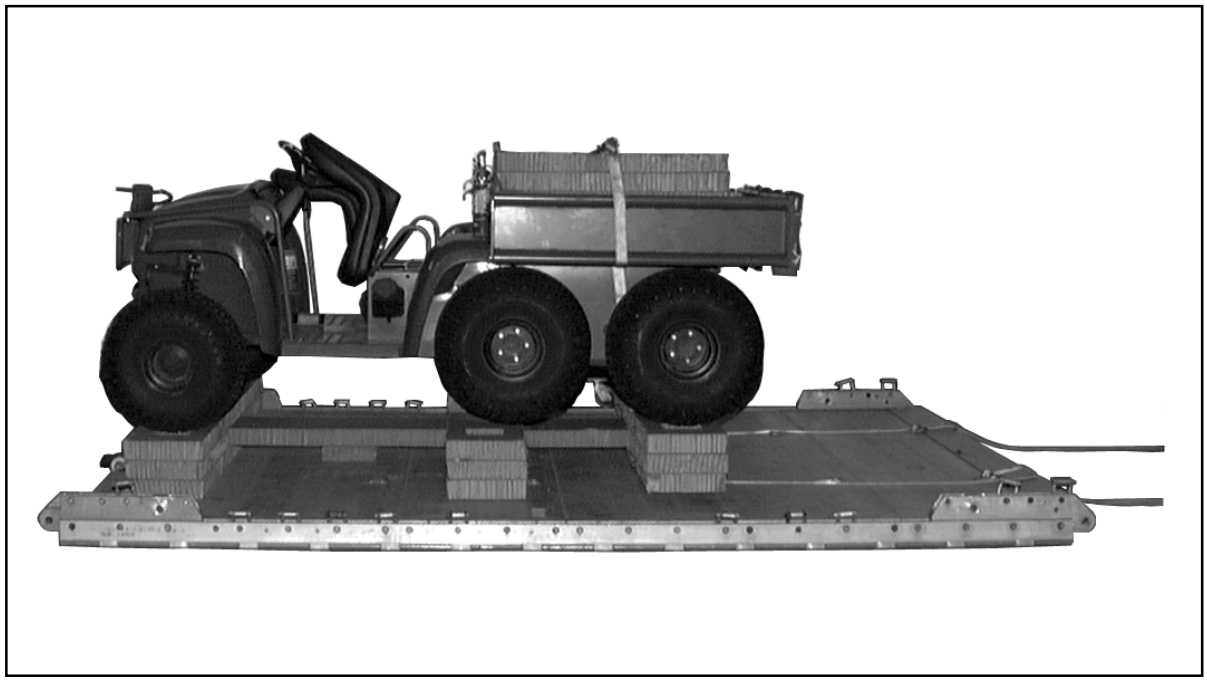


Figure 3-4. M-Gator Positioned

POSITIONING HONEYCOMB STACK 2

3-8. Temporarily place the pre-positioned lashings from deck-rings 3A and 3B over the tailgate. Position honeycomb stack 2 on the front edge of the platform, centered left to right ensure the 51 inch length is across the platform as shown in Figure 3-5.

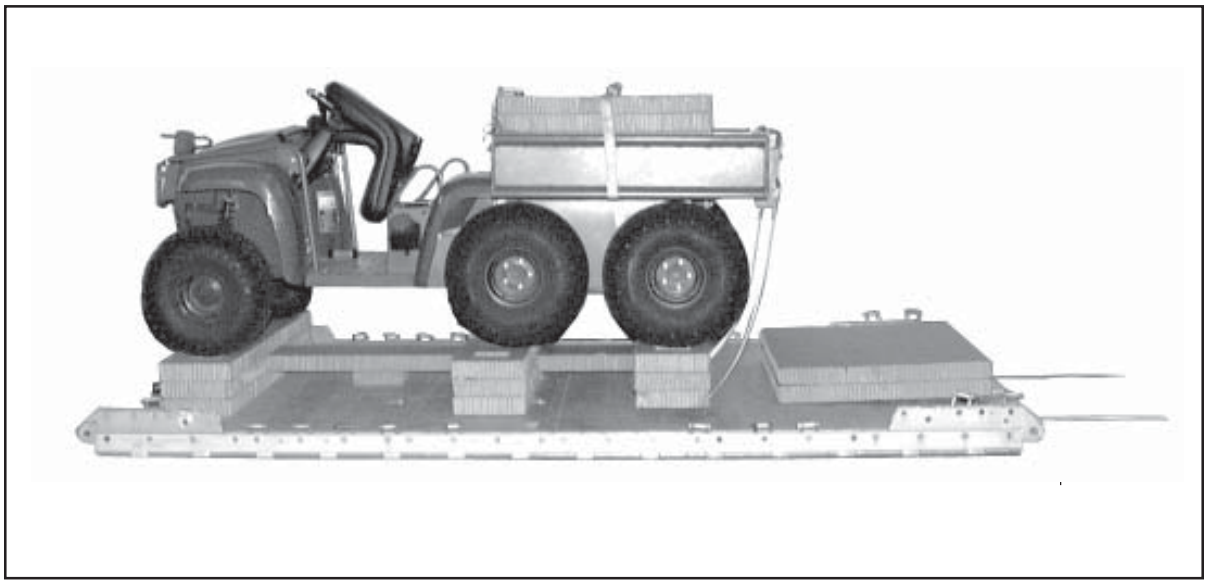


Figure 3-5. Honeycomb Stack 2 Positioned

RIGGING AND POSITIONING THE A-22 CARGO BAG

3-9. Rig the A-22 cargo bag as described in FM 10-500-3/TO13C7-1-11. The A-22 cargo bag weight limitations are 800 pounds minimum to 1,000 pounds maximum of unit specific equipment. Position the A-22 container on stack 2. Place the A-22 container against the tailgate of the M-Gator so there is no overhang as shown in Figure 3-6.

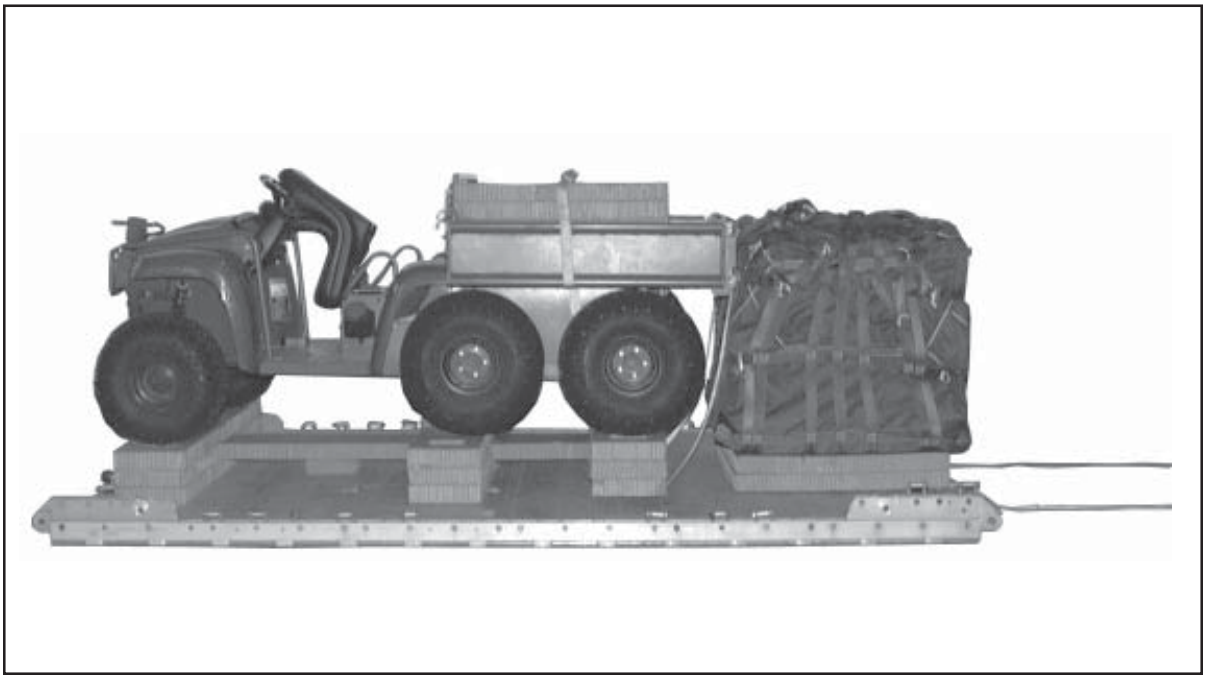
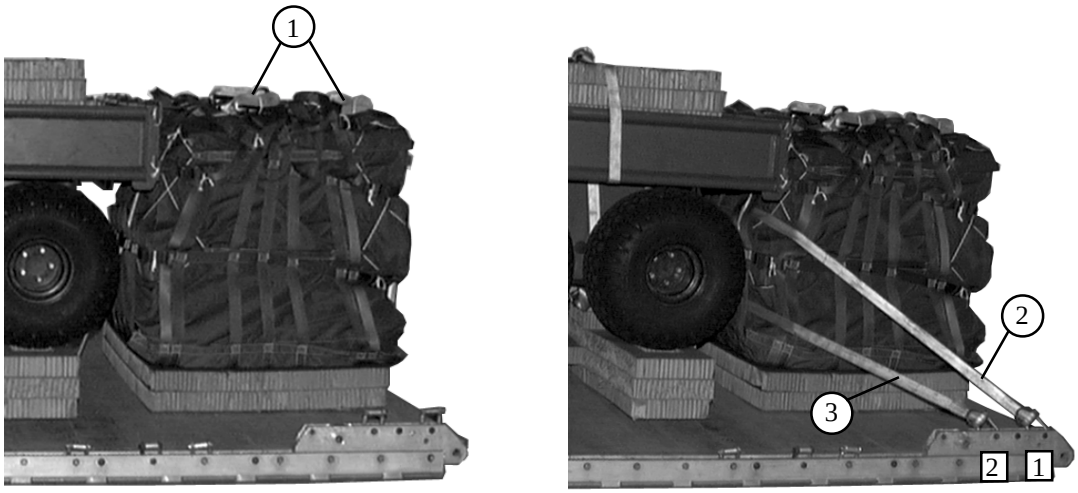


Figure 3-6. A-22 Cargo Bag Postitioned

LASHING THE A-22 CARGO BAG

3-10. Lash the A-22 cargo bag to the platform according to FM 10-500-2/TO 13C7-1-5 and as shown in Figure 3-7.

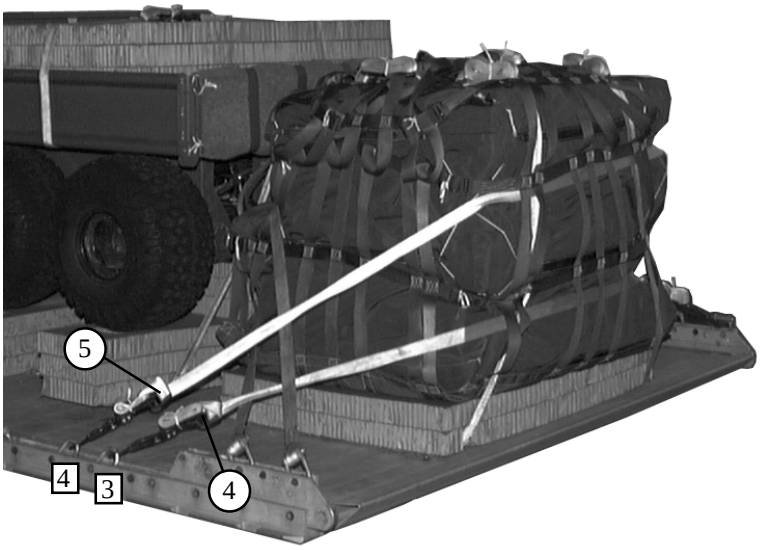


1. Route the pre-positioned lashings under the A-22 cargo bag webbing, tie-down ring 1A load binds to tie-down ring 3A, tie-down ring 1B load binds to tie-down ring 3B, and load bind on top of A-22 cargo bag.

2. Route a lashing through clevis 1 and back through it's own D-ring, route it through the rear middle webbing on the A-22 cargo bag and load bind to clevis 1A.

3. Route a lashing through clevis 2 and back through it's own D-ring, route it through the rear lower webbing on the A-22 cargo bag and load bind to clevis 2A.

Figure 3-7. A-22 Cargo Bag Lashed



(4) Route a lashing through clevis 3A and back through it's own D-ring. Route it through the front lower webbing on the A-22 cargo bag and load bind to clevis 3.

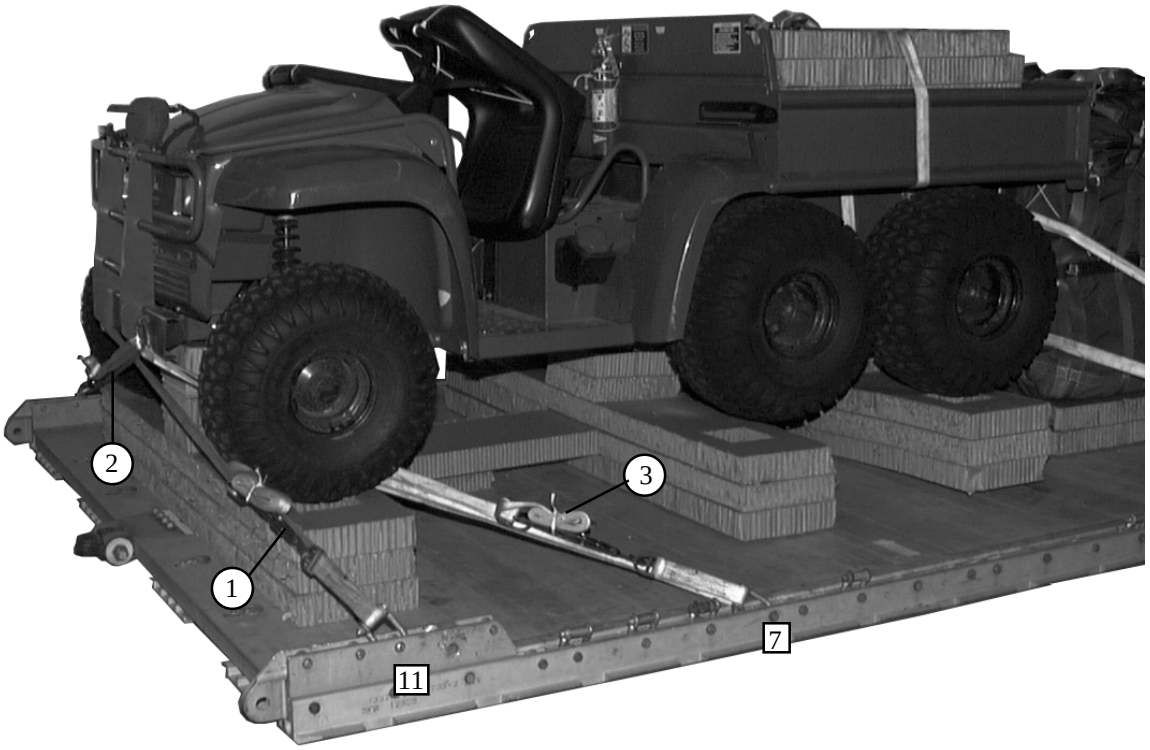
(5) Route a lashing through clevis 4A and back through it's own D-ring. Route it through the front middle webbing on the A-22 cargo bag and load bind to clevis 4.

Figure 3-7. A-22 Cargo Bag Lashed (Continued)

LASHING M-GATOR

3-11. Lash the M-Gator to the platform according to FM 10-500-2/TO 13C7-1-5 and as shown in Figures 3-8 through 3-10.

NOTE: Place all load binders near the platform in case adjustments to the lashings are needed.

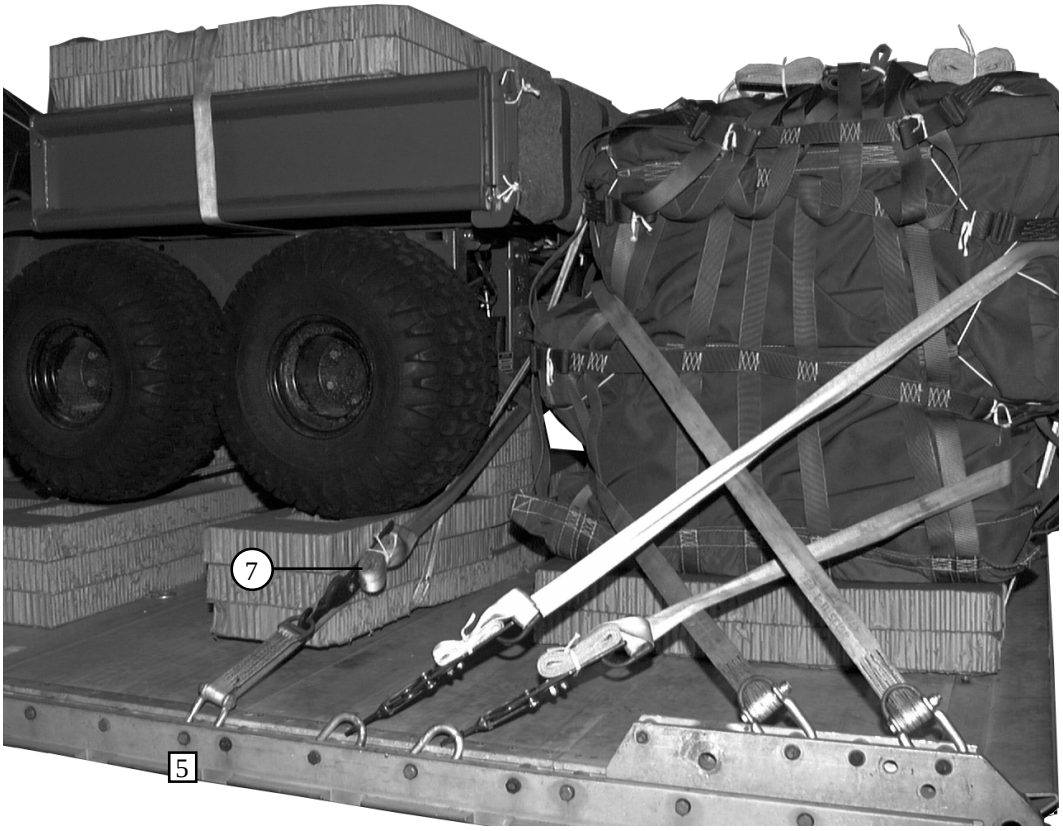


Lashing Number	**Tiedown** Clevis Number	**Instructions**
		Pass lashing through:
1	11	Front right tiedown point
2	11A	Front left tiedown point
3	7	Front left tiedown point
4	7A	Front right tiedown point

Figure 3-8. Lashings 1,2,3, and 4 Installed

Lashing Number	**Tiedown** Clevis Number	**Instructions**
		Pass lashing through:
5	Tiedown-ring 5A	Left rear tiedown point (do not tighten)
6	Tiedown-ring 5B	Right rear tiedown point (do not tighten)

Figure 3-9. Lashings 5 and 6 Installed

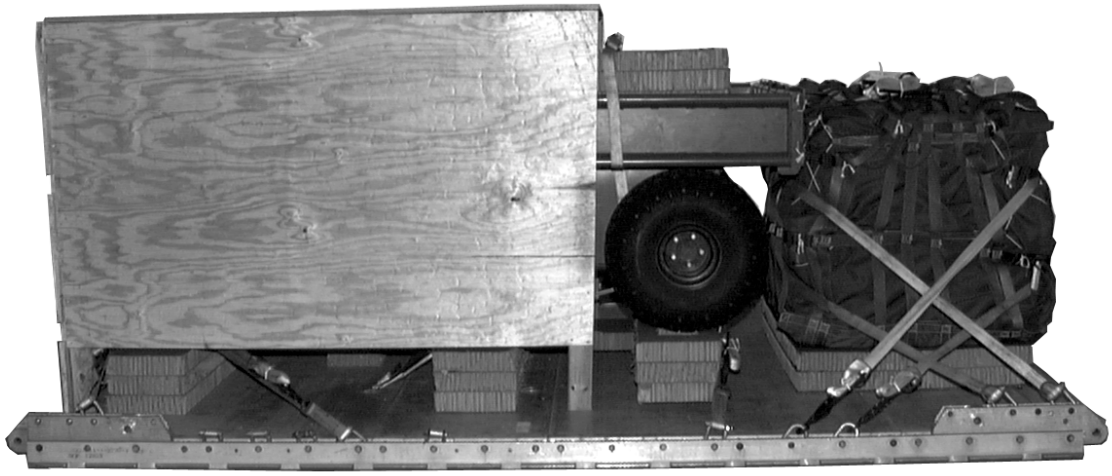


Lashing Number	**Tiedown** Clevis Number	**Instructions**
		Pass lashing through:
7	5	Rear right tiedown point (do not tighten)
8	5A	Rear left tiedown point (do not tighten)
		Tighten lashings 5 and 6 and then 7 and 8

Figure 3-10. Lashings 7 and 8 Installed

POSITIONING M-GATOR BOX

3-12. Position M-Gator box as shown in Figure 3-11.

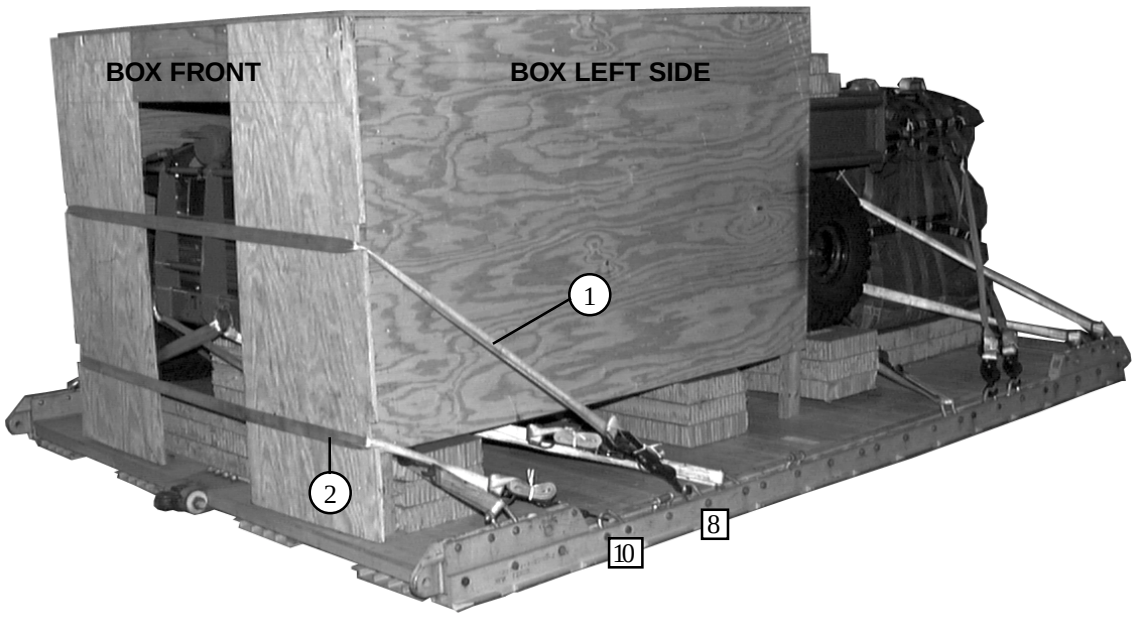


Position the box on the platform, aligning the front bottom edge of the box with the platform rear edge.

Figure 3-11. M-Gator Box Positioned

LASHING M-GATOR BOX

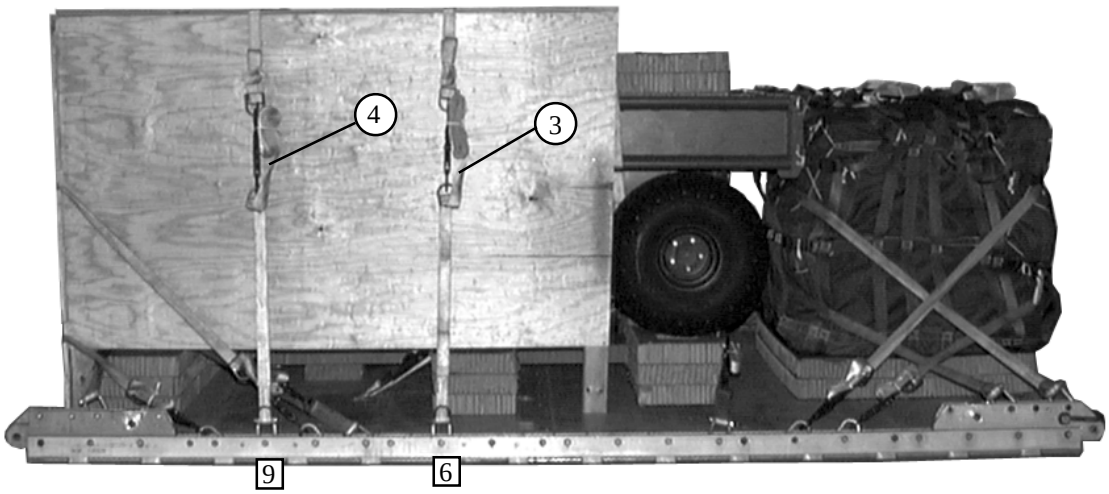
3-13. Lash the M-Gator box to the platform according to FM 10 500-2/TO 13C7-1-5 and as shown in Figure 3-12.



Route a lashing through clevis 8A and back through it's own D-ring, and pull the strap taut. Repeat the same steps for clevis 10A.

Lashing Number	**Tiedown** Clevis Number	**Instructions**
		Pass lashing through:
1	8A and 8	Top rear cutouts of box
2	10A and 10	Bottom rear cutouts of box

Figure 3-12. M-Gator Box Lashed



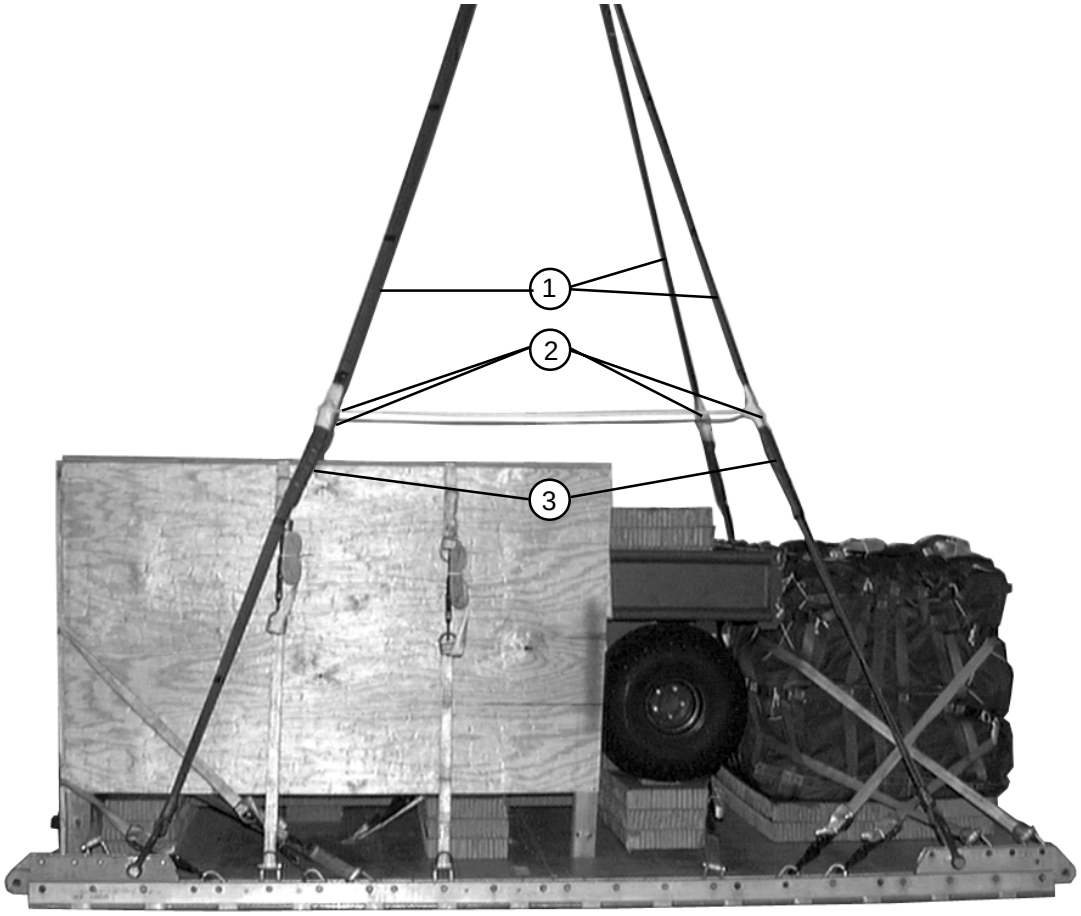
Route a lashing through clevis 6 and back through it's own D-rig, and pull strap taut. Repeat the same steps for clevises 6A, 9, and 9A.

Lashing Number	**Tiedown** Clevis Number	**Instructions**
		Pass lashing:
3	6 and 6A	Over top of box and bind on left side of box.
4	9 and 9A	Over top of box and bind on left side of box.

Figure 3-12. M-Gator Box Lashed (Continued)

INSTALLING SUSPENSION SLINGS

3-14. Install four 16-foot (2 loop), type XXVI nylon slings as suspension slings according to FM 10-500-2/TO 13C7-1-5 and as shown in Figure 3-13.



(1) Attach a 16-foot (2-loop), type XXVI nylon sling to each of the four suspension links using a large clevis.

(2) Raise the slings above the load and install the deadman's tie as outlined in FM 10-500-2/TO 13C7-1-5.

(3) Felt and tape each sling where they may make contact with the box or load.

Figure 3-13. Suspension Slings Installed

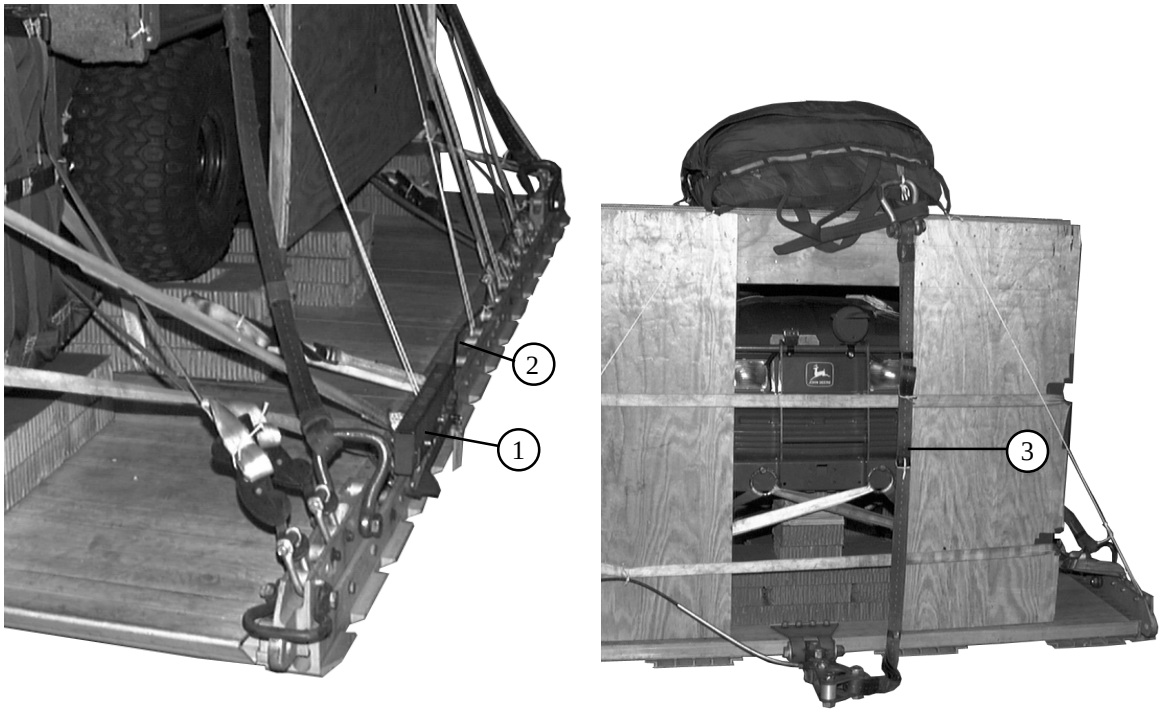
STOWING CARGO PARACHUTE

3-15. Prepare, stow, and restrain one G-11 cargo parachute on the front edge of the M-Gator box according to FM 10-500-2/TO 13C7-1-5 and as shown in Figure 3-14.

Figure 3-14. Cargo Parachute Stowed

INSTALLING EXTRACTION SYSTEM

3-16. Install the Extraction Force Transfer Coupling (EFTC) according to FM 10-500-2/TO13C7-1-5 and as shown in Figure 3-15.



1. Install EFTC actuator mounting bracket using front mounting holes.
2. Install a 12-foot cable.
3. Attach a 9-foot (2-loop), type XXVI nylon sling for the deployment line.

Figure 3-15. Extraction System Installed

INSTALLING PARACHUTE RELEASE

3-17. Prepare and install an M-1 cargo parachute release system according to FM 10-500-2/TO 13C7-1-5, and as shown in Figure 3-16.

1. Place the M-1 release on the M-Gator box, and safety it to a convenient place on the load.
2. Fold and secure any slack in the suspension slings.

Figure 3-16. Parachute Release System Installed

POSITIONING EXTRACTION PARACHUTE

3-18. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 10-500-2/TO 13C7-1-5. Place the extraction parachute and extraction line on the load for installation inside aircraft.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

3-19. Select and install provisions for emergency restraints according to the emergency aft restraints requirements in FM 10-500-2/TO 13C7-1-5.

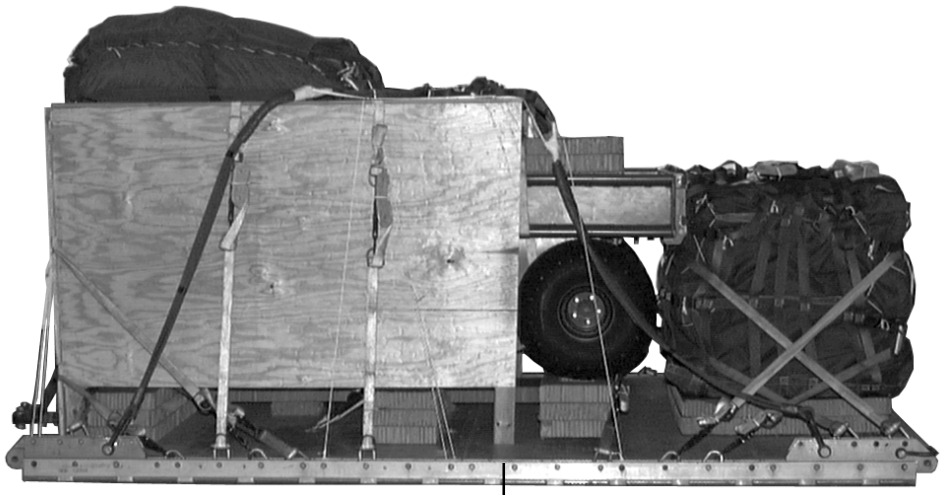
MARKING RIGGED LOAD

3-20. Mark the rigged load according to FM 10-500-2/TO 13C7-1-5 and as shown in Figure 3-17. Complete the Shipper's Declaration for Dangerous Goods. If the load varies from the one shown, the weight, height, tip-off curve, CB, and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

3-21. The equipment required to rig this load is listed in Table 3-1.

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



RIGGED LOAD

Weight	4,630 pounds
Height	78 inches
Width	108 inches
Overall Length	162 inches
Overhang: Front	0 inches
Rear (EFTC)	18 inches
Center of Balance (from front edge of platform)	68 inches

Figure 3-17. M-Gator and CDS Rigged on a 12-Foot Platform For Low- Velocity Airdrop

Table 3-1. Equipment required for rigging M-Gator and CDS on a 12-foot platform 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	1
1670-00-587-3421	Bag, cargo, aerial delivery, A-22	1
4030-00-090-5354	Clevis, suspension, 1-in (large)	5
4020-00-240-2146	Cord, nylon, type III, 550-lb	As required
1670-00-434-5783	Coupling, airdrop, extraction force transfer with cable, 12-ft	1
	Cover:	
1670-00-360-0328	Clevis, large	1
1670-01-183-2678	Leaf, extraction line (line bag)	2
	Line, drogue (for C-17)	
1670-01-064-4452	60-ft (1-loop), type XXVI	1
	Line, extraction:	
1670-01-064-4452	For C-130: 60-ft (1-loop), type XXVI	1
1670-01-107-7652	For C-141: 160-ft (1-loop), type XXVI	1
1670-01-107-7652	For C-5: 160-ft (1-loop), type XXVI	1
1670-01-107-7652	For C-17: 160-ft (1-loop), type XXVI	1
	Link assembly:	
	Two-point, 3 3/4-in	1
5306-00-435-8994	Bolt, 1-in diam, 4-in long	(2)
5310-00-232-5165	Nut, 1-in, hexagonal	(2)
1670-00-003-1954	Plate, side, 3 3/4-in	(2)
5365-00-007-3414	Spacer, large	(2)
	Two-point, 3 3/4-in (for C-17)	1
5306-00-435-8994	Bolt, 1-in diam, 4-in long	(2)
5310-00-232-5165	Nut, 1-in, hexagonal	(2)
1670-00-003-1954	Plate, side, 3 3/4-in	(2)
5365-00-007-3414	Spacer, large	(2)
N/A	Link, towed mechanized release (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	9 sheets

Table 3-1. Equipment required for rigging M-Gator and CDS on a 12-foot platform for low-velocity airdrop (continued)

National Stock Number	Item	Quantity
	Parachute:	
1670-01-016-7841	Cargo, G-11B	1
1670-01-063-3715	Cargo, extraction, 15ft	1
1670-01-063-3715	Drogue, 15ft (for C-17)	1
	Platform, airdrop, type V, 12-foot:	
1670-01-353-8425	Bracket assembly, coupling	(1)
1670-01-162-2372	Clevis assembly, type V	(22)
1670-01-353-8424	Extraction bracket assembly	(1)
1670-01-162-2381	Link, tandem, suspension link assembly	(4)
5530-00-128-4981	Plywood, 3/4- by 48- by 96-in	6 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 deployment:	
1670-01-062-6304	9-ft (2-loop), type XXVI nylon webbing	1
	For riser extention:	
1670-01-062-6301	3-ft (2-loop), type XXVI nylon webbing	1
7510-00-266-5016	Tape, adhesive, 2-in	As required
1670-00-937-0271	Tie-down assembly, 15-ft	24
	Webbing:	
8305-00-268-2411	Cotton, 1/4-in, type I	As required
8305-00-082-5725	Nylon, tubular, 1/2-in	As required
8305-00-261-8585	Type VIII	As required

CHAPTER 4

Rigging One Military Utility Vehicle (M-Gator) With The First Response Expeditionary (FRE) Fire Vehicle and an A-22 Cargo Bag on a 12-Foot Platform for Low-Velocity Airdrop

DESCRIPTION OF LOAD

4-1. This load consists of one John Deere Diesel, which has been named the Military Utility Vehicle (M-Gator) w/ FRE (Figure 4-1) and one A-22 cargo bag. The minimum the A-22 cargo bag can weigh is 800 pounds and the maximum weight is 1,200 pounds. It is rigged on a 12-foot platform. The load shown has a rigged weight of 4,980 pounds. It has an overall length of 168 inches, width of 108 inches, and height of 94 inches, with a center of balance of 70 inches. The load is rigged with one G-11 cargo parachute.

PREPARING PLATFORM

4-2. Inspect, or assemble and inspect, a 12-foot platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22. Prepare a 12-foot platform using 22 tiedown clevises as shown in Figure 4-2.

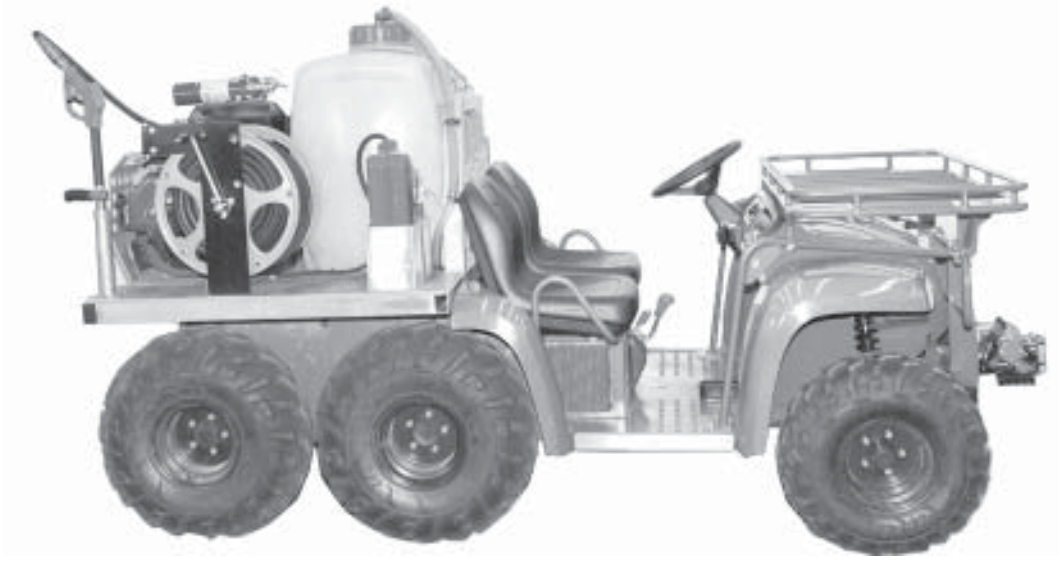
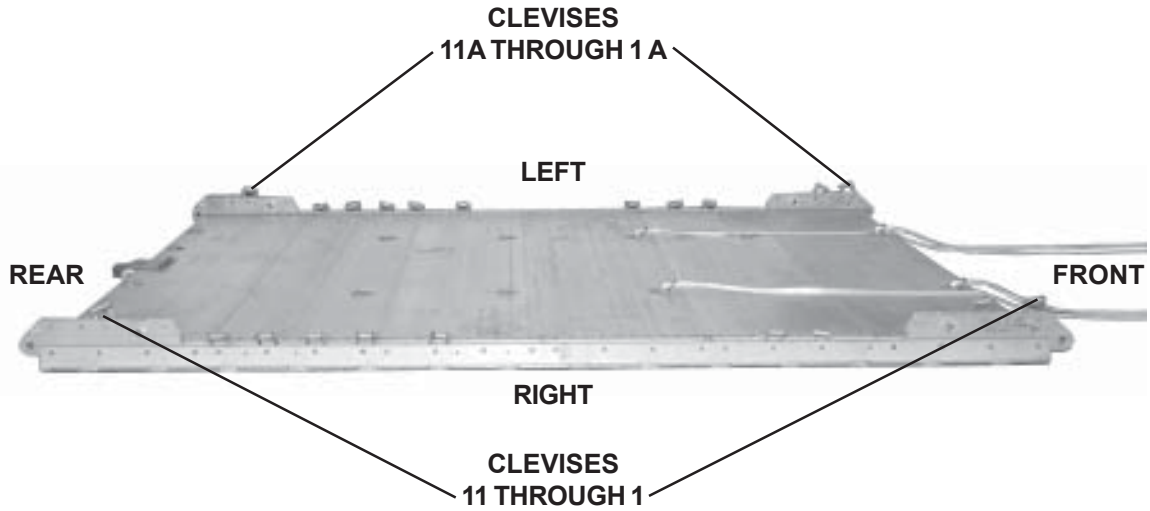


Figure 4-1. Military Utility Vehicle (M-Gator) W/ FRE



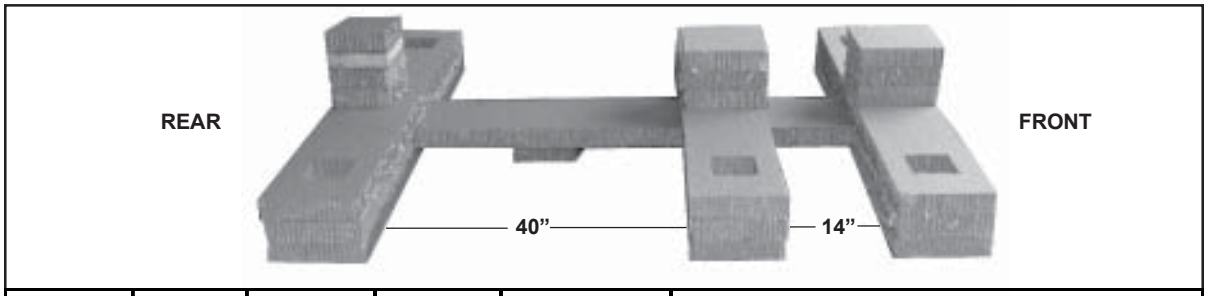
Step:

1. Install a tandem multi-purpose link to the front of each platform side rail using holes 1,2, and 3.
2. Install a tandem multi-purpose link to the rear of each platform side rail using holes 22, 23, and 24.
3. Install a clevis on bushings 1 and 3 of each front tandem link.
4. Install a clevis on bushing 2 of each rear tandem link.
5. Starting at the front of each platform side rail, install clevises on the bushings bolted on holes 6, 7, 9, 15, 17, 18, 19, and 20.
6. Starting at the front of the platform, number the clevises 1 through 11 on the right side and 1A through 11A on the left side.
7. Label the tie-down rings according to FM 4-20.102/NAVSEA-SS400-AB-MMO-010/TO 13C7-1-5 (FM 10-500-2).
8. Route a lashing through tie-down ring 1A and back through it's own D-ring, repeat for tie-down rings 1B, 3A, and 3B.

Figure 4-2. Platform Prepared

BUILDING HONEYCOMB STACKS

4.3. Prepare the honeycomb stack for the M-Gator as shown in Figure 4-3. Position the honeycomb stack as shown in Figure 4-4.



Stack Number	Pieces	Width (inches)	Length (inches)	Material	Instructions
1	3	72	12	Honeycomb	Position on floor with the second piece 14 inches from the first and the third piece 40 inches from the second. Cut a 6-inch by 6-inch hole in each piece of honeycomb 6 inches from the sides and centered.
	1	9	9	Honeycomb	Centered and 16 inches from the rear of the second piece of honeycomb.
	1	12	90	Honeycomb	Center and glue across first four pieces of honeycomb.
	6	30	12	Honeycomb	Cut 6-inch by 6-inch holes, 6 inches from one side, in the center of each piece. Line holes up on base and glue in place.
	3	72	12	Honeycomb	Cut 6-inch by 6-inch holes on each side of honeycomb, 6 inches from the side and centered. Line holes up on base and glue in place.
	6	12	14	Honeycomb	Center and glue three pieces on the first and second sections. Position the 12 inch edges facing to the rear.
	2	9	9	Honeycomb	Center and glue on the third sections rear edge.
	3	9	9	3/4-inch Plywood	Glue on the 9-inch by 9-inch honeycomb stack.
	1	9	9	Honeycomb	Glue on the 9-inch by 9-inch honeycomb and plywood stack.

Figure 4-3. Honeycomb Stack 1Prepared

Stack Number	Pieces	Width (inches)	Length (inches)	Material	Instructions
2	2	51	36	Honeycomb	Glue and place one on top of the other.

Figure 4-4. Honeycomb Stack 2 Prepared

POSITIONING HONEYCOMB STACK 1

4-4. Position honeycomb stack 1 centered left to right and 47 1/2 inches from the front edge of the platform and as shown in Figure 4-5.

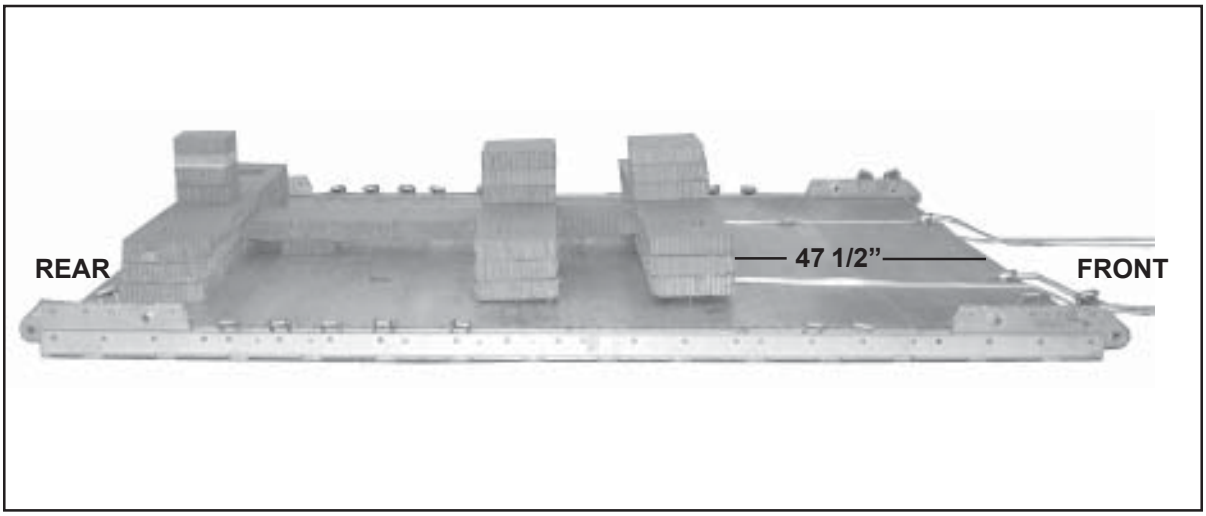
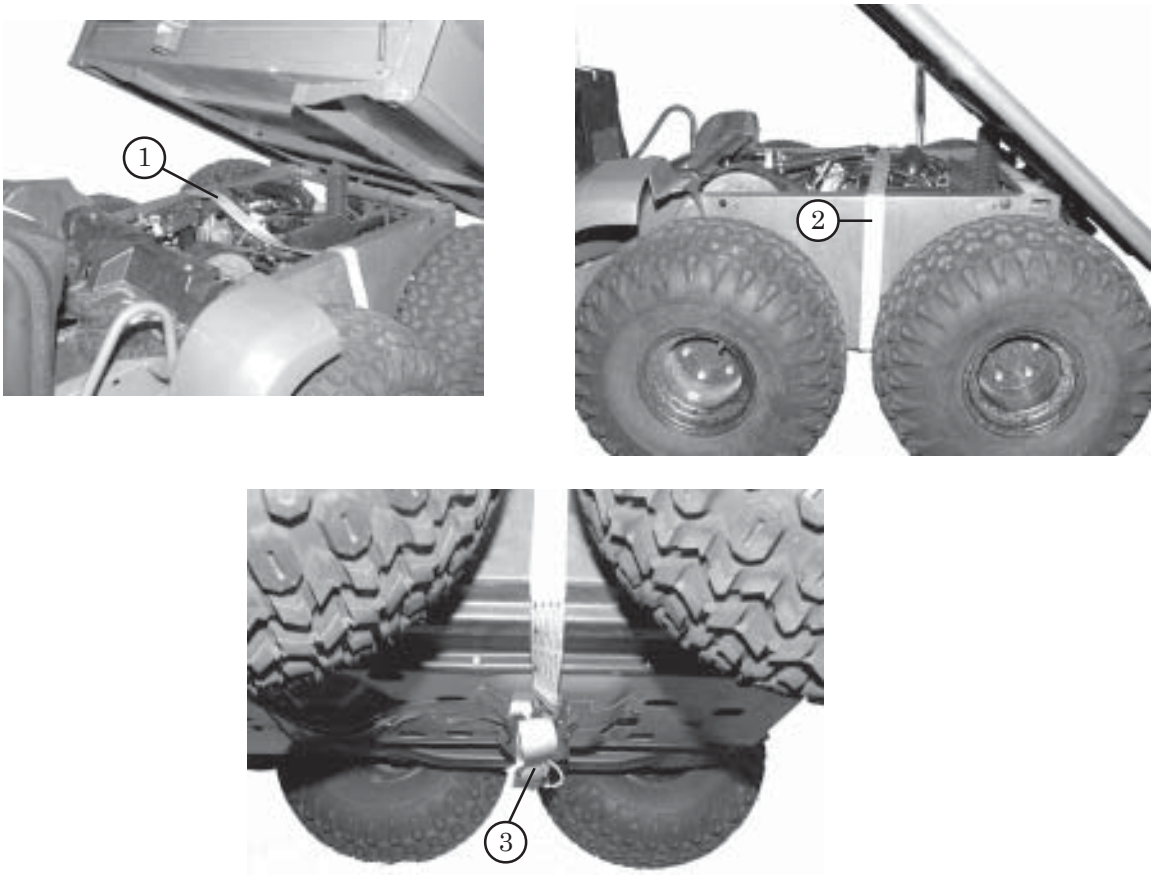


Figure 4-5. Honeycomb Stack 1 Positioned

PREPARING M-GATOR WITH FRE

4-5. Remove the following items from the vehicle: 1KW Generator, Cargo Rack, Gas Can, 5-Gallon Can Foam Concentrate, Foam Can Connector, Winch, Winch Control, Extension Cord, Water Hose, Sump Pump, and Fire Fighting Pistol. Set items aside to be placed inside A-22 container. Prepare the M-Gator with FRE according to Figure 4-6.

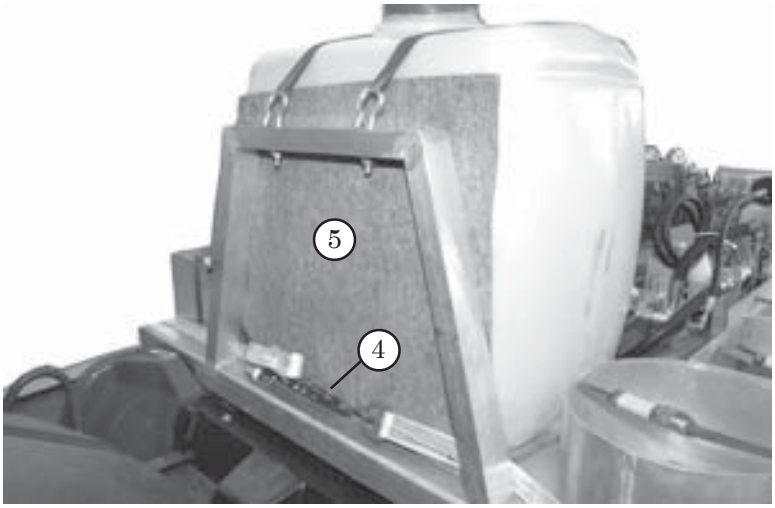


(1) Raise the FRE platform and position a lashing across the frame, centered between the rear tires.

(2) Route lashing around the frame and the engine.

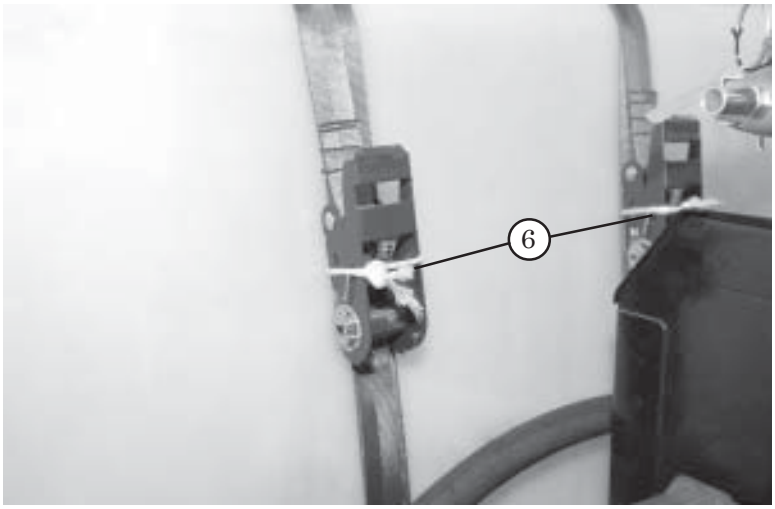
(3) Secure a piece of 2-inch by 4-inch by 8 1/2-inch lumber, laterally, under the engine. Lumber may be temporarily secured using cloth backed tape. Position the load binder against the lumber.

Figure 4-6. M-Gator W/ FRE Prepared



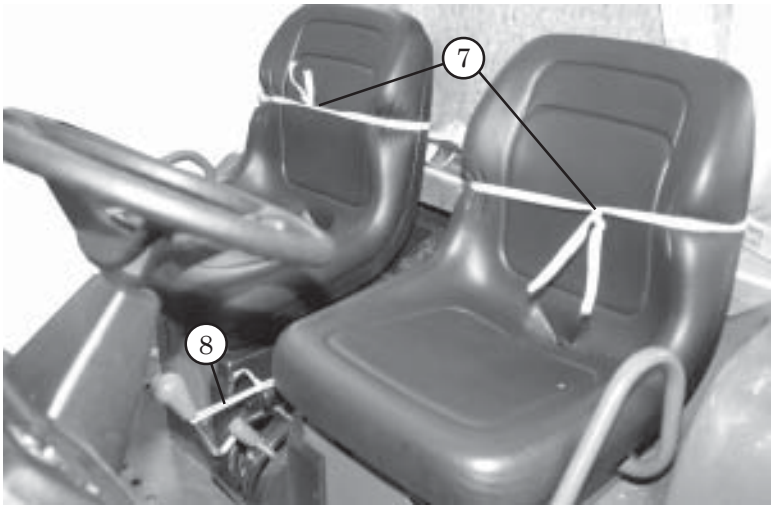
(4) Lower the FRE platform. Route a lashing around the frame of the M-Gator and over the FRE platform just behind the A-frame. Secure the lashing with a D-ring and load binder behind the A-frame.

(5) Loosen the water reservoir retaining straps. Place a 28- by 42-inch piece of felt padding under and forward against the A-frame of the FRE platform.



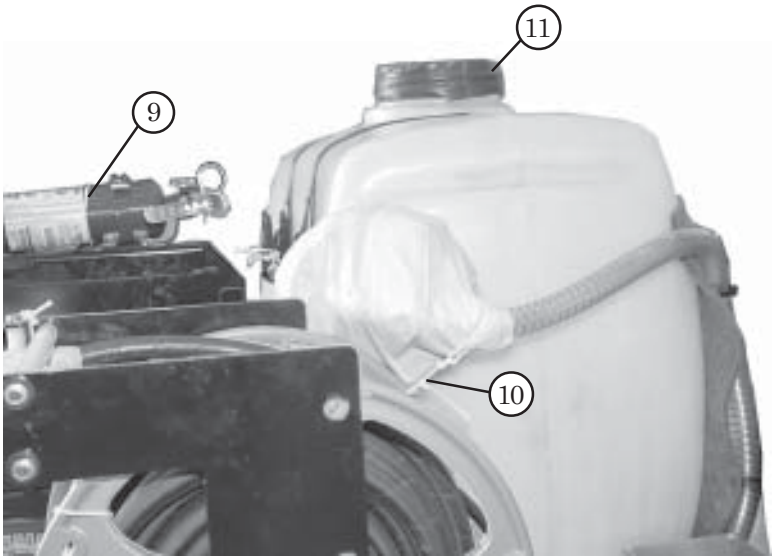
(6) Tighten the water reservoir retaining straps and secure ratchet handles with type III nylon cord.

Figure 4-6. M-Gator W/ FRE Prepared (Continued)



(7) Secure the seats in position with 1/2-inch tubular nylon.

(8) Secure the gear stick to the emergency brake lever with type III nylon cord.

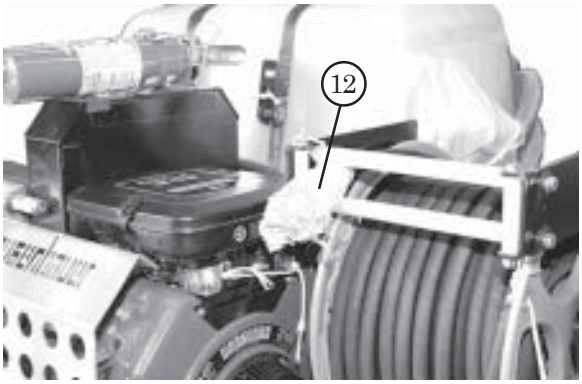


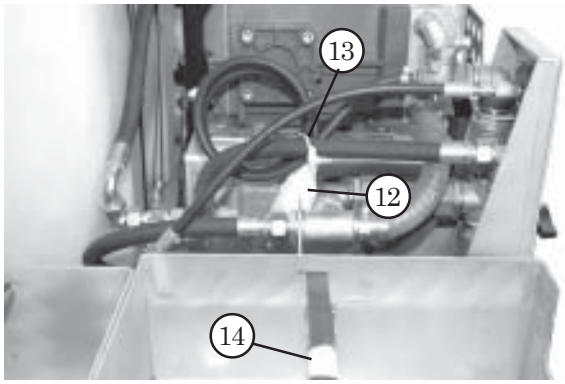
(9) Secure the fire extinguisher to the mounting bracket with type III nylon cord.

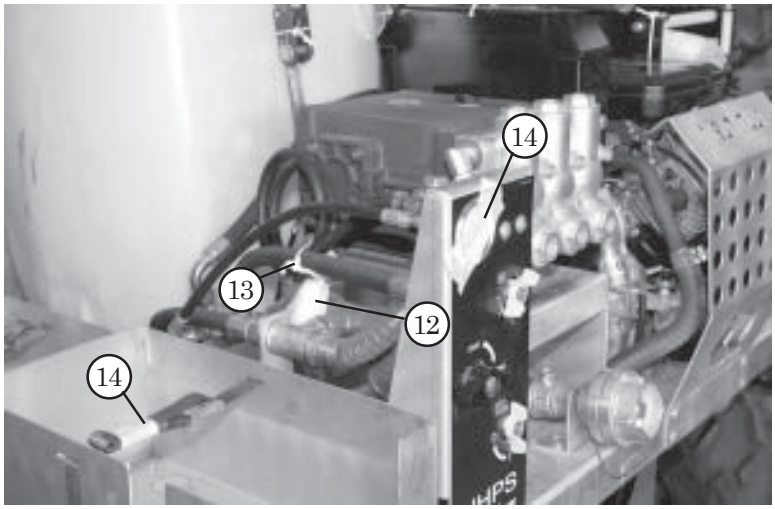
(10) Remove the water reservoir top and wrap with cellulose wadding and tape. Secure reservoir top to pressure hose reel with type III nylon cord.

(11) Tape the top of the water reservoir.

Figure 4-6. M-Gator W/ FRE Prepared (Continued)







(12) Wrap hose fittings with cellulose wadding and tape.

(13) Secure all loose hoses with type III nylon cord.

(14) Secure and tape all retaining straps and gauge lenses.

Figure 4-6. M-Gator W/ FRE Prepared (Continued)

BUILDING M-GATOR W/FRE BOX

4-6. Build the M-Gator box using 8d common nails as shown in Figure 4-7.

NOTE: Use wood glue and 1 1/2 inch long, #4 wood screws to sturdy box for multiple airdrop use. Drawing is not to scale.

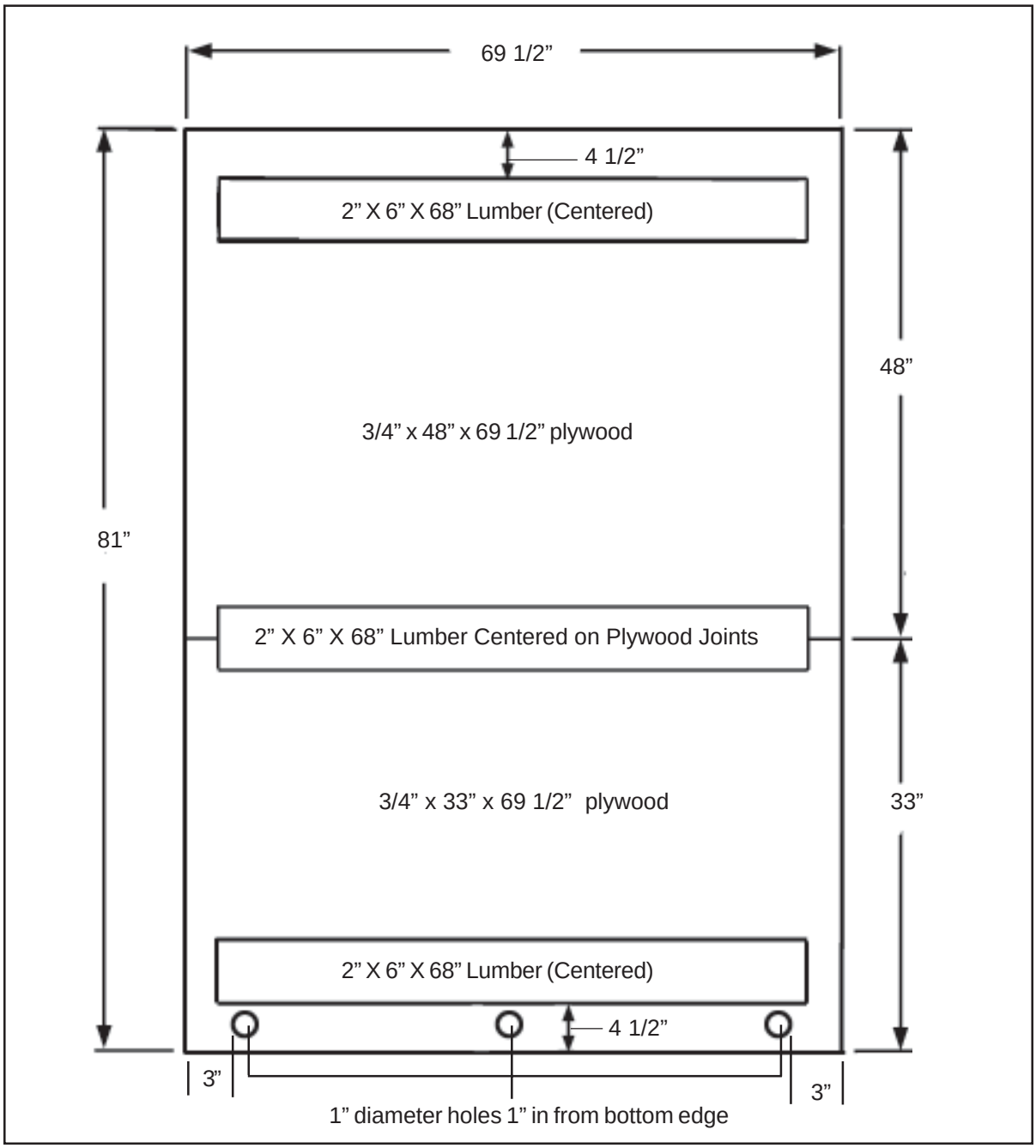


Figure 4-7. M-Gator W/FRE Box Built (Top Board)

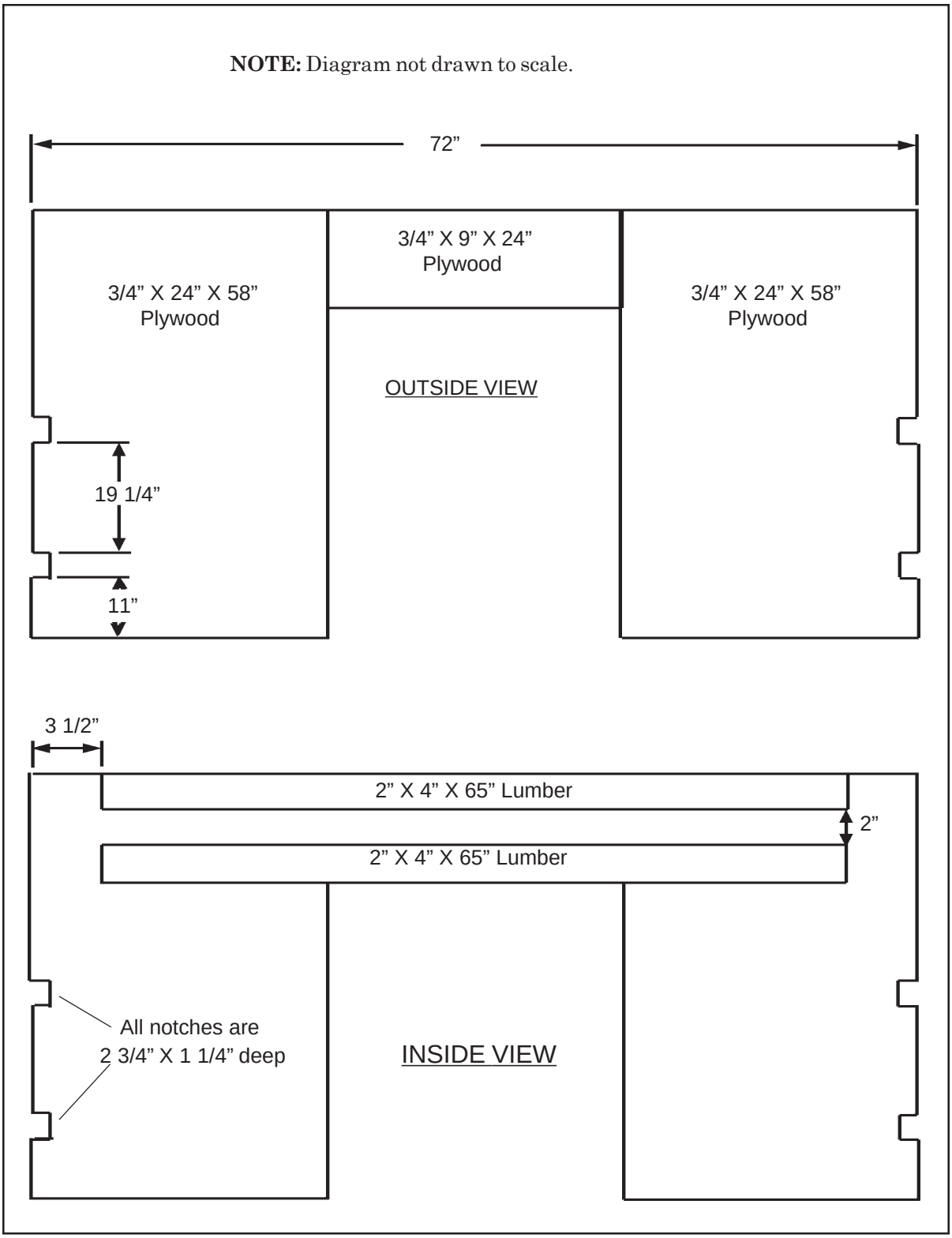


Figure 4-7. M-Gator W/FRE Box Built (Front Board) (Continued)

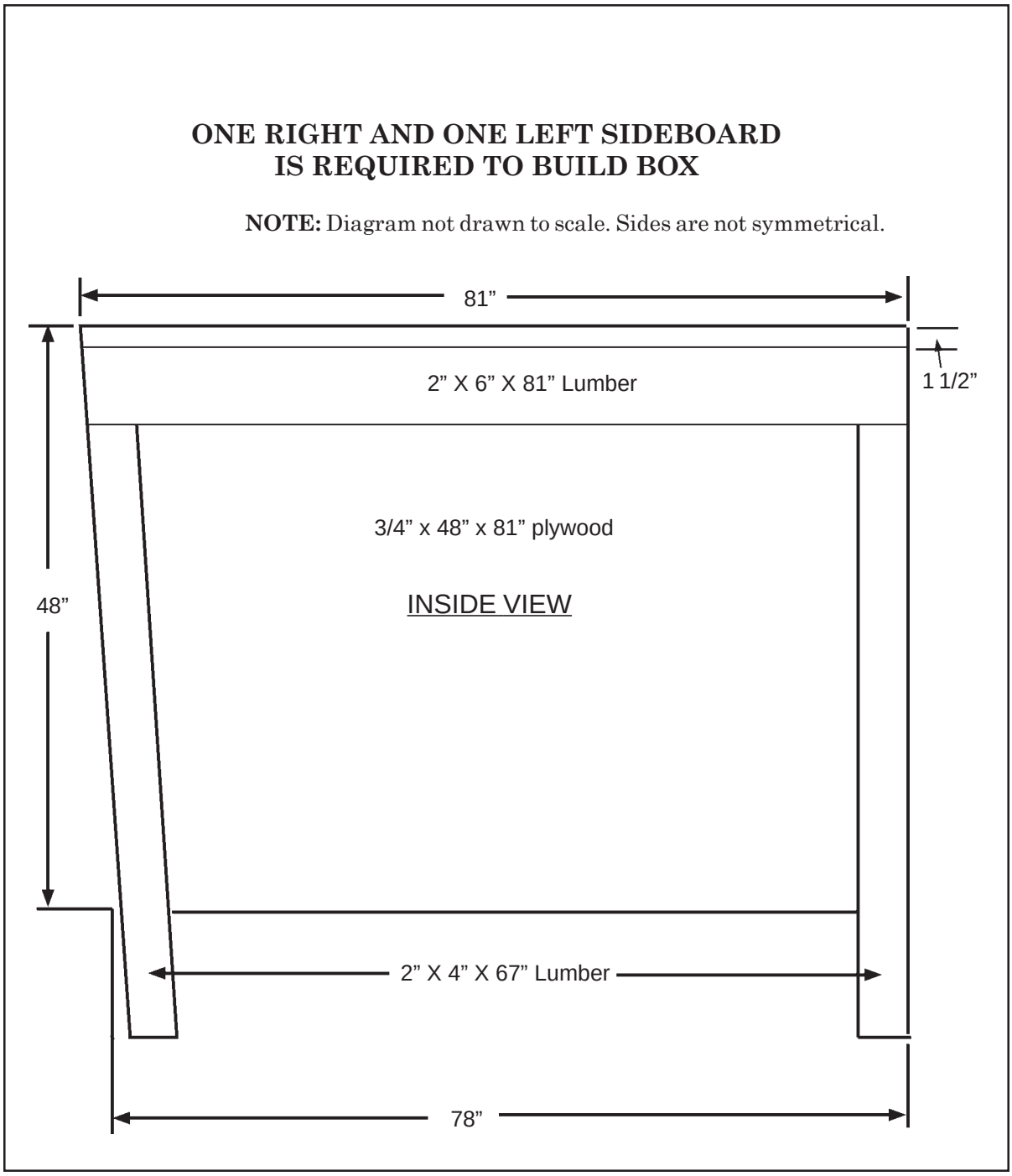
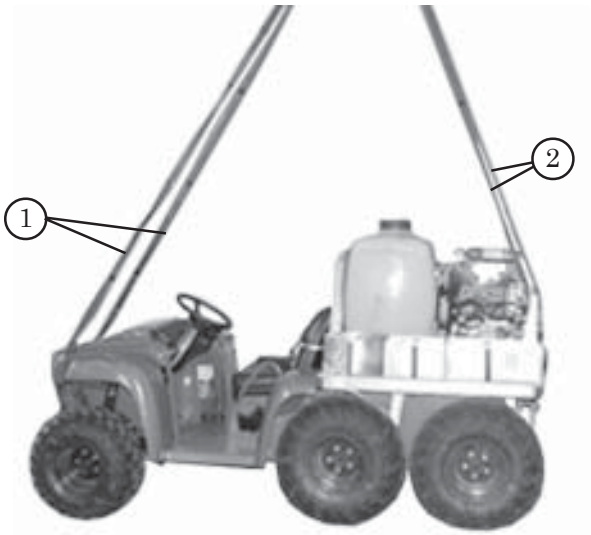


Figure 4-7. M-Gator W/FRE Box Built (Side Boards) (Continued)

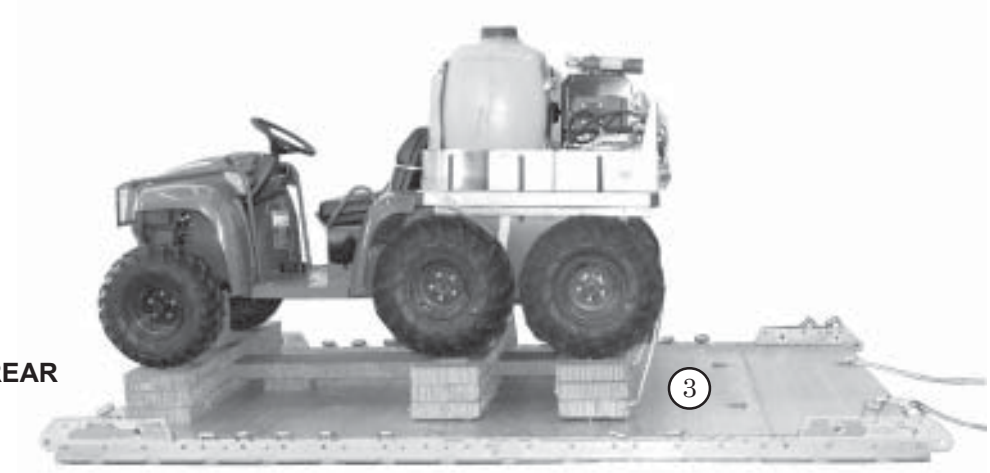
POSITIONING LOAD

4-7. Using two 12-foot (2-loop), type XXVI, nylon suspension slings and two 11-foot (2-loop), type XXVI, nylon suspension slings for lifting slings position the M-Gator on the platform as shown in Figure 4-8.



(1) Attach a large clevis to one end of each lifting sling. Attach a 12-foot lifting sling to the right front lifting point of the M-Gator using the large clevis. Repeat for the left front lifting point.

(2) Attach an 11-foot lifting sling to the right rear lifting point of the M-Gator using the large clevis. Repeat for the left rear lifting point.



(3) Position the M-Gator with the rear of the vehicle facing the front of the platform. Align the rear edge of the M-Gator frame with the front edge of the honeycomb stack and center. Each tire will be centered over a cutout in the honeycomb stack. Remove lifting slings.

Figure 4-8. M-Gator W/FRE Positioned

POSITIONING HONEYCOMB STACK 2

4-8. Temporarily place the pre-positioned lashings from deck-rings 3A and 3B over the bed. Position honeycomb stack 2 on the front edge of the platform, centered left to right. Ensure the 51 inch length is across the platform as shown in Figure 4-9.

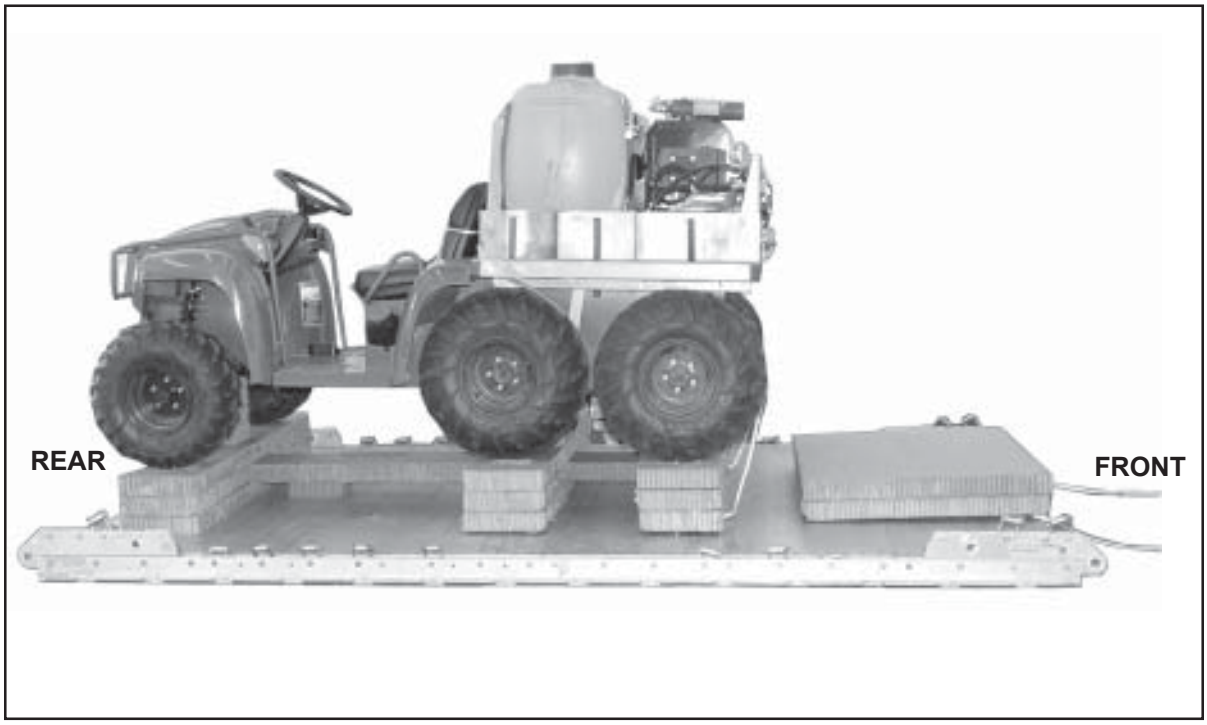


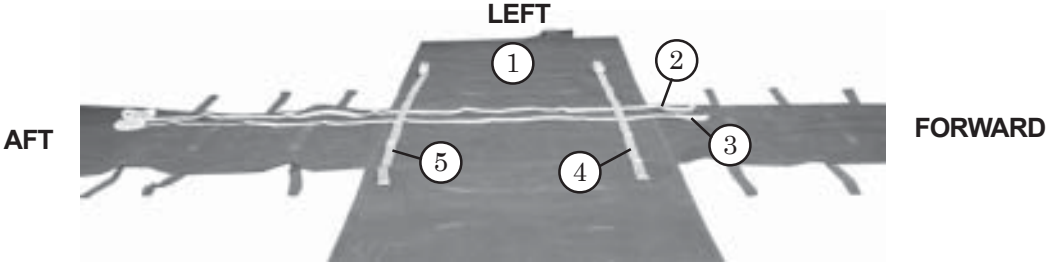
Figure 4-9. Honeycomb Stack 2 Positioned

RIGGING AND POSITIONING THE A-22 CARGO BAG

4-9. Rig the A-22 cargo bag as described in FM 10-500-3/TO 13C7-1-11 and as shown in Figure 4-10. The A-22 cargo bag weight limitations for this load are 800 pounds minimum and a maximum weight of 1,200 pounds of unit specific equipment. Cellulose wadding and honeycomb will be used to fill the void spaces prior to closing the A-22 bag. Position the A-22 cargo bag as shown in Figure 4-11.

Note: Items to be rigged in the A-22 bag are as follows:

1	Cargo rack
14	Five-gallon water cans
2	Boxes of small arms ammunition
1	Five-gallon can of foam
1	Gasoline can
1	1KW generator
1	Winch
1	Winch control
1	Sump pump
1	Foam separator connector
1	Fire fighter pistol
1	Water hose
1	Electrical extension cord



(1) Lay out the A-22 cargo bag sling facing down and center the cargo bag cover on the sling assembly.

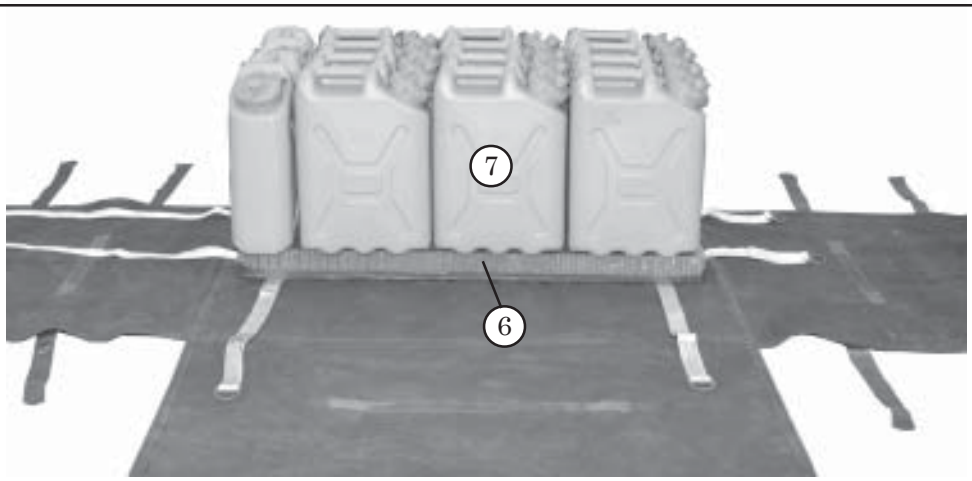
(2) Pre-position four 15-foot lashings. Lashing 1 is positioned 3-inches from the left side running from forward to aft.

(3) Position a second lashing 12-inches to the right of lashing 1.

(4) Position a third lashing 6-inches from the forward edge running from right to left.

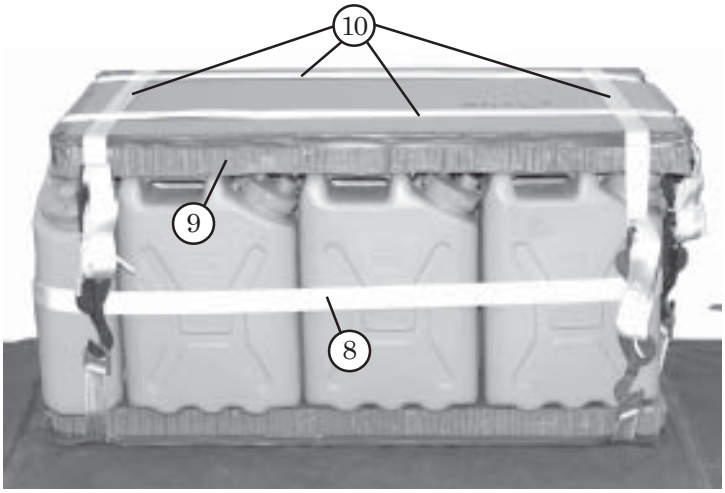
(5) Position the fourth lashing 3-inches from the aft edge running from right to left.

Figure 4-10. A-22 Cargo Bag Rigged



(6) Center a 27- by 48-inch piece of honeycomb on the pre-positioned lashings. Tape the bottom edges of the honeycomb.

(7) Position fourteen 5-gallon water containers on top of the honeycomb as shown.

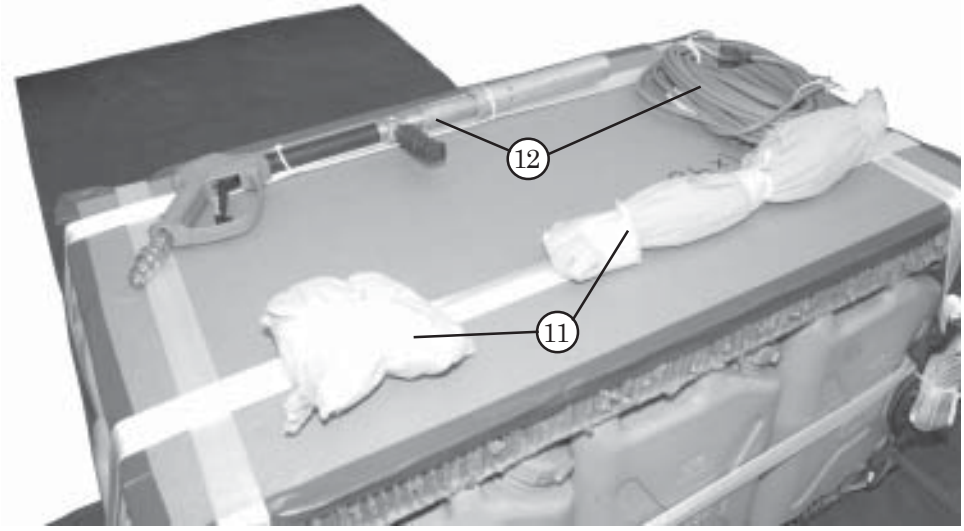


(8) Secure water cans by running a lashing around the water containers and secure with a D-ring and load binder.

(9) Place a 27- by 48-inch piece of honeycomb on top of the water containers and tape the top edges.

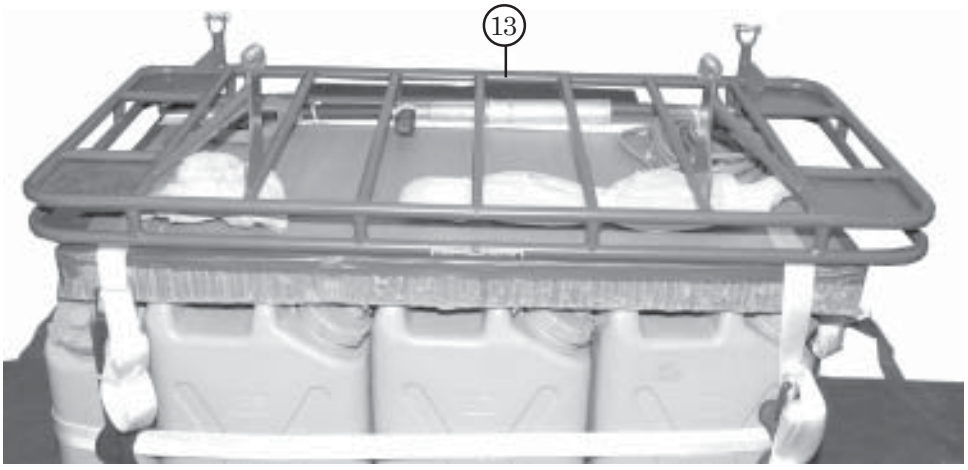
(10) Secure the water containers and honeycomb with the four pre-positioned lashings.

Figure 4-10. A-22 Cargo Bag Rigged (Continued)



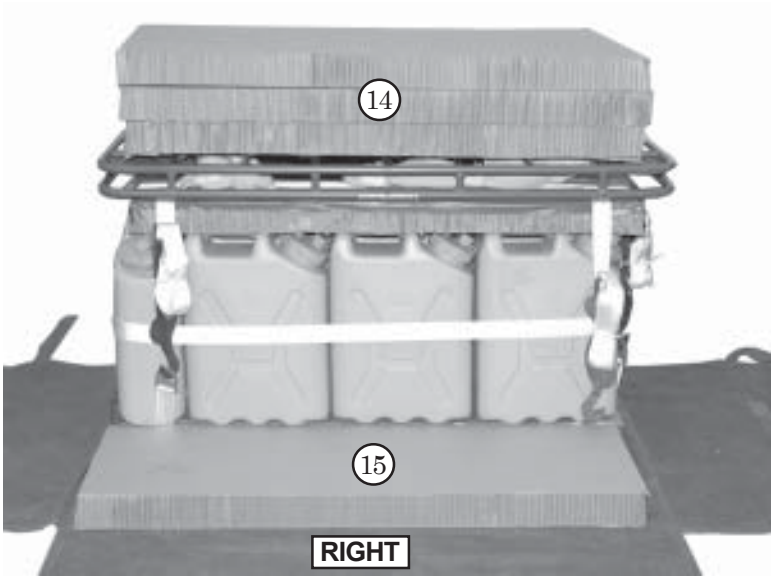
(11) Wrap the winch control and foam separator and connector with cellulose wadding and tape. Place on top of the honeycomb as shown. Secure items to the lashing using type III nylon cord.

(12) Place the fire fighting pistol and the electrical extension cord on the honeycomb as shown. Secure items to the lashing using type III nylon cord.



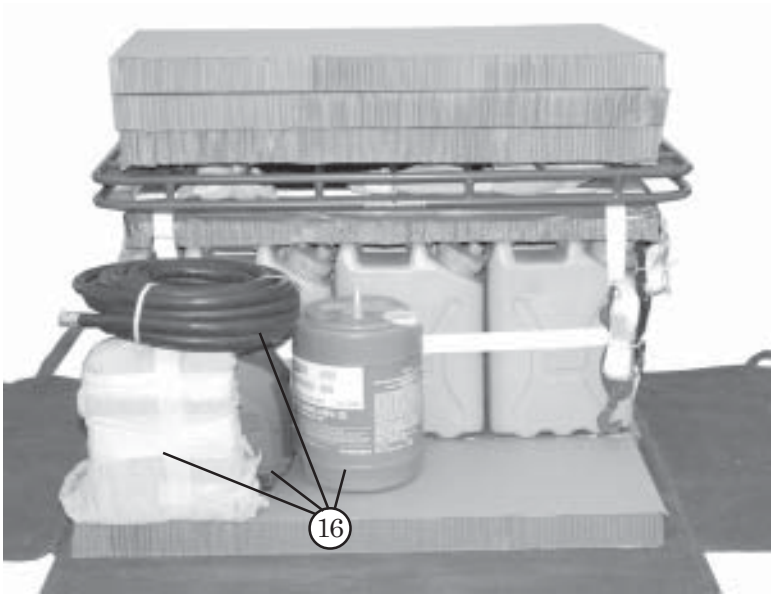
(13) Position the cargo rack upside down on top of the honeycomb as shown.

Figure 4-10. A-22 Cargo Bag Rigged (Continued)



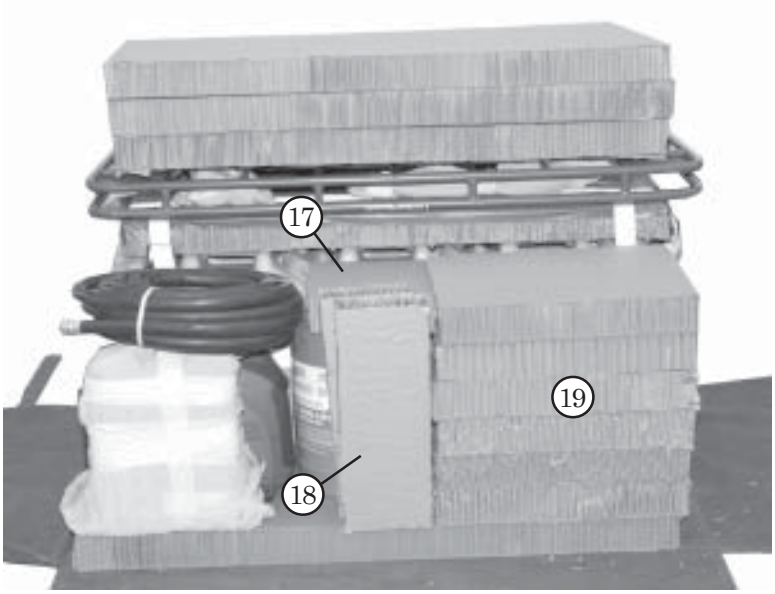
(14) Position three layers of 27- by 48-inch pieces of honeycomb on top of the cargo rack. Crush the honeycomb down over the cargo rack brackets.

(15) Position one 18- by 48-inch piece of honeycomb on the bottom right of the cargo bag cover. Position the 48-inch edge flush against the water container honeycomb base.



(16) Wrap the gas can with cellulose wadding and tape. Position the generator, gas can, 5-gallon foam can, and water hose as shown.

Figure 4-10. A-22 Cargo Bag Rigged (Continued)

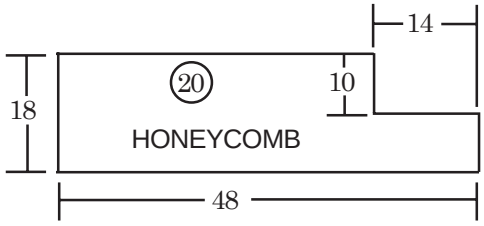


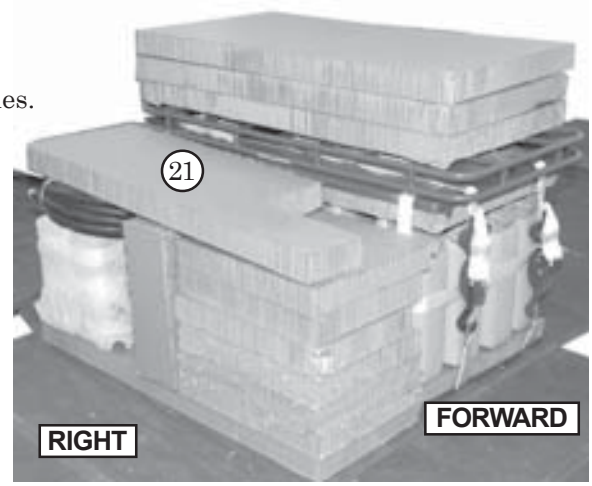
(17) Cut one piece of honeycomb and position on top of the foam can.

(18) Cut two pieces of honeycomb to fill in the area to the right of the foam can.

(19) Cut to fit, six pieces of honeycomb to fill the area forward of the foam can.

NOTES: 1. Drawing not to scale.
2. All dimensions are given in inches.

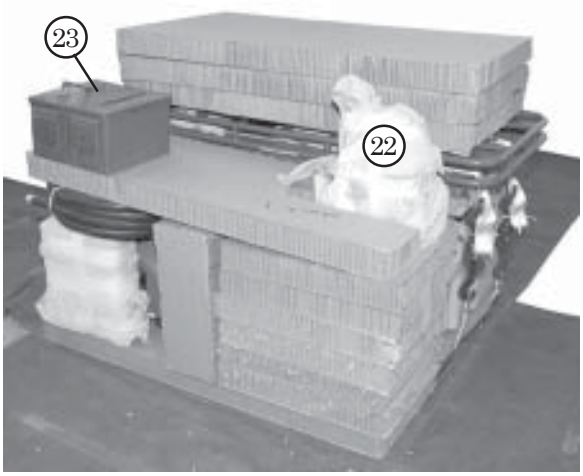




(20) Cut an 18- by 48-inch piece of honeycomb with a 10- by 14-inch cutout as shown above.

(21) Position the 18- by 48-inch piece of honeycomb on top of water hose and honeycomb filler with the cut out facing to the forward left of the container load as shown.

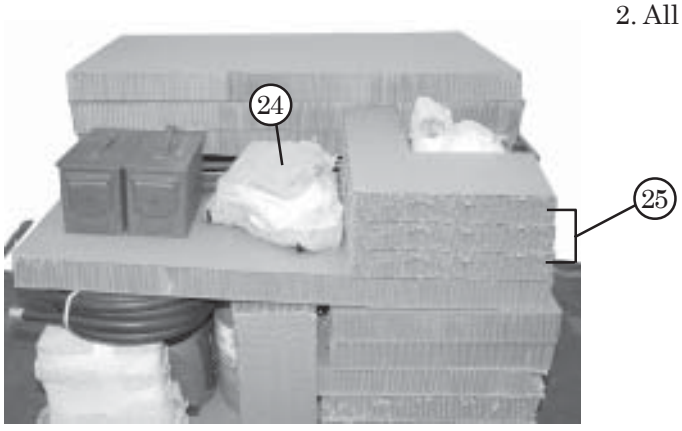
Figure 4-10. A-22 Cargo Bag Rigged (Continued)

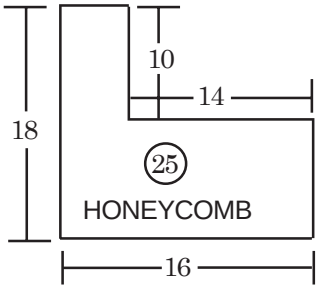


(22) Wrap the sump pump and the winch with cellulose wadding and tape. Place the sump pump into the 10- by 14-inch honeycomb cutout with the high point to the inside of the container.

(23) Position two small arms ammunition cans on the honeycomb on the opposite end of the sump pump.

NOTES: 1. Drawing not to scale.
2. All dimensions are given in inches.

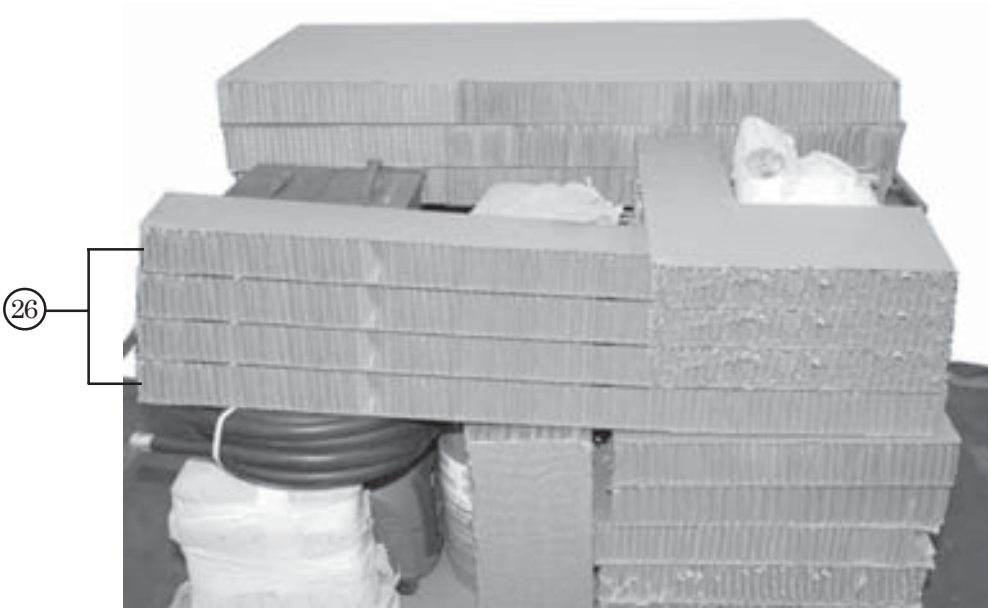




(24) Position the prepared winch on the center of the honeycomb.

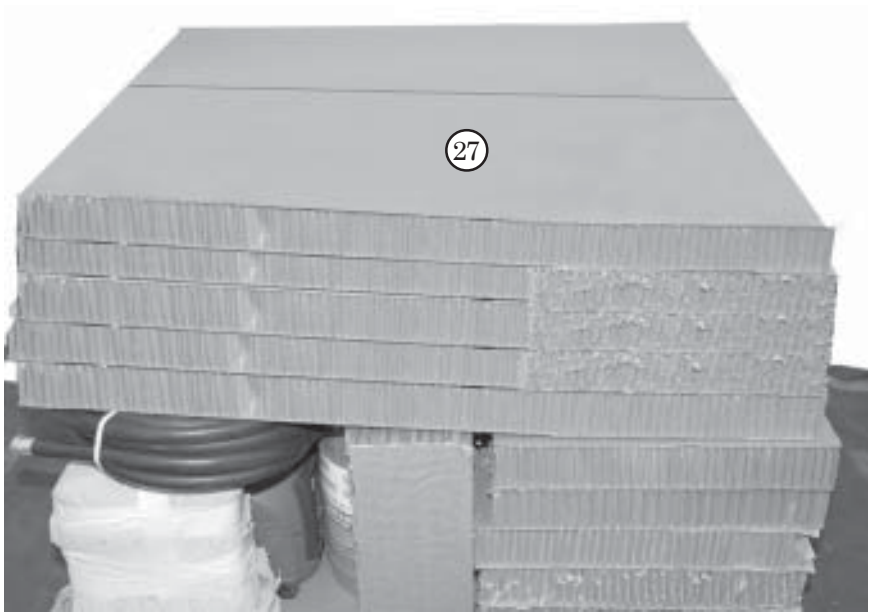
(25) Cut and position three pieces of honeycomb 16- by 18-inches with a 10- by 14-inch cutout around the sump pump as shown above.

Figure 4-10. A-22 Cargo Bag Rigged (Continued)



RIGHT

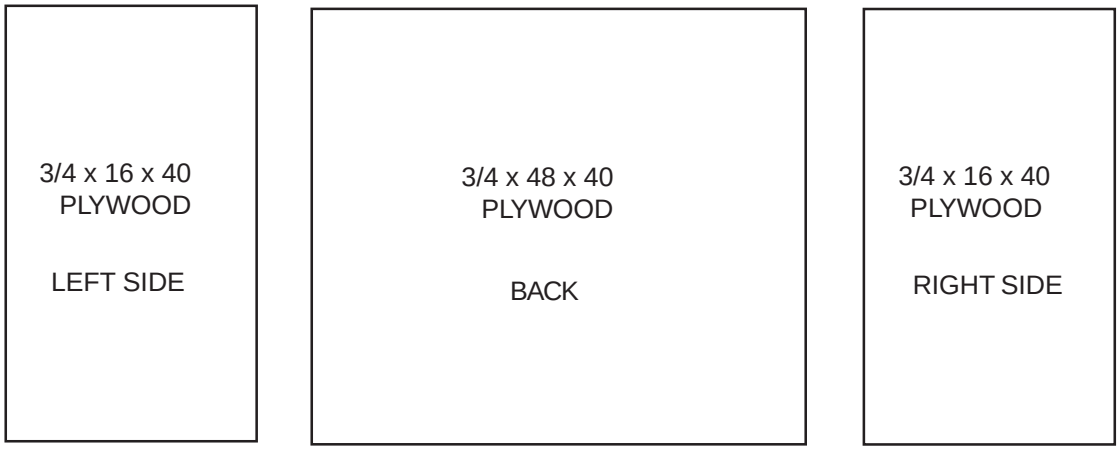
(26) Cut to fit, three pieces of honeycomb. Place on top of the other piece of honeycomb, to fill the space to the right of the winch and ammunition cans as shown above. Fill in all the empty spaces around the ammunition cans and winch with scrap honeycomb and cellulose wadding as needed (not shown).



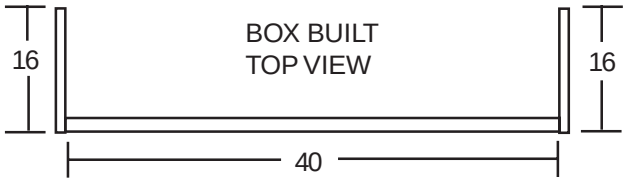
(27) Cut a 18- by 48-inch piece of honeycomb and position on top of the winch, ammunition cans, and sump pump as shown above.

Figure 4-10. A-22 Cargo Bag Rigged (Continued)

NOTES: 1. Drawing not to scale.
2. All dimensions are given in inches.



(28)



(28) Cut three pieces of 3/4-inch plywood as shown above to be used as the A-22 equipment retainer box. Nail together with 8d common nails or 2-inch #4 wood screws to form a three sided box.

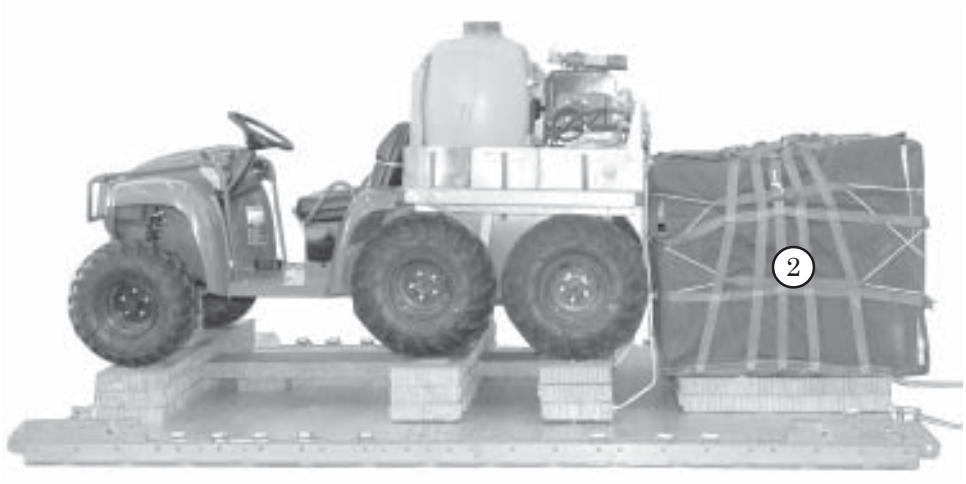
Figure 4-10. A-22 Cargo Bag Rigged (Continued)

(29) Position the A-22 equipment retainer box around the stacked equipment on the right side of the container.

(30) Route a lashing around the A-22 equipment retainer box and the water cans. Secure the lashing with a D-ring and loadbinder on the side with the water cans.

(31) Close the A-22 container according to FM 10-500-3/TO 13C7-1-11/FMFM 7-47.

Figure 4-10. A-22 Cargo Bag Rigged (Continued)



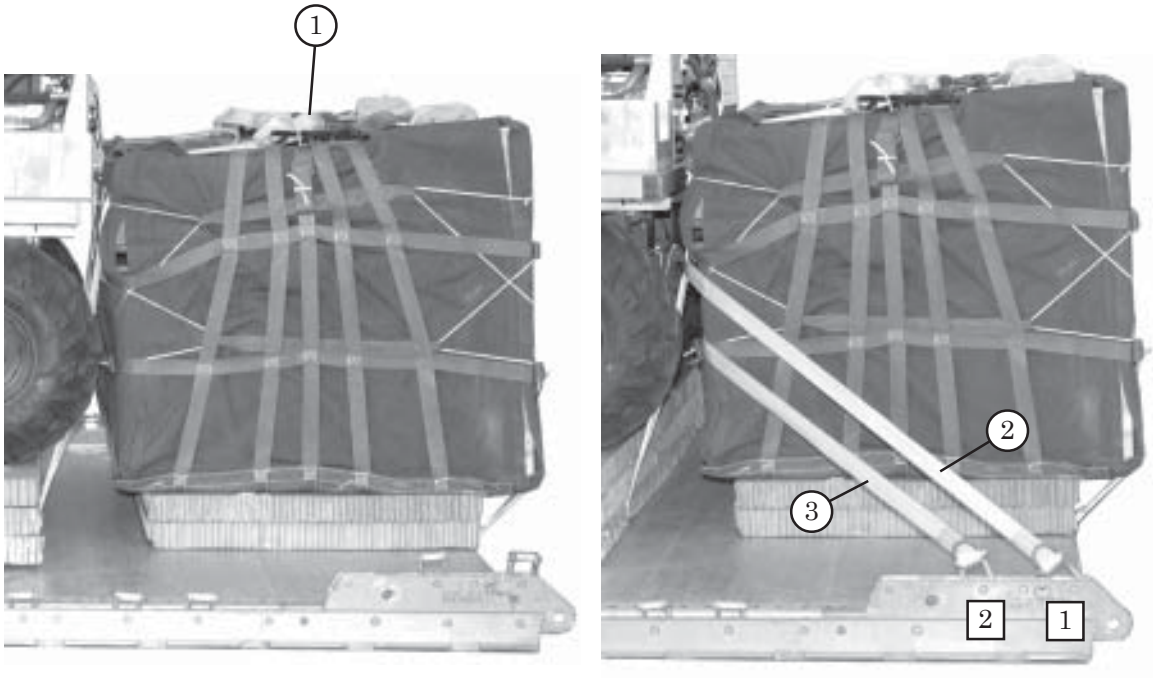
(1) Route the pre-positioned lashings on 3A and 3B, Figure 4-2, over the bed of the FRE (not shown).

(2) Position the A-22 cargo bag on stack 2 with the equipment box positioned facing the front of the platform and away from the M-Gator. Position the A-22 cargo bag against the rear of the M-Gator so there is no overhang as shown.

Figure 4-11. A-22 Cargo Bag Positioned

LASHING THE A-22 CARGO BAG

4-10. Lash the A-22 cargo bag to the platform according to FM 4-20.102/ NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 4-12.

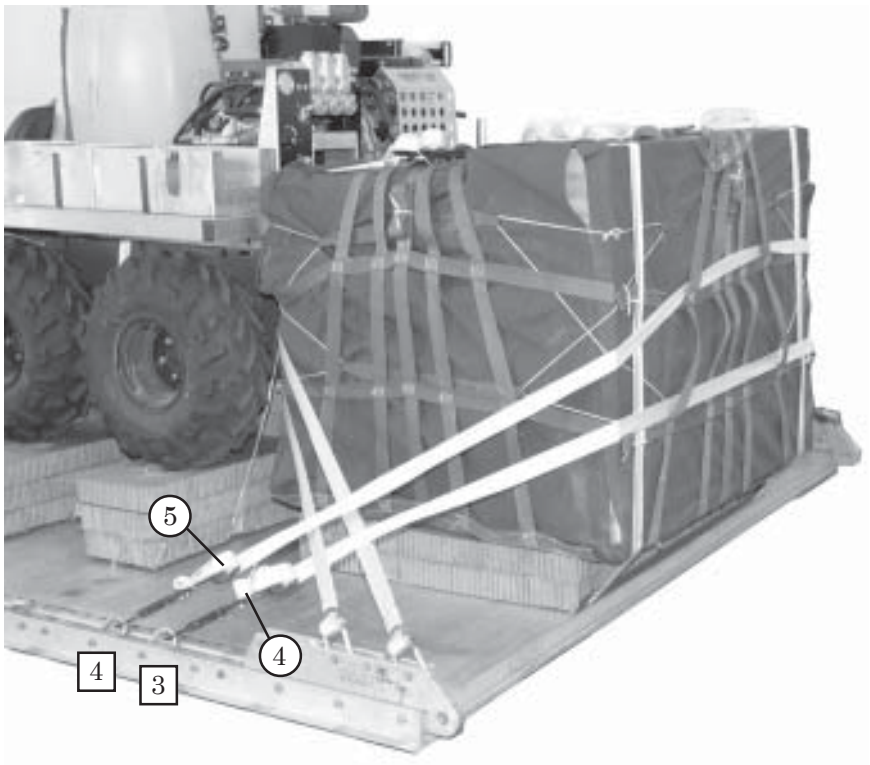


(1) Route the pre-positioned lashings under the A-22 cargo bag webbing, tie-down ring 1A load binds to tie-down ring 3A, tie-down ring 1B load binds to tie-down ring 3B, and close and secure load binders on top of A-22 cargo bag.

(2) Route a lashing through clevis 1 and back through it's own D-ring, route it through the rear middle webbing on the A-22 cargo bag and load bind to clevis 1A.

(3) Route a lashing through clevis 2 and back through it's own D-ring, route it through the rear lower webbing on the A-22 cargo bag and load bind to clevis 2A.

Figure 4-12. A-22 Cargo Bag Lashed



(4) Route a lashing through clevis 3A and back through it's own D-ring. Route it through the front lower webbing on the A-22 cargo bag and load bind to clevis 3.

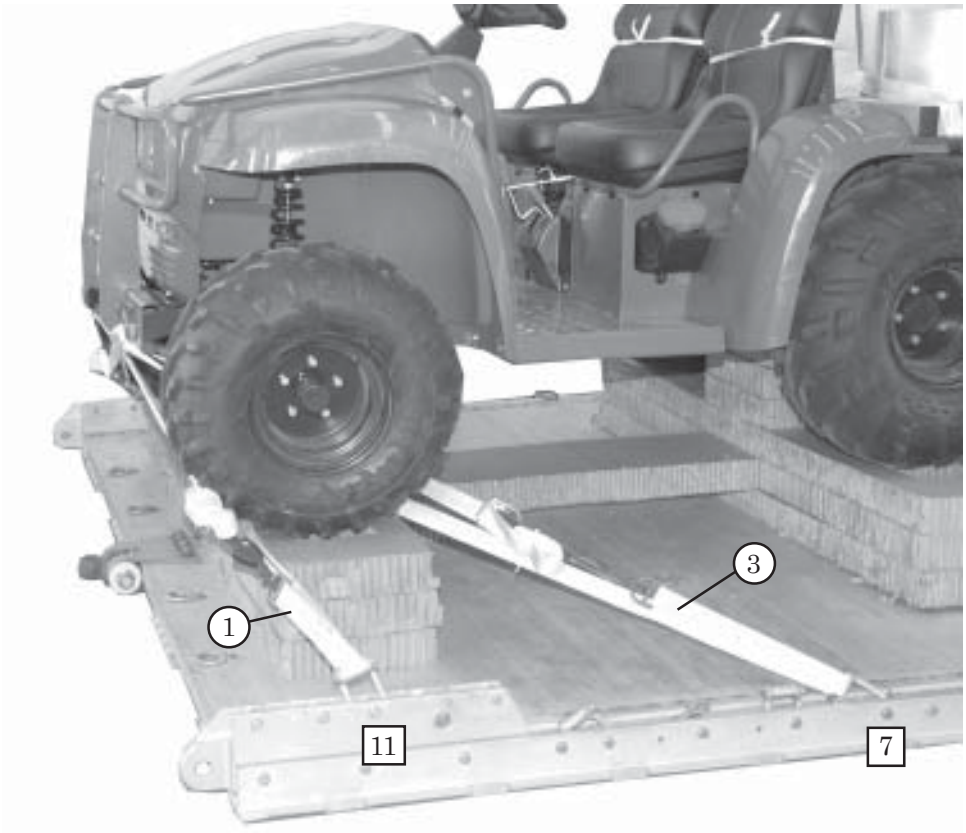
(5) Route a lashing through clevis 4A and back through it's own D-ring. Route it through the front middle webbing on the A-22 cargo bag and load bind to clevis 4.

Figure 4-12. A-22 Cargo Bag Lashed (Continued)

LASHING M-GATOR W/FRE

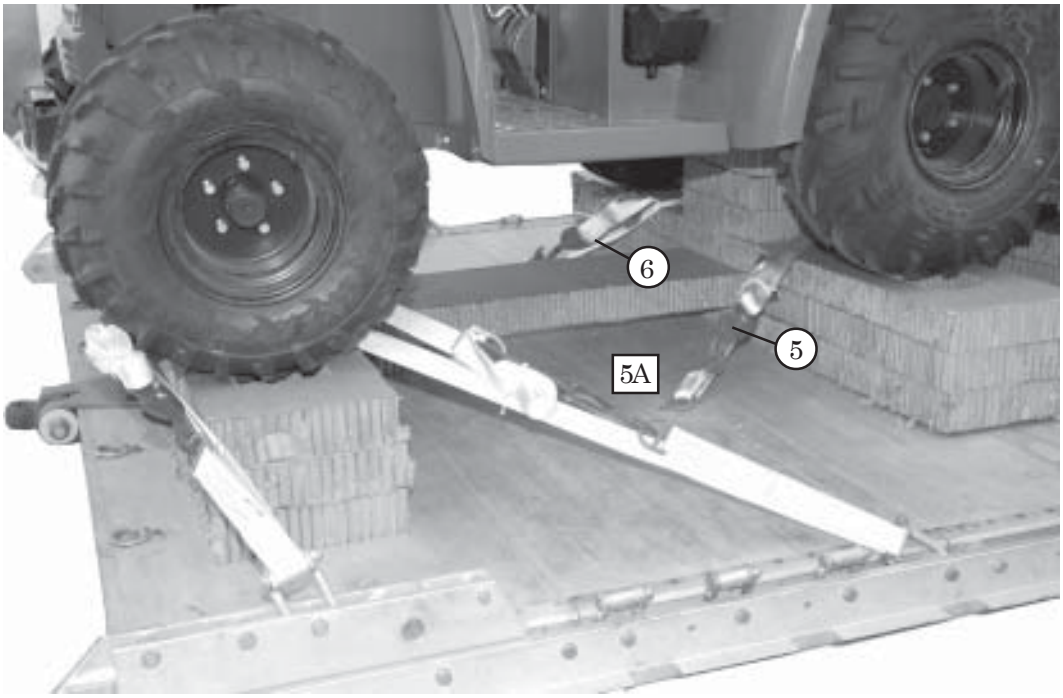
4-11. Lash the M-Gator to the platform according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figures 4-13 through 4-15.

NOTE: Position all load binders near the platform in case adjustments to the lashings are needed.



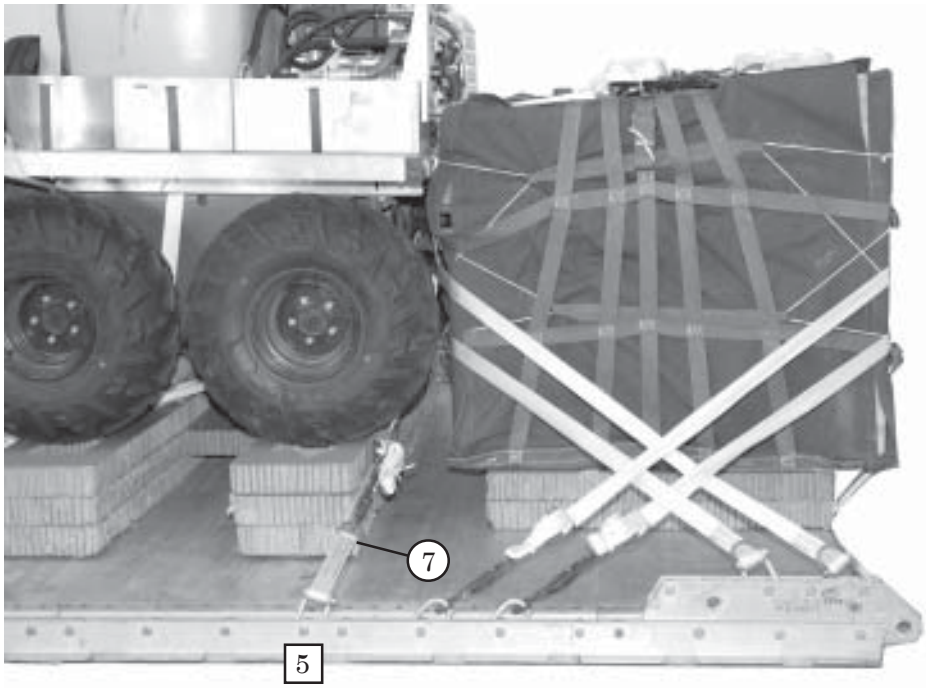
Lashing Number	Tiedown Clevis Number	Instructions
		Pass lashing through:
1	11	Front right tiedown point
2	11A	Front left tiedown point
3	7	Front left tiedown point
4	7A	Front right tiedown point

Figure 4-13. Lashings 1, 2, 3, and 4 Installed



Lashing Number	Tiedown Clevis Number	Instructions
		Pass lashing through:
5	Tiedown-ring 5A	Left rear tiedown point **(do not tighten)**
6	Tiedown-ring 5B	Right rear tiedown point **(do not tighten)**

Figure 4-14. Lashings 5 and 6 Installed

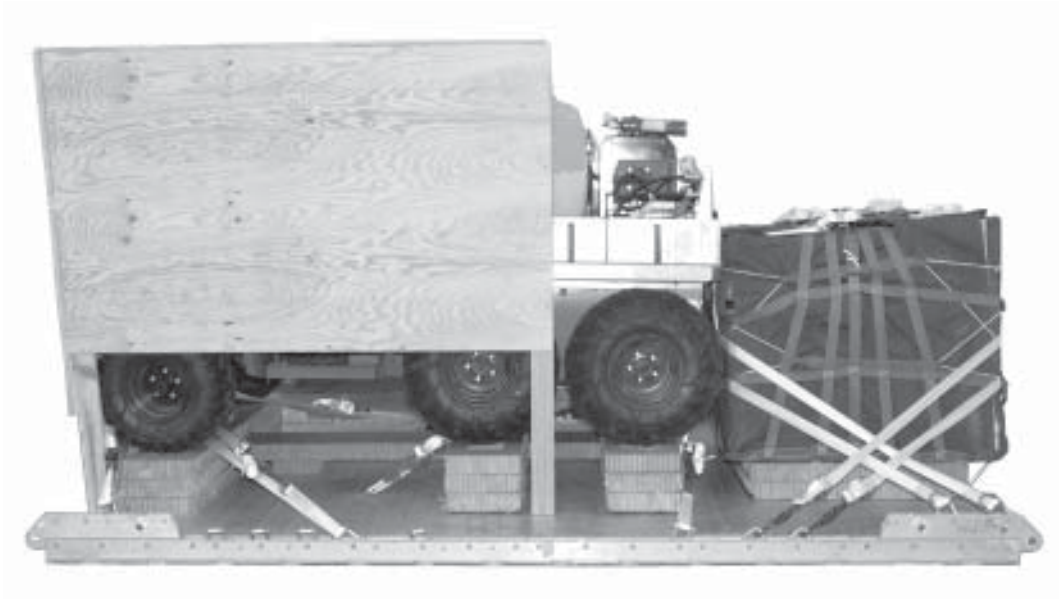


Lashing Number	Tiedown Clevis Number	Instructions
		Pass lashing through:
7	5	Rear right tiedown point **(do not tighten)**
8	5A	Rear left tiedown point **(do not tighten)**
		Tighten lashings 5 and 6 then 7 and 8.

Figure 4-15. Lashings 7 and 8 Installed

POSITIONING M-GATOR BOX

4-12. Position M-Gator box as shown in Figure 4-16.

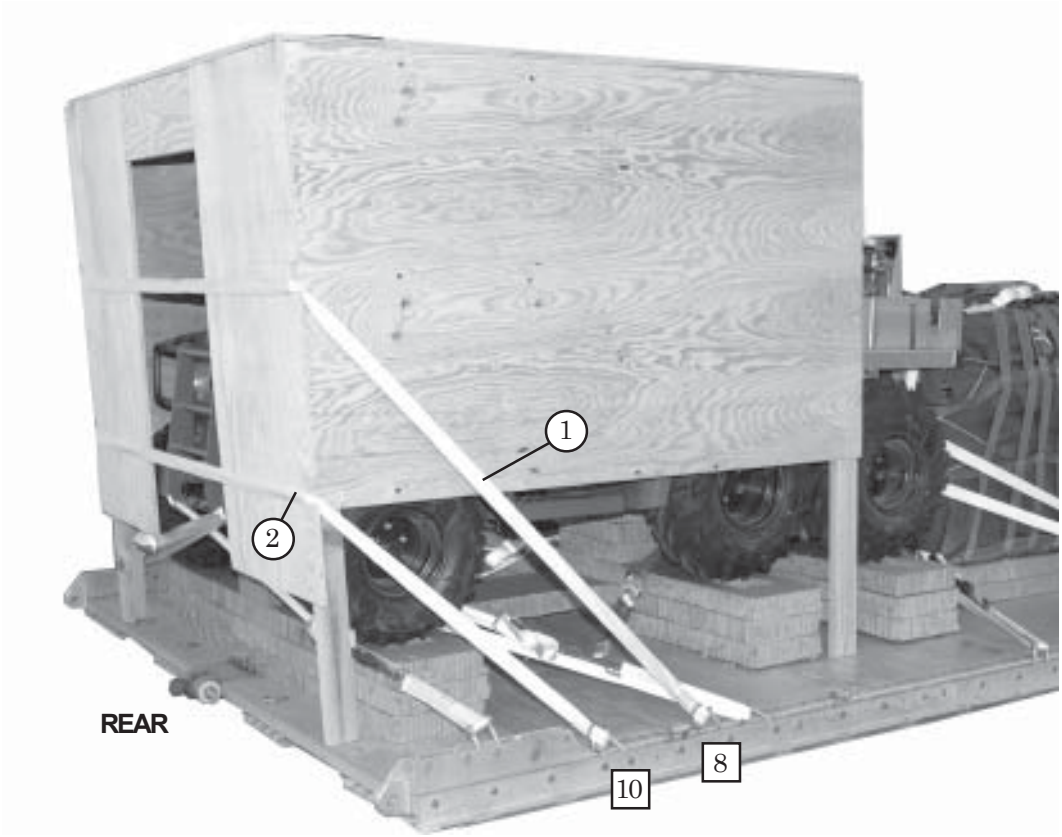


Position the box on the platform, aligning the front bottom edge of the box with the platform rear edge.

Figure 4-16. M-Gator Box Positioned

LASHING M-GATOR BOX

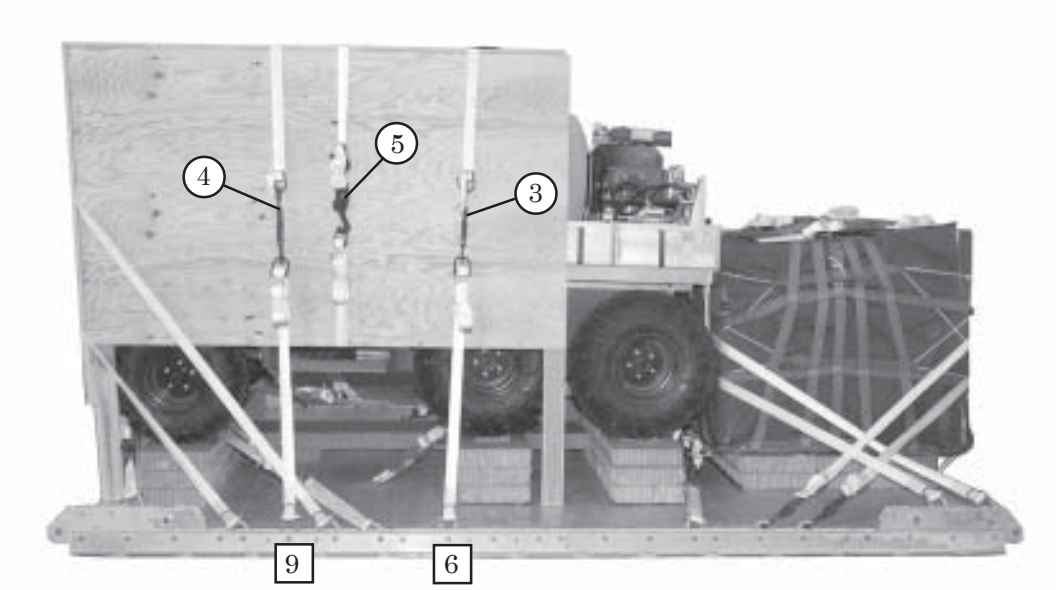
4-13. Lash the M-Gator box to the platform according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 4-17.



Route a lashing through clevis 8 and back through it's own D-ring, and pull the strap taut. Repeat the same steps for clevis 10.

Lashing Number	Tiedown Clevis Number	Instructions
		Pass lashing through:
1	8 and 8A	Top rear cutouts of box
2	10 and 10A	Bottom rear cutouts of box

Figure 4-17. M-Gator Box Lashed



Route a lashing through clevis 6 and back through it's own D-ring, and pull the strap taut. Repeat the same steps for clevises 6A, 9, and 9A.

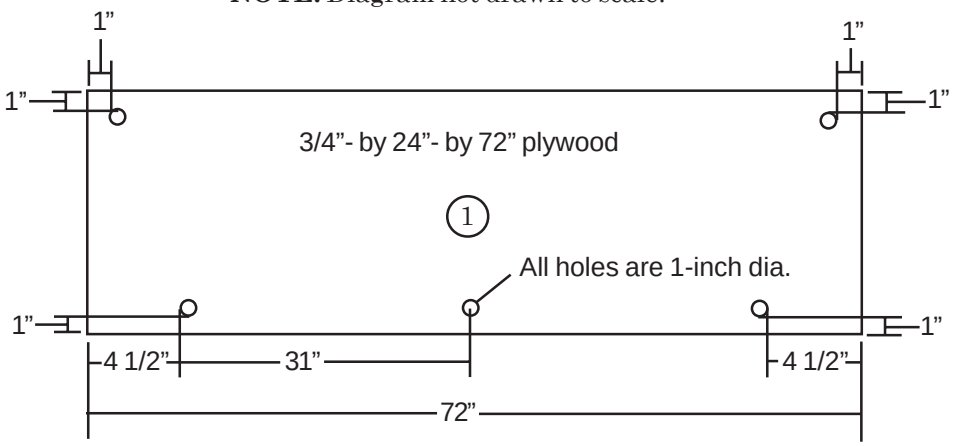
Lashing Number	Tiedown Clevis Number	Instructions
		Pass lashing through:
3	6 and 6A	Over top of box and bind on right side of box
4	9 and 9A	Over top of box and bind on right side of box
5		Route a lashing through the passenger compartment of the vehicle, around and over the box and bind the ends together on the right side of box.

Figure 4-17. M-Gator Box Lashed (Continued)

BUILDING AND INSTALLING M-GATOR W/FRE BOX EXTENSION

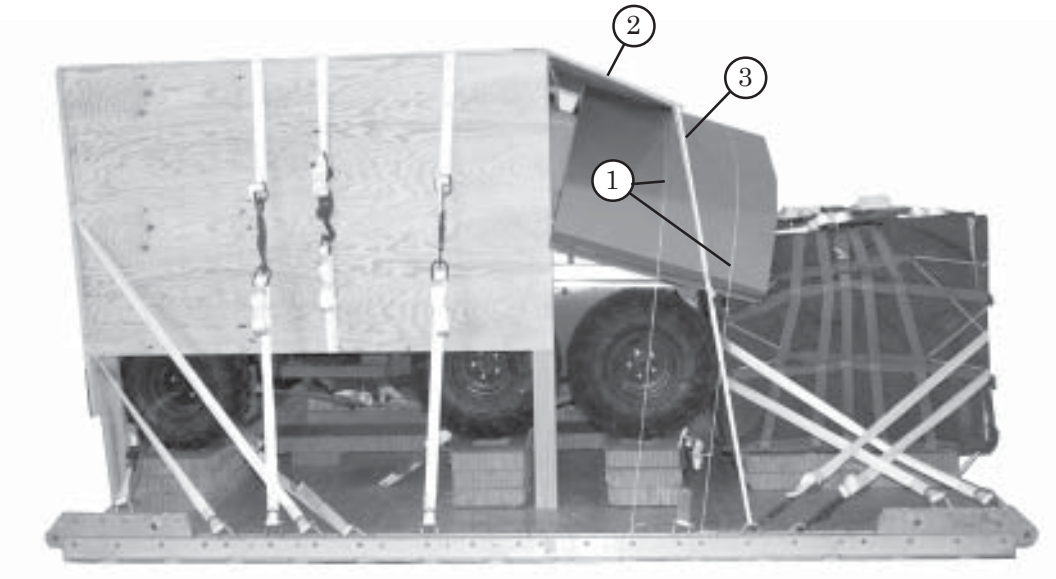
4-14. Build and install the M-Gator w/FRE box extension as shown in Figures 4-18 and 4-19.

NOTE: Diagram not drawn to scale.



(1) Cut a piece of 3/4- by 24- by 72-inch piece of plywood. Drill five holes as shown in diagram above. Drill three matching holes in the top board of the M-Gator box (Figure 4-6) to match the three holes on the 72-inch side of the M-Gator W/FRE box extension.

Figure 4-18. M-Gator W/FRE Box Extension Built



(1) Place one full sheet of honeycomb over the water reservoir and FRE and tie down with type III nylon cord to a convenient point on the platform.

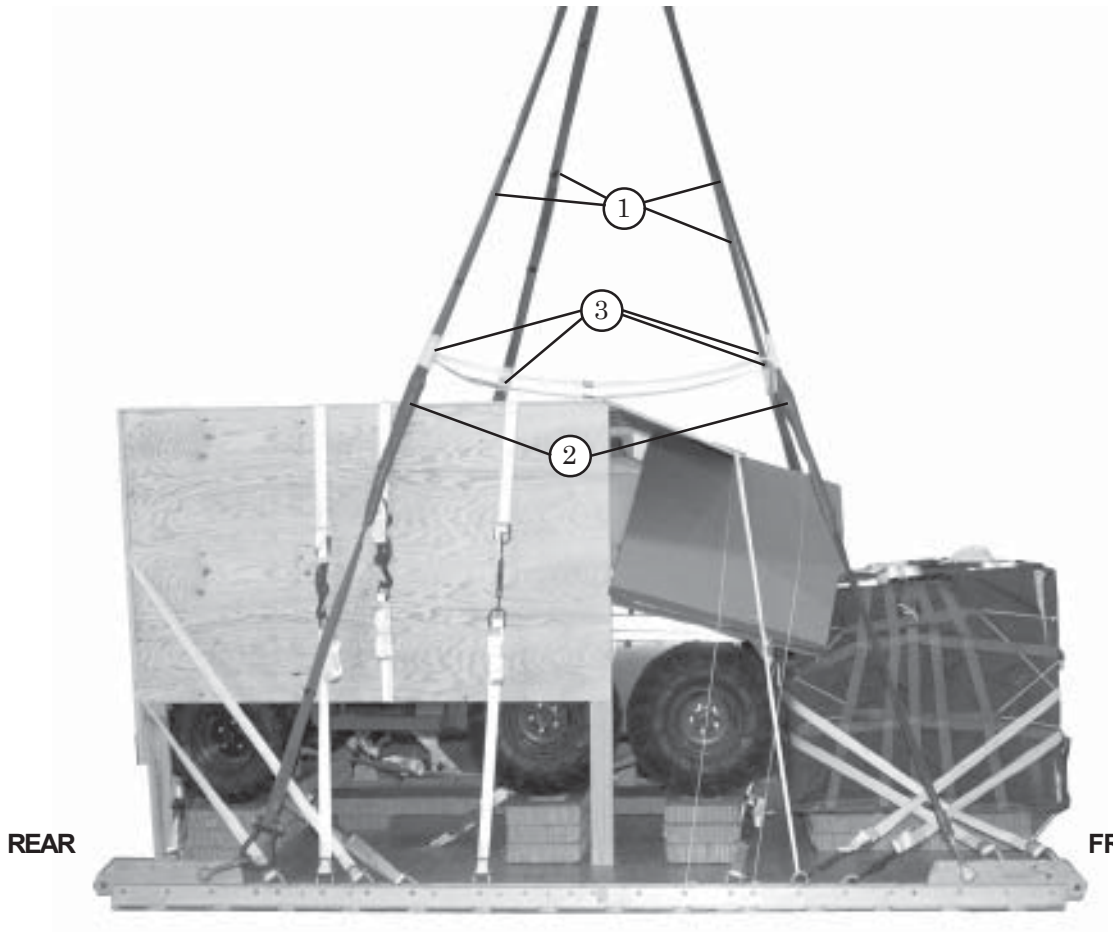
(2) Place the FRE box extension on top of the honeycomb matching the three drilled holes on top of the M-Gator box with the box extension.

(3) Secure the FRE box extension to the top of the M-Gator box by tying 1/2-inch tubular nylon webbing through each of the three drilled holes in each box. Secure with square knots and overhand knots in each running end (not shown). Tie the rear of the box extension, using the two outside holes, down on top of the honeycomb using 1/2-inch tubular nylon webbing tied to a convenient point on the platform.

Figure 4-19. M-Gator W/FRE Box Extension Installed

INSTALLING SUSPENSION SLINGS

4-15. Install four 16-foot (2 loop), type XXVI nylon slings as suspension slings according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 4-20.



(1) Attach a 16-foot (2 loop), type XXVI nylon sling to each of the front tandem links using one large clevis. Attach a 16-foot (2 loop), type XXVI nylon sling to each of the rear tandem links using two large clevises.

(2) Felt and tape each sling where they make contact with the box.

(3) Raise the slings above the load and install the deadman's tie as outlined in FM 4-20.102/ NAVSEA-SS400-AB-MMO-010/TO 13C7-1-5.

Figure 4-20. Suspension Slings Installed

STOWING CARGO PARACHUTE

4-16. Prepare, stow, and restrain one G-11 cargo parachute on the front edge of the M-Gator box according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 4-21.

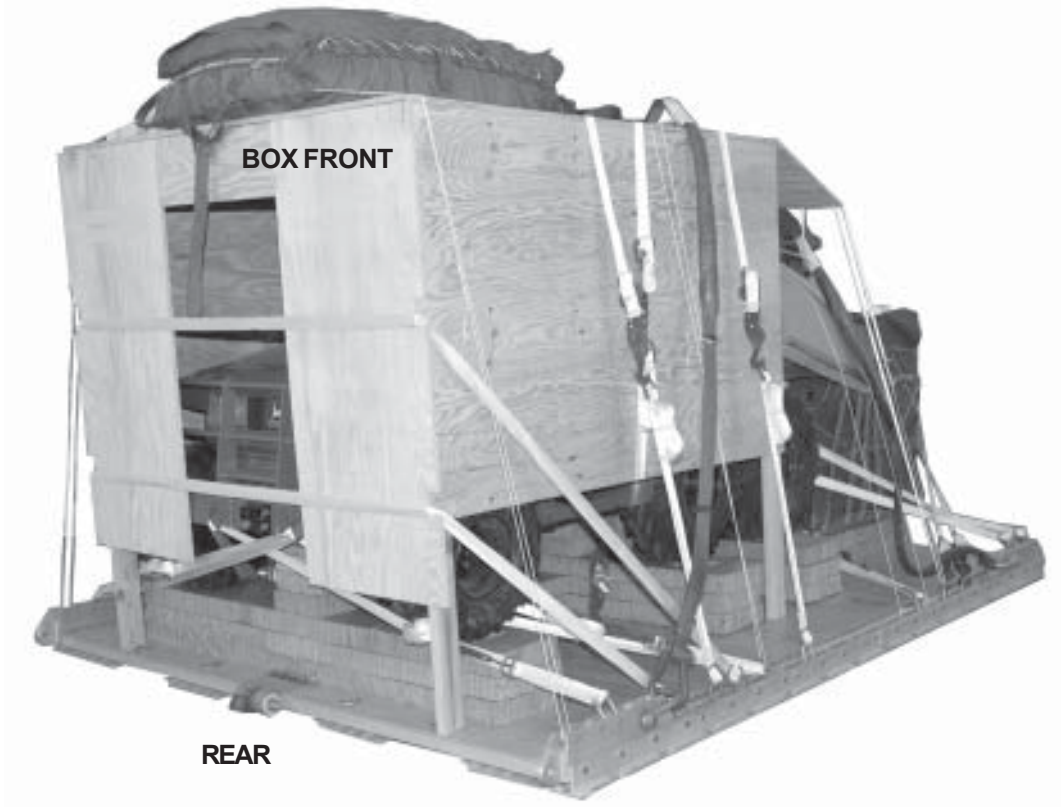
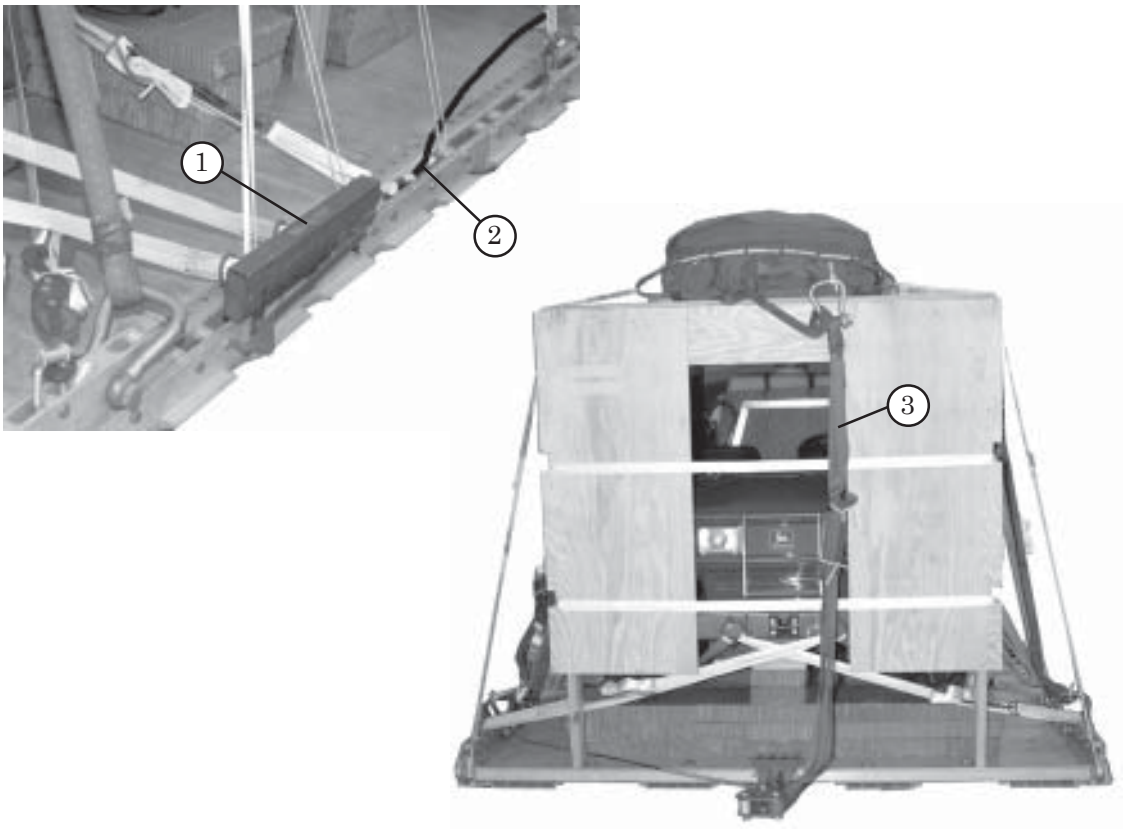


Figure 4-21. Cargo Parachute Stowed

INSTALLING EXTRACTION SYSTEM

4-17. Install the Extraction Force Transfer Coupling (EFTC) according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 4-22.



(1) Install the EFTC actuator mounting bracket using the front mounting holes.

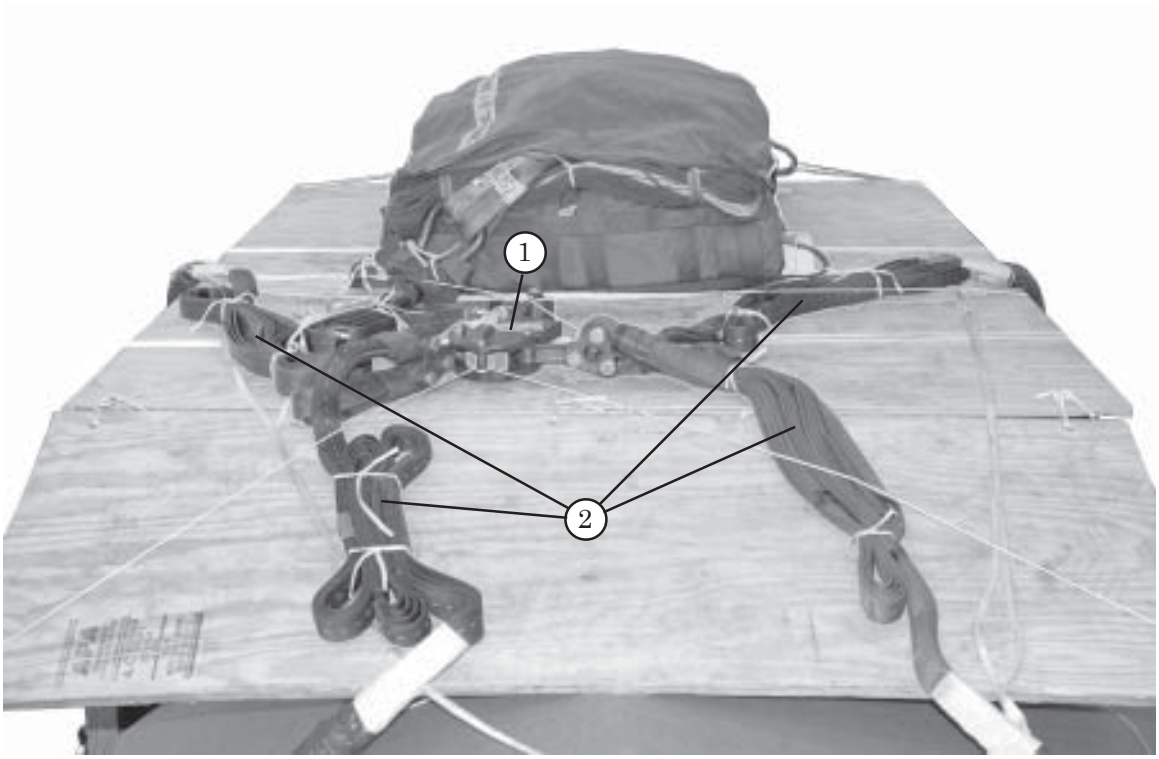
(2) Install a 12-foot cable.

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

Figure 4-22. Extraction System Installed

INSTALLING PARACHUTE RELEASE

4-18. Prepare and install an M-1 cargo parachute release system according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 4-23.



(1) Place the M-1 release on the M-Gator box, positioning the release centered and safety tied to a convenient point on the load.

(2) Fold and tape any slack in the suspension slings.

Figure 4-23. Parachute Release System Installed

POSITIONING EXTRACTION PARACHUTE

4-19. 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. Place the extraction parachute and extraction line bag on the load for installation inside the aircraft.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

4-20. Select and install provisions for emergency restraints according to the emergency aft restraints requirements in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

MARKING RIGGED LOAD

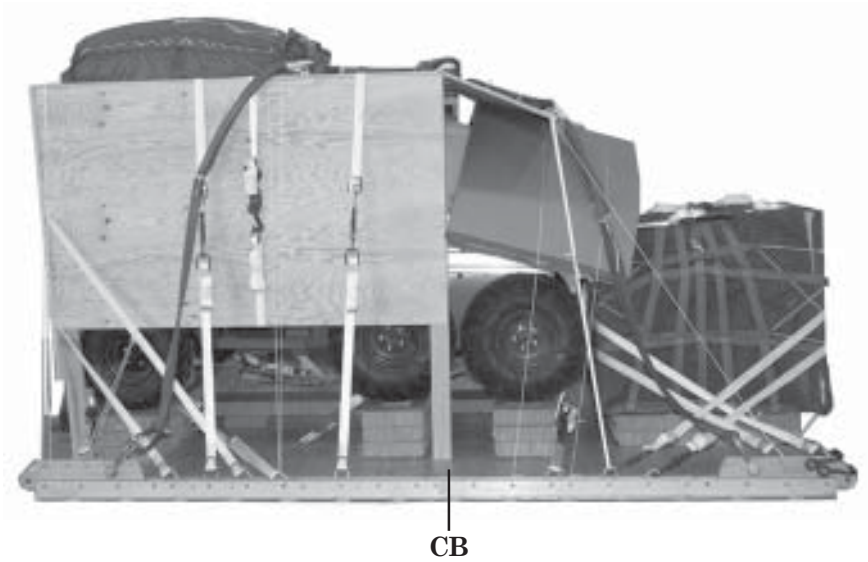
4-21. Mark the rigged load according to FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 4-24. Complete the Shipper's Declaration for Dangerous Goods. If the load varies from the one shown, the weight, height, tip-off curve, CB, and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

4-22. The equipment required to rig this load is listed in Table 4-1.

CAUTION

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



RIGGED LOAD

Weight	4,980 pounds
Maximum rigged weight	5,230 pounds
Minimum rigged weight	4,600 pounds
Height	94 inches
Width	108 inches
Overall Length	168 inches
Overhang: Front	6 inches
Rear (EFTC)	18 inches
Center of Balance (from front edge of platform)	70 inches

Figure 4-24. M-Gator W/FRE Rigged on a 12-Foot Platform For Low-Velocity Airdrop

Table 4-1. Equipment required for rigging M-Gator W/FRE on a 12-foot platform for low-velocity airdrop

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive paste, 1-gal	As required
1670-00-587-3421	Bag, cargo, aerial delivery, A-22	1
1670-01-035-6054	Bridle, extraction line bag (for DES)	1
4030-00-090-5354	Clevis, large	7
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
1670-00-360-0328	Cover, clevis, large	1
8135-00-664-6958	Cushioning material, packing, cellulose wadding	As required
8305-00-191-1101	Felt, 1/2-inch	As required
1670-01-183-2678	Leaf, extraction line (line bag)(add 1 for DES)	1
	Line, drogue (for DES)	
1670-01-064-4452	60-foot (1-loop), type XXVI	1
	Line, extraction:	
1670-01-064-4452	For C-130: 60-foot (1-loop), type XXVI	1
1670-01-107-7612	For C-141: 160-foot (1-loop), type XXVI	1
1670-01-107-7612	For C-17: 160-foot (1-loop), type XXVI	1
1670-01-107-7612	For C-5: 160-ft, (1-loop), type XXVI	1
	Link assembly:	
	Two-point, 3 3/4-in	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)
	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)
1670-01-483-8259	Link, tow release mechanism (H-Block) C-17 aircraft	1

Table 4-1. Equipment required for rigging M-Gator W/FRE on a 12-foot platform for low-velocity airdrop (Continued)

National Stock Number	Item	Quantity
	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
1670-00-753-3928	Pad, energy dissipating, honeycomb, 3- by 36- by 96-in	12 sheets
	Parachute:	
1670-01-016-7841	Cargo, G-11B	1
1670-01-063-3715	Cargo, extraction, 15-ft	1
1670-01-063-3715	Drogue, 15-ft (for DES)	1
	Platform, airdrop, type V, 12-ft	1
1670-01-353-8425	Bracket assembly, EFTC	(1)
1670-01-353-8424	Bracket assembly, extraction	(1)
1670-01-162-2372	Clevis assembly	(22)
1670-01-162-2381	Tandum link assembly (multipurpose link)	(4)
5530-00-128-4981	Plywood, 3/4-in	8 sheets
1670-01-097-8816	Release, cargo parachute, M-1	1
	Sling, cargo, airdrop:	
	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	2
	For suspension:	
1670-01-063-7761	16-ft (2-loop), type XXVI nylon webbing	4
	For riser extensions:	
1670-01-062-6301	3-ft (2-loop), type XXVI nylon webbing	1
	For deployment:	
1670-01-062-6304	9-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-ft	31
	Webbing:	
8305-00-268-2411	Cotton, 1/4-in, type I	As required
8305-00-082-5752	Nylon, tubular, 1/2-in	As required

Glossary

AFB	Air Force Base
AFTO	Air Force Technical Order
AFSOC	Air Force Special Operations Command
ALC	Airlift Logistics Center
AMC	Air Mobility Command
CB	center of balance
CDS	container delivery system
d	penny
DC	District of Columbia
DES	drogue extraction system
diam	diameter
EFTC	extraction force transfer coupling
FRE	first response expeditionary
FM	field manual
ft	foot/feet
gal	gallon
HQ	headquarters
in	inch
lb	pound
M-Gator	military utility vehicle
No	number
TRADOC	US Army Training and Doctrine Command
USA	United States of America
TM	technical manual
TO	technical order

References

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***AFJMAN 24-204/ TM 38-250**	Preparing Hazardous Materials for Military Air Shipments. 25 November 1994.
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FM 10-500-53/MCRP No 4-3.8/TO 13C7-18-41	Airdrop of Supplies and Equipment: Rigging Ammunition. 19 August 1996.
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TM 10-1670-278-23&P/TO 13C5-26-2/NAVAIR 13-1-27 /TM 01109C-23&P/1	Unit and Intermediate DS Maintenance Manual Including Repair Parts and Special Tools List for Parachute, Cargo Type, 15-ft Diam, Extraction. 6 November 1989.
TM 10-1670-279-23&P/TO 13C5-27-2/NAVAIR 13-1-28	Unit and Intermediate DS Maintenance Manual Including Repair Parts and Special Tools List for Parachute, Cargo Type, G-11A, G-11B, and G-11C. 5 August 1991.
TM 10-1670-280-23&P/TO 13C5-31-2/NAVAIR 13-1-31	Unit and Intermediate DS Maintenance Manual Including Repair Parts and Special Tools List for Parachute, Cargo Type, 22-ft Diam, Extraction. 30 August 1989.

***AFJMAN 24-204/TM 38-250 has superseded AFR 71-4/TM 38-250 (15 January 1988).**

****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). Change 1 reflects this change. The basic manual still references the superseded publication. You may wish to make pen and ink changes to update the old reference citations accordingly.**

TM 10-1670-286-20/ TO 13C5-2-41	Unit Maintenance Manual for Sling/Extraction Line Panel (Including Stowing Procedures). 1 April 1986
TM 10-1670-296-20&P/ TO 13C7-49-2	Unit Maintenance Manual Including Repair Parts and Special Tools List for Ancillary Equipment for Low-Velocity Airdrop System (LVADS). 15 September 19995
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 4-20.108 (FM 10-508)
TO 13C7-2-491
29 JUNE 2001

By Order of the Secretary of the Army and the Air Force:

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