

CHAPTER 8

CERTIFIED SINGLE-POINT RIGGING PROCEDURES FOR ENGINEER EQUIPMENT

8-1. INTRODUCTION

This chapter contains rigging procedures for single-point lift of engineer equipment that has been certified for sling load. Each rigging procedure is found in a paragraph that includes a description of the load, materials required for rigging, and steps to complete the procedure. An applicability paragraph is also a part of each paragraph and identifies the certified loads. The certified single-point rigging

procedures for engineer equipment are in this section. Paragraphs 8-2 through 8-40 give detailed instructions for rigging loads.

NOTE: Reach Pendants may be used on all single point loads. A static discharge person is not required when using a Reach Pendant.

8-2. T-3 Tractor, Crawler

a. Applicability. The following items in Table 8-1 are certified for all helicopters with suitable lift capacity by the US Army Soldier Systems Center:

Table 8-1. T-3 Tractor, Crawler

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	RECOMMENDED AIRSPEED (KNOTS)
Tractor, Full-Tracked, JD550 with Roll Over Protection System (ROPS), Towing Winch and Hydraulic Angle Blade	16,662	25K	10/20	90

b. Materials. The following materials are required to rig this load:

- (1) Sling set (25,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (5) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.

c. Personnel. Two persons can prepare and rig this load in 10 minutes.

d. Procedures. The following procedures apply to this

load:

(1) Preparation. Prepare the load using the following steps:

- (a) Secure the operator's seat cushion to the seat frame with tape or Type III nylon cord.
- (b) Remove both canopy lights, wrap in padding, and store in the toolbox.
- (c) Secure all loose covers and panels with tape.

(d) Place the transmission in neutral and start the engine. Raise the blade 12 inches above the ground and align the blade at a 90 degree angle to the tractor. Turn the engine off and tape the ignition key in place.

(2) Rigging. Rig the load according to the steps in Figure 8-1.

(3) **Hookup.** The hookup team stands on the engine cowl in front of the ROPS. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter re-

moves slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).

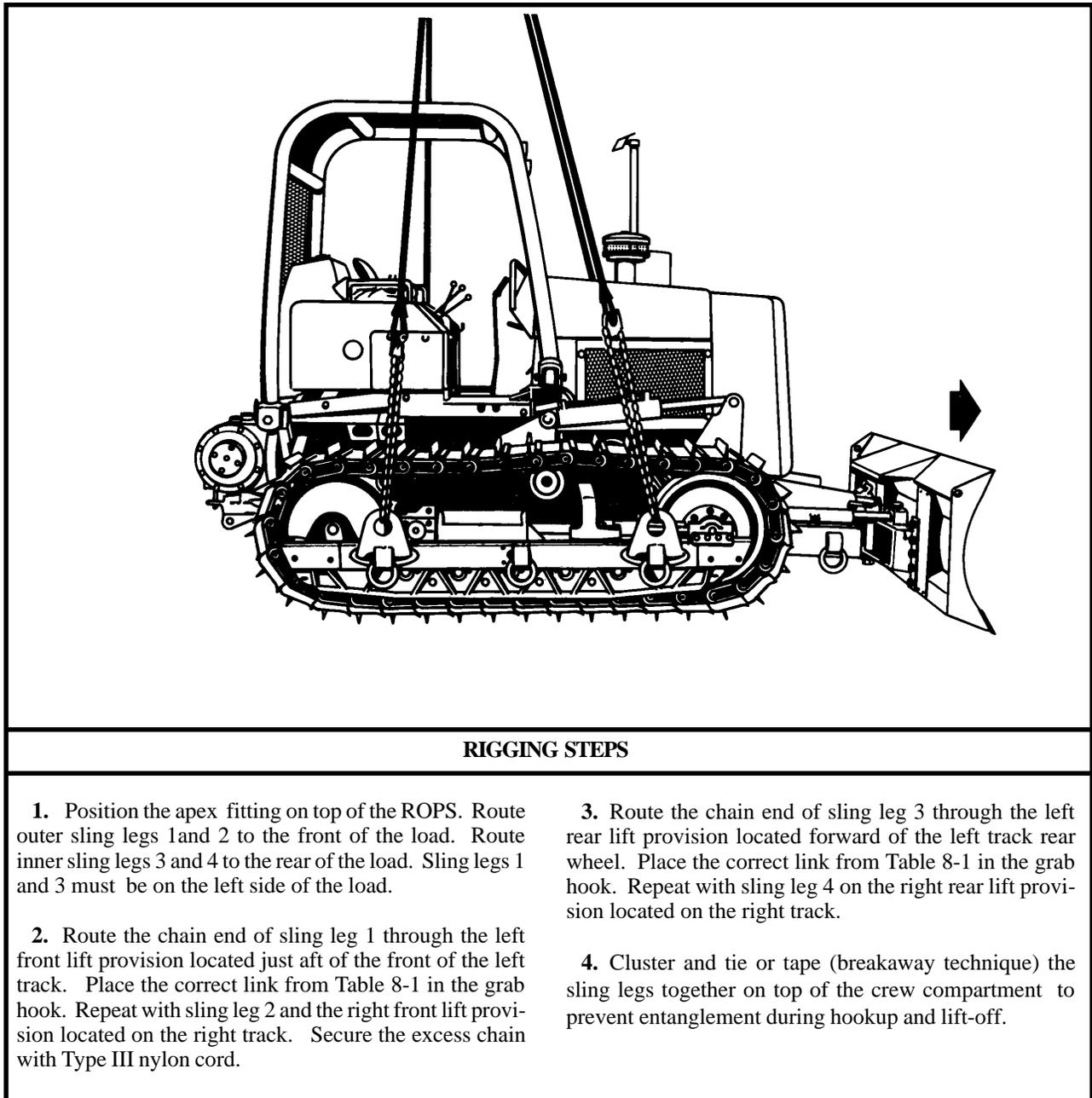


Figure 8-1. T-3 Tractor, Crawler

8-3. D5B Tractor, Dozer

a. Applicability. The following items in Table 8-2 are certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-2. D5B Tractor, Dozer

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
D5B Tractor, Dozer, Type II, Power Section without ROPS	18,915	25K	47/8	70
D5B Tractor, Dozer, Type II, Track Section	13,735	25K	21/3	90

b. Materials. The following materials are required to rig this load:

- (1) Sling set (25,000-pound capacity) (2 each).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.

c. Personnel. Four persons can sectionalize the dozer in 2 1/2 hours and two persons can prepare and rig this load in 10 minutes.

d. Procedures. The following procedures apply to this load:

(1) **Preparation.** Prepare the load using the following steps:

- (a) Sectionalize the dozer in accordance with the operator's manual. Do not remove the winch or the winch pump.
- (b) Remove the exhaust stack and secure it on top of the winch with Type III nylon cord.

(c) Remove the pre-air cleaner and secure it on the seat with Type III nylon cord.

(d) Secure the operator's seat cushion to the seat frame with tape or Type III nylon cord.

(e) Tape all lights and gauges.

(f) Place the transmission in neutral and secure the safety lock lever with Type III nylon cord.

(2) **Rigging.** Rig the load according to the steps in Figure 8-2.

NOTE: Hookup of this load presents substantial risk of damage to the load or injury to the hookup personnel. Use of a reach pendant is recommended for this load.

(3) **Hookup.** The hookup team stands on top of the power or track section. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).

RIGGING STEPS TRACK SECTION	RIGGING STEPS POWER SECTION
<ol style="list-style-type: none"> 1. Position the apex fitting on top of the section. Route outer sling legs 1 and 2 to the front of the load (blade end). Route inner sling legs 3 and 4 to the rear of the load. Sling legs 1 and 3 must be on the left side of the load. 2. Route the chain end of sling leg 1 through the left front lift provision. Place the correct link from Table 8-2 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure the excess chain with Type III nylon cord. 3. Route the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 8-2 in the grab hook. Repeat with sling leg 4 on the right rear lift provision. 4. Cluster and tie or tape (breakaway technique) the sling legs together on top of the section to prevent entanglement during hookup and lift-off. 	<ol style="list-style-type: none"> 1. Position the apex fitting on top of the section. Route outer sling legs 1 and 2 to the front of the load (radiator end). Route inner sling legs 3 and 4 to the rear of the load. Sling legs 1 and 3 must be on the left side of the load. 2. Route the chain end of sling leg 1 through the left front lift provision located by the left headlight. Place the correct link from Table 8-2 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure the excess chain with Type III nylon cord. 3. Route the chain end of sling leg 3 through the left rear lift provision located beside the fuel tank. Place the correct link from Table 8-2 in the grab hook. Repeat with sling leg 4 on the right rear lift provision. 4. Cluster and tie or tape (breakaway technique) the sling legs together on top of the section to prevent entanglement during hookup and lift-off.

Figure 8-2. D5B Tractor, Dozer

8-4. Tractor, Full Tracked, MC1150E

a. Applicability. The following item in Table 8-3 is certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-3. Tractor, Full Tracked, MC1150E

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Tractor, Full-Tracked, MC1150E	24,062	40K	5/35	75

b. Materials. The following materials are required to rig this load:

- (1) Sling set (40,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (5) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- (6) Chain, 8-foot length from 40,000-pound capacity sling set with coupling links (2 each).
- (7) Tie-down chain assembly (10,000-pound capacity), MB-1.

c. Personnel. Two persons can prepare and rig this load in 30 minutes.

d. Procedures. The following procedures apply to this load:

- (1) **Preparation.** Prepare the load using the following

steps:

(a) Elevate the blade two feet off the ground. Using the tie-down chains, secure the blade in the UP position.

(b) Twist the lights on the cab inward. Tape the lights, glass fixtures, and exhaust pipe opening.

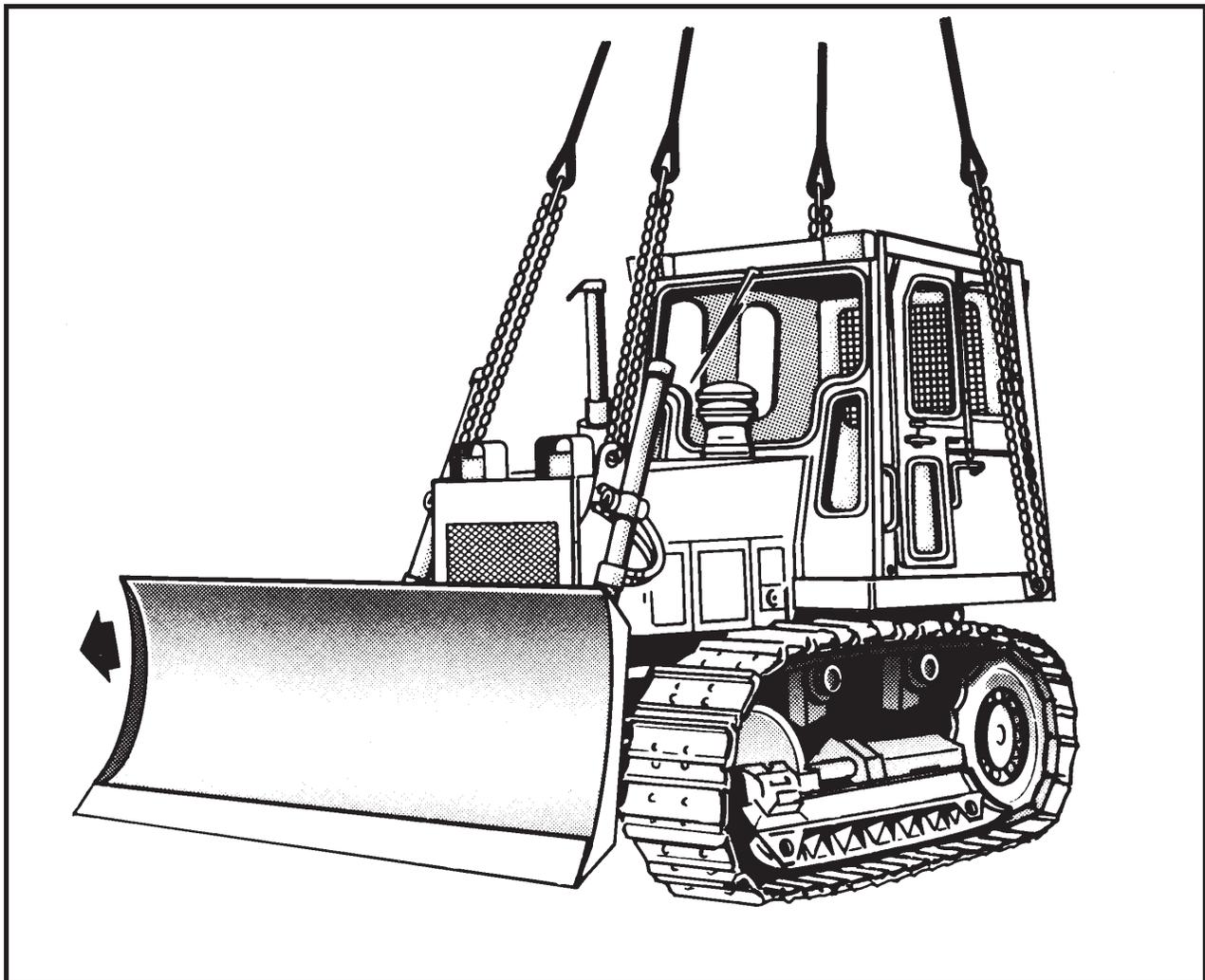
(c) Ensure all caps, lids, and doors are securely fastened.

(d) Place the transmission in neutral and engage the hand brake.

(2) **Rigging.** Rig the load according to the steps in Figure 8-3.

(3) **Hookup.** The hookup team stands on top of the engine deck or cab. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).



RIGGING STEPS

1. Position the apex fitting on top of the cab. Route outer sling legs 1 and 2 to the front of the load. Route inner sling legs 3 and 4 to the rear of the load. Sling legs 1 and 3 must be on the left side of the load.

2. Route the chain end of sling leg 1 through the left front lift provision located on the left front corner of the engine deck. Place the correct link from Table 8-3 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure the excess chain with Type III nylon cord.

3. Route the chain end of sling leg 3 through the left

rear lift provision located near the base of the cab. Using the coupling link add the additional chain length to the sling leg chain. Place the correct link from Table 8-3 in the grab hook. Repeat with sling leg 4 on the right rear lift provision.

NOTE: Add the additional chain length after the sling leg chain is routed through the lift provision. The link coupling does not fit through the lift provision.

4. Cluster and tie or tape (breakaway technique) the sling legs together on top of the crew compartment to prevent entanglement during hookup and lift-off.

Figure 8-3. Tractor, Full Tracked, MC1150E

8-5. Tractor, Wheeled, Industrial, Case Model 580

a. Applicability. The following item in Table 8-4 is certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-4. Tractor, Wheeled, Industrial, Case Model 580

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Tractor, Case, 580	10,500	15K	30/54	80

b. Materials. The following materials are required to rig this load:

- (1) Sling set (15,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (5) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- (6) Chain, 6-foot length from 15,000-pound capacity sling set with coupling links (2 each).
- (7) Tie-down strap, cargo, CGU-1B (2 each).

c. Personnel. Two persons can prepare and rig this load in 20 minutes.

d. Procedures. The following procedures apply to this load:

- (1) **Preparation.** Prepare the load using the following steps:
- (a) Elevate the front bucket halfway and tilt the bucket

toward the rear.

(b) Position the rear backhoe arm with the backhoe in the up position and secure with the tie-down straps to prevent the backhoe arm from swinging freely. Route the straps from each stabilizer to the backhoe arm.

(c) Ensure all caps, lids, and doors are securely fastened.

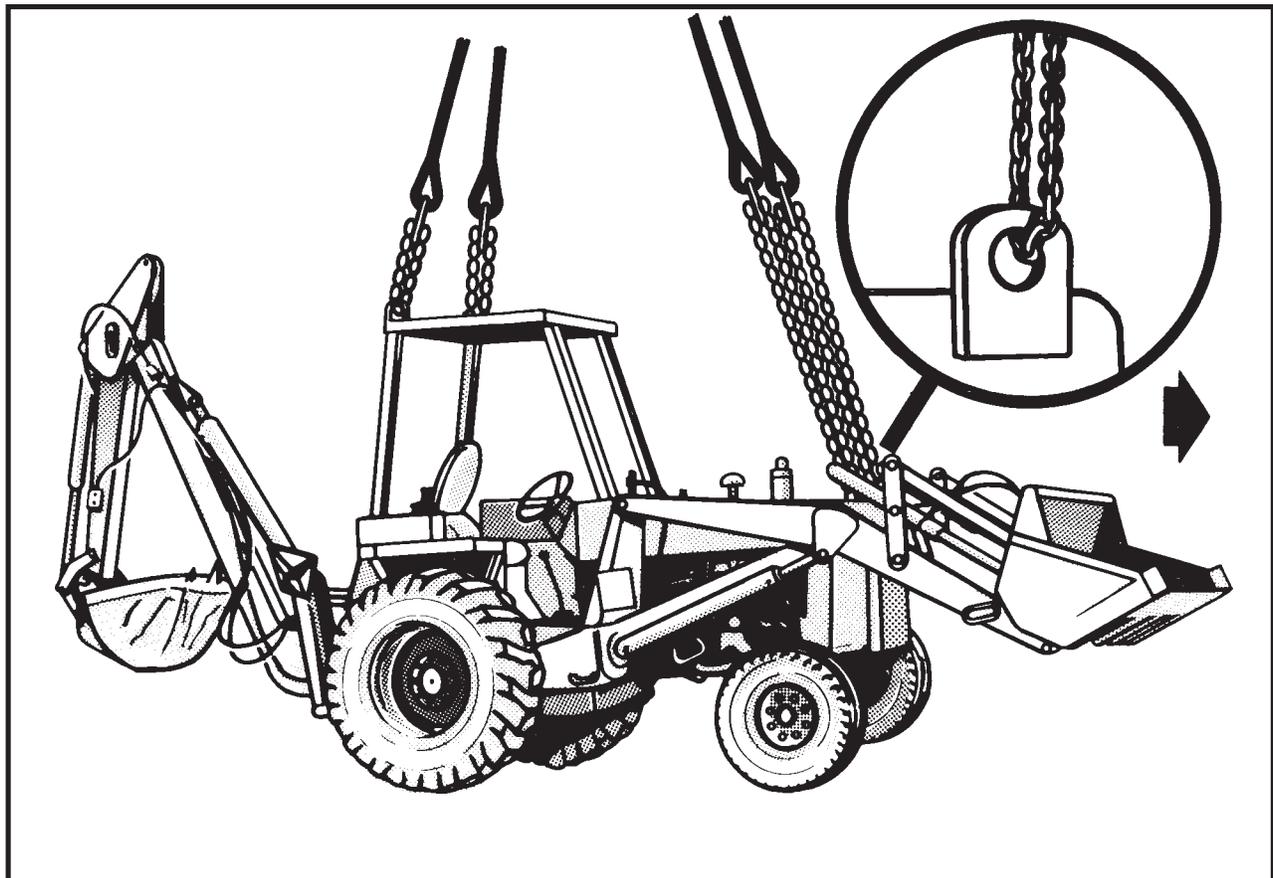
(d) Tape all lights, glass fixtures, and the exhaust cap closed.

(e) Place the transmission in neutral and engage the hand brake.

(2) **Rigging.** Rig the load according to the steps in Figure 8-4.

(3) **Hookup.** The hookup team stands on top of the engine deck or ROPS. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).



RIGGING STEPS

1. Position the apex fitting on top of the cab. Route outer sling legs 1 and 2 to the front of the load. Route inner sling legs 3 and 4 to the rear of the load. Sling legs 1 and 3 must be on the left side of the load. Using the coupling links, add the additional chain length to sling legs 1 and 2.

2. Route the chain end of sling leg 1 through the left front lift provision located on the left front corner of the engine hood. Place the correct link from Table 8-4 in the grab hook. Repeat with sling leg 2 and the right front lift

provision. Secure the excess chain with Type III nylon cord.

3. Route the chain end of sling leg 3 through the left rear lift provision located on the left rear corner of the ROPS. Place the correct link from Table 8-4 in the grab hook. Repeat with sling leg 4 on the right rear lift provision. Secure the excess chain with Type III nylon cord.

4. Cluster and tie or tape (breakaway technique) the sling legs together on top of the crew compartment to prevent entanglement during hookup and lift-off.

Figure 8-4. Tractor, Wheeled, Industrial, Case Model 580

8-6. Small Emplacement Excavator (SEE)

a. Applicability. The following item in Table 8-5 is certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-5. Small Emplacement Excavator (SEE)

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Small Emplacement Excavator (SEE)	16,240	25K	Listed in Rigging Steps	95

b. Materials. The following materials are required to rig this load:

- (1) Sling set (25,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (5) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.

c. Personnel. Two persons can prepare and rig this load in 30 minutes.

d. Procedures. The following procedures apply to this load:

(1) **Preparation.** Prepare the load using the following steps:

(a) Elevate the bucket halfway and tilt the bucket toward the rear. Ensure the front end loader assembly travel locks, located at the ends of both front end loader boom cylinders, are properly pinned in place.

(b) Secure the steering wheel, doors, and all loose equipment with tape or Type III nylon cord.

(c) Tape all lights, glass fixtures, and the exhaust cap

closed.

(d) Fold the side mirrors inboard and tie or tape as required. Tape the windshield wipers to the windshield. Secure the engine compartment hood with Type III nylon cord.

(e) Place the transmission in neutral and engage the hand brake.

(f) Tie or tape the hydraulic lines and hoses in close proximity to the forward lift provisions to prevent possible entanglement during hookup.

(2) **Rigging.** Rig the load according to the steps in Figure 8-5.

NOTE: Hookup of this load presents substantial risk of damage to the load or injury to the hookup personnel. Use of a reach pendant is recommended for this load.

(3) **Hookup.** The hookup team stands on top of the falling objects protection systems (FOPS). The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).

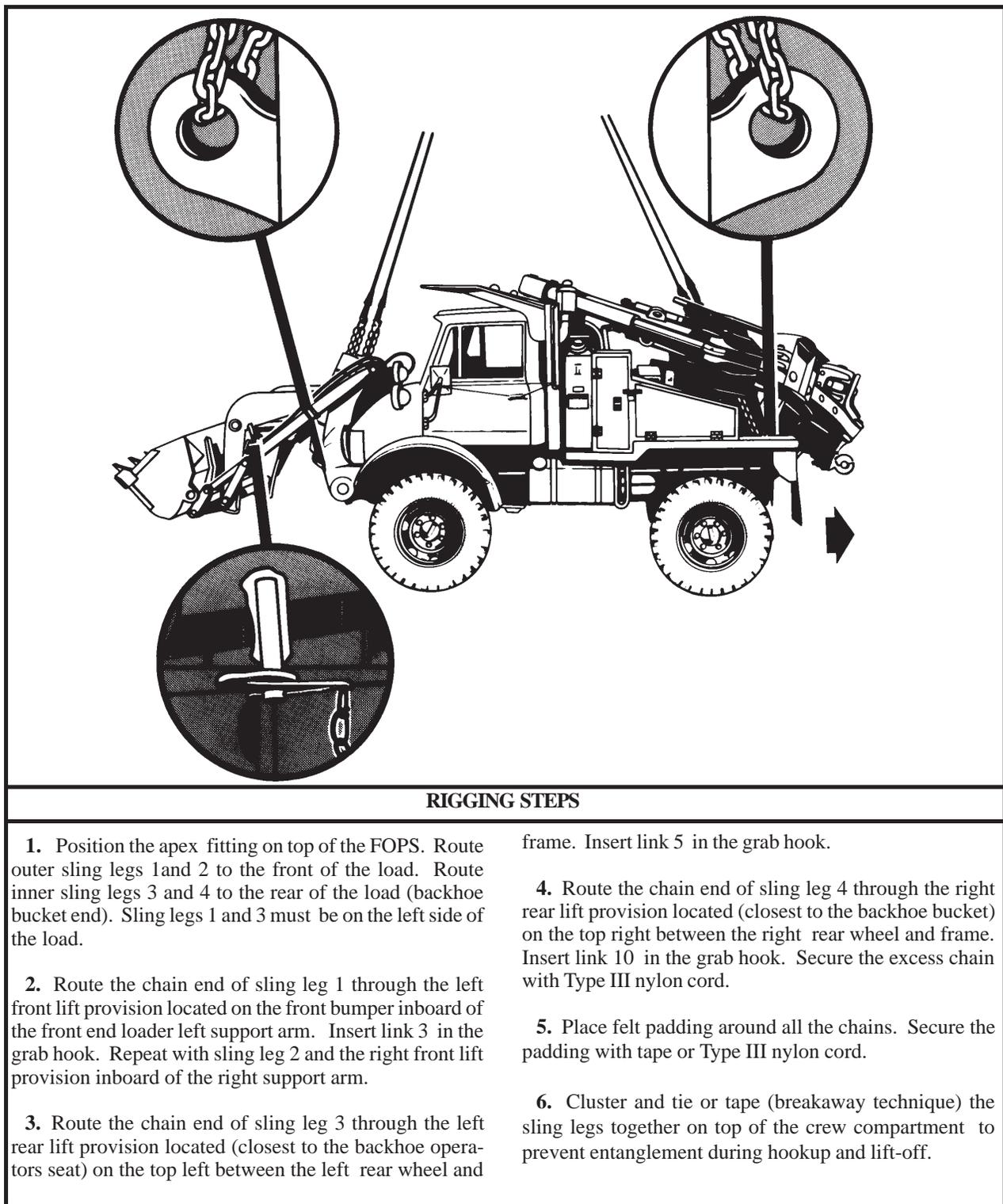


Figure 8-5. Small Emplacement Excavator (SEE)

8-7. High Mobility Materiel Handler (HMMH)

a. Applicability. The following item in Table 8-6 is certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-6. High Mobility Materiel Handler (HMMH)

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
High Mobility Materiel Handler	15,650	25K	3/56	115

b. Materials. The following materials are required to rig this load:

- (1) Sling set (25,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (5) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.

c. Personnel. Two persons can prepare and rig this load in 30 minutes.

d. Procedures. The following procedures apply to this load:

(1) Preparation. Prepare the load using the following steps:

- (a) Ensure all travel locks are properly pinned in place.
- (b) Secure the steering wheel, doors, and all loose equipment with tape or Type III nylon cord.
- (c) Tape all lights, glass fixtures, and the exhaust cap closed.

(d) Fold the side mirrors inboard and tie or tape as required. Tape the windshield wipers to the windshield. Secure the engine compartment hood with Type III nylon cord.

(e) Place the transmission in neutral and engage the hand brake.

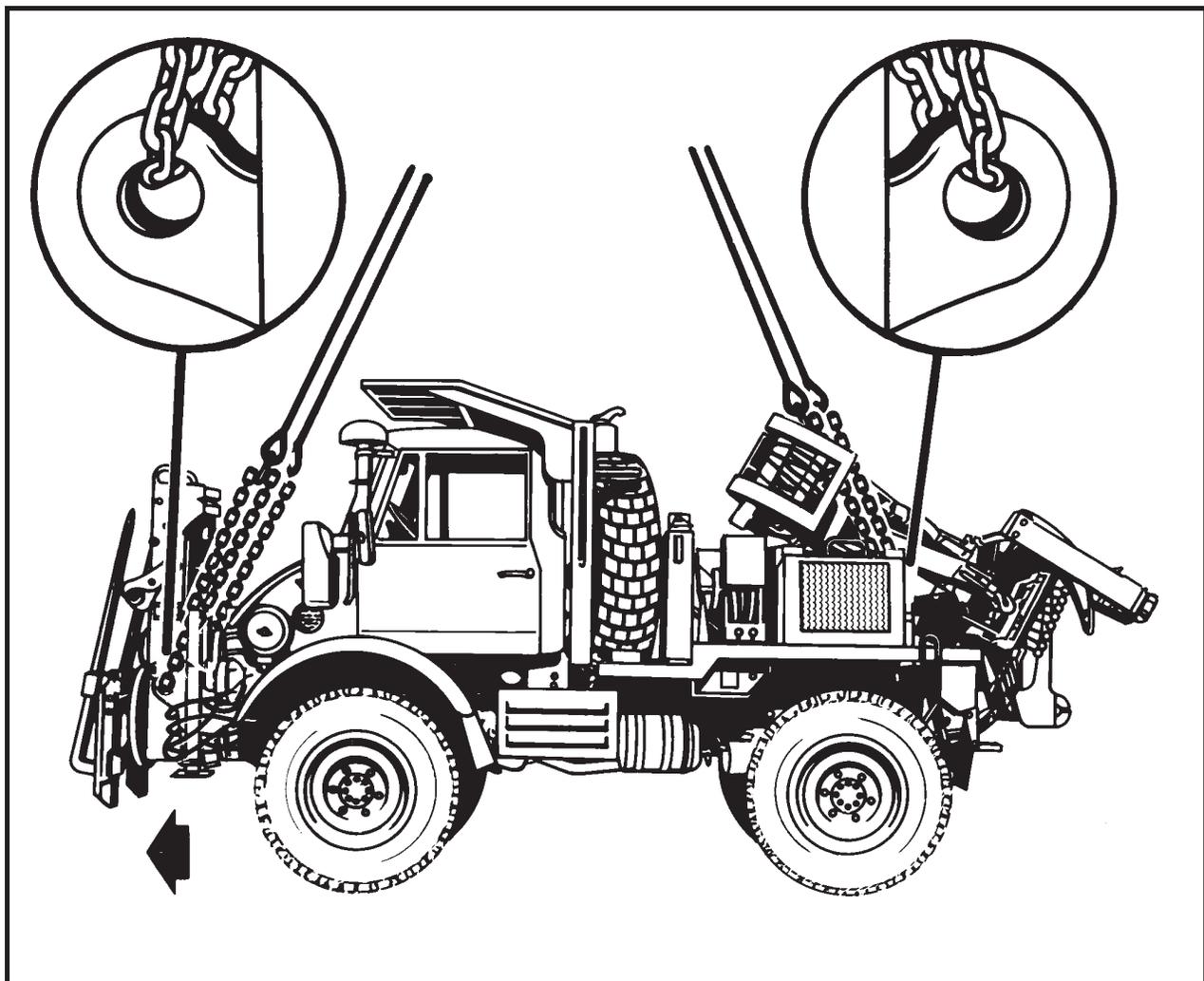
(f) Tie or tape the hydraulic lines and hoses in close proximity to the forward lift provisions to prevent possible entanglement during hookup.

(2) Rigging. Rig the load according to the steps in Figure 8-6.

NOTE: Hookup of this load presents substantial risk of damage to the load or injury to the hookup personnel. Use of a reach pendant is recommended for this load.

(3) Hookup. The hookup team stands on top of the falling objects protection systems (FOPS). The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) Derigging. Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).



RIGGING STEPS

1. Position the apex fitting on top of the FOPS. Route outer sling legs 1 and 2 to the front of the load. Route inner sling legs 3 and 4 to the rear of the load. Sling legs 1 and 3 must be on the left side of the load.

2. Route the chain end of sling leg 1 through the left front lift provision located near the front bumper outboard of the forklift frame. Place the correct link from Table 8-6 in the grab hook. Repeat with sling leg 2 and the right front lift provision.

3. Route the chain end of sling leg 3 through the left

rear lift provision located on the frame inboard of the rear wheel. Place the correct link from Table 8-6 in the grab hook. Repeat with sling leg 4 on the right rear lift provision. Secure the excess chain with Type III nylon cord.

4. Place felt padding around all the chains. Secure the padding with tape or Type III nylon cord.

5. Cluster and tie or tape (breakaway technique) the sling legs together on top of the FOPS to prevent entanglement during hookup and lift-off.

Figure 8-6. High Mobility Materiel Handler (HMMH)

8-8. Ditching Machine

a. Applicability. The following item in Table 8-7 is certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-7. Ditching Machine

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Ditching Machine	3,340	15K	3/20	100

b. Materials. The following materials are required to rig this load:

- (1) Sling set (15,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (5) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.

c. Personnel. Two persons can prepare and rig this load in 15 minutes.

d. Procedures. The following procedures apply to this load:

(1) Preparation. Prepare the load using the following steps:

- (a) Raise the blade on the front of the vehicle and the digging chain on the rear of the vehicle.

(b) Ensure the fuel tank is not over 3/4 full. Inspect the fuel tank cap, oil filter cap, and the battery caps for proper installation.

(c) Place the transmission in neutral and engage the parking brake.

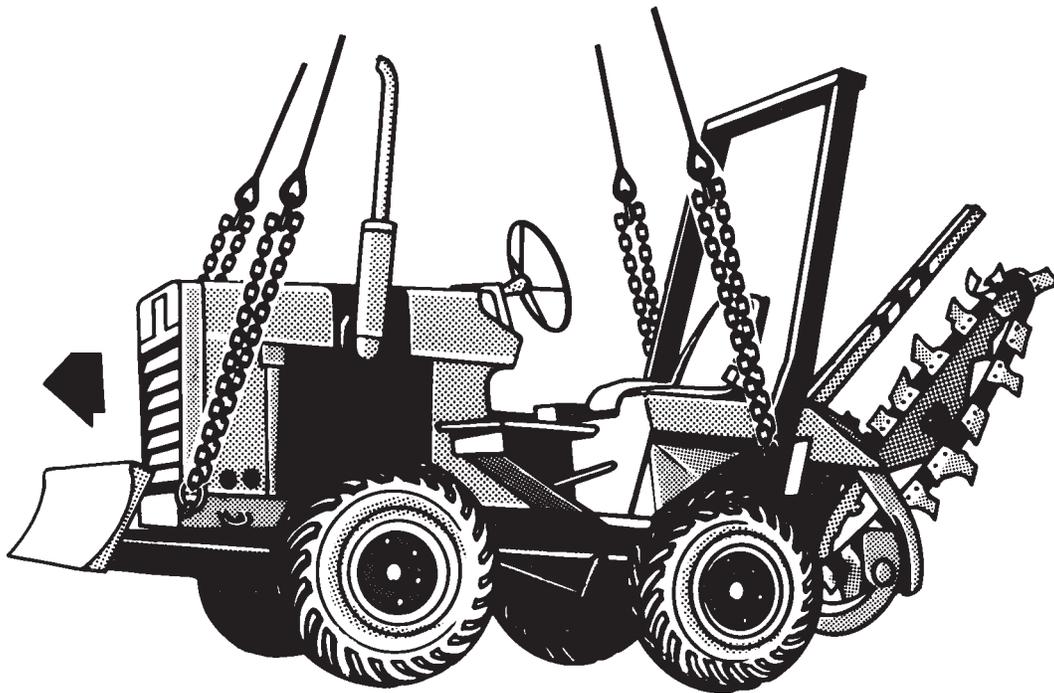
(d) Ensure the front wheels are pointed straight ahead and tie the steering wheel in place with Type III nylon cord.

(e) Secure the hood latches with type III nylon cord.

(2) Rigging. Rig the load according to the steps in Figure 8-7.

(3) Hookup. The hookup team stands on the hood of the vehicle. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) Derigging. Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).



RIGGING STEPS

1. Position the apex fitting on the hood of the vehicle. Route outer sling legs 1 and 2 to the front of the load (blade end). Route inner sling legs 3 and 4 to the rear of the load. Sling legs 1 and 3 must be on the left side of the load.

2. Route the chain end of sling leg 1 through the left front lift provision located at the front bottom of the frame. Place the correct link from Table 8-7 in the grab hook. Repeat with sling leg 2 and the right front lift provision.

3. Route the chain end of sling leg 3 through the left rear lift provision located below the rollover bar. Place the correct link from Table 8-7 in the grab hook. Repeat with

sling leg 4 on the right rear lift provision. Secure the excess chain with Type III nylon cord.

4. Place felt padding around all the chains where they contact the vehicle. Secure the padding with tape or Type III nylon cord.

5. Raise the apex fitting above the hood of the vehicle. Ensure the front slings are in front of the exhaust stack and the rear slings are in front of the rollover bar.

6. Cluster and tie or tape (breakaway technique) the sling legs together on top of the FOPS to prevent entanglement during hookup and lift-off.

Figure 8-7. Ditching Machine

8-9. 950BS Scoop Loader

a. Applicability. The following items in Table 8-8 are certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-8. 950BS Scoop Loader

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Loader, Scoop, 950BS (Type II), Work Section	15,830	25K	10/5	100
Loader, Scoop, 950BS (Type II), Power Section	16,110	25K	10/20	90

b. Materials. The following materials are required to rig this load:

- (1) Sling set (25,000-pound capacity).
- (2) Chain, 8-foot length from a 25,000-pound capacity sling set with coupling links.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (5) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- (6) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (7) Tie-down assembly, 15-foot dacron (2 each).
- (8) Tie-down assembly, chain, MB-1 (2 each).
- (9) Plastic bags (4 each).

c. Personnel. Four persons can sectionalize the scoop loader in 2 1/2 hours. Two persons can prepare and rig this load in 20 minutes per section.

d. Procedures. The following procedures apply to this load:

(1) Preparation. Prepare the load using the following steps:

(a) Sectionalize the loader according to the instructions provided in the operator's manual.

(b) Secure the bucket lift arm assembly to the work section housing with two MB-1 chain tie-down assemblies. Pass a chain around the left side of the bucket control group arm crosstube through the lift point on the housing, and secure the running ends with an MB-1 tensioning device. Repeat this procedure on the right side of the crosstube.

CAUTION
Chains must be tight to prevent sagging of the hydraulic system during flight.

(c) Cover all hitch pins and pivot holes with plastic and tape to prevent contamination by dust and dirt.

(d) Secure tool basket lid, located in the bucket, with nylon cord. Tape all lights.

(e) Secure all hoses and cables located on front of the power section, with nylon cord to prevent damage.

(f) Secure the floating axle in level position with two 15-foot tie-down assemblies. On the left side, pass the running end of a 15-foot tie-down strap down through the tie-down provision aft of the axle, under the axle, and up

through the tie-down provision forward of the axle. Secure the running ends of the strap using a D-ring and load binder on top of the axle. Repeat this procedure on the right side. Fold and secure excess webbing and loadbinder with cotton webbing or tape.

(g) Install the low-velocity airdrop suspension provisions on the left and right sides of the operator's platform. (These provisions are used as forward lift points for sling loading.) Torque mounting bolts to 640 + 80 foot-pounds.

(h) Remove exhaust stack and stow on the component tray, mounted in the work section bucket. Cover opening of exhaust stack with tape.

(i) Remove the pre-air cleaner and pad with cellulose padding and stow in the stowage compartment located behind the operator's seat. Cover opening of pre-air cleaner with tape.

(j) Fold the back of the operator seat down and secure in place with nylon cord. Secure the seat belt over the seat back.

(k) Tape all lights and instruments.

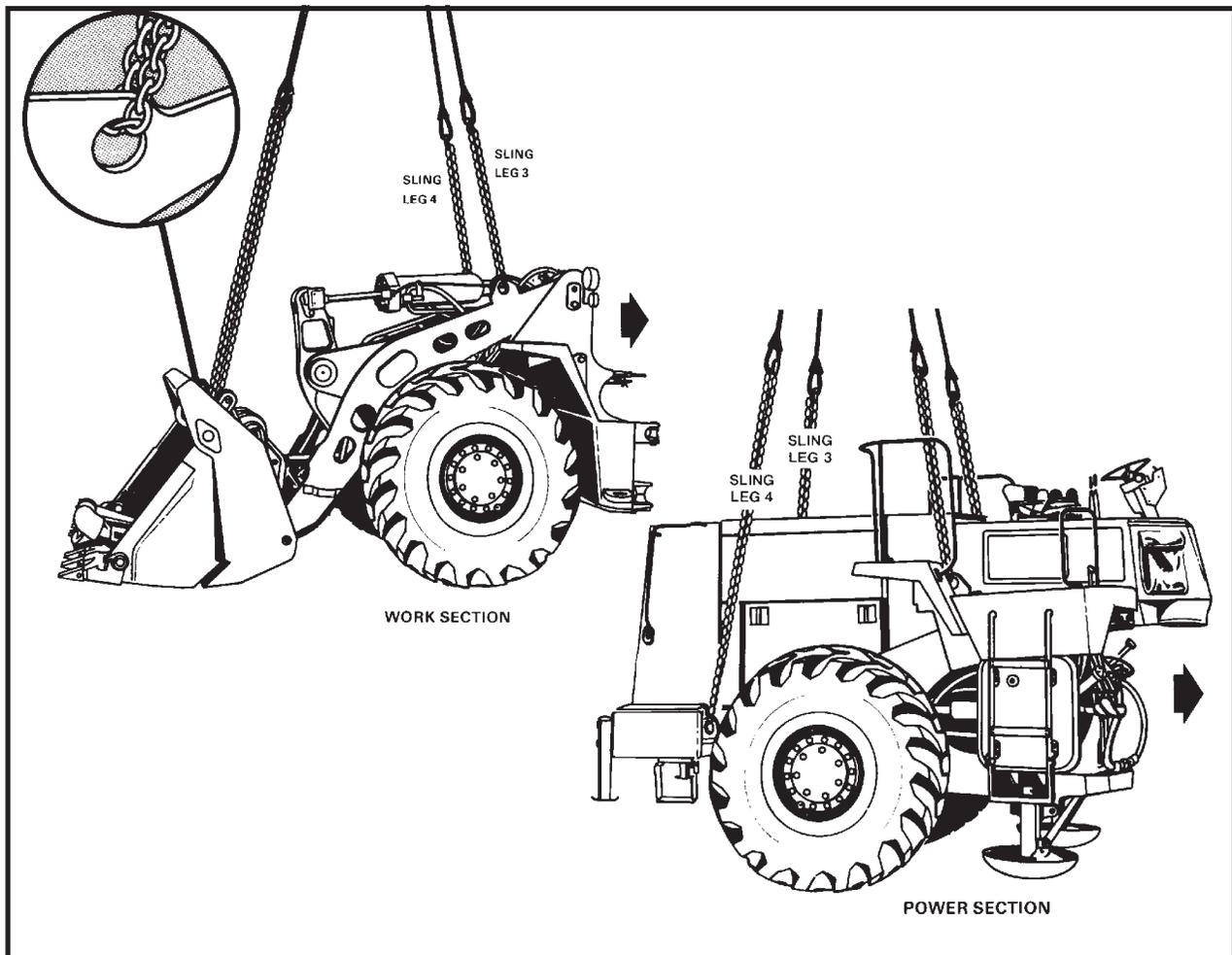
(l) Secure all doors and covers with tape or nylon cord.

(m) Place controls in neutral and release brakes.

(2) **Rigging.** Rig the load according to the steps in Figure 8-8.

(3) **Hookup.** The hookup team stands on the wheels or fender of the work section and on the operator's platform of the power section. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).



RIGGING STEPS (WORK SECTION)

1. Lay out a 25,000-pound sling set and connect the additional 8-foot chain sections to sling legs 1 and 2 using the proper coupling links.

2. Position apex fitting on top of the hydraulic cylinder. Route outer sling legs 1 and 2 to the bucket end of the load and the inner sling legs 3 and 4 to the aft end. Sling legs 1 and 3 should be on the left side of the load.

3. Pass the chain end of sling leg 1 through the left front lift provision, located on the left side of the back of the bucket. Place the correct link from Table 8-8 in the

grab hook. Repeat with sling leg 2 on the right front lift provision on the right side of the bucket. Secure the excess chain with Type III nylon cord.

4. Loop the chain end of sling leg 3 through the left rear lift provision, located on top of the control group left support arm. Place the correct link from Table 8-8 in the grab hook. Repeat with sling leg 4 on the right rear lift provision on the right arm.

5. Cluster and tie or tape (breakaway technique) all sling legs together to prevent entanglement during hookup and lift-off.

Figure 8-8. 950BS Scoop Loader

RIGGING STEPS (POWERSECTION)

1. Lay out a 25,000-pound sling set and connect the additional 8-foot chain sections to sling legs 3 and 4 using the proper coupling links.

2. Position apex fitting on the engine hood. Route outer sling legs 1 and 2 to the front of the load (operator's seat) and inner sling legs 3 and 4 to the rear of the load (bumper end). Sling legs 1 and 3 should be on the left side of the load.

3. Loop the chain end of sling leg 1 through the left front lift provision located to the left of the operator's seat above the fuel tank. Place the correct link from Table 8-8 in the grab hook. Repeat with sling leg 2 on the right front lift provision.

4. Loop the chain end of sling leg 3 through the left rear lift provision located on the forward edge of the battery box aft of the left wheel. Place the correct link from Table

8-8 in the grab hook. Repeat with sling leg 4 on the right rear lift provision. Secure the excess chain with Type III nylon cord.

WARNING

DO NOT ATTACH SLING LEGS 3 AND 4 TO FRAME LIFTING PROVISIONS LOCATED ON THE FRAME. SLINGS ATTACHED TO THESE PROVISIONS MAY CAUSE LOSS OF THE LOAD IN FLIGHT.

5. Pull sling legs up on top of the engine hood and secure together with cotton webbing. Cluster and tie or tape (breakaway technique) all sling legs together to prevent entanglement during hookup and lift-off.

Figure 8-8. 950BS Scoop Loader (continued)

8-10. 130GS Grader

a. Applicability. The following items in Table 8-9 are certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-9. 130GS Grader

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
130GS Grader, Front Section with Scarifier and ROPS and Low-Velocity Airdrop (LVAD) suspension provisions removed	16,120	25K	3/77	100
130GS Grader, Rear Section	14,270	25K	46/56	100

b. Materials. The following materials are required to rig this load:

- (1) Sling set (25,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (5) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- (6) Tie-down, cargo, CGU-1B (2 each).
- (7) Plastic bags (4 each).
- (8) Posts, wooden, 4- x 4- x 48-inch (2 each).

c. Personnel. Two persons can prepare and rig each load in 20 minutes after the ROPS and LVAD suspension provisions are removed and the grader is sectionalized.

d. Procedures. The following procedures apply to this load:

(1) **Preparation.** Prepare the load using the following steps:

(a) Sectionalize the loader according to the instructions provided in the operator's manual.

(b) Remove ROPS and LVAD suspension provisions mounted on the front bolster.

(c) Ensure the fuel tank is not over 3/4 full.

(d) Use a tie-down assembly to secure each side of the front axle to front tie-down points on the front end.

(e) Loosen front headlight bar, rotate forward 180 degrees, and retighten. Pad lights with padding and tape.

(f) Tape work lights on forward edge of operator's platform.

(g) Secure steering wheel to horizontal control bar with nylon cord on both sides. Secure seat with nylon cord.

(h) Cover all pivot points in the articulated hitch group with plastic bags or a suitable substitute and tape securely to prevent fouling by sand and dirt.

(i) Remove throttle handle and secure in toolbox.

(j) Pad instrument panel with cellulose padding and tape.

(k) Remove air cleaner and exhaust stack and secure

to top rail with nylon cord.

(l) Tie 4- x 4- x 48-inch posts to inside rear guardrail on the rear section with nylon cord.

(m) Pad and tape rear working light and taillights.

(n) Secure doors with one loop of nylon cord horizontally around the body of the unit.

(2) **Rigging.** Rig the load according to the steps in Figure 8-9.

(3) **Hookup.** The hookup team stands on top of each section. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).

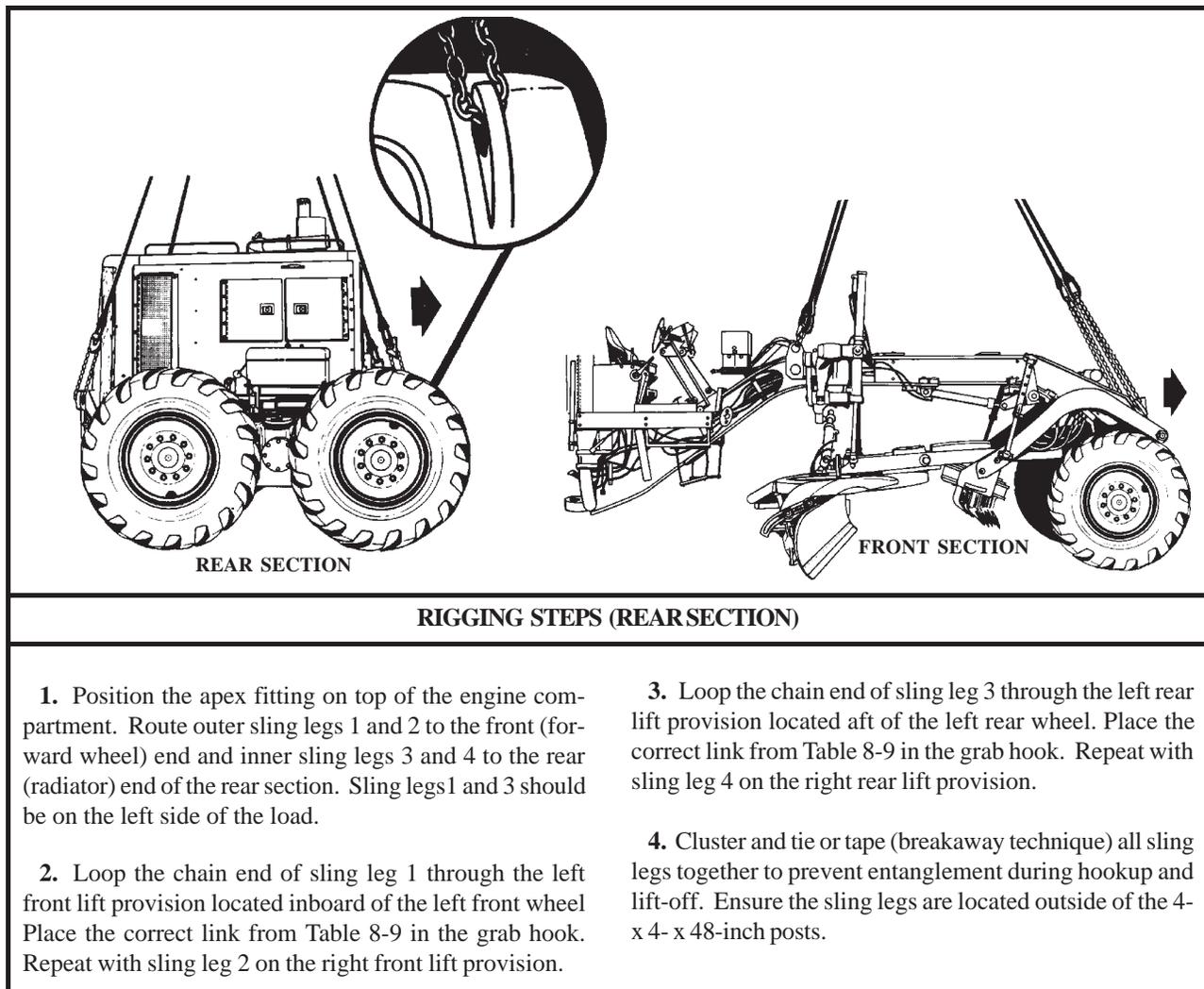


Figure 8-9. 130GS Grader

RIGGING STEPS (FRONT SECTION)	
<p>1. Position apex fitting on top of the front section. Route outer sling legs 1 and 2 to the front (wheel end) of the section and inner sling legs 3 and 4 to the rear end. Sling legs 1 and 3 should be on the left side of the load.</p> <p>2. Loop the chain end of sling leg 1 through the left front lift provision by the left wheel. Place the correct link from Table 8-9 in the grab hook. Repeat with sling leg 2 on the right front lift provision.</p>	<p>3. Loop the chain end of sling leg 3 through the left rear lift provision above the blade. Place the correct link from Table 8-9 in the grab hook. Repeat with sling leg 4 on the right rear lift provision. Secure excess chain with tape or nylon cord.</p> <p>4. Cluster and tie or tape (breakaway technique) all sling legs together to prevent entanglement during hookup and lift-off.</p>

Figure 8-9. 130GS Grader (continued)

8-11. 613BS Scraper, Elevating

a. Applicability. The following items in Table 8-10 are certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-10. 613BS Scraper, Elevating

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
613BS Scraper, Elevating, Work Section	16,330	25K	3/40	110
613BS Scraper, Elevating, Power Section	16,860	25K	Listed in Rigging Steps	110

b. Materials. The following materials are required to rig this load:

- (1) Sling set (25,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (5) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- (6) Plastic bags (4 each).
- (7) Plywood, 3/4- x 8- x 46-inch (2 each).

c. Personnel. Four persons can sectionalize the scraper in 1 hour. Two persons can prepare and rig each load in 20 minutes.

d. Procedures. The following procedures apply to this load:

(1) Preparation. Prepare the load using the following steps:

(a) Sectionalize the scraper according to the instructions provided in the operator's manual.

(b) Secure the operator's seat with Type III nylon cord.

(c) Secure all covers and doors with tape or Type III nylon cord.

(d) Secure auxiliary fuel tank in place with Type III nylon cord.

(e) Stow elevator motor hoses and hanger arms on elevator flights in the bowl, and secure with nylon cord.

(f) Secure hydraulic cylinders up in a stowed position with doubled nylon cord.

(g) Secure loose hoses and cables with Type III nylon cord.

(h) Fold and secure the steps located on outside of the bowl.

(i) Tape all lights.

(j) Cover all hitch pins and pin holes with plastic and tape to prevent contamination by dirt and dust.

(k) Secure toolbox lid closed with nylon cord.

(l) Ensure that steering wheels are aligned.

(m) Install front bumper lift provision. Ensure that pin safety clip is installed. If clip is missing, secure the pin in place with nylon cord.

(n) Fabricate a hood protection from two pieces of 3/4- x 8- x 46-inch plywood. Nail plywood together forming

an L-shaped protector. Drill two 1/2-inch holes in each corner for restraint. Plywood will protect the top edge of the radiator grill where it meets the hood.

(o) Place felt padding over the headlights and tape in place.

(p) Position the plywood protector on the hood and secure in place at four corners with nylon cord.

CAUTION

Plywood hood protector is essential to prevent hood damage by sling leg chains.

(2) **Rigging.** Rig the load according to the steps in Figure 8-10.

(3) **Hookup.** The hookup team stands on top of each section. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).

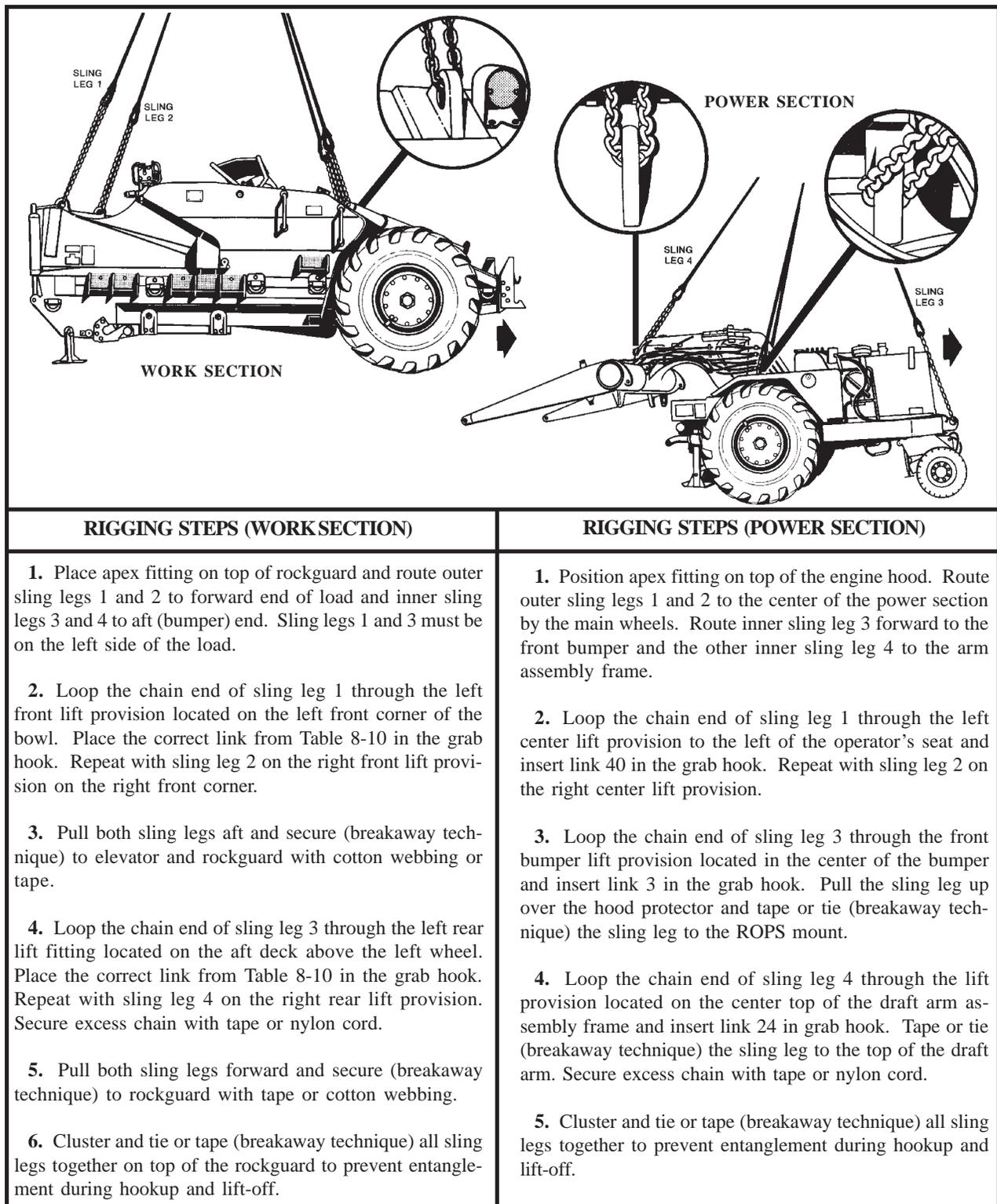


Figure 8-10. 613BS Scrapper, Elevating

8-12. 613WDS Water Distributor

a. Applicability. The following items in Table 8-11 are certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-11. 613WDS Water Distributor

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Distributor, Water, Work Section	15,400	25K	3/45	110
Distributor, Water, Power Section	16,960	25K	Listed in Rigging Steps	110

b. Materials. The following materials are required to rig this load:

- (1) Sling set (25,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (5) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- (6) Plastic bags (4 each).
- (7) Plywood, 3/4- x 8- x 46-inch (2 each).

c. Personnel. Four persons can sectionalize the distributor in 1 hour. Two persons can prepare and rig each load in 20 minutes.

d. Procedures. The following procedures apply to this load:

- (1) **Preparation.** Prepare the load using the following steps:
 - (a) Sectionalize the distributor according to the instructions provided in the operator's manual.
 - (b) Secure the operator's seat with Type III nylon

cord.

- (c) Secure all covers and doors with tape or Type III nylon cord.
- (d) Secure auxiliary fuel tank in place with Type III nylon cord.
- (e) Secure the distribution control panel and cable in place on top of the tank with nylon cord.
- (f) Ensure that the tank manhole cover is closed and secured.
- (g) Close and secure the toolbox and hose stowage compartment covers with nylon cord.
- (h) Secure the hose nozzle and reel with nylon cord.
- (i) Tape all lights.
- (j) Cover hitch pins and pin holes with plastic and tape to prevent contamination by dust and dirt.
- (k) Ensure the steering wheels are aligned.
- (l) Install front bumper lift provision. Ensure that pin safety clip is installed. If clip is missing, secure the pin in place with nylon cord.

(m) Fabricate a hood protection from two pieces of 3/4- x 8- x 46-inch plywood. Nail plywood together forming an L-shaped protector. Drill two 1/2-inch holes in each corner for restraint. Plywood will protect the top edge of

the radiator grill where it meets the hood.

(n) Place felt padding over the headlights and tape in place.

(o) Position the plywood protector on the hood and secure in place at four corners with nylon cord.

(p) Secure lift cylinders to the draft arms with a doubled length of nylon cord.

CAUTION
Plywood hood protector is essential to prevent hood damage by sling leg chains.

(2) **Rigging.** Rig the load according to the steps in Figure 8-11.

(3) **Hookup.** The hookup team stands on top of each section. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).

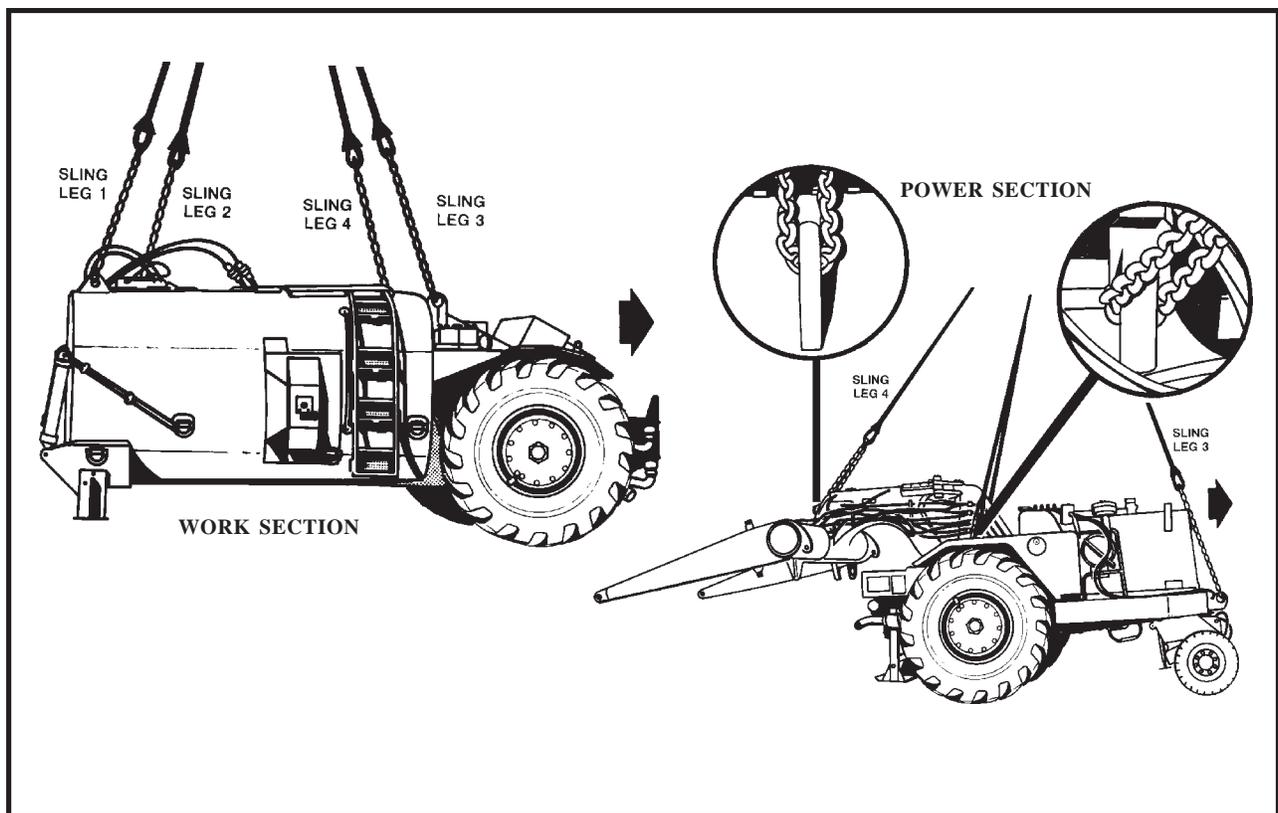


Figure 8-11. 613WDS Water Distributor

RIGGING STEPS (WORKSECTION)	RIGGING STEPS (POWERSECTION)
<p>1. Place the apex fitting on top of work section tank. Route outer sling legs 1 and 2 to the forward end of the water tank and inner sling legs 3 and 4 to the aft (wheel) end of the work section. Sling legs 1 and 3 must be to the same side of the water tank.</p> <p>2. Pass chain end of sling leg 1 through the forward left lift provision located on left forward corner of the water tank. Place the correct link from Table 8-11 in the grab hook. Repeat this procedure for sling leg 2 on the lift provision on the right forward corner of the water tank.</p> <p>3. Pass chain end of sling leg 3 through the aft left lift provision located on the aft deck by the left wheel. Place the correct link from Table 8-11 in the grab hook. Repeat this procedure for sling leg 4 on the lift provision by the right wheel. Secure excess chain with tape or nylon cord.</p> <p>4. Cluster and tie or tape (breakaway technique) all sling legs together on top of the tank to prevent entanglement during hookup and lift-off.</p>	<p>1. Position apex fitting on top of the engine hood. Route outer sling legs 1 and 2 to the center of the power section by the main wheels. Route inner sling leg 3 forward to the front bumper and the other inner sling leg 4 to the arm assembly frame.</p> <p>2. Loop the chain end of sling leg 1 through the left center lift provision to the left of the operator's seat and insert link 40 in the grab hook. Repeat with sling leg 2 on the right center lift provision.</p> <p>3. Loop the chain end of sling leg 3 through the front bumper lift provision located in the center of the bumper and insert link 3 in the grab hook. Pull the sling leg up over the hood protector and tape or tie (breakaway technique) the sling leg to the ROPS mount.</p> <p>4. Loop the chain end of sling leg 4 through the lift provision located on the center top of the draft arm assembly frame and insert link 24 in grab hook. Tape or tie (breakaway technique) the sling leg to the top of the draft arm. Secure excess chain with tape or nylon cord.</p> <p>5. Cluster and tie or tape (breakaway technique) all sling legs together to prevent entanglement during hookup and lift-off.</p>

Figure 8-11. 613WDS Water Distributor (continued)

8-13. Roller, Towed, Vibrating

a. Applicability. The following item in Table 8-12 is certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-12. Roller, Towed, Vibrating

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Roller, Towed, Vibrating	4,830	10K	3/3	120

b. Materials. The following materials are required to rig this load:

- (1) Sling set (10,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.

c. Personnel. Two persons can prepare and rig each load in 10 minutes.

d. Procedures. The following procedures apply to this load:

(1) Preparation. Prepare the load using the following steps:

- (a) Lift the tongue and position the support leg in its

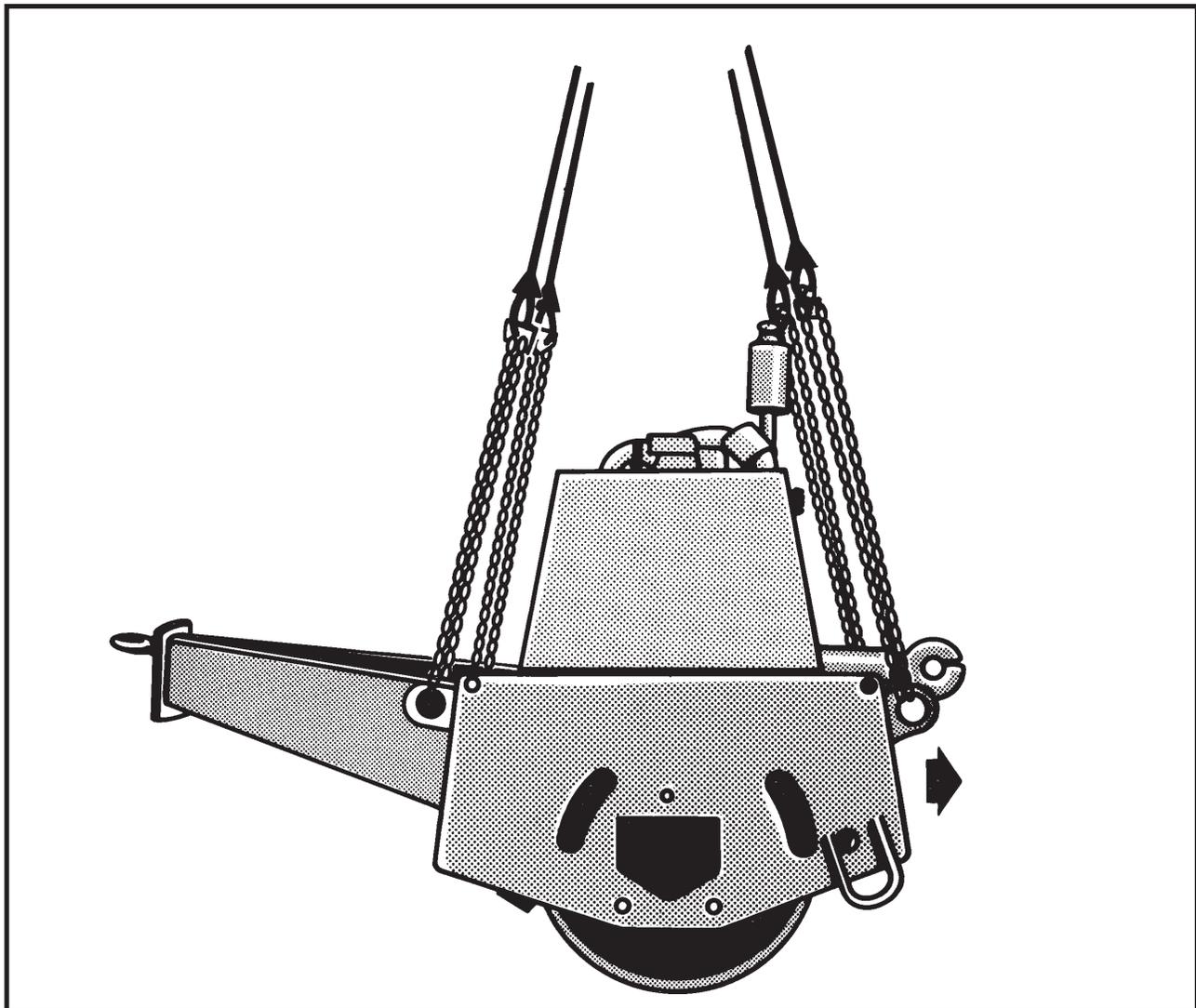
stowed or travel position and secure it with Type III nylon cord.

(b) Ensure the battery box cover, fuel cap, hoses, and all loose items are secured. Tape or tie any loose items as required.

(2) Rigging. Rig the load according to the steps in Figure 8-12.

(3) Hookup. The hookup team stands alongside the load. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) Derigging. Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).



RIGGING STEPS

1. Position the apex fitting on top of the roller. Route outer sling legs 1 and 2 to the front of the load (tongue end). Route inner sling legs 3 and 4 to the rear of the load. Sling legs 1 and 3 must be on the left side of the load.

2. Route the chain end of each sling leg through its

respective lift provision. Place the correct link from Table 8-12 in the grab hook.

3. Cluster and tie or tape (breakaway technique) the sling legs together on top of the roller to prevent entanglement during hookup and lift-off.

Figure 8-12. Roller, Towed, Vibrating

8-14. Mk155 Launcher, Mine Clearing

a. Applicability. The following item in Table 8-13 is certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-13. Mk155 Launcher, Mine Clearing

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Mk155 Launcher, Mine Clearing	860	10K	3/3	80

b. Materials. The following materials are required to rig this load:

- (1) Sling set (10,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.

c. Personnel. Two persons can prepare and rig each load in 10 minutes.

d. Procedures. The following procedures apply to this load:

(1) **Preparation.** Prepare the load using the following steps:

(a) Ensure the launch rail is in the collapsed or storage mode and not in its vertical position.

(b) Ensure the storage box lid is closed and secured with Type III nylon cord or tape.

(2) **Rigging.** Rig the load according to the steps in Figure 8-13.

(3) **Hookup.** The hookup team stands alongside the launcher. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).

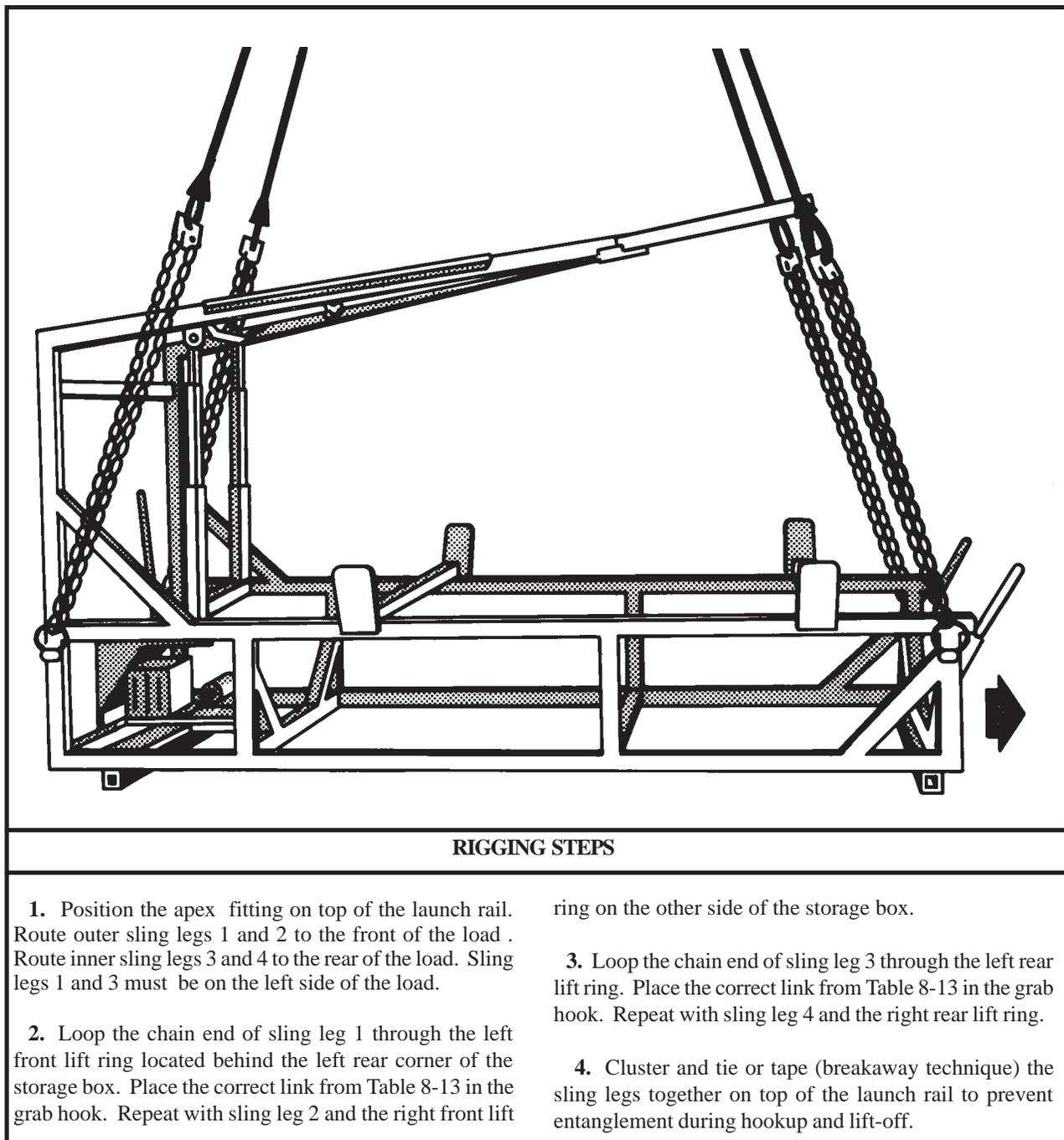


Figure 8-13. Mk155 Launcher, Mine Clearing

8-15. M68A2 Line Charge, Demolition with or without Mk22 Rocket Motor

a. Applicability. The following items in Table 8-14 are certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-14. M68A2 Line Charge, Demolition

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
M68A2 Line Charge, Demolition, Inert	2,486	10K	3/3	70
M68A2 Line Charge, Demolition with Mk22 Rocket Motor	2,672	10K	3/3	70

b. Materials. The following materials are required to rig this load:

- (1) Sling set (10,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (5) Tie-down strap, CGU-1B (4 each).

c. Personnel. Two persons can prepare and rig each load in 20 minutes.

d. Procedures. The following procedures apply to this load:

(1) Preparation. Prepare the load using the following steps:

(a) Ensure the end of the load opposite the electrical connectors and fuse storage area is designated as the front of the load.

(b) Ensure the storage box lid is closed and secured with Type III nylon cord or tape.

(c) Ensure the rocket motor box is secured with metal strapping.

(d) Center the rocket motor box on top of the line charge container.

(e) Connect two CGU-1/B tie-down straps together to form one long strap. Route the strap around the line charge and rocket motor box lengthwise. Tighten the strap securely.

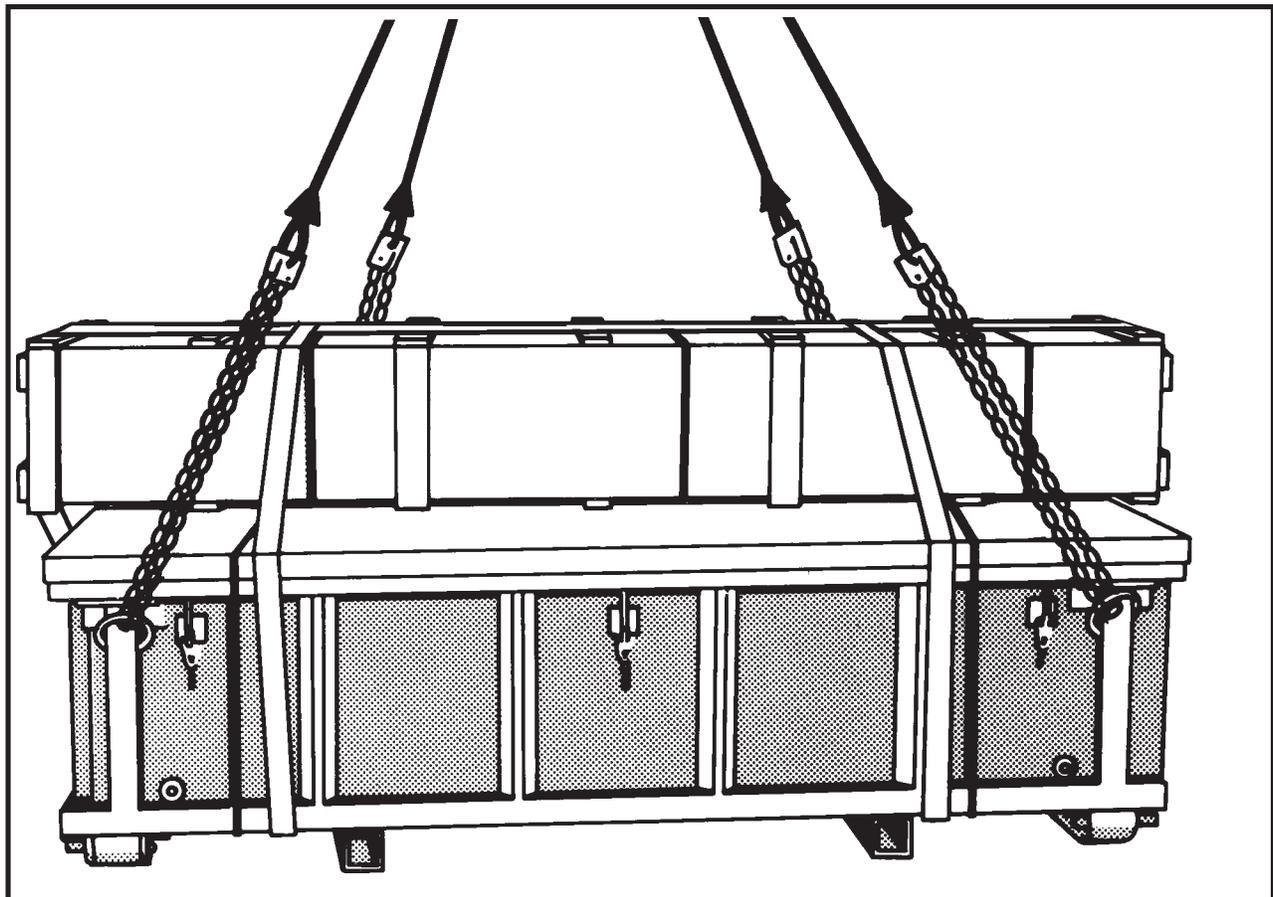
(f) Route two CGU-1/B tie-down straps across the rocket motor box and underneath the line charge container. Position the strap at each end of the containers approximately equal distance from the center. Tighten the strap securely. Secure the excess tie-down strap with tape or Type III nylon cord.

NOTE: When rigging the line charge without the rocket motor omit steps d (1) (c) through (f).

(2) Rigging. Rig the load according to the steps in Figure 8-14.

(3) Hookup. The hookup team stands alongside the line charge. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) Derigging. Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).



RIGGING STEPS

1. Position the apex fitting on top of the container. Route outer sling legs 1 and 2 to the front of the load. Route inner sling legs 3 and 4 to the rear of the load. Sling legs 1 and 3 must be on the left side of the load.

2. Loop the chain end of sling leg 1 through the left front lift ring. Place the correct link from Table 8-14 in the grab hook. Repeat with sling leg 2 and the right front lift ring.

3. Loop the chain end of sling leg 3 through the left rear lift ring. Place the correct link from Table 8-14 in the grab hook. Repeat with sling leg 4 and the right rear lift ring.

4. Cluster and tie or tape (breakaway technique) the sling legs together on top of the launch rail to prevent entanglement during hookup and lift-off.

Figure 8-14. M68A2 Line Charge, Demolition

8-16. Mk155 Launcher with or without M68A2 Demolition Line Charge and Mk22 Rocket Motor on M353 Trailer

a. Applicability. The following items in Table 8-15 are certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-15. Mk155 Launcher on M353 Trailer

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Mk155 Launcher	3,700	10K	3/3	90
Mk155 Launcher with M68A2 Demolition Charge and Mk22 Rocket Motor	6,312	10K	3/3	100

b. Materials. The following materials are required to rig this load:

- (1) Sling set (10,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (5) Tie-down strap, CGU-1B (4 each).

c. Personnel. Two persons can prepare and rig each load in 20 minutes.

d. Procedures. The following procedures apply to this load:

(1) Preparation. Prepare the load using the following steps:

(a) Ensure the launcher is securely attached to the trailer chassis. Ensure the launch rail is in the collapsed or storage mode and not in its vertical position.

(b) Ensure the storage box lid is closed and secured with Type III nylon cord or tape (if installed).

(c) Tie off hoses and safety chains and secure any loose items with nylon cord or tape.

(d) Set the parking brake.

(e) Place and secure the Mk22 rocket motor box inside the aircraft using the CGU-1/B tie-down straps (if required).

(2) Rigging. Rig the load according to the steps in Figure 8-15.

(3) Hookup. The hookup team stands on the trailer chassis. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) Derigging. Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).

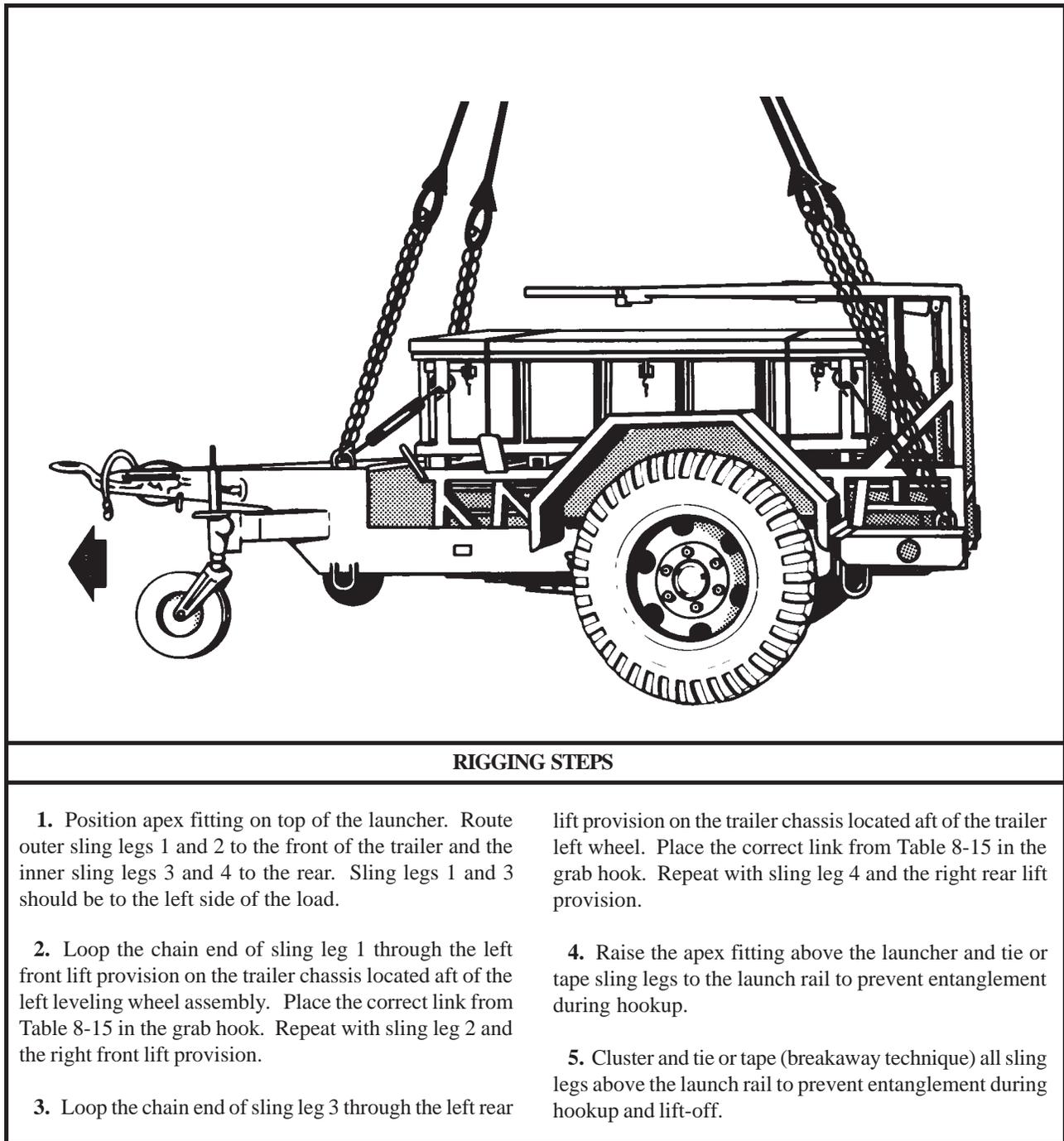


Figure 8-15. Mk155 Launcher on M353 Trailer

8-17. Mk155 Launcher with or without M68A2 Demolition Line Charge and Mk22 Rocket Motor on M200A1 or Mobile-Trac System (MTS) Trailer

a. Applicability. The following items in Table 8-16 are certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-16. Mk155 Launcher on M200A1 or MTS Trailer

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Mk155 Launcher on M200A1 Trailer	3,330	10K	3/3	90
Mk155 Launcher, M68A2 Demolition Charge, and Mk22 Rocker Motor on M200A1 Trailer	5,620	10K	10/3	110
Mk155 Launcher, M68A2 Demolition Charge, and Mk22 Rocker Motor on the Mobile-Trac System Trailer (MTS)	7,172	10K	10/3	110

b. Materials. The following materials are required to rig this load:

- (1) Sling set (10,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (5) Tie-down strap, CGU-1B (4 each).

c. Personnel. Two persons can prepare and rig each load in 20 minutes.

d. Procedures. The following procedures apply to this load:

(1) **Preparation.** Prepare the load using the following steps:

(a) Ensure the launcher is securely attached to the trailer chassis. Ensure the launch rail is in the collapsed or storage mode and not in its vertical position.

(b) Ensure the storage box lid is closed and secured with Type III nylon cord or tape (if installed).

(c) Tie off hoses and safety chains and secure any loose items with nylon cord or tape.

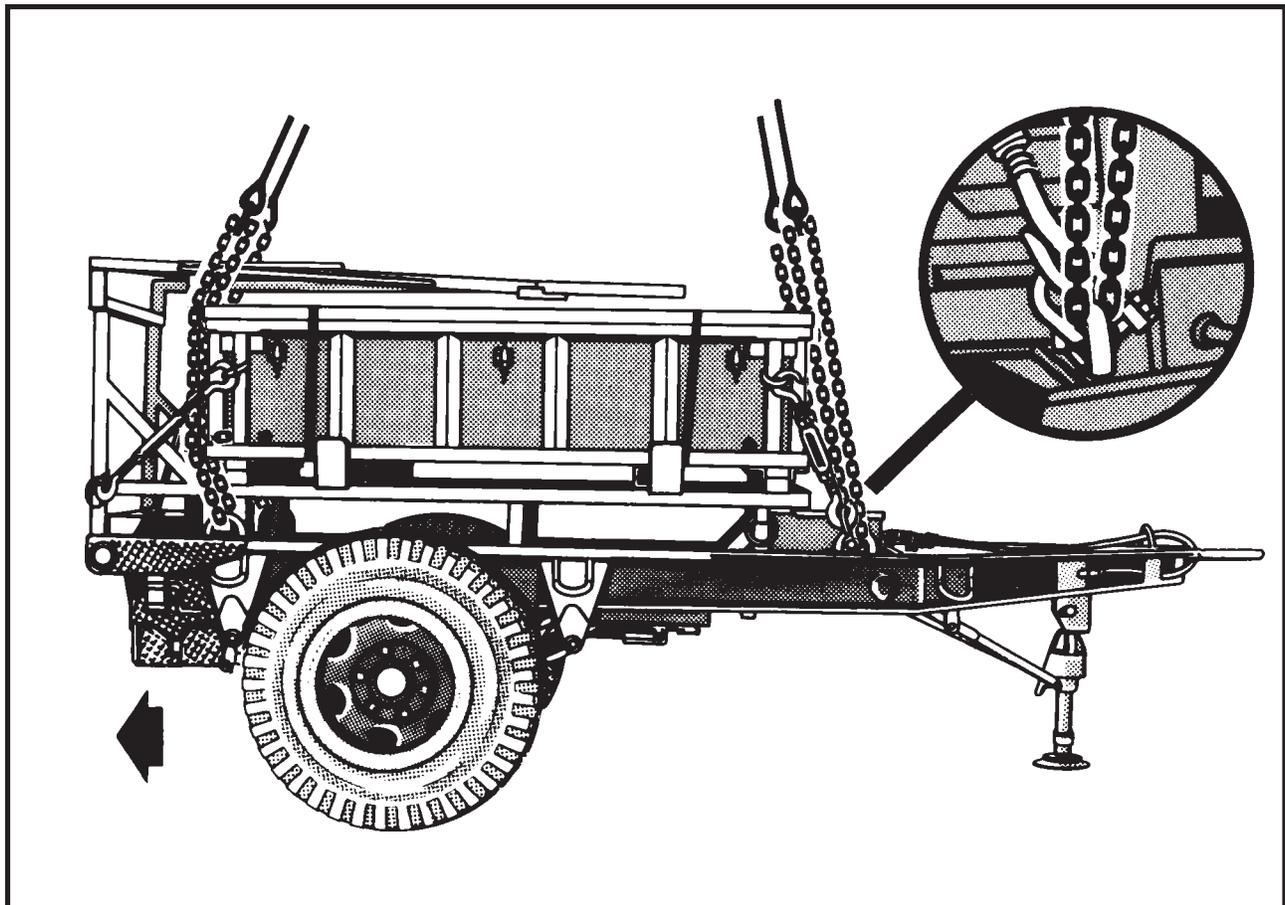
(d) Set the parking brake.

(e) Place and secure the Mk22 rocket motor box inside the aircraft using the CGU-1/B tie-down straps (if required).

(2) **Rigging.** Rig the load according to the steps in Figure 8-16.

(3) **Hookup.** The hookup team stands on the trailer chassis or on the charge. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).



RIGGING STEPS

1. Position apex fitting on top of the launcher. Route outer sling legs 1 and 2 to the front of the trailer and the inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 should be to the left side of the load.

2. Loop the chain end of sling leg 1 through the left front lift provision on the trailer chassis located aft of the lunette. Place the correct link from Table 8-16 in the grab hook. Repeat with sling leg 2 and the right front lift provision.

3. Loop the chain end of sling leg 3 through the left rear

lift provision on the trailer chassis located aft of the demolition charge container. Place the correct link from Table 8-16 in the grab hook. Repeat with sling leg 4 and the right rear lift provision.

4. Raise the apex fitting above the launcher and tie or tape sling legs to the launch rail to prevent entanglement during hookup.

5. Cluster and tie or tape (breakaway technique) all sling legs above the launch rail to prevent entanglement during hookup and lift-off.

Figure 8-16. Mk155 Launcher on M200A1 or MTS Trailer

8-18. LRT-110, 7 1/2-Ton Crane

a. Applicability. The following item in Table 8-17 is certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-17. LRT-110, 7 1/2-Ton Crane

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
LRT-110 Crane	24,230	25K	3/3	120

b. Materials. The following materials are required to rig this load:

- (1) Sling set (25,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (5) Tie-down strap, CGU-1B (4 each).
- (6) Webbing, tubular, nylon, 1/2-inch.
- (7) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.

c. Personnel. Two persons can prepare and rig each load in 20 minutes.

d. Procedures. The following procedures apply to this load:

(1) Preparation. Prepare the load using the following steps:

(a) Fold side mirrors in toward cab and tie or tape, as necessary. Tape or secure windshield wipers to windshield.

(b) Ensure the wheels are pointing straight ahead. Secure the steering wheel with nylon cord or tape.

(c) Secure doors, tool box covers, and all loose equipment with nylon cord or tape. Secure hook-block assembly to the end of the boom mast with CGU-1/B cargo tie-down or equivalent.

(d) Secure boom light power cable with nylon cord or tape.

(e) Insert wooden cable wedges at the drum to prevent the cable from unspooling if the cable becomes slack. Secure wedges with 1/2-inch tubular nylon.

(f) Set the parking brake.

(2) Rigging. Rig the load according to the steps in Figure 8-17.

(3) Hookup. The hookup team stands beside the left and right side of the boom base. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) Derigging. Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).

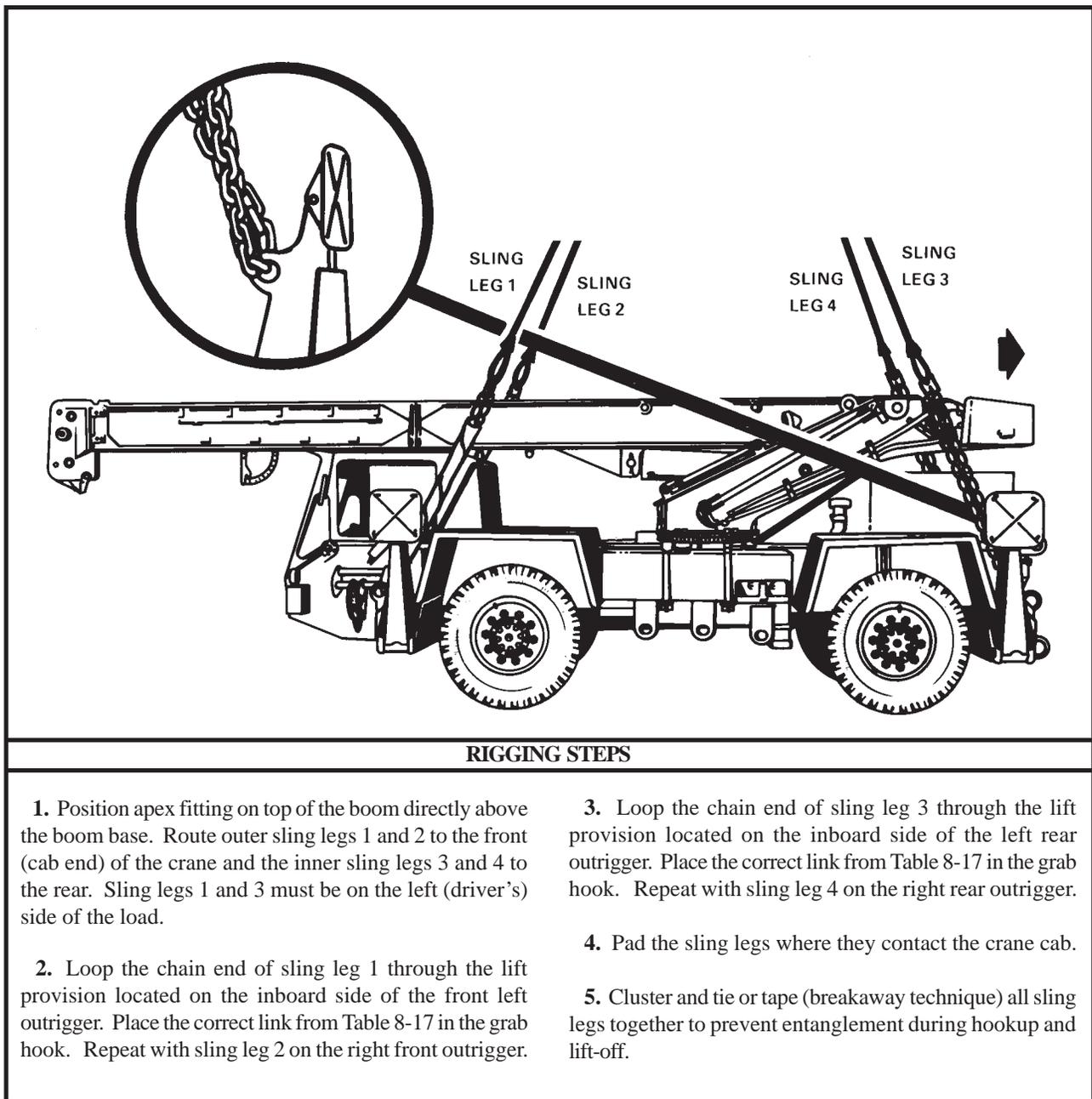


Figure 8-17. LRT-110, 7 1/2-Ton Crane

8-19. LRT-110, 7 1/2-Ton Crane (Boom)

a. Applicability. The following item in Table 8-18 is certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-18. LRT-110, 7 1/2-Ton Crane (Boom)

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
LRT-110 Crane (Boom)	8,600	10K	3/3	140

b. Materials. The following materials are required to rig this load:

- (1) Sling set (10,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (5) Tie-down strap, CGU-1B (4 each).
- (6) Webbing, tubular, nylon, 1/2-inch.

c. Personnel. Two persons can prepare and rig each load in 20 minutes.

d. Procedures. The following procedures apply to this load:

(1) **Preparation.** Prepare the load using the following steps:

- (a) Sectionalize the crane according to instructions in the operator's manual.

(b) Secure hook-block assembly to the end of the boom mast with CGU-1/B cargo tie-down or equivalent.

(c) Secure boom light power cable with nylon cord or tape.

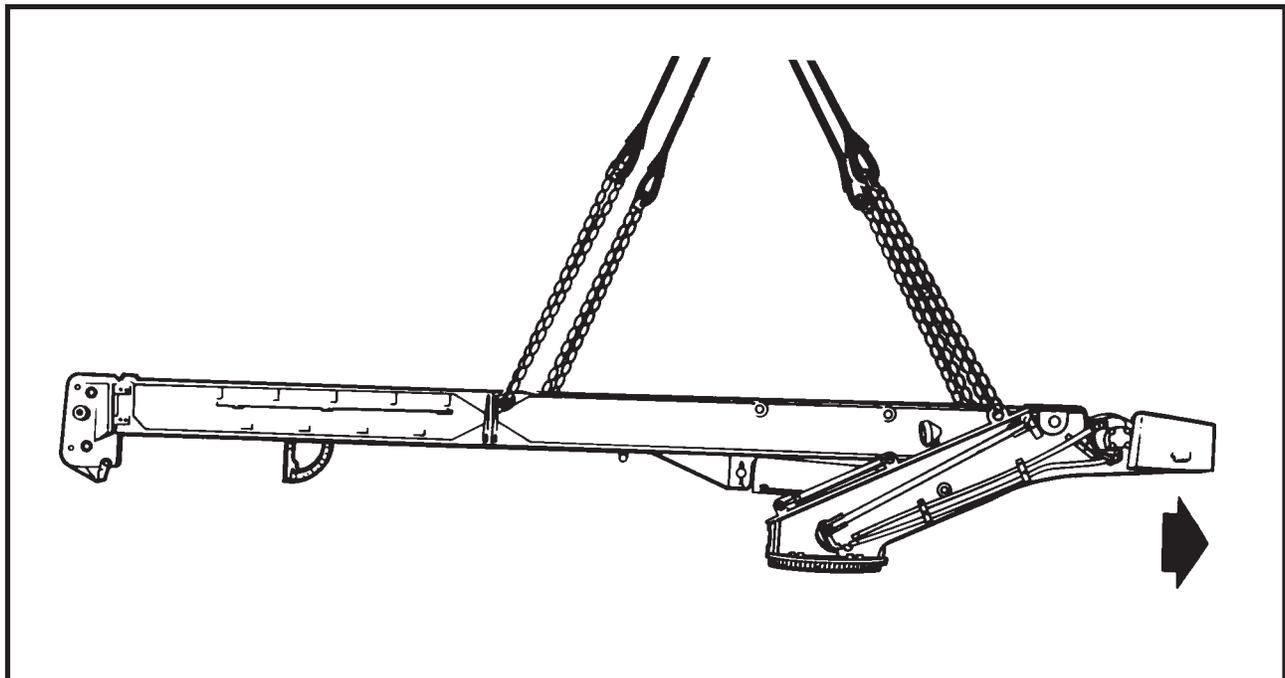
(d) Insert wooden cable wedges at the drum to prevent the cable from unspooling if the cable becomes slack. Secure wedges with 1/2-inch tubular nylon.

(e) Secure the boom hydraulic hoses with tape or nylon cord. Make sure the hoses are clear of the boom base.

(2) **Rigging.** Rig the load according to the steps in Figure 8-18.

(3) **Hookup.** The hookup team stands beside the boom. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).



RIGGING STEPS

1. Position apex fitting on top of the boom directly above the boom base. Route outer sling legs 1 and 2 to the front (counterweight) end and inner sling legs 3 and 4 to the rear (hook) end. Sling legs 1 and 3 must be on the left side of the boom.

2. Loop the chain end of sling leg 1 through the lift provision located on top of the boom left support arm near the counterweight end. Place the correct link from Table 8-18 in the grab hook. Repeat with sling leg 2 on the right side support arm.

3. Loop the chain end of sling leg 3 through the lift provision located on the left side near the middle of the boom. Place the correct link from Table 8-18 in the grab hook. Repeat with sling leg 4 on the right side.

4. Cluster and tie or tape (breakaway technique) all sling legs together to prevent entanglement during hookup and lift-off.

Figure 8-18. LRT-110, 7 1/2-Ton Crane (Boom)

8-20. LRT-110, 7 1/2-Ton Crane (Power Unit)

a. Applicability. The following item in Table 8-19 is certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-19. LRT-110, 7 1/2-Ton Crane (Power Unit)

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
LRT-110 Crane (Power Unit)	15,600	25K	3/3	140

b. Materials. The following materials are required to rig this load:

- (1) Sling set (25,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (5) Tie-down strap, CGU-1B (4 each).
- (6) Webbing, tubular, nylon, 1/2-inch.
- (7) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.

c. Personnel. Two persons can prepare and rig each load in 20 minutes.

d. Procedures. The following procedures apply to this load:

(1) **Preparation.** Prepare the load using the following steps:

(a) Sectionalize the crane according to instructions in the operator's manual.

(b) Fold side mirrors in toward cab and tie or tape, as necessary. Tape or secure windshield wipers to windshield.

(c) Ensure the wheels are pointing straight ahead. Secure the steering wheel with nylon cord or tape. Engage the parking brake.

(d) Secure doors, tool box covers, and all loose equipment with nylon cord or tape.

(2) **Rigging.** Rig the load according to the steps in Figure 8-19.

(3) **Hookup.** The hookup team stands beside the left and right side of the boom base. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).

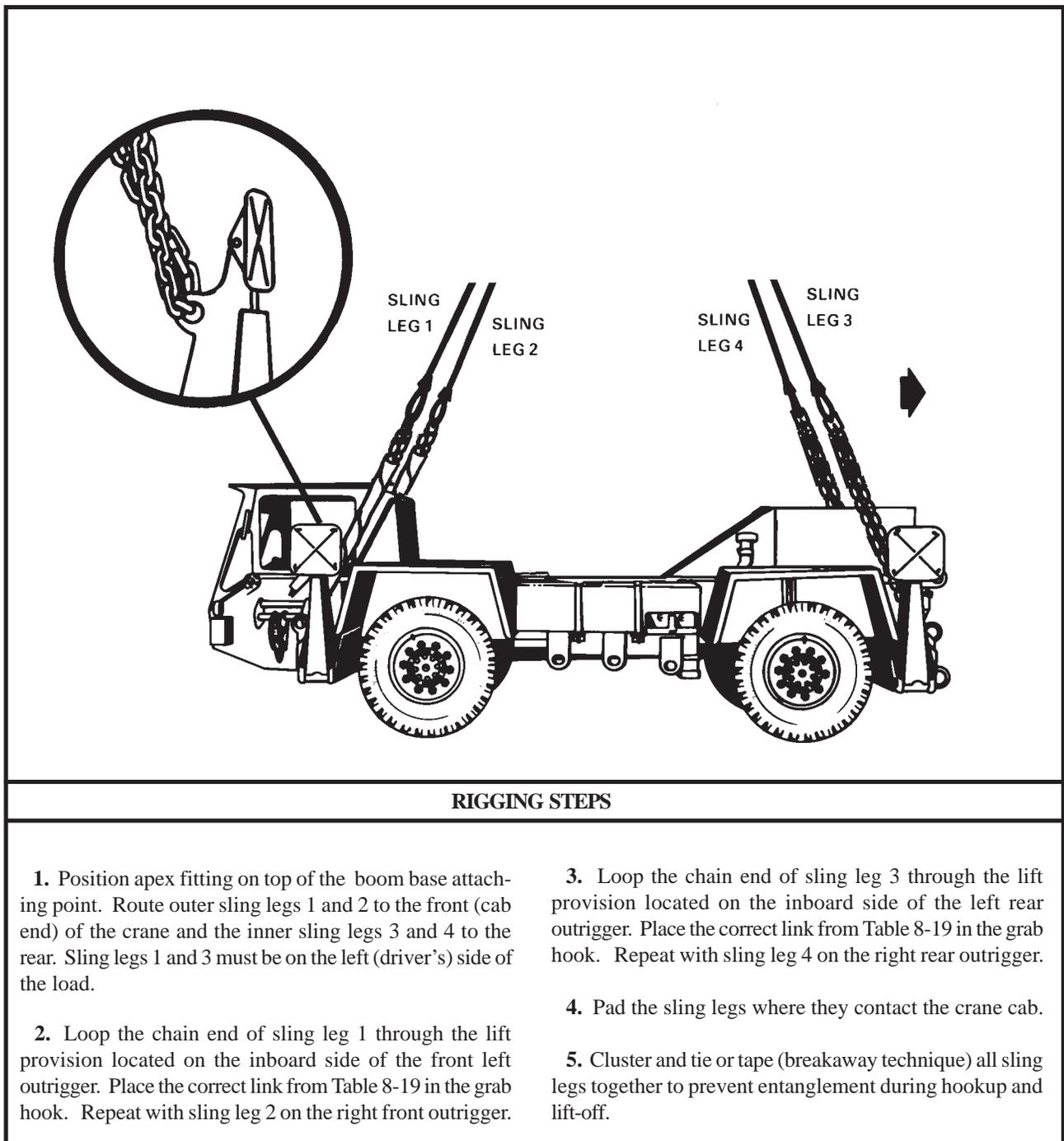


Figure 8-19. LRT-110, 7 1/2-Ton Crane (Power Unit)

8-21. Truck, Forklift, MC-4000

a. Applicability. The following item in Table 8-20 is certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-20. Truck, Forklift, MC-4000

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Truck, Forklift, Rough Terrain, MC-4000, TAMCN B2565	8,600	15K	4/10	90

b. Materials. The following materials are required to rig this load:

- (1) Sling set (15,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.

c. Personnel. Two persons can prepare and rig each load in 20 minutes.

d. Procedures. The following procedures apply to this load:

(1) Preparation. Prepare the load using the following steps:

- (a) Insert the articulating lock pin to keep the front and rear sections from twisting while in flight.

(b) Secure the seat cushion and steering wheel with Type III nylon cord. Engage the hand brake and place the transmission in neutral.

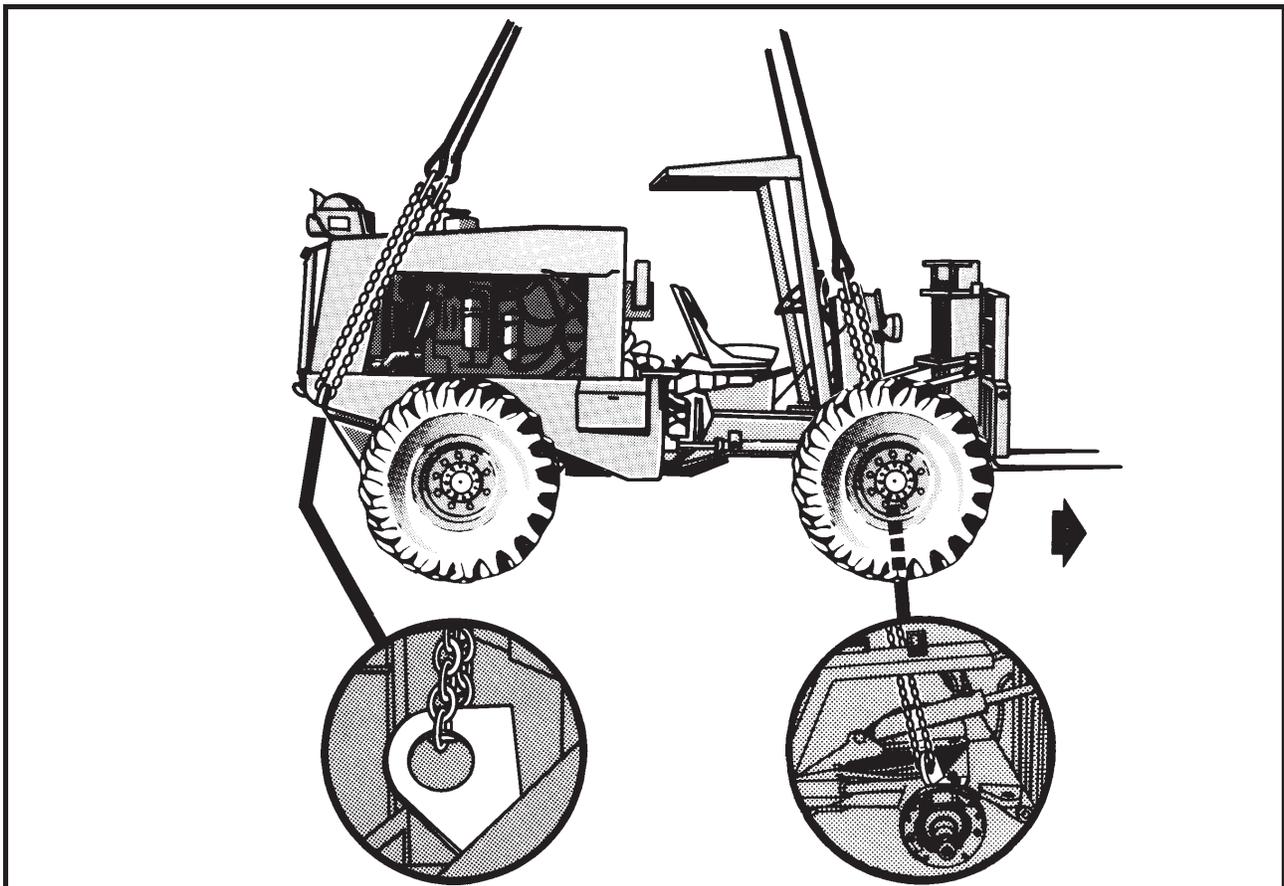
(c) Ensure the fuel tank is less than 3/4 full.

(d) Raise the fork tines 1 foot above the ground.

(2) Rigging. Rig the load according to the steps in Figure 8-20.

(3) Hookup. The hookup team stands on top of the engine deck. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) Derigging. Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).



RIGGING STEPS

1. Position apex fitting/web ring on top of the engine hood or ROPS. Route outer sling legs 1 and 2 to the front of the forklift and inner sling legs 3 and 4 to the rear of the engine area. Sling legs 1 and 3 must be on the left side of the load.

2. Loop the chain end of sling leg 1 through the left front lift provision (not the tie-down provision) that is located directly above the forward axle housing between the left front tire and the hydraulic cylinder. Place the correct link from Table 8-20 in the grab hook. Repeat with sling leg 2 on the right front lift provision.

3. Loop the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 8-20 in the

grab hook. Repeat with sling leg 4 and the right rear lift provision.

4. Pull the front sling legs up and tape or tie (breakaway technique) the grab links to the front side of the upper light brackets to ensure the sling legs do not become entangled.

5. Pull the aft sling legs together on top of the engine compartment and tie or tape (breakaway technique) the two grab links together.

6. Cluster and tie or tape (breakaway technique) all sling legs together on top of the forklift to prevent entanglement during hookup and lift-off.

Figure 8-20. Truck, Forklift, MC-4000

8-22. Truck, Forklift, RT4000

a. Applicability. The following item in Table 8-21 is certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-21. Truck, Forklift, RT4000

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Truck, Forklift, Rough Terrain, 4000-pound capacity, TAMCN B2566	10,860	15K	3/10	120

b. Materials. The following materials are required to rig this load:

- (1) Sling set (15,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (5) Tie-down strap, CGU-1B (4 each).

c. Personnel. Two persons can prepare and rig each load in 10 minutes.

d. Procedures. The following procedures apply to this load:

(1) Preparation. Prepare the load using the following steps:

(a) Secure the seat cushion and steering wheel with Type III nylon cord. Engage the hand brake and place the

transmission in neutral.

(b) Ensure the fuel tank is less than 3/4 full.

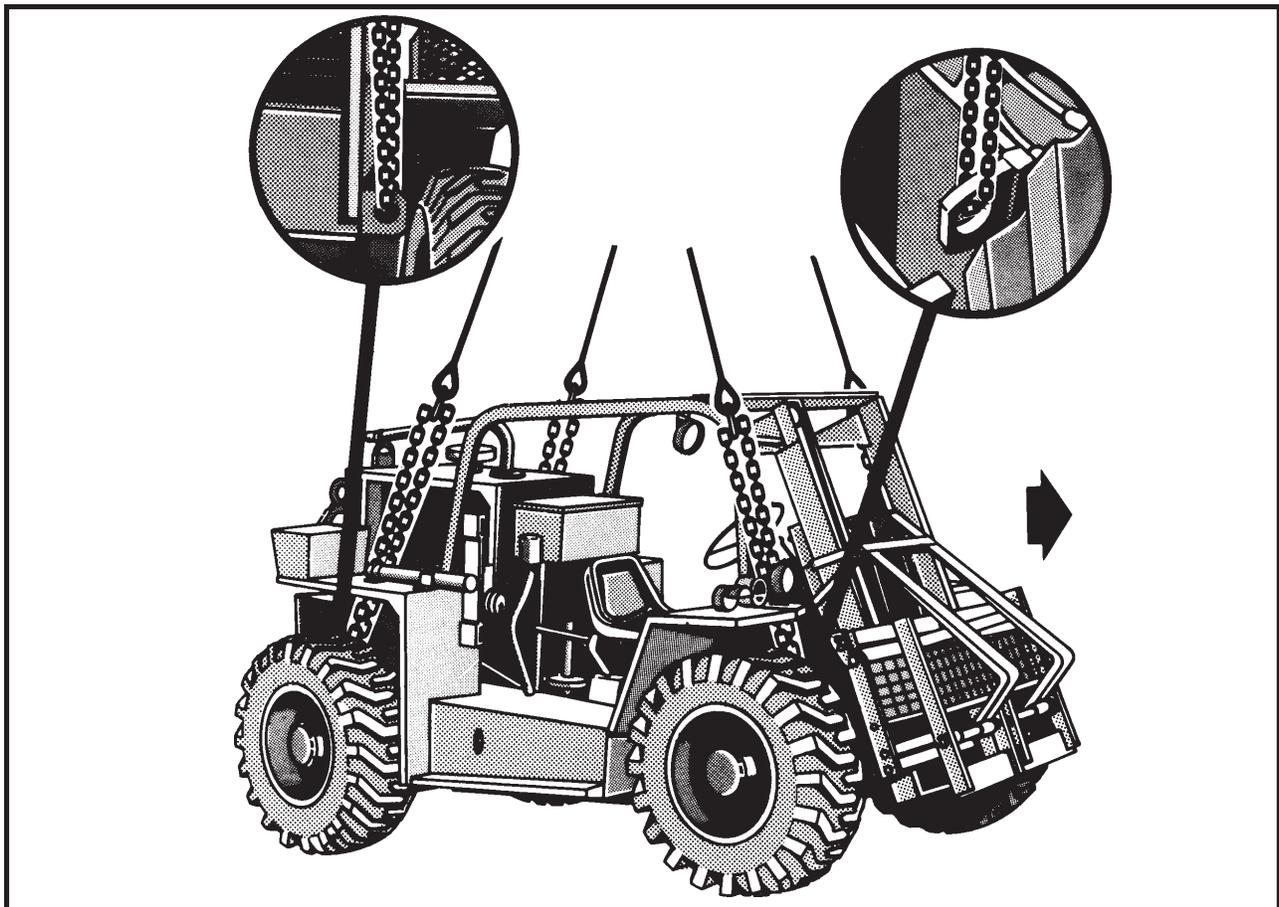
(c) Raise the fork tines 1 foot above the ground. Lift the fork ends upward and secure to the lift cylinder frame using the CGU-1B straps.

(d) Tape the end of the exhaust pipe.

(2) Rigging. Rig the load according to the steps in Figure 8-21.

(3) Hookup. The hookup team stands on top of the falling objects protection system (FOPS). The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) Derigging. Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).



RIGGING STEPS

1. Position apex fitting on top of the falling object protection system (FOPS). Route outer sling legs 1 and 2 to the front of the forklift and inner sling legs 3 and 4 to the rear of the engine area. Sling legs 1 and 3 must be on the left side of the load.

2. Loop the chain end of sling leg 1 through the left front lift provision (not the tie-down provision) that is located directly above the forward axle housing between the left front tire and the hydraulic cylinder. Place the correct link from Table 8-21 in the grab hook. Repeat with sling leg 2 on the right front lift provision.

3. Loop the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 8-21 in the

grab hook. Repeat with sling leg 4 and the right rear lift provision. Secure excess chain with tape or nylon cord.

4. Pull the front sling legs up and tape or tie (breakaway technique) the grab links to the front side of the upper light brackets to ensure the sling legs do not become entangled.

5. Pull the aft sling legs together on top of the engine compartment and tie or tape (breakaway technique) the two grab links together.

6. Cluster and tie or tape (breakaway technique) all sling legs together on top of the FOPS to prevent entanglement during hookup and lift-off.

Figure 8-21. Truck, Forklift, RT4000

8-23. MHE-270/MHE-271 Truck, Forklift, RT4000

a. Applicability. The following items in Table 8-22 are certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-22. MHE-270/MHE-271 Truck, Forklift, RT4000

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
MHE-270 without cab, NSN 3930-01-330-8907	11,700	25K	40/3	125
MHE-271 with cab, NSN 3930-01-330-8906	11,920	25K	40/3	125

b. Materials. The following materials are required to rig this load:

- (1) Sling set (25,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.

c. Personnel. Two persons can prepare and rig each load in 15 minutes.

d. Procedures. The following procedures apply to this load:

(1) **Preparation.** Prepare the load using the following steps:

- (a) Tilt the mast back as far as it will go.
- (b) Ensure the fuel tank is less than 3/4 full.
- (c) Tilt the tow bar up as far as it will go. Ensure both pins which hold the tow bar in an upright position are

disengaged. The tow bar must be free to rotate.

(d) Place the transmission in neutral and straighten the front wheels.

(e) Engage the parking brake.

(f) Secure the doors, chains, fire extinguisher, and all loose equipment with tape or Type III nylon cord.

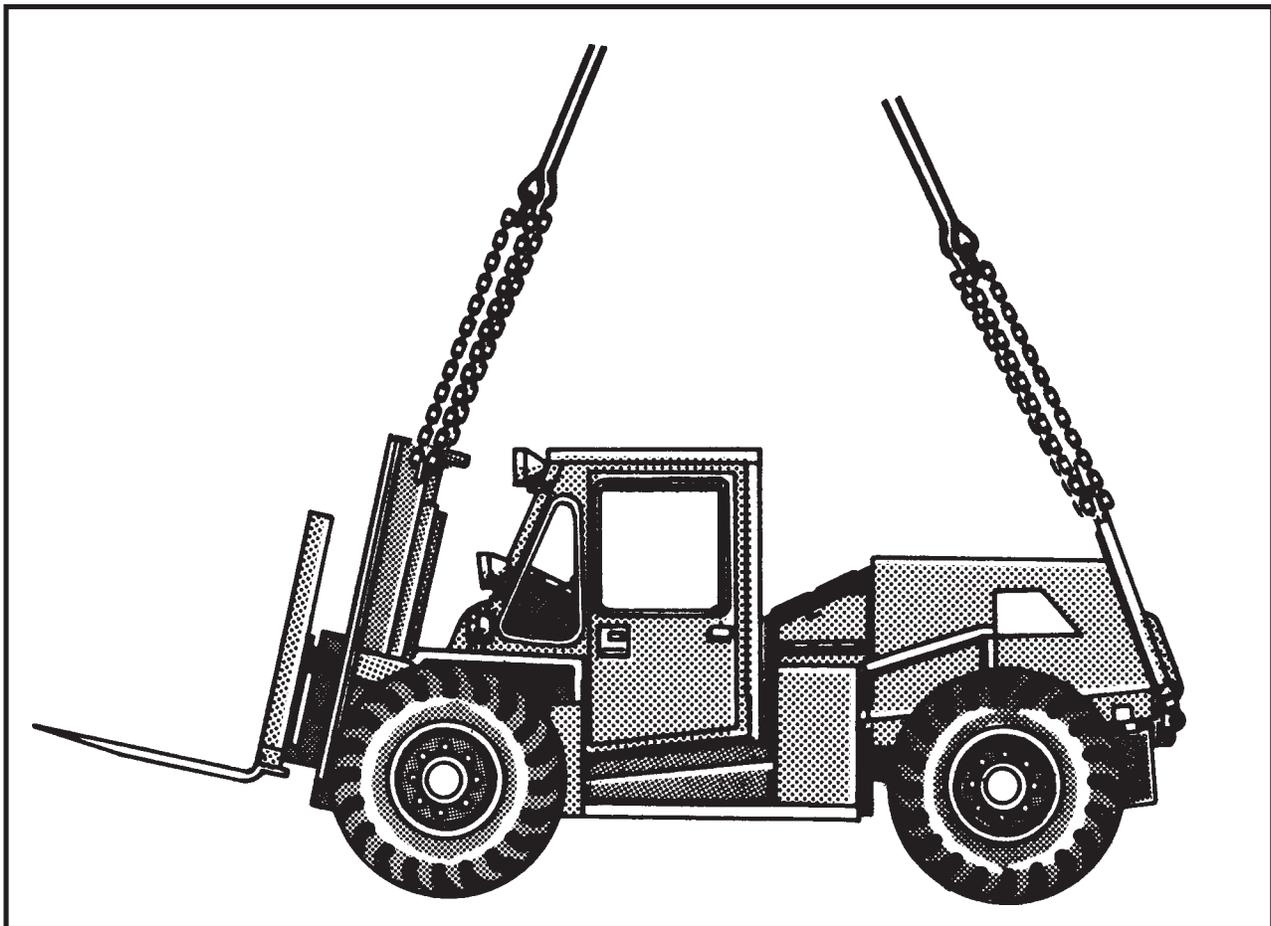
(g) Tape all lights, windows and glass fixtures.

(h) Tape the windshield wipers to the windshield.

(2) **Rigging.** Rig the load according to the steps in Figure 8-22.

(3) **Hookup.** The hookup team stands on the rear of the forklift. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).



RIGGING STEPS

1. Position the apex fitting on top of the rear of the forklift. Route outer sling legs 1 and 2 to the mast and inner sling legs 3 and 4 to the tow bar. Sling legs 1 and 3 must be on the left side of the load.

2. Loop the chain end of sling leg 1 through the left front lift provision located at the top of the left mast. Place the correct link from Table 8-22 in the grab hook. Repeat with sling leg 2 and the right front lift provision.

3. Loop the chain end of sling leg 3 down through the

left rear lift provision located on the left side of the tow bar. Place the correct link from Table 8-22 in the grab hook. Repeat with sling leg 4 and the right rear lift provision.

4. Pull the front sling legs up and tape or tie (breakaway technique) to the top of the mast to ensure the sling legs do not become entangled.

5. Cluster and tie or tape (breakaway technique) all sling legs together on top of the forklift to prevent entanglement during hookup and lift-off.

Figure 8-21. Truck, Forklift, RT4000

8-24. Truck, Forklift, MC-6000

a. Applicability. The following item in Table 8-23 is certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-23. Truck, Forklift, MC-6000

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
MC-6000 Forklift	19,800	40K	3/16	85

b. Materials. The following materials are required to rig this load:

- (1) Sling set (40,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (5) Tie-down strap, CGU-1B (4 each).
- (6) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.

c. Personnel. Two persons can prepare and rig each load in 10 minutes.

d. Procedures. The following procedures apply to this load:

(1) Preparation. Prepare the load using the following steps:

- (a) Position the forks so they are sitting on the travel

blocks and are tilted all the way aft.

(b) Ensure the fuel tank is less than 3/4 full. Place the transmission in neutral and engage the parking brake.

(c) Route two CGU-1/B cargo tie-down straps around the rear access doors.

(d) Route two CGU-1/B cargo tie-down straps around the engine access doors.

(e) Secure the tool box lid with tape or Type III nylon cord.

(2) Rigging. Rig the load according to the steps in Figure 8-23.

(3) Hookup. The hookup team stands on top of the engine deck. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) Derigging. Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).

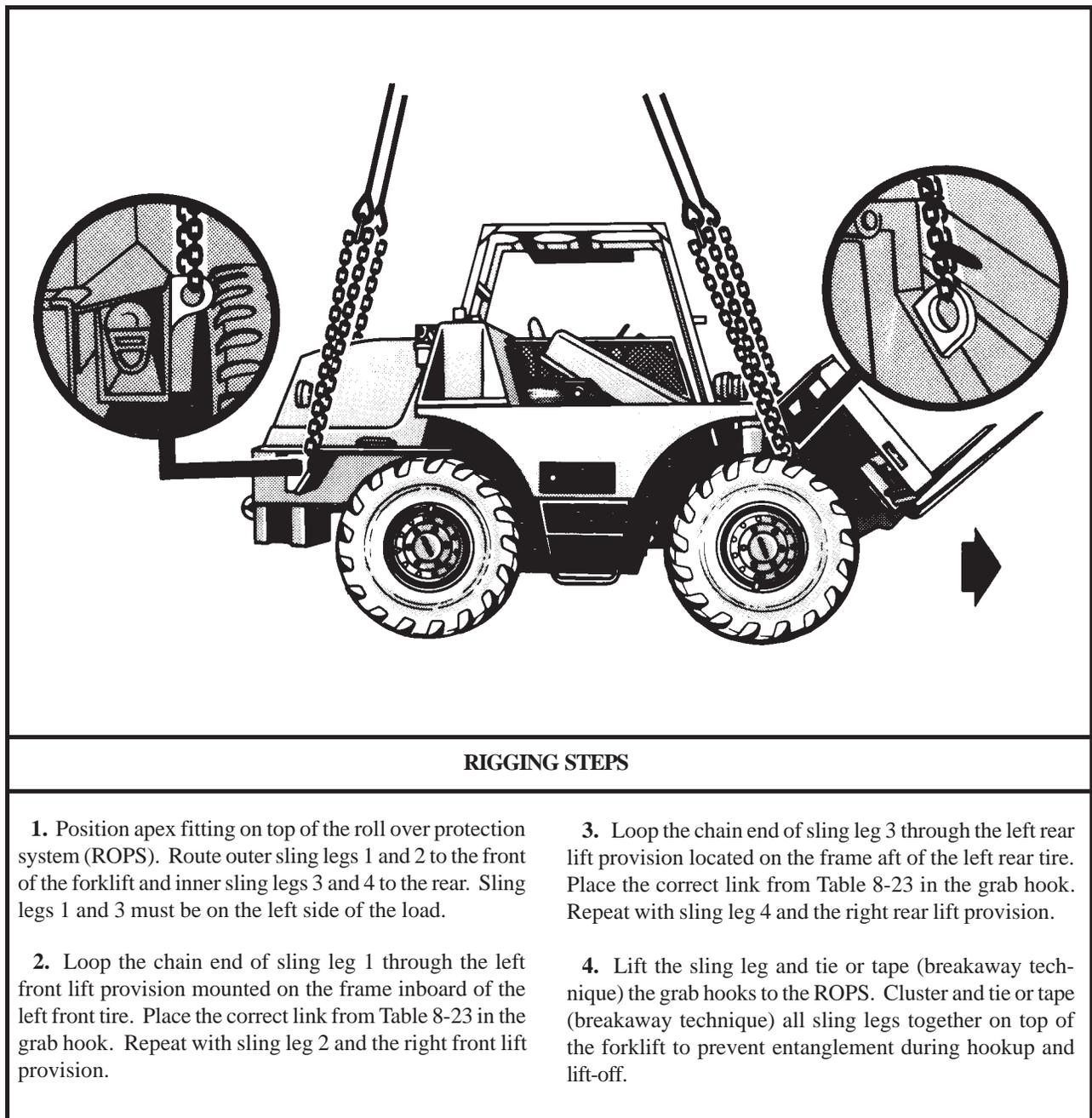


Figure 8-23. Truck, Forklift, MC-6000

8-25. Extendable Boom Forklift (EBFL)

a. Applicability. The following item in Table 8-24 is certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-24. Extendable Boom Forklift (EBFL)

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Extendable Boom Forklift, (EBFL), TAMCN B2561	25,640	40K	3/20	105

b. Materials. The following materials are required to rig this load:

- (1) Sling set (40,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (5) Tie-down strap, cargo, CGU-1/B (as required).

c. Personnel. Two persons can prepare and rig each load in 10 minutes.

d. Procedures. The following procedures apply to this load:

(1) **Preparation.** Prepare the load using the following steps:

(a) Secure the forks against the carriage using the CGU-1/Bs.

(b) Raise the carriage 10 inches off the ground, retract and raise the boom.

(c) Set the parking brake.

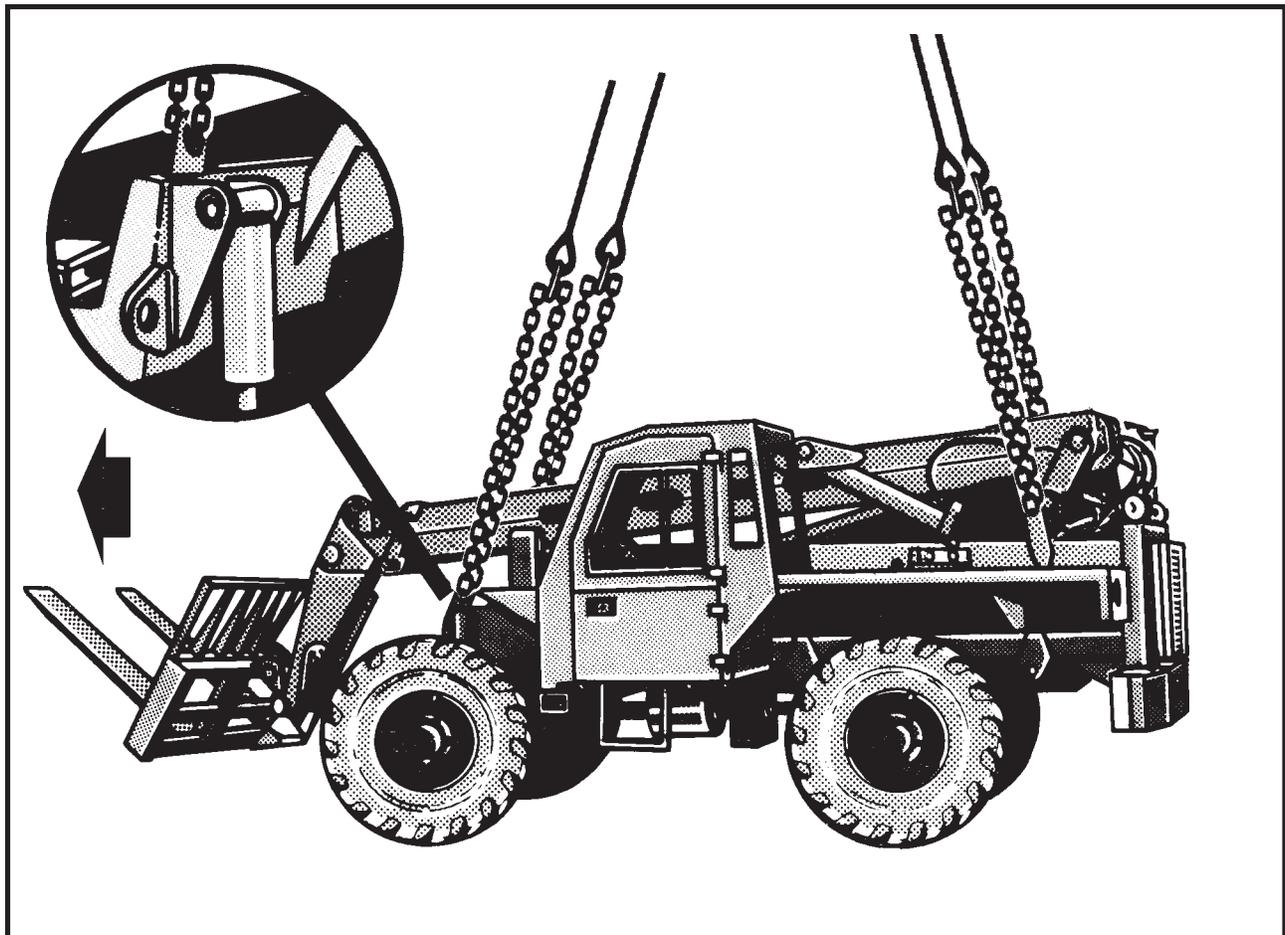
(d) Place the gear selector lever in neutral.

(e) Tape the exhaust pipe end.

(2) **Rigging.** Rig the load according to the steps in Figure 8-24.

(3) **Hookup.** The hookup team stands on the falling objects protection system (FOPS). The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).



RIGGING STEPS

1. Position the apex fitting on top of the falling object protection system (FOPS). Route outer sling legs 1 and 2 to the front of the EBFL and inner sling legs 3 and 4 to the rear of the EBFL. Sling legs 1 and 3 must be on the left side of the load.

2. Loop the chain end of sling leg 1 through the left front lift provision. Place the correct link from Table 8-24 in the grab hook. Repeat with sling leg 2 and the right front lift provision.

3. Loop the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 8-24 in the grab hook. Repeat with sling leg 4 and the right rear lift provision. Secure excess chain with tape or Type III nylon cord.

4. Cluster and tie or tape (breakaway technique) all sling legs together on top of the FOPS to prevent entanglement during hookup and lift-off.

Figure 8-24. Extensible Boom Forklift (EBFL)

8-26. Welding Shop on M200A1 Trailer

a. Applicability. The following item in Table 8-25 is certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-25. Welding Shop on M200A1 Trailer

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Welding Shop on M200A1	7,220	10K	3/17	120

b. Materials. The following materials are required to rig this load:

- (1) Sling set (10,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (5) Webbing, nylon, tubular, 1/2-inch.

c. Personnel. Two persons can prepare and rig each load in 20 minutes.

d. Procedures. The following procedures apply to this load:

(1) **Preparation.** Prepare the load using the following steps:

(a) Secure all compressed gas cylinders to trailer with nylon cord. Ensure all the caps are properly installed.

(b) Secure the safety chains to tow bar of trailer with tape or Type III nylon cord.

(c) Secure rear outriggers in position by routing 1/2-inch tubular nylon over rear deck and under engine housing and tie on outriggers below step plate.

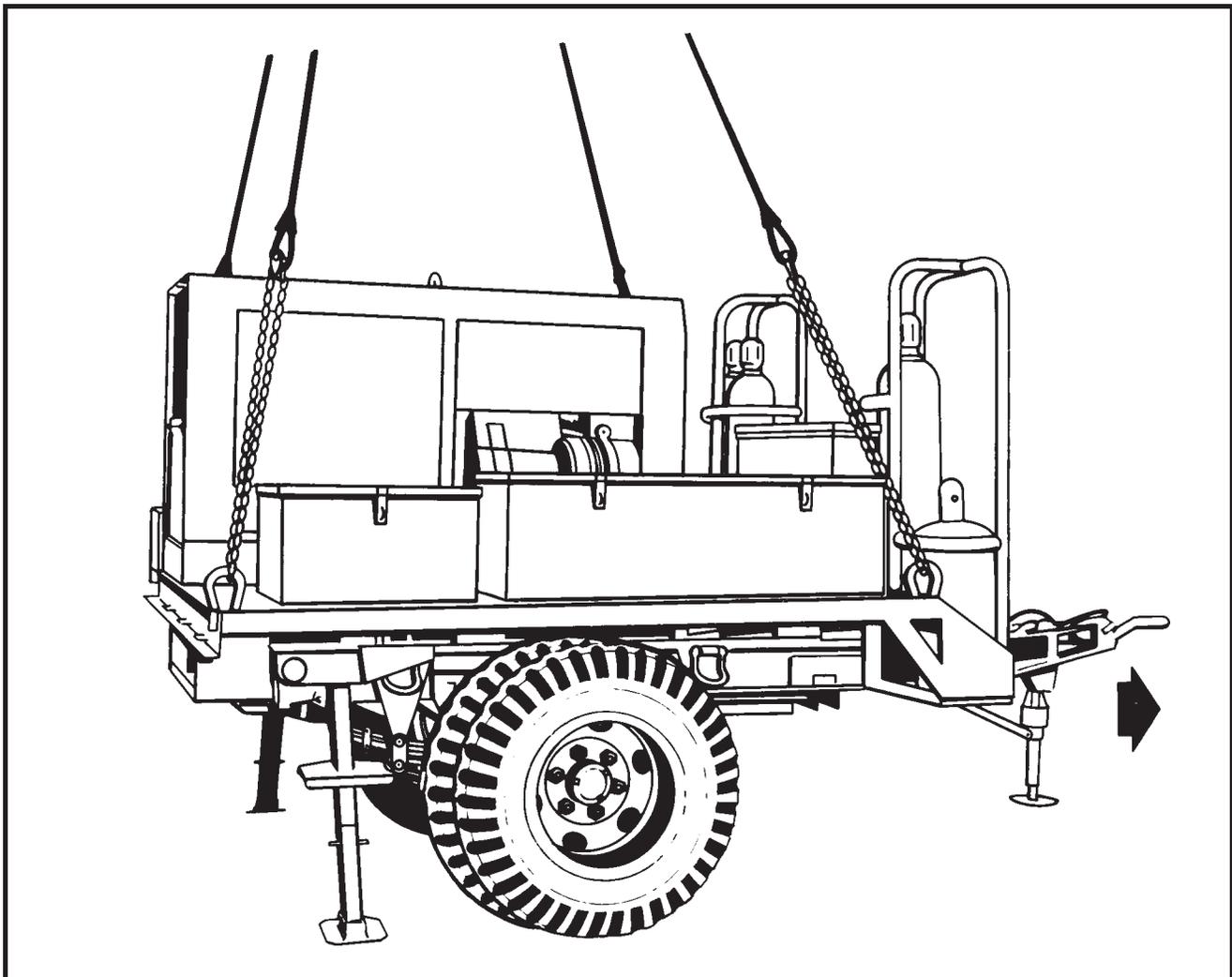
(d) Secure engine doors and control panel cover by routing nylon cord around entire engine and tying cord.

(e) The front leg must be in full down position.

(2) **Rigging.** Rig the load according to the steps in Figure 8-25.

(3) **Hookup.** The hookup team stands on top of the trailer. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).



RIGGING STEPS

1. Position apex fitting on top of welding shop. Route outer sling legs 1 and 2 to the front of the trailer and inner sling legs 3 and 4 to the rear of the trailer. Sling legs 1 and 3 should be on the left side of the load.

2. Loop the chain end of sling leg 1 through the left front lift provision located on the left front corner of the trailer. Place the correct link from Table 8-25 in the grab hook. Repeat with sling leg 2 on the right front lift provision.

3. Loop the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 8-25 in the grab hook. Repeat with sling leg 4 on the right rear lift provision. Secure excess chain with tape or nylon cord.

4. Cluster and tie or tape (breakaway technique) all sling legs together to prevent entanglement during hookup and lift-off.

Figure 8-25. Welding Shop on M200A1 Trailer

8-27. 250 CFM Air Compressor

a. Applicability. The following item in Table 8-26 is certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-26. 250 CFM Air Compressor

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Compressor, Air, 250 CFM, LIN E72804	7,425	10K	3/15	100

b. Materials. The following materials are required to rig this load:

- (1) Sling set (10,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (5) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.

c. Personnel. Two persons can prepare and rig each load in 20 minutes.

d. Procedures. The following procedures apply to this load:

(1) **Preparation.** Prepare the load using the following steps:

- (a) Engage parking brake. Secure light cables with

tape or nylon cord. Tie off hoses on reels to prevent unrolling. Close and latch all doors and lids.

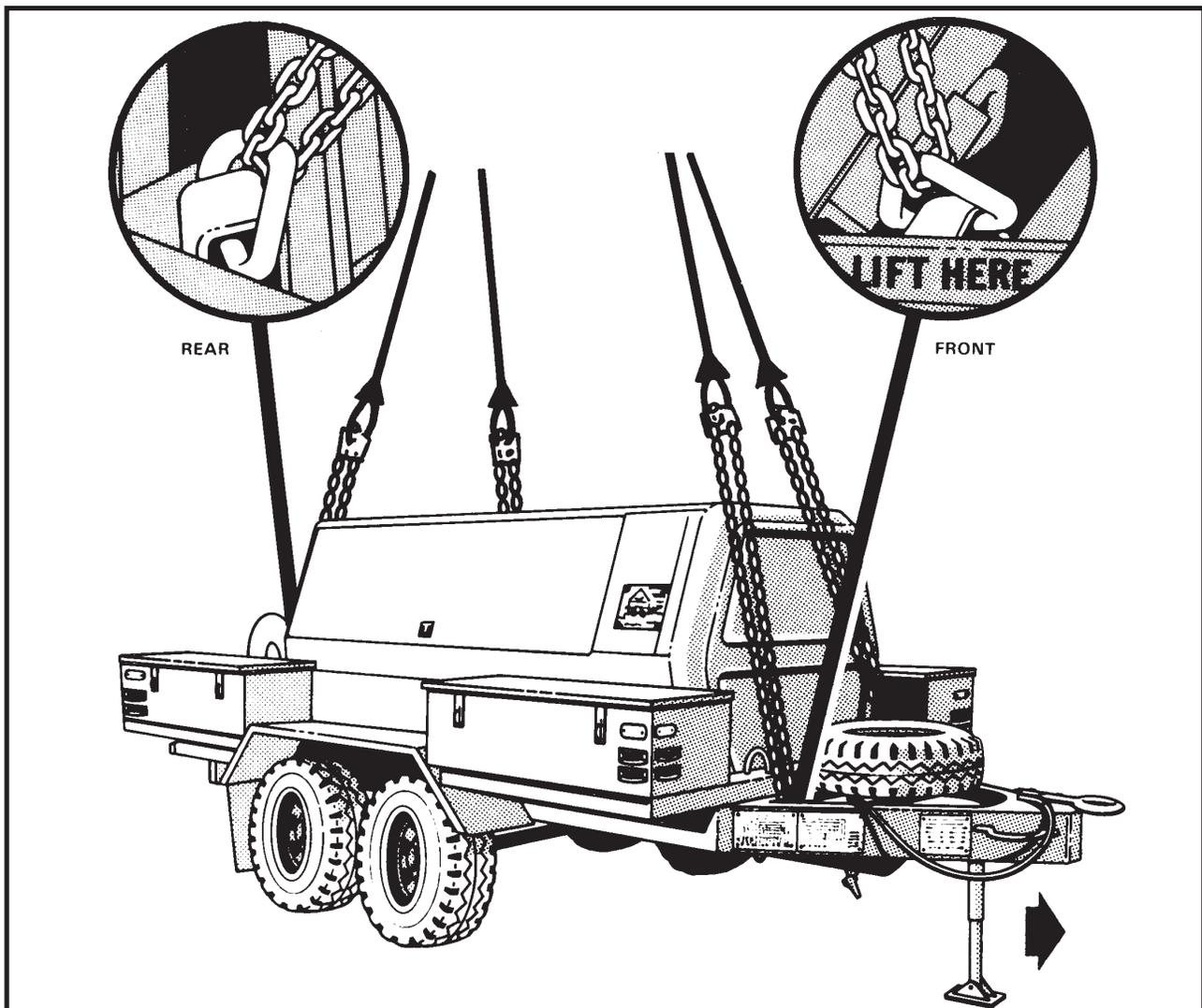
(b) Ensure fuel cap is secure. Pad front corners of shelter along bolt lines with felt and tape.

(c) Tape or tie the lift provisions in the UP position to prevent fouling.

(2) **Rigging.** Rig the load according to the steps in Figure 8-26.

(3) **Hookup.** The hookup team stands on top of the trailer. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).



RIGGING STEPS

1. Carefully place apex fitting on top of the compressor. Route outer sling legs 1 and 2 to the front of the trailer and the inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.

2. Loop the chain end from sling leg 1 through the left front lift provision on the tongue of the trailer. Place the correct link from Table 8-26 in the grab hook. Repeat this procedure for sling leg 2 on the right side of the tongue.

3. Loop the chain end from sling leg 3 through the left rear lift provision. Place the correct link from Table 8-26 in the grab hook. Repeat this procedure for sling leg 4. Tape or tie (breakaway technique) the sling legs to prevent fouling the hose reels. Secure excess chain with tape or nylon cord.

4. Cluster and tie or tape (breakaway technique) all sling legs together to prevent entanglement during hookup and lift-off.

Figure 8-26. 250 CFM Air Compressor

8-28. Pneumatic Tool and Compressor Outfit / Hydraulic Pioneer Tool Outfit (PTO) on M353 Trailer

a. Applicability. The following items in Table 8-27 are certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-27. Tool Outfits on M353 Trailer

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Pneumatic Tool and Compressor, TAMCN B0395	8,040	10K	3/18	75
Hydraulic Pioneer Tool Outfit (PTO)	6,740	10K	3/20	100

b. Materials. The following materials are required to rig this load:

- (1) Sling set (10,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (5) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.

c. Personnel. Two persons can prepare and rig each load in 15 minutes.

d. Procedures. The following procedures apply to this load:

(1) **Preparation.** Prepare the load using the following steps:

- (a) Engage both hand brakes.

(b) Ensure fuel cap is secure. Secure all loose gear and doors.

(c) Secure the light cable to the drawbar with Type III nylon cord or tape.

(d) Tape all lights, reflectors, and glass fixtures.

(e) Secure the two small wheels

(2) **Rigging.** Rig the load according to the steps in Figure 8-27.

(3) **Hookup.** The hookup team stands on top of the trailer. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).

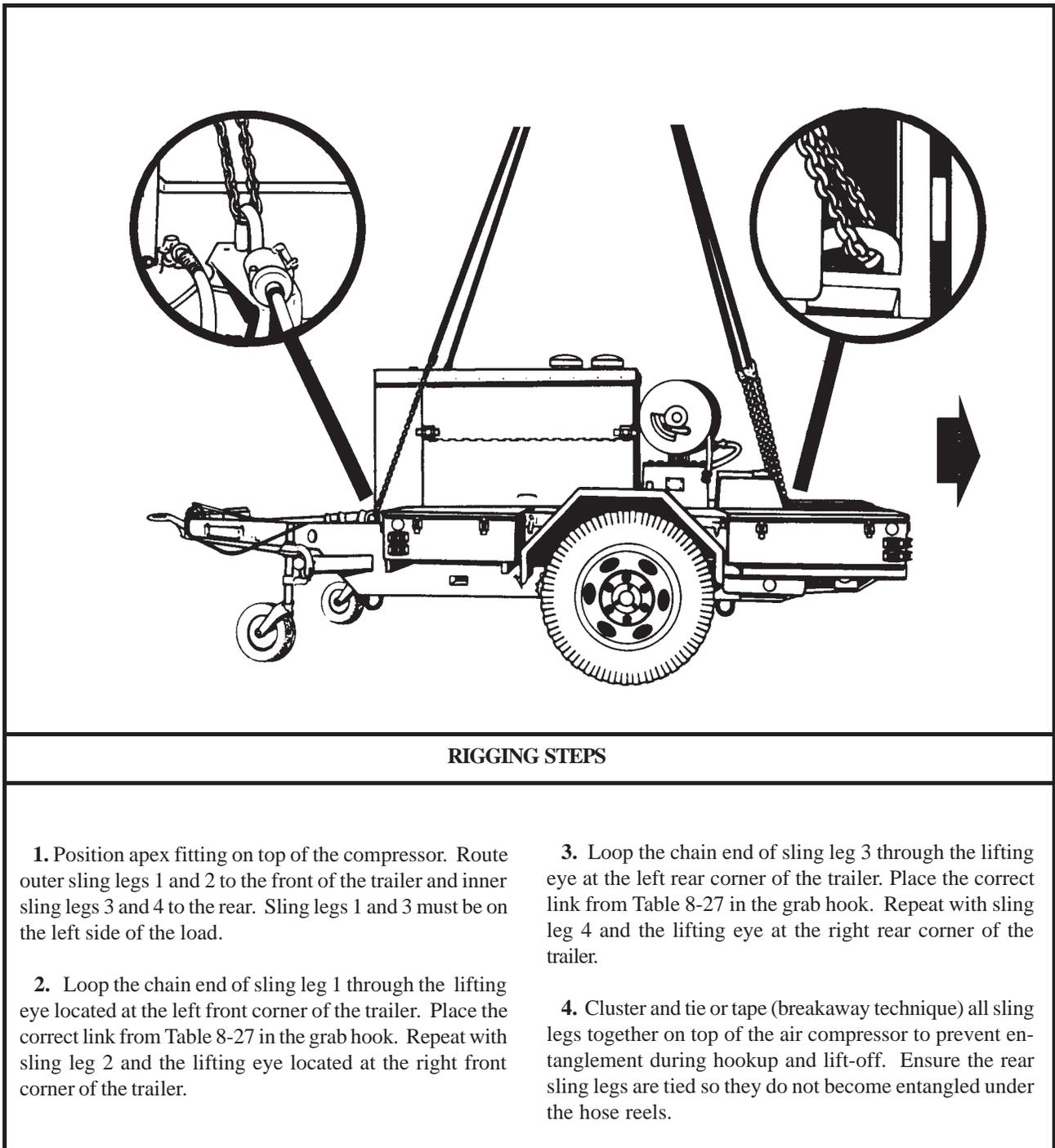


Figure 8-27. Tool Outfits on M353 Trailer

8-29. Fuel Dispensing System, Tactical Airfield (TAFDS)

a. Applicability. The following item in Table 8-28 is certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-28. Fuel Dispensing System, Tactical Airfield (TAFDS)

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Pump, 600 gallon per minute, TAFDS	3,500	15K	5/5	60

b. Materials. The following materials are required to rig this load:

- (1) Sling set (15,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.

c. Personnel. Two persons can prepare and rig each load in 15 minutes.

d. Procedures. The following procedures apply to this load:

(1) **Preparation.** Prepare the load using the following steps:

- (a) Secure the battery cover, inlet plugs, and outlet plugs with tape or Type III nylon cord.

- (b) Tape the engine intake and exhaust openings.

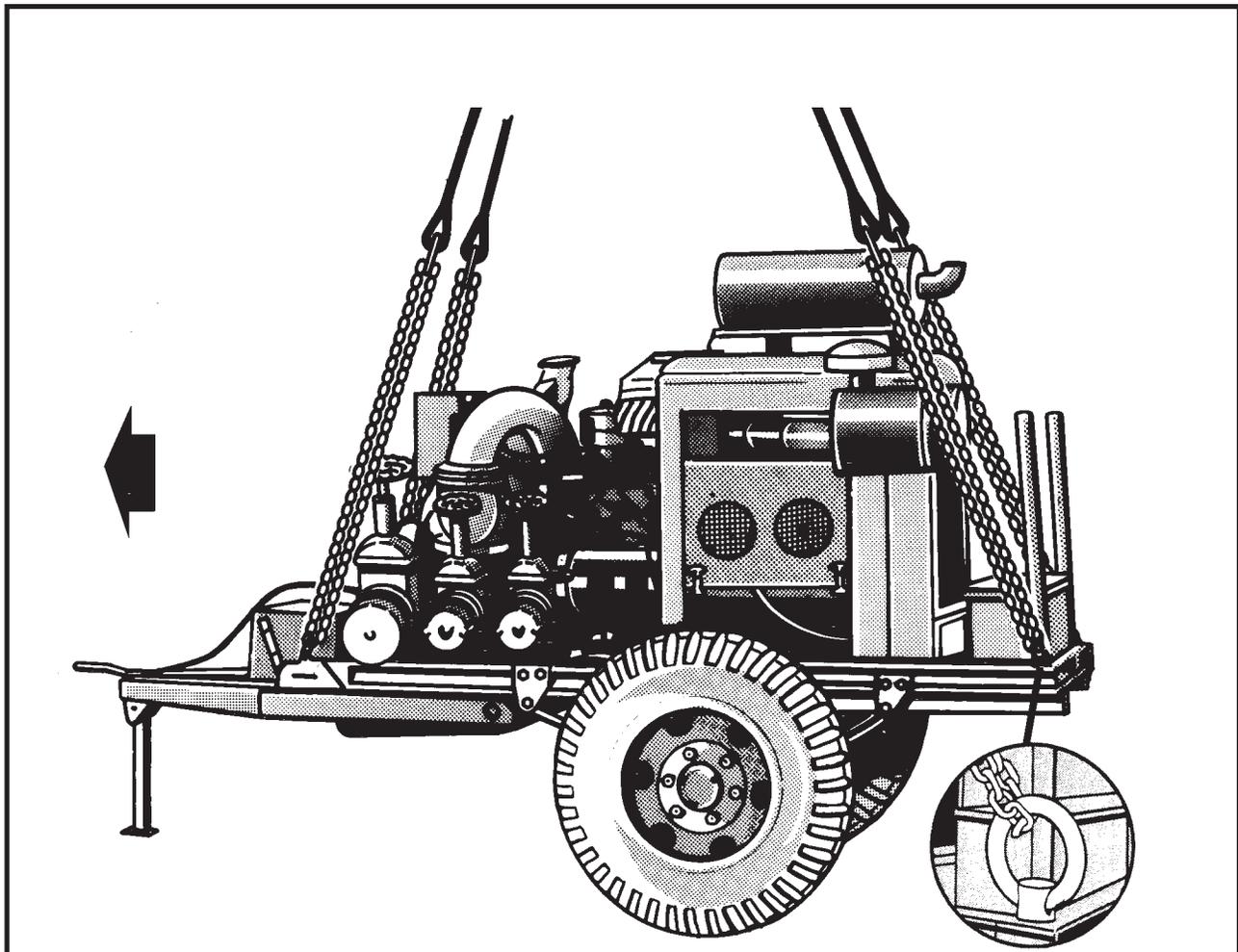
- (c) Secure the canvas cover on the pump with Type III nylon cord.

- (d) Engage one hand brake.

(2) **Rigging.** Rig the load according to the steps in Figure 8-28.

(3) **Hookup.** The hookup team stands on the pump tires. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).



RIGGING STEPS

1. Position apex fitting on top of the pump. Route outer sling legs 1 and 2 to the front of the trailer and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.

2. Loop the chain end of sling leg 1 through the left front lift provision located on the left front corner of the trailer. Place the correct link from Table 8-28 in the grab hook. Repeat with sling leg 2 and the right front lift provision.

3. Loop the chain end of sling leg 3 through the left rear lift provision located on the left rear corner of the trailer. Place the correct link from Table 8-28 in the grab hook. Repeat with sling leg 4 and the right rear lift provision.

4. Cluster and tie or tape (breakaway technique) all sling legs together on top of the pump to prevent entanglement during hookup and lift-off.

Figure 8-28. Fuel Dispensing System, Tactical Airfield (TAFDS)

8-30. Bath Unit Mounted on the M103 Trailer

a. Applicability. The following item in Table 8-29 is certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-29. Bath Unit on M103 Trailer

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Bath Unit on M103 Trailer	4,800	15K	16/30	45

b. Materials. The following materials are required to rig this load:

- (1) Sling set (15,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.

c. Personnel. Two persons can prepare and rig each load in 15 minutes.

d. Procedures. The following procedures apply to this load:

(1) **Preparation.** Prepare the load using the following steps:

(a) Ensure all tanks are empty. Secure all tank covers and lids with tape or Type III nylon cord.

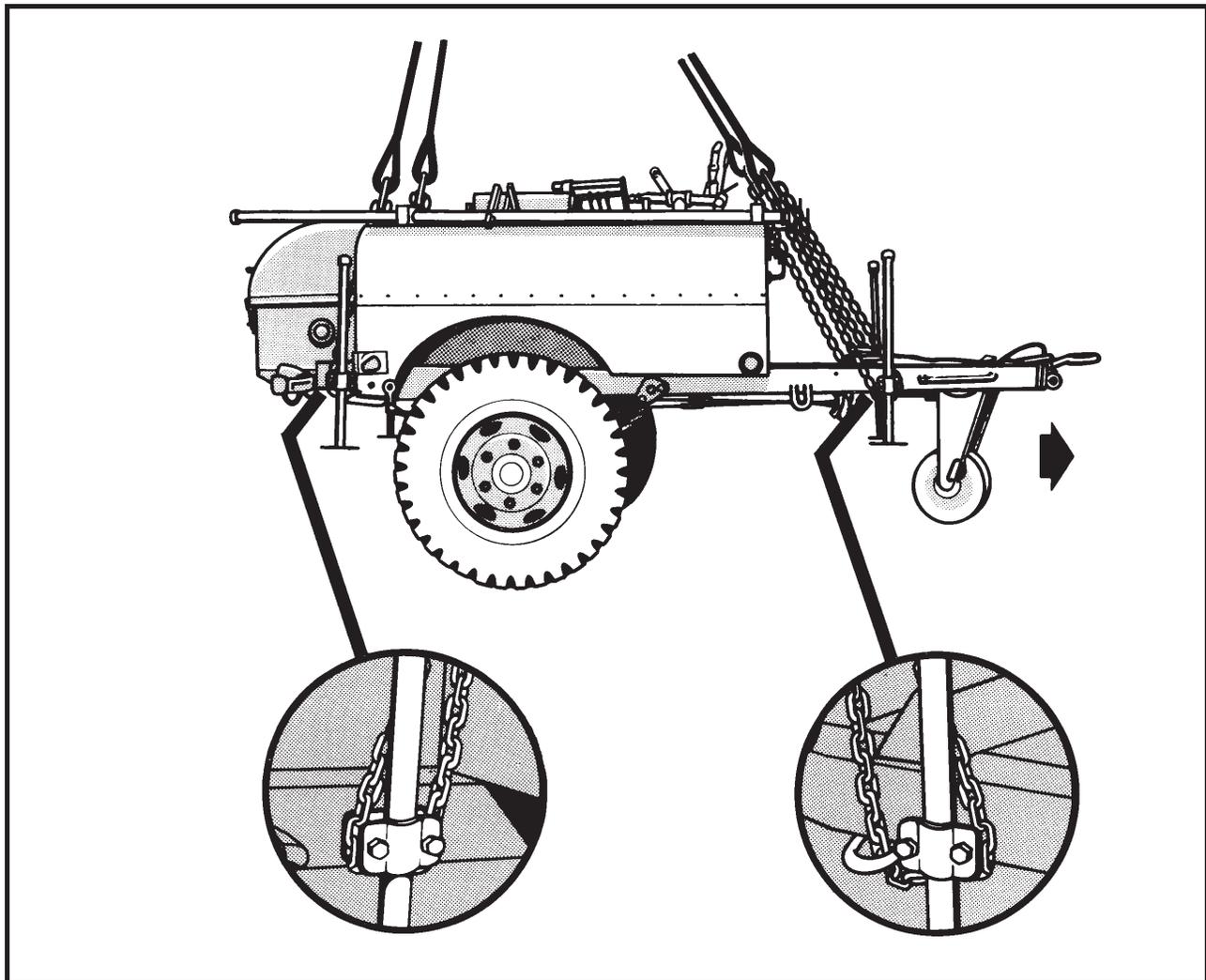
(b) Raise and secure the jack mounts 1 foot off the ground.

(c) Engage the parking brake.

(2) **Rigging.** Rig the load according to the steps in Figure 8-29.

(3) **Hookup.** The hookup team stands beside the bath unit. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).



RIGGING STEPS

1. Position apex fitting on top of the bath unit. Route outer sling legs 1 and 2 to the front of the trailer and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.

2. Loop the chain end of sling leg 1 through the left front steady jack eye and under the jack mount. Place the correct link from Table 8-29 in the grab hook. Repeat with sling leg 2 and the right front jack mount. Secure excess chain with tape or Type III nylon cord.

3. Loop the chain end of sling leg 3 around the left rear jack mount. Place the correct link from Table 8-29 in the grab hook. Repeat with sling leg 4 and the right rear jack mount. Secure excess chain with tape or Type III nylon cord.

4. Cluster and tie or tape (breakaway technique) all sling legs together on top of the bath unit to prevent entanglement during hookup and lift-off.

Figure 8-29. Bath Unit on M103 Trailer

8-31. Boat, Bridge Erection

a. Applicability. The following item in Table 8-30 is certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-30. Boat, Bridge Erection

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Boat, Bridge Erection, 27-foot	6,000	15K	4/4	60

b. Materials. The following materials are required to rig this load:

- (1) Sling set (15,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.

c. Personnel. Two persons can prepare and rig each load in 30 minutes.

d. Procedures. The following procedures apply to this load:

(1) **Preparation.** Prepare the load using the following steps:

(a) Remove and secure the canvas cover in the stern of the boat.

(b) Remove or secure all loose items of equipment.

(c) Attach the front section to the rear section of the boat.

(d) Tape all lights, gages, compass, and glass items.

(e) Ensure the shipping cradles are removed from both boat sections.

(2) **Rigging.** Rig the load according to the steps in Figure 8-30.

(3) **Hookup.** The hookup team stands on top of the boat. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).

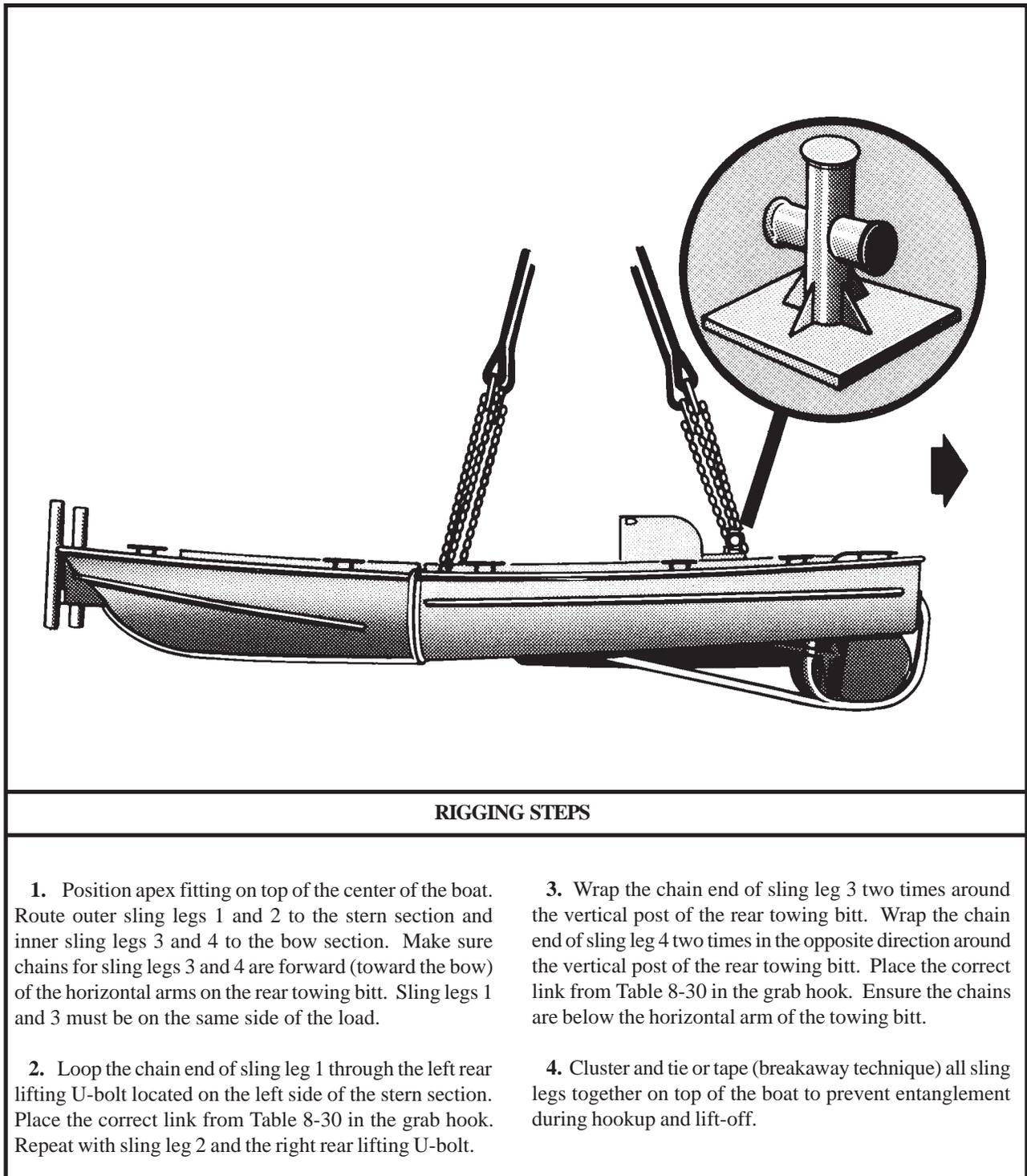


Figure 8-30. Boat, Bridge Erection

8-32. Bridge, Medium Girder, Dry Gap (MGB)

a. Applicability. The following item in Table 8-31 is certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-31. Medium Girder Bridge

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Medium Girder Bridge, Ramp Section, Palletized, TAMCN B0152	6,500	15K	10/5	70

b. Materials. The following materials are required to rig this load:

- (1) Sling set (15,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (5) Tie-down strap, cargo, CGU-1/B (as required).

c. Personnel. Two persons can prepare and rig each load in 20 minutes.

d. Procedures. The following procedures apply to this load:

(1) **Preparation.** Prepare the load using the following steps:

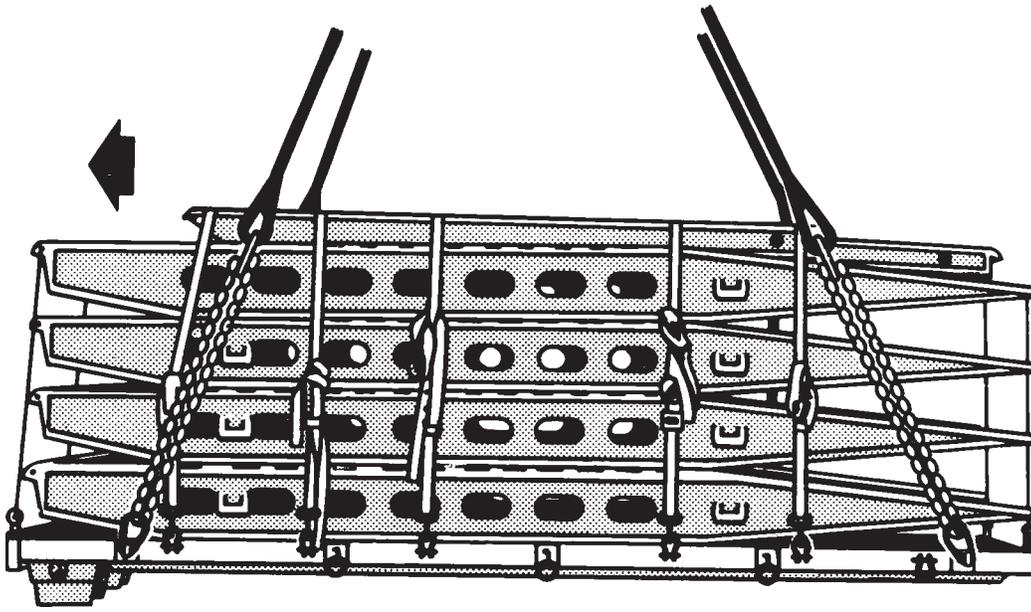
(a) The larger ends of the bridge sections are at the front of the load.

(b) Ensure all sections of the bridge are properly secured to the pallet using the cargo tie-down straps. Route two straps from the pallet forward end to the aft end. Route the remaining straps from one side of the pallet, over the ramp sections, and to the other side of the pallet. Tighten all tie-down straps.

(2) **Rigging.** Rig the load according to the steps in Figure 8-31.

(3) **Hookup.** The hookup team stands on top of the bridge ramp sections. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).



RIGGING STEPS

1. Position apex fitting on top of the ramp sections. Route outer sling legs 1 and 2 to the front of the load and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.

2. Loop the chain end of sling leg 1 through the pallet left front lift provision. Place the correct link from Table 8-31 in the grab hook. Repeat with sling leg 2 and the pallet right front lift provision. Secure excess chain with tape or nylon cord.

3. Loop the chain end of sling leg 3 through the pallet left rear lift provision. Place the correct link from Table 8-31 in the grab hook. Repeat with sling leg 4 and the pallet right rear lift provision.

4. Cluster and tie or tape (breakaway technique) all sling legs together on top of the bridge ramp sections to prevent entanglement during hookup and lift-off.

Figure 8-31. Medium Girder Bridge

8-33. Ribbon Bridge Ramp Bay

a. Applicability. The following item in Table 8-32 is certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-32. Ribbon Bridge Ramp Bay

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Ribbon Bridge, Ramp Bay	11,560	25K	3/60	90

b. Materials. The following materials are required to rig this load:

- (1) Sling set (25,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.

c. Personnel. Two persons can prepare and rig each load in 15 minutes.

d. Procedures. The following procedures apply to this load:

(1) **Preparation.** Prepare the load using the following steps:

(a) The shorter end of the bay section is the front of the load.

(b) Ensure all the bay latches are securely fastened.

(2) **Rigging.** Rig the load according to the steps in Figure 8-32.

(3) **Hookup.** The hookup team stands on top of the ramp bays. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).

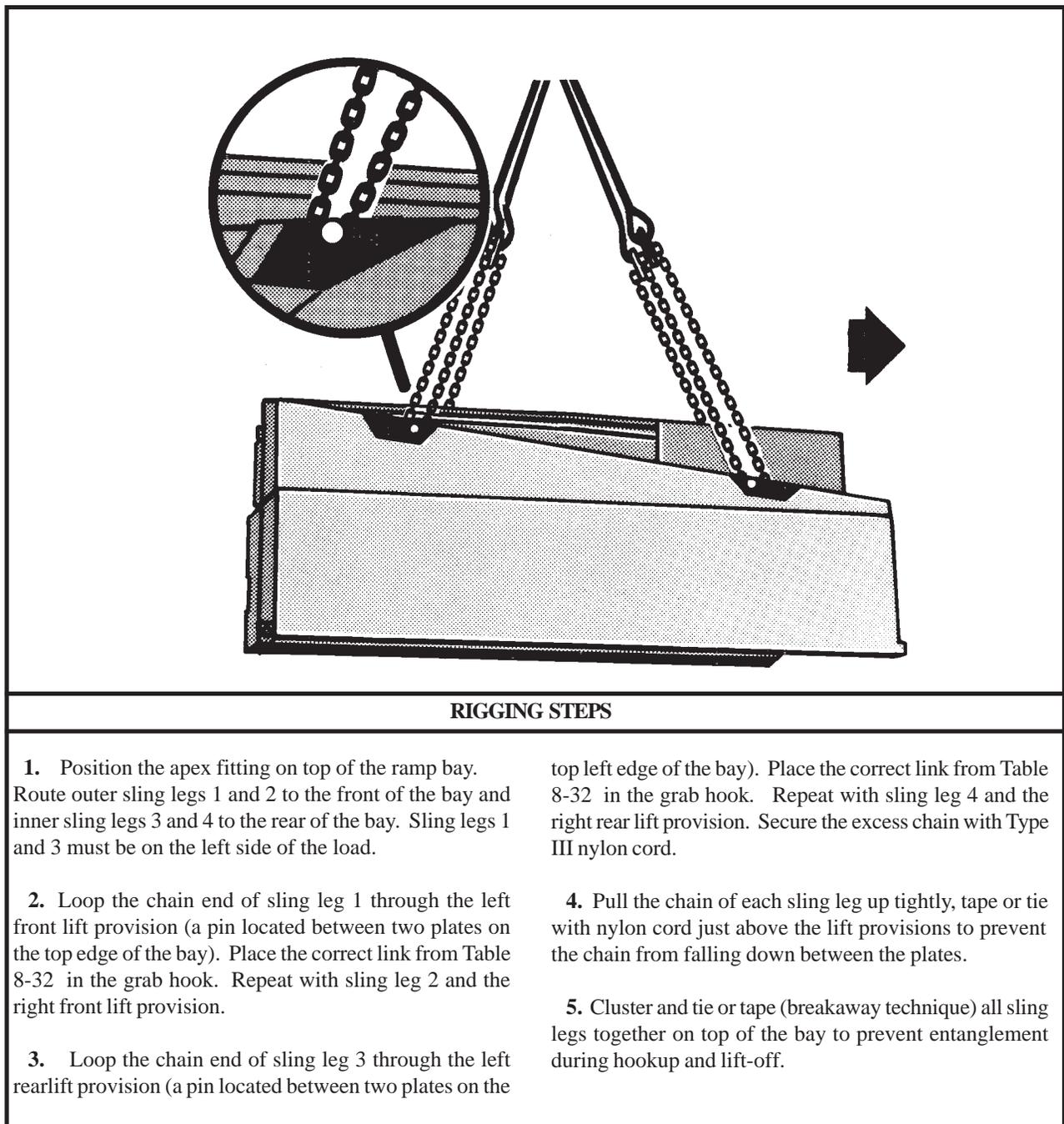


Figure 8-32. Ribbon Bridge Ramp Bay

8-34. Ribbon Bridge Interior Bay

a. Applicability. The following item in Table 8-33 is certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-33. Ribbon Bridge Interior Bay

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Ribbon Bridge, Interior Bay	11,800	25K	3/15	70

b. Materials. The following materials are required to rig this load:

- (1) Sling set (25,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.

c. Personnel. Two persons can prepare and rig each load in 15 minutes.

d. Procedures. The following procedures apply to this load:

(1) **Preparation.** Prepare the load using the following steps:

(a) The end with the roadway lock is the front of the load.

(b) Ensure all the bay latches are securely fastened.

(2) **Rigging.** Rig the load according to the steps in Figure 8-33.

(3) **Hookup.** The hookup team stands on top of the interior bays. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).

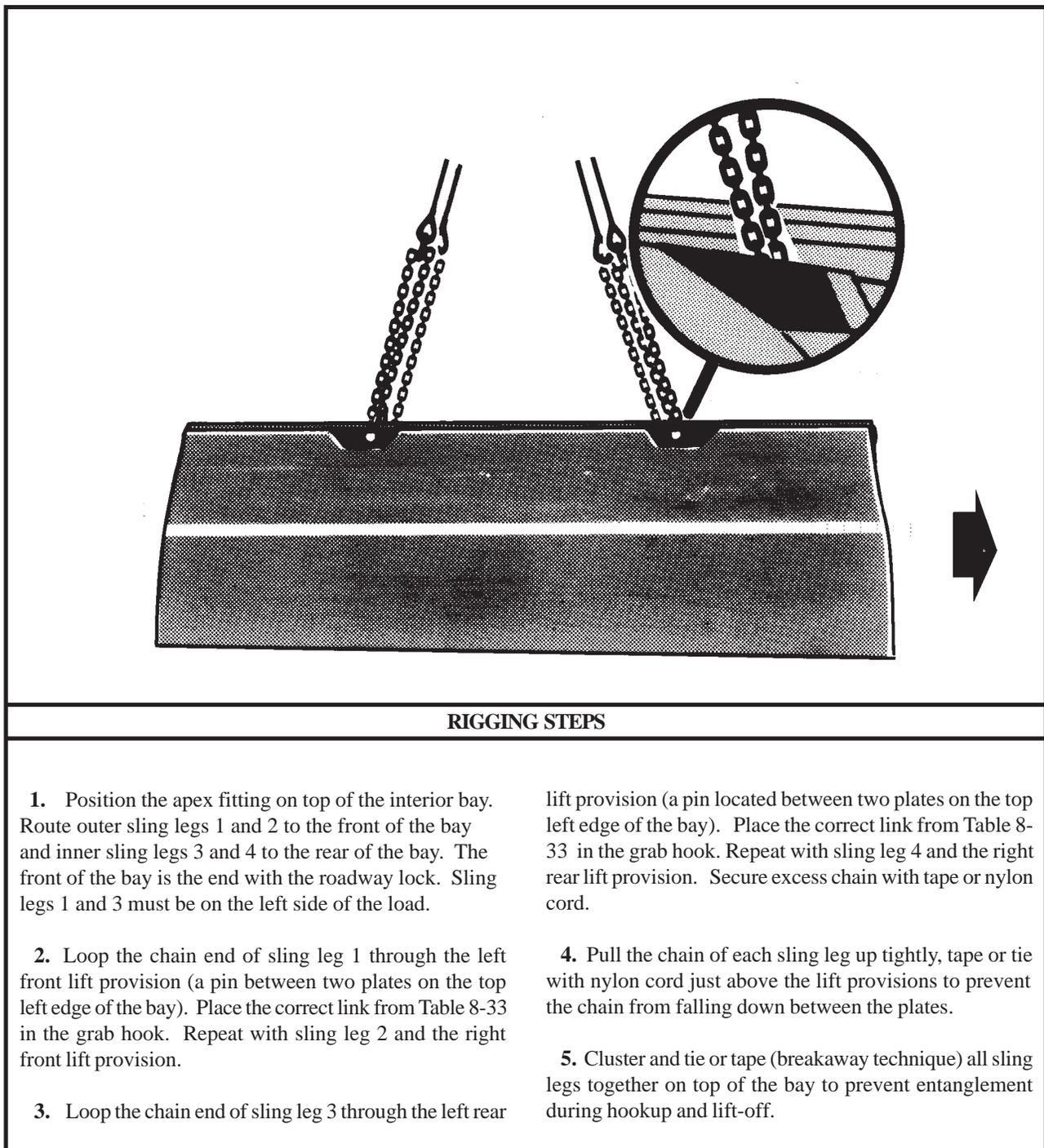


Figure 8-33. Ribbon Bridge Interior Bay

8-35. Water Purification Unit-Reverse Osmosis (ROWPU)

a. Applicability. The following item in Table 8-34 is certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-34. Water Purification Unit-Reverse Osmosis

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
MC257 Water Purification Unit-Reverse Osmosis, 600 gallons per hour (GPH), Skid Mounted, TAMCN B2064	7,400	15K	5/5	90

b. Materials. The following materials are required to rig this load:

- (1) Sling set (15,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.

c. Personnel. Two persons can prepare and rig each load in 15 minutes.

d. Procedures. The following procedures apply to this load:

(1) **Preparation.** Prepare the load using the following steps:

(a) The water pump end is the front of the load.

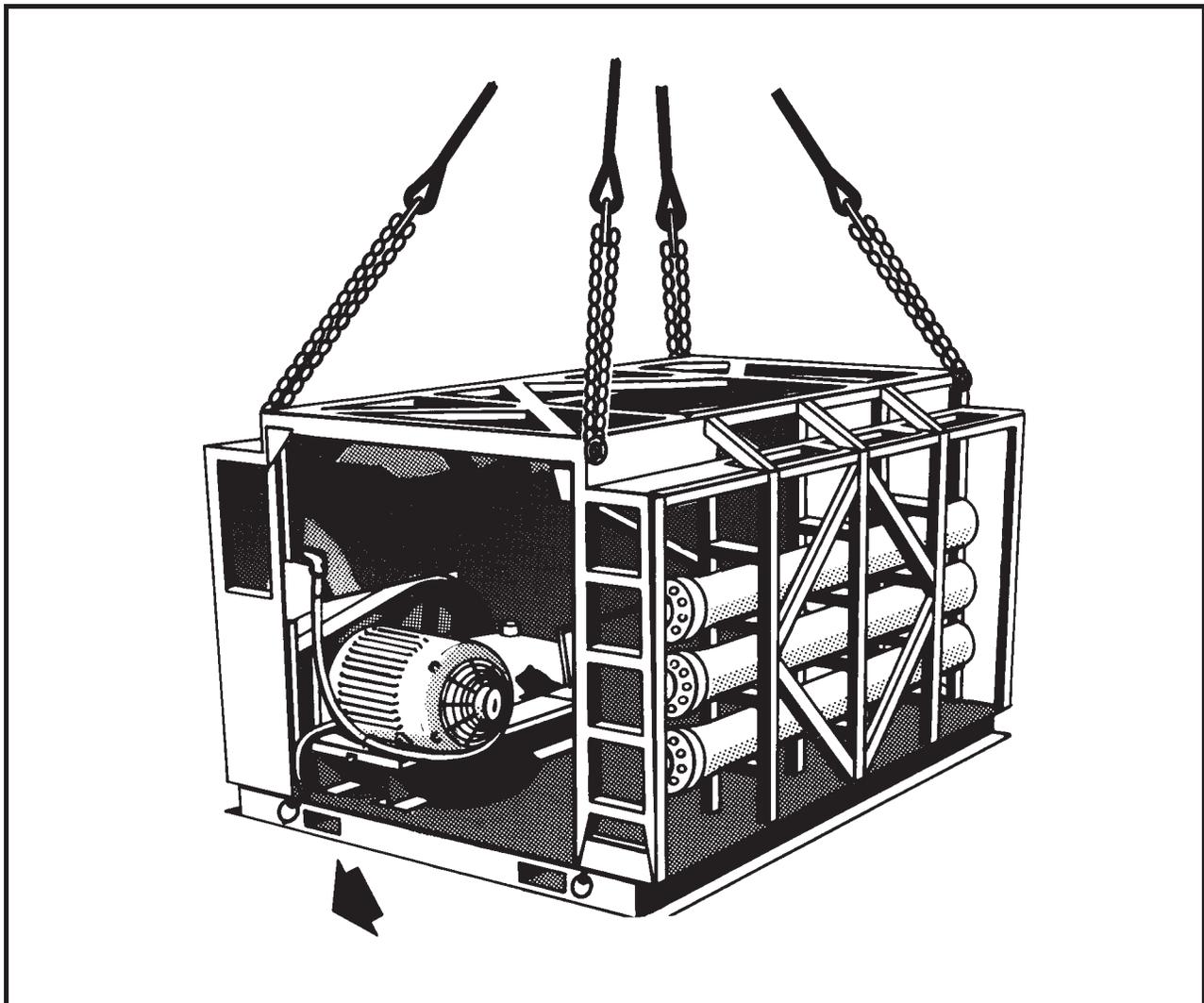
(b) Secure all containers, boxes, and other equipment with tape or Type III nylon cord.

(c) Tape all glass fixtures.

(2) **Rigging.** Rig the load according to the steps in Figure 8-34.

(3) **Hookup.** The hookup team stands on top of the unit. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).



RIGGING STEPS

1. Position apex fitting on top of the ROWPU unit. Route outer sling legs 1 and 2 to the front of the unit and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.
2. Loop the chain end of sling leg 1 through the left front lift ring on the top of the unit. Place the correct link from Table 8-34 in the grab hook. Repeat with sling leg 2 and the right front lift ring.
3. Loop the chain end of sling leg 3 through the left rear lift ring. Place the correct link from Table 8-34 in the grab hook. Repeat with sling leg 4 and the right rear lift ring.
4. Cluster and tie or tape (breakaway technique) all sling legs together on top of the unit to prevent entanglement during hookup and lift-off.

Figure 8-34. Water Purification Unit-Reverse Osmosis (ROWPU)

8-36. MS114 WFD Concrete Mixer

a. Applicability. The following item in Table 8-35 is certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-35. MS114 WFD Concrete Mixer

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
MS114WFD Concrete Mixer, TAMCN B1326	4,223	15K	50/30	70

b. Materials. The following materials are required to rig this load:

- (1) Sling set (15,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (5) Tie-down strap, cargo, CGU-1/B (as required).

c. Personnel. Two persons can prepare and rig each load in 10 minutes.

d. Procedures. The following procedures apply to this load:

(1) **Preparation.** Prepare the load using the following steps:

- (a) Secure all hoses, cables, or chains with tape or nylon cord.

(b) Secure the towbar in the raised/locked position.

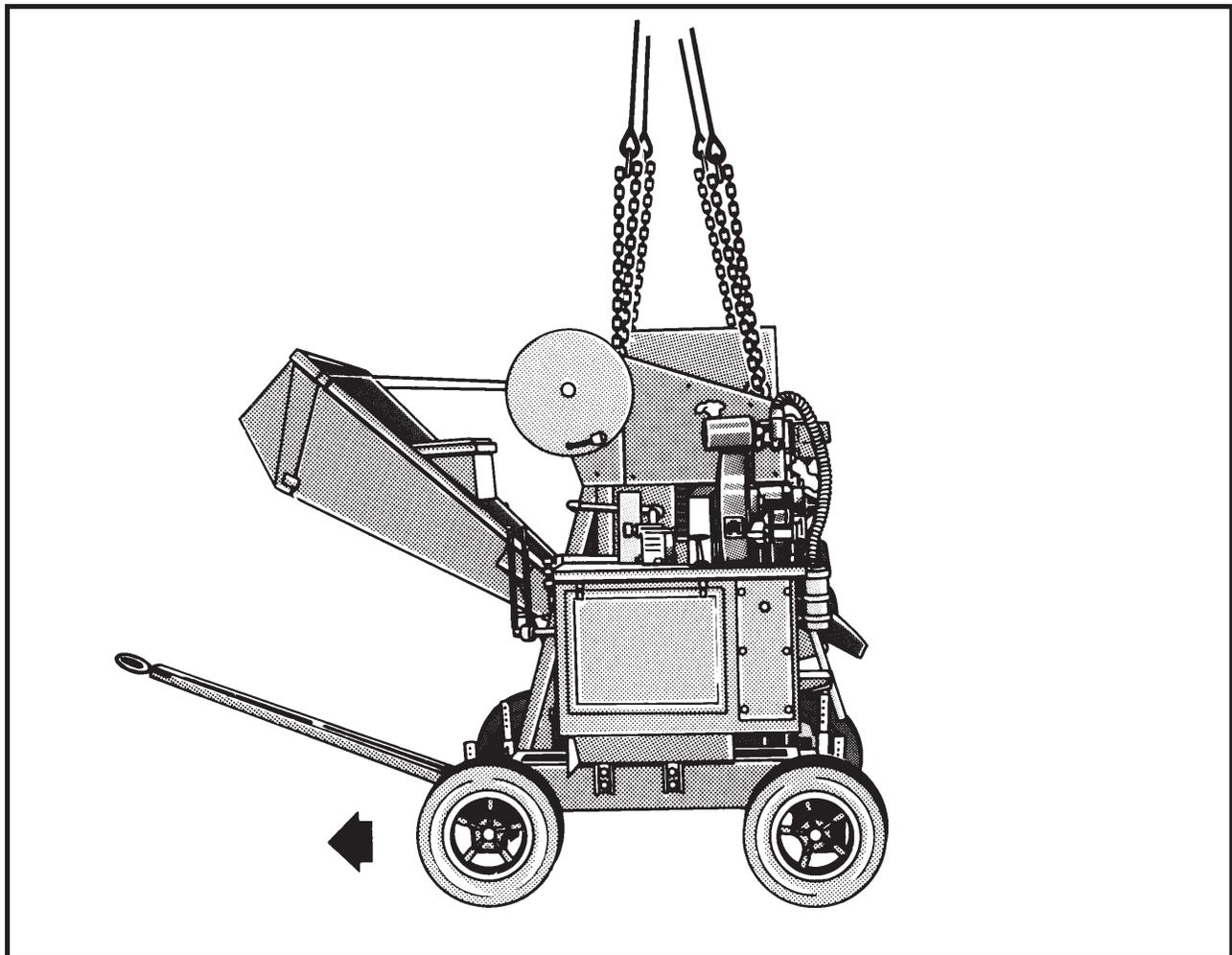
(c) Raise the scoop to the up position and secure the scoop elevating wheel with the tie-down strap.

(d) Since the mixer does not have a hand brake, loop a tie-down strap through a wheel rim and secure it to the frame to keep the wheel from turning.

(2) **Rigging.** Rig the load according to the steps in Figure 8-35.

(3) **Hookup.** The hookup team stands on top of the mixer. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).



RIGGING STEPS

1. Position the apex fitting on top of the mixer. Route outer sling legs 1 and 2 to the front of the mixer (towbar end) and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.

2. Loop the chain end of sling leg 1 through the left front U-bolt lift provision located on the left top side of the mixer. Place the correct link from Table 8-35 in the grab hook. Route the chain from the inboard side of the provision to the outboard side. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with tape or nylon cord.

3. Loop the chain end of sling leg 3 through the left rear U-bolt lift provision located on the left top side of the mixer. Place the correct link from Table 8-35 in the grab hook. Route the chain from the inboard side of the provision to the outboard side. Repeat with sling leg 4 and the right rear lift provision. Secure excess chain with tape or nylon cord.

4. Cluster and tie or tape (breakaway technique) all sling legs together on top of the mixer to prevent entanglement during hookup and lift-off.

Figure 8-35. MS114 WFD Concrete Mixer

8-37. Towed Rollers

a. Applicability. The following items in Table 8-36 are certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 8-36. Towed Rollers

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Roller, Towed, RO3402	4,600	10K	3/30	120
Roller, Hercules, PT-11	3,520	10K	3/3	85

b. Materials. The following materials are required to rig this load:

- (1) Sling set (10,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (5) Tie-down strap, cargo, CGU-1/B (as required).

c. Personnel. Two persons can prepare and rig each load in 10 minutes.

d. Procedures. The following procedures apply to this load:

(1) **Preparation.** Prepare the load using the following steps:

(a) Secure the drain plugs with tape.

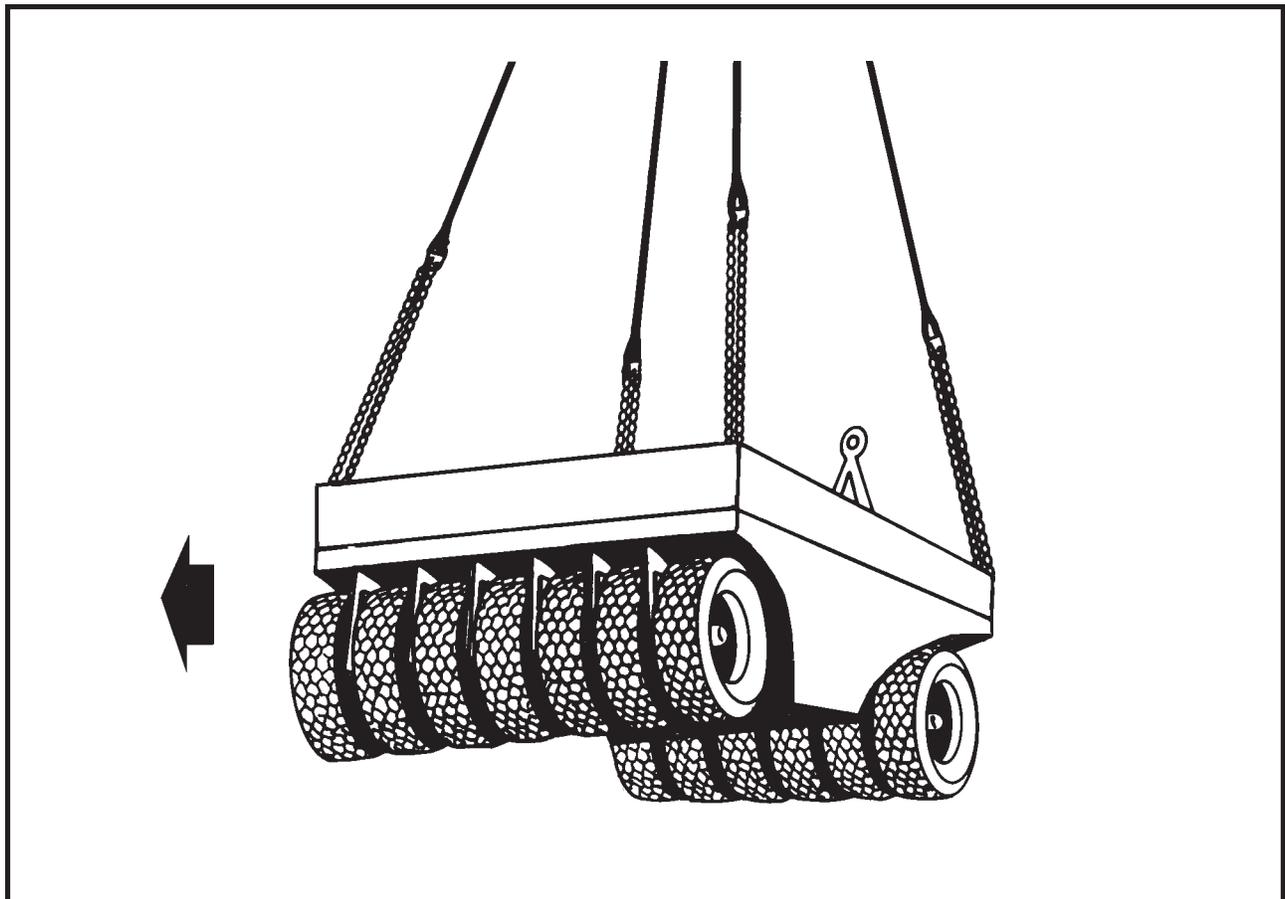
(b) Raise and secure the tongue with tie-down straps.

(2) **Rigging.** Rig the load according to the steps in Figure 8-36.

(3) **Hookup.** The hookup team stands on top of the roller. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

NOTE: Brief the aircrew to hover to one side of the load and relax the sling tension before releasing the apex fitting to prevent damaging the load.

(4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).



RIGGING STEPS

1. Position the apex fitting on top of the roller. Route outer sling legs 1 and 2 to the front of the roller (lunette end) and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.
2. Loop the chain end of sling leg 1 through the left front lift provision located on the left front corner of the roller. Place the correct link from Table 8-36 in the grab hook. Repeat with sling leg 2 and the right front lift provision.
3. Loop the chain end of sling leg 3 through the left rear lift provision located on the left rear corner of the roller. Place the correct link from Table 8-36 in the grab hook. Repeat with sling leg 4 and the right rear lift provision.
4. Cluster and tie or tape (breakaway technique) all sling legs together on top of the roller to prevent entanglement during hookup and lift-off.

Figure 8-36. Towed Rollers

8-38. Tractor (Dozer), Full-Track, Type III, JD450G

a. Applicability. The following items in Table 8-37 are certified for all helicopters with suitable lift capacity by the US Army Soldier Systems Center:

Table 8-37. Tractor (Dozer), Full-Track, Type III, JD450G

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	RECOMMENDED AIRSPEED (KNOTS)
Tractor (Dozer), Full-Track, Type III, JD450G	18,400	25K	3/10	100
Tractor (Dozer), Full-Track, Type III, JD450G, without ROPS	17,700	25K	3/10	100
Tractor (Dozer), Full-Track, Type III, JD450G, without ROPS and Winch	16,160	25K	3/10	100

b. Materials. The following materials are required to rig this load:

(1) Sling set (25,000-pound capacity).

(a) Chain length, part number 38850-00053-102, from a 25,000-pound capacity sling set (4 each).

(b) Coupling link, part number 664241, from a 25,000-pound capacity sling set (4 each).

(2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.

(3) Cord, nylon, Type III, 550-pound breaking strength.

(4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.

(5) Heavy padding (1/4 section of a steel-belted tire or a length of fire hose or equivalent) (2 each).

c. Personnel. Two persons can prepare and rig this load in 15 minutes.

d. Procedures. The following procedures apply to this load:

(1) **Preparation.** Prepare the load using the following steps:

(a) Connect one additional chain length to each chain on each sling set with a coupling link.

(b) Prepare the tractor for mission needs using the operator's manual. Special tools may be required to remove the ROPS or winch.

(c) Secure all loose equipment with tape or Type III nylon cord.

(d) Place the transmission in neutral and set the parking brake.

(e) Tape the front sling guides on the ROPS. Tape all lights and gauges.

(f) Ensure the fuel tank is not over 3/4 full. Ensure the fuel tank cap is in the vent position. Inspect the oil filter cap and battery caps for proper installation.

(2) **Rigging.** Rig the load according to the steps in Figure 8-37.

(3) **Hookup.** The hookup team stands on top of the dozer. The static wand person discharges the static elec-

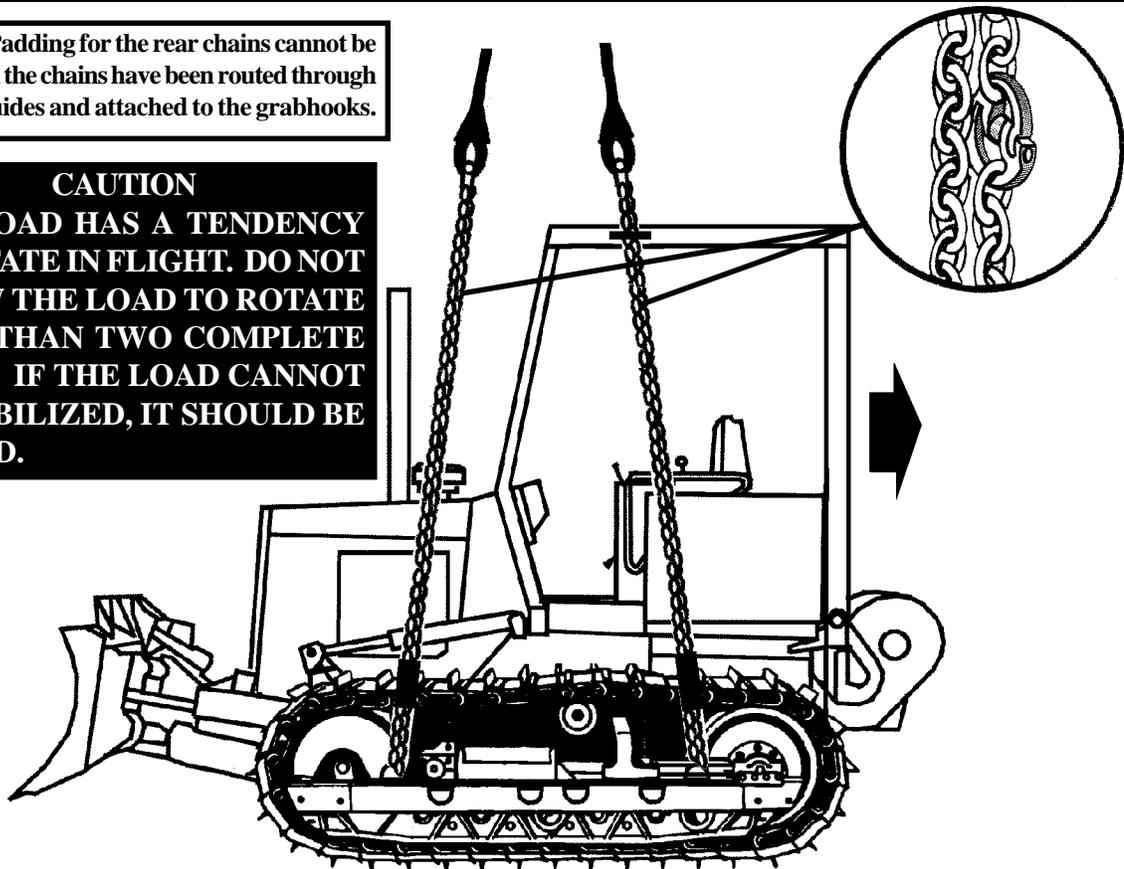
tricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team

quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).

NOTES: Padding for the rear chains cannot be added until the chains have been routed through the sling guides and attached to the grabhooks.

CAUTION
THIS LOAD HAS A TENDENCY TO ROTATE IN FLIGHT. DO NOT ALLOW THE LOAD TO ROTATE MORE THAN TWO COMPLETE TURNS. IF THE LOAD CANNOT BE STABILIZED, IT SHOULD BE LANDED.



RIGGING STEPS

1. Position the apex fitting on top of the ROPS. Route outer sling legs 1 and 2 to the front of the load. Route inner sling legs 3 and 4 to the rear of the load. Sling legs 1 and 3 must be on the left side of the load.
2. Route the chain end of sling leg 1 through the left front lift provision. Place the correct link from Table 8-37 in the grab hook. Repeat with sling leg 2 and the right front lift provision.
3. Route the chain end of sling leg 3 through the left

front sling guide on the ROPS, down through the left rear lift provision, and back through the same sling guide. Place the correct link from Table 8-37 in the grab hook. Repeat with sling leg 4 on the right rear lift provision. Secure the excess chain with tape or Type III nylon cord.

4. Heavy pad the sling legs where they make contact with the tracks.

5. Cluster and tie or tape (breakaway technique) the sling legs together on top of the ROPS to prevent entanglement during hookup and lift-off.

Figure 8-37. Tractor (Dozer), Full-Tracked, Type III, JD450G

8-39. Vibrating Roller, Caterpillar, RO-33

a. Applicability. The following item in Table 8-38 is certified for all helicopters with suitable lift capacity by the US Army Soldier Systems Center:

Table 8-38. Vibrating Roller, Caterpillar, RO-33

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Vibrating Roller, Caterpillar, RO-33	16,425	25K	30/3	120

b. Materials. The following materials are required to rig this load:

- (1) Sling set (25,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (5) Lumber, 2-inch x 4-inch (as required).
- (6) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.

c. Personnel. Two persons can prepare and rig this load in 15 minutes.

d. Procedures. The following procedures apply to this load:

(1) **Preparation.** Prepare the load using the following steps:

- (a) Place the transmission in neutral and set the parking brake.
- (b) Ensure the fuel tank is not over 3/4 full. Ensure the fuel tank cap is in the vent position. Inspect the oil

filter cap and battery caps for proper installation.

(c) Secure the seat cushion to the frame with tape or Type III nylon cord.

(d) Remove and secure the exhaust stack.

(e) Tape all lights and gauges. Secure all loose covers and panels with tape or Type III nylon cord.

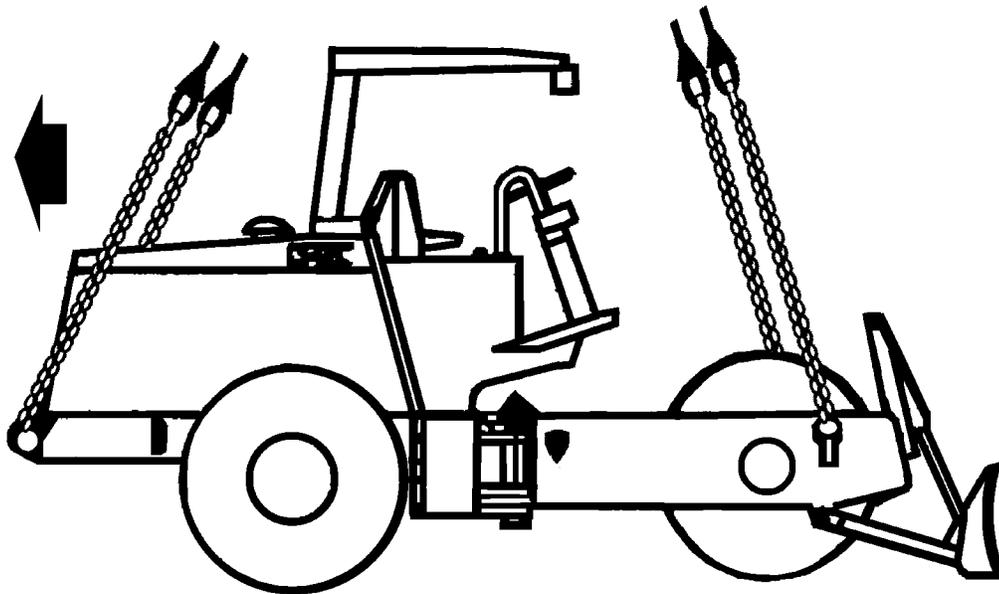
(f) Tie down the steering wheel with Type III nylon cord.

(g) Place the wooden block in the pivot point at the center of the roller to prevent the two halves from flexing during flight.

(2) **Rigging.** Rig the load according to the steps in Figure 8-38.

(3) **Hookup.** The hookup team stands on top of the roller. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).



RIGGING STEPS

1. Position the apex fitting near the roller. Route outer sling legs 1 and 2 to the front of the load (roller end). Route inner sling legs 3 and 4 to the rear of the load (engine end). Sling legs 1 and 3 must be on the left side of the load.
2. Route the chain end of sling leg 1 through the left front lift provision. Place the correct link from Table 8-38 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure the excess chain with tape or Type III nylon cord.
3. Route the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 8-38 in the grab hook. Repeat with sling leg 4 on the right rear lift provision.
4. Pad the sling legs/chains in the area where they make contact with the vehicle.
5. Cluster and tie or tape (breakaway technique) the sling legs together on top of the roller to prevent entanglement during hookup and lift-off.

Figure 8-38. Vibrating Roller, Caterpillar, RO-33

8-40. Countermine Mini-Flail

a. Applicability. The following item in Table 8-39 is certified for all helicopters with suitable lift capacity by the US Army Soldier Systems Center:

Table 8-39. Countermine Mini-Flail

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Countermine Mini-Flail	2,420	10K	35/3	100

b. Materials. The following materials are required to rig this load:

- (1) Sling set (10,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (5) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.

c. Personnel. Two persons can prepare and rig this load in 10 minutes.

d. Procedures. The following procedures apply to this load:

(1) **Preparation.** Prepare the load using the following steps:

(a) Tape the flail headspring mechanism to the lift/tie crossmember.

(b) Ensure the engine compartment door securing pin is present and safety the pin with tape.

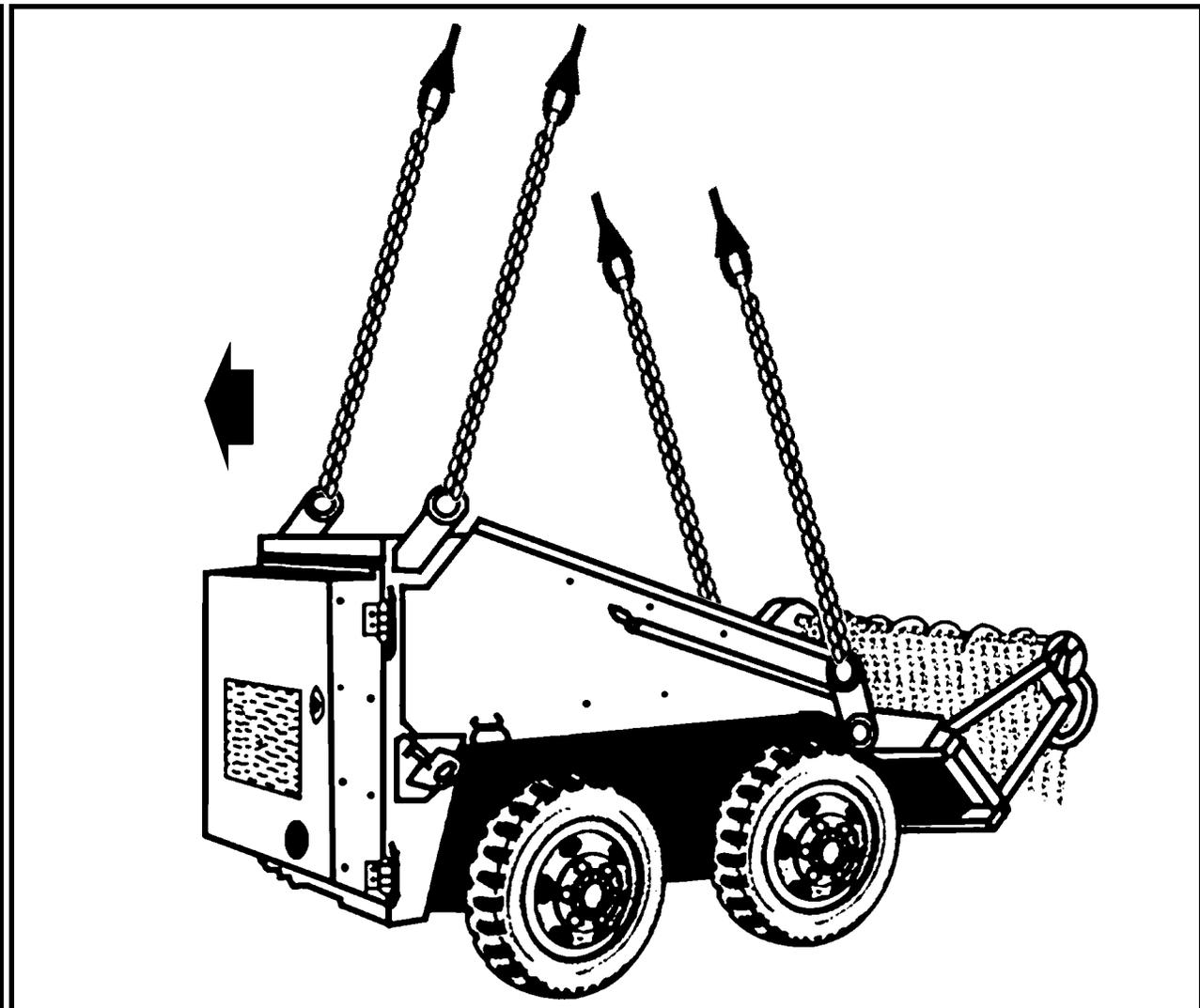
(c) Secure loose cables, safety cables, and safety chains with tape or Type III nylon cord.

(d) Engage the brakes.

(2) **Rigging.** Rig the load according to the steps in Figure 8-39.

(3) **Hookup.** The hookup team stands beside the mini-flail. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

(4) **Derigging.** Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).



RIGGING STEPS

1. Position the apex fitting near the mini-flail. Route outer sling legs 1 and 2 to the front of the load (engine end). Route inner sling legs 3 and 4 to the rear of the load (flail head). Sling legs 1 and 3 must be on the left side of the load.

2. Route the chain end of sling leg 1 through the left front lift provision (engine end). Place the correct link from Table 8-39 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure the excess chain with tape or Type III nylon cord.

3. Route the chain end of sling leg 3 through the left rear lift provision (flail head end). Place the correct link from Table 8-39 in the grab hook. Repeat with sling leg 4 on the right rear lift provision.

4. Pad the sling legs/chains in the area where they make contact with the vehicle.

5. Cluster and tie or tape (breakaway technique) the sling legs together on top of the vehicle to prevent entanglement during hookup and lift-off.

Figure 8-39. Countermine Mini-Flail