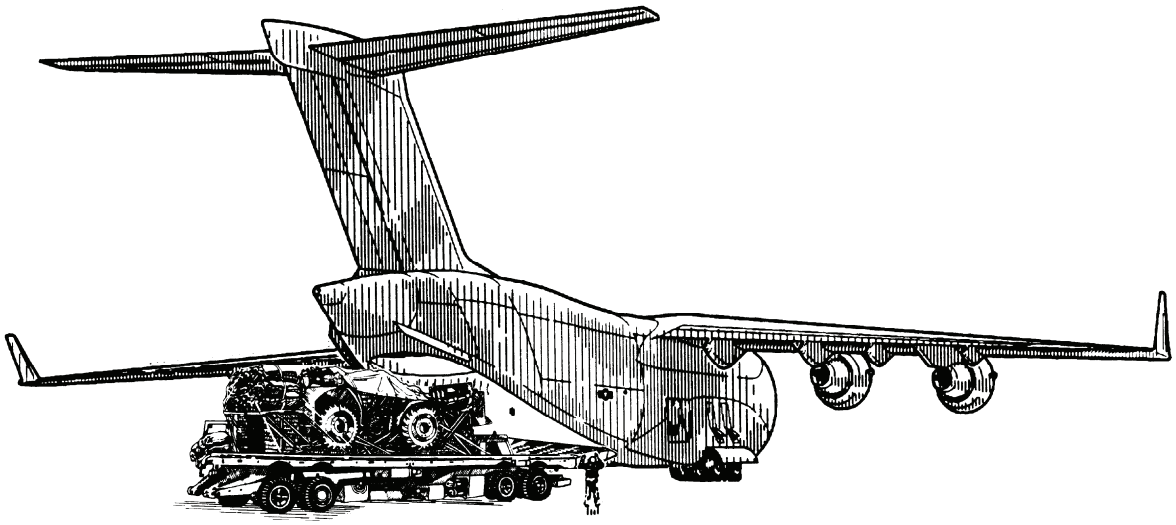
FM 4-20.108 (FM 4-20.108 & FM 10-500-77)
TO 13C7-2-491

Airdrop of Supplies and Equipment: Rigging Military Utility Vehicles

SEPTEMBER 2007



Headquarters
Department of the Army
Department of the Air Force

Field Manual
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No. 13C7-2-491

Headquarters
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Airdrop of Supplies and Equipment: Rigging Military Utility Vehicles

Contents

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Preface

SCOPE

This manual is designed for use by all parachute riggers. This manual shows and tells how to prepare and rig the following configurations of the Military Utility Vehicles (M-Gator), one 80-cubic centimeter minibike, one or two 250- to 300-cubic centimeter motorcycles, one 350-cubic centimeter Yamaha four wheeled quad-runner on a combat expendable platform and one 500-cubic centimeter Polaris four wheeled quad-runner on a combat expendable platform. They are rigged for low-velocity airdrop from a C-130 or C-17 aircraft.

USER INFORMATION

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Introduction

DESCRIPTION OF LOAD

- 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.

- 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 cargo 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 1,200 pounds.

- 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.

- The minibike is an 80-cubic centimeter. The minibike is 61 inches long, 27 inches wide and 34 inches high. The weight of the minibike is 155 pounds, including fuel and fluids.

- The motorcycle is a 250 to 300-cubic centimeter. The motorcycle is 88 inches long, 32 inches wide and 49 inches high. The motorcycle weighs 275 pounds, including fuel and fluids.

- The four wheeled quad-runner is a 350-cubic centimeter. The quad-runner is 72 inches long, 45 inches wide and 65 inches high. The quad-runner weighs 550 pounds, including fuel and fluids.

- The four wheeled quad-runner is a 500-cubic centimeter. The quad-runner is 89 inches long, 48 inches wide and 50 inches high. The quad-runner weighs 820 pounds, including fuel and fluids.

SPECIAL CONSIDERATIONS

CAUTION

Only ammunition listed in FM 4-20.153/MCRP 4-11.3B/TO 13C7-18-41 may be airdropped.

- The loads covered in this manual include hazardous material as defined in AFMAN 24-204(I)/TM 38-250/NAVSUP PUB 505/MCO P4030 19I. The hazardous materials must be packaged, marked and labeled as required by AFMAN 24-204(I)/TM 38-250/NAVSUP PUB 505/MCO P4030.19I.
- A copy of this manual must be available to the Joint Airdrop Inspectors during the before and after loading inspection in accordance with AR 59-4/OPNAVINST 4630.24C/AFI 13-210(I)/MCO 13480.1B.

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Chapter 1

Rigging One Military Utility Vehicle (M-Gator) on an 8-Foot, Type V 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) (Figure 1-1). It is rigged on an 8 foot, type V 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, type V platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22. Prepare an 8-foot, type V platform using 14 tie-down clevises as shown in Figure 1-2.

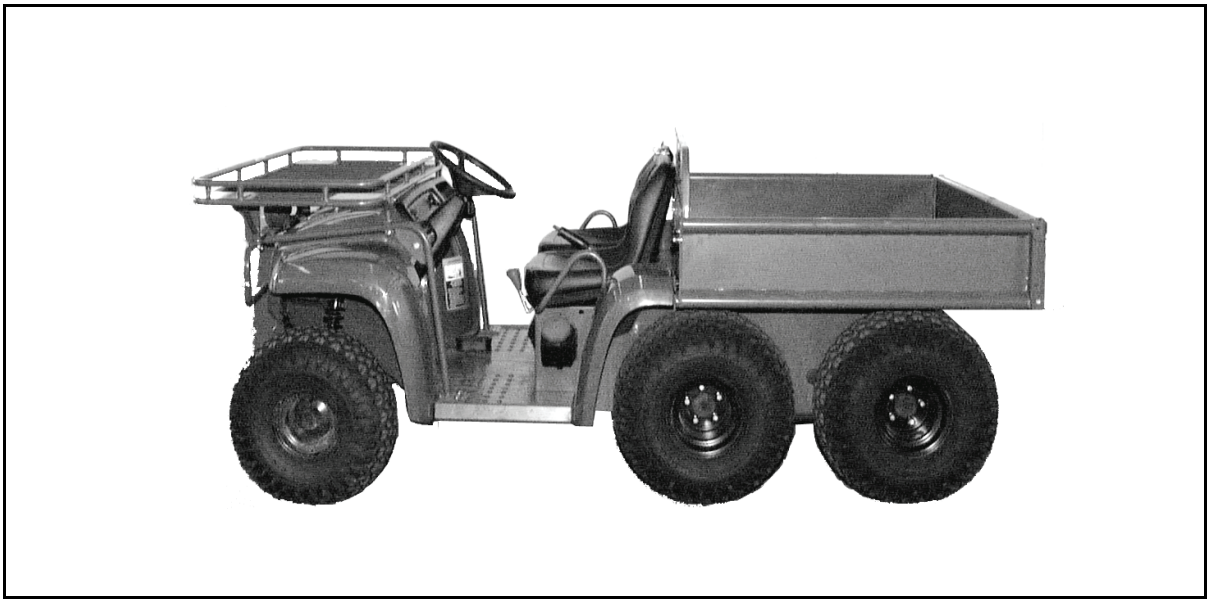
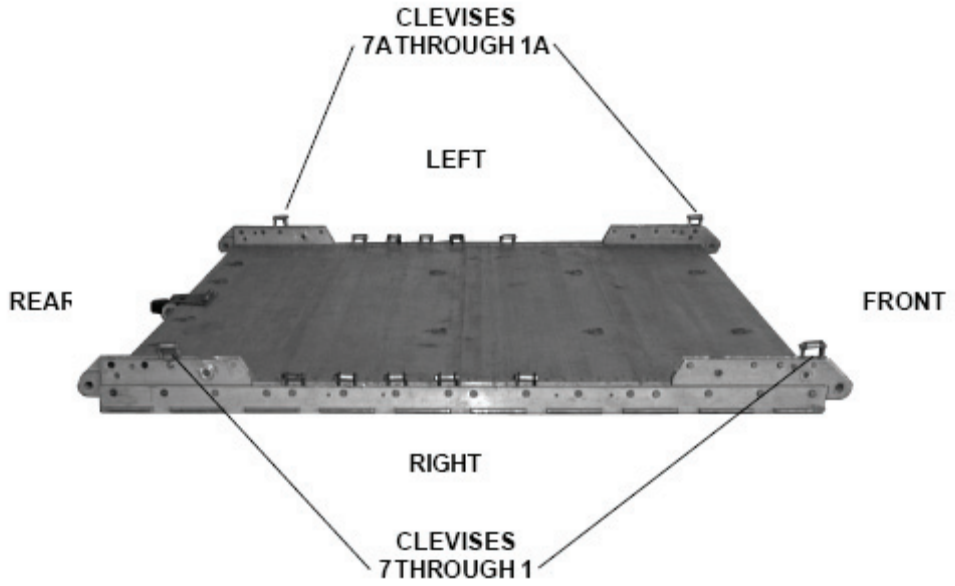


Figure 1-1. Military Utility Vehicle (M-Gator)



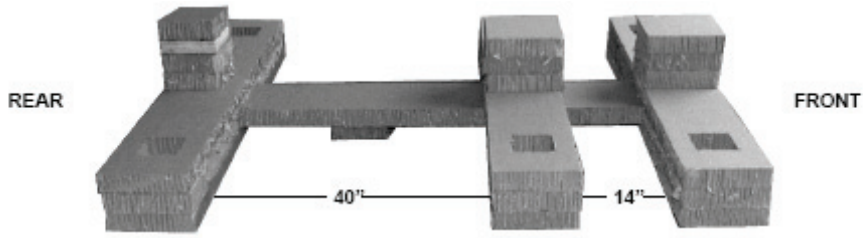
Step:

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 4-20.102/MCRP 4-11.3J /NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

Figure 1-2. Platform Prepared

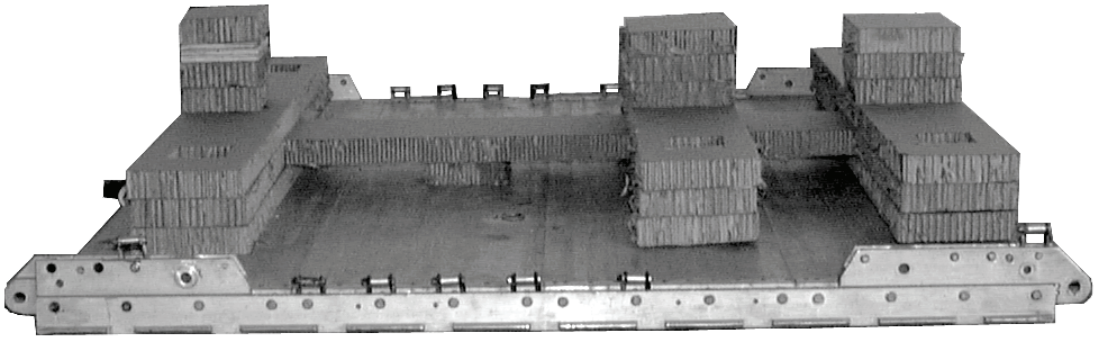
BUILDING AND PLACING HONEYCOMB STACK

1-3. Prepare the honeycomb stack for the M-Gator as shown in Figure 1-3. Position the honeycomb stack as shown in Figure 1-4.



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	¾- 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 1-3. Honeycomb Stack Prepared

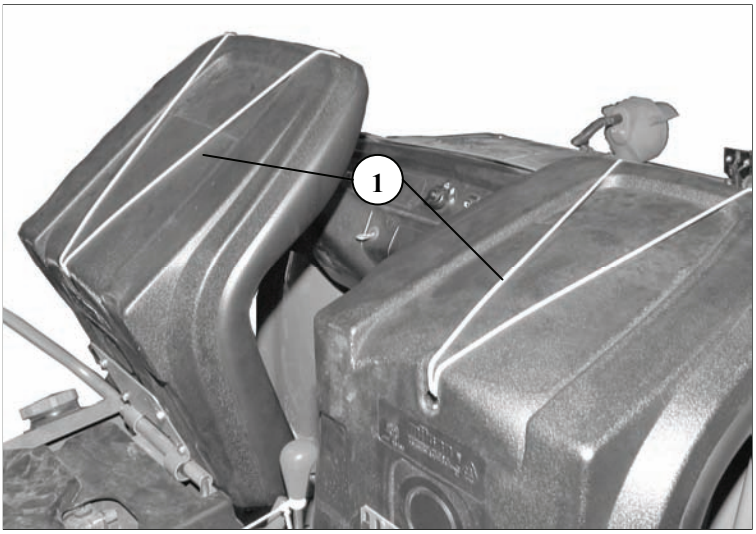


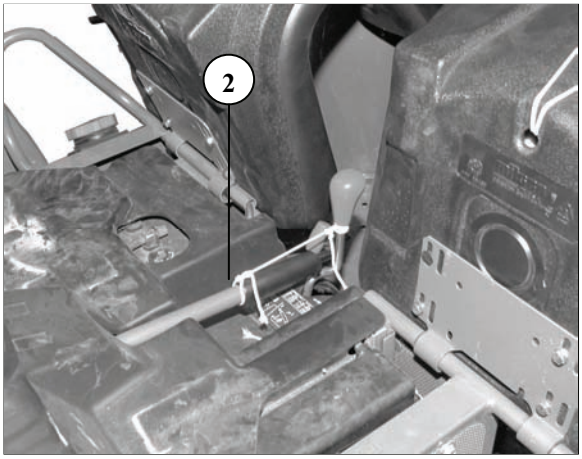
Stack Number	*Position of Stack on the Platform*
1	Place stack: Centered on the platform and even with front edge of platform.

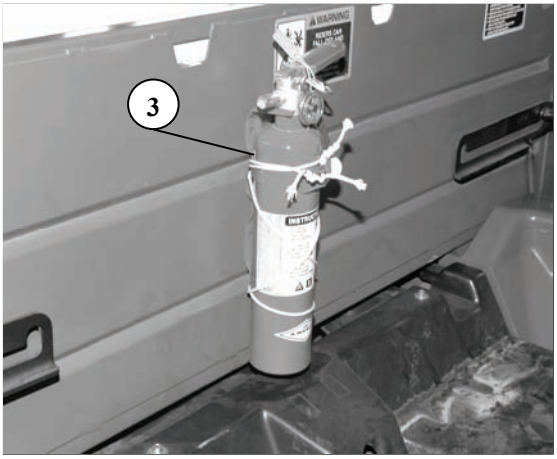
Figure 1-4. Honeycomb Stack Positioned on Platform

PREPARING THE M-GATOR

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

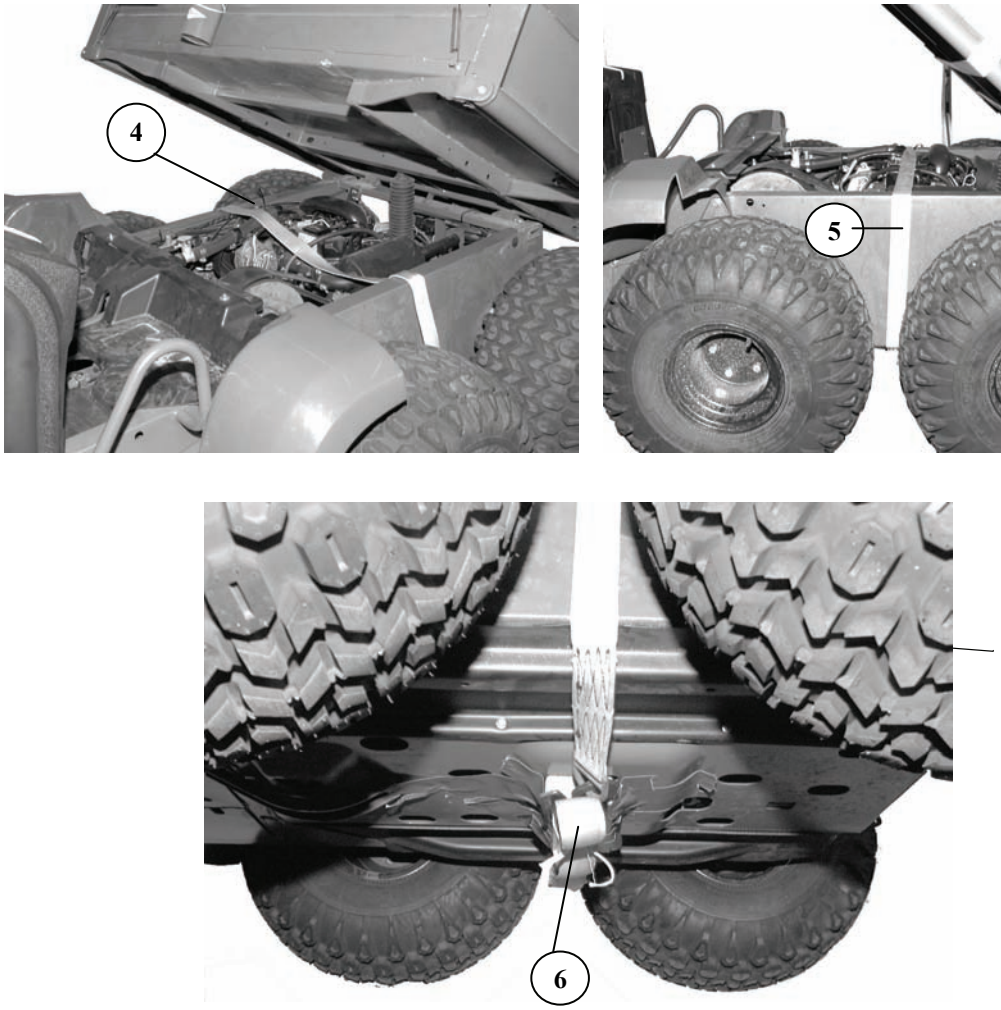






1. Bring the seats forward and secure with Type III nylon cord.
2. Secure the gear stick to the emergency brake with Type III nylon cord.
3. Secure the fire extinguisher to the mounting bracket with Type III nylon cord.

Figure 1-5. M-Gator Prepared

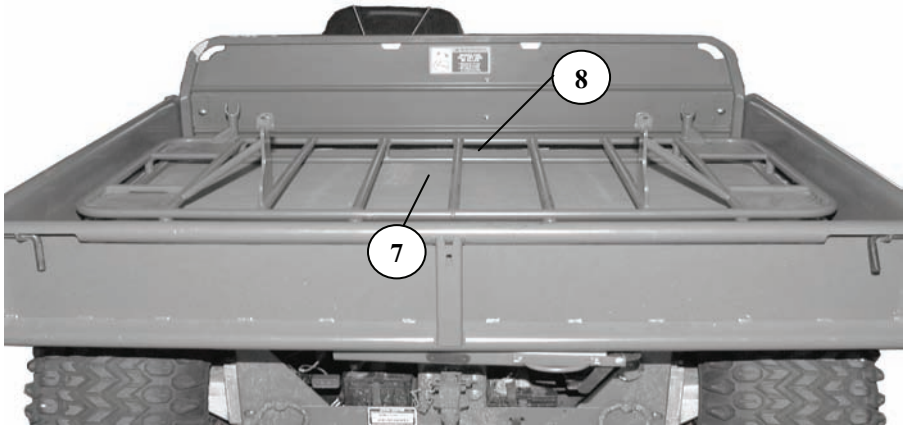


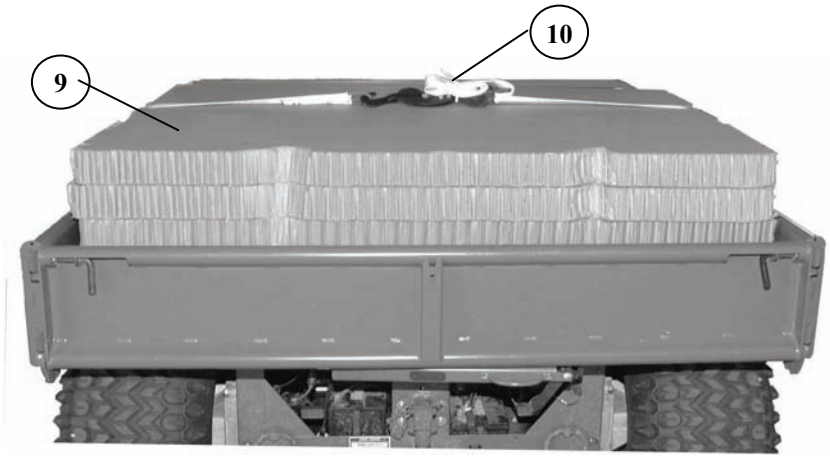
4 Raise the bed and position a lashing across the frame, centered between the rear tires.

5 Route lashing around the frame and the engine.

6 Secure a piece of 2- by 4- by 8 ½-inch lumber, laterally, under the engine. Lumber may be temporarily secured using cloth-backed tape. Position the load binder against the lumber. Pre-position 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 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 by 56-inch pieces of honeycomb on the litter and force them all the way down.

10 Secure the litter and honeycomb to the bed with the pre-positioned 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 Figure 1-6.

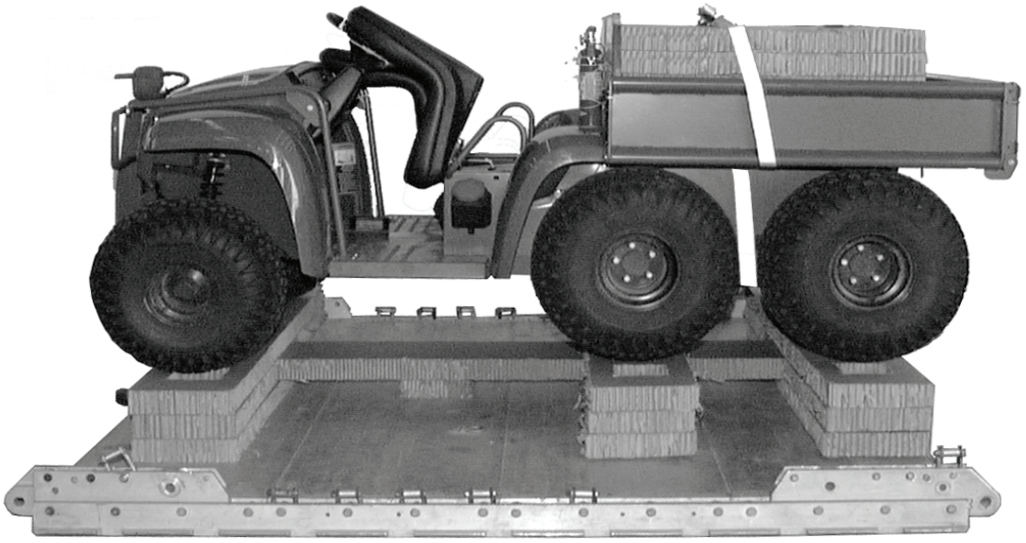
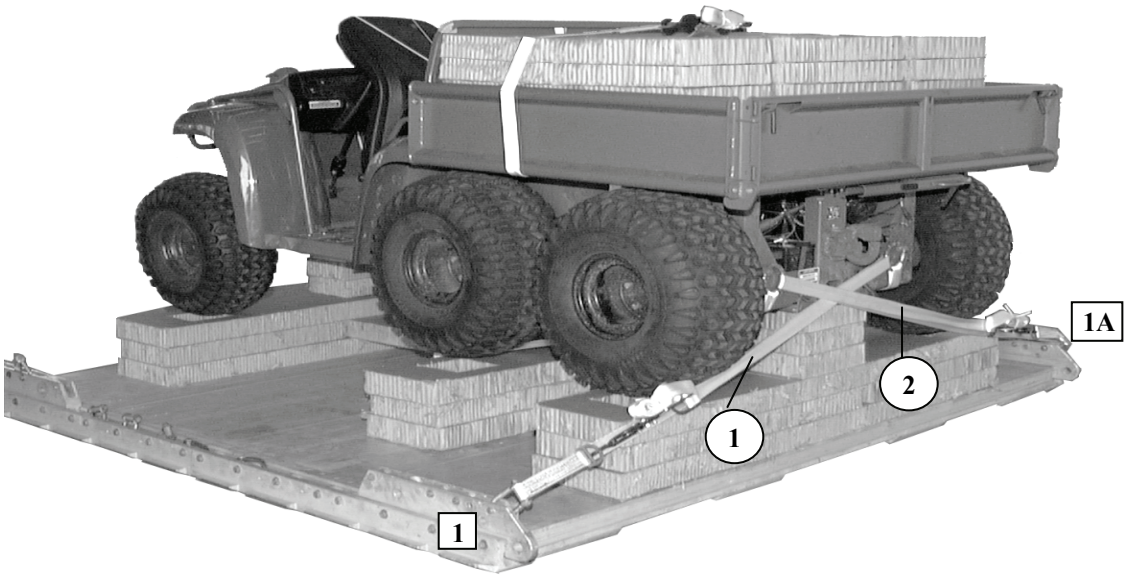


Figure 1-6. M-Gator Positioned

LASHING M-GATOR

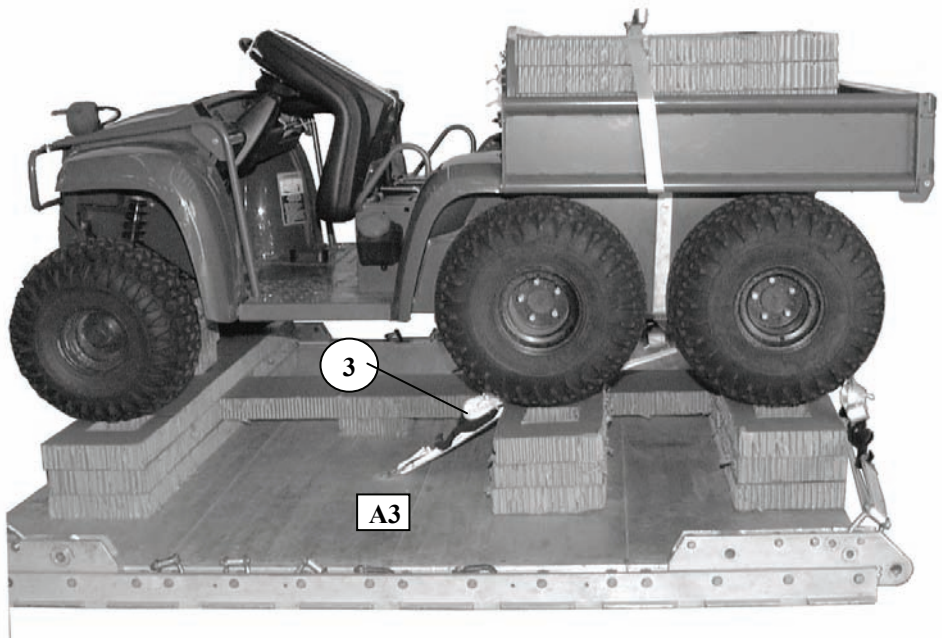
1-6. Lash the M-Gator to the platform according to FM 4-20.102/MCRP 4-11.3J /NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figures 1-7 through 1-9.

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



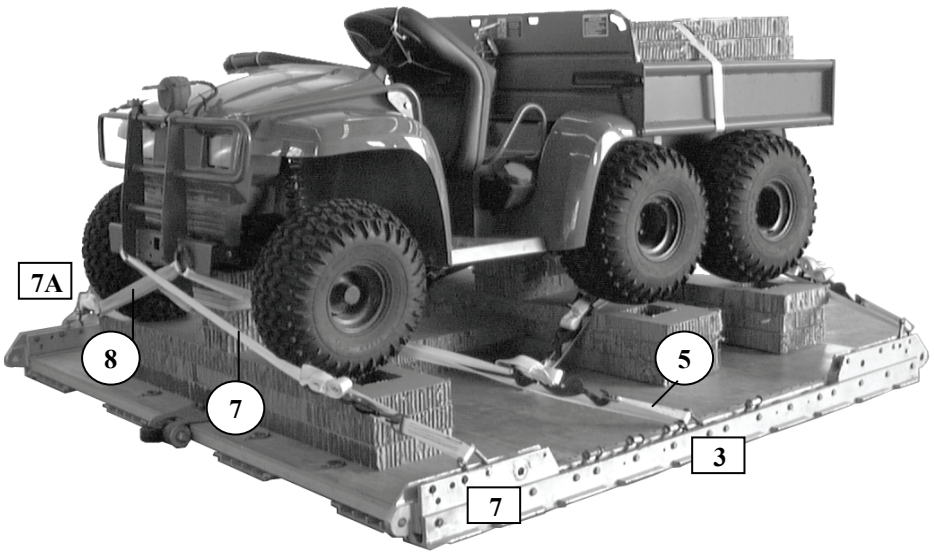
Lashing Number	*Tie-down Clevis Number*	*Instructions*
		Pass lashing through:
1	1	Right rear tie-down point.
2	1A	Left rear tie-down point.

Figure 1-7. Lashings 1 and 2 Installed



Lashing Number	*Deck Ring Number*	*Instructions*
		Pass lashing through:
3	A3	Left rear tie-down point.
4	B3	Right rear tie-down point. (Not Shown)

Figure 1-8. Lashings 3 and 4 Installed



Lashing Number	*Tie-down Clevis Number*	*Instructions*
		Pass lashing through:
5	3	Front left tie-down point.
6	3A	Front right tie-down point. (Not Shown)
7	7	Front right tie-down point
8	7A	Front left tie-down point

Figure 1-9. Lashings 5 through 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 ½-inch long, #4 wood screws to sturdy box for multiple airdrop use.

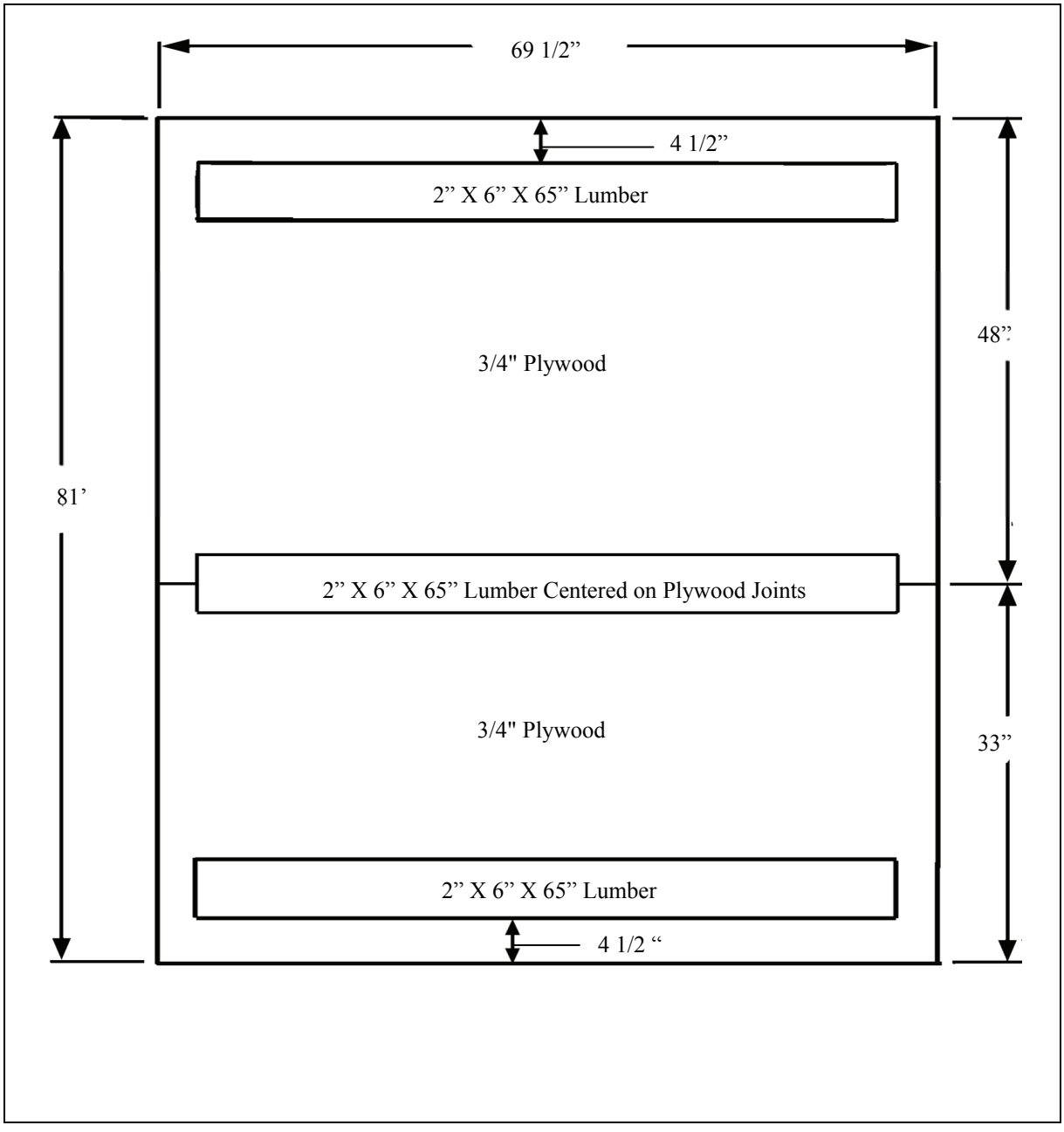


Figure 1-10. M-Gator Box Built (Top Board)

ONE RIGHT AND ONE LEFT SIDEBOARD IS REQUIRED TO BUILD BOX

Note. Diagram not drawn to scale. Sides are not symmetrical.

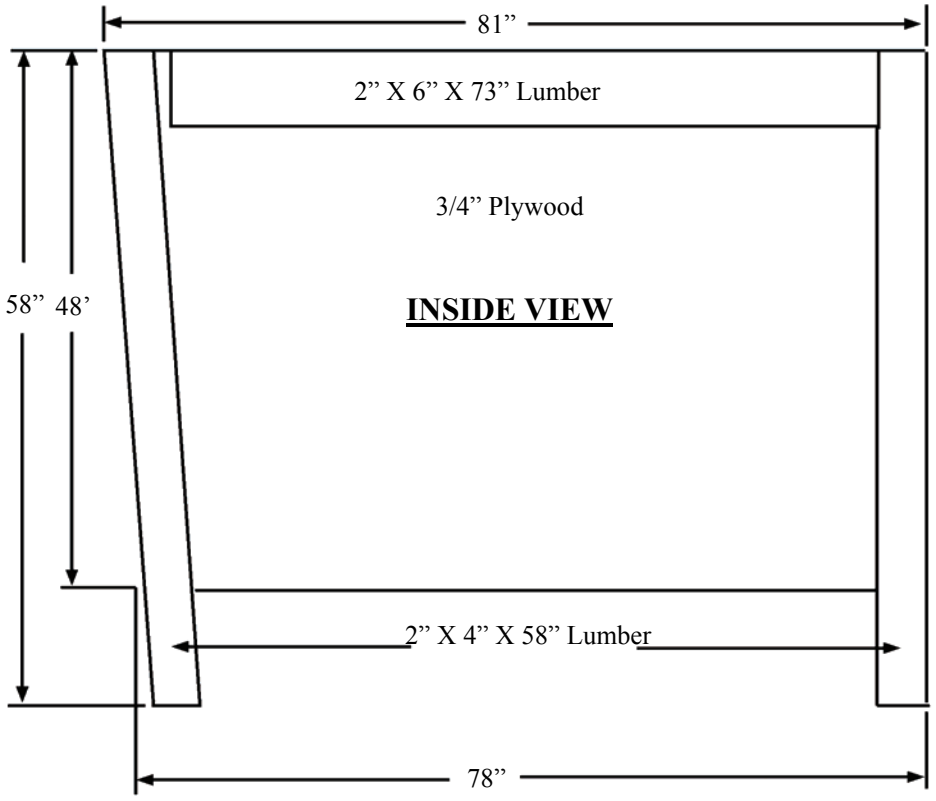


Figure 1-10. M-Gator Box Built (Side Boards) (Continued)

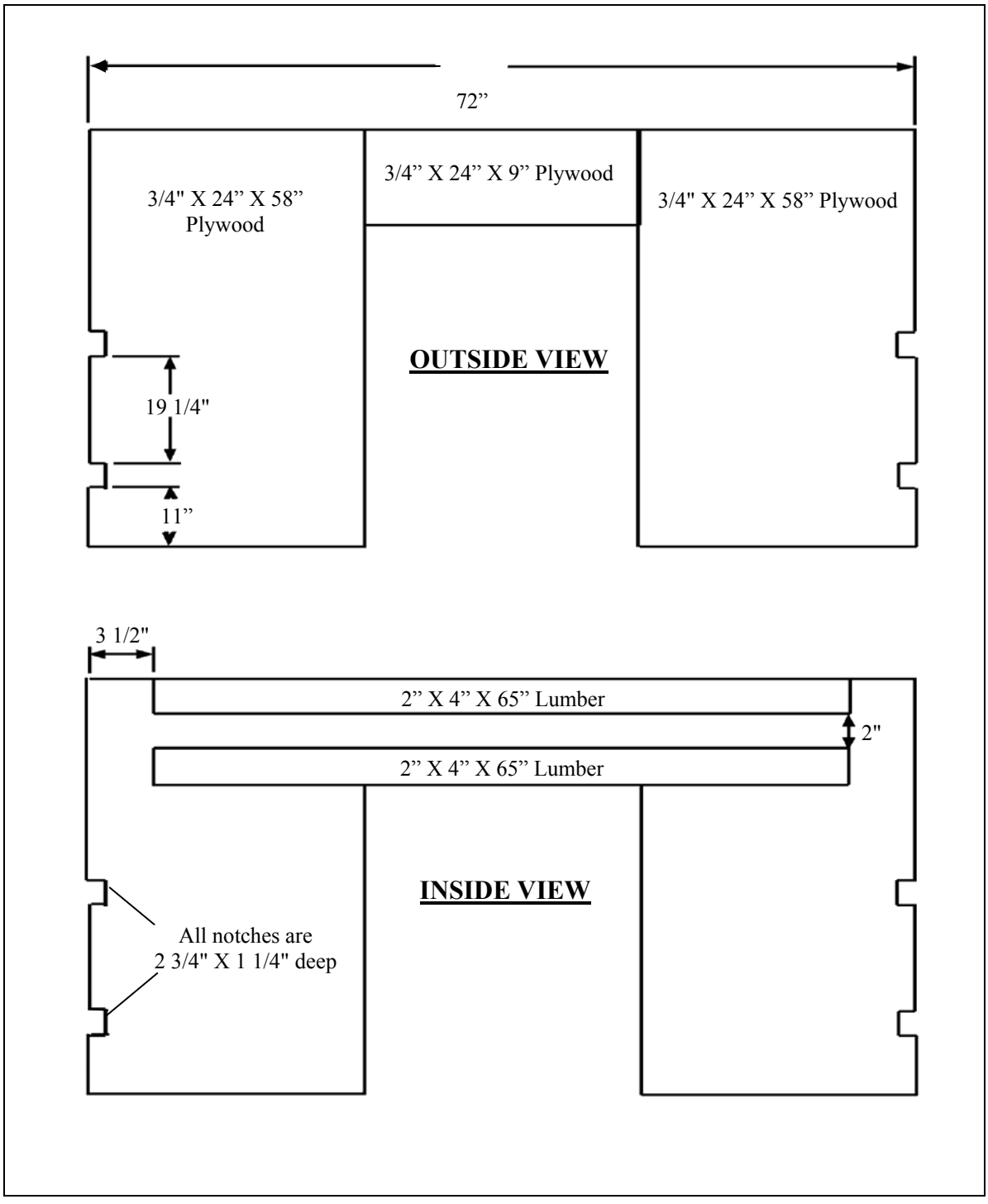
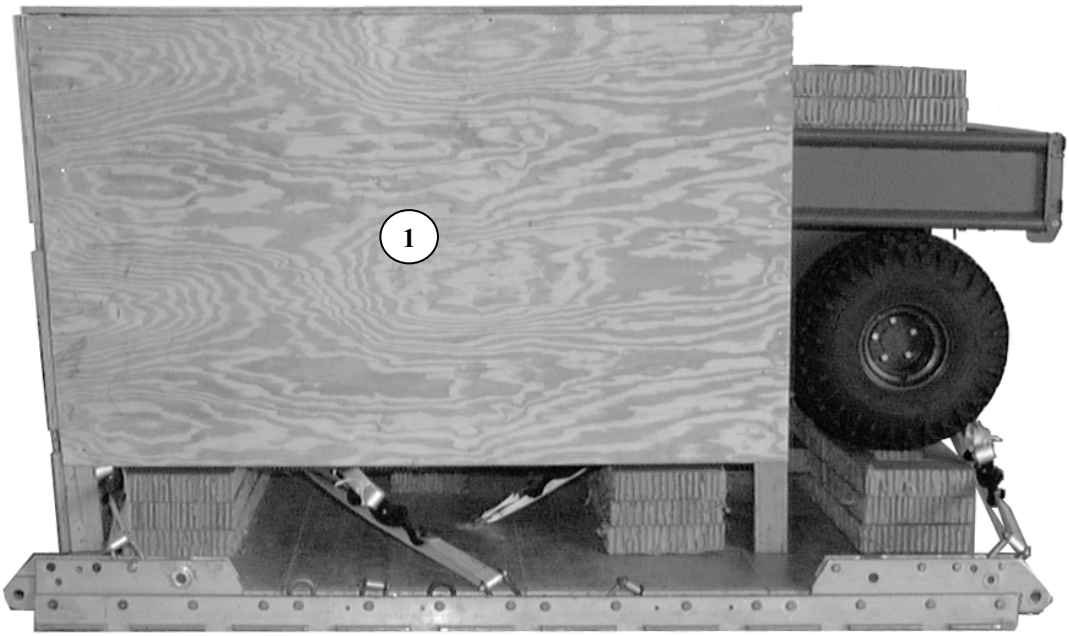


Figure 1-10. M-Gator Box Built (Front Board) (Continued)

POSITIONING M-GATOR BOX

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

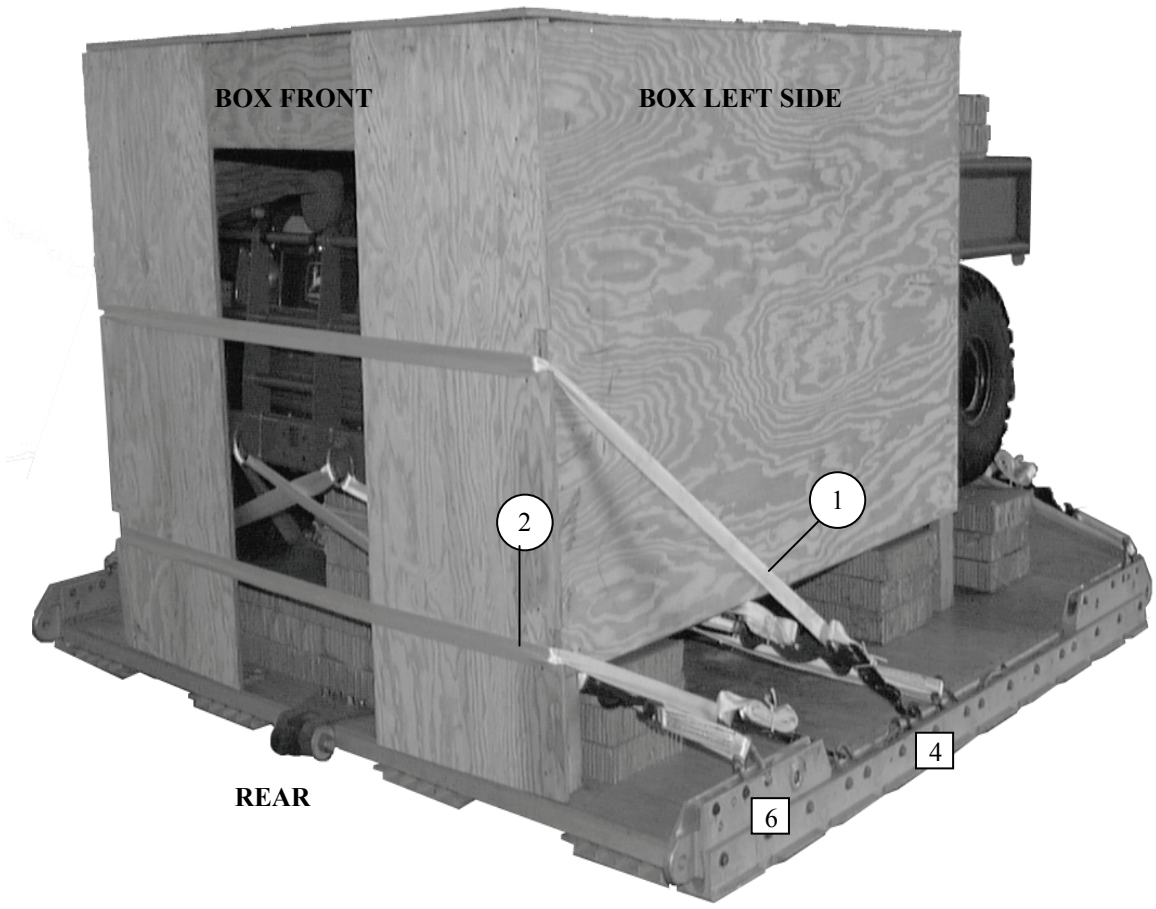


(1) Position the box on the platform, aligning the front bottom edge of the box with the platform rear edge.

Figure 1-11. M-Gator Box Positioned

LASHING M-GATOR BOX

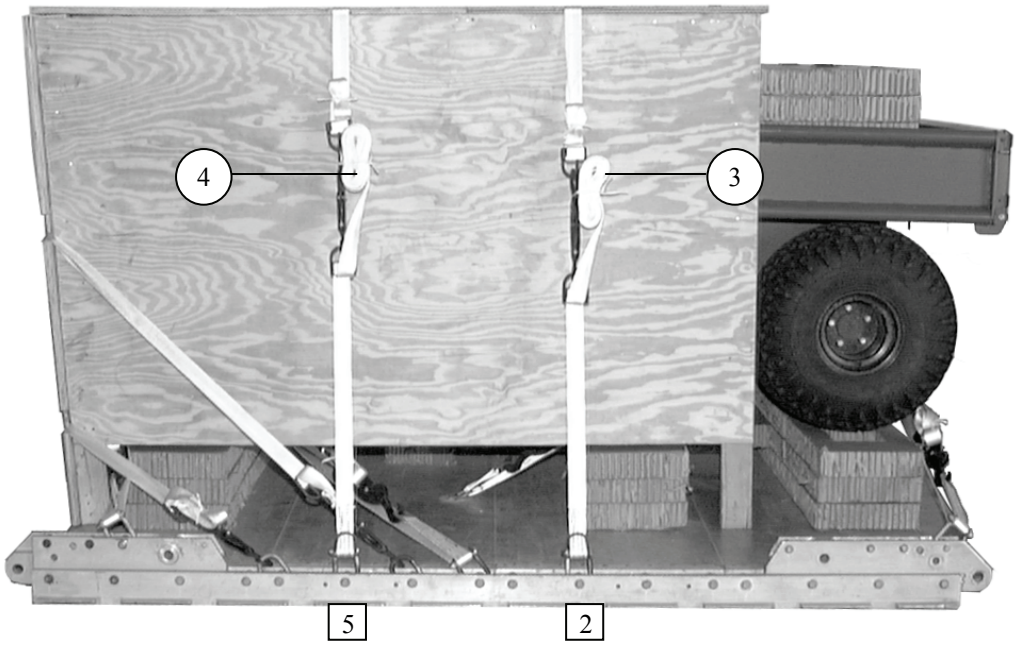
1-9. Lash the M-Gator box to the platform according to FM 4-20.102/MCRP 4-11.3J /NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 1-12.



(1) Route a lashing through clevis 4A and back through its own D-ring, and pull the strap taut. Repeat the same steps for clevis 6A.

Lashing Number	*Tie-down 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



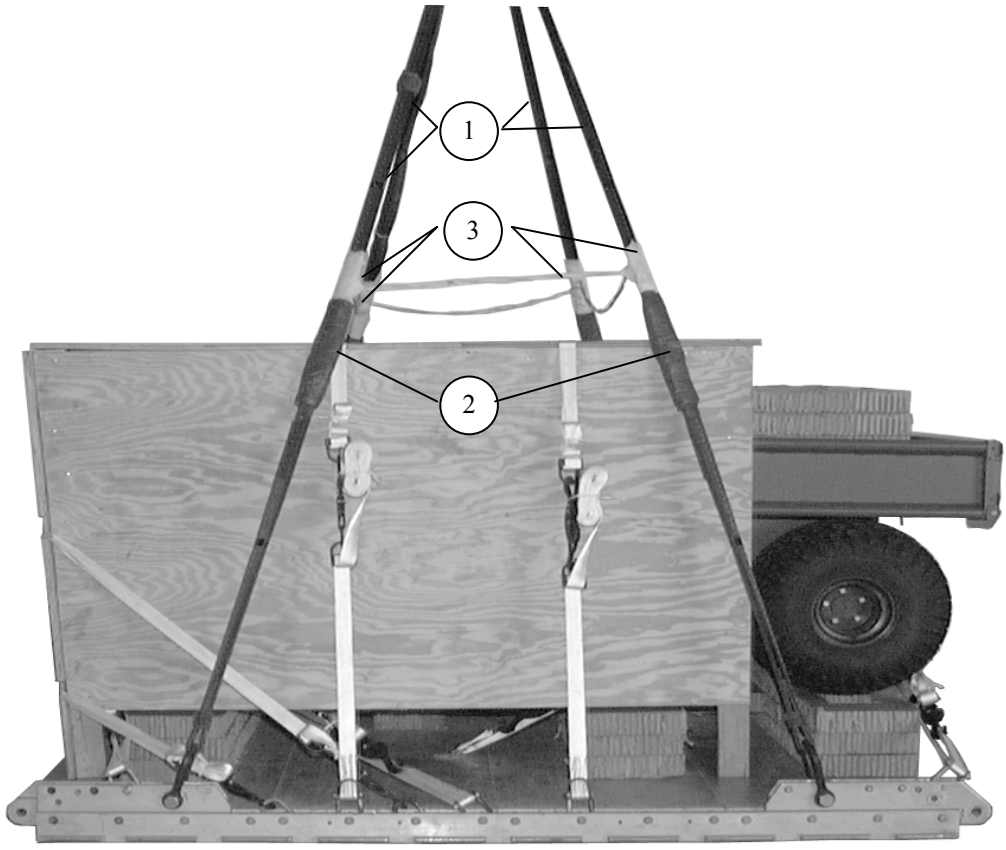
1 Route a lashing through clevis 2 and back through its own D-ring, and pull strap taut. Repeat the same steps for clevises 2A, 5, and 5A.

Lashing Number	*Tie-down Clevis Number*	*Instructions*
		Pass lashing through:
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 4-20.102/MCRP 4-11.3J /NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 1-13.



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 4-20.102/MCRP 4-11.3J /NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

Figure 1-13. Suspension Slings Installed

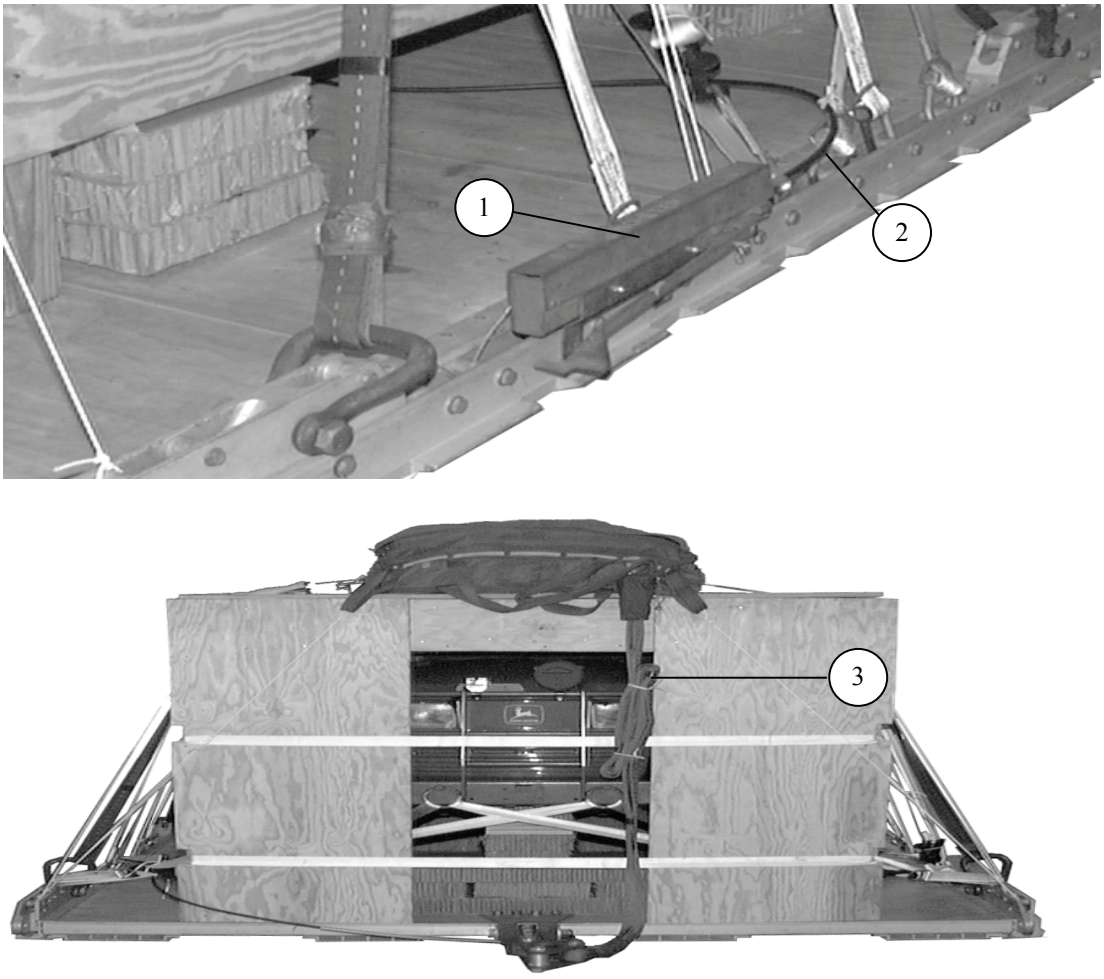
STOWING CARGO PARACHUTE

1-11. Prepare, stow, and restrain one G-11 cargo parachute on the front edge of the M-Gator box according to FM 4-20.102/MCRP 4-11.3J /NAVSEA SS400-AB-MMO-010/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 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 1-15.

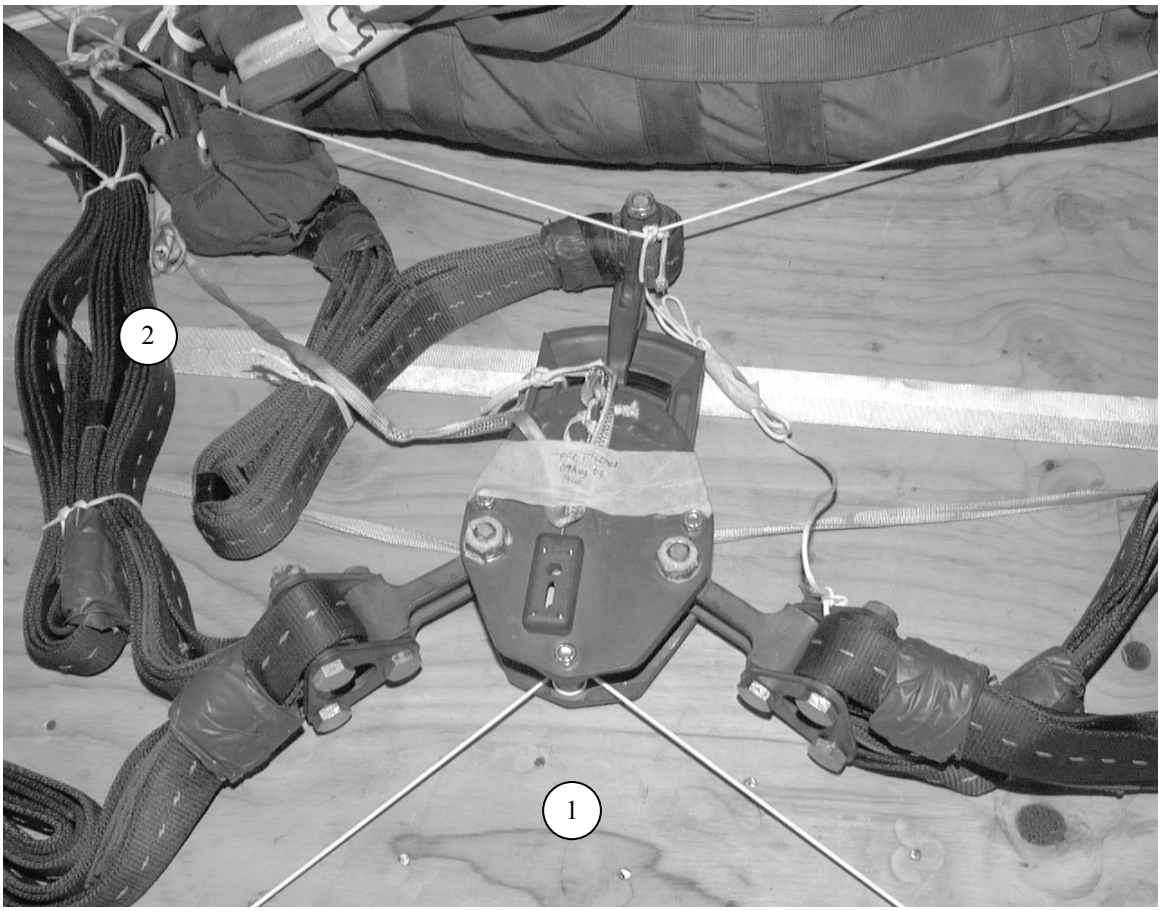


1. Install EFTC actuator mounting bracket using front mounting holes.
2. Install a 12-foot cable.
3. Attach a 9-foot (2-loop), type XXVI nylon sling for the deployment line.

Figure 1-15. Extraction System Installed

INSTALLING PARACHUTE RELEASE

1-13. Prepare and install an M-1 cargo parachute release system according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5, and as shown in Figure 1-16.



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 4-20.102/MCRP 4-11.3J /NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

1-15. Select and install provisions for emergency restraints according to the emergency aft restraints requirements in FM 4-20.102/MCRP 4-11.3J /NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

MARKING RIGGED LOAD

1-16. Mark the rigged load according to FM 4-20.102/MCRP 4-11.3J /NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 1-17. Complete the Shipper's Declaration for Dangerous Goods. If the load varies from the one shown, the weight, height, tip-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 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MM0-010/TO 13C7-1-5 and AR 59-4/ OPNAVINST 4630.24C/AFJ 13-210(I)/MCO 13480.1B before the load leaves the rigging site.

RIGGED LOAD DATA

Weight	3,120 pounds
Maximum Load Allowed	5,000 pounds
Height	78 inches
Width	108 inches
Overall Length	125 inches
Overhang: Front (bed)	11 inches
Rear	0 inches
Center of Balance (CB) (from front edge of platform)	49 inches
Extraction System with 12-foot cable (adds 18 inches to length of platform)	EFTC

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

Table 1-1. Equipment Required for Rigging the M-Gator on an 8-Foot Type V 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 lead, (line bag for C-17)	1
4030-00-090-5354	Clevis, large	5
1670-00-360-0328	Cover, clevis, large	1
8135-00-664-6958	Cushioning material, packaging, cellulose wadding	As required
1670-00-434-5783	Coupling assembly, airdrop, EFTC, w/12-ft cable	1
1670-01-475-1990	Extraction Parachute Jettison System (EPJS)	1
8305-00-191-1101	Felt, ½-inch	As required
8305-00-290-5584	Felt, $^{3}/_{16}$-inch	As required
1670-01-183-2678	Leaf, extraction line (line bag)(add 2 for DES)	2
	Line Multi-Loop:	
	For deployment line:	
1670-01-062-6304	9-ft (2-loop), type XXVI nylon webbing	1
	For drogue:	
1670-01-064-4452	60-ft (1-loop), type XXVI nylon webbing (DES)	1
	For extraction:	
1670-01-064-4452	60-ft (1-loop), type XXVI nylon (C-130 aircraft)	1
1670-01-107-7652	160-ft (1-loop), type XXVI nylon (C-17 aircraft)	1
	For riser extension:	
1670-01-062-6301	3-ft (2-loop), type XXVI nylon webbing	1
	For suspension:	
1670-01-062-6303	12-ft (2-loop), type XXVI nylon webbing	4
	Link:	
1670-01-493-6418	Assembly small, two-point, 3 ¾-inch	1
1670-01-493-6418	Assembly small, two-point, 3 ¾-inch (C-17 drogue)	1
1670-01-072-5637	Jettison, C-130 (DES)	1
1670-01-483-8259	Link, Parachute connector (TRM H-block) (C-17)	1
	Lumber:	
5510-00-220-6146	2- by 4-inch	As required
5510-00-220-6148	2- by 6-inch	As required
5530-00-128-4981	Plywood, ¾-inch sheet	6 sheets
	Nail, steel wire, common:	
5315-00-010-4659	8d	As required
1670-00-753-3928	Pad, energy-dissipating, honeycomb,	9 sheets
	Parachute:	
1670-01-016-7841	G-11	1
1670-00-063-3715	15-ft, Extraction, Cargo	1
1670-01-063-3717	15-ft, Extraction Drogue (DES)	1

Table 1-1. Equipment Required for Rigging the M-Gator on an 8-Foot Type V Platform for Low-Velocity Airdrop (Continued)

National Stock Number	*Item*	*Quantity*
	Platform, airdrop, type V, 8-ft:	
1670-01-353-8425	Bracket assembly, component (EFTC)	1
1670-01-353-8424	Bracket, assembly, extraction	1
1670-01-162-2372	Clevis, load tie-down	14
1670-01-162-2381	Link, Tandem, link sups. assembly	4
1670-01-097-8816	Release, cargo parachute, M-1	1
7510-00-266-5016	Tape, adhesive, 2-in	As required
1670-00-937-0271	Tie-down cargo, A/C, 15-ft webbing	16
	Webbing:	
4020-00-240-2146	Cord, nylon, type III, 550-lb	As required
8305-00-268-2411	Cotton, type I, 1/4-inch	As required
8305-00-082-5752	Nylon, tubular, 1/2-in, natural	As required
8305-00-263-3591	Nylon, type VIII	As required

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Chapter 2

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

DESCRIPTION OF LOAD

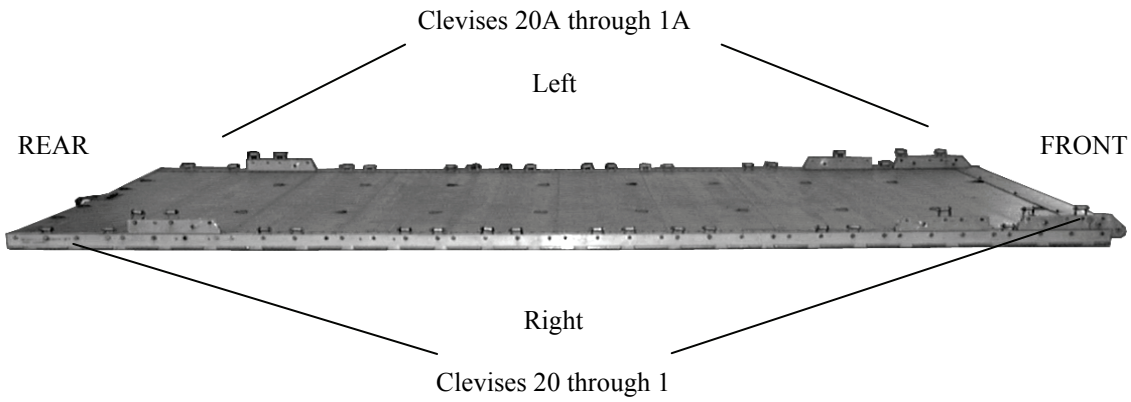
2-1. This load consists of two John Deere diesels, which have been named M-Gator, and an equipment box weighing 1,600 pounds minimum or 2,000 pounds maximum of unit specific equipment. It is rigged on a 20-foot, type V platform. The load shown has a rigged weight of 8,520 pounds. It has a length of 258 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. Prepare a 20-foot, type V airdrop platform according to TM 10-1670-268-20&P/TO 13C7-52-22 using 40 tie-down clevises and 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.



1. Inspect, or assemble and inspect, a 20-foot, type V platform according to TM 10-1670-268-20&P/TO 13C7-52-22.
2. Install a tandem multi-purpose link to front of each platform side rail holes 1, 2, and 3.
3. Install a suspension link to each platform side rail holes 6, 7, and 8.
4. Install a suspension link to each platform side rail holes 33, 34, and 35.
5. Install a clevis on bushings 2 and 4 on each tandem multi-purpose link.
6. Install a clevis on bushing 3 of each front suspension bracket link.
7. Install a clevis on bushings 2 and 4 on each rear suspension bracket link.
8. Starting at the front of each platform side rail, install clevises on each platform side rail using bushings bolted on holes 4, 10, 11, 15, 16, 18, 19, 22, 23, 25, 26, 30, 31, 37, and 39.
9. Starting at the front of each platform side rail, number the clevises, including the clevis on the tandem link, bolted to the right side from 1 through 20 and those bolted to the left side from 1A through 20A.
10. Label the tie down rings according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/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 shown 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 each other.

Figure 2-2. Honeycomb Stack 2 Prepared

POSITIONING HONEYCOMB STACK 2

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

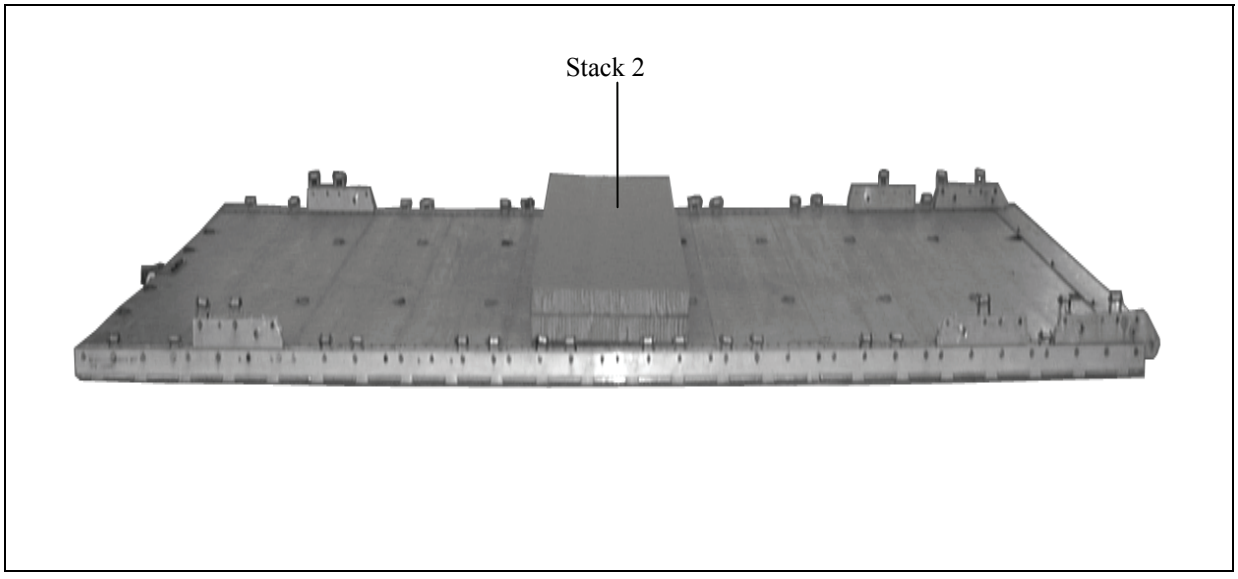
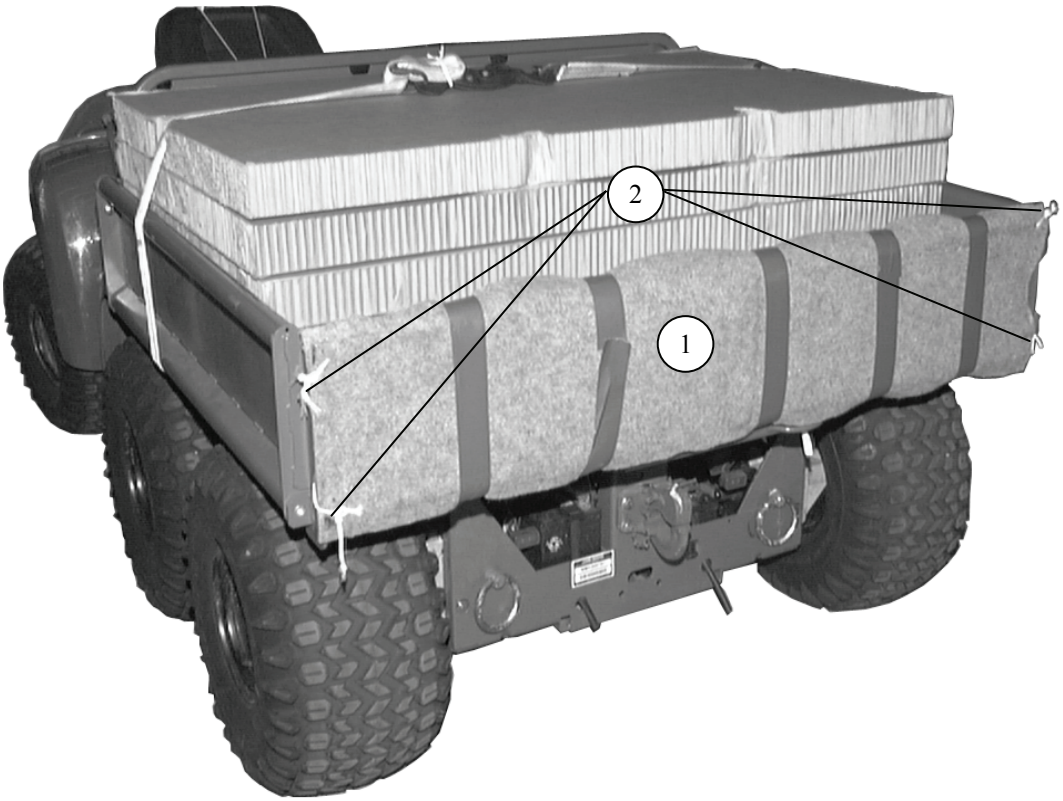


Figure 2-3. Honeycomb Stack 2 Positioned

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 1 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.

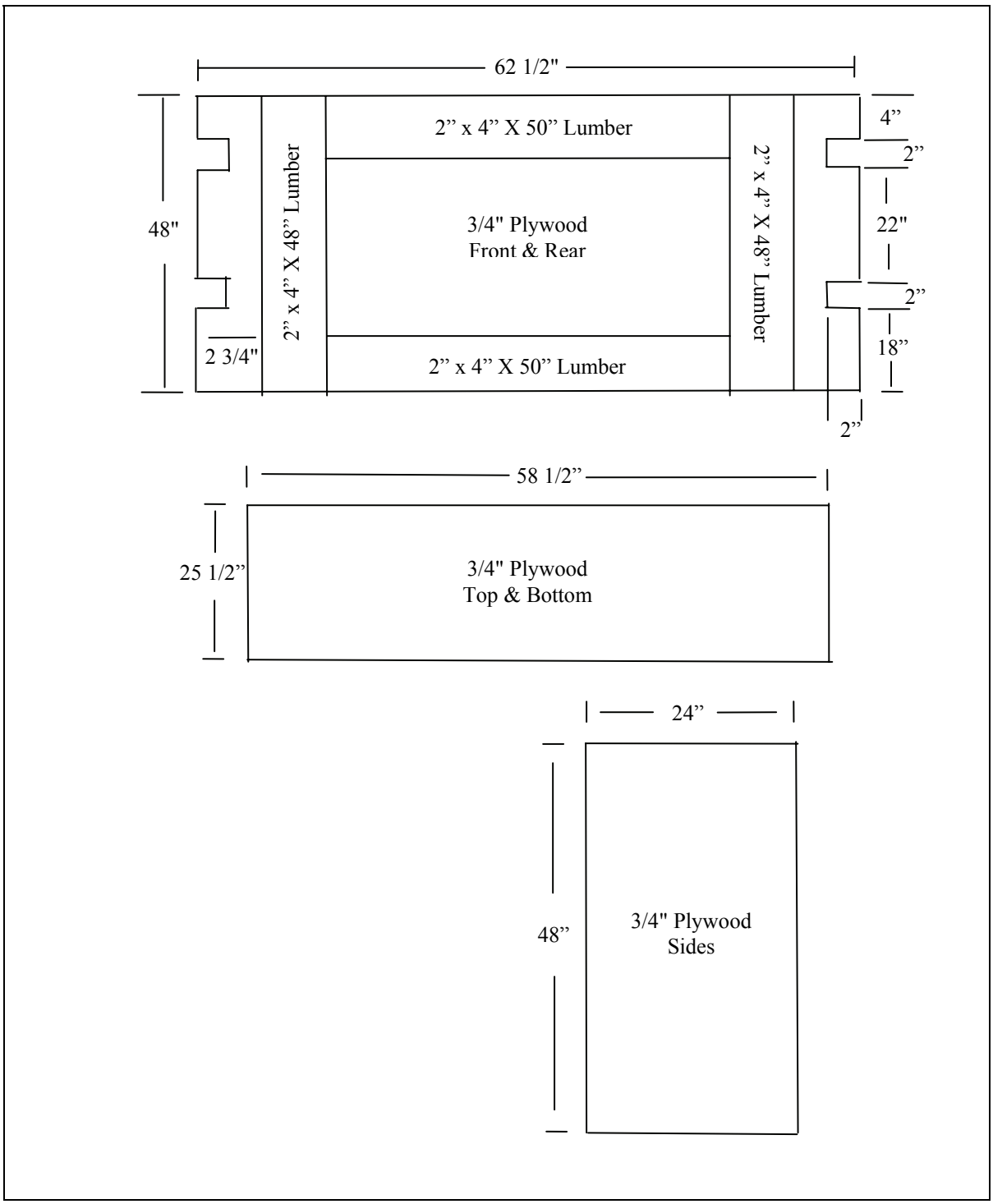
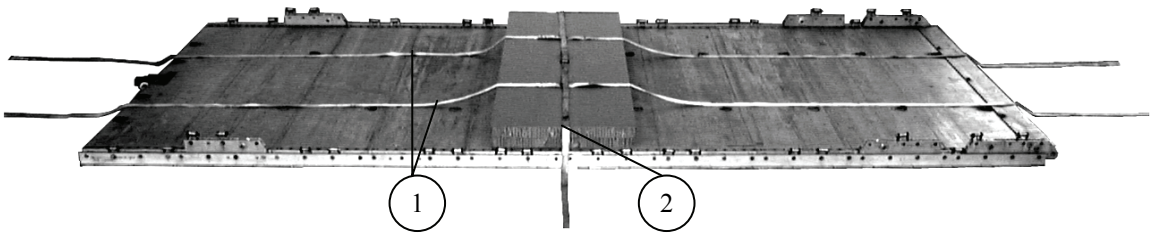


Figure 2-5. Equipment Box Built

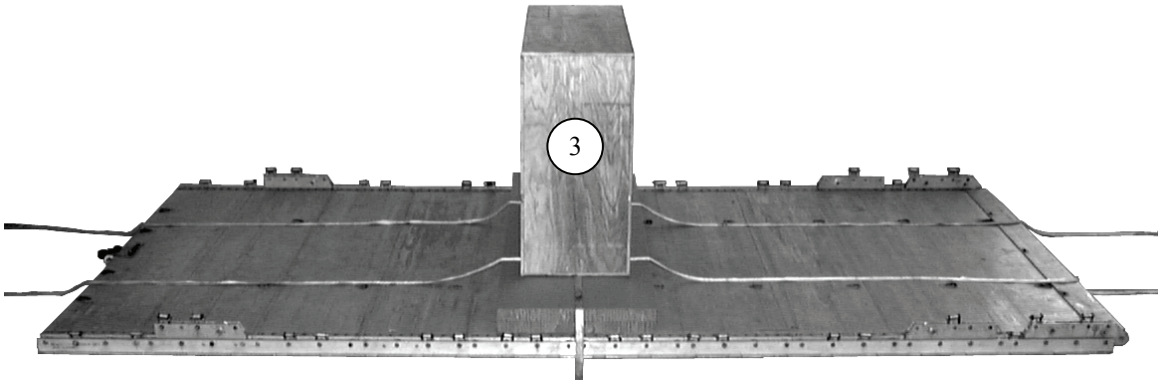
POSITIONING AND LASHING THE EQUIPMENT BOX

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



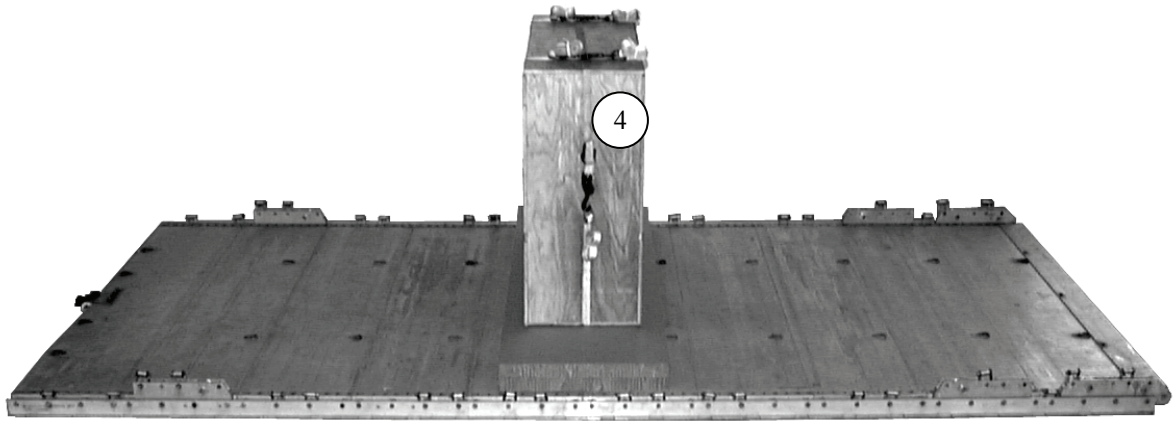
1 Position two 30-foot lashings 28 inches from each edge on stack 2, running the length of the platform.

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

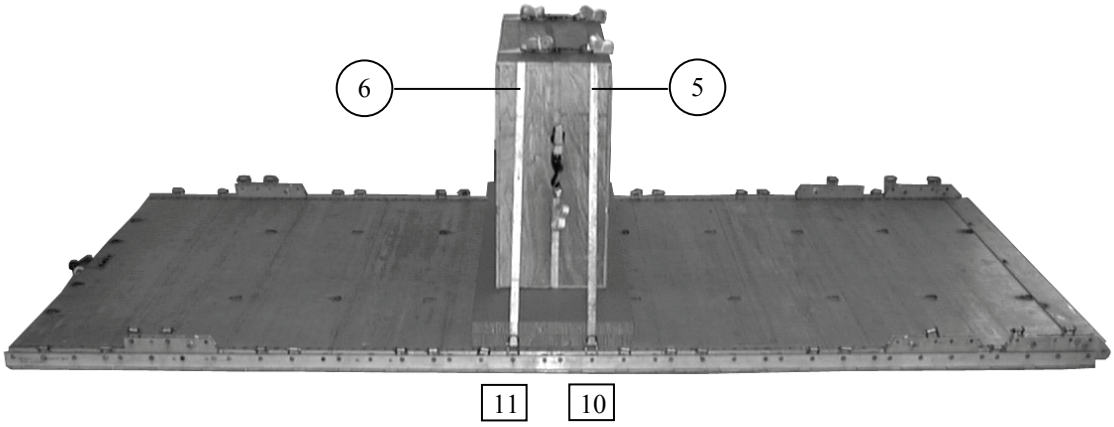


3 Position the box centered on stack 2.

Figure 2-6. Equipment Box Positioned and Lashed



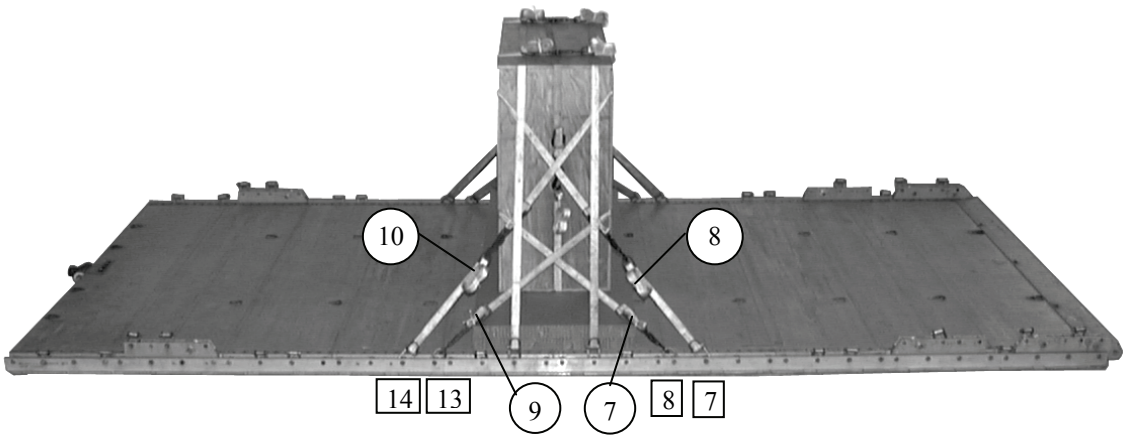
4 Secure the previously positioned lashings on top and side of the box.



5 Route a lashing through clevis 10 and back through its own D-ring, over the box and load bind to clevis 10A.

6 Rout a lashing through clevis 11 and back through its 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 its 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 its own D-ring, through the upper rear cutouts of the box. Route a lashing through clevis 7 and back through its own D-ring and load bind the lashings together.

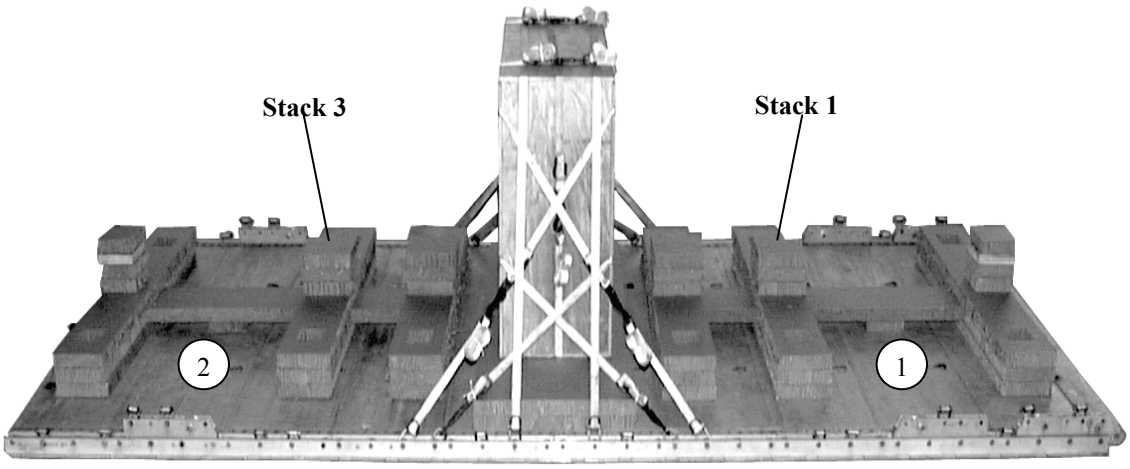
9 Route a lashing through clevis 13A and back through its own D-ring, through the lower front cutouts of the box, load bind to clevis 13.

10 Route a lashing through clevis 14A and back through its own D-ring, through the upper front cutouts of the box. Route a lashing through clevis 14 and back through its own D-ring and 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.



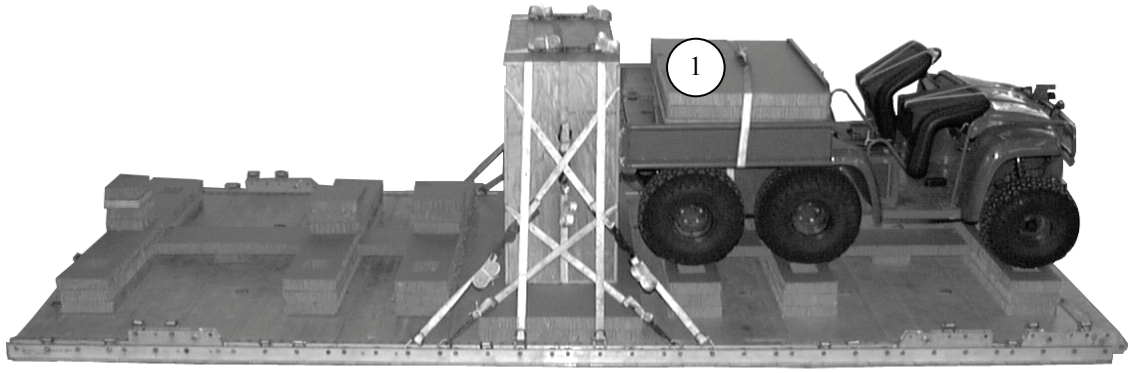
1 Pre-position honeycomb stack 1 behind the tie-down rings on the front panel and centered left to right.

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

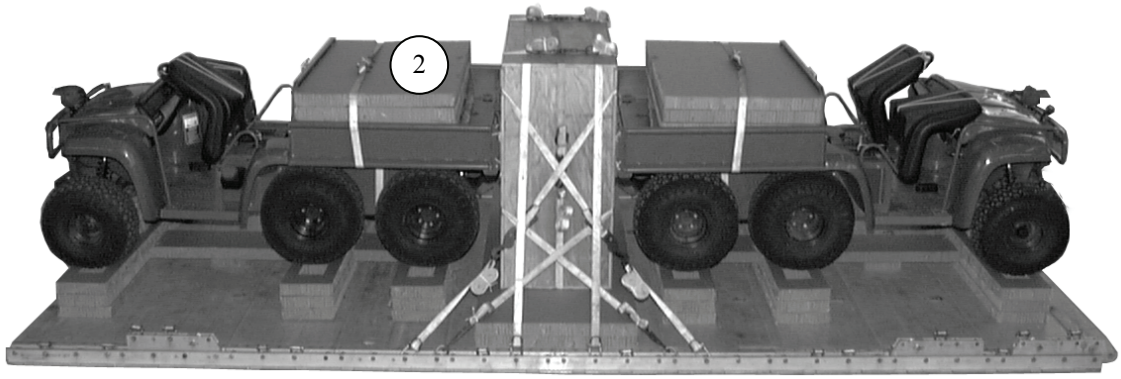
Figure 2-7. Honeycomb Stacks 1 and 3 Positioned on Platform

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 on the tailgate is against the center equipment box. Adjust the honeycomb stack so each tire will be centered over a cutout in the honeycomb stack.



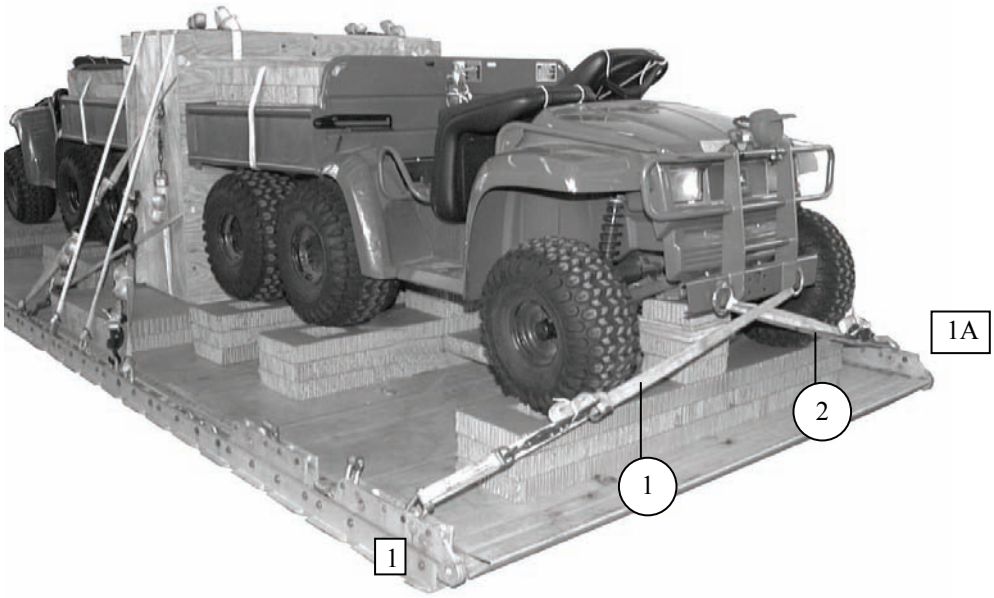
2 Position the rear M-Gator on honeycomb stack 3 ensuring the felt on the tailgate is against the center equipment box. Each tire will be centered over a cutout in the honeycomb stack.

Figure 2-8. M-Gators Positioned

LASHING M-GATORS

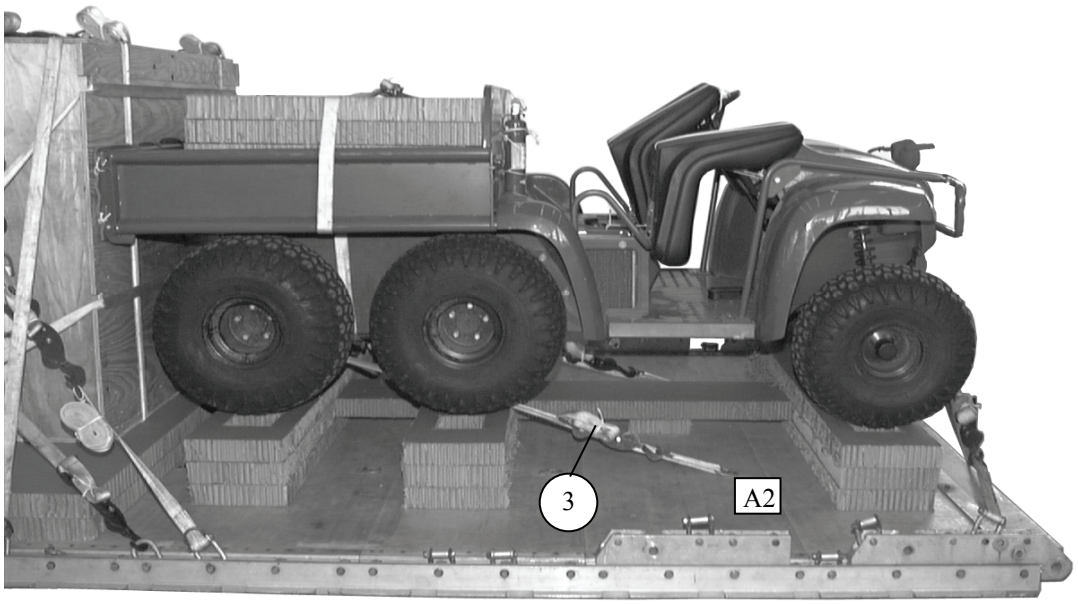
2-11. Lash the M-Gators to the platform according to FM 4-20.102/MCRP 4-11.3J /NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figures 2-9 through 2-15.

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



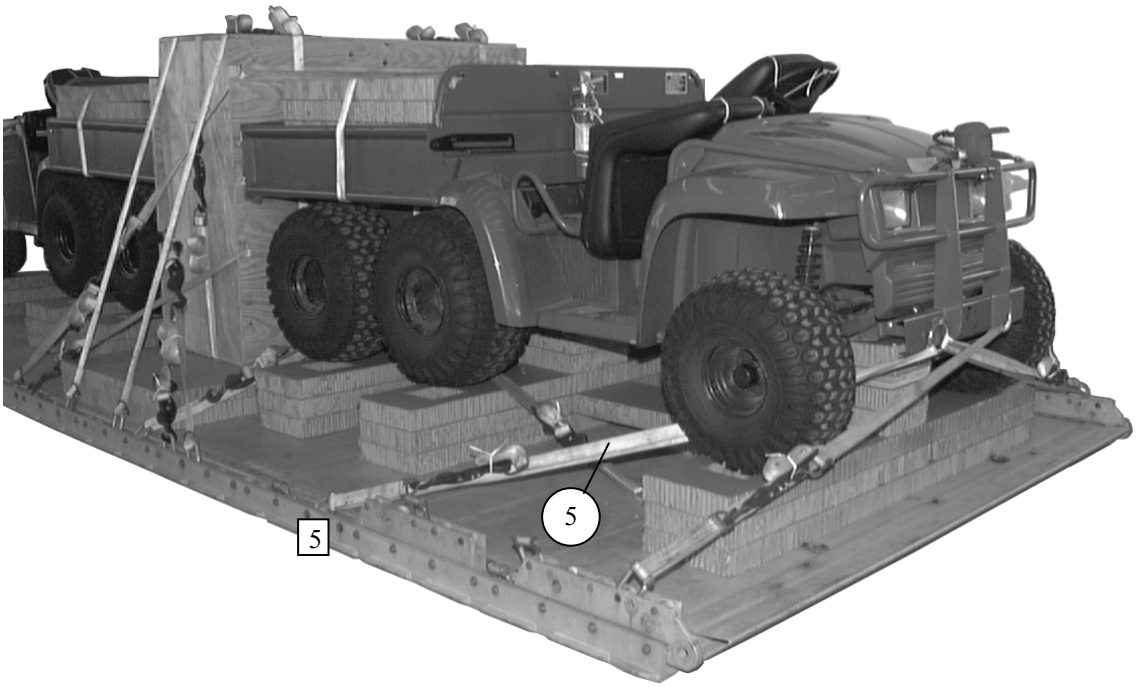
Lashing Number	*Tie-down Clevis Number*	*Instructions*
		Pass lashing through:
1	1	Front left tie-down point.
2	1A	Front right tie-down point.

Figure 2-9. Lashings 1 and 2 Installed



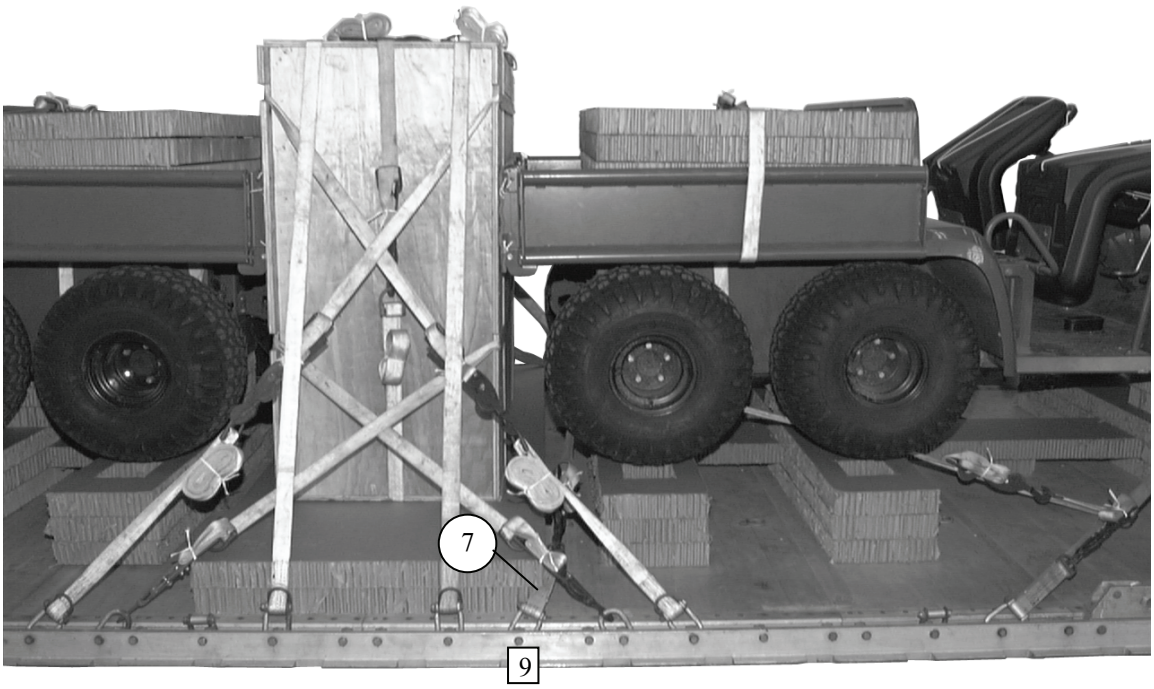
Lashing Number	*Deck Ring Number*	*Instructions*
		Pass lashing through:
3	A2	Left rear tie-down point.
4	B2	Right rear tie-down point. (Not Shown)

Figure 2-10. Lashings 3 and 4 Installed



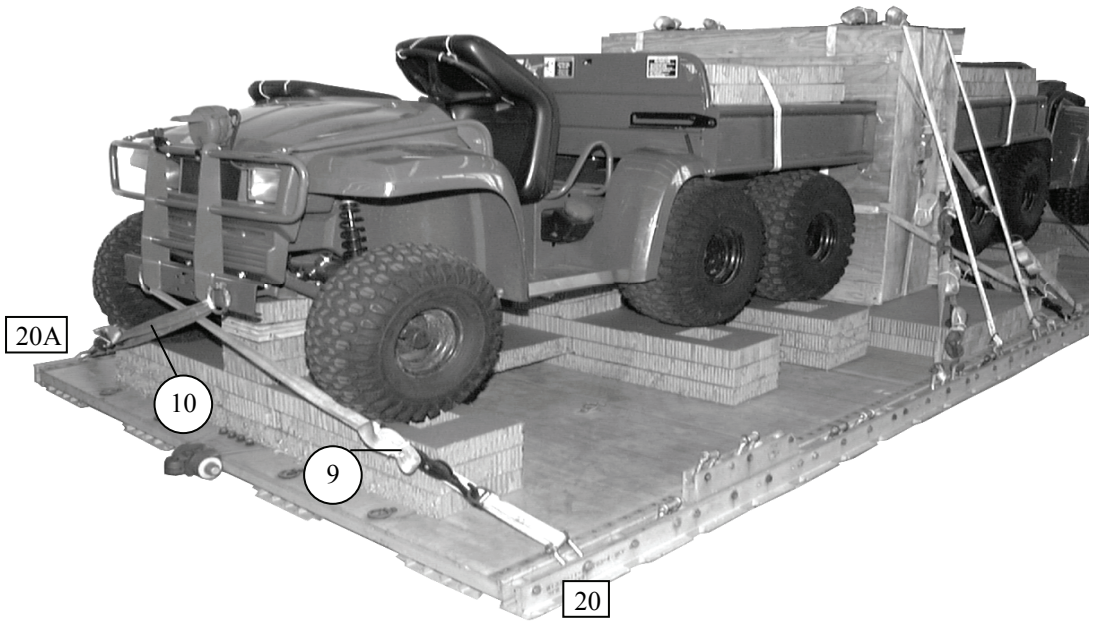
Lashing Number	*Tie-down Clevis Number*	*Instructions*
		Pass lashing through:
5	5	Front right tie-down point.
6	5A	Front left tie-down point. (Not Shown)

Figure 2-11. Lashings 5 and 6 Installed



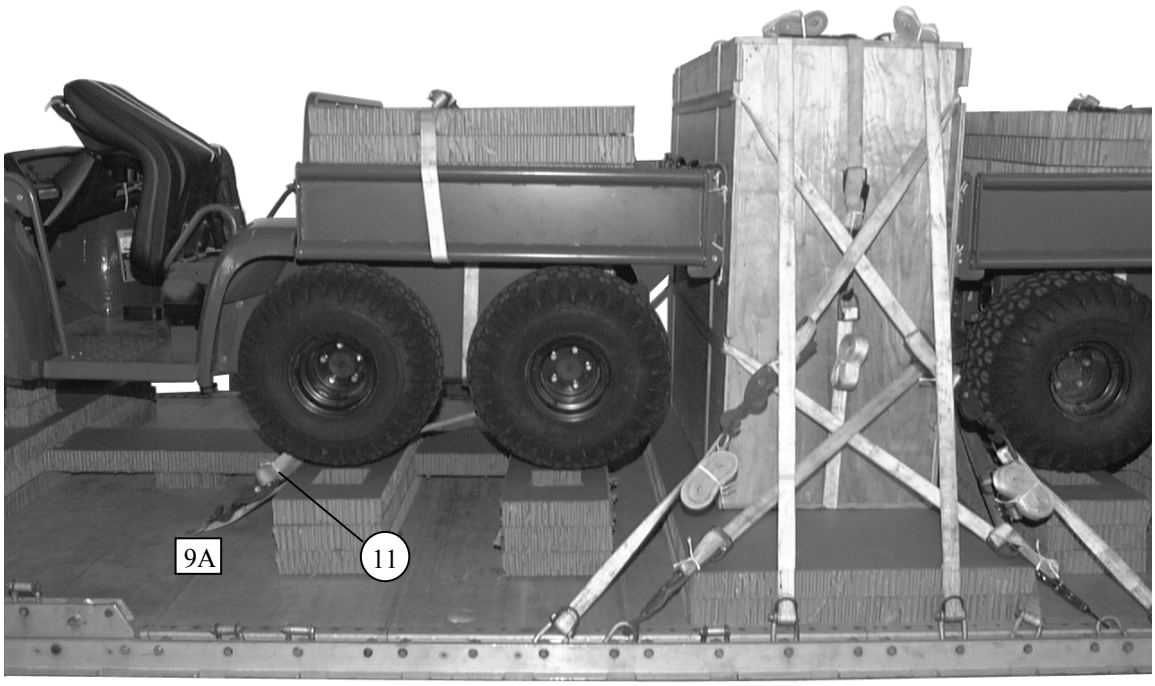
Lashing Number	*Tie-down Clevis Number*	*Instructions*
		Pass lashing through:
7	9	Rear left tie-down point.
8	9A	Rear right tie-down point. (Not Shown)

Figure 2-12. Lashings 7 and 8 Installed



Lashing Number	*Tie-down Clevis Number*	*Instructions*
		Pass lashing through:
9	20	Front right tie-down point.
10	20A	Front left tie-down point.

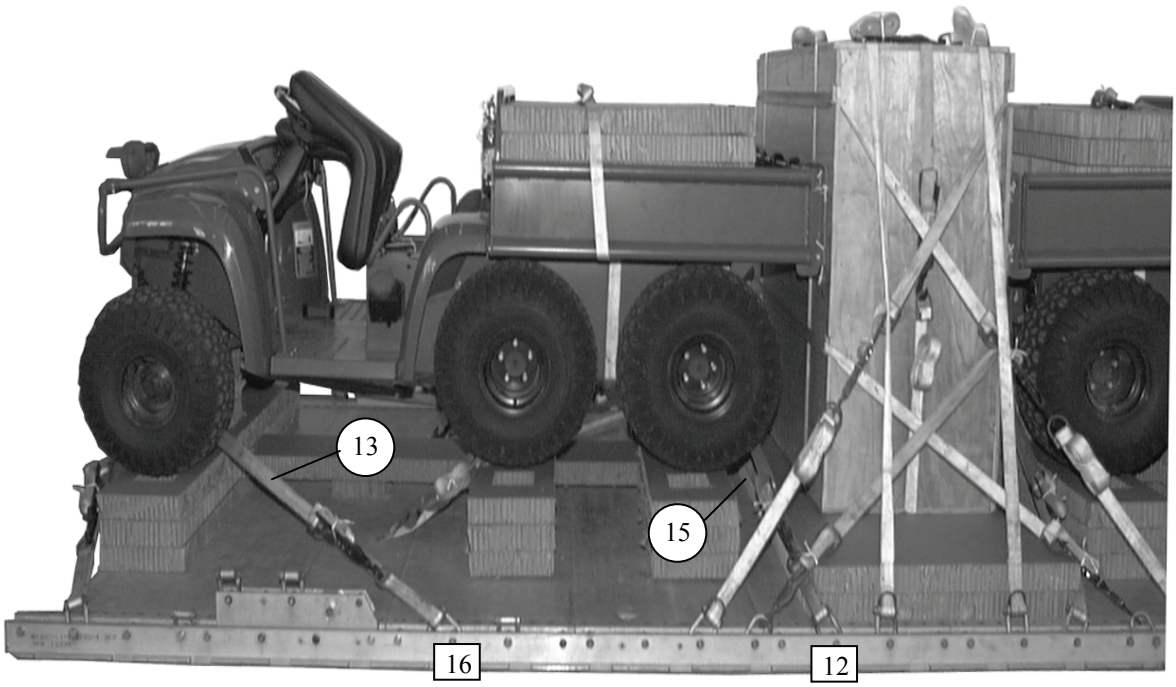
Figure 2-13. Lashings 9 and 10 Installed



-

Lashing Number	*Deck Ring Number*	*Instructions*
		Pass lashing through:
11	9A	Left rear tie-down point.
12	9B	Right rear tie-down point. (Not Shown)

Figure 2-14. Lashings 11 and 12 Installed

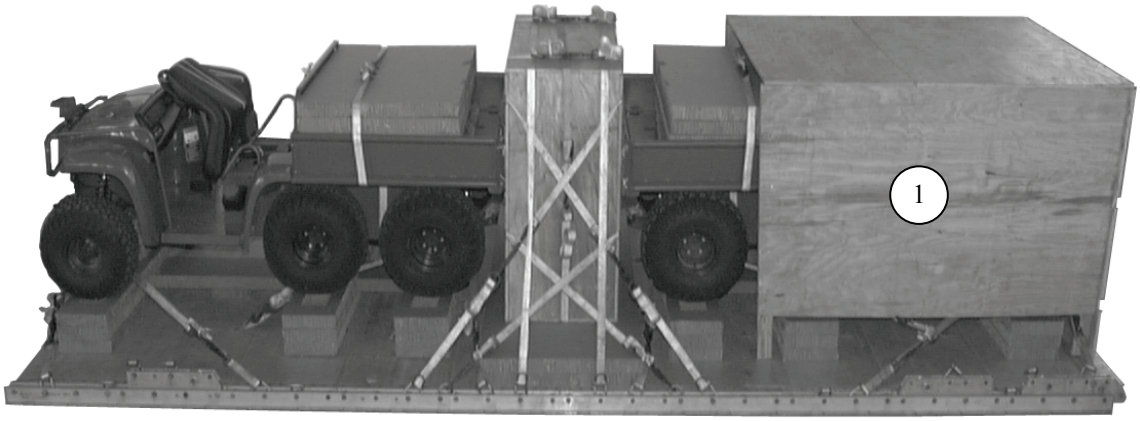


Lashing Number	*Tie-down Clevis Number*	*Instructions*
		Pass lashing through:
13	16	Front left tie-down point.
14	16A	Front right tie-down point. (Not Shown)
15	12	Right rear tie-down point.
16	12A	Left rear tie-down point. (Not Shown)

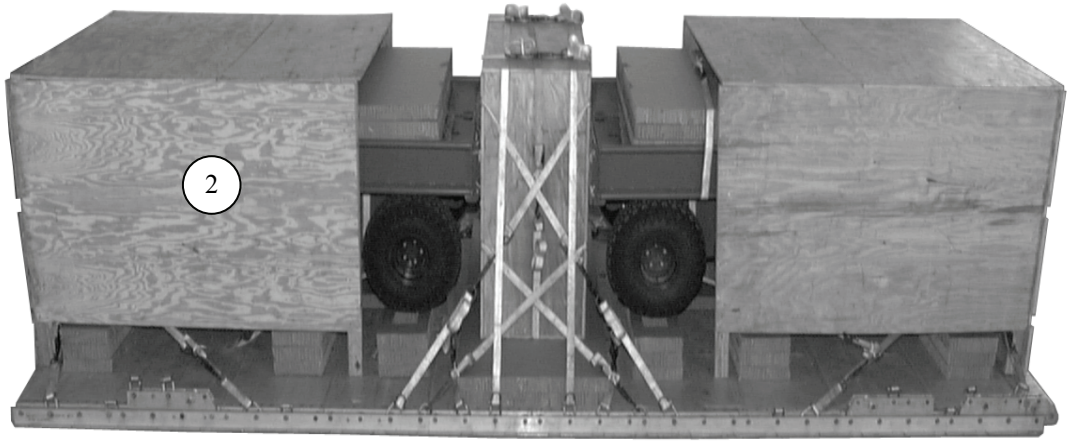
Figure 2-15. Lashings 13 through 16 Installed

POSITIONING M-GATOR BOXES

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



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

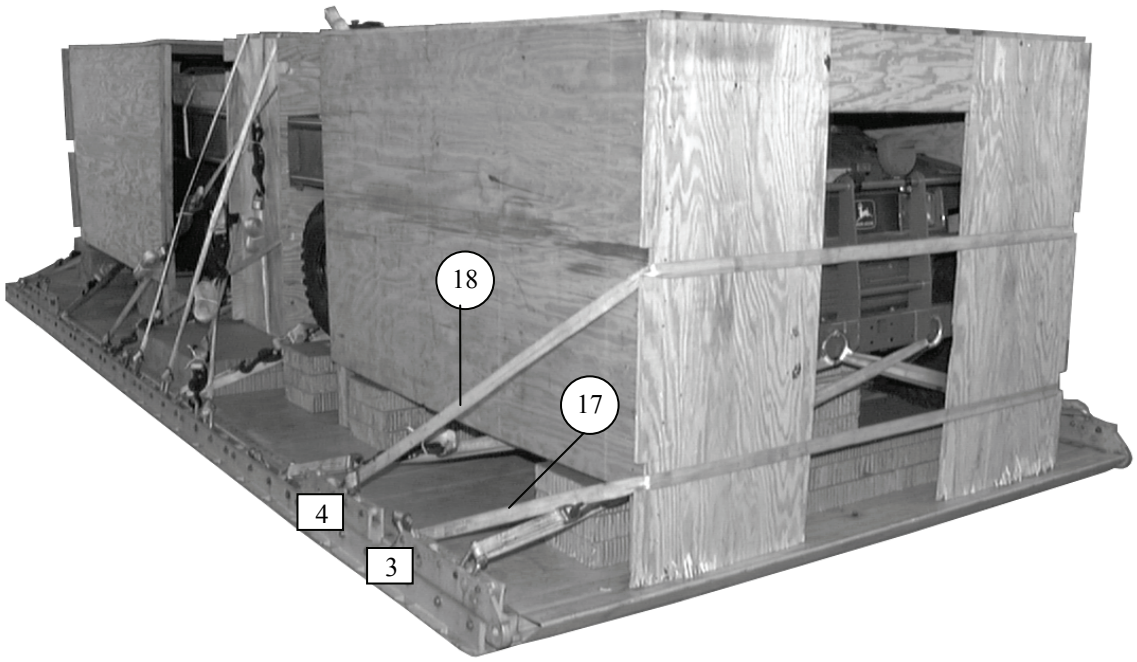


2 Position the rear box over the rear M-Gator aligning the bottom front edge of the box with the rear edge of the platform.

Figure 2-16. M-Gator Boxes Positioned

LASHING M-GATOR BOXES

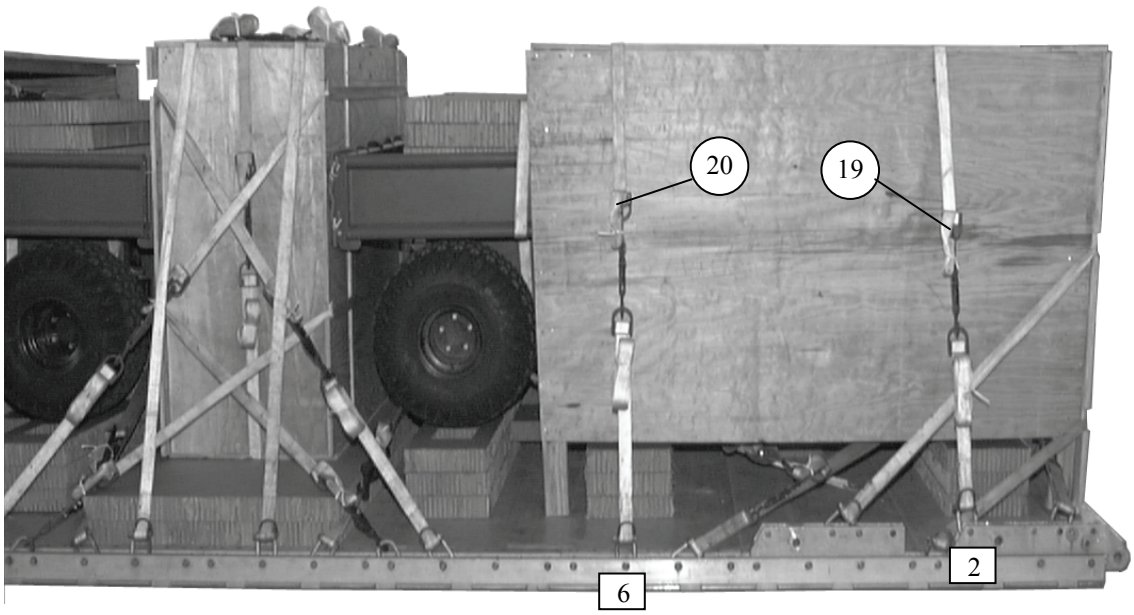
2-13. Lash the M-Gator boxes to the platform according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 2-17.



(1) Route a lashing through clevis 3 and back through its own D-ring, and pull strap taut. Repeat the same steps for clevis 4. Bind to clevises 3A and 4A.

Lashing Number	*Tie-down 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.

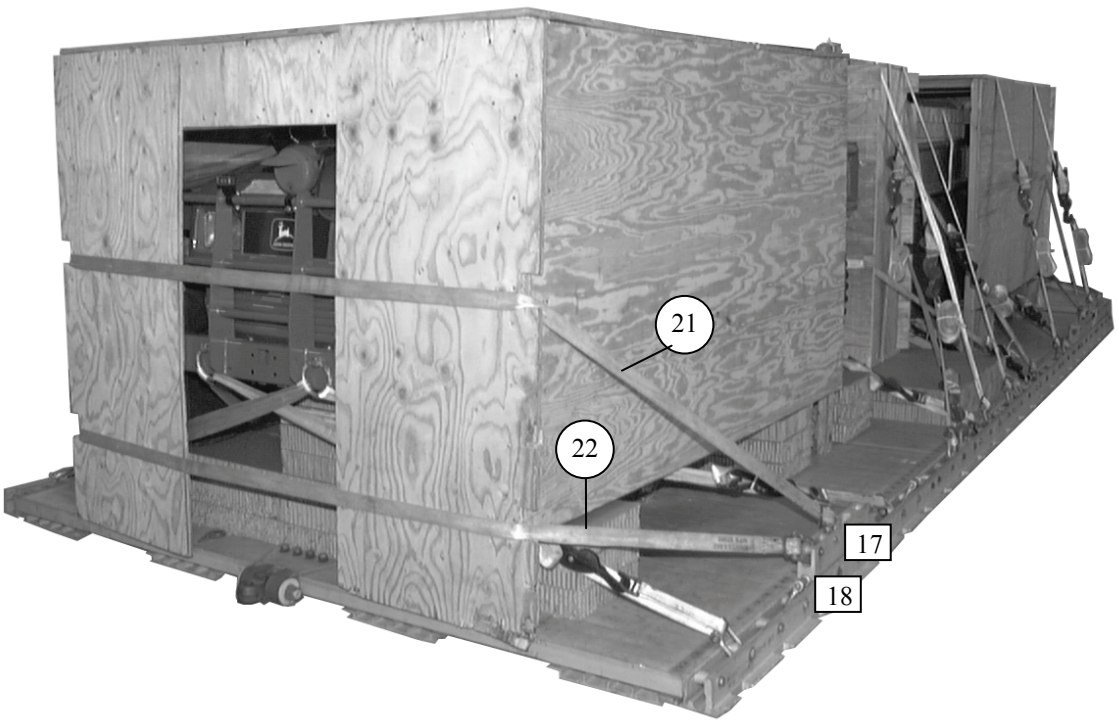
Figure 2-17. M-Gator Boxes Lashed



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

Lashing Number	*Tie-down 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.

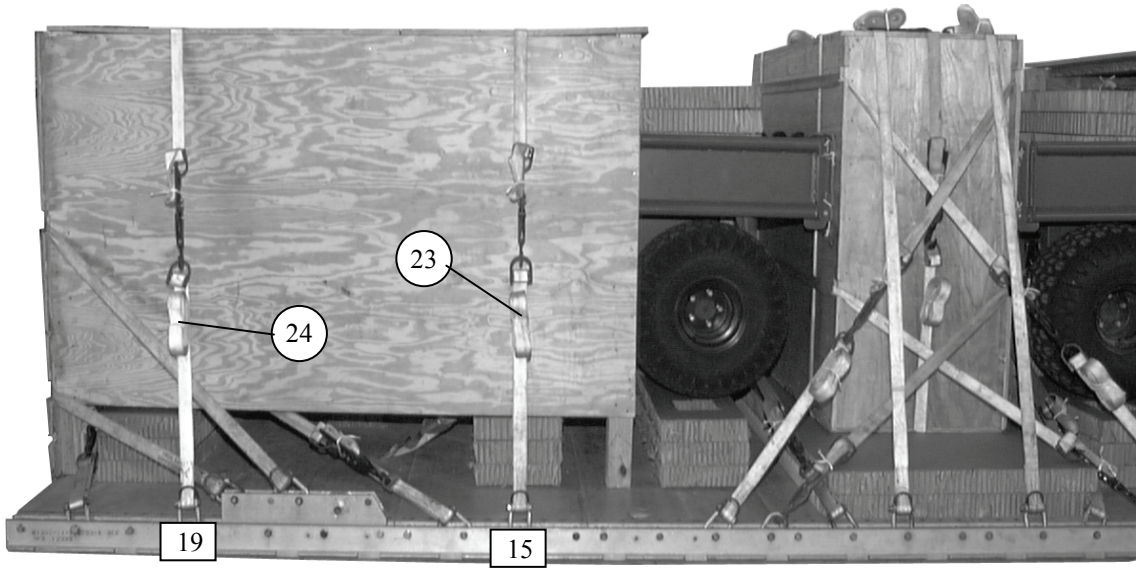
Figure 2-17. M-Gator Boxes Lashed (Continued)



3 Route a lashing through clevis 17 and back through its 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	*Tie-down Clevis Number*	*Instructions*
		Pass lashing through:
21	17 and 17A	Front upper cutouts of rear box.
22	18 and 18A	Front lower cutouts of rear box.

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



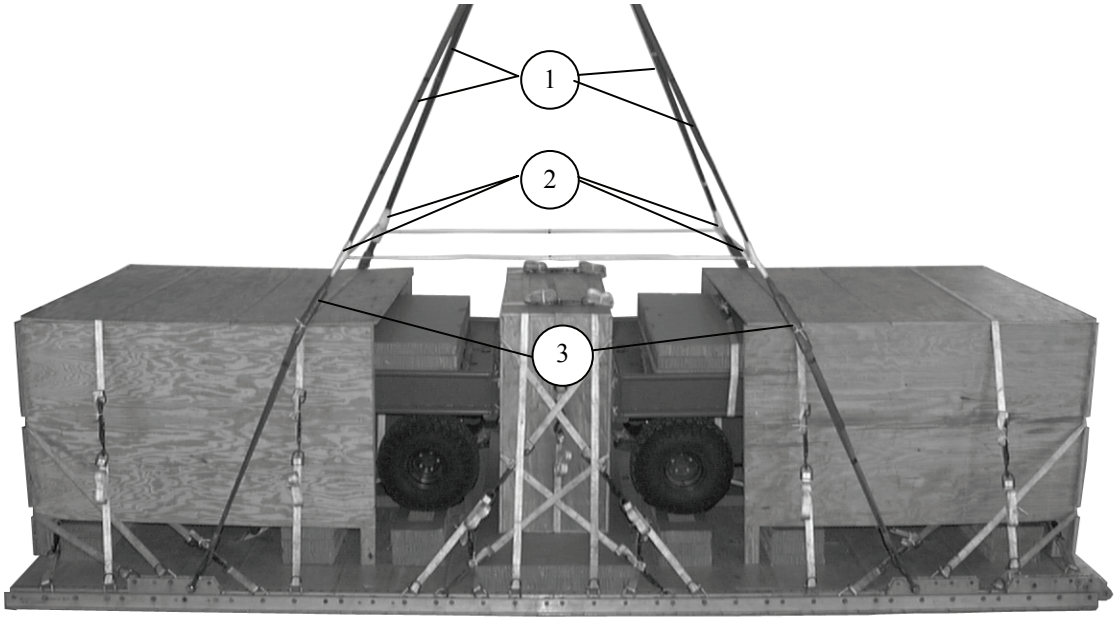
4 Route a lashing through clevis 15 and back through its own D-ring, and pull strap taut. Repeat same steps for clevises 15A, 19, and 19A.

Lashing Number	*Tie-down Clevis Number*	*Instructions*
		Pass lashing through:
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 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 2-18.

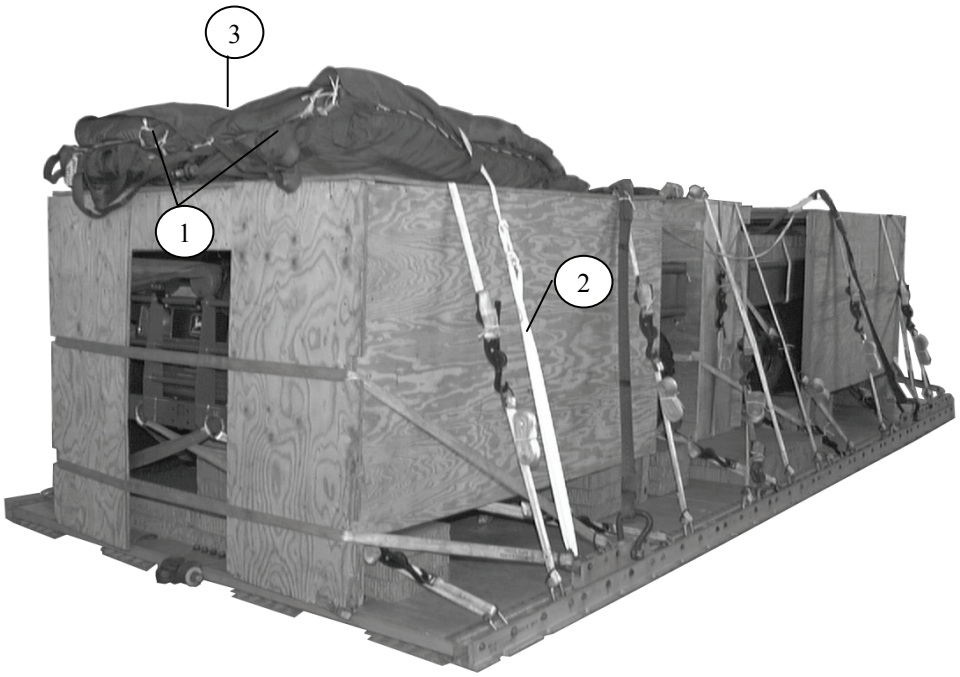


1. Attach a 16-foot (2-loop), type XXVI nylon sling to each of the four suspension bracket links using a large clevis.
2. Raise the slings above the load and install the deadman's tie as outlined in FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
3. Felt and tape each sling where they make 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 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 as shown in Figure 2-19.

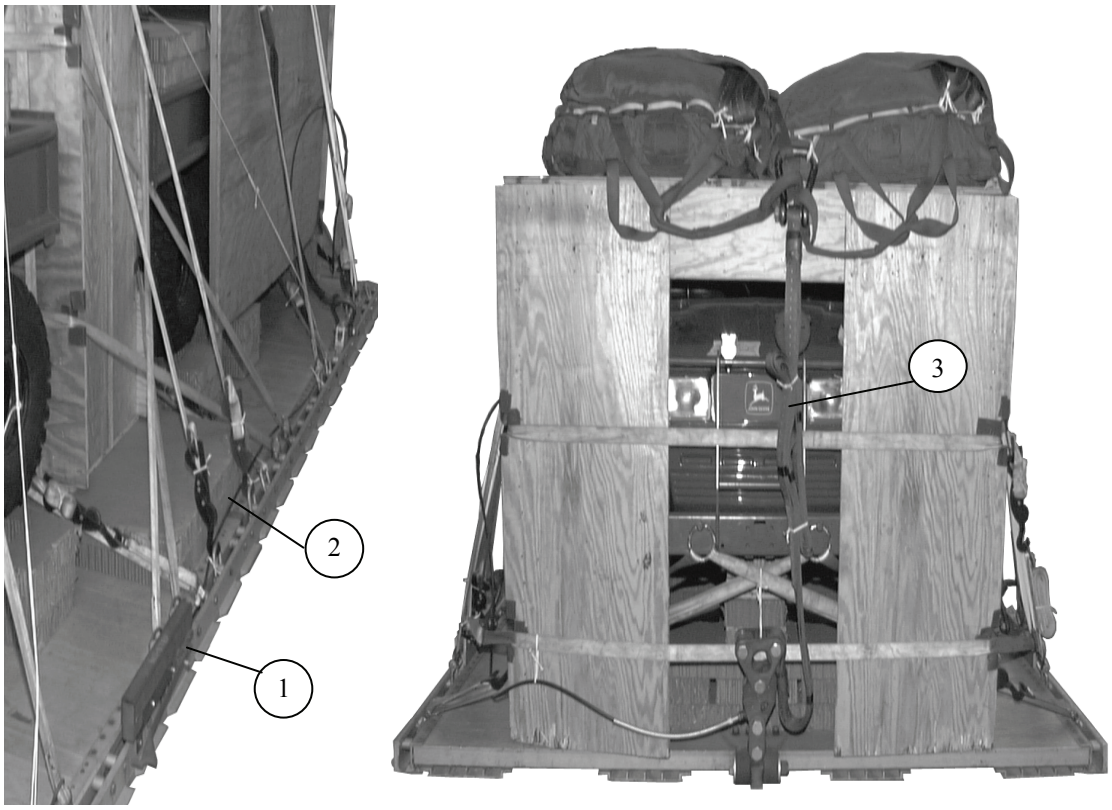


1. Place two G-11 cargo parachutes on the front edge of the rear M-Gator box.
2. Restrain the parachutes with type VIII nylon webbing to clevises 18 and 18A.
3. Install the parachute release strap according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

Figure 2-19. Cargo Parachutes Stowed

INSTALLING EXTRACTION SYSTEM

2-16. Install the Extraction Force Transfer Coupling (EFTC) according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 as shown in Figure 2-20.

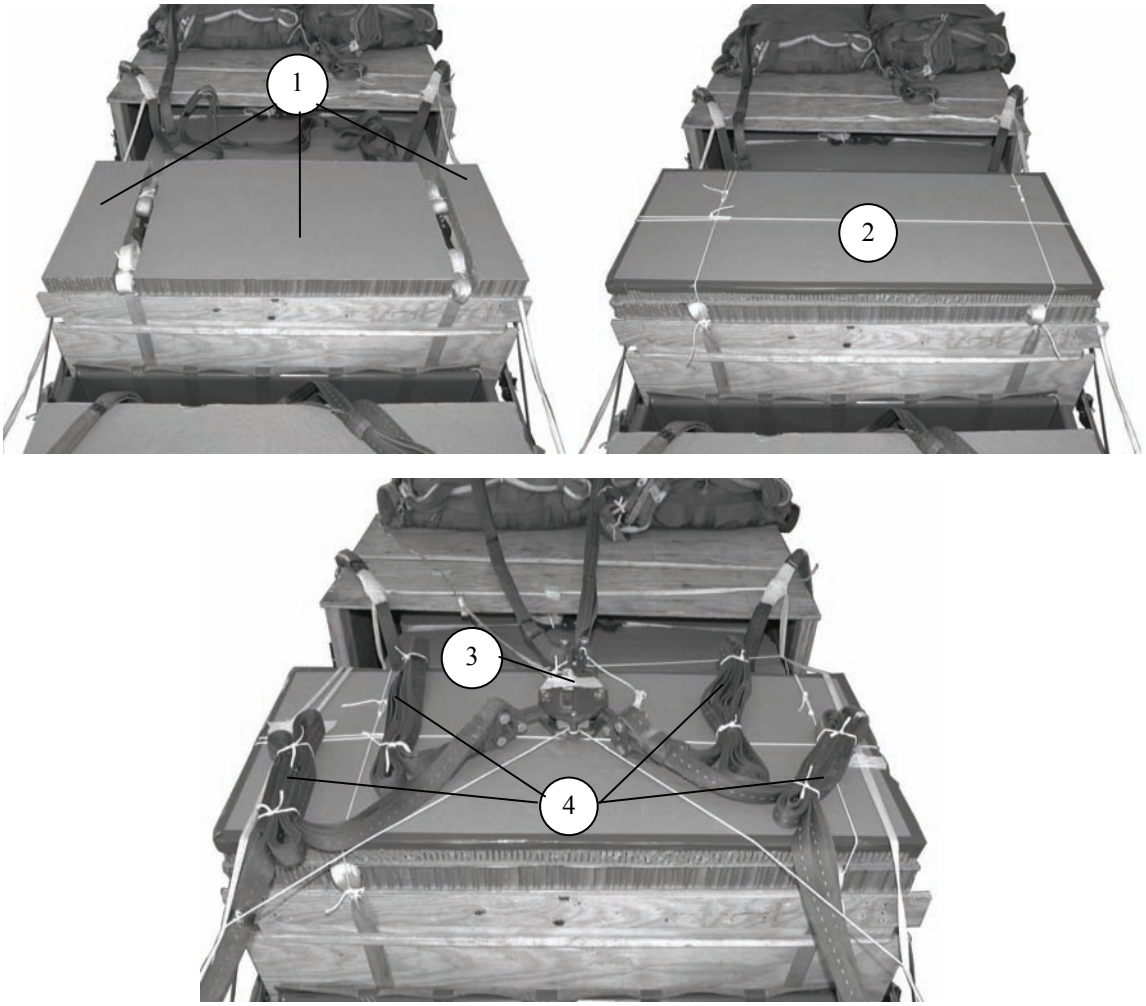


1. Install EFTC actuator mounting brackets using rear mounting holes.
2. Install a 20-foot cable.
3. Attach a 9-foot (2-loop), type XXVI nylon sling for the deployment line.

Figure 2-20. Extraction System Installed

INSTALLING PARACHUTE RELEASE

2-17. Prepare and install an M-1 cargo parachute release system according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 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 in FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Place the extraction parachute and extraction line on the load for installation inside the aircraft.

INSTALLING PROVISIONS FOR EMERGENCY RESTRAINTS

2-19. Select and install provisions for emergency restraints according to the emergency aft restraint requirements in FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

MARKING RIGGED LOAD

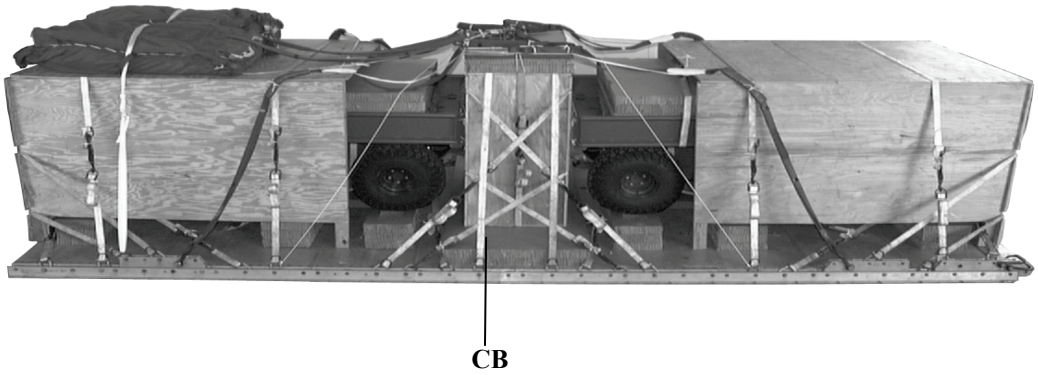
2-20. Mark the rigged load according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 2-22. Complete the Shipper's Declaration for Dangerous Goods. If the load varies from the one shown, the weight, height, and CB must be recomputed.

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 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MM0-010/TO 13C7-1-5 and AR 59-4/ OPNAVINST 4630.24C/AFJ 13-210(I)/MCO 13480.1B before the load leaves the rigging site.



RIGGED LOAD DATA

Weight	8,520 pounds
Maximum Load Allowed	10,000 pounds
Height	78 inches
Width	108 inches
Overall Length	258 inches
Overhang: Front (box)	2 1/2 inches
Rear	0 inches
Center of Balance (CB) (from front edge of platform)	124 inches
Extraction System with 12-foot cable (adds 18 inches to length of platform)	EFTC

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

Table 2-1. Equipment Required for Rigging the M-Gator and Equipment Box on a 20-Foot, Type V 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 lead, (line bag for C-17)	1
4030-00-090-5354	Clevis, large	5
1670-00-360-0328	Cover, clevis, large	2
8135-00-664-6958	Cushioning material, packaging, cellulose wadding	As required
1670-00-434-5783	Coupling assembly, airdrop, EFTC, w / 20-ft cable	1
1670-01-475-1990	Extraction Parachute Jettison System (EPJS)	1
8305-00-191-1101	Felt, ½-inch	As required
8305-00-290-5584	Felt, $^{3}/_{16}$-inch	As required
1670-01-183-2678	Leaf, extraction line (line bag)(add 2 for DES)	2
	Line Multi-Loop:	
	For deployment line:	
1670-01-062-6304	9-ft (2-loop), type XXVI nylon webbing	1
	For drogue:	
1670-01-064-4452	60-ft (1-loop), type XXVI nylon webbing (DES)	1
	For extraction:	
1670-01-064-4452	60-ft (3-loop), type XXVI nylon (C-130 aircraft)	1
1670-01-107-7652	140-ft (3-loop), type XXVI nylon (C-17 aircraft)	1
	For riser extension:	
1670-01-062-6301	20-ft (2-loop), type XXVI nylon webbing	1
	For suspension:	
1670-01-062-6303	16-ft (2-loop), type XXVI nylon webbing	4
	Link:	
1670-01-493-6418	Assembly small, two-point, 3 ¾-inch	1
1670-01-493-6418	Assembly small, two-point, 3 ¾-inch (C-17 drogue)	1
1670-01-072-5637	Jettison, C-130 (DES)	1
1670-01-483-8259	Link, Parachute connector (TRM H-block) (C-17)	1
	Lumber:	
5510-00-220-6146	2- by 4-inch	As required
5510-00-220-6148	2- by 6-inch	As required
5530-00-128-4981	Plywood, ¾-inch sheet	9 sheets
	Nail, steel wire, common:	
5315-00-010-4659	8d	As required
1670-00-753-3928	Pad, energy-dissipating, honeycomb,	20 sheets
	Parachute:	
1670-01-016-7841	G-11	1
1670-00-063-3715	22-ft, Extraction, Cargo (for C-130 and C-17)	1
1670-01-063-3717	15-ft, Extraction Drogue (DES)	1

Table 2-1. Equipment Required for Rigging the M-Gator and Equipment Box on a 20-Foot, Type V Platform for Low-Velocity Airdrop (Continued)

National Stock Number	*Item*	*Quantity*
	Platform, airdrop, type V, 8-ft:	
1670-01-353-8425	Bracket assembly, component (EFTC)	1
1670-01-353-8424	Bracket, assembly, extraction	1
1670-01-162-2372	Clevis, load tie-down	40
1670-01-162-2381	Link, Tandem, link sups. assembly	2
1670-01-247-2389	Link, Suspension Bracket	4
1670-01-097-8816	Release, cargo parachute, M-1,	1
7510-00-266-5016	Tape, adhesive, 2-in	As required
1670-00-937-0271	Tie-down cargo, A/C, 15-ft webbing	46
	Webbing:	
4020-00-240-2146	Cord, nylon, type III, 550-lb	As required
8305-00-268-2411	Cotton, type I, 1/4-inch	As required
8305-00-082-5752	Nylon, tubular, 1/2-in, natural	As required
8305-00-263-3591	Nylon, type VIII	As required

Chapter 3

Rigging One Military Utility Vehicle (M-Gator) and an A-22 Cargo Bag on a 12-Foot, Type V 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 type V platform. The load shown has a rigged weight of 4,630 pounds. It has an overall length of 162 inches, width of 108 inches, height of 78 inches, and a center of balance of 68 inches. The load is rigged with one G-11 cargo parachute.

PREPARING PLATFORM

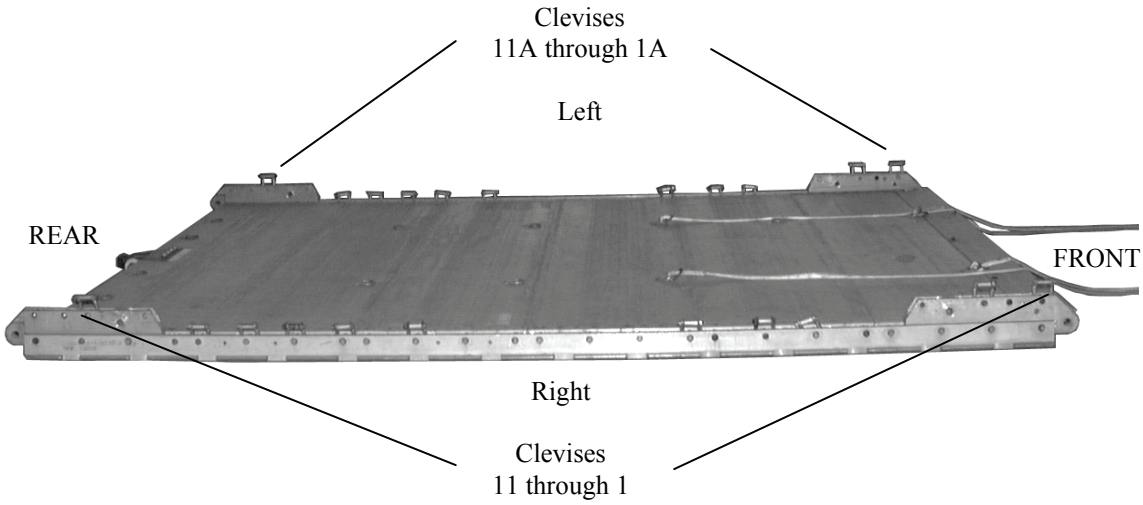
3-2. Inspect, or assemble and inspect, a 12-foot type V platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22. Prepare a 12-foot platform using 22 tie-down clevises as shown in Figure 3-1.

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.



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 deck rings according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
8. Route a lashing through deck ring A1 and back through its own D-ring, repeat for tie-down rings B1, A3, and B3.

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 each other.

Figure 3-2. Honeycomb Stack 2 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.

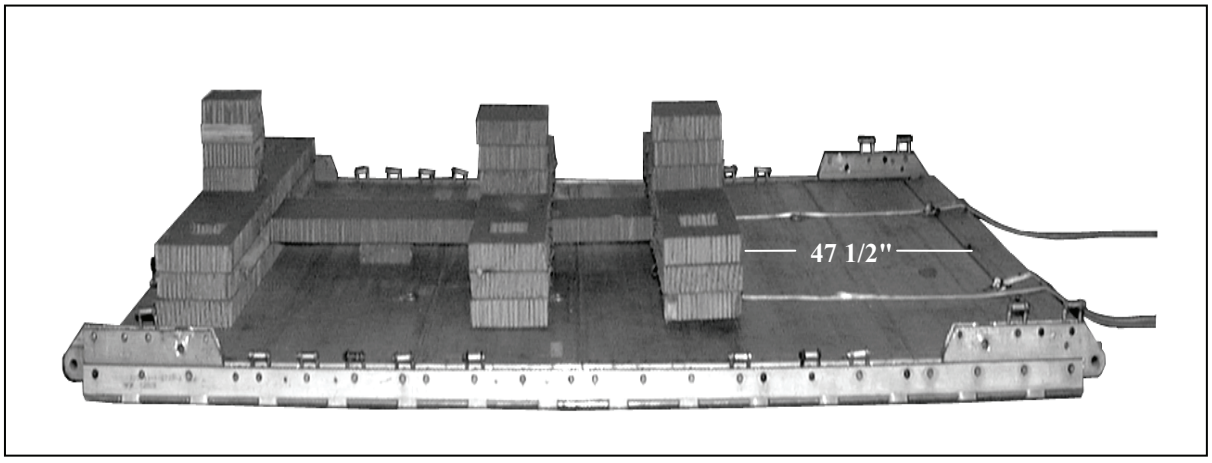


Figure 3-3. Honeycomb Stack 1 Positioned

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.

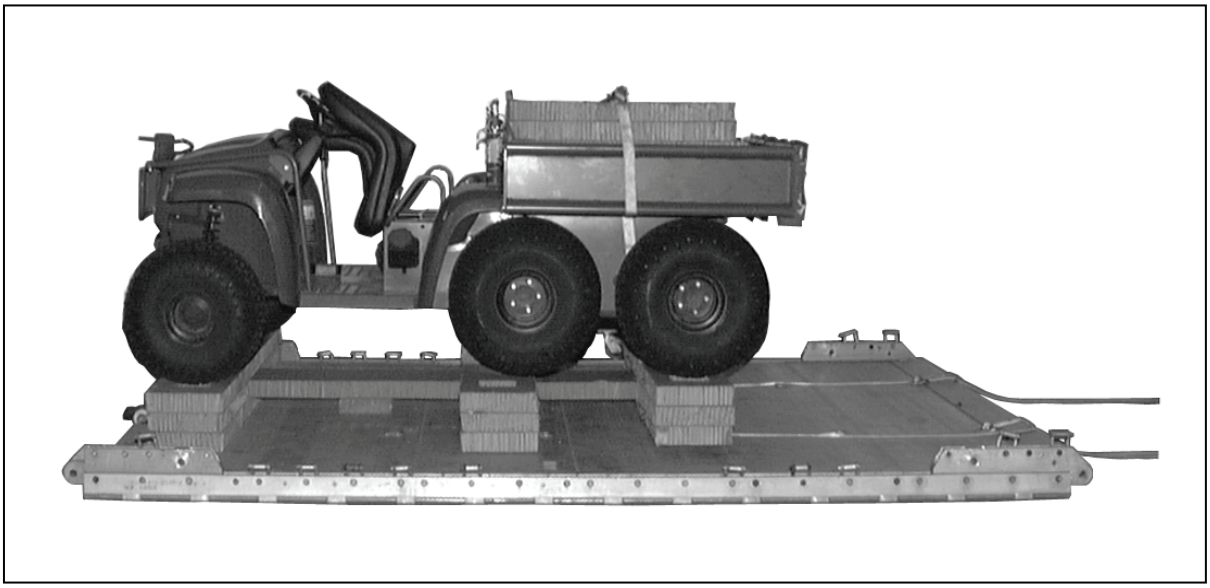


Figure 3-4. M-Gator Positioned

POSITIONING HONEYCOMB STACK 2

3-8. Temporarily place the pre-positioned lashings from deck-rings A3 and B3 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.

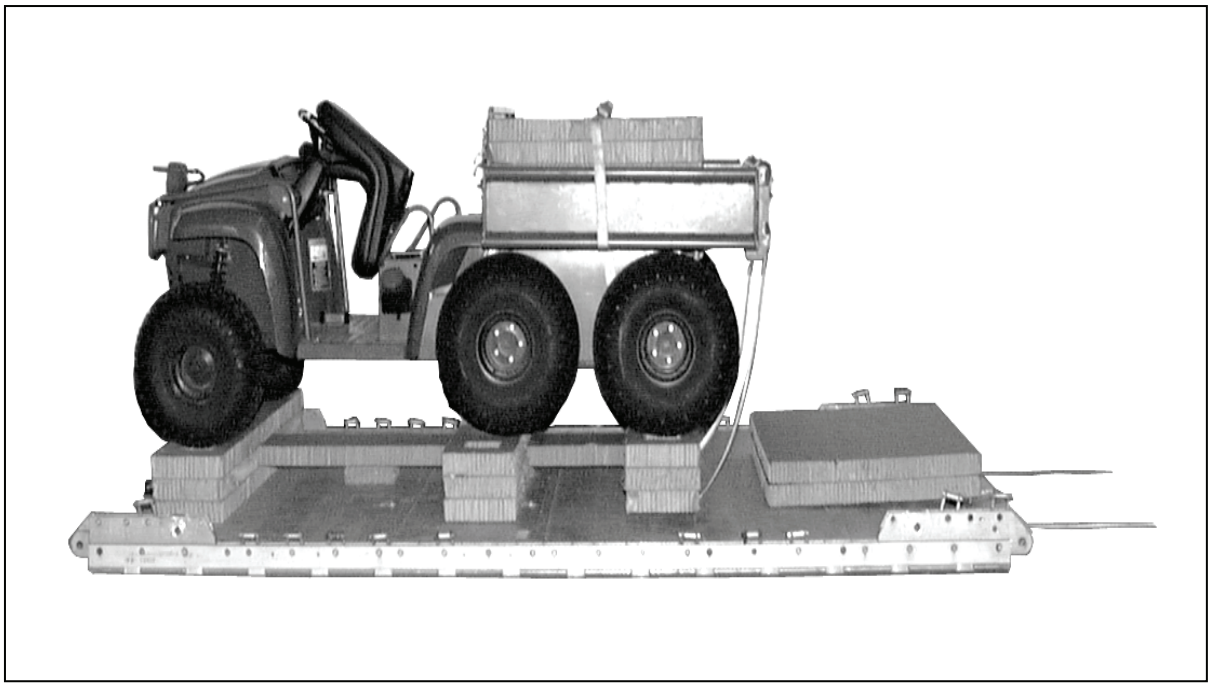


Figure 3-5. Honeycomb Stack 2 Positioned

RIGGING AND POSITIONING THE A-22 CARGO BAG

3-9. Rig the A-22 cargo bag as described in FM 4-20.103/MCRP 4-11.3C/TO 13C7-1-11. 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.

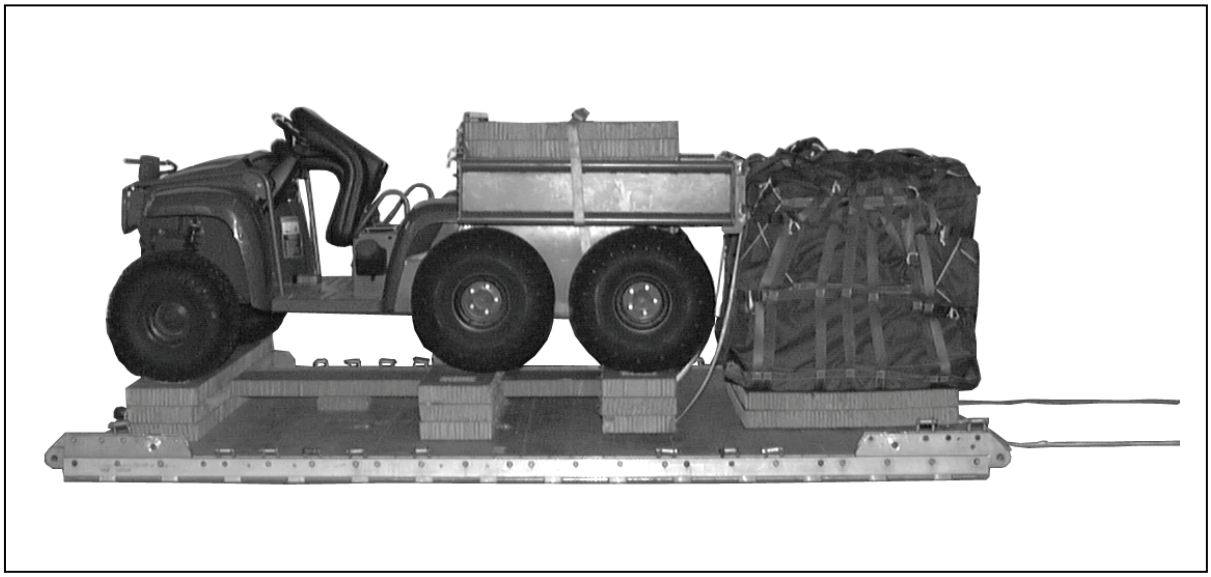
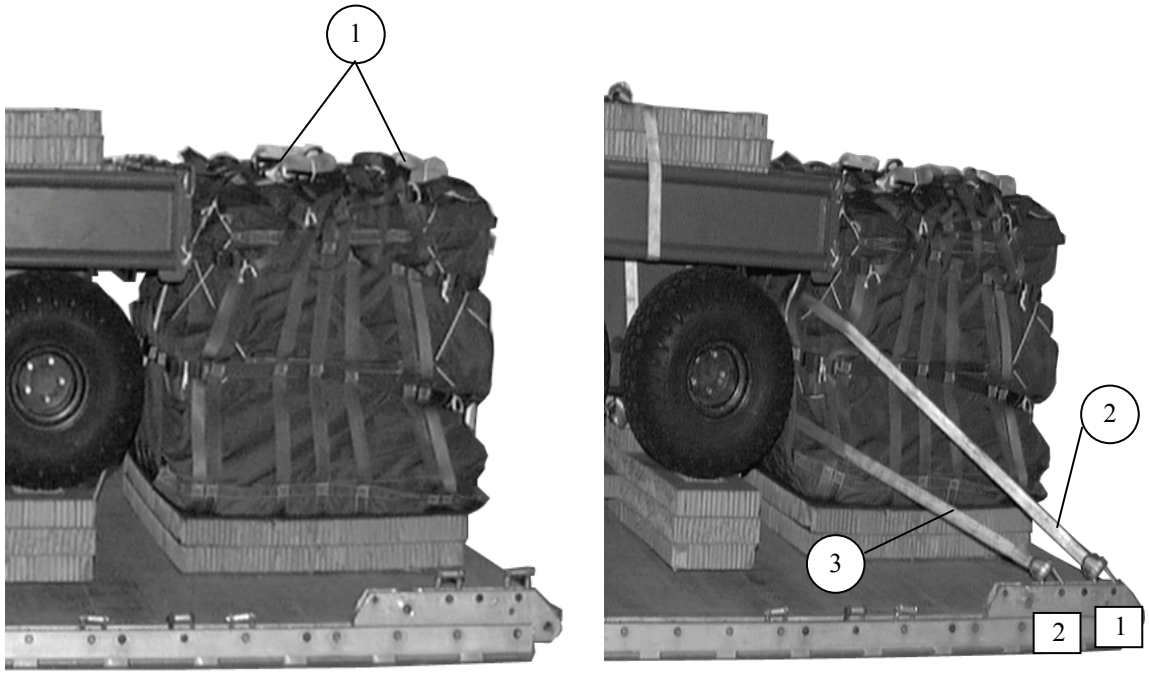


Figure 3-6. A-22 Cargo Bag Positioned

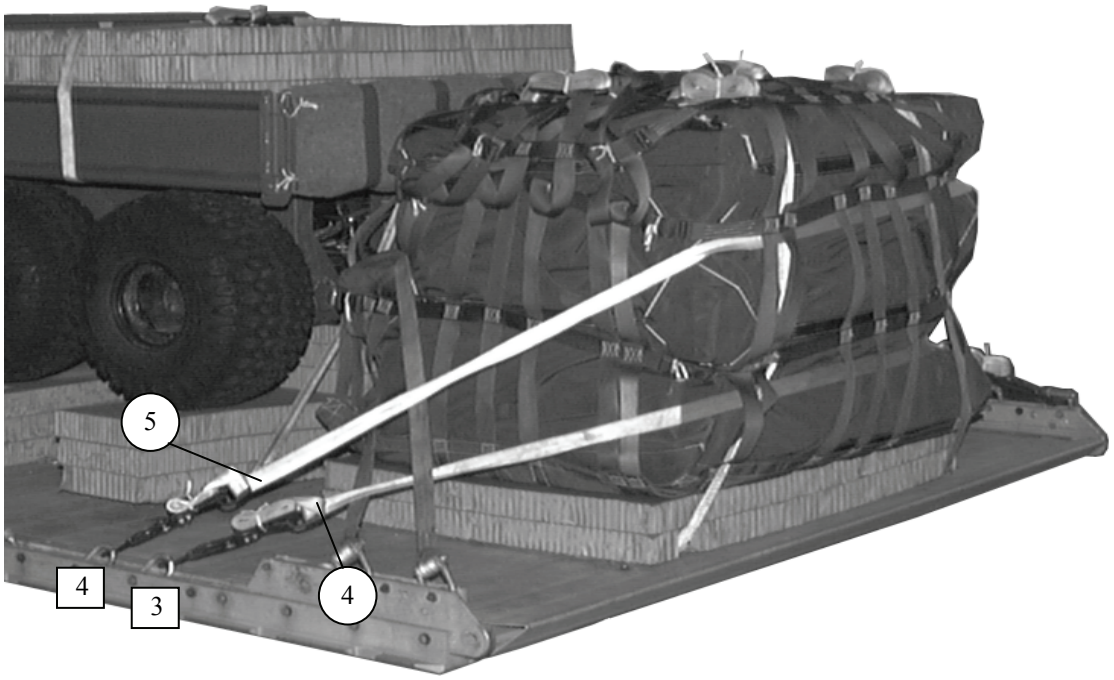
LASHING THE A-22 CARGO BAG

3-10. Lash the A-22 cargo bag to the platform according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 3-7.



1. Route the pre-positioned lashings under the A-22 cargo bag webbing, deck ring A1 load binds to deck ring A3, tie-down ring B1 load binds to tie-down ring B3, and load bind on top of A-22 cargo bag.
2. Route a lashing through clevis 1 and back through its 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 its 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



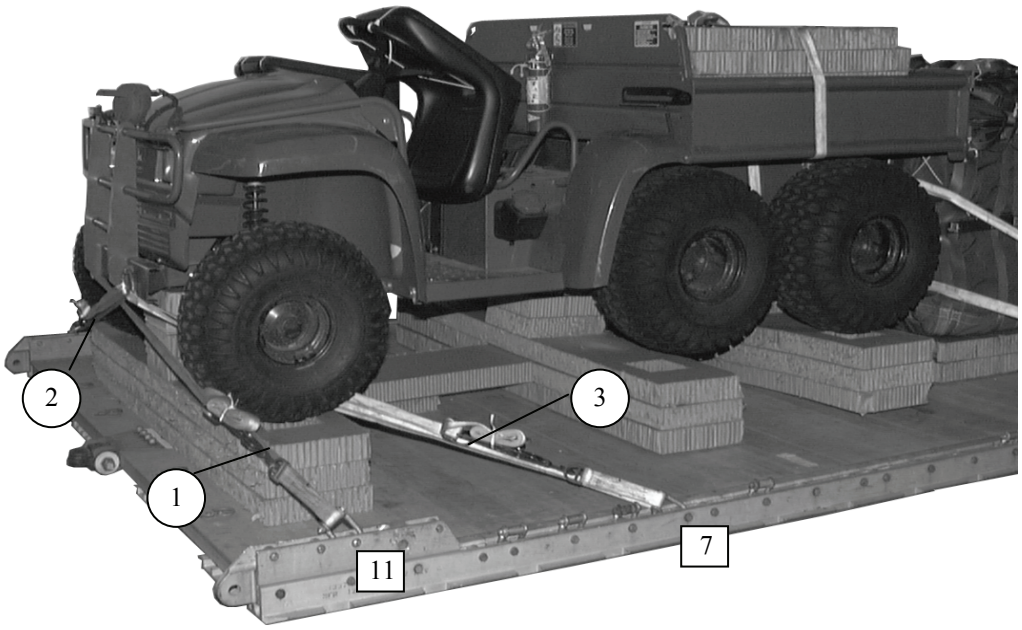
4 Route a lashing through clevis 3A and back through its own D-ring. Route it through the front lower webbing on the A-22 cargo bag and load bind to clevis 3.

5 Route a lashing through clevis 4A and back through its 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)

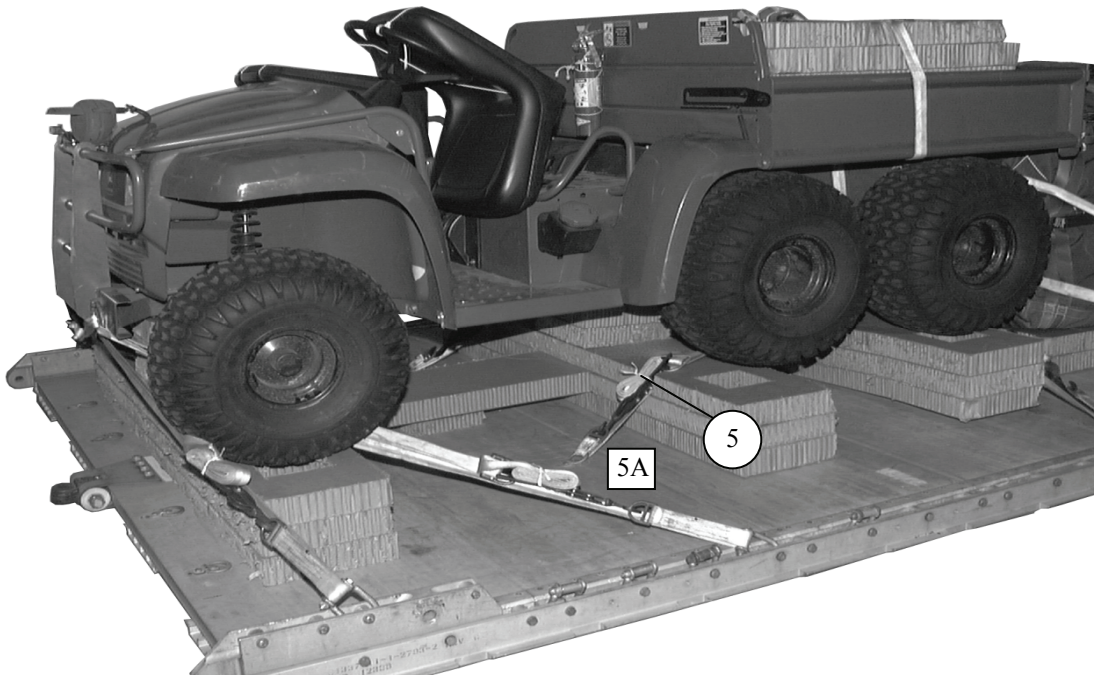
LASHING M-GATOR

3-11. Lash the M-Gator to the platform according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figures 3-8 through 3-10.



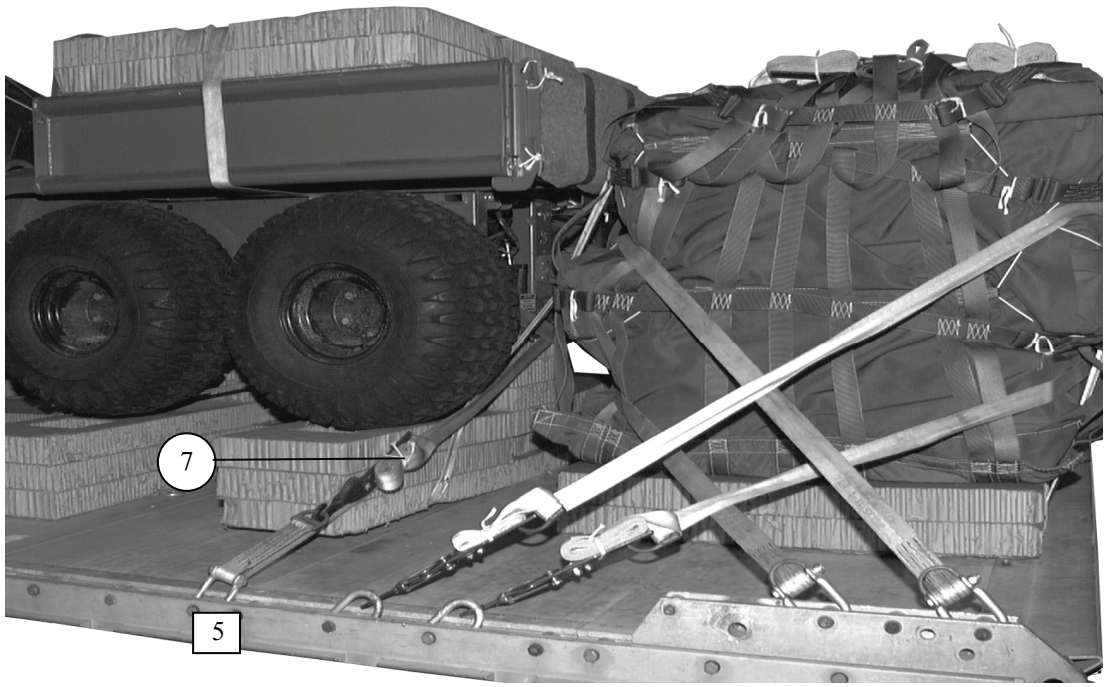
Lashing Number	*Tie-down Clevis Number*	*Instructions*
		Pass lashing through:
1	11	Front right tie-down point.
2	11A	Front left tie-down point. (Not Shown)
3	7	Front left tie-down point.
4	7A	Front right tie-down point. (Not Shown)

Figure 3-8. Lashings 1 through 4 Installed



Lashing Number	*Deck Ring Number*	*Instructions*
		Pass lashing through:
5	A5	Left rear tie-down point **(do not tighten)**.
6	B5	Right rear tie-down point (**do not tighten)**.

Figure 3-9. Lashings 5 and 6 Installed

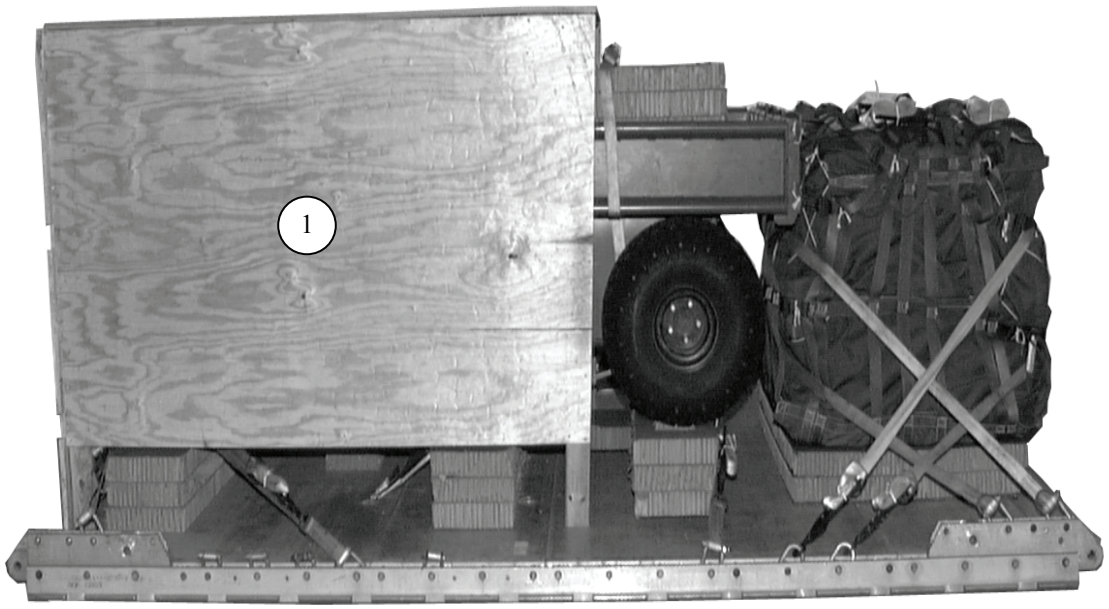


Lashing Number	*Tie-down Clevis Number*	*Instructions*
		Pass lashing through:
7	5	Rear right tie-down point **(do not tighten)**.
8	5A	Rear left tie-down point (**do not tighten)**.
		Tighten lashings 5 and 6, then 7 and 8.

Figure 3-10. Lashings 7 and 8 Installed

POSITIONING M-GATOR BOX

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

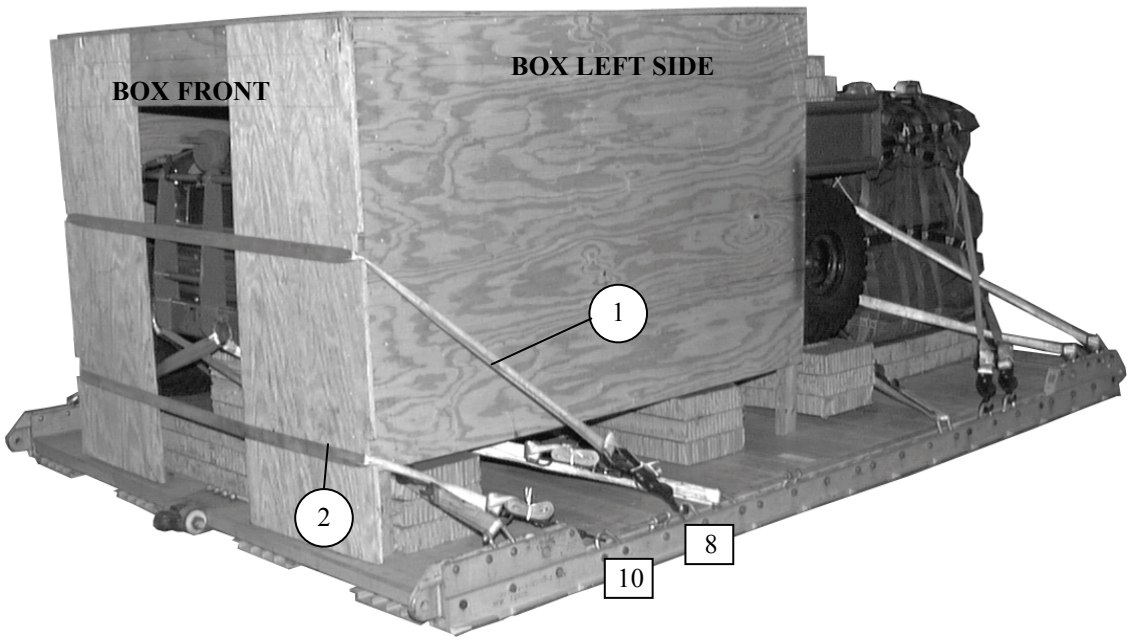


1 Position the box on the platform, aligning the front bottom edge of the box with the platform rear edge.

Figure 3-11. M-Gator Box Positioned

LASHING M-GATOR BOX

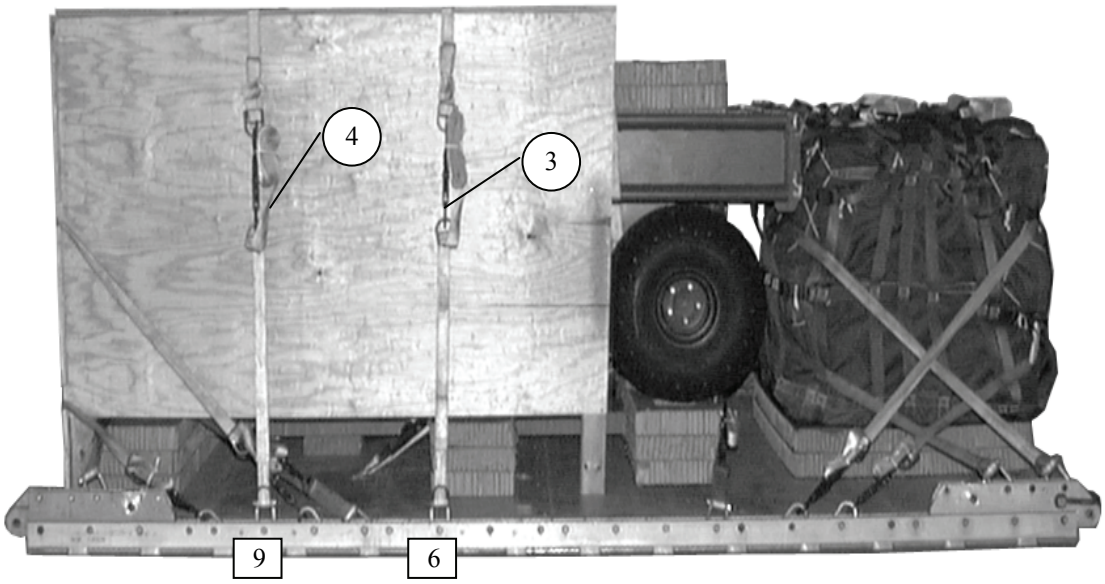
3-13. Lash the M-Gator box to the platform according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 3-12.



(1) Route a lashing through clevis 8A and back through its own D-ring, and pull the strap taut. Repeat the same steps for clevis 10A.

Lashing Number	*Tie-down 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

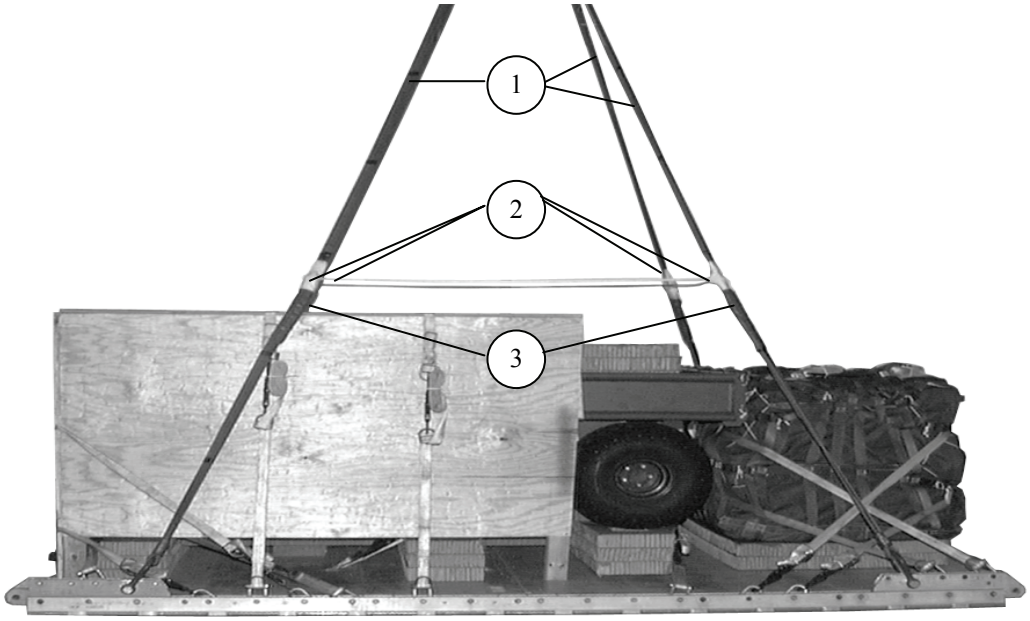


Lashing Number	*Tie-down Clevis Number*	*Instructions*
		Pass lashing:
3	6 and 6A	Over top of box and bind on left side of box.
4	9 and 9A	Over top of box and bind on left side of box.

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 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/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 tandem links using a large clevis.
2. Raise the slings above the load and install the deadman's tie as outlined in FM 4-20.102/ MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
3. Felt and tape each sling where they make contact with the box or load.

Figure 3-13. Suspension Slings Installed

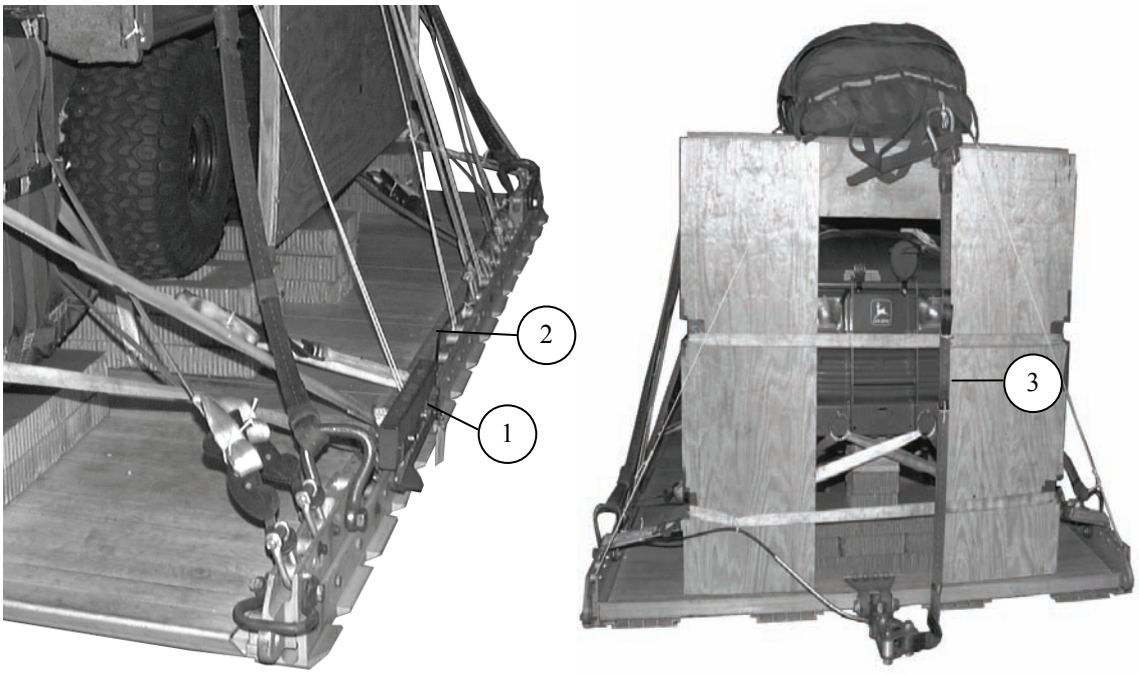
STOWING CARGO PARACHUTE

3-15. Prepare, stow, and restrain one G-11 cargo parachute on the front edge of the M-Gator box according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/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 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 3-15.

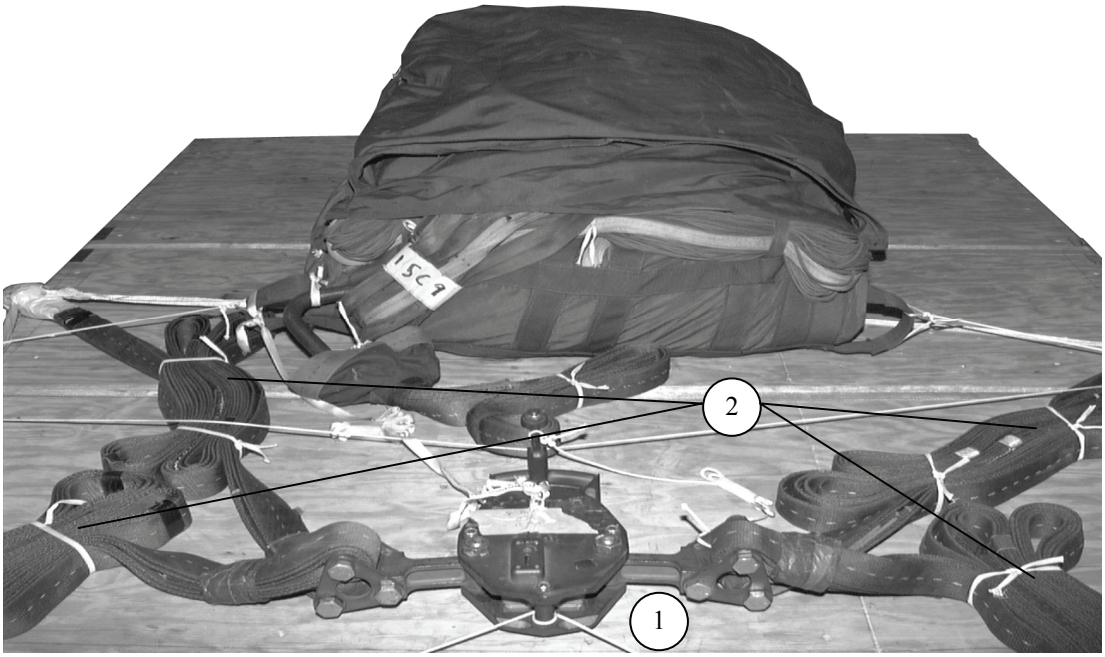


1. Install EFTC actuator mounting bracket using front mounting holes.
2. Install a 12-foot cable.
3. Attach a 9-foot (2-loop), type XXVI nylon sling for the deployment line.

Figure 3-15. Extraction System Installed

INSTALLING PARACHUTE RELEASE

3-17. Prepare and install an M-1 cargo parachute release system according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/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 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/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 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5

MARKING RIGGED LOAD

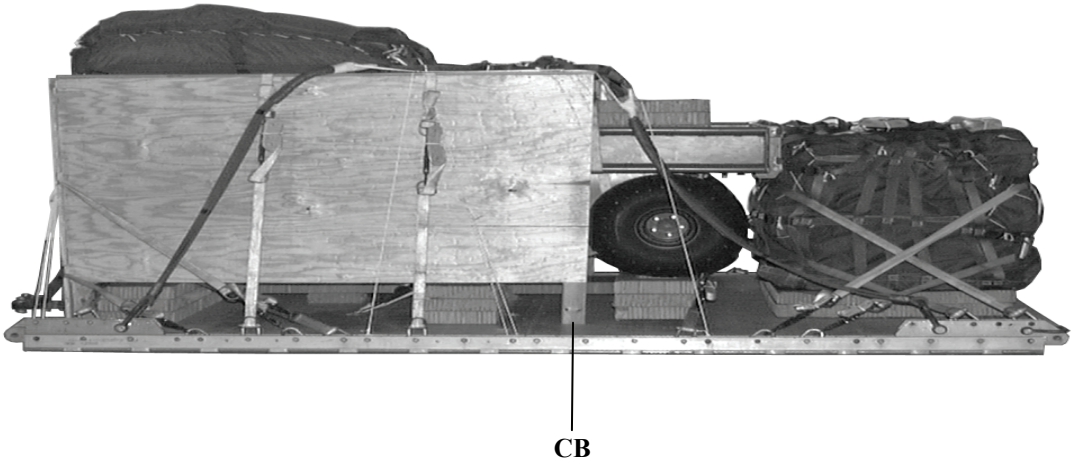
3-20. Mark the rigged load according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 3-17. Complete the Shipper's Declaration for Dangerous Goods. If the load varies from the one shown, the weight, height, tip-off curve, CB, and parachute requirement must be recomputed.

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 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MM0-010/TO 13C7-1-5 and AR 59-4/ OPNAVINST 4630.24C/AFJ 13-210(I)/MCO 13480.1B before the load leaves the rigging site.



RIGGED LOAD DATA

Weight	4,630 pounds
Maximum Load Allowed	5,000 pounds
Height	78 inches
Width	108 inches
Overall Length	162 inches
Overhang: Front (box)	0 inches
Rear	0 inches
Center of Balance (CB) (from front edge of platform)	68 inches
Extraction System with 12-foot cable (adds 18 inches to length of platform)	EFTC

Figure 3-17. M-Gator and CDS Rigged on a 12-Foot, Type V Platform for Low-Velocity Airdrop

Table 3-1. Equipment Required for Rigging the M-Gator and an A-22 Cargo Bag on a 12-Foot, Type V 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 lead, (line bag for C-17)	1
4030-00-090-5354	Clevis, large	5
1670-00-360-0328	Cover, clevis, large	1
8135-00-664-6958	Cushioning material, packaging, cellulose wadding	As required
1670-00-434-5783	Coupling assembly, airdrop, EFTC, w/12-ft cable	1
1670-01-475-1990	Extraction Parachute Jettison System (EPJS)	1
8305-00-191-1101	Felt, ½-inch	As required
8305-00-290-5584	Felt, $^{3}/_{16}$-inch	As required
1670-01-183-2678	Leaf, extraction line (line bag)(add 2 for DES)	2
	Line Multi-Loop:	
	For deployment line:	
1670-01-062-6304	9-ft (2-loop), type XXVI nylon webbing	1
	For drogue:	
1670-01-064-4452	60-ft (1-loop), type XXVI nylon webbing (DES)	1
	For extraction:	
1670-01-064-4452	60-ft (1-loop), type XXVI nylon (C-130 aircraft)	1
1670-01-107-7652	160-ft (1-loop), type XXVI nylon (C-17 aircraft)	1
	For riser extension:	
1670-01-062-6301	3-ft (2-loop), type XXVI nylon webbing	1
	For suspension:	
1670-01-062-6303	16-ft (2-loop), type XXVI nylon webbing	4
	Link:	
1670-01-493-6418	Assembly small, two-point, 3 ¾-inch	1
1670-01-493-6418	Assembly small, two-point, 3 ¾-inch (C-17 drogue)	1
1670-01-072-5637	Jettison, C-130 (DES)	1
1670-01-483-8259	Link, Parachute connector (TRM H-block) (C-17)	1
	Lumber:	
5510-00-220-6146	2-by 4-inch	As required
5510-00-220-6148	2-by 6-inch	As required
5530-00-128-4981	Plywood, ¾-inch sheet	6 sheets
	Nail, steel wire, common:	
5315-00-010-4659	8d	As required
1670-00-753-3928	Pad, energy-dissipating, honeycomb,	9 sheets
	Parachute:	
1670-01-016-7841	G-11	1
1670-00-063-3715	15-ft, Extraction, Cargo (for C-130 and C-17)	1

Table 3-1. Equipment Required for Rigging the M-Gator and an A-22 Cargo Bag on a 12-Foot, Type V Platform for Low-Velocity Airdrop (Continued)

National Stock Number	*Item*	*Quantity*
1670-01-063-3715	15-ft, Extraction Drogue (DES)	1
	Platform, airdrop, type V, 12-ft:	
1670-01-353-8425	Bracket assembly, component (EFTC)	1
1670-01-353-8424	Bracket, assembly, extraction	1
1670-01-162-2372	Clevis, load tie-down	22
1670-01-162-2381	Link, Tandem, link sups. assembly	4
1670-01-097-8816	Release, cargo parachute, M-1	1
7510-00-266-5016	Tape, adhesive, 2-in	As required
1670-00-937-0271	Tie-down cargo, A/C, 15-ft webbing	24
	Webbing:	
4020-00-240-2146	Cord, nylon, type III, 550-lb	As required
8305-00-268-2411	Cotton, type I, 1/4-inch	As required
8305-00-082-5752	Nylon, tubular, 1/2-in, natural	As required
8305-00-263-3591	Nylon, 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, Type V 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, type V platform. The load shown has a rigged weight of 4,980 pounds. It has an overall length of 168 inches, width of 108 inches, height of 94 inches, and 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, type V platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22. Prepare a 12-foot platform using 22 tie-down clevises as shown in Figure 4-2.

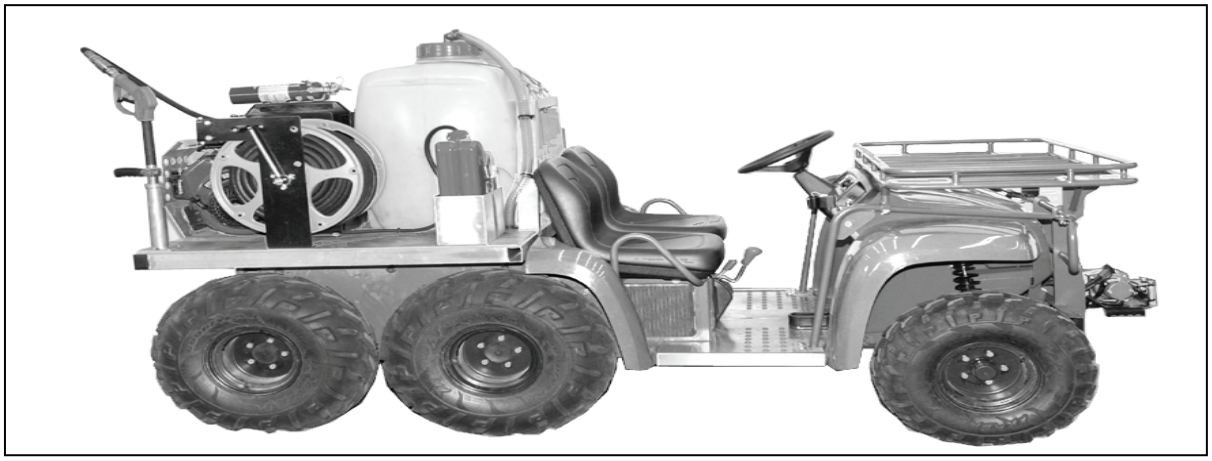
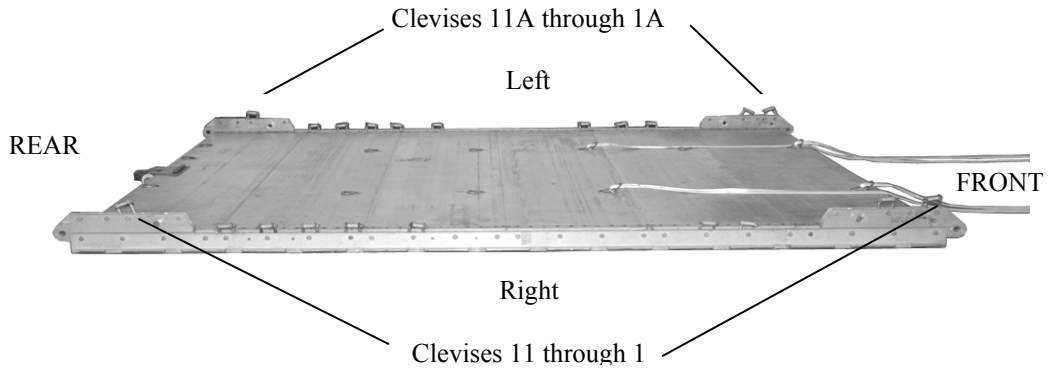


Figure 4-1. Military Utility Vehicle (M-Gator) W/ FRE



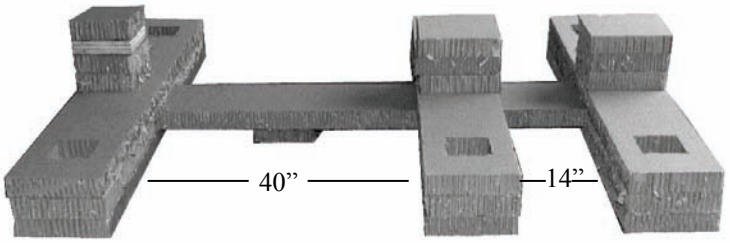
1. Install a tandem multi-purpose link to the front of each platform side rail using holes 1, 2, and 3.
2. Install a tandem multi-purpose link to the rear of each platform side rail using holes 22, 23, and 24.
3. Install a clevis on bushings 1 and 3 on each front tandem link.
4. Install a clevis on bushing 2 of each rear tandem link.
5. Starting at the front of each platform side rail, install clevises on each bushing bolted on holes 6, 7, 9, 15, 17, 18, 19, and 20.
6. Starting at the front of each platform side, number the clevises bolted to the right side rail from 1 through 11 and those bolted to the left side from 1A through 11A.
7. Label the deck rings according to FM 4-20.102/ MCRP 4-11.3J/NAVSEA SS 400-AB-MMO-010/TO 13C7-1-5.
8. Route a lashing through deck ring A1 and back through its own D-ring, repeat for tie-down rings B1, A3, and B3.

Figure 4-2. Platform Prepared

BUILDING AND POSITIONING HONEYCOMB STACKS

4-3. Prepare the honeycomb stack for the M-Gator as shown in Figures 4-3 and 4-4.

REAR



FRONT

Notes. 1. Not drawn to scale.
2. All dimensions are given in inches.

Stack Number	***Pieces***	***Width (Inches)***	***Length (Inches)***	***Material***	***Instructions***
1	3	72	36	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- 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- 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 1 Prepared

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.

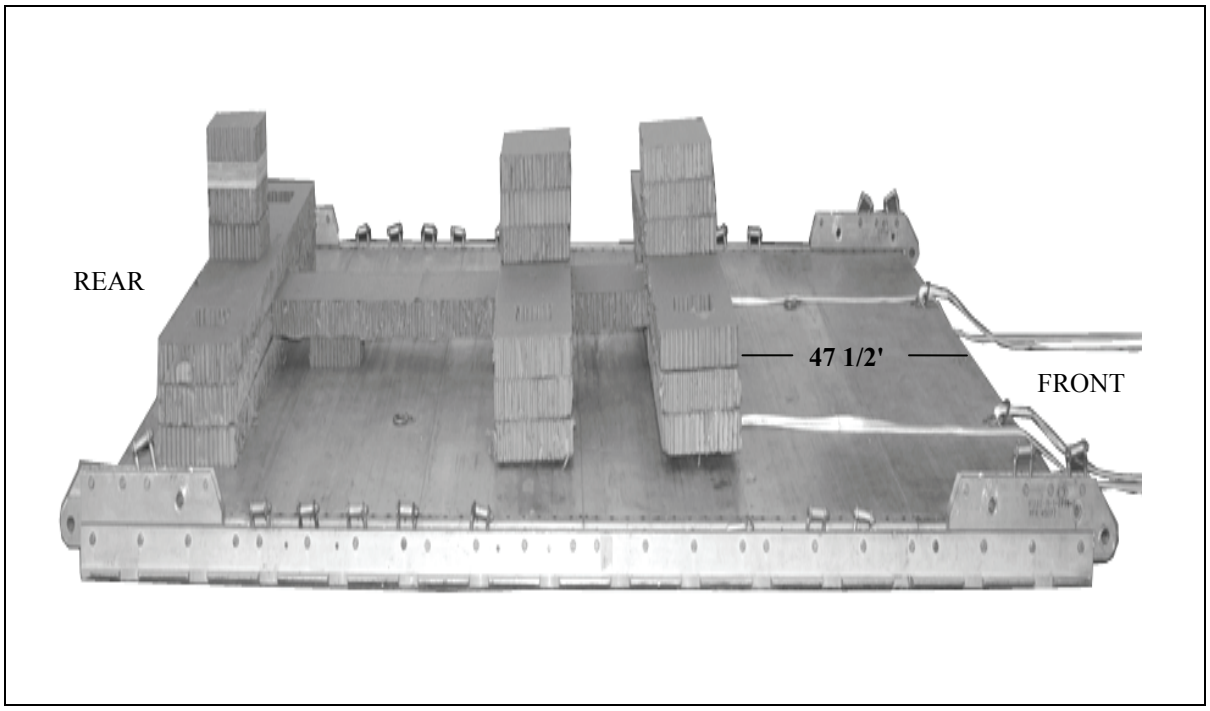
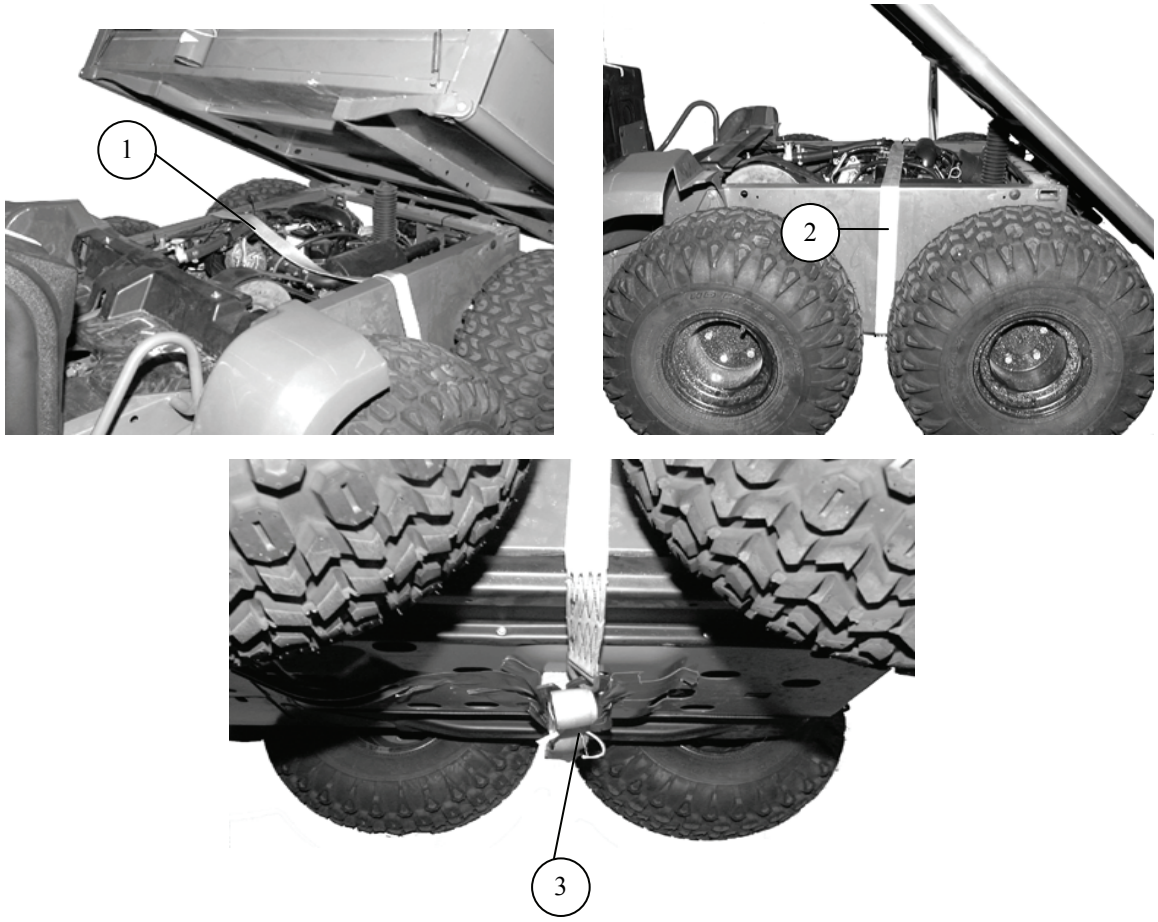


Figure 4-5. Honeycomb Stack 1 Positioned

PREPARING M-GATOR WITH FRE

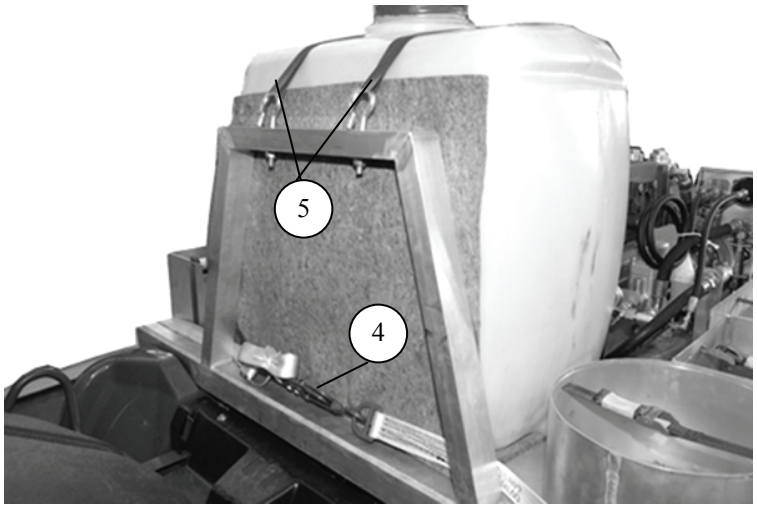
4-5. Remove the following items from the vehicle: 1KW generator, cargo rack, gas can, 5-gallon can foam concentrate, foam can connector, winch, winch control, extension cord, water hose, sump pump, and fire fighting pistol. Set items aside to be placed inside A-22 container. Prepare the M-Gator with FRE according to Figure 4-6.

Note. Ensure water reservoir has been drained completely.



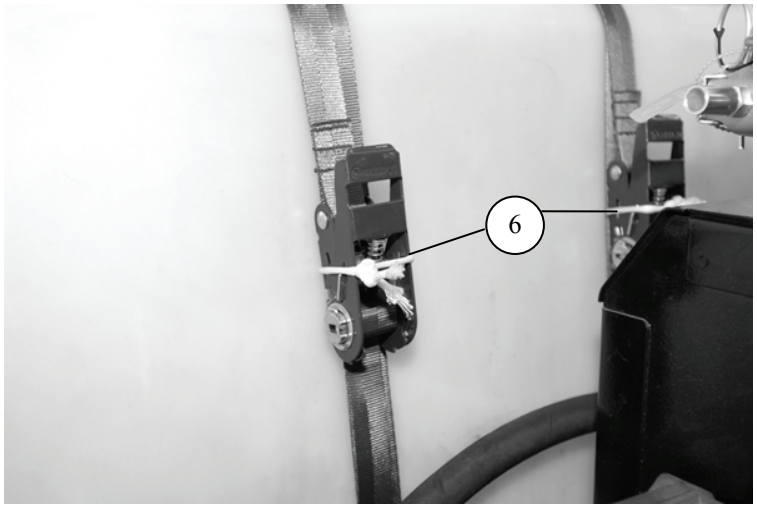
1. Raise the FRE platform and position a lashing across the frame, centered between the rear tires.
2. Route lashing around the frame and the engine.
3. Secure a piece of 2- by 4- by 8 1/2-inch lumber, laterally, under the engine. The piece of lumber may be temporarily secured using cloth-backed tape. Position the load binder against the piece of lumber.

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



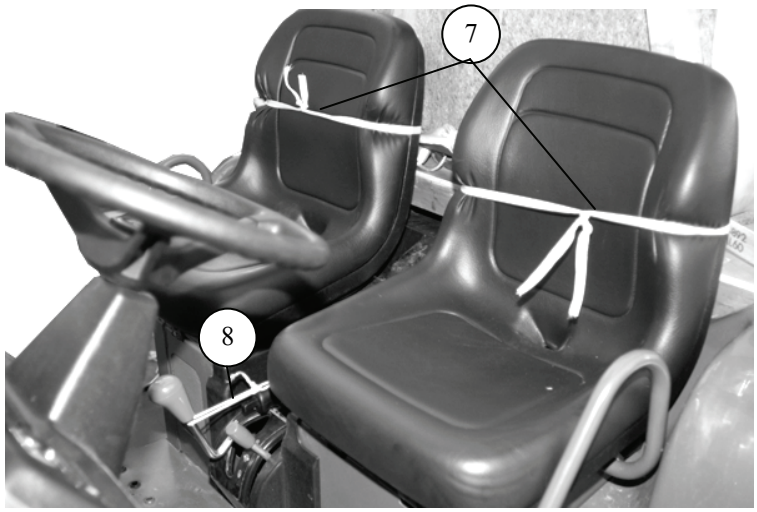
4 Lower the FRE platform. Route a lashing around the frame of the M-Gator and over the FRE platform just behind the A-frame. Secure the lashing with a D-ring and load binder behind the A-frame.

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



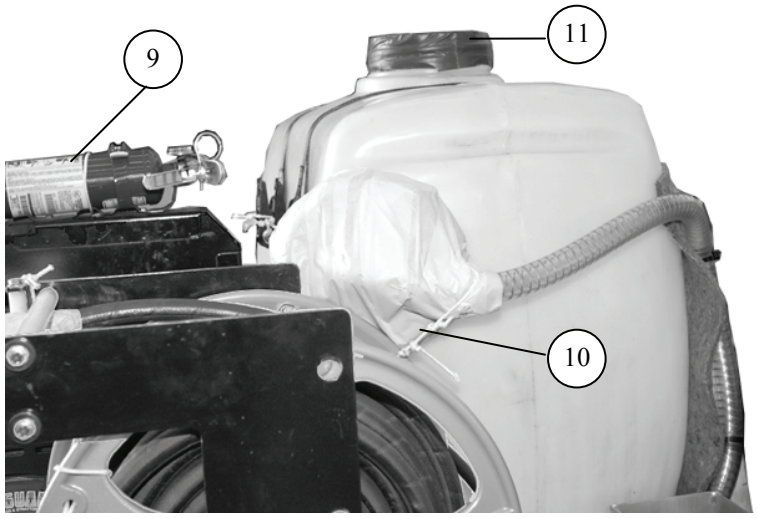
6 Tighten the water reservoir retaining straps and secure ratchet handles with type III nylon cord.

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.

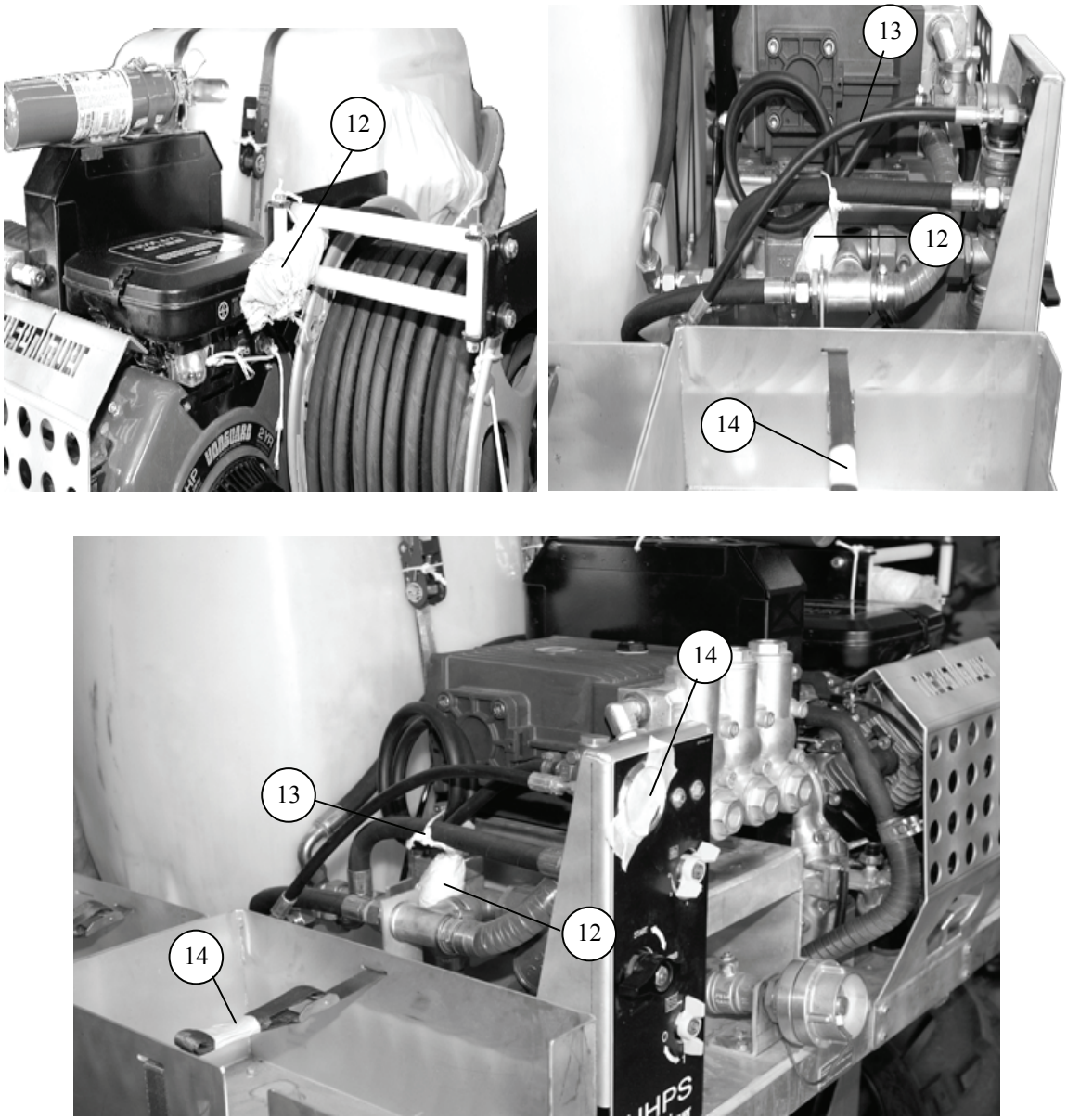


9 Secure the fire extinguisher to the mounting bracket with type III nylon cord.

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.

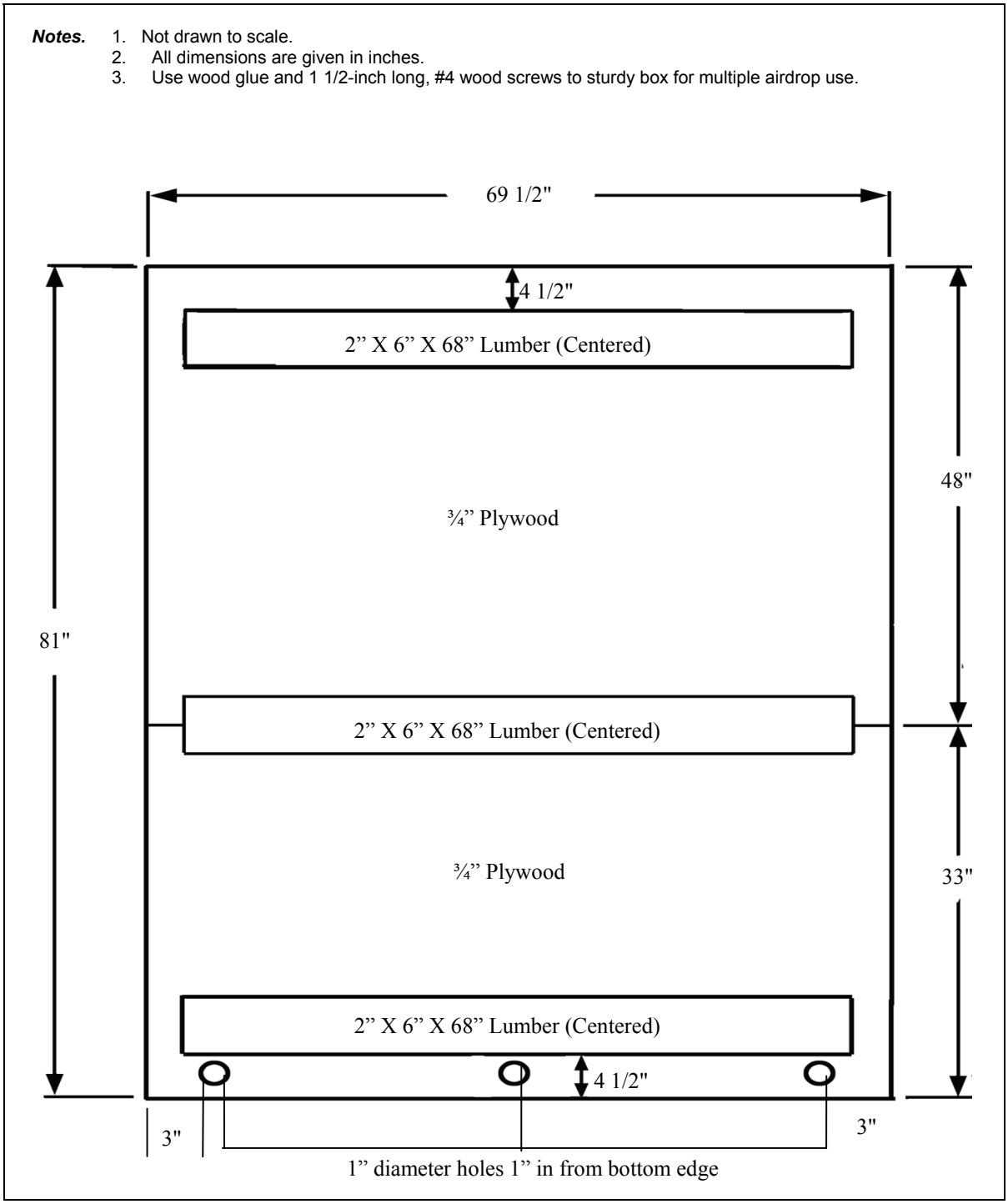


Figure 4-7. M-Gator W/FRE Box Built (Top Board)

Notes. 1. Not drawn to scale.
2. All dimensions are given in inches.
3. Use wood glue and 1 1/2-inch long, #4 wood screws to sturdy box for multiple airdrop use.

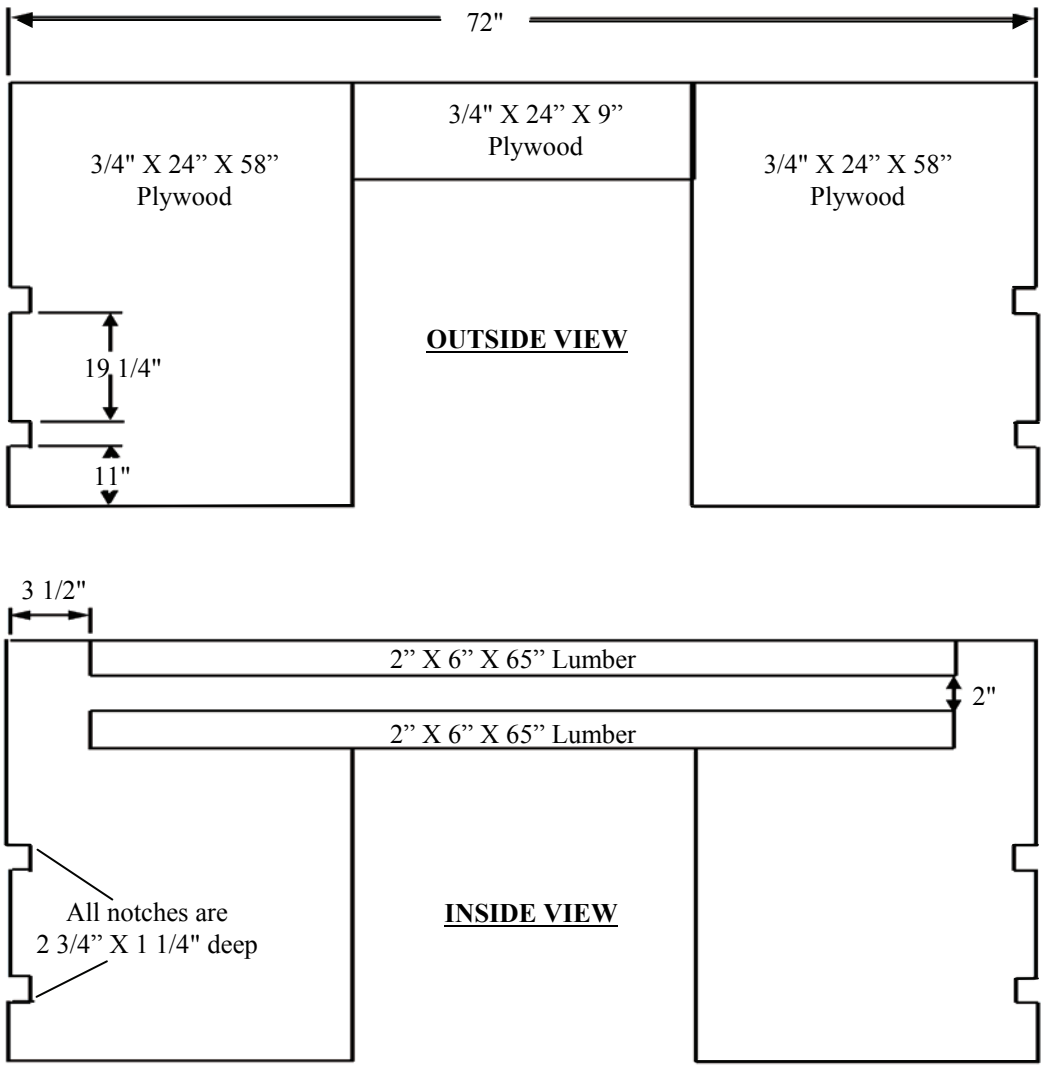


Figure 4-7. M-Gator W/FRE Box Built (Front Board) (Continued)

ONE RIGHT AND ONE LEFT SIDEBOARD IS REQUIRED TO BUILD BOX

Notes. 1. Not drawn to scale.
2. All dimensions are given in inches.
3. Use wood glue and 1 1/2-inch long, #4 wood screws to sturdy box for multiple airdrop use.

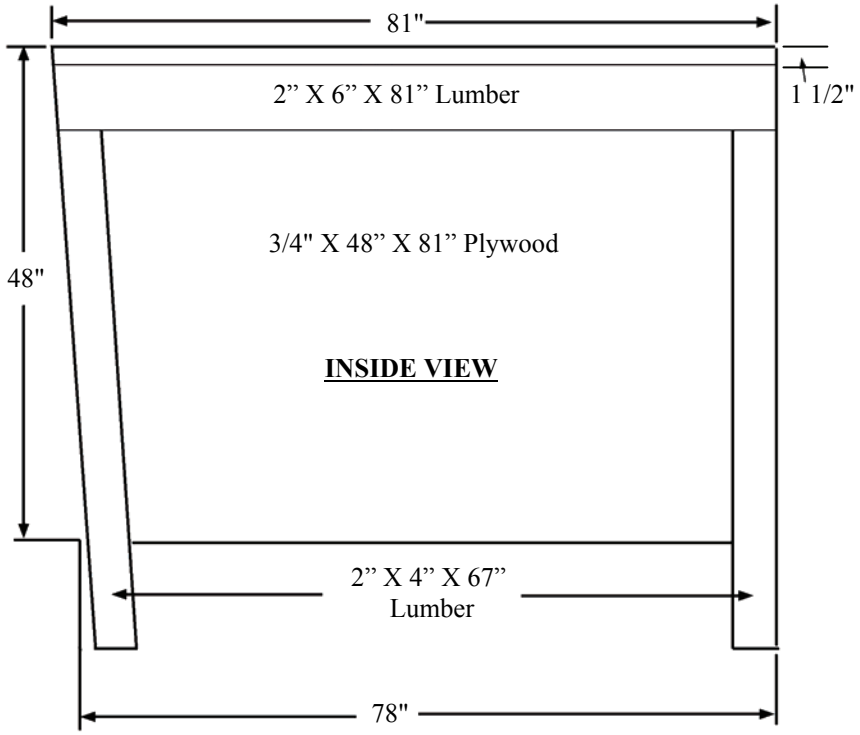
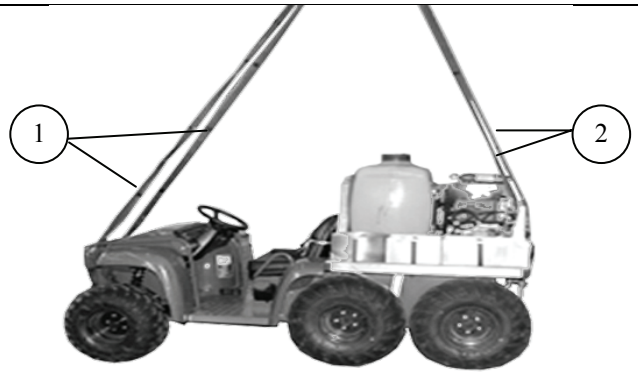


Figure 4-7. M-Gator W/FRE Box Built (Side Boards) (Continued)

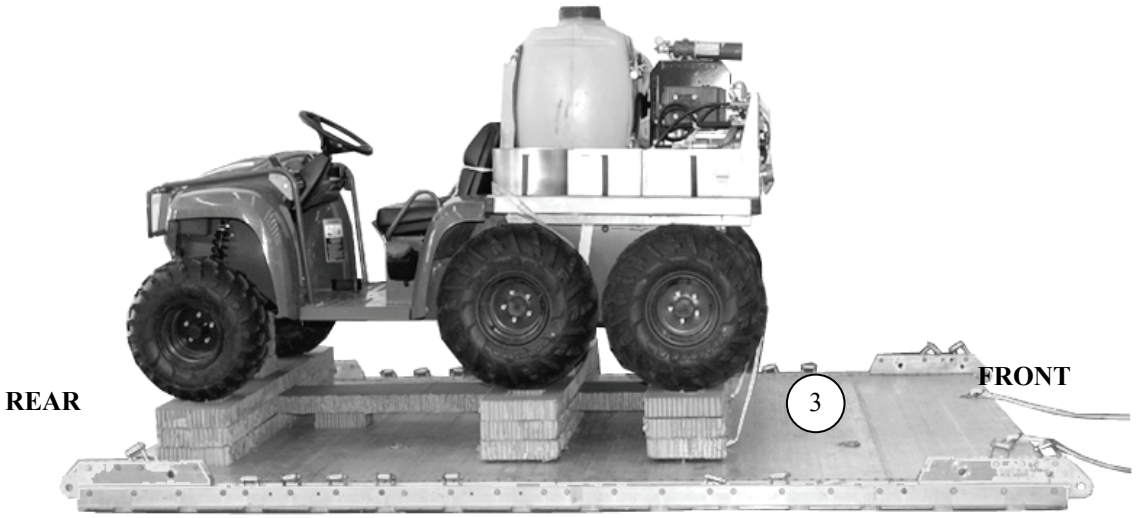
POSITIONING LOAD

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 A3 and B3 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.

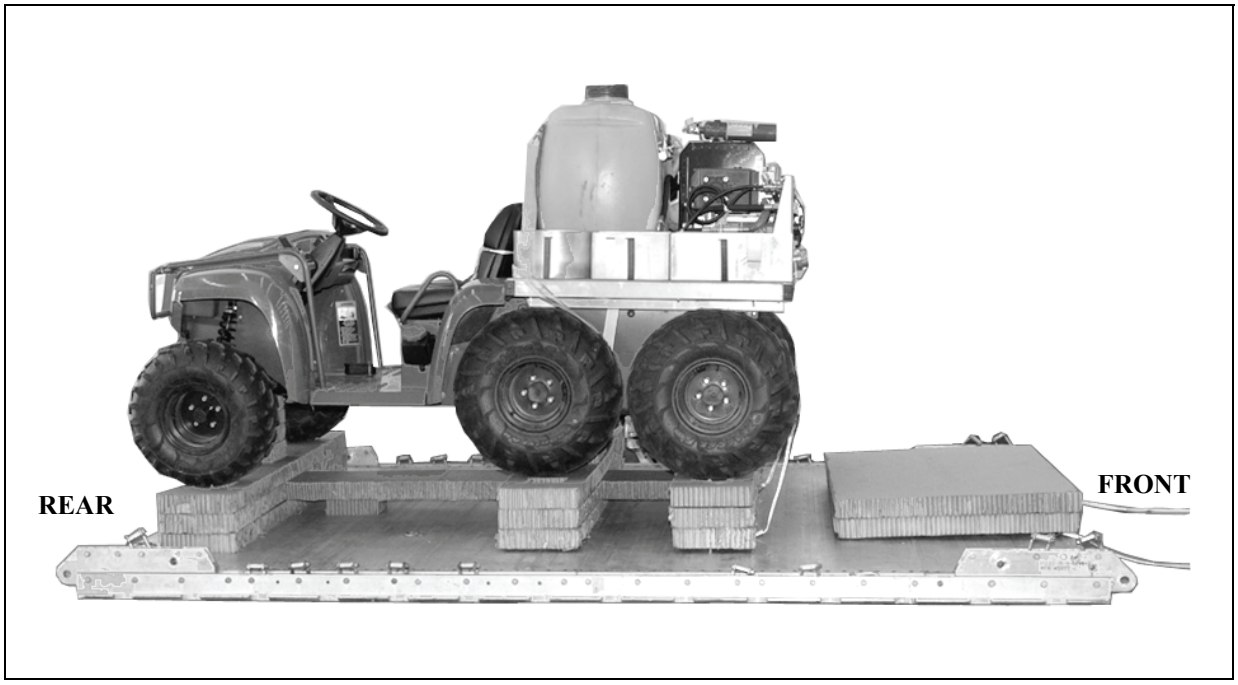


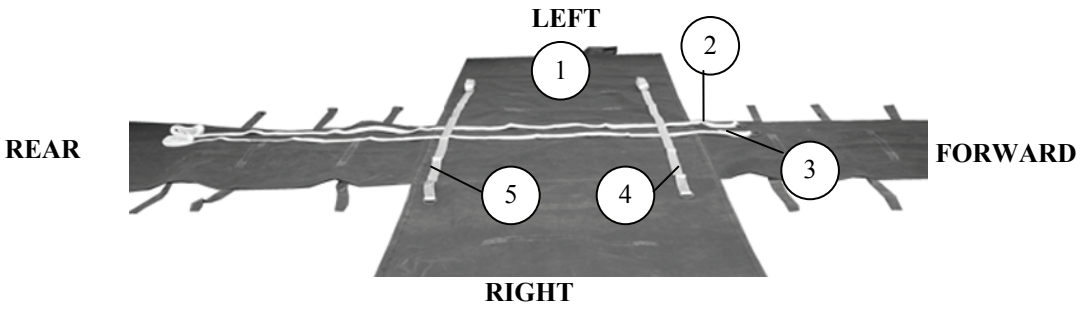
Figure 4-9. Honeycomb Stack 2 Positioned

RIGGING AND POSITIONING THE A-22 CARGO BAG

4-9. Rig the A-22 cargo bag as described in FM 4-20.103/MCRP 4-11.35/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.

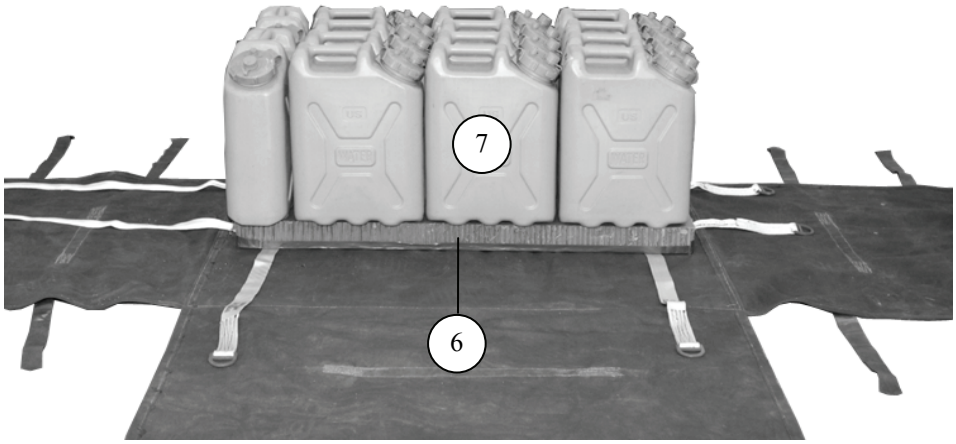
Note. Items to be rigged in the A-22 bag are as follows:

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



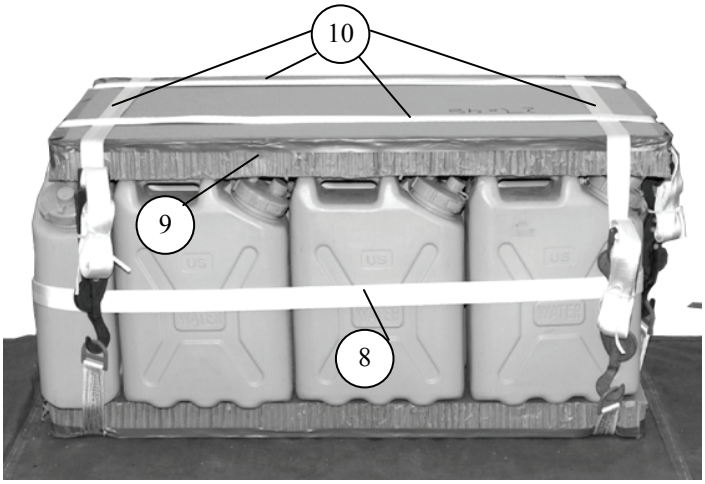
1. Lay out the A-22 cargo bag sling facing down. Center the cargo bag cover on the sling assembly.
2. Pre-position four 15-foot lashings. Lashing 1 is positioned 3 inches from the left side running forward to rear.
3. Position second lashing 12 inches to the right of lashing 1.
4. Position third lashing 6 inches from the forward edge running from right to left.
5. Position fourth lashing 3 inches from the rear edge running from left to right.

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.

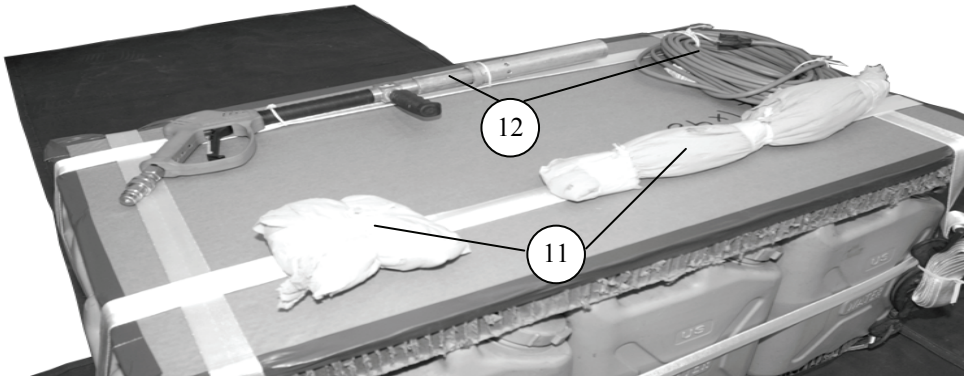


8 Secure water cans by running a lashing around the water containers and secure with a D-ring and load binder.

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

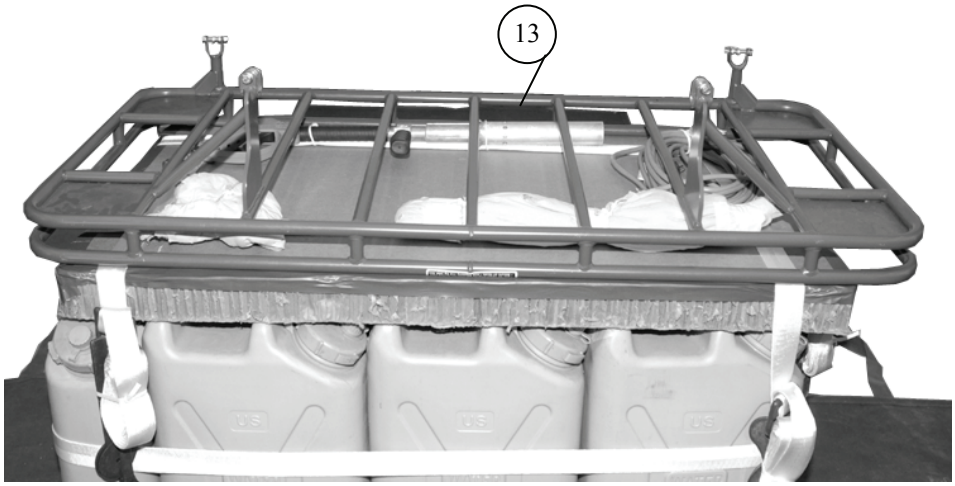
10 Secure the water containers and honeycomb with the four pre-positioned lashings.

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



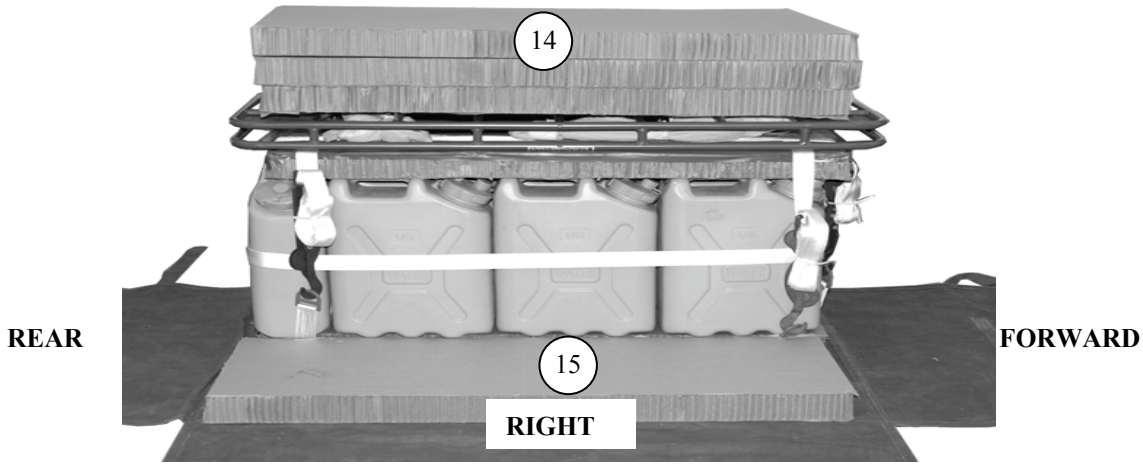
(11) Wrap the winch control and foam separator and connector with cellulose wadding and tape. Place on top of the honeycomb as shown. Secure items to the lashing using type III nylon cord.

(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.



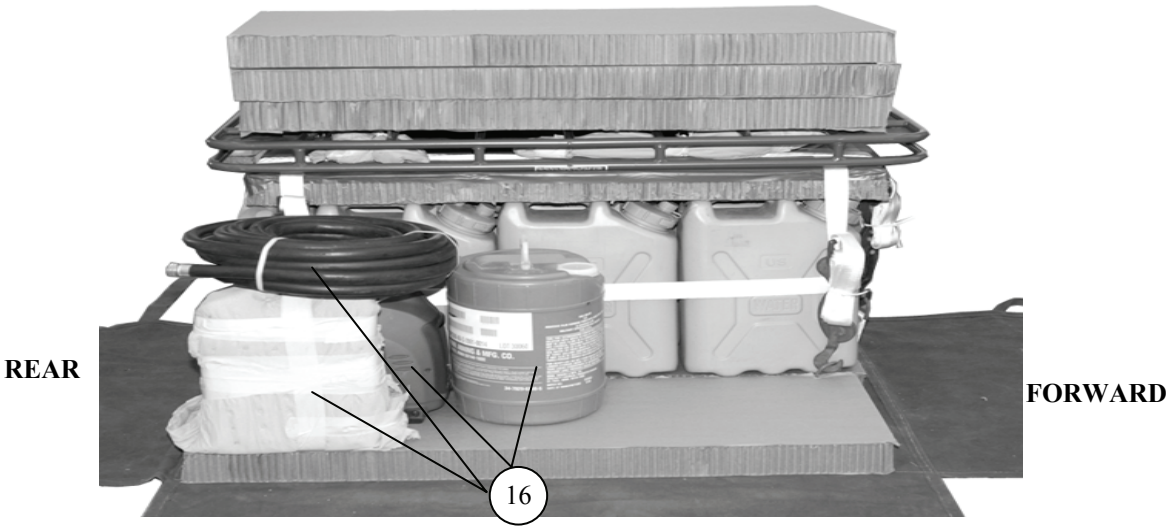
(13) Position the cargo rack upside down on top of the honeycomb as shown.

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



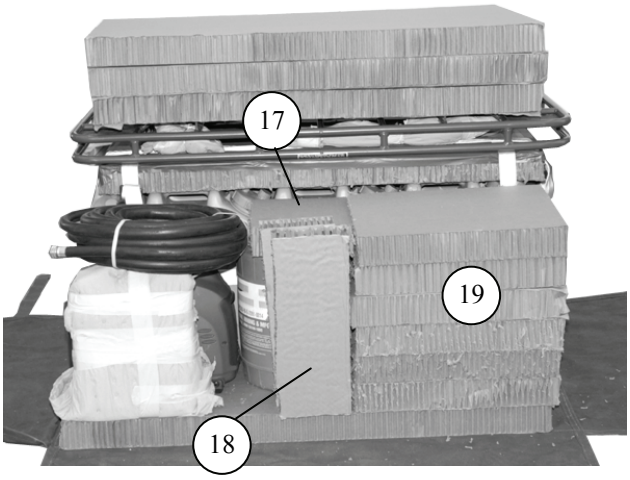
(14) Position three layers of 27- by 48-inch pieces of honeycomb on top of the cargo rack. Crush the honeycomb down over the cargo rack brackets.

(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)

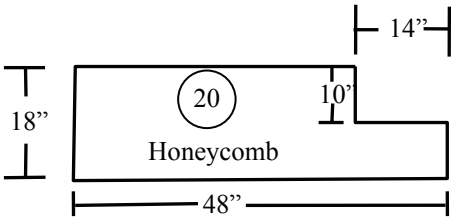


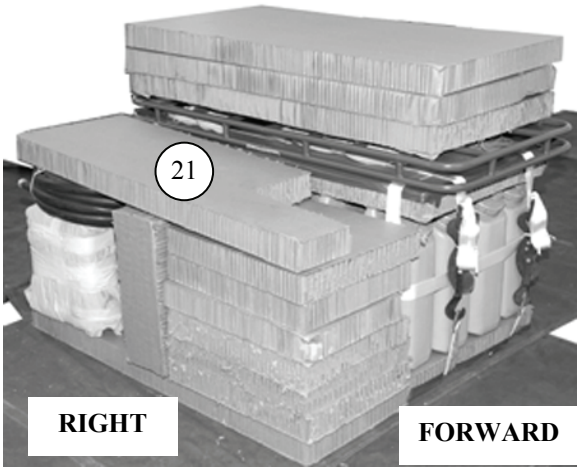
(17) Cut one piece of honeycomb and position on top of the foam can.

(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. Not drawn to scale.
2. All dimensions are given in inches.

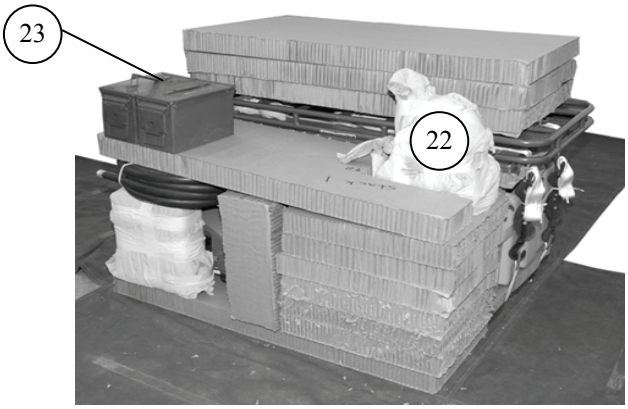




(20) Cut an 18- by 48-inch piece of honeycomb with a 10- by 14-inch cutout as shown above.

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

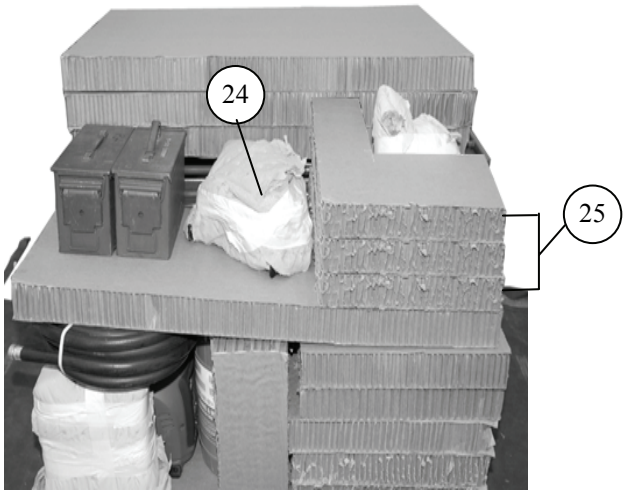
Figure 4-10. A-22 Cargo Bag Rigged (Continued)

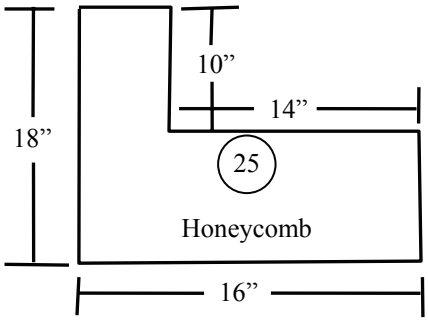


(22) Wrap the sump pump and the winch with cellulose wadding and tape. Place the sump pump into the 10- by 14-inch honeycomb cutout with the high point to the inside of the container.

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

Notes. 1. Not drawn to scale.
2. All dimensions are given in inches.

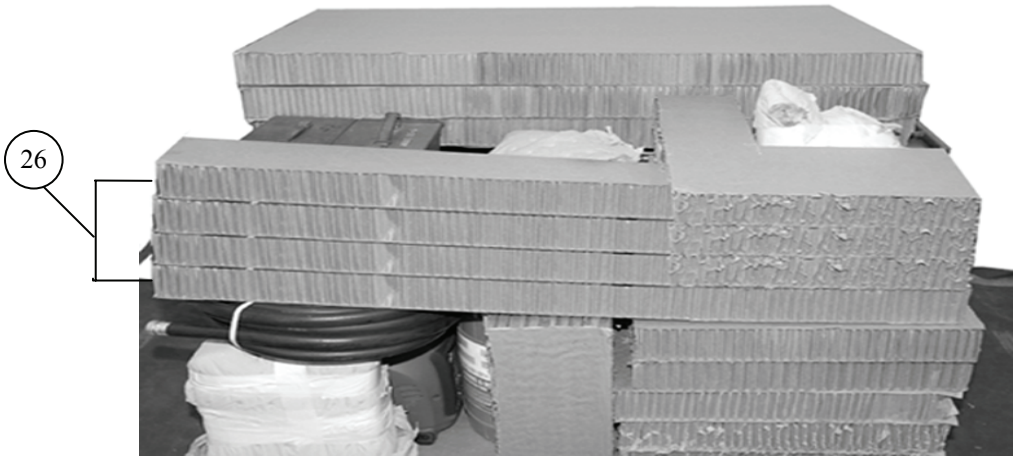




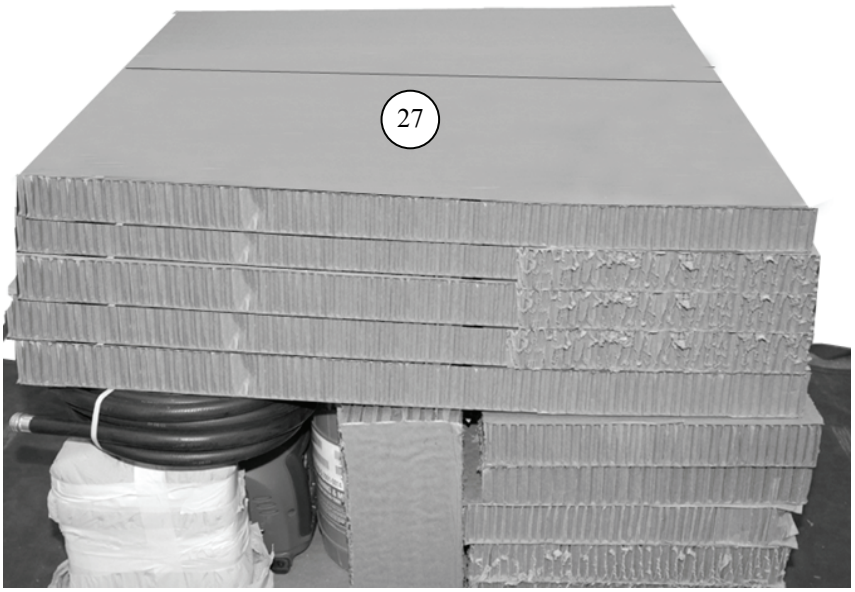
(24) Position the prepared winch on the center of the honeycomb.

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

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



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).

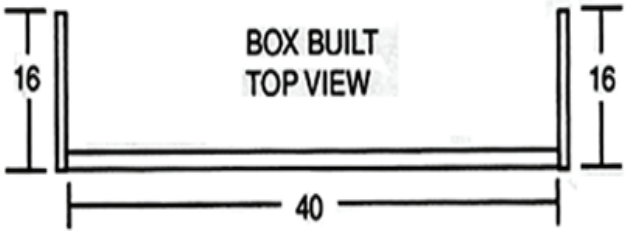


27 Cut an 18- by 48-inch piece of honeycomb and position on top of the winch, ammunition vans, and sump pump as shown above.

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

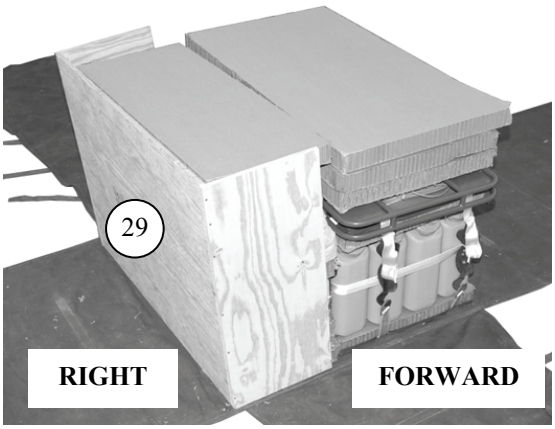
Notes. 1. Not drawn to scale.
2. All dimensions are given in inches.
3. Use 8d common nails or 2-inch long, #4 wood screws.

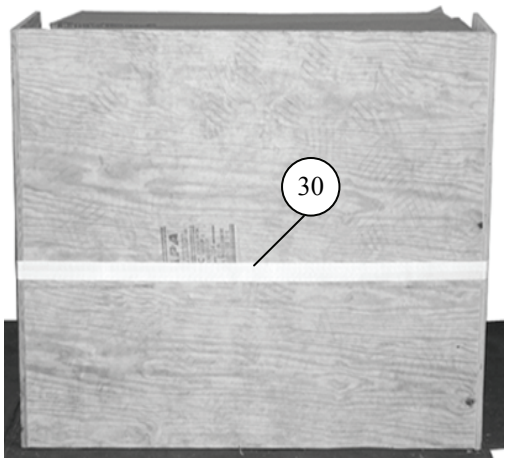
28



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)



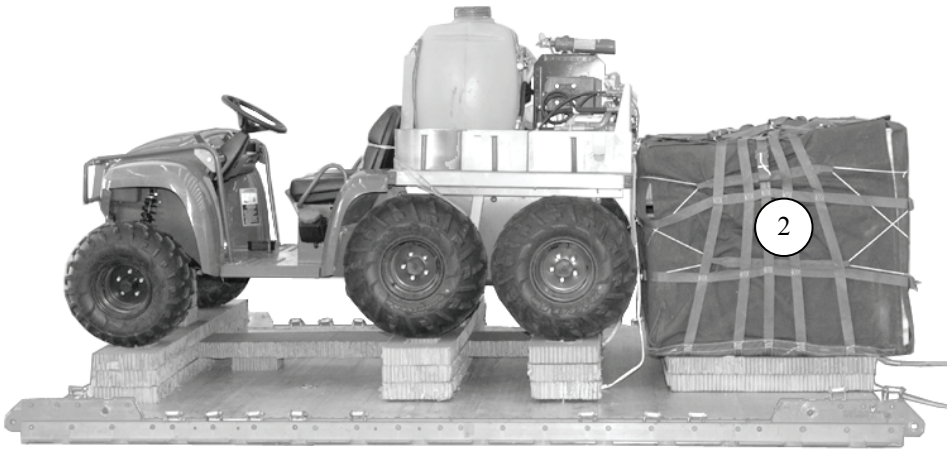


29 Position the A-22 equipment retainer box around the stacked equipment on the right side of the container.

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

31 Close the A-22 container according to FM 4-20.103/MCRP 3-11.3C/NAVSEA SS400-AB-MMO-010/TO 13C7-1-11.

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



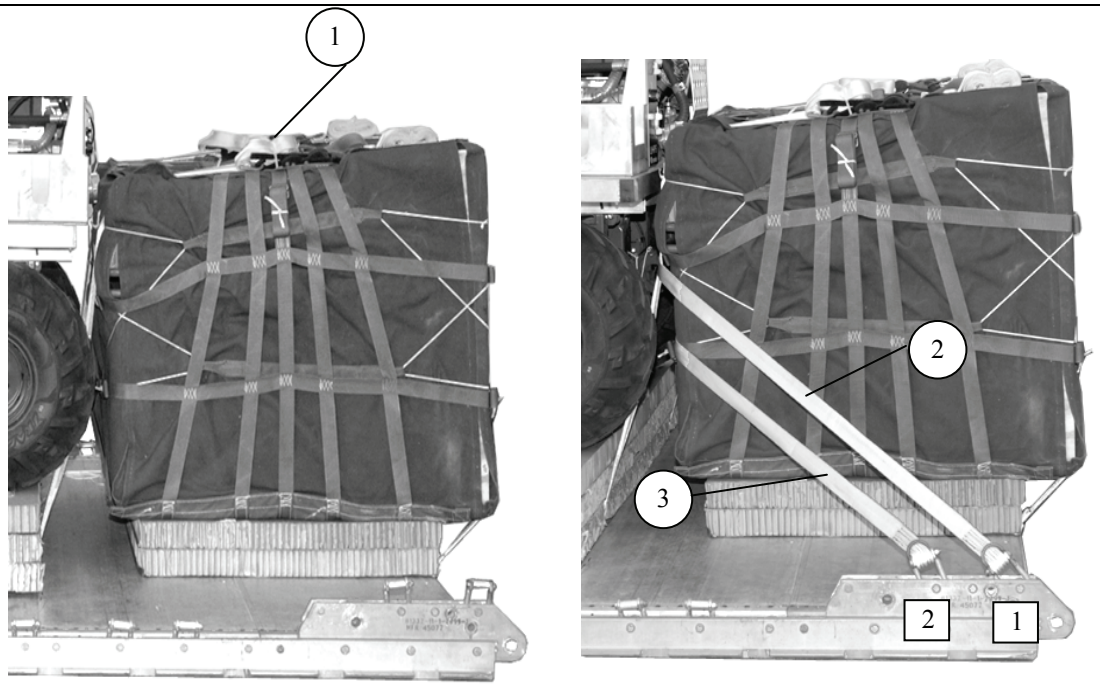
1 Route the pre-positioned lashings on A3 and B3, Figure 4-2, over the bed of the FRE (Not Shown).

2 Position the A-22 cargo bag on stack 2 with the equipment box 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.

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/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 4-12.

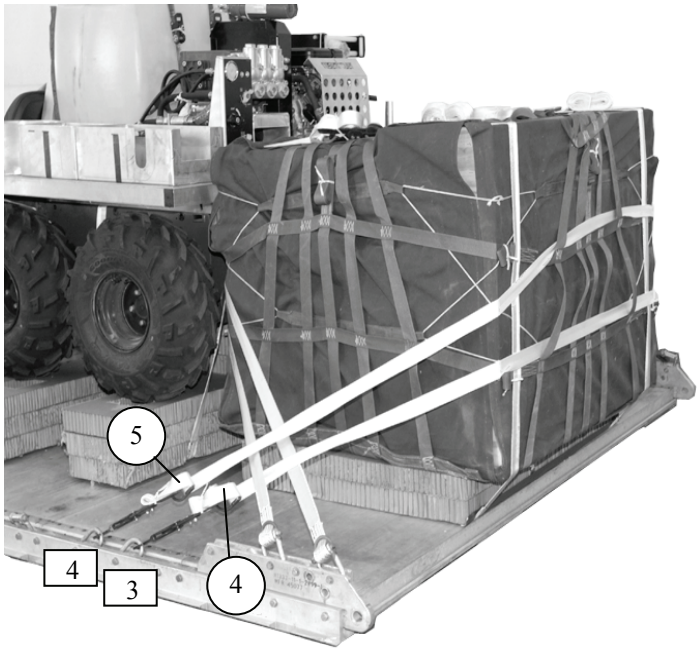


1. Route the pre-positioned lashings under the A-22 cargo bag webbing, tie-down ring A1 load binds to deck ring A3, deck ring B1 load binds to deck ring B3, and close and secure load binders on top of the A-22 cargo bag.

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

3. Route a lashing through clevis 2 and back through its 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



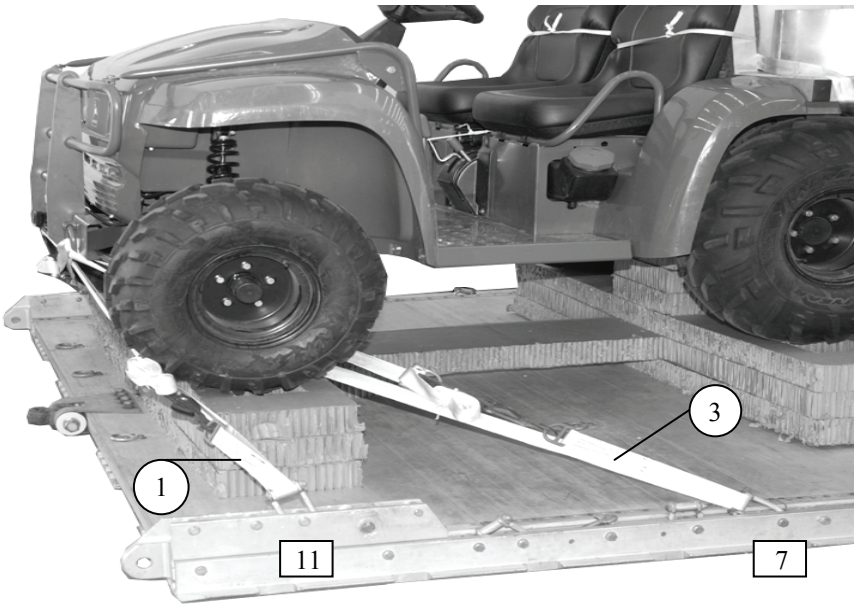
(4) Route a lashing through clevis 3A and back through its own D-ring. Route it through the front lower webbing on the A-22 cargo bag and load bind to clevis 3.

(5) Route a lashing through clevis 4A and back through its 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)

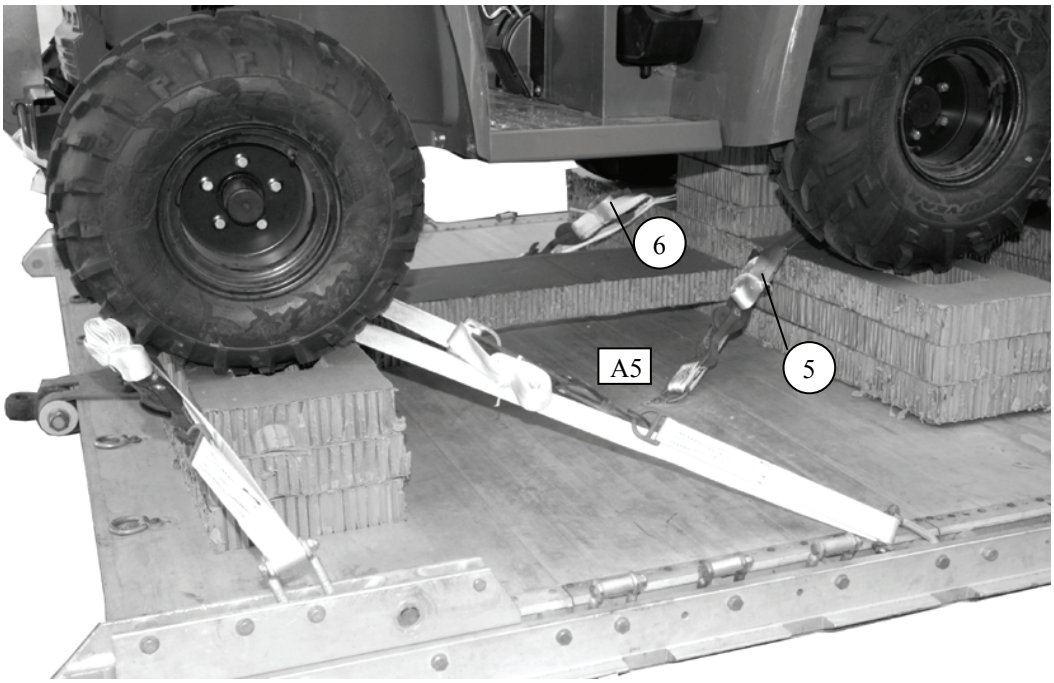
LASHING M-GATOR W/FRE

4-11. Lash the M-Gator to the platform according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figures 4-13 through 4-15.



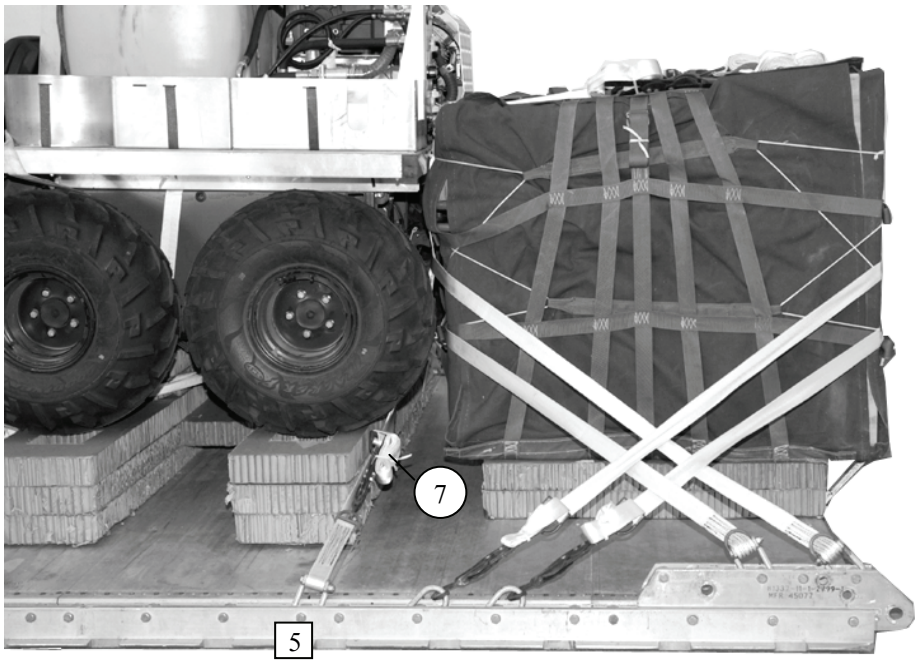
Lashing Number	*Tie-down Clevis Number*	*Instructions*
		Pass lashing through:
1	11	Front right tie-down point.
2	11A	Front left tie-down point. (Not Shown)
3	7	Front left tie-down point.
4	7A	Front right tie-down point. (Not Shown)

Figure 4-13. Lashings 1 Through 4 Installed



Lashing Number	*Deck Ring Number*	*Instructions*
		Pass lashing through:
5	A5	Left rear tie-down point **(do not tighten)**.
6	B5	Right rear tie-down point **(do not tighten)**.

Figure 4-14. Lashings 5 and 6 Installed

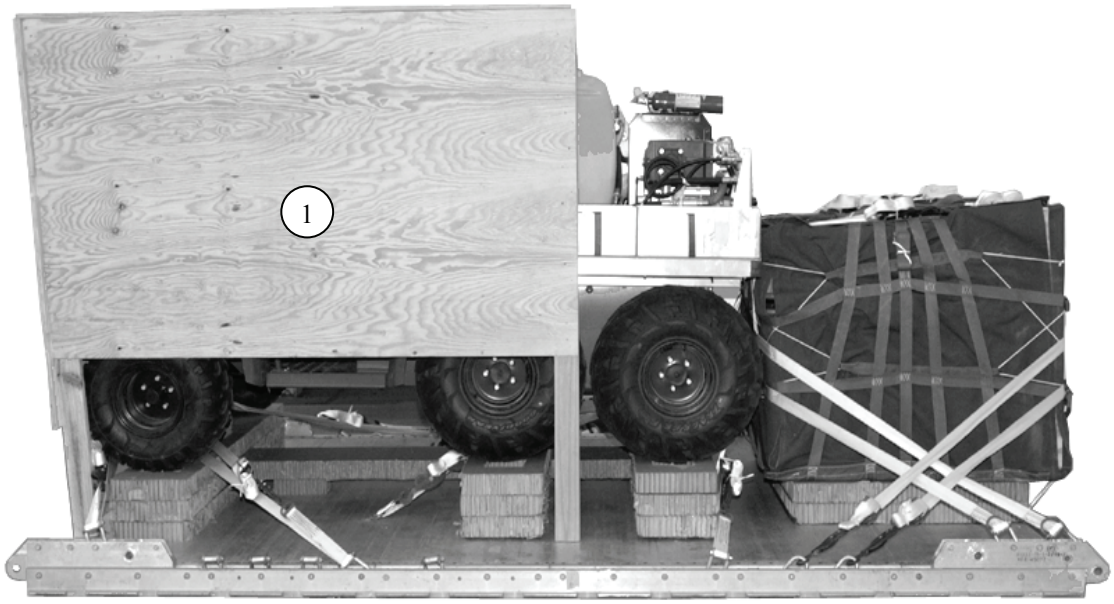


Lashing Number	*Tie-down Clevis Number*	*Instructions*
		Pass lashing through:
7	5	Rear right tie-down point **(do not tighten)**.
8	5A	Rear left tie-down point **(do not tighten)**.
		Tighten lashings 5 and 6, then 7 and 8.

Figure 4-15. Lashings 7 and 8 Installed

POSITIONING M-GATOR BOX

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

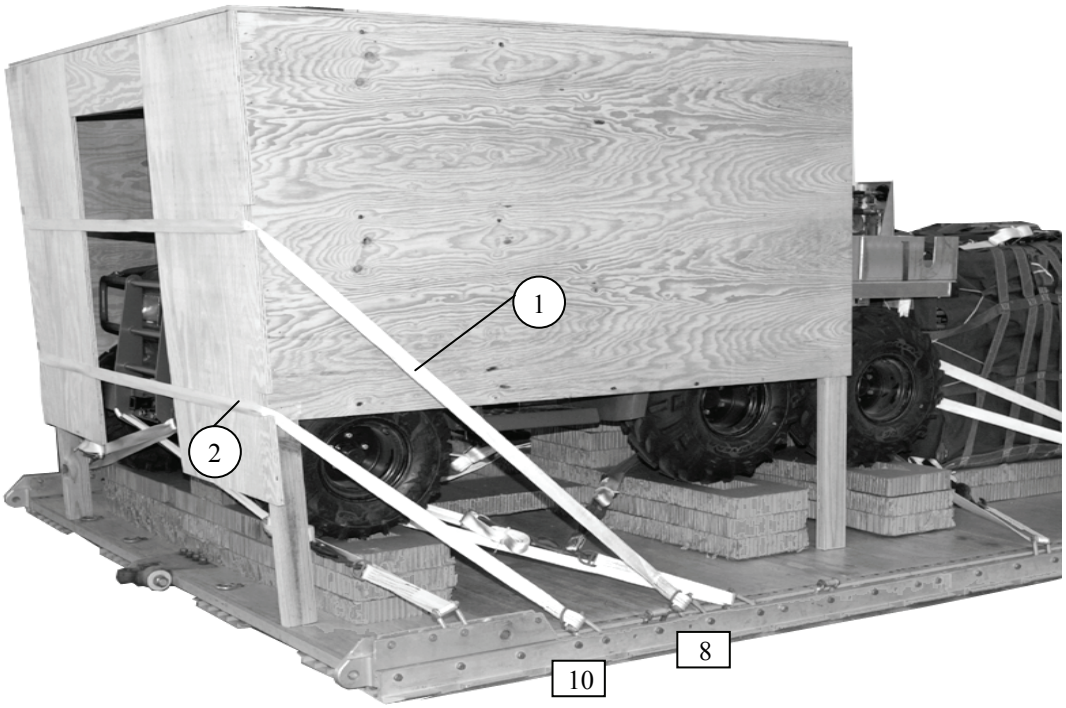


1 Position the box on the platform, aligning the front bottom edge of the box with the platform rear edge.

Figure 4-16. M-Gator Box Positioned

LASHING M-GATOR BOX

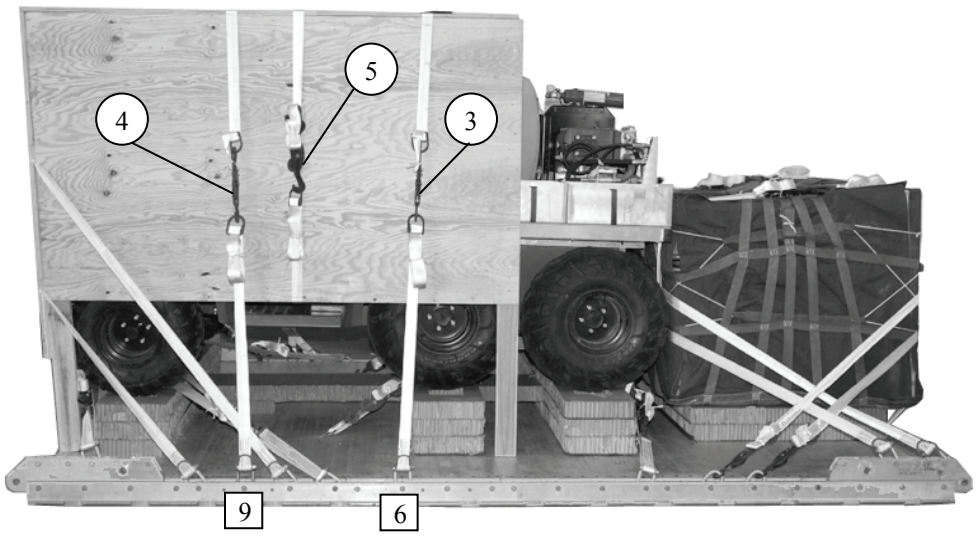
4-13. Lash the M-Gator box to the platform according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 4-17.



(1) Route a lashing through clevis 8 and back through its own D-ring, and pull the strap taut. Repeat the same steps for clevis 10.

Lashing Number	*Tie-down 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



(2) Route a lashing through clevis 6 and back through its own D-ring, and pull the strap taut. Repeat the same steps for clevis 6A, 9, and 9A.

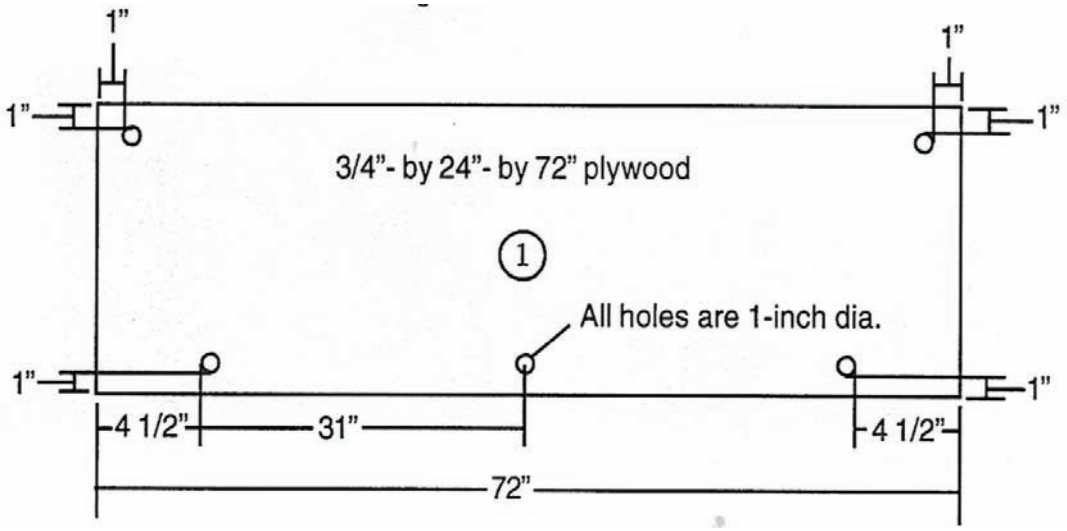
Lashing Number	*Tie-down Clevis Number*	*Instructions*
		Pass lashing:
3	6 and 6A	Over top of box and bind on right side of box.
4	9 and 9A	Over top of box and bind on right side of box.
5		Through the passenger compartment of the vehicle, around and over the box and bind the ends together on the right side of box.

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

BUILDING AND INSTALLING M-GATOR W/FRE BOX EXTENSION

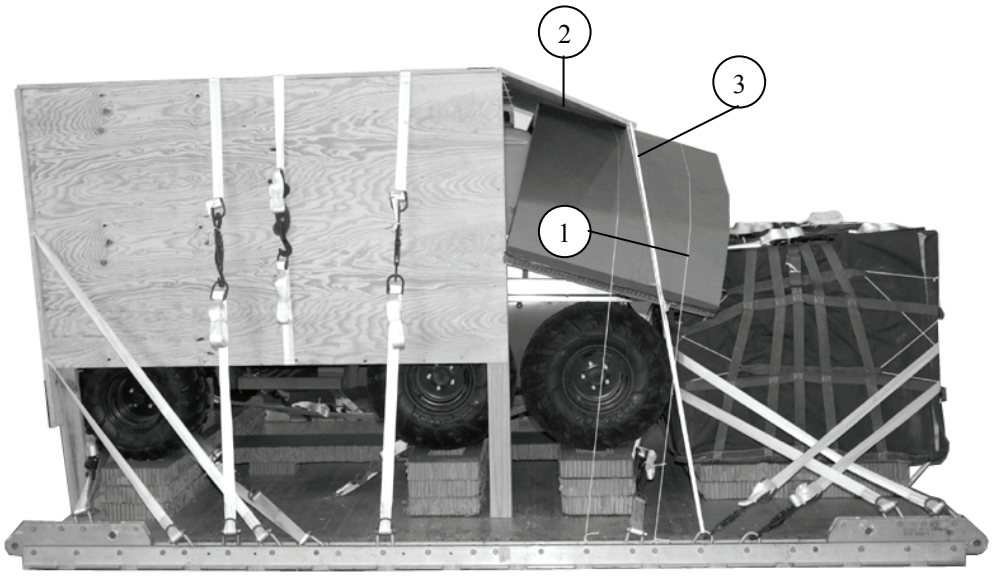
4-14. Build and install the M-Gator W/FRE box extension as shown in Figures 4-18 and 4-19.

Notes. 1. Not drawn to scale.
2. All dimensions are given in inches.
3. All holes are 1-inch in diameter and 1 inch in on all corners.



1 Cut a piece of 3/4- by 24- by 72-inch 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

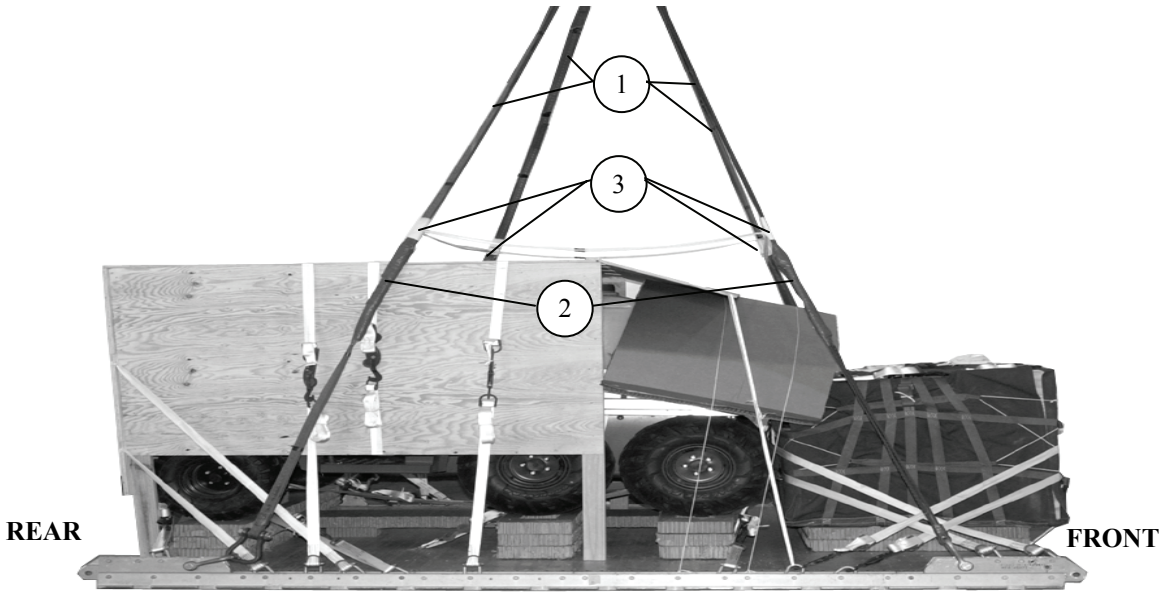


1. Place one full sheet of honeycomb over the water reservoir and FRE and tie down with type III nylon cord to a convenient point on the platform.
2. Place the FRE box extension on top of the honeycomb matching the three drilled holes on top of the M-Gator box with the box extension.
3. Secure the FRE box extension on 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/MCRP 4-11.3J/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 rear tandem link 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/MCRP 4-11.3J/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/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 4-21.

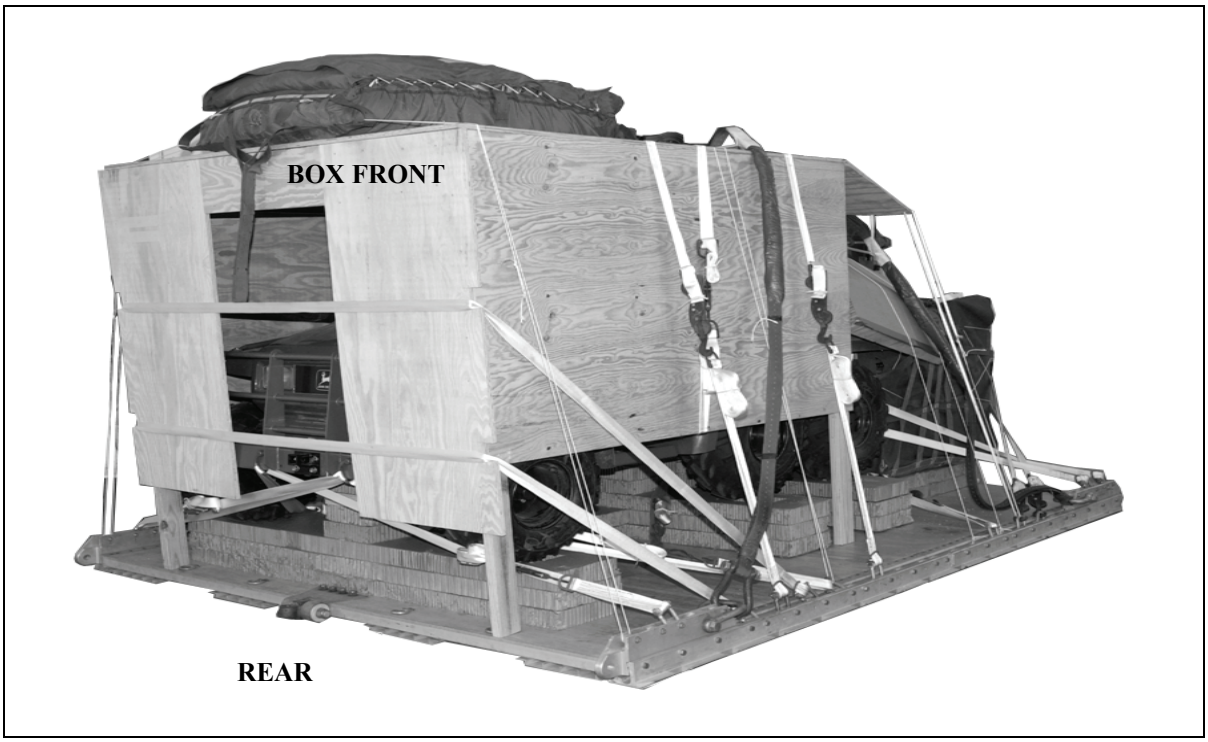
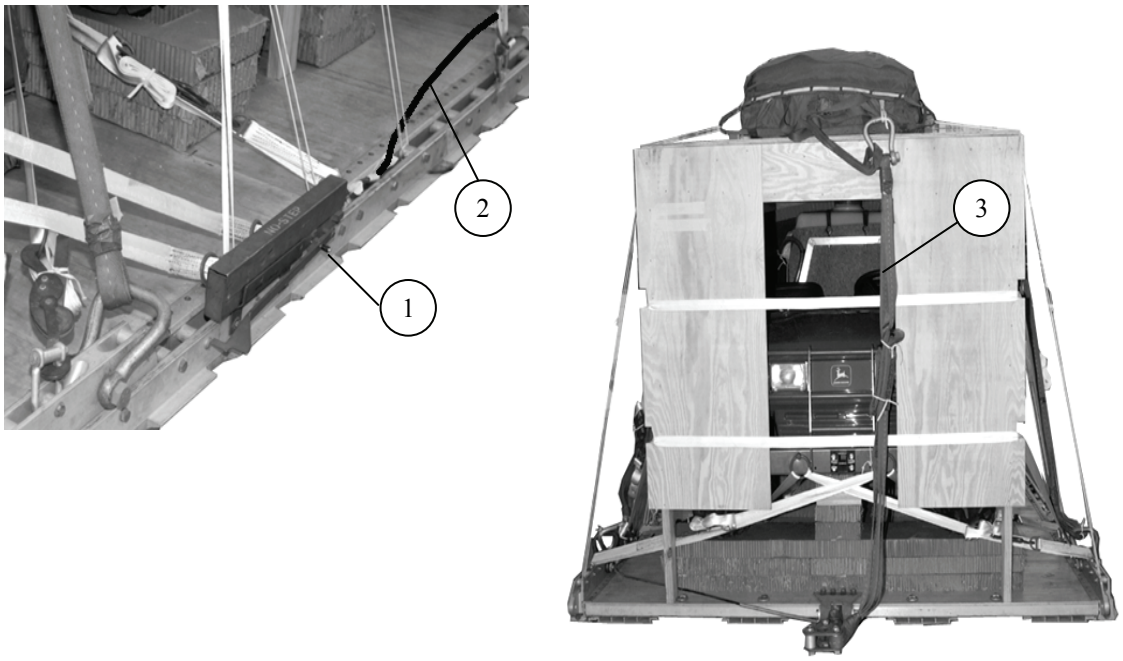


Figure 4-21. Cargo Parachute Stowed

INSTALLING EXTRACTION SYSTEM

4-17. Install the Extraction Force Transfer Coupling (EFTC) according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 4-22.

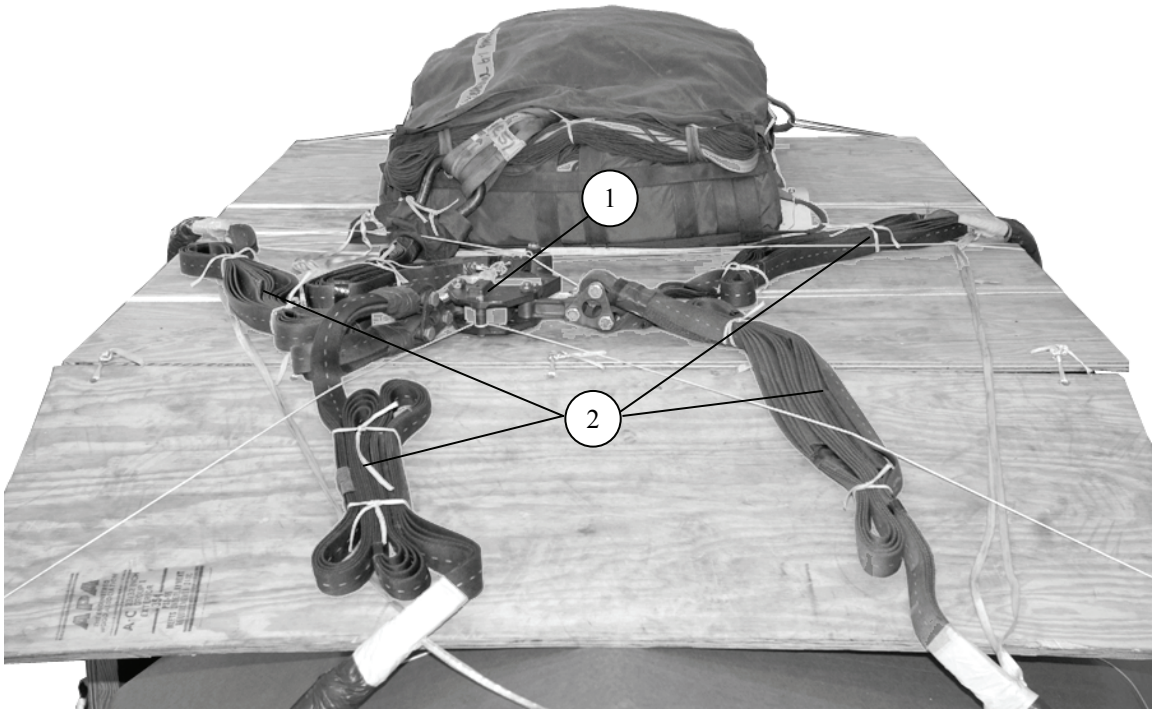


1. Install the EFTC actuator mounting bracket using the front mounting holes.
2. Install a 12-foot cable.
3. Attach a 9-foot (2-loop), type XXVI nylon sling for the deployment line.

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/MCRP 4-11.3J/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 secure 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/MCRP 4-11.3J/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/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

MARKING RIGGED LOAD

4-21. Mark the rigged load according to FM 4-20.102/MCRP 4-11.3J/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/MCRP 4-11.3J/NAVSEA SS400-AB-MM0-010/TO 13C7-1-5 and AR 59-4/ OPNAVINST 4630.24C/AFJ 13-210(I)/MCO 13480.1B before the load leaves the rigging site.

RIGGED LOAD DATA

Weight	4,980 pounds
Maximum Load Allowed	5,000 pounds
Minimum Load Allowed	4,600 pounds
Height	94 inches
Width	108 inches
Overall Length	168 inches
Overhang: Front (A-22)	6 inches
Rear	0 inches
Center of Balance (CB) (from front edge of platform)	70 inches
Extraction System with 12-foot cable (adds 18 inches to length of platform)	EFTC

Figure 4-24. M-Gator W/FRE Rigged on a 12-Foot, Type V Platform for Low-Velocity Airdrop

Table 4-1. Equipment Required for Rigging the M-Gator with the First Response Expeditionary (FRE) Fire Vehicle and an A-22 Cargo Bag on an 12-Foot, Type V 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 lead, (line bag for C-17)	1
4030-00-090-5354	Clevis, large	7
4030-00-678-8562	Clevis, medium	2
1670-00-360-0328	Cover, clevis, large	1
8135-00-664-6958	Cushioning material, packaging, cellulose wadding	As required
1670-00-434-5783	Coupling assembly, airdrop, EFTC, w / 12-ft cable	1
1670-01-475-1990	Extraction Parachute Jettison System (EPJS)	1
8305-00-191-1101	Felt, ½-inch	As required
8305-00-290-5584	Felt, $^{3}/_{16}$-inch	As required
1670-01-183-2678	Leaf, extraction line (line bag)(add 1 for DES)	1
	Line Multi-Loop:	
	For deployment line:	
1670-01-062-6304	9-ft (2-loop), type XXVI nylon webbing	1
	For drogue:	
1670-01-064-4452	60-ft (1-loop), type XXVI nylon webbing (DES)	1
	For extraction:	
1670-01-064-4452	60-ft (1-loop), type XXVI nylon (C-130 aircraft)	1
1670-01-107-7652	160-ft (1-loop), type XXVI nylon (C-17 aircraft)	1
	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 riser extension:	
1670-01-062-6301	3-ft (2-loop), type XXVI nylon webbing	1
	For suspension:	
1670-01-062-6303	16-ft (2-loop), type XXVI nylon webbing	4
	Link:	
1670-01-493-6418	Assembly small, two-point, 3 ¾-inch	1
1670-01-493-6418	Assembly small, two-point, 3 ¾-inch (C-17 drogue)	1
1670-01-072-5637	Jettison, C-130 (DES)	1
1670-01-483-8259	Link, parachute connector (TRM H-block) (C-17)	1
	Lumber:	
5510-00-220-6146	2-by 4-inch	As required
5510-00-220-6148	2-by 6-inch	As required
5530-00-128-4981	Plywood, ¾-inch sheet	8 sheets
	Nail, steel wire, common:	
5315-00-010-4659	8d	As required
1670-00-753-3928	Pad, energy-dissipating, honeycomb	12 sheets

Table 4-1. Equipment Required for Rigging the M-Gator with the First Response Expeditionary (FRE) Fire Vehicle and an A-22 Cargo Bag on a 12-Foot, Type V 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 15-ft	1
1670-01-063-3715	15-ft, Extraction Drogue (DES)	1
	Platform, airdrop, type V, 12-ft:	
1670-01-353-8425	Bracket assembly, component (EFTC)	1
1670-01-353-8424	Bracket, assembly, extraction	22
1670-01-162-2372	Clevis, load tie-down	4
1670-01-162-2381	Link, Tandem, link sups. assembly	1
1670-01-097-8816	Release, cargo parachute, M-1	1
7510-00-266-5016	Tape, adhesive, 2-in	As required
1670-00-937-0271	Tie-down assembly, 15-ft webbing	31
	Webbing:	
4020-00-240-2146	Cord, nylon, type III, 550-lb	As required
8305-00-268-2411	Cotton, type I, 1/4-inch	As required
8305-00-082-5752	Nylon, tubular, 1/2-in, natural	As required
8305-00-263-3591	Nylon, type VIII	As required

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Chapter 5

Rigging One Minibike for Door Bundle

DESCRIPTION OF LOAD

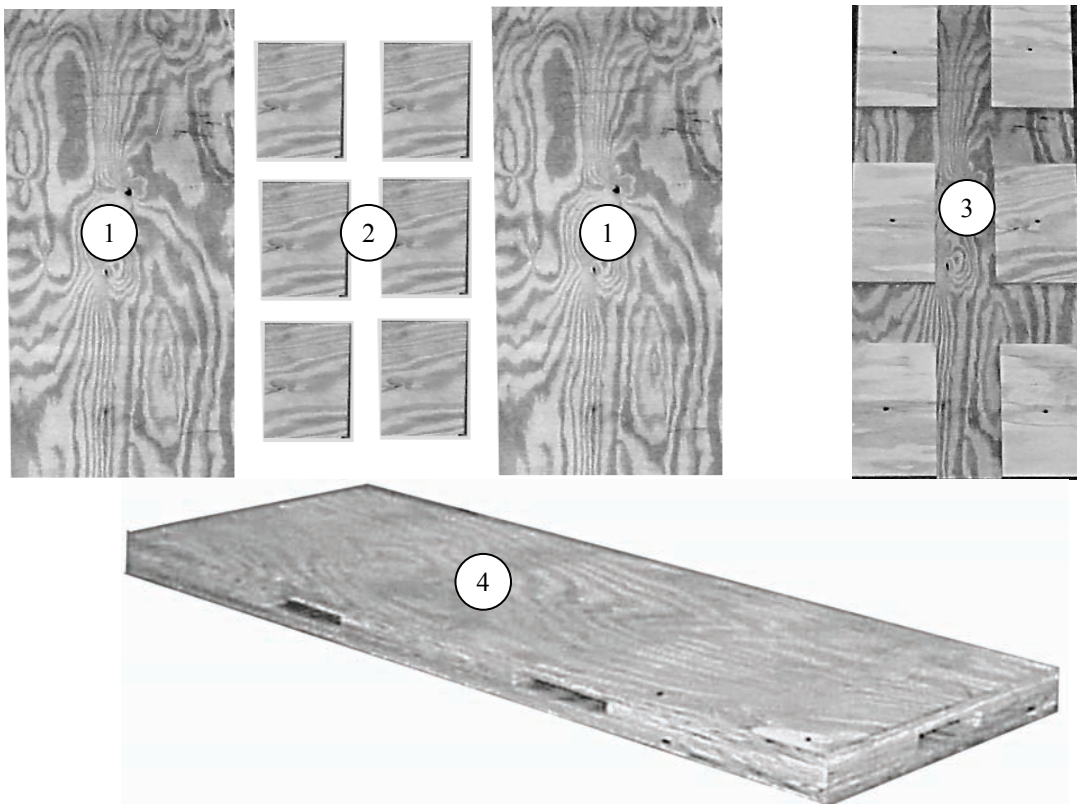
5-1. The minibike is rigged on a 16- by 48-inch Combat Expendable Platform (CEP) with one T-10 cargo parachute. The minibike is 27 inches wide, 34 inches high and 61 inches long. It weighs 155 pounds and is shown in Figure 5-1.

Figure 5-1. Minibike

BUILDING THE COMBAT-EXPENDABLE PLATFORM (CEP)

5-2. Build a 16- by 48-inch combat-expendable platform (CEP) as shown in Figure 5-2.

Notes. 1. Not drawn to scale.
2. All dimensions are given in inches.
3. Use 8d common nails or 2-inch long, #4 wood screws.

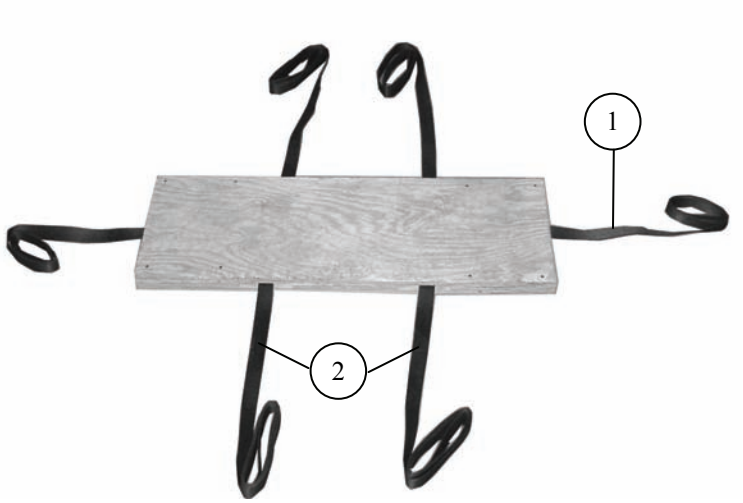


1. Cut two 3/4- by 16- by 48-inch pieces of plywood.
2. Cut six 3/4- by 6- by 12-inch pieces of plywood.
3. Nail or screw the six pieces of plywood from step 2 on top of one of the pieces of plywood from step 1. Make sure the plywood is flush with the sides, one in each corner and centered in the middle as shown above.
4. Nail or screw the second piece of plywood from step 1 on top of the plywood placed in step 3. Make sure the plywood is flush with the sides.

Figure 5-2. Combat-Expendable Platform (CEP) Built

PREPARING THE CEP

5-3. Prepare the platform as shown in Figure 5-3.



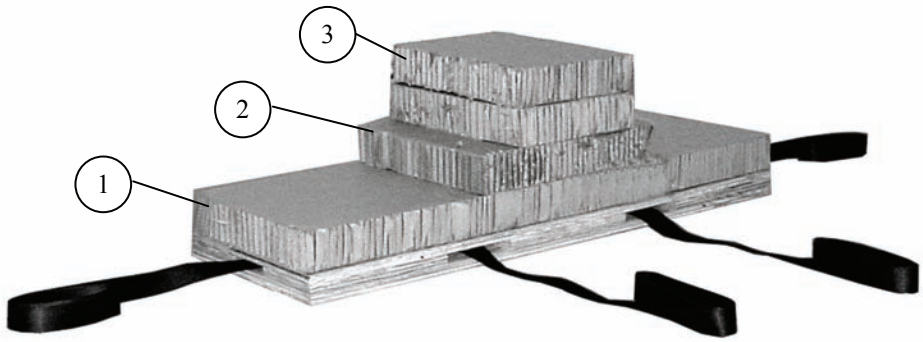
1 Route and center a 14-foot length of type X nylon webbing through the long channel of the platform.

2 Route and center two 12-foot lengths of type X nylon webbing through the two short channels of the platform.

Figure 5-3. Platform Prepared

BUILDING AND POSITIONING THE HONEYCOMB STACK

5-4. Prepare and position the honeycomb stack on the platform as shown in Figure 5-4.

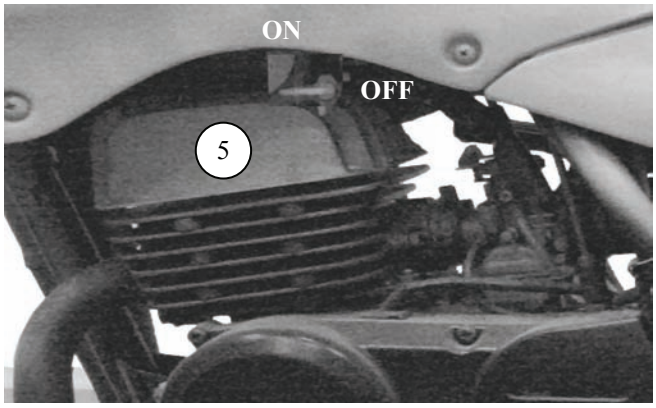


1. Cut and glue a 16- by 48-inch piece of honeycomb on top of the platform built in paragraph 5-2. Make sure it is flush with the sides.
2. Cut and glue a 16- by 18-inch piece of honeycomb on top of the honeycomb placed in step 1, centered and flush with the sides.
3. Cut and glue two 12- by 16-inch pieces of honeycomb on top of the honeycomb placed in step 2, centered and flush with the sides.

Figure 5-4. Honeycomb Stack Built and Positioned

PREPARING AND POSITIONING MINIBIKE

5-5. Prepare and position minibike as shown in Figures 5-5 and 5-6.



1. Secure key with type III nylon cord (if equipped with a key) (Not Shown).
2. Make sure tank is at least half full, but no more than three fourths full.
3. Secure left handlebar lever to handlebar with type III nylon cord.
4. Wedge a piece of honeycomb between right handlebar and lever and secure with cloth-backed adhesive tape.
5. Place gas valve in OFF position.

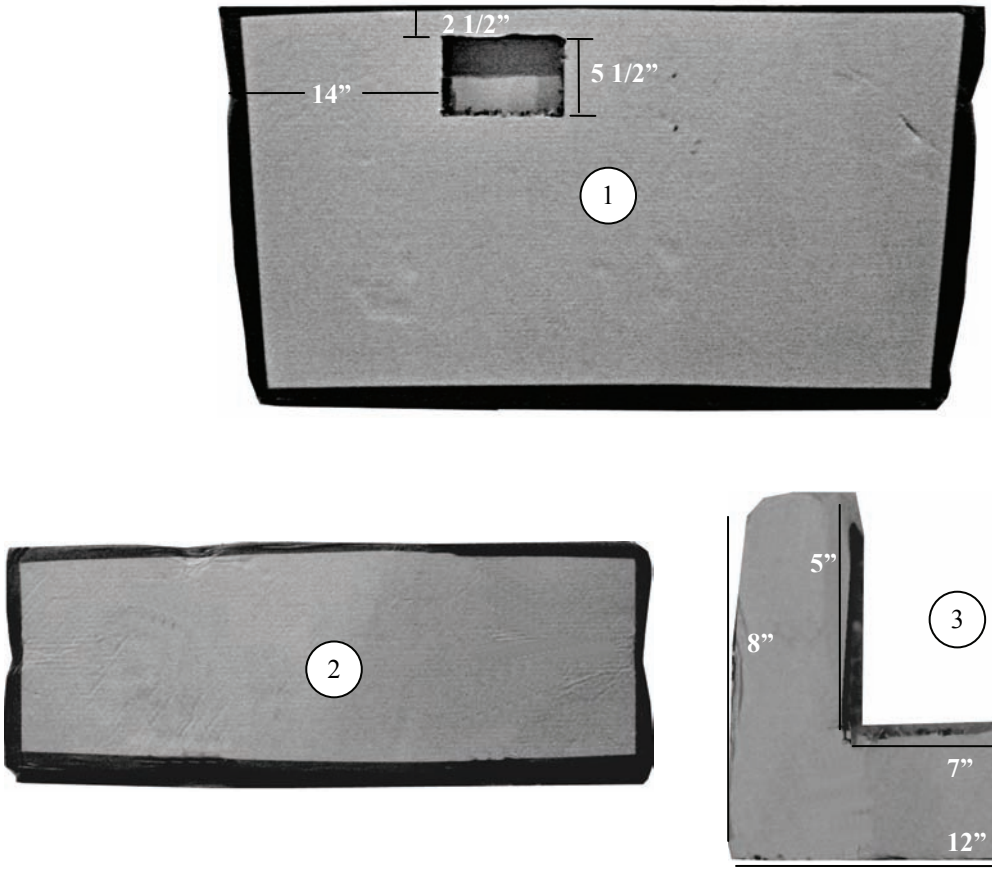
Figure 5-5. Minibike Prepared

1. Place minibike on honeycomb centering engine on stack.
2. Secure kickstand in the up position with type III nylon cord.
3. Secure foot pegs up with type III nylon cord.

Figure 5-6. Minibike Positioned on Honeycomb

PREPARING MINIBIKE AFTER POSITIONING

5-6. Cut honeycomb protectors and secure as shown in Figure 5-7.

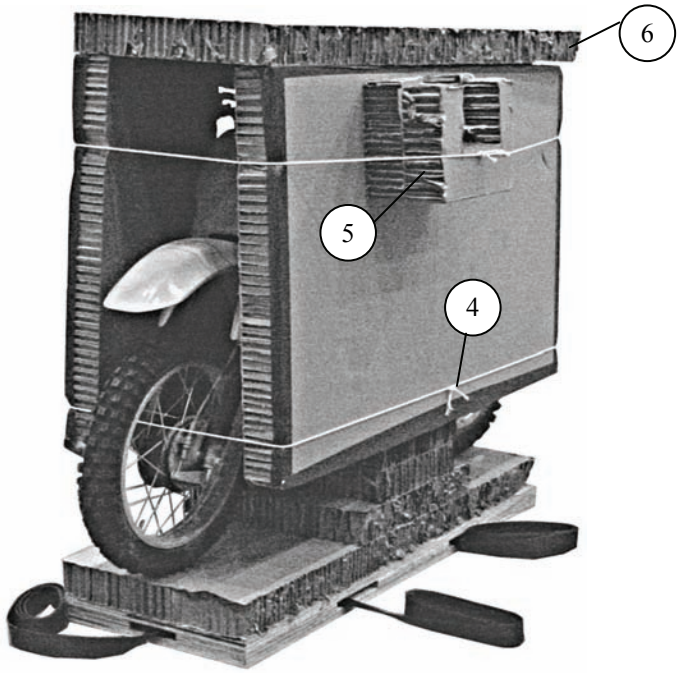


1. Cut two 30- by 48-inch pieces of honeycomb. Make a 5 1/2- by 7 1/2-inch cutout in each piece of honeycomb, 14 inches in from one side and 2 ½ inches down from the top as shown above. Tape the edges with 2-inch cloth-backed adhesive tape.

2. Cut a 16- by 48-inch piece of honeycomb. Tape the edges with 2-inch cloth-backed adhesive tape.

3. Cut four 8- by 12-inch pieces of honeycomb. Make a 5- by 7-inch cutout in each piece of honeycomb, 1 1/2 inches in from one side and flush with the top as shown above.

Figure 5-7. Minibike Positioned and Prepared



4 Secure the two 30- by 48-inch pieces of honeycomb. Place one piece on each side of the minibike with type III nylon cord. Make sure the handlebars are sticking through cutout.

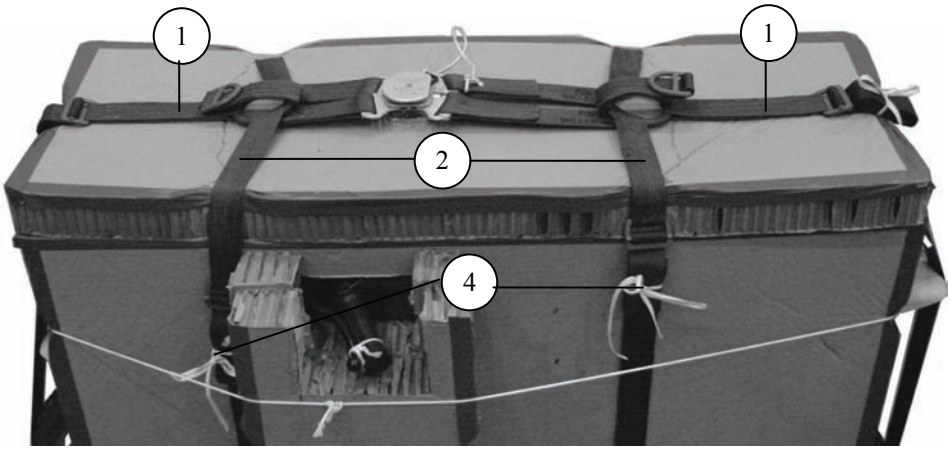
5 Secure two 8- by 12-inch pieces of honeycomb for each side. Place around the handlebars with the open portion facing upwards and secure to the other piece of honeycomb from step 4.

6 Place the 16- by 48-inch piece of honeycomb centered and on top of the load.

Figure 5-7. Minibike Positioned and Prepared (Continued)

SECURING THE MINIBIKE

5-7. Secure the minibike to the CEP according to FM 4-20.103/MCRP 3-11.3C/NAVSEA SS400-AB-MMO-010/TO 13C7-1-11as shown in Figure 5-8.



1. Lay two O-Ring straps on top of honeycomb. Pass the running ends of the 14-foot, type X nylon webbing through each of the friction adapters.
2. Follow the procedures in FM 4-20.103/MCRP 3-11.3C/NAVSEA SS400-AB-MMO-010/TO 13C7-1-11, paragraph 6-4, steps 4-8, to attach the quick-release assembly and straps to the running ends of the 12-foot, type X nylon webbing.
3. Keeping the quick-release assembly centered on the load, tighten the 14-foot, type X nylon webbing strap. Make sure 14-foot strap is centered over the wheels, then tighten the 12-foot, type X nylon webbing straps.
4. Secure the excess of each strap in place with type I, 1/4-inch cotton webbing or tape.
5. Tie the 14-foot strap to the wheels of the minibike with one turn doubled, type I, 1/4-inch cotton webbing (Not Shown).

Figure 5-8. Minibike Secured

STOWING CARGO PARACHUTE

5-8. Prepare, stow, and restrain one T-10 cargo parachute centered according to FM 4-20.103/MCRP 3-11.3C/NAVSEA SS400-AB-MMO-010/TO 13C7-1-11 and as shown in Figure 5-9.

(1) Adapt procedures in FM 4-20.103/MCRP 3-11.3C/NAVSEA SS400-AB-MMO-010/TO 13C7-1-11, paragraph 6-5, to install the T-10 cargo parachute on the load.

(2) Secure the parachute to the load using a length of type I, 1/4-inch cotton webbing. Tie one end to the O-ring on the front of the load. Route the webbing underneath the static line to the other O-ring and secure with a trucker's hitch.

Figure 5-9. Cargo Parachute Stowed

POSITIONING EXTRACTION PARACHUTE

5-9. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/MCRP 4-11.3J/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

5-10. Select and install provisions for emergency restraints according to the emergency aft restraints requirements in FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

MARKING RIGGED LOAD

5-11. Mark the rigged load according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 5-10. Complete the Shipper's Declaration for Dangerous Goods. If the load varies from the one shown, the weight, height, length, and parachute requirements must be recomputed.

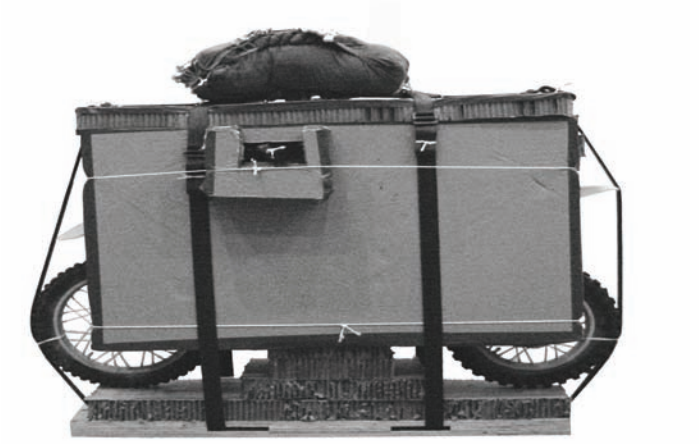
EQUIPMENT REQUIRED

5-12. The equipment required to rig this load is listed in Table 5-1.

Note. This bundle is approved to exit the troop doors of the C-17 and the C-130 aircraft with the 56 inches in the vertical/upright position and the 61 inches in the horizontal position. Two qualified pushers must be used to eject this bundle from the troop door due to its awkward size. Coordinate actions during Loadmaster/Jumpmaster brief prior to flight.

CAUTION

Make the final rigger inspection required by FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MM0-010/TO 13C7-1-5 and AR 59-4/ OPNAVINST 4630.24C/AFJ 13-210(I)/MCO 13480.1B before the load leaves the rigging site.



RIGGED LOAD DATA

Weight	210 pounds
Maximum Weight Allowed	500 pounds
Height	56 inches
Width	27 inches
Length	61 inches
Overhang: Front	0 inches
Rear	0 inches
Center of Balance (from front edge of platform)	0 inches

Figure 5-10. Minibike Rigged as Door Bundle

Table 5-1. Equipment Required for Rigging the Minibike as a Door Bundle

National Stock Number	*Item*	*Quantity*
8040-00-273-8713	Adhesive, paste, 1-gal	As required
1670-00-753-3928	Pad, energy-dissipating, honeycomb	1 sheet
P/N 11-1-466	Parachute, cargo, T-10 (modified)	1
	Plywood:	
5530-00-128-4981	¾-in by 48- by 96- inch sheet	1 sheet
	Nail, steel wire, common:	
5315-00-010-4659	8d	As required
	(or)	
	wood screws,1 1/2-inch	As required
1670-00-131-9695	Quick Release Assembly	1
1670-00-360-0533	Strap, quick release, fixed	1
1670-00-360-0532	Strap, webbing, quick release	3
1670-00-360-0542	Strap, webbing, ring	2
7510-00-266-5016	Tape, adhesive, 2-inch, OD	As required
7510-00-266-6710	Tape, masking, 2-inch	As required
	Webbing:	
4020-00-240-2146	Cord, nylon, type III, 550-lb	As required
8305-00-268-2411	Cotton, type I, ¼-inch	As required
8305-00-261-8584	Nylon, type X	As required

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Chapter 6

Rigging One Motorcycle for Low-Velocity Airdrop

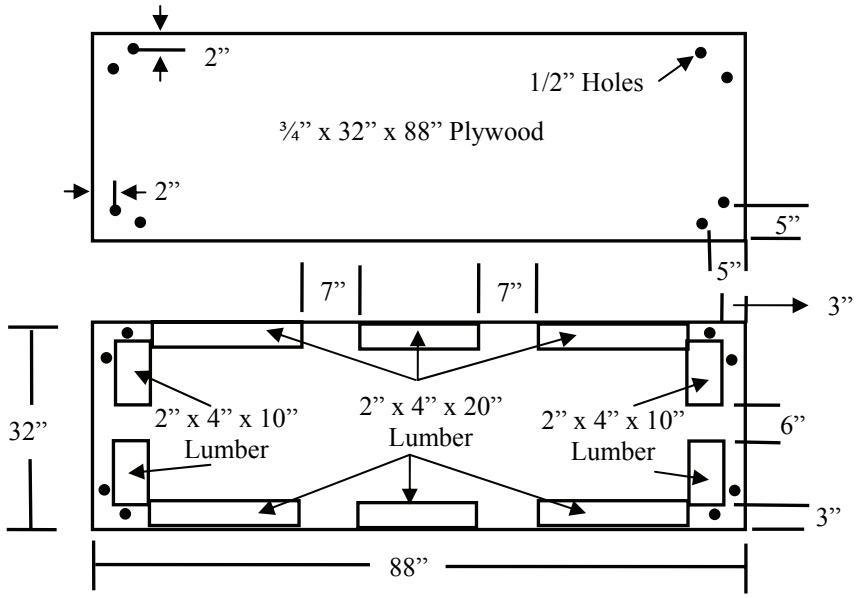
DESCRIPTION OF LOAD

6-1. The motorcycle is rigged on a 32- by 88-inch Combat Expendable Platform (CEP) with one G-14 or T-10C cargo parachute. The load is rigged for a low velocity, over the ramp airdrop from a C-130, C-141 or C-17 aircraft.

BUILDING COMBAT EXPENDABLE PLATFORM

6-2. Build a 32- by 88-inch CEP as shown in Figure 6-1.

Notes.
1. Not drawn to scale.
2. All dimensions are given in inches.
3. All holes are 1/2-inch in diameter and 2 inches in from sides.
4. Use 8d common nails or 2-inch long, #4 wood screws.

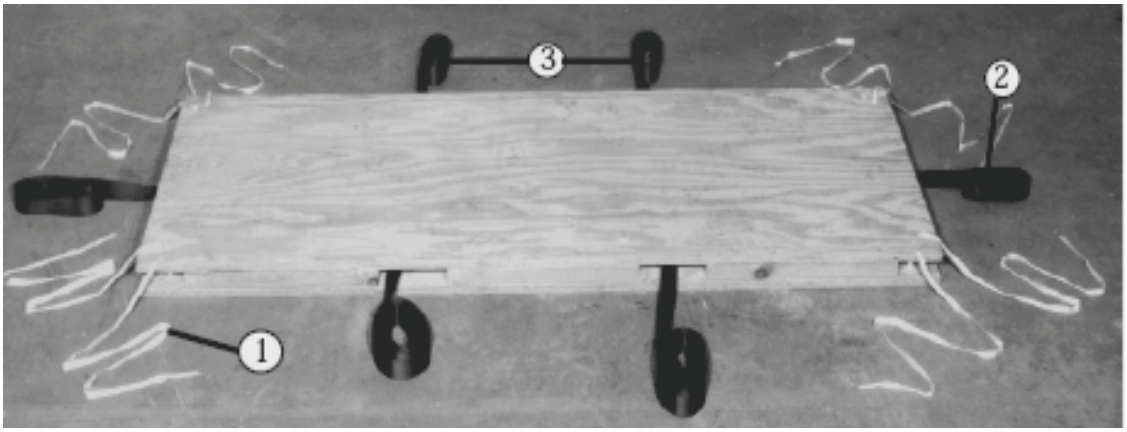


1. Drill two 1/2-inch holes in each corner of both pieces of plywood.
2. Nail the lumber to one piece of plywood with 8d nails.
3. Nail the second piece of plywood to the lumber with 8d nails.

Figure 6-1. Building Combat Expendable Platform (CEP)

PREPARING COMBAT EXPENDABLE PLATFORM (CEP)

6-3. Prepare the platform as shown in Figure 6-2.

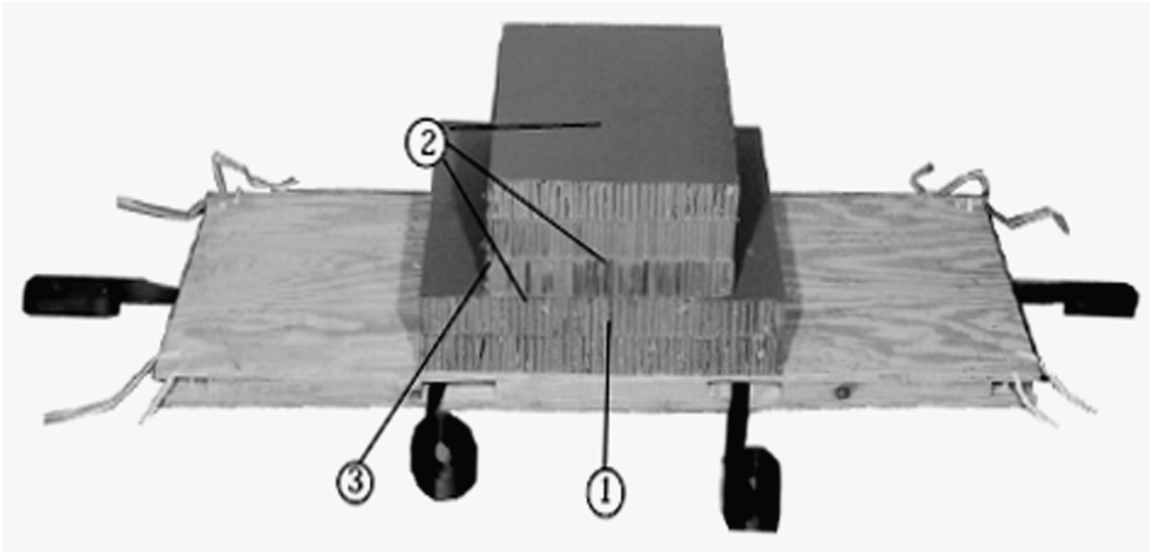


1. Run an 18-foot length of 1/2-inch tubular nylon webbing through each pair of corner holes.
2. Run a 24-foot length of type X or XIII nylon webbing lengthwise through the platform and fit a D-ring to each end according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.
3. Run two 18-foot lengths of type X or XIII nylon webbing crosswise through the platform.

Figure 6-2. Combat Expendable Platform Prepared

BUILDING AND POSITIONING HONEYCOMB STACK

6-4. Build a honeycomb stack and position it on the platform as shown in Figure 6-3.



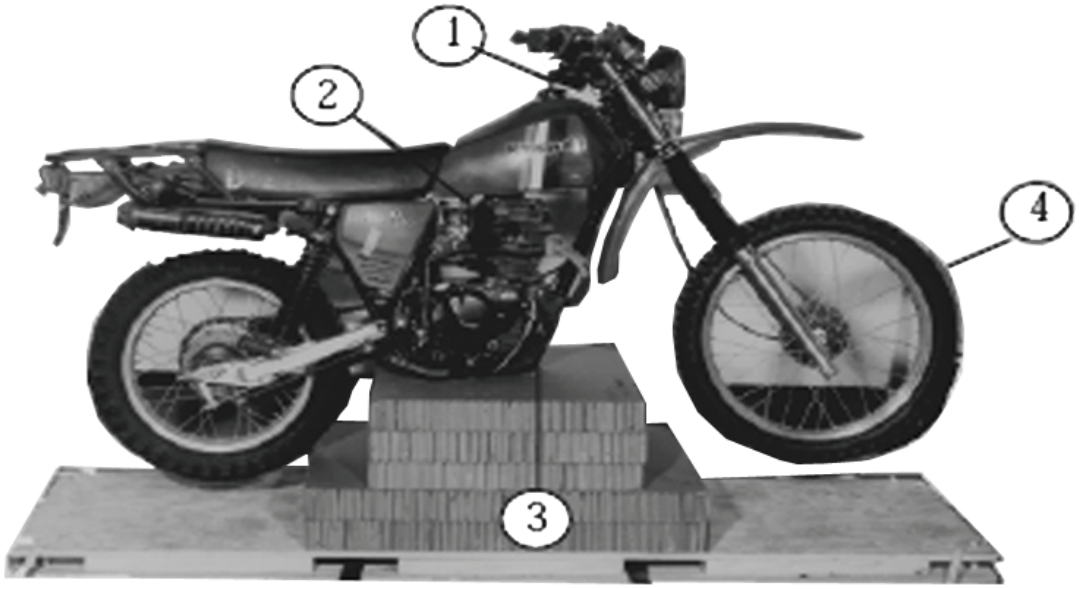
1. Glue two 32- by 36-inch pieces of honeycomb together.
2. Glue three 24- by 32-inch pieces of honeycomb together and glue the pieces to the top center 32- by 36-inch piece of honeycomb.
3. Center the honeycomb from front to rear on the platform and glue it in place.

Figure 6-3. Honeycomb Stack Built and Positioned

PREPARING AND POSITIONING MOTORCYCLE ON CEP

6-5. Prepare and position the motorcycle on the Combat Expendable Platform (CEP) as shown in Figure 6-4.

Notes. 1. Not drawn to scale.
2. The fuel should be no higher than 3 inches below the filler cap.
3. Make sure the frame protecting the engine is sitting on the honeycomb stack.

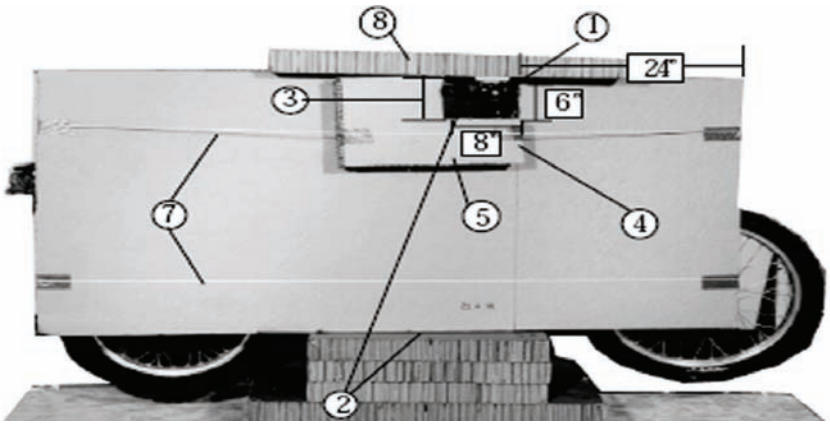


1. Make sure the fuel tank is at least half full but no more than three-fourths full.
2. Tie the kick-start lever up with type III, nylon cord.
3. Fold the foot-rest up.
4. Set the motorcycle on the honeycomb stack with the front tire flush with the front edge of the platform.

Figure 6-4. Motorcycle Built and Positioned on Honeycomb

PROTECTING THE MOTORCYCLE

6-6. Tie honeycomb protectors to the motorcycle as shown in Figure 6-5.



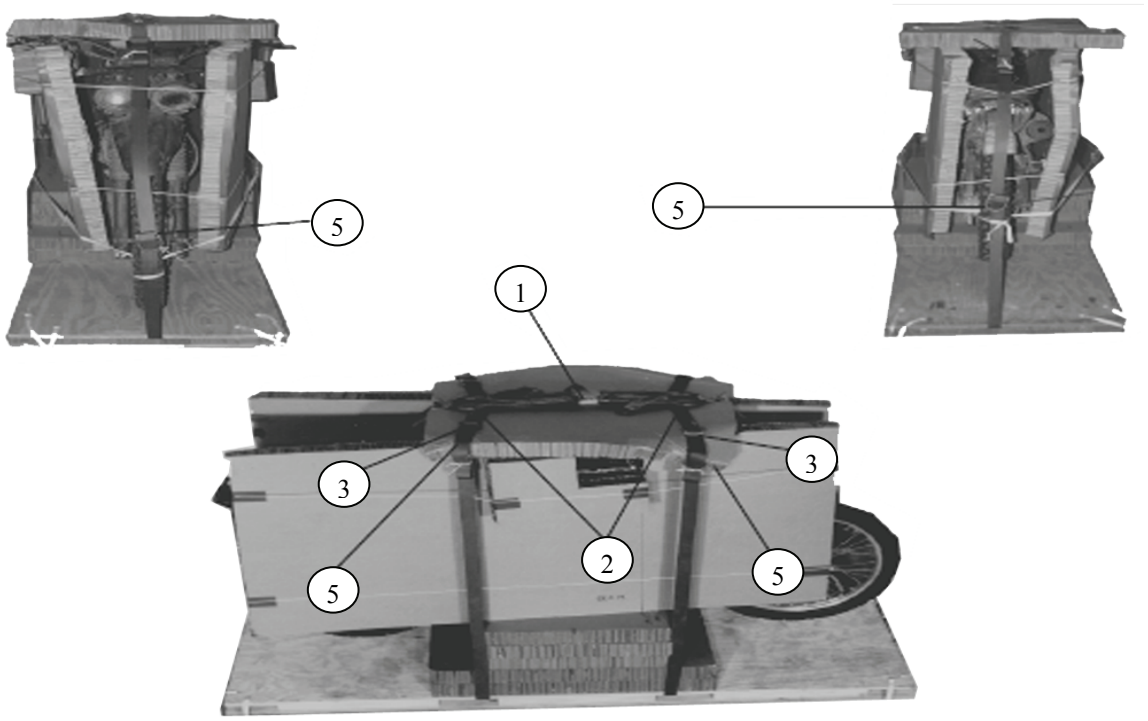
1. Make a 6- by 8-inch cutout in the 72-inch edge of a 36- by 72-inch piece of honeycomb, 24 inches from the front edge.
2. Set the protector on the right side of the motorcycle. Rest the bottom edge of the protector on the honeycomb stack. Align the cutout with the handlebar.
3. Cut a 6- by 8-inch piece of honeycomb from a corner of two 12- by 18-inch pieces of honeycomb per side.
4. Align the cutouts (protector) and glue the pieces together.
5. Place the 12- by 18-inch pieces of honeycomb to the rear of the cutouts.
6. Repeat steps 2 through 5 and set a second protector on the left side of the motorcycle (Not Shown).
7. Tie the protectors in place with lengths of type III nylon cord. Use tape on the protectors to keep the cord from cutting the protectors.
8. Lay a 32- by 36-inch piece of honeycomb on the protectors so that the 36-inch side of the honeycomb is parallel with the long side of the platform.

Figure 6-5. Motorcycle Protected

SECURING THE MOTORCYCLE TO CEP

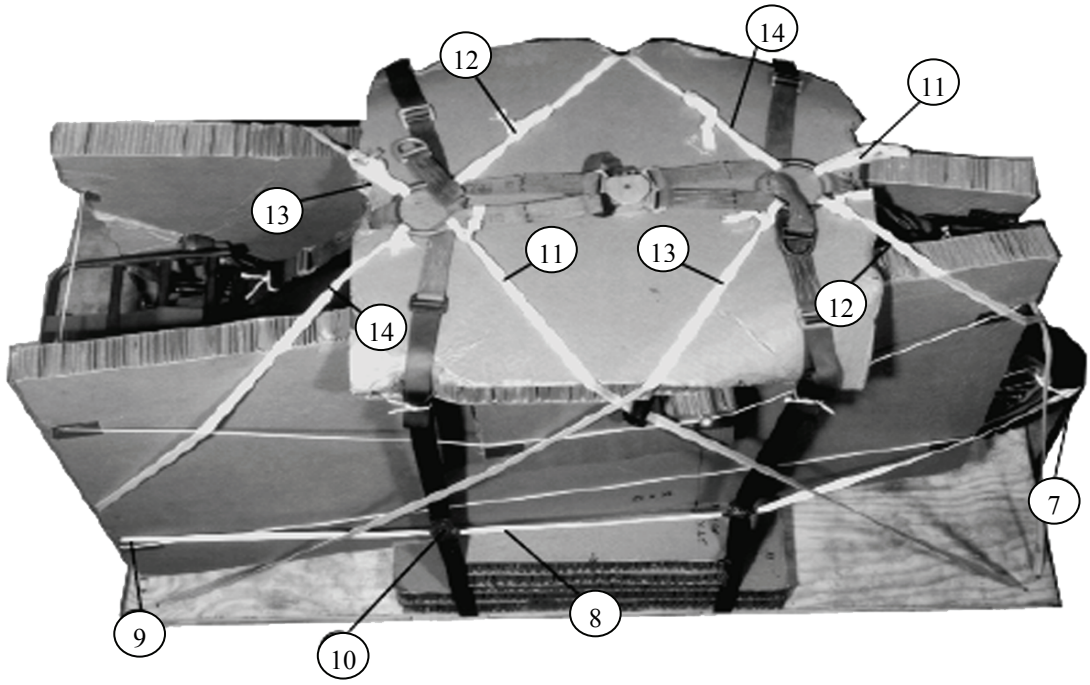
6-7. Secure the motorcycle to the Combat Expendable Platform (CEP) as shown in Figures 6-6 and 6-7.

Notes. 1. The D-ring found on the 24-foot straps is for aircraft release gate.
2. Ensure the D-ring on the 24-foot straps remain 24 inches above the platform.



1. Lay the A-21 quick-release assembly on top of the honeycomb.
2. Fit the A-21 O-ring strap to both ends of the 24-foot strap.
3. Fit the A-21 quick-release strap on both ends of the 18-foot straps.
4. Adapt procedures in FM 4-20.103/MCRP 3-11.3C/NAVSEA SS400-AB-MMO-010/TO 13C7-1-11 to close the A-21 sling assembly.
5. Pull the 18- and 24-foot straps taut, keeping the release box in the center of the honeycomb and allowing the honeycomb to bend under the straps. Ensure the D-ring on the 24-foot strap is 24 inches above the platform.
6. Fold the excess straps and tie the folds in place with type I, 1/4-inch cotton webbing. Tape may be used in place of the webbing.

Figure 6-6. Motorcycle Secured to the CEP



7 Run an additional 20-foot length of 1/2-inch tubular, nylon webbing completely around the front tire and the 24-foot, type X, nylon webbing. Safety the tubular nylon with a square knot.

8 Run the ends of the 1/2-inch tubular, nylon webbing along each side of the load. Tie it to both 18-foot lengths of type X, nylon webbing on each side of the load with a square knot.

9 Run the ends of the 1/2-inch tubular, nylon webbing completely around the rear tier and the 24-foot, type X, nylon webbing. Safety the tubular nylon with a square knot (Not Shown).

10 Tape the tubular nylon ties to the 18-foot, type X, nylon webbing on each side of the load.

11 Pass one end of the right front skid board tie around the front wheel and tie it to the front steel ring. Tie the other end of the skid board tie to the rear steel ring.

12 Pass one end of the left front skid board tie around the front wheel and tie it to the front steel ring. Tie the other end of the skid board tie to the rear steel ring.

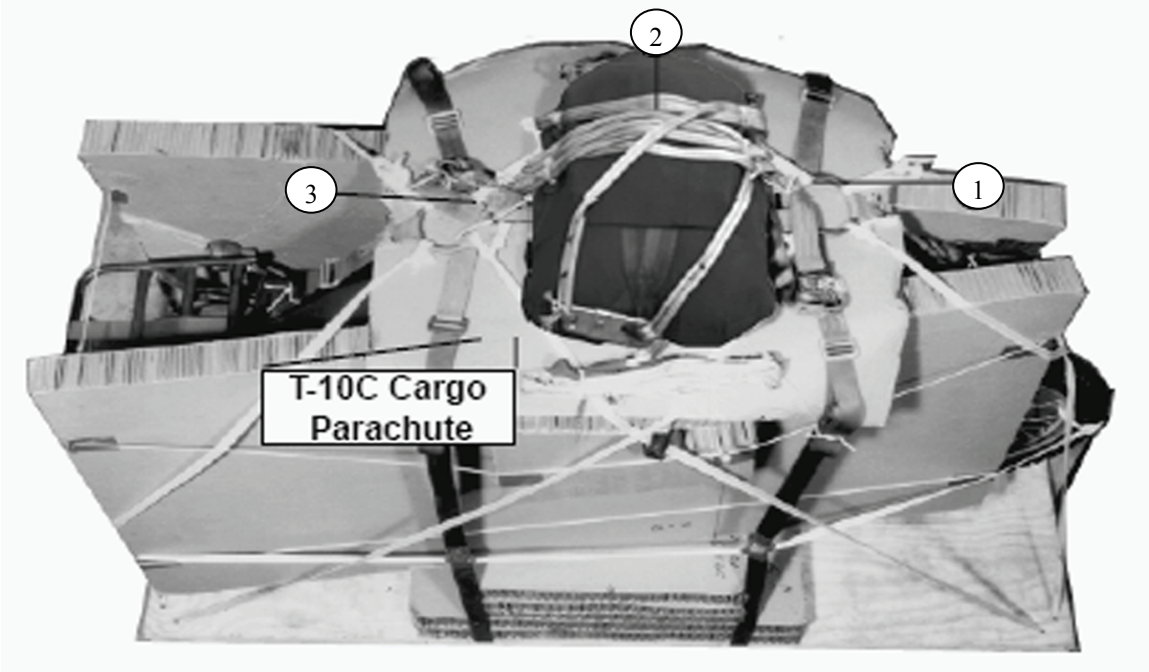
13 Tie one end of the right rear skid board tie to the front steel ring. Pass the other end of the skid board tie around the rear of the load and tie it to the rear steel ring.

14 Tie one end of the left rear skid board tie to the front steel ring. Pass the other end of the skid board tie around the rear of the load and tie it to the rear steel ring.

Figure 6-6. Motorcycle Secured to the CEP (Continued)

STOWING CARGO PARACHUTES

6-8. Select either a G-14 or T-10 cargo parachute. Attach a G-14 or T-10 cargo parachute to the load according to FM 4-20.103/MCRP 3-11.3C/NAVSEA SS400-AB-MMO-010/TO 13C7-1-11. Secure the parachute to the load as shown in Figure 6-7.



1. Tie one end of a length of type I, 1/4-inch cotton webbing to the front O-ring.
2. Run the type I, 1/4-inch cotton webbing over the T-10C cargo parachute.
3. Tie the free end of the type I, 1/4-inch cotton webbing to the rear O-ring.

Figure 6-7. Cargo Parachute Stowed

POSITIONING EXTRACTION PARACHUTE

6-9. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/MCRP 4-11.3J/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

6-10. Select and install provisions for emergency restraints according to the emergency aft restraints requirements in FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

MARKING RIGGED LOAD

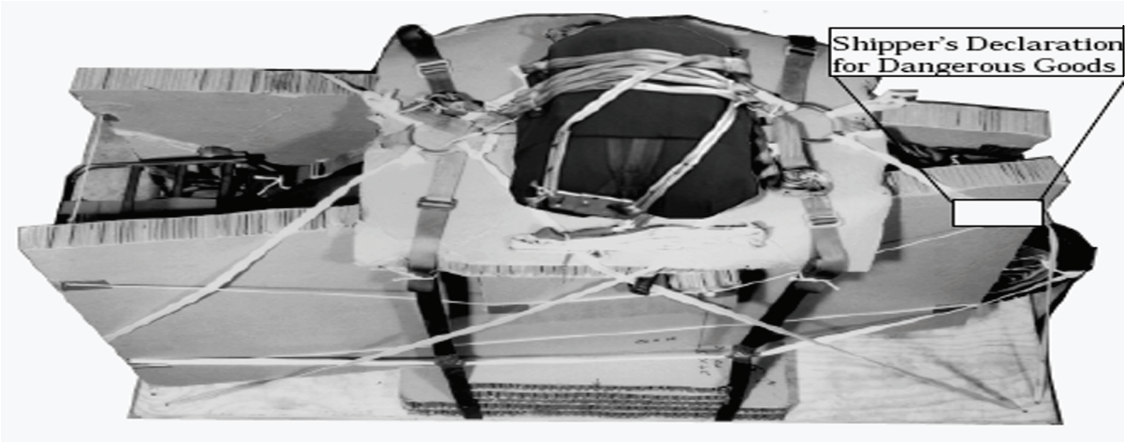
6-11. Mark the rigged load according to FM 4-20.102/ MCRP 4-11.3J/NAVSEA SS 400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 6-8. Complete the Shipper's Declaration for Dangerous Goods. If the load varies from the one shown, the weight, height, length, center of balance (CB), and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

6-12. Use the equipment listed in Table 6-1 to rig this load.

CAUTION

Make the final rigger inspection required by FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MM0-010/TO 13C7-1-5 and AR 59-4/OPNAVINST 4630.24C/AFJ 13-210(I)/MCO 13480.1B before the load leaves the rigging site.



RIGGED LOAD DATA

Weight	485 pounds
Maximum Weight	500 pounds
Height	71 inches
Width	32 inches
Length	88 inches
Overhang: Front	0 inches
Rear	0 inches
Center of Balance (from front edge of platform)	0 inches

Figure 6-8. Single Motorcycle Rigged for Low-Velocity Airdrop

Table 6-1. Equipment Required for Rigging a Single Motorcycle for Low-Velocity Airdrop

National Stock Number	*Item*	*Quantity*
8040-00-273-8713	Adhesive paste, 1-gal	As required
5365-00-937-0147	D-Ring	2
5510-00-220-6146	Lumber:	
	2- by 4- by 10-inches	4
	2- by 4- by 20-inches	6
5315-00-010-4659	Nail, steel wire, common:	
	8d	As required
1670-00-753-3928	Pad, energy-dissipating, honeycomb	3 sheets
	Parachute:	
1670-00-999-2658	Cargo, G-14	1
P/N 11-1-466	Cargo, T-10C	1
5530-00-128-4981	Plywood:	
	3/4-in by 48- by 96- inch sheet	2
1670-00-131-9695	Quick release assembly	1
1670-00-360-0533	Strap, quick release, fixed	
1670-00-360-0532	Strap, webbing, quick release	
1670-00-360-0542	Strap, webbing, ring	2
7510-00-266-5016	Tape, adhesive, 2-inch, OD	As required
7510-00-266-6710	Tape, masking, 2-inch	As required
	Webbing:	
8305-00-268-2411	Cotton, type I, 1/4-inch	As required
8305-00-268-2453	Nylon, tubular, 1/2-inch, natural	As required
8305-00-261-8584	Nylon, type X	As required
	(or)	
8305-00-260-4586	Nylon, type XIII	As required

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Chapter 7

Rigging Two Motorcycles for Low-Velocity Airdrop

NOTICE OF EXCEPTION

The procedures in this Chapter are different from those in FM 4-20.103/MCRP 3-11.3C/NAVSEA SS400-AB-MMO-010/TO 13C7-1-11. An exception to FM 4-20.103/MCRP 3-11.3C/NAVSEA SS400-AB-MMO-010/TO 13C7-1-11 is granted. The procedures in this Chapter must be followed.

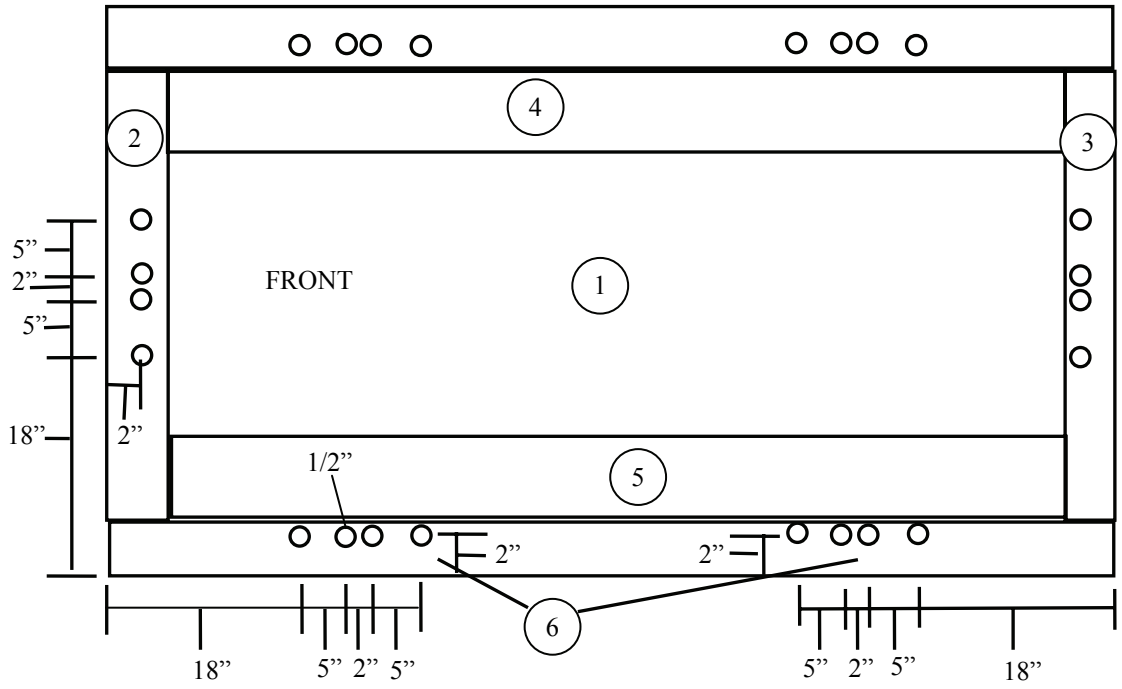
DESCRIPTION OF LOAD

7-1. Two motorcycles are rigged in two A-22 cargo bags on a 48- by 96-inch Combat Expendable Platform (CEP) with one G-12E cargo parachute. The load is rigged for low-velocity airdrop over the ramp from C-130 and C-17 aircraft. Each motorcycle is 35 inches wide, 49 inches high, 88 inches long, and each weighs 275 pounds.

BUILDING COMBAT EXPENDABLE PLATFORM

7-2. Build the 48- by 96-inch CEP as shown in Figure 7-1.

Notes. 1. Not drawn to scale.
2. All dimensions are given in inches.
3. All holes are 1/2-inch in Diameter.
4. Use 8d common nails or 2-inch long, #4 wood screws.



1 Place a ¾- by 48- by 96-inch sheet of plywood on a flat surface.

2 Nail a 2- by 6- by 42-inch piece of lumber on the front edge of the plywood, 3 inches in from the 48-inch side.

3 Nail a 2- by 6- by 42-inch piece of lumber on the rear side the same as in step 2.

4 Nail a 2- by 6- by 85-inch piece of lumber to the right side of the plywood, 3 inches in from the 48-inch side.

5 Nail a 2- by 6- by 85-inch piece of lumber to the left side of the plywood, 3 inches in from the 48-inch side.

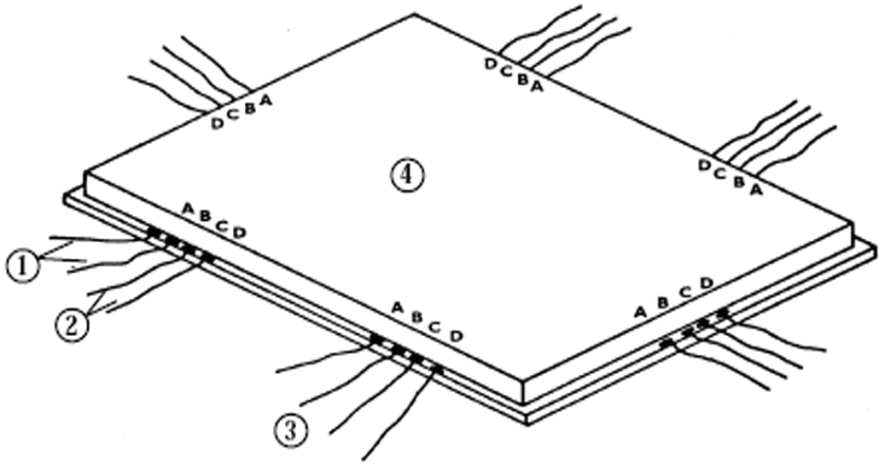
6 Drill twenty-four 1/2-inch holes as shown above.

Figure 7-1. Combat Expendable Platform Built

PREPARING COMBAT EXPENDABLE PLATFORM (CEP)

7-3. Prepare the 48- by 96-inch CEP as shown in Figure 7-2.

Notes. 1. Not drawn to scale.
2. All dimensions are given in inches.



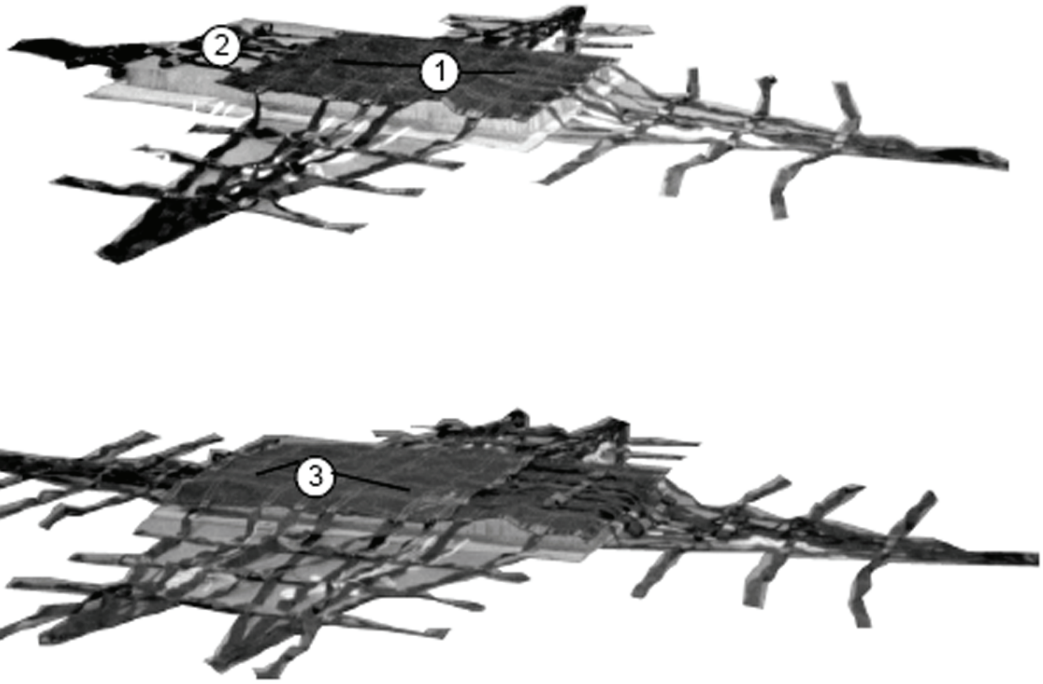
1. Cut twelve 8-foot lengths of 1/2-inch tubular nylon webbing. Route one end through hole A and hole B, from bottom to top.
2. Repeat step 1 for holes C and D.
3. Repeat steps 1 and 2 for the other five sets of holes.
4. Lay a 36- by 96-inch piece of honeycomb on the platform.

Figure 7-2. Combat Expendable Platform (CEP) Prepared

POSITIONING A-22 SLING ASSEMBLIES

7-4. Lay two A-22 cargo bag sling assemblies on the platform as shown in Figure 7-3.

Notes. 1. Be sure that the support web D-ring extends over the rear edge of the platform.
2. Be sure that the support web D-ring of the top assembly extends over the front edge of the platform.



1 Place one A-22 sling assembly toward the front of the honeycomb. Extend all lateral straps and support webbing. Make sure the support web D-ring at the rear extends off the load.

2 Fold and place all lateral straps on top of the rear support web.

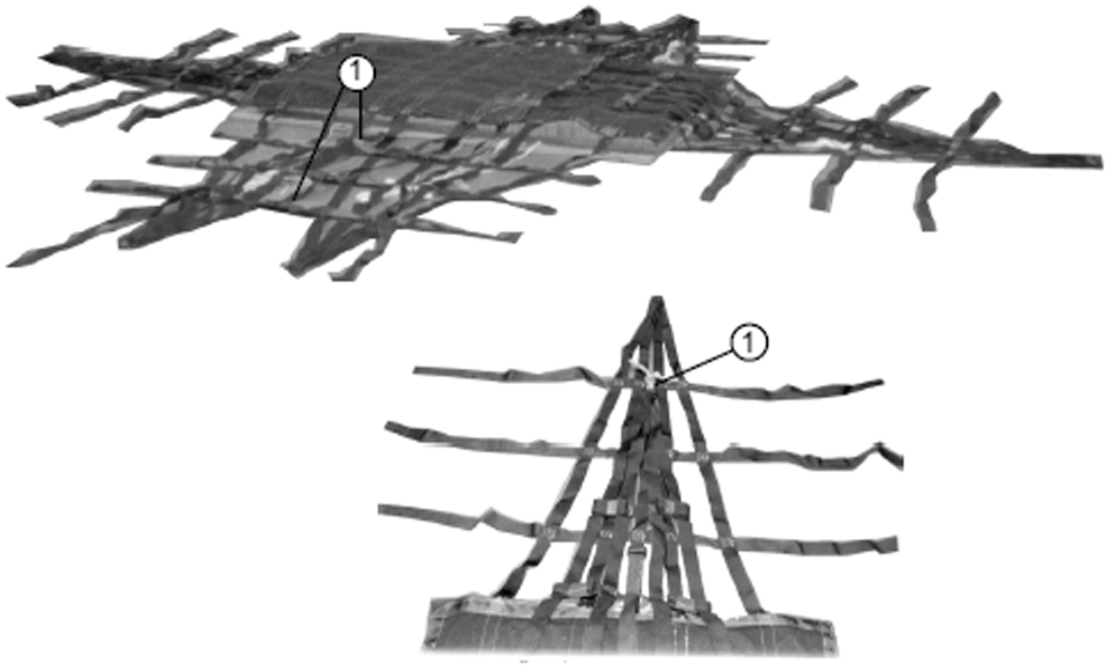
3 Place the second A-22 sling assembly to the rear. Position it in the same manner as the front assembly. Make sure the D-ring on the front support web extends off the load.

Figure 7-3. Two A-22 Sling Assemblies Positioned on the CEP

JOINING A-22 SLING ASSEMBLIES

7-5. Join both A-22 sling assemblies as shown in Figure 7-4.

Note. Do not pull the webbing taut at this time. They will be tightened and tied when the sling assemblies are closed.



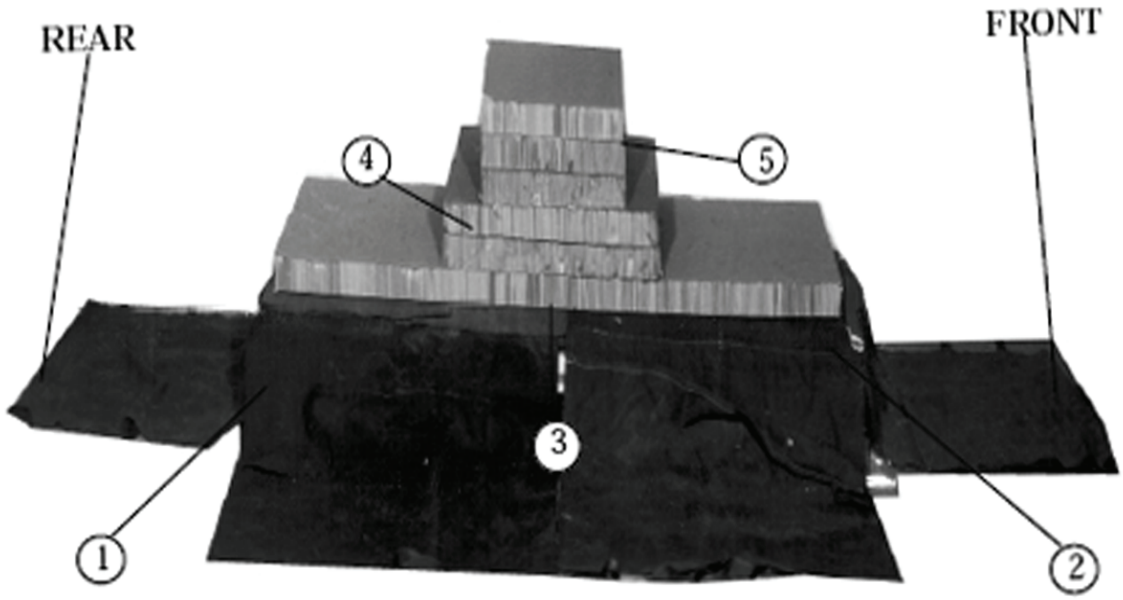
1 Use a length of type VIII nylon webbing to tie the support web D-ring exposed at the front and rear of the load to the other A-22 sling assembly as shown.

2 Cut six lengths of type VIII nylon webbing. Route one length through each set of friction adapters at the midsection of the load as shown.

Figure 7-4. A-22 Sling Assemblies Joined

POSITIONING A-22 CARGO COVERS AND HONEYCOMB

7-6. Lay two A-22 cargo bag covers on the sling assemblies. Set the honeycomb on the covers as shown in Figure 7-5.



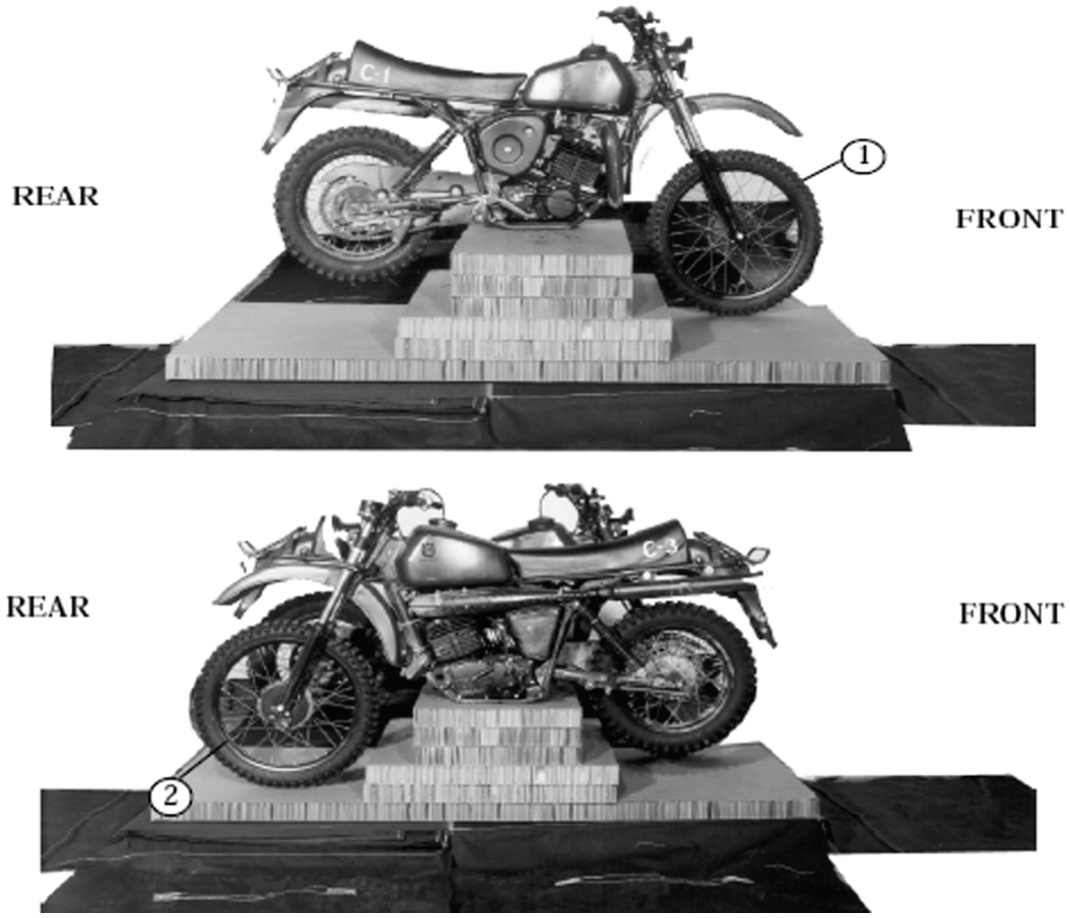
1. Lay an A-22 cargo bag cover on the rear sling assembly with the cover squarely on top of the scuff pad. Fold the front end flap in even with the front edge of the platform.
2. Repeat step 1 and lay a cover on the front sling assembly. Fold the rear end flap in.
3. Center a 36- by 96- piece of honeycomb on the cargo bag covers.
4. Glue two 36- by 36-inch pieces of honeycomb together, and glue them to the center of the 36- by 96-inch piece of honeycomb.
5. Glue three 24- by 36-inch pieces of honeycomb together, and glue them to the center of the 36- by 36-inch piece of honeycomb.

Figure 7-5. A-22 Cargo Covers and Honeycomb Positioned

PREPARING, POSITIONING, AND PROTECTING THE TWO MOTORCYCLES

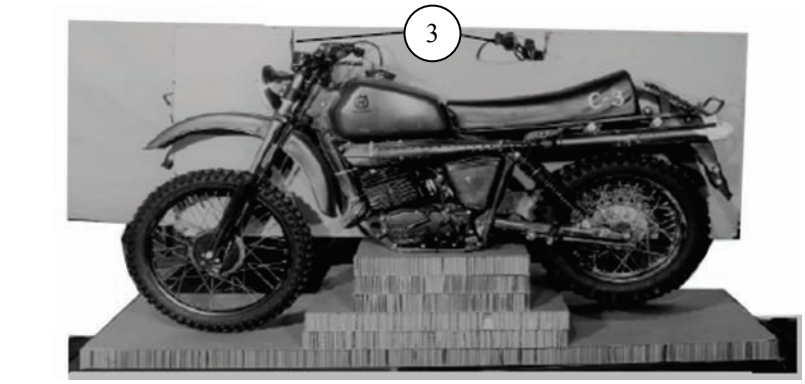
7-7. Prepare the two motorcycles as outlined in Chapter 6. Set them on the honeycomb as shown in Figure 7-6. Tie honeycomb protectors to the motorcycles as shown in Figure 7-7.

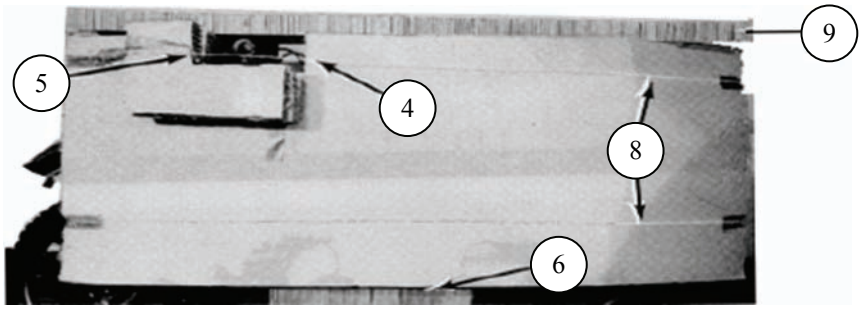
Note. Make sure the frames protecting the engines are sitting on the honeycomb.



1. Set one motorcycle on the honeycomb with the front wheel toward the front of the platform.
2. Set the second motorcycle 3 inches from the first one with the front wheel toward the rear of the platform.

Figure 7-6. Two Motorcycles Prepared, Positioned, and Protected





3 Make two 6- by 8-inch cutouts in one 84-inch edge of a 36- by 84-inch piece of honeycomb spaced for the handlebars of both motorcycles to fit in the cutouts. Rest the bottom of the protector on the honeycomb stack.

4 Make a 6- by 8-inch cutout in the 84-inch edge of a 36- by 84-inch piece of honeycomb, 30 inches from the rear edge of the honeycomb. Bend the honeycomb just to the rear of the cutout.

5 Cut a 6- by 8-inch piece of honeycomb from the corner of two 12- by 18-inch pieces of honeycomb. Align the cutouts, and glue the two pieces of honeycomb together.

6 Set the protector on the right side of the motorcycles. Rest the bottom edge of the protector on the honeycomb stack. Align the cutouts with the handles.

7 Repeat steps 4, 5, 6, and set a second protector on the left side of the motorcycle (Not Shown). Make the cutout 30 inches from the front edge of the honeycomb protector.

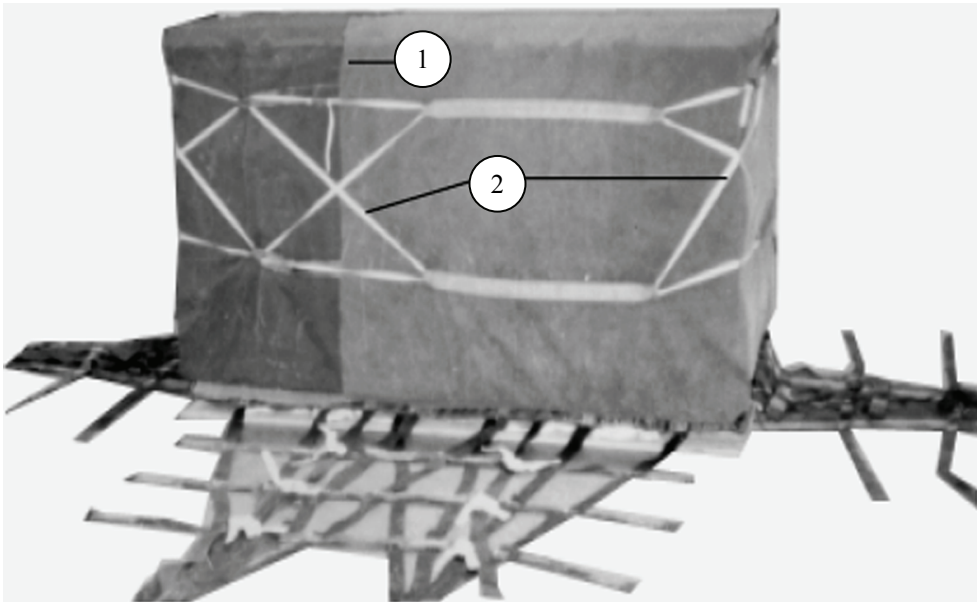
8 Tie the protectors in place with lengths of type III nylon cord. Use tape on the protectors to keep the type III nylon cord from cutting into the protectors.

9 Lay a 24- by 84-inch piece of honeycomb on top of the load as the top protector.

Figure 7-6. Two Motorcycles Prepared, Positioned, and Protected (Continued)

CLOSING THE A-22 CARGO BAG COVERS

7-8. Close the A-22 cargo bag covers as outlined in FM 4-20.103/MCRP 3-11.3C/NAVSEA SS400-AB-MMO-010/TO 13C7-1-11 and as shown in Figure 7-7.



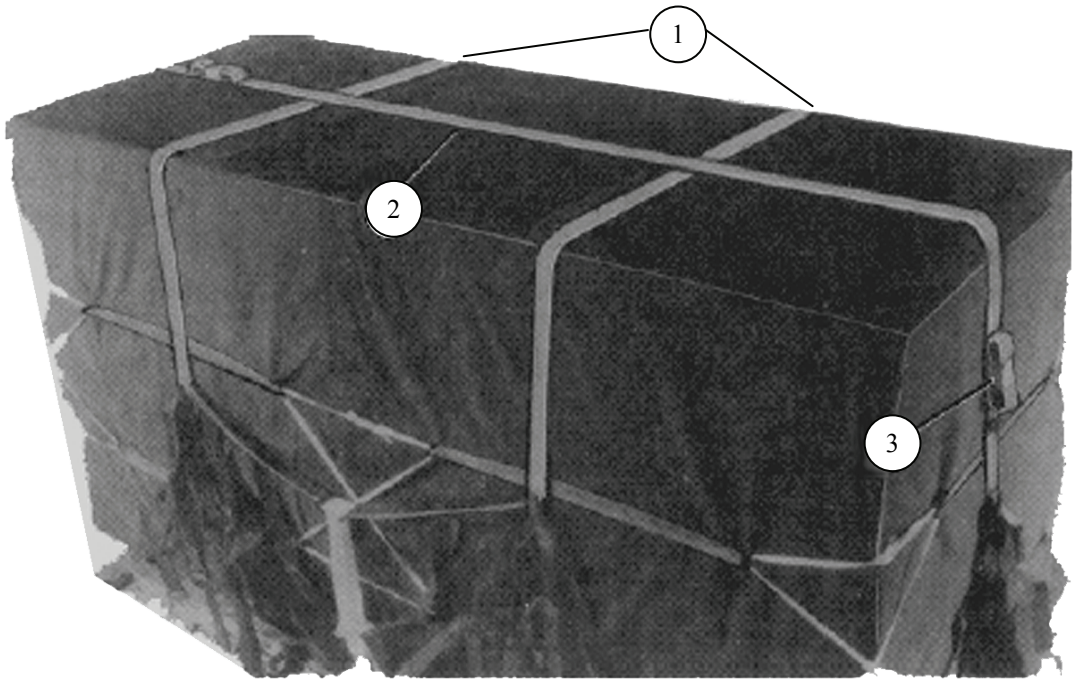
1. Fold the bag covers over the front and rear first, then the sides over the top. Fold under the excess side covers.

2. Use six lengths of 1/2-inch tubular nylon webbing to lace the bag closed. Pull the webbing tight and tie the running ends in a surgeon's knot and bow knot. Tape the excess and knot. Leave one running end slightly exposed to allow rapid de-rigging.

Figure 7-7. A-22 Cargo Bag Covers Closed

SECURING A-22 CARGO BAGS TIE-DOWN STRAPS

7-9. Secure the tie-down straps as outlined in FM 4-20.103/MCRP 3-11.3C/NAVSEA SS400-AB-MMO-010/TO 13C7-1-11 and as shown in Figure 7-8.



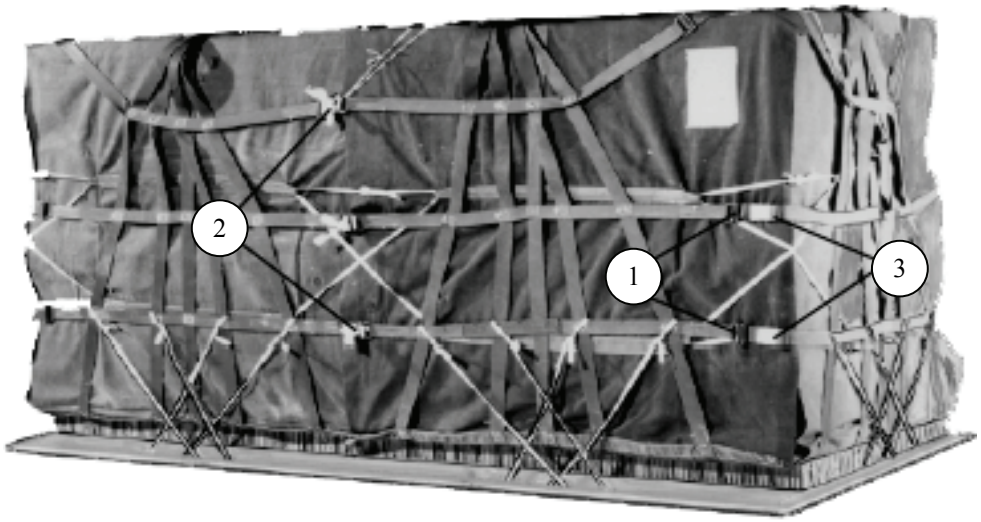
1. Run the side tie-down straps through the friction adapters. Apply tension to the straps.
2. If necessary, attach a 36- or 60-inch type VIII nylon webbing strap to either the front or rear tie-down strap. If used, fold and tape or tie to the sling assembly. Route the running end through the friction adapter on the opposite end.
3. Fold the excess on the tie-down straps. Tape or tie it as shown.

Figure 7-8. A-22 Cargo Bags Tie-Down Straps Secured

SECURING A-22 CARGO BAGS LATERAL STRAPS

7-10. Secure the A-22 cargo bags lateral straps as outlined in FM 4-20.103/MCRP 3-11.3C/NAVSEA SS400-AB-MMO-010/TO 13C7-1-11 and as shown in Figure 7-9.

Note. If top lateral straps are on the top of the load, make sure they are loosely tightened.

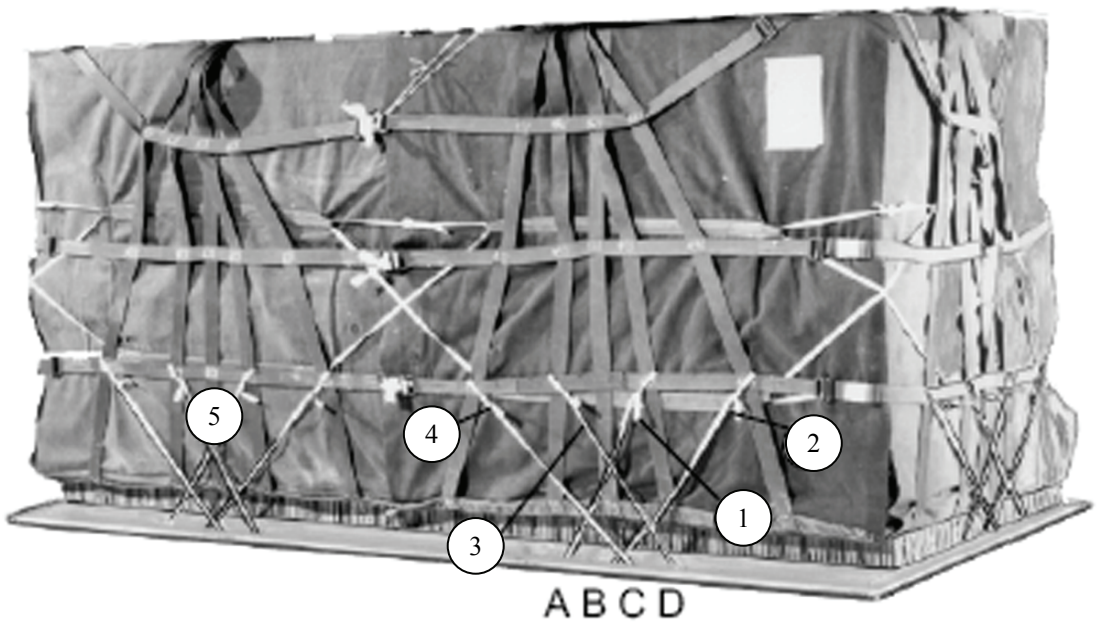


1. Lay the remaining portions of the sling assemblies over the load. Route the lateral straps through the friction adapters.
2. Tighten the center friction adapters and type VIII nylon webbing so that the middle suspension web on each container is vertical. Install a knot in the running ends of the type VIII nylon webbing about 3 inches from the friction adapters.
3. Apply equal tension on the remaining lateral straps. Fold the excess and tape or tie it in place as shown.

Figure 7-9. A-22 Cargo Bags Lateral Straps Secured

SECURING A-22 CARGO BAGS SKID BOARD TIES

7-11. Secure the A-22 cargo bags skid board ties as outlined in FM 4-20.103/MCRP 3-11.3C/NAVSEA SS400-AB-MMO-010/TO 13C7-1-11 and as shown in Figure 7-10.



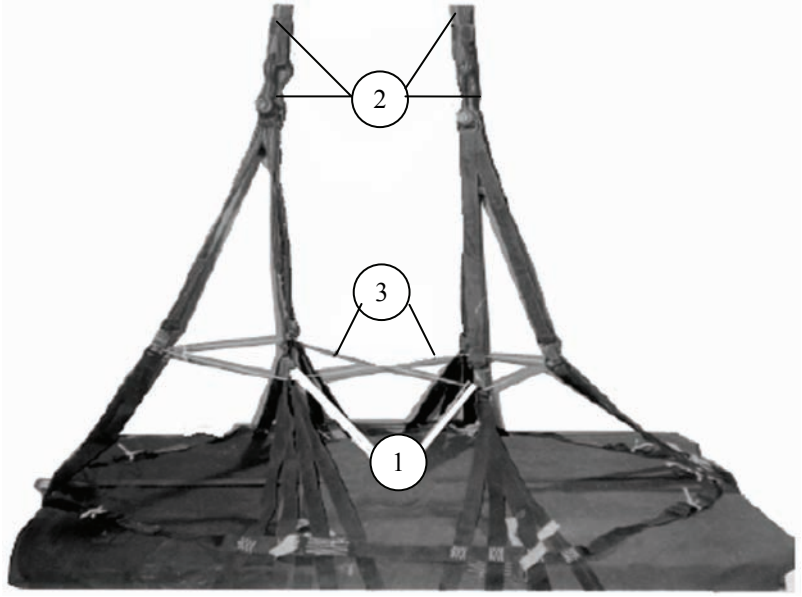
1. Starting at the front right side, take tie-down A and diagonally tie it around the intersection of the lower lateral and fourth support web. Use three half-hitch knots and an overhand knot in the running end.
2. Route tie-down B around the fifth support web and lower lateral strap intersection diagonally.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

Figure 7-10. A-22 Cargo Bags Skid Board Ties Secured

INSTALLING SUSPENSION SLINGS

7-12. Install suspension slings using six suspension webs, two 3/4-inch cargo suspension clevises, and two 3-foot (2-loop), type XXVI nylon webbing slings as outlined in FM 4-20.103/MCRP 3-11.3C/NAVSEA SS400-AB-MMO-010/TO 13C7-1-11 and as shown in Figure 7-11.

Note. After positioning the type III nylon cord, fold and tape the excess with masking tape **(Not Shown)**.



1. Attach one suspension web to each of the six D-rings. Route the snap hook from outside to inside. Wrap each hook with masking tape.

2. Place a 3-foot (2-loop), type XXVI nylon webbing sling on each clevis. Bolt the three suspension webs at the front of the load to one clevis. Repeat step for the rear set.

3. Route a length of type III nylon cord through the front support web D-rings. Cross the type III nylon cord and run it rearward through the rear support web D-rings. Tie the ends together with a surgeon's knot and locking knot with an overhand knot in each running end. Make sure the tie has excess to allow suspension sling movement.

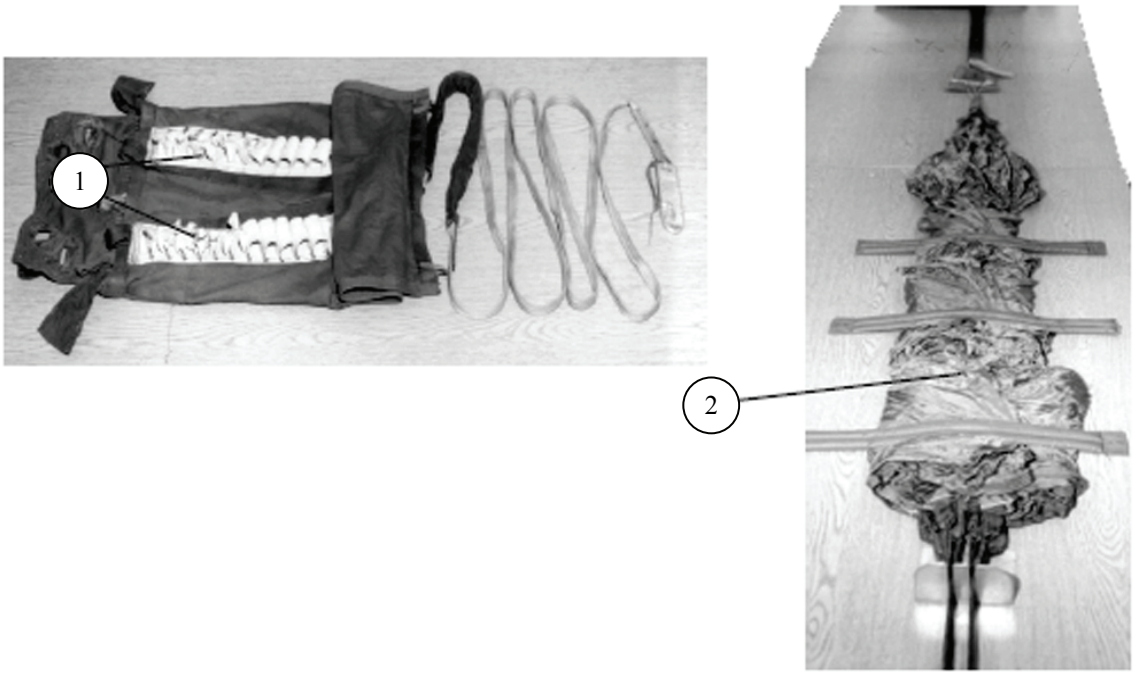
Figure 7-11. Suspension Slings Installed

PACKING A 15-FOOT CARGO EXTRACTION PARACHUTE FOR USE AS A DEPLOYMENT PARACHUTE

7-13. Pack a 15-foot cargo extraction parachute as shown in Figures 7-12 through 7-17 using the following items:

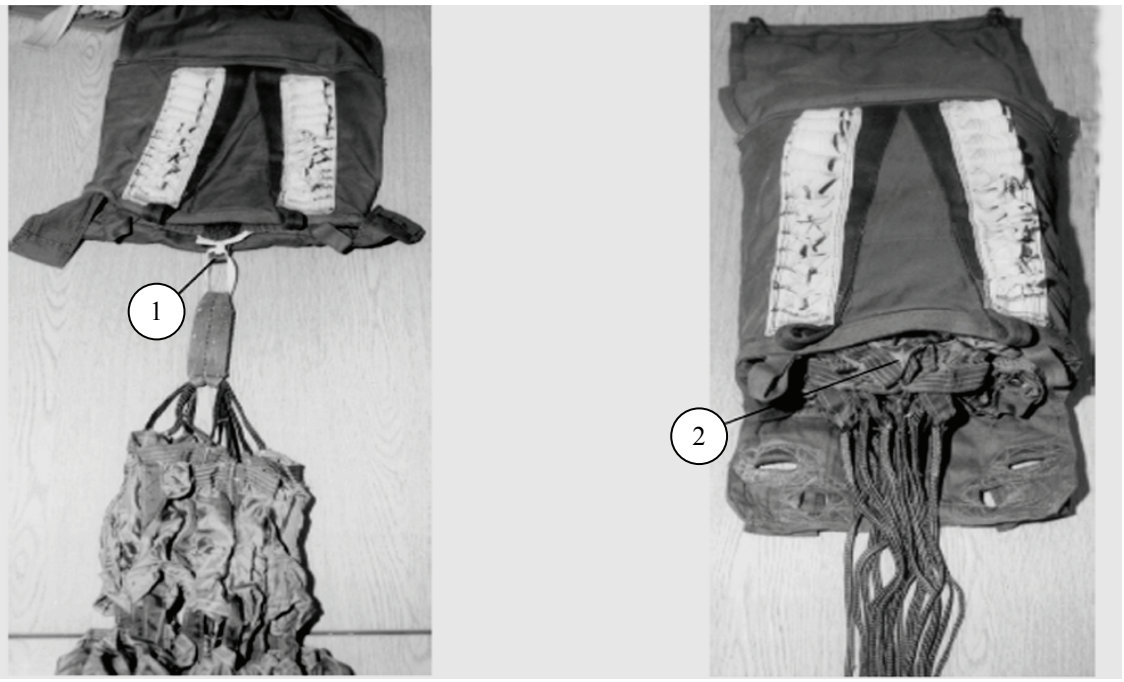
1	T-10 deployment bag with static line
	Retainer bands
	Type I, 1/4-inch cotton webbing
	Ticket number 5, cotton thread
2	Medium cargo suspension clevises
	For parachute with a 36-inch adapter web:
1	9-foot (2-loop), type XXVI nylon sling
1	Attach a two-point, 3 3/4-inch link assembly
	For parachute without a 36-inch adapter web:
1	12-foot (2-loop), type XXVI nylon sling
1	60-inch nylon webbing strap (shear strap)

Note. If the standard 15-foot parachute deployment bag is attached to the parachute, remove the bag at the bag retaining line.



1. Attach retainer bands to the first eight stow loops on each side of the T-10 deployment bag.
2. Flat fold and long fold the canopy as outlined in TM 10-1670-278-23&P/TO 13C5-26-2.

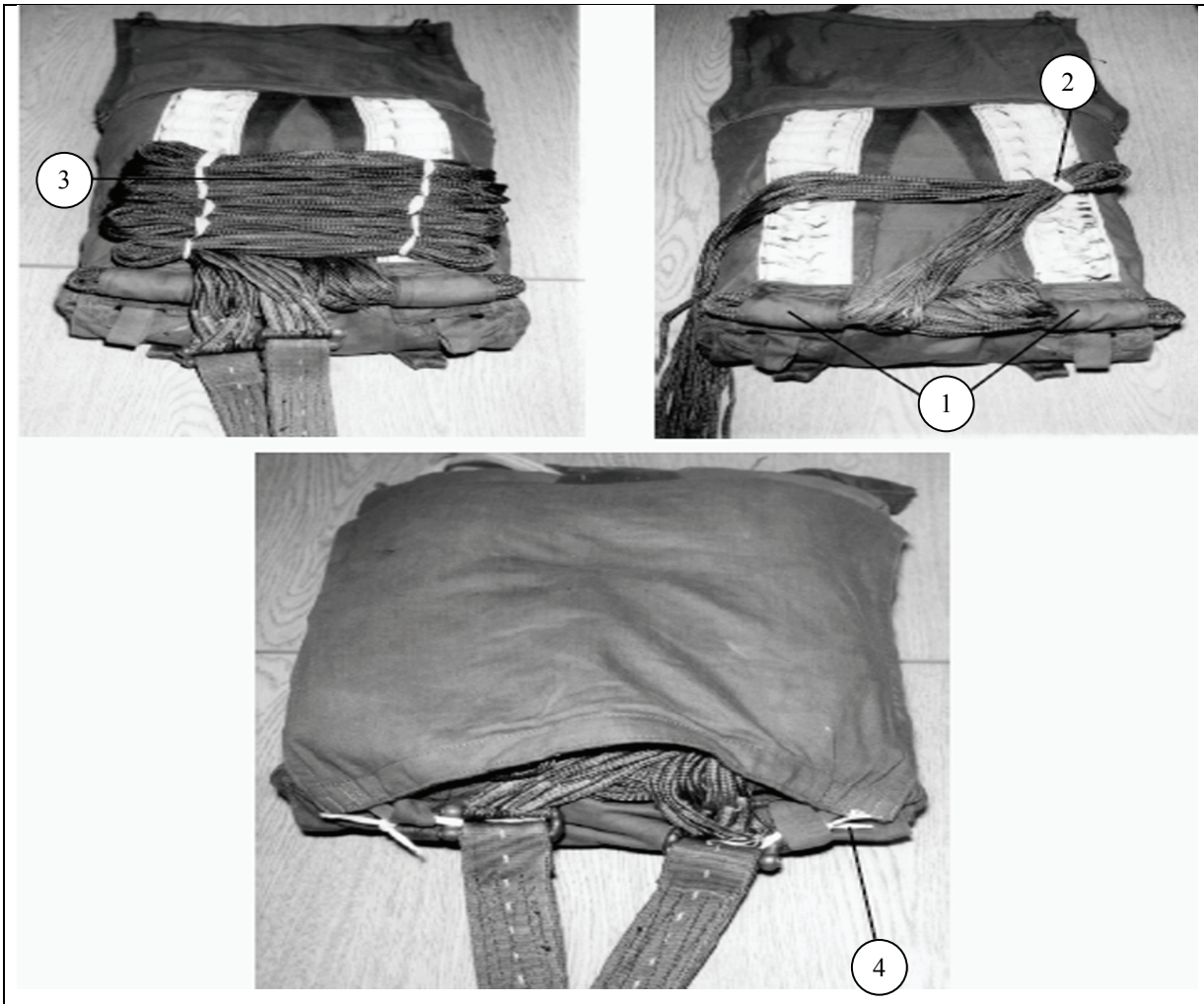
Figure 7-12. Retainer Bands Attached and Canopy Folded



1. Pass two lengths of type I, 1/4-inch cotton webbing through the bridle loop of the canopy and through the bridle attaching loop of the deployment bag to form a 3-inch loop. Cross the ends of the webbing over the attaching loop, and tie them with a surgeon's knot and locking knot.

2. S-fold the canopy into the deployment bag starting in the upper right corner of the bag.

Figure 7-13. Deployment Bag Attached and Canopy Stowed



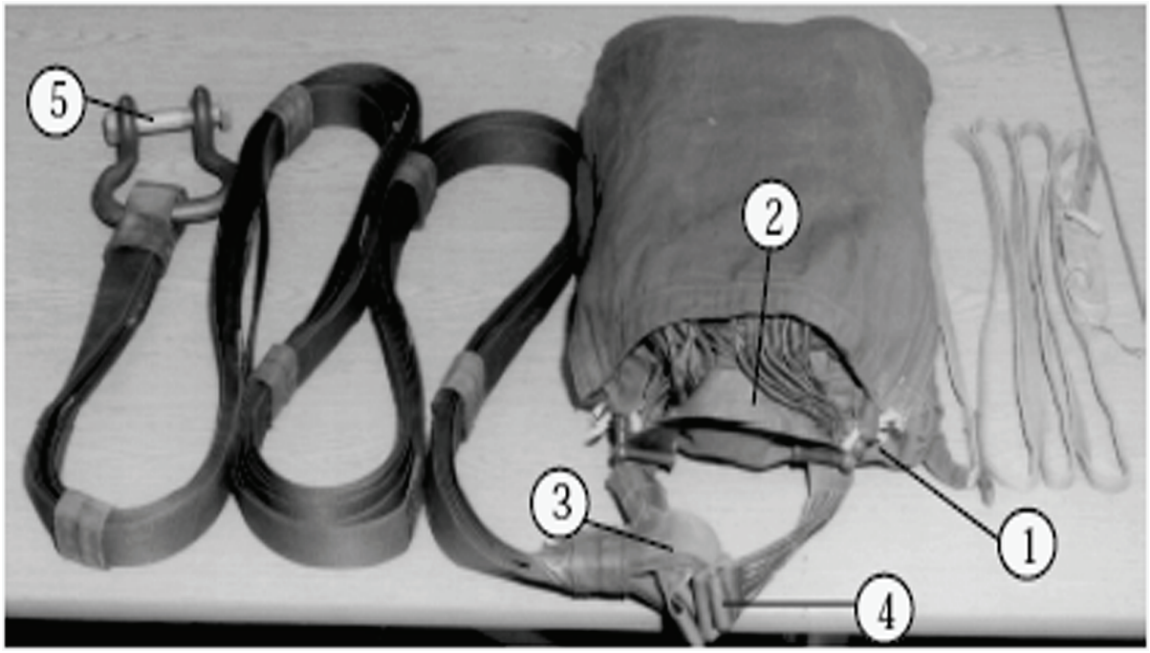
1. Make the locking stows as outlined in TM 10-1670-278-23&P/TO 13C5-26-2.
2. Make the first suspension line stow in the upper right retainer band.
3. Continue stowing the lines from side to side.
4. Pass a length of type I, 1/4-inch cotton webbing through the right side connector link, the connector link loops, and the suspension line protector flap loop. Tie the webbing with a surgeon's knot and locking knot. Repeat on the left side.

Figure 7-14. Locking and Suspension Line Stows Made and Connector Links Tied

1. Attach a two-point, 3 3/4-inch link assembly or medium clevis to the 36-inch adapter web.
2. Attach a 9-foot (2-loop), type XXVI nylon webbing sling to the two-point, 3 3/4-inch link assembly or medium clevis.
3. Bolt a medium suspension clevis (Shown) or a two-point, 3 3/4-inch link assembly to the free end of the sling.

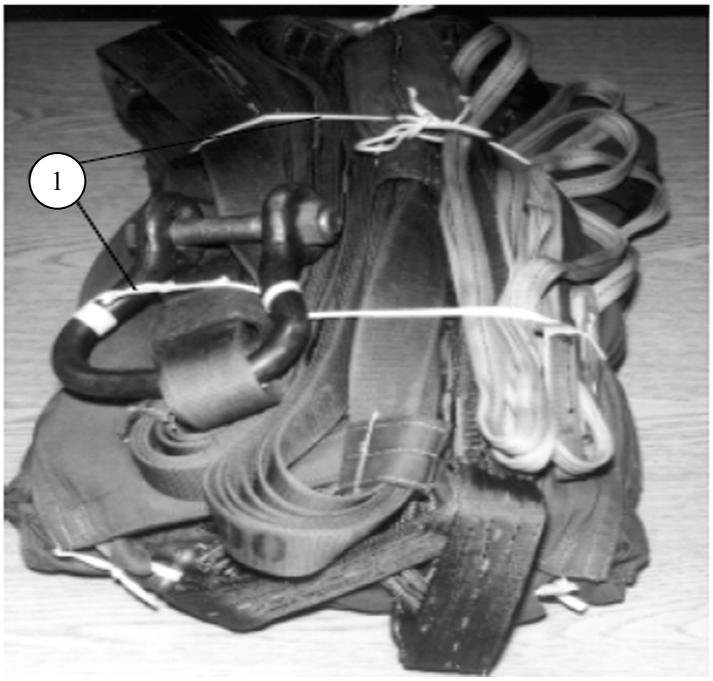
Figure 7-15. Deployment Line Installed on a 36-inch Adapter Web

Note. These procedures are for a 15-foot cargo extraction parachute without a 36-inch adapter web.



1. Secure the parachute connector links as shown in step 4.
2. Run one end of a 60-inch shear strap through both of the parachute connector links.
3. Run one end of the 60-inch shear strap through one end of a 12-foot (3-loop), type XXVI nylon sling.
4. Fasten the friction adapter, and adjust the shear strap to form a 12-inch loop. Tape the excess strap.
5. Bolt a medium suspension clevis (shown) or a two-point, 3 3/4-inch link assembly to the free end of the sling.

Figure 7-16. Deployment Line Installed on a 60-inch Adapter Web

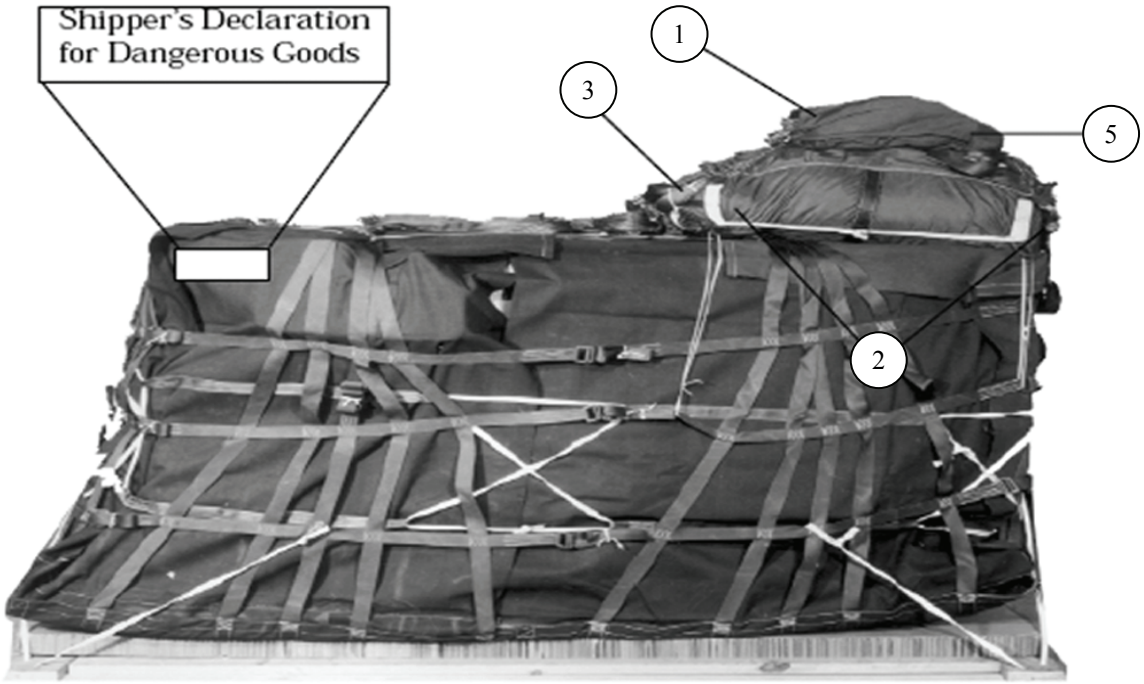


1 S-fold the deployment line and static line. Place them on top of the deployment bag. Secure them in place with two lengths of type I, 1/4-inch cotton webbing wrapped around the lines and bag.

Figure 7-17. Cargo Extraction Parachute Packed in a T-10 Deployment Bag

PREPARING AND STOWING A G-12 CARGO PARACHUTE AND THE 15-FOOT CARGO EXTRACTION

7-14. Prepare a G-12 cargo parachute. Stow the G-12 cargo parachute and the 15-foot cargo extraction parachute on the load as shown in Figure 7-18.



1. Set the parachute on the front of the load with the riser compartment up and the deployment bag bridle to the front.
2. Tie the parachute in place with four lengths of type I, 1/4-inch cotton webbing.
3. Bolt the 3-foot suspension slings to the parachute's riser clevis. Fold the slings and tape or tie the folds in place.
4. Cut the secondary bag closing tie (Not Shown).
5. Set a 15-foot cargo extraction parachute, packed in a T-10C deployment bag, on the G-12 cargo parachute. Tie it in place with ticket number 5 or 8/7 cotton thread.
6. Attach the 9-foot sling clevis to the G-12 D-bag and tie a medium clevis with type I, 1/4-inch cotton webbing to the D-bag (Not Shown).

Figure 7-18. Parachutes Stowed on Two Motorcycles Rigged for a Low-Velocity Airdrop

POSITIONING EXTRACTION PARACHUTE

7-15. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/MCRP 4-11.3J/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

7-16. Select and install provisions for emergency restraints according to the emergency aft restraints requirements in FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

MARKING RIGGED LOAD

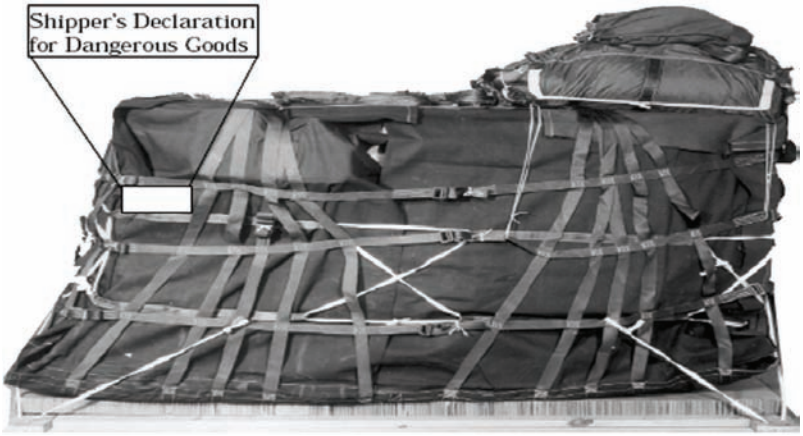
7-17. Mark the rigged load according to FM 4-20.102/ MCRP 4-11.3J/NAVSEA SS 400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 7-19. Complete the Shipper's Declaration for Dangerous Goods and indicates on the form that the fuel tank has been prepared in accordance with AFJMAN 24-204/TM 38-250. If the load varies from the one shown, the weight, height, length, center of balance (CB), and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

7-18. Use the equipment listed in Table 7-1 to rig this load.

CAUTION

Make the final rigger inspection required by FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MM0-010/TO 13C7-1-5, FM 4-20.103/MCRP 3-11.3C/NAVSEA SS400-AB-MMO-010/TO 13C7-1-11, and AR 59-4/OPNAVINST 4630.24C/AFJ 13-210(I)/MCO 13480.1B before the load leaves the rigging site.



RIGGED LOAD DATA

Weight..... 892 pounds

Maximum Weight..... 2200 pounds

Height .....75 inches

Width.....48 inches

Length.....96 inches

Overhang: Front.....0 inches

Rear .....0 inches

Center of Balance (from front edge of platform) .....0 inches

Figure 7-19. Two Motorcycles Rigged for Low-Velocity Airdrop

Table 7-1. Equipment Required for Rigging Two Motorcycles 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, A-22	2
1670-00-590-9909	*Bag, deployment, personnel parachute, T-10C	1
1670-00-568-0323	*Band, rubber, retainer	As required
4030-00-678-8562	Clevis, suspension, 3/4-inch (medium)	1
1670-00-783-5988	*Link assembly, type IV	1
5510-00-220-6146	Lumber:	
	2- by 6- by 48-inches	2
	2- by 6- by 85-inches	2
5315-00-010-4659	Nail, steel wire, common:	
	8d	As required
1670-00-753-3928	Pad, energy-dissipating, honeycomb	7 sheets
	Parachute:	
1670-01-065-3755	Cargo,G-12E	1
1670-01-063-3715	*Cargo, extraction, 15-foot	1
5530-00-128-4981	Plywood:	
	3/4-in by 48- by 96- inch sheet	2
	Sling, cargo, airdrop, type XXVI, nylon webbing	
1670-01-062-6301	3-foot (2-loop)	2
1670-01-062-6304	*9-foot (2-loop) (deployment line)	1
1670-00-998-0117	Static line, cargo parachute, breakaway	1
7510-00-266-5016	Tape, adhesive, 2-inch, OD	As required
7510-00-266-6710	Tape, masking, 2-inch	As required
8310-00-917-3945	Thread, cotton, ticket Number 5	As required
	Webbing:	
8305-00-268-2411	Cotton, type I, 1/4-inch	As required
8305-00-268-2453	Nylon, tubular, 1/2-inch, natural	As required
8305-00-263-3591	Nylon, type VIII	As required

* These items are needed to pack the 15-foot cargo extraction parachute.

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Chapter 8

Rigging One Four Wheeled Quad-Runner on a Combat Expendable Platform (CEP) for Low-Velocity Airdrop

DESCRIPTION OF LOAD

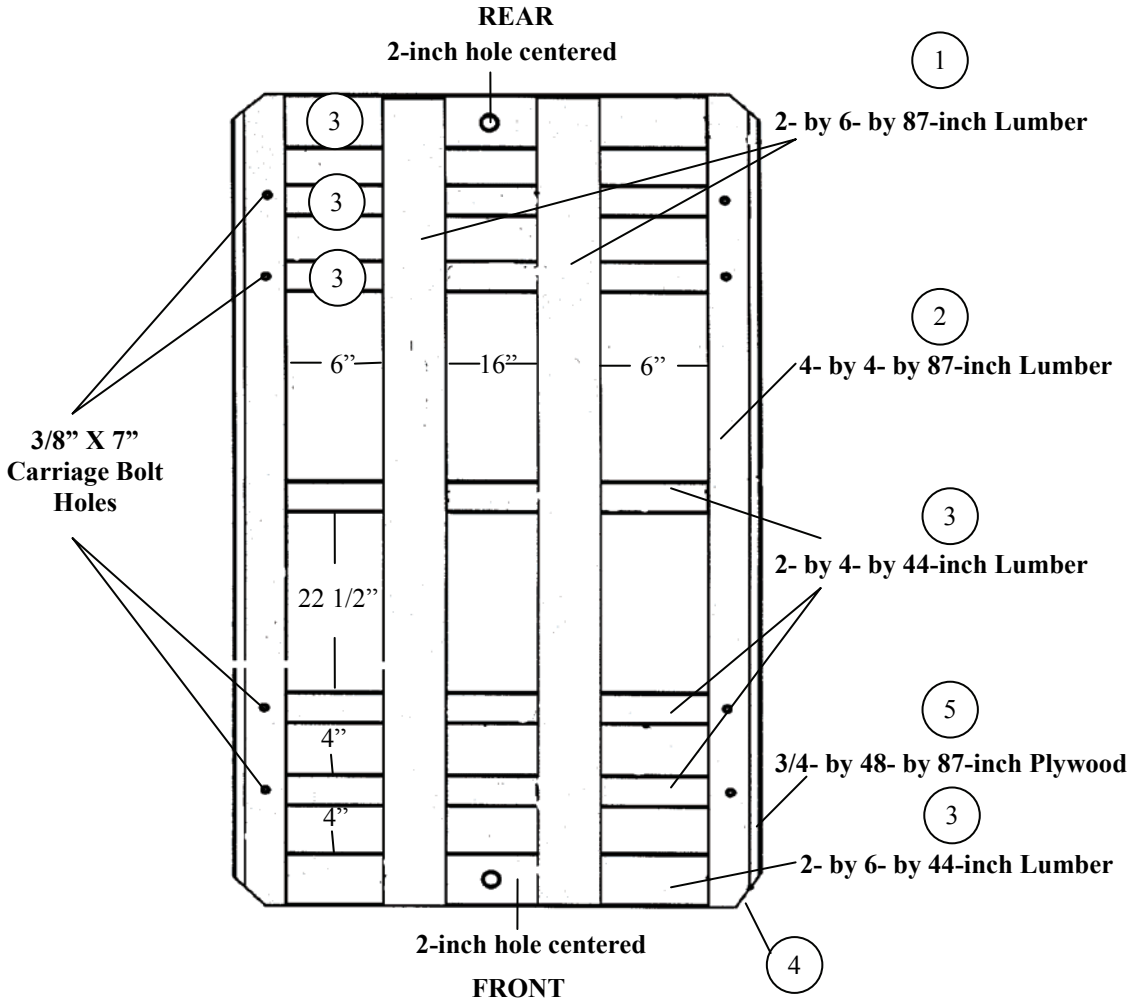
8-1. The Yamaha (350-cubic centimeter) four wheeled quad-runner (QUAD) is rigged on a 48- by 87-inch Combat Expendable Platform (CEP) with one G-12E cargo parachute. The load is rigged for a low-velocity airdrop of a C-130 or C-17 aircraft. The QUAD is 45 inches wide, 65 inches high, 72 inches long, and weighs 550 pounds as shown in Figure 8-1.

BUILDING AND PREPARING COMBAT EXPENDABLE PLATFORM

8-2. Build and prepare the 48- by 87-inch CEP as shown in Figure 8-2.

Figure 8-1. Four Wheeled Quad-Runner (QUAD)

Notes. 1. Not drawn to scale.
2. Dimensions are given in inches.
3. Use 8d penny nails or 2-inch long, #4 wood screws
4. Use 3/8- by 7-inch carriage bolts.



1 Place two 2- by 6- by 87-inch pieces of lumber side by side 16 inches apart. (Longitudinal)

2 Place two 4- by 4- by 87-inch pieces of lumber 6 inches to the outside of the 2- by 6- by 44-inch pieces of lumber. (Longitudinal)

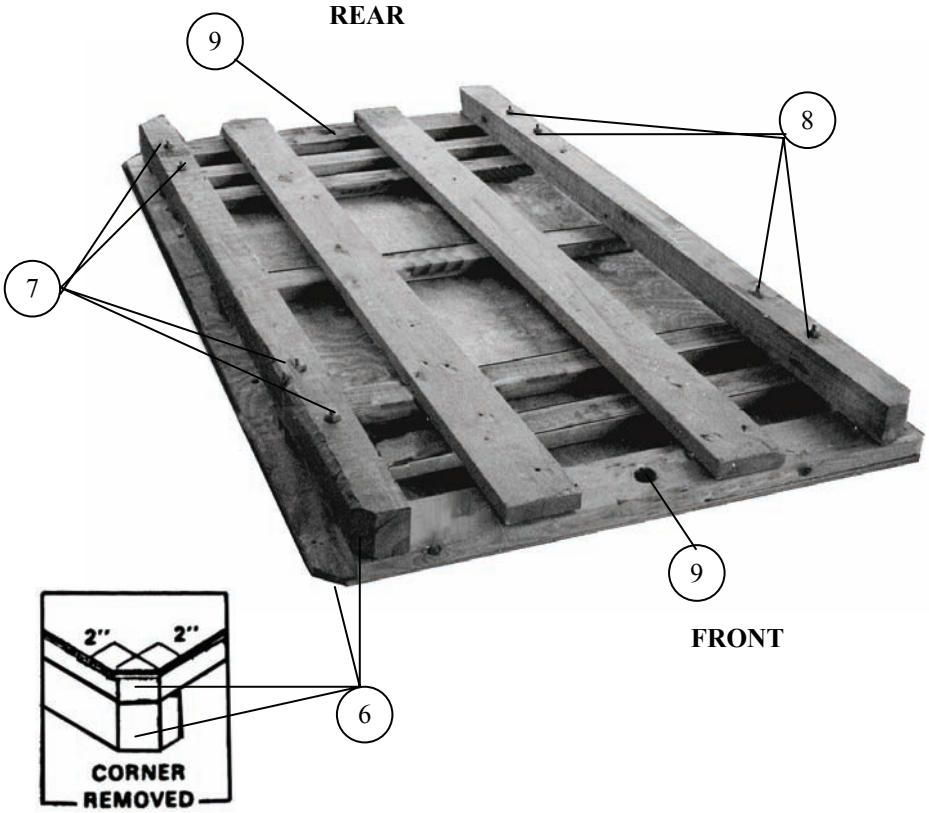
3 Place five 2- by 4- by 44-inch and two 2- by 6- by 44-inch pieces of lumber across and on top of the lumber listed in steps 1 and 2 as shown in diagram. (Lateral)

4 Nail the pieces of lumber together with 8d penny nails. Do not nail the extreme corners of the frame where the corners will be cut off.

5 Position and nail a 3/4- by 48- by 87-inch piece of plywood on top of the lumber leaving a 2 inch overhang on each side.

Figure 8-2. Platform Prepared

Notes. 1. Not drawn to scale.
2. Dimensions are given in inches.
3. Use 3/8- by 7-inch carriage bolts.
4. Insert bolts from plywood deck side of platform and countersink carriage bolts head.



6 Cut the four corners of the plywood and 4- by 4- by 87-inch pieces of lumber at 45 degree angles (2- by 2-inch).

7 Drill eight 3/8-inch holes at the suspension sling points as shown. Ensure the holes pass through the plywood and each end of each 2- by 4- by 44-inch lateral stringer and the 4- by 4- by 87-inch longitudinal stringers.

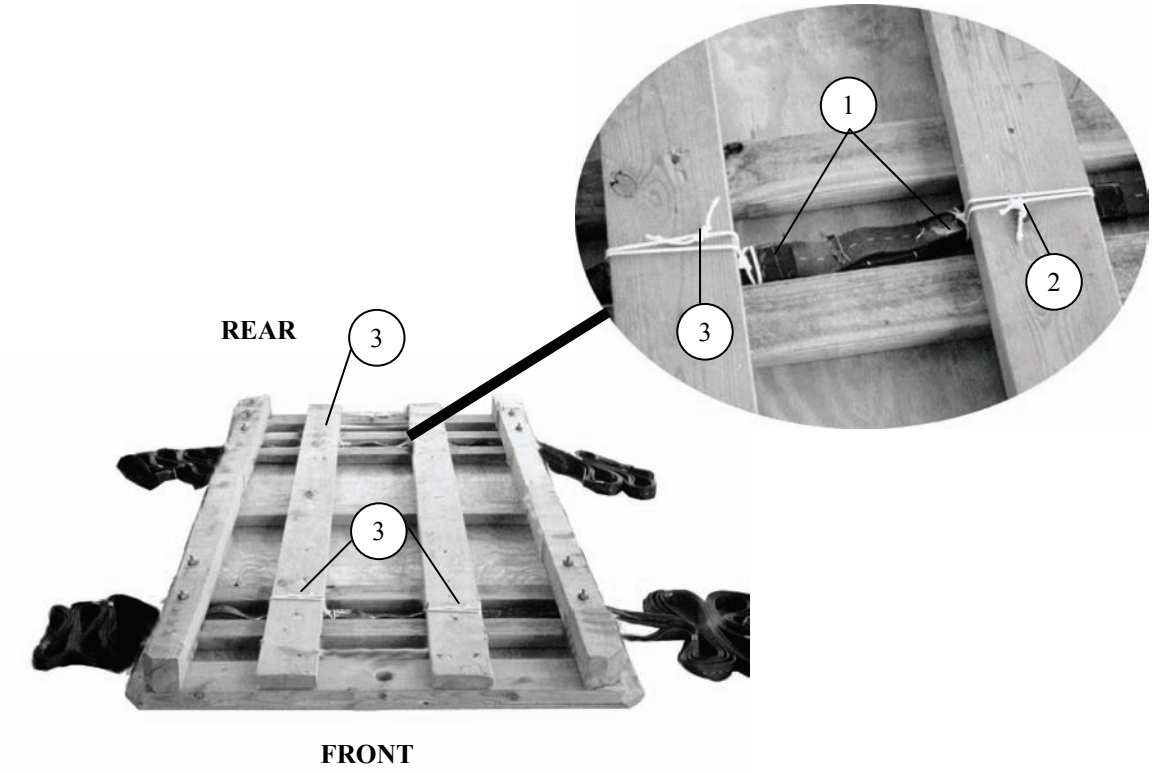
8 Insert a 3/8- by 7-inch carriage bolt into each hole, and bolt each of the lateral stringers to the longitudinal stringers.

9 Drill one 2-inch hole centered on the 2- by 6- by 44-inch piece of lumber and plywood at each end of the platform.

Figure 8-2. Platform Prepared (Continued)

INSTALLING SUSPENSION SLINGS

8-3. Mark the center of two 20-foot, (2-loop) suspension slings with tape. Route the slings through the suspension points of the platform with the tape at the center of the platform. Secure the slings to the platform as shown in Figure 8-3.

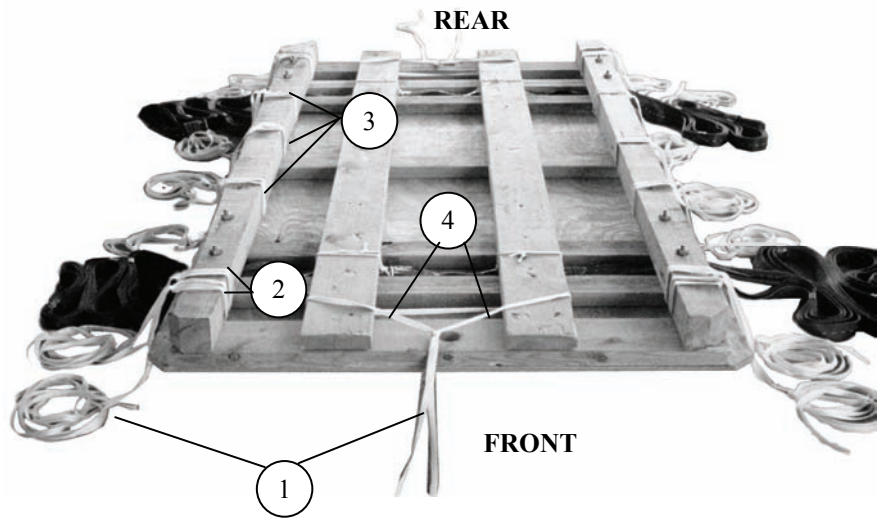


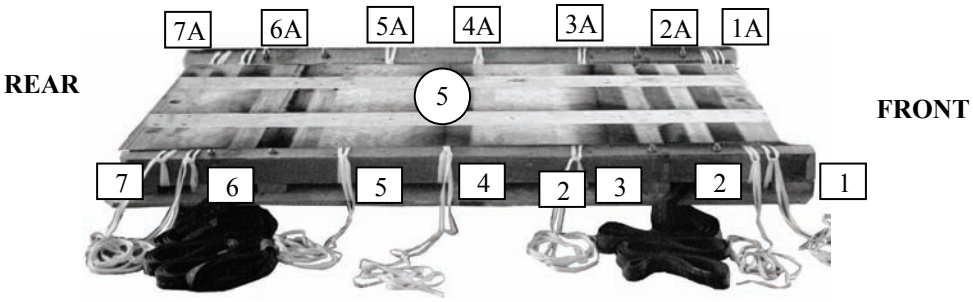
1. Tape the portion of the slings that route underneath the longitudinal 2- by 6-inch piece of lumber.
2. Cut four lengths of type III nylon cord 56 inches long. Girth hitch one length of type III nylon cord to the inside taped portion of the sling. Route one end under and over the 2- by 6-inch piece of lumber twice. Secure both ends on top with a surgeon's knot and locking knot.
3. Repeat at the other three points.

Figure 8-3. Suspension Slings Secured to Platform

INSTALLING LOAD RESTRAINTS

8-4. Install the load restraints as shown in Figure 8-4.





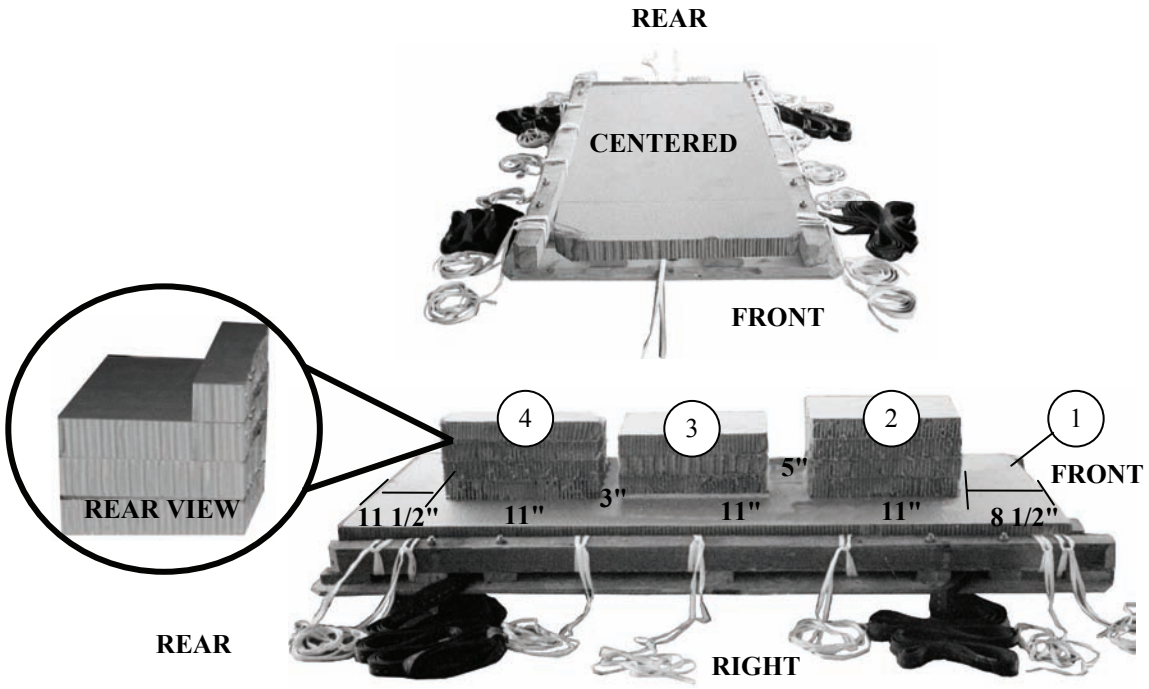
1. Cut 16 lengths of 1/2-inch tubular nylon webbing 15 feet long.
2. Girth hitch two lengths at each end of the 4- by 4-inch pieces of lumber.
3. Girth hitch three lengths of 1/2-inch tubular nylon webbing at the center of each 4- by 4-inch piece of lumber.
4. At each end of the platform, pass one end of the 1/2-inch tubular nylon webbing underneath the 2- by 6-inch longitudinal stringers. Match the two ends together and tie an overhead knot close to the stringer.
5. Number the 1/2-inch tubular nylon webbing ties 1 through 7 and 1a through 7a.

Figure 8-4. Load Restraints Secured to Platform

POSITIONING HONEYCOMB STACKS

8-5. Prepare and position the honeycomb stacks as shown in Figure 8-5.

Note. Glue stacks 2, 3, and 4 to stack 1 (Base).

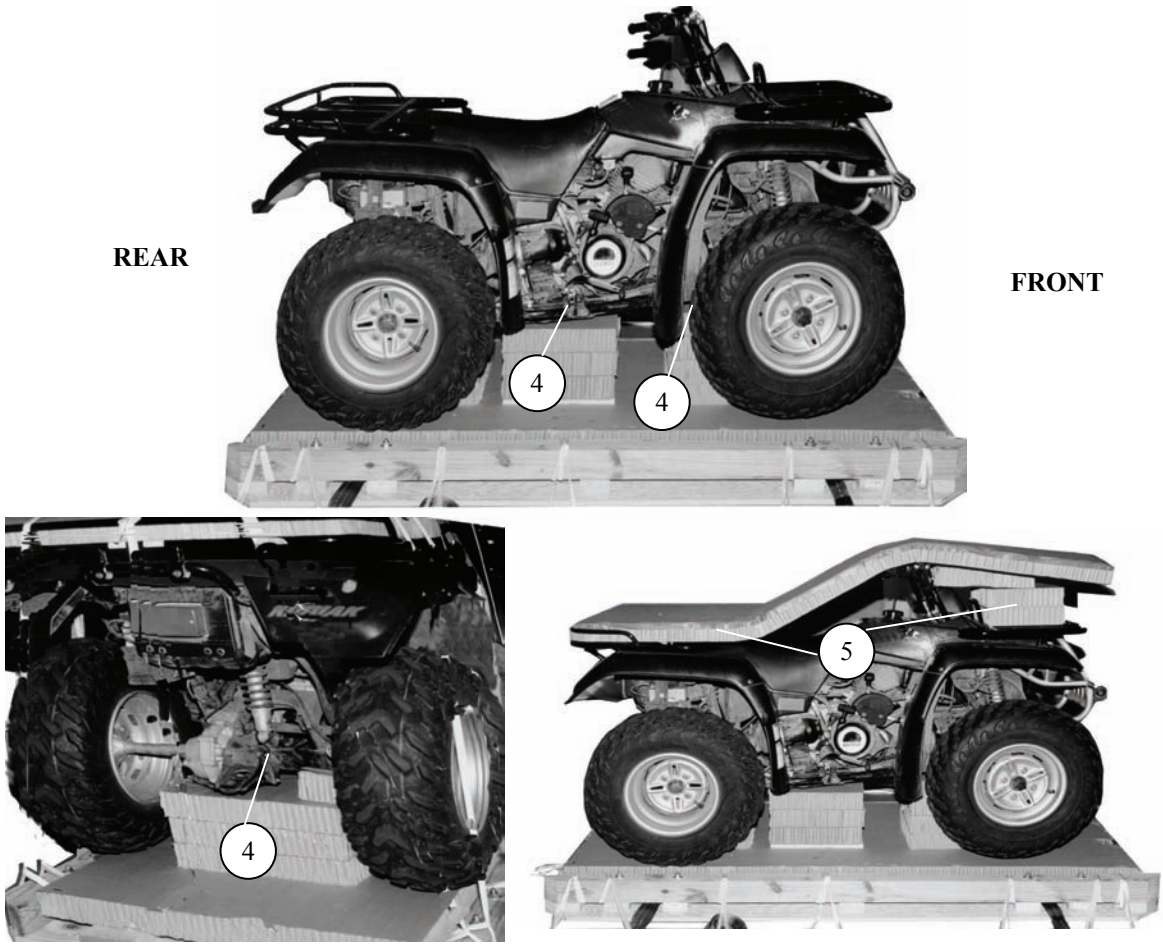


Stack Number	*Pieces*	*Width (inches)*	*Length (inches)*	*Material*	*Instructions*
1	1	36	82	Honeycomb	Position on platform centered.
2	4	14	18	Honeycomb	Center and glue 8 ½ inches from front edge of stack 1 and 11 inches from both sides.
3	3	14	18	Honeycomb	Center and glue 5 inches from stack 2.
	1	14	18	3/4-inch Plywood	Glue to bottom of stack 3.
4	3	14	18	Honeycomb	Center and glue to stack 1, 3 inches from stack 3 with 11 ½ inches from rear edge.
	1	4	18	Honeycomb	Glue on top of stack 4 on right side, flush to edge.

Figure 8-5. Honeycomb Stacks Positioned

PREPARING AND POSITIONING QUAD-RUNNER

8-6. Prepare and position the quad-runner as shown in Figure 8-6.

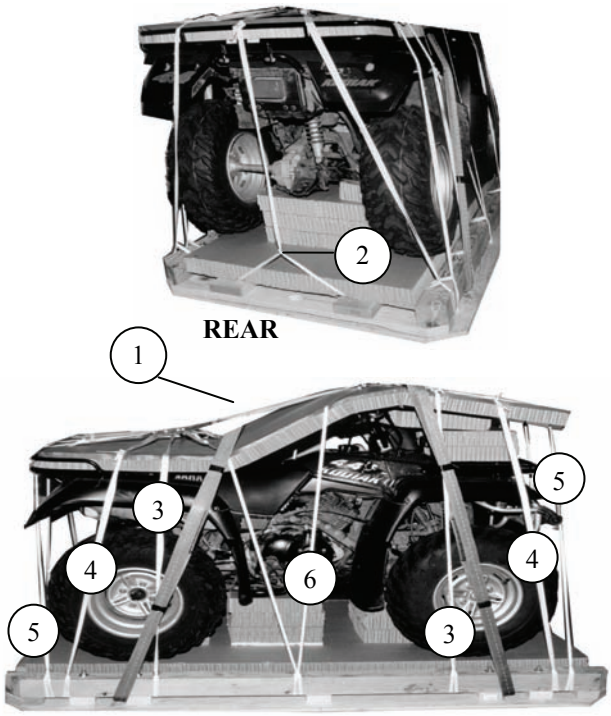


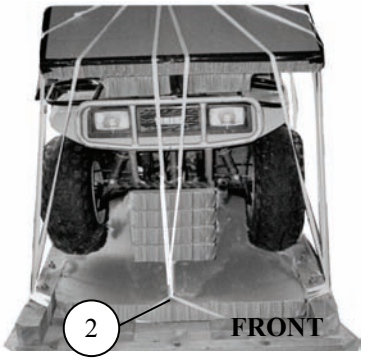
1. Ensure fuel is over half full but no more than three fourths full. **(Not Shown)**
2. Secure key with type III nylon cord safety tied to vehicle. **(Not Shown)**
3. Place gear shift in neutral if equipped with a shift stick. Secure with type III nylon cord. **(Not Shown)**
4. Position vehicle onto honeycomb with the front skid plate centered on stack 2. Center skid plate rest on stack 3. Rest axle on stack 4. Wheels should be at least 1 inch above bottom layer of honeycomb.
5. Build up around the handlebars with honeycomb to prevent movement and to protect levers and switches. Lay a 36- by 78-inch piece of honeycomb, with edges taped, on top of the vehicle.

Figure 8-6. Quad-Runner Prepared and Positioned

SECURING LOAD TO PLATFORM

8-7. Form and tape with cloth-backed tape two tie-down rings, approximately 10-inches in diameter, with 1-inch tubular nylon webbing. **(see note)** Lay one ring on top of the honeycomb over the handlebars and the other ring over the seat. Secure the load to the platform as shown in Figure 8-7.





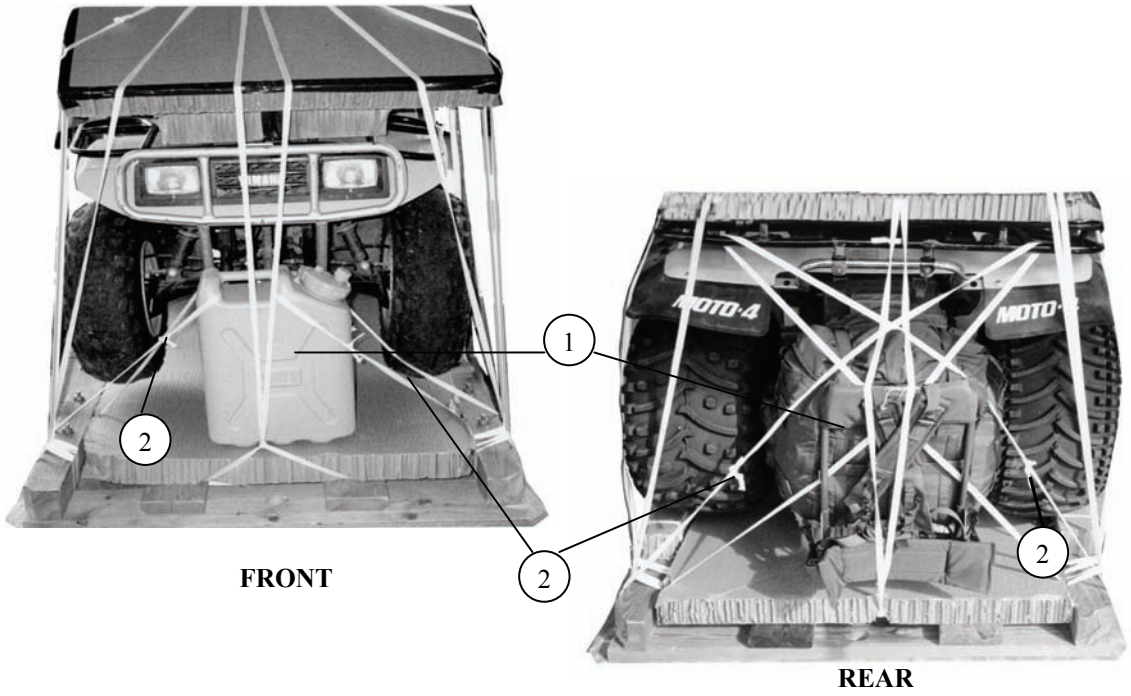
Note.
Use a 60-inch length of 1-inch nylon webbing to make a two ply tie-down ring. Tie the ends together with a square knot and overhand knot in each end. Wrap the ring with cloth backed tape.

1. Tie the rings together with a 40-inch length of 1/2-inch tubular nylon webbing to keep them centered.
2. Tie the front and rear restraints of each end to the respective tie-down ring with a trucker's hitch knot.
3. Tie numbers 5 and 5A and 3 and 3A to the respective tie-down ring.
4. Tie numbers 6 and 6A and 2 and 2A to the respective tie-down ring.
5. Route numbers 7 and 7A and 1 and 1A around each end of the vehicle and up to the tie-down rings.
6. Using numbers 4 and 4A split the tie and then tie one end to one tie-down ring and the other end to the other tie-down ring.

Figure 8-7. Load Secured to Platform

SECURING ACCOMPANYING LOAD

8-8. Whenever possible, the load should be kept balanced. One rucksack and one water or fuel can may be used to keep the load balanced as shown in Figure 8-8.



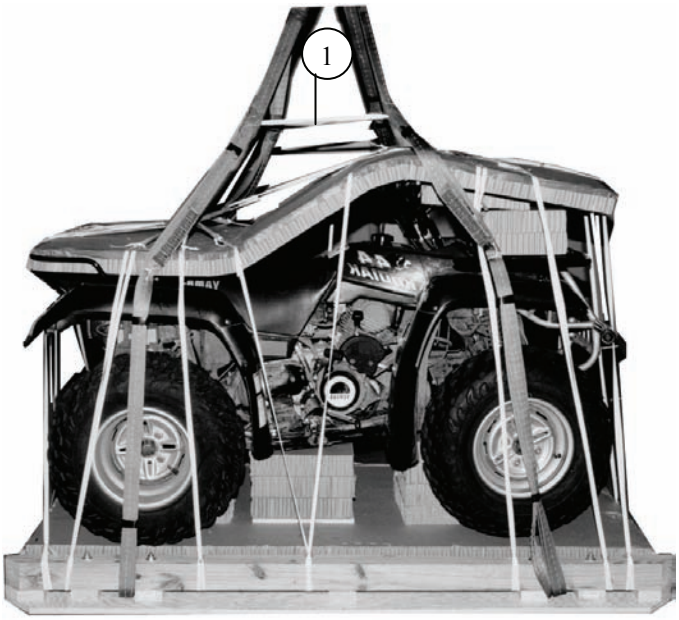
1 Place the water or fuel can between the front wheels. Place the rucksack on the honeycomb between the rear wheels.

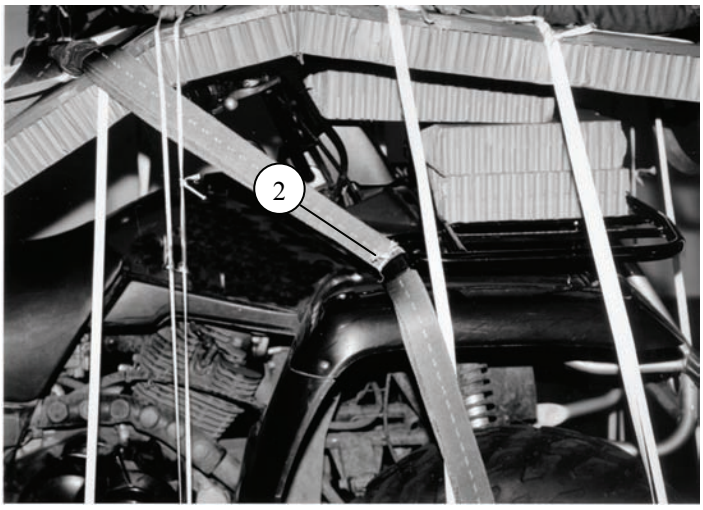
2 Secure to the load by girth hitching 1/2-inch tubular nylon webbing to the CEP.

Figure 8-8. Accompanying Load Secured

INSTALLING DEADMAN'S TIE

8-9. Lift and safety the suspension slings using a deadman's tie according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MM0-010/TO 13C7-1-5 and as shown in Figure 8-9.





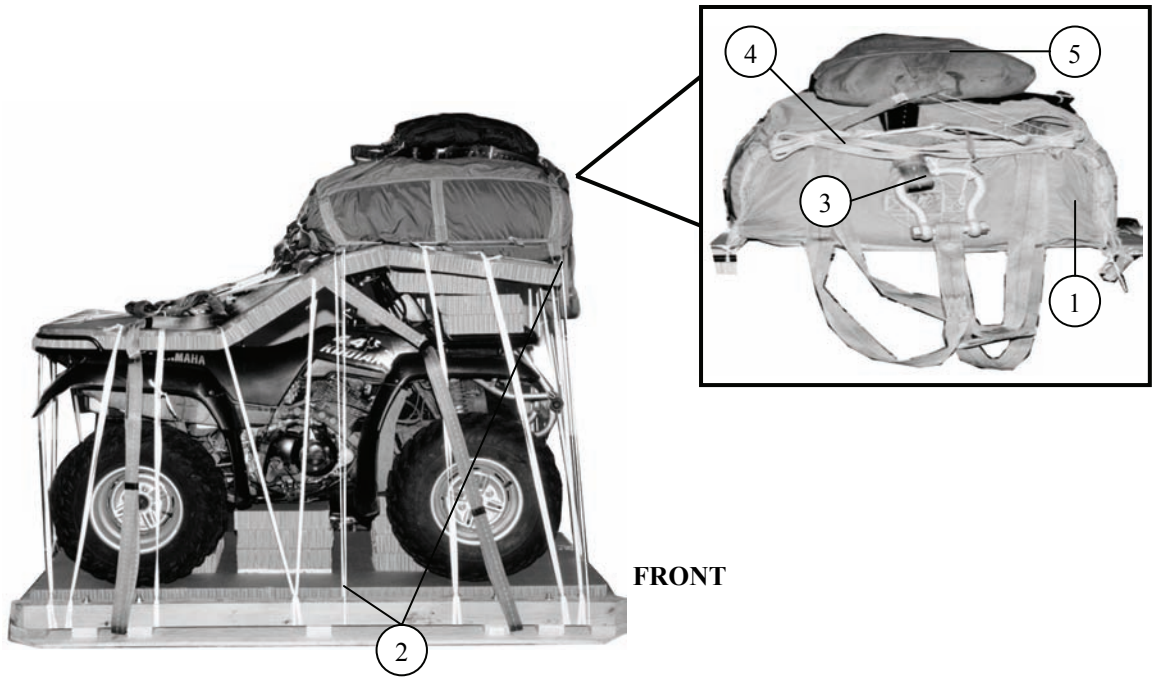
1 Safety the deadman's tie 6 to 8 inches above the highest point of the load.

2 Secure the suspension slings to the equipment rack with type I, 1/4-inch cotton webbing.

Figure 8-9. Deadman's Tie Installed

STOWING CARGO PARACHUTE

8-10. Stow one G-12E cargo parachute as shown in Figure 8-10. Prepare and pack a 15-foot cargo extraction parachute as described in Chapter 7, paragraph 7-13.



1. Place one G-12E cargo parachute on the front of the load with the riser extension compartment up and the deployment bag bridle to the front.
2. Secure the parachute to convenient points on the platform with four lengths of type I, 1/4-inch cotton webbing.
3. Attach the deployment line (9-foot (2-loop), type XXVI nylon webbing sling) from the packed 15-foot cargo extraction parachute to the G-12E bridle with a medium clevis.
4. S-fold the slack in the deployment line and secure the folds with type I, 1/4-inch cotton webbing. Secure the medium clevis attached to the G-12E bridle to the riser extension tie-down loops with a single length of type I, 1/4-inch cotton webbing. Place folds on top of the G-12E cargo parachute.
5. Center the 15-foot cargo extraction parachute on top of the G-12E cargo parachute. Secure to the G-12E parachute with four lengths of ticket number 8/7 cotton thread.

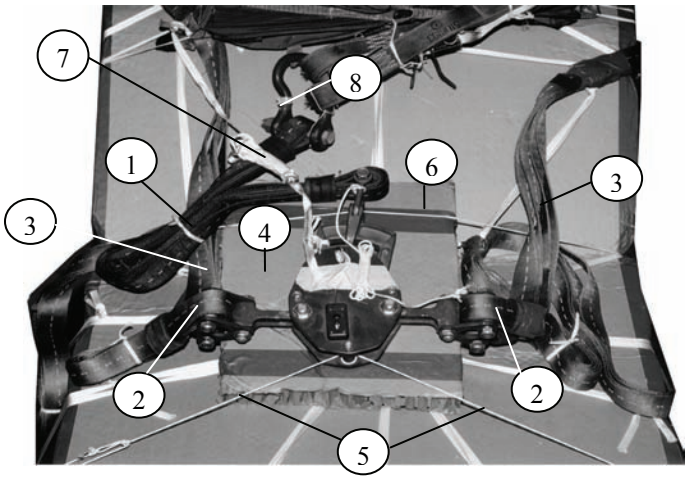
Figure 8-10. Cargo Parachutes Stowed

INSTALLING PARACHUTE RELEASE

8-11. Prepare, install, and safety the M-1 release according to FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MM0-010/TO 13C7-1-5 and as shown in Figure 8-11.

CAUTION

Make sure the arming wire lanyard is routed over all items as required by FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MM0-010/TO 13C7-1-5.



1. Connect a 3-foot (2-loop), type XXVI nylon sling to the G-12E parachute riser clevis. Connect the other end of the sling to the parachute connector on the M-1 release. Fold and tie with type I, 1/4-inch cotton webbing.
2. Attach the front suspension slings to the top bolts of the lower suspension link.
3. Attach the rear suspension slings to the lower bolts of the lower suspension link. The rear slings will have a half twist towards the parachutes.
4. Cut and place a 14- by 14-inch piece of honeycomb on top of the load under the M-1 release.
5. Run a length of type III nylon cord to encircle the lower spacer, and tie the ends of the cord to points on the front of the load or platform.
6. Run a length of type III nylon cord over the suspension slings and through the parachute connectors, and tie the ends of the cord to points on the rear of the load or platform.
7. Tie the lanyard to a carrying handle of a parachute with three alternating half hitches and an overhand knot in the running end. Fold the slack in the lanyard and tape the folds in place with one turn of masking tape.
8. Remove the left secondary bag closing tie from the G-12E parachute.

Figure 8-11. M-1 Parachute Release Installed

POSITIONING EXTRACTION PARACHUTE

8-12. Select the extraction parachute and extraction line needed using the extraction line requirements table in FM 4-20.102/MCRP 4-11.3J/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

8-13. Select and install provisions for emergency restraints according to the emergency aft restraints requirements in FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

MARKING RIGGED LOAD

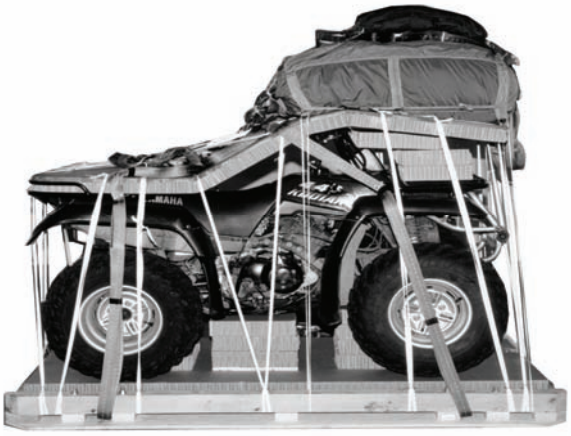
8-14. Mark the rigged load according to FM 4-20.102/ MCRP 4-11.3J/NAVSEA SS 400-AB-MMO-010/TO 13C7-1-5 and as shown in Figure 8-12. Complete the Shipper's Declaration for Dangerous Goods and indicates on the form that the fuel tank has been prepared in accordance with AFJMAN 24-204/TM 38-250. If the load varies from the one shown, the weight, height, length, center of balance (CB), and parachute requirements must be recomputed.

EQUIPMENT REQUIRED

8-15. Use the equipment listed in Table 8-1 to rig this load.

CAUTION

Make the final rigger inspection required by FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MM0-010/TO 13C7-1-5, FM 4-20.103/MCRP 3-11.3C/NAVSEA SS400-AB-MMO-010/TO 13C7-1-11, and AR 59-4/OPNAVINST 4630.24C/AFJ 13-210(I)/MCO 13480.1B before the load leaves the rigging site.



RIGGED LOAD DATA

Weight	960 pounds
Maximum Weight	1200 pounds
Height	68 inches
Width	48 inches
Length	87 inches
Overhang: Front	0 inches
Rear	0 inches
Center of Balance (from front edge of platform)	0 inches

Figure 8-12. Four Wheeled Quad-Runner Rigged on CEP for Low-Velocity Airdrop

Table 8-1. Equipment Required for Rigging a Quad-Runner on a Combat Expendable Platform (CEP) for Low-Velocity Airdrop

National Stock Number	*Item*	*Quantity*
8040-00-273-8713	Adhesive paste, 1-gal	As required
1670-00-590-9909	*Bag, deployment, personnel parachute, T-10C	1
1670-00-568-0323	*Band, rubber, retainer	As required
NO NSN	Bolt, carriage, 3/8-inch diameter, 7-inch long, w/ washer and nut	8
4030-00-678-8562	Clevis, suspension, 3/4-inch (medium)	2
5510-00-220-6146	Lumber:	
	2- by 4- by 44-inches	5
	2- by 6- by 87-inches	2
	2- by 6- by 44-inches	2
	4- by 4- by 87-inches	2
5315-00-010-4659	Nail, steel wire, common:	
	8d	As required
1670-00-753-3928	Pad, energy-dissipating, honeycomb	9 sheets
	Parachute:	
1670-01-065-3755	Cargo,G-12E	1
1670-01-063-3715	*Cargo, extraction, 15-foot	1
5530-00-128-4981	Plywood:	
	3/4-in by 48- by 96- inch sheet	2 sheets
1670-01-097-8816	Release, cargo parachute, M-1	1
	Sling, cargo, airdrop, type XXVI, nylon webbing	
1670-01-062-6301	3-foot (2-loop)	2
1670-01-062-6304	*9-foot (2-loop) deployment line	1
1670-01-062-6302	20-foot (2-loop) riser extensions	2
7510-00-266-5016	Tape, adhesive, 2-inch, OD	As required
7510-00-266-6710	Tape, masking, 2-inch	As required
8310-00-917-3945	Thread, cotton, number 8/7 cord	As required
	Webbing:	
8305-00-268-2411	Cotton, type I, 1/4-inch	As required
8305-00-268-2453	Nylon, tubular, 1/2-inch, natural	As required
8305-00-268-2455	Nylon, tubular, 1-inch	As required
8305-00-263-3591	Nylon, type VIII	As required

* These items are needed to pack the 15-foot cargo extraction parachute.

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Glossary

AD	Airdrop
AFB	Air Force Base
AFI	Air Force Instruction
AFI (I)	Air Force Instruction Interservice
AFMAN (I)	Air Force Manual Interservice
AFSOC	Air Force Special Operations Command
AFTO	Air Force Technical Order
ALC	Airlift Logistics Center
AMC	Air Mobility Command
attn	attention
cap	capacity
CB	center of balance
cc	cubic centimeter
CDS	container delivery system
CEP	combat expendable platform
Chap	chapter
CVR	Container Vertical Restraint System
d	penny
DA	Department of the Army
DC	District of Columbia
DES	drogue extraction system
diam	diameter
DoD	Department of Defense
EFTC	extraction force transfer coupling
EPJS	extraction parachute jettison system
fig	figure
FM	Field Manual
FRE	first response expeditionary
ft	feet/foot
gal	gallon
HQ	Headquarters
in	inch
JAI	joint airdrop inspection

lb	pound
LV	low-velocity
M-Gator	military utility vehicle
MAJCOM	major command
MCRP	Marine Corps reference manual
mm	milli meter
NAVSEA	Navel Sea Command
No	number
OVM	operator's vehicle maintanence
qty	quantity
TM	Technical Manual
TO	Technical Order
TRADOC	US Army Training and Doctrine Command
US	United States
USA	United States of America
w	with
yd	yard

References

AR 59-4/OPNAVINST 4630.24C/AFJ 13-210(I)/MCO 13480.1B, Joint Airdrop Inspection Records, Malfunction Investigations and Activity Reporting. 1 May 1998.

AFMAN 24-204 (I)/TM 38-250/NAVSUP PUB 505/MCO P4030119I/DLAI 4145.3, Preparing Hazardous Materials for Military Air Shipments. 12 October 2004.

FM 4-20.102/MCRP 4-11.3J/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5, Airdrop of Supplies and Equipment: Rigging Airdrop Platforms. 8 June 2006.

FM 4-20.103/MCRP 4-11.3C/TO 13C7-1-11, Airdrop of Supplies and Equipment: Rigging Containers. 2 September 2005.

FM 4-20.153/MCRP 4-11.3B/TO 13C7-18-41, Airdrop of Supplies and Equipment: Rigging Ammunition. 23 October 2006.

TM 10-1670-268-20&P/TO 13C7-52-22, Organizational Maintenance Manual Including Repair Parts and Special Tools List for Type V Airdrop Platform and Dual Row Airdrop Platform. 15 September 2002.

TM 10-1670-278-23&P/TO 13C5-26-2/TM 01109C-23&P1/NAVAIR 13-1-27, Unit and Intermediate Direct Support (DS) Maintenance Manual (including Repair Parts and Special Tools List) for Parachute, Cargo Type: 15-Foot Diameter, Cargo Extraction Parachute (NSN 1670-01-063-3715) and (1670-00-052-1548) . 31 December 2004.

TM 10-1670-279-23&P/TO 13C5-27-2/NAVAIR 13-1-28, Unit and Intermediate Direct Support Maintenance Manual (including Repair Parts and Special Tools List) for Parachute, Cargo Type: 22-Foot Diameter, Cargo Extraction Parachute (NSN 1670-01-063-3716) and (1670-00-687-5458). 30 August 1989.

TM 10-1670-280-23&P/TO 13C5-31-2/NAVAIR 13-1-31, Unit and Direct Support (DS) Maintenance Manual (including Repair Parts and Special Tools List) for Parachute, Cargo Type: 100-Foot Diameter (Model G-11B, Model G-11C, and Model G-11D, NSN 1670-01-016-7841). 15 September 2002.

TM 10-1670-281-23&P/TO 13C5-32-2/NAVAIR 13-1-32, Unit and Intermediate Direct Support (DS) Maintenance Manual (including Repair Parts and Special Tools List) for Parachute, Cargo Type: 64-Foot Diameter, Model G-12D (NSN 1670-00-893-2371) and Model G-12E (1670-01-065-3755). 1 October 1990.

TM 10-1670-286-20/TO 13C5-2-41, Unit Maintenance Manual for Extraction Line Panel (Including Stowing Procedures) (NSN 1670-01-183-2678). 15 March 2001.

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)Line, MULTI-Loop (Extraction Lines, Deployment Lines, Bag Clusteringlines, Riser Extension, Suspension Slings) (NSN 1670-01-062-6301)(1670-01-062-6306) (1670-01-062-6304) (1670-01-062-6305) (1670-01-062-6311) (1670-01-063-7760) (1670-01-062-6310) (1670-01-062-6303)(1670-01-062-6307) (1670-01-062-6312) (1670-01-063-7761) (1670-01-062-6308) (1670-01-062-6302) (1670-01-064-4453) (1670-01-107-7651)(1670-01-062-6309) (1670-01-064-4451) (1670-01-064-4452)(1670-01-107-7652) Coupling, Extraction Force Transfer:(1670-00-434-5783) (1670-00-434-5785) (1670-00-434-5787)(1670-00-434-5782) (1670-01-326-7309) Release, Cargo Parachute,M-1: (1670-01-097-8816) Release, Cargo Parachute, M-2:(1670-01-097-8817) Link Assembly, Single Suspension, Type IV:(1670-00-783-5988) Assembly, Heavy Duty: Link, 4-Point:(1670-00-006-2752) Cover, Link, Type IV: (1670-01-360-0329)Clevis, Aerial Delivery: (4030-00-360-0304) (4030-00-678-8562)(4030-00-090-5354) (4030-00-432-2516) Cover, Clevis:(1670-00-360-0328) Strap, Parachute Release, Single Knife (1670-00-998-0116) Strap, Parachute Release, Multi-Knife: (4340-00-040-8219) Link Assembly, Coupling, 3-Point: (1670-01-307-0155)Bracket, Suspension: (1670-01-207-7223) Bracket, Suspension:(1670-00-078-4319) Plate, Suspension: (1670-01-141-1522) Tiedown,Cargo, 10K: (1670-00-937-0271) Tiedown, Cargo, Quick-Release:(1670-01-333-6082) Tiedown, Cargo, Aircraft: (1670-00-545-9063)Drive Off Aid, Type IV: (1670-01-344-0825) Link, 2-Point, 3 3/4-In:(1670-01-493-6418) Link, 2-Point, 5 1/2-IN: (1670-01-493-6420)Break Away Static Line, Main: (1670-01-487-5461) Jettison System, Parachute, Extraction: (1670-01-475-1990). 30 October 2002.

TM 10-1670-298-20&P, Unit Maintenance Manual Including Repair Parts and Special Tools List for Container Delivery System A-7A Cargo Sling (NSN 1670-00-251-1153) A-21 Aerial Delivery Cargo Bag (1670-00-242-9173) A-22 Aerial Delivery Cargo Bag (1670-00-587-3421) A-23 Aerial Delivery Cargo Bag (1670-01-065-3748) Capsule, Cargo, CTU-2/A(1670-01-059-5788) Strap Connector, 60-Inches Long (5340-00-738-5878) Strap Connector, 120-inches Long (5340-00-738-5879). 15 September 1995.

AFTO Form 22, Technical Order Publication Improvement Report.

DA Form 2028, Recommended Changes to Publication and Blank Forms.

* Shipper's Declaration for Dangerous Goods. Locally procured form.

FM 4-20.108
TO 13C7-2-491
10 September 2007

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