

## CHAPTER 12

### CERTIFIED SINGLE-POINT RIGGING PROCEDURES FOR RADAR AND SATELLITE EQUIPMENT

#### 12-1. Introduction

This chapter contains rigging procedures for single-point lift of radar and satellite 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 radar and satellite

equipment are in this section. Paragraphs 12-2 through 12-11 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.**

#### 12-2. AN/TPQ-37 Artillery-Loading Radar Set (Firefinder)

**a. Applicability.** The following item in Table 12-1 is certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 12-1. AN/TPQ-37 Artillery-Loading Radar Set (Firefinder)

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
AN/TPQ-37 Artillery-Loading Radar Set (Firefinder)	10,800	25K	68/5	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.
- (6) Ladder.

**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)** Antenna unit should be configured for march order. If the antenna unit is mounted on its transport trailer, it must be removed for sling loading. If the trailer is to accompany the unit, it must be rigged and moved as a separate load.

**(b)** Ensure the maintenance tent frame and cover are stowed and secured in their proper position.

(c) Ensure all cover panels, cabinet doors, and vents are installed and secured.

(d) Secure all loose items with Type III nylon cord.

(e) Ensure the rear door is closed and secured with the locking handle. Door rods must be secured in their clips.

(f) Ensure the antenna transport cover is secured tightly to the lacing brackets with bungee cord. If necessary, secure the antenna with additional nylon cord.

(2) **Rigging.** Rig the load according to the steps in Figure 12-1.

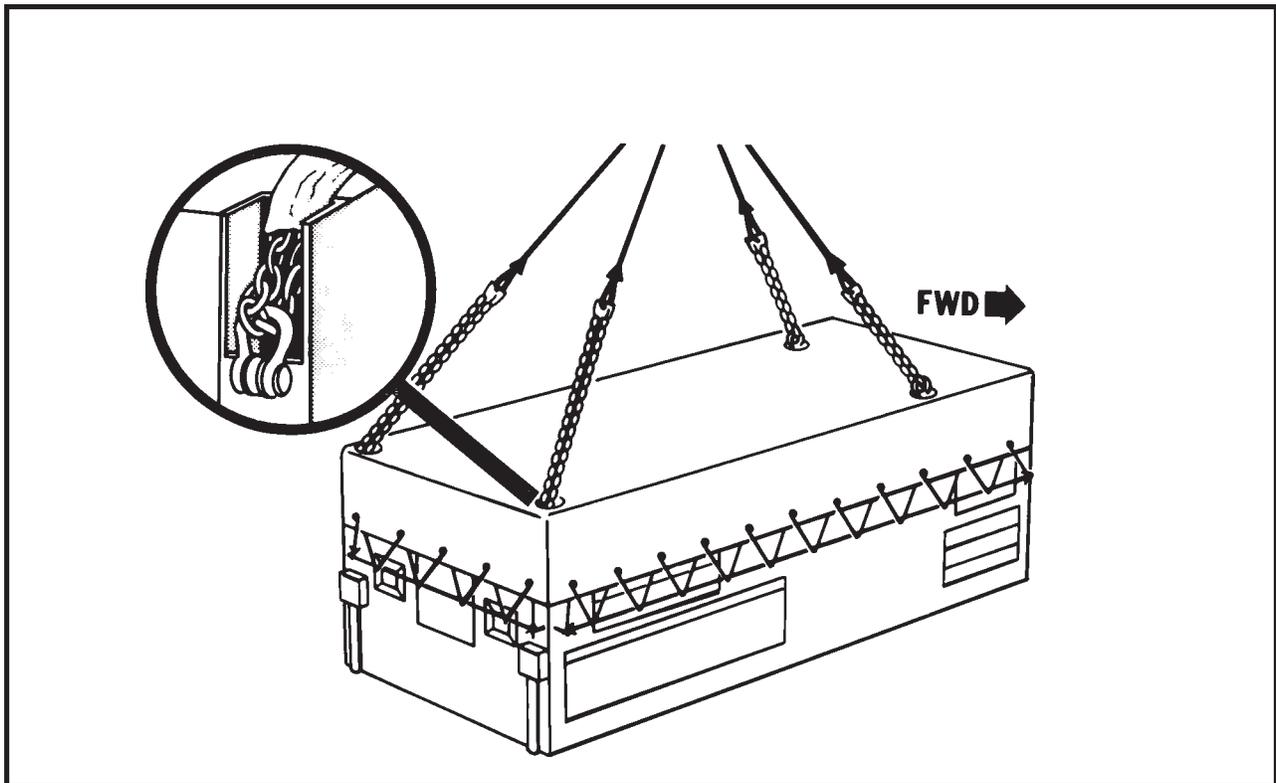
**CAUTION**  
**Do not stand on top of the load. Use the ladder to connect the sling legs to the load.**

(3) **Hookup.** The hookup team 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: Hookup is accomplished by the flight engineer using a cargo-hook loading pole (Shepard's Hook). Ensure the helicopter crew is informed of this in advance.**

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

**NOTE: Advise the pilot to hover to one side before releasing the apex fitting from the cargo hook .**



#### RIGGING STEPS

1. Open the access holes in the antenna transport cover as necessary to reach the lifting rings.

2. Rotate the antenna tie-down bolt ratchet handles toward the center of the trailer to prevent sling interference.

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

4. Loop the chain end of sling leg 1 through the left front lift ring. Place the correct link from Table 12-1 in the grab hook. Repeat with sling leg 2 on the right front lift

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

5. Loop the chain end of sling leg 3 through the left rear lift ring. Ensure the chain is routed through the slot on the top of the corner post. Place the correct link from Table 12-1 in the grab hook. Repeat with sling leg 4 on the right rear lift ring. Pad the chain legs where they contact the top of the corner post. Secure the padding with tape or Type III nylon cord.

6. Close and securely fasten the opening in the rear of the antenna transport cover.

7. 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 12-1. AN/TPQ-37 Artillery-Loading Radar Set (Firefinder)

### 12-3. AN/TMQ-31 Radio Direction Finder

**a. Applicability.** The following item in Table 12-2 is certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

**Table 12-2. AN/TMQ-31 Radio Direction Finder**

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
AN/TMQ-31 Radio Direction Finder, Pedestal Mounted on M103A3 Trailer	5,010	10K	3/22	90

**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 this load in 30 minutes.

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

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

- (a) Place the radar set in the travel mode.
- (b) Secure the air hoses, safety chains, and

intervehicular cable to the tongue of the trailer with tape or Type III nylon cord.

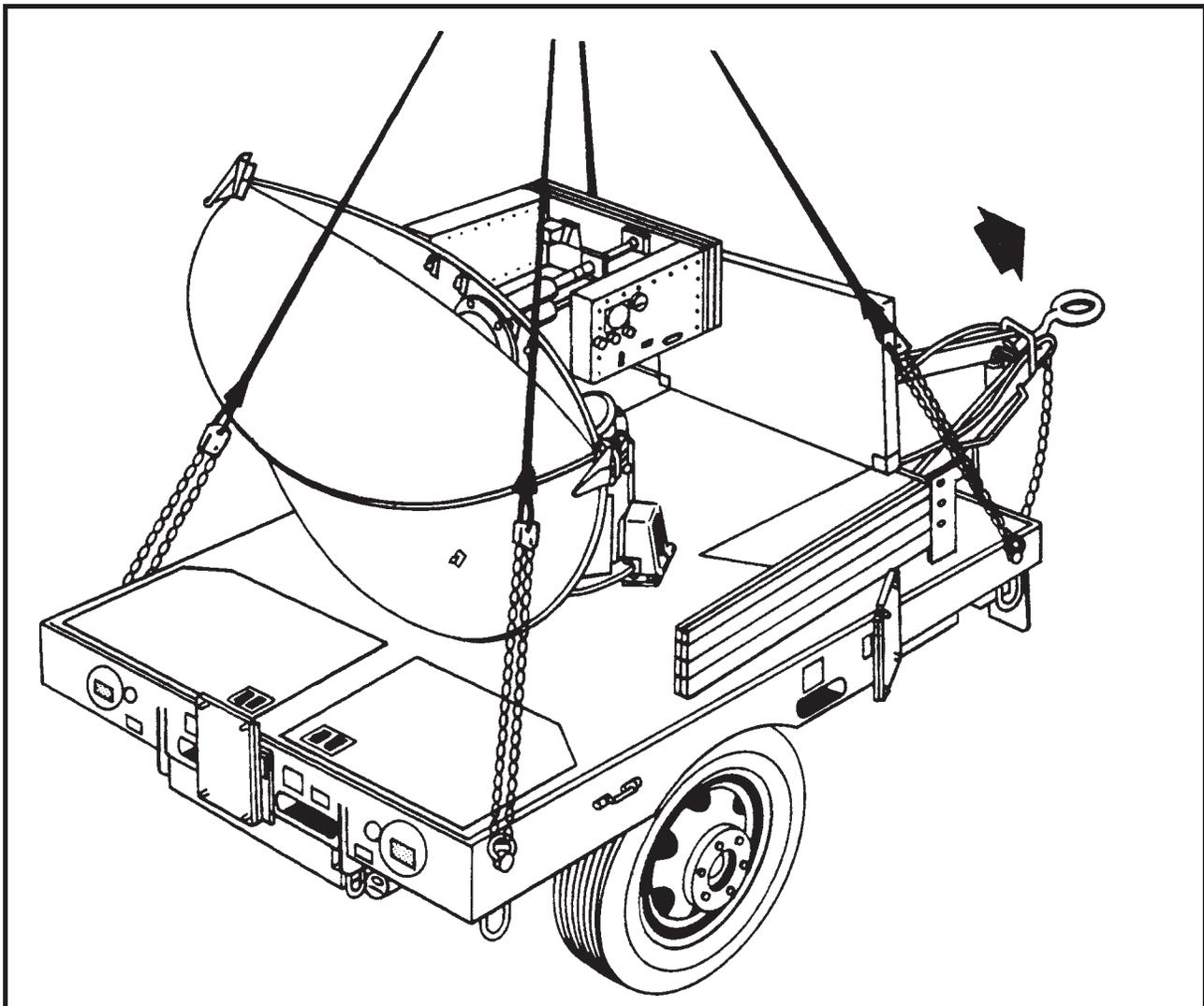
- (c) Engage the trailer hand brakes.
- (d) Remove the canvas cover and secure it on top of the ladder with Type III nylon cord.
- (e) Fold the canvas bows down and secure them to the trailer deck with Type III nylon cord.

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

(3) **Hookup.** The hookup team stands on the platform to the rear of the radar. 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).

**NOTE: Advise the pilot to hover to one side before releasing the apex fitting from the cargo hook .**



#### RIGGING STEPS

1. Position apex fitting on top of the trailer. 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 ring located on the front left corner of the trailer. Place the correct link from Table 12-2 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 ring located on the left rear corner of the trailer. Place the correct link from Table 12-2 in the grab hook. Repeat with sling leg 4 on the right rear lift ring. Secure the 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 unit to prevent entanglement during hookup and lift-off.

*Figure 12-2. AN/TMQ-31 Radio Direction Finder*

## 12-4. AN/TPQ-36 Firefinder Antenna Radar Set

**a. Applicability.** The following item in Table 12-3 is certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

**Table 12-3. AN/TPQ-36 Firefinder Antenna Radar Set**

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
AN/TPQ-36 Firefinder Antenna Radar Set on M103A1 Trailer	4,110	10K	16/11	110

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

- (1) Sling set (10,000-pound capacity).
- (2) Multiloop line, 9-foot, Type XXVI, nylon (4 each).
- (3) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (4) Cord, nylon, Type III, 550-pound breaking strength.
- (5) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (6) Clevis assembly, medium (2 each).
- (7) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.

**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) Engage the trailer hand brakes.

(b) Close and secure the doors with Type III nylon cord.

(c) Place the radar set in the travel mode.

(d) Secure the cover on the antenna.

(e) Attach a medium clevis to each rear lift points.

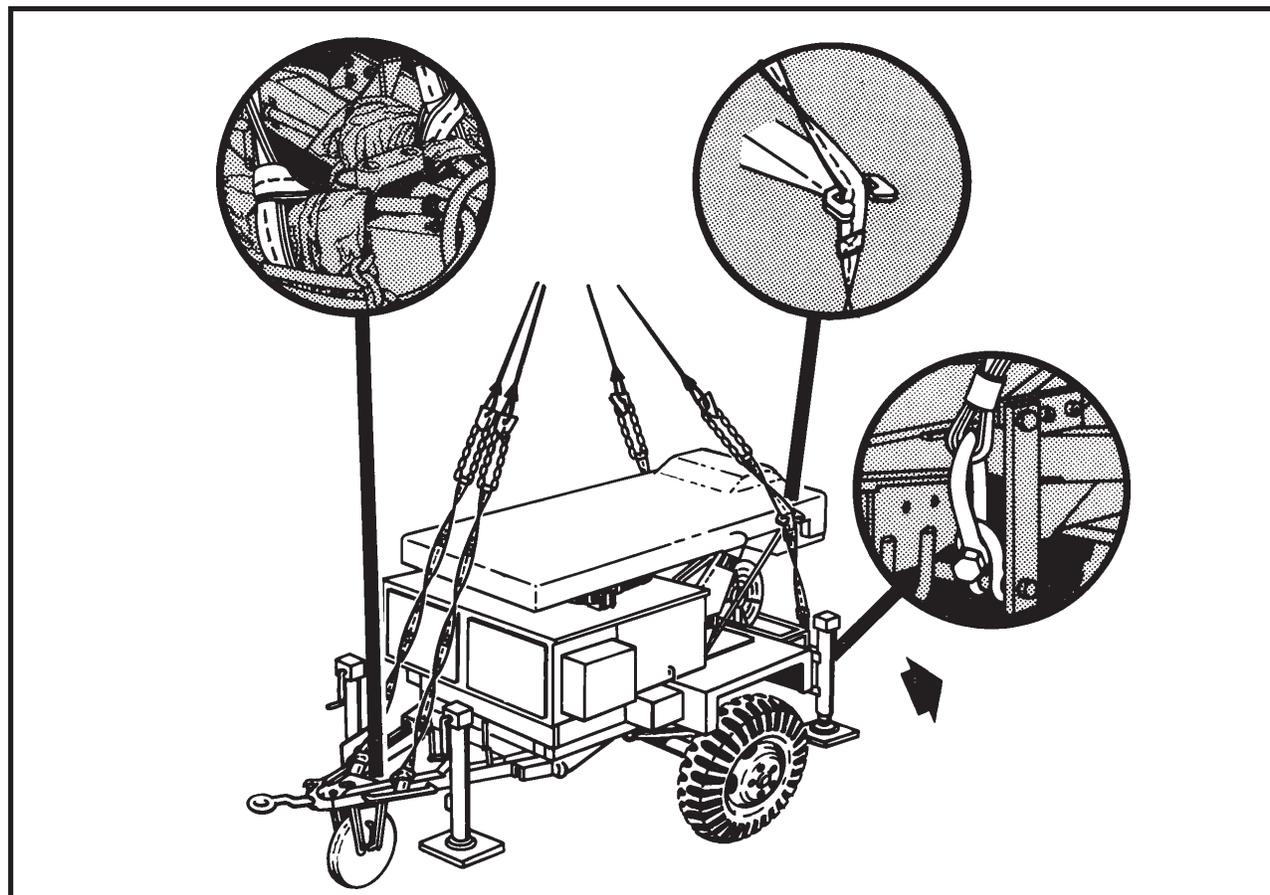
**(2) Rigging.** Rig the load according to the steps in Figure 12-3.

**NOTE: The radar panels cannot support any extra weight.**

**(3) Hookup.** The hookup team stands on the fenders 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).

**NOTE: Advise the pilot to hover to one side before releasing the apex fitting from the cargo hook .**



#### RIGGING STEPS

1. Connect a 9-foot multiloop line to the left rear clevis. Place the multiloop line in the sling guide of the antenna, pull up until tight, and tape the line to the sling guide. Repeat the procedure on the right side.
2. Wrap the left side of the A-frame, aft of the lunette, with padding and secure it in place with tape. Choker-hitch a 9-foot multiloop line around the padded area. Repeat the procedure on the right side.
3. Position apex fitting on top of the trailer (not on top of the radar panel). 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.
4. Loop the chain end of sling leg 1 through the multiloop line attached to the left side of the tongue. Place the correct link from Table 12-3 in the grab hook. Repeat with sling leg 2 on the right front lift provision. Secure the excess chain with tape or Type III nylon cord.
5. Loop the chain end of sling leg 3 through the multiloop line attached to the left rear lift provision. Place the correct link from Table 12-3 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.
6. 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 12-3. AN/TPQ-36 Firefinder Antenna Radar Set

## 12-5. AN/TPQ-36 Firefinder II

**a. Applicability.** The following item in Table 12-4 is certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

**Table 12-4. AN/TPQ-36 Firefinder II**

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Firefinder II, AN/TPQ-36 Block II	9,673	25K	11/3	120

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

- (1) Sling set (25,000-pound capacity) with four additional chain lengths and coupling links.
- (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 straps, cargo, CGU-1/B (2 each).
- (6) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- (7) Spreader bar assemblies, 117 inches and 91.8 inches in length (components of the Firefinder II).

**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:

**NOTE: Do not stand on the surface of the antenna array at any time.**

(a) Assemble the two spreader bar assemblies by

matching similar sections to form a long (117-inch) and a short (91.8-inch) spreader bar.

(b) Prepare the Firefinder II for transport in accordance with operator's manual.

(c) Secure all loose equipment on the pallet with tape or nylon cord.

(d) Ensure all latches, doors, and panels are secured with tape or nylon cord.

(e) Using the two tie-down straps, secure the antenna cover to the antenna array. Route the tie-down straps from front to rear.

(f) Place the long (117-inch) spreader bar on top of the shelter roof. Position the bar (parallel with the side of the shelter) between the edge of the shelter that is adjacent to the antenna array and the radio mount on the shelter roof. Secure the spreader bar loosely in place (allow adequate slack for movement) with nylon cord to prevent the spreader bar from rolling off the shelter roof.

(g) Place the short (91.8-inch) spreader bar through the opening in the antenna array support arms directly below the antenna array as indicated in the illustration. Secure the spreader bar loosely in place with nylon cord to prevent the spreader bar from sliding out of the openings in the support arms.

(2) **Rigging.** Rig the load according to the steps in Figure 12-4.

(3) **Hookup.** The hookup team stands on top of the

shelter. 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).

**NOTE:** Brief the helicopter crew to relax sling leg tension, lower the spreader bars onto the shelter roof and antenna array support arms, and hover to the side of the load when releasing the sling set.

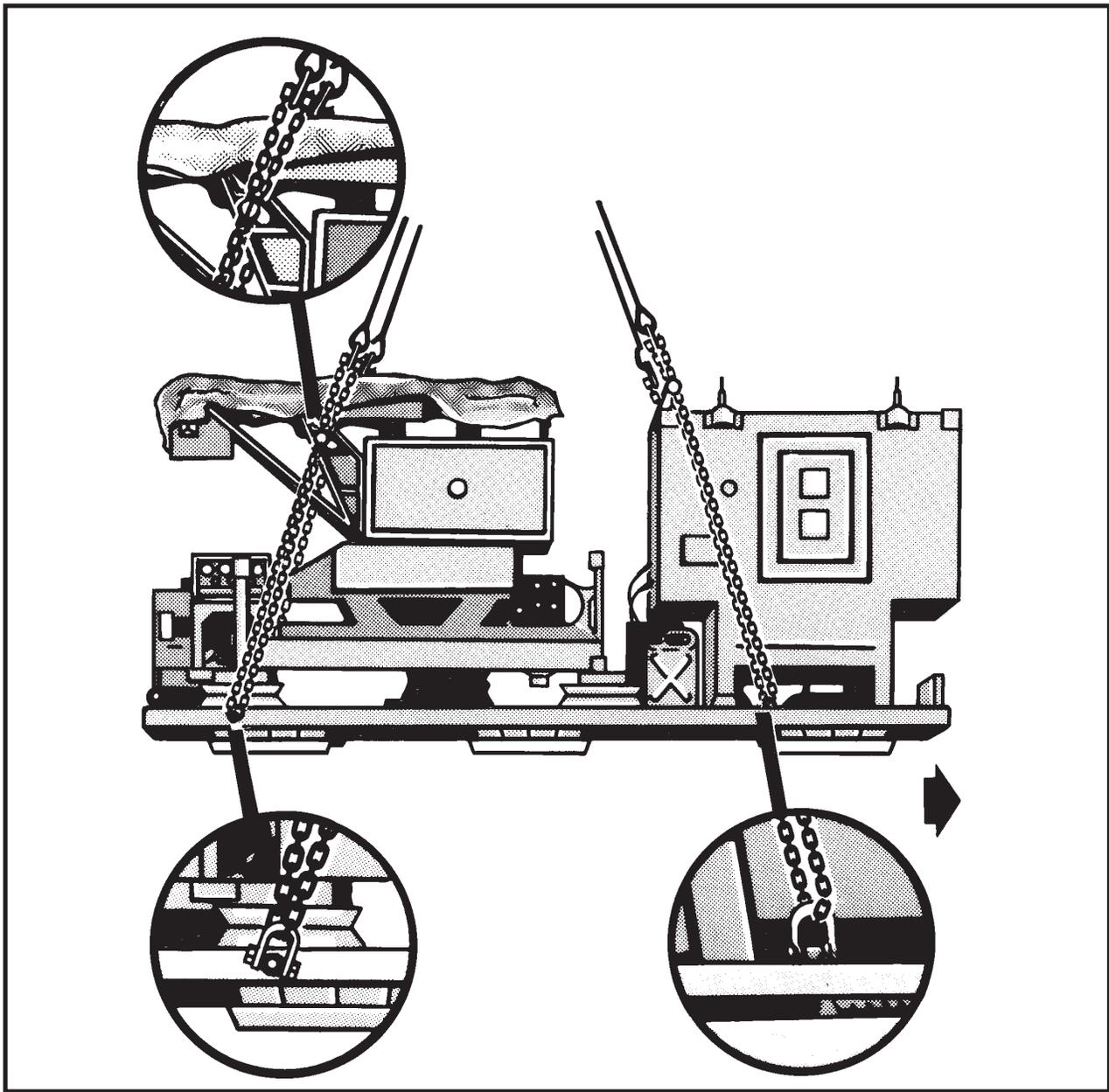


Figure 12-4. AN/TPQ-36 Firefinder II

### RIGGING STEPS

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

2. Using the proper coupling links, add the chain extensions to each sling leg chain assembly.

3. Route the chain end of sling leg 1 through the fitting on the left end of the long spreader bar and down the side of the shelter. Insert link 10 (counting down from the grab hook coupling link) in the spreader bar end fitting. Route the chain end through the lift provision located on the left side of the pallet frame, back up to the spreader bar, and insert link 23 in the end fitting. Secure the chain in the end fitting by installing the retaining pin in the end of the spreader bar. Place the correct link from Table 12-4 in the grab hook. Repeat with sling leg 2 through the right end fitting on the spreader bar, and lift provision on the right side of the pallet frame.

4. Route the chain end of sling leg 3 through the fitting on the left end of the short spreader bar and down the side of the antenna array assembly. Route the chain end through the lift provision located on the left side of the pallet frame

below the generator engine and back up through the spreader bar end fitting. Pull the chains tight to remove slack. Place the correct link from Table 12-4 in the grab hook. Install the retaining pin in the end of the spreader bar. Repeat with sling leg 4 through the right end fitting on the spreader bar and lift provision on the right side of the pallet frame.

**NOTE: The chain links do not lock in the end fittings on the short spreader bar like they do on the long spreader bar.**

5. Tape the two loops of the chain legs together every 1 to 2 feet. Secure all excess chain with tape or nylon cord. Place padding around the grabhooks and secure with tape or nylon cord to prevent damage caused by the grabhooks when the sling is released.

6. Pull the rear sling legs 3 and 4 tight over top of the antenna array to remove slack from the sling legs. Cluster and tie or tape (breakaway technique) the sling legs together to prevent the chains and grabhooks from fouling on the antenna array during hookup and lift-off.

7. Cluster and tie or tape (breakaway technique) the front sling legs 1 and 2 together on top of the shelter to prevent entanglement during hookup and lift-off.

*Figure 12-4. AN/TPQ-36 Firefinder II (continued)*

## 12-6. OE-361/G Quick Reaction Satellite Antenna

**a. Applicability.** The following item in Table 12-5 is certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

**Table 12-5. OE-361/G Quick Reaction Satellite Antenna**

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Antenna, Satellite, Quick Reaction (QRSA), OE-361/G	4,830	10K	3/30	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.
- (5) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.

**c. Personnel.** Four 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) Install the spreader bar assembly which is stored on the load. After hooking the spreader bar assembly to the lift rings, tape the keepers securely with tape.

(b) Pad both spreader bars with felt or other cushioning material to prevent damage to the antenna panels during load release. Tape or tie the padding securely to prevent it from being dislodged during flight.

(c) Pad the uppermost stacked antenna panel with

available material to prevent possible damage from the apex clevis at load release. Tape or tie the padding securely to prevent it from being dislodged during flight.

(d) Ensure the ladder, box covers, and any other loose items are properly secured. If the tie-down straps are missing or worn, replace with nylon cord.

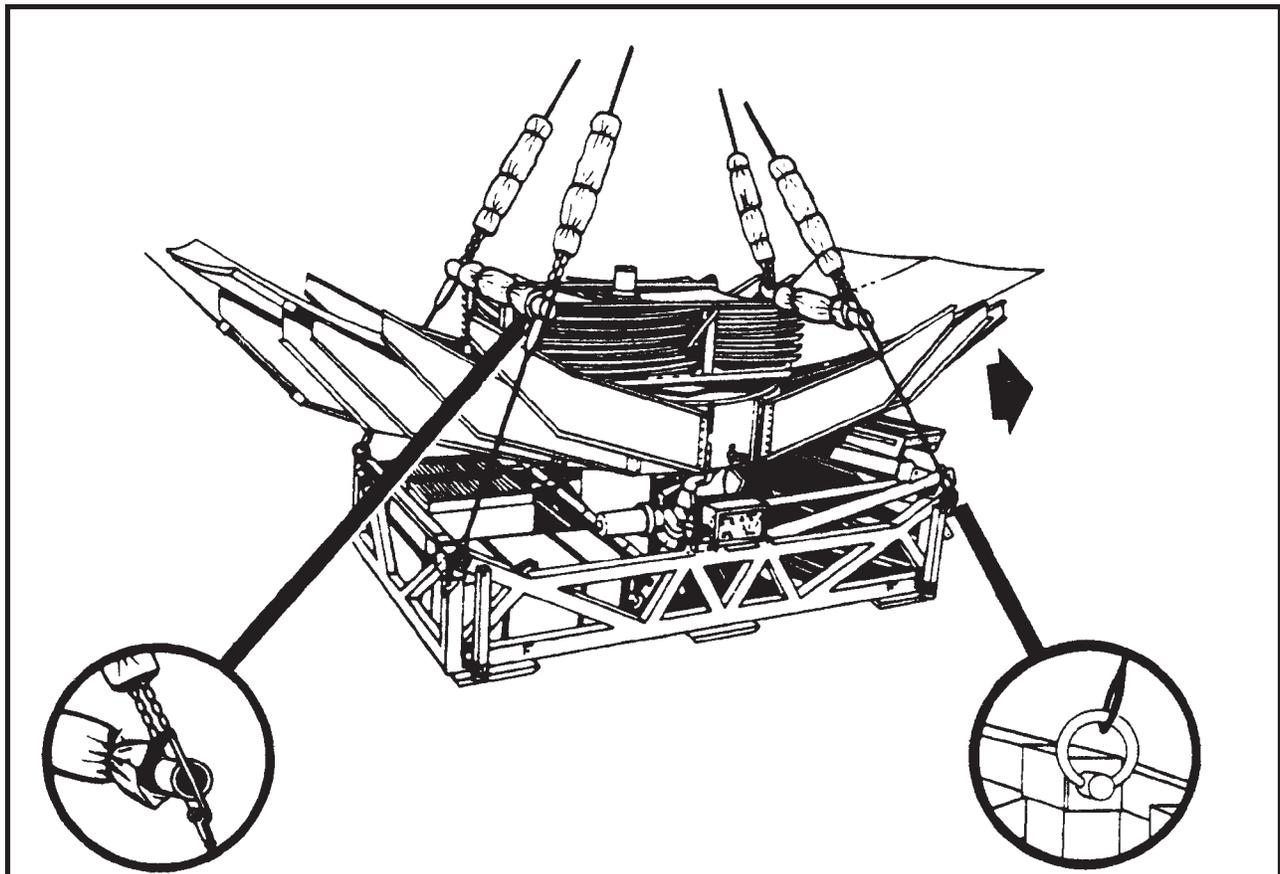
(2) **Rigging.** Rig the load according to the steps in Figure 12-5.

(3) **Hookup.** The hookup team stands on top of the load between the stacked antenna panels and either side of the center post. 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).

### CAUTION

**Brief the helicopter crew to relax sling leg tension, lower the spreader bars onto the shelter roof and antenna array support arms, and hover to the side of the load when releasing the sling set.**



#### RIGGING STEPS

1. Position the apex fitting on top of the load. Route outer sling legs 1 and 2 to the front (ladder end) 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 left lift eye of the front spreader bar. Place the correct link from Table 12-5 in the grab hook. Repeat with sling leg 2 and the right lift eye on the front spreader bar.

3. Loop the chain end of sling leg 3 through the left lift eye of the rear spreader bar. Place the correct link from Table 12-5 in the grab hook. Repeat with sling leg 4 and

the right lift eye on the rear spreader bar. Secure excess chain with tape or nylon cord.

4. Wrap felt padding or other suitable cushioning material around each grab hook assembly to protect the antenna when the sling set is released. Tape or tie the padding securely to prevent it from being dislodged during flight.

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

Figure 12-5. OE-361/G Quick Reaction Satellite Antenna

## 12-7. AS-3471/TPN-22 Antenna Pallet (USMC)

**a. Applicability.** The following item in Table 12-6 is certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

**Table 12-6. AS-3471/TPN-22 Antenna Pallet (USMC)**

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Antenna Pallet, AN-3471/TPN-22 TAMCN Q2115	5,700	40K	3/5	80

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

(1) Sling set (40,000-pound capacity) with four additional chain lengths and coupling links.

(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.** Four 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) Secure all handles.

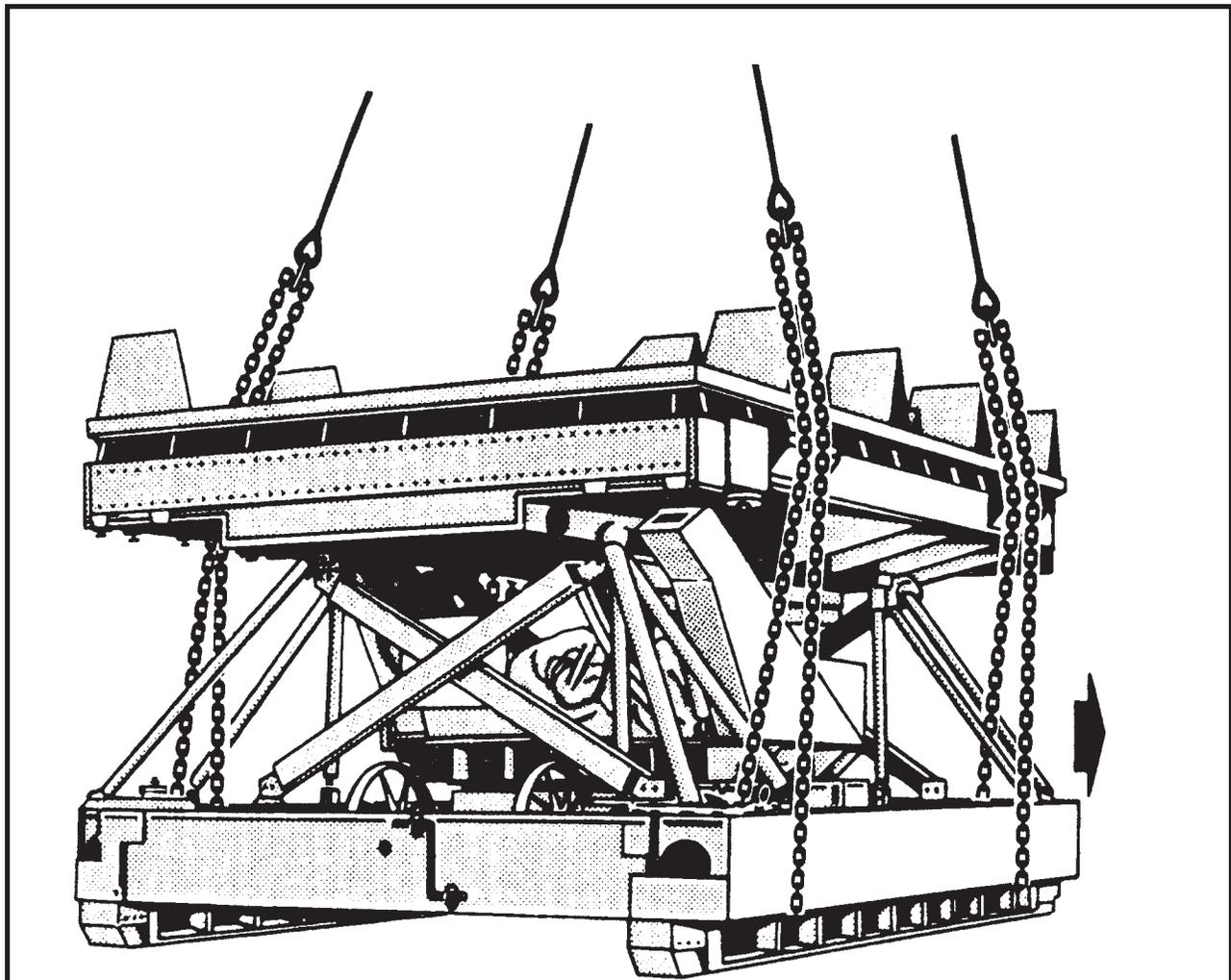
(b) Secure the crank handle at the base of the pallet.

(c) Add the additional chain length to each leg of the sling set using the coupling links.

(2) **Rigging.** Rig the load according to the steps in Figure 12-6.

(3) **Hookup.** The hookup team stands on the pallet. 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 load. Route outer sling legs 1 and 2 to the front (supply box end) of the load and inner sling legs 3 and 4 to the rear (leveling disk end). 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 small space between the channel beams at the left front base of the antenna. Place the correct link from Table 12-6 in the grab hook. Repeat with sling leg 2 on the right front base of the antenna.

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

space between the channel beams at the left rear base of the antenna. Place the correct link from Table 12-6 in the grab hook. Repeat with sling leg 4 on the right rear base of the antenna.

4. Tie or tape (breakaway technique) all chains loosely to the straps at the bumpers to prevent the chains from moving off the protective bumpers.

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

*Figure 12-6. AS-3471/TPN-22 Antenna Pallet*

## 12-8. Antenna Pallet Transit Frame

**a. Applicability.** The following items in Table 12-7 are certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

**Table 12-7. Antenna Pallet Transit Frame**

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
SM-F 973604-1 used with AN/TSC-93B	1,970	10K	30/3	75
SM-F 973604-21 used with AN/TSC-85B	2,107	10K	30/3	75

**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.** Four 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:

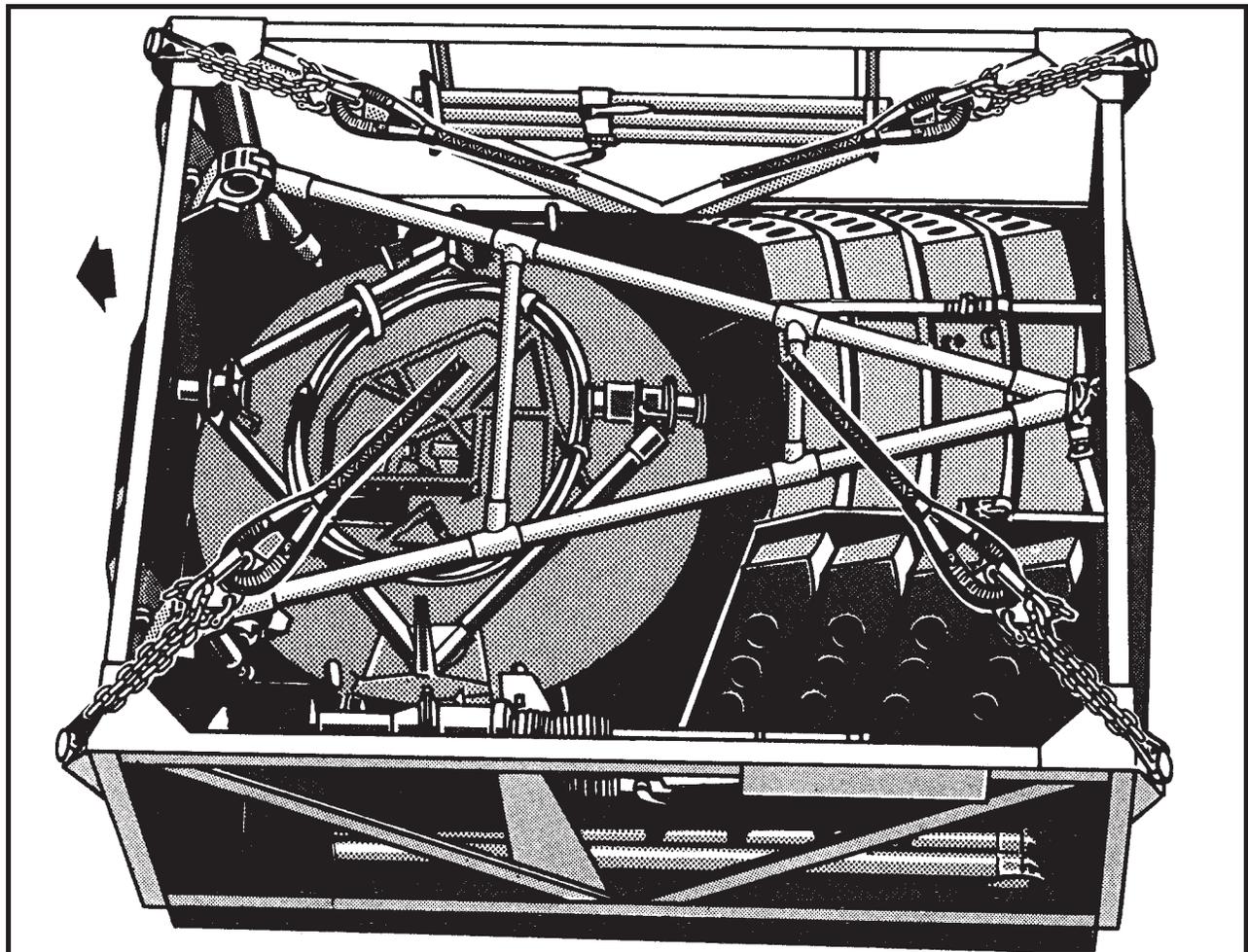
(a) Secure all equipment with the eight ratchet straps supplied. Use tape or Type III nylon cord if additional security is required.

(b) Remove and stow the protective cover. Secure with Type III nylon cord.

(2) **Rigging.** Rig the load according to the steps in Figure 12-7.

(3) **Hookup.** The hookup team stands on the frame. 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 load. Route outer sling legs 1 and 2 to the front (opposite the antenna segments) 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 left front lift provision located on the top left corner of the frame. Place the correct link from Table 12-7 in the grab hook. Repeat with sling leg 2 on the top right corner of the frame. Secure the excess chain with tape or Type III nylon

cord.

3. Loop the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 12-7 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 on top of the frame to prevent entanglement during hookup and lift-off.

*Figure 12-7. Antenna Pallet Transit Frame*

## 12-9. Digital Group Multiplexer (DGM), Digital Antenna Mast Program (DAMP), 2 and 3 Antenna Pallet Configurations

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

**Table 12-8. Digital Group Multiplexer (DGM), Digital Antenna Mast Program (DAMP)**

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
DGM, DAMP Pallet, 2 Antenna Configuration	4,300	10K	3/3	90
DGM, DAMP Pallet, 3 Antenna Configuration	5,500	10K	3/3	90

**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, tubular, nylon, 1/2-inch, 1000-pound breaking strength.
- (6) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.

**c. Personnel.** Four 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) Secure the grating on the cable reels side with Type III nylon cord.

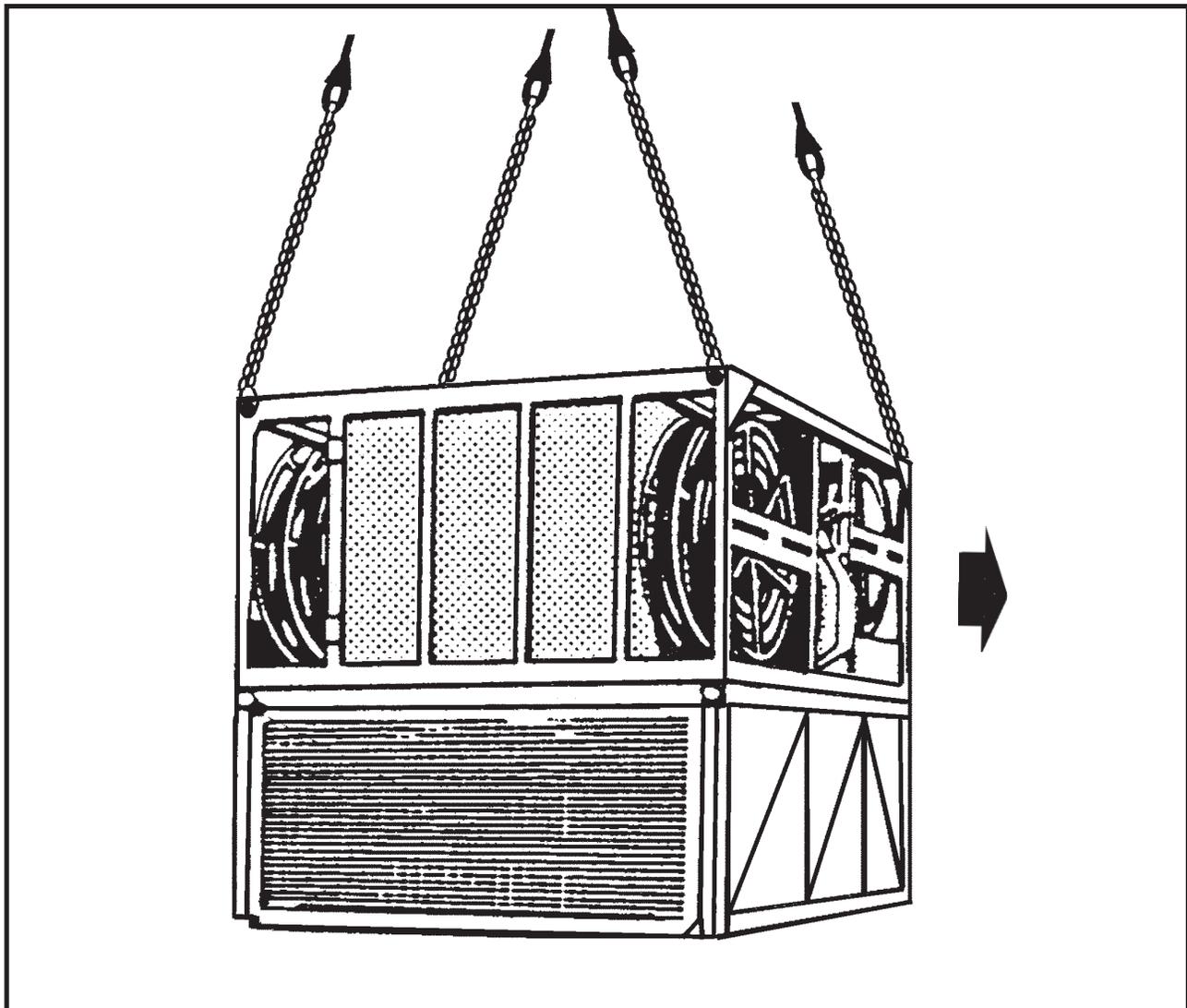
(b) Secure the cable reels with Type III nylon cord.

(c) Wrap the tie-down straps and turnbuckles with padding and secure the padding with tape. Secure them to the pallet with the rubber straps provided.

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

(3) **Hookup.** The hookup team stands on the pallet. 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 load. Route outer sling legs 1 and 2 to the front (cable reel end) 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 left front lift provision located on the top left corner of the frame. Place the correct link from Table 12-8 in the grab hook. Repeat with sling leg 2 on the top right corner of the frame.

3. Loop the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 12-8 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 on top of the frame to prevent entanglement during hookup and lift-off.

*Figure 12-8. Digital Group Multiplexer (DGM), Digital Antenna Mast Program (DAMP)*

## 12-10. Digital Group Multiplexer (DGM), Auxiliary Equipment Transportation Container (AETC), 2 and 3 Mast Configurations

**a. Applicability.** The following items in Table 12-9 are certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

**Table 12-9. Digital Group Multiplexer (DGM), Auxiliary Equipment Transportation Container (AETC)**

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
DGM, AETC, 2 Mast Configuration	3,028	10K	3/3	100
DGM, AETC, 3 Mast Configuration	4,014	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.

**c. Personnel.** Four 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:

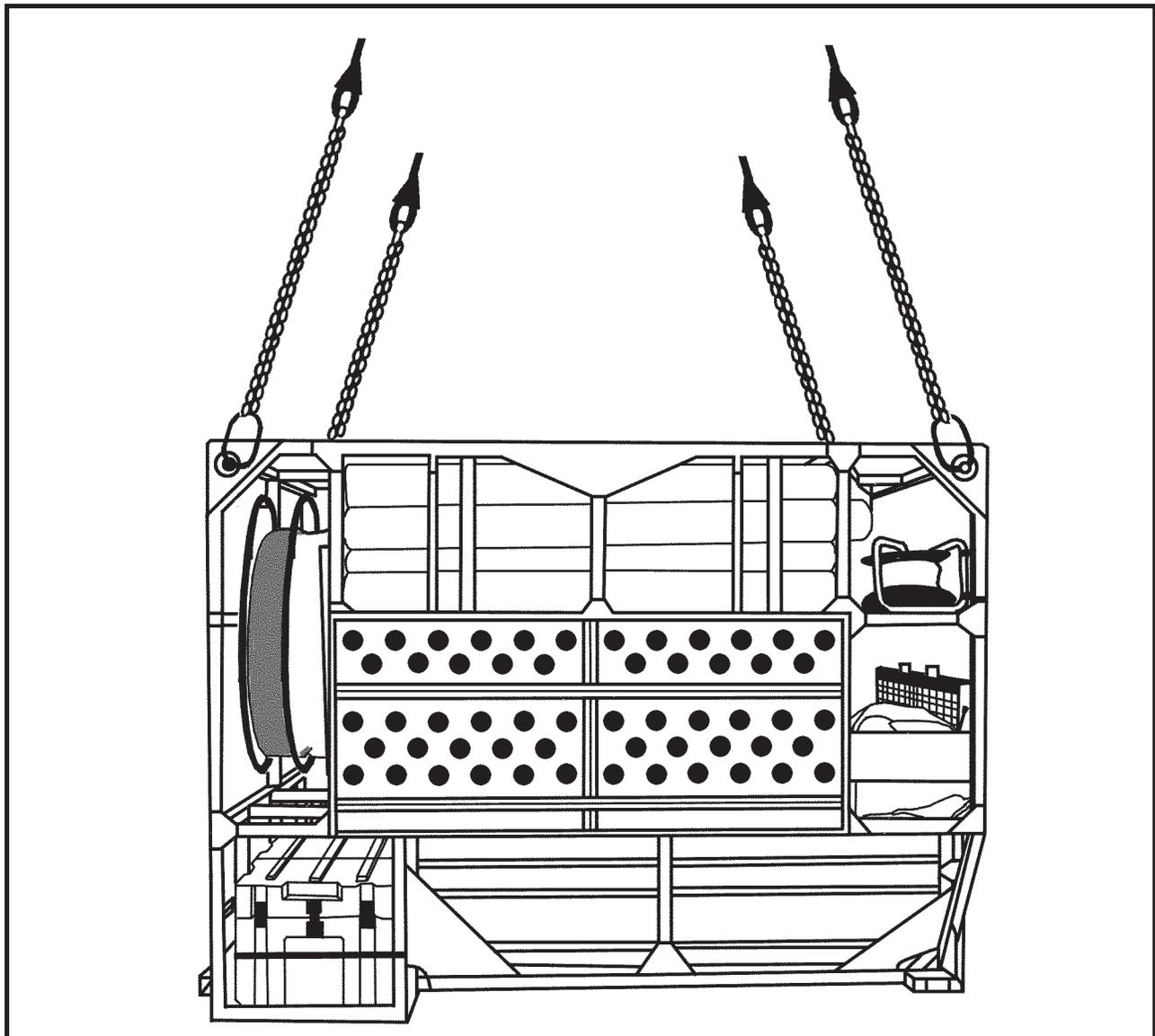
(a) Secure all loose equipment inside the AETC with tape or Type III nylon cord.

(b) Remove and stow the AETC cover. Secure the cover with Type III nylon cord.

(2) **Rigging.** Rig the load according to the steps in Figure 12-9.

(3) **Hookup.** The hookup team stands on the AETC. 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 load. 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 left front lift provision. Place the correct link from Table 12-9 in the grab hook. Repeat with sling leg 2 on the top right corner of the frame.

3. Loop the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 12-9 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 on top of the AETC to prevent entanglement during hookup and lift-off.

*Figure 12-9. Digital Group Multiplexer (DGM), Auxiliary Equipment Transportation Container (AETC)*

## 12-11. Lightweight Generator Frame Assembly (AN/TSC-93B Reconfiguration) Satellite Communications Terminal

**a. Applicability.** The following items in Table 12-10 are certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

**Table 12-10. Lightweight Generator Frame Assembly (AN/TSC-93B Reconfiguration)**

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
AN/TSC-98B Satellite Communications Terminal without ALTA	3,644	10K	3/3	110
AN/TSC-98B Satellite Communications Terminal with ALTA	3,957	10K	3/3	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, cargo, CGU-1/B (3 each).

**c. Personnel.** Four 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 all loose equipment with CGU-1/B tie-down straps, tape, or Type III nylon cord.

(b) Remove and stow the cover. Secure the cover with Type III nylon cord.

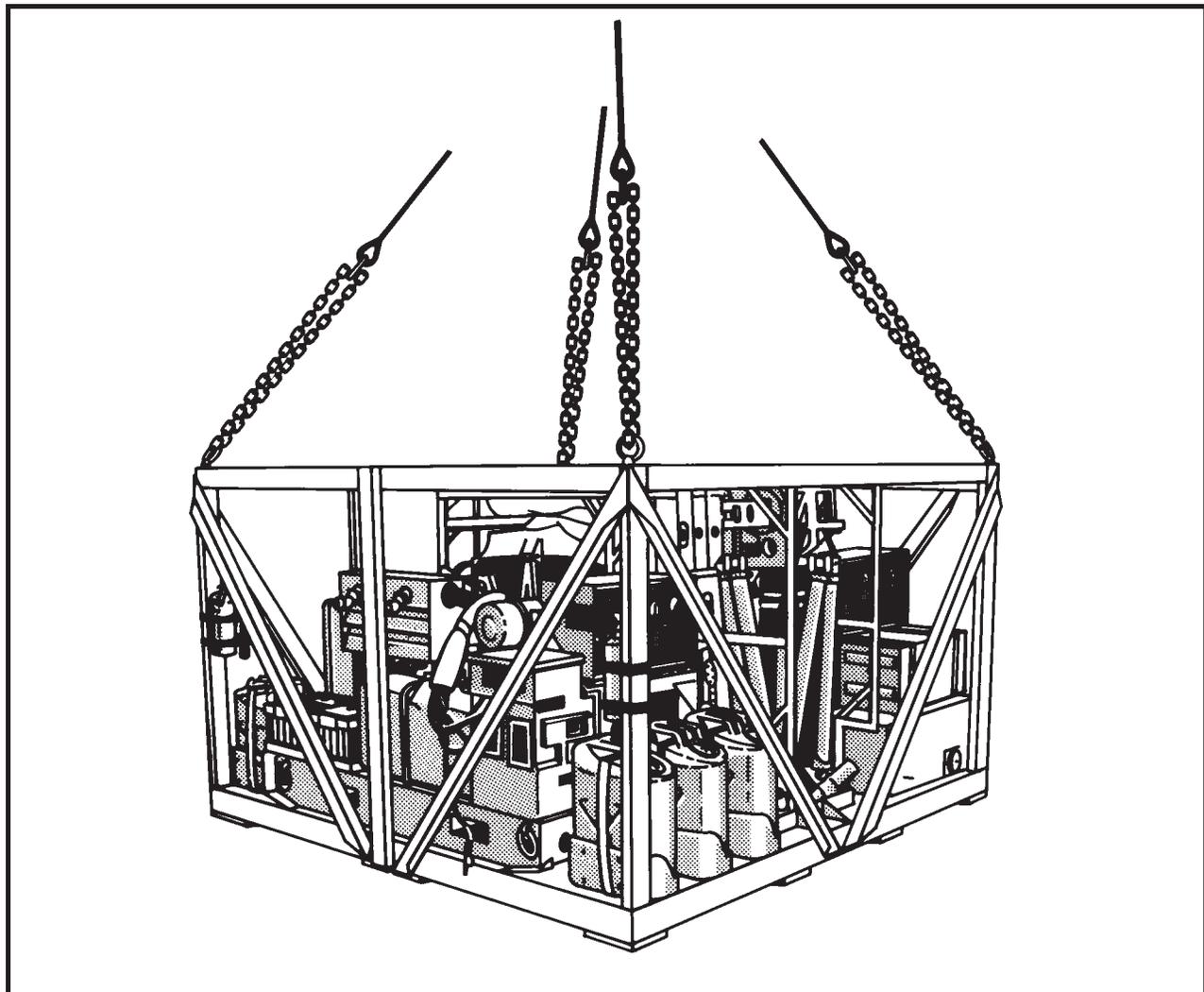
(2) **Rigging.** Rig the load according to the steps in Figure 12-10.

(3) **Hookup.** The hookup team stands on the frame corners, diagonally across from each other. 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.

### CAUTION

**Brief the helicopter crew to relax the sling leg tension and hover to the side of the load when releasing the apex fitting.**

(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 load. 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 left front lift provision. Place the correct link from Table 12-10 in the grab hook. Repeat with sling leg 2 on the top right corner of the frame.
3. Loop the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 12-10 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 on top of the load to prevent entanglement during hookup and lift-off.

*Figure 12-10. Lightweight Generator Frame Assembly (AN/TSC-93B Reconfiguration)*