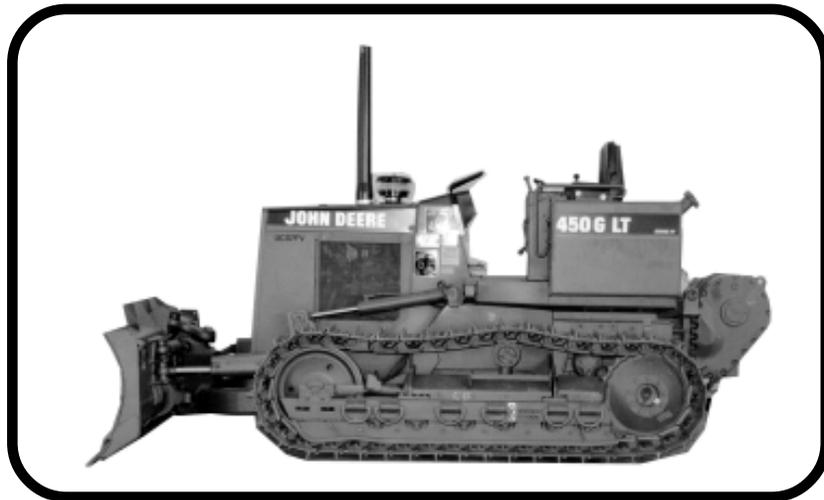


AIRDROP OF SUPPLIES AND EQUIPMENT: RIGGING TRACTORS AND TRACTOR-DOZERS



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**AIRDROP OF SUPPLIES AND EQUIPMENT:
RIGGING TRACTORS AND TRACTOR-DOZERS**

This change adds the procedures for rigging the John Deere 450G LT full-tracked commercial bulldozer on a 16-foot, Type V platform for low-velocity airdrop.

FM 10-521/TO 13C7-22-61, 7 October 1987, is changed as follows:

1. New or changed material is identified by a vertical bar in the margin opposite the changed material.
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AIRDROP OF SUPPLIES AND EQUIPMENT: RIGGING TRACTORS AND TRACTOR-DOZERS

TABLE OF CONTENTS

		Paragraph	Page
	PREFACE		vi
CHAPTER 1	Introduction		
	Description of Items	1-1	1-1
	Special Considerations	1-2	1-1
CHAPTER 2	RIGGING T-3 TRACTOR-DOZER		
Section I	RIGGING THE TRACTOR-DOZER FOR LOW-VELOCITY AIRDROP		
	Description of Load	2-1	2-1
	Preparing Platform	2-2	2-1
	Building and Placing Honeycomb Stacks	2-3	2-1
	Removing and Stowing Components	2-4	2-5
	Preparing Tractor-Dozer	2-5	2-6
	Installing Suspension Slings	2-6	2-9
	Positioning Tractor-Dozer	2-7	2-9
	Installing Lashings	2-8	2-9
	Installing Load Cover	2-9	2-13
	Safelying Suspension Slings	2-10	2-13
	Stowing Cargo Parachutes	2-11	2-14
	Installing Extraction System	2-12	2-18
	Installing Release Assembly	2-13	2-20
	Installing Emergency Restraints	2-14	2-21
	Placing Extraction Parachute	2-15	2-22
	Marking Rigged Load	2-16	2-22
	Equipment Required	2-17	2-23
Section II	RIGGING THE TRACTOR-DOZER FOR LAPE AIRDROP		
	Description of Load	2-18	2-26
	Preparing Platform	2-19	2-26
	Building and Placing Honeycomb Stacks	2-20	2-26
	Preparing Tractor-Dozer	2-21	2-29

DISTRIBUTION RESTRICTION: Approved for public release; distribution is unlimited.

	Paragraph	Page
Installing Lifting Slings	2-22	2-29
Positioning Tractor-Dozer	2-23	2-29
Installing Lashings	2-24	2-29
Installing Attitude Control Bar	2-25	2-36
Installing Extraction System	2-26	2-39
Placing Extraction Parachutes	2-27	2-39
Marking Rigged Load	2-28	2-40
Equipment Required	2-29	2-40
Section III		
RIGGING THE ACCOMPANYING LOAD		
Description of Load	2-30	2-43
Constructing Stowage Box	2-31	2-44
Preparing Swing Fire Heater	2-32	2-45
Securing Swing Fire Heater	2-33	2-46
Equipment Required	2-34	2-47
CHAPTER 3		
RIGGING D-5B AND D-5BS TRACTOR-DOZERS		
Section I		
RIGGING THE TYPE I, D-5B TRACTOR-DOZER FOR LOW-VELOCITY AIRDROP		
Description of Load	3-1	3-1
Preparing Platform	3-2	3-1
Building and Placing Honeycomb Stacks	3-3	3-1
Preparing Tractor-Dozer	3-4	3-16
Installing Suspension Slings	3-5	3-22
Positioning Tractor-Dozer	3-6	3-23
Installing Lashings	3-7	3-23
Installing Load Cover	3-8	3-29
Safetying Suspension Slings	3-9	3-29
Stowing Cargo Parachutes	3-10	3-30
Installing Extraction System	3-11	3-32
Installing Release Assembly	3-12	3-32
Installing Emergency Restraints	3-13	3-36
Placing Extraction Parachutes	3-14	3-37
Marking Rigged Load	3-15	3-37
Equipment Required	3-16	3-37
Section II		
RIGGING THE TYPE II, D-5BS TRACTOR-DOZER FOR LOW-VELOCITY AIRDROP		
Description of Load	3-17	3-40
Preparing and Rigging Tractor-Dozer	3-18	3-40
Marking Rigged Load	3-19	3-40
Equipment Required	3-20	3-42

	Paragraph	Page
Installing Lashings	6-7	6-8
Building and Installing Parachute Stowage Platform	6-8	6-11
Installing Extraction Attaching Point Extension	6-9	6-11
Stowing Cargo Parachutes	6-10	6-11
Installing Extraction System	6-11	6-11
Installing Release Assembly	6-12	6-11
Installing Emergency Restraint	6-13	6-13
Placing Extraction Parachute	6-14	6-13
Marking Rigged Load	6-15	6-13
Equipment Required	6-16	6-13
Section II		
RIGGING THE TRACTOR FOR LAPE AIRDROP		
Description of Load	6-17	6-16
Preparing Platform	6-18	6-16
Building and Placing Honeycomb Stacks	6-19	6-17
Preparing Tractor	6-20	6-18
Positioning Tractor	6-21	6-20
Installing Lashings	6-22	6-20
Installing Attitude Control Bar	6-23	6-22
Installing Extraction System	6-24	6-23
Placing Extraction Parachutes	6-25	6-24
Marking Rigged Load	6-26	6-24
Equipment Required	6-27	6-24
CHAPTER 7		
RIGGING D-6 TRACTOR FOR LOW-VELOCITY AIRDROP		
Description of Load	7-1	7-1
Preparing Platform	7-2	7-2
Building and Placing Honeycomb Stacks	7-3	7-3
Preparing Tractor	7-4	7-4
Installing Suspension Slings	7-5	7-5
Positioning Tractor	7-6	7-6
Installing Lashings	7-7	7-6
Installing Load Cover	7-8	7-8
Building and Installing Parachute Stowage Platform	7-9	7-8
Installing Extraction Attaching Point Extension	7-10	7-8
Stowing Cargo Parachutes	7-11	7-10
Installing Extraction System	7-12	7-10
Installing Release Assembly	7-13	7-11
Installing Emergency Restraint	7-14	7-11
Placing Extraction Parachute	7-15	7-11
Marking Rigged Load	7-16	7-11
Equipment Required	7-17	7-11

	Paragraph	Page
CHAPTER 8	RIGGING THE TYPE I, D-5B TRACTOR-DOZER ON THE TYPE V PLATFORM	
Section I	RIGGING THE TRACTOR-DOZER FOR LOW-VELOCITY AIRDROP	
Description of Load	8-1	8-1
Preparing Platform	8-2	8-1
Building and Positioning Honeycomb Stacks	8-3	8-3
Preparing Dozer	8-4	8-16
Installing Suspension Slings	8-5	8-23
Lifting and Positioning Dozer	8-6	8-24
Lashing Dozer	8-7	8-25
Padding and Securing Hydraulic Cylinders	8-8	8-30
Installing Load Cover	8-9	8-30
Installing Deadman's Tie	8-10	8-31
Safetying Suspension Slings	8-11	8-31
Safetying Load Spreader	8-12	8-31
Stowing Cargo Parachutes	8-13	8-32
Installing the Release System	8-14	8-34
Installing Extraction System	8-15	8-37
Installing Emergency Restraint Points	8-16	8-38
Positioning Extraction Parachutes	8-17	8-38
Marking Rigged Load	8-18	8-38
Equipment Required	8-19	8-38
Section II	RIGGING THE TRACTOR-DOZER FOR LAPE AIRDROP	
Description of Load	8-20	8-42
Preparing Platform	8-21	8-42
Building and Positioning Honeycomb Stacks	8-22	8-44
Preparing Dozer	8-23	8-50
Lifting and Positioning Honeycomb Stacks	8-24	8-51
Lashing Dozer	8-25	8-53
Building and Installing Parachute Extraction System	8-26	8-59
Positioning Extraction Parachutes	8-27	8-83
Marking Rigged Load	8-28	8-83
Equipment Required	8-29	8-84
CHAPTER 9	RIGGING THE JOHN DEERE 450G LT TRACKED COMMERCIAL BULLDOZER ON A 16-FOOT, TYPE V PLATFORM FOR LOW-VELOCITY AIRDROP	
Description of Load	9-1	9-1
Preparing Platform	9-2	9-1
Building and Positioning Honeycomb Stacks	9-3	9-3
Preparing Dozer	9-4	9-9
Lifting and Positioning Dozer	9-5	9-13
Lashing Load to Platform	9-6	9-14
Installing Suspension Slings, Deadman's Tie and Load Cover	9-7	9-16
Building and Positioning Parachute Stowage Platform Support Stacks	9-8	9-17

	Paragraph	Page
Building Parachute Stowage Platform	9-9	9-18
Installing Parachute Platform, Preparing and Stowing Cargo Parachutes	9-10	9-19
Installing Extraction System	9-11	9-20
Installing Parachute Release	9-12	9-21
Placing Extraction Parachute	9-13	9-22
Installing Provisions for Emergency Restraints	9-14	9-22
Marking Rigged Load	9-15	9-22
Equipment Required	9-16	9-22
GLOSSARY		Glossary-1
REFERENCES		References-1

PREFACE

SCOPE

This manual tells and shows how to prepare and rig the T-3 tractor-dozers for low-velocity or LAPE airdrop from a C-130 aircraft and low-velocity airdrop from a C-141 aircraft. The D-5B (Type I) and D-5BS (Type II) tractor-dozers are rigged for LV and LAPE airdrop from a C-130 aircraft and LV airdrop from a C-141 aircraft. The D-5 full-tracked tractor and the D-5A full-tracked tractor with sectionalization kit are rigged for LV airdrop from a C-130 aircraft. The D-5 full-tracked tractor is also rigged for LAPE airdrop from a C-130 aircraft. The D-5 and D-5A full-tracked tractors cannot be airdropped from a C-141 aircraft. The Case 1150 full-tracked crawler tractor can be rigged for LV and LAPE airdrops from only a C-130 aircraft with a tail number of 62-1784 or higher. It is also rigged for LV airdrop from a C-141 aircraft. The M450 full-tracked crawler tractor is rigged for LV and LAPE airdrops from a C-130 aircraft. It is also rigged for LV airdrop from a C-141 aircraft. The D-6 tractor is rigged for LV airdrop from a C-130 aircraft. It cannot be airdropped from a C-141 aircraft. The John Deere 450G LT full-tracked commercial bulldozer is rigged for LV airdrop from a C-130, C-141, C-5, and C-17 aircraft.

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Unless this publication states otherwise, masculine nouns and pronouns do not refer exclusively to men.

CHAPTER 1

INTRODUCTION

1-1. Description of Items

The description and unrigged data for the items covered in this manual are described below:

a. T-3 Tractor Dozer. The T-3 tractor-dozer weighs 16,620 pounds. This weight is reducible to 16,160 pounds with the ROPS removed. The tractor-dozer is 158 inches in length. Its width is 96 inches, and its height is 106 inches (reducible to 71 inches). The accompanying load is a swing fire heater. It is 35 inches long, 12 inches high, and 8 inches wide. The swing fire heater weighs 90 pounds when it is prepared.

b. D-5B and D-5BS Tractor-Dozers. The unrigged D-5B and D-5BS tractor-dozers are described below.

(1) D-5B, type I (nonsectionalized). The type I tractor-dozer weighs 31,350 pounds with 3/4 tank of fuel. The weight of the tractor-dozer is reducible to 30,105 pounds with the ROPS removed. The tractor-dozer is 225 inches in length. Its width is 104 inches with the blade angled, and its height is 121 inches (reducible to 82 inches).

(2) D-5BS, type II (sectionalized). The type II tractor-dozer weighs 33,310 pounds with 1/2 tank of fuel. The weight of the tractor-dozer is reducible to 30,570 pounds with the ROPS and the sectionalization kit removed. All other dimensions are the same as those of the type I tractor-dozer.

c. D-5 and D-5A Full-Track Tractors. The unrigged D-5 and D-5A full-track tractors are described below.

(1) D-5 (nonsectionalized). The D-5 tractor weighs 24,815 pounds. The tractor is 188 inches in length. Its width is 96 inches, and its height is 107 inches (reducible to 78 inches).

(2) D-5A (sectionalized). The dimensions for this tractor are the same as those of the D-5 (nonsectionalized) tractor.

d. Case 1150 Full-Track Crawler Tractor. The Case 1150 tractor weighs 22,760 pounds. The weight is reducible to 21,890 pounds. The tractor is 191 inches in length. Its width is 120 inches (reducible to 110 inches), and its height is 113 1/2 inches (reducible to 78 inches).

e. M450 Full-Track Crawler Tractor. The M450 tractor weighs 9,900 pounds. The tractor is 140 inches in length. Its width is 78 inches, and its height is 88 inches (reducible to 67 inches).

f. D-6 Tractor. The D-6 tractor weighs 15,975 pounds. The tractor is 179 inches in length. Its width is 96 inches, and its height is 77 inches.

g. John Deere 450G Lt Full-Track Commercial Bulldozer. The John Deere 450G Lt bulldozer weighs 18,080 pounds. The dozer is 180 1/3 inches in length. Its width is 97 inches and its height is 108 inches (reducible to 77 inches with ROPS removed and the seat back lowered).

1-2. Special Considerations

Special considerations for this manual are given below.

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

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

CHAPTER 9

RIGGING THE JOHN DEERE 450G LT TRACKED COMMERCIAL BULLDOZER ON A 16-FOOT, TYPE V PLATFORM FOR LOW-VELOCITY AIRDROP

9-1. Description of Load

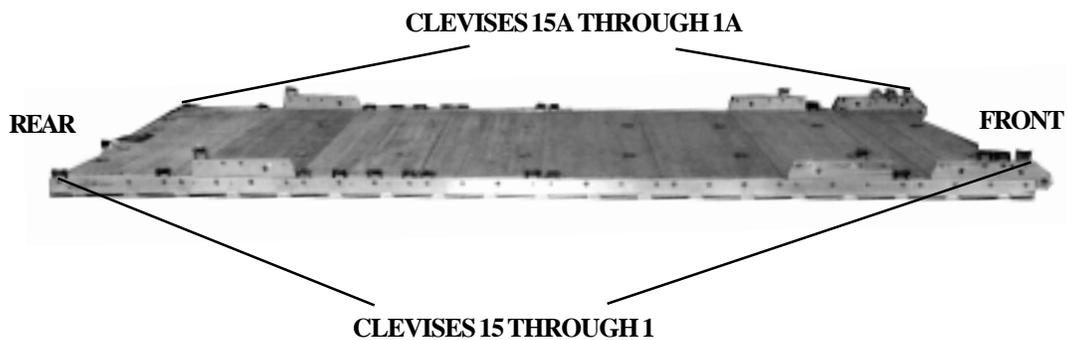
The John Deere 450G Lt Full Tracked Commercial Bulldozer is rigged on a 16-foot, type V airdrop platform with four G-11B cargo parachutes. The unrigged dozer weighs 18,080 pounds reduced to 17,440 pounds with the ROPS removed. It is 180 1/3 inches long. It is 97 inches wide and 108 inches high reduced to 77 inches with the ROPS removed and the back seat back lowered.

9-2. Preparing Platform

Prepare a 16-foot, type V airdrop platform as shown in Figure 9-1.

NOTES:

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



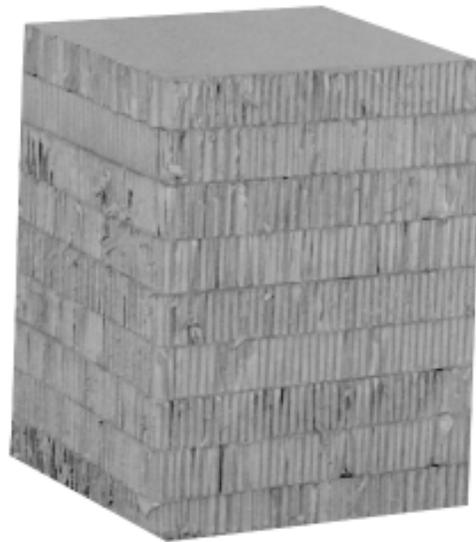
Step:

1. Inspect, or assemble and inspect, a 16-foot, type V airdrop platform as outlined in TM 10-1670-268-20&P/TO 13C7-52-22.
2. Install a tandem link to the front of each platform side rail using holes 1, 2, and 3.
3. Install a suspension link on bushings 6, 7, 8 for forward and 25, 26, and 27 for aft on each platform side rail.
4. Install a clevis on bushings 1, 2, and 3 on the tandem links.
5. Install a clevis on bushing 2 on the forward suspension links.
6. Install a clevis on bushing 3 on the aft suspension links.
7. Starting at the front of each platform side rail, install clevises on the bushings bolted on holes 5, 16, 17, 20, 21, 22, 23, 24, 29, and 32.
8. Starting at the front of the platform, number the clevises 1 through 15 on the right side and 1A through 15A on the left side.
9. Label the tiedown rings according to FM 10-500-2/TO 13C7-1-5.

Figure 9-1. Platform prepared

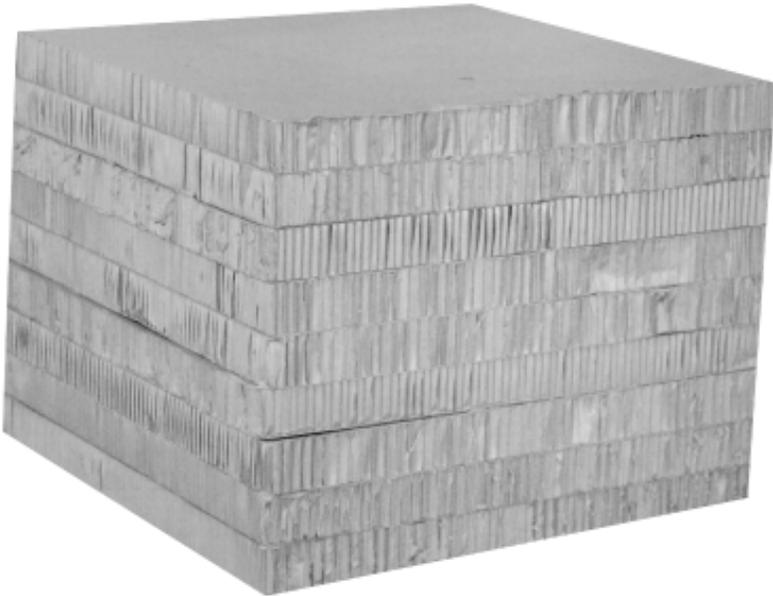
9-3. Building and Positioning Honeycomb Stacks

Build the honeycomb stacks as shown in Figures 9-2 through 9-6. Position the honeycomb stacks as shown in Figure 9-7.



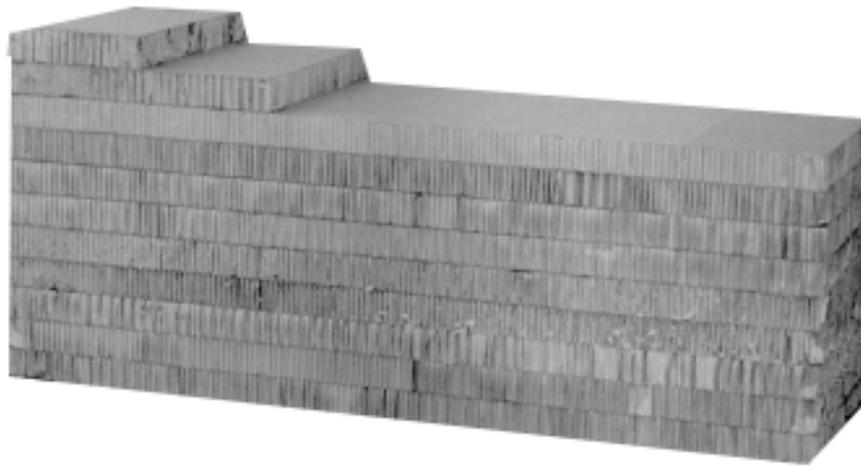
Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
1	9	21	21	Honeycomb	Glue the pieces together.

Figure 9-2. Honeycomb stack 1 prepared



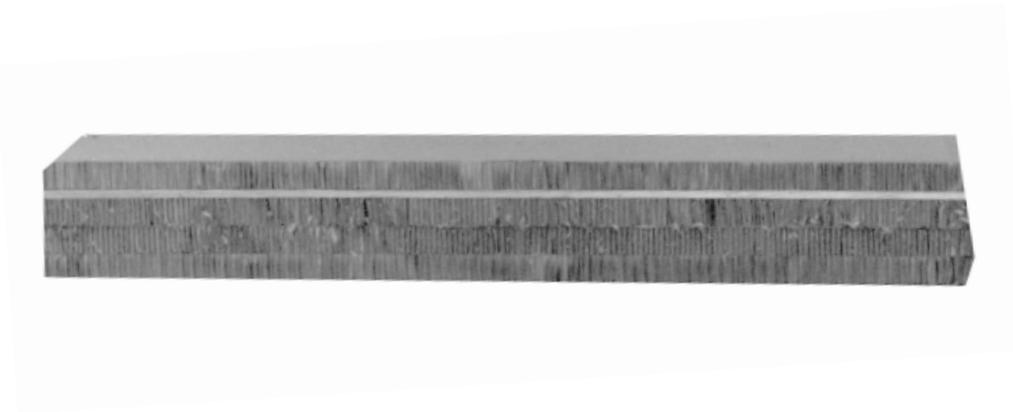
Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
2	9	36	36	Honeycomb	Glue the pieces together.

Figure 9-3. Honeycomb stack 2 prepared



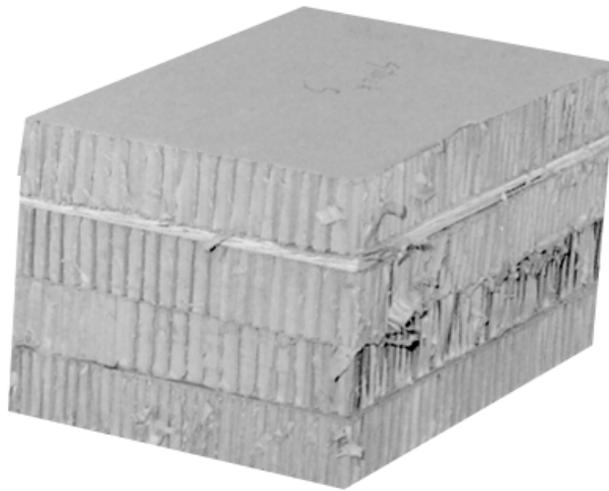
Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
3	9	28	76	Honeycomb	Glue to form the base. Glue to base flush with rear edge. Glue a 28-inch by 26-inch piece flush with rear edge.
	1	28	26	Honeycomb	
	1	28	13	Honeycomb	

Figure 9-4. Honeycomb stack 3 prepared



Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
4 and 5	3	18	96	Honeycomb 3/4-inch plywood Honeycomb	Glue to form the base.
	1	18	96		Glue to base.
	1	18	96		Glue to plywood.

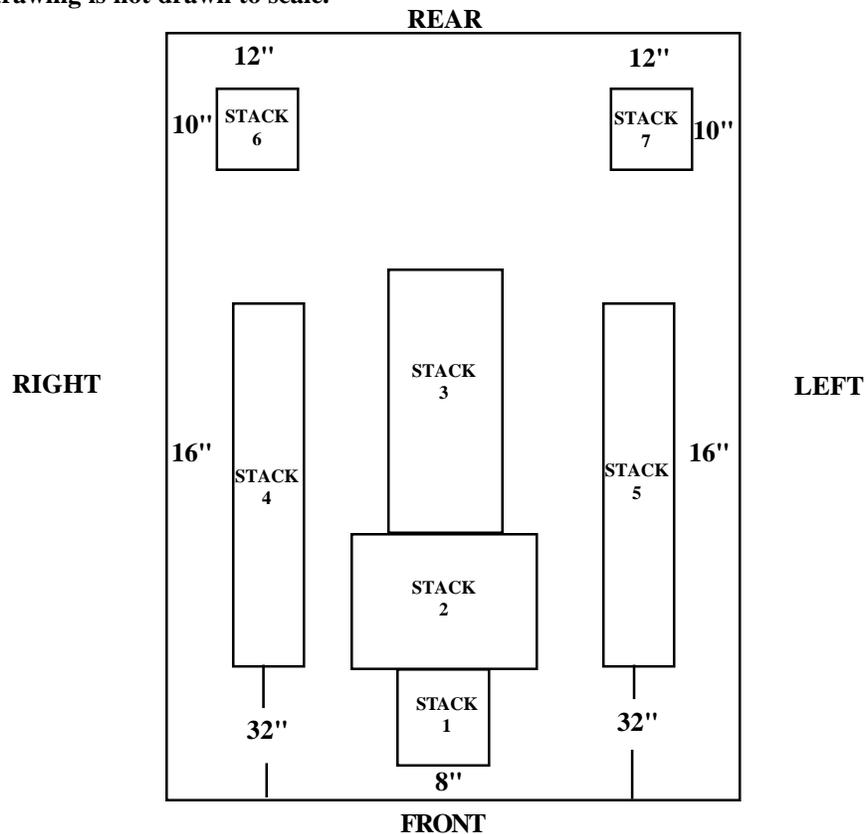
Figure 9-5. Honeycomb stacks 4 and 5 prepared



Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
6 and 7	3	24	15	Honeycomb 3/4-inch plywood Honeycomb	Glue to form the base.
	1	24	15		Glue to base.
	1	24	15		Glue to plywood.

Figure 9-6. Honeycomb stacks 6 and 7 prepared

NOTE: This drawing is not drawn to scale.



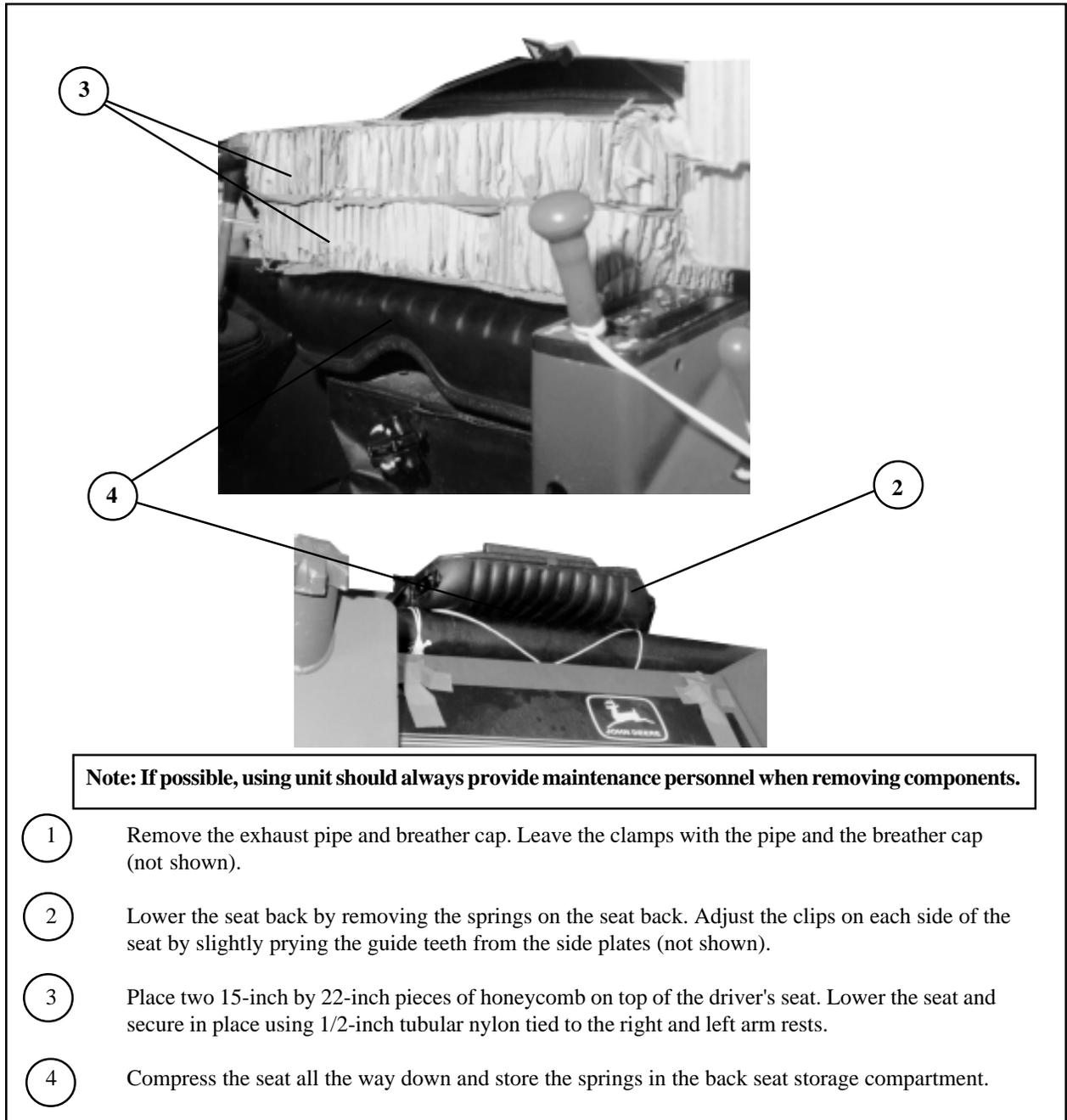
Step:

1. Position stack 1 centered and 8 inches from the front edge of the platform.
2. Position stack 2 centered and flush with the rear of stack 1.
3. Position stack 3 centered and flush with the rear of stack 2.
4. Position stacks 4 and 5 on each side of the platform 32 inches from the front edge of the platform and 16 inches from the sides of the platform.
5. Position stacks 6 and 7 on each side of the platform 12 inches from the rear edge of the platform and 10 inches from the sides of the platform.

Figure 9-7. Honeycomb stacks positioned on platform

9-4. Preparing Dozer

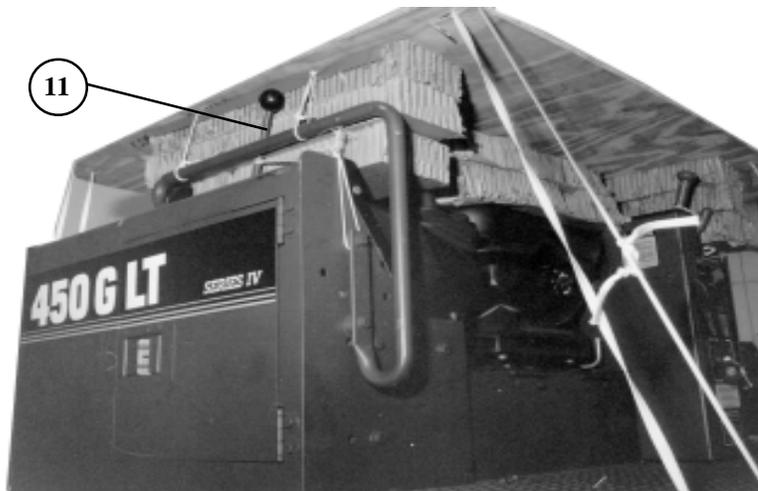
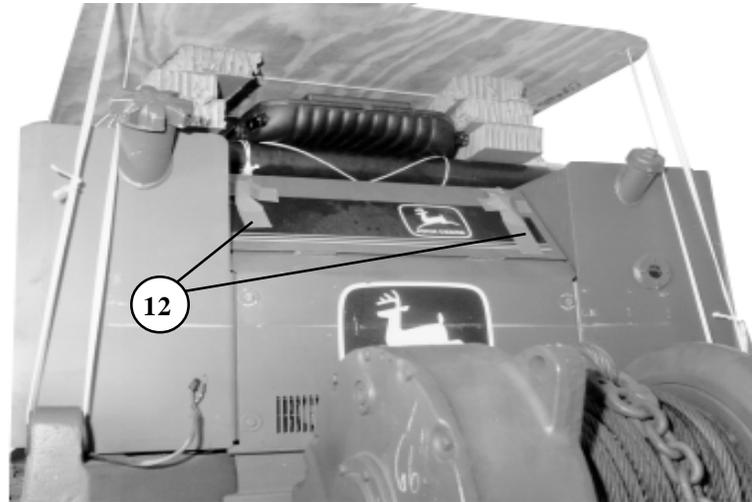
Prepare the dozer as shown in Figure 9-8.



Note: If possible, using unit should always provide maintenance personnel when removing components.

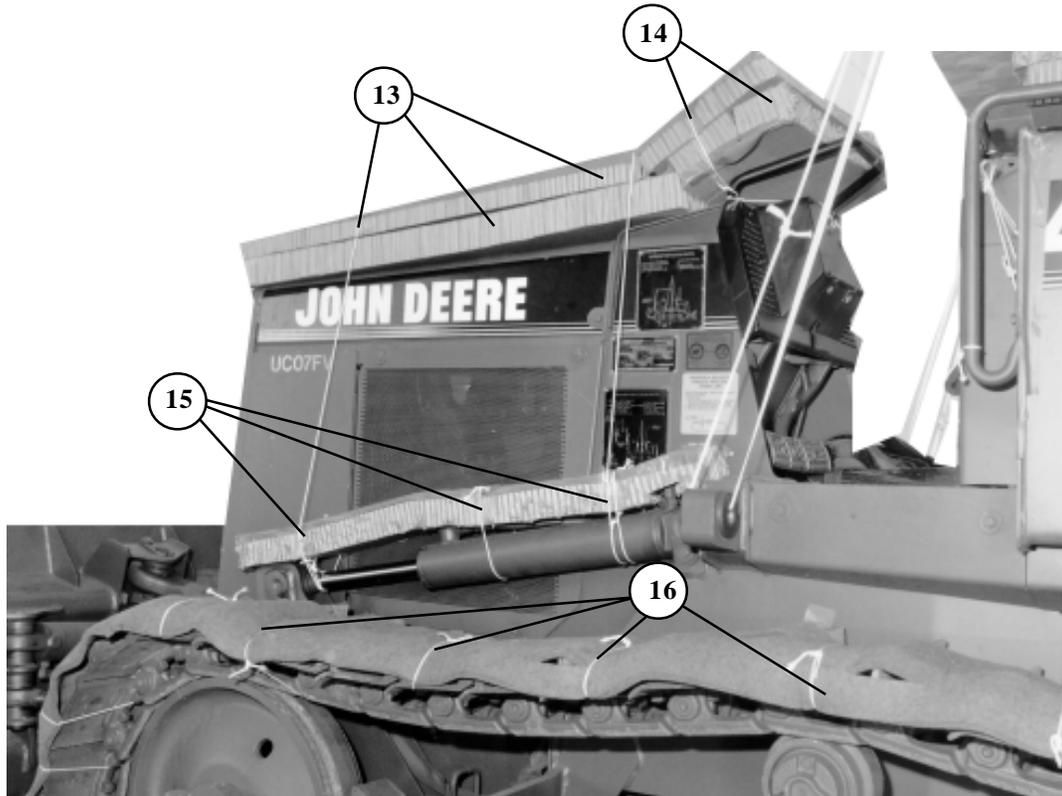
- 1 Remove the exhaust pipe and breather cap. Leave the clamps with the pipe and the breather cap (not shown).
- 2 Lower the seat back by removing the springs on the seat back. Adjust the clips on each side of the seat by slightly prying the guide teeth from the side plates (not shown).
- 3 Place two 15-inch by 22-inch pieces of honeycomb on top of the driver's seat. Lower the seat and secure in place using 1/2-inch tubular nylon tied to the right and left arm rests.
- 4 Compress the seat all the way down and store the springs in the back seat storage compartment.

Figure 9-8. Dozer prepared



- 10 Lay the exhaust pipe long ways behind the seat and secure in place with type III nylon cord (not shown).
- 11 Secure to a convenient point the winch control lever in the forward position with type III nylon cord.
- 12 Place a piece of honeycomb covering the floor in the storage compartment behind the seat. Pad the breather cap with cellulose wadding and place it on top of the honeycomb. Place the toolbox and all the other dozer accessories in the compartment. Use honeycomb filler to hold the equipment in place. Close the door and tape the latches.

Figure 9-8. Dozer prepared (continued)

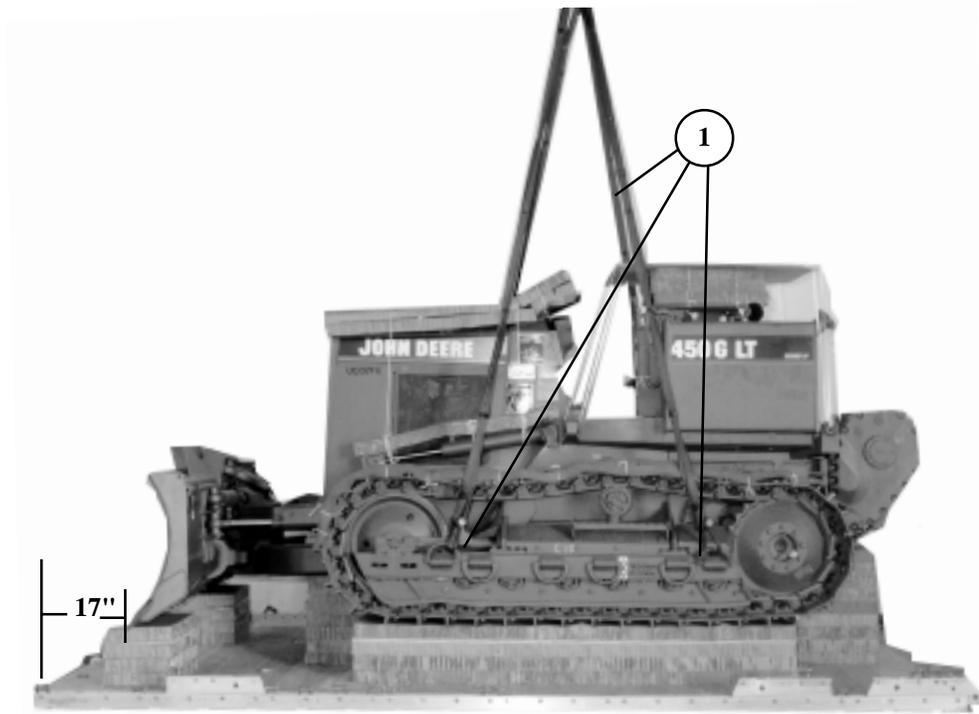


- 13 Cut two 28-inch by 60-inch pieces of honeycomb to cover the engine compartment. Cut holes for the breather and exhaust pipe openings in the bottom layer of honeycomb. Place the honeycomb on the dozer and secure it to a convenient point with type III nylon cord.
- 14 Cut two 28-inch by 12-inch pieces of honeycomb. Place them next to the 28-inch by 60-inch pieces and secure them to a convenient point with type III nylon cord.
- 15 Cut two 6-inch by 48-inch pieces of honeycomb. Place one piece on each hydraulic arm and secure in place to a convenient point with type III nylon cord.
- 16 Cover the top half of the track with 1/2-inch felt and secure the felt to the track with type III nylon cord.

Figure 9-8. Dozer prepared (continued)

9-5. Lifting and Positioning Dozer

Lift and position the dozer as shown in Figure 9-9.



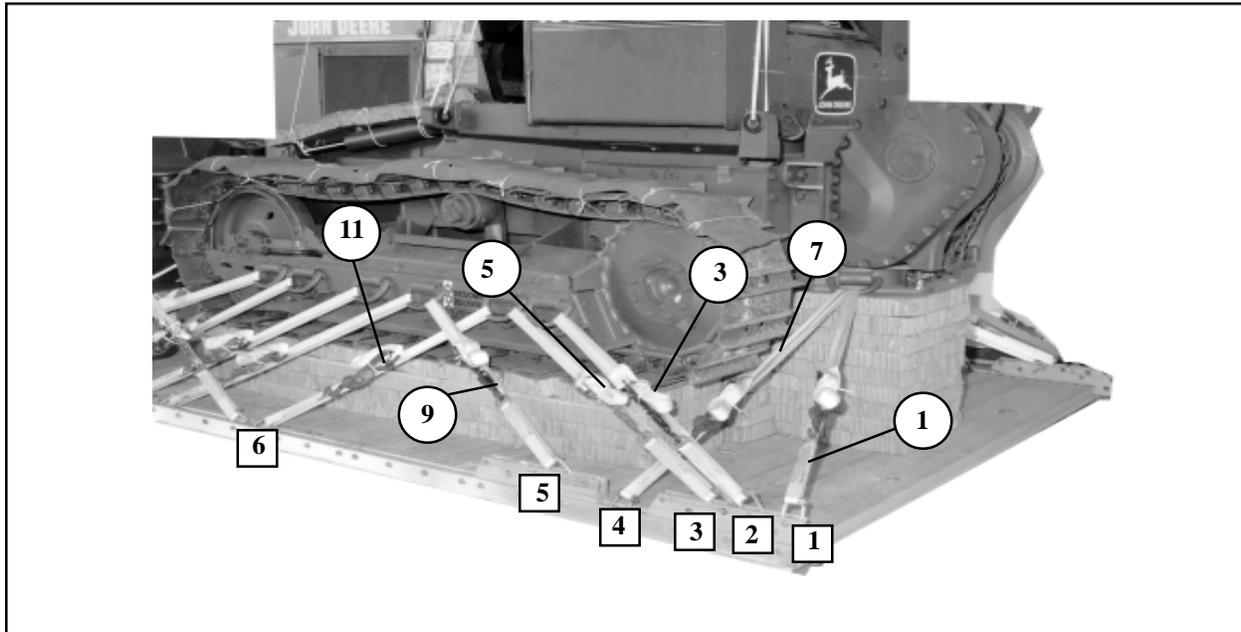
Note: The 17-inch measurement will be taken from the blade base. Place a line on top of stacks 6 and 7, 17 inches from the rear of the platform prior to positioning the dozer.

- ① Attach a 12-foot (4-loop), type XXVI nylon sling to points 2 and 7 on both the right and left sides of the dozer with large clevises.
- ② Position the dozer centered on the platform with the bottom of the blade 17 inches from the rear edge of the platform.
- ③ Remove the slings.

Figure 9-9. Dozer lifted and positioned on platform

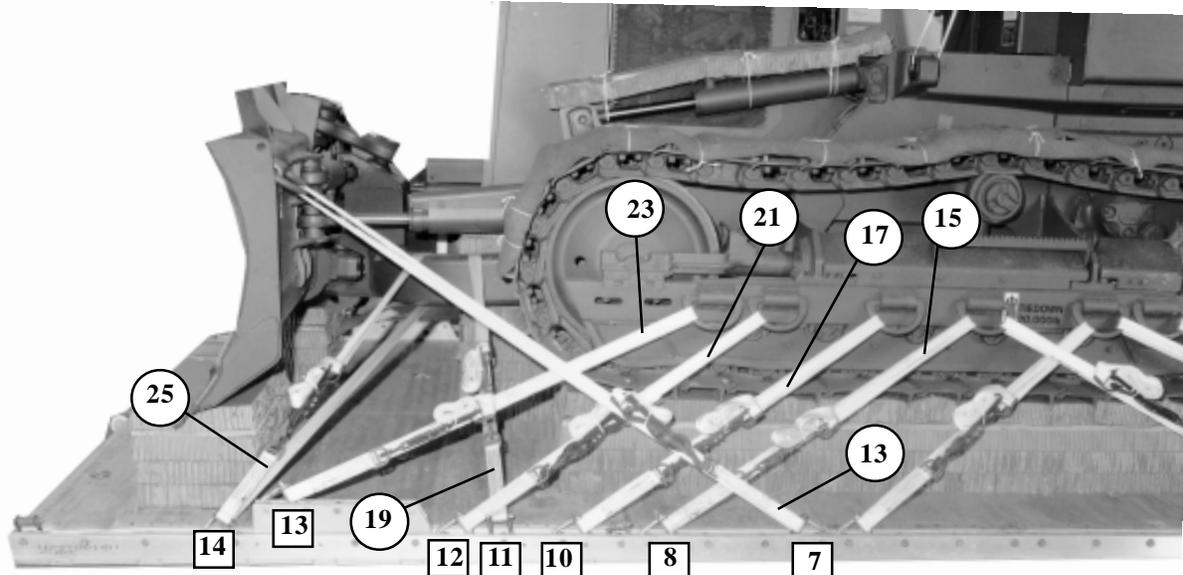
9-6. Lashing Load to Platform

Lash the load to the platform as shown in Figure 9-10.



Lashing Number	Tiedown Clevis Number	Instructions
1	1	Pass lashing: To tiedown point 8, left side.
2	1A	To tiedown point 8, right side.
3	2	To tiedown point 7, left side.
4	2A	To tiedown point 7, right side.
5	3	To tiedown point 6, left side.
6	3A	To tiedown point 6, right side.
7	4	To tiedown point 8, left side.
8	4A	To tiedown point 8, right side.
9	5	To tiedown point 5, left side.
10	5A	To tiedown point 5, right side.
11	6	To tiedown point 6, left side.
12	6A	To tiedown point 6, right side.

Figure 9-10. Load lashed to platform

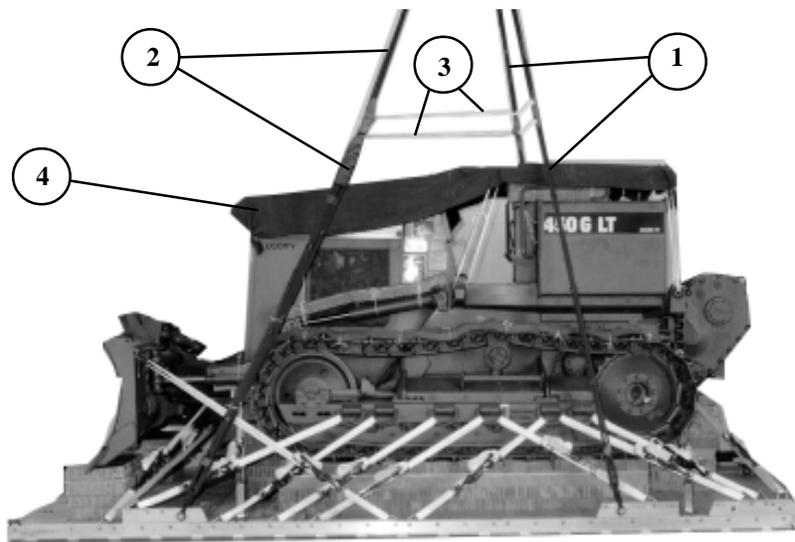


Lashing Number	Tiedown Clevis Number	Instructions
		Pass lashing:
13	7	To tiedown point 1, left side.
14	7A	To tiedown point 1, right side.
15	8	To tiedown point 5, left side.
16	8A	To tiedown point 5, right side.
17	10	To tiedown point 4, left side.
18	10A	To tiedown point 4, right side.
19	11	Around yoke of blade support, left side.
20	11A	Around yoke of blade support, right side.
21	12	To tiedown point 3, left side.
22	12A	To tiedown point 3, right side.
23	13	To tiedown point 2, left side.
24	13A	To tiedown point 2, right side.
25	14	Around yoke of blade support, left side.
26	14A	Around yoke of blade support, right side.

Figure 9-10. Load lashed to platform (continued)

9-7. Installing Suspension Slings, Deadman's Tie and Load Cover

Install the suspension slings, deadman's tie and the load cover as shown in Figure 9-11.

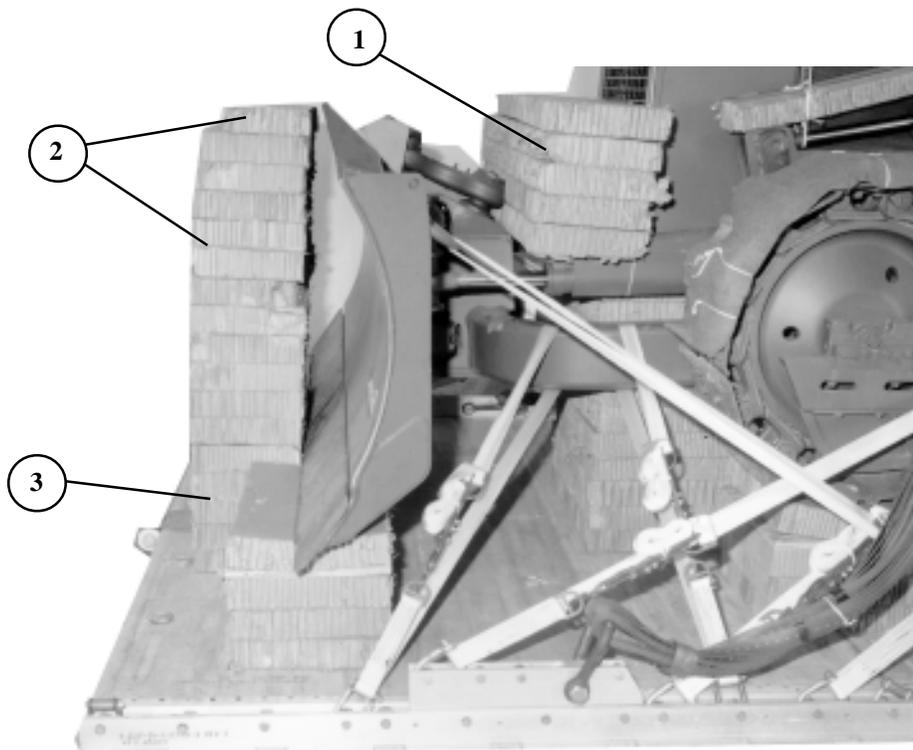


- ① Attach a 16-foot (4-loop), type XXVI nylon suspension sling to a large clevis and attach that to each front suspension link.
- ② Run both ends of a 16-foot (4-loop), type XXVI nylon suspension sling through a large clevis and attach that to each rear suspension link. Join the ends of each sling together with a 3 3/4-inch link and a 9-foot (4-loop), type XXVI suspension sling. Pad each 3 3/4-inch link.
- ③ Raise the slings and install the deadman's tie according to FM 10-500-2/TO 13C7-1-5.
- ④ Place a 60-inch by 120-inch piece of canvas over the top of the dozer as a load cover and secure the cover in place with type III nylon cord to a convenient point.

Figure 9-11. Suspension slings, deadman's tie and load cover installed

9-8. Building and Positioning Parachute Stowage Platform Support Stacks

Build and position two parachute stowage platform support stacks as shown in Figure 9-12.



- ① Cut and glue five 12-inch by 48-inch pieces of honeycomb together and place the stack on top of the blade support arms. Crush the bottom piece down to level the stack out.
- ② Cut and glue sixteen 12-inch by 36-inch pieces of honeycomb together. Cut and glue a 9-inch by 36-inch piece of honeycomb on top.
- ③ Position the honeycomb stack between stacks 6 and 7, flush with the blade. The top outside edge of the top piece of honeycomb on the stack will be to the front of the load.

Figure 9-12. Parachute stowage platform support stacks built and positioned

9-9. Building Parachute Stowage Platform

Build a parachute stowage platform as shown in Figure 9-13.

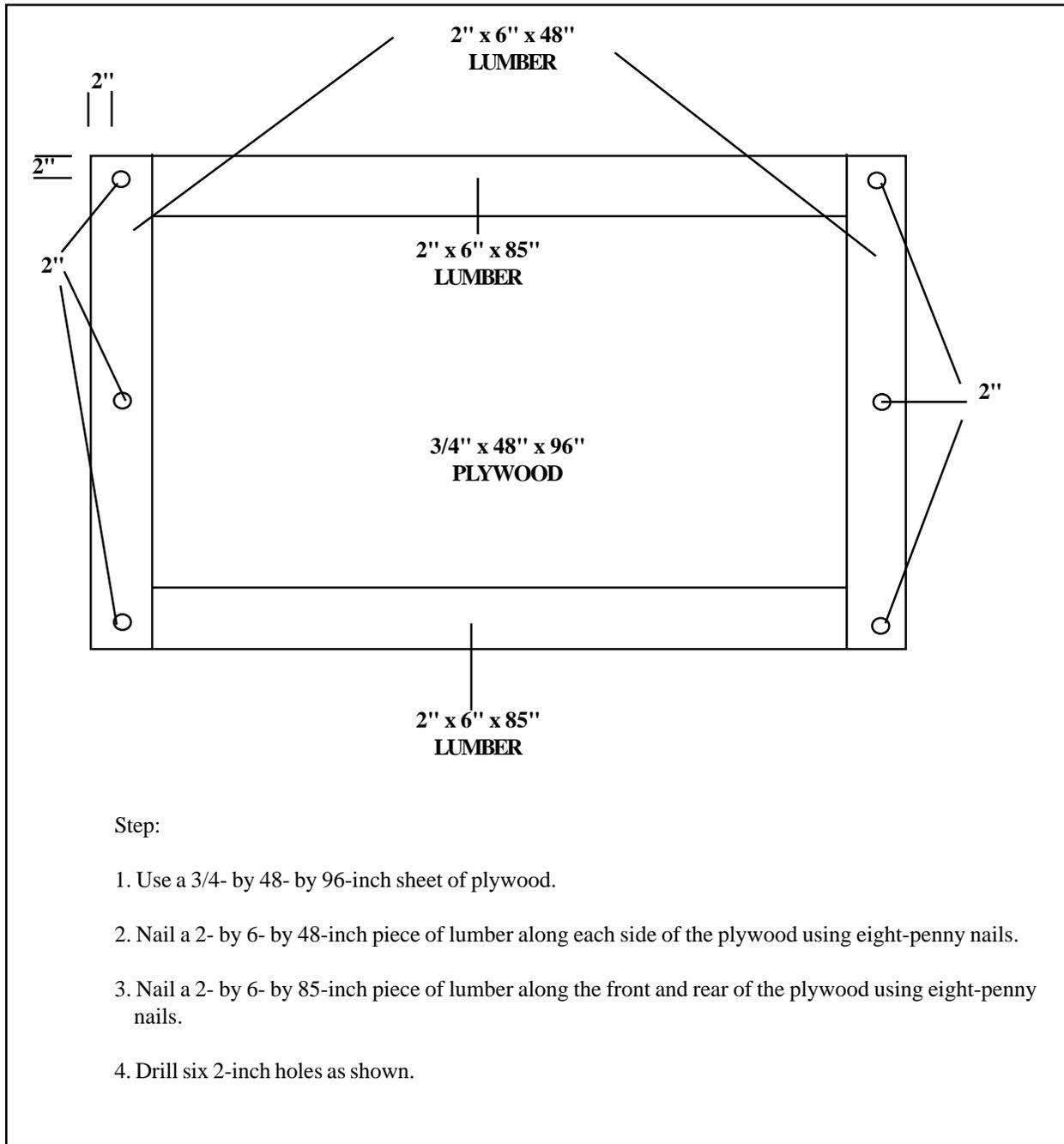
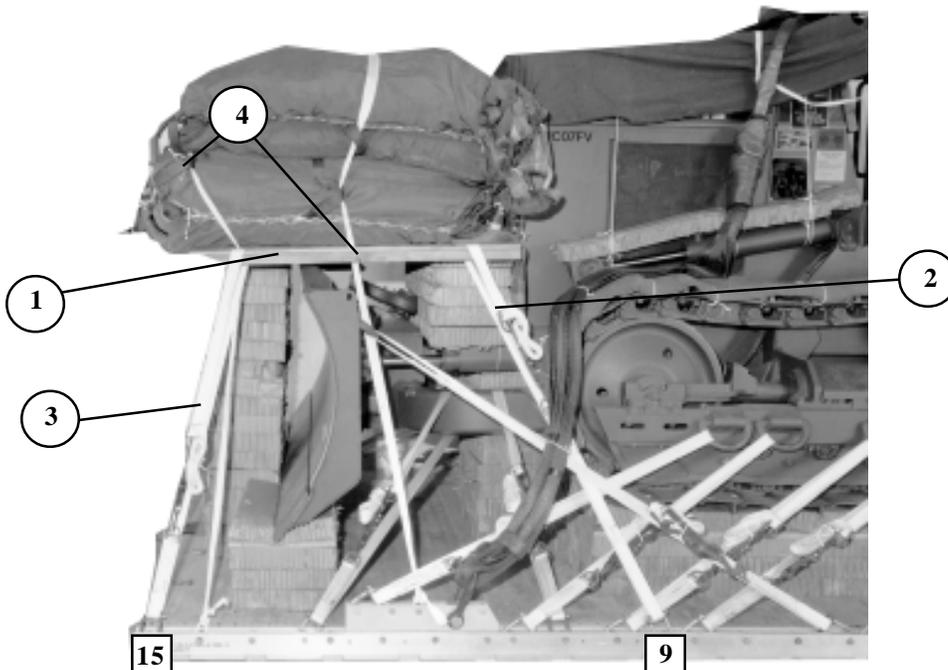


Figure 9-13. Parachute stowage platform built

9-10. Installing Parachute Stowage Platform, Preparing and Stowing Cargo Parachutes

Install the parachute stowage platform on top of the support stacks.
Prepare and stow the cargo parachutes as shown in Figure 9-14.



- ① Set the stowage platform on the two stacks of honeycomb.
- ② Run a 15-foot tiedown strap through clevis 9, up through the forward hole of the stowage platform. Bind the strap with a D-ring and a load binder. Lash the left side using clevis 9A.
- ③ Run a 15-foot tiedown strap through clevis 15, up through the rear hole of the stowage platform. Bind the strap with a D-ring and a load binder. Lash the left side using clevis 15A.
- ④ Prepare, stow and restrain four G-11B cargo parachutes according to FM 10-500-2/TO 13C7-1-5. Restrain the parachutes through the center holes of the stowage platform using bushing 2 on the rear suspension link on both sides of the platform and through the rear holes of the stowage platform using platform bushing 32 on both sides of the platform.

Figure 9-14. Parachute stowage platform installed and cargo parachutes prepared and stowed

9-11. Installing Extraction System

Install the EFTC as shown in Figure 9-15.

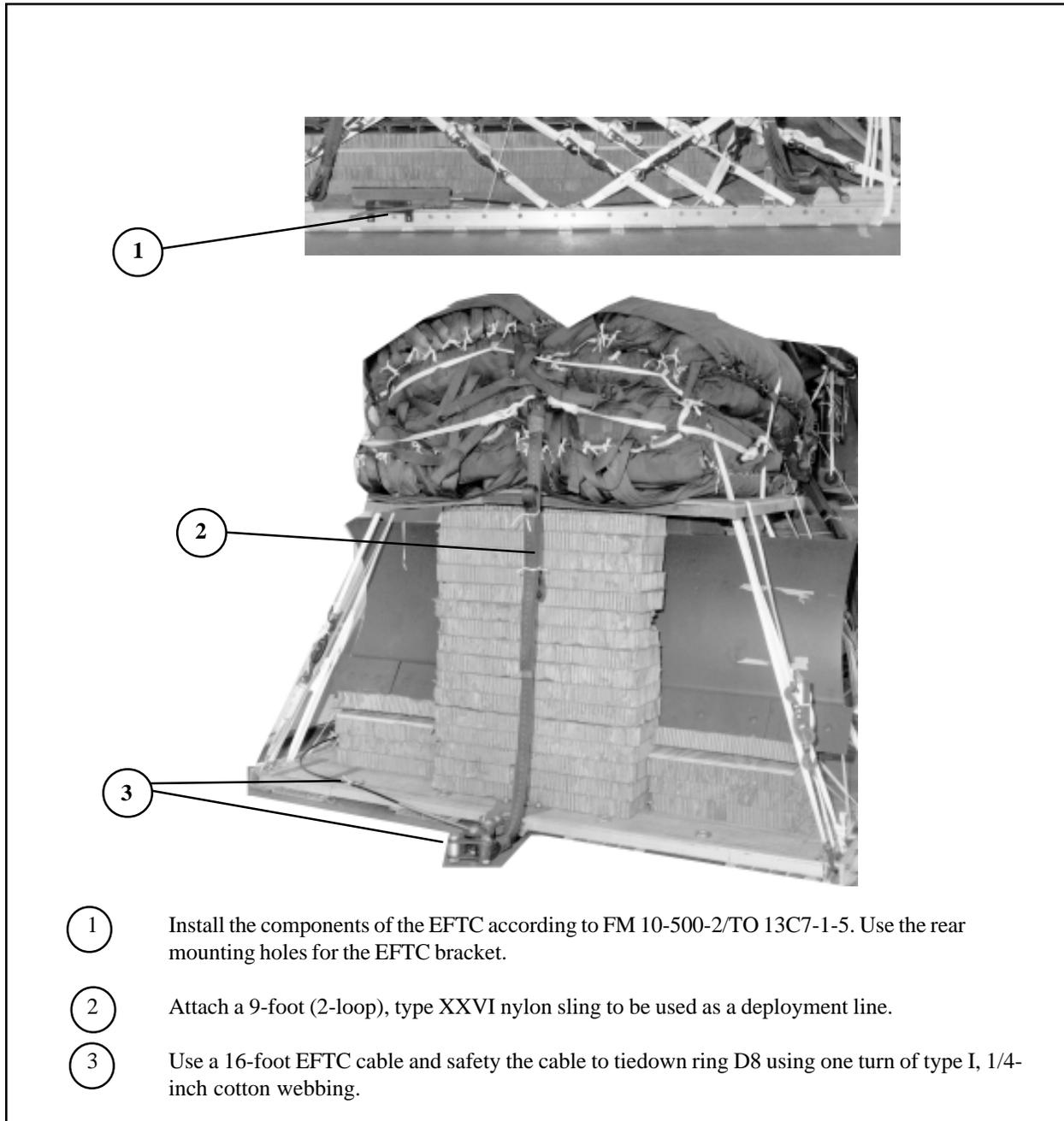


Figure 9-15. Extraction system installed

9-12. Installing Parachute Release

Prepare, attach, and safety an M-2 release according to FM 10-500-2/TO 13C7-1-5 and as shown in Figure 9-16.

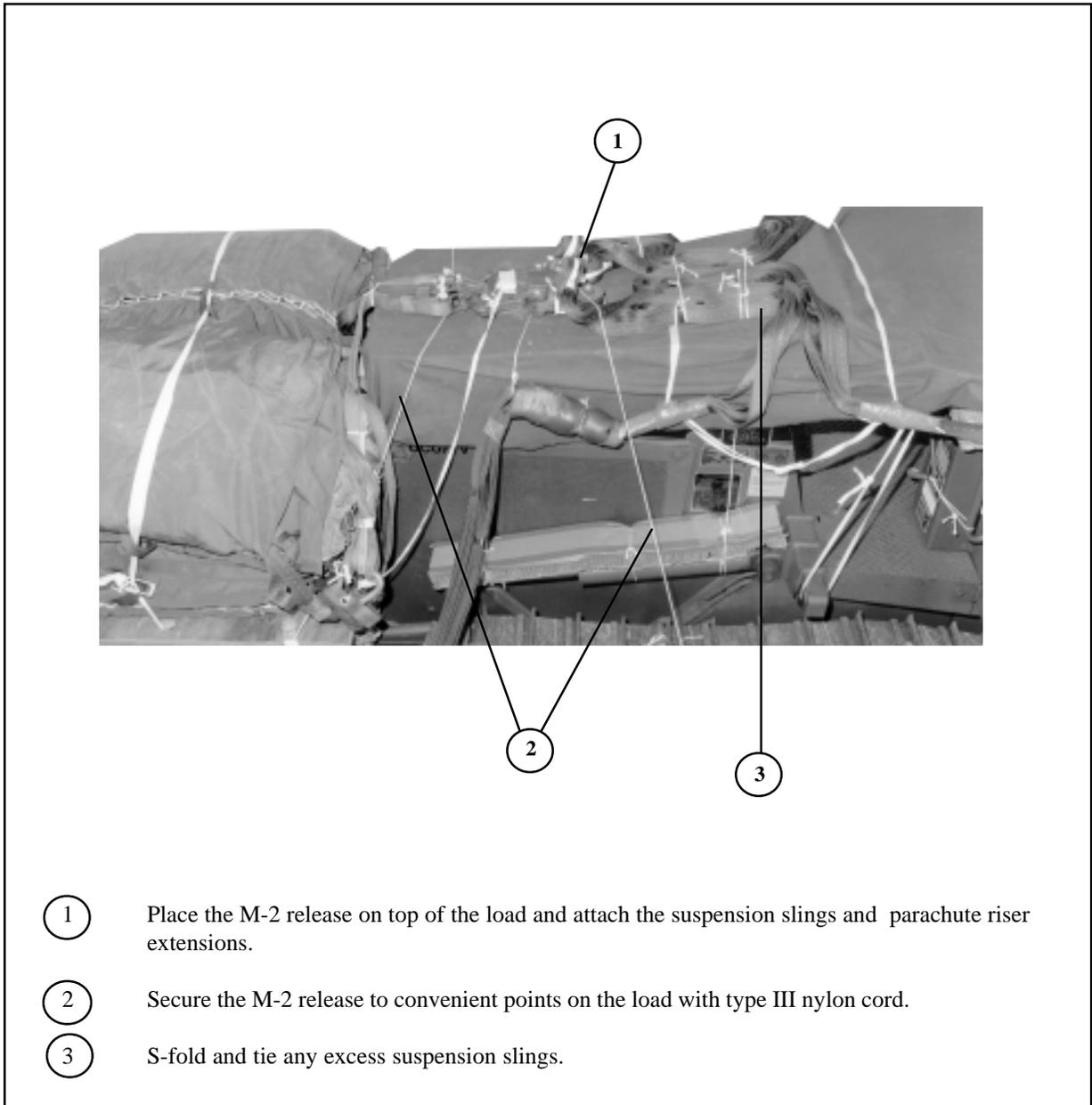


Figure 9-16. M-2 cargo parachute release installed

9-13. Placing Extraction Parachute

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

9-14. Installing Provisions for Emergency Restraints

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

9-15. Marking Rigged Load

Mark the rigged load according to FM 10-500-2/TO 13C7-1-5 and as shown in Figure 9-17. Complete Shipper's Declaration for Dangerous Goods and affix to load. If the load varies from the one shown, the weight, height, CB, tip off curve, and parachute requirements must be recomputed.

9-16. Equipment Required

Use the equipment listed in Table 9-1 to rig the load shown in Figure 9-17.

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



RIGGED LOAD DATA

Weight.....20,960 pounds

Height.....94 inches

Width.....108 inches

Length.....214 inches

Overhang: Front.....5 inches

Rear.....17 inches

Center of Balance (CB)
(from front edge of the platform).....84 inches

Extraction System.....EFTC

Figure 9-17. John Deere 450G Lt full-tracked bulldozer rigged on a 16-foot type V platform for low-velocity airdrop

Table 9-1. Equipment required for rigging the John Deere 450G Lt full-tracked commercial bulldozer on a 16-foot, type V airdrop platform for low-velocity airdrop

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive, paste, 1-gal.	As required
4030-00-090-5354	Clevis, suspension, 1-in (large)	4
8305-00-242-3593	Cloth, cotton duck, 60-in.	As required
4020-00-240-2146	Cord, nylon, type III, 550-lb.	As required
1670-00-434-5785	Coupling, airdrop extraction force transfer cable, 16-ft	1
	Cover:	
1670-00-360-0328	Clevis, large	1
1670-00-360-0329	Link, type IV	1
8305-00-958-3685	Felt, 1/2-in thick	As required
1670-01-183-2678	Leaf, extraction line (line bag)	2
	Line extraction:	
1670-01-062-6313	60-ft (3-loop), type XXVI (for C-130)	1
1670-01-107-7651	140-ft (3-loop), type XXVI (for C-141,C-5 or C-17)	1
1670-01-064-4452	60-ft (1-loop), type XXVI with towplate link (for C-17)	1
1670-00-783-5988	Link assembly, type IV	1
1670-00-753-3928	Pad, energy-dissipating, (honeycomb), 3- by 36- by 96-in:	22 sheets
	6- by 26-in	(6)
	12- by 36-in	(16)
	12- by 48-in	(5)
	15- by 22-in	(2)
	18- by 96-in	(8)
	21- by 21-in	(9)
	24- by 15-in	(8)
	28- by 12-in	(2)
	28- by 76-in	(9)
	36- by 36-in	(9)
	Parachute, cargo	
1670-01-016-7841	G-11B	4
	Parachute, cargo extraction	
1670-00-040-8135	28-ft	1
1670-01-063-3715	15-ft drogue (for C-17)	1
	Platform, airdrop, type V,16-ft:	
1670-01-162-2372	Clevis, assembly (type V)	(30)
1670-01-162-2376	Extraction bracket assembly	(1)
1670-01-162-2381	Tandem link assembly (Multipurpose link)	(4)
	Platform, stowage:	
5510-00-220-6148	Lumber, 2- by 6- by:	
	48-in	(2)
	85-in	(2)
5530-00-128-4981	Plywood, 3/4-in:	4 sheets
	18- by 96-in	2
	24- by 15-in	2

Table 9-1. Equipment required for rigging the John Deere 450G Lt full-tracked commercial bulldozer on a 16-foot, type V airdrop platform for low-velocity airdrop (continued)

National Stock Number	Item	Quantity
1670-01-097-8817	Release, cargo parachute, M-2	1
	Sling, cargo, airdrop:	
1670-01-062-6304	9-ft (2-loop), type XXVI	1
1670-01-062-6305	9-ft (4-loop), type XXVI	2
1670-01-062-6307	12-ft (4-loop), type XXVI	4
5340-01-062-6308	16-ft (4-loop), type XXVI	4
1670-00-040-8219	Strap, parachute release with fastener and knife	2
7501-00-266-5016	Tape, adhesive, 2-in	As required
1670-00-937-0271	Tiedown assembly, 15-ft	30
	Webbing:	
8305-00-268-2411	Cotton, 1/4-inch, type I	As required
8305-00-082-5752	Nylon, tubular 1/2-in	As required