

CHAPTER 2

RIGGING M-R-S 100MC INDUSTRIAL WHEELED TRACTOR FOR LOW-VELOCITY AIRDROP

2-1. Description of Load

The M-R-S 100MC industrial wheeled tractor, 4 x 4, DED, with a bulldozer and scarifiers, is rigged on a 24-foot modular platform with six G-11A cargo parachutes. The unrigged tractor with the bulldozer and scarifiers weighs 21,500 pounds. It is 121 inches high (reducible to 88 1/2 inches), 221 inches long, and 108 inches wide.

2-2. Preparing Platform

Inspect, or assemble and inspect, the type II modular platform according to TM 10-1670-208-20&P/TO 13C3-4-12 and as shown in figure 2-1.

2-3. Building and Placing Honeycomb Stacks

Build eight honeycomb stacks, and place them on the platform as shown in figure 2-2.

2-4. Preparing Tractor

Prepare the tractor as shown in figure 2-3 and as follows:

- a. Check the fuel tank to make sure it is no more than three-fourths full.
- b. Make sure that the air hose coupling covers are in place. Put the coupling covers on the stowing hooks and tape them securely.
- c. Pad and tape the radiator cap.

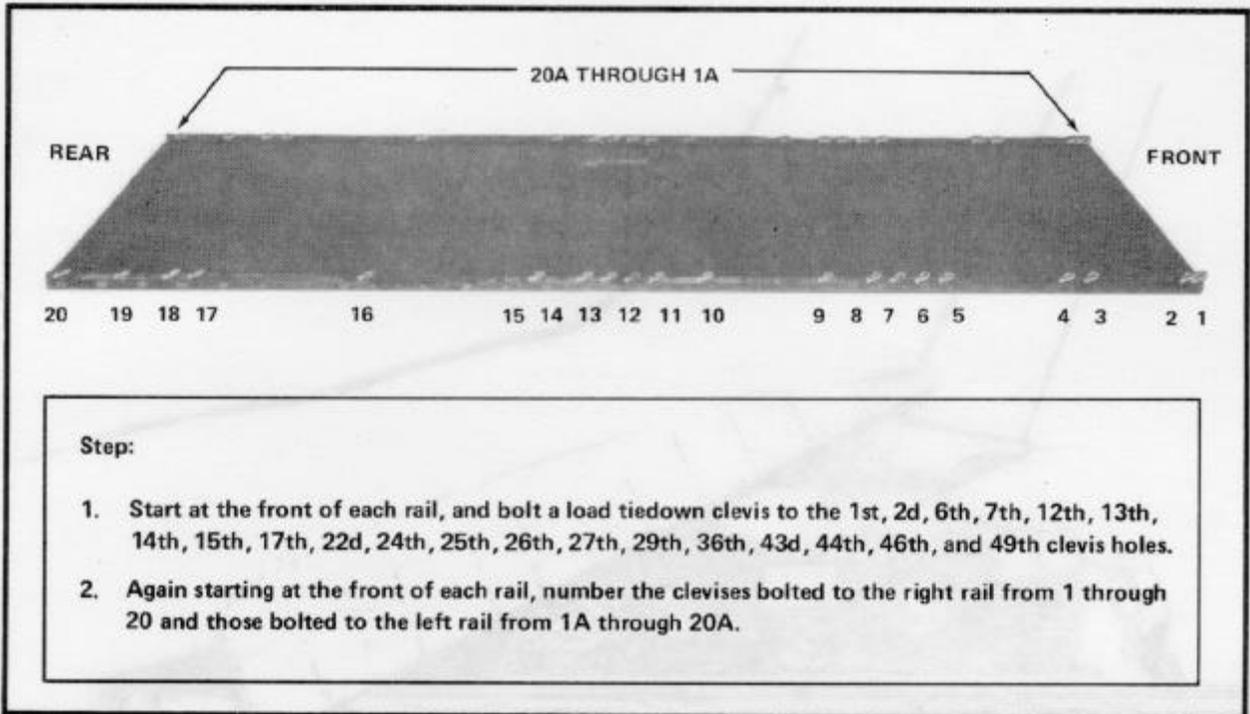


Figure 2-1. Platform prepared.

CHAPTER 2

RIGGING M-R-8 TOWING INDUSTRIAL WHEELED TRACTOR FOR LOW-VELOCITY AIRDROP

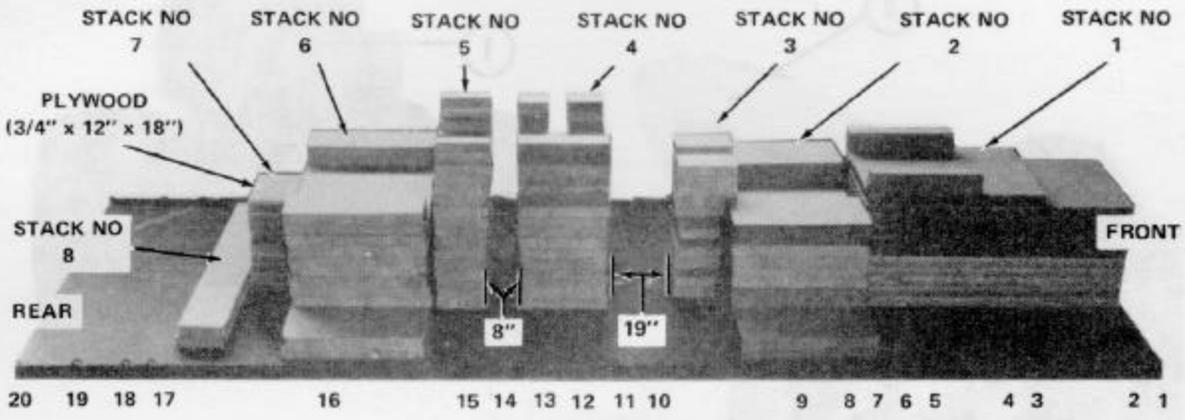
2-2. Balling and Piling
 Horizontal Stacks
 Build eight horizontal stacks and place them on the platform as shown in figure 2-2.

2-3. Preparing Tractor
 Prepare the tractor as shown in figure 2-3 and as follows:
 a. Check the fuel tank to make certain it is no more than three-fourths full.
 b. Check that the air flow warning covers are in place. Put the coupling covers on the steering handle and tag them securely.
 c. Put red tape on the controls and

1. Description of Load
 The M-R-8 towing industrial wheeled tractor is a 10,000 lb tractor with a maximum weight of 21,000 lb. The tractor is towed by the M-R-8 towing tractor. The towing tractor is a 10,000 lb tractor with a maximum weight of 21,000 lb. The tractor is towed by the M-R-8 towing tractor.

2. Preparing Platform
 Prepare the platform as shown in figure 2-1 and as follows:
 a. Prepare the platform as shown in figure 2-1 and as follows:
 b. Prepare the platform as shown in figure 2-1 and as follows:
 c. Prepare the platform as shown in figure 2-1 and as follows:

NOTE: Glue the stacks together. Center the stacks between the platform side rails, and glue them to the platform.



Stack Number	Pieces	Width (Inches)	Length (Inches)	Instructions
1	10 1 4	36 36 4	72 48 30	Layers 1-10. Align with rear of layers 1-10. Two pieces on each side of layer 11, lengthwise.
2	2 6 4	36 36 18	96 60 36	Layers 1-2, against rear of stack 1, lengthwise. Centered lengthwise on layer 2. Two pieces on each side of layer 8.
3	8 1 8	12 16 9	24 24 16	Layers 1-8, centered against stack 2. Layer 9. Four pieces on each side of layer 9.
4	11 5 5 5	24 6 6 6	39 24 10 8	Layers 1-11, 19 inches behind stack 3. Place on right side of layer 11. Place on left front of layer 11. Place on left rear of layer 11.
5	9 6 2 2 4	14 14 8 6 4	39 14 14 14 14	Layers 1-9, 8 inches behind stack 4. Three pieces on each side of layer 9. One piece on each side of layer 12. One piece on each side of layer 13. Two pieces on each side of layer 14.
6	2 7 4	36 36 12	96 60 36	Layers 1-2, lengthwise against stack 5. Centered on layer 2. Two pieces on each side of layer 9.
7	9	12	18	Centered against stack 6.
8	2	12	80	Place lengthwise against stack 7.

Figure 2-2. Honeycomb stacks in place.

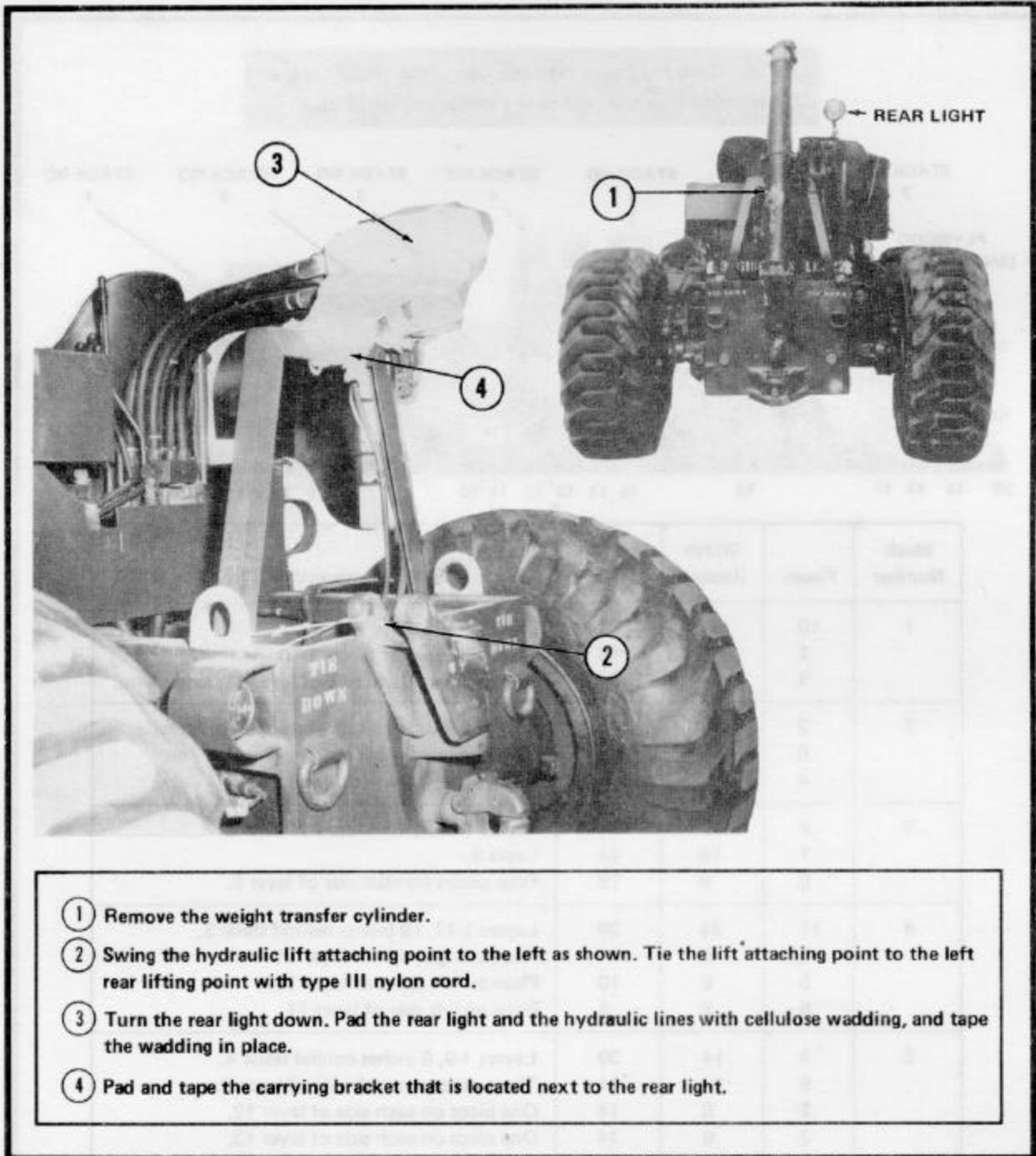
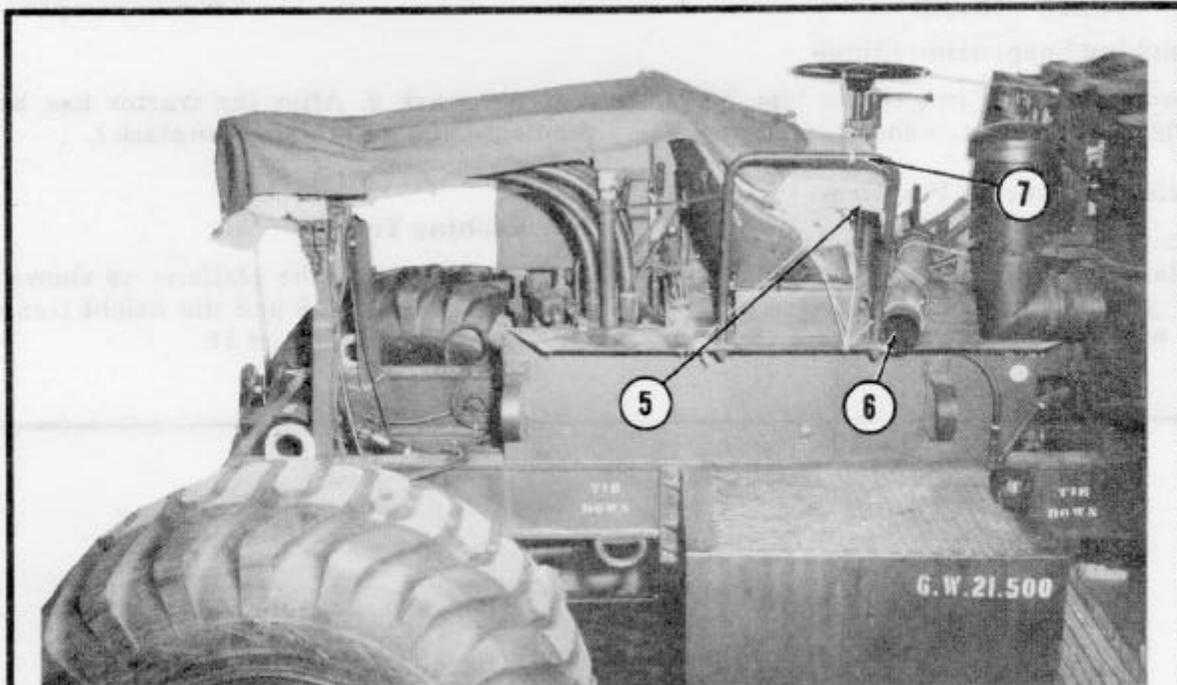


Figure 2-3. Rear of tractor prepared.



- ⑤ Remove the light and bracket, and pad them with cellulose wadding. Tie the light and bracket to the seat with type III nylon cord. Lay a 12- by 24-inch piece of honeycomb on top of the light and bracket. Tie the honeycomb in place with type II! nylon cord.
- ⑥ Remove the exhaust stack, and place it on the floor in front of the seats. Tape the exhaust opening. Tie the exhaust stack in place with type III nylon cord.
- ⑦ Tie type III nylon cord from the steering wheel to the dashboard and from the steering wheel to the safety rail.

Figure 2-4. Light, exhaust stack, and steering wheel secured.

2-5. Attaching Suspension Slings

Attach two 12-foot and two 16-foot type XXVI nylon slings to the tractor as shown in figure 2-5.

2-6. Setting Tractor on Platform

Use the suspension slings to raise and position the tractor. Raise the dozer blade at least 40 inches from the ground. Position the tractor on the platform with the front tires centered (front to

rear) on stack 2. After the tractor has been positioned, lower the blade onto stack 1.

2-7. Lashing Tractor

Lash the tractor to the platform as shown in figures 2-6 through 2-8 and the weight transfer cylinder as shown in figure 2-9.

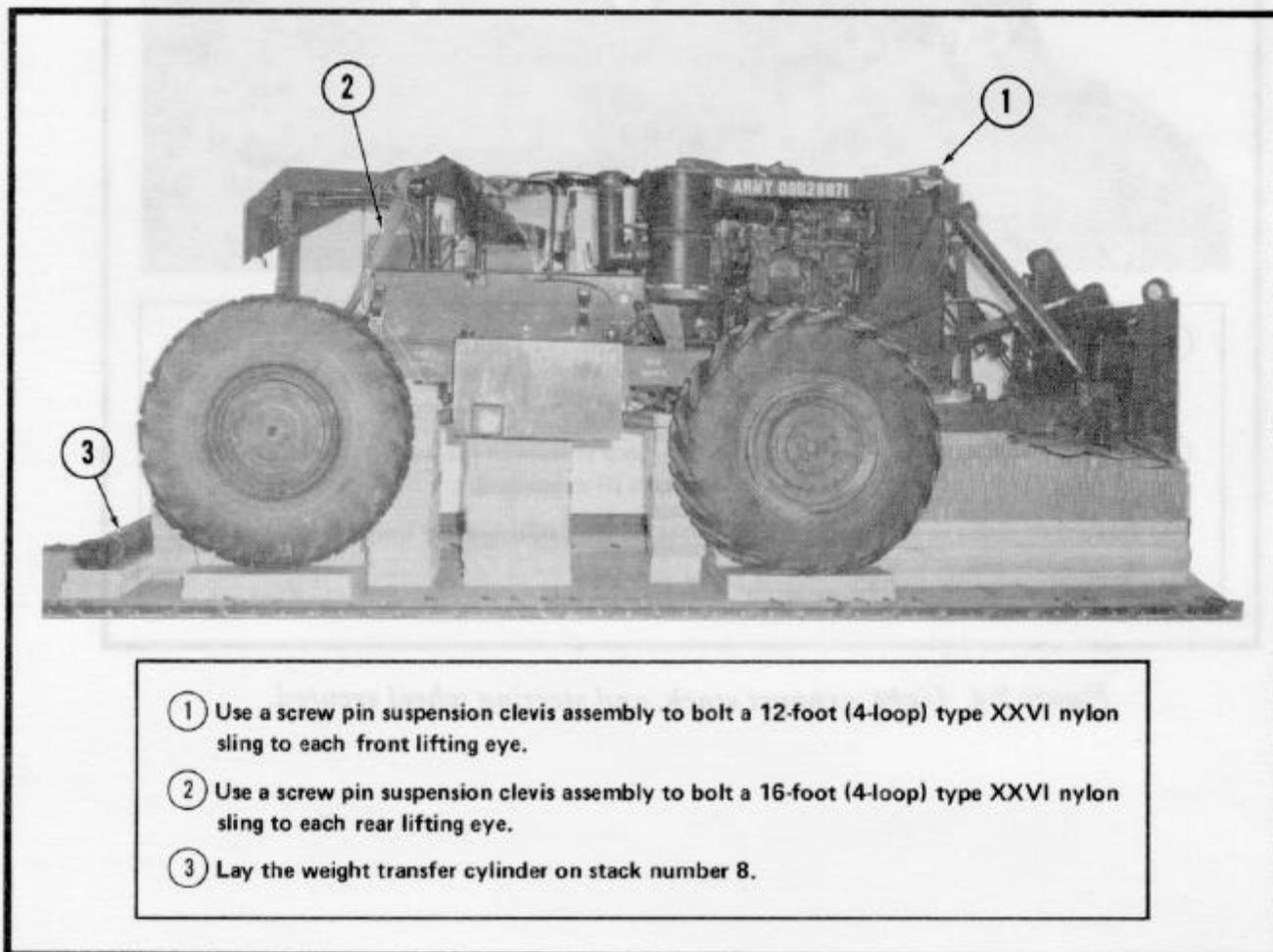
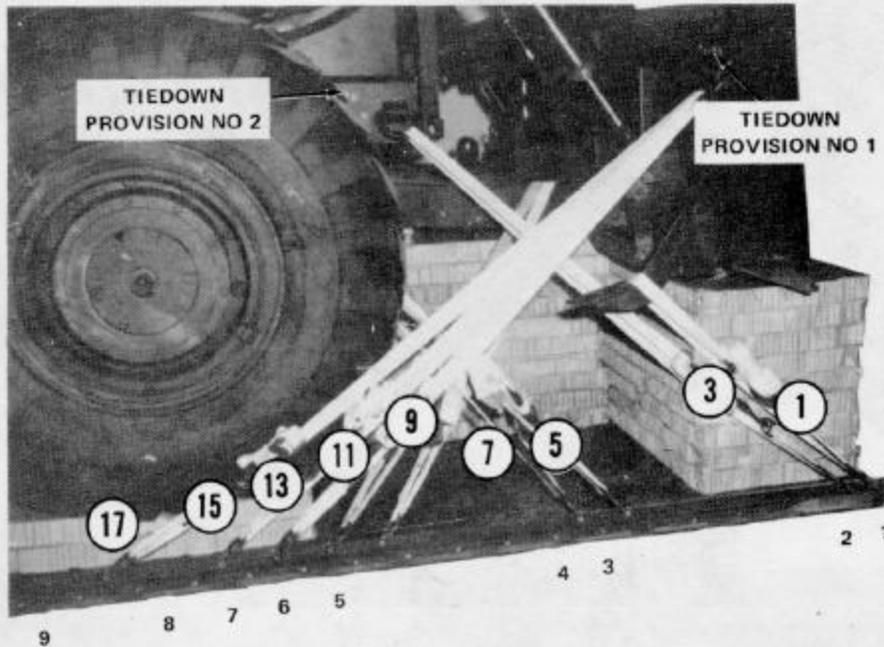


Figure 2-5. Suspension slings attached and tractor set on platform.

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



Lashing Number	Tiedown Clevis Number	Instructions
1	1	Around right front scarifier
2	1A	Around left front scarifier
3	2	To tiedown provision number 2
4	2A	To tiedown provision number 2
5	3	To tiedown provision number 3
6	3A	To tiedown provision number 3
7	4	To tiedown provision number 3
8	4A	To tiedown provision number 3
9	5	Around front dozer push arm
10	5A	Around front dozer push arm
11	6	Around front dozer push arm
12	6A	Around front dozer push arm
13	7	To blade tiedown provision number 1
14	7A	To blade tiedown provision number 1
15	8	To blade tiedown provision number 1
16	8A	To blade tiedown provision number 1
17	9	To blade tiedown provision number 1
18	9A	To blade tiedown provision number 1

Figure 2-6. Lashings 1 through 18 installed.

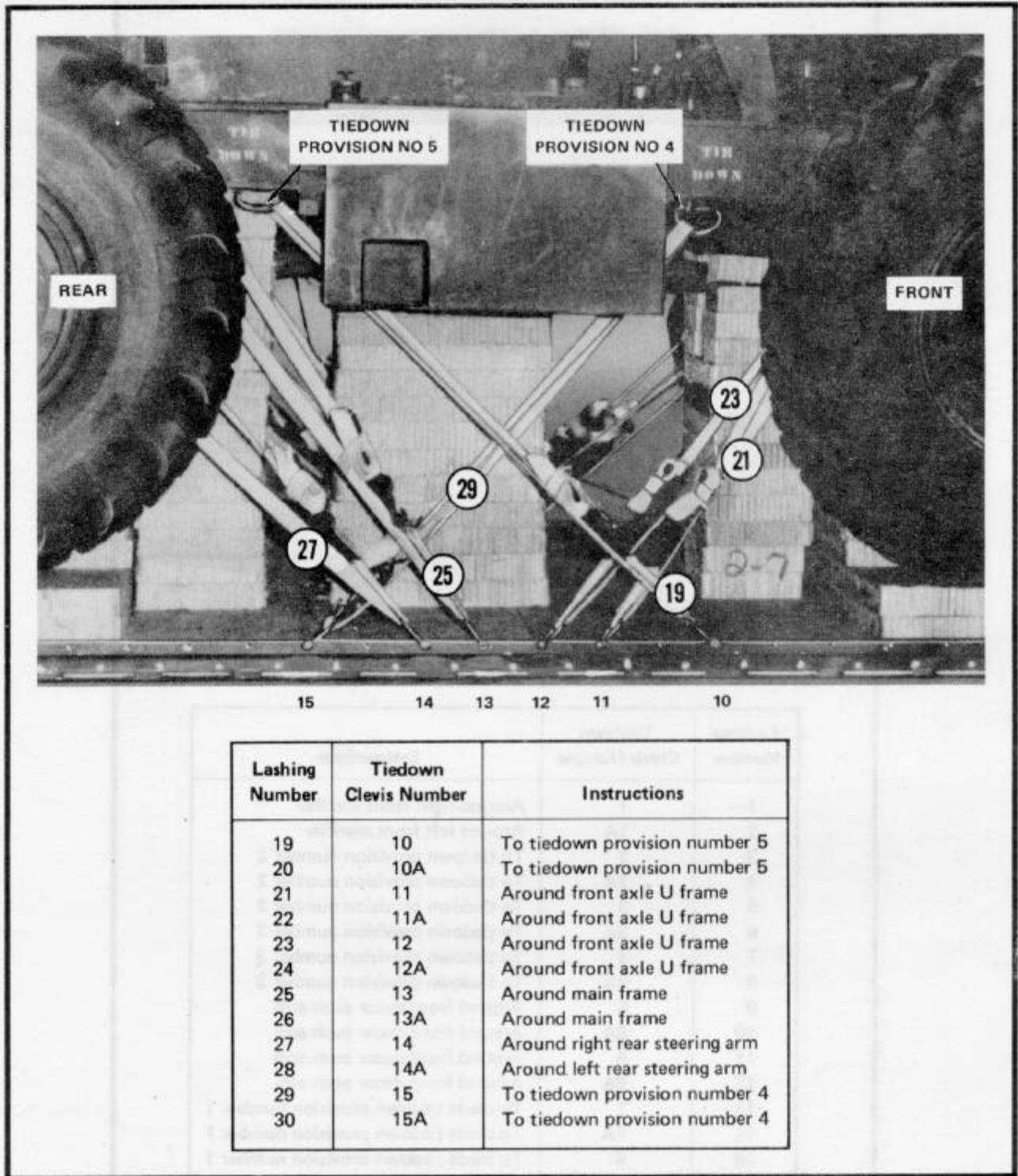


Figure 2-7. Lashings 19 through 30 installed.

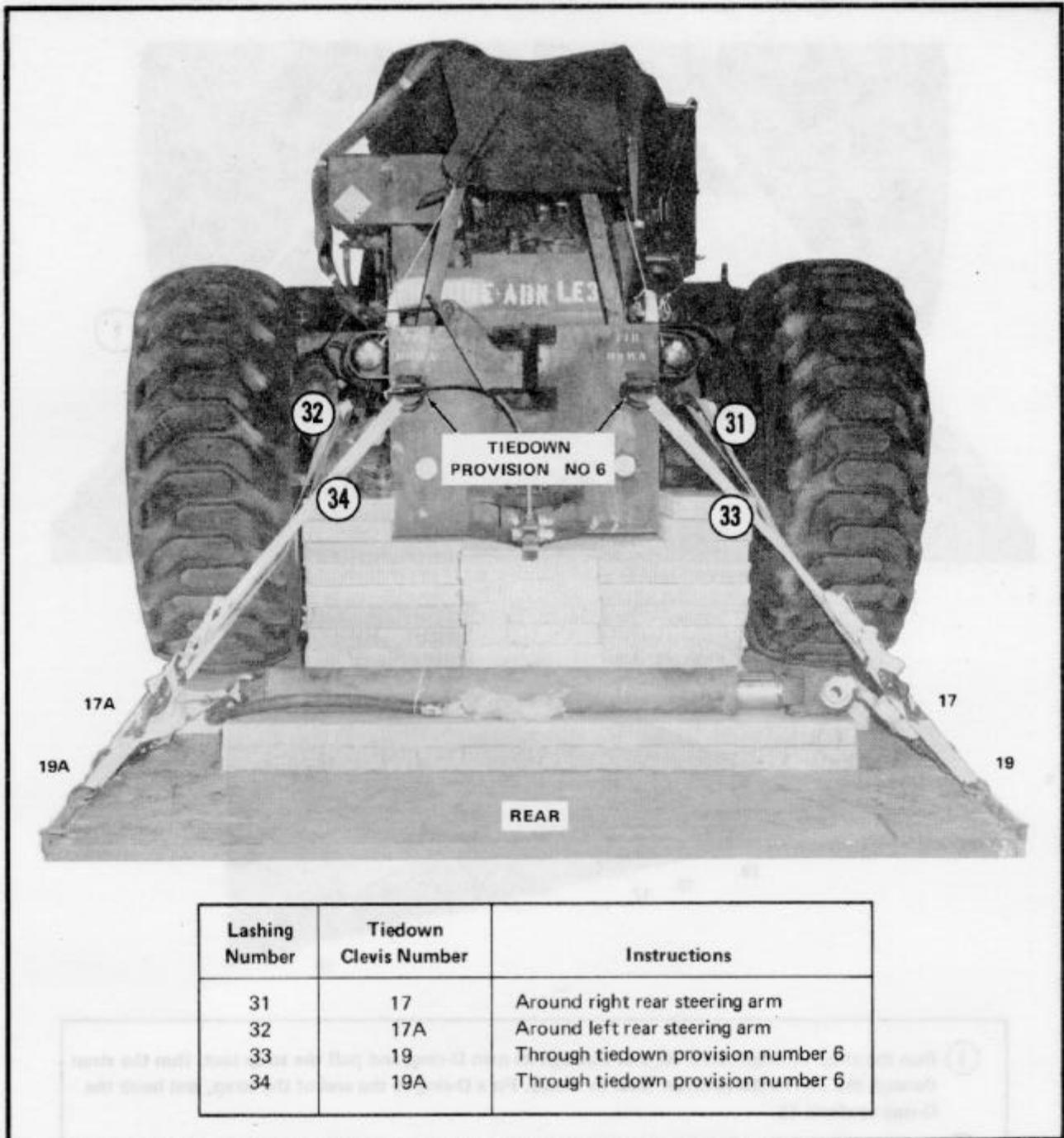


Figure 2-8. Lashings 31 through 34 installed.

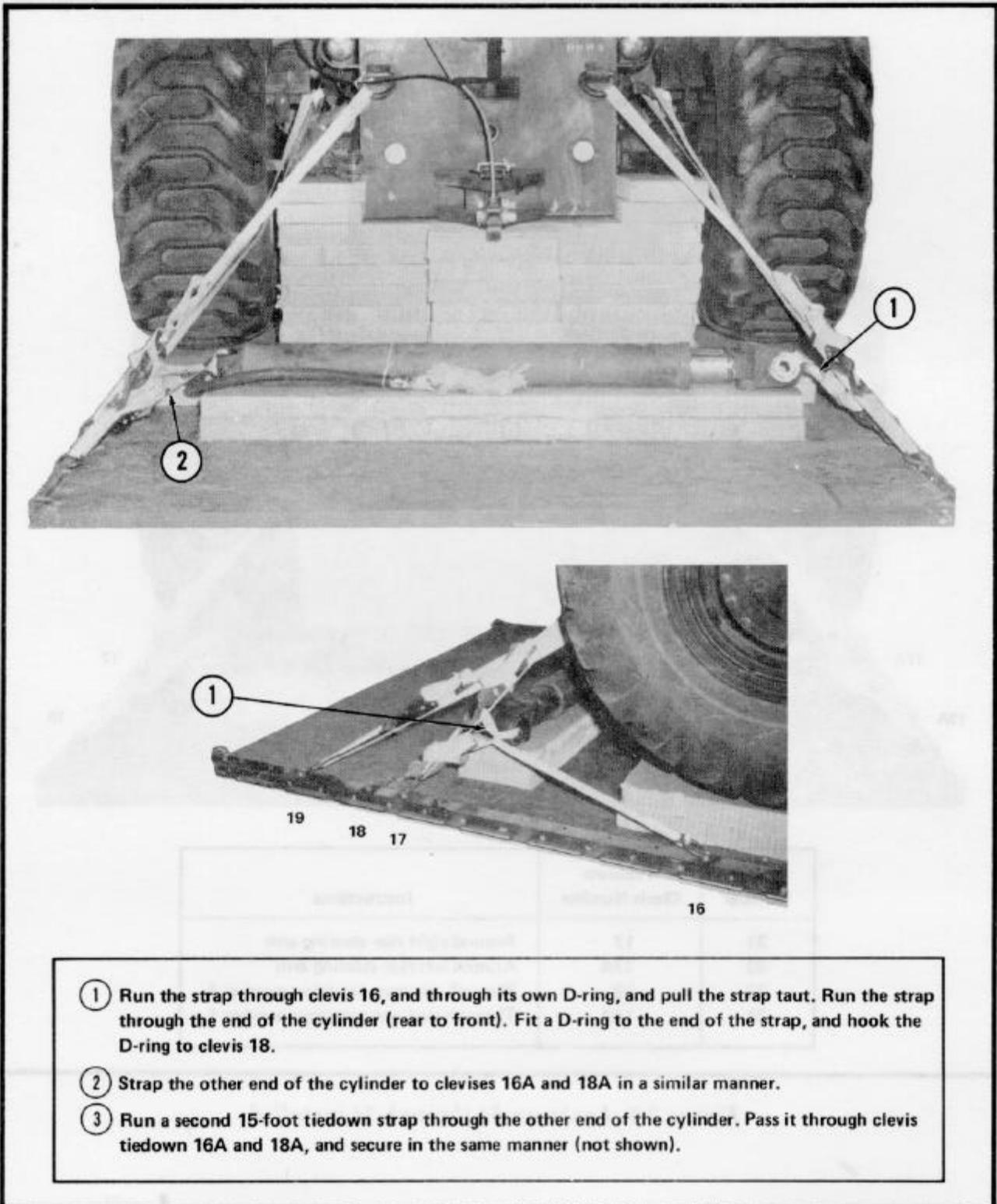


Figure 2-9. Weight transfer cylinder secured.

2-8. Installing Load Cover

Tie a 9- by 12-foot load cover over the rear of the tractor with type III nylon cord.

2-9. Preparing Parachute Stowage Platform

a. Prepare two stacks of honeycomb, each 12 layers high. Use 18- by 38-inch honeycomb for the

first four layers and 18- by 48-inch honeycomb for all other layers. Place the honeycomb stacks 18 inches from the sides of the platform and flush with the rear of the platform.

b. Build, position, and secure a parachute stowage platform as shown in figures 2-10 and 2-11.

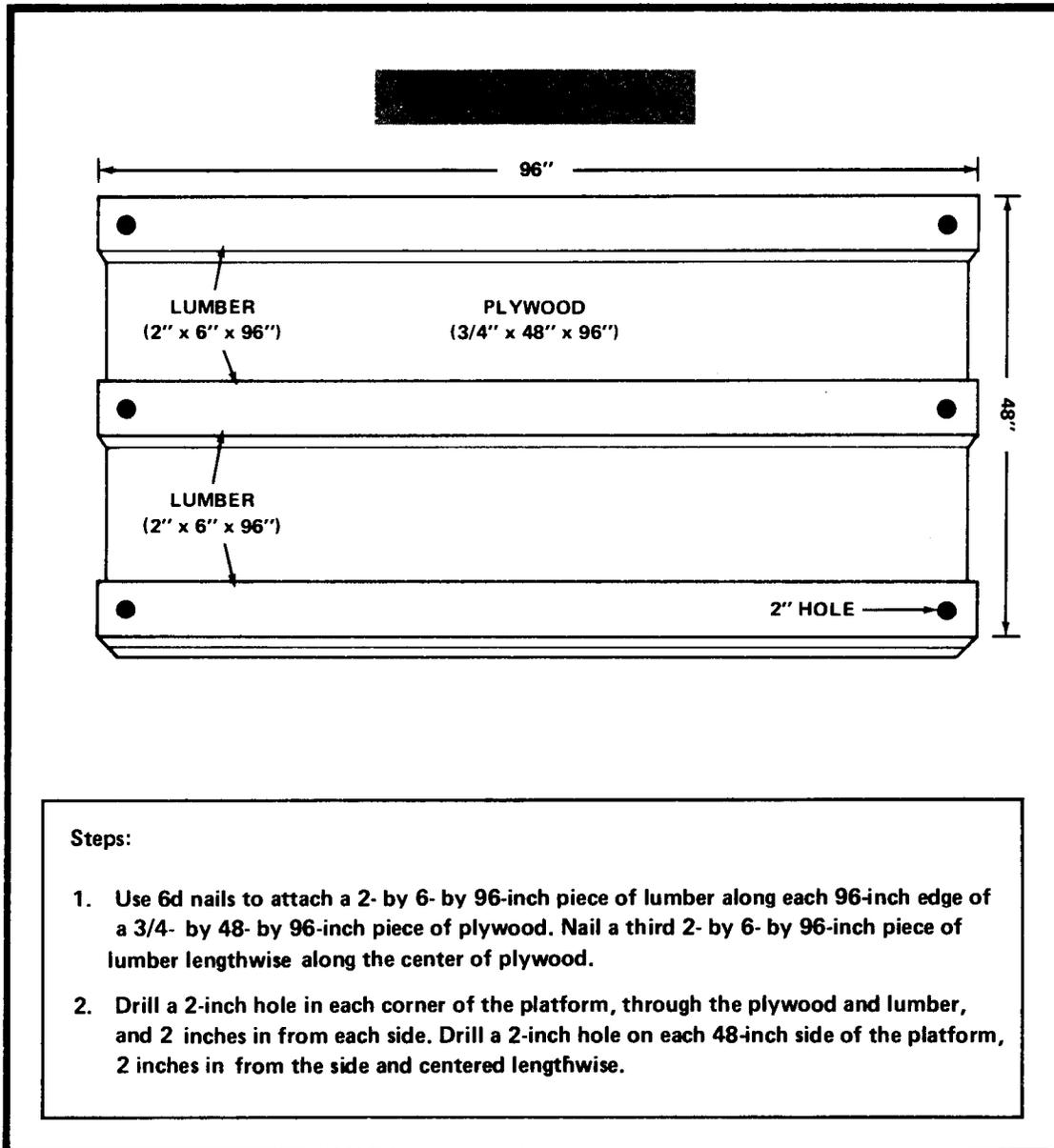


Figure 2-10. Construction details for stowage platform.

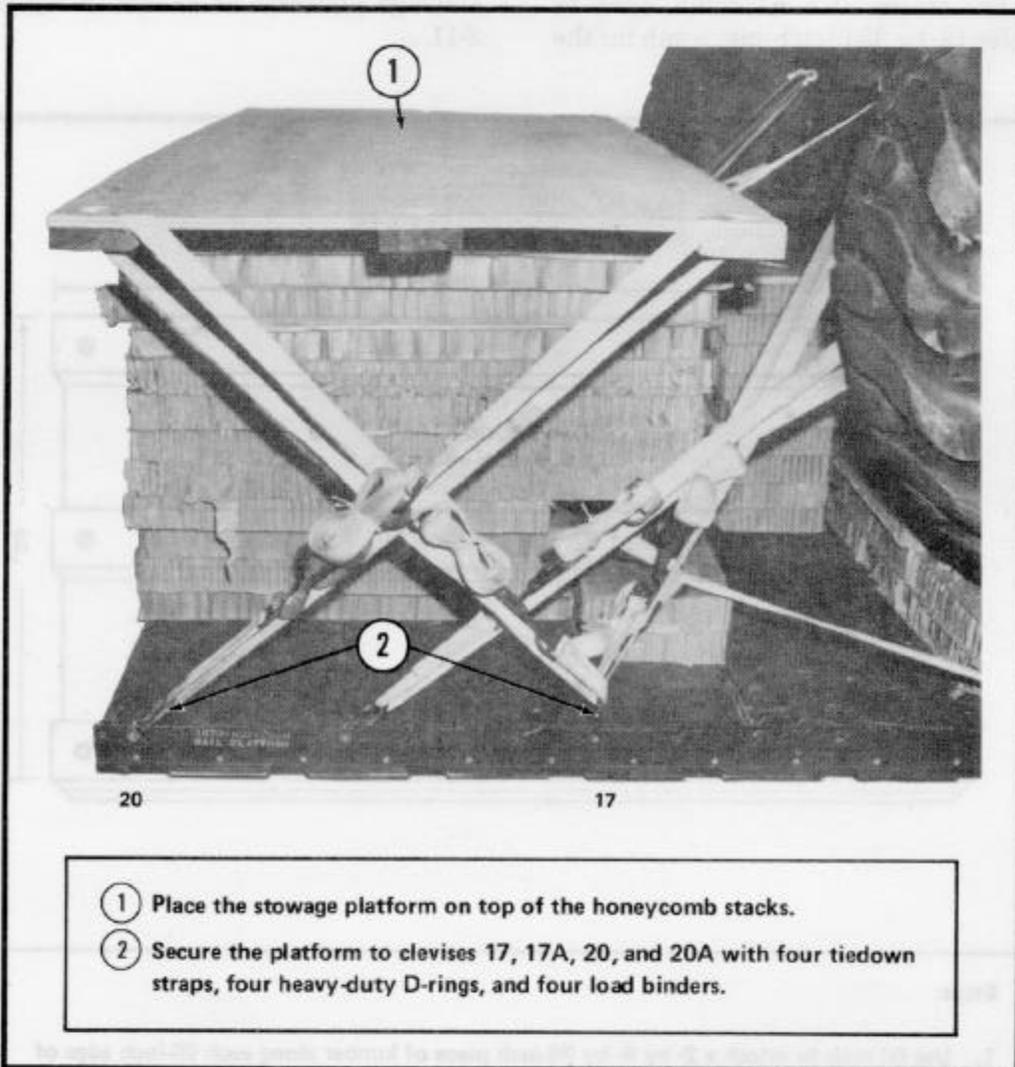


Figure 2-11. Parachute stowage platform positioned and secured.

2-10. Stowing Cargo Parachutes

Prepare and stow six G-11A cargo parachutes according to FM 10-500/TO 13C7-1-5 and as shown in figure 2-12.

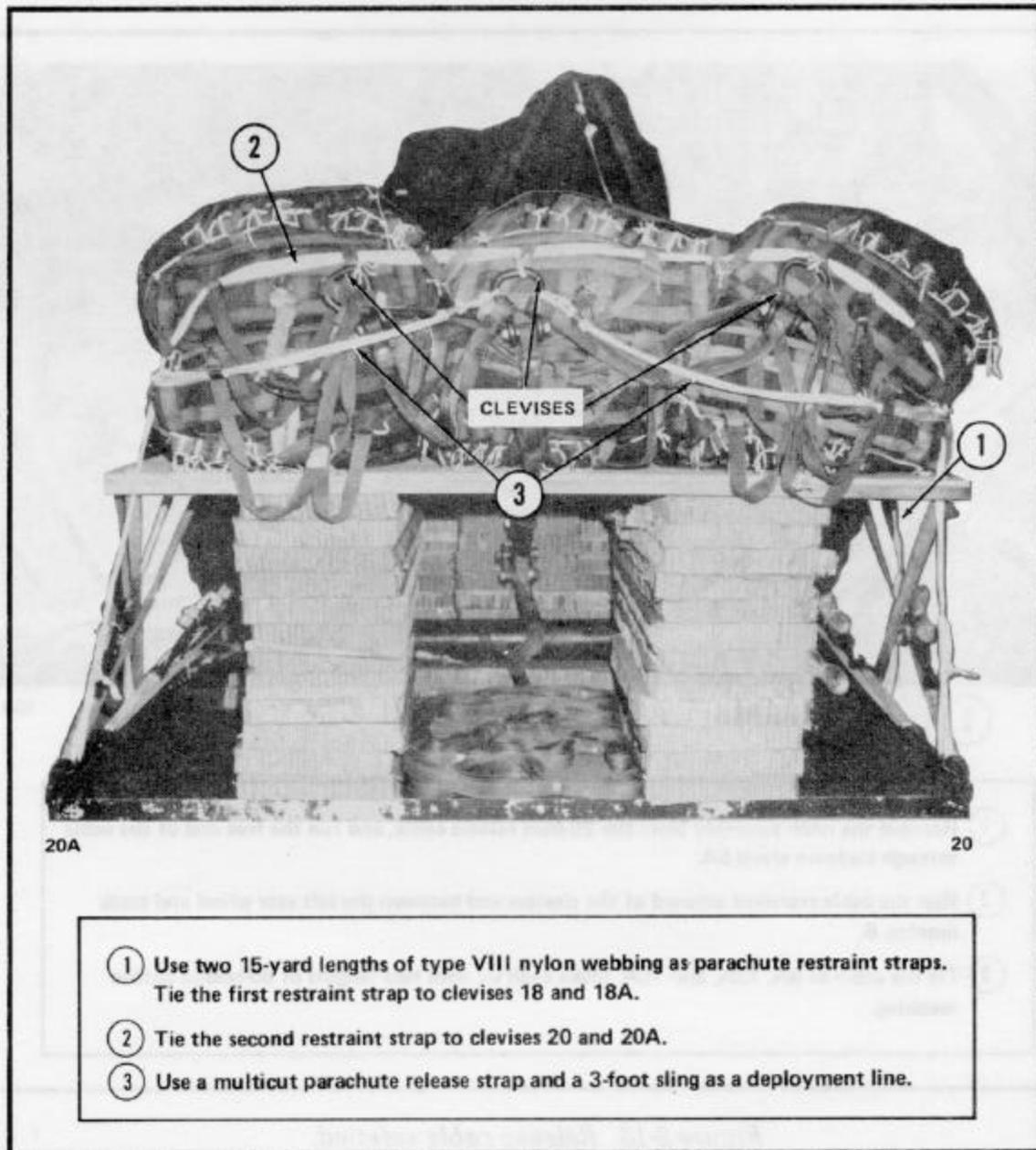


Figure 2-12. Cargo parachutes stowed.

2-11. Installing Extraction Force Transfer Coupling (EFTC)

Attach the components of the EFTC to the tractor according to FM 10-500/TO 13C7-1-5 and as shown in figures 2-13 and 2-14.

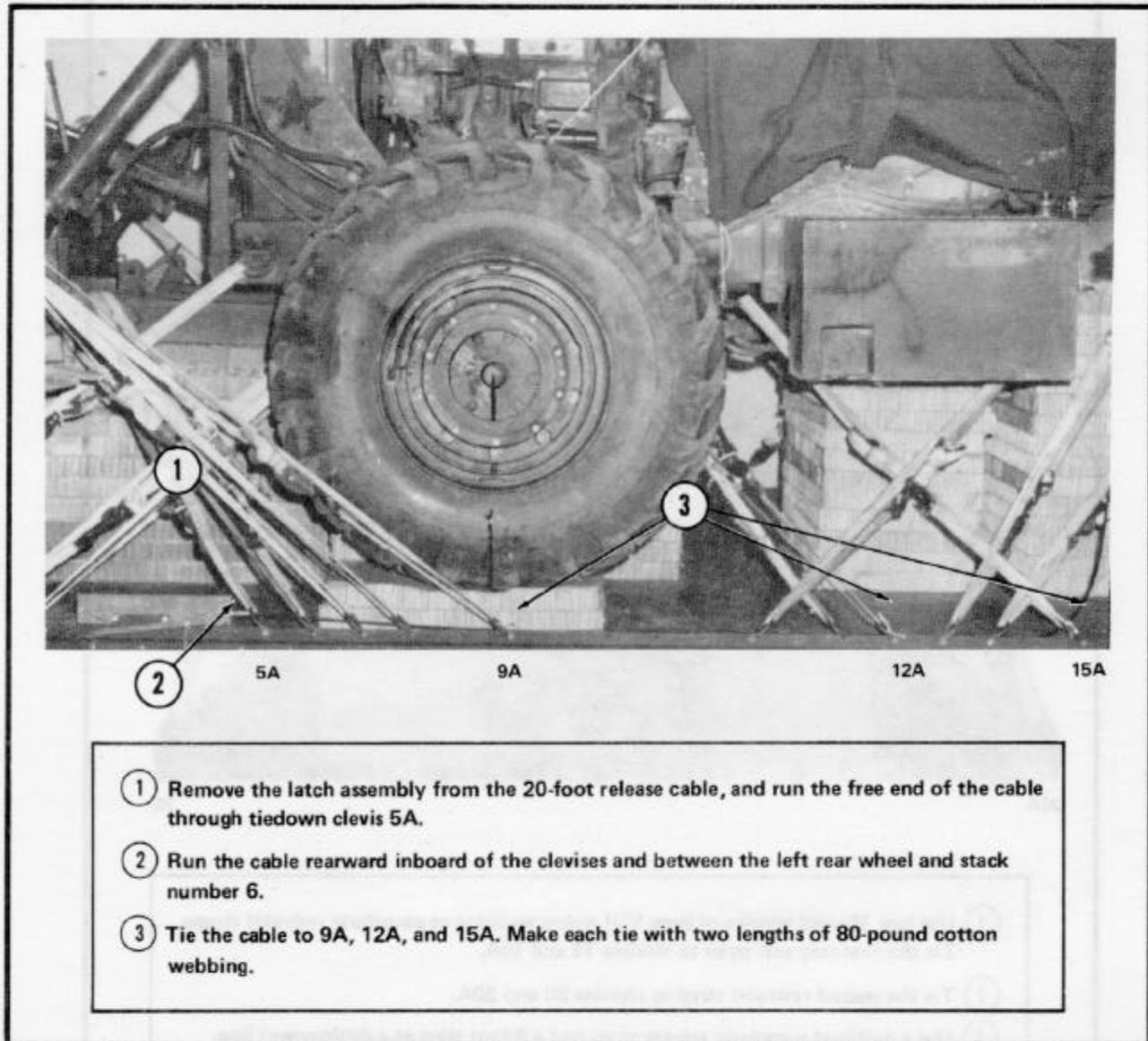
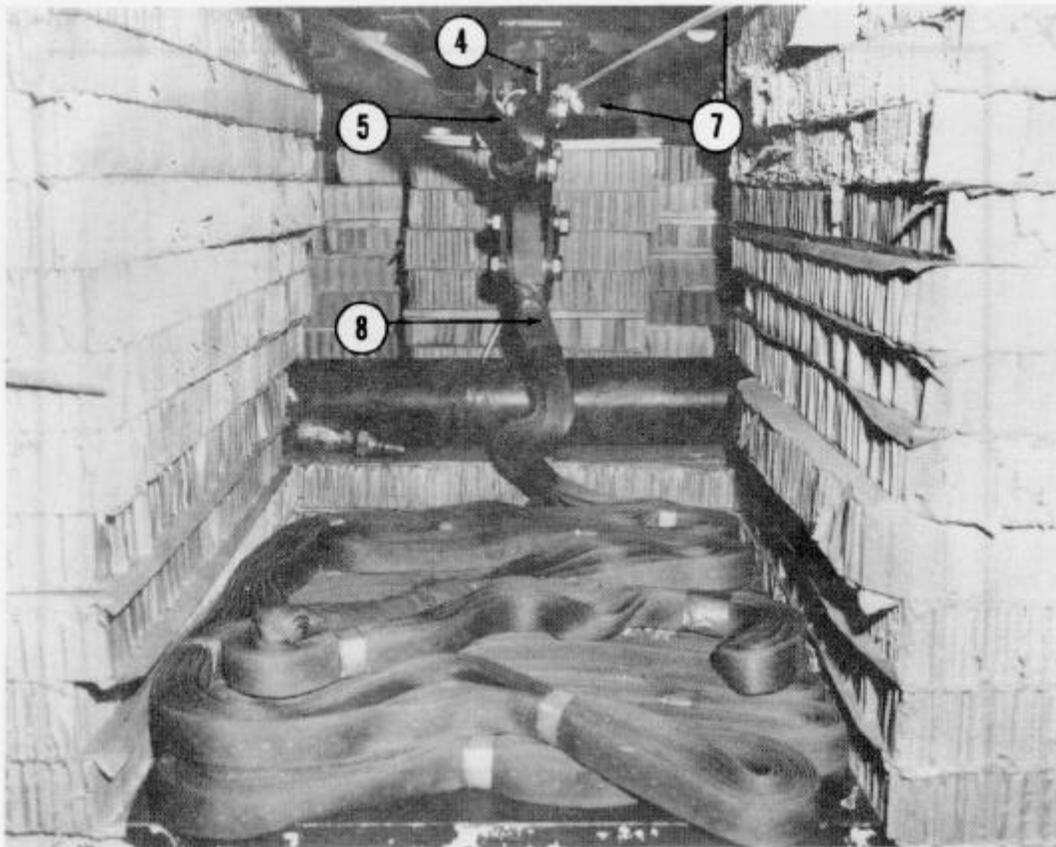


Figure 2-13. Release cable safetied.

CAUTION: Be sure that the bolts attaching coupling adapter to latch assembly and rear pan towbar are very tight.

CAUTION: To prevent damage to the cable, make sure that there is sufficient slack in the release cable at the latch assembly.

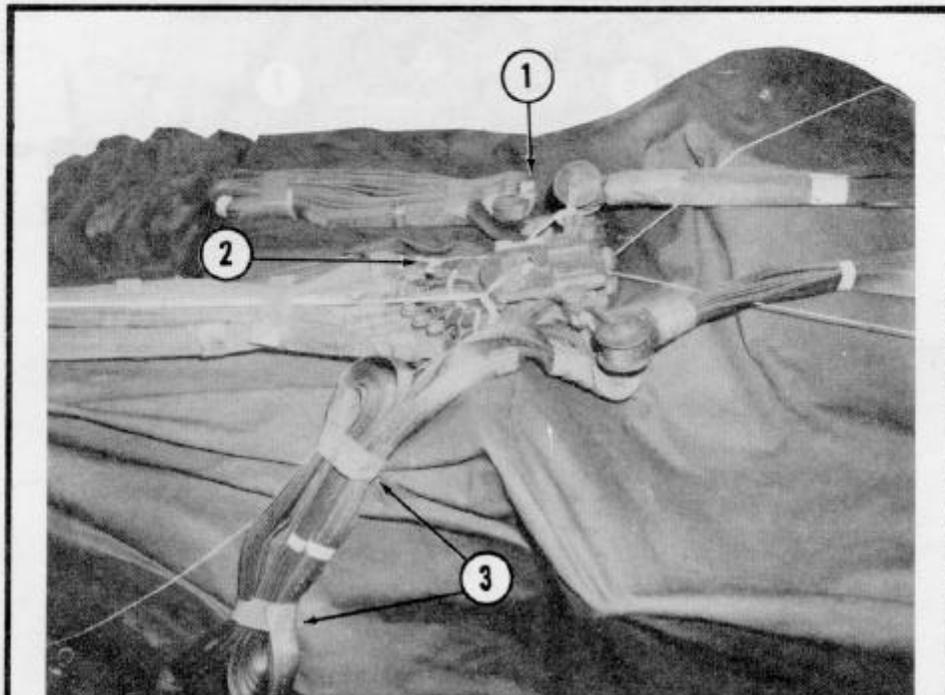


- ④ Bolt the adapter latch assembly to the rear pan towbar.
- ⑤ Attach the cable to the latch assembly.
- ⑥ Bolt the latch assembly to the link assembly with the release cable down (not shown).
- ⑦ Tie a double length of 1/2-inch tubular nylon webbing to each side of the latch assembly adapter. Pass the ties under the parachute stowage platform, and secure them to the outside corner of the parachute stowage platform.
- ⑧ Place the free end of the deployment line on the top spacer of the link assembly. Fold the deployment line, and secure the folds with tape or 80-pound cotton webbing. Attach the extraction line according to FM 10-500/TO 13C7-1-5.

Figure 2-14. Latch assembly and extraction line installed.

2-12. Installing Release System

Prepare and attach an M-2 cargo parachute release (fig 2-15), or prepare, attach, and safety six 5,000-pound-capacity cargo parachute releases to the load according to FM 10-500/TO 13C7-1-5.



- ① Place the assembly on top of the load.
- ② Safety the releases with type III nylon cord passed through the parachute connectors according to FM 10-500/TO 13C7-1-5.
- ③ Fold excess sling and tape it, or tie excess with 80-pound cotton webbing.

Figure 2-15. M-2 cargo parachute release installed.

2-13. Forming the Emergency Restraint System

To form the emergency restraint system, use two 12-foot (3-loop) slings, two 16-foot (3-loop) slings, and four cargo suspension clevises with large spacers. Install these components as shown in figure 2-16.

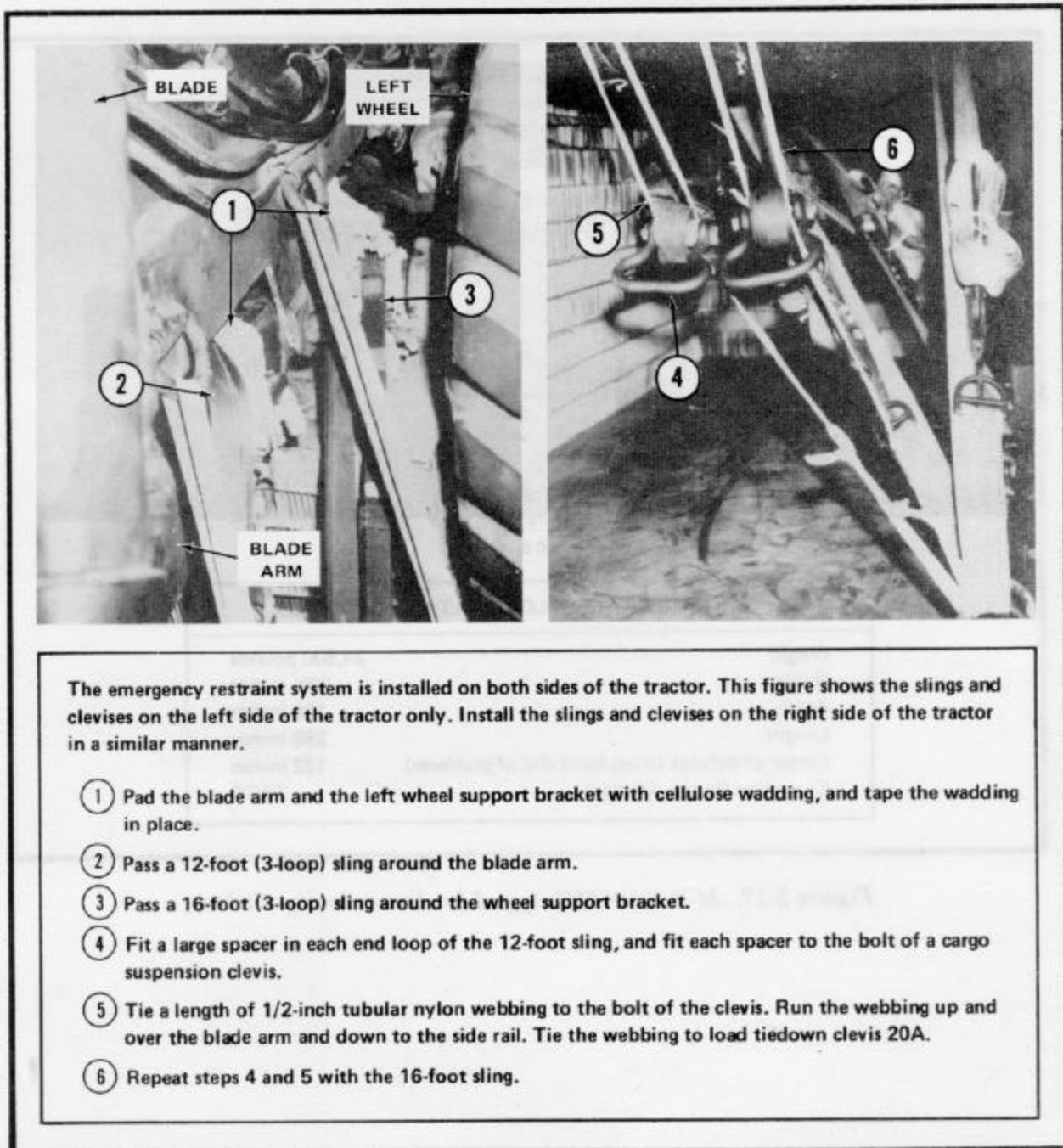


Figure 2-16. Emergency restraint system.

2-14. Positioning Extraction Parachute

a. *C-130 Aircraft.* Place a light- or heavy-duty 28-foot cargo extraction parachute on the load for installation in the aircraft.

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

2-15. Aircraft Loading Requirements

When loading the C-141 aircraft, place the load in compartments G through K, according to TO 1C-141A-9.

2-16. Marking Rigged Load

Mark the rigged load according to FM 10-500/TO 13C7-1-5 and as shown in figure 2-17.

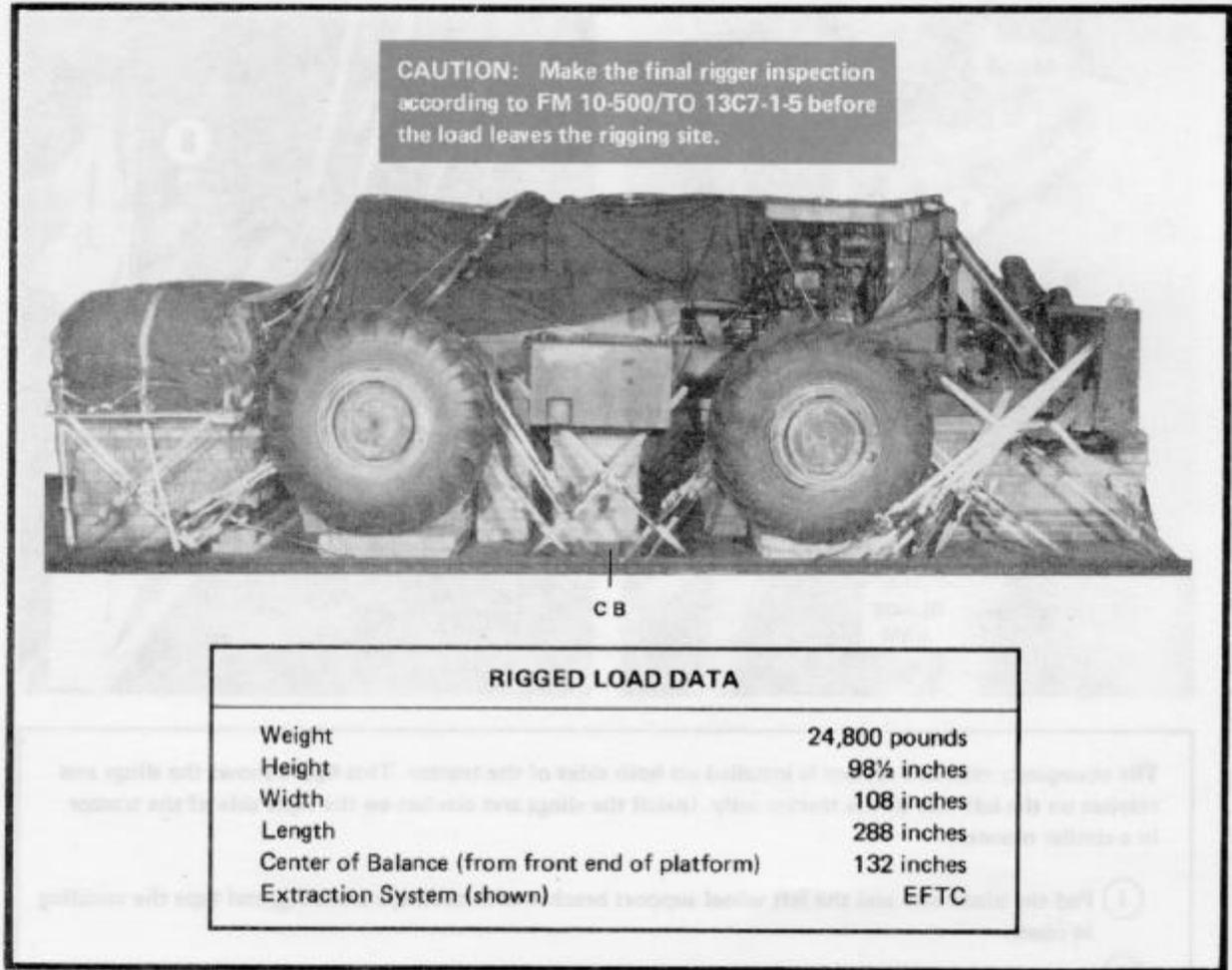


Figure 2-17. M-R-S 100MC rigged for low-velocity airdrop.

2-17. Equipment Required

The equipment needed to prepare and rig the 100MC tractor for low-velocity airdrop is listed in table 2-1.

Table 2-1. Equipment required for rigging M-R-S 100MC tractor 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 release only)	6
4030-00-432-2516	Clevis, suspension, w/screw pin and sleeve	4
1670-00-090-5354	Clevis Assembly, suspension, large (add 6 w/5,000-lb release)	9
8305-00-242-3593	Cloth, cotton duck, 60-in, load cover	8 yd
4020-00-240-2146	Cord, nylon, type III, 550-lb	As required
1670-00-434-5787	Coupling, extraction force transfer w/20-ft cable	1
1670-00-360-0328	Cover, clevis, large	6
1670-00-360-0329	Cover, link, dual	18
8135-00-664-6958	Cushioning Material, packaging, cellulose wadding	As required
1670-00-753-3631	Deployment Line, 9-ft (3-loop) type X nylon OR	1
1670-01-062-6304	Deployment Line, 9-ft (2-loop) type XXVI nylon	1
	Emergency Restraint System:	
4030-00-678-8562	Clevis, medium	4
1670-00-823-5041	Sling, 12-ft (3-loop) type X nylon OR	2
1670-01-062-6303	Sling, 12-ft (2-loop) type XXVI nylon	2
1670-00-823-5042	Sling, 16-ft (3-loop) type X nylon OR	2
1670-01-063-7761	Sling, 16-ft (2-loop) type XXVI nylon	2
5365-00-007-3414	Spacer, large	
1670-00-432-2513	Line, extraction, 60-ft (5-loop) type XXVI nylon (for C-130) OR	1
1670-01-064-4454	Line, extraction, 60-ft (6-loop) type XXVI nylon	1
1670-01-107-7651	Line, extraction, 140-ft (3-loop) type XXVI nylon (for C-141)	1
1670-00-783-5988	Link Assembly, type IV	18
1670-00-799-8597	Load Coupler, 12-spool (use w/5,000-lb release only)	1
1670-00-753-3928	Pad, energy-dissipating, honeycomb, 3- by 36- by 96-in:	35 sheets
	4- by 14-in	(4)
	4- by 30-in	(4)
	6- by 8-in	(5)
	6- by 10-in	(5)
	6- by 14-in	(2)
	6- by 24-in	(5)
	8- by 14-in	(2)
	9- by 16-in	(8)
	12- by 18-in	(9)
	12- by 24-in	(9)
	12- by 36-in	(4)
	14- by 14-in	(6)
	14- by 39-in	(9)
	16- by 24-in	(1)
	18- by 36-in	(4)

Table 2-1. (continued)

NATIONAL STOCK NUMBER	ITEM	QUANTITY
	18- by 38-in	(8)
	18- by 48-in	(16)
	24- by 39-in	(11)
	36- by 48-in	(1)
	36- by 60-in	(13)
	36- by 72-in	(10)
	36- by 96-in	(4)
1670-00-269-1107	Parachute, cargo, G-11A	6
1670-00-262-1797	Parachute, cargo extraction, 28-ft	1
	Platform, airdrop, modular, 24-ft	1
1670-00-893-1631	Clevis, load tiedown	40
1670-00-893-1624	Panel	6
1670-00-893-1629	Rail, platform side, 24-ft	2
5320-00-893-1632	Rivet, blind drive type, ¼-in diameter	96
1670-01-097-8817	Release, cargo parachute, M-2 (if not available, use 6 ea, Release, cargo parachute, 5,000-lb, NSN 1377-00-799-8494)	1
1670-00-753-3794	Riser extensions, 20-ft (2-loop) type X nylon OR	24
1670-01-062-6302	Riser extensions, 20-ft (2-loop) type XXVI nylon	24
	Sling, cargo, airdrop:	
1670-00-753-3788	3-foot (3-loop) type X nylon (add 6 w/5,000-lb release) OR	2
1670-01-062-6301	3-foot (2-loop) type XXVI nylon	2
1670-00-432-2506	12-ft (4-loop) type XXVI nylon OR	2
1670-01-062-6307	12-ft (4-loop) type XXVI nylon	2
1670-00-432-2507	16-ft (4-loop) type XXVI nylon OR	2
1670-01-062-6308	16-ft (4-loop) type XXVI nylon	2
	Stowage Platform, cargo parachute:	
5510-00-220-6148	Lumber, 2- by 6- by 96-in	3
5315-00-010-4657	Nail, steel wire, common 6d	As required
5530-00-128-4981	Plywood, 3/4- by 48- by 96-in	1
1670-00-040-8219	Strap, parachute release, multiple cut	2
7510-00-266-5016	Tape, adhesive, 2-in	As required
1670-00-937-0271	Tiedown Assembly, 10,000-lb	40
8305-00-268-2411	Webbing, cotton, 80-lb	As required
8305-00-263-3591	Webbing, nylon, type VIII (parachute restraint)	30 yd
8305-00-082-5752	Webbing, nylon, tubular 1/2-in	As required

APPENDIX A REFERENCES

- AFR 71-4/TM 38-250 Packaging and Materials Handling: Preparation of Hazardous Materials for Military Air Shipment
- FM 10-500/TO 13C7-1-5 Airdrop of Supplies and Equipment: General Information for Rigging Airdrop Platforms
- TM 5-2420-219-15 Operator's, Organizational, Direct Support, General Support and Depot Maintenance Manual for Tractor, Wheeled, Industrial: DED w/Bulldozer (M-R-S Mfg. Model 100 (4x4) MC) Sectionalized (FSN 2420-902-3084) and Non-Sectionalized (2420-415-6132)
- 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-141A-9 Loading Instructions: USAF Series C-141B Aircraft.

GLOSSARY

AFR	Air Force regulation
AFTO	Air Force technical order
CB	center of balance
d	penny
DA	Department of the Army
DED	diesel engine driven
ea	each
EFTC	extraction force transfer coupling
FM	field manual
ft	foot/feet
gal	gallon
in	inch
LAPE	low-altitude parachute-extraction
lb	pound
no	number
NSN	national stock number
sec	second
TM	technical manual
TO	technical order
w/	with
yd	yard

FM 10-584/TO 13C7-6-71

12 AUGUST 1983

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