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 8-38 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 Natick Research, Development, and Engineering Center:

Table 8-1. T-3 Tractor, Crawler

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Tractor, Full Tracked, JD-550 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.

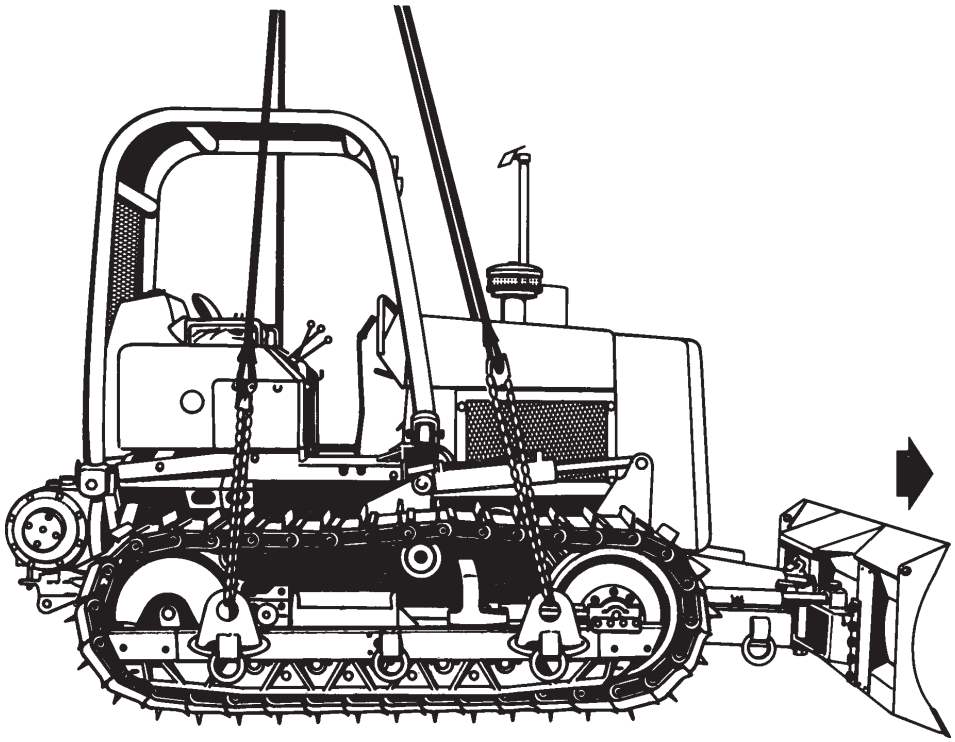
(c) Secure all loose covers and panels with tape.

(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 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 ROPS. Route outer sling legs 1and 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 just aft of the front of the left track. Place the correct link from Table 8-1 in the grab hook. Repeat with sling leg 2 and the right front lift provision located on the right track. 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 forward of the left track rear wheel. Place the correct link from Table 8-1 in the grab hook. Repeat with sling leg 4 on the right rear lift provision located on the right track.

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 8-1. 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.

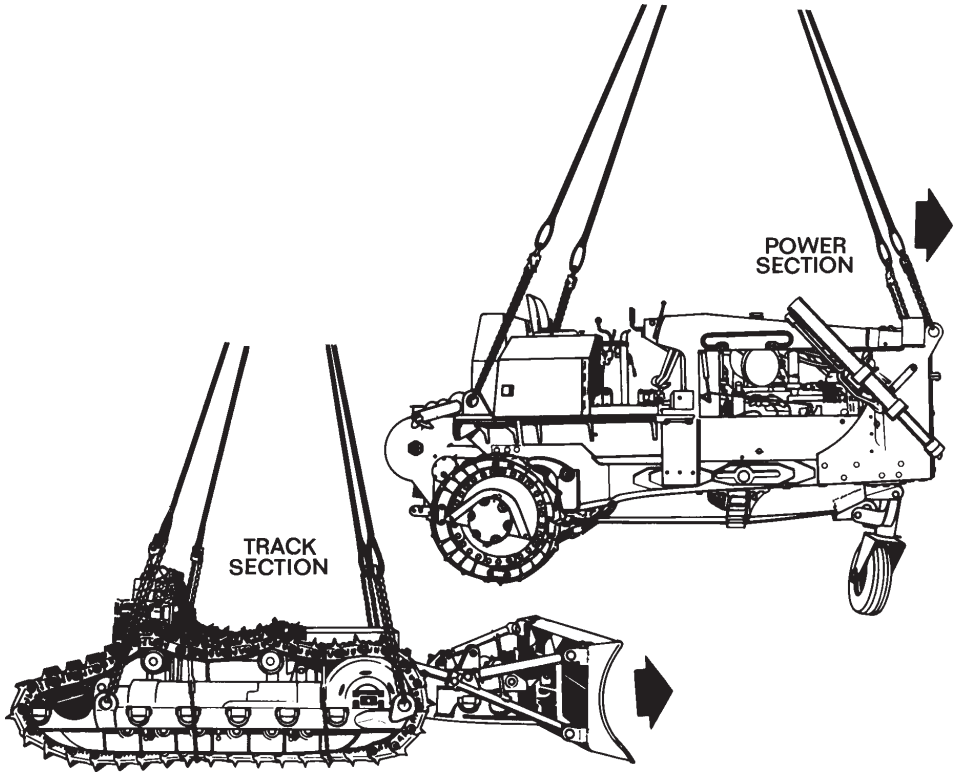
(f) Place the transmission in neutral and secure the safety lock lever with Type III nylon cord.

(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
1. Position the apex fitting on top of the section. Route outer sling legs 1and 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.	**1.** Position the apex fitting on top of the section. Route outer sling legs 1and 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. 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.	**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. Place the correct link from Table 8-2 in the grab hook. Repeat with sling leg 4 on the right rear lift provision.	**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.	**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.

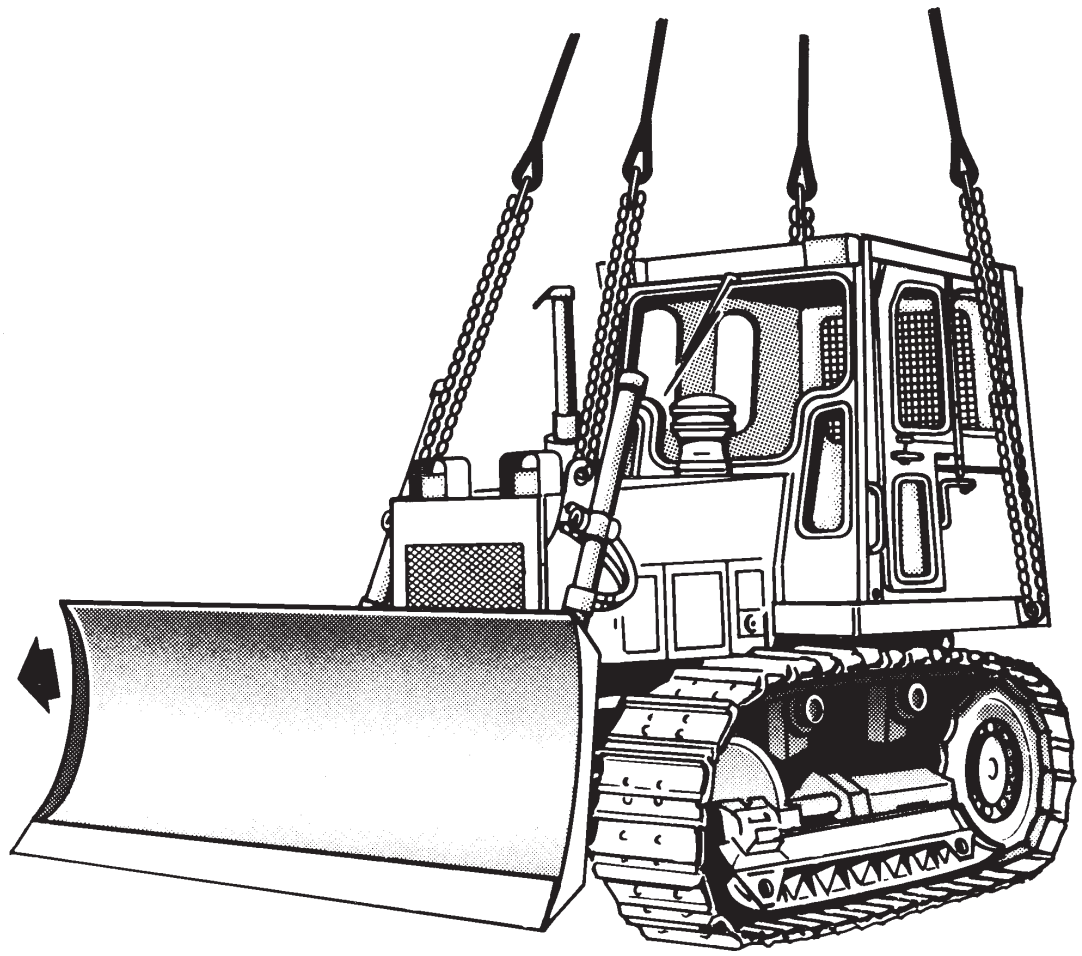
(c) Ensure all caps, lids, and doors are securely fastened.

(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 1and 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.

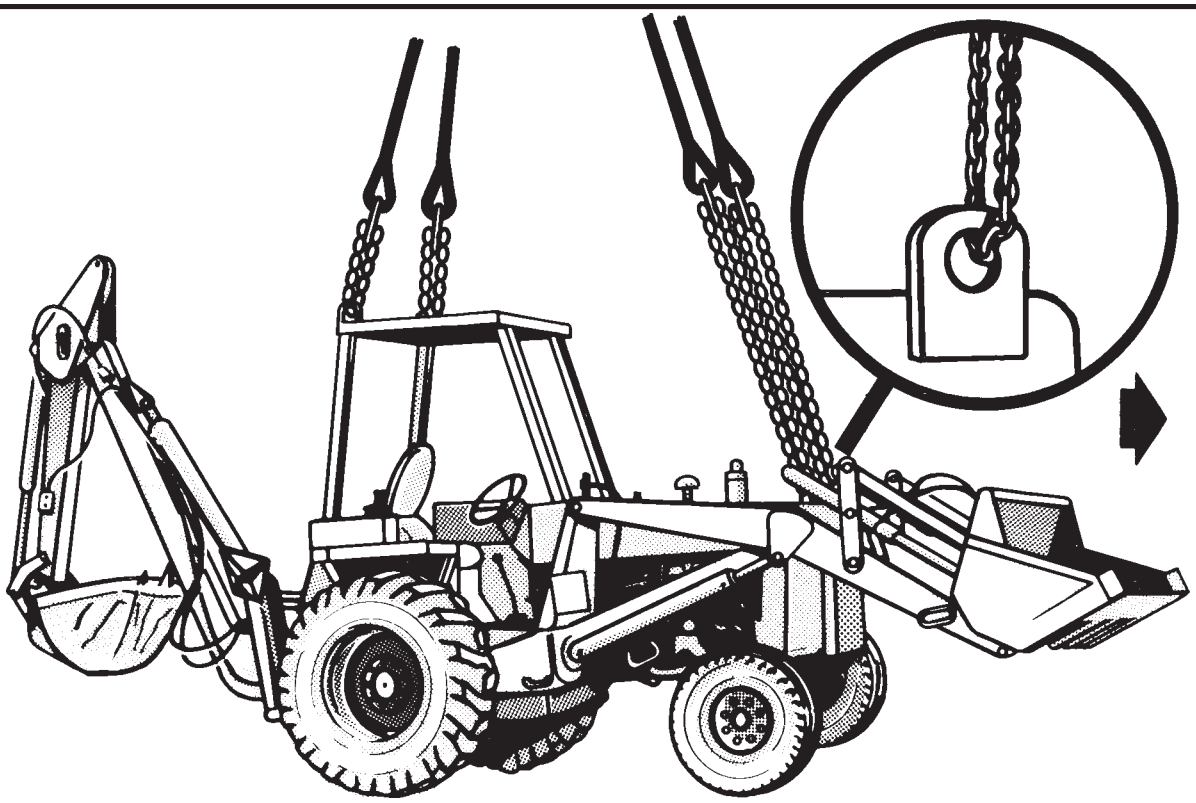
(d) Tape all lights, glass fixtures, and the exhaust cap closed.

(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 1and 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 1and 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.

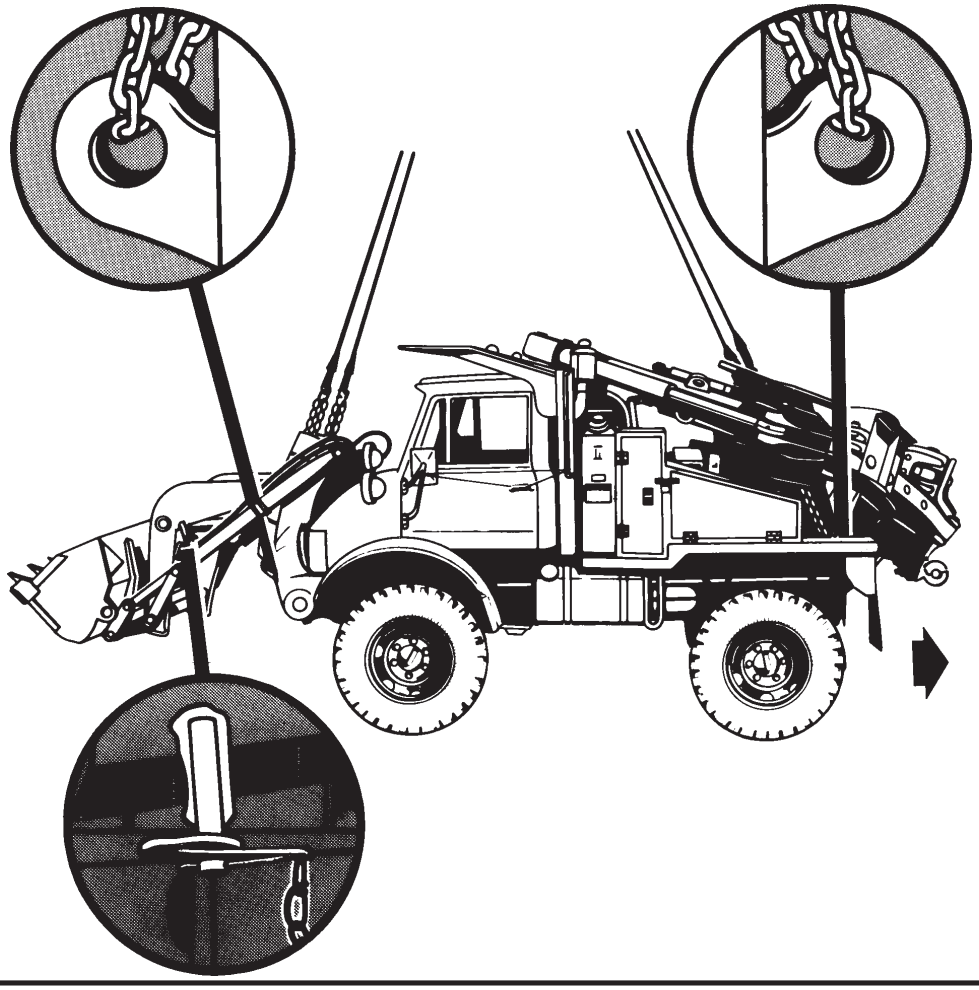
(f) Tie or tape the hydraulic lines and hoses in close proximity to the forward lift provisions to prevent possible entanglement during hookup.

(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).



RIGGING STEPS

1. Position the apex fitting on top of the FOPS. Route outer sling legs 1and 2 to the front of the load. Route inner sling legs 3 and 4 to the rear of the load (backhoe bucket 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 located on the front bumper inboard of the front end loader left support arm. Insert link 3 in the grab hook. Repeat with sling leg 2 and the right front lift provision inboard of the right support arm.

3. Route the chain end of sling leg 3 through the left rear lift provision located (closest to the backhoe operators seat) on the top left between the left rear wheel and frame. Insert link 5 in the grab hook.

4. Route the chain end of sling leg 4 through the right rear lift provision located (closest to the backhoe bucket) on the top right between the right rear wheel and frame. Insert link 10 in the grab hook. Secure the excess chain with Type III nylon cord.

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

6. 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 8-5. 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.

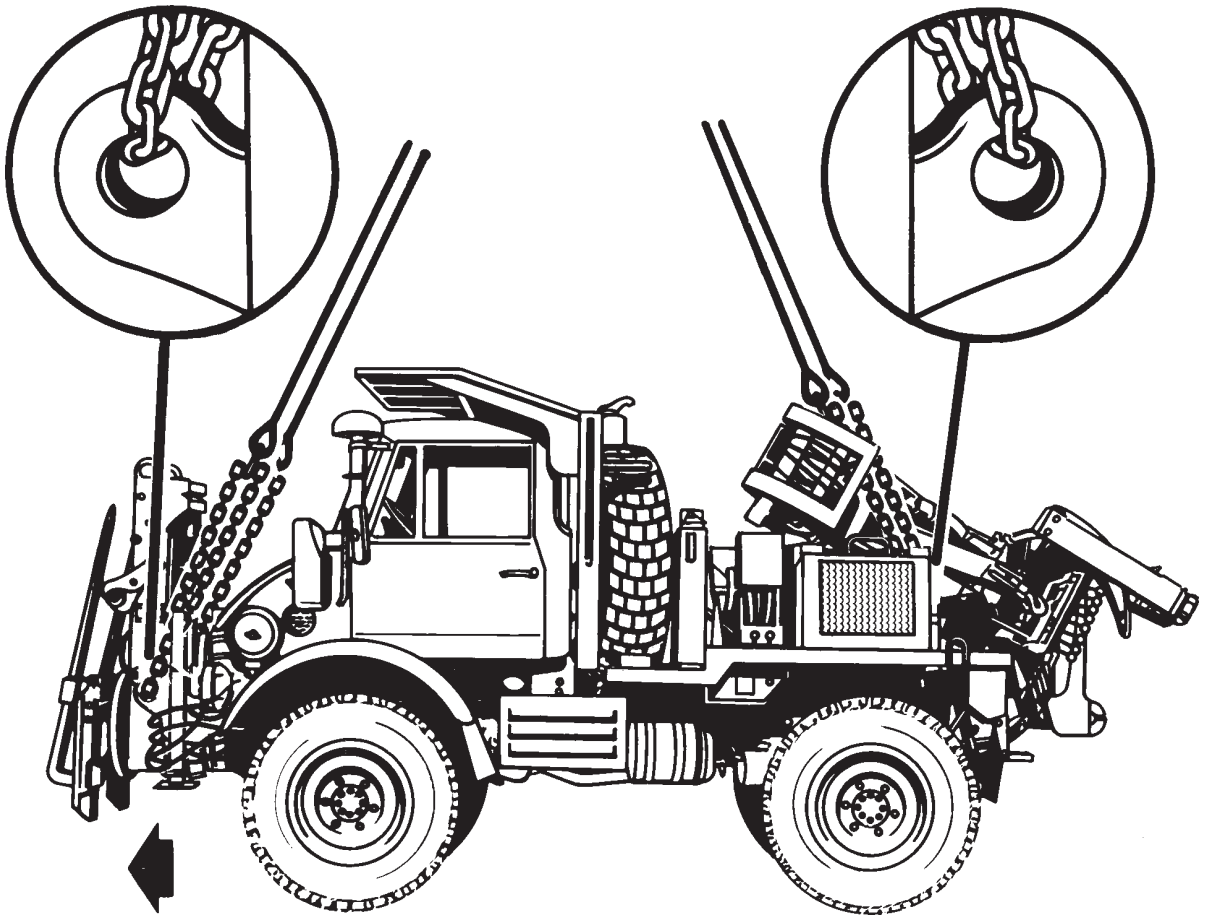
(f) Tie or tape the hydraulic lines and hoses in close proximity to the forward lift provisions to prevent possible entanglement during hookup.

(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 1and 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.

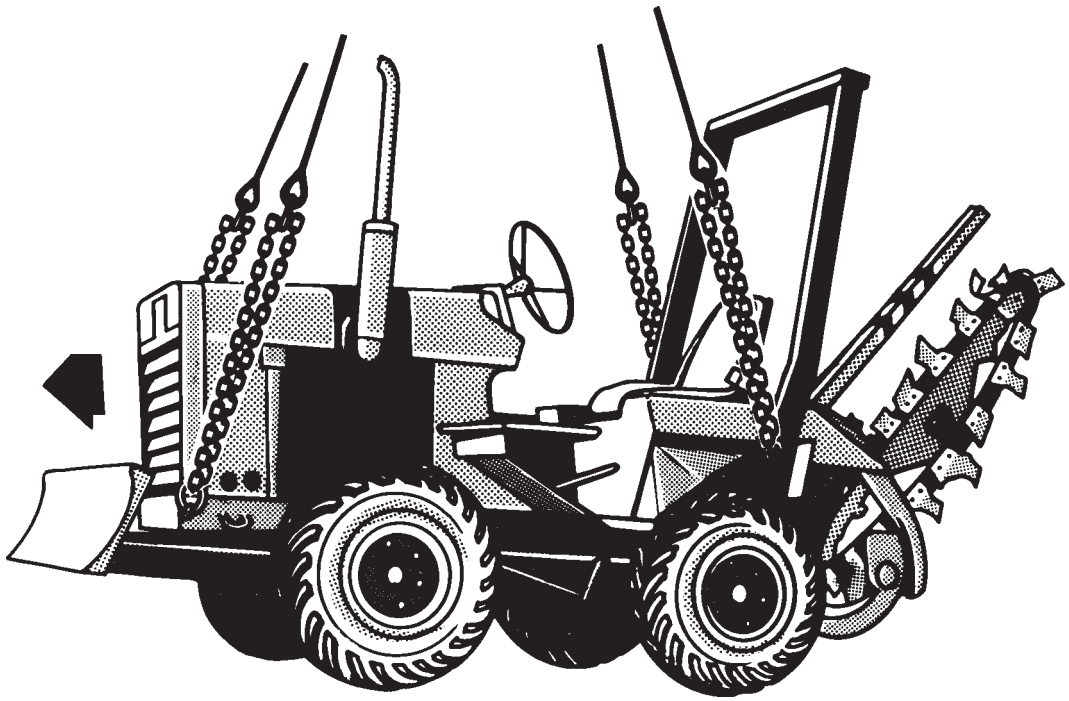
(d) Ensure the front wheels are pointed straight ahead and tie the steering wheel in place with Type III nylon cord.

(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 1and 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.

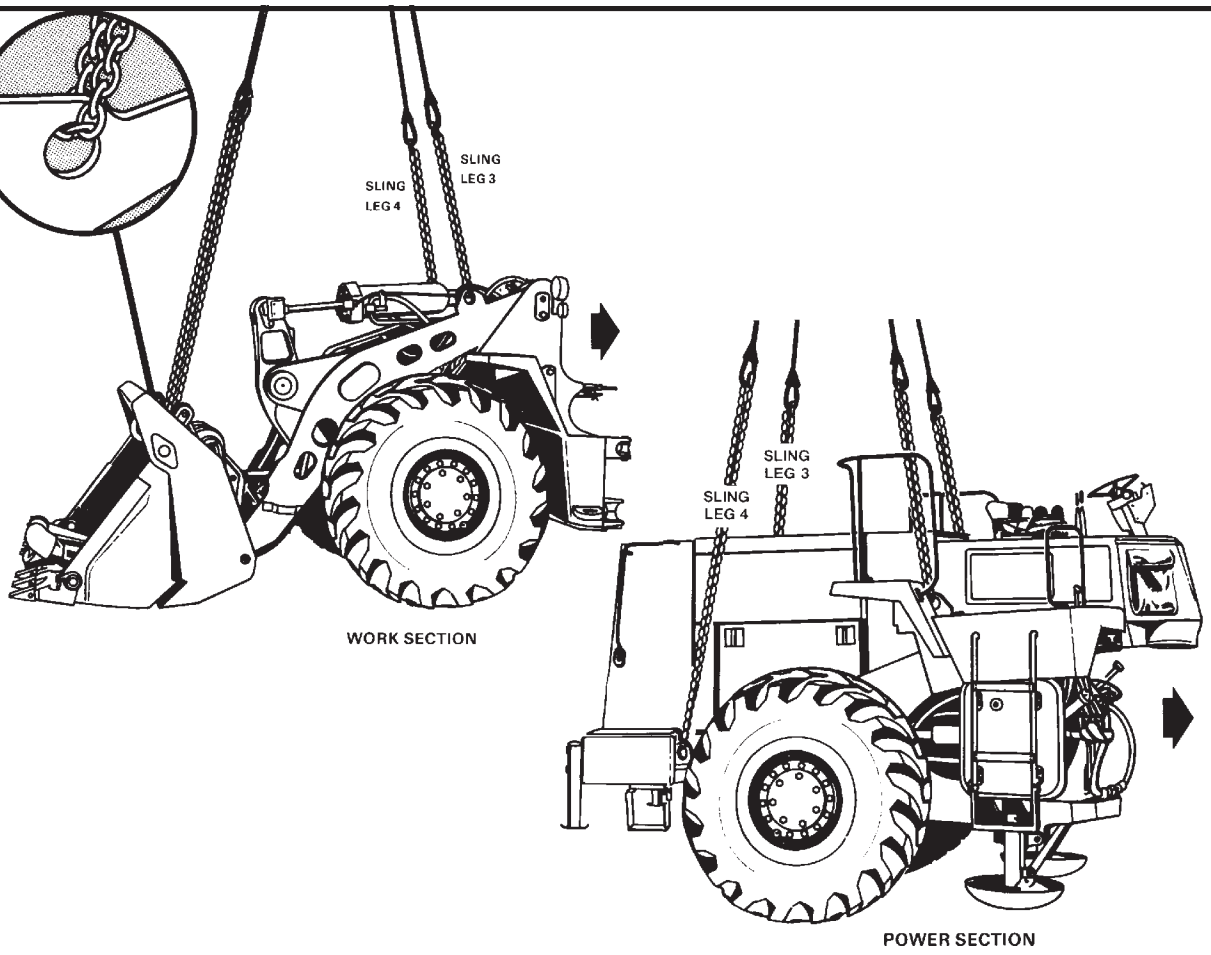
(l) Secure all doors and covers with tape or nylon cord.

(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 (POWER SECTION)

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.

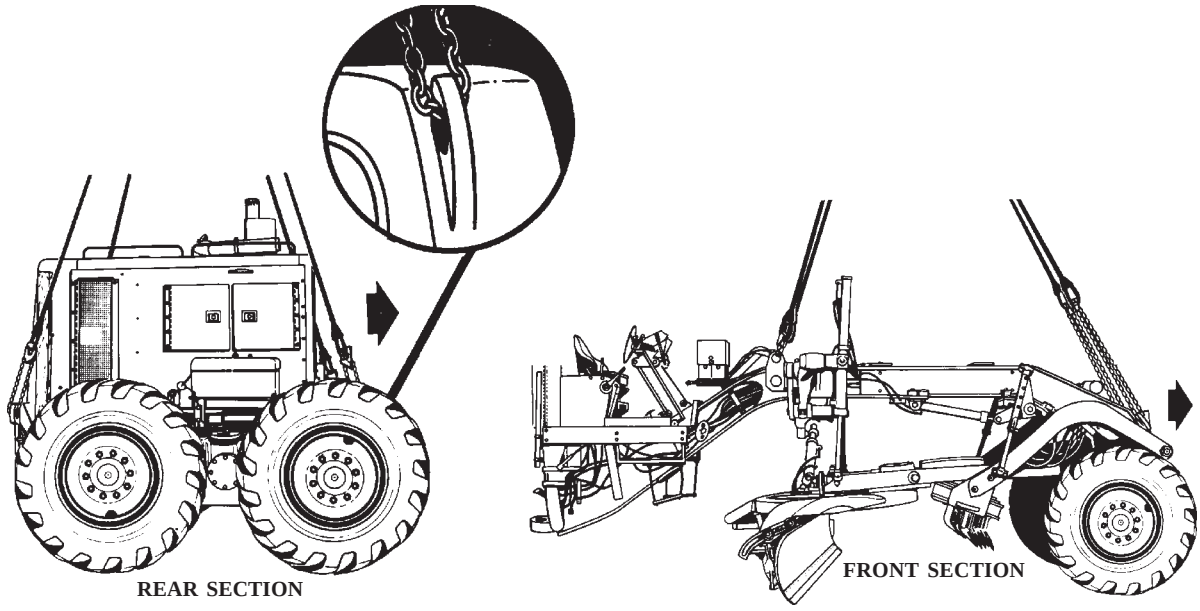
(m) Pad and tape rear working light and taillights.

(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).



RIGGING STEPS (REAR SECTION)

1. Position the apex fitting on top of the engine compartment. Route outer sling legs 1 and 2 to the front (forward wheel) end and inner sling legs 3 and 4 to the rear (radiator) end of the rear section. Sling legs1 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 inboard of the left front wheel Place the correct link from Table 8-9 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 located aft of the left rear wheel. Place the correct link from Table 8-9 in the grab hook. Repeat with sling leg 4 on the right rear lift provision.

4. Cluster and tie or tape (breakaway technique) all sling legs together to prevent entanglement during hookup and lift-off. Ensure the sling legs are located outside of the 4- x 4- x 48-inch posts.

Figure 8-9. 130GS Grader

RIGGING STEPS (FRONT SECTION)

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.

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.

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.

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

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 scaper 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.

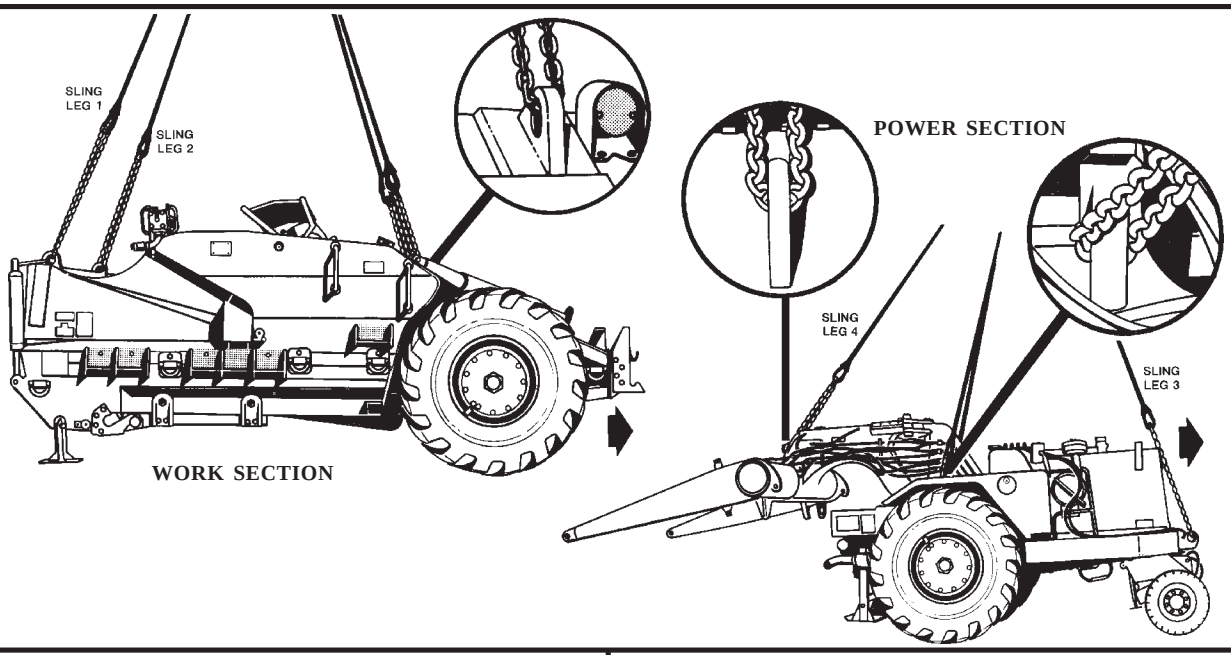
(p) Position the plywood protector on the hood and secure in place at four corners with nylon cord.

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).



RIGGING STEPS (WORK SECTION)	RIGGING STEPS (POWER SECTION)
1. Place apex fitting on top of rockguard and route outer sling legs 1 and 2 to forward end of load and inner sling legs 3 and 4 to aft (bumper) end. Sling legs 1 and 3 must be on the left side of the load.	**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.
2. Loop the chain end of sling leg 1 through the left front lift provision located on the left front corner of the bowl. Place the correct link from Table 8-10 in the grab hook. Repeat with sling leg 2 on the right front lift provision on the right front corner.	**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.
3. Pull both sling legs aft and secure (breakaway technique) to elevator and rockguard with cotton webbing or tape.	**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.
4. Loop the chain end of sling leg 3 through the left rear lift fitting located on the aft deck above the left wheel. Place the correct link from Table 8-10 in the grab hook. Repeat with sling leg 4 on the right rear lift provision. Secure excess chain with tape or nylon cord.	**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.
5. Pull both sling legs forward and secure (breakaway technique) to rockguard with tape or cotton webbing.	**5.** Cluster and tie or tape (breakaway technique) all sling legs together to prevent entanglement during hookup and lift-off.
6. Cluster and tie or tape (breakaway technique) all sling legs together on top of the rockguard to prevent entanglement during hookup and lift-off.	

Figure 8-10. 613BS Scraper, 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).

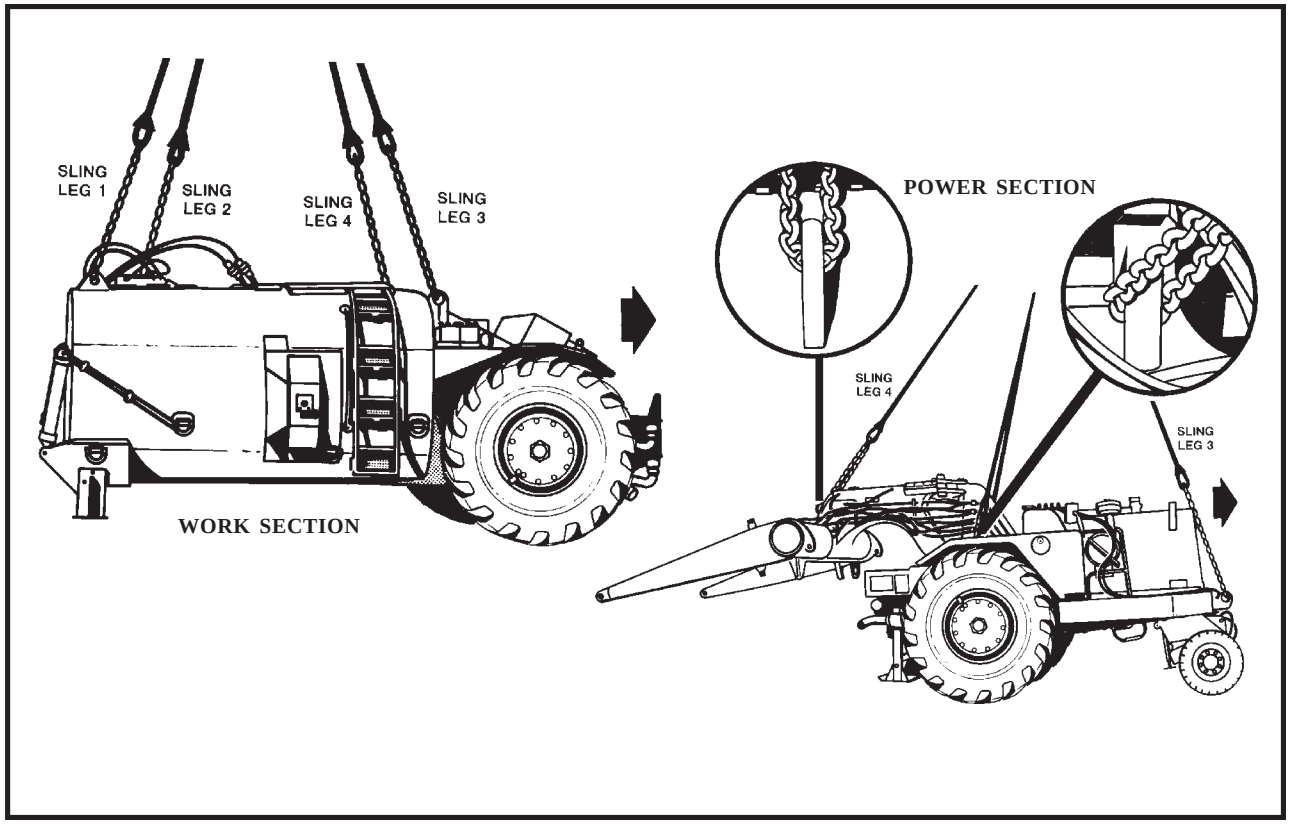


Figure 8-11. 613WDS Water Distributor

RIGGING STEPS (WORK SECTION)	RIGGING STEPS (POWER SECTION)
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. **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. **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. **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.	**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. **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. **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. **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. **5.** Cluster and tie or tape (breakaway technique) all sling legs together to prevent entanglement during hookup and lift-off.

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