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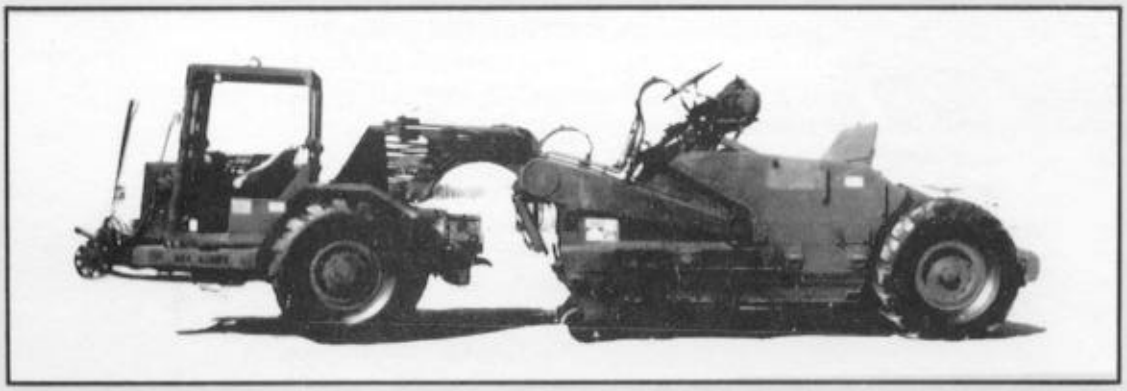
AIRDROP OF SUPPLIES AND EQUIPMENT:

RIGGING THE 613S SCRAPERS



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FIELD MANUAL
NO 10-576
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Washington, DC, 21 August 1987

AIRDROP OF SUPPLIES AND EQUIPMENT:
RIGGING THE 613S SCRAPERS

TABLE OF CONTENTS

		Paragraph	Page
PREFACE			iii
CHAPTER 1	INTRODUCTION		
	Description of Items	1-1	1-1
	Special Considerations	1-2	1-1
CHAPTER 2	RIGGING 613S, TYPE I AND II SCRAPERS FOR LOW-VELOCITY AIRDROP		
		2-1	2-1
		2-2	2-1
		2-3	2-5
		2-4	2-8
		2-5	2-14
		2-6	2-17
		2-7	2-36
		2-8	2-40
		2-9	2-46
		2-10	2-50
		2-11	2-52
		2-12	2-59
		2-13	2-60
		2-14	2-62
		2-15	2-62

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		Paragraph	Page
	[redacted]	2-16	2-63
		2-17	2-64
CHAPTER 3	RIGGING 613S, TYPE I AND II SCRAPERS ON A TYPE V PLATFORM		
Section I	LOW-VELOCITY AIRDROP		
	Description of Load	3-1	3-1
	Preparing Platform	3-2	3-2
	Preparing Honeycomb Stacks	3-3	3-4
	Building Load Spreaders and Supports	3-4	3-7
	Positioning Honeycomb Stacks, Belly Pan Load Spreader, and Nylon Webbing	3-5	3-13
	Preparing Scraper	3-6	3-16
	Installing Lifting Slings and Positioning Scraper	3-7	3-35
	Lashing Scraper	3-8	3-39
	Installing and Safetying Suspension Slings	3-9	3-44
	Installing Parachute Release Platform and Load Cover	3-10	3-48
	Building and Installing Parachute Stowage Platform	3-11	3-51
	Stowing Cargo Parachutes	3-12	3-54
	Installing Extraction System	3-13	3-55
	Installing Release Assembly	3-14	3-57
	Placing Extraction Parachutes	3-15	3-58
	Installing Provisions for Emergency Restraints	3-16	3-58
	Marking Rigged Load	3-17	3-59
	Equipment Required	3-18	3-60
Section II	LAPE AIRDROP		
	[redacted]	3-19	3-62
		3-20	3-62
		3-21	3-64
		3-22	3-64
		3-23	3-67
		3-24	3-68
		3-25	3-69
		3-26	3-74
		3-27	3-84
		3-28	3-84
		3-29	3-85
GLOSSARY			Glossary-1
REFERENCES			References-1

PREFACE

SCOPE

This manual tells and shows how to rig the 613SNS, type I (nonsectionalized) scraper and the 613S, type II (sectionalized) scraper for low-velocity airdrop from the C-130 and C-141 aircraft and for LAPE airdrop from a C-130 aircraft. This manual is designed for use by all parachute riggers.

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CHAPTER 1

INTRODUCTION

1-1. Description of Items

The description of the items rigged in this manual are given below.

a. **The 613SNS, Type I Scraper.** The unrigged 613SNS, type I scraper (NSN 3805-01-144-2992) (Figure 1-1) or rebuy (NSN 3805-01-267-4178) with the fuel tank full weighs 33,000 pounds. The fuel tank must be at least 1/2 full. The length of the scraper is 405 inches, reducible to 393 inches. Its height is 121 inches, reducible to 91 inches. The width of the scraper is 104 3/4 inches.

b. **The 613SS, Type II Scraper.** The unrigged 613SS, type II scraper (NSN 3805-01-144-8837) or rebuy (NSN 3805-01-267-4177) with the fuel tank full weighs 34,645 pounds. The fuel tank must be at least 1/2 full. The length of the scraper is 436 inches, reducible to 393 inches. Its height is 121 inches, reducible to 91 inches. The width of the scraper is 104 3/4 inches.

1-2. Special Considerations

Special considerations for this manual are given below.

CAUTION: Rigging of the 613S scrapers for airdrop is critical. Deviation from the rigging procedures and materials covered by this manual may result in Air Force rejection of the load.

a. The loads covered in this manual may include hazardous materials as defined in AFR 71-4/TM 38-250. If included, the hazardous material must be packaged, marked, and labeled as required by AFR 71-4/TM 38-250.

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

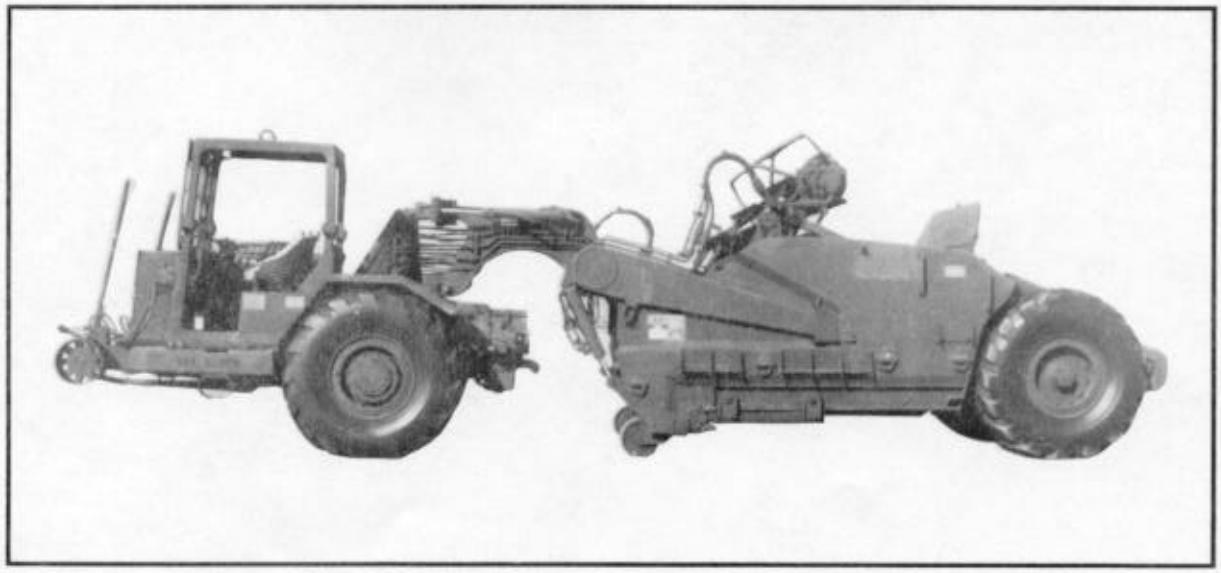


Figure 1-1. The unrigged 613S, type I scraper with IAT kit installed

CHAPTER 3

RIGGING 613S, TYPE I AND II SCRAPERS ON A TYPE V PLATFORM

Section I. LOW-VELOCITY AIRDROP

3-1. Description of Load

The 613S, type I and II scrapers are rigged on a 32-foot, type V airdrop platform for low-velocity airdrop from C-130 and C-141 aircraft. The scraper is rigged with eight G-11B cargo parachutes and other items of airdrop equipment, to include a modified M-2 release.

The type I and II scrapers are rigged the same, except where noted.

CAUTION: These loads may be airdropped from C-141 aircraft only if the rigged weight is 38,500 pounds or less.

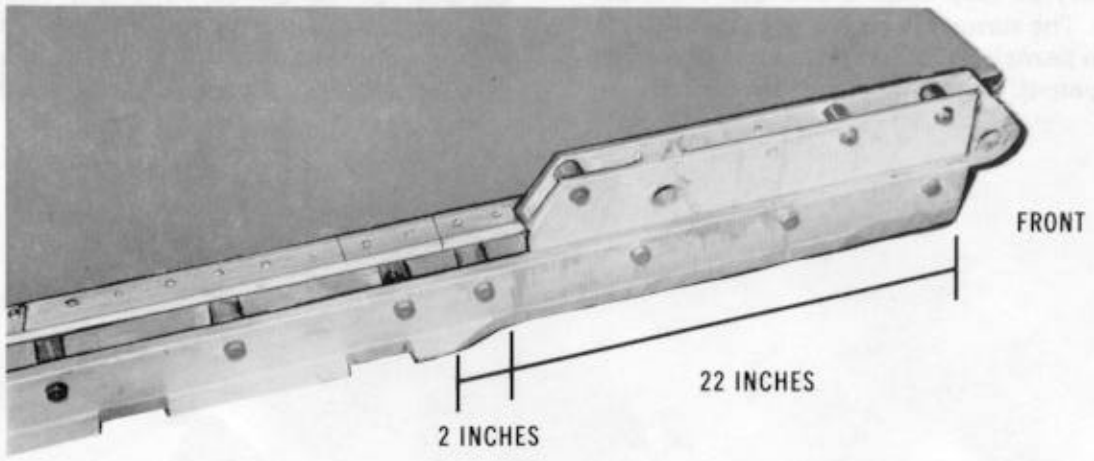
3-2. Preparing Platform

Prepare a 32-foot, type V airdrop platform as shown in Figure 3-1.

CAUTION: The 32-foot, type V airdrop platform must be modified as shown in Figure 3-1.

Notes:

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



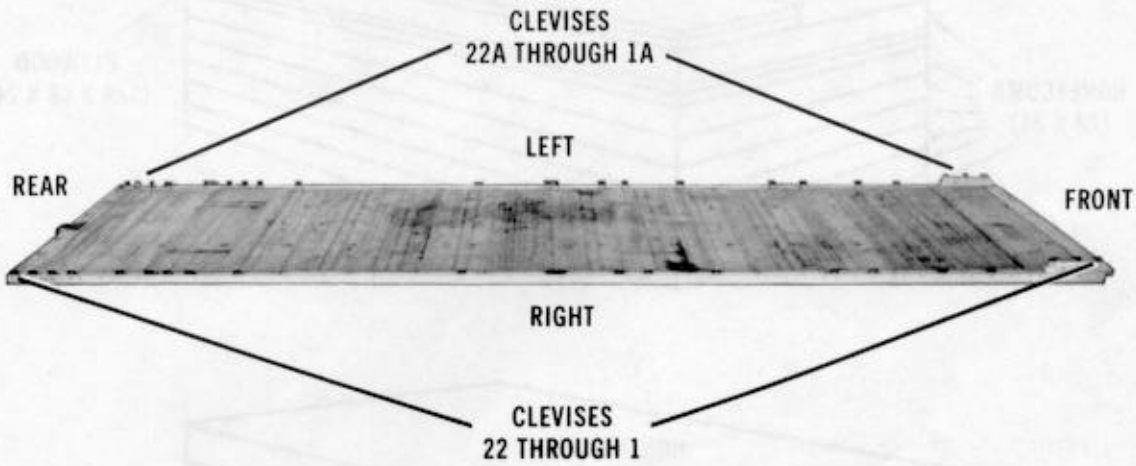
Step:

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

Note: If the rail has not been modified, use the following modification procedures in steps 2 and 3:

2. Cut off the indent locks 22 inches from the front of the platform, even with the platform side rails. Taper the cut 2 inches to the edge of the third indent block.
3. Drill a set of EFTC bracket holes in the left rail. Drill the first .406-inch-diameter hole 120 inches on center from the front edge of the rail and 1 1/8 inches on center from the top of the rail. Drill the second hole 7 1/4 inches on center from the first hole and 1 1/8 inches from the top of the rail.

Figure 3-1. Platform prepared



Step:

4. Install a tandem link on the front of each rail. Bolt clevises to bushings 1, 3, and 4 on each tandem link.
5. Starting at the front of each platform side rail, install clevises on each platform side rail using the bushings bolted on holes 7, 10, 14, 16, 23, 27, 29, 32, 33, 38, 51, 54, 55, 56, 58, 61, 62, 63, and 64. Turn the clevises on bushings 58, 61, and 63 upside down.
6. Starting at the front of the platform, number the clevises bolted to the right side from 1 through 22 and those bolted to the left side from 1A through 22A.

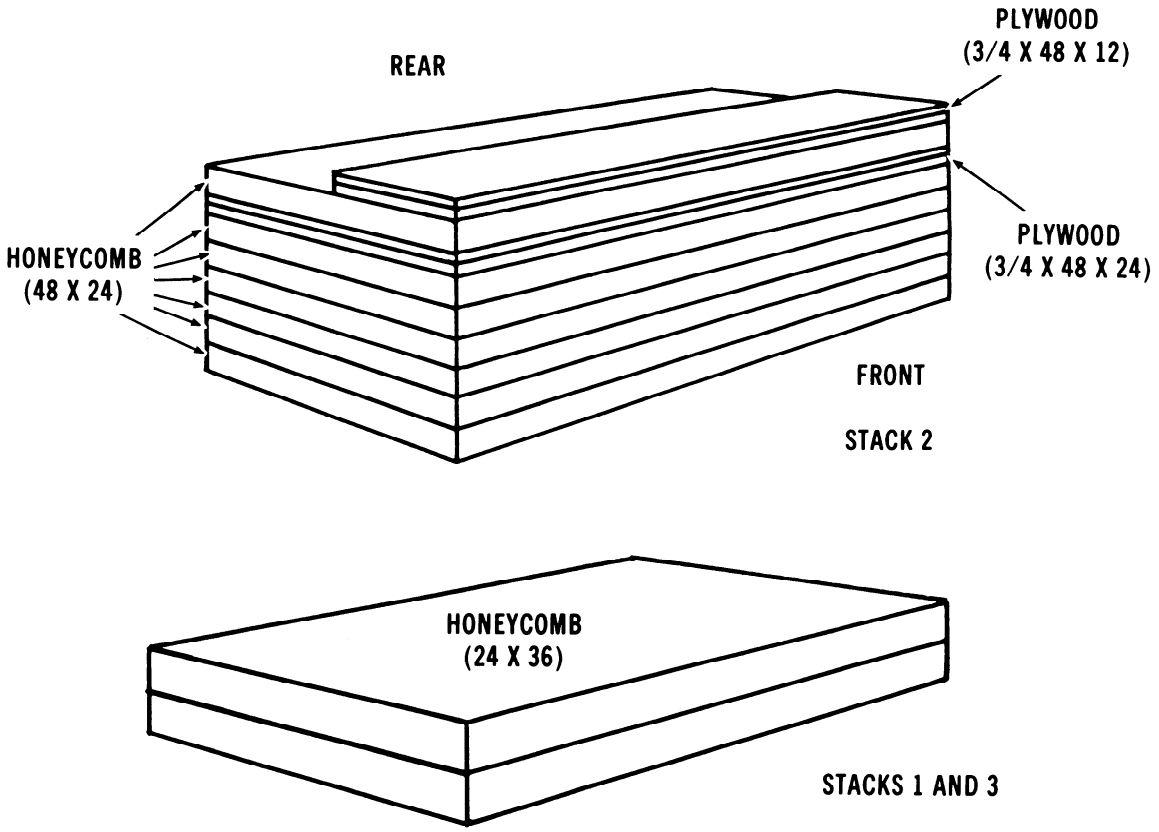
Figure 3-1. Platform prepared (continued)

3-3. Preparing Honeycomb Stacks

Prepare the honeycomb stacks as shown in Figures 3-2, 3-3, and 3-4.

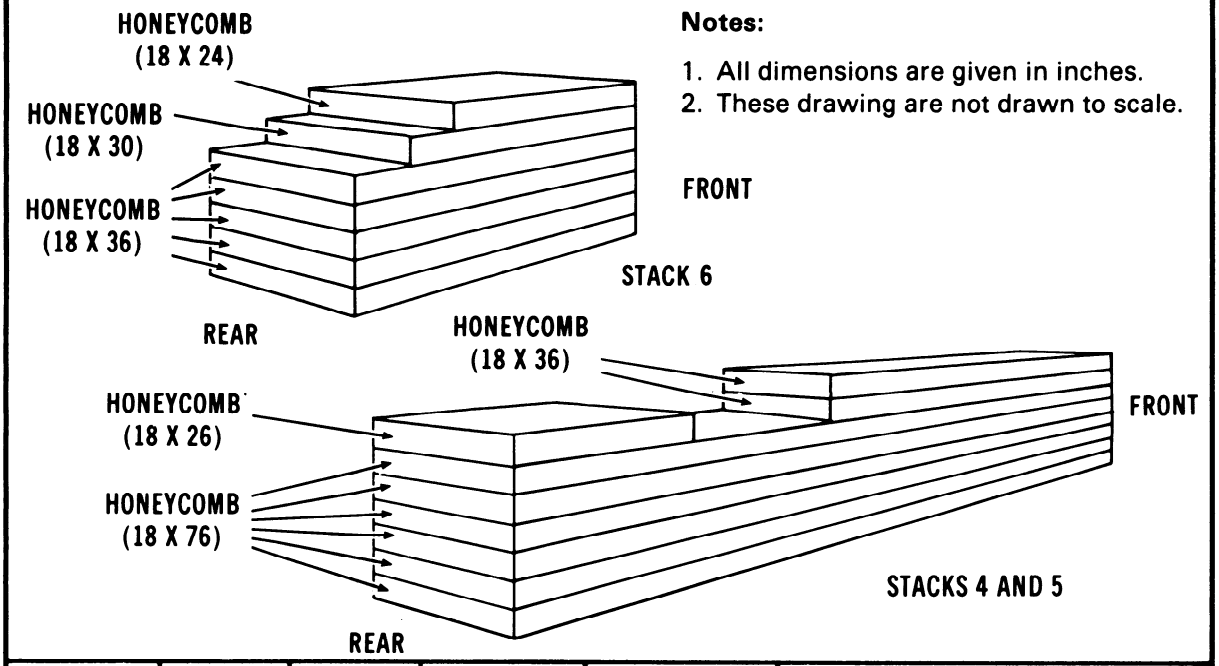
Notes:

1. All dimensions are given in inches.
2. These drawings are not drawn to scale.



Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
1	2	24	36	Honeycomb	Form stack.
2	7	48	24	Honeycomb	Form base.
	2	48	24	3/4-inch plywood	Place plywood between layers 6 and 7 of base.
	2	48	12	3/4-inch plywood	Place plywood flush with front edge of honeycomb.
3	2	24	36	Honeycomb	Form stack.

Figure 3-2. Honeycomb stacks 1, 2, and 3 prepared

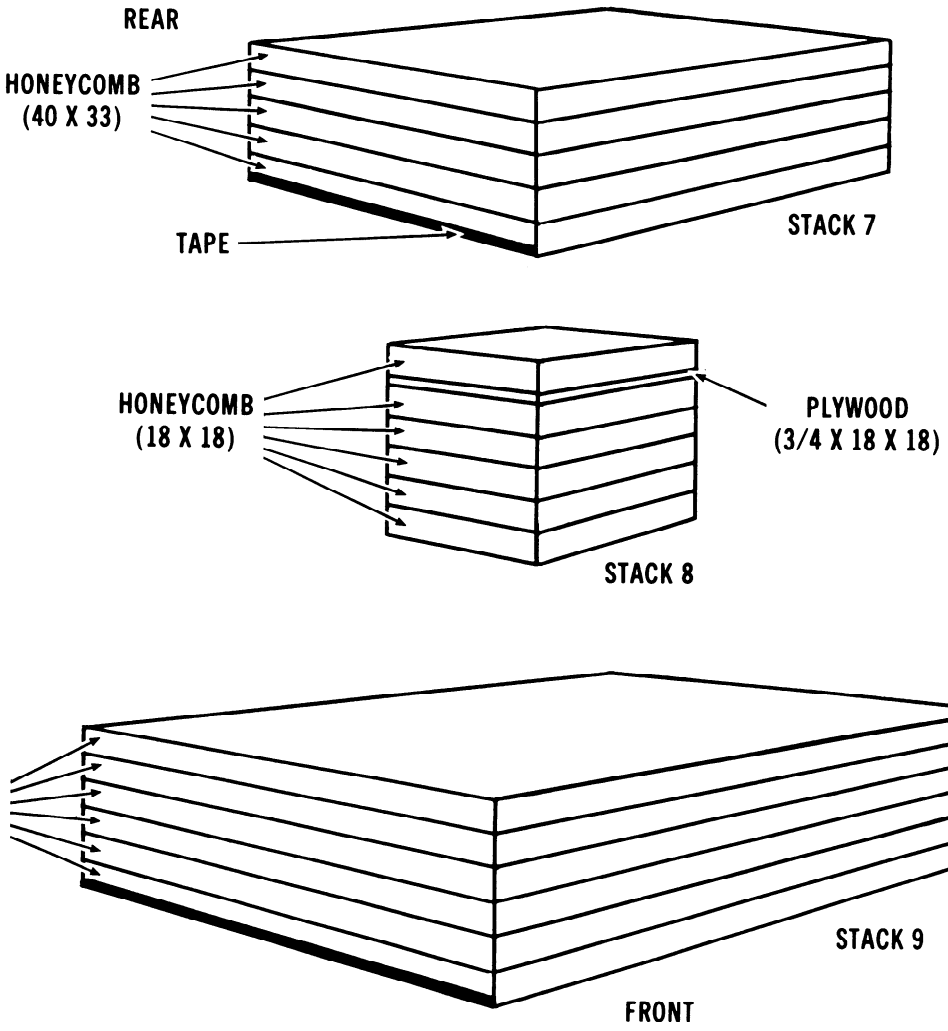


Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
4	6	18	76	Honeycomb	Form base.
	2	18	36	Honeycomb	Place honeycomb on base flush with front edge of stack.
	1	18	26	Honeycomb	Place honeycomb on base flush with rear edge of stack.
5	6	18	76	Honeycomb	Form base.
	2	18	36	Honeycomb	Place honeycomb on base flush with front edge of stack.
	1	18	26	Honeycomb	Place honeycomb on base flush with rear edge of stack.
6	5	18	36	Honeycomb	Form base.
	1	18	30	Honeycomb	Place honeycomb on base flush with front edge of stack.
	1	18	24	Honeycomb	Place honeycomb on top of the 18- by 30-inch piece of honeycomb flush with the front edge of the stack.

Figure 3-3. Honeycomb stacks 4, 5, and 6 prepared

Notes:

1. All dimensions are given in inches.
2. These drawings are not drawn to scale.



Stack Number	Pieces	Width (Inches)	Length (Inches)	Material	Instructions
7	5	40	33	Honeycomb	Form stack. Tape the left and right bottom edges of this stack.
8	6	18	18	Honeycomb	Form stack.
	1	18	18	3/4-inch plywood	Place plywood between layers 5 and 6 of stack.
9	6	48	60	Honeycomb	Form stack.

Figure 3-4. Honeycomb stacks 7, 8, and 9 prepared

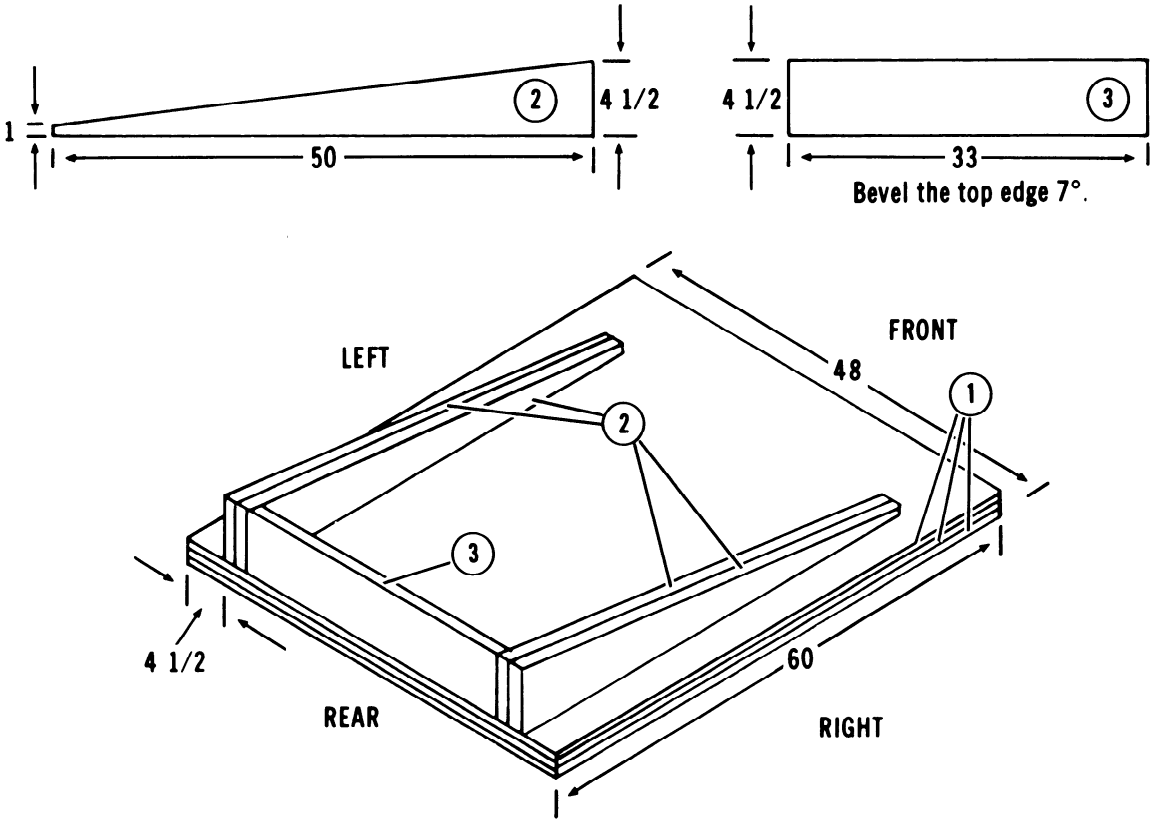
3-4. Building Load Spreaders and Supports

Build the load spreaders and supports as shown in Figures 3-5 through 3-8.

***a.* Building the Belly Pan Load Spreader.** Build the belly pan load spreader as shown in Figure 3-5.

Notes:

1. All dimensions are given in inches.
2. Eightpenny nails are used in the plywood, and sixteen-penny nails are used in the lumber.
3. These drawings are not drawn to scale.
4. Circled numbers refer to item numbers.
5. The bevel on item 3 faces the front when assembled.



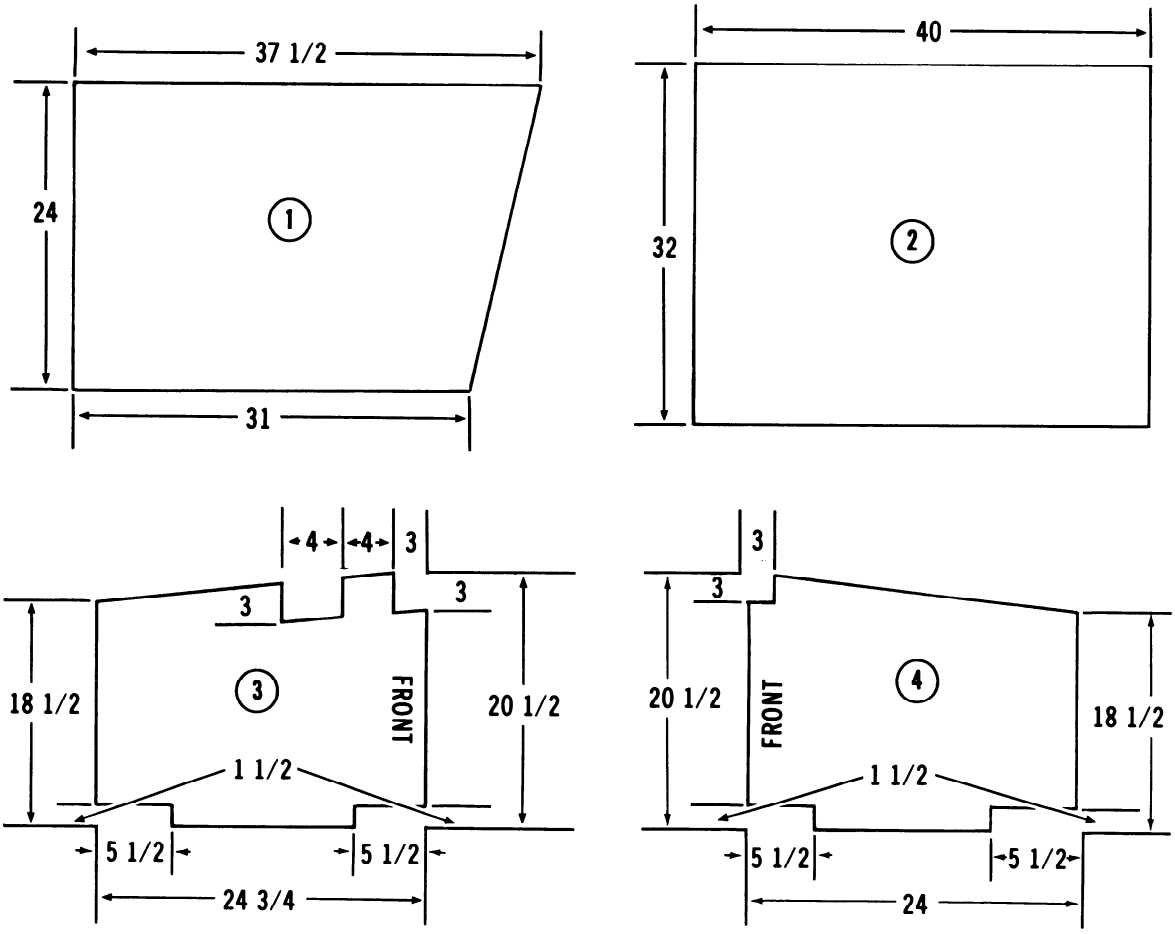
Item Number	Pieces	Width (Inches)	Length (Inches)	Material
1	3	48	60	3/4-inch plywood
2	4	4 1/2	50	2- by 6-inch lumber
3	1	4 1/2	33	2- by 6-inch lumber

Figure 3-5. Belly pan load spreader built

***b.* Building the Transmission Housing Load Spreader.** Build the transmission housing load spreader as shown in Figure 3-6.

Notes:

1. All dimensions are given in inches.
2. These drawings are not drawn to scale.
3. Circled numbers refer to item numbers.

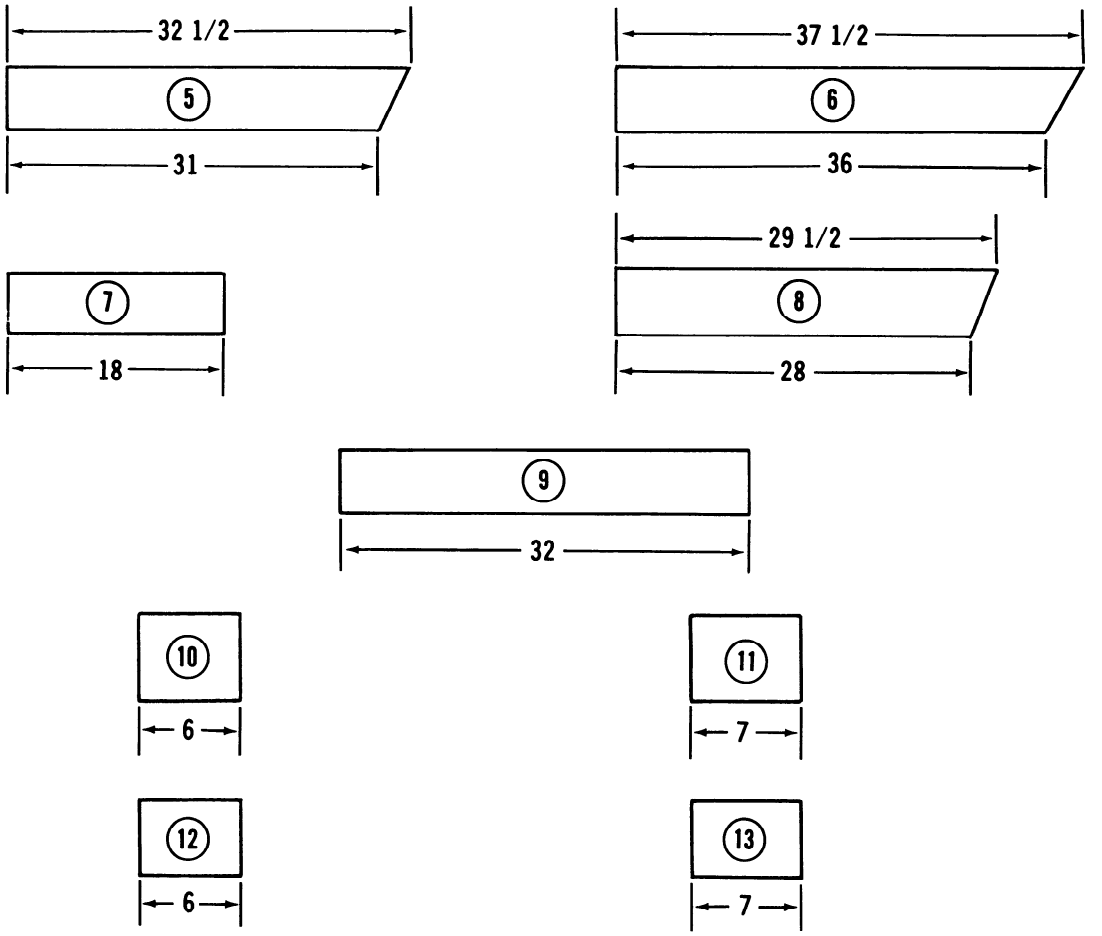


Item Number	Pieces	Width (Inches)	Length (Inches)	Material
1	1	24	37 1/2	3/4-inch plywood
2	2	32	40	3/4-inch plywood
3	3	20 1/2	24 3/4	3/4-inch plywood
4	3	20 1/2	24	3/4-inch plywood

Figure 3-6. Transmission housing load spreader built

Notes:

1. All dimensions are given in inches.
2. These drawings are not drawn to scale.
3. Circled numbers refer to item numbers.



Item Number	Pieces	Width (Inches)	Length (Inches)	Material
5	1	5 1/2 (actual)	32 1/2	2- by 6-inch lumber
6	1	5 1/2 (actual)	37 1/2	2- by 6-inch lumber
7	1	5 1/2 (actual)	18	2- by 6-inch lumber
8	1	5 1/2 (actual)	29 1/2	2- by 6-inch lumber
9	2	3 1/2 (actual)	32	2- by 4-inch lumber
10	1	5 1/2 (actual)	6	2- by 6-inch lumber
11	1	5 1/2 (actual)	7	2- by 6-inch lumber
12	1	5 1/2	6	1/4-inch plywood
13	1	5 1/2	7	1/4-inch plywood

Figure 3-6. Transmission housing load spreader built (continued)

Notes:

1. All dimensions are given in inches.
2. These drawings are not drawn to scale.
3. Circled numbers refer to item numbers.
4. A generous amount of nails must be used.

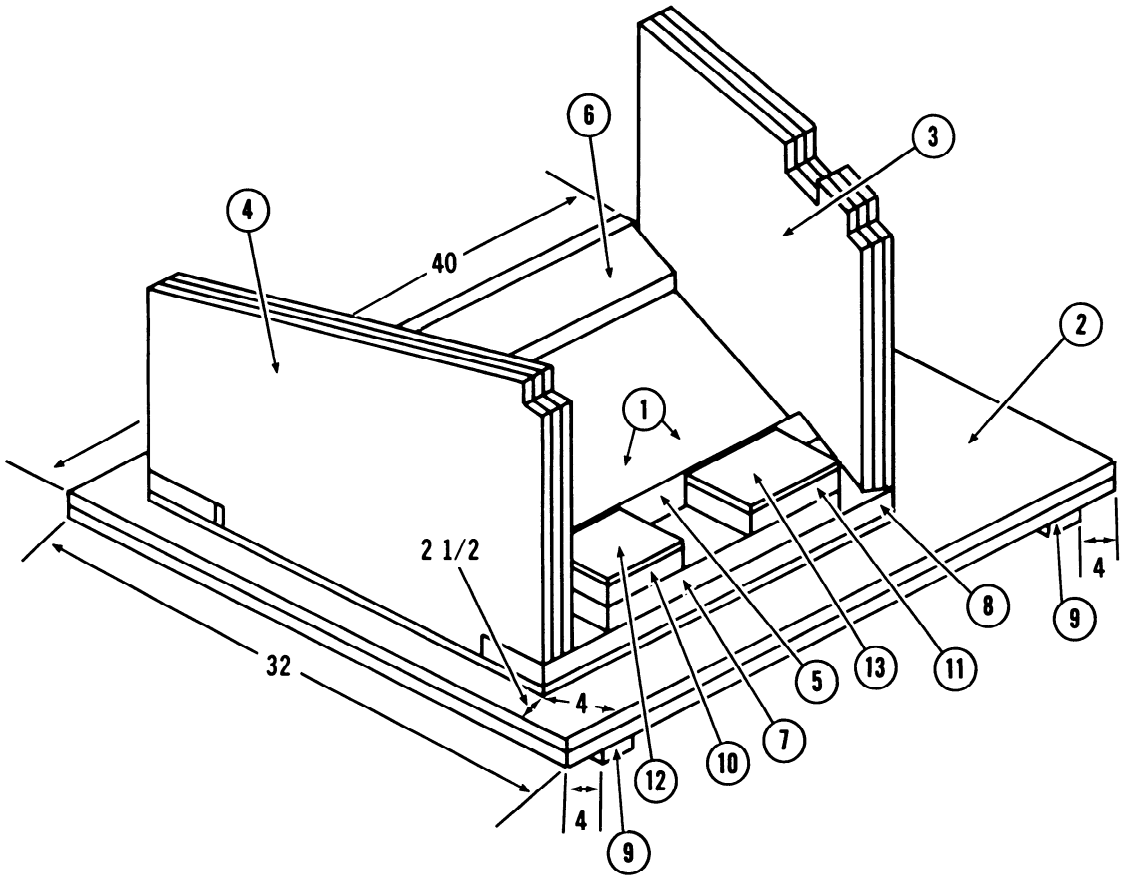
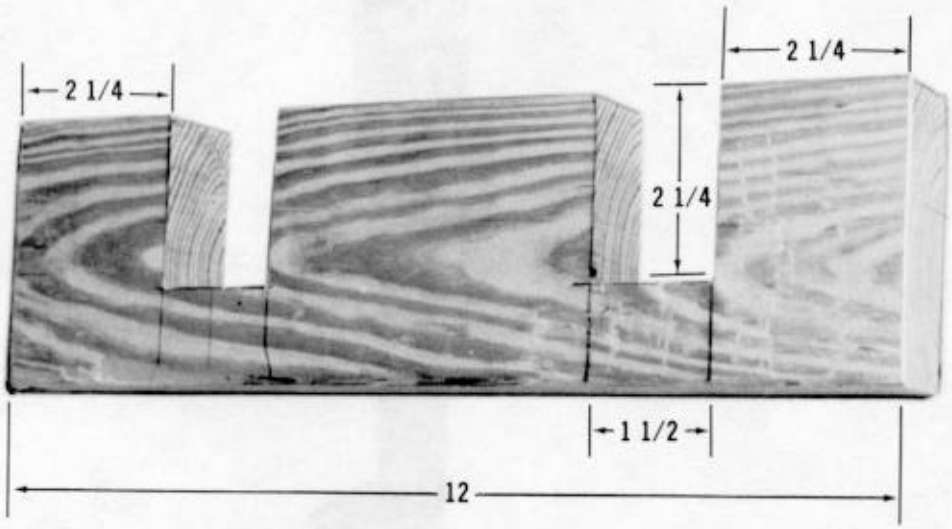


Figure 3-6. Transmission housing load spreader built (continued)

c. **Building the Engine Mount Support.** Build the engine mount support as shown in Figure 3-7.

Note: All dimensions are given in inches.



Step:

1. Use a 2- by 4- by 12-inch piece of lumber.
2. Make both cutouts 1 1/2 inches wide and 2 1/4 inches deep.

Figure 3-7. Engine mount support built

d. **Building the Elevator Supports.** Build two elevator supports as shown in Figure 3-8.

Notes:

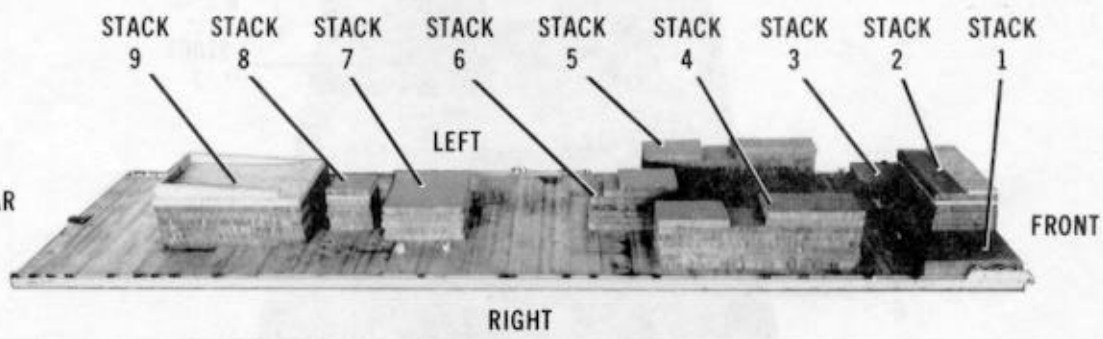
1. All dimensions are given in inches.
2. Sixteen-penny nails must be used.

Item Number	Pieces	Width (Inches)	Length (Inches)	Material
1	2	3 1/2 (actual)	41	4- by 4-inch lumber
2	4	3 1/2 (actual)	18	2- by 4-inch lumber
3	2	5 1/2 (actual)	18	2- by 6-inch lumber

Figure 3-8. Elevator support built

3-5. Positioning Honeycomb Stacks, Belly Pan Load Spreader, and Nylon Webbing

Position the honeycomb stacks, load spreader, and nylon webbing on the platform as shown in Figures 3-9, 3-10, and 3-11.



Stack Number	Position of Stack on Platform
	Place stack:
1	Flush with the front edge of the platform and the inside edge of the right rail.
2	Centered flush with the front edge of the platform. Pass two 15-foot lengths of 1/2-inch tubular nylon webbing under stack 2 in a front-to-rear direction.
3	Flush with the front edge of the platform and 2 1/2 inches from the left side of stack 2.
4	10 inches from the outside edge of the right rail and 22 inches from stack 1.
5	10 inches from the outside edge of the left rail and 22 inches from stack 3.
6	Centered and 101 inches from stack 2.
7	Centered and 52 inches from stack 6. Pass two 15-foot lengths of 1/2-inch tubular nylon webbing under stack 7 in a side-to-side direction.
8	Centered and 6 inches from stack 7.
9	Centered and 48 inches from the rear edge of the platform. Place the belly pan load spreader flush on stack 9 with the tapered ends toward the front of the platform.

Figure 3-9. Honeycomb stacks, belly pan load spreader, and nylon webbing positioned on platform

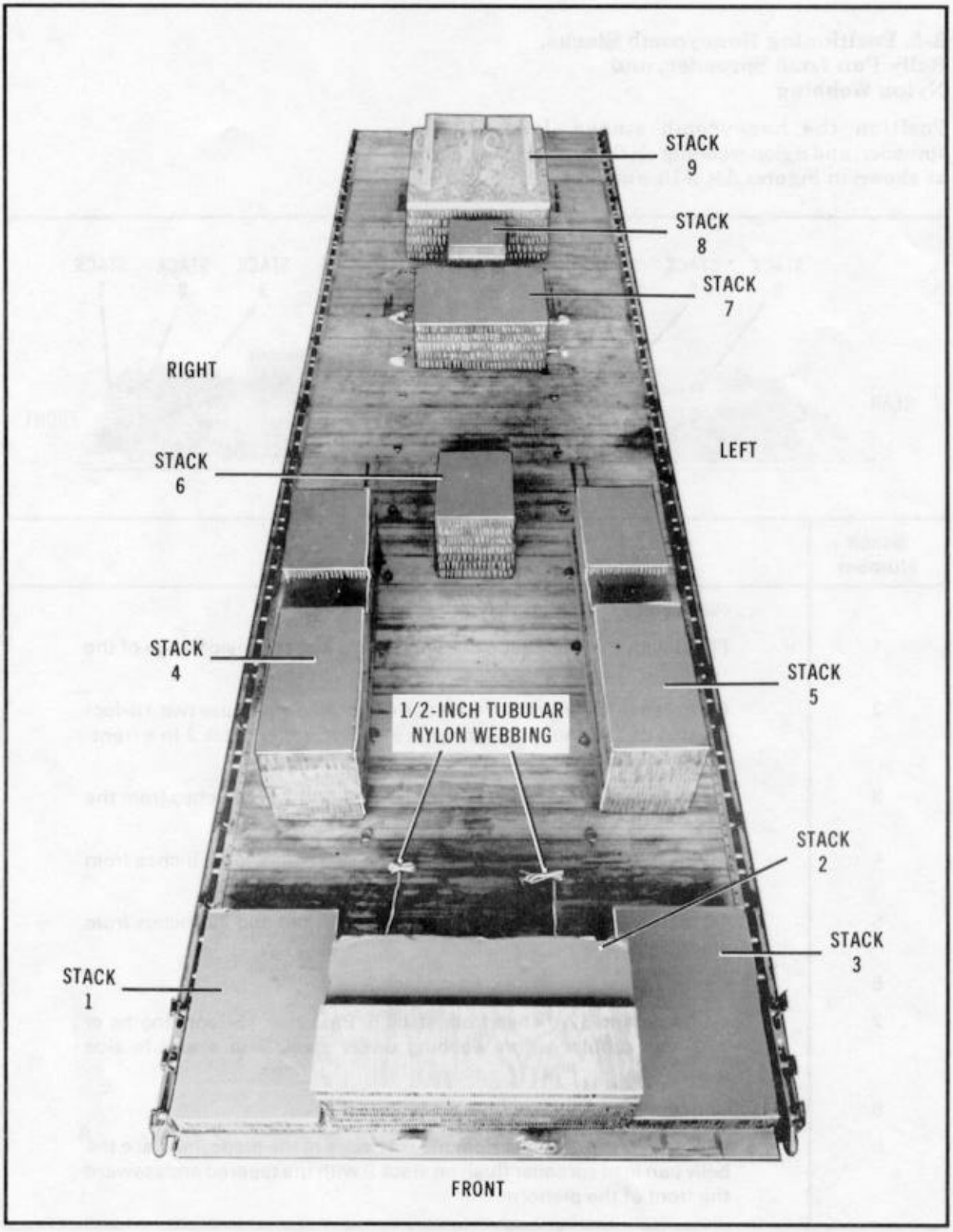


Figure 3-10. Front view of honeycomb stacks positioned on platform

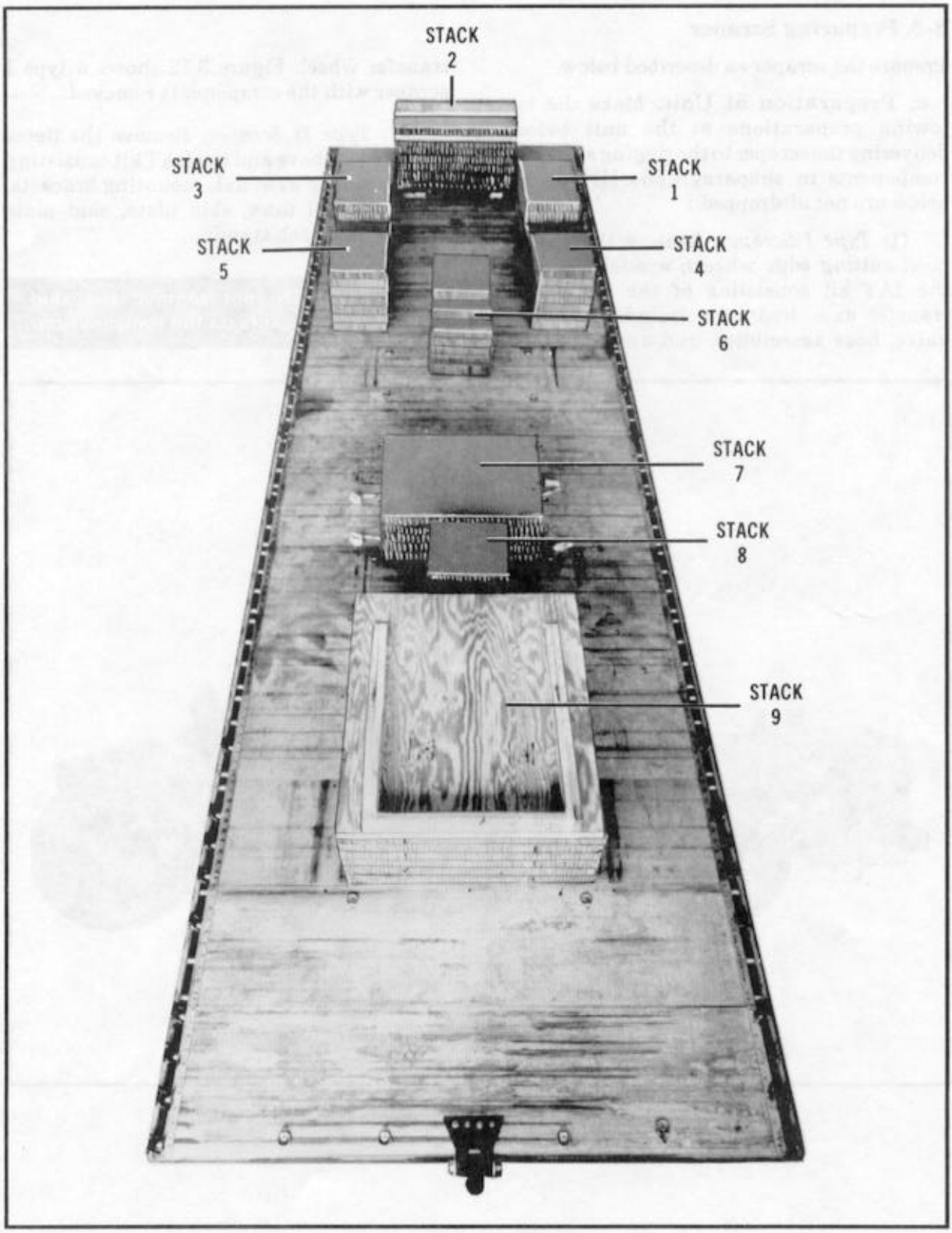


Figure 3-11. Rear view of honeycomb stacks positioned on platform

3-6. Preparing Scraper

Prepare the scraper as described below.

a. **Preparation at Unit.** Make the following preparations at the unit before delivering the scraper to the rigging site. (The components in subparagraphs (1) and (2) below are not airdropped.)

(1) *Type I Scraper.* Remove the ROPS; bowl cutting edge wheels; windshield; and the IAT kit consisting of the front load transfer axle, hydraulic cylinders, control valve, hose assemblies, and auxiliary load transfer wheel. Figure 3-12 shows a type I scraper with the components removed.

(2) *Type II Scraper.* Remove the items listed in (1) above and the EAT kit consisting of the steering axle, axle mounting brackets, auxiliary fuel tank, skid plate, skid plate mounts, and jack stands.

CAUTION: Do not remove the skid mounting brackets on the transmission.

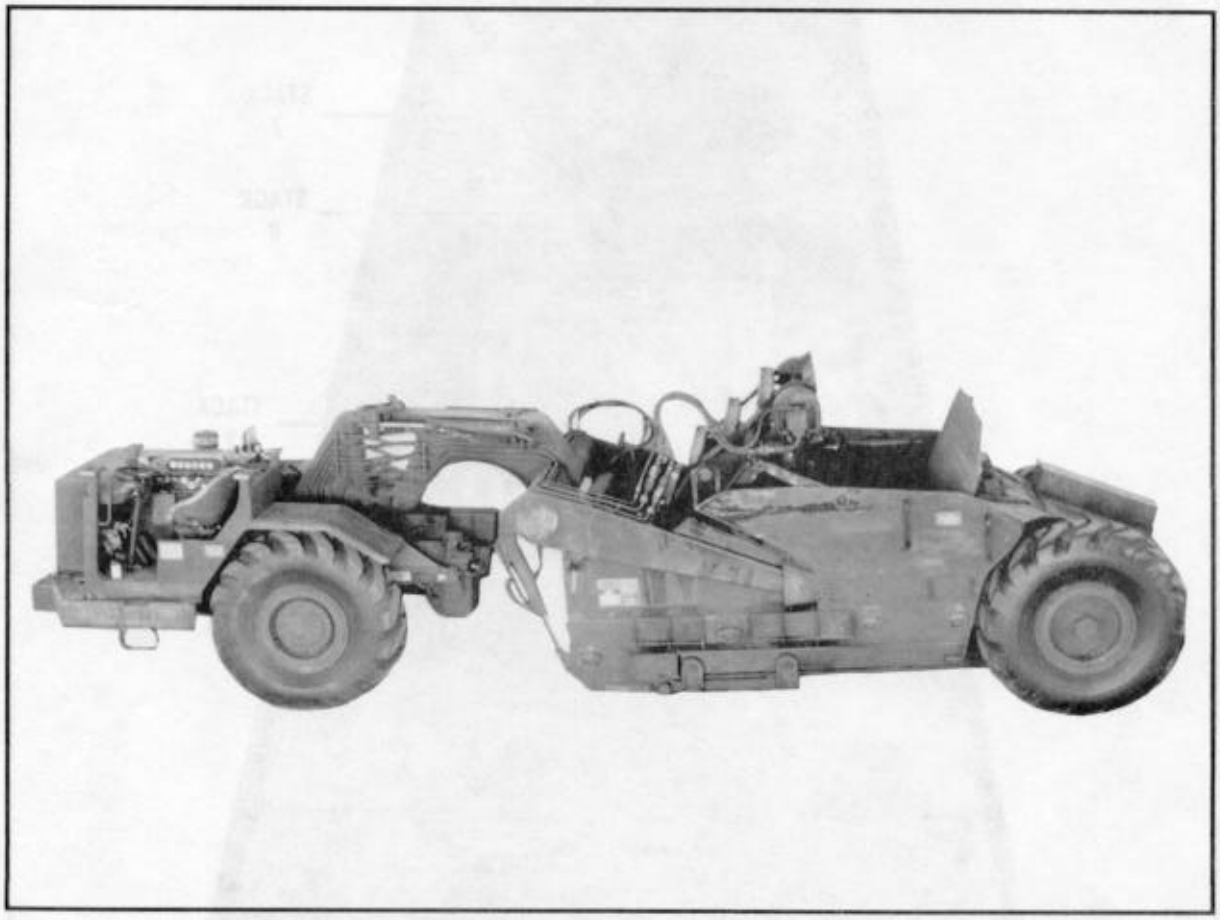


Figure 3-12. Type I scraper with components removed by the unit

(3) *Type I and II Scrapers.* Make these additional preparations for both scrapers before delivering them to the rigging site.

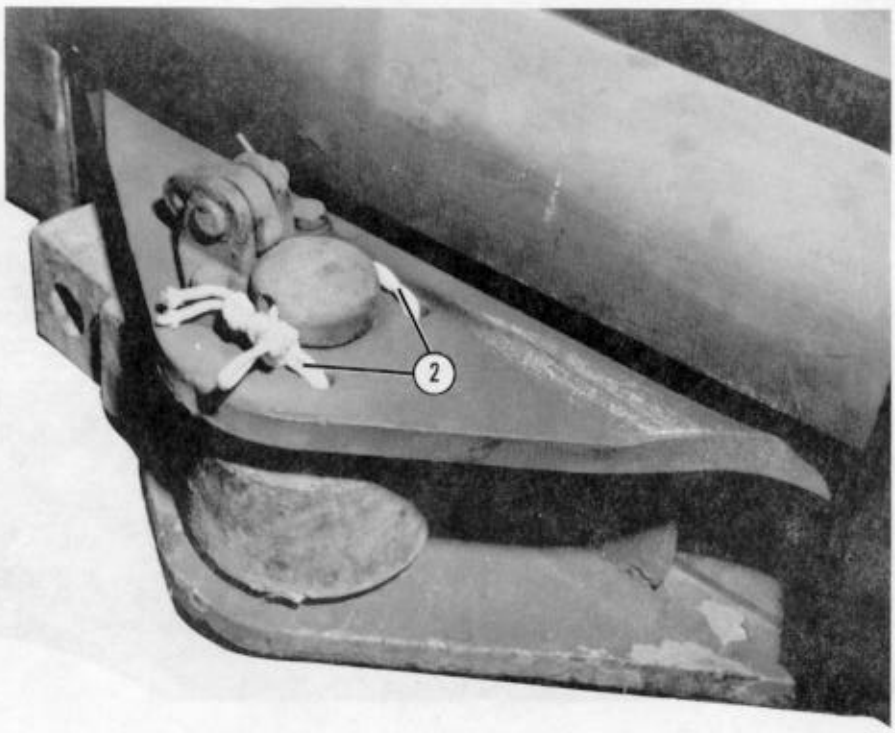
(a) Remove the cutting edge teeth, and stow them in the toolbox on the rear deck.

(b) Pad the wiper controls with cellulose wadding, and secure them to the air vent control arm with type III nylon cord.

(c) Adjust the fuel in the fuel tank so that the tank is 1/2 full.

(d) Adjust the tire pressure to 17 psi in the front tires and 24 psi in the rear tires. This is very important for meeting height requirements.

(e) Safety the towing pintle on the front of the scraper as shown in Figure 3-13. If you cannot secure the towing pintle as shown, remove it and stow in the toolbox.



(1) Safety the pintle with a large cotter pin on the bottom (not shown).

(2) Safety the top latch with type III nylon cord doubled.

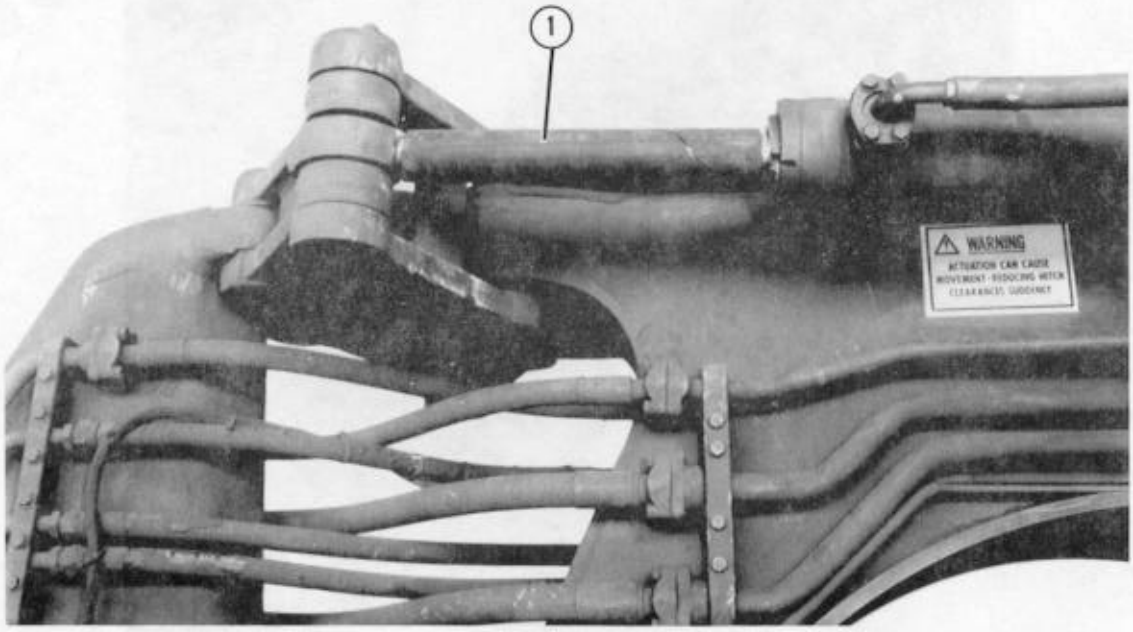
Figure 3-13. Towing pintle safetied

b. **Preparation at Rigging Site.** Prepare the vehicle at the rigging site as described below.

CAUTION: Steps (1) through (4) must be performed ONLY by qualified operators or maintenance personnel.

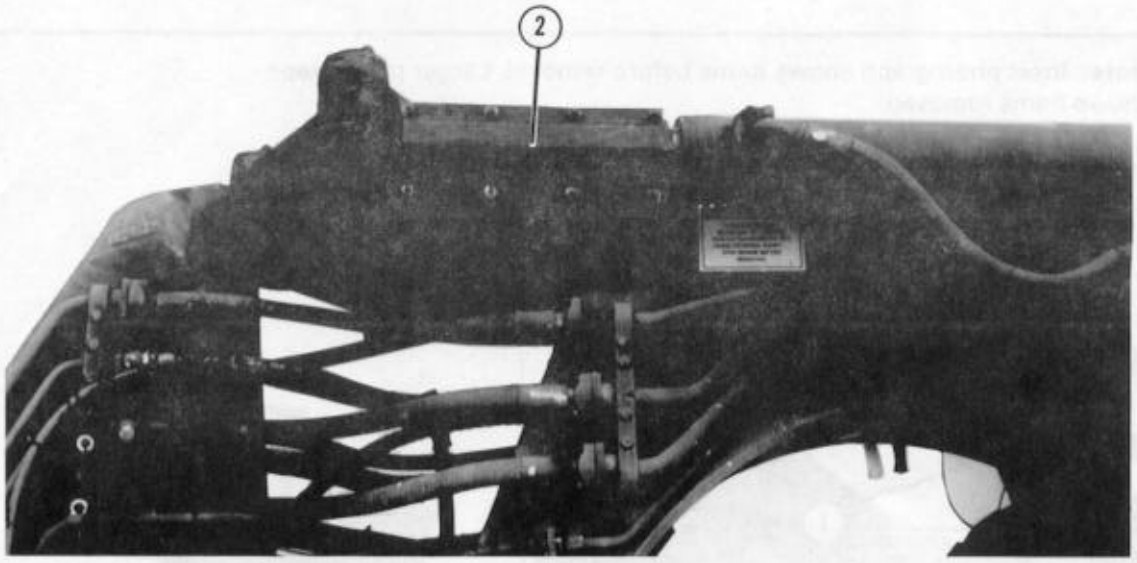
(1) Raise the scraper bowl to its maximum height. Make sure the power and scraper sections of the vehicle are aligned in a straight-line position.

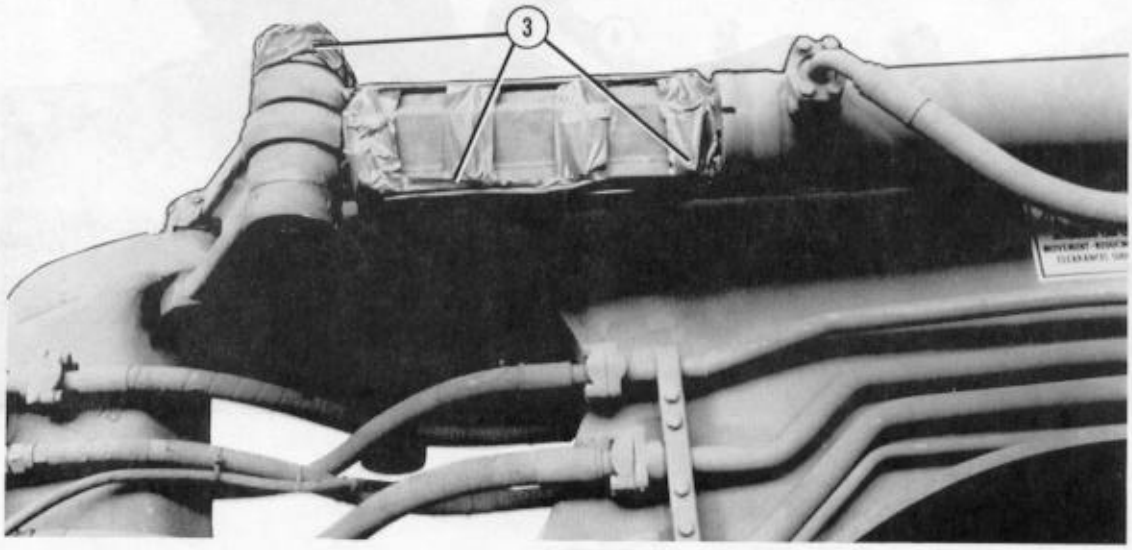
(2) Have the operator install the steering cylinder rod travel lock sleeves as shown in Figure 3-14.



(1) Wrap the rod with the rubber bushing provided in the steering cylinder rod travel lock sleeve kit.

Figure 3-14. Steering cylinder rod travel lock sleeves installed





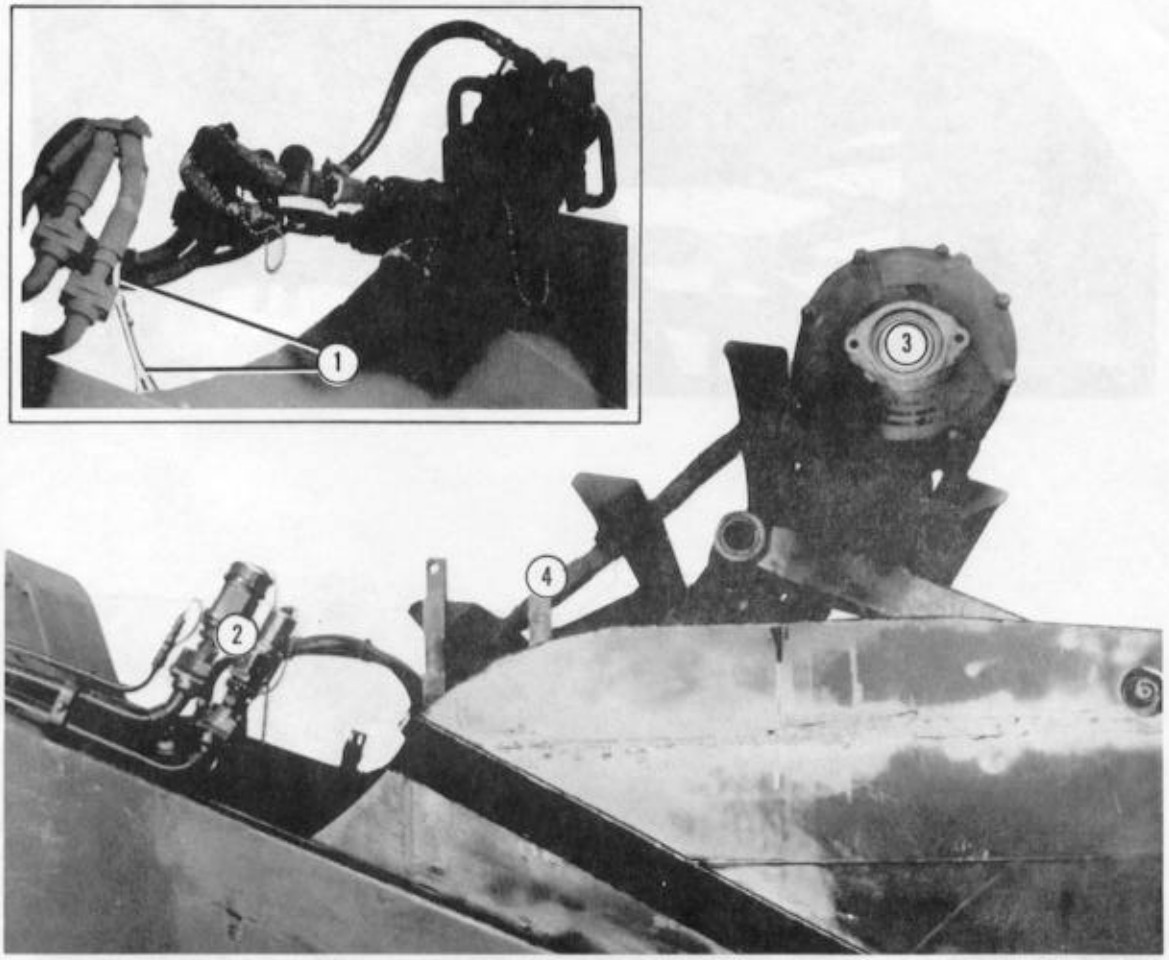
(2) Bolt on the lock sleeves. Be sure that the sleeve flanges are vertical and that the nuts face the outside.

(3) Tape nuts, bolts, edges of sleeves, and tops of steering arm joints.

Figure 3-14. Steering cylinder rod travel lock sleeves installed (continued)

(3) Prepare the elevator motor assembly as shown in Figure 3-15.

Note: Inset photograph shows items before removal. Larger photograph shows items removed.



(1) Tie the elevator motor hose assembly to a convenient point on the load with 1/2-inch tubular nylon webbing.

OR

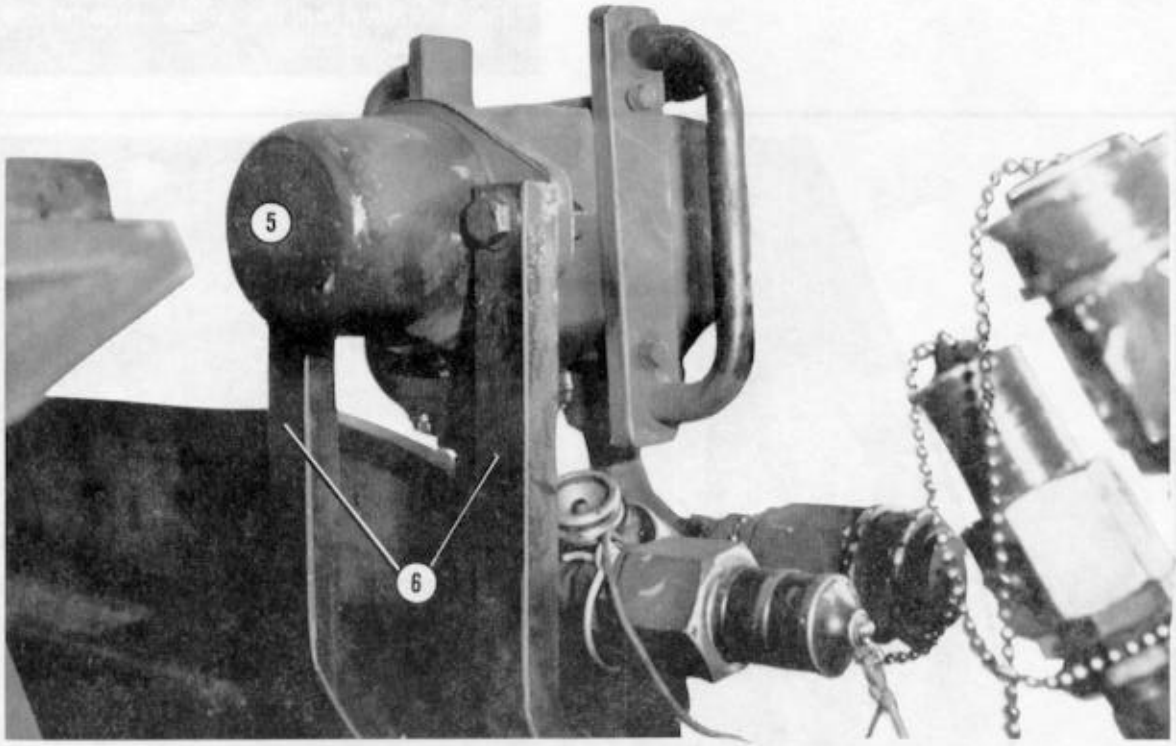
(2) Remove the elevator motor hose assembly for stowage later.

(3) Remove the elevator motor from the speed reducer.

(4) Remove the cap and gasket assembly from the motor stowage brackets.

Figure 3-15. Elevator motor assembly prepared

Note: View shown is from inside the scraper bowl.



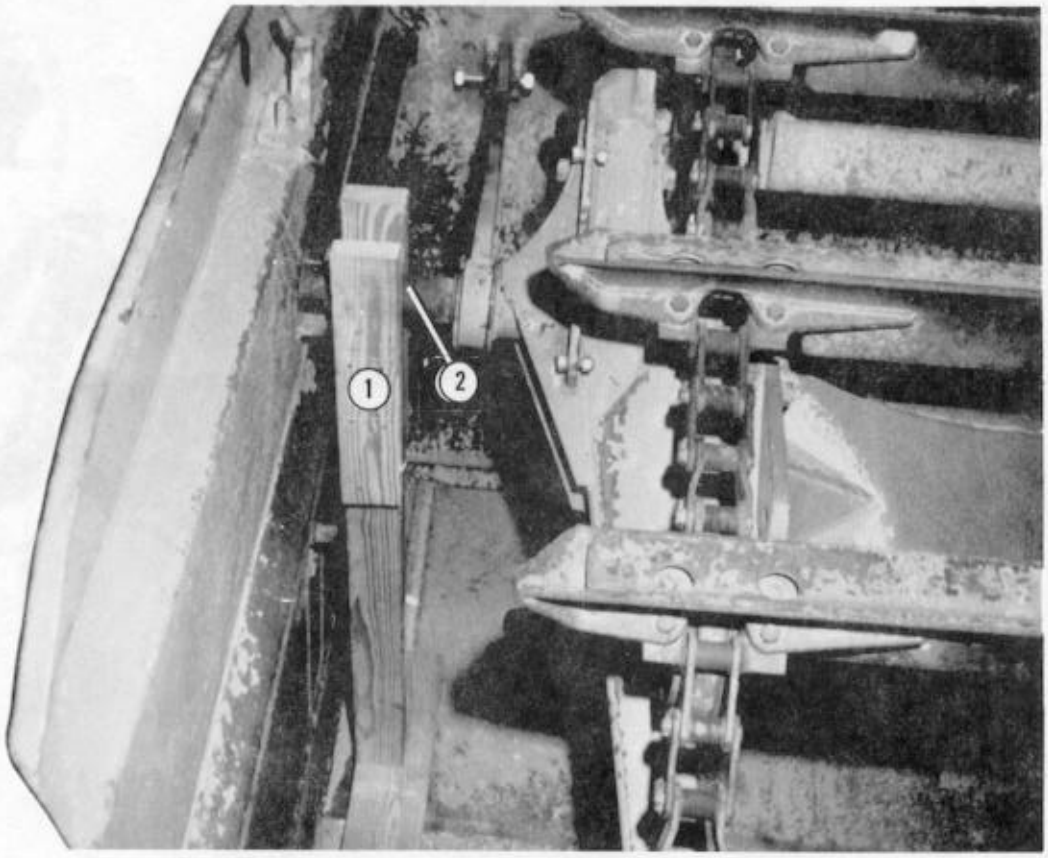
(5) Place the cap and gasket over the exposed motor shaft.

(6) Bolt the elevator motor assembly to the motor stowage brackets.

Figure 3-15. Elevator motor assembly prepared (continued)

(4) Install the elevator supports as shown in Figure 3-16.

CAUTION: The steps shown in Figures 3-16 and 3-17 are a three-person operation. The driver maintains hydraulic pressure on the ejector while two assistants perform these tasks. The assistants must remain on the steps outside the scraper bowl.

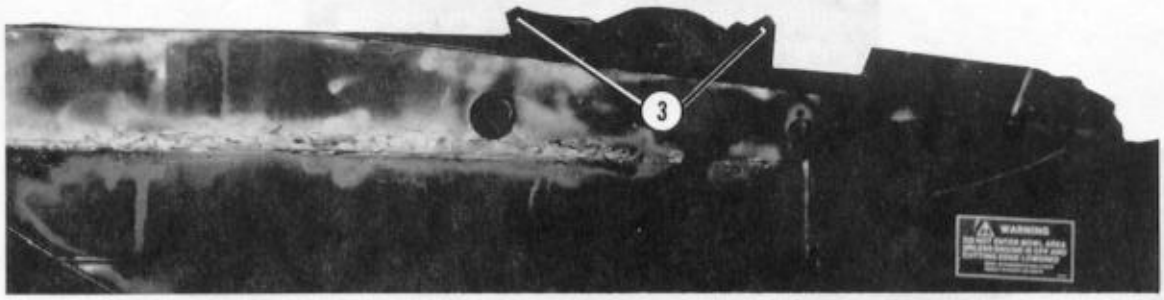


(1) Position the two elevator supports (Figure 3-8) inside the bowl between the elevator hanger arm support brackets and the hanger arm pivot points.

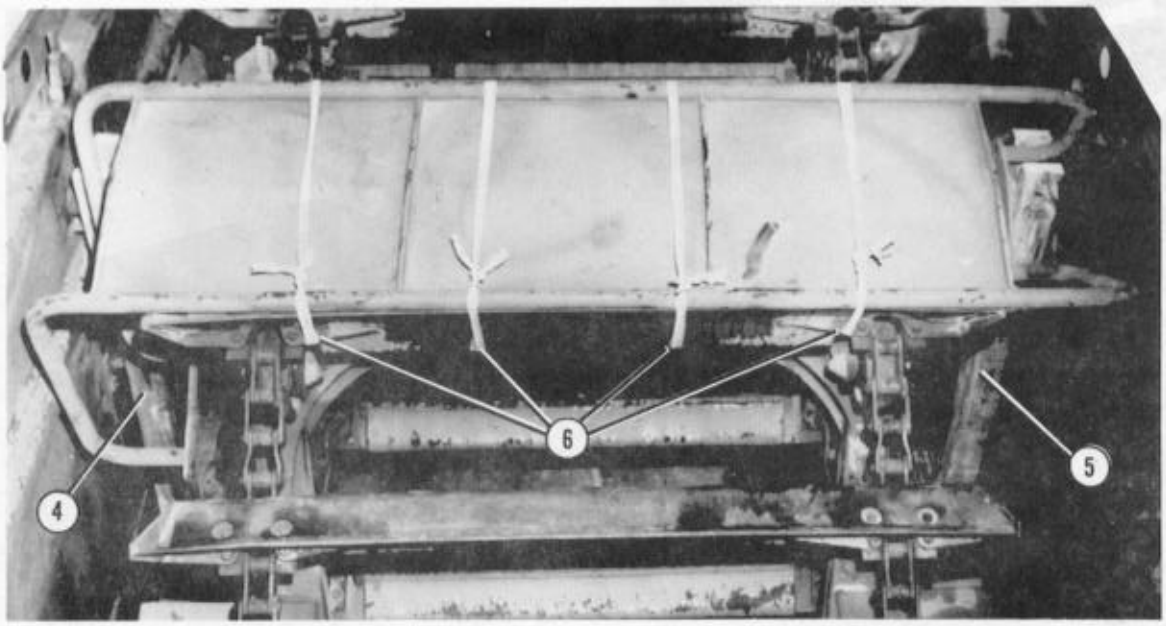
(2) Have the operator retract the ejector and lower the elevator into the bowl and onto the supports. Adjust the supports, if necessary, so that they are vertical.

Figure 3-16. Elevator assembly prepared

CAUTION: Wait until the elevator supports are placed and the elevator slats are in the reduced height position before beginning this procedure.



(3) Manually position the elevator slats as shown to reduce height. (Pry bar may be required.)



(4) Place the straight portion of the guard supports in the left side of the scraper bowl just behind the left elevator support.

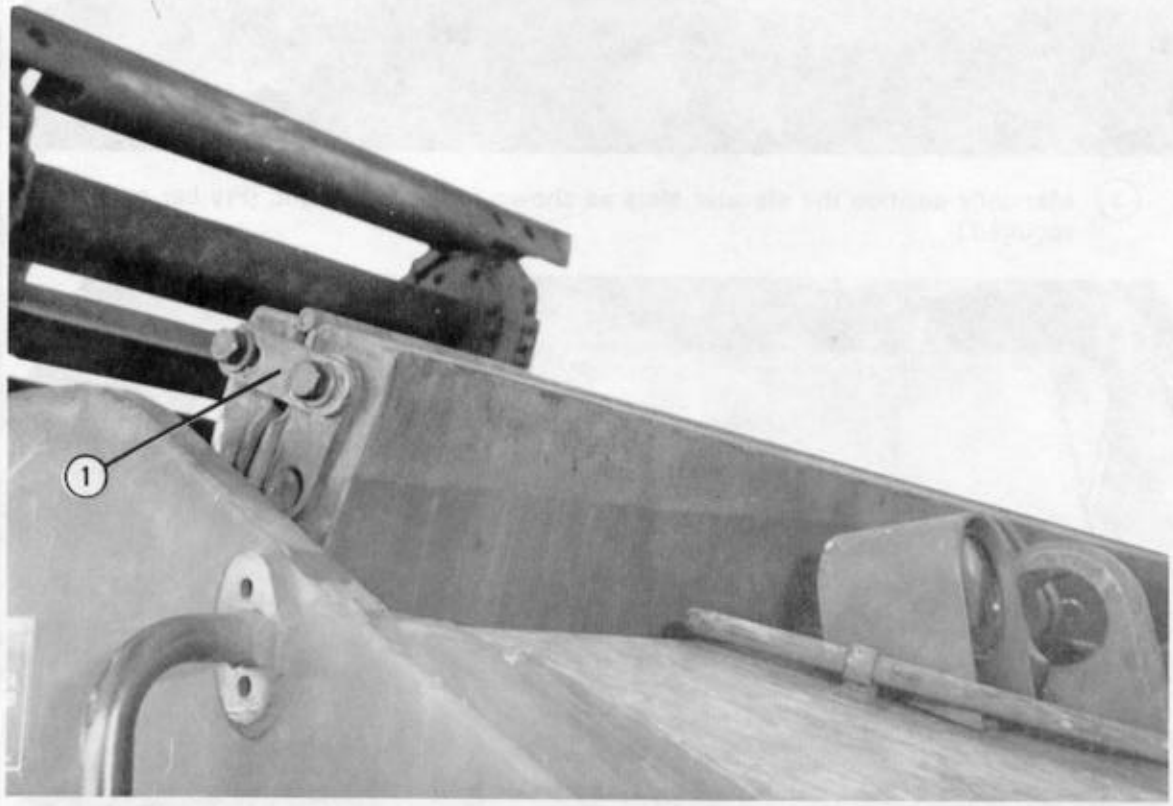
(5) Place the right front curved portion of the guard support into the right elevator support.

(6) Tie the elevator rack guard to the two uppermost elevator slats with four lengths of 1/2-inch tubular nylon webbing.

Figure 3-16. Elevator assembly prepared (continued)

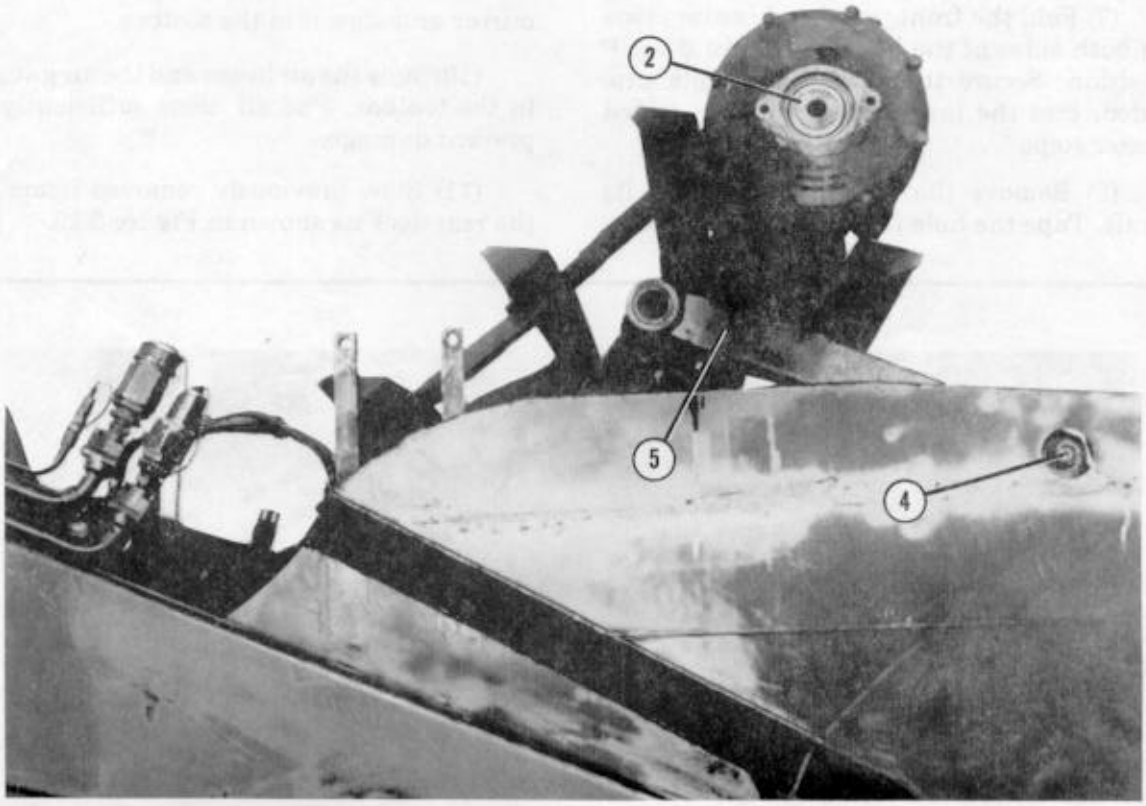
(5) Secure the ejector and remove the hanger arms as shown in Figure 3-17.

CAUTION: Operator must keep the engine running to maintain control of the ejector during this operation.



(1) Remove the bolts. Fold the top section of the ejector, and secure it with the metal straps provided. Replace the bolts.

Figure 3-17. Ejector secured, and hanger arms removed



(2) Bolt the plate from the cap and gasket assembly (removed in Figure 3-15, step 4) over the speed reducer opening.

(3) Have the operator move the ejector forward. Attach the retractor links to the ejector (not shown) with the pins and eyes provided.

(4) Remove the hanger arm pin retaining nuts and bolts.

(5) Remove the elevator hanger arms and pins. Replace the pins in the hanger arm holes for stowage later.

Figure 3-17. Ejector secured, and hanger arms removed (continued)

(6) Install medium suspension clevises in the bowl cutting edge as shown in Figure 3-18.

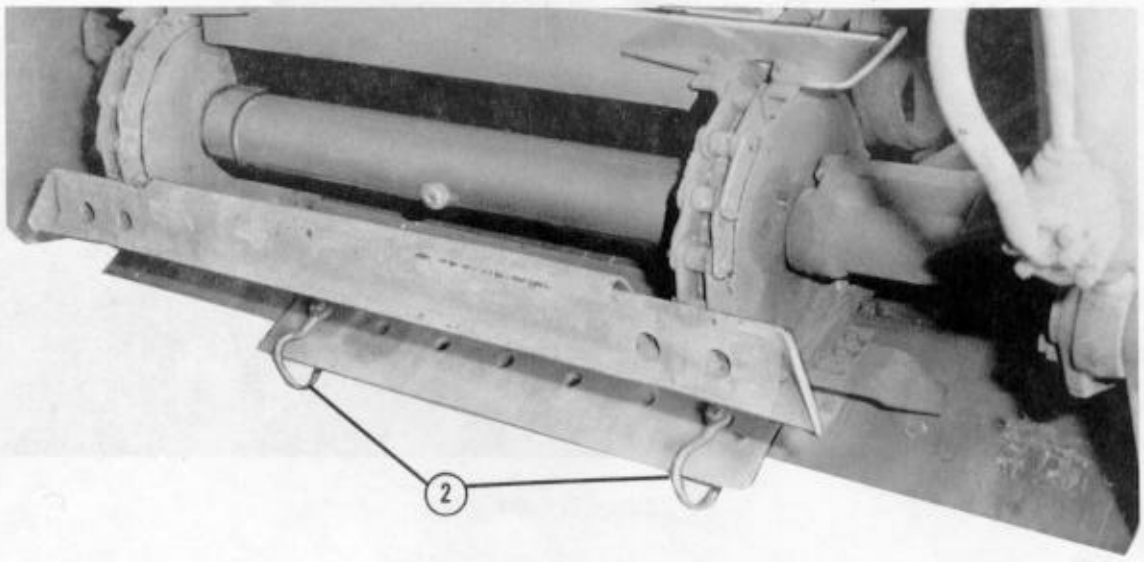
(7) Fold the front, rear, and center steps on both sides of the bowl section in the UP position. Secure them with the bolts provided. Pad the lower corners of the folded center steps.

(8) Remove the air precleaner and its shaft. Tape the hole in the air cleaner. Stow the precleaner in the toolbox on the rear deck of the scraper.

(9) Remove the rearview mirror. Pad the mirror and stow it in the toolbox.

(10) Stow the air hoses and the air gauges in the toolbox. Pad all items sufficiently to prevent damage.

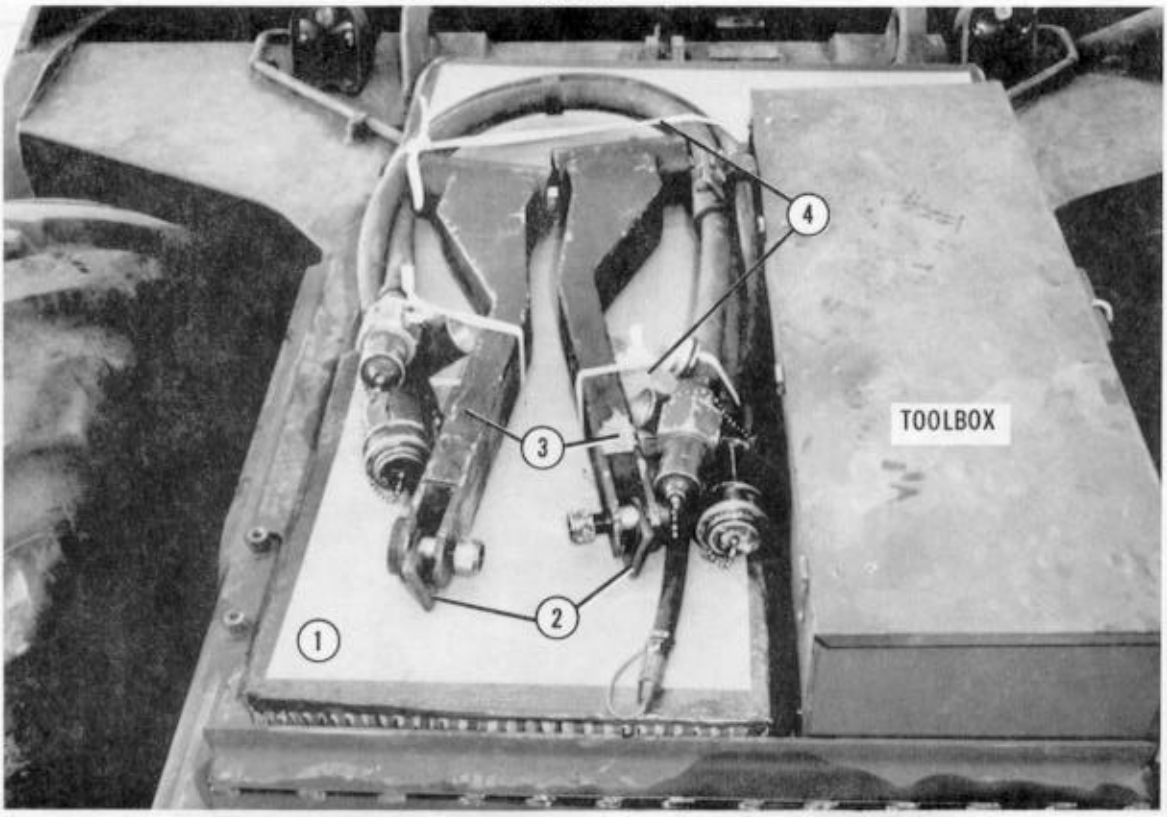
(11) Stow previously removed items on the rear deck as shown in Figure 3-19.



(1) Have the operator raise the bowl to the full UP position. Place safety chocks under the bowl cutting edge (not shown).

(2) Bolt a medium suspension clevis to each outboard cutting edge hole.

Figure 3-18. Medium suspension clevises installed in bowl cutting edge



(1) Place a 36- by 51-inch piece of honeycomb on the rear deck. Make a 15- by 41-inch cutout in the honeycomb so that the honeycomb covers the part of the deck to the left of and in front of the toolbox.

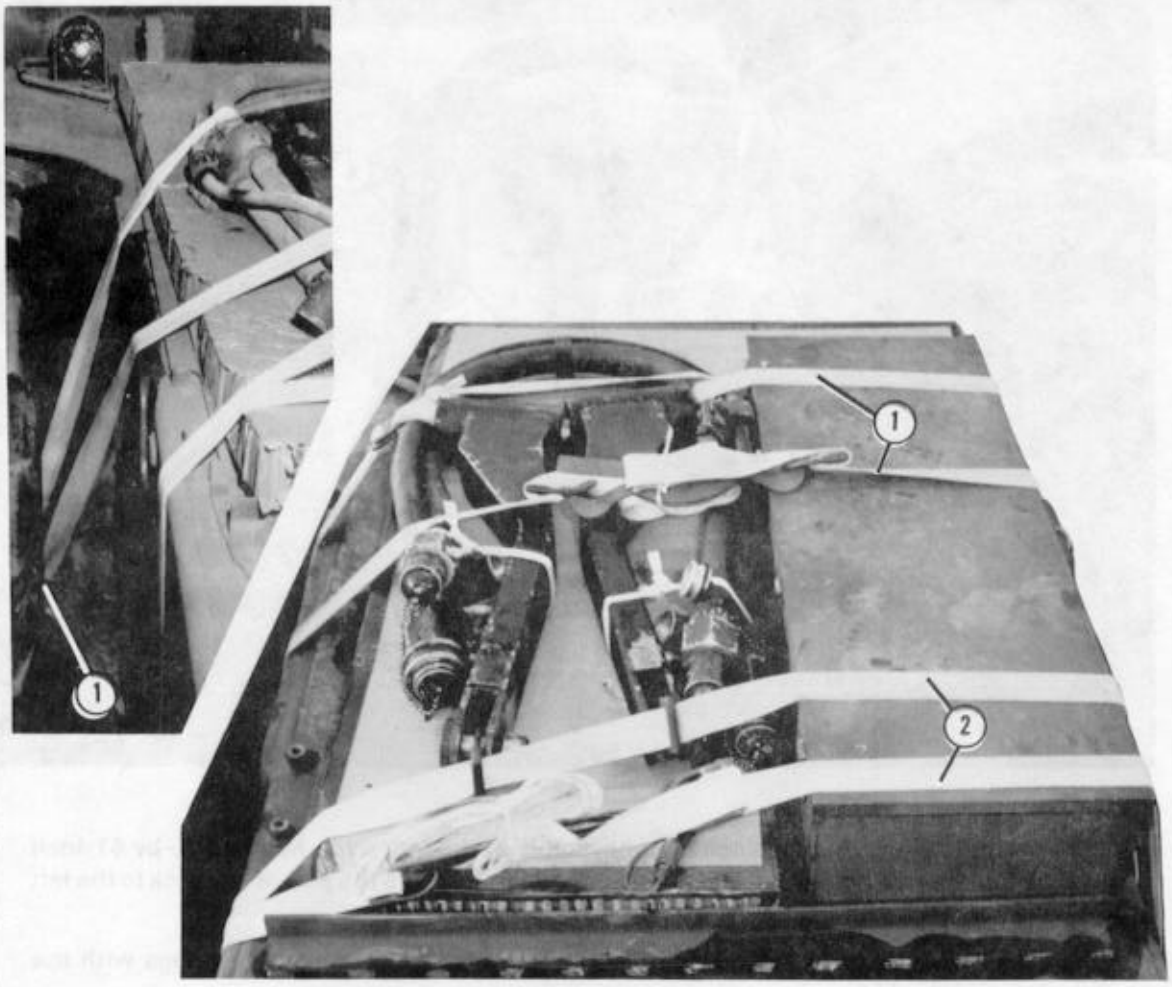
(2) Attach a D-ring to the bolt end of each hanger arm. Secure the D-rings with the hanger arm bolts.

(3) Position the hanger arms on the honeycomb with the D-rings facing the rear of the scraper.

(4) Position the elevator motor hoses in a U-shape around the hanger arms. Safety the hoses to the hanger arms with 1/2-inch tubular nylon webbing.

Figure 3-19. Elevator motor hoses and hanger arms positioned on the rear deck

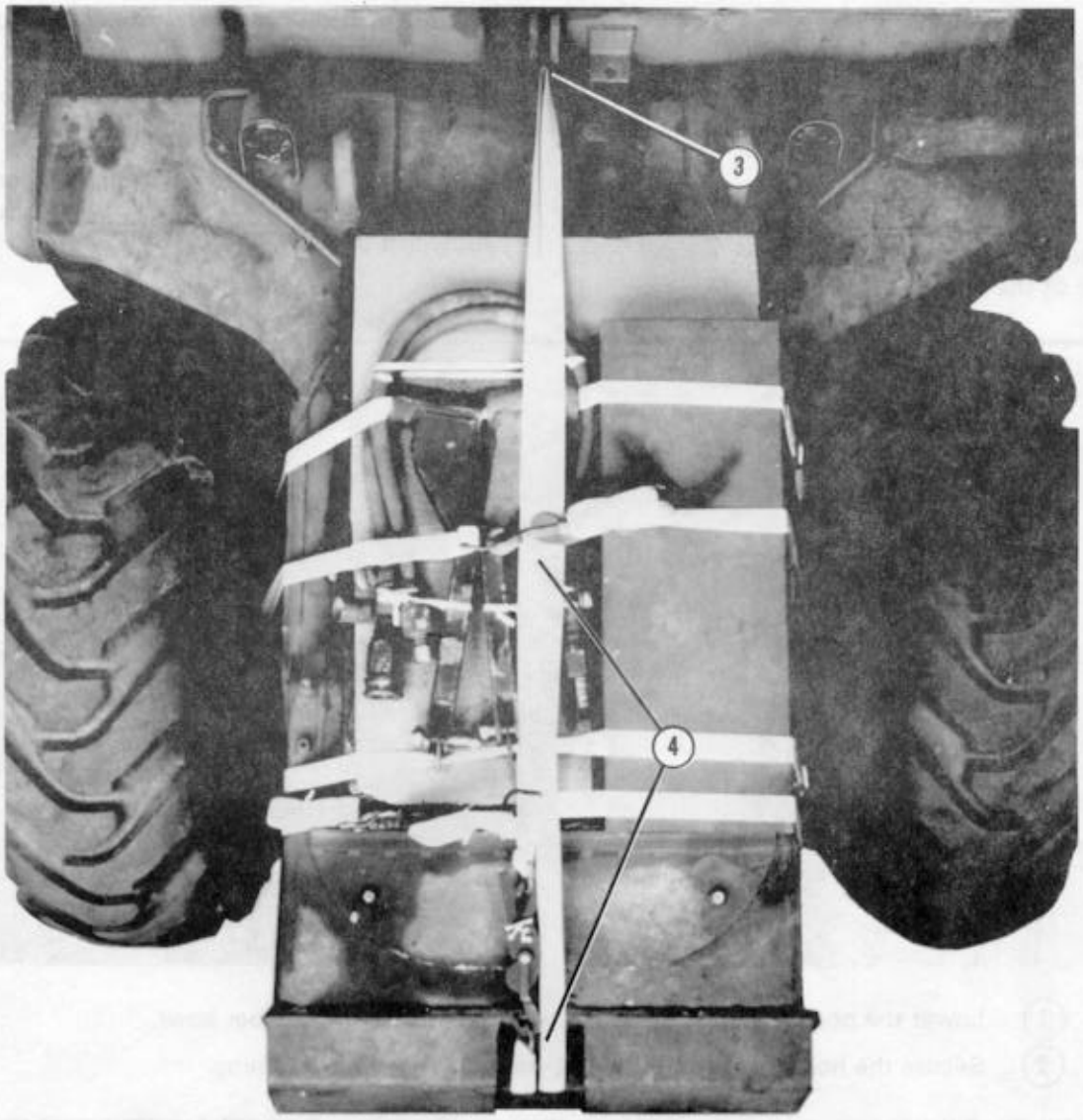
(12) Secure the equipment to the rear deck with lashings as shown in Figure 3-20.



(1) Run a 30-foot lashing around the left axle between the axle and the brake line, up over the hoses, through the hanger arm holes, over the toolbox, and under the right axle. Fasten the lashing with a load binder and a D-ring on top of the deck.

(2) Run a 30-foot lashing around the push bar frame on either side, through the D-rings in the hanger arms, and over the toolbox. Fasten the lashing with a load binder and a D-ring on top of the deck.

Figure 3-20. Equipment secured to rear deck



(3) Attach a D-ring to the fitting on the rear of the ejector using the pin provided.

(4) Run a 15-foot lashing through the D-ring on the ejector, down to the towing pintle, and back, passing it under the load binder portions of the side-to-side lashings. Fasten the lashing with a load binder and a D-ring on top of the deck.

Figure 3-20. Equipment secured to rear deck (continued)

(13) Prepare the cab as described below.

(a) Lower the seat, and move it all the way to the rear.

(b) Tape the ignition key in the OFF position. Safety it to the transmission lock lever with type III nylon cord.

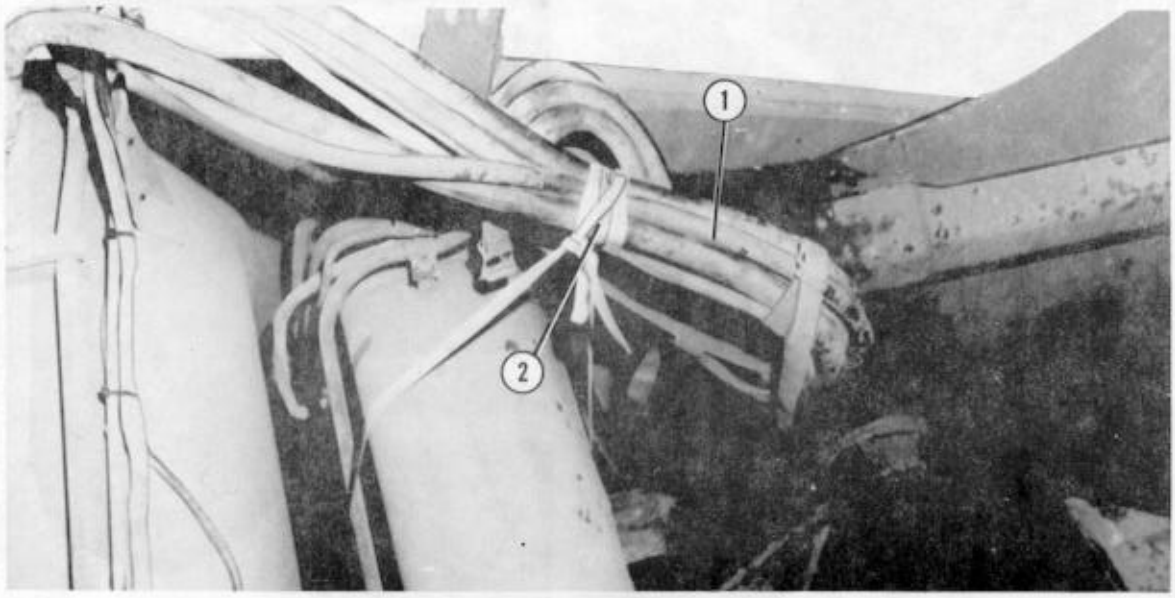
(c) Tape all lights and gauges.

(d) Remove the control arm handles. Place them in the storage box on the right side of the operator compartment.

(e) Pad the mirror bracket above the air cleaner with cellulose wadding, and tape the cellulose wadding in place.

(14) Lower and secure the hose assembly on the scraper bowl as shown in Figure 3-21.

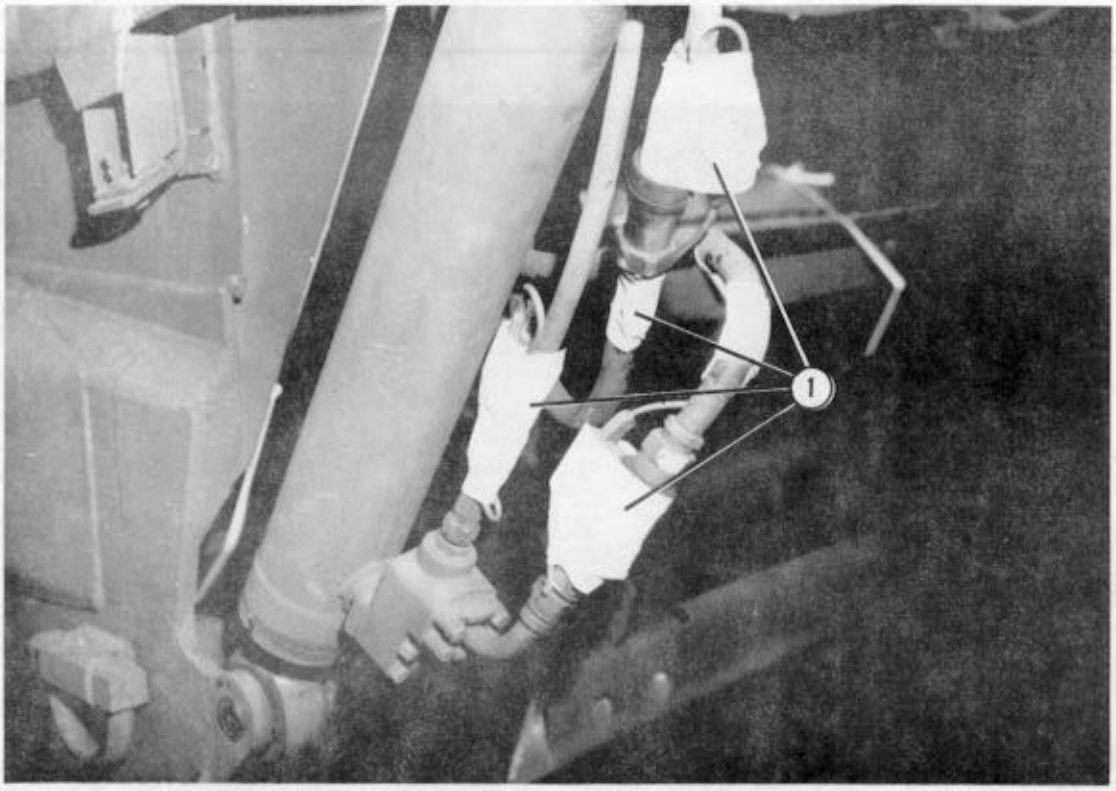
(15) If the scraper has quick-disconnect couplers at the front of the bowl, tape them as shown in Figure 3-22.



(1) Lower the hose assembly on the upper right side of the scraper bowl.

(2) Secure the hose assembly with 1/2-inch tubular nylon webbing.

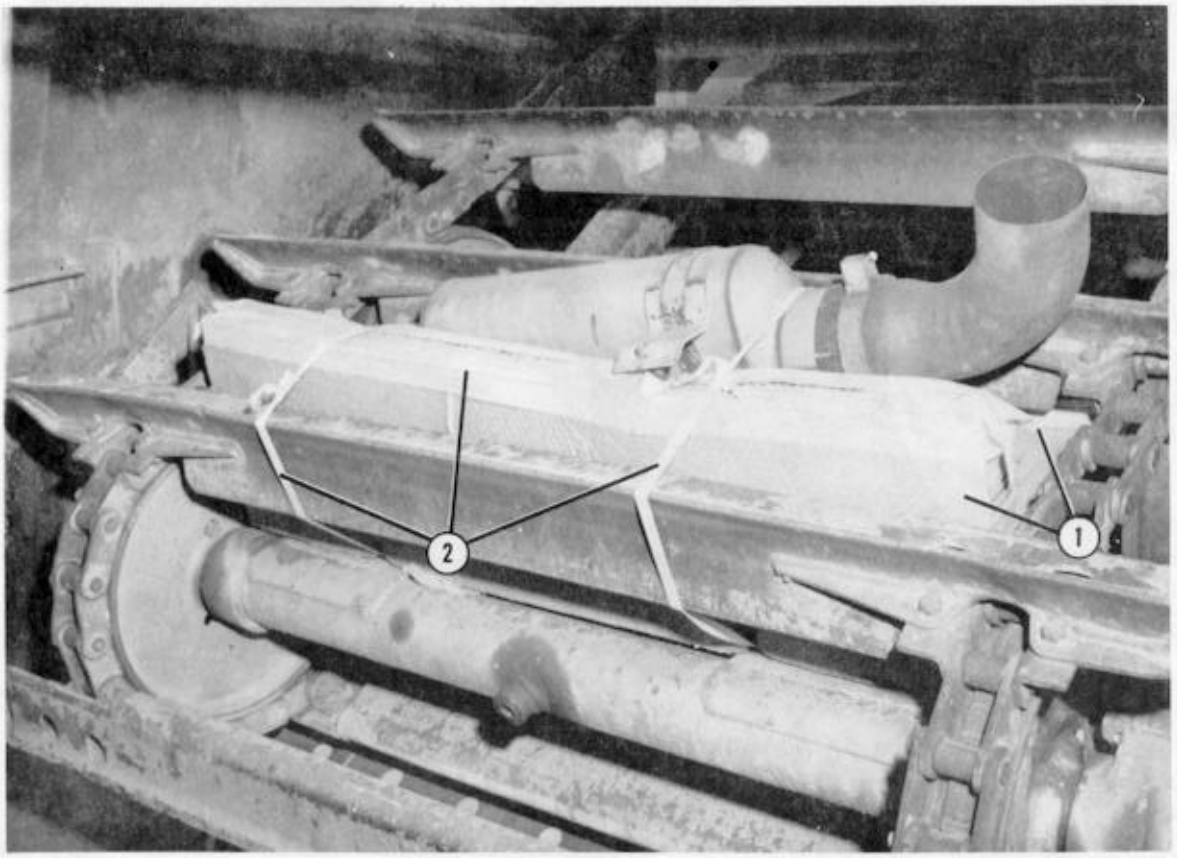
Figure 3-21. Hose assembly secured



(1) Tape the quick-disconnect couplers as shown above.

Figure 3-22. Quick-disconnect couplers taped

(16) Remove the muffler, and stow it on the elevator slats as shown in Figure 3-23.

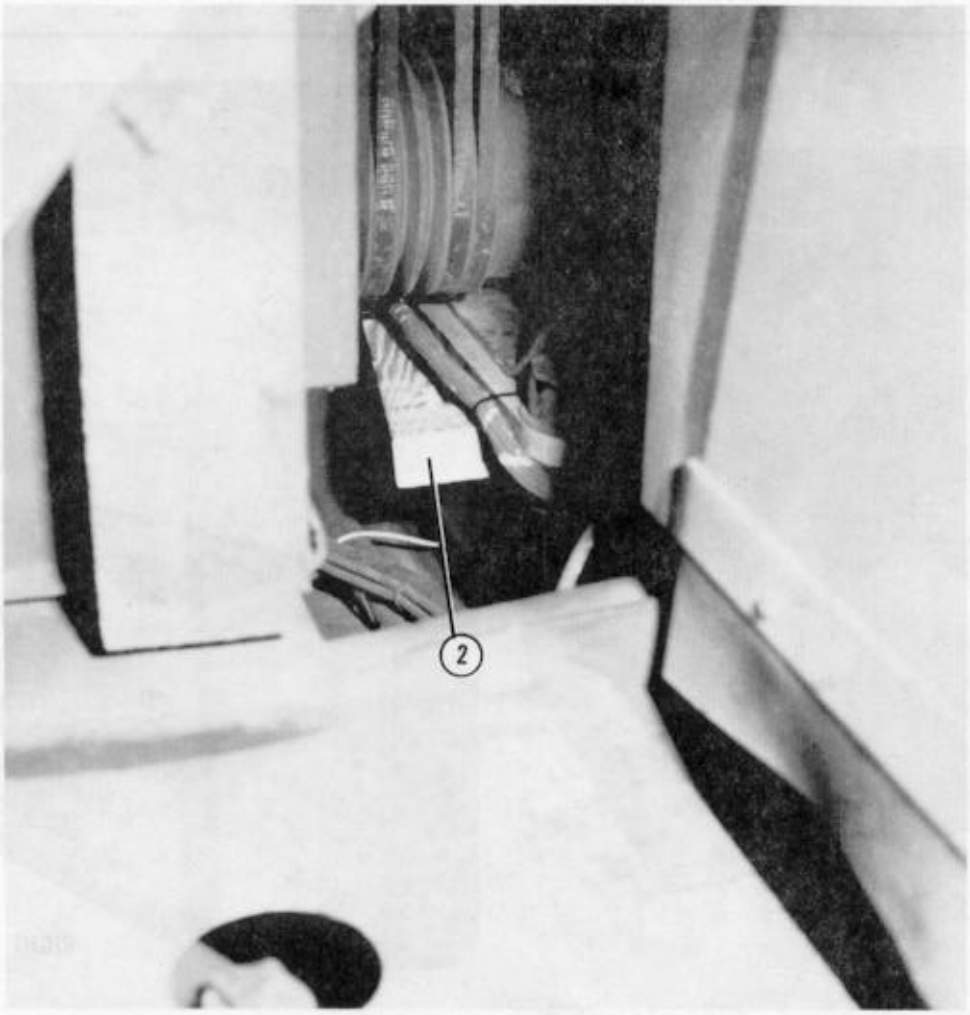


(1) Cradle the muffler between two pieces of 12- by 43-inch honeycomb placed lengthwise between the elevator chains.

(2) Tape the outer edges of the honeycomb. Tie the muffler in place with 1/2-inch tubular nylon webbing.

Figure 3-23. Muffler stowed

(17) Install the engine mount support as shown in Figure 3-24.

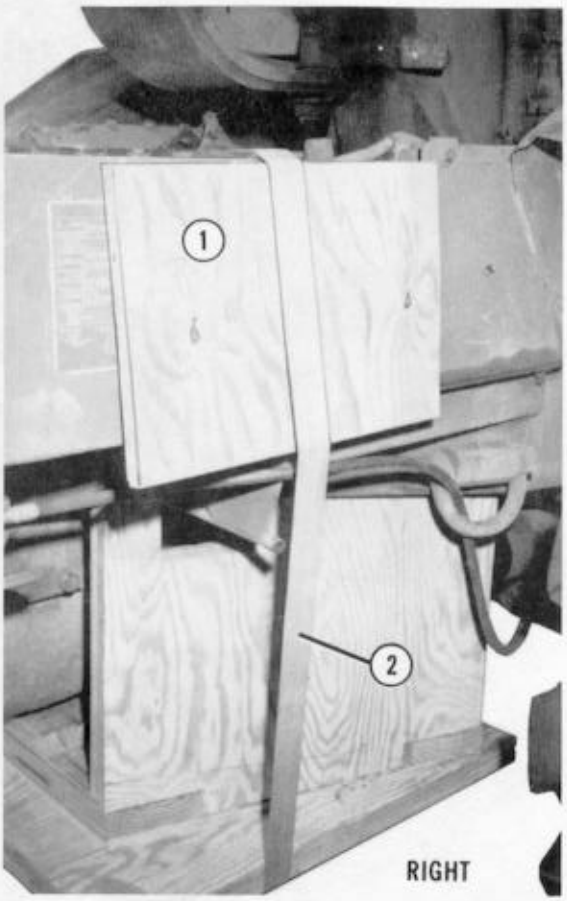


(1) Center the engine mount support (Figure 3-7) under the crankshaft pulley between the motor support and frame.

(2) Seat the engine mount support as far as possible toward the rear. Secure it around the cross member on both sides of the pulley with type III nylon cord (support shown partly installed).

Figure 3-24. Engine mount support installed

(18) Install the transmission housing load spreader as shown in Figure 3-25.



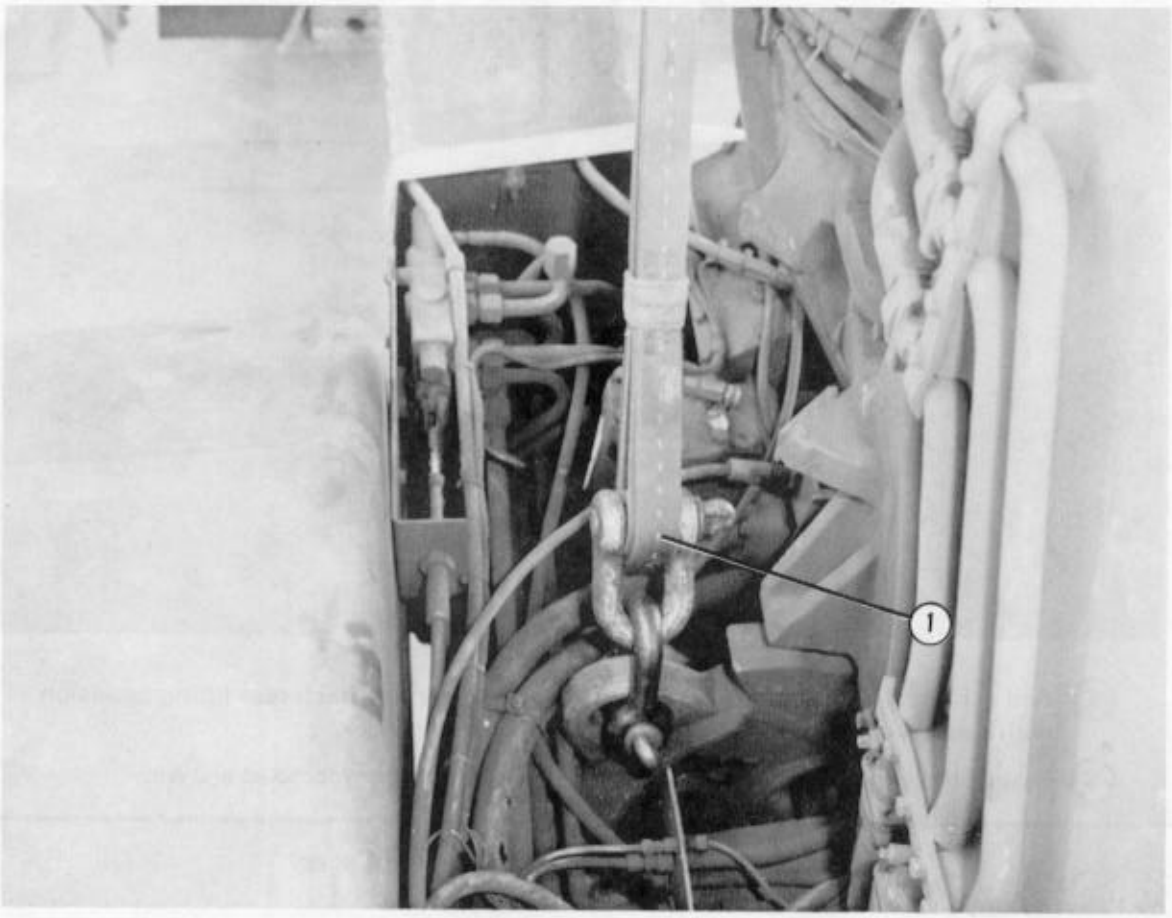
(1) Have an assistant hold a 3/4- by 12- by 18-inch piece of plywood against the right side of the battery box above the transmission.

(2) Support the transmission housing load spreader (Figure 3-6), and secure it and the plywood with a 15-foot lashing, a load binder, and a D-ring.

Figure 3-25. Transmission housing load spreader installed

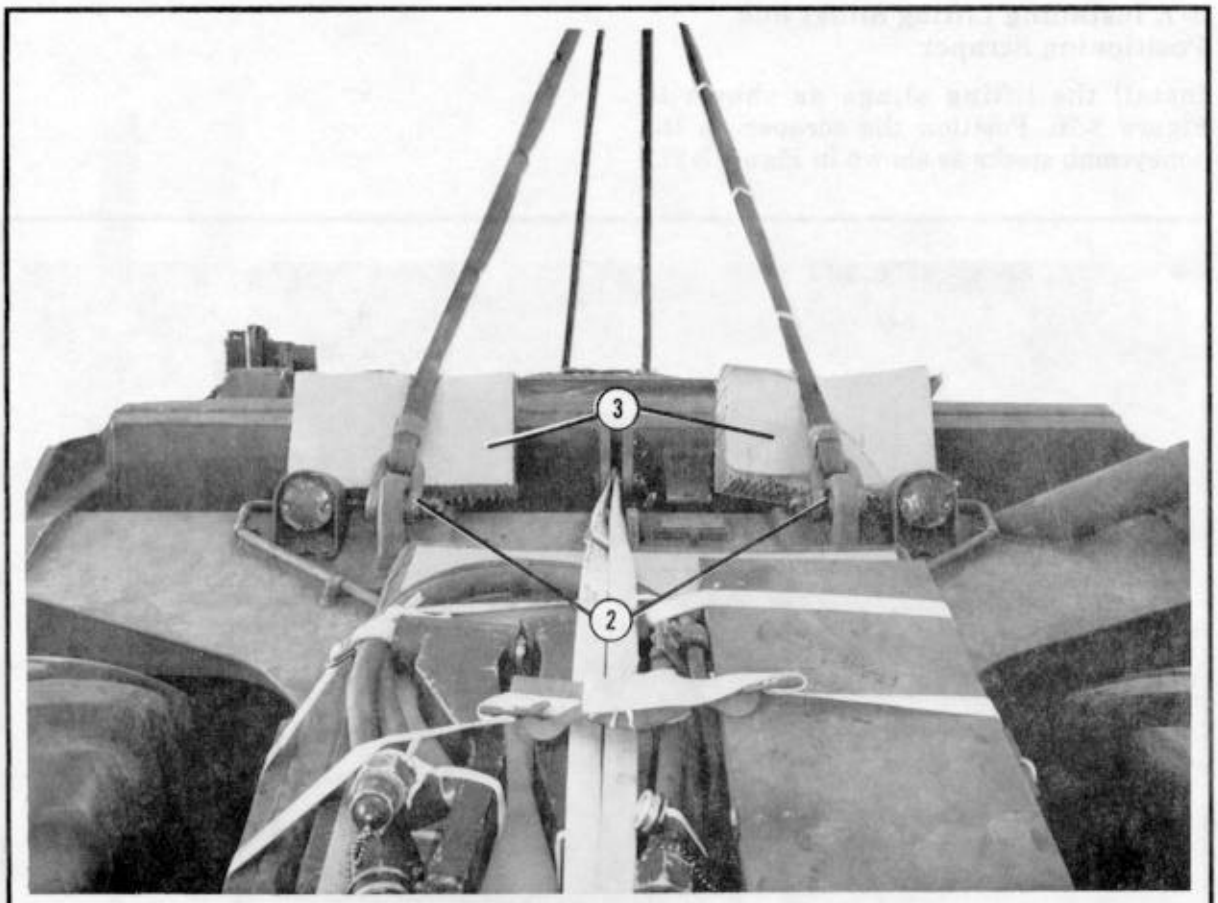
3-7. Installing Lifting Slings and Positioning Scraper

Install the lifting slings as shown in Figure 3-26. Position the scraper on the honeycomb stacks as shown in Figure 3-27.



(1) Bolt a 9-foot (4-loop), type XXVI nylon webbing sling to each front lifting provision using a screw-pin suspension clevis. Pass the slings up between the steering cylinders and the frame.

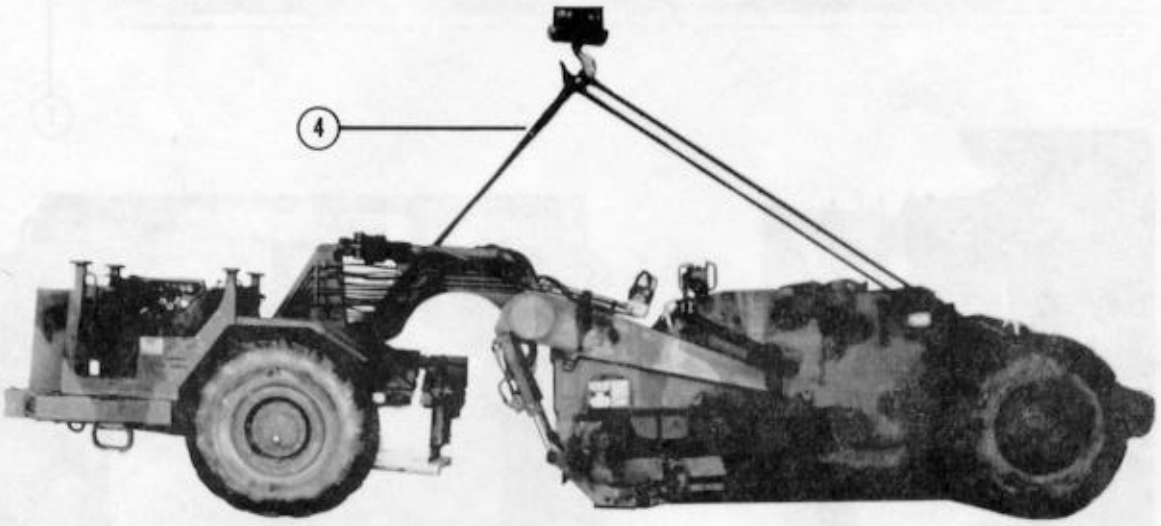
Figure 3-26. Lifting slings installed



(2) Bolt a 12-foot (4-loop), type XXVI nylon webbing sling to each rear lifting provision with a screw-pin suspension clevis.

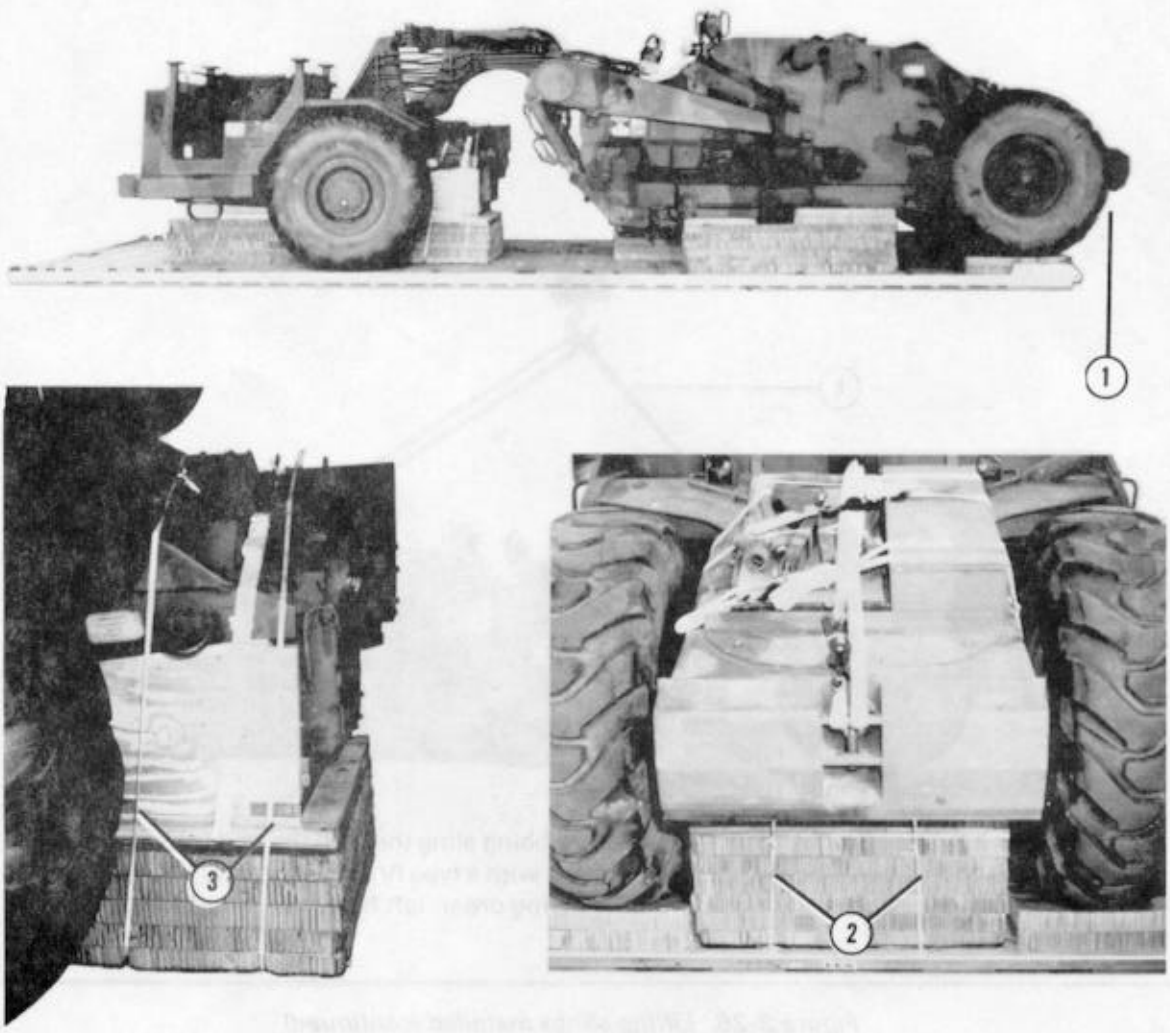
(3) Protect the slings with two pieces of 12- by 18-inch honeycomb as shown.

Figure 3-26. Lifting slings installed (continued)



(4) Pass a 3-foot (4-loop), type XXVI nylon webbing sling through the end loop of each of the 9-foot slings. Secure each 3-foot sling with a type IV link to form two loops. Place the slings on the crane hook in the following order: left front sling, rear slings, right front sling.

Figure 3-26. Lifting slings installed (continued)



(1) Center the scraper on the honeycomb stacks with the rear end of the scraper overhanging the front of the platform 36 inches. The overhang must be at least 35 inches and must not exceed 36 inches. Lower the bowl to rest on the honeycomb by cycling the controls without running the engine.

(2) Tie the 1/2-inch tubular nylon webbing on stack 2 to the frame supports.

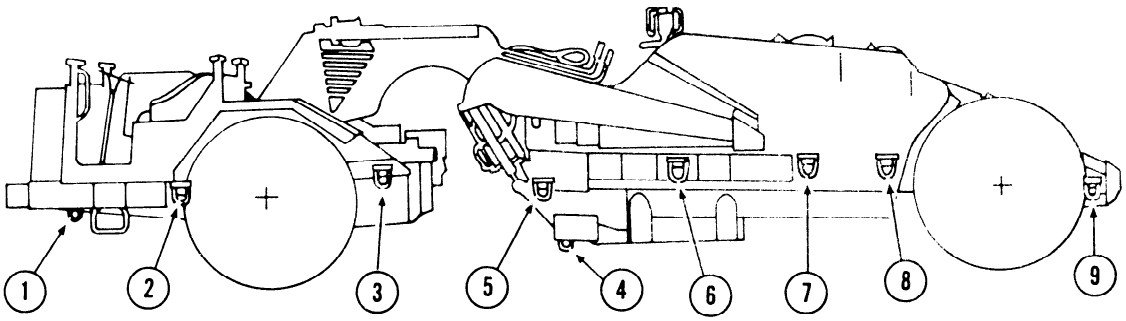
(3) Tie the 1/2-inch tubular nylon webbing on stack 7 around the transmission housing.

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

Figure 3-27. Scraper positioned

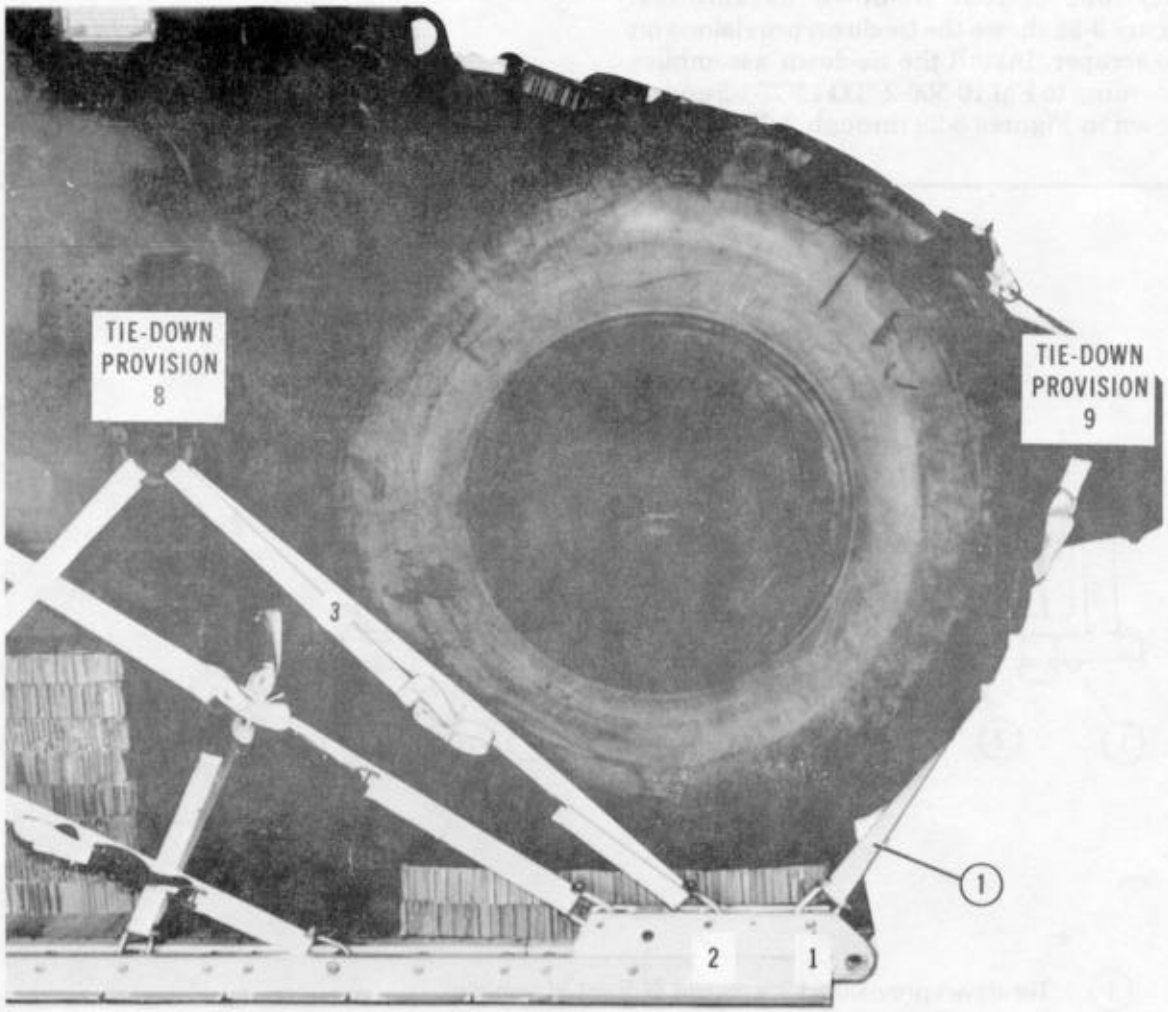
3-8. Lashing Scraper

Lash the scraper to the platform using fifty-four 15-foot tie-down assemblies. Figure 3-28 shows the tie-down provisions on the scraper. Install the tie-down assemblies according to FM 10-500-2/TO 13C7-1-5 and as shown in Figures 3-29 through 3-32.



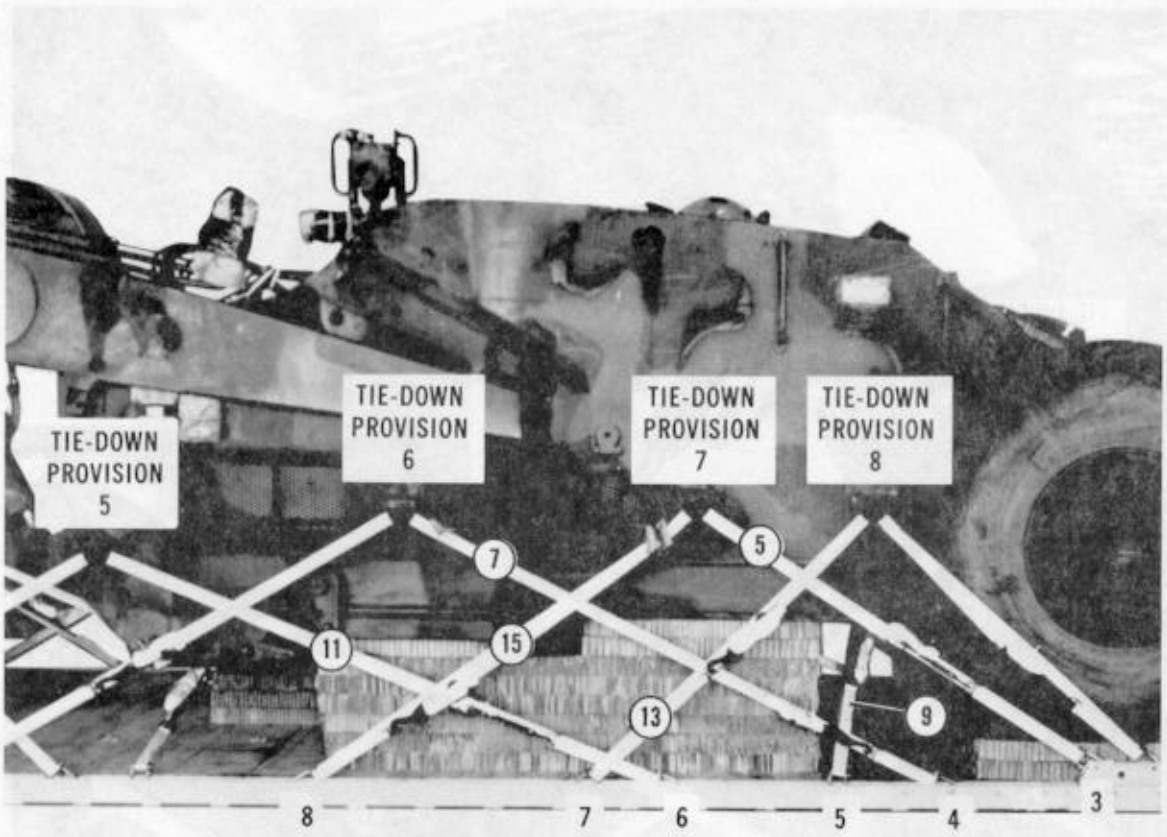
(1) Tie-down provision 1 (centered at front of vehicle).
(2) Tie-down provision 2 (mounted to frame behind tire).
(3) Tie-down provision 3.
(4) Tie-down provision 4 (medium suspension clevis in the bowl cutting edge).
(5) Tie-down provision 5.
(6) Tie-down provision 6.
(7) Tie-down provision 7.
(8) Tie-down provision 8.
(9) Tie-down provision 9.

Figure 3-28. Tie-down provisions on the 613S, type I and II scrapers



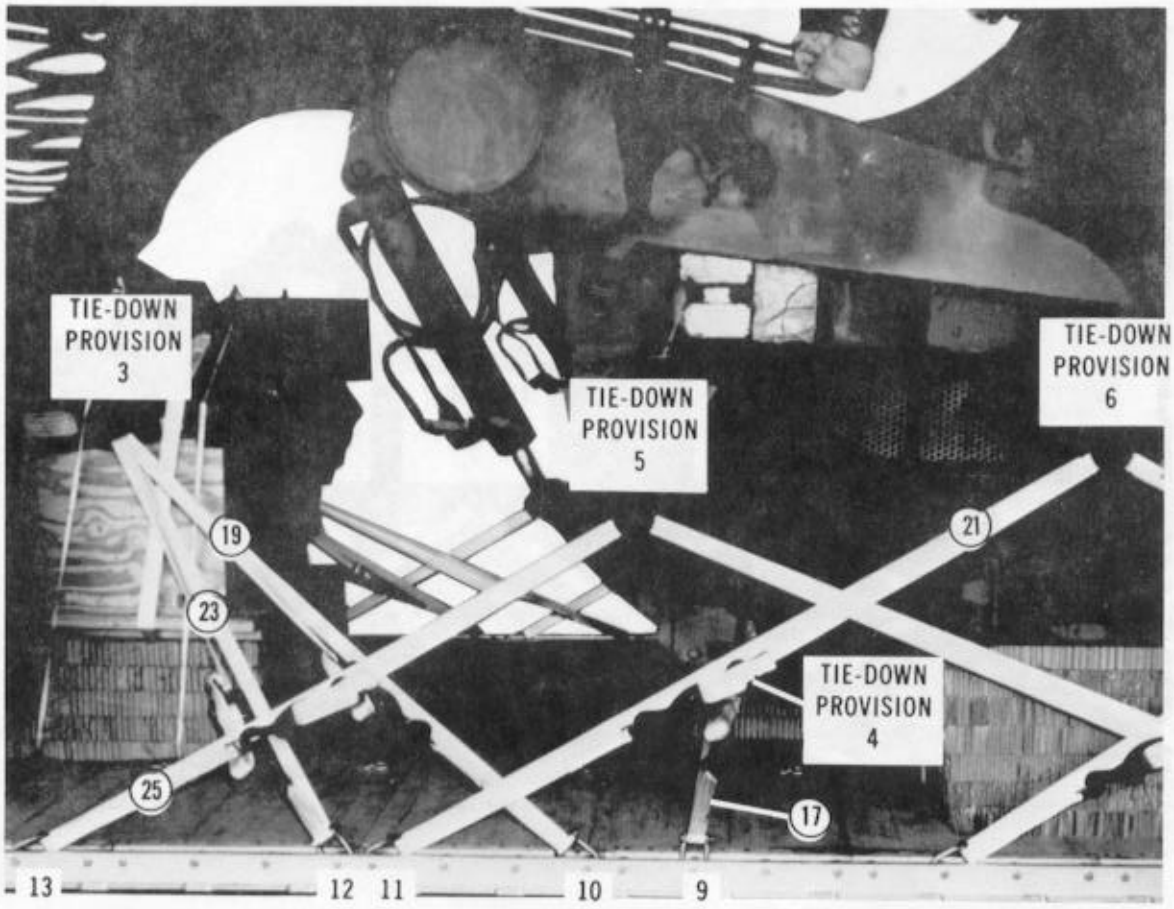
Lashing Number	Tie-down Clevis Number	Instructions
		Pass lashing:
1	1	Through tie-down provision 9.
2	1A	Through tie-down provision 9.
3	2	Through tie-down provision 8.
4	2A	Through tie-down provision 8.

Figure 3-29. Lashings 1 through 4 installed



Lashing Number	Tie-down Clevis Number	Instructions
		Pass lashing:
5	3	Through tie-down provision 7.
6	3A	Through tie-down provision 7.
7	4	Through tie-down provision 6.
8	4A	Through tie-down provision 6.
9	5	Around rear frame member of vehicle.
10	5A	Around rear frame member of vehicle.
11	6	Through tie-down provision 5.
12	6A	Through tie-down provision 5.
13	7	Through tie-down provision 8.
14	7A	Through tie-down provision 8.
15	8	Through tie-down provision 7.
16	8A	Through tie-down provision 7.

Figure 3-30. Lashings 5 through 16 installed



Lashing Number	Tie-down Clevis Number	Instructions
		Pass lashing:
17	9	Through tie-down provision 4.
18	9A	Through tie-down provision 4.
19	10	Through tie-down provision 3.
20	10A	Through tie-down provision 3.
21	11	Through tie-down provision 6.
22	11A	Through tie-down provision 6.
23	12	Through tie-down provision 3.
24	12A	Through tie-down provision 3.
25	13	Through tie-down provision 5.
26	13A	Through tie-down provision 5.

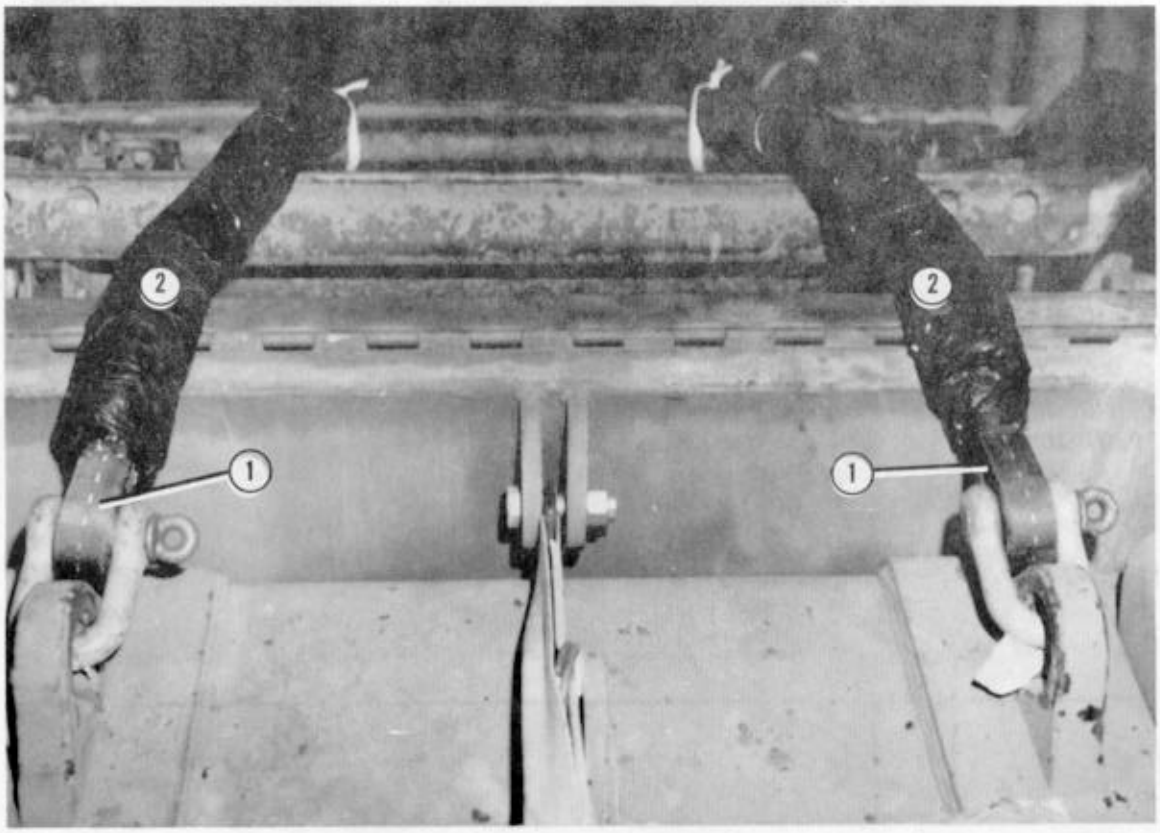
Figure 3-31. Lashings 17 through 26 installed

Lashing Number	Tie-down Clevis Number	Instructions
		Pass lashing:
27	15	Through tie-down provision 2.
28	15A	Through tie-down provision 2.
29	16	Through tie-down provision 2.
30	16A	Through tie-down provision 2.
31	17	Through tie-down provision 1.
32	17A	Through tie-down provision 1.

Figure 3-32. Lashings 27 through 32 installed

3-9. Installing and Safetying Suspension Slings

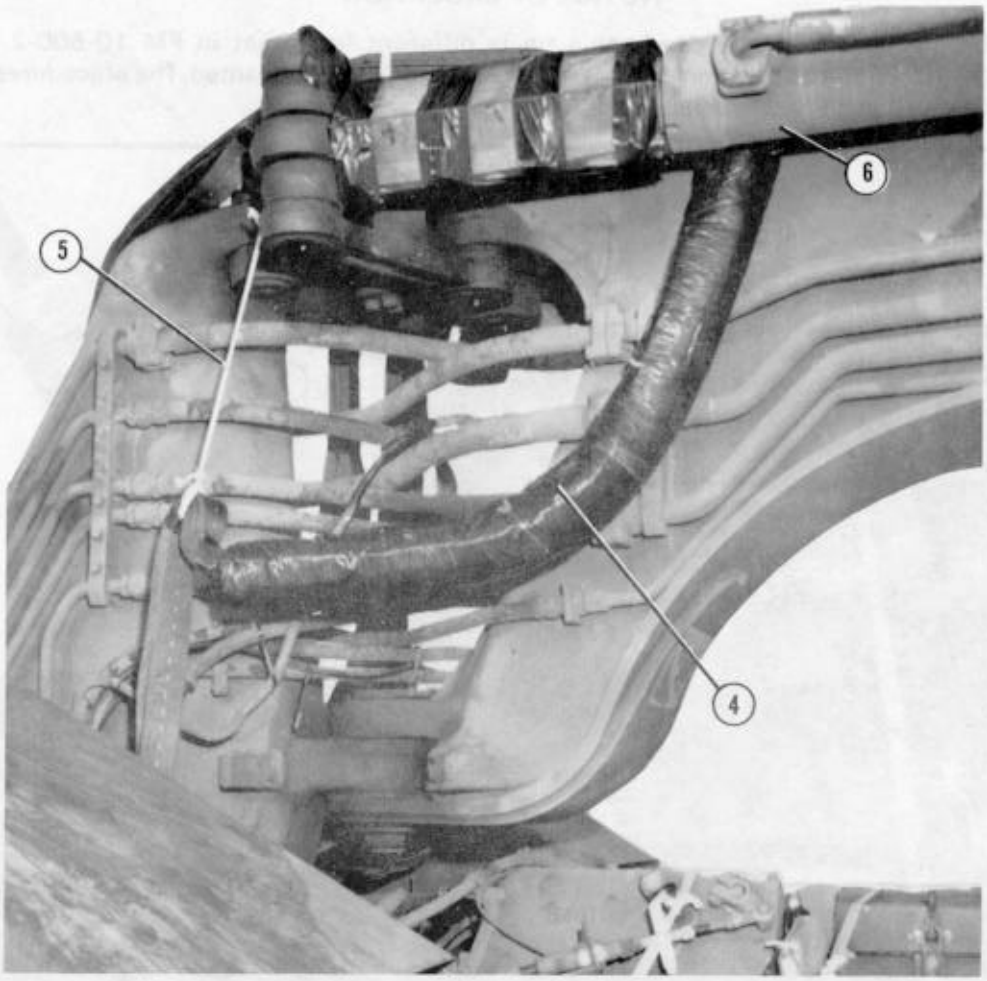
Install and safety four 20-foot (4-loop), type XXVI nylon webbing suspension slings to the scraper as shown in Figure 3-33.



(1) Bolt a 20-foot sling to each of the lifting provisions at the rear of the scraper with a screw-pin suspension clevis. Install a 2 3/8-inch steel spacer on each clevis pin. These will be the front slings.

(2) Wrap each front sling with an 8- by 36-inch piece of felt. Tape the felt in place with pressure-sensitive tape beginning 1 inch from the end loop of the sling.

Figure 3-33. Suspension slings installed and safetied



(3) Bolt a 20-foot sling to each of the lifting provisions at the front of the scraper with a screw-pin suspension clevis (not shown). Install a 2 3/8-inch steel spacer on each clevis pin. These will be the rear slings.

(4) Wrap each rear sling with an 8- by 36-inch piece of felt. Tape the felt in place with pressure-sensitive tape beginning 30 inches from the end loop of the sling.

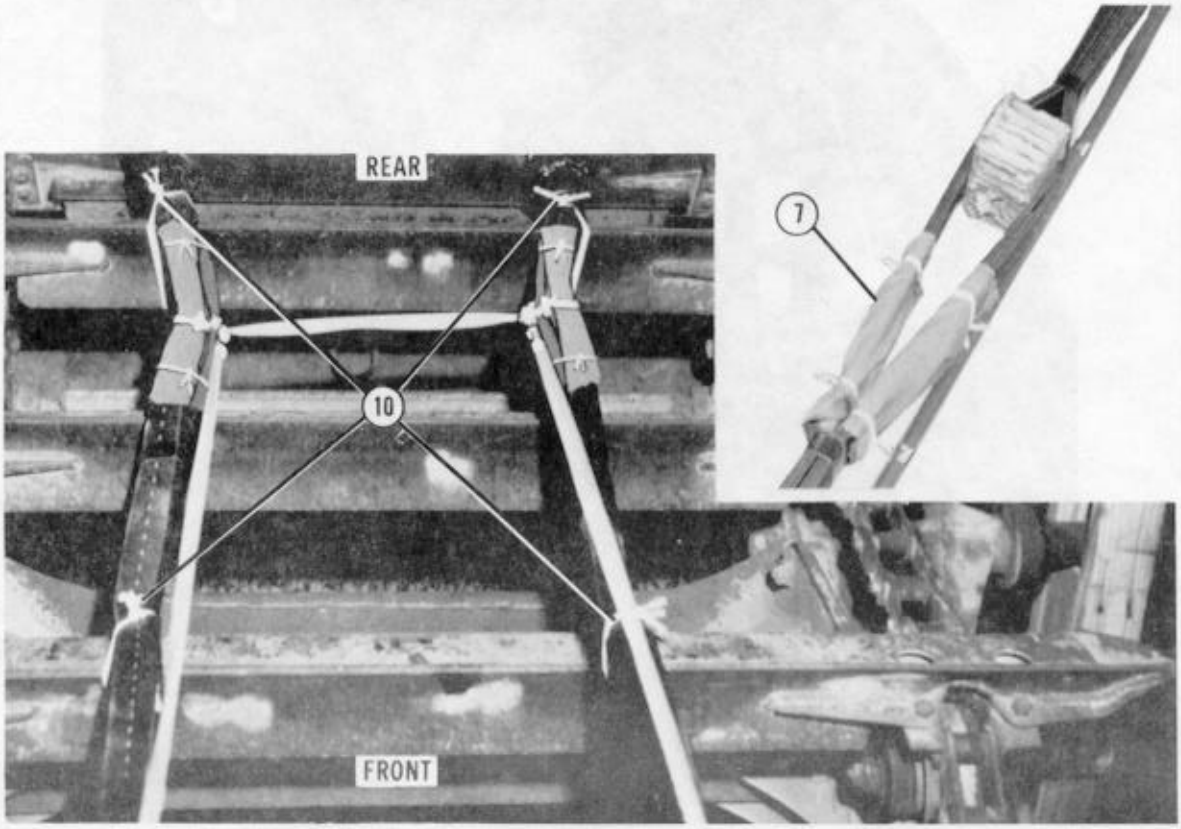
(5) Safety the rear slings to the steering assembly arms with two lengths of type I, 1/4-inch cotton webbing. Tie the webbing 22 inches from the clevis.

(6) Pass the slings between the steering cylinders and the frame.

Figure 3-33. Suspension slings installed and safetied (continued)

NOTICE OF EXCEPTION

The positioning of the deadman's tie is different from that in FM 10-500-2/TO 13C7-1-5. An exception to FM 10-500-2/TO 13C7-1-5 is granted. The procedures in steps 7 and 8 below must be followed.



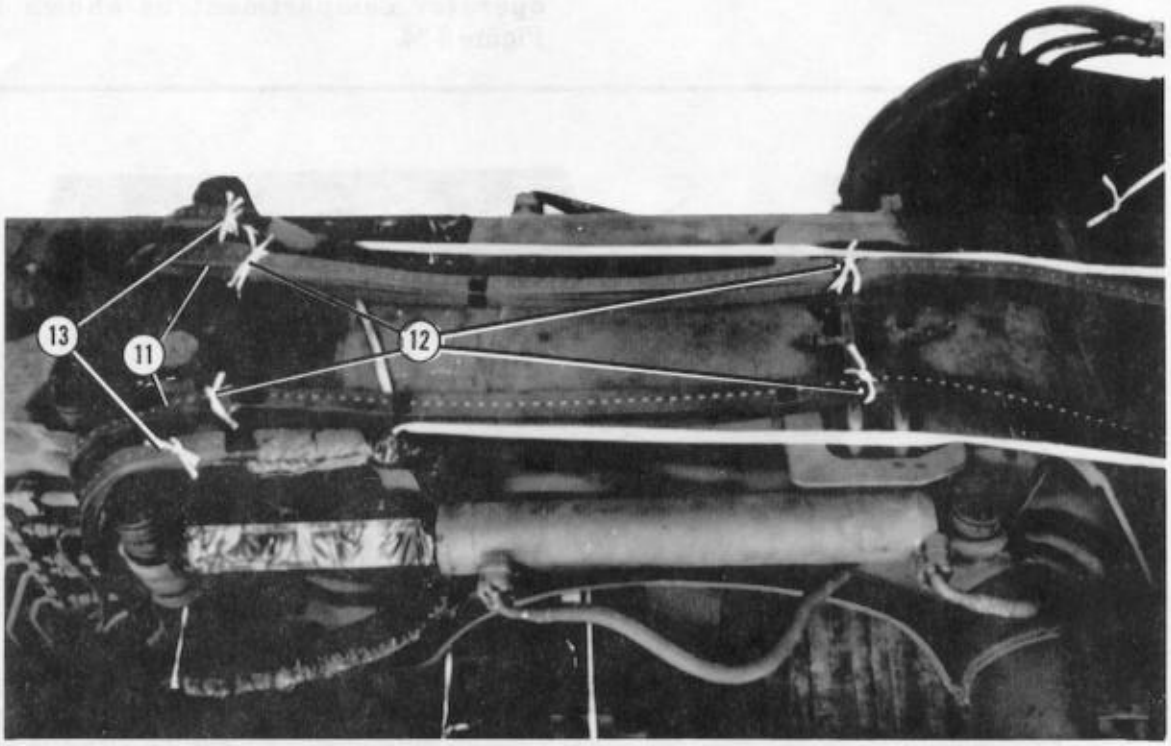
(7) Center a 12- by 12-inch piece of cotton muslin cloth on one of the suspension slings 13 inches above the highest point of the load. Wrap the cloth around four of the eight plies of the sling, and tie it at the top and bottom with type I, 1/4-inch cotton webbing. Wrap the other four plies of the sling in the same way. Prepare the other three slings using the same procedure.

(8) Raise the slings, and install the deadman's tie (not shown) 13 inches above the highest point on the load.

(9) Lower the slings (not shown), passing them from the front of the load toward the rear.

(10) Safety the lower part of the front slings to the elevator slats. Safety the upper portion of the slings to the 1/2-inch tubular nylon ties. Secure the elevator guard with two lengths of type I, 1/4-inch cotton webbing.

Figure 3-33. Suspension slings installed and safetied (continued)



(11) Pass the front slings over the steering arms. Be sure that the slings do not extend above the top of the steering assembly.

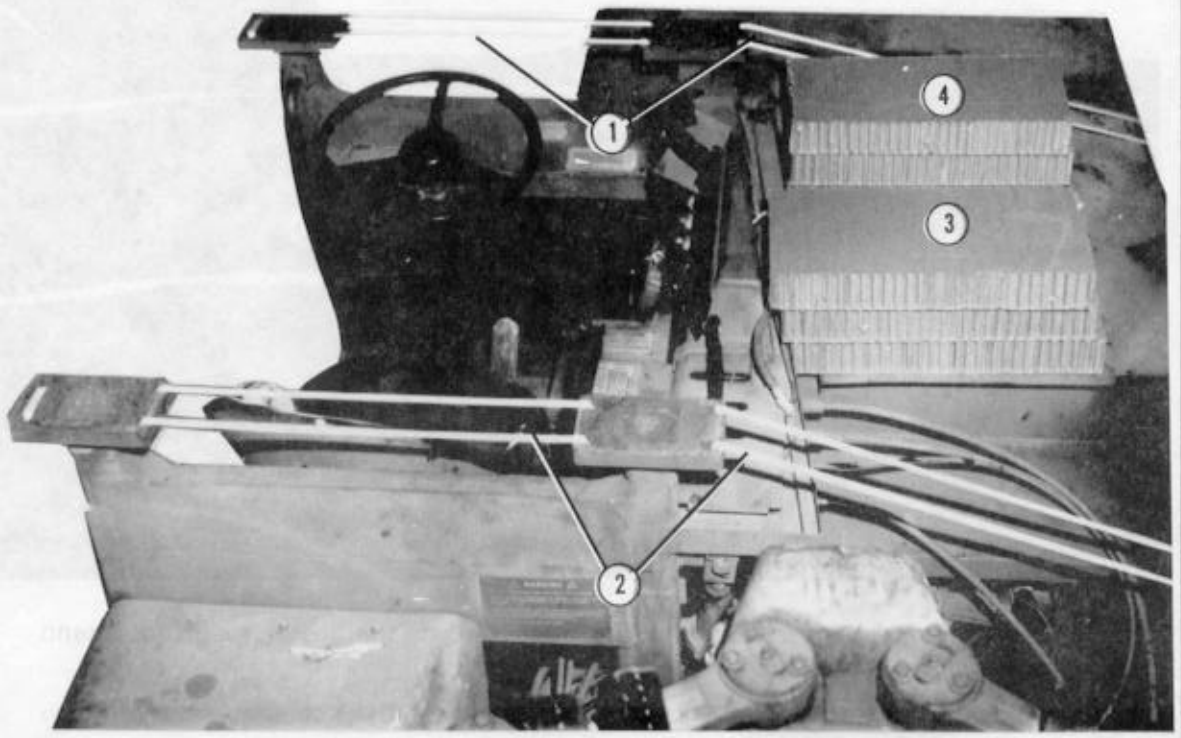
(12) Safety the front slings to the frame plate assembly and the steering arms with two lengths of type I, 1/4-inch cotton webbing.

(13) Safety the rear slings to the steering arms with two lengths of type I, 1/4-inch cotton webbing. Be sure that the rear slings pass to the outside of the front slings.

Figure 3-33. Suspension slings installed and safetied (continued)

3-10. Installing Parachute Release Platform and Load Cover

Install the honeycomb for the parachute release platform beside the operator compartment as shown in Figure 3-34. Position and secure the canvas cover over the engine and operator compartment as shown in Figure 3-34.



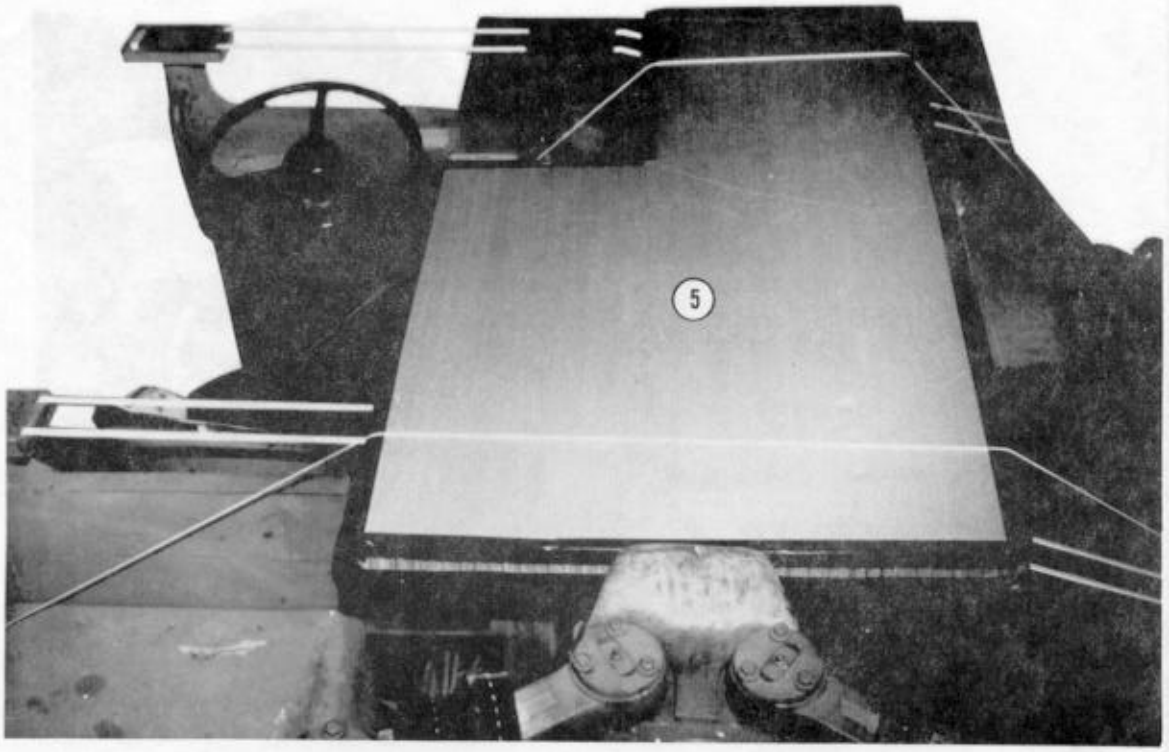
(1) Pass a length of 1/2-inch tubular nylon webbing through the front ROPS mounting holes and over the vehicle. Tie the webbing to clevis 26A.

(2) Pass a length of 1/2-inch tubular nylon webbing through the rear ROPS mounting holes and over the vehicle. Tie the webbing to clevis 24A.

(3) Place three 10- by 21-inch pieces of honeycomb beside the operator compartment and even with the edge of the engine cover.

(4) Place three 10- by 21-inch pieces of honeycomb against the webbing placed in step 1 above.

Figure 3-34. Parachute release platform and load cover installed



(5) Position a 36- by 62-inch piece of honeycomb with a 15- by 24-inch cutout as the parachute release platform over the engine housing as shown. Tape the upper edges of the honeycomb. Safety the honeycomb with type III nylon cord to convenient points on the platform.

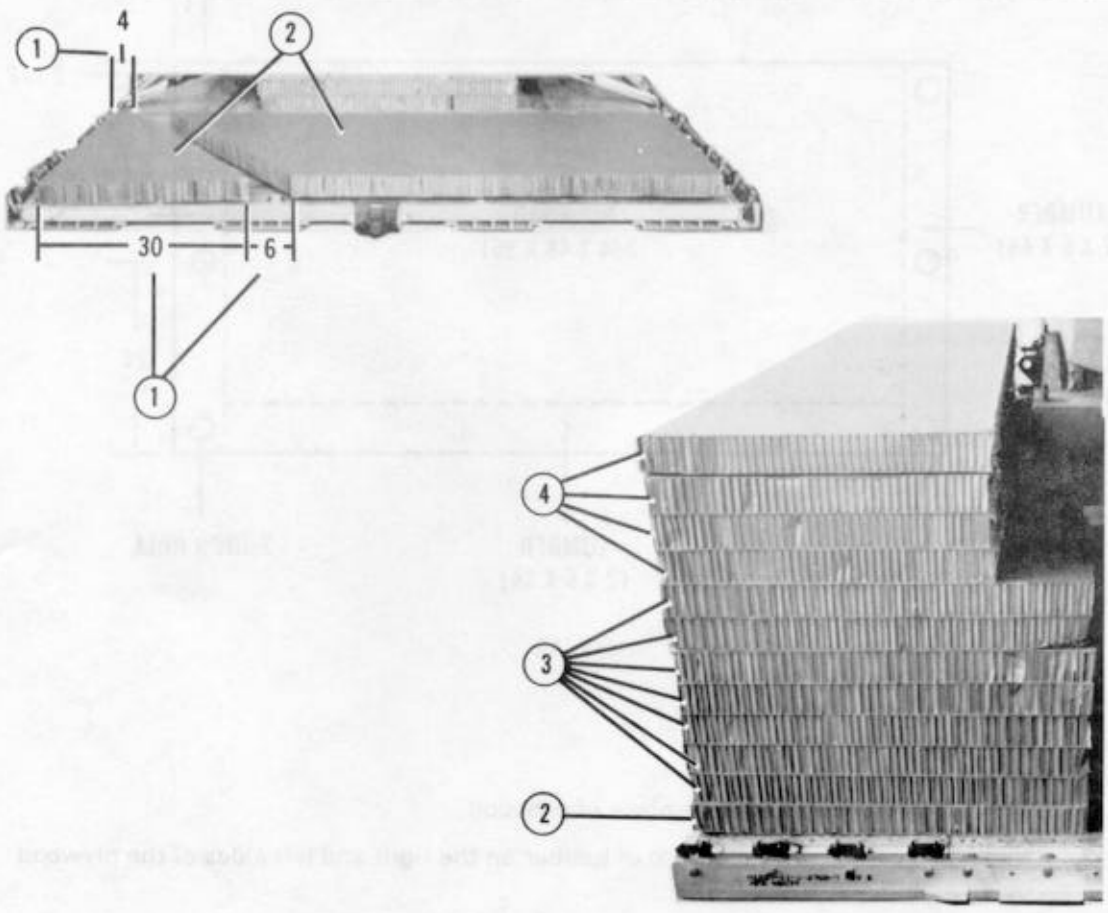
Figure 3-34. Parachute release platform and load cover installed (continued)

(6) Secure a 10- by 10-foot canvas cover with type III nylon cord to convenient points on the platform. Secure the corners of the cover to the bumper.

Figure 3-34. Parachute release platform and load cover installed (continued)

3-11. Building and Installing Parachute Stowage Platform

Build the parachute stowage platform support stack as shown in Figure 3-35. Build the parachute stowage platform as shown in Figure 3-36. Lash the parachute stowage platform to the platform as shown in Figure 3-37.

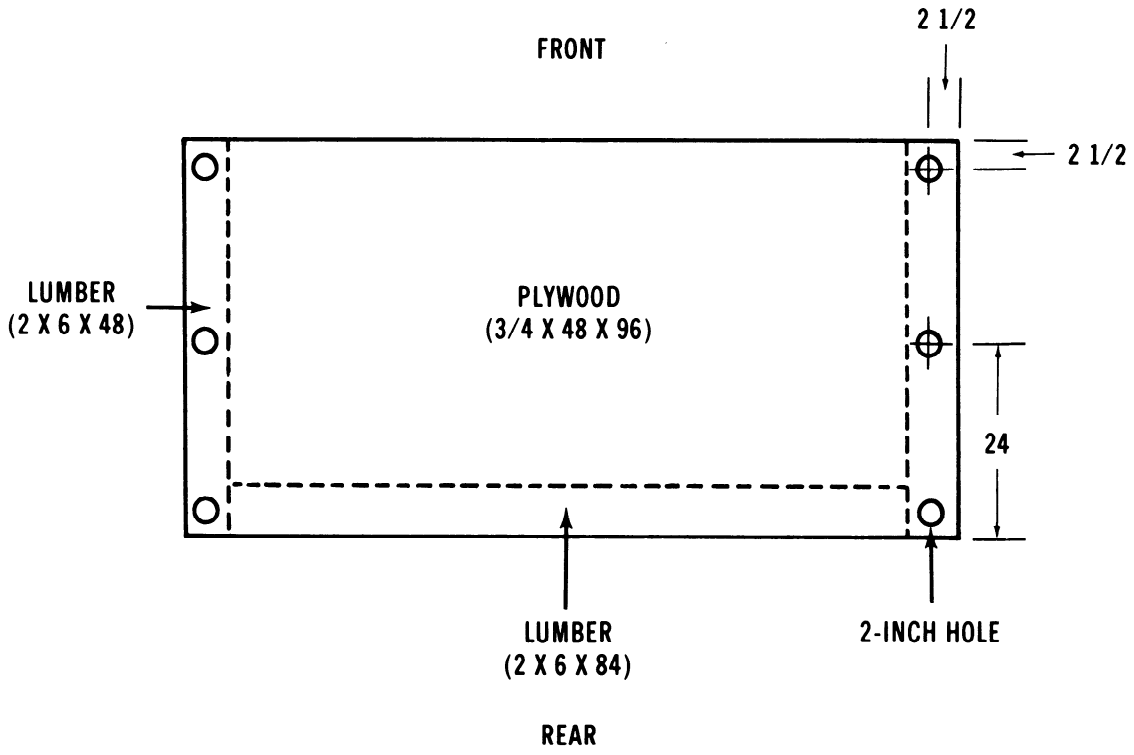


1. Cut a 36- by 96-inch piece of honeycomb. Measure 30 inches in on one of the 96-inch sides and 4 inches in on the opposite side. Make a 6-inch-wide diagonal cut.
2. Place the two pieces of honeycomb on the platform as shown above to form a base.
3. Place seven 36- by 96-inch pieces of honeycomb on the base.
4. Place four 28- by 96-inch pieces of honeycomb flush with the rear edge of the stack.

Figure 3-35. Parachute stowage platform support stack built

Notes:

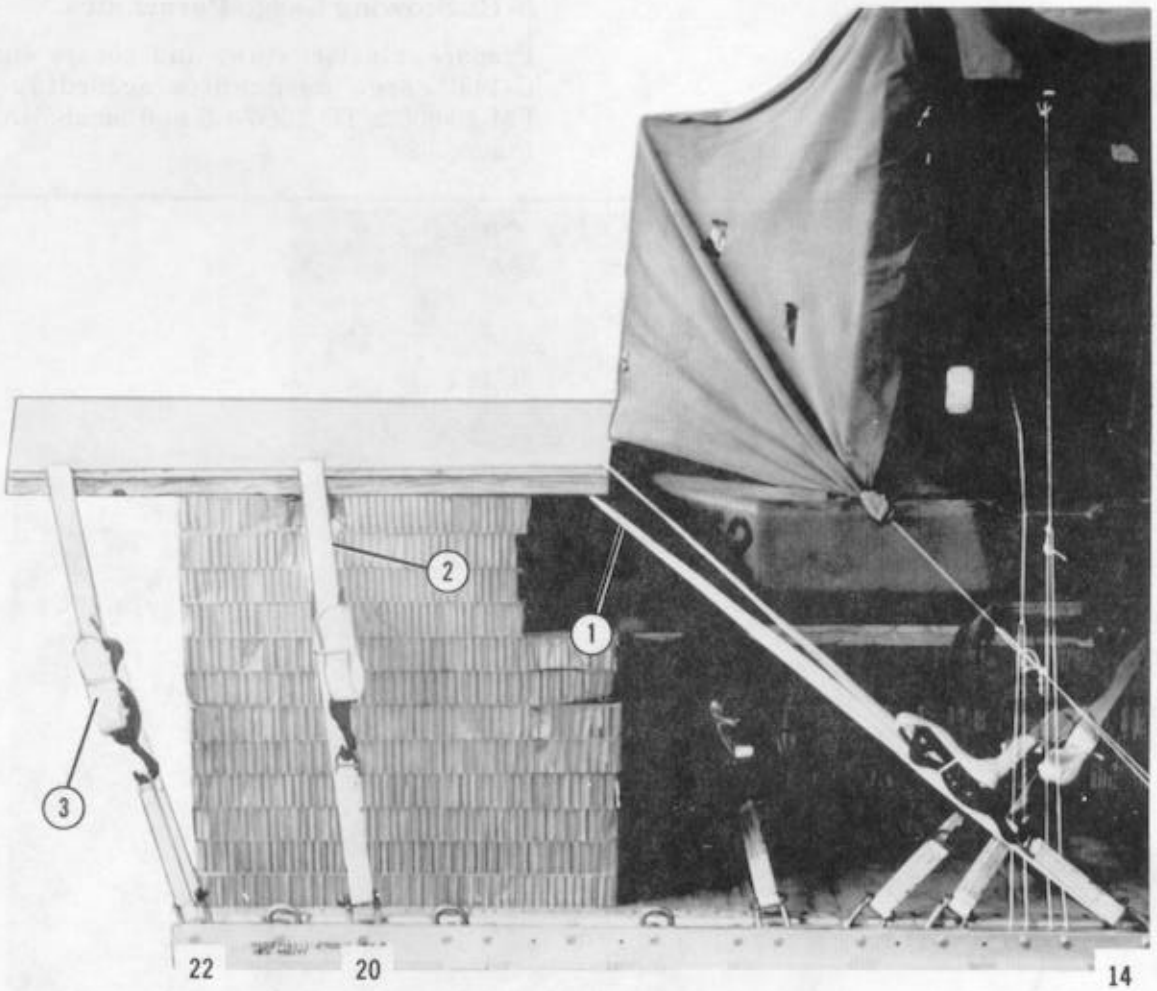
1. All dimensions are given in inches.
2. This drawing is not drawn to scale.



Step:

1. Cut a 3/4- by 48- by 96-inch piece of plywood.
2. Nail a 2- by 6- by 48-inch piece of lumber on the right and left sides of the plywood using eightpenny nails.
3. Nail a 2- by 6- by 84-inch piece of lumber on the rear of the plywood using eightpenny nails.
4. Drill a 2-inch hole on each corner of the tray 2 1/2 inches from each side.
5. Drill a 2-inch hole on the right and left sides of the platform centered 24 inches from the rear corner of the platform.

Figure 3-36. Parachute stowage platform built



(1) Run a 15-foot tie-down strap from clevis 14 through the front hole in the right side of the parachute stowage platform. Run a 15-foot tie-down strap from clevis 14A through the front hole on the left side of the parachute stowage platform. Secure each strap with a D-ring and a load binder.

(2) Run a 15-foot tie-down strap from clevis 20 through the center hole on the right side of the tray. Run a 15-foot tie-down strap from clevis 20A through the center hole on the left side of the parachute stowage platform. Secure each strap with a D-ring and a load binder.

(3) Run a 15-foot tie-down strap from clevis 22 through the rear hole in the right side of the parachute stowage platform. Run a 15-foot tie-down strap from clevis 22A through the rear hole on the left side of the parachute stowage platform. Secure each strap with a D-ring and a load binder.

Figure 3-37. Parachute stowage platform lashed to platform

3-12. Stowing Cargo Parachutes

Prepare, cluster, stow, and secure eight G-11B cargo parachutes according to FM 10-500-2/TO 13C7-1-5 and as shown in Figure 3-38.

CAUTION:

1. The front clustering ties must not interfere with the deployment of the parachutes.
2. Make certain the parachutes are not higher than the load.

(1) Secure the parachutes with three lengths of type X nylon webbing. Attach the first restraint strap to clevises 19 and 19A.

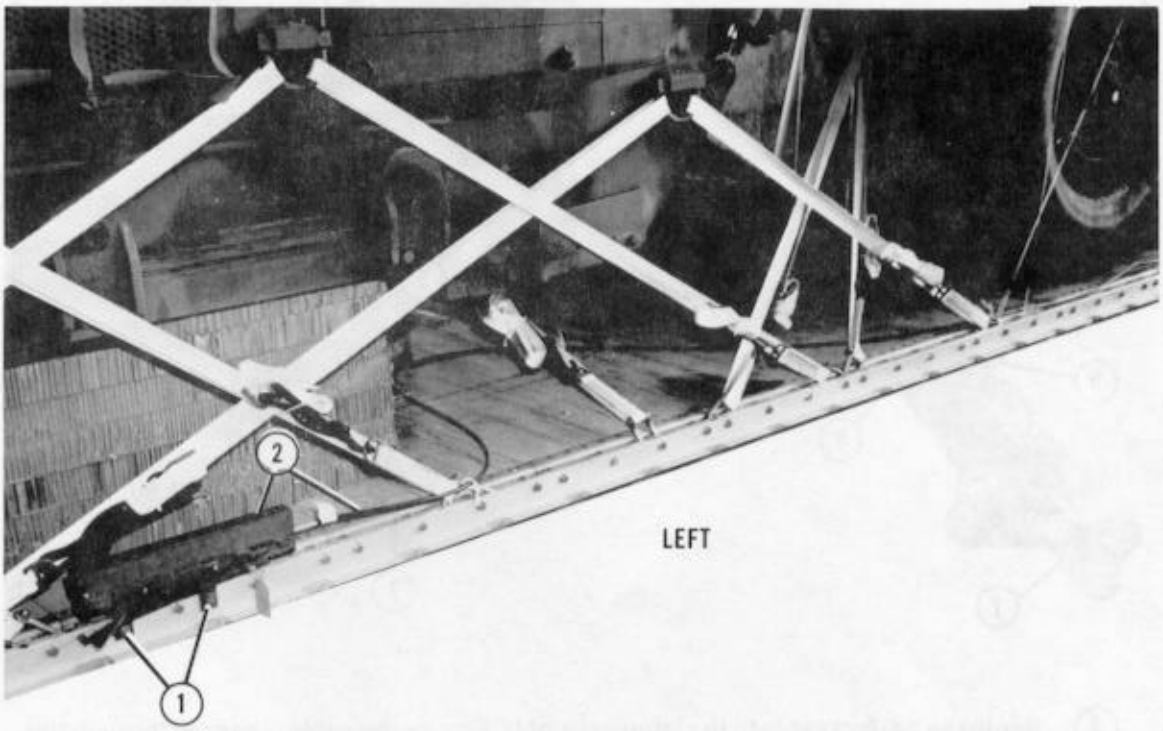
(2) Attach the second restraint strap to clevises 21 and 21A.

(3) Attach the third restraint strap to clevises 18 and 18A.

Figure 3-38. Cargo parachutes stowed and secured

3-13. Installing Extraction System

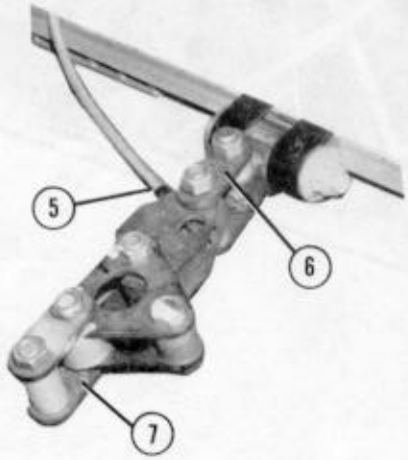
Install the EFTC extraction system according to FM 10-500-2/TO 13C7-1-5 and as shown in Figure 3-39.

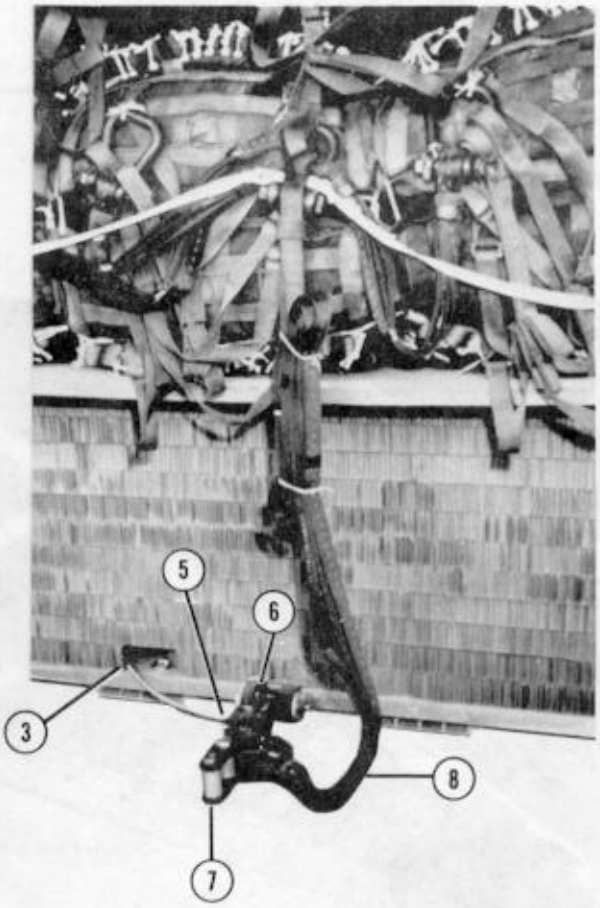


(1) Bolt the actuator mounting bracket to the rear mounting holes (10 feet from front edge of platform) on the left platform side rail.

(2) Attach a 24-foot cable to the actuator. Install the actuator to the EFTC mounting bracket. Tie the cable to the outside edge of clevis 8A with type I, 1/4-inch cotton webbing.

Figure 3-39. Extraction system installed





(3) Route the 24-foot cable to the latch assembly. Ensure the cable is passed through the cutout portion of the parachute stowage platform.

(4) Tie the cable to tie-down rings or tie-down clevises at random points (not shown).

(5) Connect the cable to the latch assembly according to FM 10-500-2/TO 13C7-1-5.

(6) Install the latch assembly on the platform extraction bracket according to FM 10-500-2/TO 13C7-1-5.

(7) Install a link assembly adapter on the latch assembly using a 3-inch spacer in the free end.

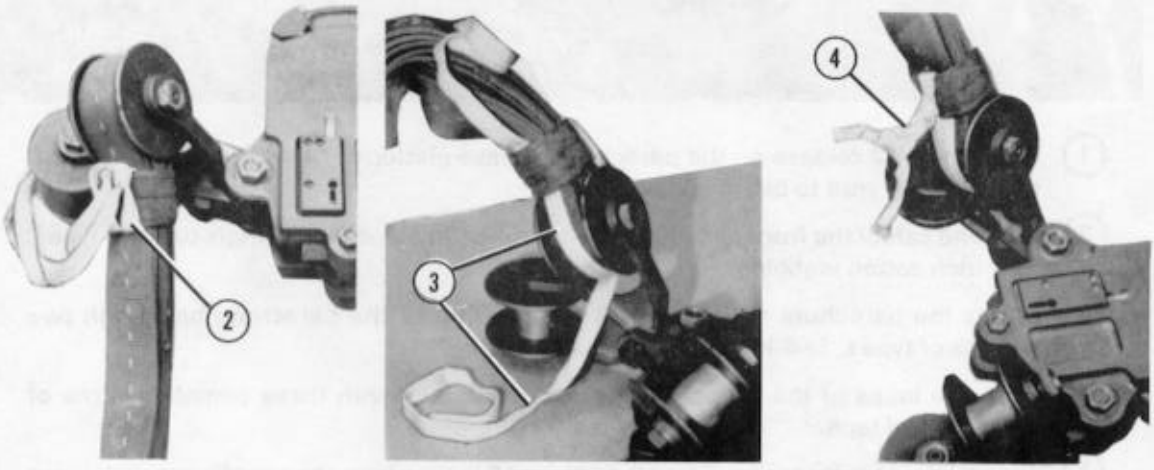
(8) Install a 9-foot (4-loop), type XXVI nylon webbing deployment line according to FM 10-500-2/TO 13C7-1-5.

Figure 3-39. Extraction system installed (continued)

3-14. Installing Release Assembly

Prepare a modified M-2 cargo parachute release assembly according to FM 10-500-2/TO 13C7-1-5. Safety the suspension sling keepers as shown in Figure 3-40. Install the release assembly on the load as shown in Figure 3-41.

CAUTION: Be sure to use a modified M-2 cargo parachute release assembly as shown in FM 10-500-2/TO 13C7-1-5.



(1) Lay the M-2 release assembly face up on the load (not shown). Bolt the rear suspension slings to the lower links. Bolt the front suspension slings to the upper links.

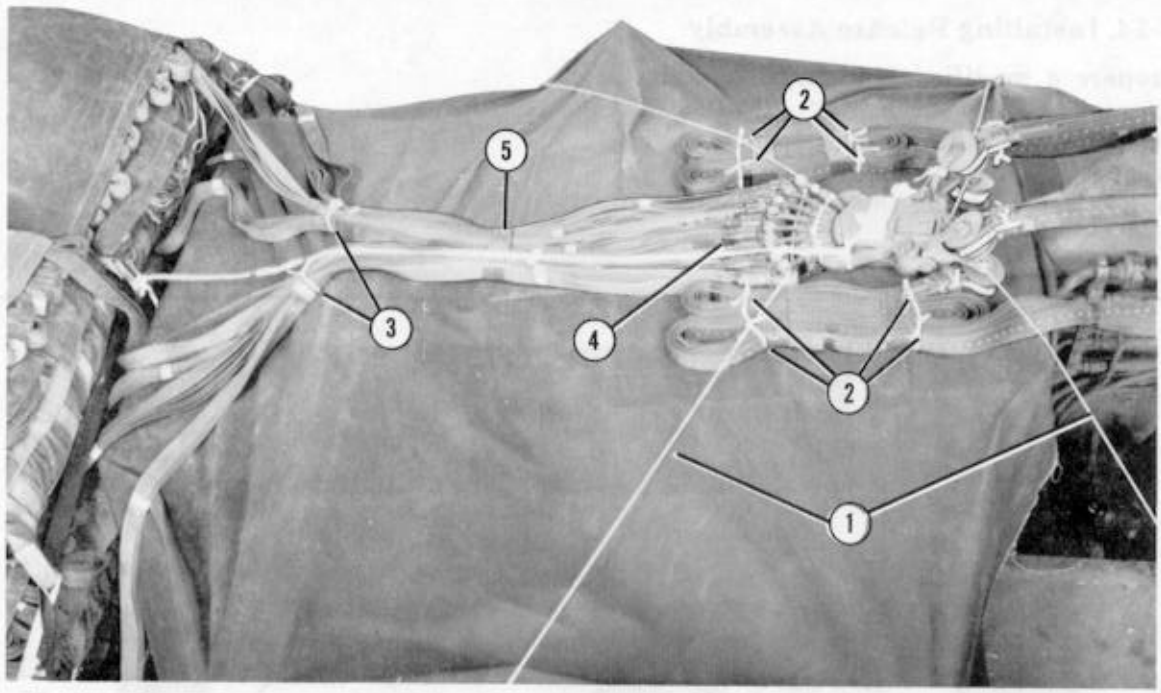
(2) Form a girth hitch around one side of a sling keeper with a 60-inch length of 1/2-inch tubular nylon webbing so that the running ends are of equal length.

(3) Bring both running ends around the loop of the sling and through the suspension link. Bring one running end through the sling keeper.

(4) Tie the two running ends together with two half hitches and a locking knot. Pull the sling keeper as tightly as possible toward the sling loop.

(5) Secure the other three suspension sling keepers in the same manner.

Figure 3-40. Suspension sling keepers safetied



(1) Place the M-2 release on the parachute release platform. Tie it down securely with type III nylon cord to bushings 39 and 57.

(2) Fold and safety the front suspension slings in eight places with single turns of type I, 1/4-inch cotton webbing.

(3) Safety the parachute risers about 3 feet in front of the parachute bags with two lengths of type I, 1/4-inch cotton webbing.

(4) Tape the loops of the parachute risers individually with three complete turns of cloth-backed tape.

(5) Tape all the parachute risers together about 18 inches from the taped loops with three complete turns of cloth-backed tape.

Figure 3-41. Release assembly installed

3-15. Placing Extraction Parachutes

Place extraction parachutes as given below.

a. **C-130 Aircraft.** Place two 28-foot, heavy-duty cargo extraction parachutes and a 60-foot (6-loop), type XXVI nylon webbing extraction line on the load for installation in the aircraft.

b. **C-141 Aircraft.** Place two 28-foot, heavy-duty cargo extraction parachutes and a 120-foot (6-loop), type XXVI nylon webbing extraction line on the load for installation in the aircraft.

3-16. Installing Provisions for Emergency Restraints

Install provisions for the emergency restraints when the scraper is to be air-dropped from a C-141 aircraft. Install the provisions for the emergency restraints according to FM 10-500-2/TO 13C7-1-5.

3-17. Marking Rigged Load

Mark the rigged load according to FM 10-500-2/TO 13C7-1-5 and as shown in Figure 3-42. Complete DD Form 1387-2, and securely attach it to the load. Indicate on DD Form 1387-2 that the vehicle fuel tank and the batteries have been prepared according to AFR 71-4/TM 38-250. If the load varies, the weight, height, CB, and parachute requirements must be recomputed.

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

Note: Disconnect the suspension slings, lay them aside, and install the lifting slings to lift this load onto the transport vehicle. Reconnect the suspension slings after the load is on the transport vehicle.

RIGGED LOAD DATA

		REBUY	TYPE I	TYPE II
Weight:	Load shown	37,880 lb	38,270 lb	38,670 lb
	Maximum load allowed	39,500 lb	39,500 lb	39,500 lb
Height		98 1/2 in	98 1/2 in	98 1/2 in
Width		108 in	108 in	108 in
Length		440 in	440 in	440 in
Overhang:	Front	35 to 36 in	35 to 36 in	35 to 36 in
	Rear	20 to 21 in	20 to 21 in	20 to 21 in
CB (from front edge of platform)		181 in	180 in	178 in
Extraction System		EFTC	EFTC	EFTC

Figure 3-42. The 613S, type I scraper rigged on a type V platform for low-velocity airdrop

3-18. Equipment Required

Use the equipment listed in Table 3-1 to rig this load.

Table 3-1. Equipment required for rigging the 613S, type I and II scrapers on a type V platform for low-velocity airdrop

NSN	Item	Quantity
8040-00-273-8713	Adhesive, paste, 1-gal	As required
4030-00-432-2516	Clevis, screw-pin	6
	Clevis, suspension:	
4030-00-678-8562	3/4-in (medium)	2
4030-00-090-5354	1-in (large)	8
8305-00-242-3593	Cloth, cotton duck, 60-in	As required
4020-00-240-2146	Cord, nylon, type III, 550-lb	As required
1670-00-434-5782	Coupling, airdrop, extraction force transfer w 24-ft cable	1
1670-00-360-0328	Cover, clevis, large	1
8135-00-664-6958	Cushioning material, packaging, cellulose wadding	As required
5365-00-937-0147	D-ring, heavy-duty, 10,000-lb	3
8305-00-958-3685	Felt, 1/2-in thick	As required
	Line, extraction, type XXVI nylon webbing:	
1670-00-003-1957	60-ft (6-loop) *or*	1
1670-01-064-4454	60-ft (6-loop)	1
1670-01-062-6312	120-ft (6-loop)	1
1670-00-783-5988	Link assembly, type IV	2
1670-00-006-2752	Link, four-point	1
5510-00-220-6146	Lumber, 2- by 4-in:	
	12-in	1
	18-in	4
	32-in	2
5510-00-220-6148	Lumber, 2- by 6-in:	
	6-in	1
	7-in	1
	18-in	3
	29 1/2-in	1
	32 1/2-in	1
	33-in	1
	37 1/2-in	1
	48-in	2
	50-in	4
	84-in	1
5510-00-220-6274	Lumber, 4- by 4- by 41-in	2
	Nail, steel wire, common:	
5315-00-010-4659	8d	As required
5315-00-010-4663	16d	As required

Table 3-1. Equipment required for rigging the 613S, type I and II scrapers on a type V platform for low-velocity airdrop (continued)

NSN	Item	Quantity
1670-00-753-3928	Pad, energy-dissipating, honeycomb,	
	3- by 36- by 96-in:	28 sheets
	5- by 21-in	(2)
	10- by 21-in	(6)
	12- by 18-in	(2)
	12- by 30-in	(2)
	12- by 43-in	(2)
	12- by 48-in	(1)
	18- by 18-in	(6)
	18- by 24-in	(1)
	18- by 26-in	(2)
	18- by 30-in	(1)
	18- by 36-in	(9)
	18- by 76-in	(12)
	24- by 36-in	(4)
	36- by 51-in	(1)
	36- by 62-in	(1)
	36- by 96-in	(8)
	40- by 33-in	(5)
	48- by 24-in	(7)
	48- by 60-in	(6)
	Parachute:	
1670-01-016-7841	Cargo, G-11B	8
1670-00-040-8135	Cargo extraction, 28-ft, heavy-duty	2
	Platform, AD, type V, 32-ft:	1
	Bracket:	
1670-01-162-2375	Inside EFTA	(1)
1670-01-162-2374	Outside EFTA	(1)
1670-01-162-2372	Clevis assembly	(44)
1670-01-162-2376	Extraction bracket assembly	(1)
1670-01-162-2381	Tandem link	(2)
	Plywood:	
5530-00-129-7721	1/4-in:	
	5 1/2- by 6-in	1
	5 1/2- by 7-in	1
5530-00-128-4981	3/4-in:	
	12- by 18-in	1
	18- by 18-in	1
	20 1/2- by 24-in	3
	20 1/2- by 24 3/4-in	3
	24- by 37 1/2-in	1
	32- by 40-in	2
	48- by 12-in	2
	48- by 24-in	2

Table 3-1. Equipment required for rigging the 613S, type I and II scrapers on a type V platform for low-velocity airdrop (continued)

NSN	Item	Quantity
	48- by 60-in	3
	48- by 96-in	1
1670-01-097-8817	Release, cargo parachute, M-2 (modified)	1
	Sling, cargo, airdrop:	
	For deployment line:	
1670-01-062-6305	9-ft (4-loop), type XXVI nylon	1
	For lifting:	
1670-00-432-2499	3-ft (4-loop), type XXVI nylon webbing *or*	2
1670-01-062-6306	3-ft (4-loop), type XXVI nylon webbing	2
1670-00-432-2501	9-ft (4-loop), type XXVI nylon webbing *or*	2
1670-01-062-6305	9-ft (4-loop), type XXVI nylon webbing	2
1670-01-062-6307	12-ft (4-loop), type XXVI nylon webbing	2
	For riser extension:	
1670-01-062-6311	120-ft (2-loop), type XXVI nylon webbing	8
	For suspension:	
1670-01-064-4453	20-ft (4-loop), type XXVI nylon webbing *or*	4
1670-00-432-2511	20-ft (4-loop), type XXVI nylon webbing	4
1670-00-040-8219	Strap, parachute release, multicut comes w 3 knives	2
7510-00-266-6710	Tape, adhesive, 2-in	As required
1670-00-937-0271	Tie-down assembly, 15-ft	84
	Webbing:	
8305-00-268-2411	Cotton, 1/4-in, type I	As required
	Nylon:	
8305-00-082-5752	Tubular, 1/2-in	As required
8305-00-261-8584	Type X	As required

GLOSSARY

AD airdrop
AFB Air Force base
AFR Air Force regulation
AFTO Air Force technical order
ALC Air Logistics Center
attn attention
C change
CB center of balance
d penny
DA Department of the Army
DC District of Columbia
diam diameter
EAT external air transport
EFTA extraction force transfer actuator
EFTC extraction force transfer coupling
FM field manual
ft foot/feet
gal gallon
hex hexagon
HQ headquarters
IAT internal air transport
in inch
LAPE low-altitude parachute extraction
lb pound
MAC Military Airlift Command
no number
NSN national stock number
psi pounds per square inch
ROPS roll-over protection structure
TM technical manual
TO technical order
TRADOC United States Army Training and Doctrine Command
US United States
w with
yd yard

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