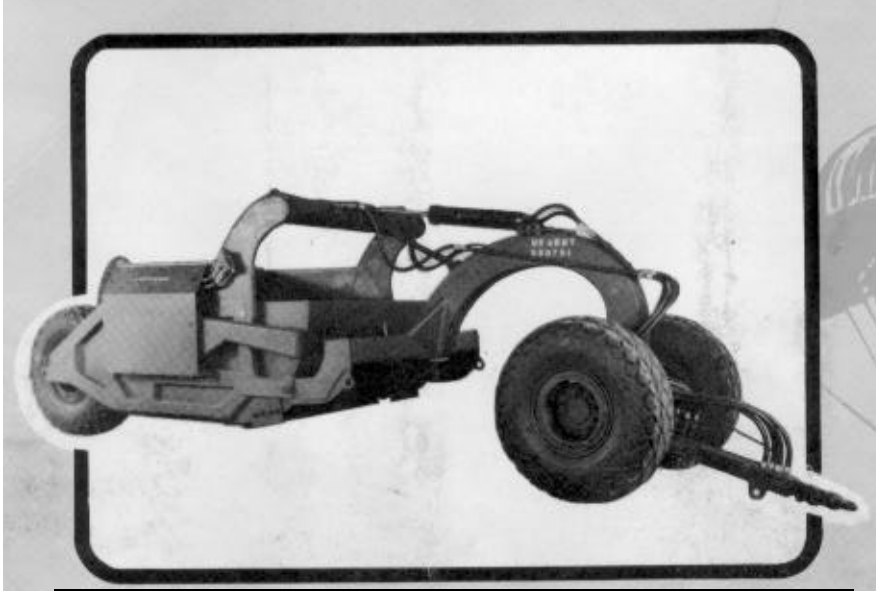
ARMY FM 10-530
AIR FORCE TO 13C7-27-121

AIRDROP OF SUPPLIES AND EQUIPMENT

RIGGING EARTHMOVING SCRAPERS



DISTRIBUTION UNLIMITED

DEPARTMENTS OF THE ARMY AND THE AIR FORCE

FIELD MANUAL
NO 10-530
TECHNICAL ORDER
NO 13C7-27-121

DEPARTMENTS OF THE ARMY
AND THE AIR FORCE
Washington, DC, 9 August 1985

AIRDROP OF SUPPLIES AND EQUIPMENT
RIGGING EARTHMOVING 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 MURRAY MODEL EARTHMOVING SCRAPER		
	Description of Load	2-1	2-1
	Preparing Platform	2-2	2-2
	Building and Placing Honeycomb Stacks	2-3	2-3
	Preparing Scraper	2-4	2-4
	Installing Suspension Slings	2-5	2-6
	Positioning Scraper	2-6	2-7
	Lashing Scraper	2-7	2-7
	Installing Extraction Attaching Point Extension	2-8	2-9
	Stowing Cargo Parachutes	2-9	2-10
	Installing Extraction System	2-10	2-13
	Installing Load Cover	2-11	2-14
	Installing Release System	2-12	2-14
	Positioning Extraction Parachute	2-13	2-15
	Marking Rigged Load	2-14	2-15
	Equipment Required	2-15	2-16
CHAPTER 3.	RIGGING MRS-100, 8-CUBIC-YARD EARTHMOVING SCRAPER		
Section I	RIGGING LOAD FOR LOW-VELOCITY AIRDROP		
	Description of Load	3-1	3-1
	Preparing Platform	3-2	3-1
	Building and Placing Honeycomb Stacks	3-3	3-2
	Preparing Scraper	3-4	3-3
	Placing and Lashing Front Axle and Tongue Assembly	3-5	3-7
	Installing Suspension Slings	3-6	3-9

*This manual supersedes FM 10-530/TO 13C7-27-121, 28 March 1975.

		Paragraph	Page
	Setting Scraper on Platform	3-7	3-9
	Lashing Scraper	3-8	3-9
	Stowing Cargo Parachutes	3-9	3-13
	Installing EFTC	3-10	3-17
	Installing and Safetying Release System	3-11	3-18
	Placing Extraction Parachute	3-12	3-19
	Marking Rigged Load	3-13	3-19
	Equipment Required	3-14	3-20
Section II	RIGGING LOAD FOR LAPE AIRDROP		
	[redacted]	3-15	3-22
		3-16	3-22
		3-17	3-23
		3-18	3-24
		3-19	3-28
		3-20	3-28
		3-21	3-29
		3-22	3-29
		3-23	3-35
		3-24	3-37
		3-25	3-37
		3-26	3-38

GLOSSARY GLOSSARY-1

REFERENCES REFERENCES-1

REMOVED: 95 MESSAGE TERMINATION OF LAPES

PREFACE

SCOPE

This manual tells and shows how to rig the Murray model, towed, 7 1/2-cubic-yard earthmoving scraper and the MRS-100, towed, 8-cubic-yard earthmoving scraper for low-velocity airdrop from C-130 and C-141 aircraft. It also tells and shows how to rig the MRS-100, towed, 8-cubic-yard earthmoving scraper for low-altitude parachute-extraction (LAPE) airdrop from the C-130 aircraft. This manual is designed for use by all parachute riggers.

USER INFORMATION

The proponent of this publication is the US Army Quartermaster School. You are encouraged to report any errors or omissions and suggest ways for making this a better manual. Army personnel, send your comments on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to:

Commandant
US Army Quartermaster School
ATTN: ATSM-DTL
Fort Lee, VA 23801-5036

Air Force personnel, send your reports on AFTO Form 22 (Technical Order Publication Improvement Report) through:

Headquarters
Military Airlift Command (MAC/DOXT)
Scott AFB, IL 62225-5001

to:

Commandant
US Army Quartermaster School
ATTN: ATSM-DTL
Fort Lee, VA 23801-5036

Also, send information copies of AFTO Form 22 to:

San Antonio ALC/MMEDTR
Kelly AFB, TX 78241-5000

CHAPTER 1
INTRODUCTION

1-1. Description of Items

The description of the items covered in this manual is as follows.

a. Murray Model. The Murray model, towed, 7 1/2-cubic-yard earthmoving scraper weighs 12,650 pounds. It is 344 inches long (reducible to 290 inches). It is 100 inches wide and 81 inches high.

b. MRS-100. The MRS-100, towed, 8-cubic-yard earthmoving scraper weighs 17,420 pounds. It is 378 inches long (reducible to 306 inches). It is 110 inches wide and 105 inches high (reducible to 81 inches).

1-2. Special Considerations

Special considerations are described below.

a. When these loads are dropped from a C-141 aircraft, they must be loaded in aircraft compartments I through M according to TO 1C-141B-9.

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

CHAPTER 2

RIGGING MURRAY MODEL EARTHMOVING SCRAPER

2-1. Description of Load

The Murray model, towed, 7 1/2-cubic-yard earthmoving scraper (figure 2-1) is rigged on a 24-foot, type II, modular platform. It is rigged with five G-11A cargo parachutes and other items of airdrop equipment for a low-velocity airdrop. This load can be airdropped from a C-130 or C-141 aircraft.

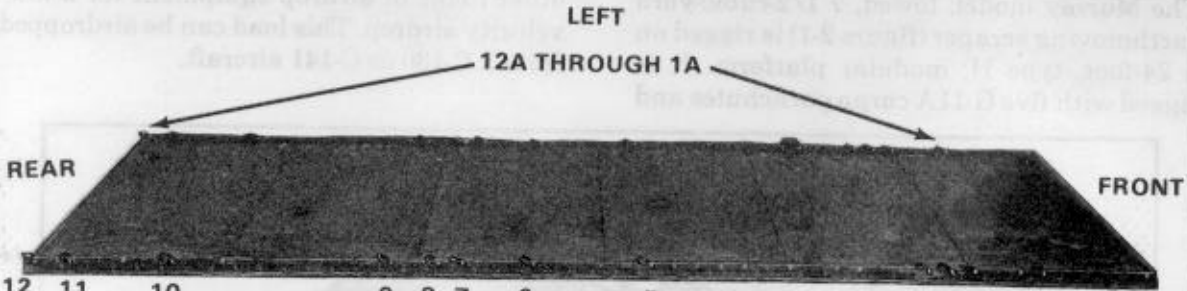
Figure 2-1. Murray model, towed, 7 1/2-cubic-yard earthmoving scraper.

2-2. Preparing Platform

Prepare the platform as described below.

a. Inspect, or assemble and inspect, the 24-foot, type II, modular platform as outlined in TM 10-1670-208-20&P/TO 13C3-4-12.

b. Bolt the load tiedown clevises to the clevis holes, and number them as shown in figure 2-2.



Step:

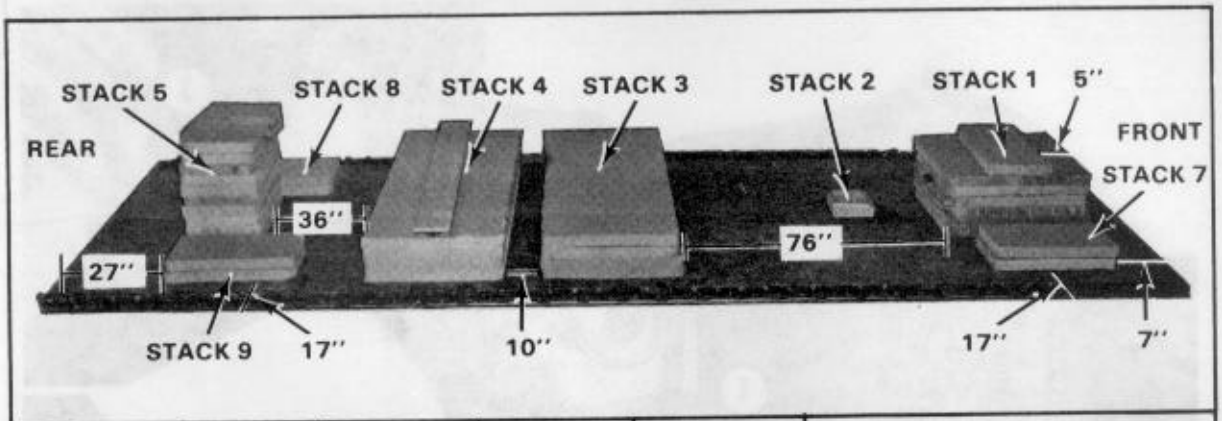
1. **Start at the front of each platform rail, and bolt a load tiedown clevis to the 6th, 9th, 10th, 11th, 23d, 28th, 31st, 32d, 34th, 43d, 47th, and 49th clevis holes.**
2. **Start at the front of the platform, and number the clevises bolted to the right rail 1 through 12 and those bolted to the left rail 1A through 12A.**

Figure 2-2. Platform prepared.

2-3. Building and Placing Honeycomb Stacks

Build nine honeycomb stacks, and place them on the platform according to FM 10-500/TO 13C7-1-5 and as shown in figure 2-3.

NOTE: Do not glue stack 2 to the platform because it may need to be moved.

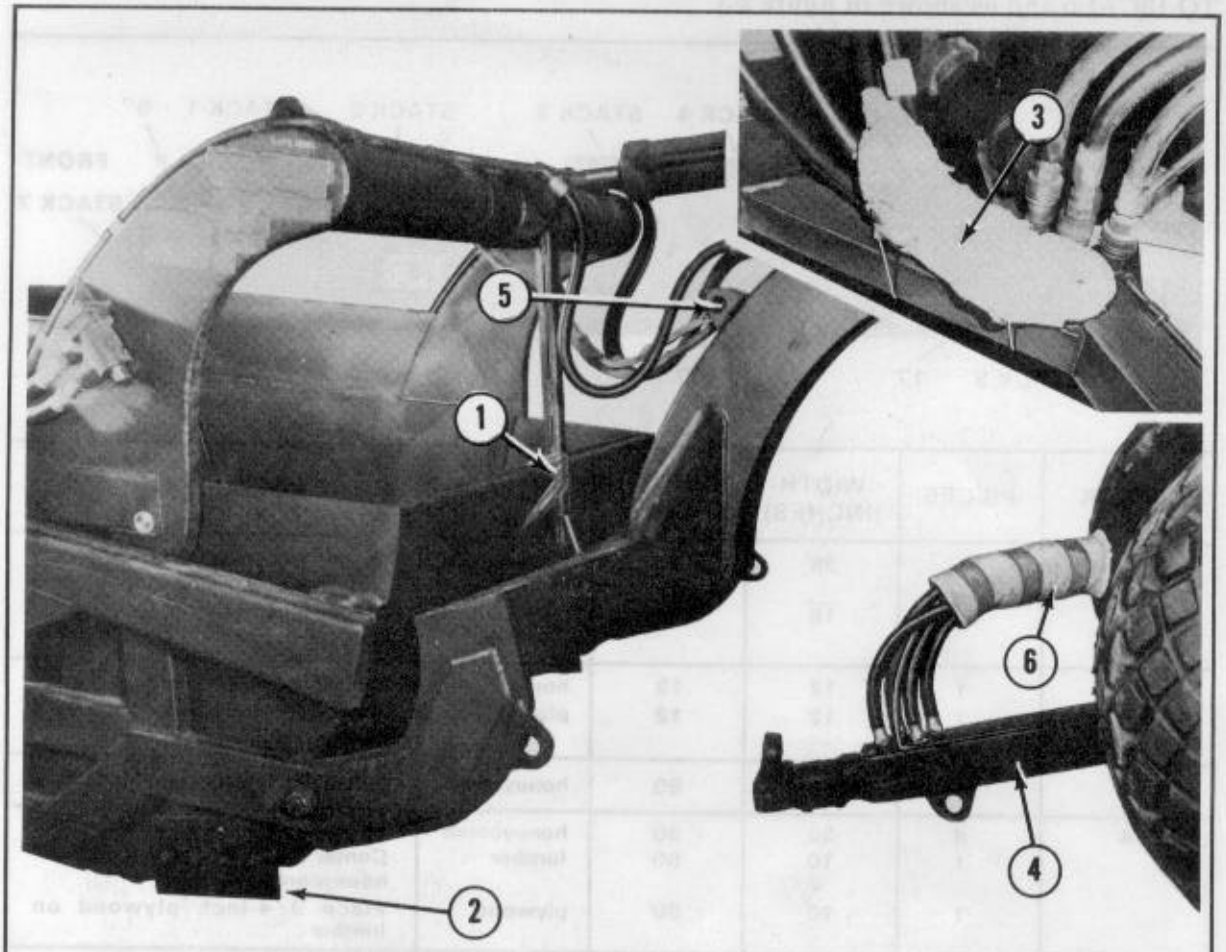


STACK	PIECES	WIDTH (INCHES)	LENGTH (INCHES)	MATERIAL	INSTRUCTIONS
1	6	36	40	honeycomb	Center 7 inches from front of platform.
	1	18	36	honeycomb	Center 5 inches from front of stack.
2	1	12	12	honeycomb	Center in second platform panel.
	1	12	12	plywood	Place 3/4-inch plywood on honeycomb.
3	4	36	90	honeycomb	Center 76 inches from stack 1.
4	4	36	90	honeycomb	Center 10 inches from stack 3.
	1	10	90	lumber	Center 2-inch lumber on honeycomb.
	1	10	90	plywood	Place 3/4-inch plywood on lumber.
5	10	20	36	honeycomb	Center 36 inches from stack 4. Cut out a 12- by 12-inch piece from the center front of top two layers.
6 (not shown)	2	18	36	honeycomb	Place 7 inches from front of platform and 17 inches from left rail.
7	2	18	36	honeycomb	Place 7 inches from front of platform and 17 inches from right rail.
8	2	18	36	honeycomb	Place 27 inches from rear of platform and 17 inches from left rail.
9	2	18	36	honeycomb	Place 27 inches from rear of platform and 17 inches from right rail.

Figure 2-3. Honeycomb stacks placed on platform.

2-4. Preparing Scraper

Prepare the scraper as shown in figures 2-4 and 2-5.



(1) Disconnect the end of the transportation bar from the yoke, and tape it to the bowl.

(2) Lower the scraper bowl until the scraper blade is resting on the surface.

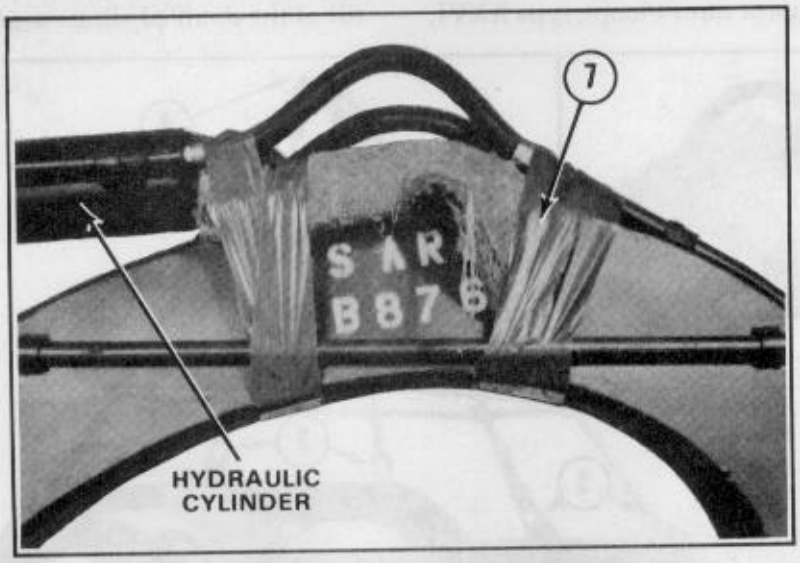
(3) Disconnect the hydraulic hoses. Pad the hoses with cellulose wadding, and tape the wadding in place.

(4) Remove the towing tongue from the prime mover. Turn the towing tongue 180 degrees so that it points to the scraper blade.

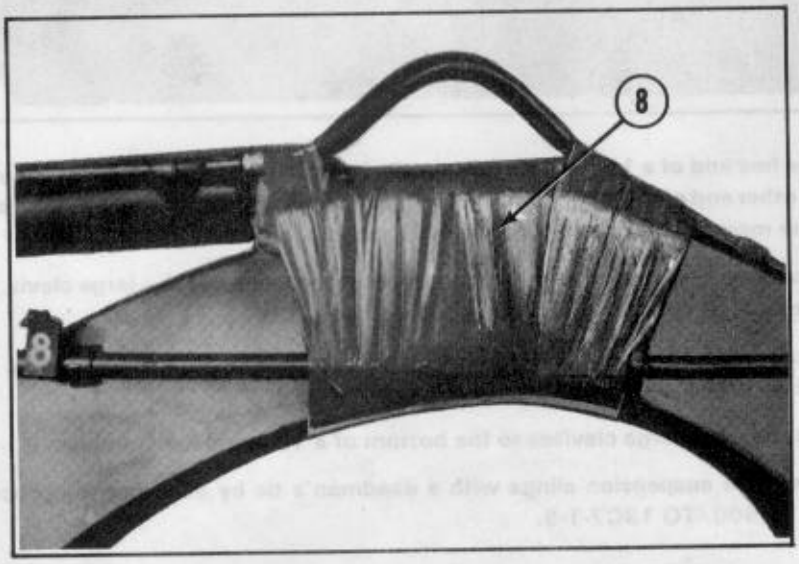
(5) Pass a 9-foot sling around the cylindrical brace, and attach both ends to the transportation bar bracket on the yoke.

(6) Pad the hydraulic hose attached to the tongue with cellulose wadding. Tape the wadding in place.

Figure 2-4. Scraper prepared.



(7) Lay three layers of cellulose wadding on top of the hydraulic cylinder bracket. Tape the wadding in place.



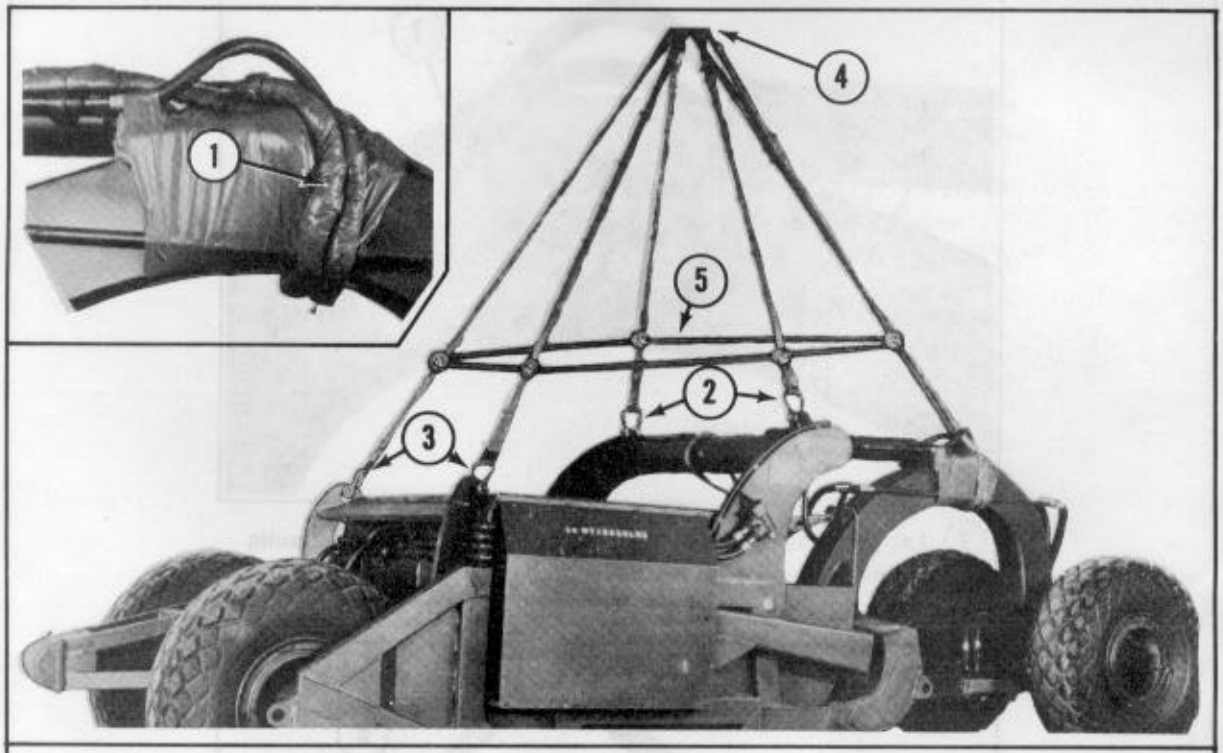
(8) Place a 2- by 6- by 8-inch wood block against each side of the yoke under the cylinder bracket. Tape the wood blocks in place.

Figure 2-5. Yoke prepared for suspension slings.

2-5. Installing Suspension Slings

NOTE: Use only 5,000-pound-capacity cargo parachute releases on this load.

Use two (2-loop), type X, nylon webbing suspension slings or one (4-loop), type XXVI, nylon webbing suspension sling on each suspension point as shown in figure 2-6. Do not mix slings on this load. Pad and tape 4 feet of the slings attached to the yoke. Tape all of the doubled slings together.



1. Pass one end of a 16-foot sling under the hydraulic hoses and around the yoke. Pass the other end of the sling through this loop and pull it tight. Install a second sling in the same manner. Place the ends of the slings on a large clevis.
2. Install two 9-foot slings on each center lifting provision with a large clevis. Place the four ends of the slings on a second large clevis.
3. Install two 12-foot slings on each rear lifting provision with a large clevis. Place the four ends of the slings on a third large clevis.
4. Bolt the three large clevises to the bottom of a 12-spool load coupler.
5. Safety the suspension slings with a deadman's tie by adapting the procedures in FM 10-500/TO 13C7-1-5.

Figure 2-6. Suspension slings installed.

2-6. Positioning Scraper

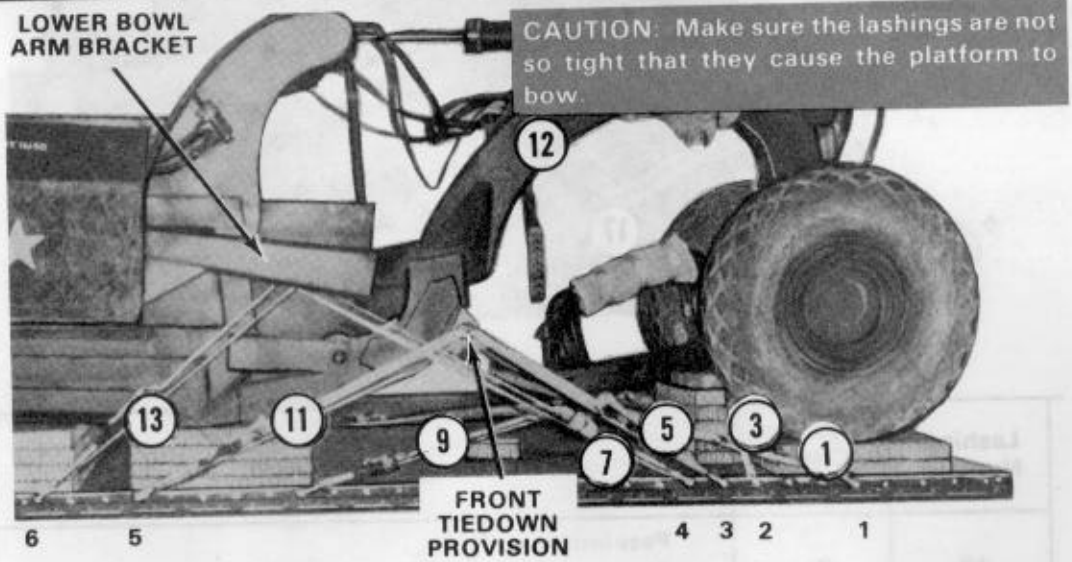
Set the scraper on the honeycomb stacks with the rear of the scraper even with the rear edge of the platform.

NOTE: Position honeycomb stack 2 under the end of the tongue.

2-7. Lashing Scraper

Lash the scraper to the platform as shown in figure 2-7. Safety the load binders according to FM 10-500/TO 13C7-1-5.

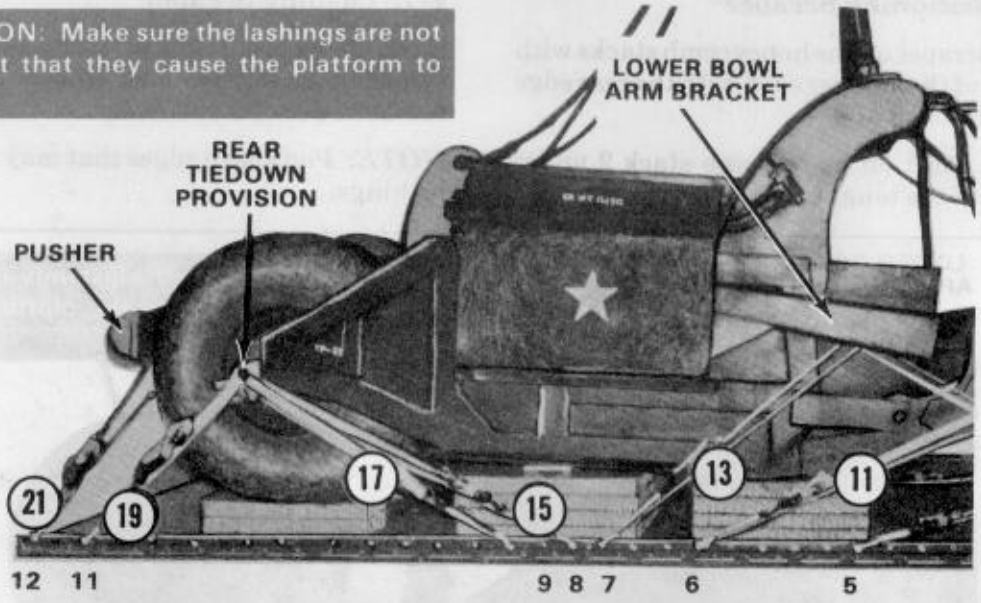
NOTE: Pad sharp edges that may touch the lashings.



Lashing Number	Tiedown Clevis Number	Instructions
		Pass lashings:
1	1	Through padded lunette
2	1A	Through padded lunette
3	2	Around towing tongue
4	2A	Around towing tongue
5	3	Through padded right front tiedown provision
6	3A	Through padded left front tiedown provision
7	4	Around right lower bowl arm bracket
8	4A	Around left lower bowl arm bracket
9	5	Through padded eye on tongue
10	5A	Through padded eye on tongue
11	6	Through padded right front tiedown provision
12	6A	Through padded left front tiedown provision

Figure 2-7. Lashings installed.

CAUTION: Make sure the lashings are not so tight that they cause the platform to bow.

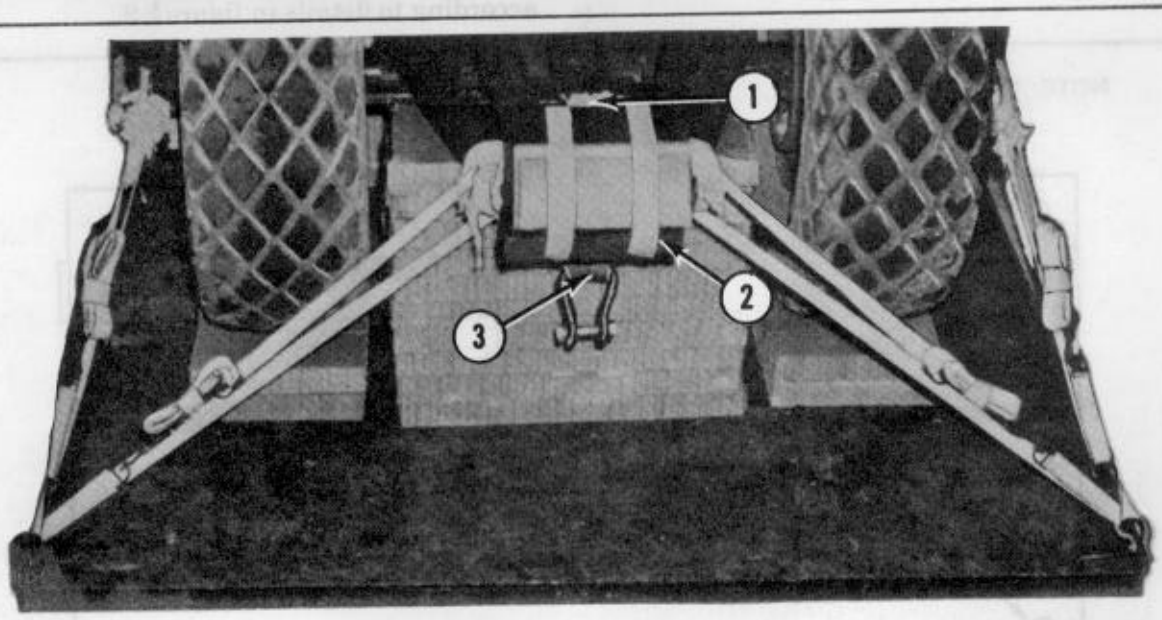


Lashing Number	Tiedown Clevis Number	Instructions
		Pass lashings:
13	7	Around right lower bowl arm bracket
14	7A	Around left lower bowl arm bracket
15	8	Through padded right rear tiedown provision
16	8A	Through padded left rear tiedown provision
17	9	Through padded right rear tiedown provision
18	9A	Through padded left rear tiedown provision
19	11	Through padded right rear tiedown provision
20	11A	Through padded left rear tiedown provision
21	12	Around padded lower right outside pusher brace
22	12A	Around padded lower left outside pusher brace

Figure 2-7. Continued.

2-8. Installing Extraction Attaching Point Extension

Install the extraction attaching point extension as shown in figure 2-8.



1. Pad the center pusher brace with cellulose wadding. Tape the wadding in place.
2. Pad the bottom of the pusher with felt. Tape the felt in place.
3. Pass the ends of a 3-foot sling down over the center pusher brace. Place the ends of the sling on a large suspension clevis assembly.

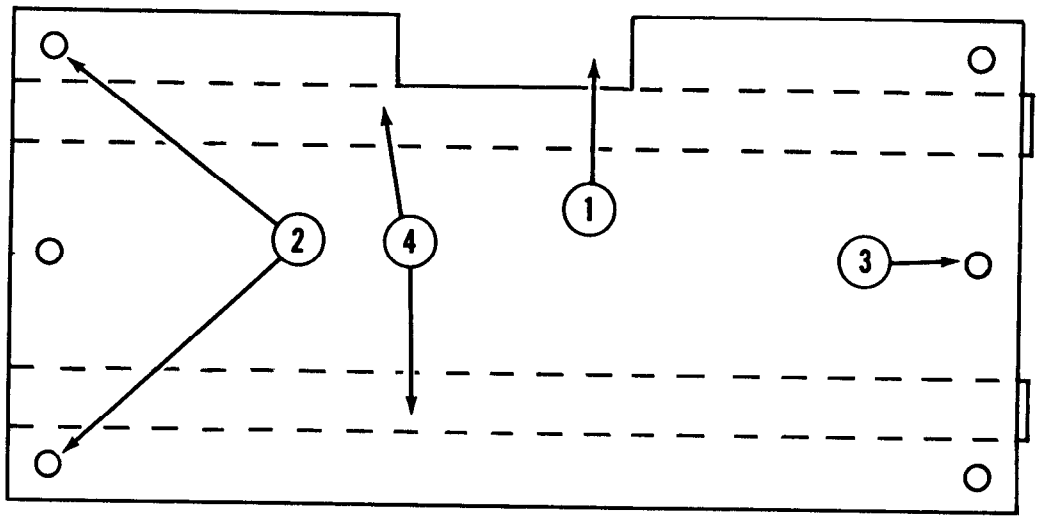
Figure 2-8. Extraction attaching point extension installed.

2-9. Stowing Cargo Parachutes

Stow the cargo parachutes as described below.

a. Build a parachute stowage platform according to details in figure 2-9.

NOTE: Not drawn to scale



(1) Cut out a 6- by 25-inch piece from the middle of one of the 96-inch edges of a 3/4- by 48- by 96-inch piece of plywood.

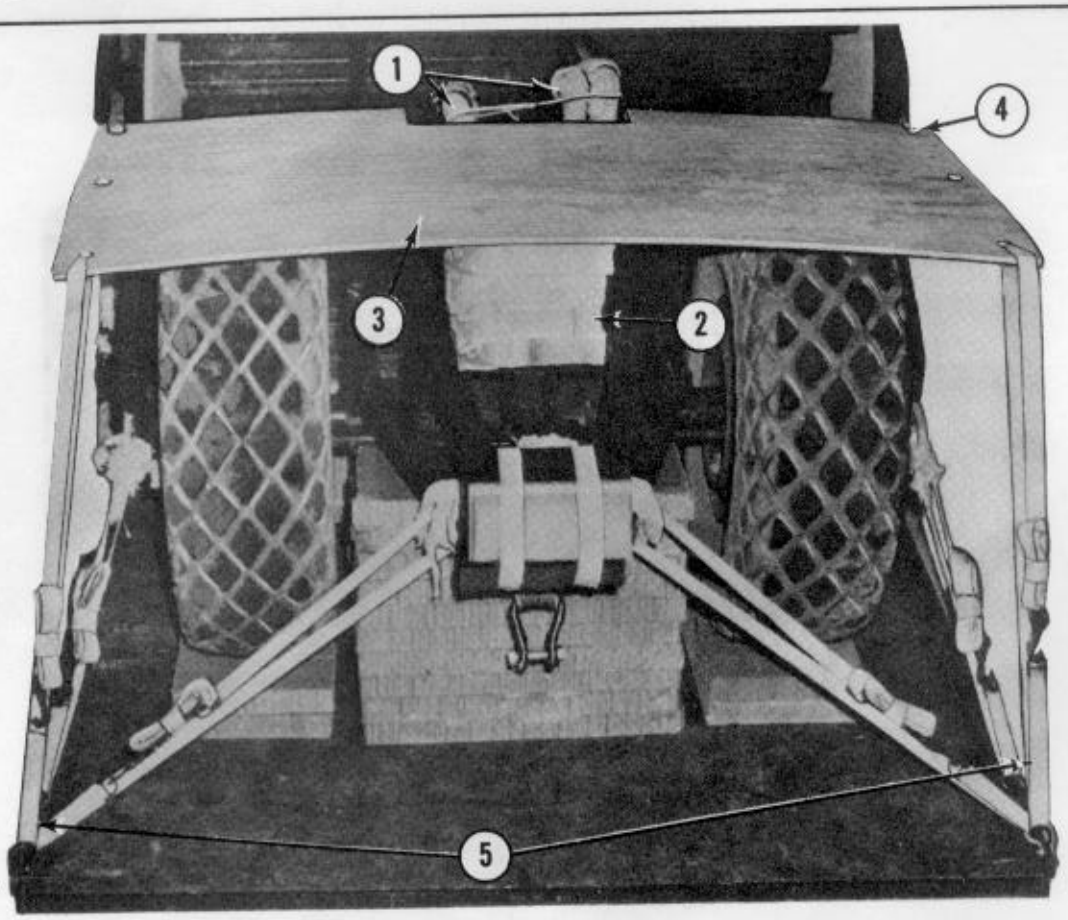
(2) Drill a 2-inch hole 3 inches from each corner.

(3) Drill a 2-inch hole 2 inches from each 48-inch edge and 24 inches from the 96-inch edges.

(4) Nail a 2- by 6- by 96-inch piece of lumber 6 inches from and parallel with each 96-inch edge of the plywood. Use 8d nails.

Figure 2-9. Parachute stowage platform construction details.

b. Set the parachute stowage platform on the load and secure it in place as shown in figure 2-10.



(1) Pad the hydraulic hoses with cellulose wadding, and tape the wadding.

(2) Set four 15- by 36-inch pieces of honeycomb on the center of the pusher frame and flush with the rear edge of the cylinder bracket.

(3) Set the stowage platform on the honeycomb and rear wheels and against the scraper bowl.

CAUTION: Hydraulic hoses MUST NOT come in contact with the stowage platform.

(4) Secure the front corners of the platform to clevises 9 and 9A with tiedown assemblies.

(5) Secure the rear corners of the platform to clevises 12 and 12A with tiedown assemblies.

Figure 2-10. Parachute stowage platform installed.

c. Prepare five G-11A cargo parachutes, and stow them on the stowage platform as outlined in FM 10-500/TO 13C7-1-5. Install two 15-yard, type VIII, nylon webbing restraint straps as described in FM 10-500/TO 13C7-1-5 and as shown in figure 2-11.

(1) Tie the first restraint strap to clevises 10 and 10A.

(2) Tie the second restraint strap to clevises 10 and 10A.

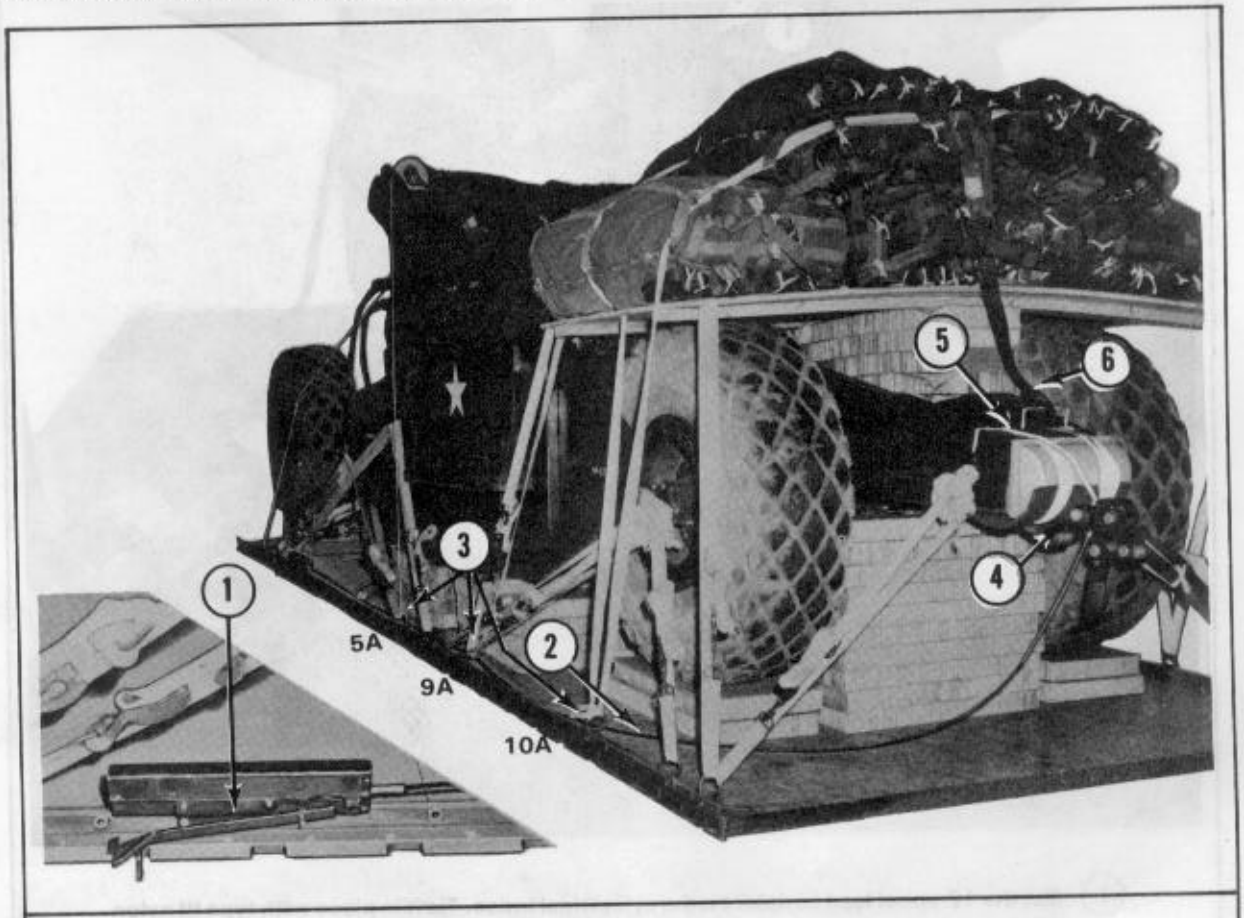
Figure 2-11. Cargo parachutes stowed and restraint straps installed.

2-10. Installing Extraction System

Use either the extraction force transfer coupling (EFTC) or the static line/connector strap (SL/CS) extraction system on this load.

a. EFTC. Install the EFTC with a 24-foot cable assembly as outlined in FM 10-500/TO 13C7-1-5 and as shown in figure 2-12.

b. SL/CS. Use a 120-inch connector strap and a 9-foot deployment line. Install the components of the SL/CS as outlined in FM 10-500/TO 13C7-1-5.



1. Bolt the actuator bracket to clevis holes 14 and 15.
2. Run the release cable to the rear of the platform.
3. Tie the cable to clevises 5A, 9A, and 10A with double lengths of 80-pound cotton webbing.
4. Bolt the latch assembly adapter, with the locking nut down, to the large suspension clevis on the extraction attaching point extension.
5. Tie the latch assembly to the pusher frame with 1/2-inch tubular nylon webbing.
6. Bolt one end of the 9-foot deployment line to the top spacer of the link assembly. Bolt the other end to the center large clevis on the parachute deployment lines.

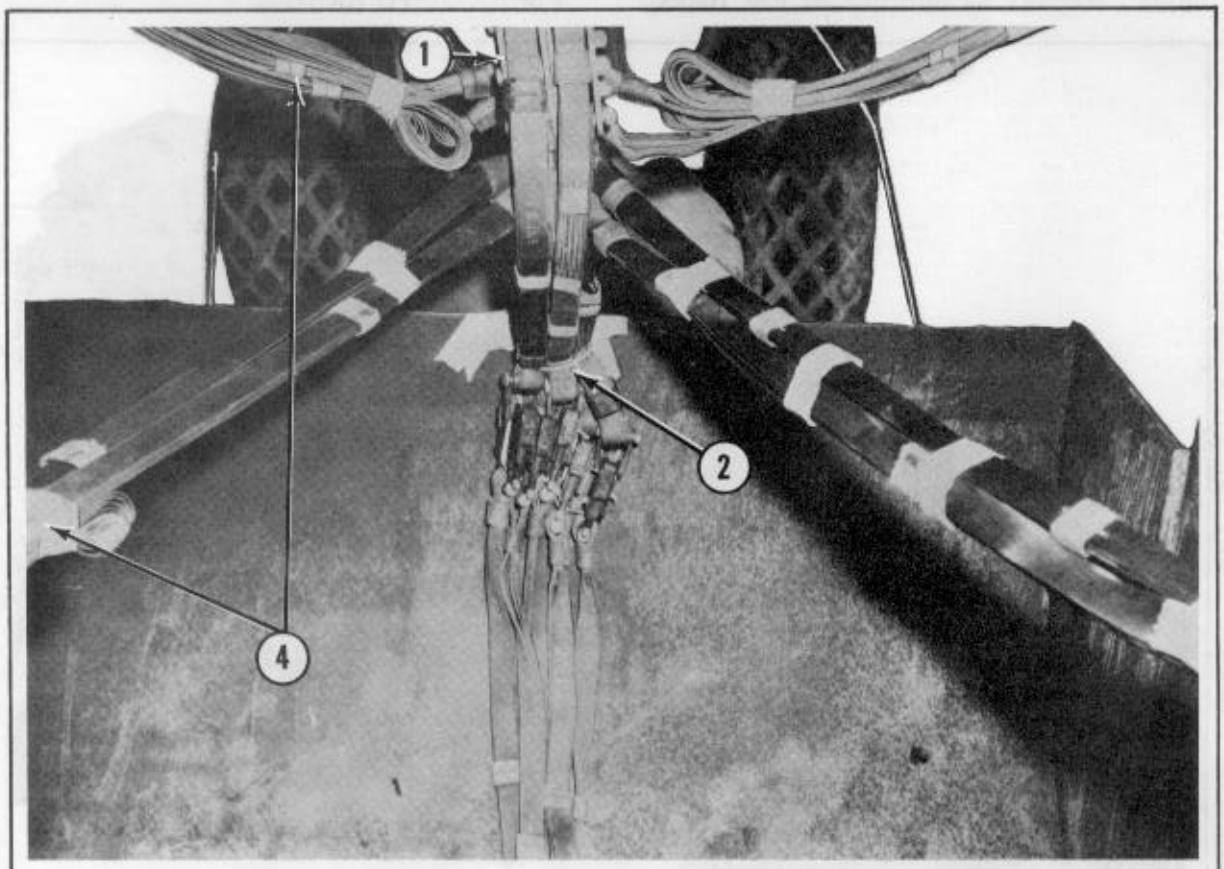
Figure 2-12. EFTC installed.

2-11. Installing Load Cover

Tie a 4-yard piece of cotton duck cloth over the yoke with type III nylon cord.

2-12. Installing Release System

Prepare five 5,000-pound-capacity cargo parachute releases, and attach them to the suspension system as described in FM 10-500/TO 13C7-1-5 and as shown in figure 2-13.



(1) Set the 12-spool load coupler on the cylindrical brace. Tie it in place with type III nylon cord.

(2) Lay the releases in the scraper bowl. Tie them to the transportation bar with type III nylon cord.

(3) Fold the slack in the front slings. Tape the folds in place on the load cover (not shown).

(4) Fold the center and rear slings, and tape the folds.

Figure 2-13. Release assemblies and suspension slings safetied.

2-13. Positioning Extraction Parachute

Position the extraction parachute as described below.

a. C-130 Aircraft. Place a 22-foot cargo extraction parachute with a 60-foot extraction line on the load for installation in the aircraft.

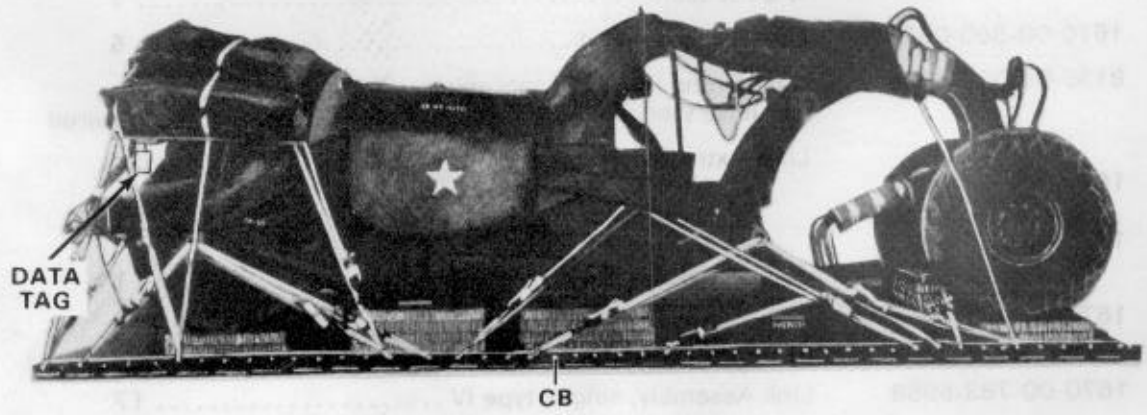
b. C-141 Aircraft. Place a 22- or a 28-foot cargo extraction parachute with a 140-foot (3-loop), type XXVI, nylon webbing extraction line on the load for installation in the aircraft.

CAUTION: The extraction line must be a continuous 140-foot extraction line.

2-14. Marking Rigged Load

Use the data shown in figure 2-14, and mark the rigged load as outlined in FM 10-500/TO 13C7-1-5.

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



RIGGED LOAD DATA

Weight	15,330 pounds
Width	108 inches
Height	94 inches
Length:	291 inches
Overhang: Front	3 inches
Center of balance (CB) (from front edge of platform)	160 inches
Extraction system (shown)	EFTC

Figure 2-14. Murray model earthmoving scraper rigged for low-velocity airdrop.

2-15. Equipment Required

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

Table 2-1. Equipment required to rig the Murray model earthmoving scraper for low-velocity airdrop

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive, paste, 1-gal	As required
1377-00-958-1048	Cartridge, time delay, 20-sec	5
4030-00-090-5354	Clevis assembly, suspension, large	16
8305-00-242-3593	Cloth, cotton duck, 60-in	4 yd
4020-00-240-2146	Cord, nylon, type III, 550-lb	As required
1670-00-434-5782	Coupling, extraction force transfer w 24-ft cable	1
1670-00-360-0328	Cover, clevis, large	5
8135-00-664-6958	Cushioning material, packaging, cellulose wadding	As required
	Line, extraction:	
1670-00-856-0266	60-ft (3-loop), type X, nylon webbing or	1
1670-01-062-6313	60-ft (3-loop), type XXVI, nylon webbing (for C-130 aircraft)	1
1670-01-107-7651	Line, extraction, 140-ft (3-loop), type XXVI, nylon webbing (for C-141 aircraft)	1
1670-00-783-5988	Link Assembly, single, type IV	17
	Lumber:	
5510-00-220-6148	2- by 6- by 8-in	2
	2- by 6- by 96-in	2
5510-00-220-6248	2- by 10- by 90-in	1
5315-00-010-4657	Nail, steel wire, common, 6d	As required
1670-00-753-3928	Pad, energy-dissipating, honeycomb,	
	3- by 36- by 96-in:	16 sheets
	12- by 12-in	(1)
	15- by 36-in	(4)
	18- by 32-in	(8)
	18- by 36-in	(1)
	20- by 36-in	(10)
	36- by 40-in	(6)
	36- by 90-in	(8)
1670-00-269-1107	Parachute, cargo, 100-ft, G-11A	5
	Parachute, cargo extraction:	
1670-00-687-5458	22-ft	1
1670-00-262-1797	28-ft (may be used with C-130 aircraft)	1
1670-00-040-8135	28-ft (for C-141 aircraft)	1

Table 2-1. Continued

National Stock Number	Item	Quantity
	Platform, modular, 24-ft:	
1670-00-893-1631	Clevis, load tiedown	24
1670-00-893-1624	Panel	6
1670-00-893-1629	Rail, platform-side, 24-ft	2
5320-00-893-1632	Rivet, blind-drive type, 1/4-in diam	96
5530-00-128-4981	Plywood, 3/4-in:	
	10- by 90-in	1
	12- by 12-in	1
	48- by 96-in	1
1377-00-799-8494	Release, cargo parachute, 5,000-lb	5
	Riser extension:	
1670-00-753-3794	20-ft (2-loop), type X, nylon webbing or	20
1670-01-062-6211	20-ft (2-loop), type XXVI, nylon webbing	20
	Sling, cargo, airdrop:	
	For deployment lines:	
1670-00-432-2501	9-ft (4-loop), type XXVI, nylon webbing or	3
1670-01-062-6305	9-ft (4-loop), type XXVI, nylon webbing	3
	For suspension slings:	
1670-00-753-3790	9-ft (2-loop), type X, nylon webbing or	4
1670-01-062-6305	9-ft (4-loop), type XXVI, nylon webbing	2
1670-00-753-3792	12-ft (2-loop), type X, nylon webbing or	4
1670-01-062-6307	12-ft (4-loop), type XXVI, nylon webbing	2
1670-00-753-3793	16-ft (2-loop), type X, nylon webbing or	2
1670-01-062-6308	16-ft (4-loop), type XXVI, nylon webbing	1
1670-00-040-8219	Strap, parachute release, multicut	2
7510-00-266-5016	Tape, adhesive, 2-in	As required
1670-00-937-0271	Tiedown assembly, 15-ft	26
8305-00-268-2411	Webbing, cotton, 80-lb	As required
8305-00-263-3591	Webbing, nylon, type VIII	30 yd
8305-00-261-8584	Webbing, nylon, type X	30 yd
8305-00-082-5752	Webbing, nylon, tubular, 1/2-in	As required

CHAPTER 3
RIGGING MRS-100, 8-CUBIC-YARD EARTHMOVING SCRAPER

Section I
RIGGING LOAD FOR LOW-VELOCITY AIRDROP

3-1. Description of Load

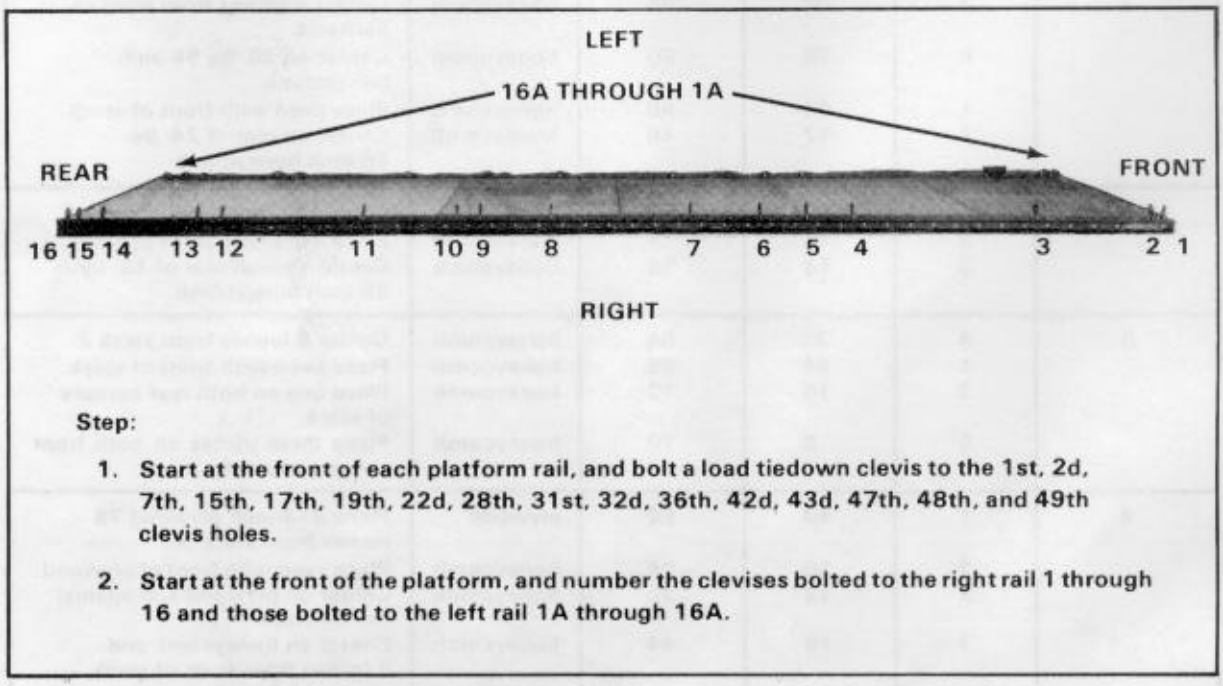
The MRS-100, towed, 8-cubic-yard earthmoving scraper is rigged on a 24-foot, type II, modular platform with six G-11A cargo parachutes and other items of airdrop equipment for a low-velocity airdrop. This load can be airdropped from a C-130 or C-141 aircraft.

3-2. Preparing Platform

Prepare the platform as described below.

a. Inspect, or assemble and inspect, the 24-foot modular platform as outlined in TM 10-1670-208-20&P/TO 13C3-4-12.

b. Attach and number the load tiedown clevises according to FM 10-500/TO 13C7-1-5 and as shown in figure 3-1.



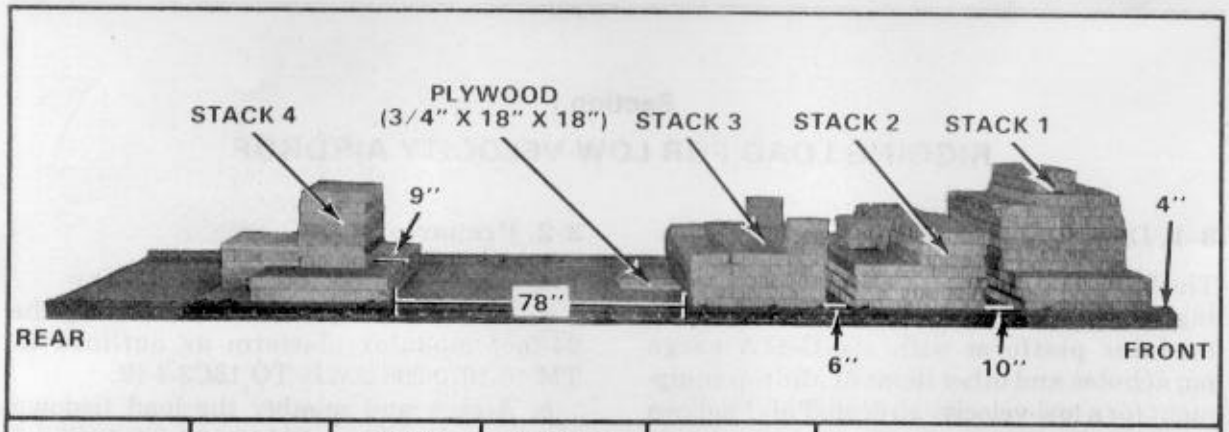
Step:

1. **Start at the front of each platform rail, and bolt a load tiedown clevis to the 1st, 2d, 7th, 15th, 17th, 19th, 22d, 28th, 31st, 32d, 36th, 42d, 43d, 47th, 48th, and 49th clevis holes.**
2. **Start at the front of the platform, and number the clevises bolted to the right rail 1 through 16 and those bolted to the left rail 1A through 16A.**

Figure 3-1. Platform prepared.

3-3. Building and Placing Honeycomb Stacks

Build four honeycomb stacks, and place them on the platform according to FM 10-500/TO 13C7-1-5 and as shown in figure 3-2.



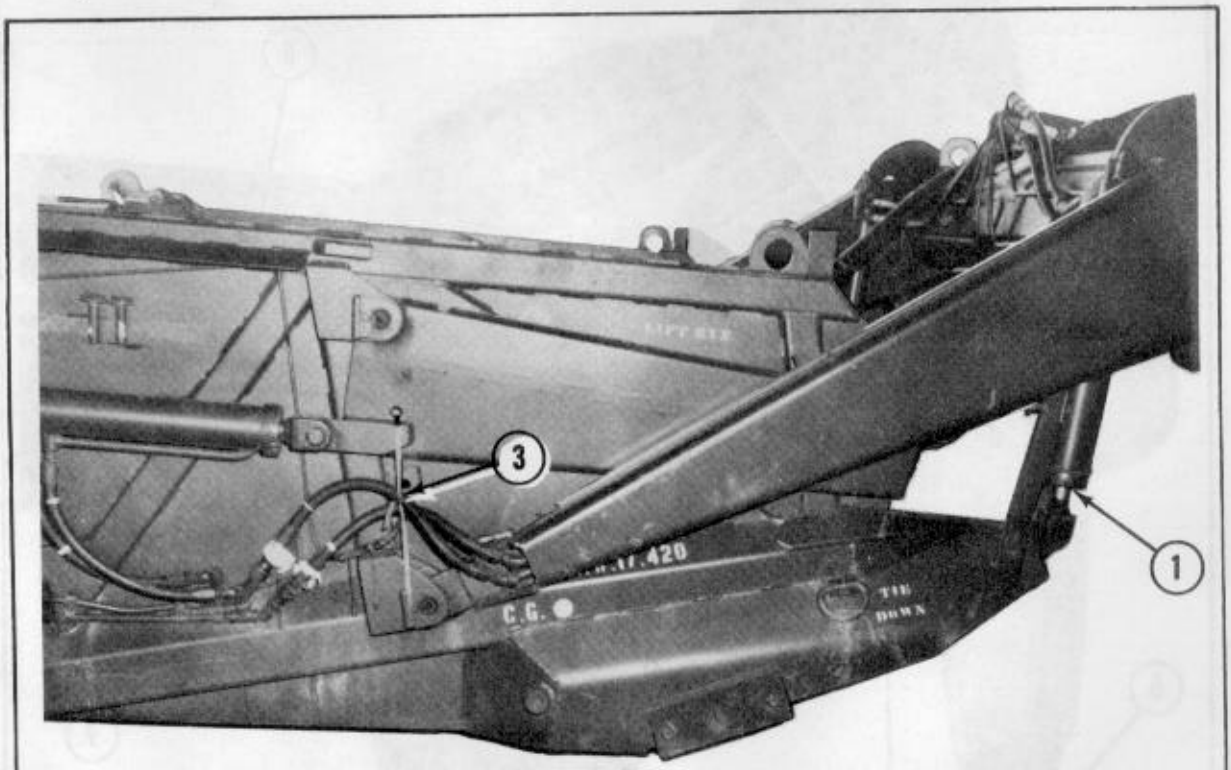
STACK	PIECES	WIDTH (INCHES)	LENGTH (INCHES)	MATERIAL	INSTRUCTIONS
1	3	36	96	honeycomb	Center 4 inches from front of platform.
	6	36	60	honeycomb	Center on 36- by 96-inch honeycomb.
	1	24	60	honeycomb	Place even with front of stack.
	2	12	48	honeycomb	Center on rear of 24- by 60-inch honeycomb.
2	4	36	96	honeycomb	Center 10 inches from stack 1.
	3	18	96	honeycomb	Place even with front of stack.
	3	12	18	honeycomb	Center against rear of 18- by 96-inch honeycomb.
3	4	36	96	honeycomb	Center 6 inches from stack 2.
	1	24	96	honeycomb	Place even with front of stack.
	2	10	12	honeycomb	Place one on both rear corners of stack.
	6	8	10	honeycomb	Place three pieces on both front corners of stack.
4	1	48	96	plywood	Place 3/4-inch plywood 78 inches from stack 3.
	2	36	96	honeycomb	Place even with front of plywood.
	2	12	36	honeycomb	Center on plywood and against rear of stack.
	7	18	44	honeycomb	Center on honeycomb and 9 inches from front of stack.
	1	21	36	plywood	Center 3/4-inch plywood against rear of 44-inch honeycomb.
	1	21	36	honeycomb	Place on top of plywood.
	3	21	36	plywood	Place 3/4-inch plywood on top of honeycomb.

NOTE: Center a 3/4- by 18- by 18-inch piece of plywood against the rear of stack 3.

Figure 3-2. Honeycomb stacks placed on platform.

3-4. Preparing Scraper

Prepare the scraper as shown in figures 3-3 through 3-6.

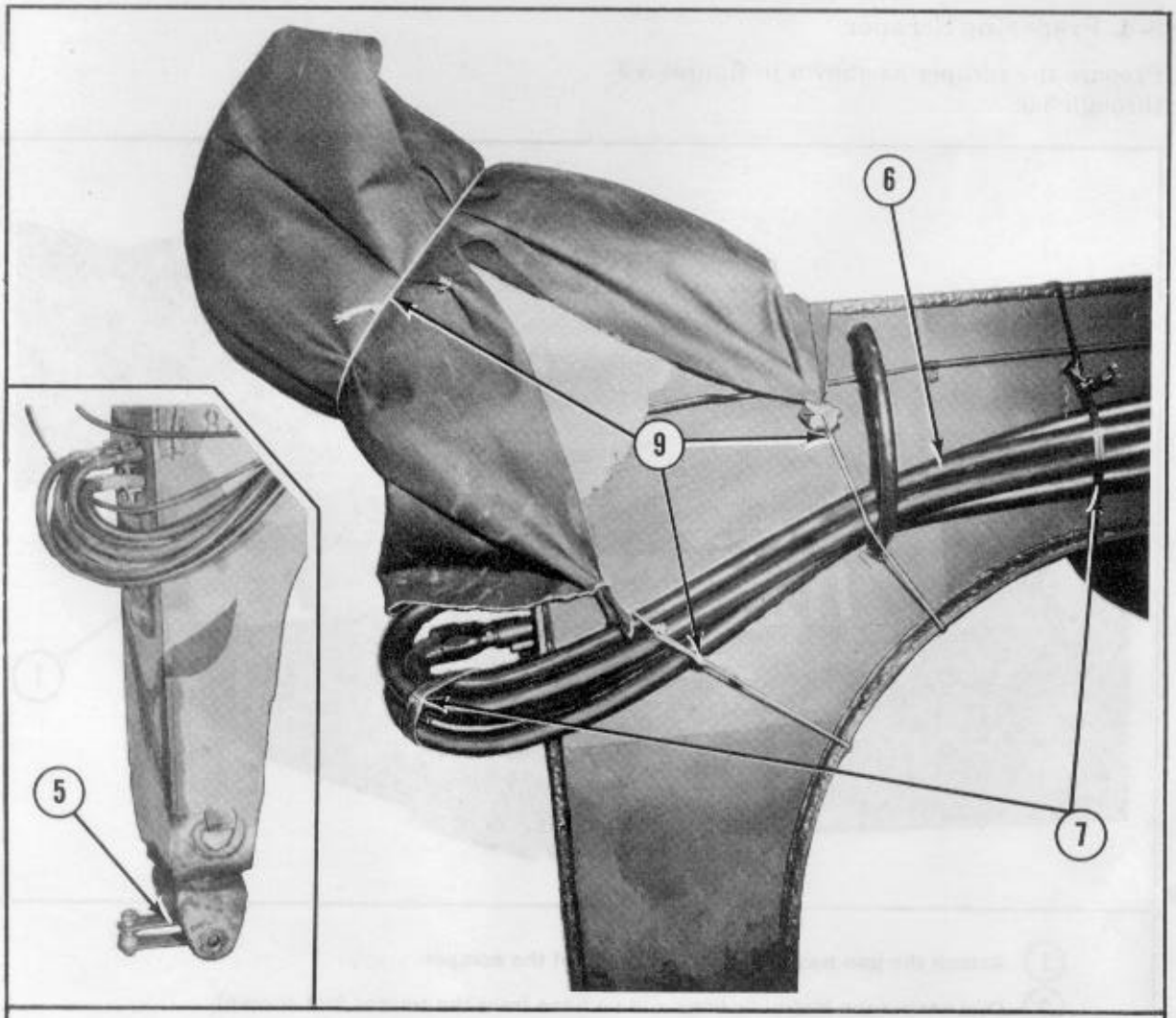


(1) Attach the pan travel lock on each side of the scraper.

(2) Disconnect the hydraulic lines and air hose from the tractor (not shown).

(3) Tie the hydraulic lines and air hose to the side of the scraper with 1/2-inch tubular nylon webbing.

Figure 3-3. Scraper bowl prepared.



(4) Remove the kingpin mounting pin, and disconnect the front axle and tongue assembly (not shown).

(5) Replace the kingpin mounting pin. Install the EFTC latch assembly adapter on the kingpin mounting pin.

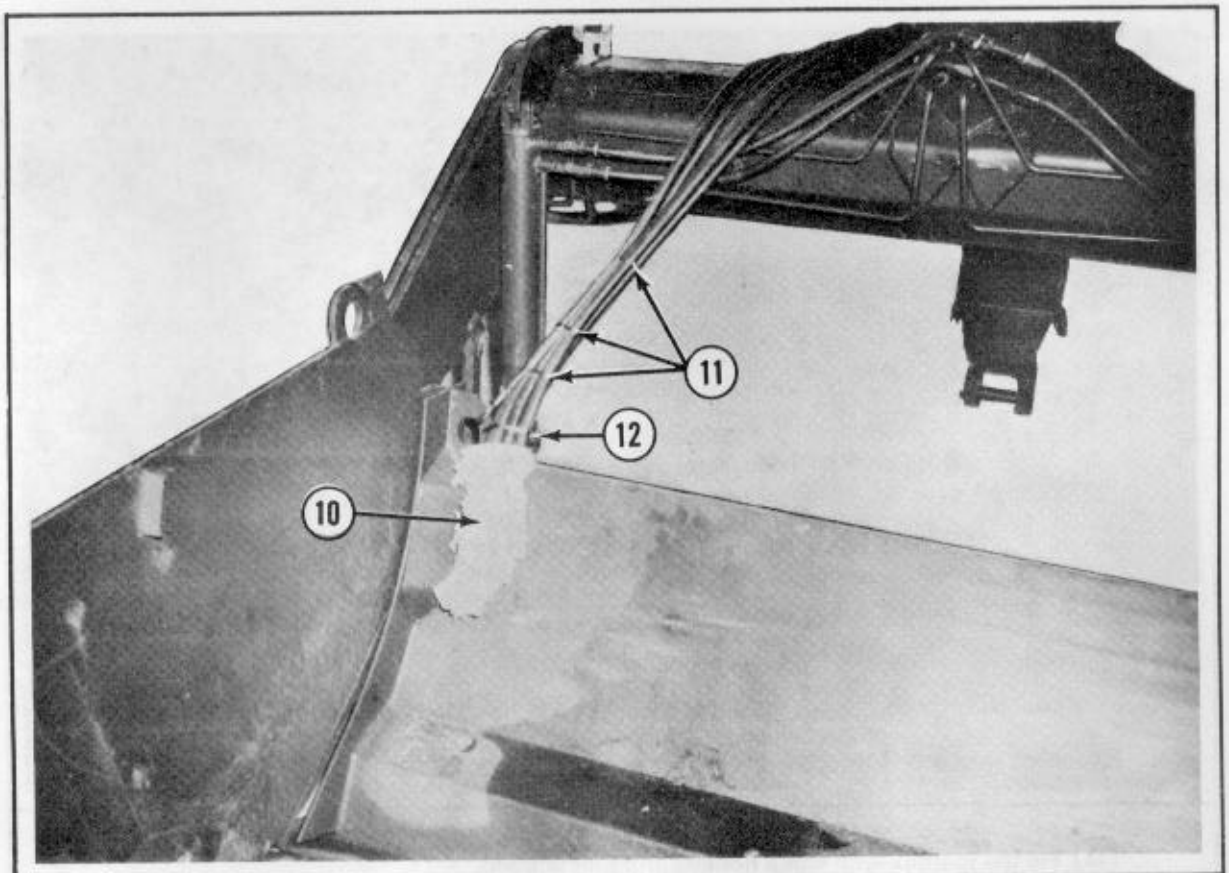
(6) Pass the air hose and hydraulic lines through the traction mast guard, and lay them in the pan.

(7) Tie the air hose and hydraulic lines against the mast with 1/2-inch tubular nylon webbing.

(8) Pad the traction mast with cellulose wadding, and tape the wadding in place (not shown).

(9) Cover the mast with a 2-yard piece of cotton duck cloth. Tie the cover in place with type III nylon.

Figure 3-4. Mounting pin and traction mast prepared.

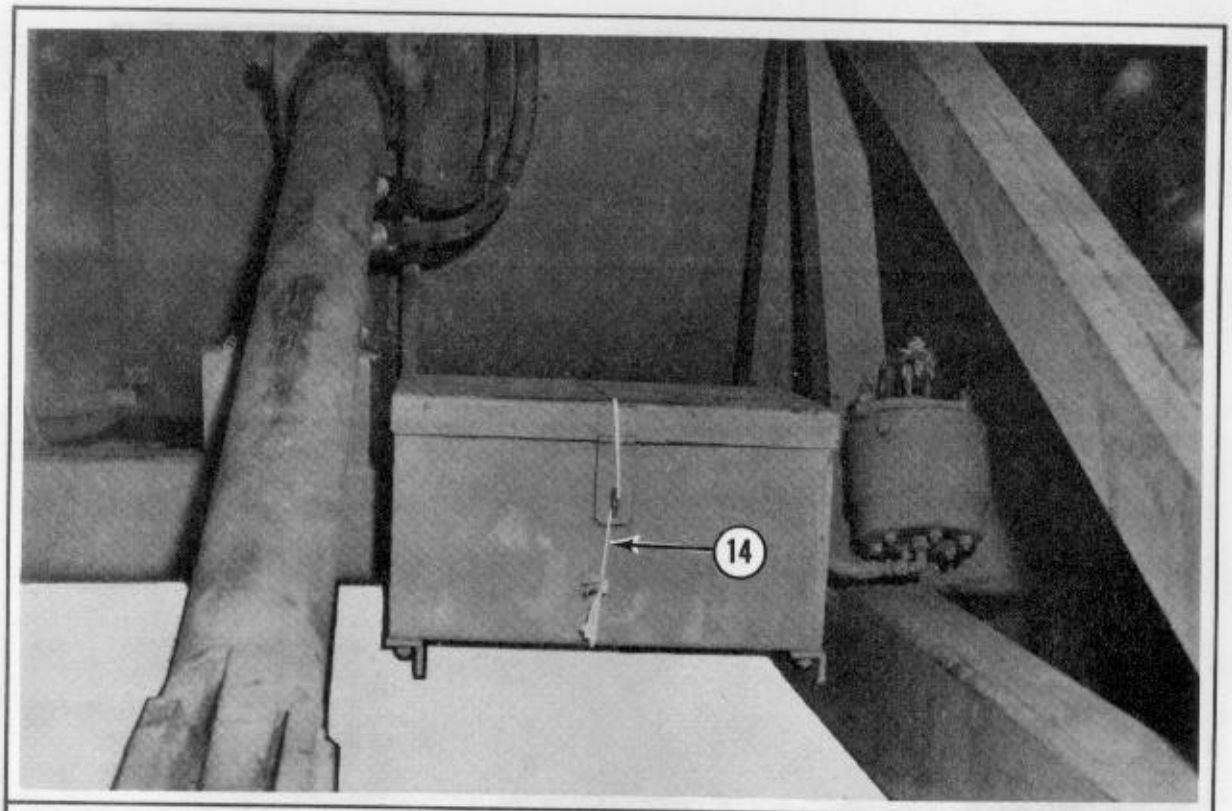


(10) Pad the air hose and hydraulic lines with cellulose wadding, and tape the wadding in place.

(11) Tie the air hose and hydraulic lines together in three places with 1/2-inch tubular nylon webbing.

(12) Tie the air hose and hydraulic lines in the scraper pan with 1/2-inch tubular nylon webbing.

Figure 3-5. Hydraulic lines prepared.



(13) Fill the toolbox with scrap honeycomb (not shown).

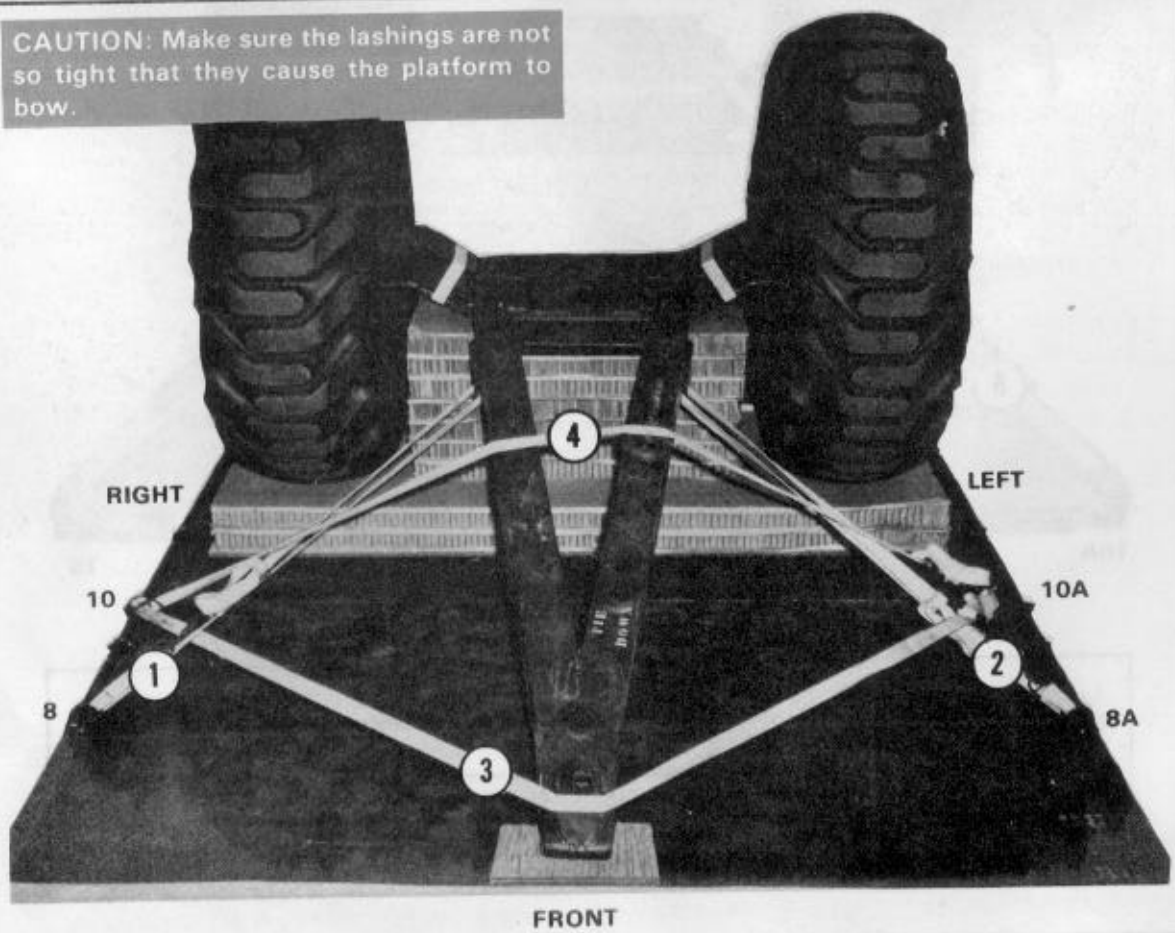
(14) Close the toolbox, and safety it with a length of type III nylon cord.

Figure 3-6. Toolbox prepared.

3-5. Placing and Lashing Front Axle and Tongue Assembly

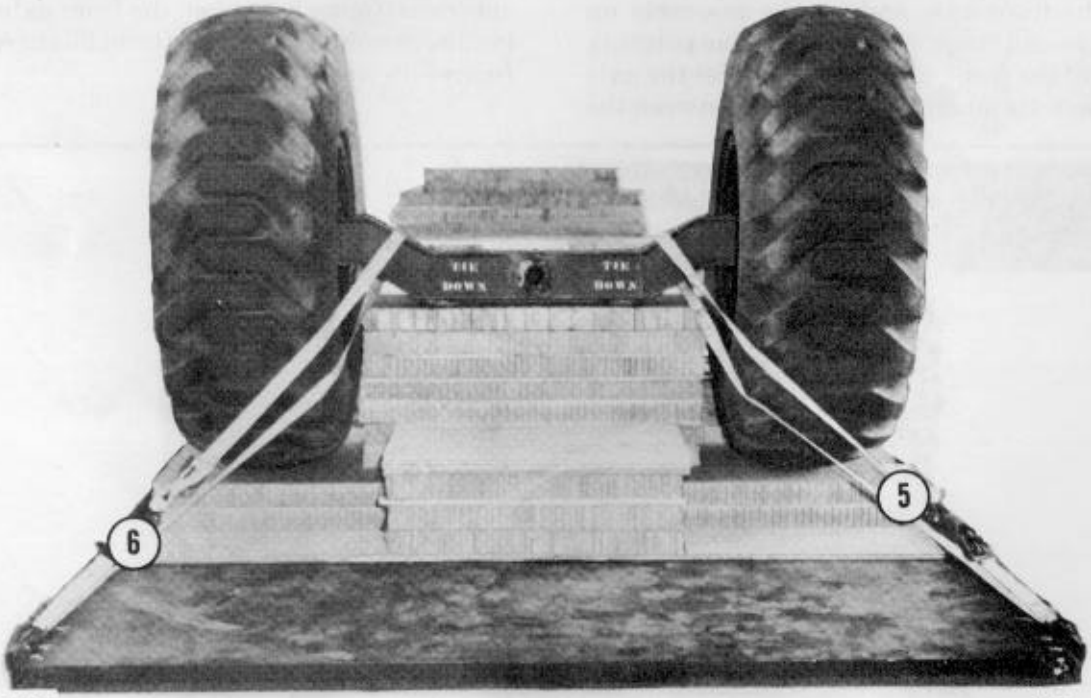
Set the front axle and tongue assembly on honeycomb stack 4 with the tongue pointing toward the front of the platform. Set the axle on stack 4, and center the wheels between the side rails (figure 3-7). Lash the front axle and tongue assembly to the platform as shown in figures 3-7 and 3-8.

CAUTION: Make sure the lashings are not so tight that they cause the platform to bow.



Lashing Number	Tiedown Clevis Number	Instructions
		Pass lashings:
1	8	Through tiedown provision, right side
2	8A	Through tiedown provision, left side
3	10 to 10A	Around front of tongue
4	10 to 10A	Around front of tongue

Figure 3-7. Axle and tongue assembly positioned and lashings 1 through 4 installed.



Lashing Number	Tiedown Clevis Number	Instructions
		Pass lashings:
5	16	Around axle, right side
6	16A	Around axle, left side

Figure 3-8. Lashings 5 and 6 installed.

3-6. Installing Suspension Slings

Attach a 9-foot (4-loop), type XXVI, nylon sling to each of the four lifting provisions. Use a screw pin clevis at each provision. Safety the suspension slings with a deadman's tie 2 feet above the scraper according to FM 10-500/TO 13C7-1-5.

3-7. Setting Scraper on Platform

NOTICE OF EXCEPTION

The procedures in this paragraph are different from those in FM 10-500/TO 13C7-1-5. An exception to FM 10-500/TO 13C7-1-5 is granted. The procedures in this paragraph WILL be followed.

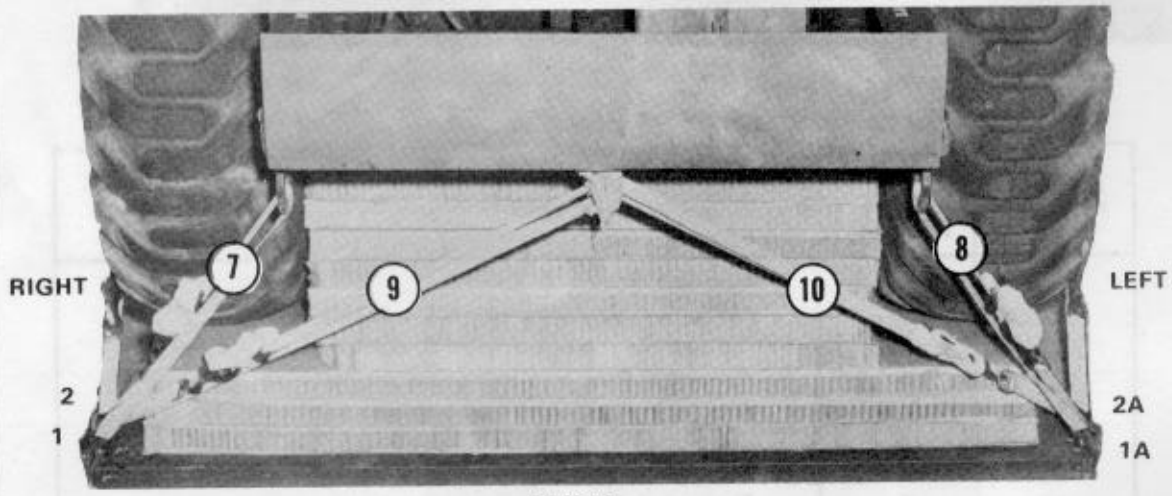
Set the scraper on the honeycomb stacks with the rear of the scraper overhanging the front of the platform 38 inches. Center the scraper on the platform so that it overhangs each side 1 inch.

3-8. Lashing Scraper

Lash the scraper to the platform as shown in figures 3-9 through 3-12.

CAUTION: Make sure the lashings are not so tight that they cause the platform to bow.

NOTE: Pad sharp edges that may touch the lashings.

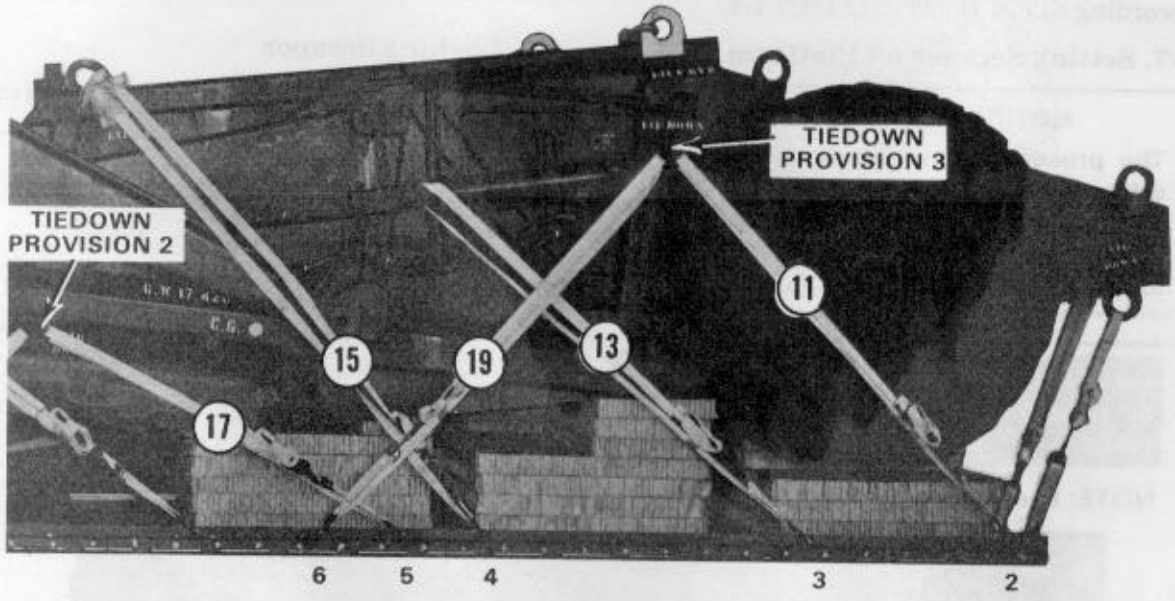


Lashing Number	Tiedown Clevis Number	Instructions
		Pass lashings:
7	1	Through right rear tiedown provision
8	1A	Through left rear tiedown provision
9	2	Around rear tow hook
10	2A	Around rear tow hook

Figure 3-9. Lashings 7 through 10 installed.

CAUTION: Make sure the lashings are not so tight that they cause the platform to bow.

NOTE: Pad sharp edges that may touch the lashings.

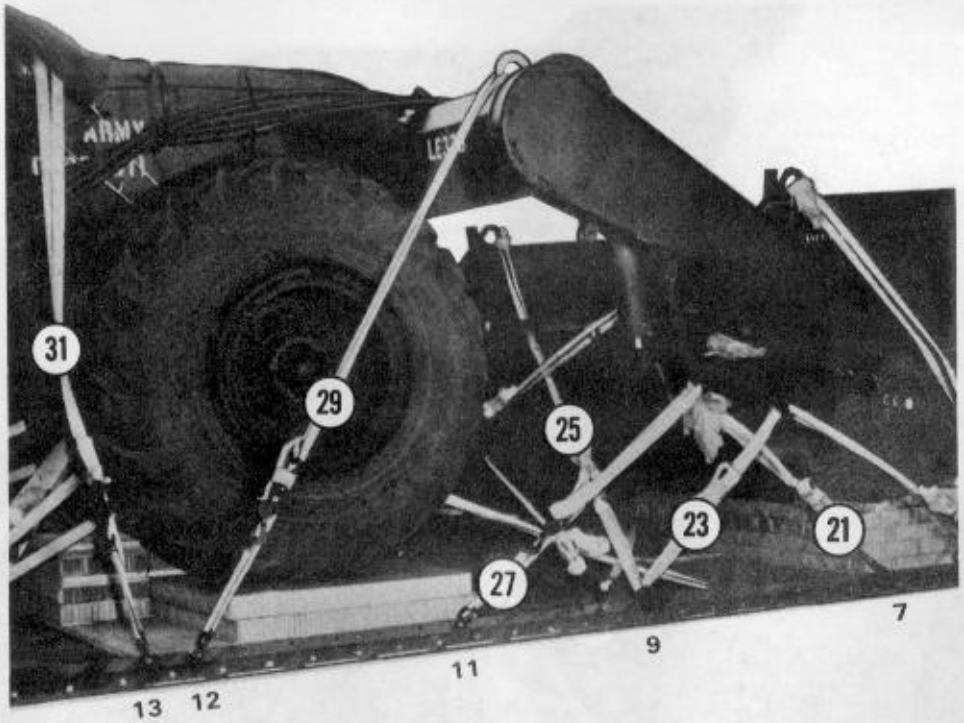


Lashing Number	Tiedown Clevis Number	Instructions
		Pass lashings:
11	2	Through tiedown provision 3, left side
12	2A	Through tiedown provision 3, right side
13	3	Around hydraulic cylinder arm pin, left side
14	3A	Around hydraulic cylinder arm pin, right side
15	4	Through lifting provision, left side
16	4A	Through lifting provision, right side
17	5	Through tiedown provision 2, left side
18	5A	Through tiedown provision 2, right side
19	6	Through tiedown provision 3, left side
20	6A	Through tiedown provision 3, right side

Figure 3-10. Lashings 11 through 20 installed.

CAUTION: Make sure the lashings are not so tight that they cause the platform to bow.

NOTE: Pad sharp edges that may touch the lashings.



Lashing Number	Tiedown Clevis Number	Instructions
		Pass lashings:
21	7	Around pan travel lock bracket, left side
22	7A	Around pan travel lock bracket, right side
23	9	Through tiedown provision 2, left side
24	9A	Through tiedown provision 2, right side
*25	9	Through tiedown provision 4, right side
*26	9A	Through tiedown provision 4, left side
27	11	Around pan travel lock bracket, left side
28	11A	Around pan travel lock bracket, right side
29	12	Through top lifting provision, left side
30	12A	Through top lifting provision, right side
31	13	Through lifting provision on traction mast, left side
32	13A	Through lifting provision on traction mast, right side

*Use a 30-foot tiedown strap made according to FM 10-500/TO 13C7-1-5.

Figure 3-11. Lashings 21 through 32 installed.

CAUTION: Make sure the lashings are not so tight that they cause the platform to bow.

NOTE: Pad sharp edges that may touch the lashings.

Lashing Number	Tiedown Clevis Number	Instructions
		Pass lashings:
33	14	Through traction mast tiedown provision, left side
34	14A	Through traction mast tiedown provision, right side
35	15	Through traction mast tiedown provision, left side
36	15A	Through traction mast tiedown provision, right side

Figure 3-12. Lashings 33 through 36 installed.

3-9. Stowing Cargo Parachutes

Stow the cargo parachutes as described below.

a. Build the honeycomb stacks on the rear of the platform as shown in figure 3-13.

NOTE: Set the honeycomb stacks on the platform so that they will not interfere with the lashings.

(1) Set four 18- by 36-inch pieces of honeycomb on each side of the platform. Place each honeycomb stack at an angle with the outside corner and 18 inches from the rail.

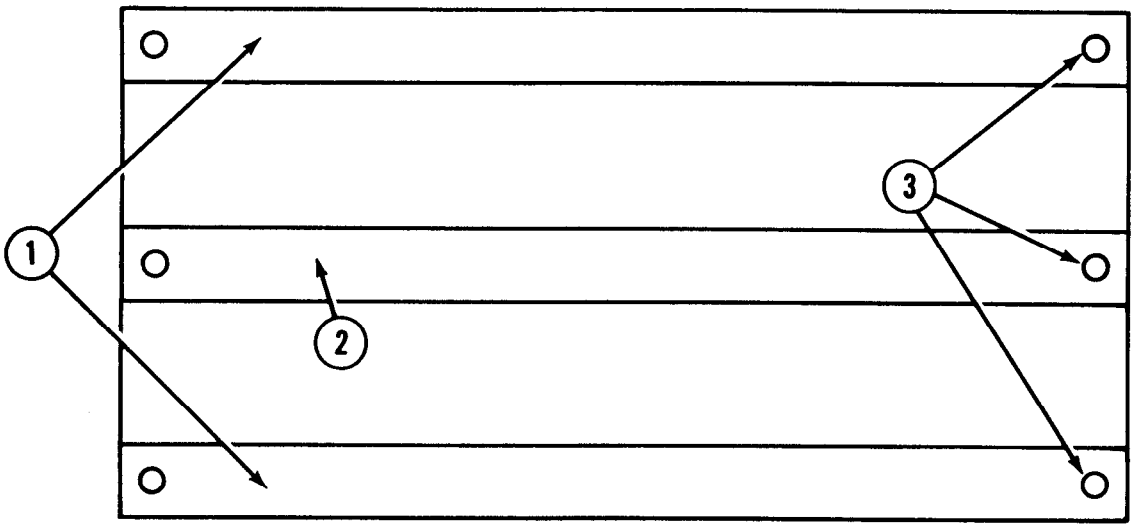
(2) Cut a 14- by 24-inch corner off each of ten 18- by 48-inch pieces of honeycomb. Set five of these pieces on each honeycomb stack in step 1.

(3) Set one 18- by 18-inch piece of honeycomb on the rear of each stack.

Figure 3-13. Stowage platform honeycomb stacks placed.

b. Build the parachute stowage platform as shown in figure 3-14.

NOTE: Not drawn to scale



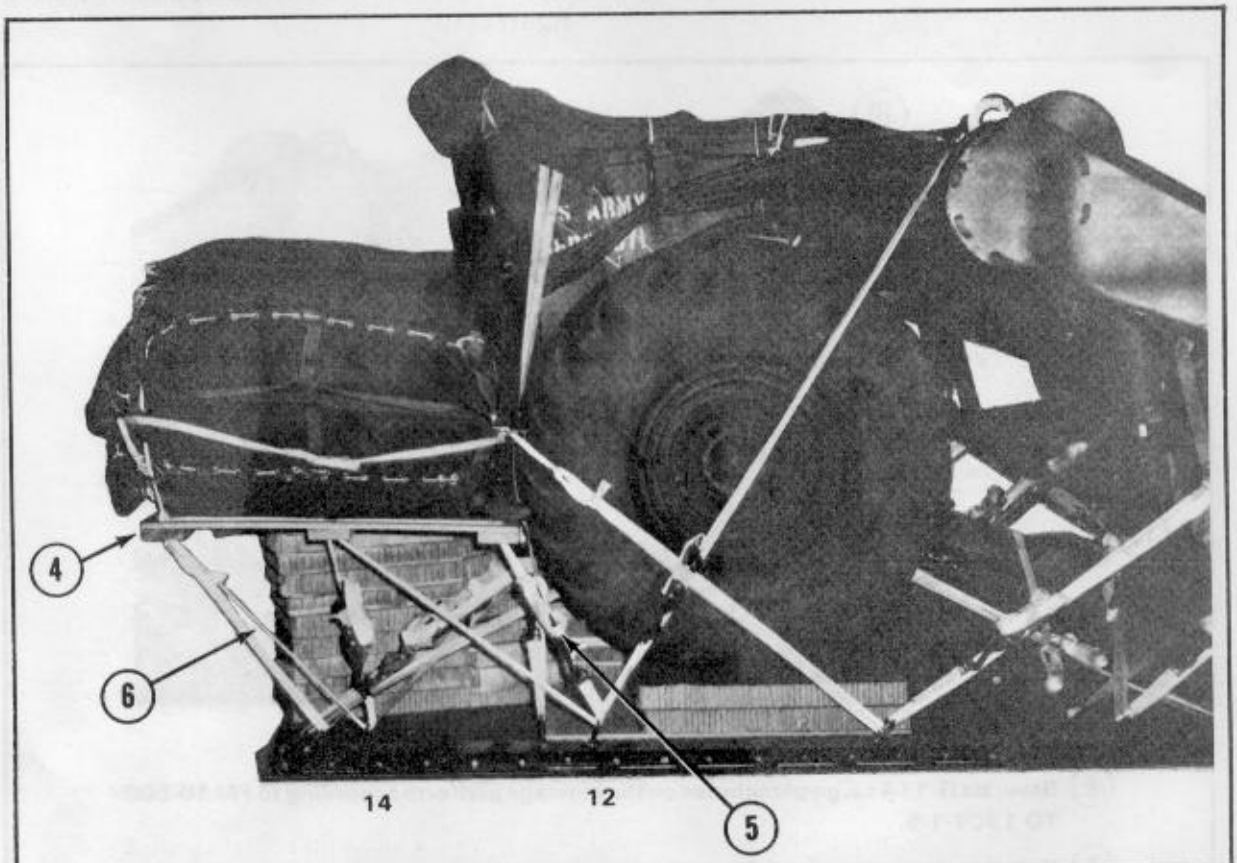
(1) Nail a 2- by 6- by 96-inch piece of lumber on each 96-inch edge of a 3/4- by 48- by 96-inch piece of plywood. Use 6d nails.

(2) Center a third 2- by 6- by 96-inch piece of lumber between the two pieces in step 1. Nail it in place with 6d nails.

(3) Drill a 2-inch hole through the platform 3 inches from each corner. Drill an additional hole 2 inches from each 48-inch edge and 24 inches from the 96-inch edge.

Figure 3-14. Construction details for parachute stowage platform.

c. Set the stowage platform on the honeycomb stacks, and lash it to the platform as shown in figure 3-15.



(4) Set the parachute stowage platform on the honeycomb stacks.

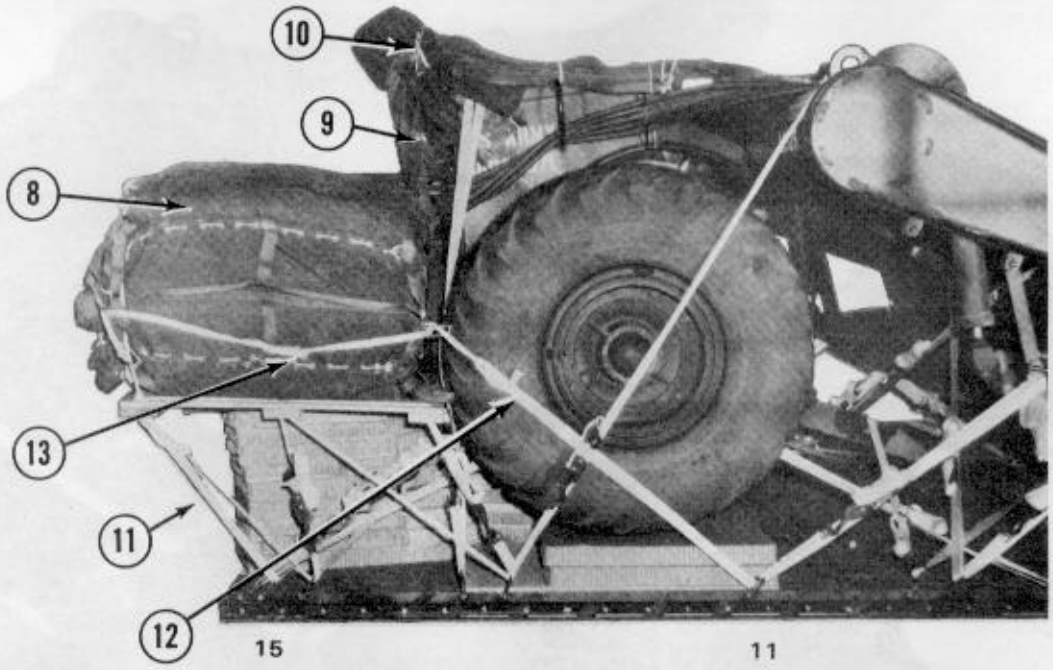
(5) Pass a tiedown strap through clevis 12, up through the right center stowage platform hole, and down through the right front hole. Hook the ends together with a D-ring and a load binder.

(6) Pass a tiedown strap through clevis 14, up through the right rear stowage platform hole, and down through the right center hole. Hook the ends together with a D-ring and a load binder.

(7) Adapt the procedures in steps 5 and 6 to lash the left end of the stowage platform to clevises 12A and 14A (not shown).

Figure 3-15. Stowage platform lashed in place.

d. Prepare six G-11A cargo parachutes, and stow them on the stowage platform according to FM 10-500/TO 13C7-1-5 and as shown in figure 3-16.



(8) Stow six G-11A cargo parachutes on the stowage platform according to FM 10-500/TO 13C7-1-5.

(9) Pull the riser extensions from the riser extension compartment. Pass the riser extensions up to the right of the traction mast, and lay the ends over in the scraper bowl.

(10) Tie the riser extensions to the traction mast with a length of type III nylon cord.

NOTICE OF EXCEPTION

The procedures in this figure differ from those in FM 10-500/TO 13C7-1-5. An exception to FM 10-500/TO 13C7-1-5 is granted. The procedures in this figure WILL be followed.

(11) Use a 15-yard length of type VIII nylon webbing to install a restraint strap according to FM 10-500/TO 13C7-1-5. Tie the strap to clevises 15 and 15A.

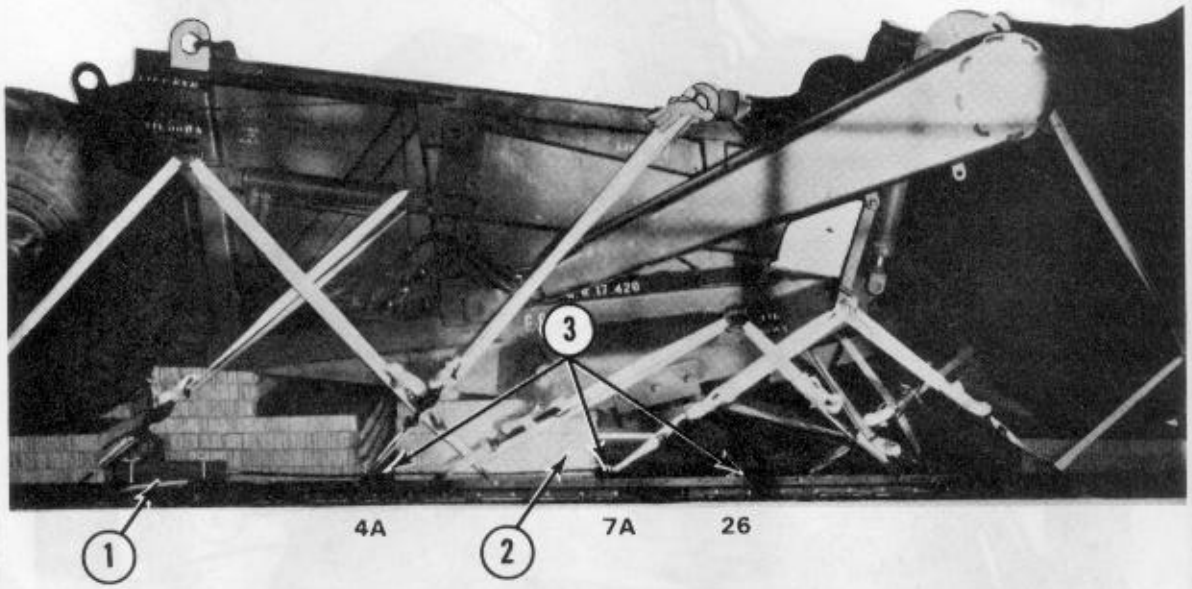
(12) Use a 15-yard length of type VIII nylon webbing to install another restraint strap. Adapt the procedures for a seven-parachute load as shown in FM 10-500/TO 13C7-1-5. Tie the restraint strap to clevises 11 and 11A.

(13) Install the parachute release straps according to FM 10-500/TO 13C7-1-5. Tape the center knife provision.

Figure 3-16. Cargo parachutes stowed.

3-10. Installing EFTC

Inspect and install the EFTC with a 20-foot cable assembly according to FM 10-500/TO 13C7-1-5 and as shown in figure 3-17. Use either a 3-loop, type X, nylon webbing deployment line or a 2-loop, type XXVI, nylon webbing deployment line.

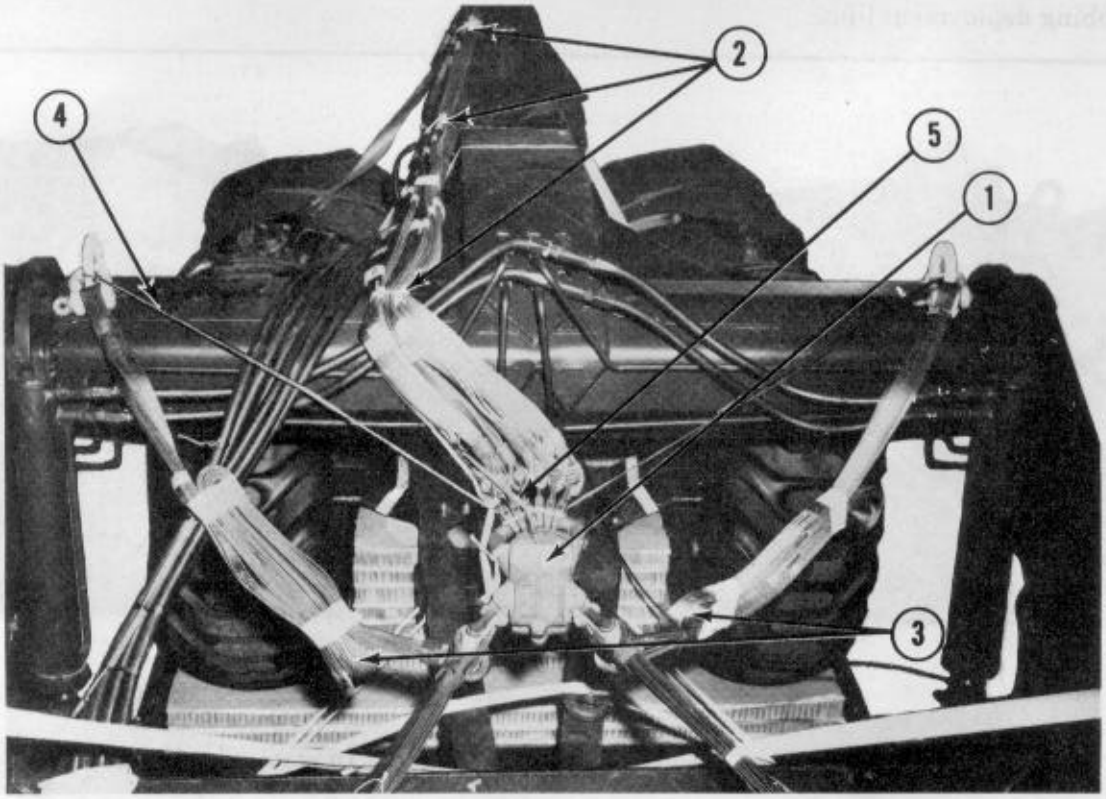


1. Bolt the actuator bracket in tiedown clevis holes 9 and 10 of the left platform rail.
2. Pass the cable to the rear of the platform and under the scraper.
3. Tie the cable to clevises 4A and 7A, clevis hole 26, and lashing 27 with 80-pound cotton webbing.
4. Bolt the latch assembly to the latch assembly adapter with the locking nut hole toward the left platform rail (not shown).
5. Use a 9-foot sling as the deployment line (not shown).

Figure 3-17. EFTC cable installed and safetied.

3-11. Installing and Safetying Release System

Test and install the M-2 cargo parachute release assembly according to FM 10-500/TO 13C7-1-5 and as shown in figure 3-18. Safety the release as shown in figure 3-18. If the M-2 release is not available, prepare and attach six 5,000-pound-capacity cargo parachute releases according to FM 10-500/TO 13C7-1-5.



(1) Install the M-2 cargo parachute release according to FM 10-500/TO 13C7-1-5.

(2) Tie the parachute riser extensions together in three places with type III nylon cord.

(3) Fold and tape slack in the suspension slings.

NOTICE OF EXCEPTION

The procedures in this figure differ from those in FM 10-500/TO 13C7-1-5. An exception to FM 10-500/TO 13C7-1-5 is granted. The procedures in this figure WILL be followed.

(4) Safety the M-2 release in place with a length of 1/2-inch tubular nylon webbing. Make the ties to the nearest suspension points.

(5) Tie an extension to the arming lanyard. Run it to the parachutes along with the riser extensions. Tie it to a parachute carrying handle according to FM 10-500/TO 13C7-1-5.

Figure 3-18. Release system installed and safetied.

3-12. Placing Extraction Parachute

Place the extraction parachute as described below.

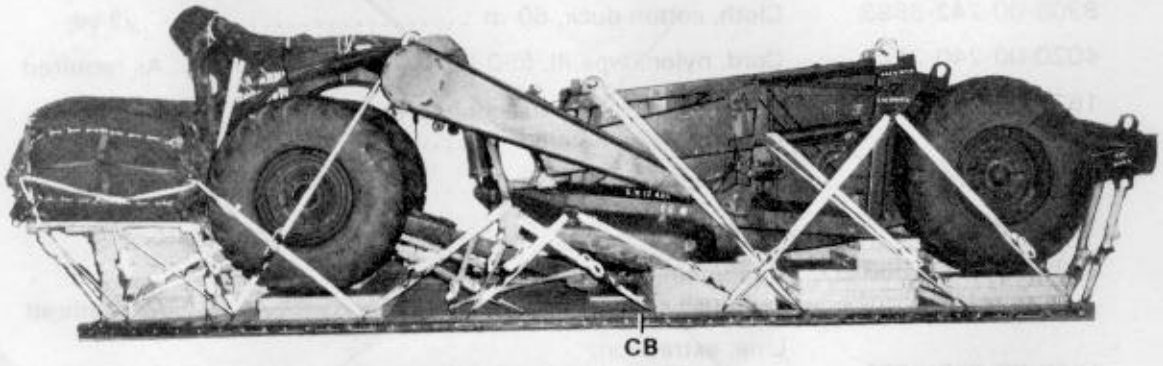
a. C-130 Aircraft. Lay a 28-foot cargo extraction parachute on the load for installation in the aircraft. A light-duty parachute may use either a 60-foot (4-loop), type X, nylon webbing extraction line or a 60-foot (3-loop), type XXVI, nylon webbing extraction line. However, the heavy-duty parachute must have a 60-foot (3-loop), type XXVI, nylon webbing extraction line.

b. C-141 Aircraft. Lay a heavy-duty, 28-foot cargo extraction parachute on the load for installation in the aircraft. This load requires a continuous 140-foot (3-loop), type XXVI, nylon webbing extraction line.

3-13. Marking Rigged Load

Mark the rigged load according to FM 10-500/TO 13C7-1-5 and as shown in figure 3-19.

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



RIGGED LOAD DATA

Weight		20,830 pounds
Width		110 inches
Height		96 1/2 inches
Length:		338 inches
Overhang:	Front	38 inches
	Rear	12 inches
Center of balance (from front edge of platform)		129 inches

Figure 3-19. MRS-100 scraper rigged for low-velocity airdrop.

3-14. Equipment Required

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

Table 3-1. Equipment required to rig the MRS-100 earthmoving scraper for low-velocity airdrop

National Stock Number	Item	Quantity
8040-00-273-8713	Adhesive, paste, 1-gal	As required
1377-00-958-1048	Cartridge, time-delay, 20-sec (use w 5,000-lb releases only)	6
1670-00-090-5354	Clevis assembly, suspension, large (add two w 5,000-lb release)	6
4030-00-432-2516	Clevis, suspension w screw pin and sleeve	4
8305-00-242-3593	Cloth, cotton duck, 60-in	2 yd
4020-00-240-2146	Cord, nylon, type III, 550-lb	As required
1670-00-434-5787	Coupling, airdrop extraction force transfer w 20-ft cable	1
1670-00-360-0328	Cover, clevis, large	6
1670-00-360-0329	Cover, link	18
8135-00-664-6958	Cushioning material, packaging, cellulose wadding	As required
	Line, extraction:	
1670-00-045-9972	60-ft (4-loop), type X, nylon webbing or	1
1670-01-062-6313	60-ft (3-loop), type XXVI, nylon webbing (for C-130 aircraft)	1
1670-01-107-7651	Line, extraction, 140-ft (3-loop), type XXVI, nylon webbing (for C-141 aircraft)	1
1670-00-783-5988	Link assembly, single, type IV	19
1670-00-799-8597	Load coupler, 12-spool (for 5,000-lb releases)	6
5510-00-220-6148	Lumber, 2- by 6- by 96-in	3
5315-00-010-4657	Nail, steel wire, common, 6d	As required
1670-00-753-3928	Pad, energy-dissipating, honeycomb,	
	3- by 36- by 96-in:	28 sheets
	8- by 10-in	(6)
	10- by 12-in	(2)
	12- by 18-in	(3)
	12- by 36-in	(36)
	12- by 48-in	(2)
	18- by 18-in	(2)
	18- by 36-in	(8)
	18- by 44-in	(7)

Table 3-1. Continued

National Stock Number	Item	Quantity
	18- by 48-in	(10)
	18- by 96-in	(3)
	21- by 36-in	(1)
	24- by 60-in	(1)
	24- by 96-in	(1)
	36- by 60-in	(6)
	36- by 96-in	(13)
1670-00-269-1107	Parachute, cargo, 100-ft, G-11A	6
	Parachute, cargo extraction:	
1670-00-262-1797	28-ft (may be used with C-130 aircraft)	1
1670-00-040-8135	28-ft (MUST be used with C-141 aircraft)	1
	Platform, modular, 24-ft:	
1670-00-893-1631	Clevis, load tiedown	32
1670-00-893-1624	Panel	6
1670-00-893-1629	Rail, platform-side, 24-ft	2
5320-00-893-1632	Rivet, blind-drive type, 1/4-in diam	96
5530-00-128-4981	Plywood, 3/4-in:	
	18- by 18-in	1
	21- by 36-in	4
	48- by 96-in	1
1670-01-097-8817	Release, cargo parachute M-2 (If not available, use six 5,000-lb releases, NSN 1377-00-799-8494.)	1
	Sling, cargo, airdrop:	
	For deployment lines:	
1670-00-753-3631	9-ft (3-loop), type X, nylon webbing or	1
1670-01-062-6304	9-ft (2-loop), type XXVI, nylon webbing	1
	For riser extensions:	
1670-00-753-3794	20-ft (2-loop), type X, nylon webbing or	24
1670-01-062-6302	20-ft (2-loop), type XXVI, nylon webbing	24
	For suspension slings:	
1670-00-753-3788	3-ft (3-loop), type X, nylon webbing (Add six w 5,000-lb releases) or	2
1670-01-062-6301	3-ft (2-loop), type XXVI, nylon webbing (Add six w 5,000-lb releases)	2
1670-00-432-2501	9-ft (4-loop), type X, nylon webbing or	4
1670-01-062-6305	9-ft (4-loop), type XXVI, nylon webbing	4
1670-00-040-8219	Strap, parachute release, multicut	2
7510-00-266-5016	Tape, adhesive, 2-in	As required
1670-00-937-0271	Tiedown assembly, 15-ft	26
8305-00-268-2411	Webbing, cotton, 80-lb	As required
8305-00-082-5752	Webbing, nylon, tubular, 1/2-in	As required
8305-00-263-3591	Webbing, nylon, type VIII	As required

GLOSSARY

AFTO	Air Force technical order
attn	attention
CB	center of balance
cu	cubic
d	penny
DA	Department of Army
diam	diameter
EFTC	extraction force transfer coupling
FM	field manual
ft	feet; foot
gal	gallon
in	inch
LAPE	low-altitude parachute extraction
LAPES	low-altitude parachute extraction system
lb	pound
sec	second
SL/CS	static line/connector strap
TM	technical manual
TO	technical order
US	United States
USAF	United States Air Force
w	with
yd	yard

REFERENCES

FM 10-500/TO 13C7-1-5	Airdrop of Supplies and Equipment: Rigging Airdrop Platforms
TM 5-3805-235-13	Operator's, Organizational and Direct Support Maintenance Manual for Scrapers, Earthmoving, Towed; Hydraulic-Operated, 8 cu yd (MRS Mfg Co, (Model MS-100) (FSN 3805-051-3139) and (Model MRS-100) (3805-418-0115) Air Droppable and (3805-418-0116) Air Transportable
TM 10-1670-208-20&P/ TO 13C3-4-12	Organizational Maintenance Manual Including Repair Parts and Special Tools List for Platforms, Type II Modular, and LAPES/Airdrop Modular
TO 1C-141B-9	Technical Loading Instructions Aircraft C-141B USAF Series

FM 10-530/TO 13C7-27-121

9 AUGUST 1985

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

JOHN A. WICKHAM, JR.
General, United States Army
Chief of Staff

Official:

DONALD J. DELANDRO
Brigadier General, United States Army
The Adjutant General

DISTRIBUTION:

Active Army, USAR, and ARNG: To be distributed in accordance with DA Form 12-11A, Requirements for Airdrop of Supplies and Equipment (Qty rqr block no. 228).

Additional copies may be requisitioned from the US Army Adjutant General Publications Center, 2800 Eastern Boulevard, Baltimore, MD 21220-2896.

☆U.S. GOVERNMENT PRINTING OFFICE: 1985—537-031/20195