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**Multiservice Helicopter Sling Load:  
Single-Point Load Rigging Procedures**

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Department of the Air Force  
United States Coast Guard  
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# Multiservice Helicopter Sling Load: Single-Point Load Rigging Procedures

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# Preface

## SCOPE

This manual is one of a series of manuals for aviation and ground personnel who perform helicopter sling load missions ashore or aboard ship. Other manuals in this series are TM 4-48.09(FM 4-20.198)/MCRP 4-11.3E, VOL I/NWP 3-04.11/AFMAN (I) 11-223, VOL I/COMDTINST M13482.2B and TM 4-48.11 (FM 4-20.199/MCRP 4-23E, VOL III/NWP 3-04.13/AFJMAN 11-223, VOL III/COMDTINST M13482.4A

These manuals are a coordinated effort of the US Army, US Marine Corps, US Navy, US Air Force, and US Coast Guard. All services participate in the sling load certification program begun by the Army in 1984. These manuals include standardized rigging procedures and other information from that program. Chapters 2 through 14 contain rigging procedures for single-point loads which have been certified for sling load. Chapters 15 through 23 contain rigging procedures which have not been certified but have demonstrated acceptable static lift and flight characteristics during a flight test.

Efforts were made to standardize ground crew and hookup procedures and terminology. Where service-unique requirements apply to an entire chapter or body of text, the service initials are at the beginning of the chapter or text. Otherwise the initials are at the end of the applicable sentence.

Rigging equipment and procedures described in this manual may not be authorized for all aircraft or services because of equipment or service restrictions.

This publication applies to the Active Army, the Army National Guard (ARNG)/Army National Guard of the United States (ARNGUS), and the United States Army Reserve (USAR) unless otherwise stated.

## USER INFORMATION

The proponent of this publication is HQ TRADOC. Recommendations for changes or improvement to the manual are requested.

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USA - Director, Aerial Delivery and Field Services Department, 710 Adams Avenue, Ft. Lee, VA 23801-1502

USMC -CG, MCCDC, Quantico, VA 22134-5021 with copy to CG, MARCORSSYSCOM (PSE), Quantico, VA 2314-5021

USN - Naval Air Systems Command, AIR-4.3.5.4, Mechanical Systems Branch, External Loads Transport Systems, NAVAIR Lakehurst NJ 08733

USAF - Applicable major command (DO)

USCG - Cmdt (G-OAV), Washington, DC 20330

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# Chapter 1

## Fundamental Principles of Sling Load

### INTRODUCTION

1-1. This chapter contains general information about certification for helicopter sling load and explains the role of the Surface Deployment and Distribution Command Transportation Engineering Agency (SDDCTEA) and the Department of Defense (DOD) sling load certification authority. This authority rests with the US Army Natick Soldier Research, Developing, and Engineering Center (NSRDEC). This chapter also explains the information contained in the equipment rigging procedures and gives some general rigging instructions.

### CLASSIFICATION DEFINITIONS OF SLING LOAD

1-2. All sling loads are classified under one of the following definitions:

- **Certified Sling Loads.** Certified sling loads are those items of equipment and their associated rigging procedures which have completed the evaluation and testing required by Natick Soldier Research, Developing, and Engineering Center (NSRDEC) for sling load certification. These rigging procedures are in Chapters 2 through 14. The US Army NSRDEC has indicated that any single point sling load certified under a specific aircraft is also certified for any aircraft with suitable lift capability. The following restrictions apply for sling load certification to remain in effect:
  - The load must be within the lifting capability of the desired helicopter model and not exceed the rated capacity of the sling set being used.
  - The load shall be rigged in accordance with the certified rigging procedure. Failure to rig the load exactly as directed by the certified rigging procedure creates a unique load.
  - The maximum tested stable airspeed (straight and level flight determined during one flight test) specified for the load in the applicability section of the rigging procedure or in appendix C of this manual is a recommendation and not a restriction, unless so stated.
  - Changes or modifications to load characteristics (weight, model, NSN, accompanying load, structure of items etc.) creates a unique load.
  - This certification is limited to single-point loads only.

---

*Note.* When carrying loads at weights close to the aircraft hook limitations, close coordination with the aviation unit is required.

---

#### CAUTION

Loads weighing less than 6,000 pounds may not fly in a stable condition and may incur jettisoning problems when flown under a CH-53E helicopter. CH-53E units may have restrictions on flying light loads. Direct coordination with CH-53E units is encouraged.

- **Suitable Sling Loads.** Suitable sling loads are those items of equipment and their associated rigging procedures that have not been certified but have demonstrated acceptable static lift and flight characteristics during a flight test. In most cases these loads were not pull tested in

accordance with MIL-STD-913, but are known loads which have been flown without incident for years and which NSRDEC considers to be proven safe. These rigging procedures are in Chapters 15 through 23.

- **Unique Sling Loads.** Unique loads are equipment carried on a one time or low-frequency basis, such as telephone poles, artillery targets, or barrier material. The lack of sling load certification in itself does not preclude a commander from carrying a unique load. Due to the lack of rigging procedures, unique loads shall be considered high risk loads. Only the most experienced personnel should attempt to rig and inspect a unique load. During execution, the pilot-in-command assumes complete responsibility for making the decision to complete or abort the mission with a unique load in all circumstances. When possible, static lift the load prior to flight to determine weight, verify rigging procedures, and assess the balance of the load. Each service is responsible for determining its policy on carrying unique loads. The movement of unique loads shall be approved by the high risk approving authority (Operational Risk Management (ORM) high risk authority for Navy/USMC). (USA) The name and rank of the approving authority should be printed in the bottom right corner of the remarks block on DA Form 7382. (Navy/USMC) Where time is available, a waiver should be requested through the chain of command to the approving authority indicated in this publication. (Navy/USMC) If a waiver is not operationally feasible, pending testing and certification, such items may be lifted in support of operational requirements at the Commander's discretion.
- **Prohibited Sling Loads.** Prohibited sling loads are items of equipment that are prohibited from sling loading as determined by each service. These loads have been denied sling load certification and are a safety hazard if carried. They have either structural deficiencies or have exhibited unstable flight characteristics during flight testing. Each service will identify these loads and transmit this information by separate list. Contact your service point of contact identified in the Preface if you have any questions regarding the classification of a particular load.

## CERTIFICATION OF EQUIPMENT FOR HELICOPTER SLING LOAD

1-3. Certification for sling load assures the user that the item has met minimum standards

- **Objective.** The objective of sling load certification is to assure the user that the equipment being transported can withstand the stresses of a sling load flight environment. Certification for sling load assures the user that the item has met minimum standards for structural integrity and that the associated rigging procedures have been developed specifically for that item.
- **Responsibilities.** Within the US Army, the SDDCTEA is responsible for transportability approval of developmental equipment. Within the DOD, NSRDEC is the lead activity responsible for providing sling load certification and rigging procedures for military equipment. When an item is certified for sling load, it means that NSRDEC, in cooperation with various test activities, has:
  - Conducted an engineering analysis of the load and lifting provisions for structural adequacy during sling loading.
  - Verified that the lift provisions meet the strength requirements of the applicable military standard by means of proof load testing.
  - Developed and/or validated sling load rigging procedures through static lift testing.
  - Evaluated flight reports and determined that the particular load meets acceptable flight characteristics with the type helicopter flown during the flight test.
  - Issued a statement of sling load certification for the particular load, including load configuration(s), weight(s), types of helicopter(s), and maximum tested stable airspeed (straight and level flight as attained during the one flight evaluation). Certification is valid only for the conditions specified in the rigging procedures.

## REQUESTS FOR SLING LOAD CERTIFICATION

1-4. Each service headquarters must designate, request, and prioritize the fielded equipment to be evaluated by NSRDEC for sling load certification. Individual units can request sling load certification for fielded equipment through the appropriate service agency which will add the item to the prioritized list. The NSRDEC will evaluate the equipment on a priority basis. Single-point loads which have been certified under any DOD helicopter may be flown in the single-point configuration by any DOD helicopter with suitable lift capability. The following agencies are responsible for their branch of service:

- **US Army** - Commander, Combined Arms Support Command, ATTN: QM Combat Developments, Suite 250, 3901 A Avenue, Fort Lee, VA 23801-1809.
- **US Marine Corps** - Commanding General, Marine Corps System Command (PSE) Quantico, VA 22134-5021.
- **US Navy** - Naval Air Systems Command (NAVAIR).
- **US Air Force** - US Air Force Systems Command.

## UNIQUE ITEMS OF EQUIPMENT OR OPERATIONAL REQUIREMENTS

1-5. Helicopter sling loading of unique items, due to operational requirements, will be at the discretion of the commander. Equipment not listed in this manual should be static lifted (when possible) by a crane to determine proper rigging and stability characteristics. Personnel thoroughly familiar with sling load rigging procedures should assist in the static lift testing. Flight evaluating may be conducted after a satisfactory static rigging configuration has been determined.

---

*Note.* Low density equipment with low weight and large surface area (flat surfaces), such as shelters, empty trailers, pallet loads, boat shaped items, and empty fuel or water drums, are likely to become extremely unstable when flown during sling load operations, even at low airspeeds, and should be flown with extreme caution.

---

## EQUIPMENT RIGGING PROCEDURES

1-6. This section explains the information that is contained in the rigging procedures for each load. Chapters 2 through 14 contain the rigging procedures for certified single-point loads and Chapters 15 through 23 contains the rigging procedures for suitable single-point loads.

- **Applicability Paragraph.** The applicability paragraph states whether a load is “certified” or “suitable” for sling load and the types of helicopters. The maximum tested stable airspeed is listed in Appendix C. For certified loads, this airspeed is the maximum airspeed attained by the helicopter during the evaluation flight before the load became unstable or before the aircraft power requirements were exceeded. For suitable loads, the maximum recommended airspeed is based on previous experience with this helicopter/load combination. **For either certified or suitable loads, the airspeed listed is a recommendation and not a restriction, unless so stated. The aircrew should closely monitor the load during the flight, especially if the helicopter exceeds the recommended airspeed.**
- **Load Description.** The load description paragraph identifies the load, model, national stock number (NSN) or other identification, and the weight of the load for certification.
  - The actual weight of the equipment may vary somewhat from the actual rigged weight during the flight evaluation due to equipment modifications, fuel, equipment added to the load, or different models of the same item. The load weight on the equipment data plate or in the operator’s manual takes precedence over the load weight in this manual. Weigh the load if there is any doubt about its actual weight. If the load weight exceeds the weight listed in the load

description paragraph, the load becomes a unique load. Contact your service point of contact if you have any questions about the load description or weight.

- Equipment such as cargo trailers and cargo trucks contain descriptions of the allowable additional cargo weight. Do not exceed the fully loaded weight. Some trailers become extremely unstable at low weights; therefore, a minimum weight is identified. If your trailer is below that weight, add more cargo or dummy weight as close to the center of the trailer as possible until you reach the minimum weight.
- **Preparation.** The preparation steps are intended to reduce the possibility of damage to the equipment caused by sling leg entanglement during the hookup and lift-off operation or by wind resistance encountered during the flight. Since these preparation steps are not directive in nature, the commander assumes responsibility for any damage to the equipment caused by deviation from the preparation steps.
- **Rigging.** The rigging steps give information as to the position of the apex fitting on the load, routing orientation of the sling legs, location of the lift provisions, chain link number for each sling leg, and steps required to prevent the sling legs from becoming entangled on the load. Do not change the chain link number in the rigging procedures under any circumstances as it may change sling leg loading and cause lift provision failure.
  - The purpose of the illustration accompanying the rigging procedures is to depict what a properly rigged load looks like with the slack removed from the sling legs. The arrow identifies the direction of flight.
  - Appendix A contains NSN component listings for slings, sling sets, cargo nets, and other miscellaneous equipment and materials.
- **Hookup.** Certain sling loads, such as HMMWVs with shelters, present substantial risk of damage to the load or injury to the hookup personnel. This risk is increased during dual point hookup or night operations.
  - To reduce the risk of damage to the load or injury to the hookup personnel an extended sling system or reach pendant as defined in FM 4-20.197 may be used.
  - Using a reach pendant increases the distance between the load and the helicopter. Reach pendants should not be used on loads that have a tendency to spin during flight. A static discharge person is not required when using a reach pendant.
  - If the tactical environment permits, the use of a longline sling set may reduce the risk. Polyester round slings are recommended for use as vertical pendants.

## GENERAL RIGGING INSTRUCTIONS

### CAUTION

Inspect lifting provisions and supporting structure for damage or degradation prior to sling loading. Do not transport loads with damaged or degraded lift provisions.

1-7. All single-point loads have rigging instructions.

- **Preparing the Load.** Prepare the load to be transported by following the preparation and rigging instructions for each item. Typical preparation instructions will provide information to secure loose items, remove or secure canvas covers, and remove obstructions, such as antennas. Place protective padding on windshields and other components that could be damaged by the metal parts of the sling set during hookup or release. The load should be secure enough to withstand winds in excess of 120 knots caused by the forward airspeed of the aircraft. If possible, position the load in the takeoff direction so the pilot does not have to pick the load up and then turn the aircraft into the takeoff direction.

- **Preparing the Equipment.** Inspect and assemble the slings and miscellaneous equipment required to prepare and rig the load. Following the instructions in Chapter 6 of FM 4-20.197/MCRP 4-11.3E, VOL I/NWP 3-04.11/AFMAN 11-223(I), VOL I/COMDTINST M13482.2B, add or remove sling legs, chains, or apex fittings as required. Never exceed the capacity of the sling legs or apex fitting/web ring. If you have a sling set with a higher capacity than the sling set prescribed, use the chain link conversion chart in Appendix B to determine the corresponding chain link for your sling set.
- **Positioning and Attaching the Sling Set.** Position the sling set near the load. The sling legs for a typical load with four lifting points are routed as shown in Figure 1-1.
  - Rigging a typical load with four lifting points is begun by connecting:
    - Sling leg 1 to the left front lifting provision.
    - Sling leg 2 to the right front lifting provision.
    - Sling leg 3 to the left rear lifting provision.
    - Sling leg 4 to the right rear lifting provision.
    - If a six-leg sling set is required, the innermost sling legs, 5 and 6, are connected to the left and right middle lift provisions.

---

**Note.** Odd numbered sling legs go to the same side of the load.

---

- Following the equipment rigging procedures, loop the free end of the chain end through the lift provision and insert the specified chain link in the grabhook/grab link. Tie or tape the excess chain end to prevent the unrestrained chain from damaging the load. If necessary, wrap padding around the chain or rope assembly to prevent damage to the load or sling set. If the procedures prescribe a spreader bar, install and pad it according to the rigging instructions.
- Breakaway safety ties are used to temporarily restrain the sling legs to keep them from becoming entangled on the load as the helicopter lifts the load. These safety ties are made of Type I, 1/4-inch cotton webbing or duct tape.
- **Viewing the Load.** Left, right, front, and rear directions are designated from the driver's perspective for vehicles and towed equipment. Howitzer gun tubes are considered the front of the load. The front or rear is identified on other items of equipment. The sling leg numbering system prevents sling legs from crossing each other and causing damage to the sling legs or causing the load to twist in flight. To improve flight stability, some loads are transported backwards. Do not confuse the front of the load as it is carried with the end designated as the front for rigging purposes. The arrow shown in the illustration identifies the direction of flight.

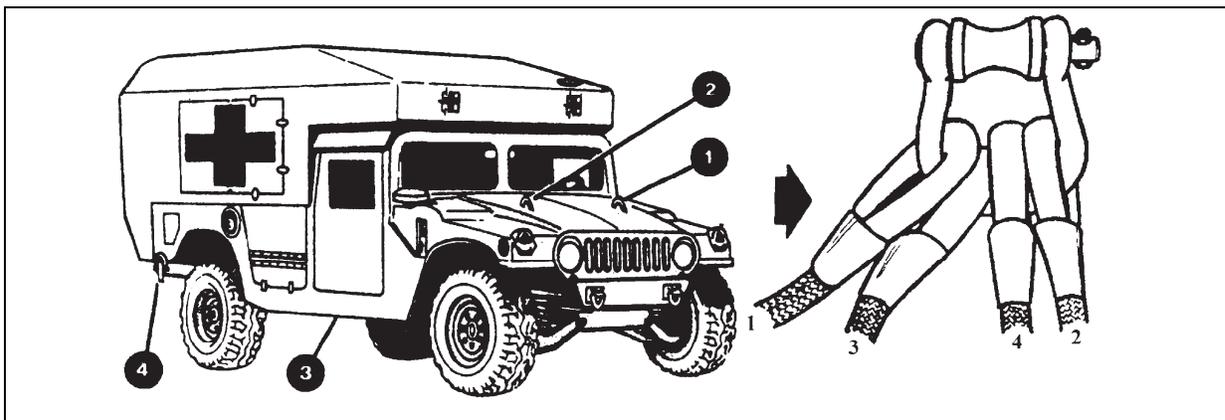


Figure 1-1. Sling Leg Lifting Point Designation

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## Chapter 2

# Certified Single-Point Rigging Procedures for Wheeled Vehicles

### INTRODUCTION

2-1. This chapter contains rigging procedures for single-point wheeled vehicle loads that have 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 wheeled vehicles are in this section. Paragraphs 2-2 through 2-44 give detailed instructions for rigging loads.

- 
- Notes.** 1. Reach pendants may be used on all single point loads. A static discharge person is not required when using a reach pendant.
2. Canvas tops and doors should be removed and stowed inside the vehicle if time allows. These items may be damaged if the airspeed exceeds 100 knots.
- 

### M996/M997/M997A2 TRUCK, AMBULANCE, (HMMWV)

2-2. The M996/M997/M997A2 ambulance is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 2-1 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-1. Truck, Ambulance, (HMMWV)**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Truck, Ambulance, M996, HMMWV	7,400	10K	80/30
Truck, Ambulance, M997, HMMWV	7,400	10K	80/30
Truck, Ambulance, M997A2, HMMWV	10,300	25K	65/24

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - OR
  - Sling set (25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Spreader bar assembly (component of vehicle).
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:

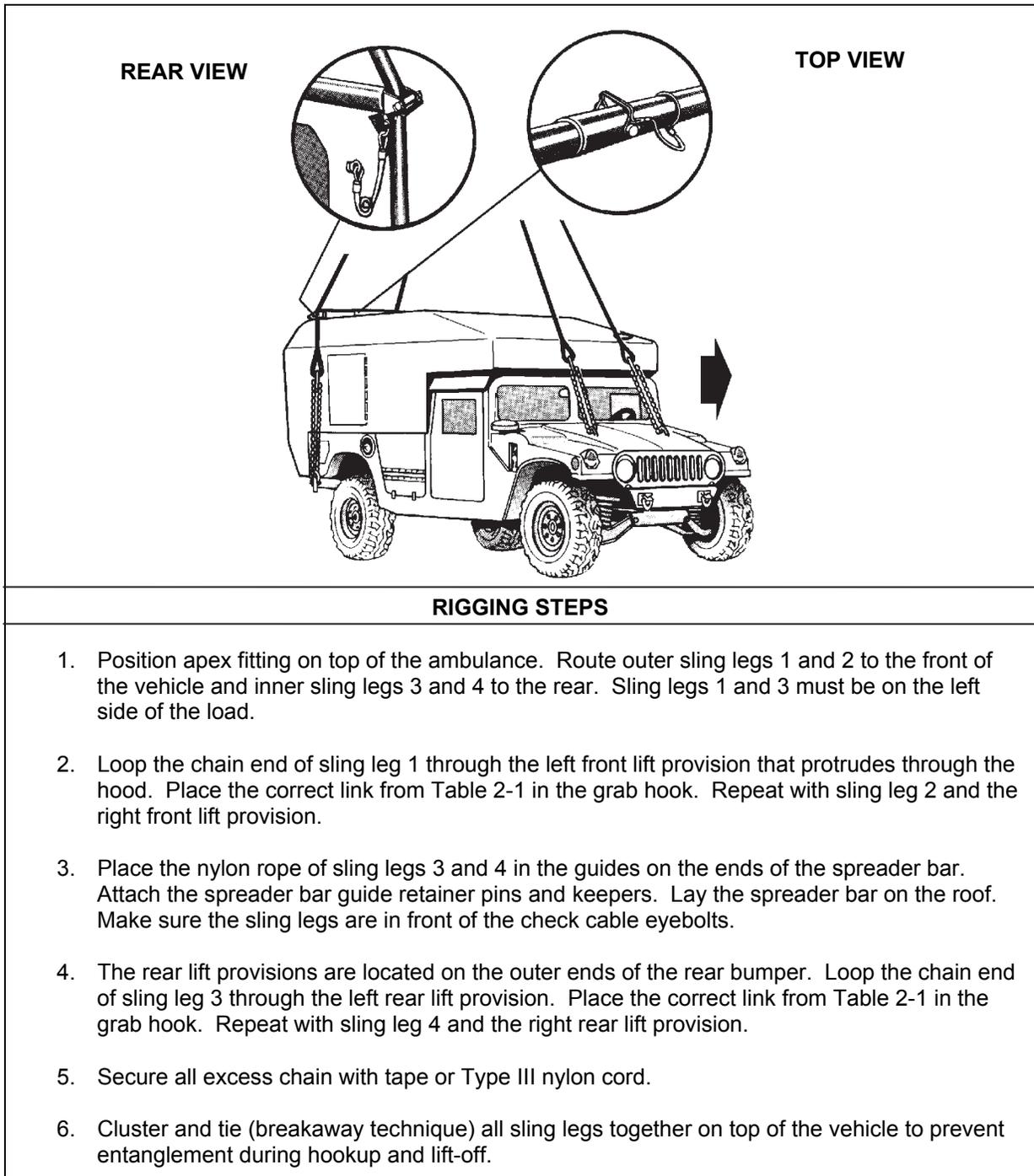
- Fold the mirrors forward in front of the windshield and tie together with Type III nylon cord. Tape the windshield in an X formation from corner to corner.
  - Remove the spreader bar from under the right hand seat inside the ambulance.
  - Secure all equipment inside the rear compartment with tape, nylon cord, and/or lashings. Close and secure the door.
  - Secure all other equipment inside the vehicle with tape, nylon cord, and/or lashings. Close and secure the doors.
  - Make sure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
  - Engage the vehicle parking brake. Place the transmission in neutral.
  - Make sure that the front wheels are pointed straight ahead. Tie down the steering wheel using the securing device attached under the dashboard.
  - Secure the Red Cross insignia covers in the closed position.
  - Remove the keeper from the spreader bar and extend the bar so the holes line up. Reinstall pin and engage keeper. Use the sighting hole in the tube to assist in aligning holes for the pin. See top view insert in Figure 2-1.
  - Position the spreader bar across the rear end of the vehicle roof. Attach the spreader bar check cables to the eyebolts located on the aft exterior sidewall of the rear compartment. See rear view insert in Figure 2-1.
  - Install lift provisions on the outer ends of the rear bumper by removing the tie-down provisions located inboard of the bumper ends and installing them on the outer ends of the rear bumper, if necessary.
- **Rigging.** Rig the load according to the steps in Figure 2-1.

---

*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.

---

- **Hookup.** The hookup team stands on the roof 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 carefully dismounts the vehicle and 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 2-1. M996/M997/M997A2 Ambulance (HMMWV)**

**CAUTION**

Do not use the lift shackles located near the center of the rear bumper for sling load lift provisions.

## M966/M1036/M1045/M1045A2/M1046 TOW MISSILE CARRIER (HMMWV), M1025/M1025A2/M1026/M1043/M1043A2/ M1043A2 WITH MARINE ARMOR KIT (MAK)/M1044/M1151 ARMAMENT CARRIER (HMMWV)

2-3. The M966/M1036/M1045/M1045A2/M1046 TOW Missile Carriers and the M1025/M1025A2/M1026/M1043/M1043A2/M1043A2 with MAK/M1044/M1151 Armament Carrier are rigged for single-point sling load using the following procedures:

- **APPLICABILITY.** The following items in Table 2-2 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-2. TOW Missile/Armament Carriers, (HMMWV)**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
TOW Missile Carrier, HMMWV, M966/M1036/M1045/M1046	Varies by Model	10K 15K 40K	80/3 60/3 53/3
TOW Missile Carrier, HMMWV, M1045A2	10,300	25K	65/5
Armament Carrier, HMMWV, M1025/M1026/M1043A2	Varies by Model	10K 15K 40K	80/3 60/3 53/3
Armament Carrier, HMMWV, M1025A2/M1043A2	10,300	25K	65/5
Armament Carrier, HMMWV, M1025A2, Line of Sight Anti-Tank (LOSAT), Resupply Vehicle with Reloader Crane	8,240	10K	40/3
Armament Carrier, HMMWV, M1043A2 with MAK (USMC)	10,300	15K	35/3
Armament Carrier, HMMWV, M1151 (Empty)	7,300	25K 15K	50/3 50/3
Armament Carrier, HMMWV, M1151 (Loaded)	11,500	25K 15K	20/3 20/3

**Notes.** 1. Recommended airspeed for CH-53E when using the 15,000-pound multileg sling set is 80 knots. The recommended airspeed for the CH-53E when using the 40,000-pound capacity sling set is 95 knots.

2. For vehicle weights up to 7,300 pounds, the recommended maximum airspeed for the UH-60 is 100 knots. For loads weighing above 7,300 pounds, the recommended maximum airspeed is 70 knots. Coordinate closely with the aviation unit as to the vehicle weight including all gear carried on the vehicle.

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity, 25,000-pound capacity, or 40,000-pound capacity).
  - OR
  - Multileg sling set (15,000-pound).
    - Chain length, from a 15,000-pound capacity sling set (4 each) (used on M1043A2 with MAK).
    - Coupling link, from a 15,000-pound sling set (4 each) (used on M1043A2 with MAK).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.

- Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Extend the sling leg chains by connecting one additional chain length to each chain on a 15,000-pound capacity sling set with a coupling link (used on M1043A2 with MAK).
    - Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord. Tape the windshield in an X formation from corner to corner.
    - Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings. Remove antennas and stow inside vehicle.
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
  - **Rigging.** Rig the load according to the steps in Figure 2-2.
  - **Hookup.** The hookup team stands on the roof 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 carefully dismounts the vehicle and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

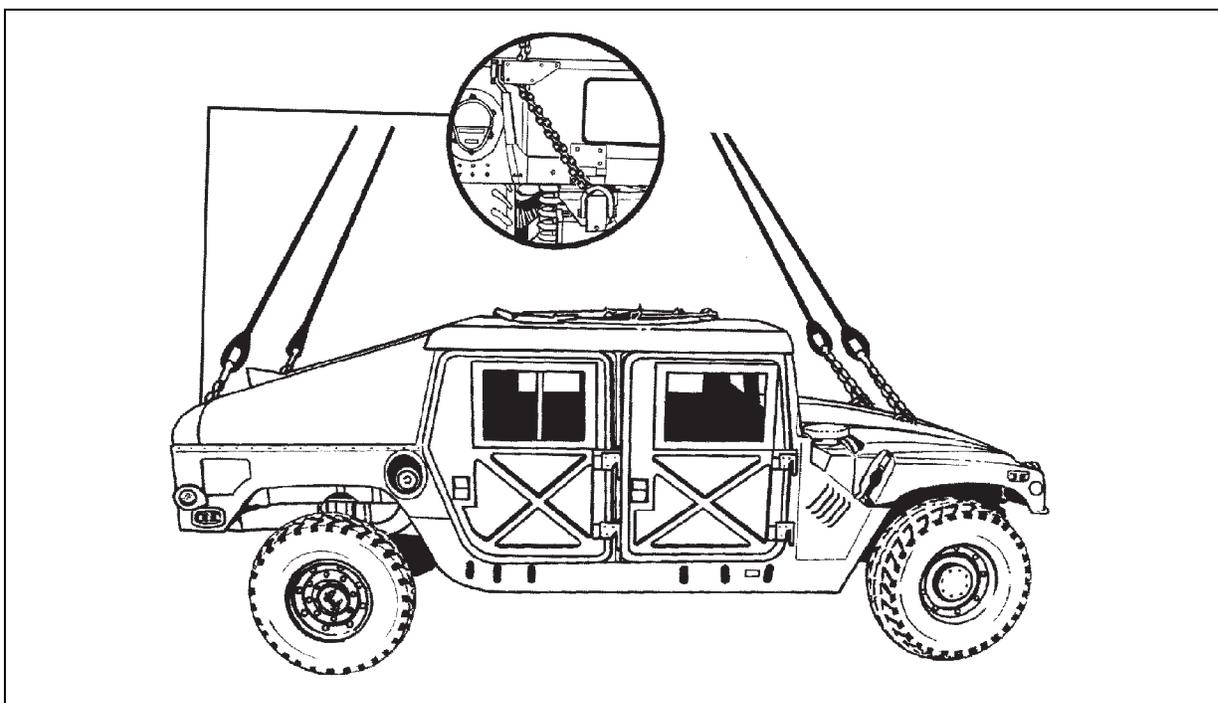


Figure 2-2. TOW Missile Carrier (HMMWV)

<b>RIGGING STEPS</b>	
1.	Position apex fitting on the roof of the vehicle. Route outer sling legs 1 and 2 to the front of the vehicle 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 that protrudes through the hood. Place the correct link from Table 2-2 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with tape or Type III nylon cord.
3.	Route the chain end of sling leg 3 through the eyelet opening in the upper left corner of the tailgate. Loop the chain end through the left lift provision on the bumper and thread back through the eyelet opening in the tailgate. Place the correct link from Table 2-2 in the grab hook. Repeat with sling leg 4 and the right rear lift provision. See insert above.
4.	Wrap rear chains with padding where they contact the shell back.
5.	Cluster and tie (breakaway technique) all sling legs together on top of the vehicle to prevent entanglement during hookup and lift-off.

**Figure 2-2. TOW Missile Carrier (HMMWV) (Continued)**

**M998/M1123 WITH MARINE ARMOR KIT (MAK) (USMC)/M1037 MODIFIED (GVW 9,400 LBS)/M1038/M1097/M1097A2/M1152 TRUCK, CARGO, 1 1/4-TON (HMMWV)**

2-4. The M998/M1123 with MAK/M1037 Modified/M1038/M1097/M1097A2/M1152, 1 1/4-ton cargo trucks are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 2-3 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-3. 1 1/4-Ton Cargo Truck (HMMWV)**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Truck, 1 1/4-ton, HMMWV, M998/M1038	7,700	10K 15K 40K	80/3 60/3 53/3
Truck, 1 1/4-ton, HMMWV, M998A1	7,500	10K 15K 40K	80/3 60/3 53/3
Truck, 1 1/4-ton, HMMWV, M998 with AN/MRC110-A Radio Set	7,700	10K 15K 40K	80/3 60/3 53/3
Truck, 1 1/4-ton, HMMWV, Modified , (GVW 9,400 lbs), M1037	9,400	10K 15K	80/3 60/3
Truck, 1 1/4-ton, Heavy HMMWV, Cargo Variant, M1097	10,001	25K	60/10
Truck, 1 1/4-ton, Heavy HMMWV, Cargo Variant, M1097A2	10,300	25K	60/10

**Table 2-3. 1 1/4-Ton Cargo Truck (HMMWV) (Continued)**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Integrated System Control (ISYSCON), Support Carrier/RadioTruck, 1 1/4-ton, Heavy HMMWV, M1097.	10,300	25K	60/10
Truck, 1 1/4-ton, HMMWV with MAK, M1123, 2 door or 4 door passenger compartment (USMC)	10,300	15K	35/3
Truck, 1 1/4-ton, Heavy HMMWV, Cargo Variant, M1152 (Empty)	7,300	25K 15K	60/3 50/3
Truck, 1 1/4-ton, Heavy HMMWV, Cargo Variant, M1152 (Loaded)	11,500	25K 15K	20/3 20/3

**WARNING**

**THIS CARGO VEHICLE (M1037 MODIFIED, 9,400-LB GVW) SHOULD NOT BE CONFUSED WITH THE SHELTER CARRIER (M1037, 8,600-LB GVW). THE M1037, MODIFIED, HAS IMPROVED LIFT PROVISIONS WHICH ALLOWS IT TO BE LIFTED AT HIGHER GROSS VEHICLE WEIGHTS.**

*Note.*: 1. Recommended airspeed for CH-53E when using the 15,000-pound multileg sling set is 100 knots. Recommended airspeed for the CH-53E, when using the 40,000-pound capacity sling set, is 105 knots.

2. For vehicle weights up to 7,300 pounds, the recommended maximum airspeed for the UH-60 is 100 knots. For loads weighing above 7,300 pounds the recommended maximum airspeed is 70 knots. Coordinate closely with the aviation unit as to the vehicle weight including all gear carried on the vehicle.

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity or 25,000-pound capacity or 40,000-pound capacity).  
OR
  - Multileg sling set (15,000-pound capacity)
    - Chain length, from a 15,000-pound capacity sling set (4 each) (used on M1123 with MAK).
    - Coupling link, from a 15,000-pound sling set (4 each) (used on M1123 with MAK).
    - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
    - Cord, nylon, Type III, 550-pound breaking strength.
    - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
    - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Extend the sling leg chains by connecting one additional chain length to each chain on a 15,000-pound capacity sling set with a coupling link (used on M1123 with MAK).

- Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord. If installed, remove canvas covering over the bed of the truck. Remove the doors. Tape the windshield in an X formation from corner to corner. If time permits, fold canvas top and tie to windshield for added protection.
- Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings. Remove antennas and stow inside vehicle.
- Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
- Engage the vehicle parking brake and put the transmission in neutral.
- Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
- **Rigging.** Rig the load according to the steps in Figure 2-3.
- **Hookup.** The hookup team stands in the bed 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 carefully dismounts the vehicle and 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

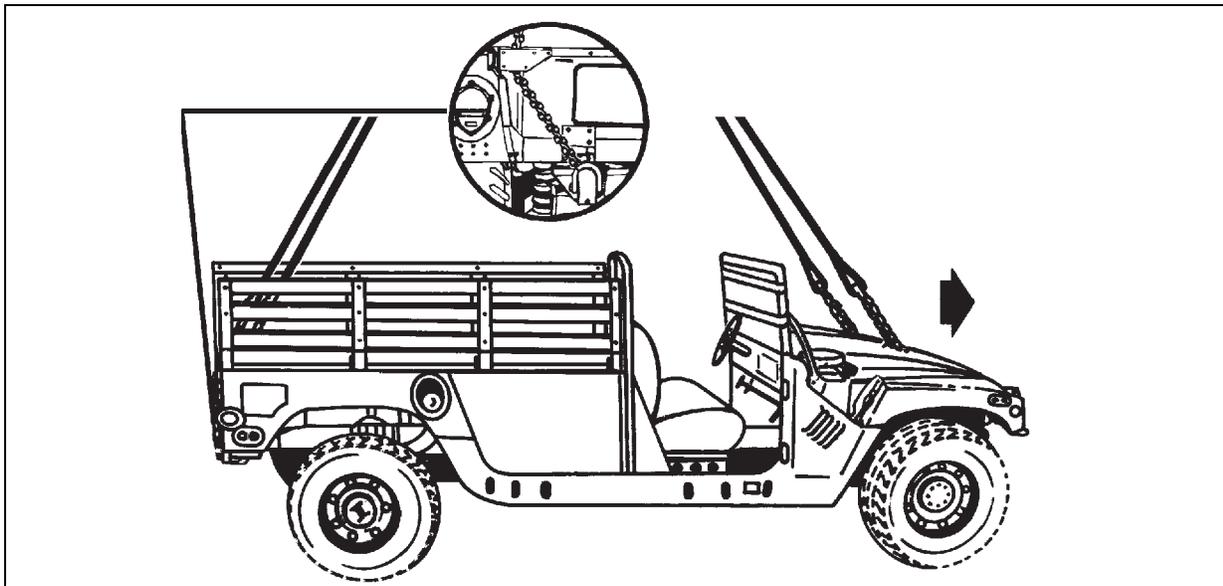


Figure 2-3. 1 1/4-Ton Cargo Truck (HMMWV)

RIGGING STEPS
1. Position apex fitting in the bed of the vehicle. Route outer sling legs 1 and 2 to the front of the vehicle 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 that protrudes through the hood from inboard to outboard. Place the correct link from Table 2-3 in the grab hook. Repeat with sling leg 2 through the right front lift provision. Secure excess chain with tape or Type III nylon cord.
3. Route the chain end of sling leg 3 through the eyelet opening in the upper left corner of the tailgate. Loop the chain end through the left lift provision on the bumper and thread back through the eyelet opening in the tailgate. Place the correct link from Table 2-3 in the grab hook. Repeat with sling leg 4 through the right rear lift provision. See insert above.
4. Cluster and tie (breakaway technique) all sling legs together on top of the trailer to prevent entanglement during hookup and lift-off.

**Figure 2-3. 1 1/4-Ton Cargo Truck (HMMWV) (Continued)**

## M1037/M1042/M1097/M1097A1/M1097A2/M1113/M1152 SHELTER CARRIER (HMMWV) WITHOUT SHELTER

2-5. The M1037/M1042/M1097/M1097A1/M1097A2/M1113/M1152 shelter carriers without shelter are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 2-4 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-4. HMMWV Shelter Carriers without Shelter**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Shelter Carriers, M1037/M1042	5,220	15K 10K	60/3
Shelter Carriers, M1097/M1097A1	10,000	10K	60/3
Shelter Carrier, M1097A2	10,300	25K	50/3
Shelter Carrier, M1113 (Empty)	6,400	25K	40/10
Shelter Carrier, M1152 (Empty)	7,300	25K	60/3
Shelter Carrier, M1152 (Loaded)	11,500	25K	30/3

- **Materials.** The following materials are required to rig this load:
  - Multileg sling set (15,000-pound capacity or 40,000-pound capacity for CH-53 only).
  - OR
  - Sling set (10,000-pound capacity or 25,000-pound capacity for CH-60 and CH-47).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type VI, 1/2-inch or suitable substitute.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.

- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord. Tape the windshield in an X formation from corner to corner.
    - Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings. Secure the doors shut if installed.
    - Ensure the fuel tank is not over 3/4 full. Inspect the fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and place the transmission in neutral.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel using the securing device attached under the dashboard.
    - Install the lift provisions on the outer ends of the rear bumper by removing the tiedown provisions located inboard of the bumper end and installing them on the outer ends of the rear bumper.
  - **Rigging.** Rig the load according to the steps in Figure 2-4.
  - **Hookup.** The hookup team stands in the bed 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 carefully dismounts the vehicle and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

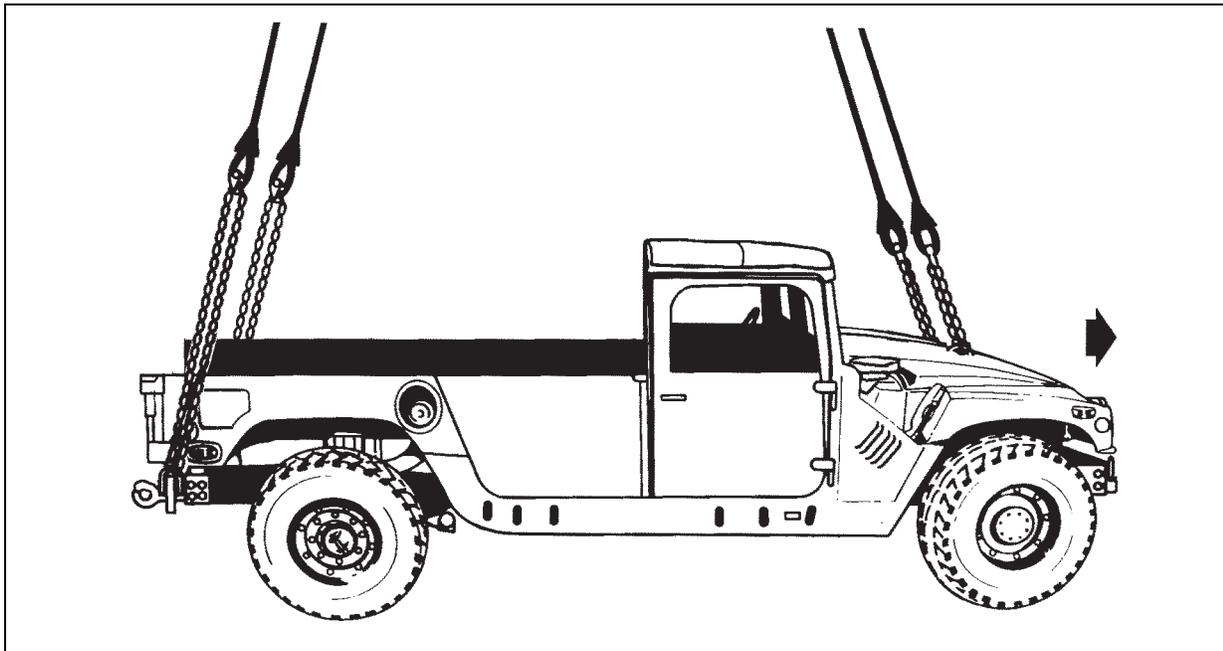


Figure 2-4. HMMWV Shelter Carriers without Shelter

RIGGING STEPS	
1.	Position apex fitting in the bed of the vehicle. Route outer sling legs 1 and 2 to the front of the vehicle 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 that protrudes through the hood from inboard to outboard. Place the correct link from Table 2-4 in the grab hook. Repeat with sling leg 2 through the right front lift provision. Secure excess chain with tape or Type III nylon cord.
3.	Route the chain end of sling leg 3 through the lift provision located on the left end of the bumper from inboard to outboard. Place the correct link from Table 2-4 in the grab hook. Repeat with sling leg 4 through the right rear lift provision. Secure excess chain with tape or Type III nylon cord.
4.	Wrap rear chains with padding where they contact the shelter carrier.
5.	Cluster and tie (breakaway technique) all sling legs together on top of the trailer to prevent entanglements.

**Figure 2-4. HMMWV Shelter Carriers without Shelter (Continued)**

### **M1037/M1042 SHELTER CARRIER (HMMWV) WITH S-250 OR S-250E SHELTER**

2-6. The M1037 and M1042 shelter carriers with S-250 or S-250E shelters are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 2-5 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-5. M1037/M1042 Shelter Carrier (HMMWV) With S-250 or S-250E Shelter**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
NC Operations	8,800	10K	80/30
NC Switch	8,513	10K	80/30
NC LOS (V3)	8,611	10K	80/30
NC Management	8,800	10K	80/30
NC Support	8,400	10K	80/30
LEN Operations	8,800	10K	80/30
LEN Switch	8,800	10K	80/30
LEN LOS (V4)	8,800	10K	80/30
LEN Management	8,800	10K	80/30
LEN Cable Vehicle	8,180	10K	80/30
SSC Command	8,800	10K	80/30
SSC Planning	8,300	10K	80/30
SSC Technical	8,507	10K	80/30

Table 2-5. M1037/M1042 Shelter Carrier (HMMWV) With S-250 or S-250E Shelter (Continued)

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
LOS(V1)	8,800	10K	80/30
LOS(V2)	8,500	10K	80/30
Radio Access Unit	8,800	10K	80/30
SEN(V1)	8,800	10K	80/30
SEN(V2)	8,800	10K	80/30
Maintenance #1	8,084	10K	80/30
Maintenance #2	8,350	10K	80/30
Battalion Spares	8,800	10K	80/30
Company Spares	7,850	10K	80/30
AN/TLQ	8,040	10K	80/30
Deployable Media Production Center	7,840	10K	80/30
Operational Control Group (OCG)/ Firefinder AN/TPQ-36 Block I	7,500	10K	80/30
TLQ-37 Intelligence and Electronic Warfare (IEW) System	8,200	10K	80/30

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Chain length, part number 38850-00053-101, from a 10,000-pound capacity sling set (4 each).
  - Coupling link, part number 5779125, from a 10,000-pound sling set (4 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.
  - Padding, cellulose.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Connect one additional chain length to each chain of the sling set with the coupling link.
    - Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord. Tape the windshield in an X formation from corner to corner.
    - Secure the shelter to the truck using wire rope or tie-down assemblies. Secure all equipment inside the shelter with tape, nylon cord, or lashings; close and secure the door.
    - Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings. Secure the doors shut if installed.
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
    - Install the lift provisions on the outer ends of the rear bumper by removing the tiedown provisions located inboard of the bumper end and installing them on the outer ends of the rear bumper.
  - **Rigging.** Rig the load according to the steps in Figure 2-5.

*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.

- **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 carefully dismounts the vehicle and 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

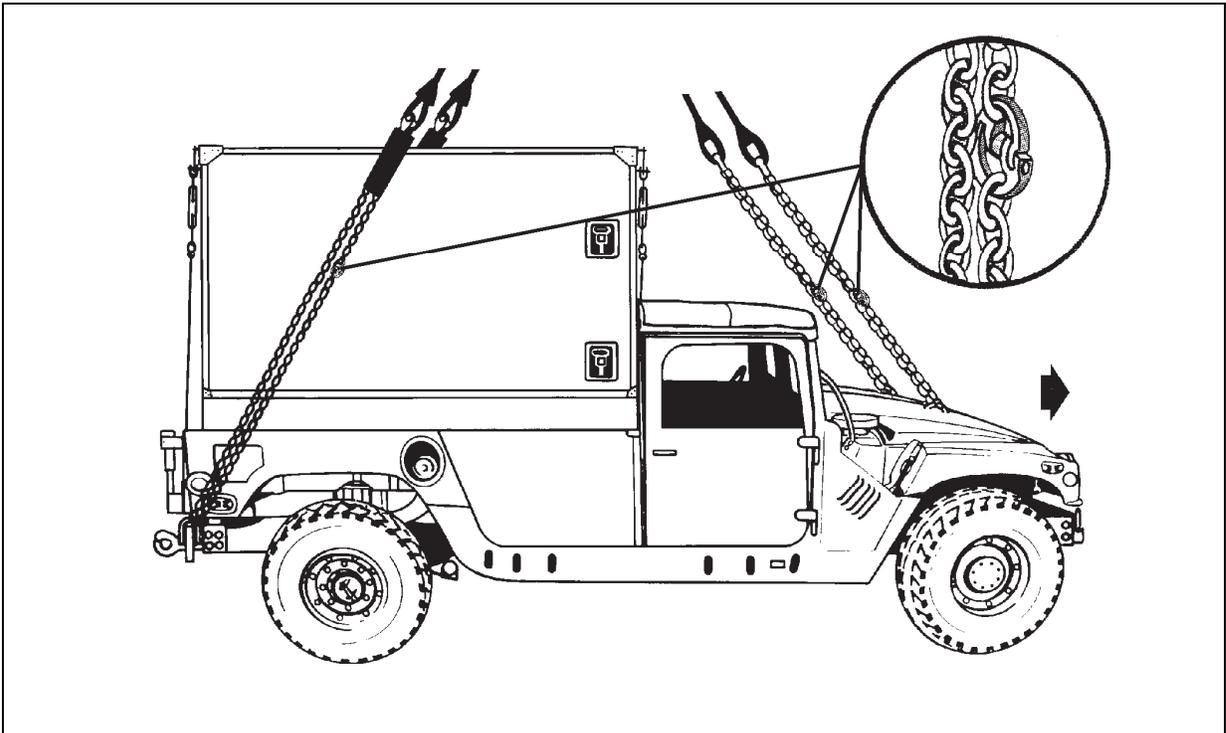


Figure 2-5. M1037/1042 Shelter Carrier with S-250/S-250E Shelter

**CAUTION**

Do not use the lift shackles located near the center of the rear bumper for sling load lift provisions.

<b>RIGGING STEPS</b>	
1.	Position apex fitting on top of the shelter. Route outer sling legs 1 and 2 to the front of the vehicle 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 that protrudes through the hood from inboard to outboard. Place the correct link from Table 2-5 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with tape or Type III nylon cord.
3.	Route the chain end of sling leg 3 through the lift provision located on the left end of the rear bumper from inboard to outboard. Place the correct link from Table 2-5 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.	Wrap the rear slings with padding where they contact the shelter sides.
5.	Raise the apex fitting above the shelter carrier keeping the slings to the side of the shelter.
6.	Cluster and tie (breakaway technique) all sling legs together on top of the shelter to prevent entanglement during hookup and lift-off.

**Figure 2-5. M1037/1042 Shelter Carrier with S-250/S-250E Shelter (Continued)**

## **M1097 SHELTER CARRIER, HEAVY HMMWV, WITH S-250 OR S-250E SHELTER**

2-7. The M1097 shelter carrier, heavy HMMWV, with S-250 or S-250E shelter is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 2-6 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-6. M1097 Shelter Carrier, Heavy HMMWV, With S-250 or S-250E Shelter**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
S-250/S-250E	10,001	25K	60/10
AN/TRC-170 Communication Shelter	9,240	15K	40/3
TRQ-32, Intelligence and Electronic Warfare (IEW) System	9,700	10K	60/10
Platoon Operations Center (POC), Intelligence and Electronic Warfare (IEW) System	9,700	10K	60/10
Mobile Subscriber Equipment Contingency Communications Package/Light Forces Contingency Communications Package in S-250E	9,993	10K	60/10
Mobile Subscriber Equipment Contingency Communications Package/Light Forces Contingency Communications Package in S-250	8,913	10K	60/10
LOS (V1)	9,038	10K	60/10
LOS (V2)	9,038	10K	60/10

**Table 2-6. M1097 Shelter Carrier, Heavy HMMWV, With S-250 or S-250E Shelter (Continued)**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
LOS (V3)	9,038	10K	60/10
LOS (V4)	9,038	10K	60/10
NODAL Support Vehicle	8,250	10K	60/10
NC Operations	9,100	10K	60/10
NC Switch	8,813	10K	60/10
NC LOS (V3)	8,911	10K	60/10
NC Management	9,100	10K	60/10
NC Support	8,700	10K	60/10
LEN Operations	9,100	10K	60/10
LEN Switch	9,100	10K	60/10
LEN LOS (V4)	9,100	10K	60/10
LEN Management	9,100	10K	60/10
LEN Cable Vehicle	8,480	10K	60/10
SSC Command	9,100	10K	60/10
SSC Planning	8,600	10K	60/10
SSC Technical	8,807	10K	60/10
LOS(V1)	9,100	10K	60/10
LOS(V2)	8,800	10K	60/10
Radio Access Unit	9,100	10K	60/10
SEN(V1)	9,100	10K	60/10
SEN(V2)	9,100	10K	60/10
Maintenance #1	8,384	10K	60/10
Maintenance #2	8,650	10K	60/10
Battalion Spares	9,100	10K	60/10
Company Spares	8,150	10K	60/10
AN/TLQ-17A (V3)	8,340	10K	60/10
Deployable Media Production Center	8,140	10K	60/10
Operational Control Group (OCG)/ Firefinder AN/TPQ-36 Block I	7,800	10K	60/10
TLQ-37 Intelligence and Electronic Warfare (IEW) System	8,500	10K	60/10

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity or 25,000-pound capacity).
  - OR
  - Multileg sling set (15,000-pound capacity for the CH-53E only).
    - Additional chain lengths from the sling set being used (4 each).
    - Additional coupling links from the sling set being used (4 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.
  - Padding, Cellulose.

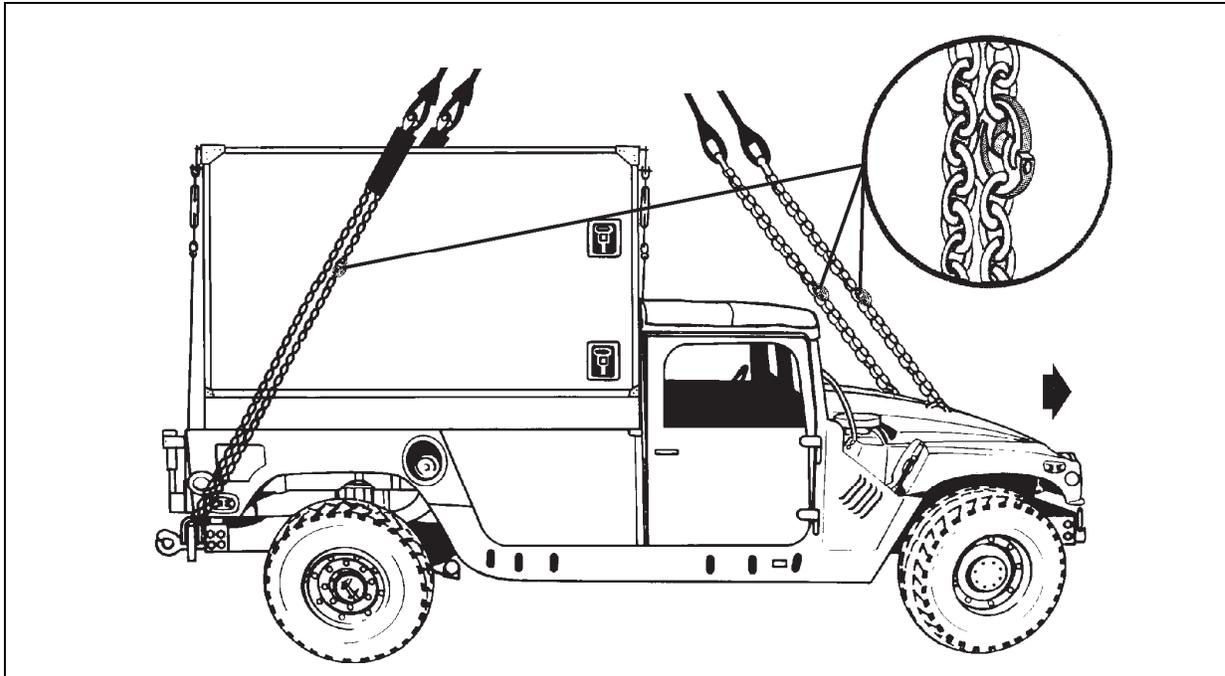
- **Personnel.** Two persons can prepare and rig this load in 15 to 25 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Connect one additional chain length to each chain of the sling set with the coupling link.
    - Fold mirrors forward in front of the windshield and tie together with Type III nylon cord. Tape the windshield in an X formation from corner to corner.
    - Secure the shelter to the truck using wire rope or tie-down assemblies. Secure all equipment inside the shelter with tape, nylon cord, or lashings; close and secure the door.
    - Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings. Secure the doors shut if installed.
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
    - Install the lift provisions on the outer ends of the rear bumper by removing the tiedown provisions located inboard of the bumper end and installing them on the outer ends of the rear bumper.
    - When using the multileg sling set, attach an additional chain length to the end of the chain on each sling leg with the coupling link.
  - **Rigging.** Rig the load according to the steps in Figure 2-6.

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**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.

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- **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 carefully dismounts the vehicle and 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting on top of the shelter. Route outer sling legs 1 and 2 to the front of the vehicle 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 that protrudes through the hood from inboard to outboard. Place the correct link from Table 2-6 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with tape or Type III nylon cord.
3. Route the chain end of sling leg 3 through the lift provision located on the left end of the rear bumper from inboard to outboard. Place the correct link from Table 2-6 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. Wrap the rear slings with padding where they contact the shelter sides.
5. Raise the apex fitting above the shelter carrier keeping the slings to the side of the shelter.
6. Cluster and tie (breakaway technique) all sling legs together on top of the shelter to prevent entanglement during hookup and lift-off.

**Figure 2-6. M1097 Shelter Carrier with S-250/S-250E Shelter**

**CAUTION**

Do not use the lift shackles located near the center of the rear bumper for sling load lift provisions.

## M1037 SHELTER CARRIER (HEAVY HMMWV) WITH DOWNSIZED DIRECT SUPPORT SECTION (DDSS) SHELTER

2-8. The M1037 shelter carrier HMMWV with downsized direct support section shelter is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 2-7 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-7. Downsized Direct Support Section Shelter**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Downsized Direct Support Section (DDSS)	8,030	10K	70/3

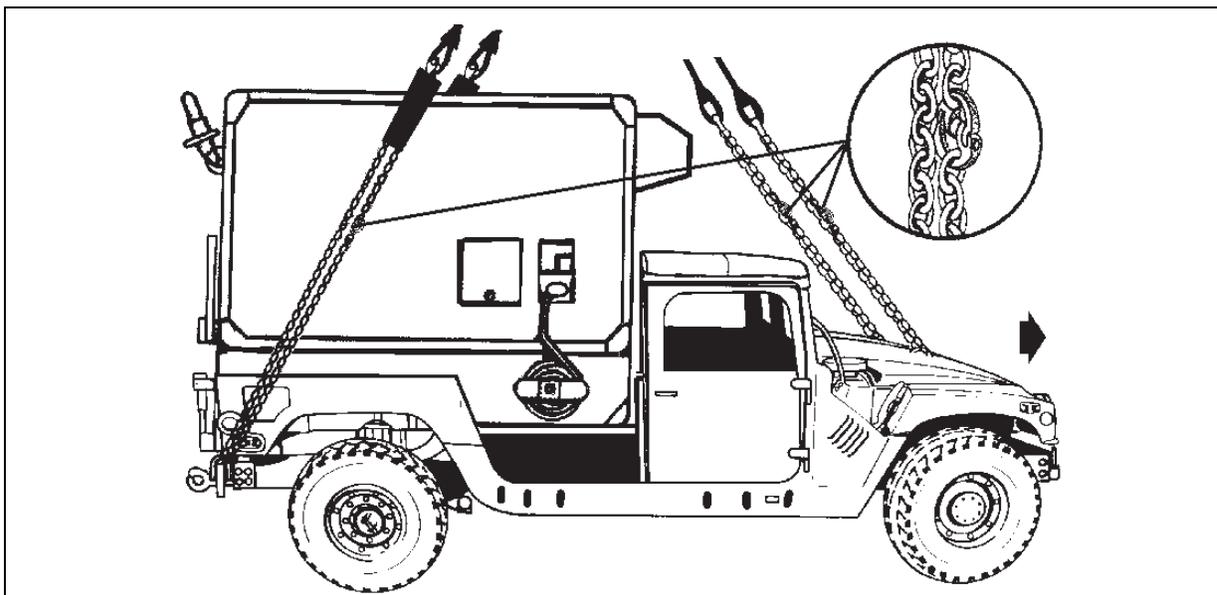
- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Chain length, part number 38850-00053-101, from a 10,000-pound capacity sling set (4 each).
  - Coupling link, part number 5779125, from a 10,000-pound sling set (4 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.
  - Padding, Cellulose.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Connect one additional chain length to each chain of the sling set with the coupling link.
    - Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord.
    - Secure the shelter to the truck using wire rope or tie-down assemblies.
    - Remove the ladder from the rear of the shelter. Secure the ladder inside the shelter. Secure all equipment inside the shelter with tape, nylon cord, or lashings; close and secure shelter vents and door with nylon cord or tape.
    - Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings. Secure the doors shut if installed.
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
    - Tape the windshield in an X formation from corner to corner.
    - Install the lift provisions on the outer ends of the rear bumper by removing the tiedown provisions located inboard of the bumper end and installing them on the outer ends of the rear bumper.
  - **Rigging.** Rig the load according to the steps in Figure 2-7.

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**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.

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- **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 carefully dismounts the vehicle and 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting on top of the shelter. Route outer sling legs 1 and 2 to the front of the vehicle 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 that protrudes through the hood from inboard to outboard. Place the correct link from Table 2-7 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with tape or Type III nylon cord.
3. Route the chain end of sling leg 3 through the lift provision located on the left end of the rear bumper from inboard to outboard. Place the correct link from Table 2-7 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. Wrap the rear slings with padding where they contact the shelter sides.
5. Raise the apex fitting above the shelter carrier keeping the slings to the side of the shelter.
6. Cluster and tie (breakaway technique) all sling legs together on top of the shelter to prevent entanglement during hookup and lift-off.

**Figure 2-7. Downsized Direct Support Section Mounted on the M1037**

## M1037 SHELTER CARRIER (HMMWV) WITH S-318 SHELTER

2-9. The M1037 shelter carrier with S-318 shelter is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 2-8 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-8. S-318 Shelter**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
S-318 Shelter Mounted on M1037	7,440	10K	80/30

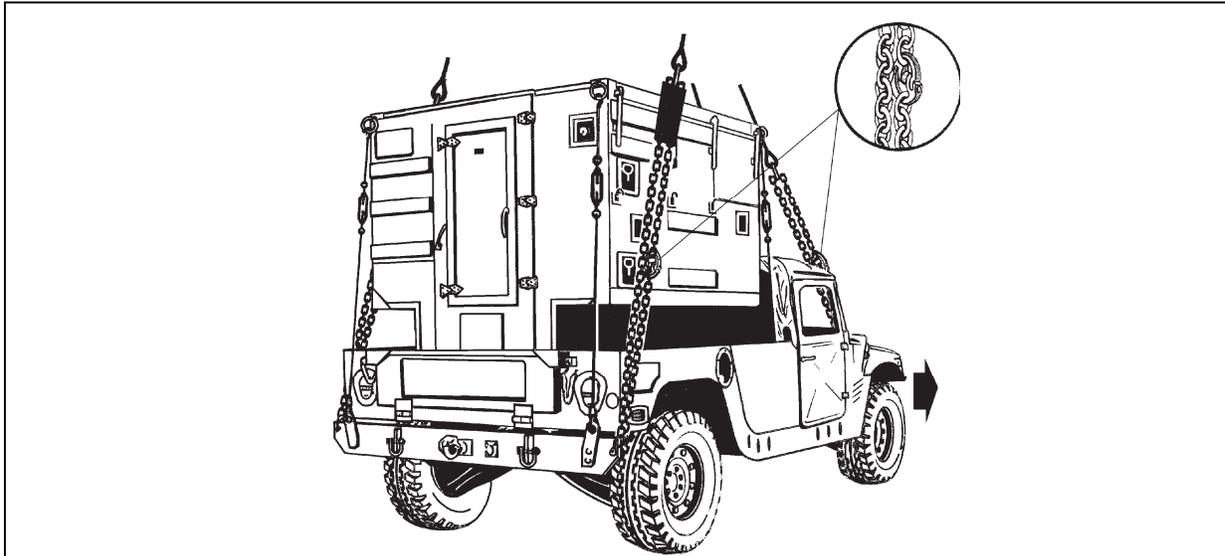
- **Materials.** The following materials are required to rig this load.
  - Sling set (10,000-pound capacity).
  - Chain length, part number 38850-00053-101, from a 10,000-pound capacity sling set (4 each).
  - Coupling link, part number 5779125, from a 10,000-pound sling set (4 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.
  - Padding, cellulose.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Connect one additional chain length to each chain of the sling set with the coupling link.
    - Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord.
    - Secure the shelter to the truck using wire rope or tie-down assemblies. Secure all equipment inside the shelter with tape, nylon cord, or lashings; close and secure shelter vents and door with nylon cord or tape.
    - Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings. Secure the doors shut if installed.
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
    - Tape the windshield in an X formation from corner to corner.
    - Install the lift provisions on the outer ends of the rear bumper by removing the tiedown provisions located inboard of the bumper end and installing them on the outer ends of the rear bumper.
  - **Rigging.** Rig the load according to the steps in Figure 2-8.

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*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.

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- **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 carefully dismounts the vehicle and 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting on top of the shelter. Route outer sling legs 1 and 2 to the front of the vehicle 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 that protrudes through the hood from inboard to outboard. Place the correct link from Table 2-8 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with tape or Type III nylon cord.
3. Route the chain end of sling leg 3 through the lift provision located on the left end of the rear bumper from inboard to outboard. Place the correct link from Table 2-8 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. Wrap the rear slings with padding where they contact the shelter sides.
5. Raise the apex fitting above the shelter carrier keeping the slings to the side of the shelter.
6. Cluster and tie (breakaway technique) all sling legs together on top of the shelter to prevent entanglement during hookup and lift-off.

**Figure 2-8. S-318 Shelter Mounted on the M1037**

**CAUTION**

Do not use the lift shackles located near the center of the rear bumper for sling load lift provisions.

## M1097/M1097A2 SHELTER CARRIER (HMMWV) WITH LIGHTWEIGHT MULTIPURPOSE SHELTER (LMS)

2-10. The M1097/M1097A2 shelter carrier with lightweight multipurpose shelter is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 2-9 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-9. Lightweight Multipurpose Shelter**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Advanced Field Artillery Tactical Data Systems (AFATADS), System #1, RWS with a CHS-2 AN/GYG-3(V)1	8,882	10K	50/3
Air Defense Communications Platform AN/MSQ-124	10,000	10K	40/3
Biological Integrated Detection System (BIDS)	9,000	10K	40/3
Common Ground Station, Joint Surveillance Target Attack Radar (JSTAR) System	10,300	25K 15K	32/5 40/3
Digital Group Multiplexer (DGM) AN/TRC-138C	9,020	10K	60/10
Enhanced Position Location Reporting System (EPLRS) Downsized Net Control Station (NCS-E(D))	10,000	10K	70/3
Forward Area Air Defense Command Control System, AN/TSQ-182	9,800	10K	40/3
Forward Area Air Defense Command Control System, AN/TSQ-183	7,561	10K	40/3
Forward Area Air Defense Command Control System, AN/TSQ-184	7,297	10K	40/3
High Frequency Communications Central AN/TRC 120	8,765	15K	50/5
High Mobility Digital Group Multiplexer Assemblage (HMDA) AN/TRC-173B, AN/TRC-174B, AN/TRC-175B	9,100	10K	60/10
High Mobility Downsized (HMD) Direct Air Support Central	8,420	15K	40/3
Integrated Meteorological Systems (IMETS), Block I & II	9,050	10K	70/3
Marine Expeditionary Force Intelligence Analysis System (IAS)	9,220	15K	64/2
Marine Expeditionary Force Intelligence Analysis System S1	9,194	15K	40/3
Marine Expeditionary Force Intelligence Analysis System S2	9,126	15K	40/3
Meteorological Measuring Set AN/TMQ-41	7,770 8,200	15K 10K	40/3 40/3
Mobile Radio Broadcasting Subsystem (MRBS)	9,746	10K	40/3
Mobile Radio (MR) Cargo Vehicle	9,907	10K	40/3
Mobile Television Broadcasting Subsystem (MTBS)	9,295	10K	40/3
Mobile Television (MT) Cargo Vehicle	9,637	10K	40/3
Operations Central (OC) Group Firefinder AN/TPQ-36 (V) 8	8,620	10K	50/3
Spare Equipment and Maintenance Shelter AN/TSQ-190 (V) 1	9,220	10K	40/3
Tactical Control and Analysis Center	9,300	15K	40/3
Tactical Remote Sensor System (TRSS) Sensor Mobile Monitoring System (SMMS)	7,685	10K	40/3
Communications Data Link System on M1097A2	9,900	15K	40/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
    - Chain length, part number 38850-00053-101, from a 10,000-pound capacity sling set (4 each).
    - Coupling link, part number 5779125, from a 10,000-pound sling set (4 each).
  - OR
  - Multileg sling set (15,000-pound capacity for the CH-53E only).
    - Additional chain lengths from the sling set being used (8 each).
    - Additional coupling links from the sling set being used (8 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.
  - Padding, cellulose.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Extend the sling leg chains by connecting one additional chain length to each chain on a 10,000-, 25,000- or 40,000-pound capacity sling set with coupling links. Connect two additional chain lengths to each chain on the 15,000-pound multileg sling set chain with coupling links.
    - Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord.
    - Secure all equipment inside the shelter with tape, nylon cord, or lashings; close and secure shelter vents and door with nylon cord or tape.
    - Secure environmental control unit cover with duct tape.
    - Disconnect the power cord from the rear panel and secure it to the rear platform with Type III nylon cord. Lower the power panel door and secure the door.
    - Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings. Secure the doors shut if installed.
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
    - Tape the windshield in an X formation from corner to corner.
    - Install the lift provisions on the outer ends of the rear bumper by removing the tiedown provisions located inboard of the bumper end and installing them on the outer ends of the rear bumper.
    - Remove the upper antenna mounting bracket if installed.
  - **Rigging.** Rig the load according to the steps in Figure 2-9.

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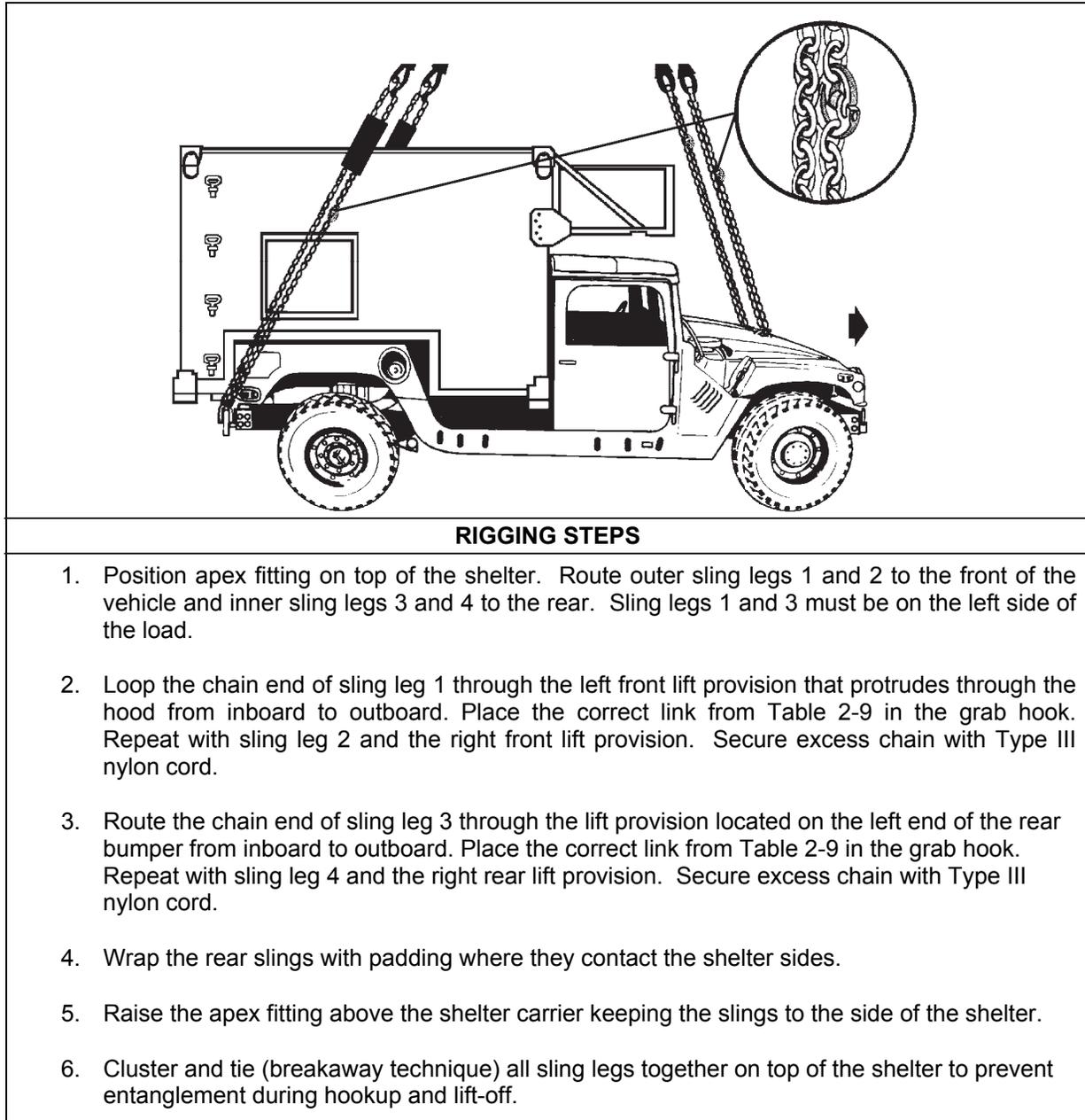
**Note.** Hookup of this load presents substantial risk of damage to the load or injury to the hookup personnel. Use of a reach pendant is recommended for this load.

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- **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 carefully dismounts the vehicle and 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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 2-9. LMS Shelter Mounted on M1097/M1097A2**

**CAUTION**

Do not use the lift shackles located near the center of the rear bumper for sling load lift provisions.

## M1097A2 SHELTER CARRIER (HMMWV) WITH LIGHTWEIGHT MULTIPURPOSE SHELTER (LMS) USING SHELTER LIFT RINGS AS SLING GUIDES

2-11. The M1097A2 shelter carrier with lightweight multipurpose shelter using the shelter lift rings as sling guides is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 2-10 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-10. Lightweight Multipurpose Shelter Using Shelter Lift Rings as Sling Guides**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Analysis Control Team-Enclave, AN-TYQ-103	10,300	25K	40/5

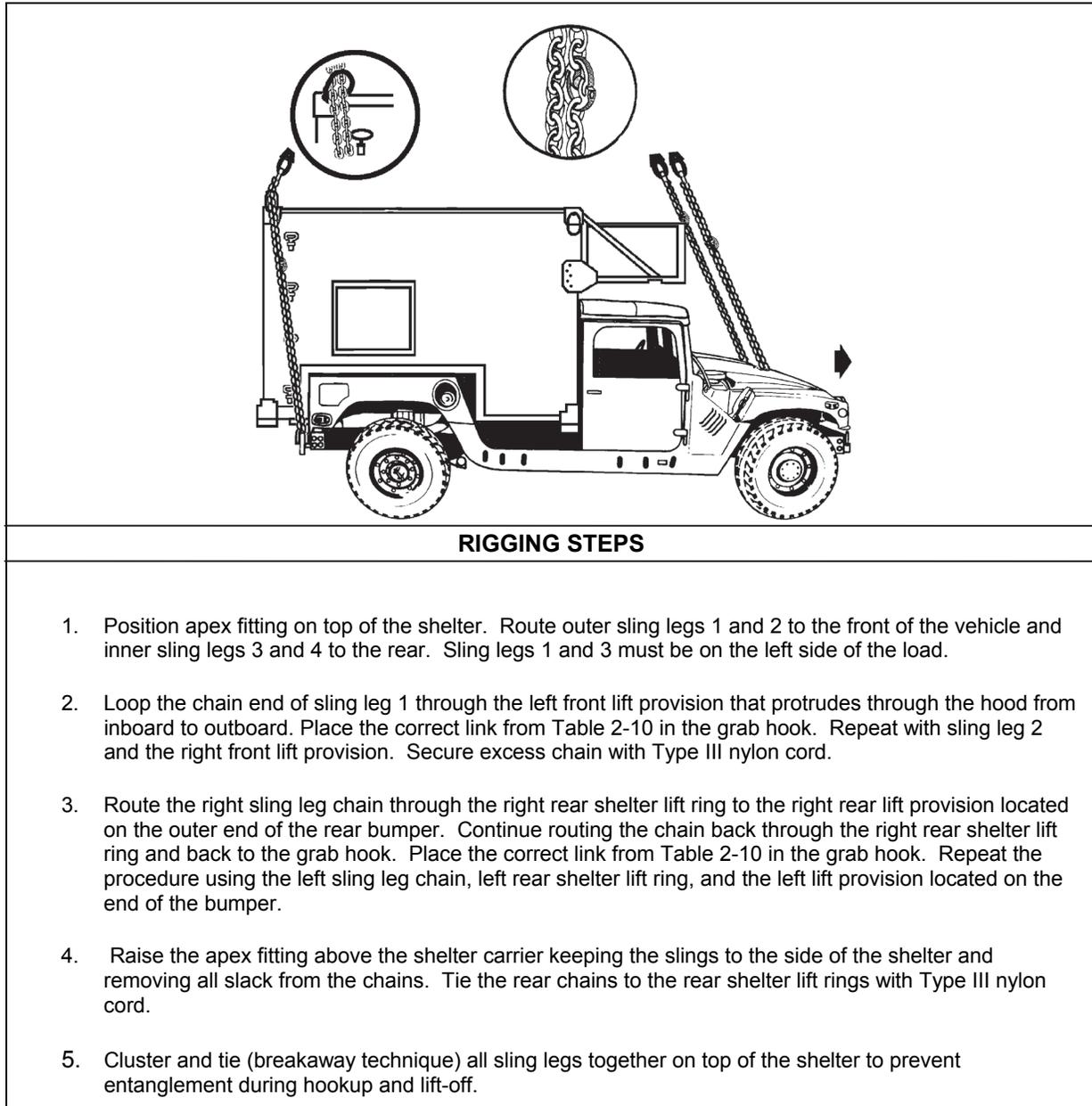
- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
    - Chain length, part number 38850-00053-102, from a 25,000-pound capacity sling set (4 each).
    - Coupling link, part number 664241, from a 25,000-pound sling set (4 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Extend the sling leg chains by connecting one additional chain length to each chain on a 25,000-pound capacity sling set with coupling links.
    - Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord.  
Secure all equipment inside the shelter with tape, nylon cord, or lashings; close and secure shelter vents and door with nylon cord or tape.
    - Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings. Secure the doors shut if installed.
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
    - Tape the windshield in an X formation from corner to corner.
    - Tie the shelters rear lift rings together with Type III nylon cord on top of the shelter. The rings should be positioned so they point towards the front of the vehicle.  
Install the lift provisions on the outer ends of the rear bumper by removing the tiedown provisions located inboard of the bumper end and installing them on the outer ends of the rear bumper.
  - **Rigging.** Rig the load according to the steps in Figure 2-10.

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*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.

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- **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 carefully dismounts the vehicle and 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 2-10. LMS Shelter Mounted on M1097A2 Using Shelter Lift Rings as Sling Guides**

**CAUTION**

Do not use the lift shackles located near the center of the rear bumper for sling load lift provisions.

**M1037/M1042 SHELTER CARRIER (HMMWV) WITH LIGHTWEIGHT MULTIPURPOSE SHELTER (LMS)**

2-12. The M1037/M1042 shelter carrier with lightweight multipurpose shelter is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 2-11 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-11. Lightweight Multipurpose Shelter on M1037/M1042**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
High Frequency Communications Central, AN/TSC-120	8,365	10K	50/5

- **Materials.** The following materials are required to rig this load.
  - Multileg sling set (15,000-pound capacity for the CH-53E only).
    - Additional chain lengths from the sling set being used (8 each).
    - Additional coupling links from the sling set being used (8 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.
  - Padding, cellulose.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Extend the sling leg chains by connecting one additional chain length to each chain on a 10,000-, 25,000-or 40,000-pound capacity sling set with coupling links. Connect two additional chain lengths to each chain on the 15,000-pound multileg sling set chain with coupling links.
    - Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord.
    - Secure the shelter to the truck using wire rope or tie-down assemblies.
    - Secure all equipment inside the shelter with tape, nylon cord, or lashings; close and secure shelter vents and door with nylon cord or tape.
    - Secure environmental control unit cover with duct tape.
    - Disconnect the power cord from the rear panel and secure it to the rear platform with Type III nylon cord. Lower the power panel door and secure the door.
    - Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings. Secure the doors shut if installed.
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.

- Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
- Tape the windshield in an X formation from corner to corner.
- Install the lift provisions on the outer ends of the rear bumper by removing the tiedown provisions located inboard of the bumper end and installing them on the outer ends of the rear bumper.
- **Rigging.** Rig the load according to the steps in Figure 2-9.

**Notes.** 1. Use the link count from Table 2-11.  
 2. 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.

- **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 carefully dismounts the vehicle and 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

## M1113 TRUCK, UTILITY, EXPANDED CAPACITY (HMMWV) WITH LIGHTWEIGHT MULTIPURPOSE SHELTER (LMS)

2-13. The M1113 truck, utility, expanded capacity with lightweight multipurpose shelter is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 2-12 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-12. M1113 with Lightweight Multipurpose Shelter (LMS)**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Analysis Control Team - Enclave (ACT-E)	11,500	25K	40/5
Common Ground Station (CGS), Joint Surveillance Target Attack Radar (JSTAR) System (V)2	11,500	25K	32/5
Digital Topographic Support System-Light (DTSS-L)	11,500	25K	32/5
Integrated System Control (ISYSCON), AN/TYQ-76B, (V)1, (V)2, and Degraded configurations	11,500	25K	32/5
Meteorological Measuring System Profiler, (MMS-P), AN/TMQ-52	11,500	25K	40/3
Shadow Tactical Unmanned Vehicle (TUAV), Air Vehicle Transport	11,500	25K	32/5
Shadow Tactical Unmanned Vehicle (TUAV), Ground Control Station	11,500	25K	32/5
Shadow Tactical Unmanned Vehicle (TUAV), Maintenance Section Multifunctional	11,500	25K	32/5
Single Shelter Switch (SSS), AN/TTC-56	11,500	25K	32/5
Tactical Airspace Integration System (TAIS)	11,500	25K	32/5
Trojan Spirit Lite (V)3 Support Vehicle, AN/TSQ-226 (V)3	11,500	25K	35/3
IMETS AN/TMQ-40C and AN/TMQ-40D	11,500	25K	32/5

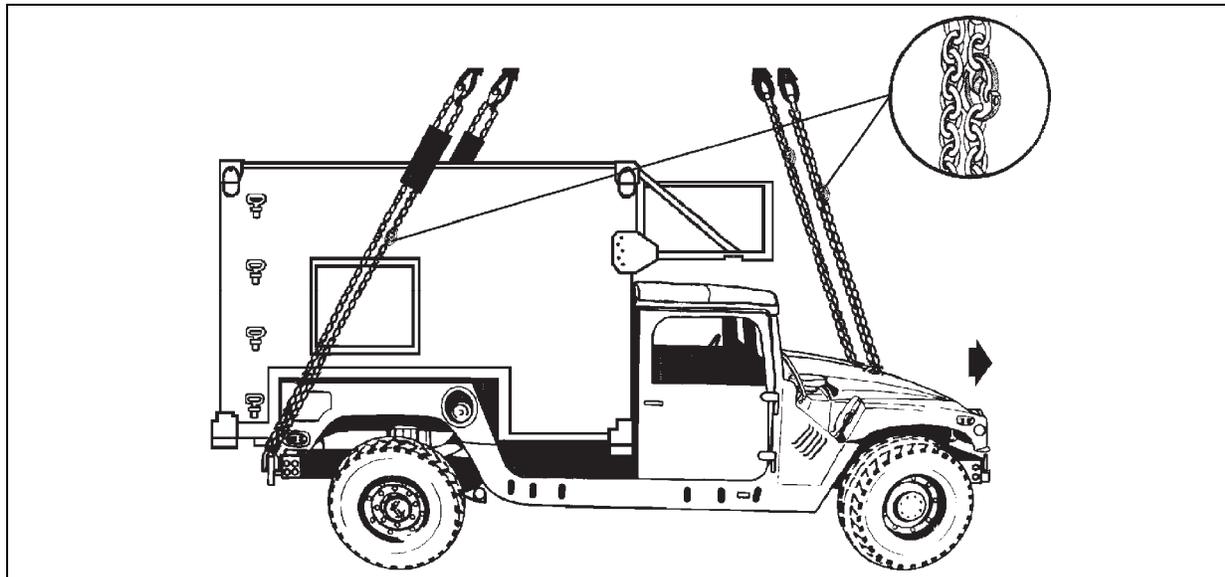
- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
    - Chain length, part number 38850-00053-102, from a 25,000-pound capacity sling set (4 each).
    - Coupling link, part number 664241, from a 25,000-pound sling set (4 each).

- Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- Cord, nylon, Type III, 550-pound breaking strength.
- Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Extend the sling leg chains by connecting one additional chain length to each chain on a 25,000-pound capacity sling set with coupling links.
    - Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord.
    - Secure all equipment inside the shelter with tape, nylon cord, or lashings; close and secure shelter vents and door with nylon cord or tape.
    - Secure environmental control unit cover with duct tape.
    - Disconnect the power cord from the rear panel and secure it to the rear platform with Type III nylon cord. Lower the power panel door and secure the door.
    - Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings. Secure the doors shut if installed.
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
    - Tape the windshield in an X formation from corner to corner.
    - Install the lift provisions on the outer ends of the rear bumper.
    - Remove the upper antenna mounting bracket if installed.
  - **Rigging.** Rig the load according to the steps in Figure 2-11.
  - **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 cargo hook. The hookup team then carefully dismounts the vehicle and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

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**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.

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**RIGGING STEPS**

1. Position the apex fitting on top of the shelter. Route outer sling legs 1 and 2 to the front of the vehicle 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 that protrudes through the hood from inboard to outboard. Place the correct link from Table 2-12 in the grab hook. Repeat with sling leg 2 through the right front lift provision. Secure all excess chain with Type III nylon cord.
3. Loop the chain end of sling leg 3 through the left rear lift provision located on the left end of the rear bumper. Place the correct link from Table 2-12 in the grab hook. Repeat with sling leg 4 through the right rear lift provision. Secure all excess chain with Type III nylon cord.
4. Wrap the rear slings with padding where they contact the shelter sides.
5. Cluster and tie (breakaway technique) the sling legs in each sling set together to prevent entanglement during hookup and lift-off.

**Figure 2-11. M1113 with Lightweight Multipurpose Shelter (LMS)**

**CAUTION**

Do not use the lift shackles located near the center of the rear bumper for sling load lift provisions.

## M1097/M1113 SHELTER CARRIER (HMMWV) WITH GITCHNER MODEL 1497A SHELTER

2-14. The M1097/M1113 shelter carrier with Gitchner model 1497A shelter is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 2-13 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-13. M1097/M1113 with Gitchner Model 1497A Shelter**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Joint Tactical Information Distribution System (JTIDS), AN/TYQ-JTIDS Shelter on M1097 HMMWV	10,000	10K	30/3
AN/TSM-210 Electronic Shop on Enhanced Capacity Vehicle, M1113 HMMWV	10,360	25K	22/46

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
    - Chain length, part number 38850-00053-101, from a 10,000-pound capacity sling set (4 each).
    - Coupling link, part number 577-0415, from a 10,000-pound capacity sling set (4 each).
  - OR
  - Sling set (25,000-pound capacity).
    - Chain length, part number 38850-00053-102, from a 25,000-pound capacity sling set (4 each).
    - Coupling link, part number 664241, from a 25,000-pound capacity sling set (4 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.
  - Padding, cellulose.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Extend the sling leg chains by connecting one additional chain length to each chain on a 10,000- or 25,000-pound capacity sling set with coupling links.
    - Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord.
    - Secure all equipment inside the shelter with tape, nylon cord, or lashings. Close and secure all shelter doors and vents with tape or Type III nylon cord.
    - Secure the environmental control unit cover with duct tape.
    - Disconnect the power cord from the rear panel and secure it to the rear platform with Type III nylon cord. Lower the power panel door and secure it.
    - Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings. Secure the doors shut if installed.
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.

- Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
- Tape the windshield in an X formation from corner to corner.
- Install the lift provisions on the outer ends of the rear bumper by removing the tiedown provisions located inboard of the bumper end and installing them on the outer ends of the rear bumper.

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

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*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.

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- **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 carefully dismounts the vehicle and 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

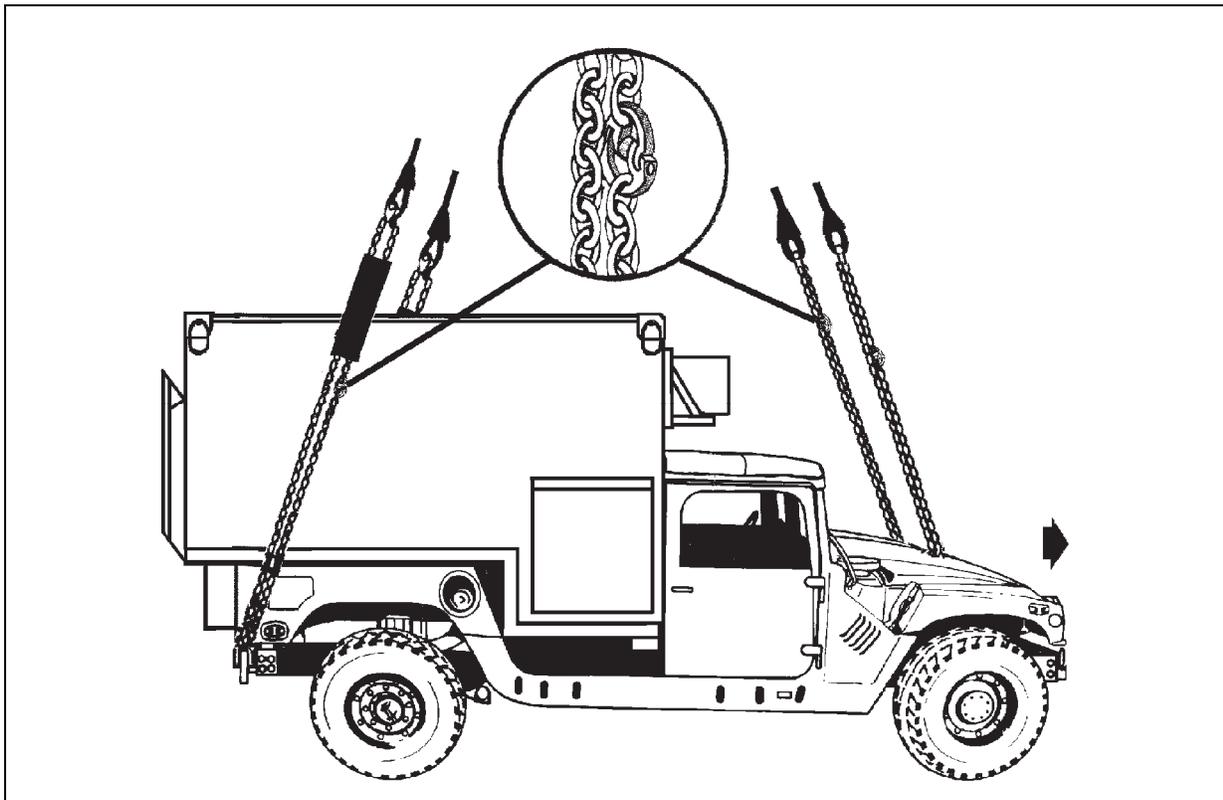


Figure 2-12. M1097/M1113 with Gitchner Model 1497A Shelter

RIGGING STEPS
<ol style="list-style-type: none"> <li>1. Position apex fitting on top of the vehicle. Route outer sling legs 1 and 2 to the front of the vehicle and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.</li> <li>2. Loop the chain end of sling leg 1 through the left front lift provision that protrudes through the hood from inboard to outboard. Place the correct link from Table 2-13 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with Type III nylon cord.</li> <li>3. Route the chain end of sling leg 3 through the lift provision located on the left end of the rear bumper from inboard to outboard. Place the correct link from Table 2-13 in the grab hook. Repeat with sling leg 4 and the right rear lift provision.</li> <li>4. Cluster and tie (breakaway technique) all sling legs together on top of the shelter to prevent entanglement during hookup and lift-off.</li> </ol>

**Figure 2-12. M1097/M1113 with Gitchner Model 1497A Shelter (Continued)**

**CAUTION**

Do not use the lift shackles located near the center of the rear bumper for sling load lift provisions.

## M1097A2 SHELTER CARRIER (HMMWV) WITH SPECIAL OPERATIONS MEDIA SYSTEM (SOMS-B) IN S-788 SHELTER

2-15. The M1097A2 shelter carrier with SOMS-B in S-788 shelter is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 2-14 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-14. M1097A2 Shelter Carrier with SOMS-B in S-788 Shelter**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Special Operations Media System	9,080	10K	40/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
    - Chain length, part number 38850-00053-101, from a 10,000-pound capacity sling set (4 each).
    - Coupling link, part number 577-0415, from a 10,000-pound sling set (4 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.

- Padding, Cellulose.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Extend the sling leg chains by connecting one additional chain length to each chain on a 10,000-pound capacity sling set with coupling links.
    - Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord.
    - Secure all equipment inside the shelter with tape, nylon cord, or lashings; close and secure shelter vents and door with nylon cord or tape.
    - Disconnect the power cord from the rear panel and secure it to the rear platform with Type III nylon cord. Lower the power panel door and secure the door.
    - Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings. Secure the doors shut if installed.
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
    - Tape the windshield in an X formation from corner to corner.
    - Install the lift provisions on the outer ends of the rear bumper.
    - Remove the upper antenna bracket if installed.
  - **Rigging.** Rig the load according to the steps in Figure 2-13.

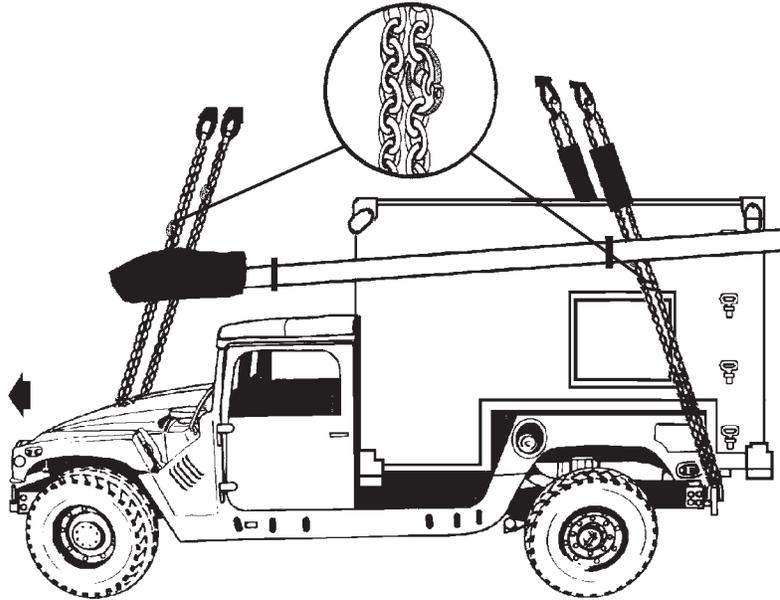
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**Notes.** 1. Ensure the chains on sling leg 1 are routed between the shelter and the 30 meter mast.  
2. Hookup of this load presents substantial risk of damage to the load or injury to the hookup personnel. Use of a reach pendant is recommended for this load.

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- **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 cargo hook. The hookup team then carefully dismounts the vehicle and 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

**Note.** Ensure the chains on sling leg 1 are routed between the shelter and the 30 meter mast.



**RIGGING STEPS**

1. Position the apex fitting on top of the shelter. Route outer sling legs 1 and 2 to the front of the vehicle 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 that protrudes through the hood from inboard to outboard. Place the correct link from Table 2-14 in the grab hook. Repeat with sling leg 2 through the right front lift provision. Secure all excess chain with Type III nylon cord.
3. Loop the chain end of sling leg 3 through the left rear lift provision located on the left end of the rear bumper. Place the correct link from Table 2-14 in the grab hook. Repeat with sling leg 4 through the right rear lift provision. Secure all excess chain with tape or Type III nylon cord.
4. Wrap the rear slings with padding where they contact the shelter sides.
5. Cluster and tie (breakaway technique) the sling legs in each sling set together to prevent entanglement during hookup and lift-off.

**Figure 2-13. M1097A2 Shelter Carrier with SOMS-B in S-788 Shelter**

**CAUTION**

Do not use the lift shackles located near the center of the rear bumper for sling load lift provisions.

## TACTICAL DATA NETWORK (TDN) GATEWAY ON M1097A1 HMMWV

2-16. The Tactical Data Network Gateway on M1097A1 is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 2-15 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-15. Tactical Data Network Gateway on M1097A1 HMMWV**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Tactical Data Network (TDN) Gateway on M1097A1 HMMWV	9,580	15K	30/3

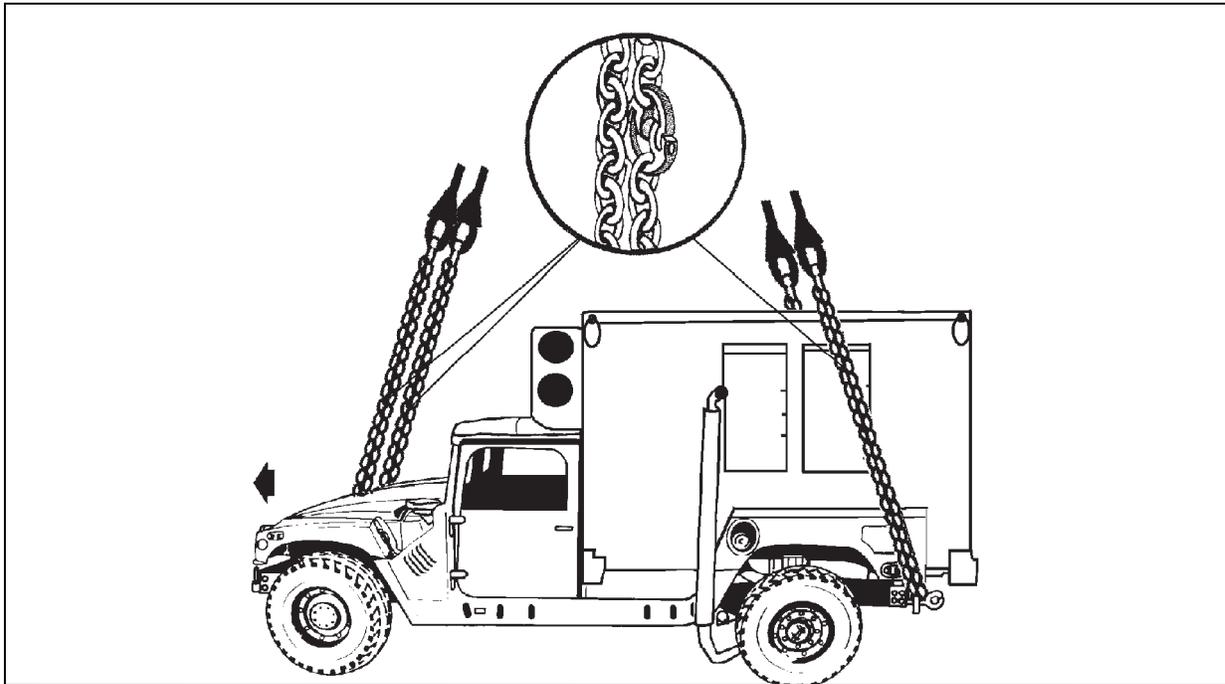
- **Materials.** The following materials are required to rig this load:
  - Multileg sling set (15,000-pound capacity).
    - Additional chain lengths, part number 3408-4, from a 15,000-pound capacity sling set (8 each).
    - Coupling link, part number 31611, from a 15,000-pound capacity sling set (8 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Fold the mirrors inward for added protection and tie together with Type III nylon cord.
    - Secure all equipment inside the unit with tape, Type III nylon cord or tiedown straps. Secure all vents, doors and latches with tape or Type III nylon cord
    - Secure all equipment and cargo inside the vehicle cab with tape, Type III nylon cord, or tiedown straps. Secure the doors shut, if installed.
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard or Type III nylon cord.
    - Extend the sling leg chains by connecting two additional chain length to each chain on the 15,000-pound capacity sling set with coupling links.
    - Tape the windshield in an X formation from corner to corner.
  - **Rigging.** Rig the load according to the steps in Figure 2-14.

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**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.

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- **Hookup.** The hookup team stands on the roof of the shelter. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting on the cargo hook. The hookup team then carefully dismounts the vehicle and 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting on top of the truck. Route outer sling legs 1 and 2 to the front of the vehicle 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 that protrudes through the hood from inboard to outboard. Place the correct link from Table 2-15 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with Type III nylon cord.
3. Loop the chain end of sling leg 3 through the left rear lift provision located on the outer ends of the rear bumper. Place the correct link from Table 2-15 in the grab hook. Repeat with sling leg 4 and the right rear lift provision. Secure excess chain with Type III nylon cord.
4. Cluster and tie (breakaway technique) all sling legs together on top of the vehicle to prevent entanglement during hookup and lift-off.

**Figure 2-14. Tactical Data Network Gateway on M1097A1 HMMWV**

**CAUTION**

Do not use the lift shackles located near the center of the rear bumper for sling load lift provisions.

## M1037/M1097 SHELTER CARRIER (HMMWV) WITH G15840 SMOKE GENERATOR SET, M157/M157A1E1

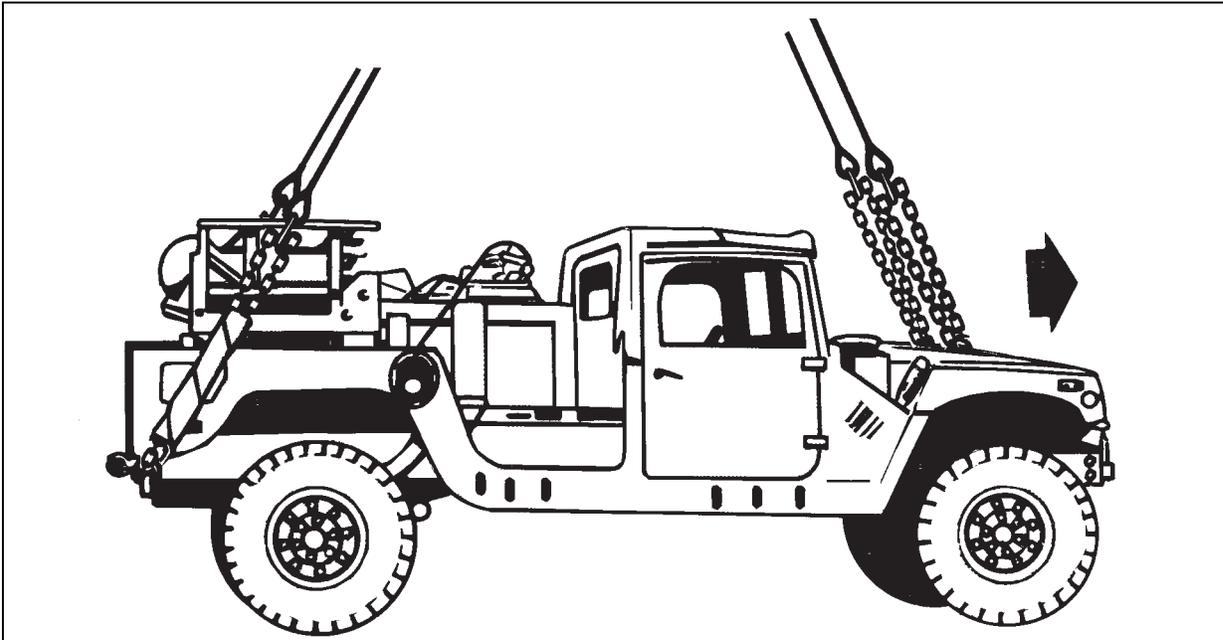
2-17. The M1037/M1097 shelter carrier (HMMWV) with G15840 smoke generator set, M157/M157A1E1 is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 2-16 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-16. M1037/M1097 Shelter Carrier (HMMWV) With G15840 Smoke Generator Set, M157/M157A1E1**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Smoke Generator Set, M157 on M1037	7,400	10K	80/30
Smoke Generator Set, M157 on M1097	8,025	10K	80/30
Smoke Generator Set, M157A1E1 on M1097	8,035	10K	80/30

- **Materials.** The following materials are required to rig this load.
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord.
    - Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings. Secure the doors shut if installed.
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
    - Tape the windshield in an X formation from corner to corner.
    - Install the lift provisions on the outer ends of the rear bumper by removing the tiedown provisions located inboard of the bumper end and installing them on the outer ends of the rear bumper.
  - **Rigging.** Rig the load according to the steps in Figure 2-15.
  - **Hookup.** The hookup team stands on top of 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 carefully dismounts the vehicle and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting on top of the roof of the HMMWV. Route outer sling legs 1 and 2 to the front of the vehicle 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 that protrudes through the hood from inboard to outboard. Place the correct link from Table 2-16 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with Type III nylon cord.
3. Route the chain end of sling leg 3 through the lift provision located on the left end of the rear bumper from inboard to outboard. Place the correct link from Table 2-16 in the grab hook. Repeat with sling leg 4 and the right rear lift provision. Secure excess chain with Type III nylon cord.
4. Wrap the rear slings with padding where they contact the vehicle sides.
5. Raise the apex fitting above the vehicle keeping the slings to the side of the vehicle.
6. Cluster and tie (breakaway technique) all sling legs together on top of the shelter to prevent entanglement during hookup and lift-off.

**Figure 2-15. M157/M157A1E1 Smoke Generator Set Mounted on the M1037/M1097**

**CAUTION**

Do not use the lift shackles located near the center of the rear bumper for sling load lift provisions.

## M1113 (HMMWV) WITH M56 SMOKE GENERATING SYSTEM

2-18. The M1113 (HMMWV) with M56 smoke generating system is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 2-17 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-17. M1113 with M56 Smoke Generating System**

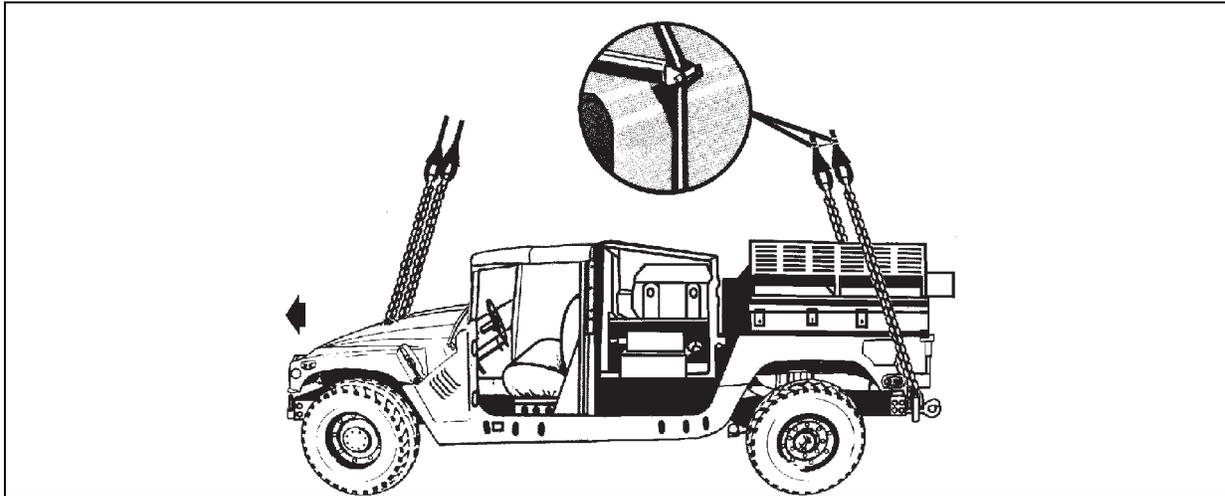
<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M1113 (HMMWV) With M56 Smoke Generating System with Graphite in Tank	9,400	10K	50/3
M1113 (HMMWV) With M56 Smoke Generating System without Graphite in Tank	9,400	10K	50-Front 3-Right Rear 14-Left Rear

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.
  - Spreader bar assembly (component of the M996/M997 HMMWV Ambulance).
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord.
    - Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings. Remove and secure the doors in the cab of the vehicle.
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
    - Ensure the turbine fuel and both fog oil tanks are not over 3/4 full.
    - Set the three-way valve to the OFF position.
    - Ensure the IR hopper latches are securely closed and the auxiliary hoses are attached to the mounting bracket at the forward end of the inboard fog oil tank.
    - Secure all latches and doors with tape or Type III nylon cord.
    - Extend the spreader bar until the holes line up. Install the pin and engage the keeper.
    - Position the spreader bar across the rear of the vehicle between the rear slings.
  - **Rigging.** Rig the load according to the steps in Figure 2-16.

### CAUTION

Total weight of load is restricted to 9,400 pounds due to the structural strength of the spreader bar.

- **Hookup.** The hookup team stands on the IR hopper loading platform on the left side 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 carefully dismounts the vehicle and 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position the apex fitting on top of the IR hopper or on the forward end of the fog oil tanks. Route outer sling legs 1 and 2 to the front of the vehicle 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 that protrudes through the hood from inboard to outboard. Place the correct link from Table 2-17 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with tape or Type III nylon cord.
3. Place the nylon rope of sling legs 3 and 4 in the guides on the ends of the spreader bar. Route the chain end of sling leg 3 through the lift provision located on the left end of the rear bumper from inboard to outboard. Place the correct link from Table 2-17 in the grab hook. Repeat with sling leg 4 and the right rear lift provision.
4. Pad the sling legs in the area where they make contact with the structure.
5. Cluster and tie (breakaway technique) all sling legs together on top of the shelter to prevent entanglement during hookup and lift-off.

**Figure 2-16. M1113 (HMMWV) With M56 Smoke Generating System**

**CAUTION**

Do not use the lift shackles located near the center of the rear bumper for sling load lift provisions.

## M1097 (HMMWV) WITH FIBERGLASS CARGO BED COVER (CBC)

2-19. The M1097 (HMMWV) with fiberglass cargo bed cover is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 2-18 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

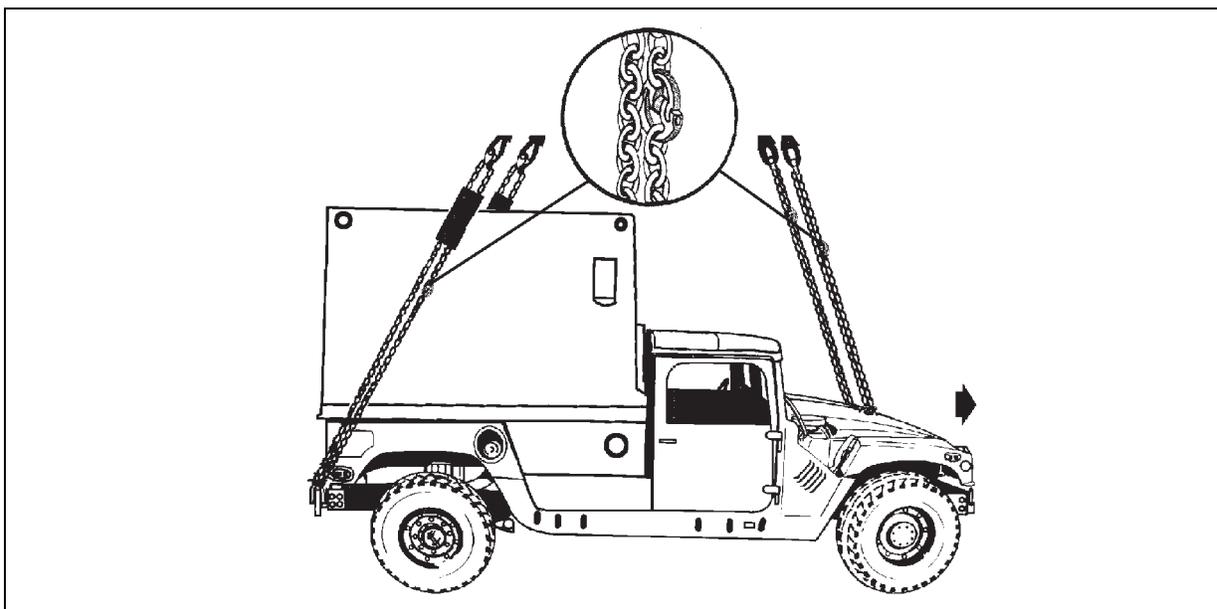
**Table 2-18. M1097 (HMMWV) With Fiberglass Cargo Bed Cover**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Cargo Bed Cover, HMMWV, Type I, Camouflage, NSN: 5411-01-647-3243	10,000	10K 15K	50/3 62/2
Cargo Bed Cover, HMMWV, Type I, Sand, NSN: 5411-01-479-1928	10,000	10K 15K	50/3 62/2

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
    - Chain length, part number 38850-00053-101, from a 10,000-pound capacity sling set (4 each).
    - Coupling link, part number 577-0415, from a 10,000-pound sling set (4 each).
  - OR
  - Multileg sling set (15,000-pound capacity for the CH-53E only).
    - Additional chain lengths from the sling set being used (8 each).
    - Additional coupling links from the sling set being used (8 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Extend the sling leg chains by connecting one additional chain length to each chain on a 10,000-pound capacity sling set with coupling links. Connect two additional chain lengths to each chain on the 15,000-pound multileg sling set chain with coupling links.
    - Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord.
    - Secure the cargo bed cover to the truck using wire rope or tie-down assemblies.
    - Secure all equipment inside the cargo bed cover with tape, nylon cord, or lashings; close and secure shelter vents and door with nylon cord or tape.
    - Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings. Secure the doors shut if installed.
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
    - Tape the windshield in an X formation from corner to corner.

— Install the lift provisions on the outer ends of the rear bumper by removing the tiedown provisions located inboard of the bumper end and installing them on the outer ends of the rear bumper.

- **Rigging.** Rig the load according to the steps in Figure 2-17.
- **Hookup.** The hookup team stands on top of the cargo bed cover. 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 carefully dismounts the vehicle and 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting on top of the cargo bed cover. Route outer sling legs 1 and 2 to the front of the vehicle 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 that protrudes through the hood from inboard to outboard. Place the correct link from Table 2-18 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with Type III nylon cord.
3. Route the chain end of sling leg 3 through the lift provision located on the left end of the rear bumper from inboard to outboard. Place the correct link from Table 2-18 in the grab hook. Repeat with sling leg 4 and the right rear lift provision. Secure excess chain with Type III nylon cord.
4. Wrap the rear slings with padding where they contact the cover sides.

**Figure 2-17. M1097 with Fiberglass Cargo Bed Cover**

<b>RIGGING STEPS (Continued)</b>
5. Raise the apex fitting above the CBC keeping the slings to the side of the CBC.
6. Cluster and tie (breakaway technique) all sling legs together on top of the shelter to prevent entanglement during hookup and lift-off.

**Figure 2-17. M1097 with Fiberglass Cargo Bed Cover (Continued)**

## **M1097 (HMMWV) WITH CONTACT MAINTENANCE TRUCK, HEAVY (CMTH)**

2-20. The M1097 with contact maintenance truck, heavy is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 2-19 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-19. M1097 with Contact Maintenance Truck, Heavy**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
CMTH, Aviation Section (AS)	9,400	10K	80/30

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
    - Chain length, part number 38850-00053-101, from a 10,000-pound capacity sling set (4 each).
    - Coupling link, part number 577-0415, from a 10,000-pound capacity sling set (4 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.
  - Spreader bar assembly (component of the M996/M997 HMMWV Ambulance).
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Extend the sling leg chains by connecting one additional chain length to each chain using the coupling links.
    - Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord.
    - Ensure the shelter is properly attached to the truck.
    - Secure all equipment inside the shelter with tape, nylon cord, or lashings. Close and secure all doors.
    - Secure the environmental control unit cover with duct tape.
    - Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings. Secure the doors in the shelter or in the cab of the vehicle.
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.

- Engage the vehicle parking brake and put the transmission in neutral.
- Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
- Tape the windshield in an X formation from corner to corner.
- Install the lift provisions on the outer ends of the rear bumper by removing the tiedown provisions located inboard of the bumper end and installing them on the outer ends of the rear bumper.
- **Rigging.** Rig the load according to the steps in Figure 2-18.
- **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 carefully dismounts the vehicle and 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

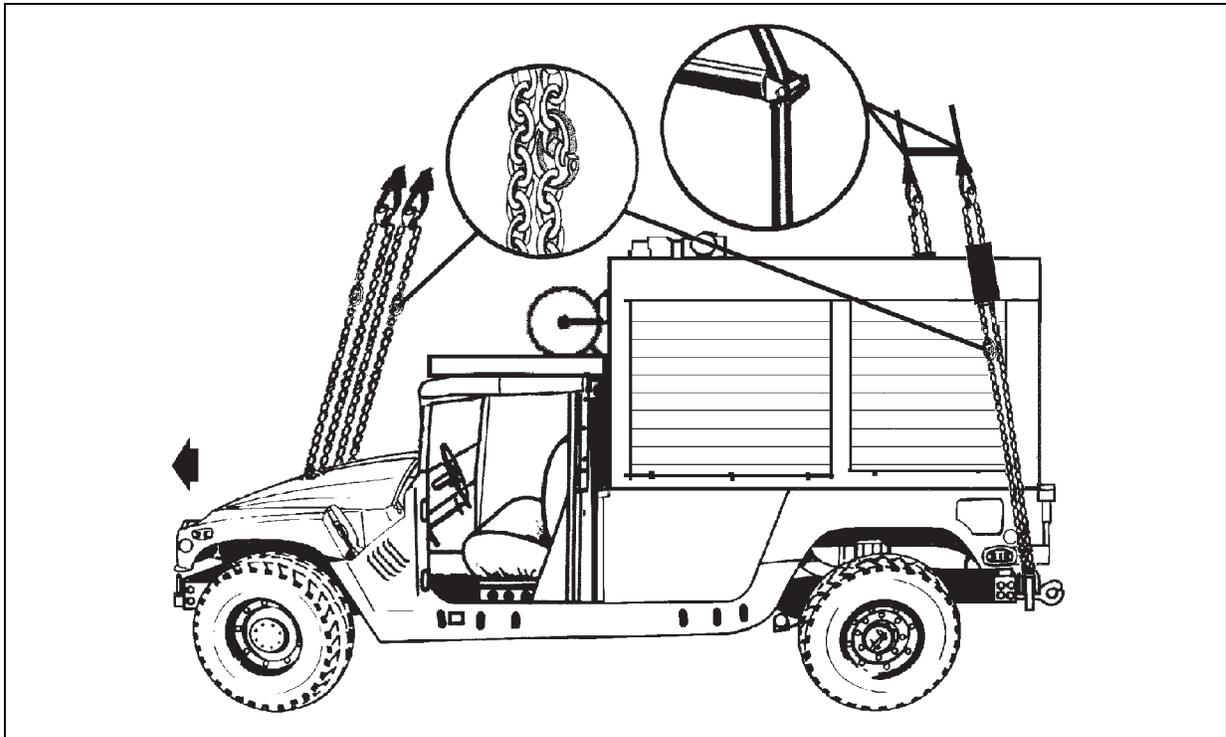


Figure 2-18. M1097 with Contact Maintenance Truck, Heavy

**CAUTION**

Do not use the lift shackles located near the center of the rear bumper for sling load lift provisions.

<b>RIGGING STEPS</b>
<ol style="list-style-type: none"> <li>1. Position apex fitting on top of the vehicle. Route outer sling legs 1 and 2 to the front of the vehicle and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.</li> <li>2. Loop the chain end of sling leg 1 through the left front lift provision that protrudes through the hood from inboard to outboard. Place the correct link from Table 2-19 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with Type III nylon cord.</li> <li>3. Position the spreader bar assembly 12 to 18 inches forward of the rear of the shelter. Route the rear sling legs through guides on the end of the spreader bar and install the pins and keepers.</li> <li>4. Route the chain end of sling leg 3 through the lift provision located on the left end of the rear bumper from inboard to outboard. Place the correct link from Table 2-19 in the grab hook. Repeat with sling leg 4 and the right rear lift provision.</li> <li>5. Secure the spreader bar retainer cable to the sling leg chain.</li> <li>6. Cluster and tie (breakaway technique) all sling legs together on top of the shelter to prevent entanglement during hookup and lift-off.</li> </ol>

**Figure 2-18. M1097 with Contact Maintenance Truck, Heavy (Continued)**

## **M1097A1 (HMMWV) WITH REMOTE LANDING SITE TOWER (RLST)**

2-21. The M1097A1 with remote landing site tower is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 2-20 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-20. M1097A1 with Remote Landing Site Tower**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M1097A1 with Remote Landing Site Tower	8,460	15K	60/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (15,000-pound capacity).
    - Chain length, part number 34080-4, from 15,000-pound capacity sling sets (8 each).
    - Coupling link, part number 31611, from 15,000-pound capacity sling sets (8 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:

- **Preparation.** Prepare the load using the following steps:
  - Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord.
  - Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings. Remove and secure the doors in the cab of the vehicle.
  - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
  - Engage the vehicle parking brake and put the transmission in neutral.
  - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
  - Install the lift provisions on the outer ends of the rear bumper by removing the tiedown provisions located inboard of the bumper end and installing them on the outer ends of the rear bumper.
  - Configure the RLST in the TRANSPORT mode in accordance with the operator's manual.
  - Ensure the RLST is properly secured to the vehicle. Secure all equipment inside the RLST with the hold-down straps, tape, or Type III nylon cord.
  - Secure the RLST cover with the straps provided. Secure the loose ends with tape.
  - Tape the windshield in an X formation from corner to corner.
  - Extend the sling leg chains by connecting two additional chain lengths to each chain with coupling links.
- **Rigging.** Rig the load according to the steps in Figure 2-19.
- **Hookup.** The hookup team stands on 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 carefully dismounts the vehicle and 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

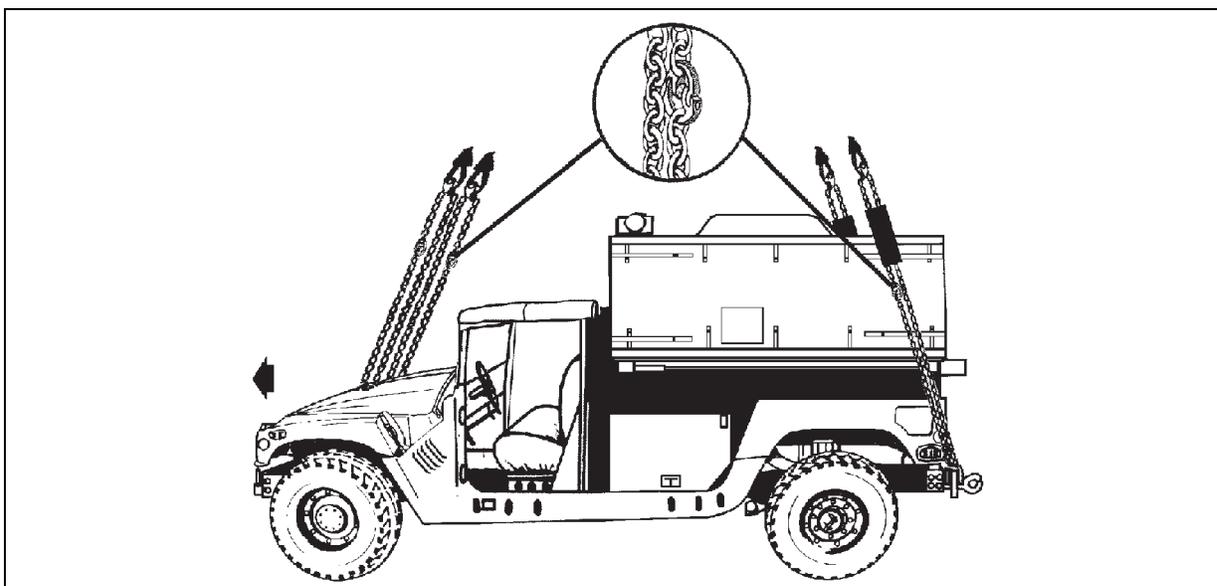


Figure 2-19. M1097A1 with Remote Landing Site Tower

<b>RIGGING STEPS</b>
<ol style="list-style-type: none"> <li>1. Position the web ring beside the RLST. Route outer sling legs 1 and 2 to the front of the vehicle and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.</li> <li>2. Loop the chain end of sling leg 1 through the left front lift provision that protrudes through the hood from inboard to outboard. Place the correct link from Table 2-20 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with Type III nylon cord.</li> <li>3. Route the chain end of sling leg 3 through the lift provision located on the left end of the rear bumper from inboard to outboard. Place the correct link from Table 2-20 in the grab hook. Repeat with sling leg 4 and the right rear lift provision.</li> <li>4. Pad the sling legs in the area where they make contact with the RLST.</li> <li>5. Cluster and tie (breakaway technique) all sling legs together on top of the shelter to prevent entanglement during hookup and lift-off.</li> </ol>

**Figure 2-19. M1097A1 with Remote Landing Site Tower (Continued)**

**CAUTION**

Do not use the lift shackles located near the center of the rear bumper for sling load lift provisions.

### PROPHET AN/MLQ-40 (V) ON M1097/M1097A1 HMMWV

2-22. The Prophet AN/MLQ-40 (V) on M1097 is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 2-21 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-21. Prophet AN/MLQ-40 (V) on M1097/M1097A1**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Prophet AN/MLQ-40 (V) 1	10,000	10K	55/10
Prophet AN/MLQ-40 (V) 3	10,000	10K	55/10
Prophet Control Vehicle	10,000	10K	55/10

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
    - Chain length, part number 38850-00053-101, from a 10,000-pound capacity sling set (4 each).
    - Coupling link, part number 577-0415, from a 10,000-pound sling set (4 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.

- Cord, nylon, Type III, 550-pound breaking strength.
- Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Fold mirrors forward inward and tie together with Type III nylon cord.
    - Ensure the Prophet cargo bed cover is secured to the truck. Secure all equipment and cargo inside the unit with tape, nylon cord, or lashings. Close and secure the door.
    - Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings. Roll up all the windows and secure the doors closed (if installed).
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
    - Tape the windshield in an X formation from corner to corner.
    - Extend the sling leg chains by connecting one additional chain length to each chain on a 10,000-pound capacity sling set with coupling links.
  - **Rigging.** Rig the load according to the steps in Figure 2-20.
  - **Hookup.** The hookup team stands on top of the vehicle. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting on the cargo hook. The hookup team then carefully dismounts the vehicle and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

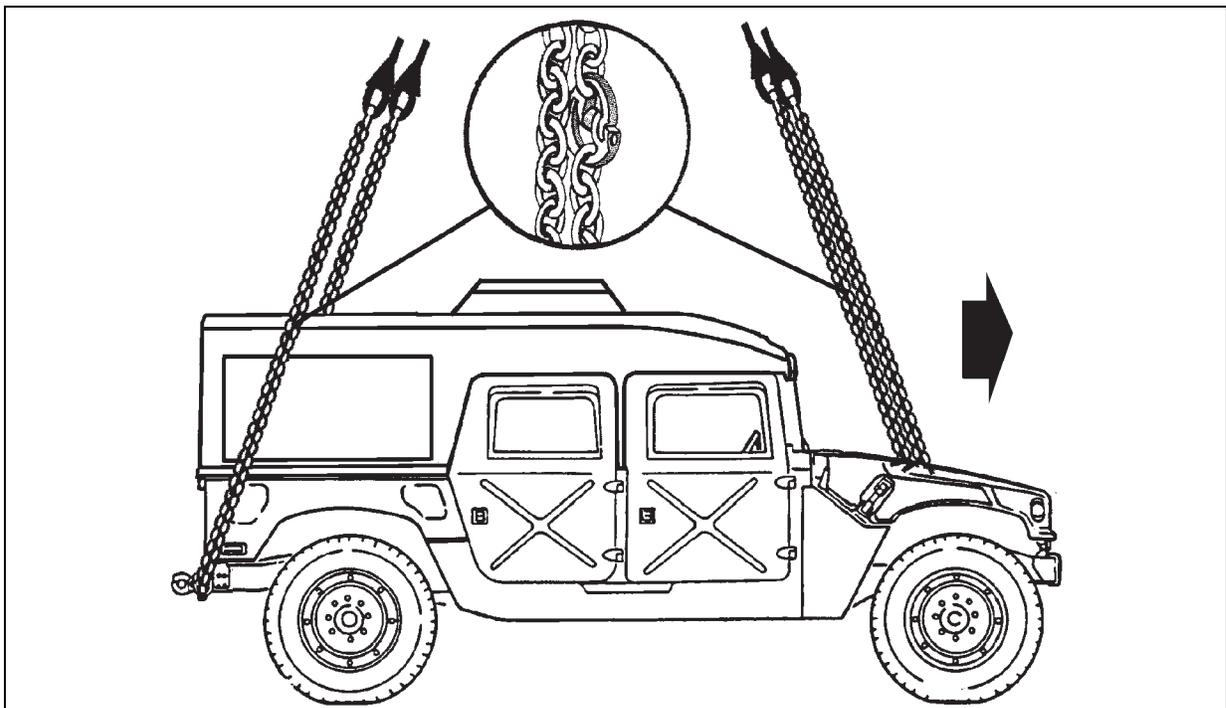


Figure 2-20. Prophet AN/MLQ-40 (V) on M1097 HMMWV

<b>RIGGING STEPS</b>
<ol style="list-style-type: none"> <li>1. Position the apex fitting on top of the vehicle roof. Route outer sling legs 1 and 2 to the front of the vehicle and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.</li> <li>2. Loop the chain end of sling leg 1 through the left front lift provision that protrudes through the hood from inboard to outboard. Place the correct link from Table 2-21 in the grab hook. Repeat with sling leg 2 through the right front lift provision.</li> <li>3. Loop the chain end of sling leg 3 through the left rear lift provision located on the outside end of the rear bumper. Place the correct link from Table 2-21 in the grab hook. Repeat with sling leg 4 through the right rear lift provision.</li> <li>4. Secure all excess chain with Type III nylon cord.</li> <li>5. Cluster and tie (breakaway technique) the sling legs in each sling set together to prevent entanglement during hookup and lift-off.</li> </ol>

**Figure 2-20. Prophet AN/MLQ-40 (V) on M1097 HMMWV (Continued)**

### **CAUTION**

Do not use the lift shackles located near the center of the rear bumper for sling load lift provisions.

## **HELMET HARDTOP (AMTECH CORP) CARGO BED COVER ON M1097A2 HMMWV**

2-23. The Helmet Hardtop (Amtech Corp) cargo bed cover on M1097A2 is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 2-22 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-22. Helmet Hardtop (Amtech Corp) Cargo Bed Cover on M1097A2**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Measurements and Signature Intelligence (MASINT)	10,300	25K	45/10

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
    - Chain length, part number 38850-00053-102, from a 25,000-pound capacity sling set (4 each).
    - Coupling link, part number 664241, from a 25,000-pound sling set (4 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.

- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Fold mirrors forward inward and tie together with Type III nylon cord.
    - Ensure the cargo bed cover is secured to the truck. Secure all equipment and cargo inside the unit with tape, nylon cord, or lashings. Close and secure the door.
    - Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings. Roll up all the windows and secure the doors closed (if installed).
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
    - Tape the windshield in an X formation from corner to corner.
    - Extend the sling leg chains by connecting one additional chain length to each chain on a 10,000-pound capacity sling set with coupling links.
  - **Rigging.** Rig the load according to the steps in Figure 2-21.
  - **Hookup.** The hookup team stands on top of the vehicle. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting on the cargo hook. The hookup team then carefully dismounts the vehicle and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

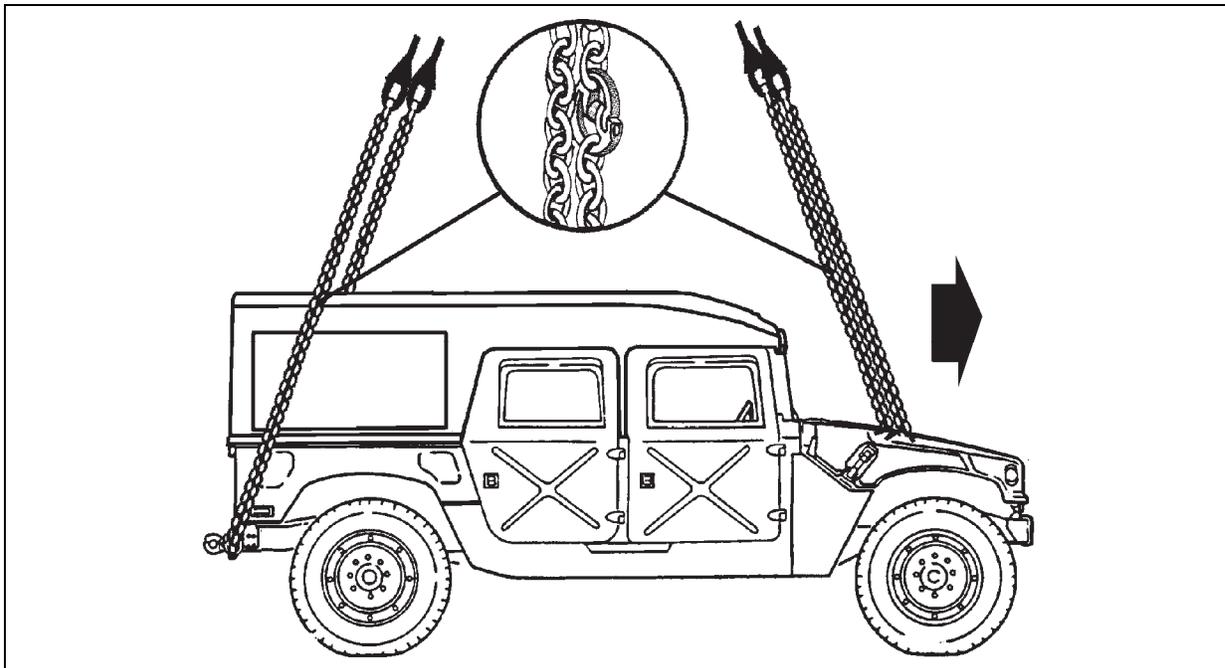


Figure 2-21. Helmet Hardtop (Amtech Corp) Cargo Bed Cover on M1097A2

<b>RIGGING STEPS</b>
1. Position the apex fitting on top of the vehicle roof. Route outer sling legs 1 and 2 to the front of the vehicle 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 that protrudes through the hood from inboard to outboard. Place the correct link from Table 2-22 in the grab hook. Repeat with sling leg 2 through the right front lift provision.
3. Loop the chain end of sling leg 3 through the left rear lift provision located on the outside end of the rear bumper. Place the correct link from Table 2-22 in the grab hook. Repeat with sling leg 4 through the right rear lift provision.
4. Secure all excess chain with tape or Type III nylon cord.
5. Cluster and tie (breakaway technique) the sling legs in each sling set together to prevent entanglement during hookup and lift-off.

**Figure 2-21. Helmet Hardtop (Amtech Corp) Cargo Bed Cover on M1097A2 (Continued)**

### **CAUTION**

Do not use the lift shackles located near the center of the rear bumper for sling load lift provisions.

## **M1097 (HMMWV) WITH ANTENNA AS-3036/TSC ON OA-9134/TSC PALLET GROUP**

2-24. The M1097 with antenna AS-3036/TSC on OA-9134/TSC pallet group is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 2-23 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-23. M1097 with Antenna AS-3036/TSC on OA-9134/TSC Pallet Group**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
OA-9134/TSC Pallet Group, Antenna AS-3036/TSC on M1097	7,129	10K	46/8

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Reach pendant (11,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.
  - Spreader bar assembly (component of the M996/M997 HMMWV Ambulance).

- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord. Remove the cab doors.
    - Ensure the antenna support structure is secured to the truck. Secure all loose equipment within the antenna support structure with Type III nylon cord, tape, or lashings.
    - Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings.
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
    - Tape the windshield in an X formation from corner to corner.
    - Install the lift provisions on the outer ends of the rear bumper by removing the tiedown provisions located inboard of the bumper end and installing them on the outer ends of the rear bumper.
  - **Rigging.** Rig the load according to the steps in Figure 2-22.
  - **Hookup.** The hookup team stands in the bed 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 carefully dismounts the vehicle and 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**

An aircrew member must monitor the spreader bar at all times. If there is any evidence of the spreader bar bending the load should be set down at the nearest suitable landing area.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

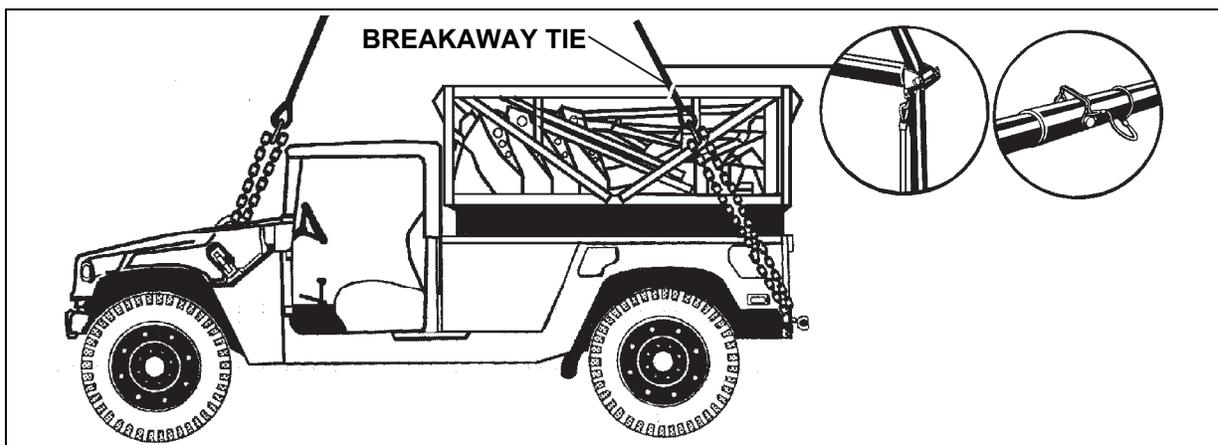


Figure 2-22. M1097 with AS-3036/TSC Antenna on OA-9134/TSC Pallet Group

<b>RIGGING STEPS</b>
<ol style="list-style-type: none"> <li>1. Install the reach pendant on the apex fitting of the sling set.</li> <li>2. Position apex fitting and reach pendant on top of the antenna support structure assembly. Route outer sling legs 1 and 2 to the front of the vehicle and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.</li> <li>3. Loop the chain end of sling leg 1 through the left front lift provision that protrudes through the hood from inboard to outboard. Place the correct link from Table 2-23 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with Type III nylon cord.</li> <li>4. Position the spreader bar assembly 12 inches from the rear of the antenna support structure. Route the rear sling ropes through the guides on the end of the spreader bar. Secure the sling ropes in the guides with the retainer pins and keepers.</li> <li>5. Route the chain end of sling leg 3 through the lift provision located on the left end of the rear bumper from inboard to outboard. Place the correct link from Table 2-23 in the grab hook. Repeat with sling leg 4 and the right rear lift provision. Secure excess chain with Type III nylon cord.</li> <li>6. Remove all slack from sling legs 3 and 4. Install a breakaway tie using 1/4-inch cotton webbing around each leg and around the top bar of the antenna support structure.</li> <li>7. Extend the spreader bar retainer cable down the length of the sling leg and secure to the chain with Type III nylon cord.</li> <li>8. Cluster and tie (breakaway technique) all sling legs together on top of the shelter to prevent entanglement during hookup and lift-off.</li> </ol>

**Figure 2-22. M1097 with AS-3036/TSC Antenna on OA-9134/TSC Pallet Group (Continued)**

### **CAUTION**

Do not use the lift shackles located near the center of the rear bumper for sling load lift provisions.

## **M1097 (HMMWV) WITH HIGH MOBILITY DIGITAL GROUP MULTIPLEXER (DGM), AUXILIARY EQUIPMENT TRANSPORTATION CONTAINER (AETC) IN 2 AND 3 MAST CONFIGURATIONS**

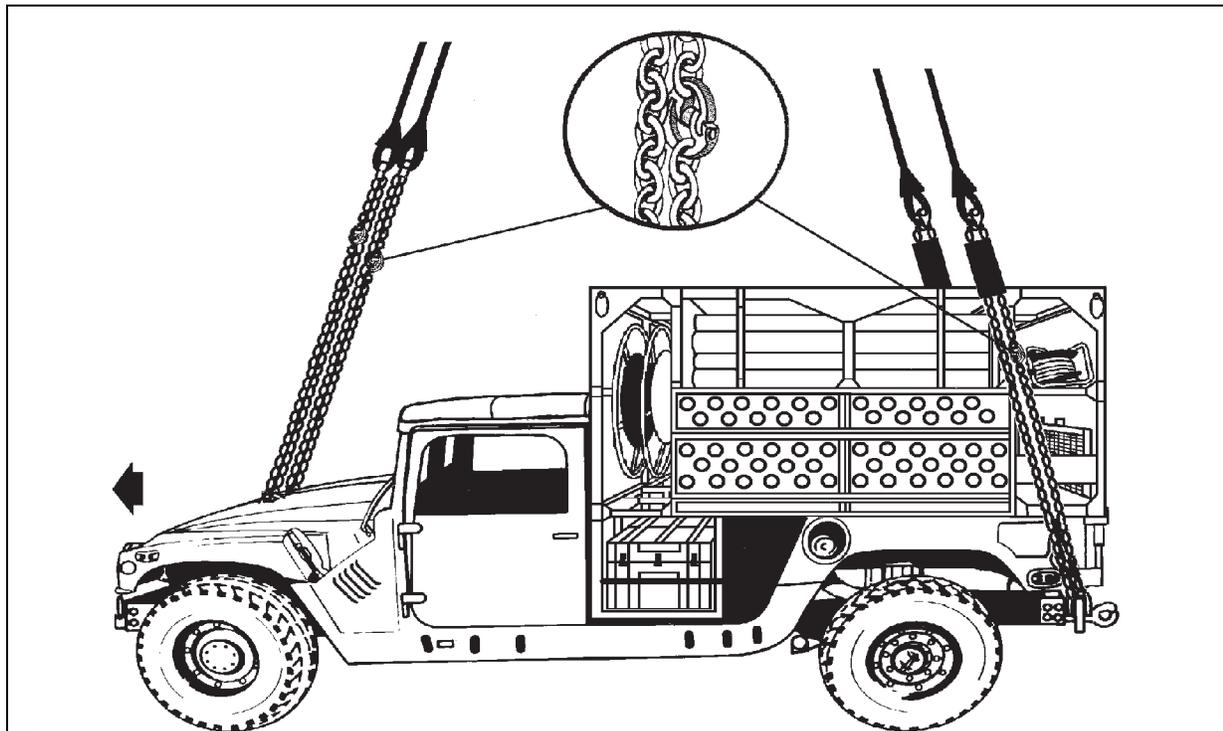
2-25. The M1097 with high mobility digital group multiplexer (DGM), auxiliary equipment transportation container (AETC) in 2 and 3 mast configurations is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 2-24 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-24. M1097 with High Mobility Digital Group Multiplexer (DGM), Auxiliary Equipment Transportation Container (AETC) in 2 and 3 Mast Configurations**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
2 Mast AETC Configuration	8,500	10K	55/3
3 Mast AETC Configuration	9,500	10K	55/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
    - Chain length, part number 38850-00053-101, from a 10,000-pound capacity sling set (4 each).
    - Coupling link, part number 577-0415, from a 10,000-pound sling set (4 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.
- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord. Remove the cab doors.
    - Remove, fold, stow, and secure the canvas cover for the AETC using Type III nylon cord.
    - Ensure the AETC is secured to the truck with wire rope or tie-down assemblies. Secure all equipment and cargo inside the AETC with tape, Type III nylon cord, and lashings.
    - Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings.
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
    - Tape the windshield in an X formation from corner to corner.
    - Install the lift provisions on the outer ends of the rear bumper by removing the tiedown provisions located inboard of the bumper end and installing them on the outer ends of the rear bumper.
    - Connect one additional chain length to each chain of the sling set with the coupling link.
  - **Rigging.** Rig the load according to the steps in Figure 2-23.
  - **Hookup.** The hookup team stands in the bed 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 carefully dismounts the vehicle and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



#### RIGGING STEPS

1. Position apex fitting on top of the shelter. Route outer sling legs 1 and 2 to the front of the vehicle 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 that protrudes through the hood from inboard to outboard. Place the correct link from Table 2-24 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with tape or Type III nylon cord.
3. Route the chain end of sling leg 3 through the lift provision located on the left end of the rear bumper from inboard to outboard. Place the correct link from Table 2-24 in the grab hook. Repeat with sling leg 4 and the right rear lift provision. Pad the slings where they contact the frame. Secure excess chain with tape or Type III nylon cord.
4. Cluster and tie (breakaway technique) all sling legs together on top of the shelter to prevent entanglement during hookup and lift-off.

**Figure 2-23. M1097 with 2 or 3 Mast AETC Configuration**

#### CAUTION

Do not use the lift shackles located near the center of the rear bumper for sling load lift provisions.

## M1097A2 (HMMWV) WITH SECURE MOBILE ANTI-JAM TACTICAL TERMINAL (SMART-T) PALLET

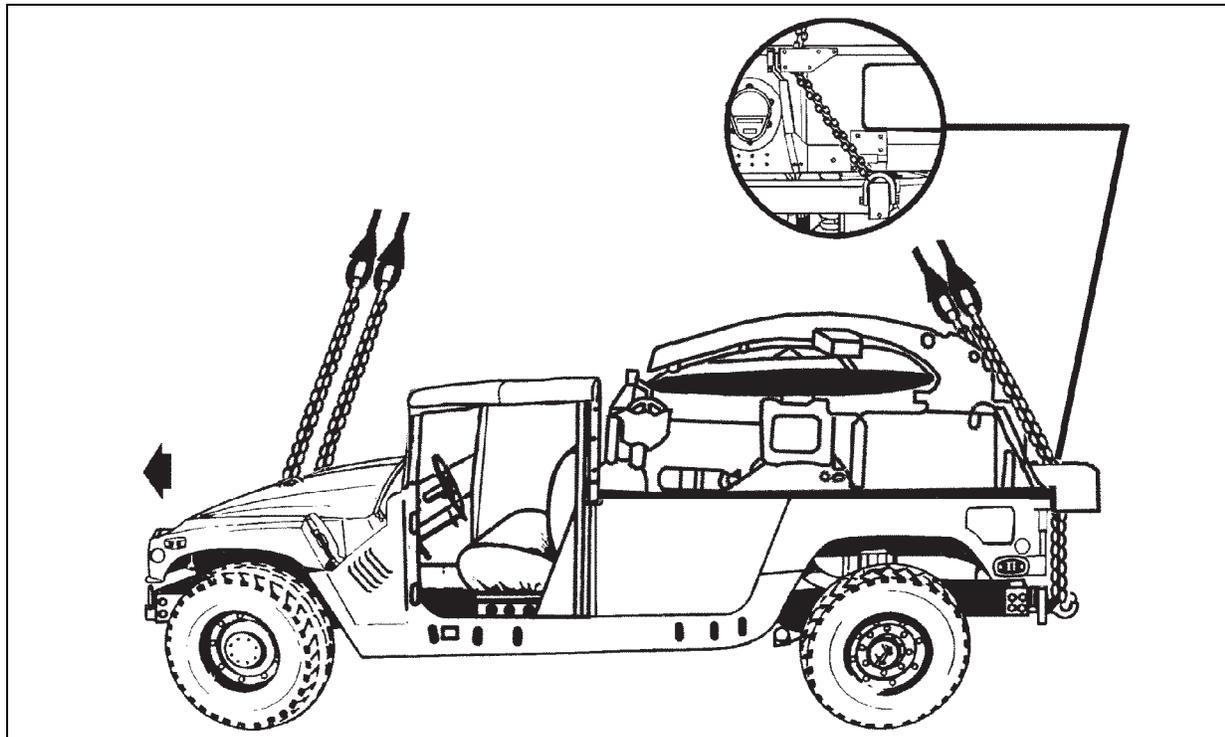
2-26. The M1097A2 with secure mobile anti-jam tactical terminal (SMART-T) pallet is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 2-25 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-25. M1097A2 with Secure Mobile Anti-Jam Tactical Terminal Pallet**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M1097A2 with Secure Anti-Jam Tactical Terminal Pallet	8,540	10K	30/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
  - **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord.
    - Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings. Remove and secure the doors in the cab of the vehicle.
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
    - Secure all loose equipment on the SMART-T with tape or Type III nylon cord.
    - Tape the windshield in an X formation from corner to corner. Tape all mirrors, lights and gauges. Remove and secure the rear cabin window.
    - Secure the antenna dish.
  - **Rigging.** Rig the load according to the steps in Figure 2-24.
  - **Hookup.** The hookup team stands on 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 carefully dismounts the vehicle and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting on top of the vehicle. Route outer sling legs 1 and 2 to the front of the vehicle 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 that protrudes through the hood from inboard to outboard. Place the correct link from Table 2-25 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with tape or Type III nylon cord.
3. Route the chain end of sling leg 3 through the sling guide located on the tailgate. Loop the chain end through the left lift provision on the bumper and thread back through the sling guide. Place the correct link from Table 2-25 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 shelter to prevent entanglement during hookup and lift-off.

**Figure 2-24. M1097A2 with Secure Mobile Anti-Jam Tactical Terminal Pallet**

## AIR TRAFFIC NAVIGATION, INTEGRATION, AND CONTROL SYSTEM (ATNAVICS) RADAR SENSOR PALLET ON M1113 HMMWV

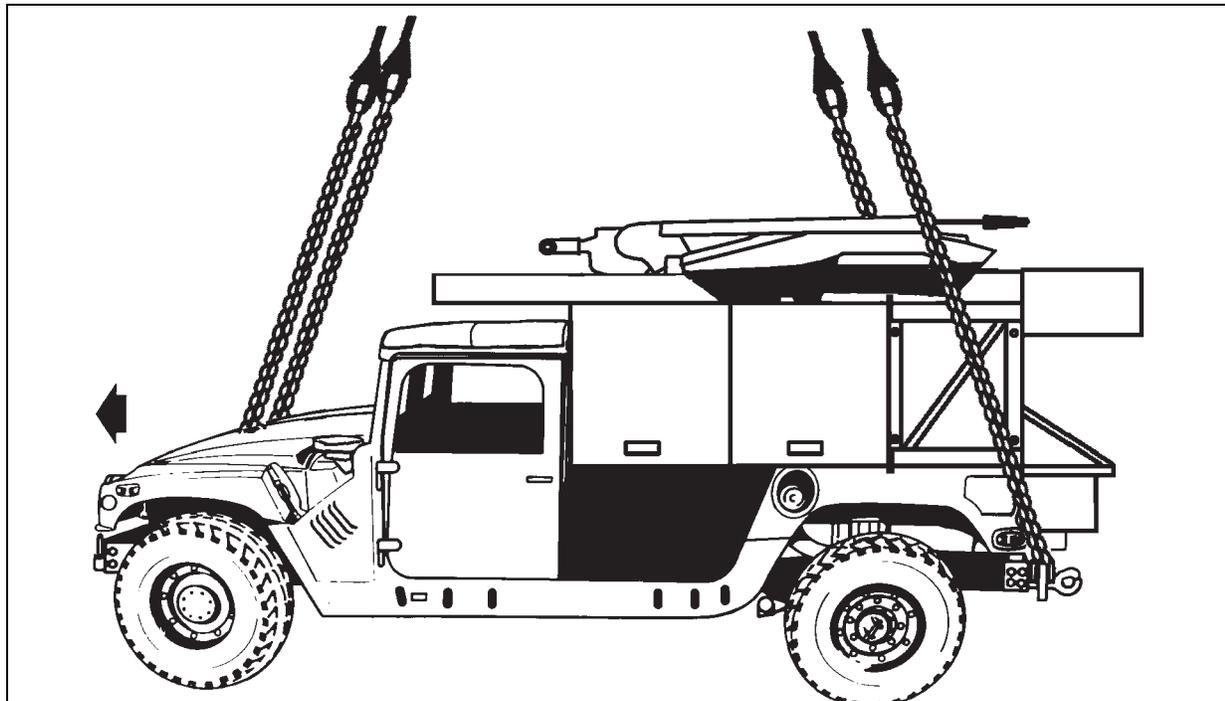
2-27. The Air Traffic Navigation, Integration, and Control System (ATNAVICS) radar sensor pallet on M1113 is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 2-26 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-26. Air Traffic Navigation, Integration, and Control System radar sensor pallet on M1113**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M1113 with ATNAVICS Radar Sensor Pallet	11,500	25K	30/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
    - Additional chain lengths, part number 38850-00053-102, from a 25,000-pound capacity sling set (4 each).
    - Coupling link, part number 664241, from a 25,000-pound capacity sling set (4 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Strap, cargo, tiedown, CGI-1/B (as required).
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Fold the mirrors inward for added protection and tie together with Type III nylon cord. Remove the doors and secure the doors on the load with Type III nylon cord.
    - Secure all equipment inside the unit with tape, Type III nylon cord or tiedown straps. Secure all vents, doors and latches with tape or Type III nylon cord.
    - Secure all equipment and cargo inside the vehicle cab with tape, Type III nylon cord, or tiedown straps.
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard or Type III nylon cord.
    - Extend the sling leg chains by connecting one additional chain length to each chain on the 25,000-pound capacity sling set with coupling links.
    - Install the sling leg guides on the rear corners of the radar sensor pallet as required in TM 11-5840-381-23&P, chapter 2.
  - **Rigging.** Rig the load according to the steps in Figure 2-25.
  - **Hookup.** The hookup team stands on the vehicle. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting on the cargo hook. The hookup team then carefully dismounts the vehicle and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



#### RIGGING STEPS

1. Position apex fitting on top of the truck. Route outer sling legs 1 and 2 to the front of the vehicle 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 that protrudes through the hood from inboard to outboard. Place the correct link from Table 2-26 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with Type III nylon cord.
3. Loop the chain end of sling leg 3 through the left rear lift provision located on the outer ends of the rear bumper. Place the correct link from Table 2-26 in the grab hook. Repeat with sling leg 4 and the right rear lift provision. Secure excess chain with Type III nylon cord.
4. Cluster and tie (breakaway technique) all sling legs together on top of the vehicle to prevent entanglement during hookup and lift-off.

**Figure 2-25. Air Traffic Navigation, Integration, and Control System Radar Sensor Pallet on M1113**

#### CAUTION

Do not use the lift shackles located near the center of the rear bumper for sling load lift provisions.

## TROJAN SPIRIT LITE (V)2, CENTRAL COMMUNICATIONS AN/TSQ-226 (V)2 ON M1113 HMMWV

2-28. The Trojan Spirit Lite (V)2, central communications AN/TSQ-226 (V)2 on M1113 is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 2-27 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-27. Trojan Spirit Lite (V)2, Central Communications AN/TSQ-226 (V)2 on M1113**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Trojan Spirit Lite (V) 2, Central Communications AN/TSQ-226 (V) 2 on M1113	11,500	25K	35/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
    - Additional chain lengths, part number 38850-00053-102, from a 25,000-pound capacity sling set (4 each).
    - Coupling link, part number 664241, from a 25,000-pound capacity sling set (4 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Fold the mirrors inward for added protection and tie together with Type III nylon cord.
    - Secure all equipment inside on the pallet with tape, Type III nylon cord or tiedown straps. Secure all vents, doors and latches with tape or Type III nylon cord.
    - Secure all equipment and cargo inside the vehicle cab with tape, Type III nylon cord, or tiedown straps. Secure the doors shut, if installed.
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard or type III nylon cord.
    - Extend the sling leg chains by connecting one additional chain length to each chain on the 25,000-pound capacity sling set with coupling links.
    - Tape the windshield in an X formation from corner to corner.
    - Secure the rear lift provision in the up position with Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 2-26.
  - **Hookup.** The hookup team stands on top of the vehicle. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting on the cargo hook. The hookup team then carefully dismounts the vehicle and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting on top of the truck. Route outer sling legs 1 and 2 to the front of the vehicle 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 that protrudes through the hood from inboard to outboard. Place the correct link from Table 2-27 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with Type III nylon cord.
3. Loop the chain end of sling leg 3 through the left rear lift provision located on the outer ends of the rear bumper. Place the correct link from Table 2-27 in the grab hook. Repeat with sling leg 4 and the right rear lift provision. Ensure sling leg 4 is routed between the handholds on the right side of the system. Remove the slack from sling leg 4 and secure the sling leg to the front handhold with Type I, 1/4-inch cotton webbing. Secure excess chain with Type III nylon cord.
4. Cluster and tie (breakaway technique) all sling legs together on top of the vehicle to prevent entanglement during hookup and lift-off.

**Figure 2-26. Trojan Spirit Lite (V)2 Central Communications AN/TSQ-226 (V)2 on M1113**

## AN/MRC-142B RADIO TERMINAL SET WITH 30M MAST ON M998 HMMWV

2-29. The AN/MRC-142B radio terminal set with 30M mast on M998 is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 2-28 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

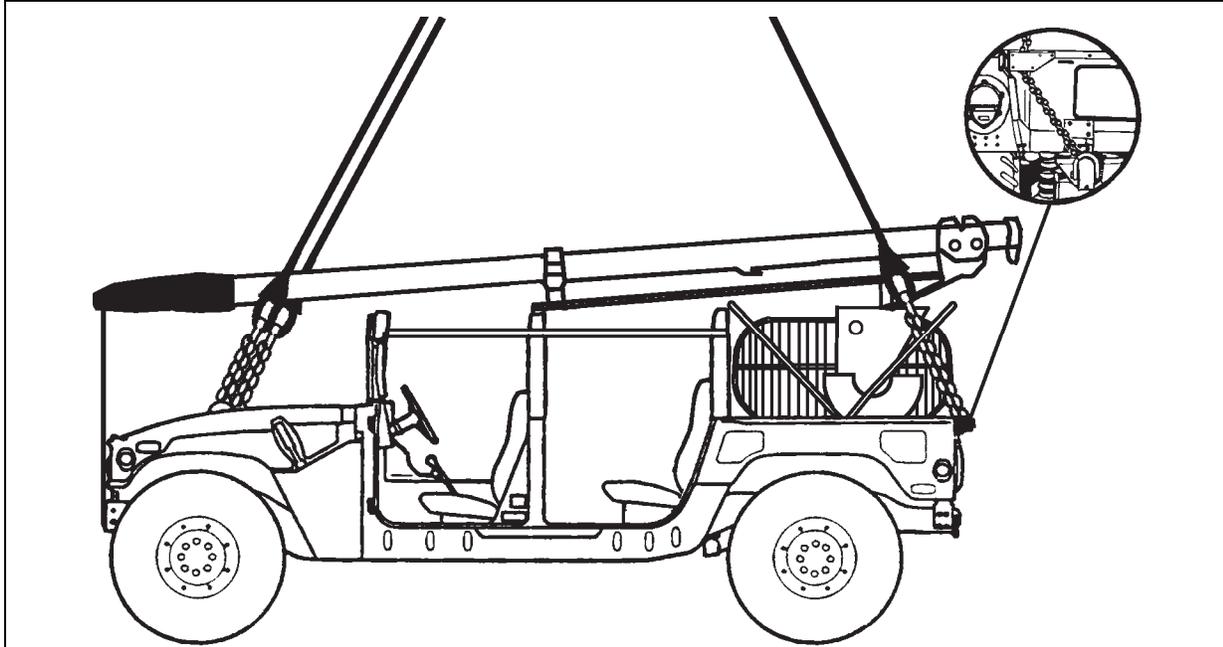
**Table 2-28. AN/MRC-142B Radio Terminal Set with 30M Mast on M998**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
AN/MRC-142B Radio Terminal Set with 30 Meter Mast on M998	7,500	15K	50/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (15,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Fold the mirrors inward for added protection and tie together with Type III nylon cord.
    - Remove the canvas cover and doors. Secure the canvas and doors inside the vehicle with tape, Type III nylon cord, or tiedown straps.
    - Secure all equipment and cargo inside the vehicle cab with tape, Type III nylon cord, or tiedown straps.
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard or type III nylon cord.
    - Stow and secure the Shore Mounted Accessory Kit (SMAK) antenna mast. Install the mast cover and secure with tape.
    - Rotate the antenna array dishes 180 degrees from the normal stowage position; so the curved sides are facing out.
    - Ensure the offset adapters are stowed and secured.
    - Ensure the left and right SMAK antenna arrays are secured in the normal stowage position.
    - Secure the power amplifier case in the normal stowage location over right rear wheel well.
    - Secure the cables on the spools on the left rear wheel well.
    - Secure the universal power supply in normal stowage location between the front seats.
    - Stow and secure radio equipment.
    - Secure the rear roof bow in the rear most position to the SMAK antenna mast with Type III nylon cord.
    - Tape the windshield in an X formation from corner to corner.
  - **Rigging.** Rig the load according to the steps in Figure 2-27.
  - **Hookup.** The hookup team stands in the bed of the vehicle. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting

on the cargo hook. The hookup team then carefully dismounts the vehicle and 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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting on top of the SMAK antenna mast. Route outer sling legs 1 and 2 to the front of the vehicle 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 that protrudes through the hood from inboard to outboard. Place the correct link from Table 2-28 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with Type III nylon cord.
3. Route the chain end of sling leg 3 under the rear roof bow and through the eyelet opening in the upper left corner of the tailgate. Loop the chain end through the left lift provision on the bumper and thread back through the eyelet opening in the tailgate. Place the correct link from Table 2-28 in the grab hook. Repeat with sling leg 4 and the right rear lift provision.
4. Cluster and tie (breakaway technique) all sling legs together on top of the vehicle to prevent entanglement during hookup and lift-off.

**Figure 2-27. AN/MRC-142B Radio Terminal Set with 30M Mast on M998**

## M998 (HMMWV) WITH TWO MRC-127 STACKS

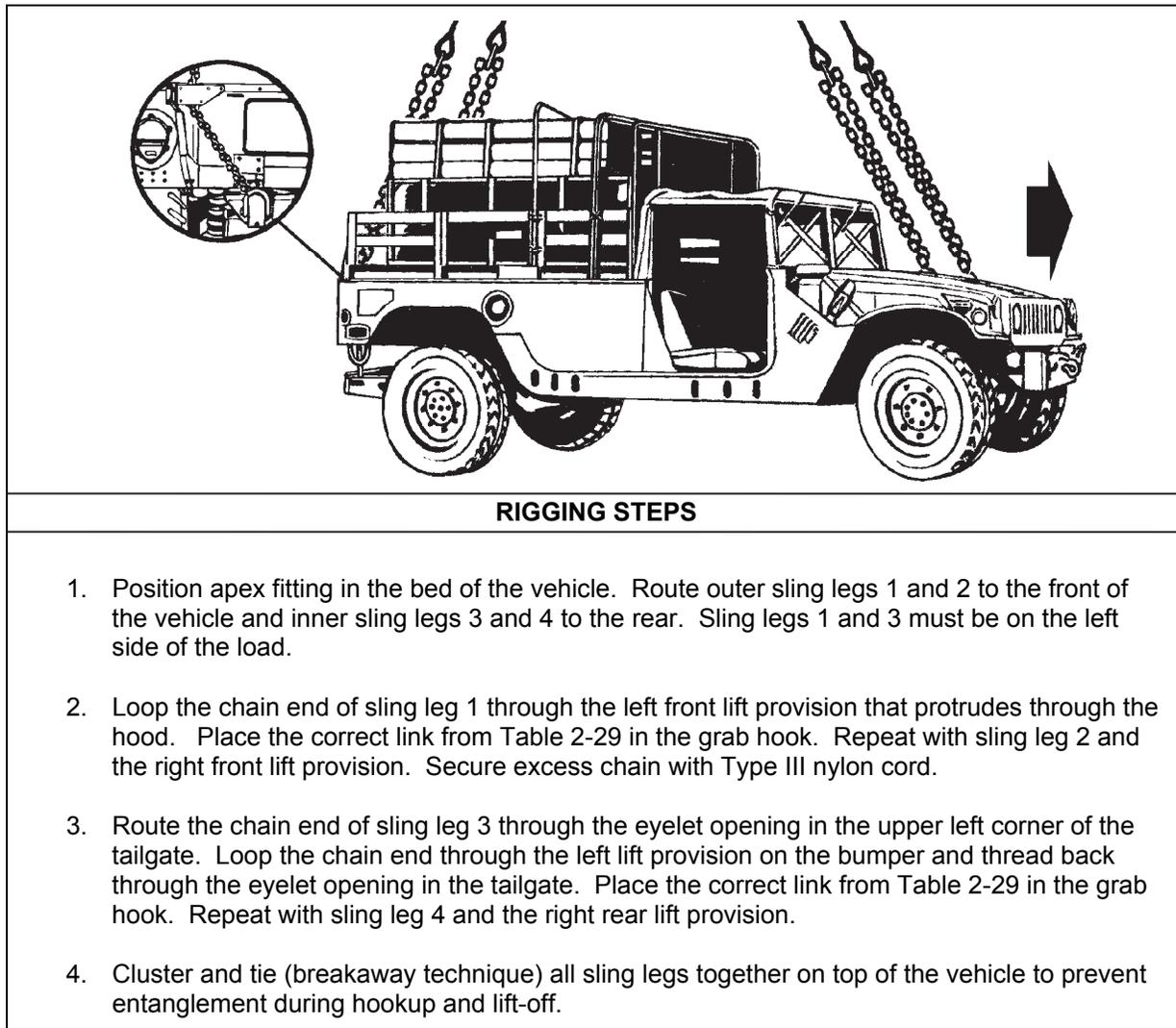
2-30. The M998 with two MRC-127 stacks is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 2-29 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-29. M998 with Two MRC-127 Stacks**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M998 with Two MRC-127 Stacks	8,010	10K	80/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.
- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord. If installed, remove canvas covering over the bed of the truck. Remove the doors. Tape the windshield in an X formation from corner to corner. If time permits, fold canvas top and tie to windshield for added protection.
    - Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings. Remove antennas and stow inside vehicle.
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
  - **Rigging.** Rig the load according to the steps in Figure 2-28.
  - **Hookup.** The hookup team stands in the bed 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 carefully dismounts the vehicle and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 2-28. M998 with Two MRC-127 Stacks**

## **M998/M1038 (HMMWV) WITH LIGHTWEIGHT TACTICAL FIRE CONTROL SYSTEMS (LTACFIRE)/TACTICAL TERMINAL CONTROL SYSTEM (TTCS)**

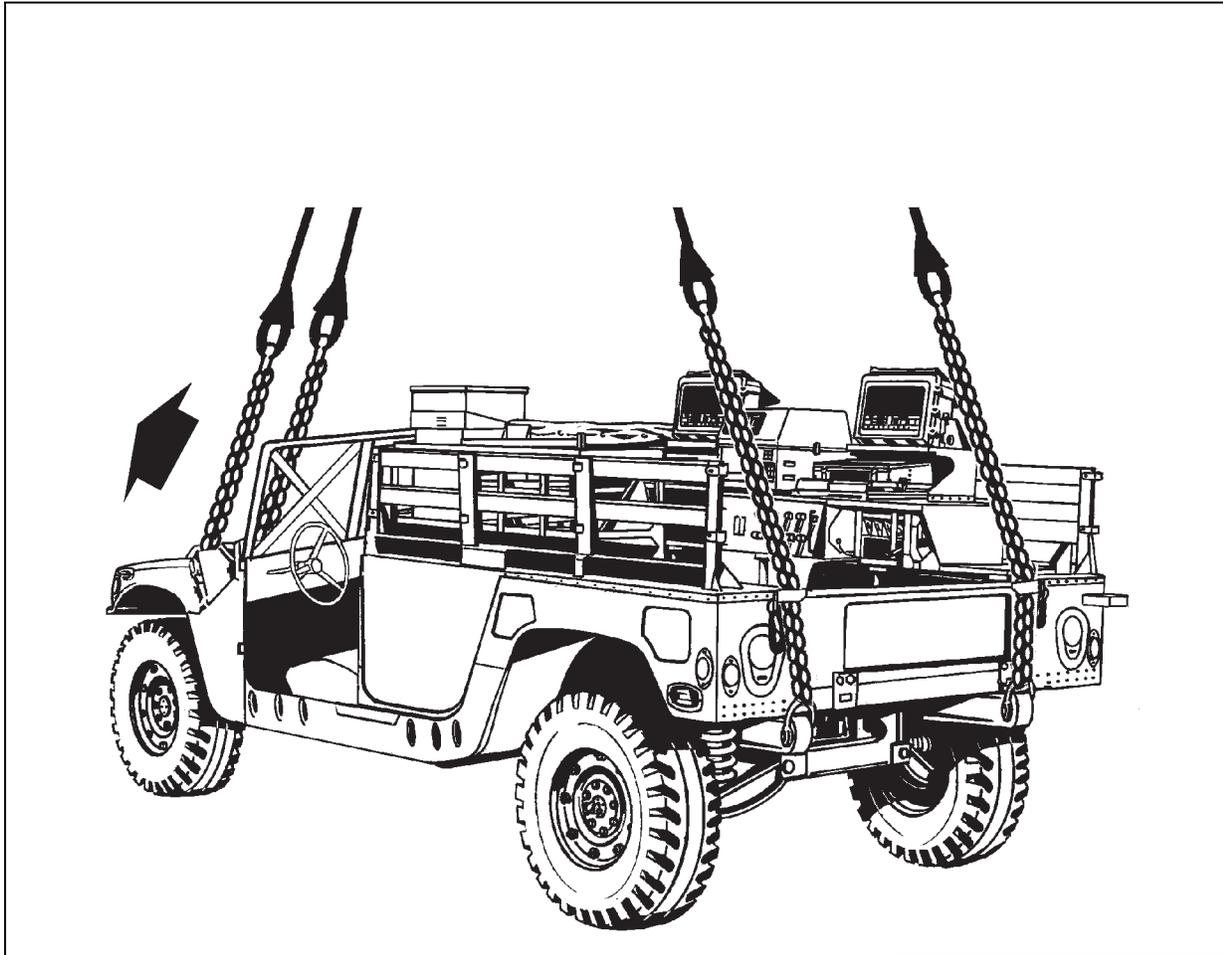
2-31. The M998/M1038 with Lightweight Tactical Fire Control Systems (LTACFIRE)/Tactical Terminal Control System (TTCS) is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 2-30 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-30. M998/M1038 with LTACFIRE or TTCS**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
LTACFIRE, Single Station	5,927	10K	80/43
LTACFIRE, Dual Station	6,215	10K	80/45
AN/TSQ-198 TTCS	6,015	10K	80/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.
- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord. Remove the canvas cab top and the doors. Fold the canvas top and stow securely inside the driver's compartment sandwiched between the doors.
    - Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings.
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
    - Tape the windshield in an X formation from corner to corner.
  - **Rigging.** Rig the load according to the steps in Figure 2-29.
  - **Hookup.** The hookup team stands in the bed 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 carefully dismounts the vehicle and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting in the bed of the vehicle. Route outer sling legs 1 and 2 to the front of the vehicle 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 that protrudes through the hood. Place the correct link from Table 2-30 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with Type III nylon cord.
3. Route the chain end of sling leg 3 through the eyelet opening in the upper left corner of the tailgate. Loop the chain end through the left lift provision on the bumper and thread back through the eyelet opening in the tailgate. Place the correct link from Table 2-30 in the grab hook. Repeat with sling leg 4 and the right rear lift provision.
4. Cluster and tie (breakaway technique) all sling legs together on top of the vehicle to prevent entanglement during hookup and lift-off.

**Figure 2-29. M998/M1038 with LTACFIRE or TTCS**

## M1097A2 (HMMWV) SOFT TOP TRUCK WITH ADVANCED FIELD ARTILLERY TACTICAL DATA SYSTEMS (AFATADS)

2-32. The M1097A2 soft top truck with Advanced Field Artillery Tactical Data Systems is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 2-31 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

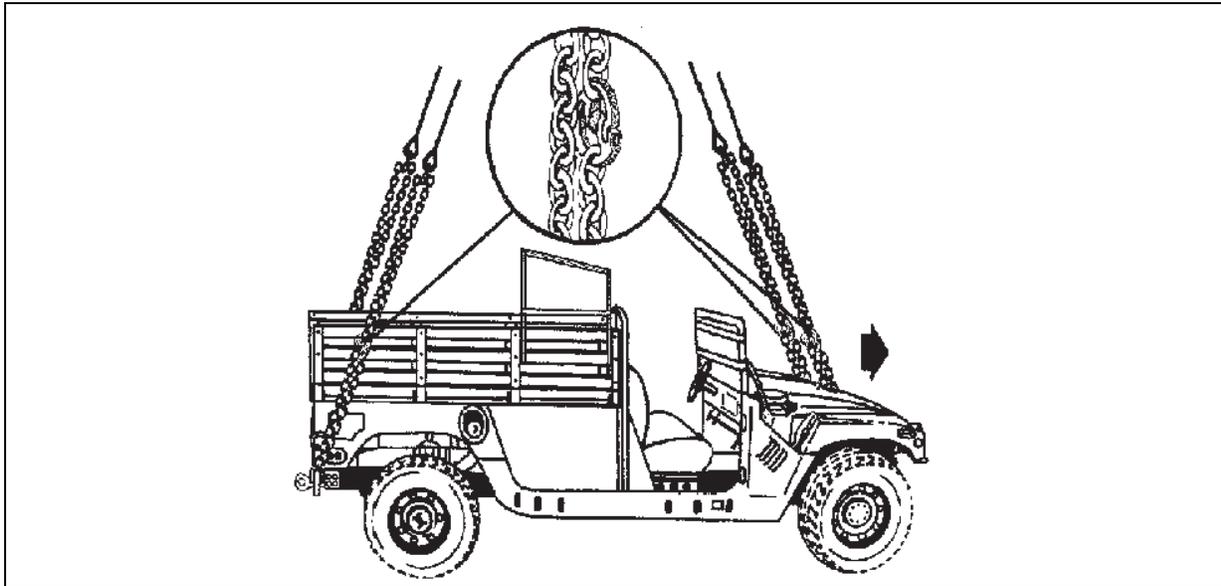
**Table 2-31. M1097A2 Soft Top Truck with Advanced Field Artillery Tactical Data Systems**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
System 2: CHS-2 AN/GYG-3(V)1, with SINGARS AN/VRC-90, AN/VRC-92, and EPLRS installed in the bed. AN/VRC-92 installed in cab.	8,103	10K	50/3
System 3: CHS-2 AN/GYG-3(V)3, with SINGARS AN/VRC-90, AN/VRC-92, and EPLRS installed in the bed. AN/VRC-92 installed in cab.	8,366	10K	50/3
System 4: 2 each AN/GYK-37(V)2, with SINGARS AN/VRC-89, AN/VRC-92, and EPLRS	7,790	10K	50/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
    - Chain length, part number 38850-00053-101, from a 10,000-pound capacity sling set (4 each).
    - Coupling link, part number 577-0415, from a 10,000-pound capacity sling set (4 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Padding, cellulose.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord.
    - Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings. Remove and secure the doors in the cab of the vehicle.
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
    - Extend the sling leg chains by connecting one additional chain length to each chain using the coupling links.
  - **Rigging.** Rig the load according to the steps in Figure 2-30.
  - **Hookup.** The hookup team stands in the bed 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 carefully dismounts the vehicle and 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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position the apex fitting on top of the shelter. Route outer sling legs 1 and 2 to the front of the vehicle 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 that protrudes through the hood from inboard to outboard. Place the correct link from Table 2-31 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with Type III nylon cord.
3. Route the chain end of sling leg 3 through the lift provision located on the left end of the rear bumper from inboard to outboard. Place the correct link from Table 2-31 in the grab hook. Repeat with sling leg 4 and the right rear lift provision.
4. Cluster and tie (breakaway technique) all sling legs together on top of the shelter to prevent entanglement during hookup and lift-off.

**Figure 2-30. M998/M1038 with LTACFIRE or TTCS**

**M1097A2 (HMMWV) WITH ADVANCED FIELD ARTILLERY TACTICAL DATA SYSTEM (AFATDS) FULL SIZE SOFT TOP INSTALLATION KIT (STIK)**

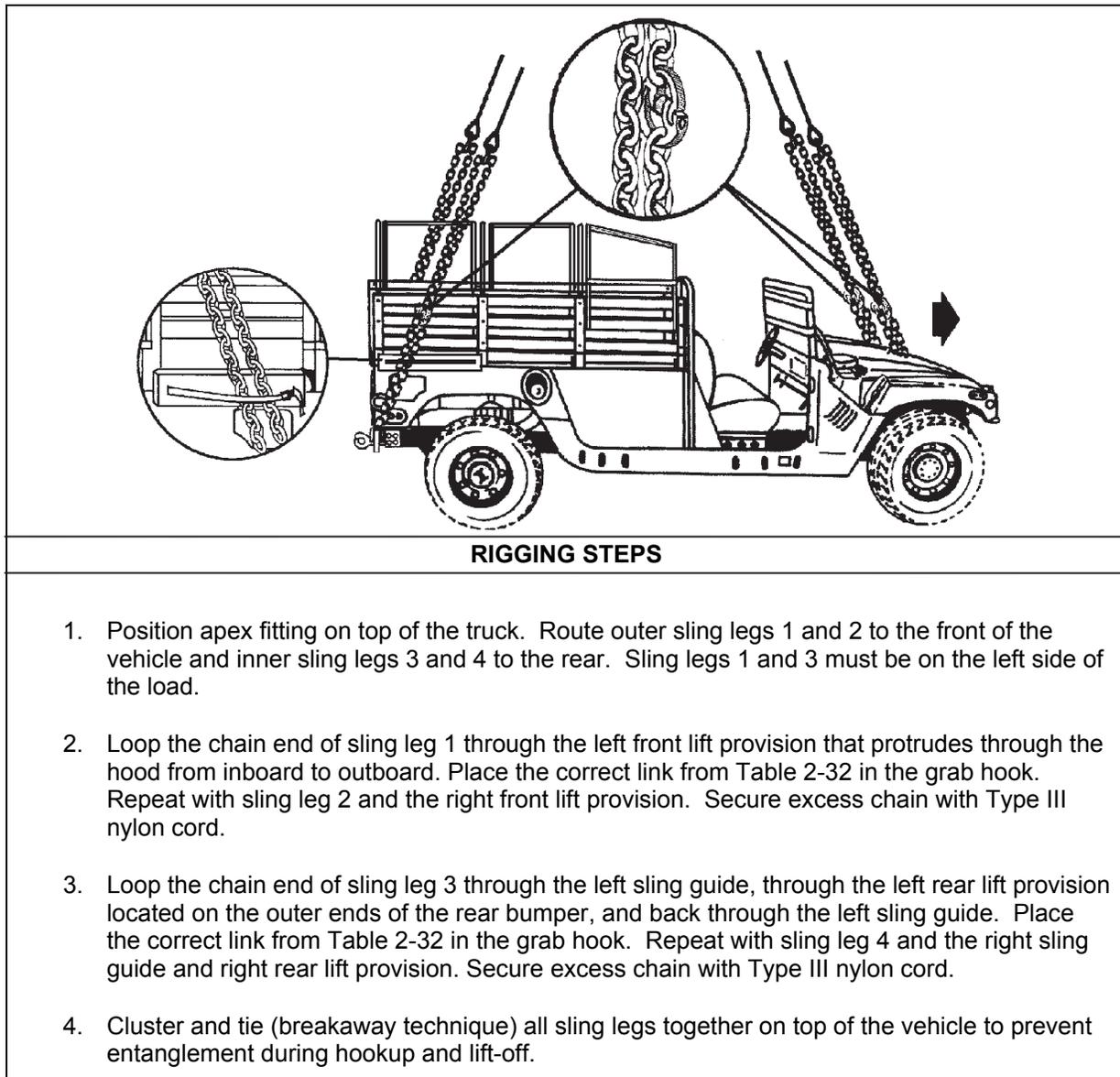
2-33. The M1097A2 with Advanced Field Artillery Tactical Data System Full Size Soft Top Installation Kit is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 2-32 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-32. M1097A2 with Advanced Field Artillery Tactical Data System Full Size Soft Top Installation Kit**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
System 2: CHS-2 AN/GYG-3(V)1, with SINCGARS AN/VRC-90, AN/VRC-92, and EPLRS installed in the bed. AN/VRC-92 installed in cab.	8,103	10K	50/3
System 3: CHS-2 AN/GYG-3(V)3, with SINCGARS AN/VRC-90, AN/VRC-92, and EPLRS installed in the bed. AN/VRC-92 installed in cab.	8,366	10K	50/3
System 4: 2 each AN/GYK-37(V)2, with SINCGARS AN/VRC-89, AN/VRC-92, and EPLRS	7,790	10K	50/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
    - Chain length, part number 38850-00053-101, from a 10,000-pound capacity sling set (4 each).
    - Coupling link, NSN 4010-01-231-3388, from a 10,000-pound sling set (4 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Strap, cargo, tiedown, CGU-1/B (2 each).
  - Sling guides (included as part of the HMMWV STIK) (2 each).
- **Personnel.** Two persons can prepare and rig the M1097A2 HMMWV in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Fold mirrors inward and tie together with Type III nylon cord. Remove the doors and secure to the seats with Type III nylon cord.
    - Secure all equipment and cargo inside the truck and trailer with tiedown straps, tape, or Type III nylon cord.
    - Ensure the fuel tank is not over 3/4 full. Inspect the fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
    - Connect one additional chain length to each chain on each sling set with a coupling link.
    - Ensure the STIK sling guides are properly installed.
  - **Rigging.** Rig the load according to the steps in Figure 2-31.
  - **Hookup.** The hookup team stands on top 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 carefully dismounts the vehicle and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 2-31. M1097A2 with Advanced Field Artillery Tactical Data System Full Size Soft Top Installation Kit**

## **M1037 (HMMWV) WITH AN/TPQ-36 FIREFINDER GENERATOR PALLET**

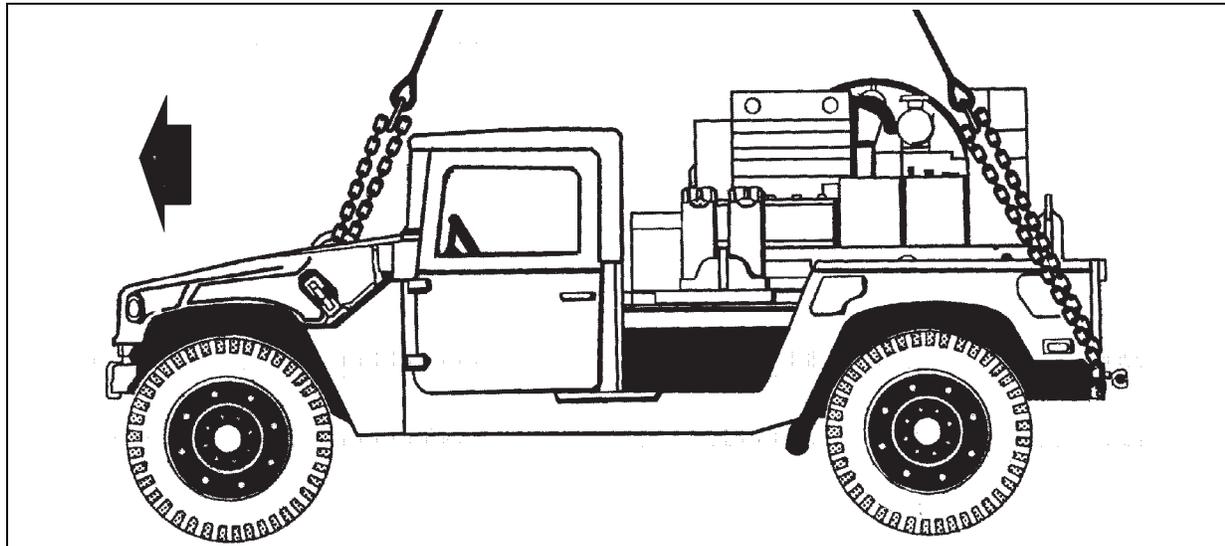
2-34. The M1037 with AN/TPQ-36 Firefinder Generator pallet is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 2-33 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-33. M1037 with AN/TPQ-36 Firefinder Generator**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
AN/TPQ-36 Firefinder Generator Pallet	7,700	10K	50/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord. Remove the cab doors.
    - Ensure the generator is secured to the truck. Secure all lids, doors, and vents on the generator with tape or nylon Type III nylon cord.
    - Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings.
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
    - Tape the windshield in an X formation from corner to corner.
    - Install the lift provisions on the outer ends of the rear bumper by removing the tiedown provisions located inboard of the bumper end and installing them on the outer ends of the rear bumper.
  - **Rigging.** Rig the load according to the steps in Figure 2-32.
  - **Hookup.** The hookup team stands in the bed 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 carefully dismounts the vehicle and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



### RIGGING STEPS

1. Position apex fitting on top of the vehicle. Route outer sling legs 1 and 2 to the front of the vehicle 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 that protrudes through the hood from inboard to outboard. Place the correct link from Table 2-33 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with tape or Type III nylon cord.
3. Route the chain end of sling leg 3 through the lift provision located on the left end of the rear bumper from inboard to outboard. Place the correct link from Table 2-33 in the grab hook. Repeat with sling leg 4 and the right rear lift provision. Secure excess chain with Type III nylon cord.
4. Wrap the rear slings with padding where they contact the vehicles sides.
5. Raise the apex fitting above the shelter carrier keeping the slings to the side of the shelter.
6. Cluster and tie (breakaway technique) all sling legs together on top of the shelter to prevent entanglement during hookup and lift-off.

**Figure 2-32. M1037 with AN/TPQ-36 Firefinder Generator**

### CAUTION

Do not use the lift shackles located near the center of the rear bumper for sling load lift provisions.

## M1097 (HMMWV) WITH SENTINEL AN/MPQ-64 TACTICAL QUIET GENERATOR (TQG)

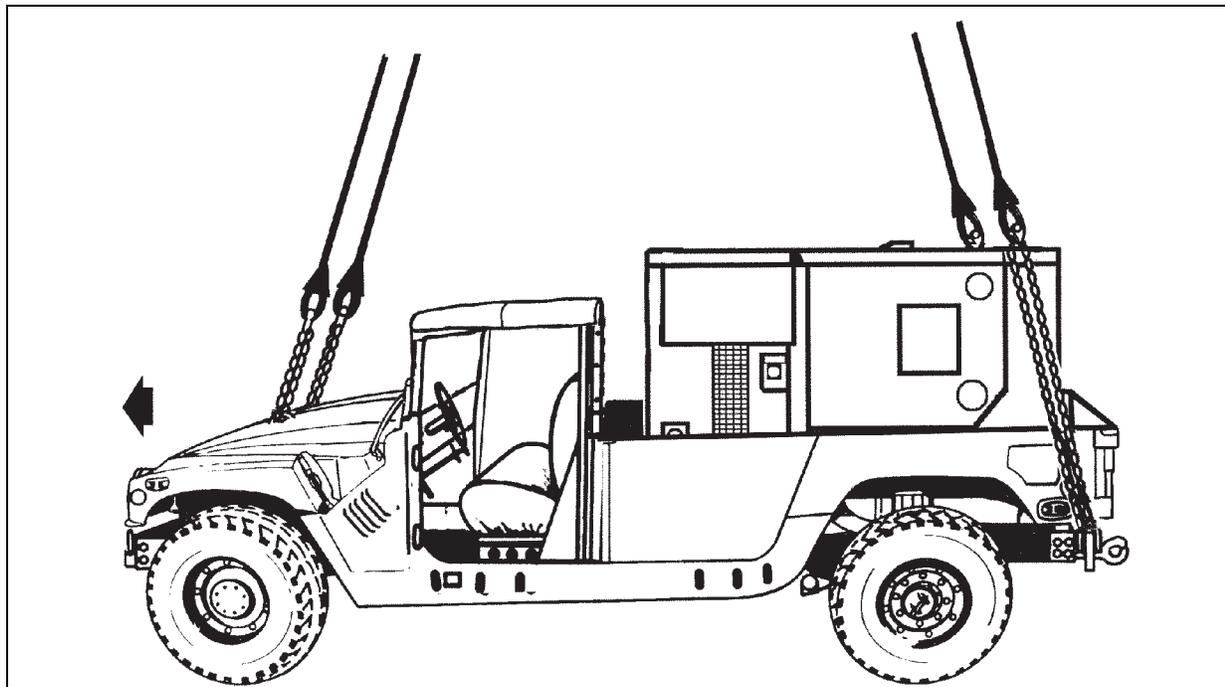
2-35. The M1097 with Sentinel AN/MPQ-64 Tactical Quiet Generator is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 2-34 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center

**Table 2-34. M1097 with Sentinel AN/MPQ-64 Tactical Quiet Generator**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M1097 with Sentinel AN/MPQ-64 Tactical Quiet Generator	7,800	10K	80/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord.
    - Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings. Remove and secure the doors in the cab of the vehicle.
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
    - Install the lift provisions on the outer ends of the rear bumper by removing the tiedown provisions located inboard of the bumper end and installing them on the outer ends of the rear bumper.
    - Tape the windshield in an X formation from corner to corner. Tape all mirrors, lights, and gauges. Remove and secure the rear cabin window.
  - **Rigging.** Rig the load according to the steps in Figure 2-33.
  - **Hookup.** The hookup team stands on the vehicle bed. 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 carefully dismounts the vehicle and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



#### RIGGING STEPS

1. Position apex fitting on top of the vehicle. Route outer sling legs 1 and 2 to the front of the vehicle 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 that protrudes through the hood from inboard to outboard. Place the correct link from Table 2-34 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with Type III nylon cord.
3. Route the chain end of sling leg 3 through the lift provision located on the left end of the rear bumper from inboard to outboard. Place the correct link from Table 2-34 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 shelter to prevent entanglement during hookup and lift-off.

**Figure 2-33. M1097 with Sentinel AN/MPQ-64 Tactical Quiet Generator**

### M1097 (HMMWV) WITH AN/TPQ-42, METEOROLOGICAL HYDROGEN GENERATOR (MHG)

2-36. The M1097 with AN/TPQ-42, Meteorological Hydrogen Generator is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 2-35 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

Table 2-35. M1097 with AN/TPQ-42, Meteorological Hydrogen Generator (MHG)

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
AN/TPQ-42 Meteorological Hydrogen Generator	10,000	10K 15K	80/45 25/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - OR
  - Multileg sling set (15,000-pound capacity or for the CH-53E only).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord.
    - Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings. Secure the doors shut if installed.
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
  - **Rigging.** Rig the load according to the steps in Figure 2-34.
  - **Hookup.** The hookup team stands in the cargo bed. 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 carefully dismounts the vehicle and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

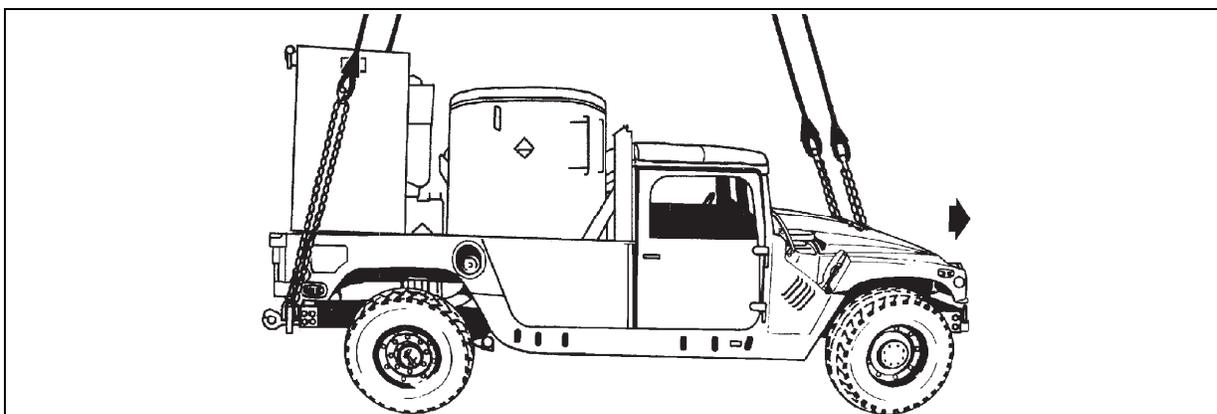


Figure 2-34. M1097 with AN/TPQ-42, Meteorological Hydrogen Generator

<b>RIGGING STEPS</b>
<ol style="list-style-type: none"> <li>1. Position apex fitting on top of the vehicle. Route outer sling legs 1 and 2 to the front of the vehicle and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.</li> <li>2. Loop the chain end of sling leg 1 through the left front lift provision that protrudes through the hood from inboard to outboard. Place the correct link from Table 2-35 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with Type III nylon cord.</li> <li>3. Route the chain end of sling leg 3 through the lift provision located on the left end of the rear bumper from inboard to outboard. Place the correct link from Table 2-35 in the grab hook. Repeat with sling leg 4 and the right rear lift provision. Secure excess chain with Type III nylon cord.</li> <li>4. Cluster and tie (breakaway technique) all sling legs together on top of the shelter to prevent entanglement during hookup and lift-off.</li> </ol>

**Figure 2-34. M1097 with AN/TPQ-42, Meteorological Hydrogen Generator (Continued)**

## **M1037 (HMMWV) WITH COMPRESSED AIR-FOAM SYSTEM, MOBILE (CAFSM)**

2-37. The M1037 with Compressed Air-Foam System, Mobile is rigged for single-point sling load using the following procedures:

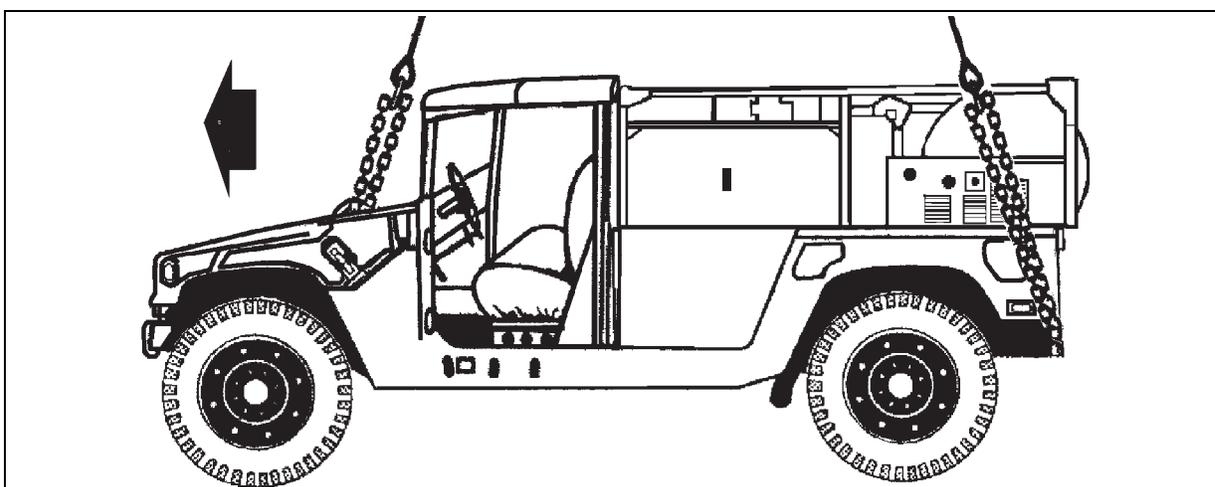
- **Applicability.** The following item in Table 2-36 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-36. M1037 with Compressed Air-Foam System, Mobile**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Compressed Air Foam System, Mobile	6,400 (Empty)	15K	40/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (15,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord. Remove the canvas cab top and the doors. Secure to the seats with Type III nylon cord.
    - Ensure the CAFSM is secured to the truck. Secure all lids, doors, and vents on the CAFSM with tape or Type III nylon cord.
    - Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings.

- Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
- Engage the vehicle parking brake and put the transmission in neutral.
- Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
- Tape the windshield in an X formation from corner to corner.
- **Rigging.** Rig the load according to the steps in Figure 2-35.
- **Hookup.** The hookup team stands in the bed of the vehicle. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting on the cargo hook. The hookup team then carefully dismounts the vehicle and 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position the apex fitting on top of the vehicle. Route outer sling legs 1 and 2 to the front of the vehicle 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 that protrudes through the hood from inboard to outboard. Place the correct link from Table 2-36 in the grab hook. Repeat with sling leg 2 through the right front lift provision. Secure all excess chain with Type III nylon cord.
3. Loop the chain end of sling leg 3 through the left rear lift provision located on the outside end of the rear bumper. Place the correct link from Table 2-36 in the grab hook. Repeat with sling leg 4 through the right rear lift provision. Secure all excess chain with Type III nylon cord.
4. Cluster and tie (breakaway technique) the sling legs in each sling set together to prevent entanglement during hookup and lift-off.

**Figure 2-35. M1037 with Compressed Air-Foam System, Mobile**

**CAUTION**

Do not use the lift shackles located near the center of the rear bumper for sling load lift provisions.

## M1113 (HMMWV) WITH TACTICAL SUPER HIGH FREQUENCY SATELLITE TERMINAL (TSST)

2-38. The M1113 with Tactical Super High Frequency Satellite Terminal is rigged for single-point sling load using the following procedures:

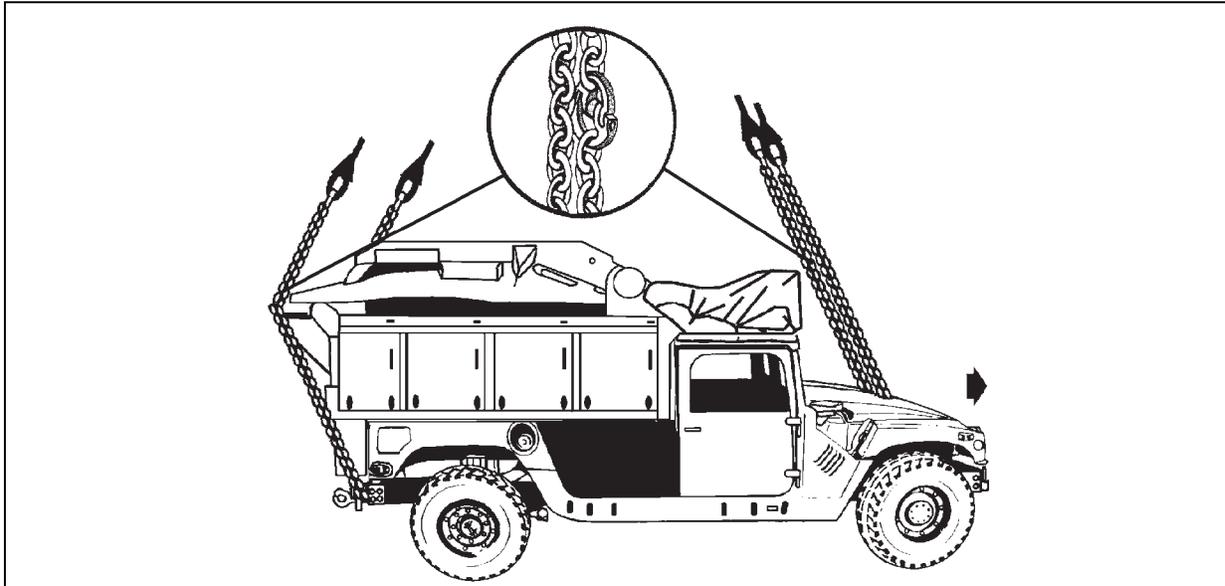
- **Applicability.** The following item in Table 2-37 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-37. M1113 with Tactical Super High Frequency Satellite Terminal**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M1113 with Tactical Super High Frequency Satellite Terminal	10,340	25K	60/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
    - Chain length, part number 38850-00053-102, from a 25,000-pound capacity sling set (4 each).
    - Coupling link part number, 664241 from a 25,000-pound sling set (4 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Reach Pendant (11,000-pound capacity).
- **Personnel.** Two persons can prepare and rig this load in 25 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Connect one additional chain length to each chain on each sling set with a coupling link.
    - Fold mirrors inward and tie together with Type III nylon cord. Remove the doors and secure to the seats with Type III nylon cord.
    - Secure all equipment and cargo inside the truck with tiedown straps, tape, or Type III nylon cord.
    - Ensure all latches are securely fastened and taped.
    - Ensure the fuel tank is not over 3/4 full. Inspect the fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Remove the doors and secure inside the vehicle with Type III nylon cord.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
    - Tape the windshield from corner to corner in an X formation.
    - Pad the cooling fan shroud and secure the padding with tape.
  - **Rigging.** Rig the load according to the steps in Figure 2-36.

- **Hookup.** The hookup team stands on top 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 carefully dismounts the vehicle and 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting on top of the satellite dish. Route outer sling legs 1 and 2 to the front of the vehicle 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 that protrudes through the hood from inboard to outboard. Place the correct link from Table 2-37 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with Type III nylon cord.
3. Position the left and right rear center sling guides so the opening is facing the rear of the vehicle.
4. Loop the chain end of sling leg 3 through the left sling guide, through the left rear lift provision located on the outer ends of the rear bumper, and back through the left sling guide. Place the correct link from Table 2-37 in the grab hook. Remove all slack from the chain and tie a breakaway tie with a double length of Type I 1/4 -inch cotton webbing to the left corner sling guide. Secure the sling leg to the center sling guide with a breakaway tie. Repeat with sling leg 4 and the right sling guides and right rear lift provision. Secure excess chain with Type III nylon cord.
5. Cluster and tie (breakaway technique) all sling legs together on top of the vehicle to prevent entanglement during hookup and lift-off.

**Figure 2-36. M1113 with Tactical Super High Frequency Satellite Terminal**

### CAUTIONS

1. Do not step on satellite dish.
2. Do not use lift shackles located near the center of the rear bumper for sling load lift provisions.
3. Ensure the outboard rear bumper lift provisions are installed properly and there is a 2-inch clearance between the round portion of the lift provision and the end of the bumper when the lift provision is in the raised position.

## M1113 (HMMWV) WITH TACTICAL SUPER HIGH FREQUENCY SATELLITE TERMINAL (TSST) MOBILE POWER UNIT (MPU)

2-39. The M1113 with Tactical Super High Frequency Satellite Terminal Mobile Power Unit is rigged for single-point sling load using the following procedures:

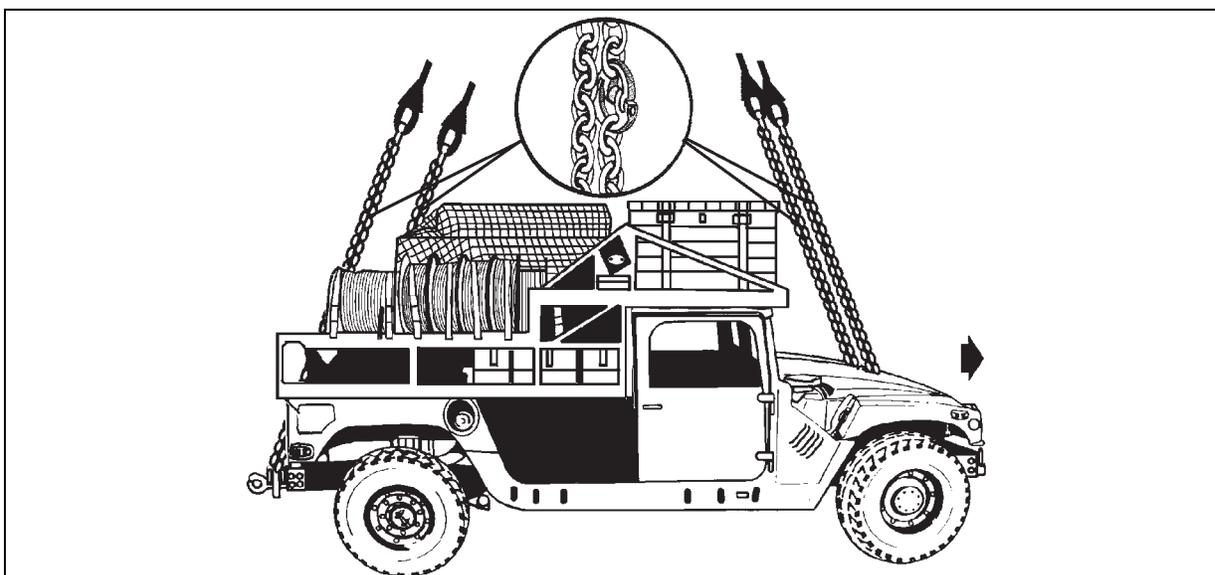
- **Applicability.** The following item in Table 2-38 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-38. M1113 with Tactical Super High Frequency Satellite Terminal Mobile Power Unit**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M1113 with Tactical Super High Frequency Satellite Terminal Mobile Power Unit MEP 803A, 10 KW TQG	10,520	25K	60/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
    - Chain length, part number 38850-00053-102, from a 25,000-pound capacity sling set (4 each).
    - Coupling link part number, 664241 from a 25,000-pound sling set (4 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Reach Pendant (11,000-pound capacity).
- **Personnel.** Two persons can prepare and rig this load in 25 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Connect one additional chain length to each chain on each sling set with a coupling link.
    - Fold mirrors inward and tie together with Type III nylon cord. Remove the doors and secure to the seats with Type III nylon cord.
    - Secure all equipment and cargo inside the truck with tiedown straps, tape, or Type III nylon cord.
    - Ensure all latches are securely fastened and taped.
    - Ensure the fuel tank is not over 3/4 full. Inspect the fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Remove the doors and secure inside the vehicle with Type III nylon cord.

- Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
- Tape the windshield from corner to corner in an X formation.
- **Rigging.** Rig the load according to the steps in Figure 2-37.
- **Hookup.** The hookup team stands on top 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 carefully dismounts the vehicle and 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting on top of the load. Route outer sling legs 1 and 2 to the front of the vehicle 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 that protrudes through the hood from inboard to outboard. Place the correct link from Table 2-38 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with Type III nylon cord.
3. Ensure the safety pins are installed in the rear top sling guides.
4. Loop the chain end of sling leg 3 through the left sling guide, through the top left rear lift provision and back through the top left sling guide. Place the correct link from Table 2-38 in the grab hook. Remove all slack from the chain and tie a breakaway tie with a double length of Type I 1/4 -inch cotton webbing to the top left sling guide. Repeat with sling leg 4 and the right sling guide and right rear lift provision. Secure excess chain with Type III nylon cord.
5. Cluster and tie (breakaway technique) all sling legs together on top of the vehicle to prevent entanglement during hookup and lift-off.

**Figure 2-37. M1113 with Tactical Super High Frequency Satellite Terminal Mobile Power Unit**

## M1113 (HMMWV) MISSION VEHICLE WITH PETROLEUM QUALITY ANALYSIS SYSTEM (PQAS) SHELTER

2-40. The M1113 with Petroleum Quality Analysis System Shelter is rigged for single-point sling load using the following procedures:

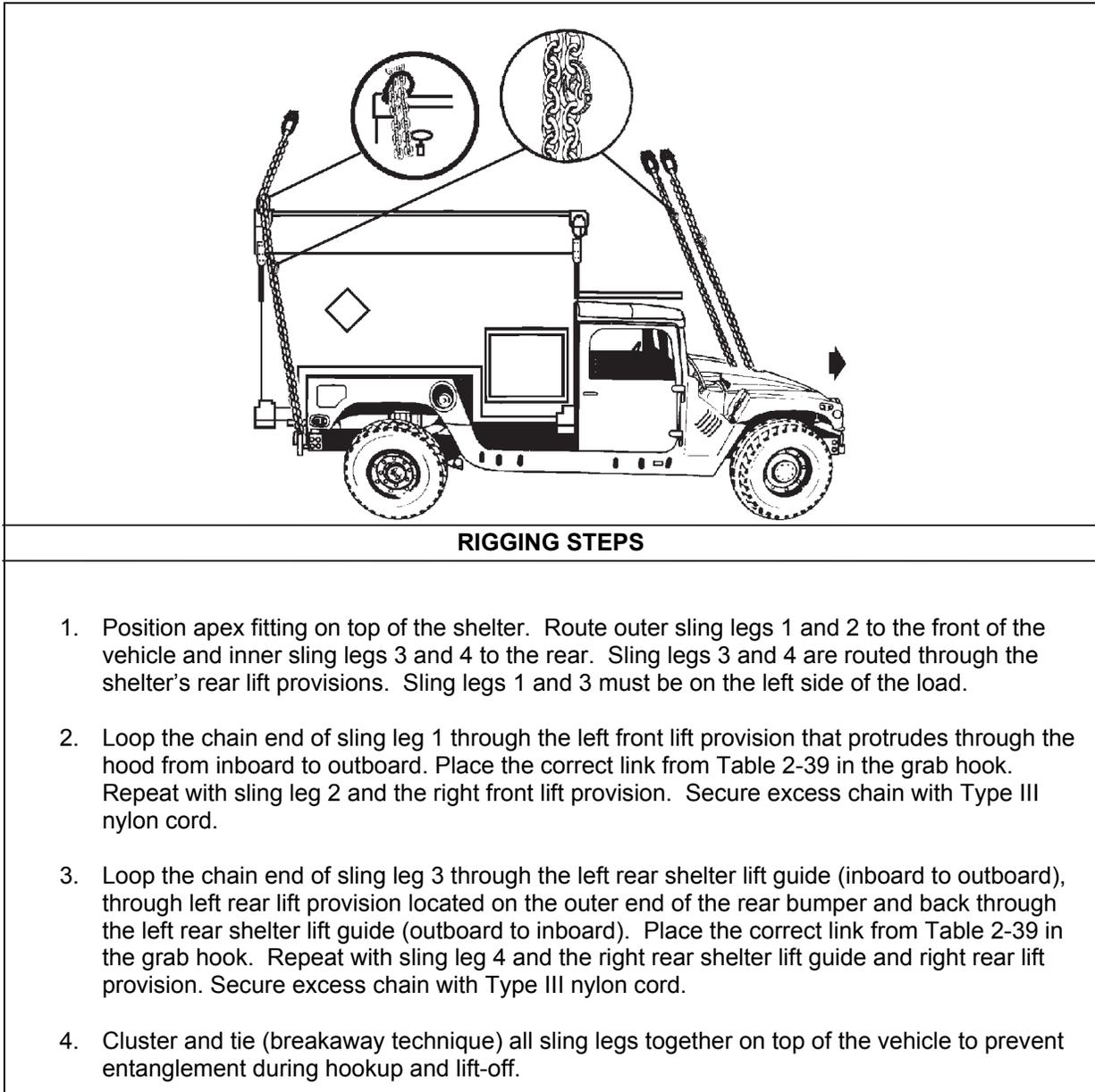
- **Applicability.** The following item in Table 2-39 is certified for all helicopters with suitable lift capacity the US Army Natick Soldier Center:

**Table 2-39. M1113 with Petroleum Quality Analysis System Shelter**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
PQAS Mission Vehicle M1113 with PQAS Shelter	9,460	25K	60/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
    - Chain length, part number 38850-00053-102, from a 25,000-pound capacity sling set (4 each).
    - Coupling link part number, 664241 from a 25,000-pound sling set (4 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Webbing, nylon, tubular, 1/2-inch, 1000-pound breaking strength.
  - Reach pendant (11,000-pound capacity).
- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Connect one additional chain length to each chain on each sling set with a coupling link.
    - Fold mirrors inward and tie together with Type III nylon cord. Remove the doors and secure to the seats with Type III nylon cord.
    - Secure all loose equipment inside the shelter with tiedown straps, Type III nylon cord or tape. Close and lock the rear access door. Lower the roof to the stop and pin in position. Secure pins in place with tape.
    - Secure all equipment and cargo inside the truck or on the roof rack with tiedown straps, tape, or Type III nylon cord.
    - Ensure the fuel tank is not over 3/4 full. Inspect the fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Remove the doors and secure inside the vehicle with Type III nylon cord.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
    - Tape the windshield from corner to corner in an X formation.
    - Roll up and tie the large canvas covers on the shelter. Tape the small covers down.
  - **Rigging.** Rig the load according to the steps in Figure 2-38.
  - **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 carefully dismounts the vehicle and 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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 2-38. M1113 with Petroleum Quality Analysis System Shelter**

**CAUTION**

Do not use the lift shackles located near the center of the rear bumper for sling load lift provisions.

## INTERIM FAST ATTACK VEHICLE (IFAV) TRUCK, LONG WHEEL BASE

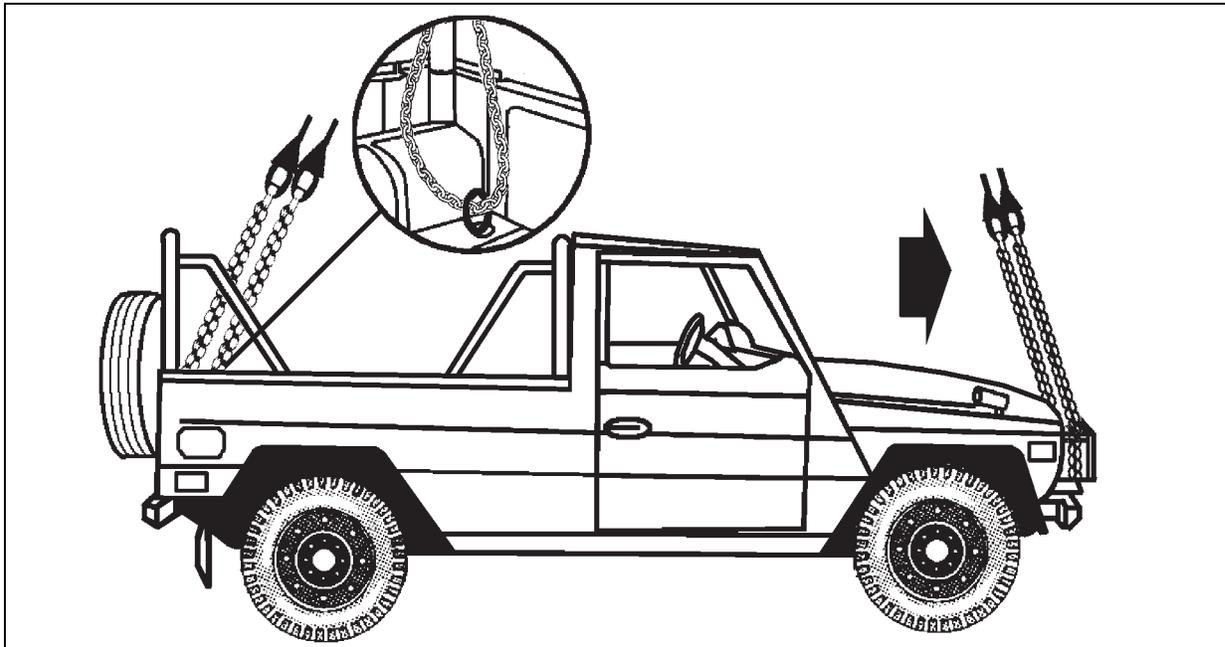
2-41. The Interim Fast Attack Vehicle (IFAV) truck, long wheel base is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 2-40 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-40. Interim Fast Attack Vehicle Truck, Long Wheel Base**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Interim Fast Attack Vehicle Truck, Long Wheel Base	5,720	15K	30/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (15,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Padding, cellulose.
  - Strap, cargo, tiedown (as required).
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord. Remove all canvas covers.
    - Secure all equipment and cargo inside the vehicle with tape, nylon cord, or tiedown straps.
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel using Type III nylon cord.
    - Tape the windshield in an X formation from corner to corner.
  - **Rigging.** Rig the load according to the steps in Figure 2-39.
  - **Hookup.** The hookup teams stand in the bed of the vehicle. The static wand person discharges the static electricity with the static wand. The hookup person places the web ring on the cargo hook. The hookup team then carefully dismounts the vehicle and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position the apex fitting on top of the vehicle. Route outer sling legs 1 and 2 to the front of the vehicle 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 bumper. Place the correct link from Table 2-40 in the grab hook. Repeat with sling leg 2 through the right front lift provision.
3. Loop the chain end of sling leg 3 through the left rear lift provision located in the left rear corner of the cargo bed. Place the correct link from Table 2-40 in the grab hook. Repeat with sling leg 4 through the right rear lift provision.
4. Secure all excess chain with Type III nylon cord.
5. Cluster and tie breakaway technique) the sling legs in each sling set together to prevent entanglement during hookup and lift-off.

**Figure 2-39. Interim Fast Attack Vehicle Truck, Long Wheel Base**

**JOHN DEERE M-GATOR (MODEL #VGM6X01001)**

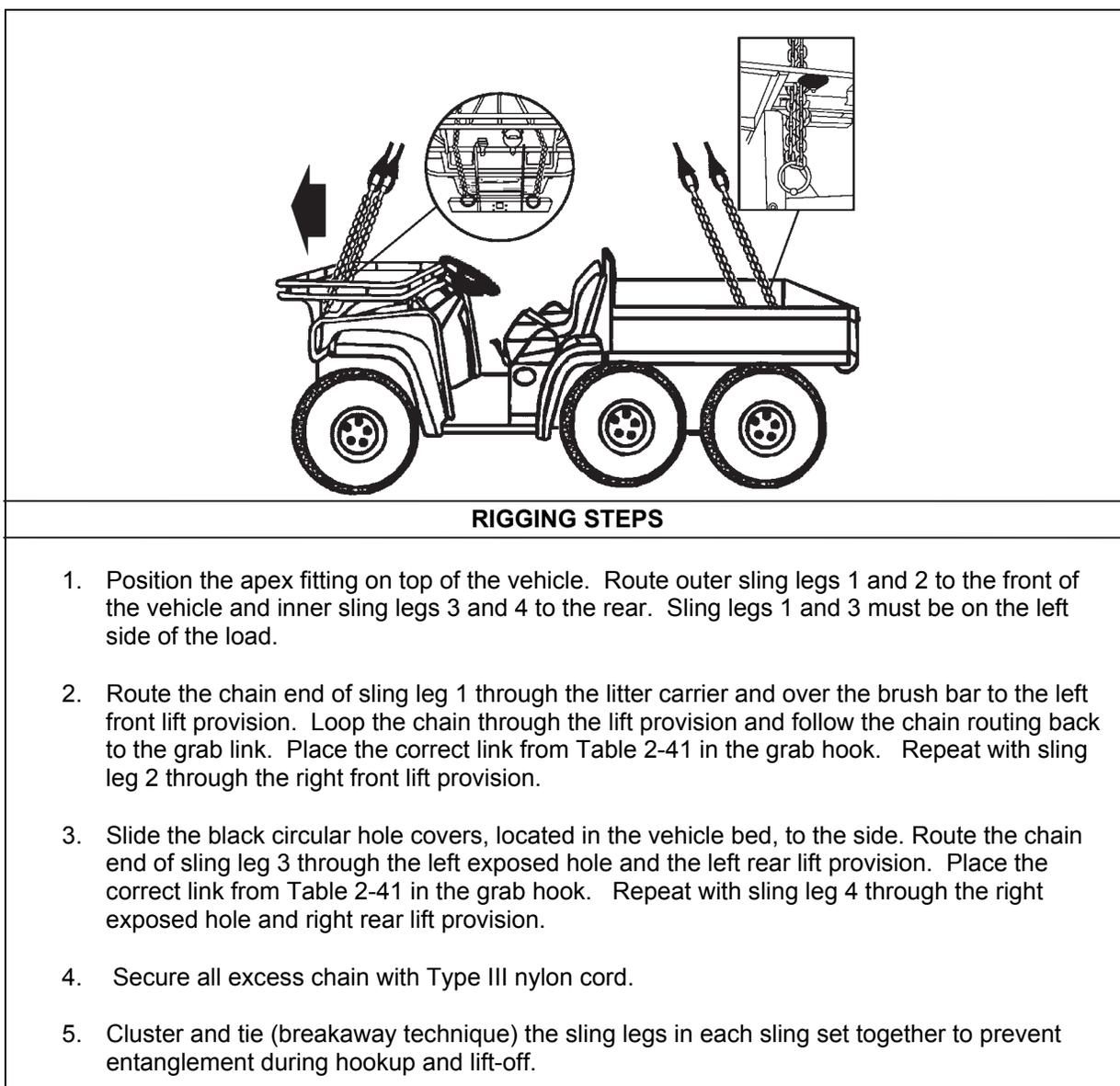
2-42. The John Deere M-Gator (Model #VGM6X01001) is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 2-41 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

Table 2-41. John Deere M-Gator (Model #VGM6X01001)

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
John Deere M-Gator, Empty (Model #VGM6X01001)	1,400	10K	3/30
John Deere M-Gator with Load (Model #VGM6X01001)	2,450	10K	3/40

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure the gas cap, tailgate, fire extinguisher, and all equipment and cargo inside the vehicle with tape, nylon cord, or lashings.
    - Place tape on all the lights.
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard or type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 2-40.
  - **Hookup.** The hookup team stands on the vehicle. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting on the cargo hook. The hookup team then carefully dismounts the vehicle and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 2-40. John Deere M-Gator (Model #VGM6X01001)**

## **TWO JOHN DEERE M-GATORS, MODEL #VGM6X01001, SIDE BY SIDE (SHOTGUN METHOD)**

2-43. The TWO John Deere M-Gators, Model #VGM6X01001, side by side (shotgun method) are rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 2-42 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

Table 2-42. TWO John Deere M-Gators, Model #VGM6X01001, Side by Side (Shotgun Method)

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Two John Deere M-Gators, Empty (Model #VGM6X01001)	2,800	10K	3/30

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity (2 each)).
  - Additional apex fitting from a 10,000-pound capacity sling set (NSN: 4030-01-027-2902).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Strap, tiedown, cargo, CGU-1/B (2 each).
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Position the vehicles as close together as possible. Ensure the vehicles are facing in the same direction and the wheels of the M-Gators are lined up.
    - Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings.
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
    - Engage the vehicle parking brake and put the transmission in neutral.
    - Ensure the front wheels are pointed straight ahead. Tie down the steering wheel using the securing device under the dash or Type III nylon cord.
    - Tape all lights and gauges.
    - Reposition the blackout lights and the infrared LED lights so they do not interfere with the routing of the sling legs.
    - Open the black sling guide covers in the bed of both vehicles.
  - **Rigging.** Rig the load according to the steps in Figure 2-41.
  - **Hookup.** The hookup team stands in the bed of the vehicle. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting on the cargo hook. The hookup team then carefully dismounts the vehicle and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

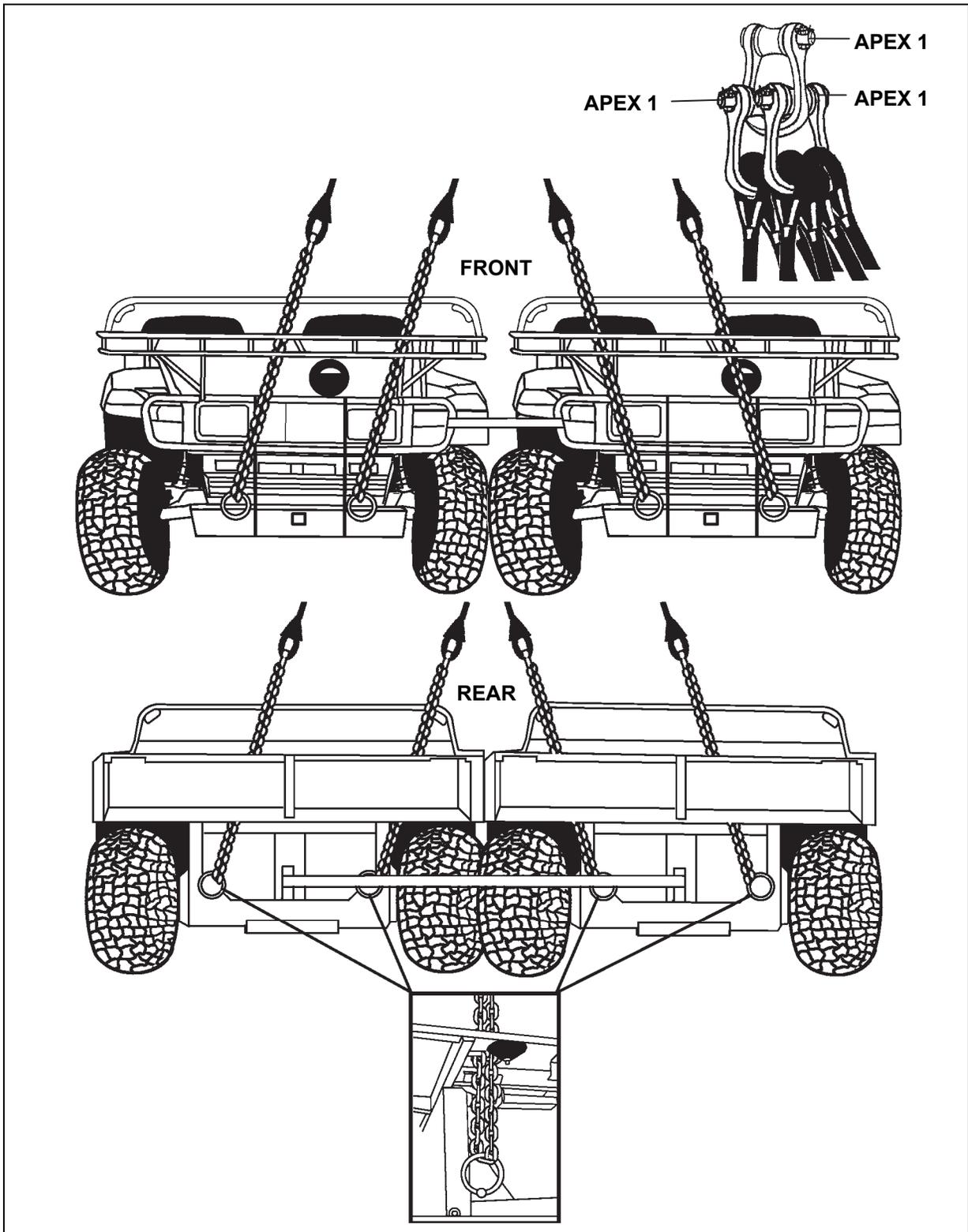


Figure 2-41. Two John Deere M-Gators (Model #VGM6X01001), Side by Side (Shotgun Method)

**RIGGING STEPS**

1. Position sling set 1 on top of the right vehicle with the bolt parallel to the length of the vehicle. Route sling legs 1 and 2 to the front of the vehicle and sling legs 3 and 4 to the rear. Sling legs 1 and 4 must be on the outside.
2. Route the chain end of sling leg 1 through the 4th opening in the front litter carrier, over the brush guard to the outside front lift provision. Loop the chain end through the outside front lift provision and back to the grabhook along the same path. Place link 3 in the grabhook.
3. Route the chain end of sling leg 2 through the 6th opening in the front litter carrier, over the brush guard to the inside front lift provision. Loop the chain end through the inside front lift provision and back to the grabhook along the same path. Place link 20 in the grabhook.
4. Route the chain end of sling leg 4 through the outside sling guide to the outside rear lift provision. Loop the chain end through the outside rear lift provision and back to the grabhook along the same path. Place link 30 in the grabhook.
5. Route the chain end of sling leg 3 through the inside sling guide to the inside rear lift provision. Loop the chain end through the inside rear lift provision and back to the grabhook along the same path. Place link 45 in the grabhook.
6. Position sling set 2 on top of the left vehicle with the bolt parallel to the length of the vehicle. Route sling legs 1 and 2 to the front of the vehicle and sling legs 3 and 4 to the rear. Sling legs 1 and 4 must be on the outside.
7. Route the chain end of sling leg 1 through the 4th opening in the front litter carrier, over the brush guard to the outside front lift provision. Loop the chain end through the outside front lift provision and back to the grabhook along the same path. Place link 3 in the grabhook.
8. Route the chain end of sling leg 2 through the 6th opening in the front litter carrier, over the brush guard to the inside front lift provision. Loop the chain end through the inside front lift provision and back to the grabhook along the same path. Place link 20 in the grabhook.
9. Route the chain end of sling leg 4 through the outside sling guide to the outside rear lift provision. Loop the chain end through the outside rear lift provision and back to the grabhook along the same path. Place link 30 in the grabhook.
10. Route the chain end of sling leg 3 through the inside sling guide to the inside rear lift provision. Loop the chain end through the inside rear lift provision and back to the grabhook along the same path. Place link 45 in the grabhook.
11. Route the additional apex fitting through apex fittings 1 and 2.
12. Secure all excess chain with tape or Type III nylon cord.
13. Cluster and tie or tape (breakaway technique) the sling legs in each sling set on top of the vehicle to prevent entanglement during hookup and lift-off.
14. Route a CGU-1/B cargo tiedown strap through the trailer hitch of both vehicles and connect the hooks together. Tighten the straps and secure the excess strap.

**Figure 2-41. Two John Deere M-Gators (Model #VGM6X01001), Side by Side (Shotgun Method)  
(Continued)**

<b>RIGGING STEPS</b>
15. Route a CGU-1/B cargo tiedown strap through the inside front bar of the brush guard on both vehicles and connect the hooks together. Tighten the straps and secure the excess strap.

**Figure 2-41. Two John Deere M-Gators (Model #VGM6X01001), Side by Side (Shotgun Method) (Continued)**

## LIGHT ARMORED VEHICLE (LAV) (USMC)

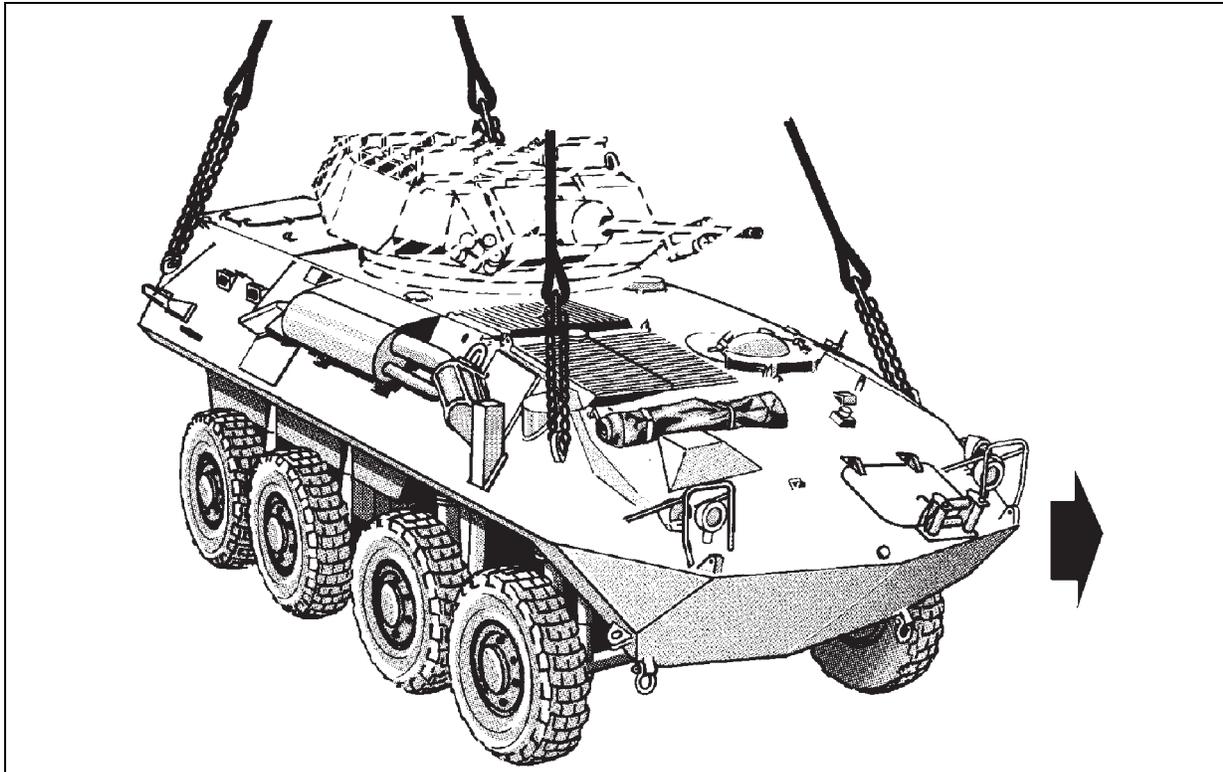
2-44. The Light Armored Vehicle is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 2-43 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 2-43. Light Armored Vehicle**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Command and Control, TAMCN E0946	27,060	40K	3/20
25-MM, TAMCN E0947	28,200	40K	25/3
Logistics, TAMCN E0948	28,200	40K	3/10
Mortar, TAMCN E0949	27,400	40K	25/3
Recovery Unit, TAMCN E0950	28,400	40K	3/10
Tow Anti-Tank, TAMCN E0942	27,650	40K	10/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (40,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all loose items inside the LAV.
    - Remove all antennae.
    - Ensure the parking brake is set.
    - Pad and tape all vision blocks, mirrors, and lights.
    - Secure all hatches and panels.
    - Ensure the boom is pinned down and tape the hydraulic cables. (Recovery Unit)
  - **Rigging.** Rig the load according to the steps in Figure 2-42.
  - **Hookup.** The hookup team stands on top 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 carefully dismounts the vehicle and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting on top of the vehicle. Route outer sling legs 1 and 2 to the front of the vehicle 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 2-43 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with Type III nylon cord.
3. Route the chain end of sling leg 3 through the lift provision located on the left end of the rear bumper from inboard to outboard. Place the correct link from Table 2-43 in the grab hook. Repeat with sling leg 4 and the right rear lift provision. Secure excess chain with Type III nylon cord.
4. Cluster and tie (breakaway technique) all sling legs together on top of the LAV to prevent entanglement during hookup and lift-off.

**Figure 2-42. Light Armored Vehicle**

## Chapter 3

# Certified Single-Point Rigging Procedures for Trailers

### INTRODUCTION

3-1. This chapter contains rigging procedures for single-point trailer loads that have 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 trailer loads are in this section. Paragraphs 3-2 through 3-37 give detailed instructions for rigging loads.

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*Note.* Reach pendants may be used on all single point loads. A static discharge person is not required when using a reach pendant.

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### M416 1/4-TON TRAILER

- 3-2. The M416 1/4-ton trailer is rigged for single-point sling load using the following procedures:
- **Applicability.** The following item in Table 3-1 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 3-1. M416 1/4-Ton Trailer**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M416 1/4-Ton Trailer	1,080	10K	3/3

### WARNING

**The M416 1/4-ton trailer must have a gross weight of 800 pounds or more. Add additional weight or cargo to any trailer which weighs less than 800 pounds.**

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie down, CGU-1B or dacron lashing and load binder.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Lower and lock the trailer support leg in the down position.
    - Tape or tie the light cable firmly to the top of the drawbar.

- Load and lash the cargo in the bed of the trailer.
- Ensure the parking brake is set.
- **Rigging.** Rig the load according to the steps in Figure 3-1.
- **Hookup.** The hookup team stands in the bed 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 carefully dismounts the vehicle and 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

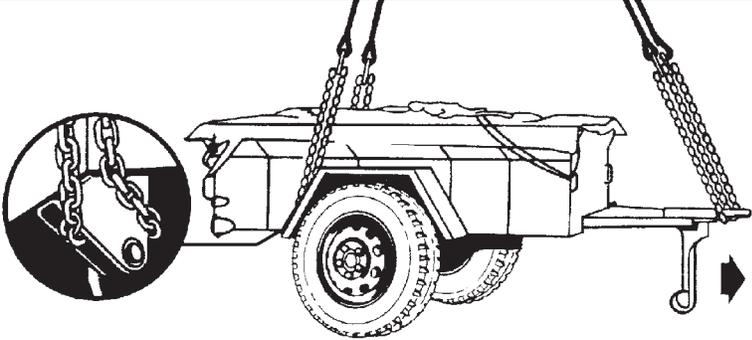

<b>RIGGING STEPS</b>
<ol style="list-style-type: none"><li>1. Position apex fitting in the trailer bed. Route outer sling legs 1 and 2 to the front of the trailer and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.</li><li>2. Loop the chain end of sling leg 1 through the lunette. Place the correct link from Table 3-1 in the grab hook. Repeat with sling leg 2 through the lunette.</li><li>3. Route the chain end of sling leg 3 around the left rear spring shackle mounting bracket. Place the correct link from Table 3-1 in the grab hook. Repeat with sling leg 4 around the right rear spring shackle mounting bracket.</li><li>4. Tie (breakaway technique) the chains of legs 3 and 4 to the next-to-last tarpaulin hold-down hook on each side.</li><li>5. Cluster and tie (breakaway technique) all sling legs together on top of the trailer to prevent entanglement during hookup and lift-off.</li></ol>

Figure 3-1. M416 1/4-Ton Trailer

## M101A2/A3 3/4-TON TRAILER

3-3. The M101A2/A3 3/4-ton trailer is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 3-2 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 3-2. M101A2/A3 3/4-Ton Trailer**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M101A2/A3 with Accompanying Load	3,000	10K	3/40
Command Version 1 Trailer	1,958	10K	3/40
Command Version 2 Trailer	1,981	10K	3/40
Len Cable Trailer	2,796	10K	3/40
NC Support Trailer	2,643	10K	3/40
Maintenance Trailer #2	1,430	10K	3/40
Battalion Spares Trailer #1	1,594	10K	3/40
Battalion Spares Trailer #2	2,206	10K	3/40
Marine Expeditionary Force Intelligence Analysis System M101A3 Trailer	3,000	10K	15/3
Technical Control and Analysis Center Production Improvement Program M101A3 Trailer	3,000	10K	15/3

### WARNINGS

**1. The M101A2/A3 3/4-ton trailer must have a gross weight of 1,575 pounds or more. Add additional weight or cargo to any trailer which weighs less than 1,575 pounds. Place the weight near the center of the trailer.**

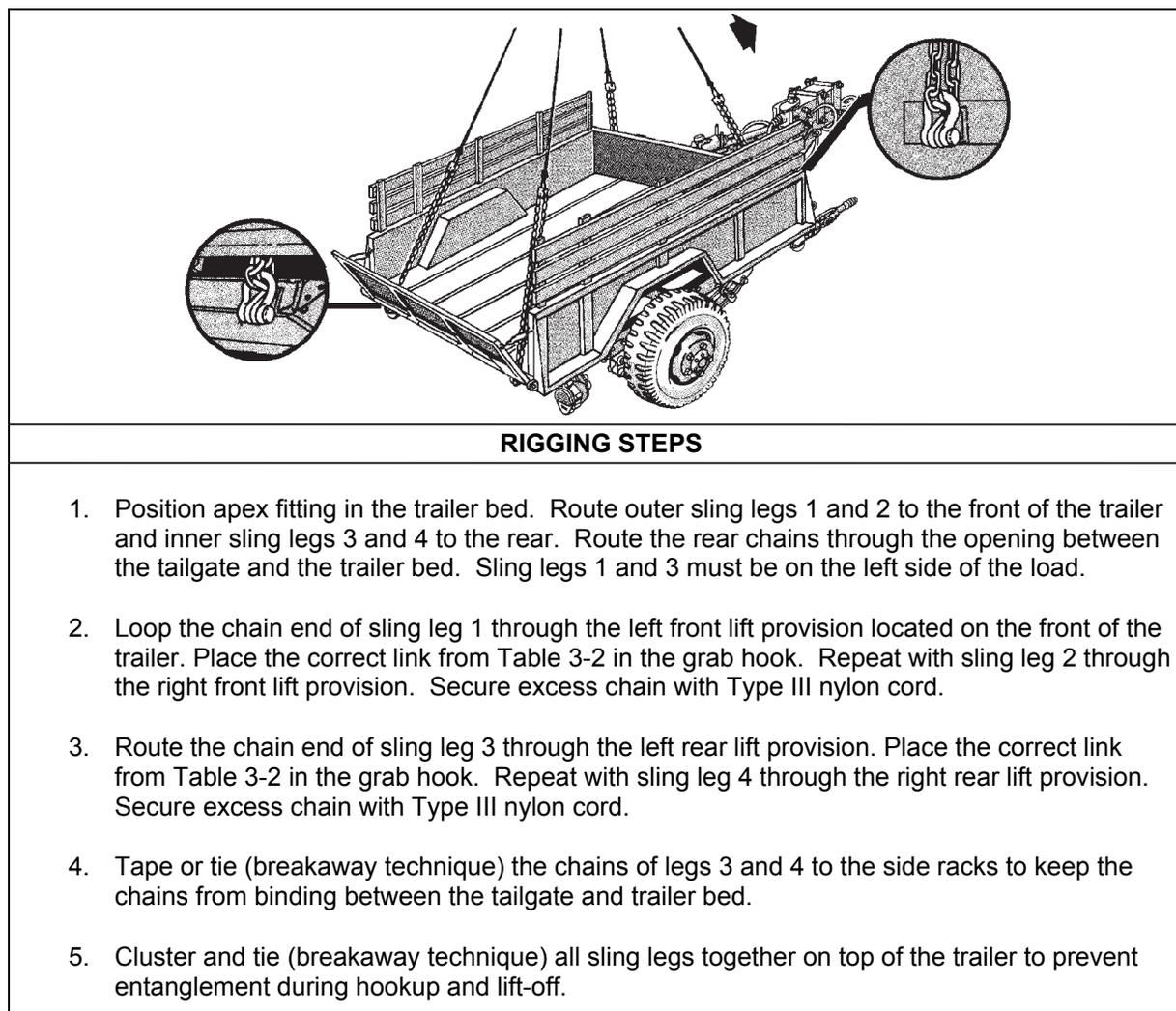
**2. Maximum weight during sling load operations for any variant of the M101A2/A3 3/4-ton trailer is 3,000 pounds.**

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie down, CGU-1B or dacron lashing and load binder.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Fasten the tailgate in the open position with the chains on each side hooked through the keeper.
    - Remove the front rack and place it in the bed of the trailer. Place the accompanying load on top of the front rack. Secure the accompanying load to the trailer using tie-down

straps. Route the straps diagonally across the load from the tailgate hinge to the front lifting shackles.

- Tape or tie the light cable firmly to the top of the drawbar.
- Ensure the tongue wheel is in the down and locked position and the parking brake is set.

- **Rigging.** Rig the load according to the steps in Figure 3-2.
- **Hookup.** The hookup team stands in the bed 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 carefully dismounts the vehicle and 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 3-2. M101A2/A3 3/4-Ton Trailer**

## M1048/M1073 TRAILER

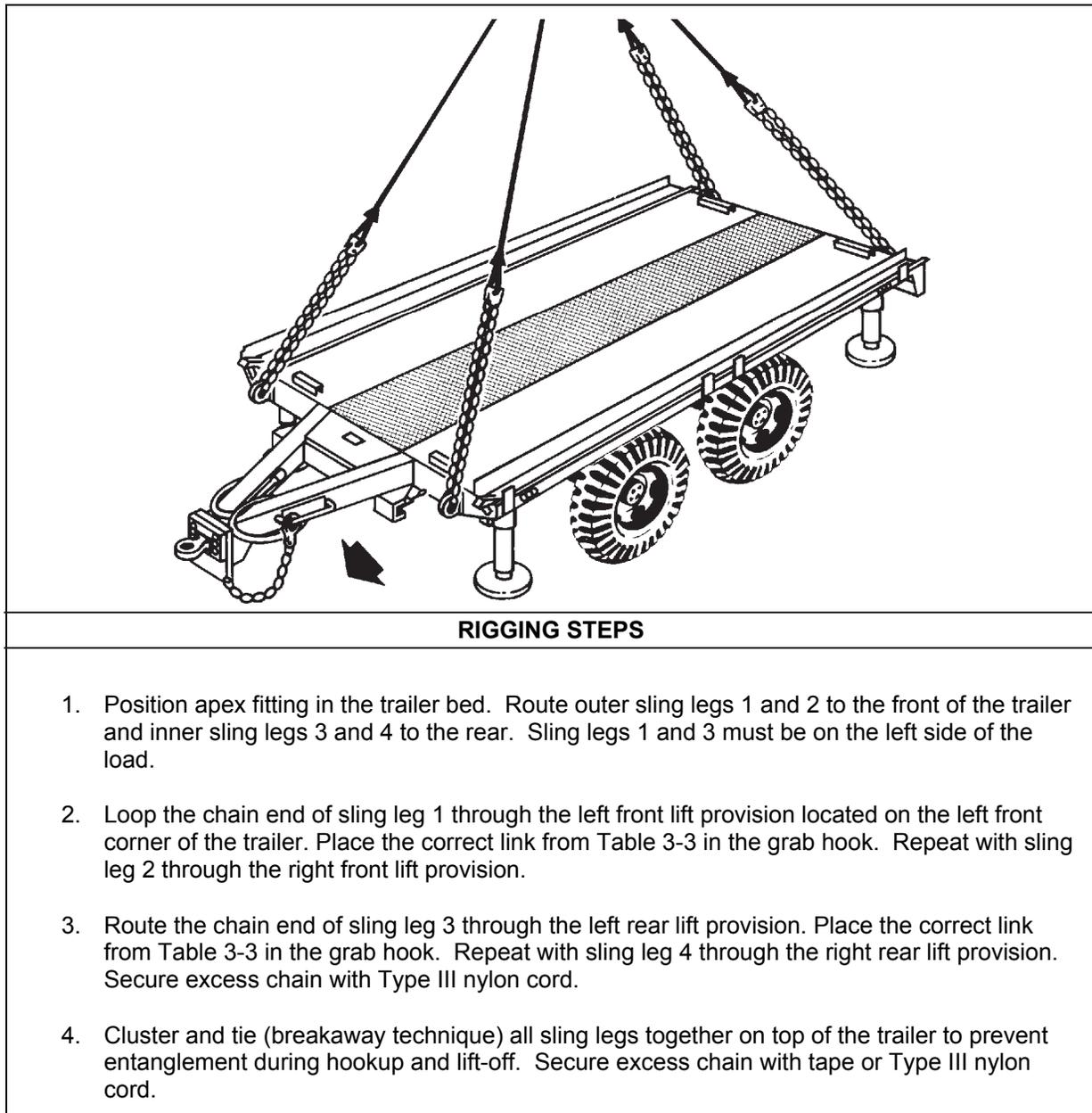
3-4. The M1048/M1073 trailer is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 3-3 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 3-3. M1048/M1073 Trailer**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M1048 Trailer	5,880	10K	44/6
M1073 Trailer	6,260	15K	58/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - OR
  - Multileg sling set (15,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all loose chains, hoses, and cables to the trailer drawbar with Type III nylon cord.
    - Secure any lids, caps, or loose items with tape or Type III nylon cord.
    - Tape or tie the light cable firmly to the top of the drawbar.
    - Place the leveling jacks in the down position. Ensure the base of the leveling jacks are not extended. Stow the jack handles and secure with Type III nylon cord. The trailer should lean downward at the lunette end.
    - Ensure the parking brake is set.
  - **Rigging.** Rig the load according to the steps in Figure 3-3.
  - **Hookup.** The hookup team stands in the bed 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 carefully dismounts the vehicle and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 3-3. M1048/M1073 Trailer**

## M1048 TRAILER WITH TRACKED SUSPENSION SYSTEM

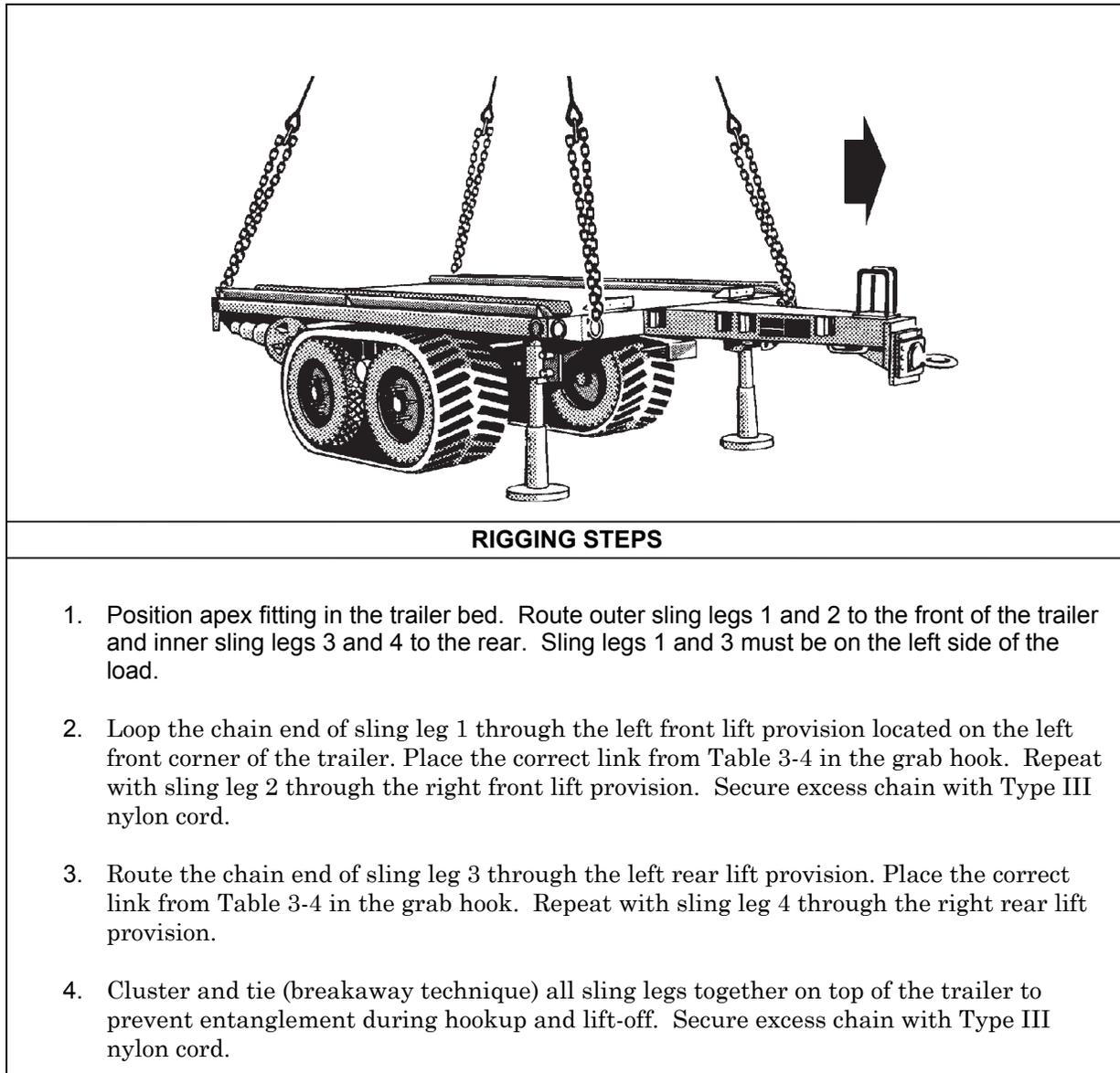
3-5. The M1048 trailer with tracked suspension system is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 3-4 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 3-4. M1048 Trailer with Tracked Suspension System**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M1048 Trailer (TSS)	7,880	10K	26/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all loose chains, hoses, and cables to the trailer drawbar with Type III nylon cord.
    - Secure any lids, caps, or loose items with tape or Type III nylon cord.
    - Tape or tie the light cable firmly to the top of the drawbar.
    - Place the front leveling jacks in the down position. Ensure the base of the leveling jacks are not extended. Stow the jack handles and secure with Type III nylon cord. Secure the rear leveling jacks in the up position. The trailer should lean downward at the lunette end.
    - Ensure the parking brake is set.
  - **Rigging.** Rig the load according to the steps in Figure 3-4.
  - **Hookup.** The hookup team stands in the bed 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 carefully dismounts the vehicle and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 3-4. M1048 Trailer (TSS)**

### M149A2 WATER TRAILER (USMC)

3-6. The M149A2 water trailer is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 3-5 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 3-5. M149A2 Water Trailer**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M149A2 Water Trailer Modified with Clevis Type Lift Provisions	6,100	15K	3/11

- Notes.**
1. This load is only certified for sling loading at its full weight of 6,100 pounds.
  2. The rigging procedures for the M149 Water Trailer (US Army) are located in Chapter 16.

- **Materials.** The following materials are required to rig this load:
  - Multileg sling set (15,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all loose chains, hoses, and cables to the trailer drawbar with tape or Type III nylon cord.
    - Ensure the tongue wheel is locked in the down position.
    - Close the tank lid and secure.
    - Ensure that one trailer brake is set.
  - **Rigging.** Rig the load according to the steps in Figure 3-5.
  - **Hookup.** The hookup team stands on the trailer fenders or the front 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 carefully dismounts the vehicle and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

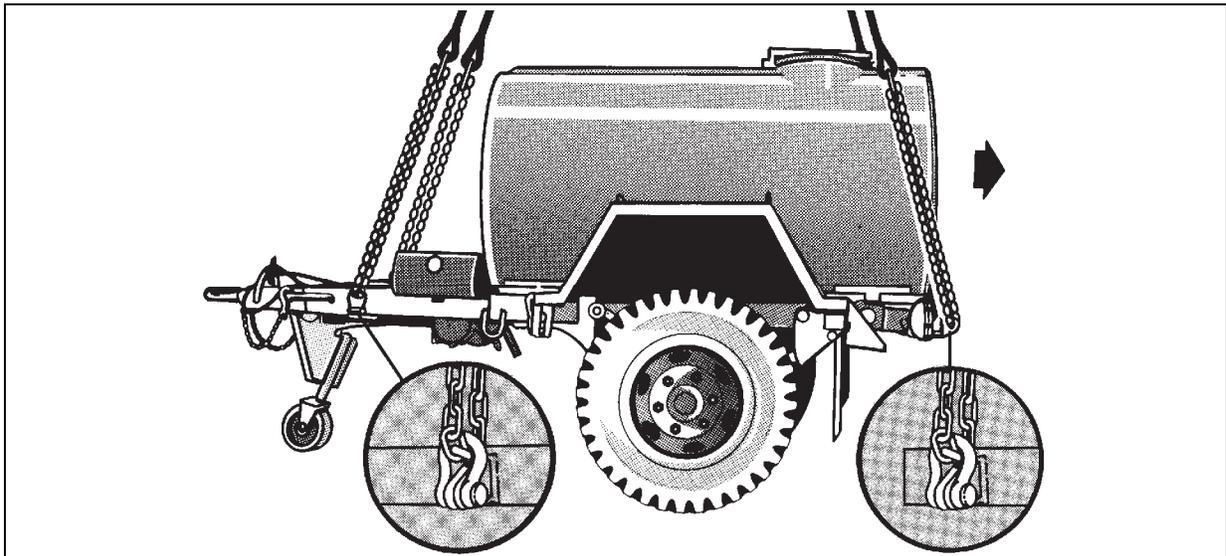


Figure 3-5. M149A2 Water Trailer

<b>RIGGING STEPS</b>
1. Position apex fitting on top of the water tank. 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 3-5 in the grab hook. Repeat with sling leg 2 through the right front lift provision.
3. Route the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 3-5 in the grab hook. Repeat with sling leg 4 through the right rear lift provision. Pad the rear slings where they contact the water tank. Secure excess chain with Type III nylon cord.
4. Position the two rear slings around the side of the tank so that the sling legs cradle the tank.
5. Cluster and tie (breakaway technique) all sling legs together on top of the tank to prevent entanglement during hookup and lift-off.

**Figure 3-5. M149A2 Water Trailer (Continued)**

## **M989 HEAVY-EXPANDED MOBILITY AMMUNITION TRAILER (HEMAT)**

3-7. The M989 heavy-expanded mobility ammunition trailer is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 3-6 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 3-6. M989 HEMAT**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M989 HEMAT, Empty	7,640	10K	40/4

*Note.* This load is only certified for sling loading at its empty weight.

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down CGU-1/B (4 each).
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:

- At each corner of the trailer, slide the lifting provisions out until they are completely extended. Do not lift the trailer unless the provisions are fully extended and secured in position.
- Remove the side and end panels. Place two panels side by side on the trailer so that the panel ends are approximately 10 inches from the front of the trailer. Make sure the panels are positioned lengthwise on the trailer. Place the remaining panels on top of the respective panels on the trailer.
- Secure the panels on the trailer with the tie-down straps. Attach the hook end of one tie-down strap to a tie-down ring on the trailer bed beside the panels approximately 1 foot from the end of the panels. Connect and tighten the ratchet end to a tie-down ring on the other side of the panels. Secure loose end of strap. Repeat with a second tie-down strap at the other end of the panels.
- To secure the panels lengthwise, route the hook end of one tie-down strap around the vertical metal stiffeners on the top panel of the stack of panels on the left side of the trailer. Attach the hook end to a tie-down ring on the front end of the trailer bed. Connect and tighten the ratchet end to a tie-down ring on the other end of the stack of panels. Secure loose end of strap. Repeat with a second tie-down strap on the other stack of panels.
- Tape or tie the intervehicular cable, hoses, and safety chains firmly to the top of the drawbar with tape or Type III nylon cord.
- Engage the parking brake.
- **Rigging.** Rig the load according to the steps in Figure 3-6.
- **Hookup.** The hookup team stands on the bed 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 carefully dismounts the vehicle and 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

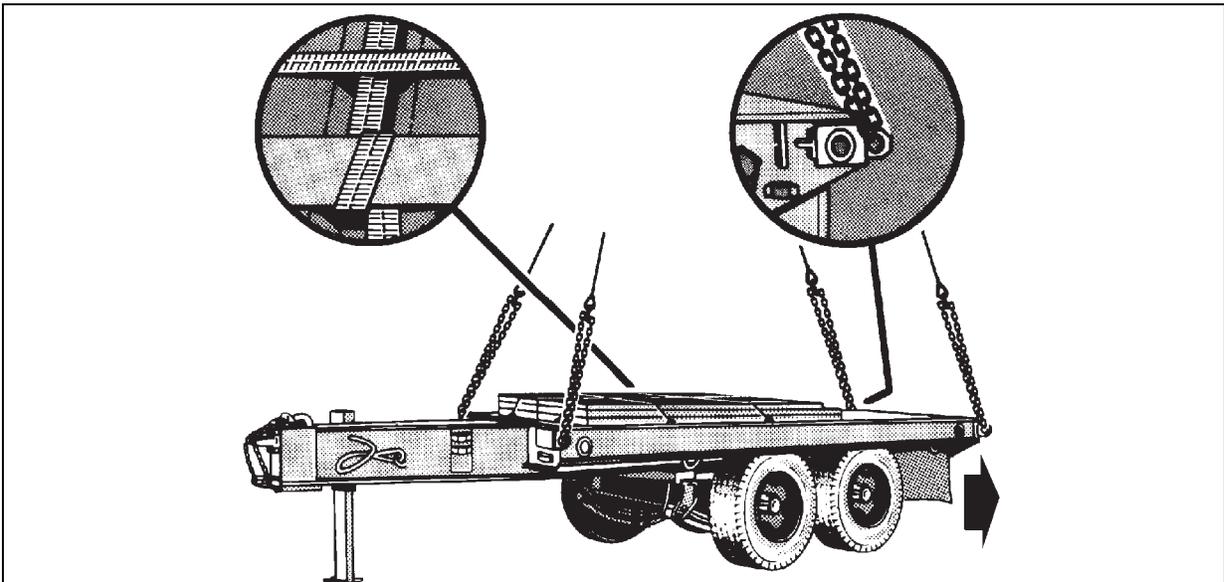


Figure 3-6. M989 HEMAT

<b>RIGGING STEPS</b>
<ol style="list-style-type: none"> <li>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.</li> <li>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 3-6 in the grab hook. Repeat with sling leg 2 through the right front lift provision. Secure excess chain with Type III nylon cord.</li> <li>3. Route the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 3-6 in the grab hook. Repeat with sling leg 4 through the right rear lift provision. Secure excess chain with Type III nylon cord.</li> <li>4. Cluster and tie (breakaway technique) all sling legs together on top of the trailer to prevent entanglement during hookup and lift-off.</li> </ol>

Figure 3-6. M989 HEMAT (Continued)

## M989A1 HEAVY-EXPANDED MOBILITY AMMUNITION TRAILER (HEMAT II)

3-8. The M989A1 heavy-expanded mobility ammunition trailer is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 3-7 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

Table 3-7. M989A1 HEMAT II

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M989 HEMAT II	10,650	25K	15/3

### CAUTION

The following rigging procedures are for the M989A1 HEMAT II only. Do not use these procedures when rigging the M989 HEMAT.

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down CGU-1/B (8 each).
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:

- Inspect the lift provisions at the four upper corners of the cargo bed.
- Raise the trailer tongue and secure it in the up position with a CGU-1/B.
- Secure the brake hose, safety hose, intervehicular cables, and safety chains to the trailer and tongue with tape or Type III nylon cord.
- Engage the steering lockout pin.
- Secure the side panels to the cargo deck with CGU-1/Bs.
- **Rigging.** Rig the load according to the steps in Figure 3-7.
- **Hookup.** The hookup team stands on the bed 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 carefully dismounts the vehicle and 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 aircrew to relax sling leg tension and hover to the side of the load when releasing the apex fitting to prevent damage to the panels on top of the trailer.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

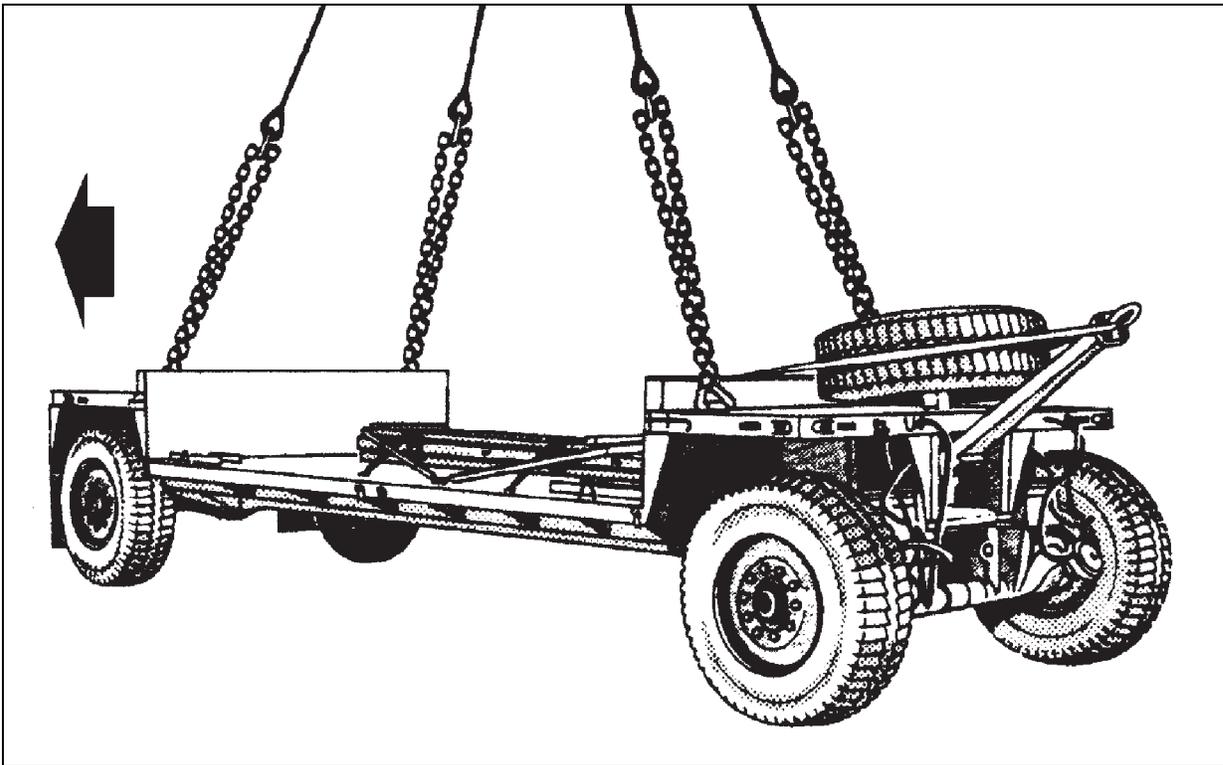


Figure 3-7. M989A1 HEMAT II

<b>RIGGING STEPS</b>
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 provision located on the left front corner of the trailer. Place the correct link from Table 3-7 in the grab hook. Repeat with sling leg 2 through the right front lift provision. Secure 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 3-7 in the grab hook. Repeat with sling leg 4 through the right rear lift provision. Secure excess chain with Type III nylon cord.
4. Cluster and tie (breakaway technique) all sling legs together on top of the trailer to prevent entanglement during hookup and lift-off.

Figure 3-7. M989A1 HEMAT II (Continued)

## MK14, TRAILER, CONTAINER HAULER

3-9. The Mk14 container hauler trailer is rigged for single-point sling load using the following procedures:

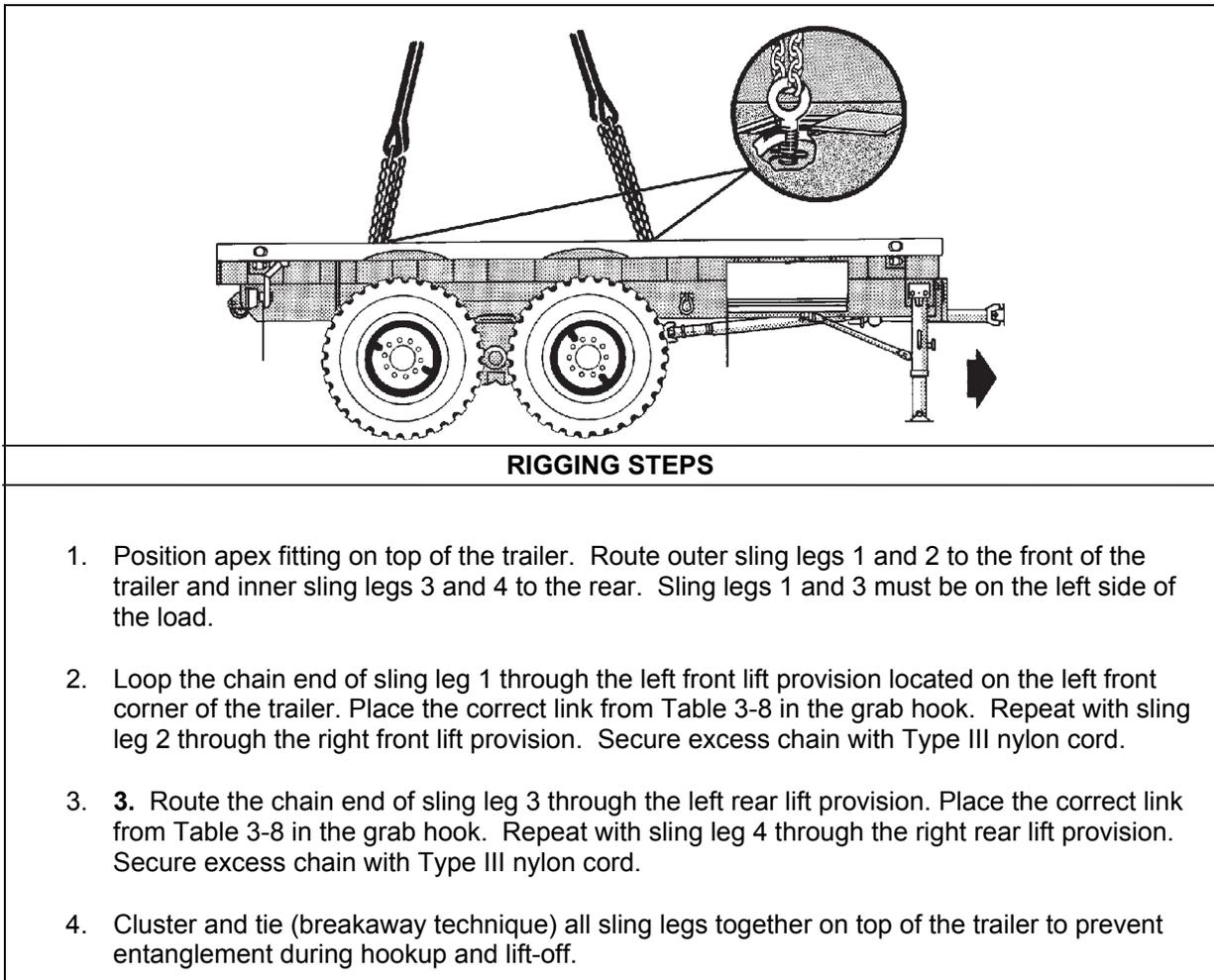
- **Applicability.** The following item in Table 3-8 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

Table 3-8. Mk14 Container Hauler Trailer

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Mk 14 Container Hauler Trailer	16,000	40K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (40,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Disengage the Mk14 from the Mk48 prime mover according to the operator's manual.
    - Secure all hoses with tape or nylon cord.
    - Tape all lights, reflectors, and glass fixtures.
    - Remove the safety retainer pins from the lifting eyelets located under the doors in the bed of the trailer. UNSRDECrew the lifting eyelets from their stored position and reinsert the lifting eyelets so that the eyelet portion is accessible from the bed of the trailer through the access doors. Screw the lifting eyelets all the way in and back out one full turn. Reinsert the safety retainer pins to prevent the lifting eyelets from backing out in flight.
    - Make sure all tool compartment doors are secured shut.

- **Rigging.** Rig the load according to the steps in Figure 3-8.
- **Hookup.** The hookup team stands on the bed 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 carefully dismounts the vehicle and 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 3-8. Mk14 Container Hauler Trailer**

## MK15, TRAILER, WRECKER/RECOVERY

3-10. The Mk15 wrecker/recovery trailer is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 3-9 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

Table 3-9. Mk15 Wrecker/Recovery Trailer

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Mk 15 Wrecker/Recovery Trailer	26,000	40K	3/10

- **Materials.** The following materials are required to rig this load:
  - Sling set (40,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down strap, cargo, CGU-1/B, as required.
- **Personnel.** Two persons can prepare and rig this load in 30 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Disengage the Mk15 from the Mk48 prime mover according to the operator's manual.
    - Remove the A-frame from the rear of the trailer.
    - Secure all hoses with tape or nylon cord.
    - Tape all lights, reflectors, and glass fixtures.
    - Remove the safety retainer pins from the lifting eyelets located under the doors in the bed of the trailer. UNSRDECrew the lifting eyelets from their stored position and reinsert the lifting eyelets so that the eyelet portion is accessible from the bed of the trailer through the access doors. Screw the lifting eyelets all the way in and back out one full turn. Reinsert the safety retainer pins to prevent the lifting eyelets from backing out in flight.
    - Make sure all tool compartment doors are secured shut.
  - **Rigging.** Rig the load according to the steps in Figure 3-9.
  - **Hookup.** The hookup team stands on the bed 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 carefully dismounts the vehicle and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

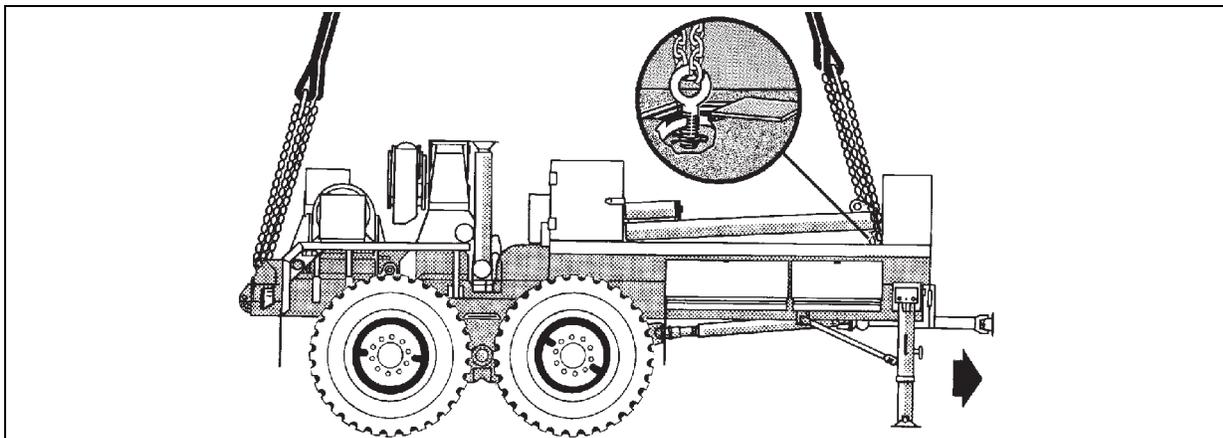


Figure 3-9. Mk15 Wrecker/Recovery Trailer

RIGGING STEPS
<ol style="list-style-type: none"> <li>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.</li> <li>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 3-9 in the grab hook. Repeat with sling leg 2 through the right front lift provision. Secure excess chain with Type III nylon cord.</li> <li>3. Route the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 3-9 in the grab hook. Repeat with sling leg 4 through the right rear lift provision. Secure excess chain with Type III nylon cord.</li> <li>4. Cluster and tie (breakaway technique) all sling legs together on top of the trailer to prevent entanglement during hookup and lift-off.</li> </ol>

**Figure 3-9. Mk15 Wrecker/Recovery Trailer (Continued)**

## MK16, TRAILER, FIFTH-WHEEL ADAPTER

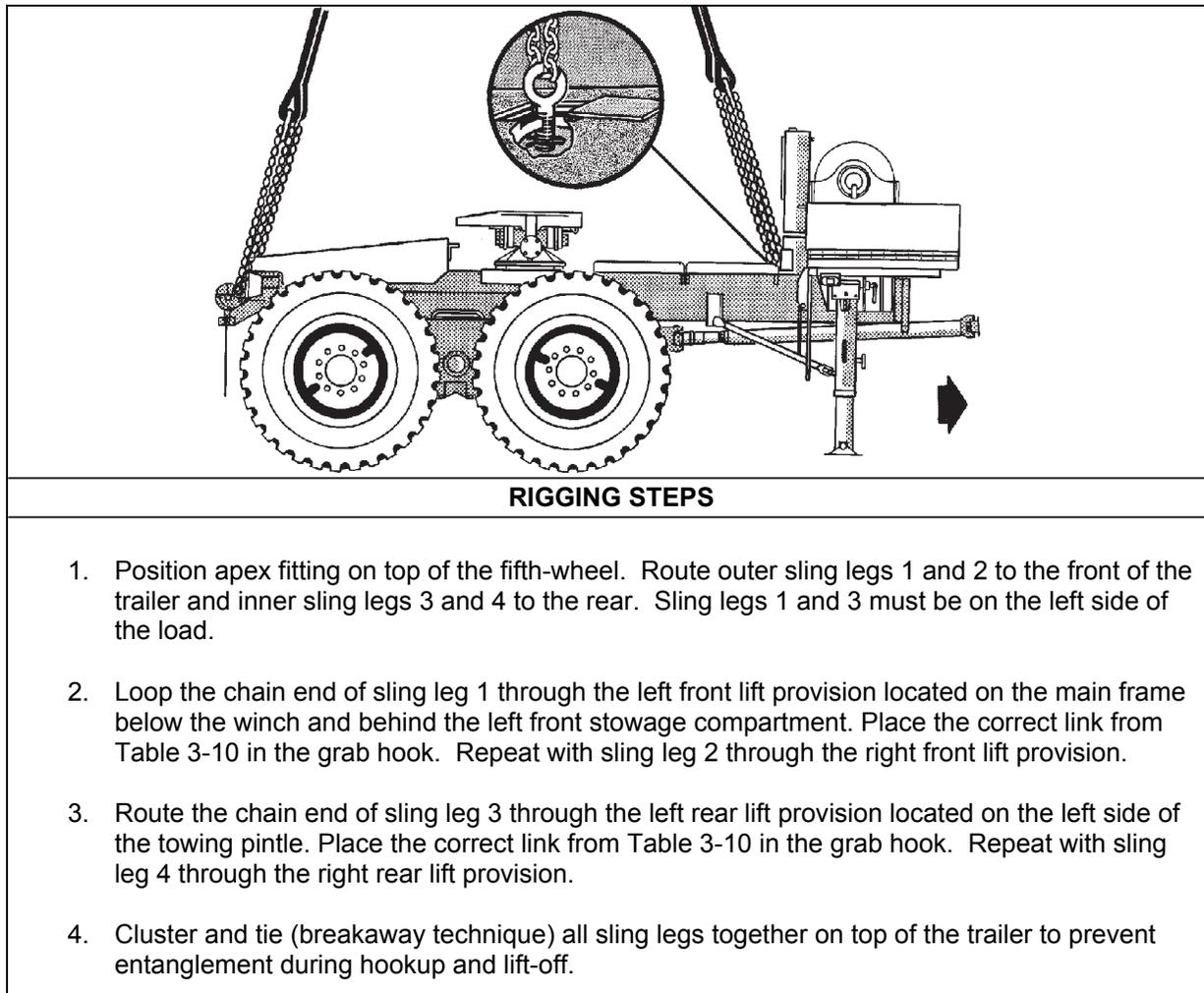
3-11. The Mk16 fifth-wheel adapter trailer is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 3-10 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 3-10. Mk16 Fifth-Wheel Adapter Trailer**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Mk 16 Fifth Wheel Adapter Trailer	16,000	40K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (40,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 30 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Disengage the Mk16 from the Mk48 prime mover according to the operator’s manual.
    - Secure all hoses with tape or nylon cord.
    - Tape all lights, reflectors, and glass fixtures.
    - Make sure all tool compartment doors are secured shut.
  - **Rigging.** Rig the load according to the steps in Figure 3-10.
  - **Hookup.** The hookup team stands on top of the fifth-wheel adapter. 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 carefully dismounts the vehicle and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 3-10. Mk16 Fifth Wheel Adapter Trailer**

## MK17, TRAILER, DROP-SIDE CARGO

3-12. The Mk17 drop-side cargo trailer is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 3-11 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 3-11. Mk17 Drop-Side Cargo Trailer**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Mk 17 Drop-Side Cargo Trailer	23,000	40K	3/13

- **Materials.** The following materials are required to rig this load:
  - Sling set (40,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.

- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Disengage the Mk17 from the Mk48 prime mover according to the operator’s manual.
    - Secure all hoses with tape or nylon cord.
    - Tape all lights, reflectors, and glass fixtures.
    - Remove the safety retainer pins from the lifting eyelets located under the doors in the bed of the trailer. UNSRDECrew the lifting eyelets from their stored position and reinsert the lifting eyelets so that the eyelet portion is accessible from the bed of the trailer through the access doors. Screw the lifting eyelets all the way in and back out one full turn. Reinsert the safety retainer pins to prevent the lifting eyelets from backing out in flight.
    - Make sure all tool compartment doors are secured shut.
  - **Rigging.** Rig the load according to the steps in Figure 3-11.
  - **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 carefully dismounts the vehicle and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

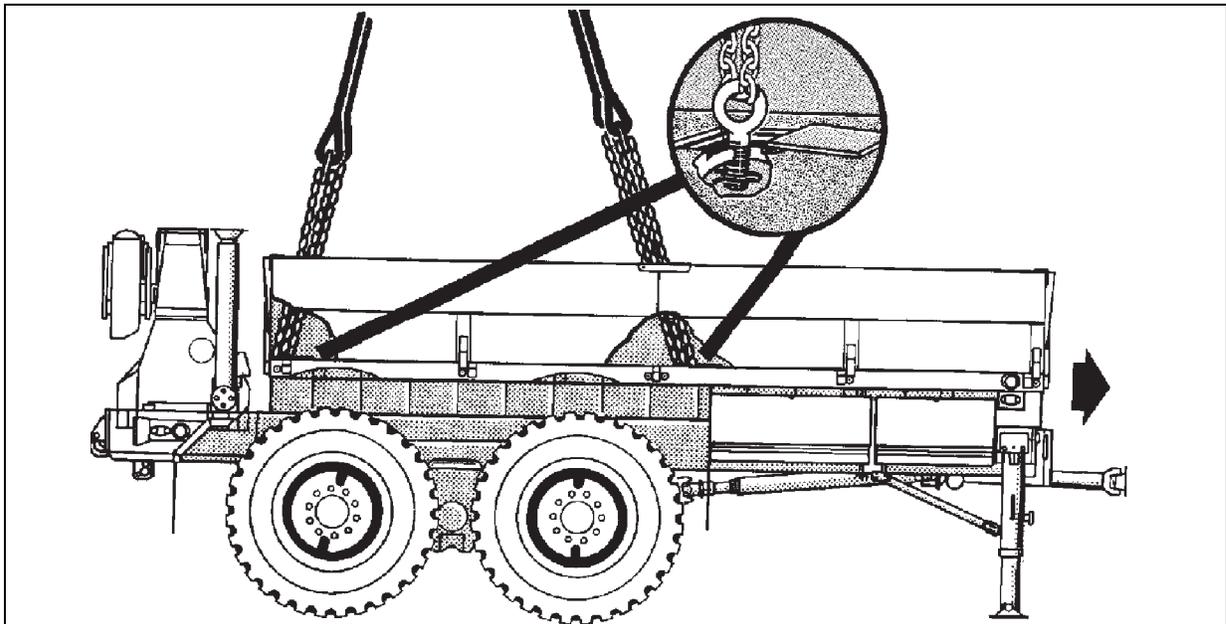


Figure 3-11. Mk17 Drop-Side Trailer

<b>RIGGING STEPS</b>
<ol style="list-style-type: none"> <li>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.</li> <li>2. Loop the chain end of sling leg 1 through the left front lift provision located in the middle of the left side of the trailer bed. Place the correct link from Table 3-11 in the grab hook. Repeat with sling leg 2 through the right front lift provision.</li> <li>3. Route the chain end of sling leg 3 through the left rear lift provision located in the left rear corner of the trailer bed by the towing pintle hook. Place the correct link from Table 3-11 in the grab hook. Repeat with sling leg 4 through the right rear lift provision.</li> <li>4. Cluster and tie (breakaway technique) all sling legs together on top of the trailer to prevent entanglement during hookup and lift-off.</li> </ol>

**Figure 3-11. Mk17 Drop-Side Trailer (Continued)**

## **M116A2 TRAILER WITH ANTENNA GROUPS, AS-3954/TRC (2 EACH) (USMC)**

3-13. The M116A2 trailer with antenna groups, AS-3954/TRC (2 each) is rigged for single-point sling load using the following procedures:

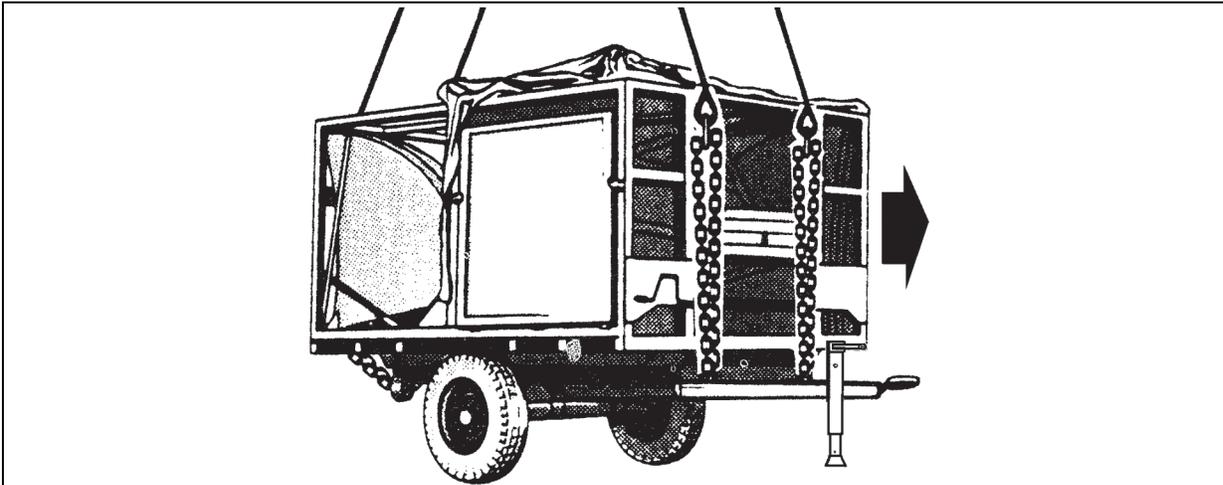
- **Applicability.** The following item in Table 3-12 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 3-12. M116A2 Trailer with Antenna Groups, AS-3954/TRC (2 each)**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M116A2 Trailer with Antenna Groups, AS-3954/TRC (2 each)	3,230	15K	3/3

- **Materials.** The following materials are required to rig this load:
  - Multileg sling set (15,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down strap, cargo, CGU-1/B.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all loose items inside the trailer with tape or Type III nylon cord.
    - Secure all covers in their proper place. Do not remove the tarps. The tarps protect the antennae.
    - Secure all chains, hoses, and cables with Type III nylon cord.
    - Engage both trailer parking brakes and ensure the front support leg is down.
  - **Rigging.** Rig the load according to the steps in Figure 3-12.

- **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 carefully dismounts the vehicle and 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting on top of the trailer. Route outer sling legs 1 and 2 to the front of the trailer (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 aluminum frame attached to the trailer. Do not use the trailer lifting provisions attached to the chassis. Place the correct link from Table 3-12 in the grab hook. Repeat with sling leg 2 through the right front lift provision.
3. Route the chain end of sling leg 3 through the left rear lift provision located on the aluminum frame attached to the trailer. Do not use the trailer lifting provisions attached to the chassis. Place the correct link from Table 3-12 in the grab hook. Repeat with sling leg 4 through the right rear lift provision.
4. Cluster and tie (breakaway technique) all sling legs together on top of the trailer to prevent entanglement during hookup and lift-off.

**Figure 3-12. M116A2 Trailer with Antenna Groups, AS-3954/TRC (2 each)**

## M116A2 TRAILER WITH AN/TPQ-36 FIREFINDER ANTENNA TRANSRDECEIVER GROUP (ATG)

3-14. The M116A2 trailer with AN/TPQ-36 Firefinder antenna traNSRDECeiver group is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 3-13 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 3-13. M116A2 Trailer with AN/TPQ-36 Firefinder Antenna TraNSRDECeiver Group**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M116A2 Trailer with AN/TPQ-36 Firefinder Antenna TraNSRDECeiver Group	3,320	10K	3/25

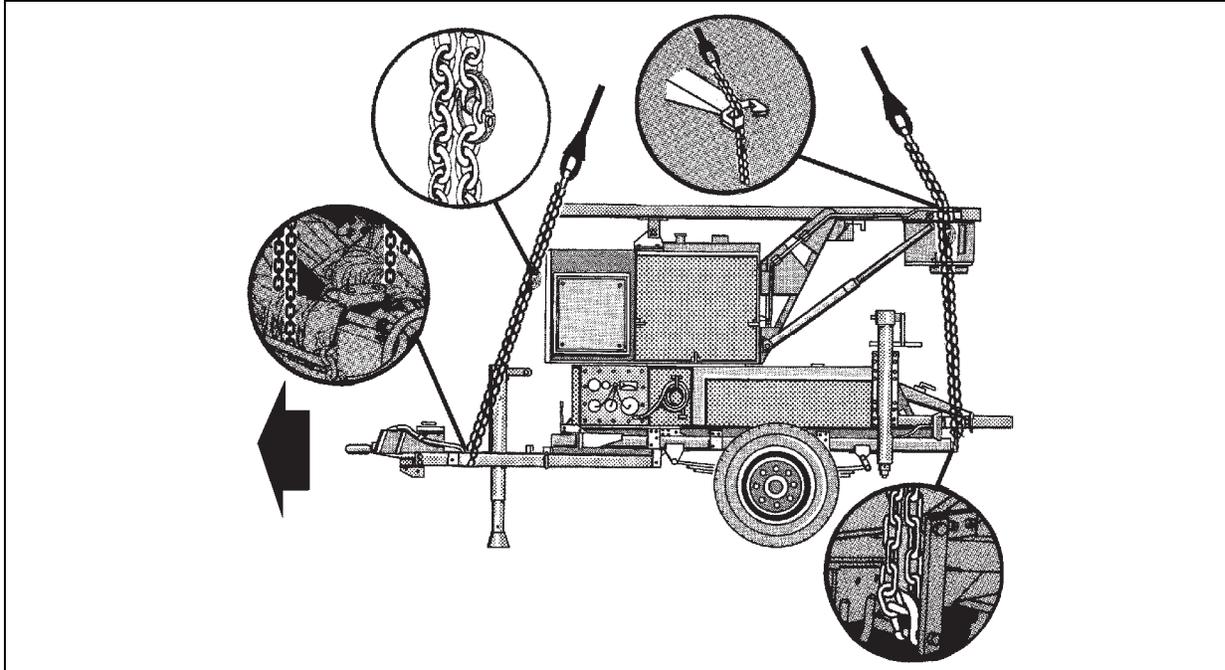
- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Chain length, part number 38850-00053-101, from a 10,000-pound capacity sling set (4 each).
  - Coupling link, part number 577-0415, from a 10,000-pound sling set (4 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.
  - Padding, Cellulose.
- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Connect one additional chain length to each chain of the sling set with the coupling link.
    - Engage the trailer parking brake.
    - Secure the doors closed with Type III nylon cord.
    - Place the radar set in the travel mode and secure the antenna cover to the antenna with tape.
  - **Rigging.** Rig the load according to the steps in Figure 3-13.
  - **Hookup.** The hookup team stands on top of the ATG trailer 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 carefully dismounts the ATG and 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.

- Notes.**
1. Do not stand on the radar panel during hookup.
  2. Due to limited clearance between the helicopter and the top of the ATG, the hookup team may want to use an extended sling system on this load and hook this load from the ground or the bed of a truck. Polyester round slings are recommended for use as vertical pendants. The extended sling legs may not be ideal for flying this load "nap of the earth" in a tactical environment.

**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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

*Note.* When releasing the apex fitting after setting the load down, the helicopter pilot should hover to the side to prevent damaging the radar panel.



#### RIGGING STEPS

1. Position apex fitting on top of the trailer (but not on top of the radar panel). Route outer sling legs 1 and 2 to the front of the trailer (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 under the trailer A-frame just aft of the lunette and through the keeper from left to right on the left side of the drawbar. Place the correct link from Table 3-13 in the grab hook. Repeat with sling leg 2 on the right side of the drawbar.
3. Route the chain end of sling leg 3 through the left rear lift provision located on the rear of the trailer. Place the correct link from Table 3-13 in the grab hook. Repeat with sling leg 4 through the right rear lift provision. Secure the excess chain with Type III nylon cord.
4. Cluster and tie (breakaway technique) all sling legs together on top of the trailer to prevent entanglement during hookup and lift-off.

**Figure 3-13. M116A2 Trailer with AN/TPQ-36 Firefinder Antenna TraNSRDECeiver Group**

## M116A2 TRAILER WITH M894 18,000-BTU AIR CONDITIONER AND MEP-003A GENERATOR

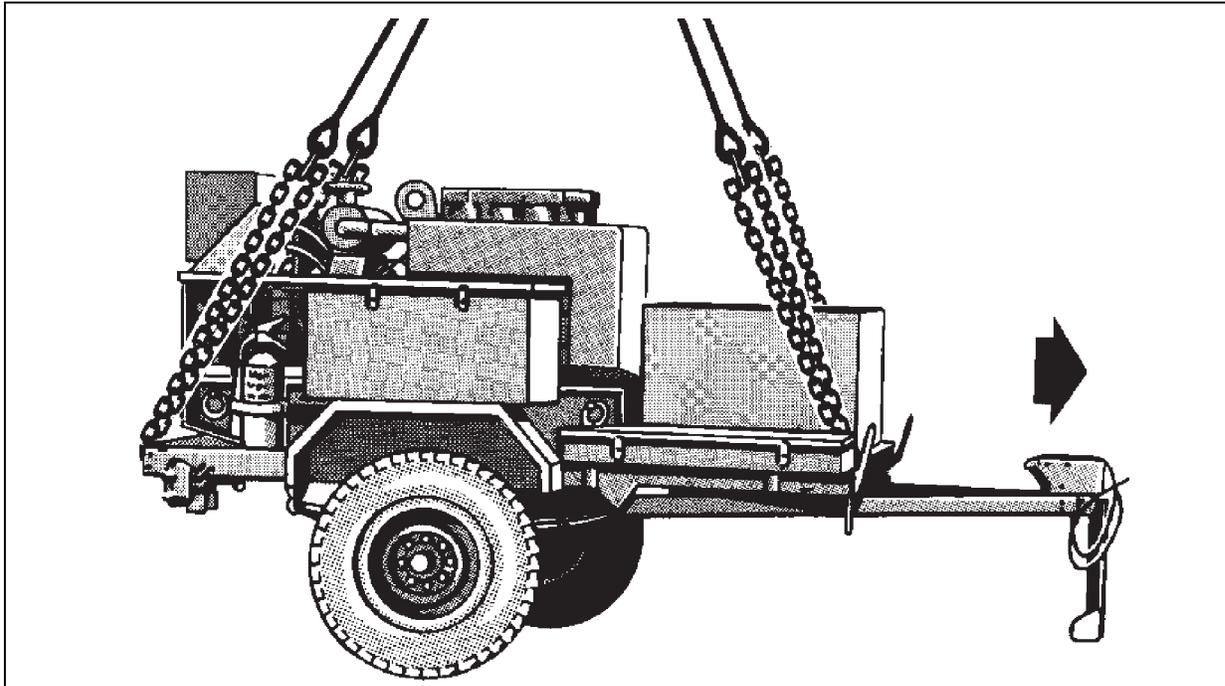
3-15. The M116A2 Trailer with M894 18,000-BTU air conditioner and MEP-003A generator is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 3-14 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 3-14. M116A2 Trailer with M894 18,000-BTU Air Conditioner and MEP-003A Generator**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M116A2 Trailer with M894 18,000-BTU Air Conditioner and MEP-003A Generator	2,620	10K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all lids, doors, and caps with tape or Type III nylon cord.
    - Secure all chains, hoses, and cables with Type III nylon cord.
    - Engage both trailer parking brakes and ensure the front support leg is down.
  - **Rigging.** Rig the load according to the steps in Figure 3-14.
  - **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 carefully dismounts the vehicle and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting on top of the generator. Route outer sling legs 1 and 2 to the front of the trailer (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 front of the trailer just outside the A-frame. Place the correct link from Table 3-14 in the grab hook. Repeat with sling leg 2 through the right front lift provision.
3. Route the chain end of sling leg 3 through the left rear lift provision located on the rear of the trailer frame. Place the correct link from Table 3-14 in the grab hook. Repeat with sling leg 4 through the right rear lift provision.
4. Cluster and tie (breakaway technique) all sling legs together on top of the trailer to prevent entanglement during hookup and lift-off.

**Figure 3-14. M116A2 Trailer with M894 18,000-BTU Air Conditioner and MEP-003A Generator**

**M116A2 TRAILER, SINGLE CHANNEL OBJECTIVE TACTICAL TERMINAL (SCOTT)**

3-16. The M116A2 trailer, single channel objective tactical terminal is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 3-15 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

Table 3-15. M116A2 Trailer, Single Channel Objective Tactical Terminal

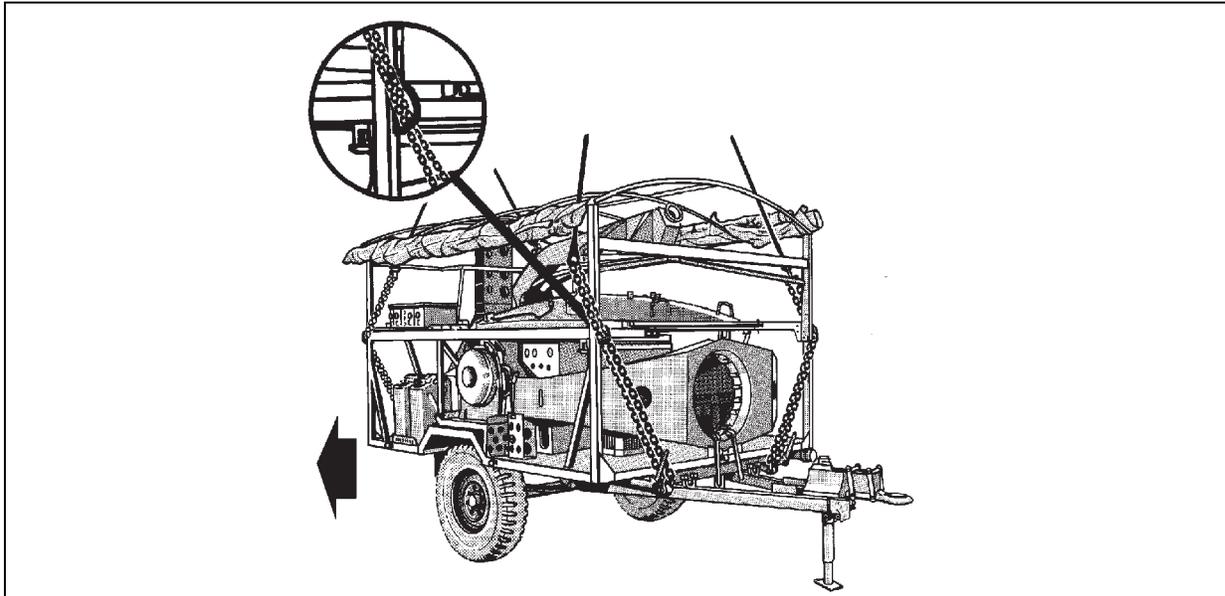
<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M116A2 Trailer Single Channel Objective Tactical Terminal	2,830	10K	18/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
  - Tie-down, cargo, CGU-1/B.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all cargo in the bed of the trailer with tie-down straps.
    - Remove and secure nylon tarps to upper trailer structure with tape or Type III nylon cord.
    - Secure all chains, hoses, and cables to the drawbar with Type III nylon cord.
    - Engage both hand brakes.
  - **Rigging.** Rig the load according to the steps in Figure 3-15.

### CAUTION

Brief the pilots to hover to the side of the trailer prior to jettisoning the apex fitting during landing operations.

- **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 carefully dismounts the vehicle and 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

*Note.* This trailer will fly with the front end (trailer lunette) aft.

1. Position apex fitting on top of the trailer. Route outer sling legs 1 and 2 to the front of the trailer (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. Route sling leg 1 through the trailer canopy structure to the side of the trailer and through the front left sling guide on the horizontal reflector support tube. Repeat with sling leg 2 and the right front sling guide provision.
3. Loop the chain end of sling leg 1 through the left front lift provision located on the front of the trailer. Place the correct link from Table 3-15 in the grab hook. Repeat with sling leg 2 through the right front lift provision. Secure the excess chain with Type III nylon cord.
4. Route sling leg 3 through the trailer canopy structure to the side of the trailer and through the rear left sling guide on the horizontal reflector support tube. Repeat with sling leg 4 and the right rear sling guide provision.
5. Route the chain end of sling leg 3 through the left rear lift provision located on the rear of the trailer. Place the correct link from Table 3-15 in the grab hook. Repeat with sling leg 4 through the right rear lift provision.
6. Pad the chain and/or trailer support where there is chain contact.
7. Cluster and tie (breakaway technique) all sling legs together on top of the roof to prevent entanglement during hookup and lift-off.

**Figure 3-15. M116A2 Trailer, Single Channel Objective Tactical Terminal**

## M116A3 TRAILER WITH OE334 ANTENNA COUPLER GROUP

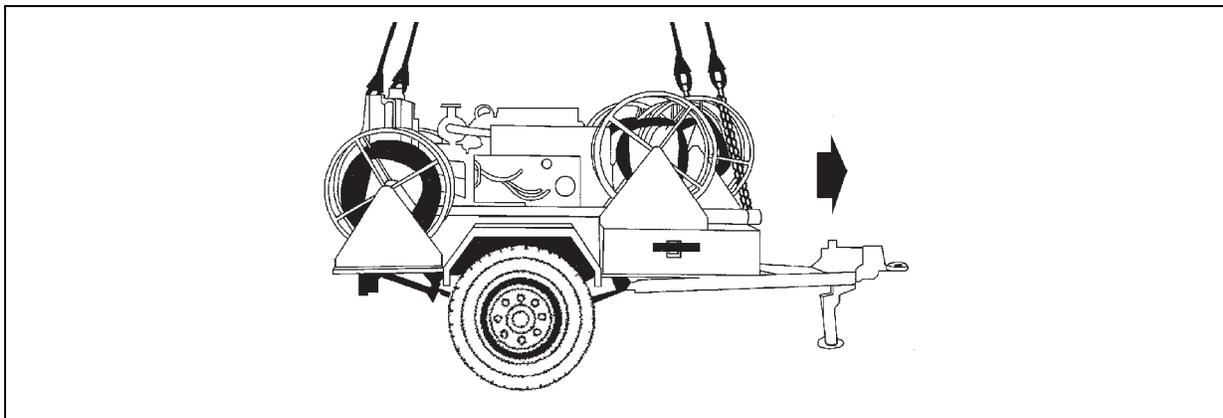
3-17. The M116A3 trailer with OE334 antenna coupler group is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 3-16 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center

**Table 3-16. M116A3 Trailer with OE334 Antenna Coupler Group**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M116A3 Trailer with OE334 Antenna Coupler Group	3,280	15K	3/15

- **Materials.** The following materials are required to rig this load:
  - Multileg sling set (15,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Lower and lock the rear landing leg in place.
    - Lower the front jack on the lunette as close to the ground as possible.
    - Secure the light cable to the top of the drawbar with Type III nylon cord.
    - Engage both parking brakes.
  - **Rigging.** Rig the load according to the steps in Figure 3-16.
  - **Hookup.** The hookup team stands next to 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 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 3-16. M116A3 Trailer with OE334 Antenna Coupler Group**

RIGGING STEPS
1. Position apex fitting on top of the trailer. Route outer sling legs 1 and 2 to the front of the trailer (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. Pass the chain end of sling leg 1 through the right inner cable reel assembly at the front of the trailer. Loop the chain end of sling leg 1 through the left front multipurpose provision located on the front of the trailer. Place the correct link from Table 3-16 in the grab hook. Repeat with sling leg 2 through the right multipurpose provision.
3. Route the chain end of sling leg 3 through the left rear multipurpose provision located on the rear of the trailer. Place the correct link from Table 3-16 in the grab hook. Repeat with sling leg 4 through the right rear multipurpose provision. Secure the excess chain with Type III nylon cord.
4. Pad the front chains where the chains contact the generator and reels.
5. Cluster and tie (breakaway technique) all sling legs together to prevent entanglement during hookup and lift-off.

**Figure 3-16. M116A3 Trailer with OE334 Antenna Coupler Group (Continued)**

## M105A3 TRAILER

3-18. The M105A3 trailer is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 3-17 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

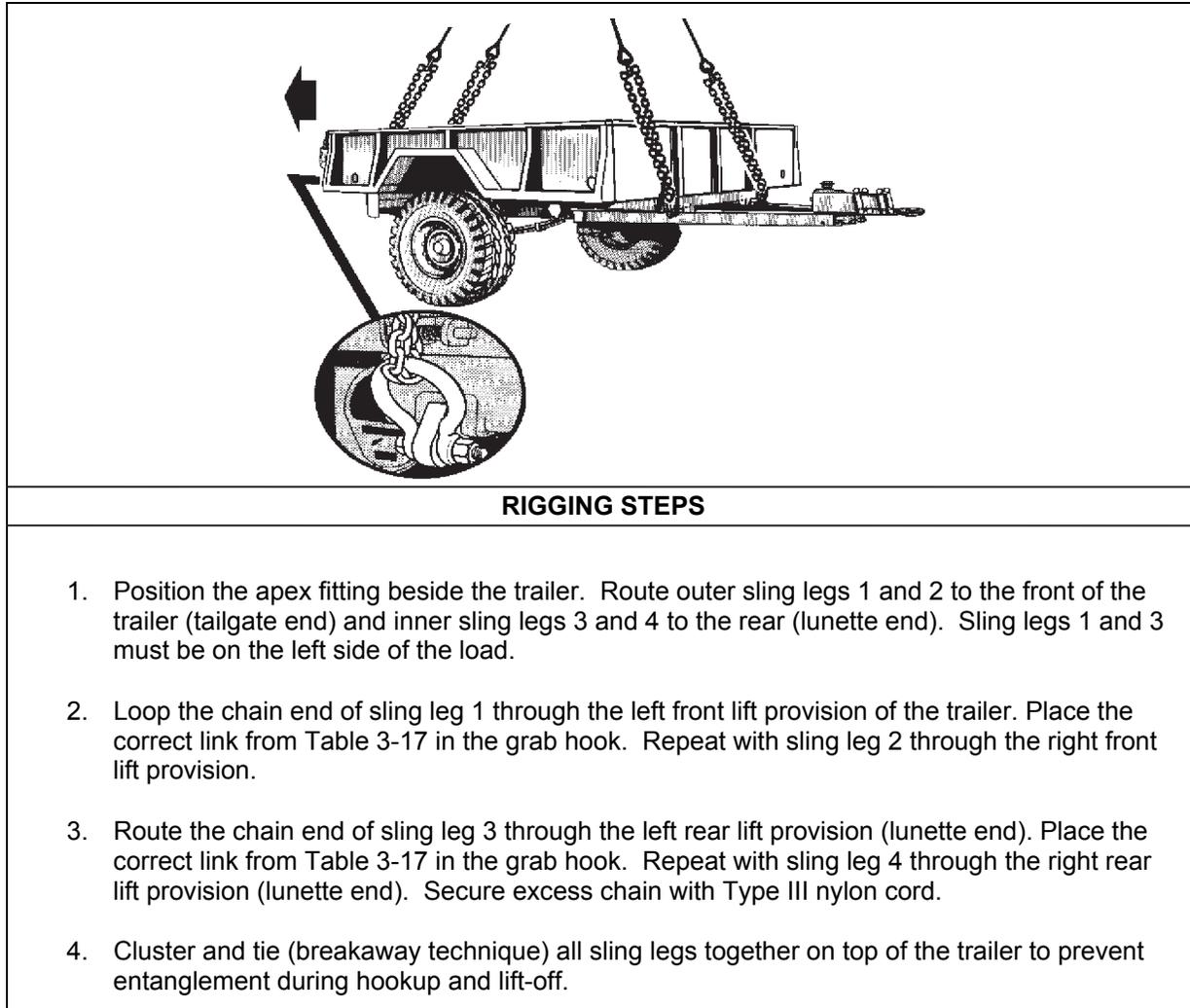
**Table 3-17. M105A3 Trailer**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M105A3 Trailer (Empty)	2,600	10K	3/40
M105A3 Trailer (Loaded)	5,580	10K	3/40

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Raise the trailer's jack stand so the pintle is on the ground.
    - Engage the hand brakes.
    - Tape or tie the light cable, safety chains, and brake hose to the top of the drawbar.
  - **Rigging.** Rig the load according to the steps in Figure 3-17.
  - **Hookup.** The hookup team stands on the trailer bed. 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 carefully dismounts the vehicle and 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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 3-17. M105A3 Trailer**

## **HIGH MOBILITY TRAILERS (HMT), M1101/M1102**

3-19. The M1101/M1102 high mobility trailers are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 3-18 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 3-18. M1101/M1102 High Mobility Trailers**

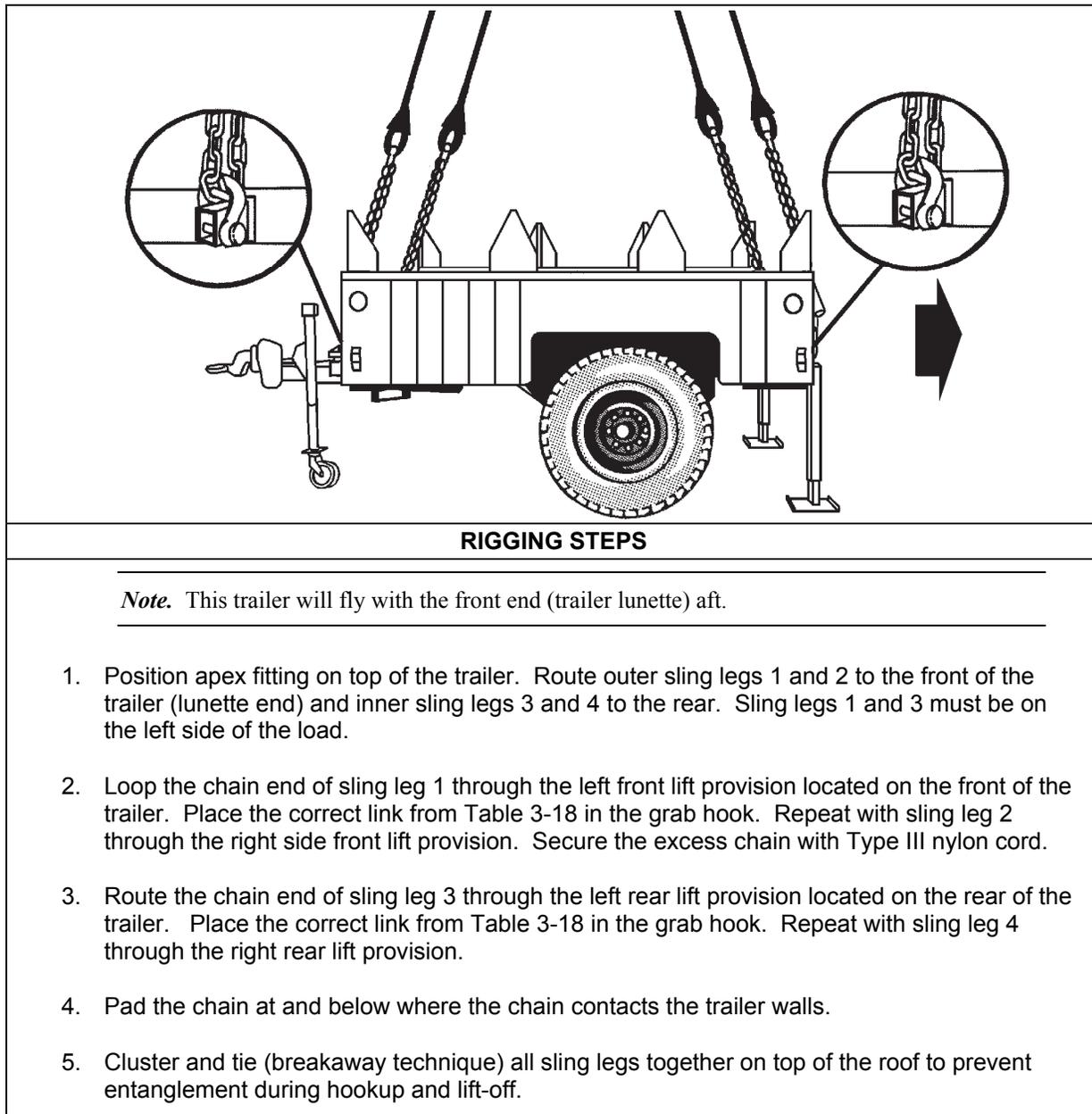
<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
High Mobility Trailer (Light), M1101	3,400	10K	20/3
High Mobility Trailer (Light), M1102	4,200	10K	20/3
Tactical Messaging System (TMS) Cargo Carrier, M1102	4,200	10K	20/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
  - Tie-down, cargo, CGU-1/B or suitable tie-down lashings.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Remove the two rear stabilizer legs from their storage location on the front of the trailer. Place the lower support section in the fully retracted position. Install the stabilizer legs on the rear of the trailer.
    - Install the front jack and lower the lunette as close to the ground as possible.
    - Remove the canvas cover and racks from the trailer. Place these items in the bed of the trailer. Place the accompanying load on top of the canvas cover and secure with the tie-down lashings.
    - Secure the light cable to the top of the drawbar with Type III nylon cord.
    - Engage the parking brake.
  - **Rigging.** Rig the load according to the steps in Figure 3-18.
  - **Hookup.** The hookup team stands on the drawbar or in the bed of the trailer (if possible). 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 carefully dismounts the trailer and 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**

The hookup team should dismount the trailer towards the lunette to keep the trailer from tipping towards the rear.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 3-18. M1101/M1102 High Mobility Trailers**

## HMT TRAILER WITH SENTINEL AN/MPQ-64 ANTENNA TRANSMITTER GROUP (ATG)

3-20. The HMT trailer with Sentinel AN/MPQ-64 antenna transmitter group is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 3-19 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 3-19. HMT Trailer with Sentinel AN/MPQ-64 Antenna Transmitter Group**

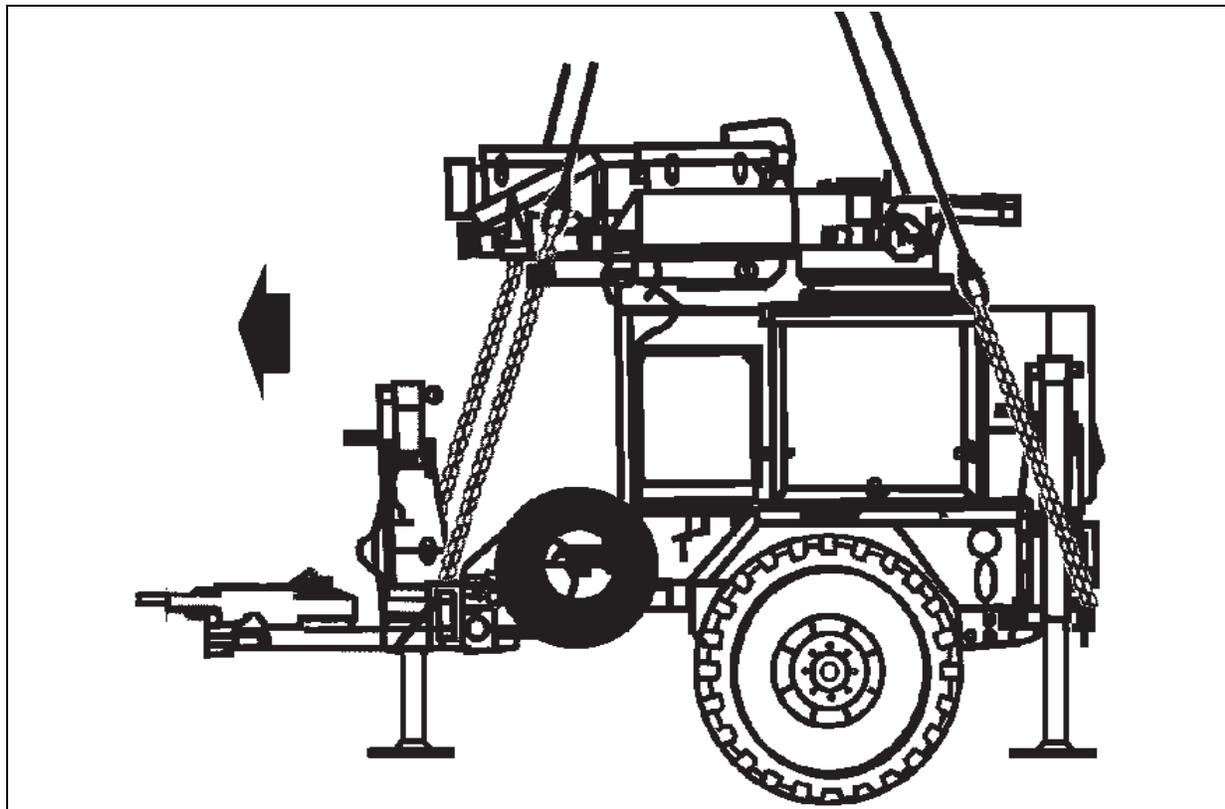
<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Sentinel AN/MPQ-64 Antenna Transmitter Group	3,900	10K	3/20

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Plywood, 3/4-inch x 48-inches x 72-inches.
  - Reach pendant, 11K or 25K.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Partially retract all landing legs. Secure in position and tie with Type III nylon cord.
    - Engage the hand brakes.
    - Tape or tie the light cable and brake hose to the top of the drawbar.
    - Secure all loose equipment, lids, and caps with tape or Type III nylon cord.
    - Cut pieces of plywood to cover the antenna boxes on top of the ATG. Drill holes in the plywood where necessary to secure the plywood with Type III nylon cord. Ensure the plywood is adequately secured.
    - Pad the slings where they make contact with the load.
  - **Rigging.** Rig the load according to the steps in Figure 3-19.
  - **Hookup.** The hookup team stands on the wheel well 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 carefully dismounts the vehicle and 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**

Advise the air crew to hover to the side of the load before releasing the apex to prevent damaging the load.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



#### RIGGING STEPS

1. Attach a reach pendant to the apex fitting. Position the reach pendant and apex fitting on top of the ATG. 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 front of the trailer. Place the correct link from Table 3-19 in the grab hook. Repeat with sling leg 2 through the right front lift provision.
3. Cluster and tie (breakaway technique) sling legs 1 and 2 together at 3-foot intervals to prevent entanglement during hookup and lift-off.
4. Route the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 3-19 in the grab hook. Repeat with sling leg 4 through the right rear lift provision. Secure excess chain with Type III nylon cord.
5. Cluster and tie (breakaway technique) all sling legs together on top of the trailer to prevent entanglement during hookup and lift-off.

**Figure 3-19. HMT Trailer with Sentinel AN/MPQ-64 Antenna Transmitter Group**

## HMT TRAILER WITH REMOTE LANDING SITE TOWER (RLST)

3-21. The HMT Trailer with remote landing site tower is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 3-20 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 3-20. HMT Trailer with Remote Landing Site Tower**

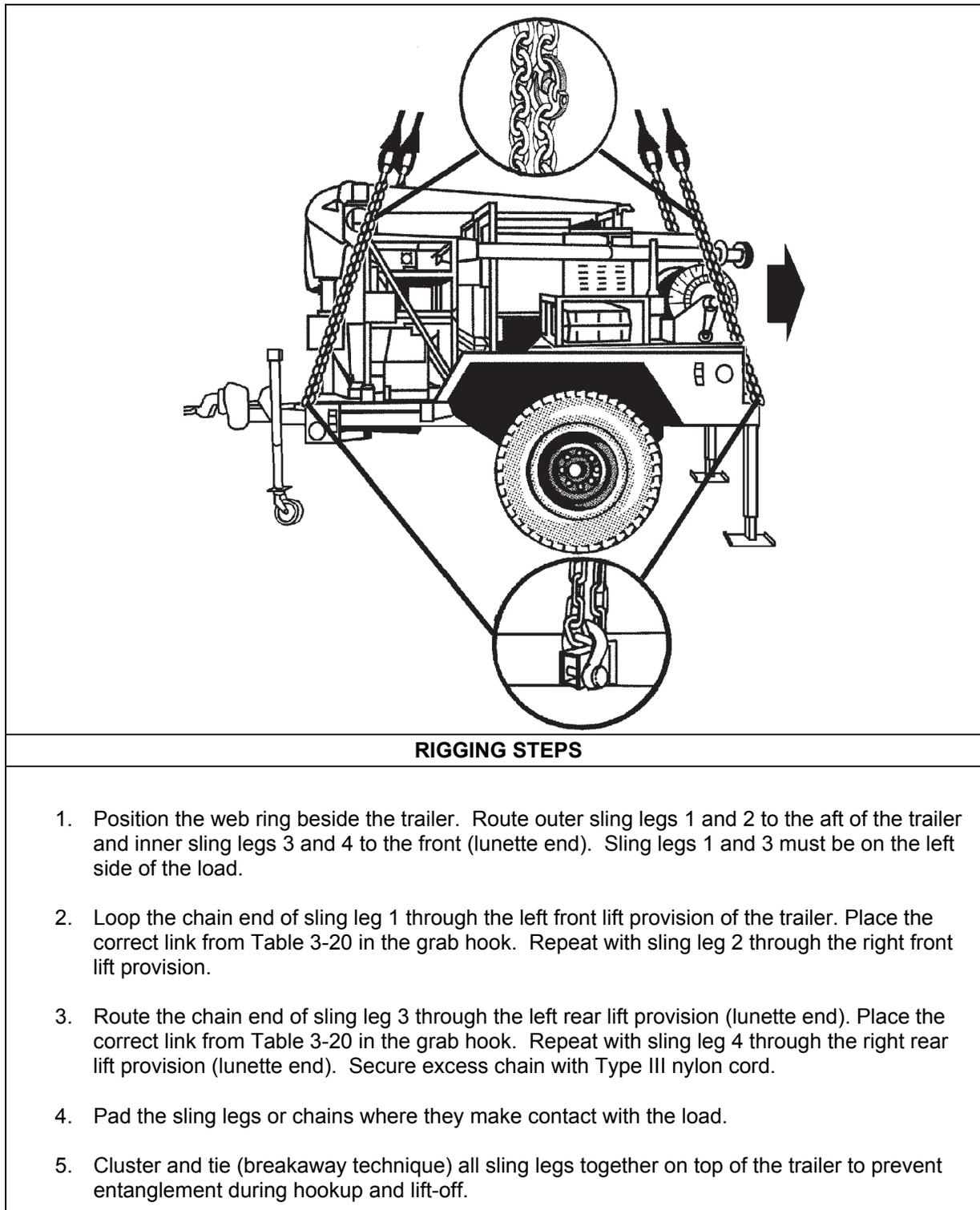
<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
HMT Trailer with Remote Landing Site Tower	3,600	15K	3/15

- **Materials.** The following materials are required to rig this load:
  - Sling set (15,000-pound capacity).
    - Chain length, part number 34080-4, from 15,000-pound capacity sling sets (8 each).
    - Coupling link, part number 31611, from 15,000-pound capacity sling sets (8 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Engage the hand brakes.
    - Secure loose fittings, wires, and cables with Type III nylon cord. Tape the trailer lights and the cable on the spool.
    - Retract the jack wheel to the lowest position. Position the rear stabilizers in the highest position.
    - Place the cover over the aft rack and secure the loose ends of the straps with tape.
    - Extend the sling leg chains by connecting two additional chain lengths to each chain using the coupling links.
  - **Rigging.** Rig the load according to the steps in Figure 3-20.
  - **Hookup.** The hookup team stands beside 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 carefully dismounts the vehicle and 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**

Ensure the sling legs do not snag on the antenna or the pole at the corner of the trailer.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 3-20. HMT Trailer with Remote Landing Site Tower**

## HMT TRAILER WITH LINE OF SIGHT ANTI-TANK (LOSAT) RESUPPLY TRAILER

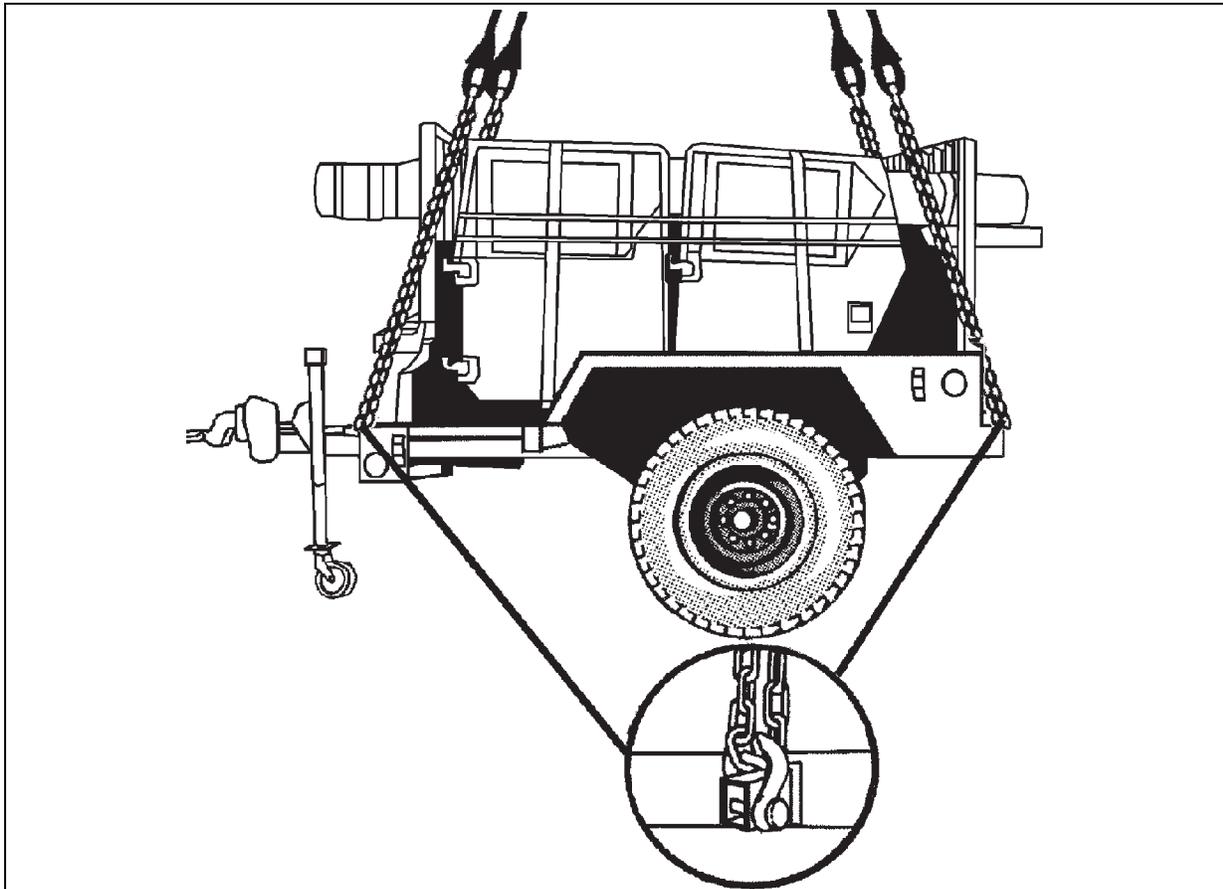
3-22. The LOSAT resupply trailer is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 3-21 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 3-21. LOSAT Resupply Trailer**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Line of Site Anti-Tank Resupply Trailer with 8 Missiles and 4 Crew Doors from the LOSAT Vehicle	4,230	10K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down, cargo, CGU-1B or suitable tie-down lashings.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding
  - Webbing, tubular nylon, 1/2-inch.
- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Engage the hand brakes.
    - Secure safety chains and brake hoses to the top of the drawbar with Type III nylon cord.
    - Secure all equipment with Type III nylon cord.
    - Place the four crew doors on the sides of the trailer and secure with CGU-1B tie-down straps and 1/2-inch tubular nylon webbing.
  - **Rigging.** Rig the load according to the steps in Figure 3-21.
  - **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 carefully dismounts the vehicle and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting on top of the trailer. Route outer sling legs 1 and 2 to the front of the trailer (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 front of the trailer. Place the correct link from Table 3-21 in the grab hook. Repeat with sling leg 2 through the right side front lift provision.
3. Route the chain end of sling leg 3 through the left rear lift provision located on the rear of the trailer. Place the correct link from Table 3-21 in the grab hook. Repeat with sling leg 4 through the right rear lift provision.
4. Pad the chain where the chain contacts the doors and missiles.
5. Cluster and tie (breakaway technique) all sling legs together on top of the roof to prevent entanglement during hookup and lift-off.

**Figure 3-21. LOSAT Resupply Trailer**

## MKT-90/MKT-95/MKT-99 FIELD KITCHEN TRAILER

3-23. The MKT-90/MKT-95/MKT-99 field kitchen trailers are rigged for single-point sling load using the following procedures:

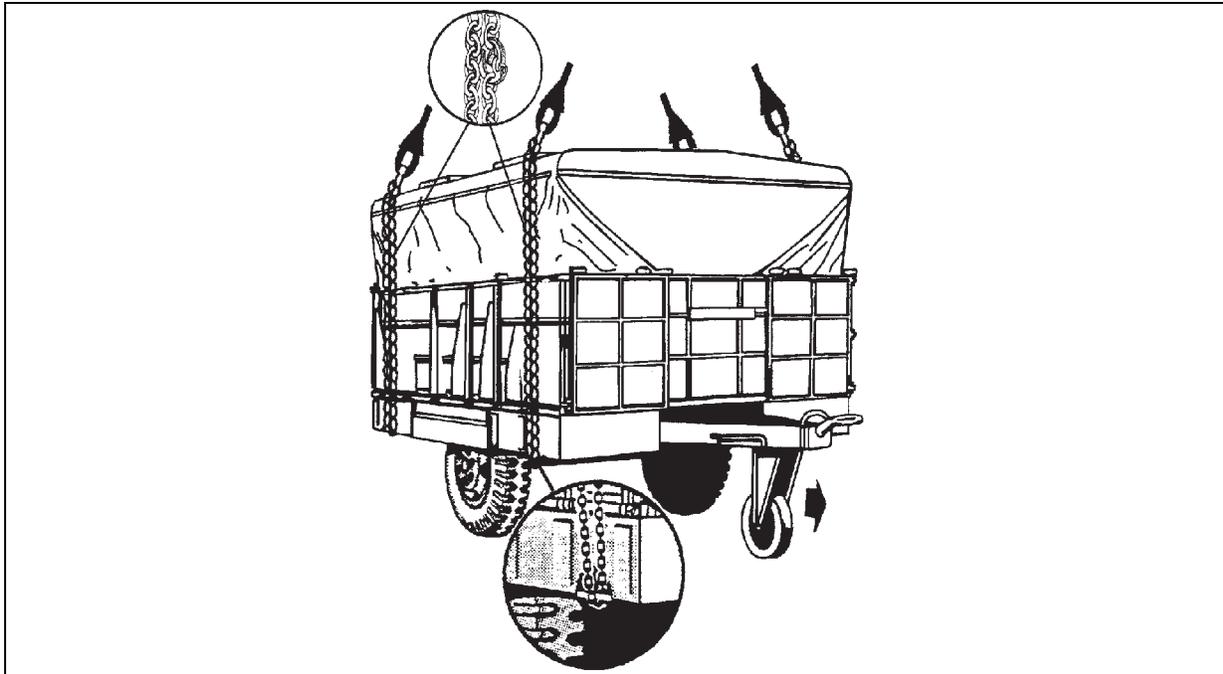
- **Applicability.** The following items in Table 3-22 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 3-22. MKT-90/MKT-95/MKT-99 Field Kitchen Trailer**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
MKT-90	5,370	10K	3/11
MKT-95	6,731	10K	3/11
MKT-99	6,731	10k	3/11

*Note.* Only MKT-90 versions equipped with internal spreader bars (PIP No. 1-85-08-2802) may be sling loaded. The data plate next to the item data plate must contain an etched helicopter.

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
    - Chain length, part number 38850-00053-101, from a 10,000-pound capacity sling set (4 each).
    - Coupling link, part number 577-0615, from a 10,000-pound sling set (4 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.
- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Extend the sling leg chains by connecting one additional chain length to each chain on a 10,000-pound capacity sling set with coupling links.
    - Secure all items in their proper storage location before closing the unit.
    - Configure the MKT for ground transportation according to the operator's instructions.
    - Retract and stow all landing legs. Secure each landing leg with Type III nylon cord.
    - Lower the lunette as far as possible by adjusting the landing wheel hand screw. Do not retract the landing wheel.
    - Secure all chains, hoses, and cables with Type III nylon cord to the trailer drawbar.
    - Engage both trailer parking brakes and ensure the front support leg is down.
    - Secure loose canvas with tape.
  - **Rigging.** Rig the load according to the steps in Figure 3-22.
  - **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 cargo hook. The hookup team then carefully dismounts the trailer and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

**CAUTION**

While on the roof of the trailer, stay in front of the trailer axle. Moving behind the axle may cause the trailer to tip rearwards, causing possible injury to personnel and damage to the load.

1. Position the apex fitting on the roof of the trailer. Route outer sling legs 1 and 2 to the front of the trailer (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 in the trailer frame. Place the correct link from Table 3-22 in the grab hook. Repeat with sling leg 2 through the right front lift provision. The lift provisions are in the form of cutouts in the frame.
3. Loop the chain end of sling leg 3 through the left rear lift provision located on the rear of the trailer frame. Place the correct link from Table 3-22 in the grab hook. Repeat with sling leg 4 through the right rear lift provision.
4. Secure all excess chain with tape or Type III nylon cord.
5. Pad each sling where it contacts the edge of the roof. Secure the padding with tape or Type III nylon cord.
6. Cluster and tie or tape (breakaway technique) all sling legs together on top of the container to prevent entanglement during hookup and lift-off.

**Figure 3-22. MKT-90/MKT-95/MKT-99 Field Kitchen Trailer**

## HYDRAULIC SYSTEM TEST AND REPAIR UNIT (HSTRU)

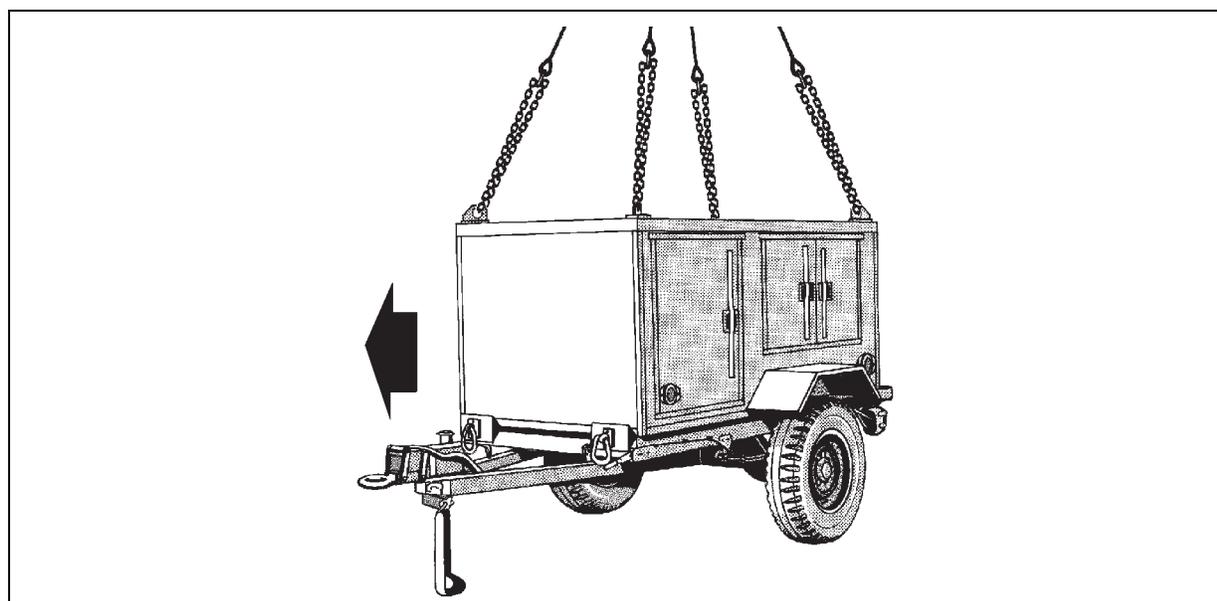
3-24. The hydraulic system test and repair unit is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 3-23 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 3-23. Hydraulic System Test and Repair Unit**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Hydraulic Systems Test and Repair Unit	2,878	10K	16/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Safety tie the covers in the down position with Type III nylon cord.
    - Secure all chains, hoses, and cables with Type III nylon cord to the trailer drawbar.
    - Engage both trailer parking brakes and ensure the front support leg is down.
  - **Rigging.** Rig the load according to the steps in Figure 3-23.
  - **Hookup.** The hookup team stands on top of the HSTRU. 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 carefully dismounts the vehicle and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting on top of the trailer roof. Route outer sling legs 1 and 2 to the front of the trailer (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 front of the HSTRU roof. Place the correct link from Table 3-23 in the grab hook. Repeat with sling leg 2 through 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 rear of the HSTRU roof. Place the correct link from Table 3-23 in the grab hook. Repeat with sling leg 4 through the right rear lift provision.
4. Cluster and tie (breakaway technique) all sling legs together on top of the roof to prevent entanglement during hookup and lift-off.

**Figure 3-23. Hydraulic System Test and Repair Unit**

**DESERT OPERATION TRAILER (DOT) WITH DESERT OPERATION MOTORCYCLE (DOM)**

3-25. The desert operation trailer with desert operation motorcycle is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 3-24 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 3-24. Desert Operation Trailer with Desert Operation Motorcycle**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Desert Operation Trailer with Desert Operation Motorcycle	3,300	10K	20/3

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

- Sling set (10,000-pound capacity).
- Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- Cord, nylon, Type III, 550-pound breaking strength.
- Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- Tie-down strap, cargo, CGU-1/B (4 each).
- Canvas to cover the motorcycle.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure the motorcycle to the trailer using standard mounting methods or using at least four (4) CGU-1/B tie-down straps.
    - Secure the tailgate in the up position.
    - Secure all chains and hoses with tape or Type III nylon cord.
    - Engage the parking brake and place the front support leg in the down position.
    - Safety the spare tire with Type III nylon cord.
    - Pad the motorcycle handlebars and luggage rack with felt padding.
    - Cover the motorcycle with canvas and secure the canvas with Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 3-24.
  - **Hookup.** The hookup team stands on the trailer fender or in the trailer bed. 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 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

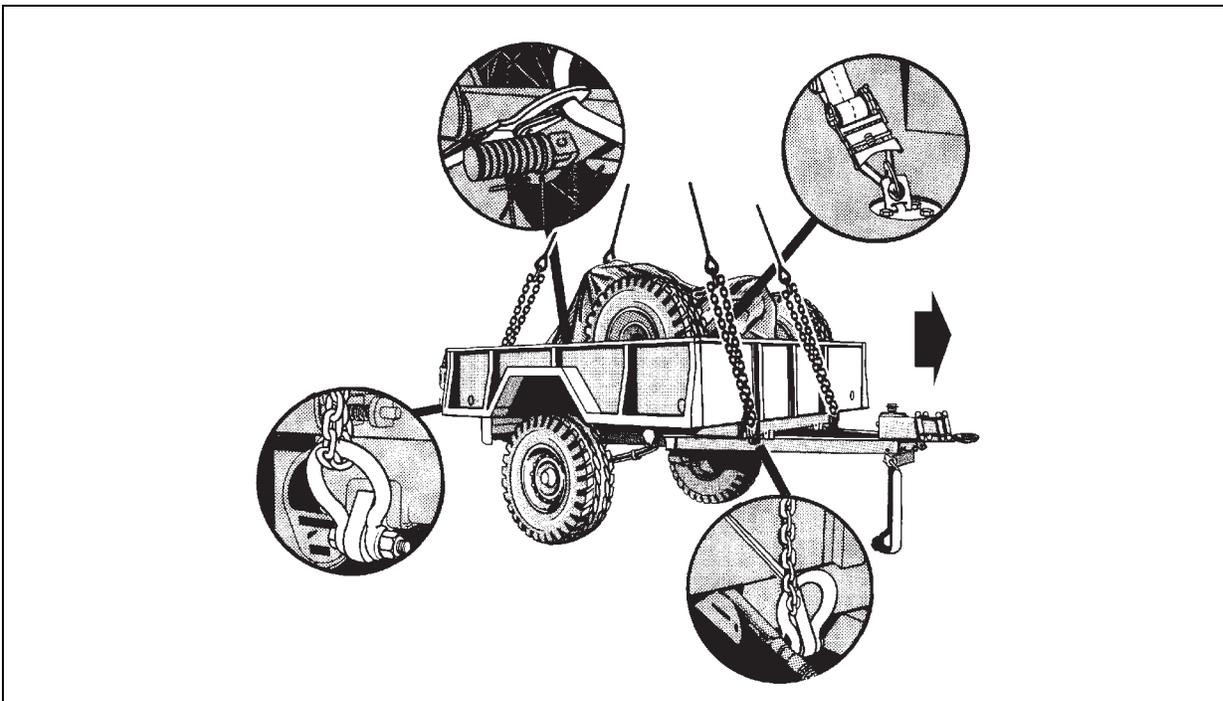


Figure 3-24. Desert Operation Trailer with Desert Operation Motorcycle

<b>RIGGING STEPS</b>
1. Position apex fitting on top of the motorcycle. Route outer sling legs 1 and 2 to the front of the trailer (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 front of the trailer. Place the correct link from Table 3-24 in the grab hook. Repeat with sling leg 2 through the right front lift provision. Secure the excess chain with Type III nylon cord.
3. Route the chain end of sling leg 3 over the tailgate and through the left rear lift provision located on the rear of the trailer. Place the correct link from Table 3-24 in the grab hook. Repeat with sling leg 4 through the right rear lift provision.
4. Secure the excess chain taut to the sidewall with Type III nylon cord.
5. Cluster and tie (breakaway technique) all sling legs together on top of the motorcycle to prevent entanglement during hookup and lift-off.

**Figure 3-24. Desert Operation Trailer with Desert Operation Motorcycle (Continued)**

## M332 AMMUNITION TRAILER, 1 1/2-TON

3-26. The M332, 1 1/2-ton ammunition trailer is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 3-25 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

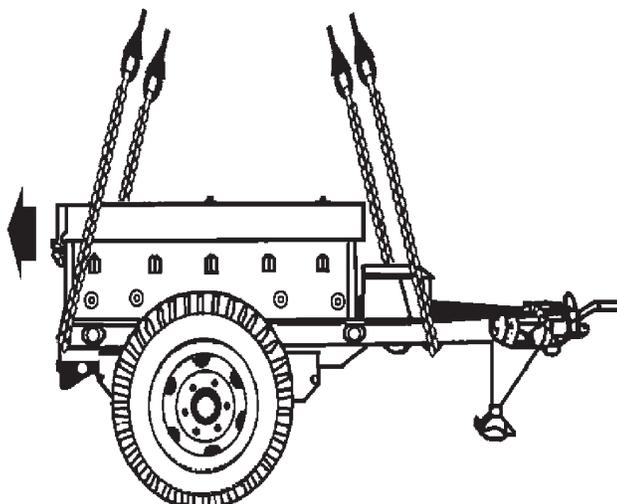
**Table 3-25. M332, 1 1/2-Ton Ammunition Trailer**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M332 Ammunition Trailer, 1 1/2-Ton	5,780	10K	10/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all loose items, lids, and caps with tape or Type III nylon cord.
    - Engage the hand brakes.
    - Tape or tie the light cable, safety chains, and brake hose to the top of the drawbar.
    - Place the telescoping leg in the down position.
  - **Rigging.** Rig the load according to the steps in Figure 3-25.
  - **Hookup.** The hookup team stands on the trailer bed. 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 carefully dismounts the vehicle and 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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position the apex fitting in the trailer bed. Route outer sling legs 1 and 2 to the front of the trailer (lunette end) and inner sling legs 3 and 4 to the rear (tailgate 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 left front lift provision located on the left side of the A-frame drawbar. Place the correct link from Table 3-25 in the grab hook. Repeat with sling leg 2 through the right front lift provision. Secure excess chain with tape or Type III nylon cord.
3. Route the chain end of sling leg 3 through the left rear lift provision (tailgate end). Place the correct link from Table 3-25 in the grab hook. Repeat with sling leg 4 through the right rear lift provision.
4. Cluster and tie or tape (breakaway technique) all sling legs together on top of the trailer to prevent entanglement during hookup and lift-off.

**Figure 3-25. M332, 1 1/2-Ton Ammunition Trailer**

### **AS-4492/TSC, LIGHTWEIGHT, HIGH GAIN, X-BAND ANTENNA (LHGXA) TRAILER**

3-27. The AS-4492/TSC, lightweight, high gain, X-band antenna trailer is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 3-26 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

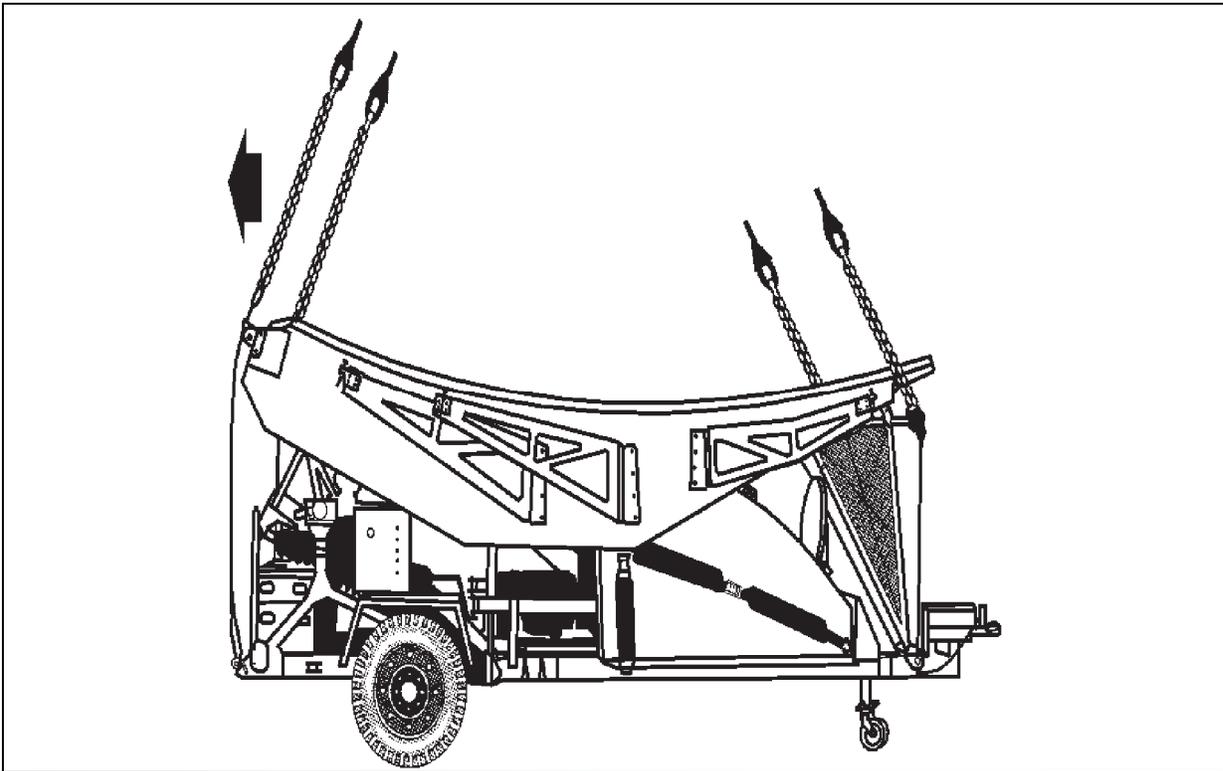
**Table 3-26. AS-4492/TSC, Lightweight, High Gain, X-band Antenna Trailer**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
AS-4492/TSC, Lightweight, High Gain, X-Band Antenna Trailer	3,820	10K	60/10

**WARNING**

**DO NOT SLING LOAD THE LHGXA IN THE DUAL POINT CONFIGURATION AS STRUCTURAL DAMAGE MAY OCCUR TO THE LOAD.**

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Additional apex fitting (10,000-pound capacity).
  - Polyester round sling, green, 17-foot (4,200-pound capacity) used as a vertical pendant.
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Prepare the LHGXA for sling loading in accordance with the operator's manual.
    - Install the shackles and lift cables in accordance with the operator's manual.
    - Tape or tie the light cable to the top of the drawbar.
    - Fully retract the rear trailer jacks. Lower the tongue jack to the position nearest the ground.
    - Engage the parking brake.
  - **Rigging.** Rig the load according to the steps in Figure 3-26.
  - **Hookup.** The hookup team stands beside 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 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

**Note.** This load is flown with the lunette facing aft at an approximate 12 degree angle.

1. Position the apex fitting beside the trailer. Route outer sling legs 1 and 2 to the front (lunette end) 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. Place the correct link from Table 3-26 in the grab hook. Repeat with sling leg 2 through the right front lift provision. Secure 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 3-26 in the grab hook. Repeat with sling leg 4 through the right rear lift provision. Secure excess chain with Type III nylon cord.
4. Pad each chain with felt padding. Secure the padding with tape.
5. Install a 17-foot polyester round sling on the bolt end of the apex fitting on the sling set. Tape the eye of the sling to prevent the apex fitting from rotating through the eye.
6. Place the free end of the 17-foot polyester round sling on the bell portion of the additional apex fitting. Tape the eye of the sling to prevent the apex fitting from rotating through the eye.
7. Cluster and tie (breakaway technique) all sling legs together on top of the trailer to prevent entanglement during hookup and lift-off.

**Figure 3-26. AS-4492/TSC, Lightweight, High Gain, X-band Antenna Trailer**

## M1112 400-GALLON WATER TRAILER

3-28. The M1112 400-gallon water trailer is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 3-27 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

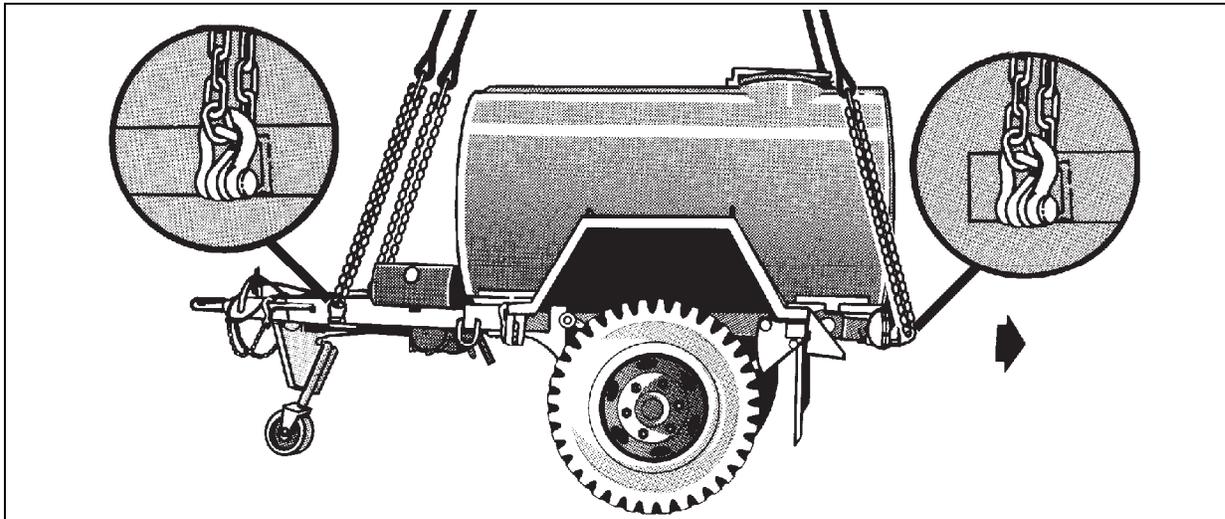
**Table 3-27. M1112 400-Gallon Water Trailer**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M1112 400 Gallon Water Trailer, (Empty)	3,860	10K	3/3

### CAUTION

This load is certified only when empty. Do not lift the trailer loaded.

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all loose chains, hoses, and cables to the trailer drawbar with tape or Type III nylon cord.
    - Ensure the tongue wheel is in the down and locked position.
    - Close and secure the tank lid.
    - Engage the parking brake.
  - **Rigging.** Rig the load according to the steps in Figure 3-27.
  - **Hookup.** The hookup team stands on the trailer fenders or the front 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 carefully dismounts the trailer and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position the apex fitting on top of the water tank. 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 3-27 in the grab hook. Repeat with sling leg 2 through the right front lift provision.
3. Route the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 3-27 in the grab hook. Repeat with sling leg 4 through the right rear lift provision.
4. Pad the chains where they make contact with the trailer.
5. Cluster and tie (breakaway technique) all sling legs together on top of the trailer to prevent entanglement during hookup and lift-off.

**Figure 3-27. M1112 400 Gallon Water Trailer**

**M1082 LIGHT MEDIUM TACTICAL VEHICLE (LMTV) AND M1095 MEDIUM TACTICAL VEHICLE (MTV) TRAILERS**

3-29. The M1082 light medium tactical vehicle and M1095 medium tactical vehicle trailers are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 3-28 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 3-28. M1082 Light Medium Tactical Vehicle and M1095 Medium Tactical Vehicle Trailers**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M1082 LMTV Trailer	11,510	25K	10/3
M1095 MTV Trailer	15,780	25K	10/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).

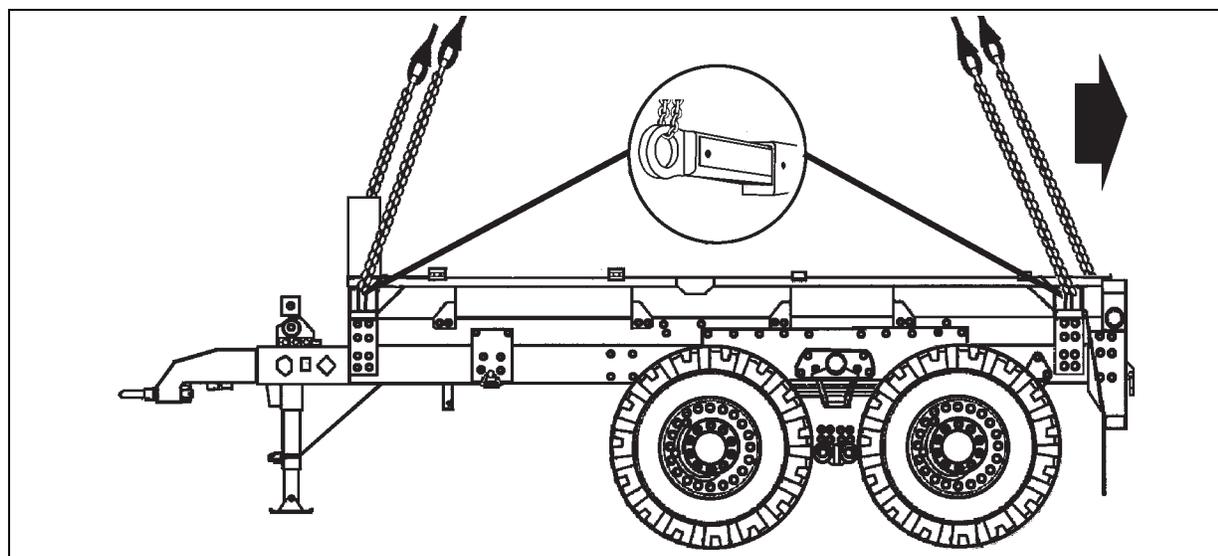
- Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- Cord, nylon, Type III, 550-pound breaking strength.
- Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Position the trailer's jack stand in the down position so the trailer sets level.
    - Secure all loose chains, hoses, and cables to the trailer drawbar with tape or Type III nylon cord.
    - Engage the parking brake.
    - Extend the lift provision bars to the widest position and lock into place with the locking pins. Secure the locking pins in place with tape.

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**Note.** Ensure the lift eyes on the lift provision bars are perpendicular to the ground.

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- Remove the side and end panels and stow in the storage boxes under the bed of the trailer. Secure the storage latches with tape.
- **Rigging.** Rig the load according to the steps in Figure 3-27.
- **Hookup.** The hookup teams stand in the bed of the trailer. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting on the cargo hook. The hookup team then carefully dismounts the trailer and 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 3-28. M1082 Light Medium Tactical Vehicle and M1095 Medium Tactical Vehicle Trailers**

<b>RIGGING STEPS</b>
1. Position the 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 provision bar located on the left front corner of the trailer (lunette end). Place the correct link from Table 3-28 in the grab hook. Repeat with sling leg 2 through the right front lift provision.
3. Loop the chain end of sling leg 3 through the left rear lift provision bar located on the left rear corner of the trailer. Place the correct link from Table 3-28 in the grab hook. Repeat with sling leg 4 through the right rear lift provision.
4. Secure all excess chain with tape or Type III nylon cord.

**Figure 3-28. M1082 Light Medium Tactical Vehicle and M1095 Medium Tactical Vehicle Trailers (Continued)**

## **SMALL PORTABLE EXPEDITIONARY AEROMEDICAL RAPID RESPONSE (SPEARR) TRAILER**

3-30. The small portable expeditionary aeromedical rapid response trailer is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 3-29 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 3-29. Small Portable Expeditionary Aeromedical Rapid Response Trailer**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Small Portable Expeditionary Aeromedical Rapid Response Trailer	6,100	10K	Listed in Rigging Steps

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Position the trailer's jack stand in the down position so the lunette is near the ground.
    - Secure all loose chains, hoses, and cables to the trailer drawbar with tape or Type III nylon cord.
    - Secure all lids, doors, and caps with tape or Type III nylon cord.
    - Ensure the stabilizer legs are retracted and stowed.
    - Release the curb side lift provisions from the stowage straps. Secure the stowage straps to the trailer with tape.

- **Rigging.** Rig the load according to the steps in Figure 3-29.
- **Hookup.** The hookup teams stand on the roof of the trailer. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting on the cargo hook. The hookup team then carefully dismounts the trailer and 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.

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*Note.* This load is flown with the rear of the trailer facing forward.

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- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

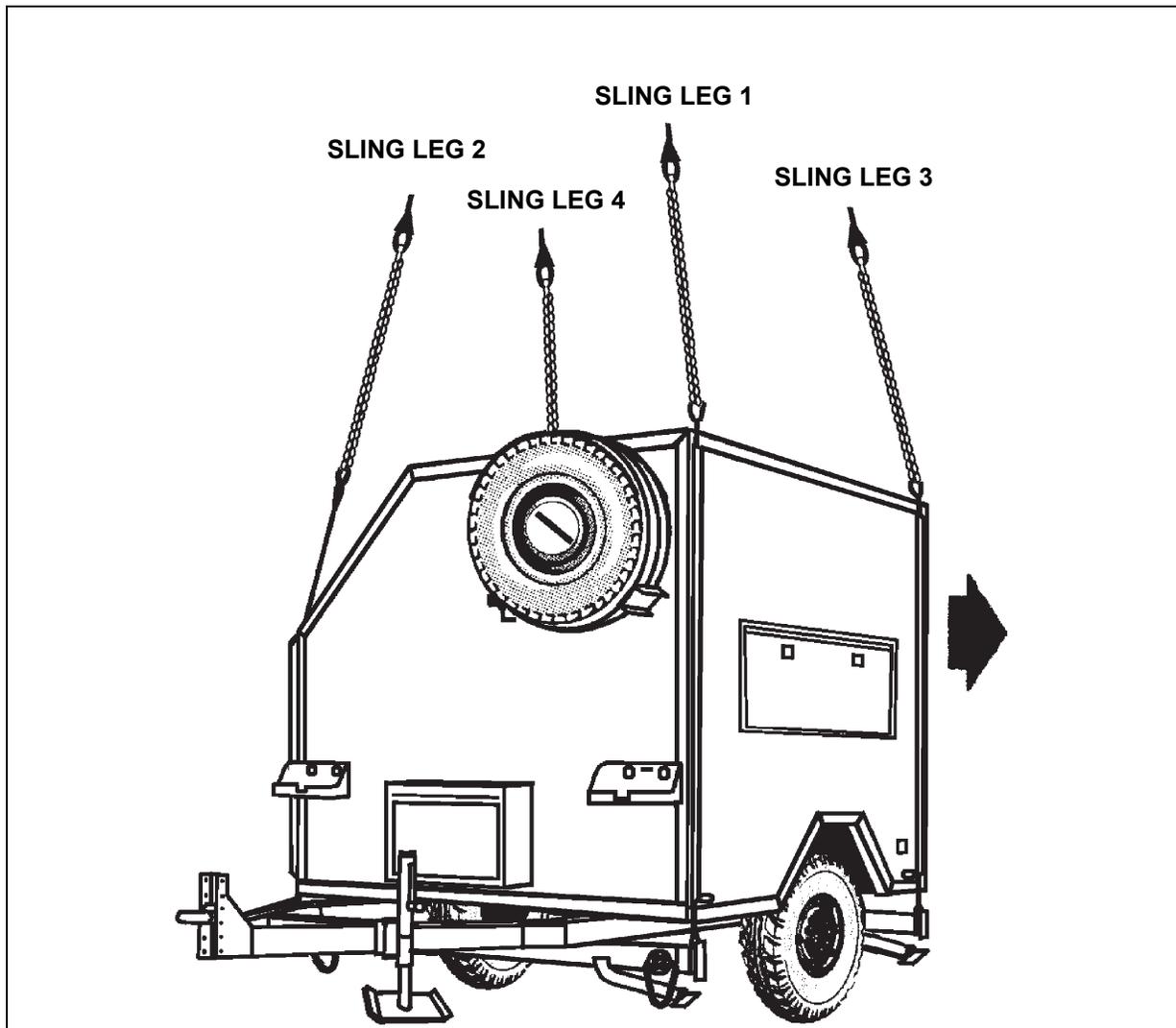


Figure 3-29. Small Portable Expeditionary Aeromedical Rapid Response Trailer

<b>RIGGING STEPS</b>
1. Position the apex fitting on top of the trailer roof. Route outer sling legs 1 and 2 to the front of the trailer (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 trailer roof (lunette end). Place link 20 in the grab hook.
3. Loop the chain end of sling leg 2 through the right front lift provision located on the right front corner of the trailer roof (lunette end). Place link 30 in the grab hook.
4. Loop the chain end of sling leg 3 through the left rear lift provision located on the left rear corner of the trailer roof. Place link 3 in the grab hook.
5. Loop the chain end of sling leg 4 through the right rear lift provision located on the right rear corner of the trailer roof. Place link 10 in the grab hook.
6. Secure all excess chain with tape or Type III nylon cord.
7. Cluster and tie or tape (breakaway technique) the sling legs in each sling set together to prevent entanglement during hookup and lift-off.

**Figure 3-29. Small Portable Expeditionary Aeromedical Rapid Response Trailer (Continued)**

## MINIMUM OPERATING STRIP LIGHTING SYSTEM (MOSLS)

3-31. The minimum operating strip lighting system is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 3-30 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 3-30. Minimum Operating Strip Lighting System**

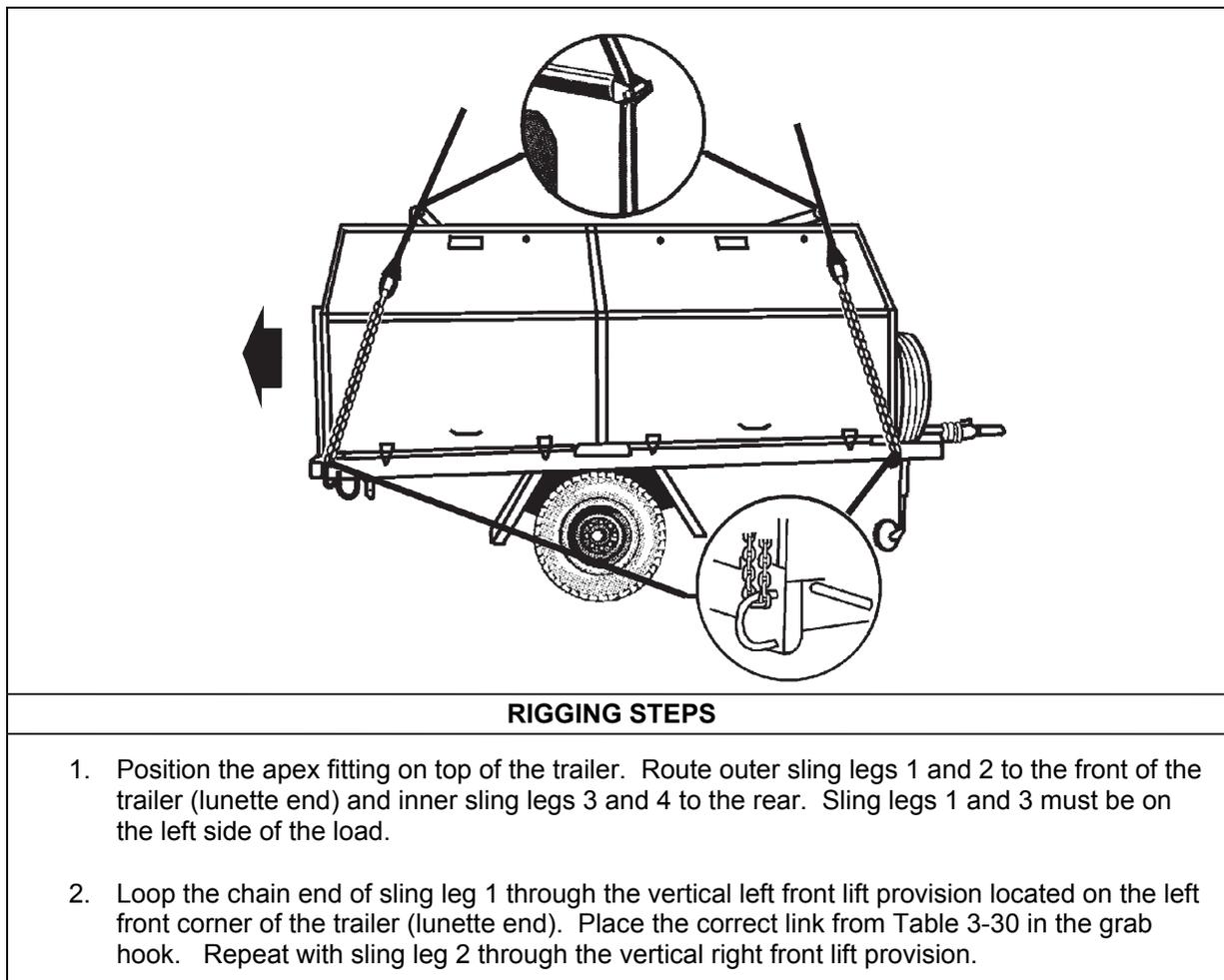
<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Minimum Operating Strip Lighting System with Spreader Bars	3,350	15K	10/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (15,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Padding, cellulose.
  - Spreader bar, HMMWV (2 each).
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Position the trailer's jack stand in the down position so the lunette is near the ground.

- Secure all loose chains, hoses, and cables to the trailer drawbar with tape or Type III nylon cord.
- Secure all lids, doors, and caps with tape or Type III nylon cord.
- Ensure the stabilizer legs are retracted and stowed.
- Engage the parking brake.
- **Rigging.** Rig the load according to the steps in Figure 3-30.
- **Hookup.** The hookup teams stand on the roof of the trailer. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting on the cargo hook. The hookup team then carefully dismounts the trailer and 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.* This load is flown with the rear of the trailer facing forward.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 3-30. Minimum Operating Strip Lighting System**

RIGGING STEPS
3. Loop the chain end of sling leg 3 through the vertical left rear lift provision located on the left rear corner of the trailer. Place the correct link from Table 3-30 in the grab hook. Repeat with sling leg 4 through the vertical right rear lift provision.
4. Secure all excess chain with Type III nylon cord.
5. Extend the sling set above the trailer. Position the spreader bar between the front slings 6-inches above the trailer roof. Secure the spreader bar to the slings with Type III nylon cord and tape. Repeat the procedure with the second spreader bar and the rear slings.
6. Cluster and tie (breakaway technique) the sling legs in each sling set together to prevent entanglement during hookup and lift-off.

**Figure 3-30. Minimum Operating Strip Lighting System (Continued)**

## ASSAULT COMMAND POST WITH HIGH MOBILITY WHEEL SET

3-32. The assault command post with high mobility wheel set is rigged for single-point sling load using the following procedures:

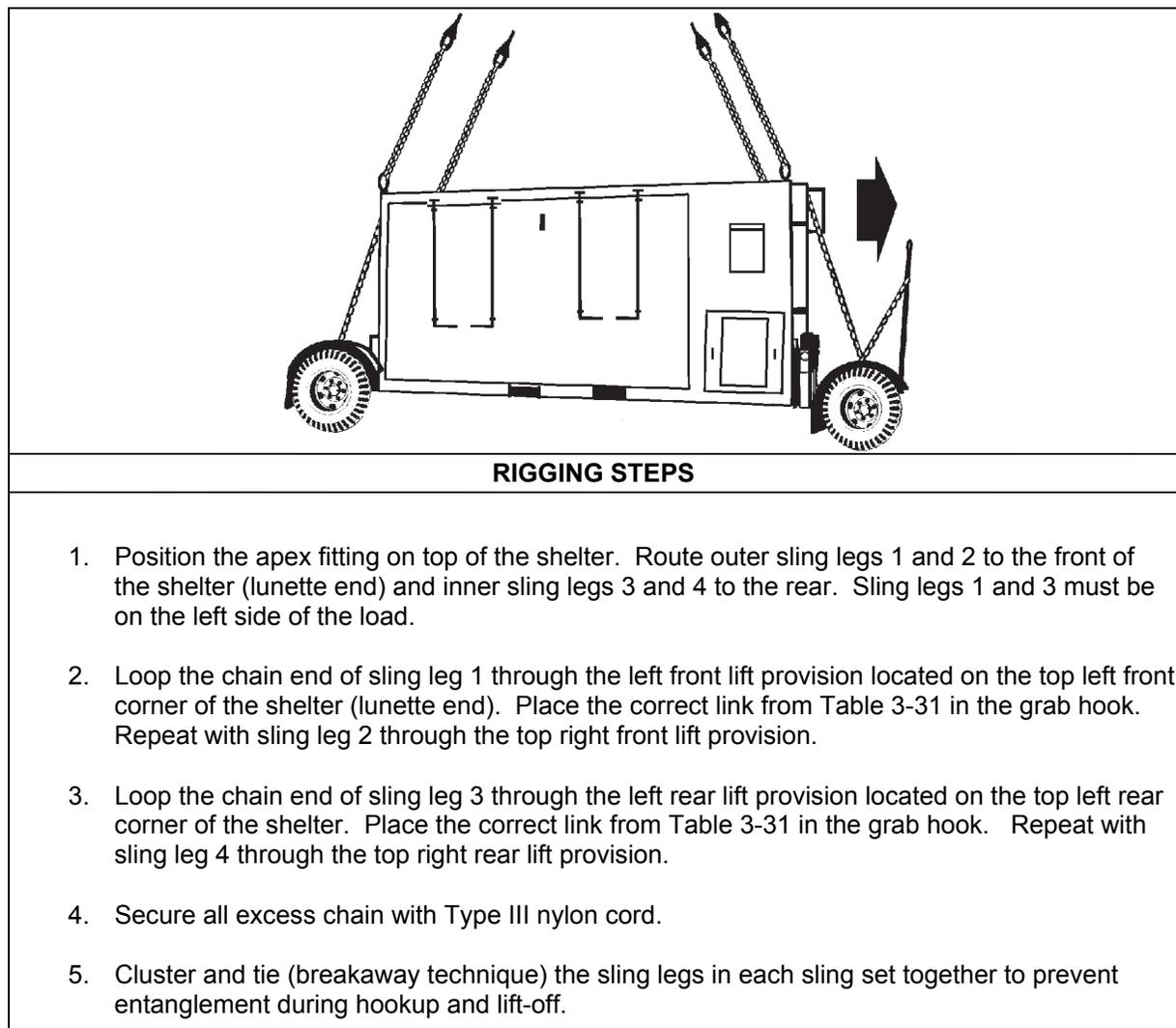
- **Applicability.** The following items in Table 3-31 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 3-31. Assault Command Post with High Mobility Wheel Set**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Assault Command Post, Housed in Expandable Light Airmobile Shelter with High Speed Mobile Wheel Set	13,240	25K	ECU is Front 3/3
Upgraded, Assault Command Post, Housed in Expandable Light Airmobile Shelter with High Speed Mobile Wheel Set	14,600	25K	ECU is Front 3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Ensure manufacturer approved tiedown assemblies (2 each) are in place between the shelter and each wheel set.
    - Remove all antennas and secure inside the shelter.
    - Secure all lids, doors, and caps with tape or Type III nylon cord.
    - Secure all loose equipment inside the shelter with tape, lashings, or Type III nylon cord.
    - Secure the tow bar in the up position.
  - **Rigging.** Rig the load according to the steps in Figure 3-31.

- **Hookup.** The hookup team stands on the roof of the shelter. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting on the cargo hook. The hookup team then carefully dismounts the trailer and 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 3-31. Assault Command Post with High Mobility Wheel Set**

## TRAILER SUPPORT SYSTEM WITH EXPEDITIONARY SHELTER

3-33. The trailer support system with expeditionary shelter is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 3-32 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

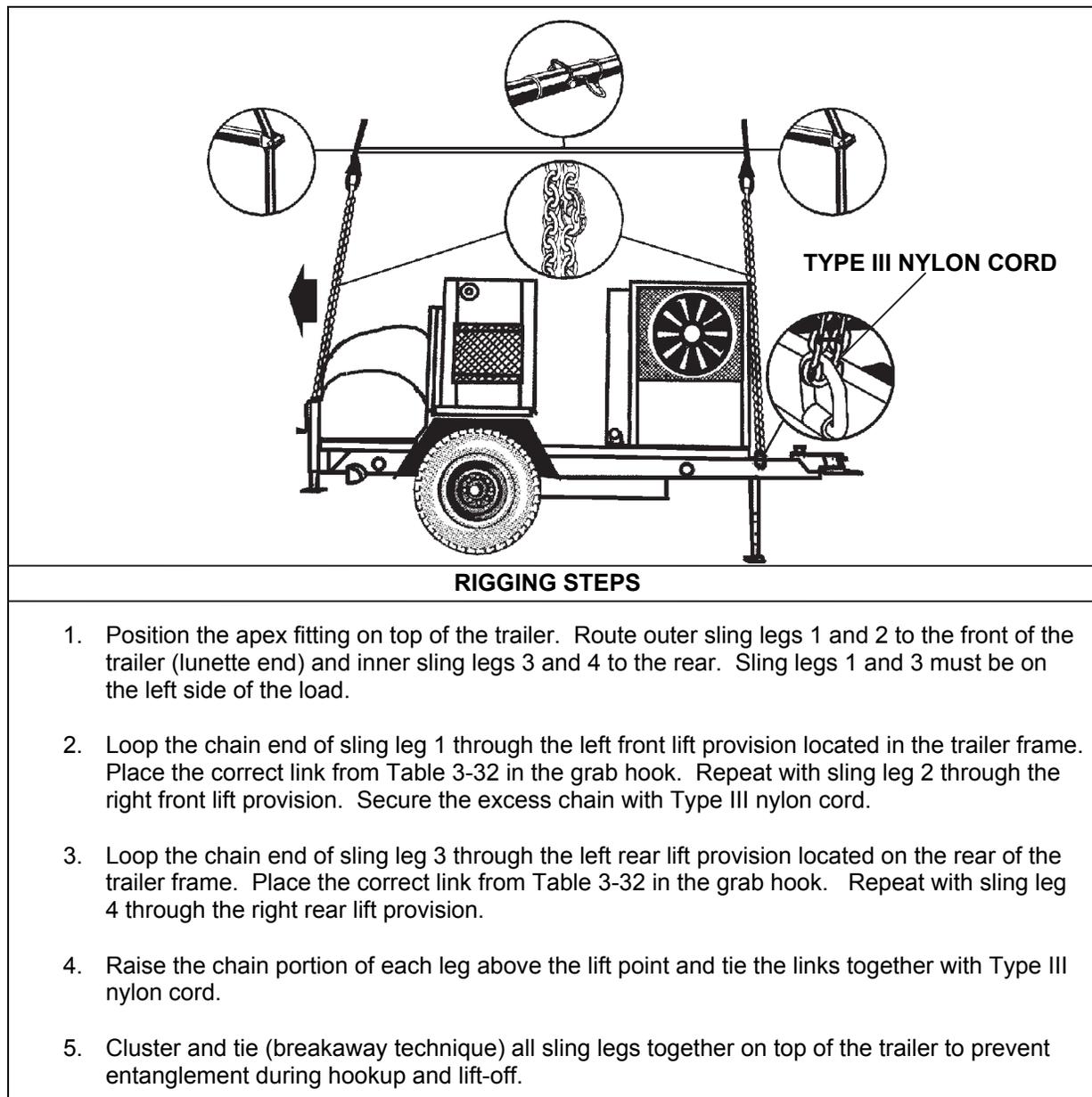
**Table 3-32. Trailer Support System with Expeditionary Shelter**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Trailer Support System (TSS 2000655) on Crash-Out-Package System (COPS) Trailer with Base-X Expeditionary Shelter	4,320	10K	20/5

**CAUTION**

The fuel tank must have the modified cap to prevent fuel from leaking through the fuel cap vent. If the cap is not modified the tank must be drained.

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
    - Chain length, part number 38850-00053-101, from a 10,000-pound capacity sling set (4 each).
    - Coupling link, NSN 4010-01-231-3388, from a 10,000-pound sling set (4 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Spreader bar assembly (component of M996/M997 HMMWV ambulance) (NSN 4910-01-313-8839) (2 each).
  - Strap, cargo tiedown, CGU-1/B (as required).
- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Extend the sling leg chains by connecting one additional chain length to each chain on a 10,000-pound capacity sling set with coupling links.
    - Engage both trailer parking brakes.
    - Secure all chains, hoses, and cables with Type III nylon cord to the trailer drawbar.
    - Secure tents and all loose equipment with CGU-1/B cargo tiedown straps.
    - Close and secure all doors, latches, and caps with tape or Type III nylon cord.
    - Secure or remove and stow the intake duct cover.
    - Fully retract the stabilizer legs.
    - Lower the front jack so the lunette is close to the ground.
  - **Rigging.** Rig the load according to the steps in Figure 3-32.
  - **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 cargo hook. The hookup team then carefully dismounts the trailer and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 3-32. Trailer Support System with Expeditionary Shelter**

## SHADOW TACTICAL UNMANNED AERIAL VEHICLE (TUAV), LAUNCHER/RECOVERY TRAILER (L/R-T)

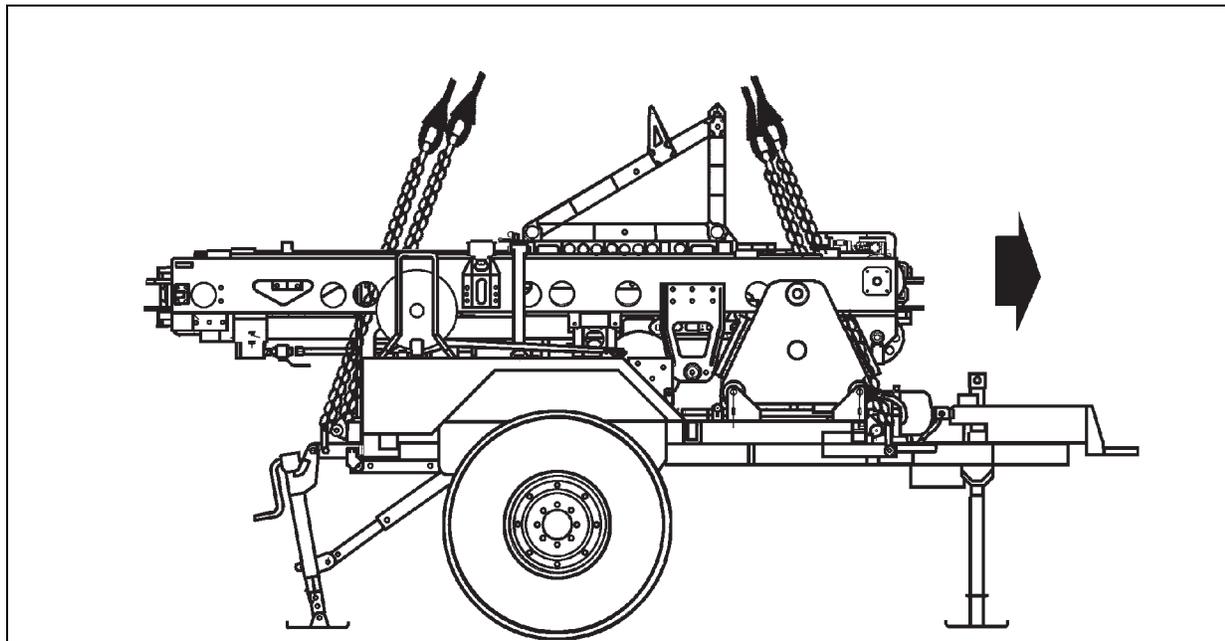
3-34. The shadow tactical unmanned aerial vehicle, launcher/recovery trailer is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 3-33 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 3-33. Shadow Tactical Unmanned Aerial Vehicle Launcher/Recovery Trailer**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Shadow Tactical Unmanned Aerial Vehicle Launcher/Recovery Trailer	4,100	10K	3/15

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Strap, cargo tiedown, CGU-1/B (as required).
- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Lower and fully retract the trailer's rear landing legs. Secure the stowage straps with tape or Type III nylon cord.
    - Ensure the rear lift provisions are positioned above the rear trailer landing legs.
    - Lower the front jack so the lunette is close to the ground and secure with Type III nylon cord.
    - Close and secure all doors, latches, and caps with tape or Type III nylon cord.
    - Secure the beam support segments to the rails with Type III nylon cord.
    - Secure the shuttle in the stowed position.
    - Engage both trailer parking brakes.
    - Secure all chains, hoses, and cables with Type III nylon cord to the trailer drawbar.
  - **Rigging.** Rig the load according to the steps in Figure 3-33.
  - **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 cargo hook. The hookup team then carefully dismounts the trailer and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



#### RIGGING STEPS

1. Position the apex fitting on top of the trailer. Route outer sling legs 1 and 2 to the front of the trailer (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. Ensure the sling legs are routed between the launcher rails.
2. Loop the chain end of sling leg 1 through the left front lift provision located in the trailer frame. Place the correct link from Table 3-33 in the grab hook. Repeat with sling leg 2 through the right front lift provision. Secure the excess chain with Type III nylon cord.
3. Loop the chain end of sling leg 3 through the left rear lift provision located on the rear of the trailer frame. Place the correct link from Table 3-33 in the grab hook. Repeat with sling leg 4 through the right rear lift provision.
4. Place the nylon rope of sling legs 1 and 3 in the guides on the end of spreader bar 1 and install the spreader bar guide retainer pins and keepers. Lay the spreader bar on left top of the load. Repeat with sling legs 2 and 4 with spreader bar 2 on the right side of the load.
5. Raise the chain portion of each leg until the chain is tight and secure each chain to the launch rail with Type I 1/4-inch cotton webbing.
6. Cluster and tie (breakaway technique) all sling legs together on top of the launcher rails to prevent entanglement during hookup and lift-off.

**Figure 3-33. Shadow Tactical Unmanned Aerial Vehicle Launcher/Recovery Trailer**

## SMALL EMPLACEMENT EXCAVATOR (SEE) TRANSPORTER (TRAILER)

3-35. The small emplacement excavator transporter is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 3-34 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 3-34. Small Emplacement Excavator Transporter**

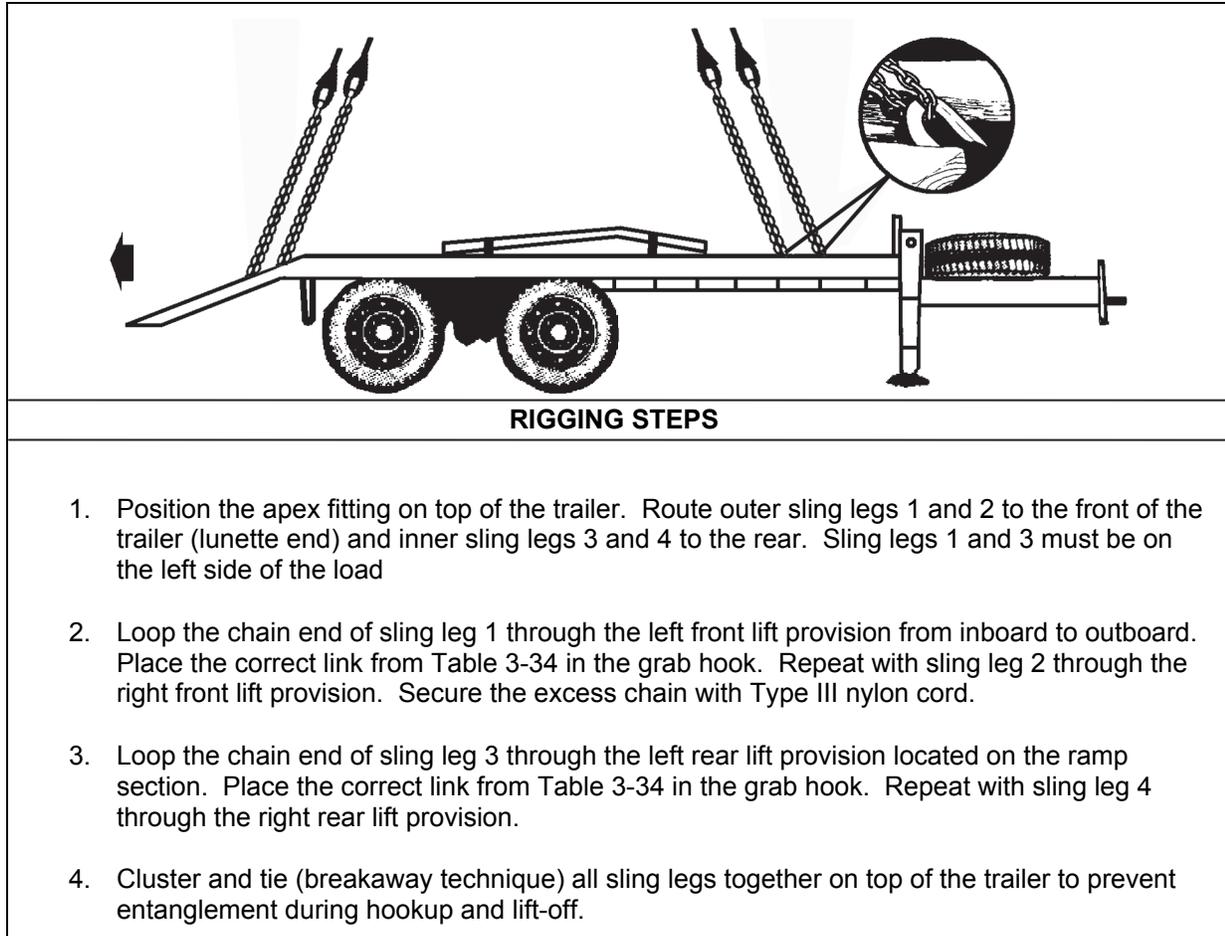
<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Transporter (Trailer), SEE, 2-Axle, 20,000-Pound Capacity	10,800	15K	30/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (15,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Strap, cargo tiedown, CGU-1/B (as required).
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Position the trailer with the rear of the trailer facing forward in the direction of flight.
    - Secure the ramps and equipment on the trailer bed with chains, tiedowns, or Type III nylon cord.

### CAUTION

Ensure the equipment or cargo on the trailer bed does not interfere with the routing of the sling legs.

- Ensure the spare tire is properly inflated.
- Rotate the rubber mud flaps to the up stowed position.
- **Rigging.** Rig the load according to the steps in Figure 3-34.
- **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 cargo hook. The hookup team then carefully dismounts the trailer and 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 3-34. Small Emplacement Excavator Transporter)**

## TRAILER MOUNTED ENVIRONMENTAL CONTROL SYSTEM (TMECS)

3-36. The trailer mounted environmental control system is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 3-35 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 3-35. Trailer Mounted Environmental Control System**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Trailer Mounted Environmental Control System	4,200	10K	15/3

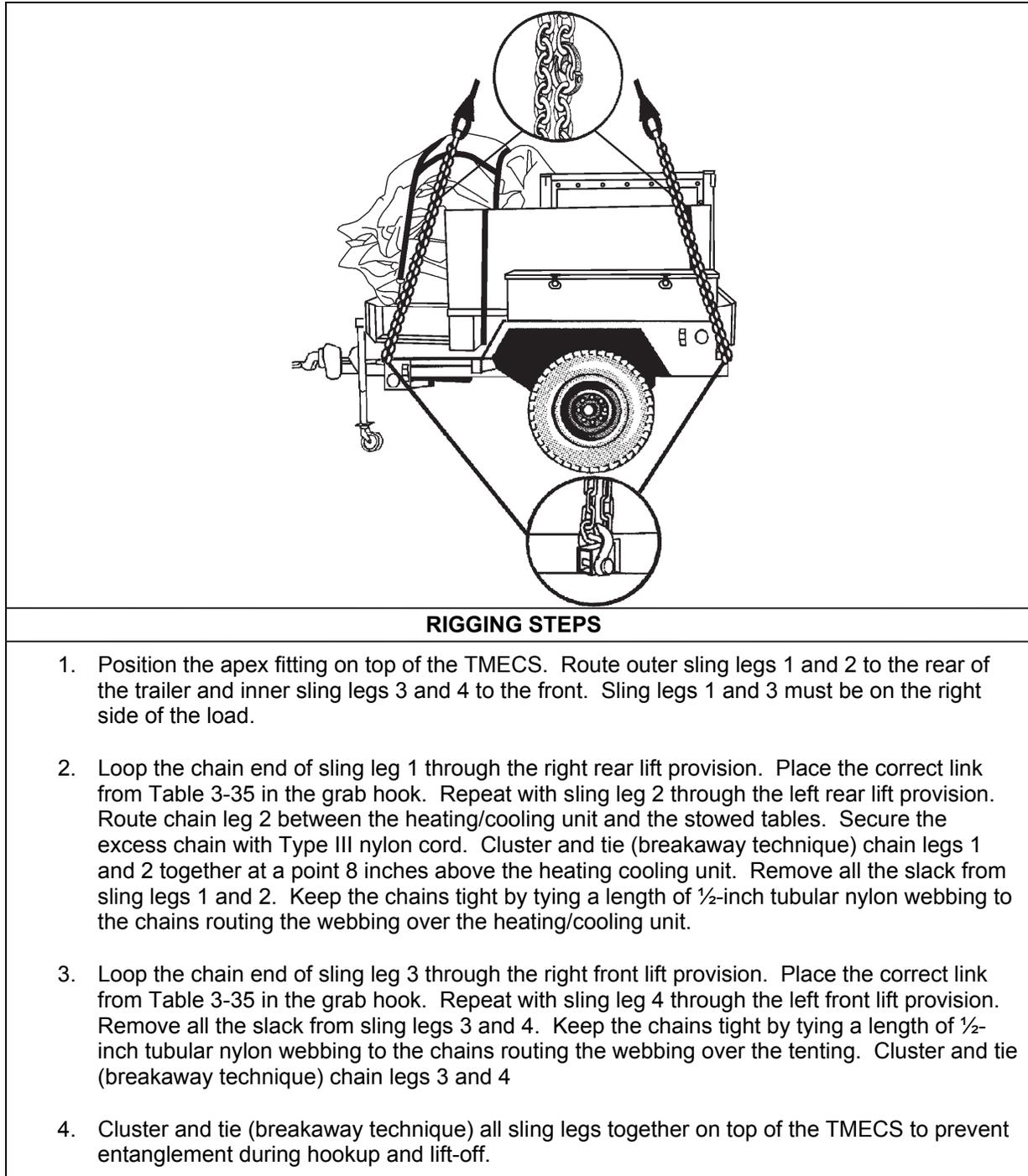
- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
    - Chain length, part number 38850-00053-101, from a 10,000-pound capacity sling set (4 each).
    - Coupling link, part number 577-0615, from a 10,000-pound sling set (4 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Webbing, nylon tubular, 1/2-inch, 1000-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Engage the parking brake.
    - Secure the brake hoses and safety chains to the top of the drawbar with Type III nylon cord.
    - Secure all lids, doors, caps, hoses, cords, and the table with tape or Type III nylon cord.
    - Secure the four lift rings on the trailer in the up position to a convenient point on the load with Type I 1/4-inch cotton webbing.
  - **Rigging.** Rig the load according to the steps in Figure 3-35.

*Note.* This load flies with the aft facing the direction of flight.

- **Hookup.** The hookup team stands on top of the TMECS. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the cargo hook. The hookup team then carefully dismounts the trailer and 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

### CAUTION

The hookup team should dismount the trailer towards the lunette to keep the trailer from tipping to the rear.



**Figure 3-35. Trailer Mounted Environmental Control System**

## PETROLEUM QUALITY ANALYSIS SYSTEM (PQAS) TRAILER

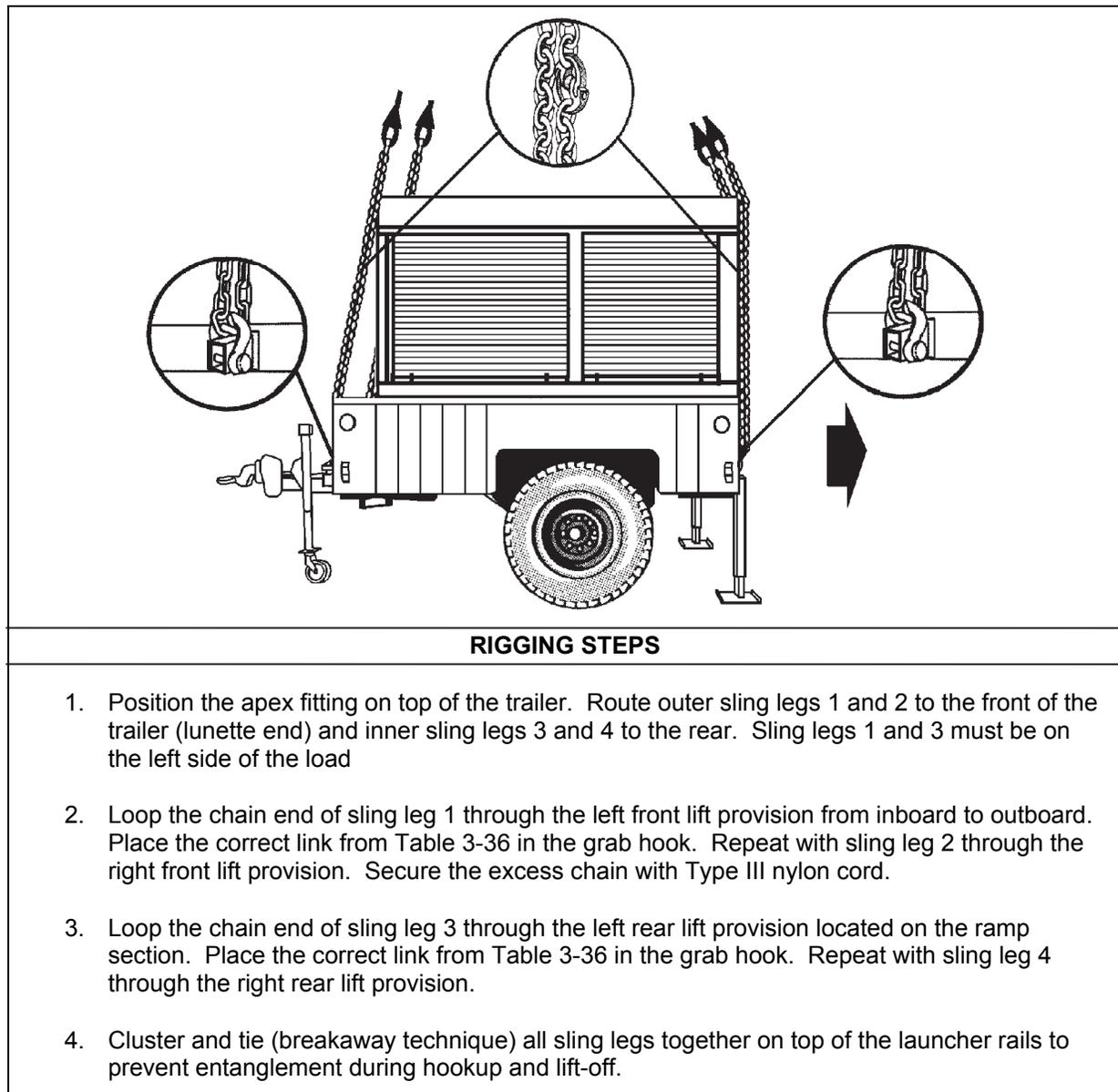
3-37. The petroleum quality analysis system trailer is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 3-36 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 3-36. Petroleum Quality Analysis System Trailer**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Petroleum Quality Analysis System Trailer	3,380	10K	35/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
    - Chain length, part number 38850-00053-101, from a 10,000-pound capacity sling set (4 each).
    - Coupling link, part number 577-0615, from a 10,000-pound sling set (4 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Webbing, nylon tubular, 1/2-inch, 1000-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all loose equipment inside the trailer with tape, Type III nylon cord, or tiedown straps. Close and lock all doors.
    - Fully extend the lunette wheel and secure in place with tape or Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 3-36.
  - **Hookup.** The hookup team stands on top of the PQAS trailer. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the cargo hook. The hookup team then carefully dismounts the trailer and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 3-36. Petroleum Quality Analysis System Trailer**

## Chapter 4

# Certified Single-Point Rigging Procedures for Trailers with Mounted Generators

## INTRODUCTION

4-1. This chapter contains rigging procedures for single-point trailer loads with mounted generators that have 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 trailer loads with mounted generators are in this section. Paragraphs 4-2 through 4-10 give detailed instructions for rigging loads.

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*Note.* Reach pendants may be used on all single point loads. A static discharge person is not required when using a reach pendant.

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## M353 TRAILER CHASSIS WITH MOUNTED GENERATORS

4-2. The M353 trailer chassis with mounted generators is rigged for single-point sling load using the following procedures:

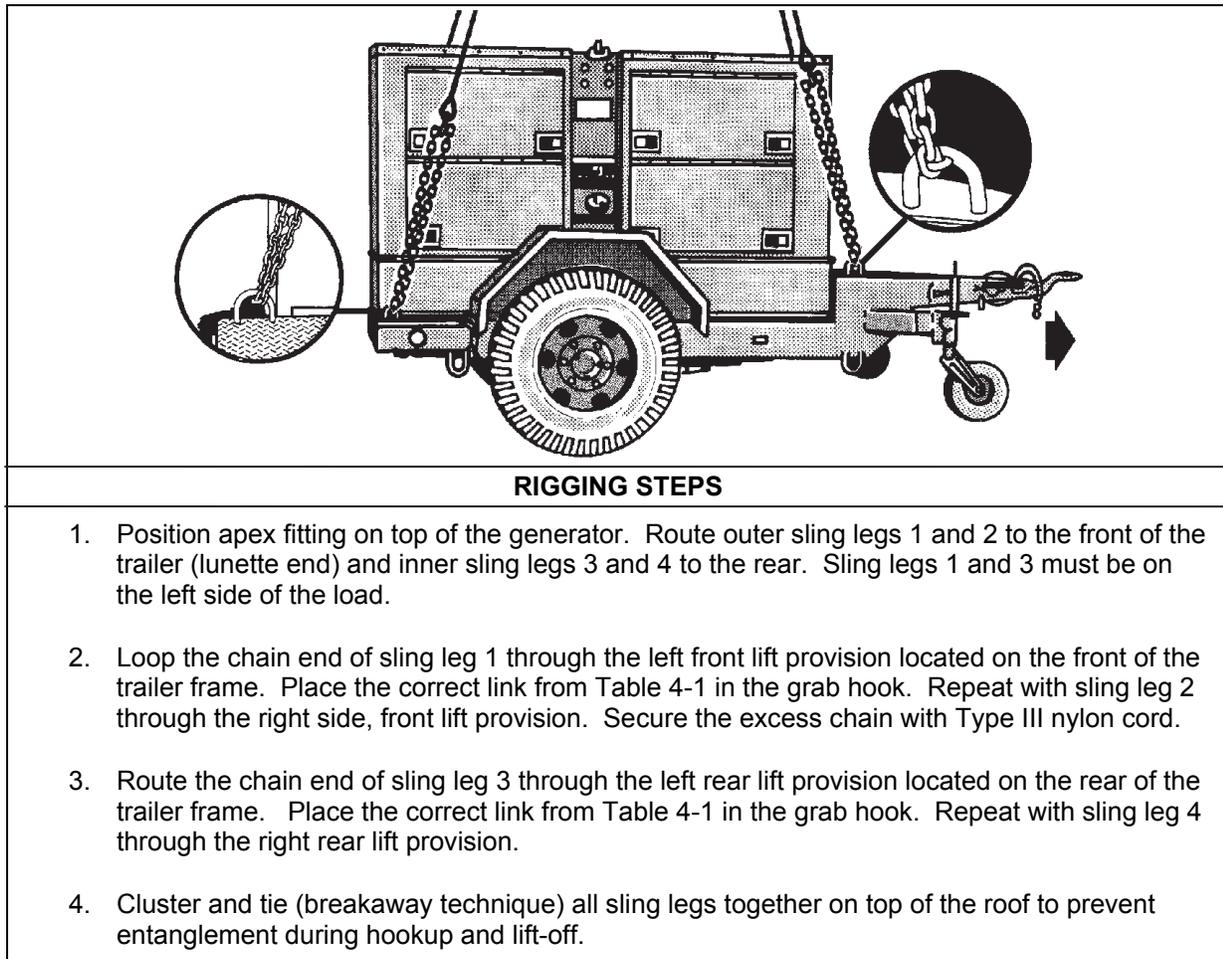
- **Applicability.** The following items in Table 4-1 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 4-1. M353 Trailer Chassis with Mounted Generators**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M353 Trailer Chassis	2,720	10K	20/3
MEP-005A	6,220	10K	20/3
MEP-006A	7,720	10K	20/3
MEP-0114A	6,220	10K	20/3
MEP-0115A	6,320	10K	20/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Engage both hand brakes.
    - Secure safety chains and brake hoses to the top of the drawbar with Type III nylon cord.
    - Secure all lids, doors, and caps with tape or Type III nylon cord.

- **Rigging.** Rig the load according to the steps in Figure 4-1.
- **Hookup.** The hookup team stands on top of the generator. 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 carefully dismounts the trailer and 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 4-1. M353 Trailer Chassis with Mounted Generators**

## **M200A1 TRAILER-MOUNTED POWER UNITS, GENERATORS, AND POWER PLANTS**

4-3. The M200A1 trailer-mounted power units, generators, and power plants are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 4-2 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 4-2. M200A1 Trailer-Mounted Power Units, Generators, and Power Plants**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Generator set, 15 kW, 6113	5,119	10K	3/23
Generator set, 30 kW, CE301ACWK1	5,625	10K	3/28
Generator set, 45 kW, 52300	6,885	10K	3/30
Generator set, 60 kW, MEP-006A	7,347	10K	3/33
AN/MJQ-12A, Unit A, 60 kW, 50/60 Hz Power Unit with MEP 006A, 60 kW, 50/60 Hz, generator set with switch box	8,060	10K	10/3
AN/MJQ-12A, Unit B, 60 kW, 50/60 Hz Power Unit with MEP 806A, 60 kW, 50/60 Hz, generator set (no switch box)	7,980	10K	10/3
AN/MJQ-39, Unit A, 15 kW, 400 Hz Power Unit with MEP 814A, 15 kW, 400 Hz, generator set with switch box	5,255	10K	3/3
AN/MJQ-39, Unit B, 15 kW, 400 Hz Power Unit with MEP 814A, 15 kW, 400 Hz, generator set (no switch box)	5,255	10K	3/3
AN/MJQ-40, Unit A, 30 kW, 50/60 Hz Power Unit with MEP 805A, 30 kW, 50/60 Hz, generator set with switch box	6,100	10K	3/3
AN/MJQ-40, Unit B, 30 kW, 50/60 Hz Power Unit with MEP 805A, 30 kW, 50/60 Hz, generator set (no switch box)	6,100	10K	3/3
AN/MJQ-40B, Unit A, PU-803B/G, PU-804B/G	7,410	10K	3/3
AN/MJQ-40B, Unit B, PU-803B/G, PU-804B/G	7,410	10K	3/3
AN/MJQ-41, Unit A, 60 kW, 50/60 Hz Power Unit with MEP 806A, 60 kW, 50/60 Hz, generator set with switch box	6,720	10K	3/3
AN/MJQ-41, Unit B, 60 kW, 50/60 Hz Power Unit with MEP 806A, 60 kW, 50/60 Hz, generator set (no switch box)	6,720	10K	3/3
AN/MJQ-41B, Unit A, PU-805B/G, PU-806B/G	7,410	10K	3/3
AN/MJQ-41B, Unit B, PU-805B/G, PU-806B/G	7,410	10K	3/3
PU-405 A/M Power Unit, 15 kW, without acoustic suppression kit (ASK)	6,119	10K	3/33
PU-405 A/M Power Unit, 15 kW, with acoustic suppression kit (ASK)	6,740	10K	3/28
PU-406 B/M Power Unit, 30 kW, with acoustic suppression kit (ASK)	7,520	10K	3/28
PU-650 B/G, 60 kW , 50/60 Hz Power Unit with MEP 006A, 60 kW, 50/60 Hz generator set	7,800	10K	10/3
PU-707 A/M, 60 kW , 400 Hz Power Unit with MEP 115A, 60 kW, 400 Hz generator set	7,800	10K	10/3
PU-732 Power Unit, 15 kW, with acoustic suppression kit (ASK)	6,690	10K	3/28
PU-760 Power Unit, 30 kW, with acoustic suppression kit (ASK)	7,240	10K	3/28
PU-800, 15 kW, 400 Hz Power Unit with MEP 814A, 15 kW, 400 Hz, generator set	5,255	10K	3/3
PU-802, 15 kW, 50/60 Hz Power Unit with MEP 804A, 15 kW, 50/60 Hz, generator set	5,320	10K	3/3
PU-803, 30 kW, 50/60 Hz Power Unit with MEP 805A, 30 kW, 50/60 Hz, generator set	6,100	10K	3/3

Table 4-2. M200A1 Trailer-Mounted Power Units, Generators, and Power Plants (Continued)

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
PU-804, 30 kW, 400 Hz Power Unit with MEP 815A, 30 kW, 400 Hz, generator set	6,130	10K	3/3
PU-805, 60 kW, 50/60 Hz Power Unit with MEP 806A, 60 kW, 50/60 Hz, generator set	7,120	10K	3/3
PU-806, 60 kW, 400 Hz Power Unit with MEP 816A, 60 kW, 400 Hz, generator set	7,215	10K	3/3
PU-794/G Regency Net Power Unit	6,600	10K	3/18

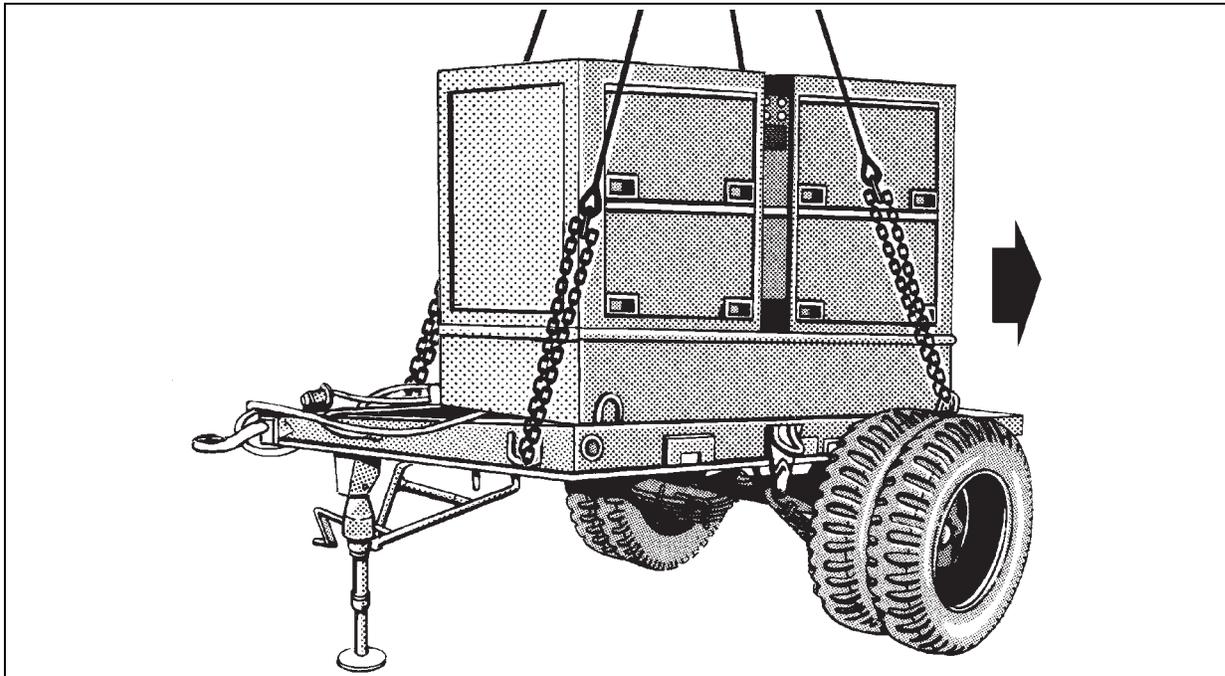
- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
  - Tie-down strap, CGU/1B (as required).
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
  - **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Lower the lunette as far as possible.
    - Engage both hand brakes.
    - Secure safety chains and brake hoses to the top of the drawbar with Type III nylon cord.
    - Secure all lids, doors, and caps with tape or type III nylon cord.
    - Secure the fire extinguisher (if installed) with Type III nylon cord.
    - Secure the landing legs in the up position with the safety pins. Secure the safety pins with tape.
    - Place additional cargo as close to the center of the trailer as possible. The cargo must not contact the sling legs during lift-off or flight.

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**Note.** The load must not weigh more than the maximum allowable weight during sling load operations.

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- **Rigging.** Rig the load according to the steps in Figure 4-2.
- **Hookup.** The hookup team stands on top of the generator. 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 carefully dismounts the trailer and 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting on top of the generator. Route outer sling legs 1 and 2 to the front of the trailer (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 front of the trailer frame. Place the correct link from Table 4-2 in the grab hook. Repeat with sling leg 2 through the right side, 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 rear of the trailer frame. Place the correct link from Table 4-2 in the grab hook. Repeat with sling leg 4 through the right rear lift provision.
4. Cluster and tie (breakaway technique) all sling legs together on top of the roof to prevent entanglement during hookup and lift-off.

**Figure 4-2. M200A1 Trailer-Mounted Power Units, Generators, and Power Plants**

**M103A3 TRAILER-MOUNTED POWER UNITS, GENERATORS, AND POWER PLANTS**

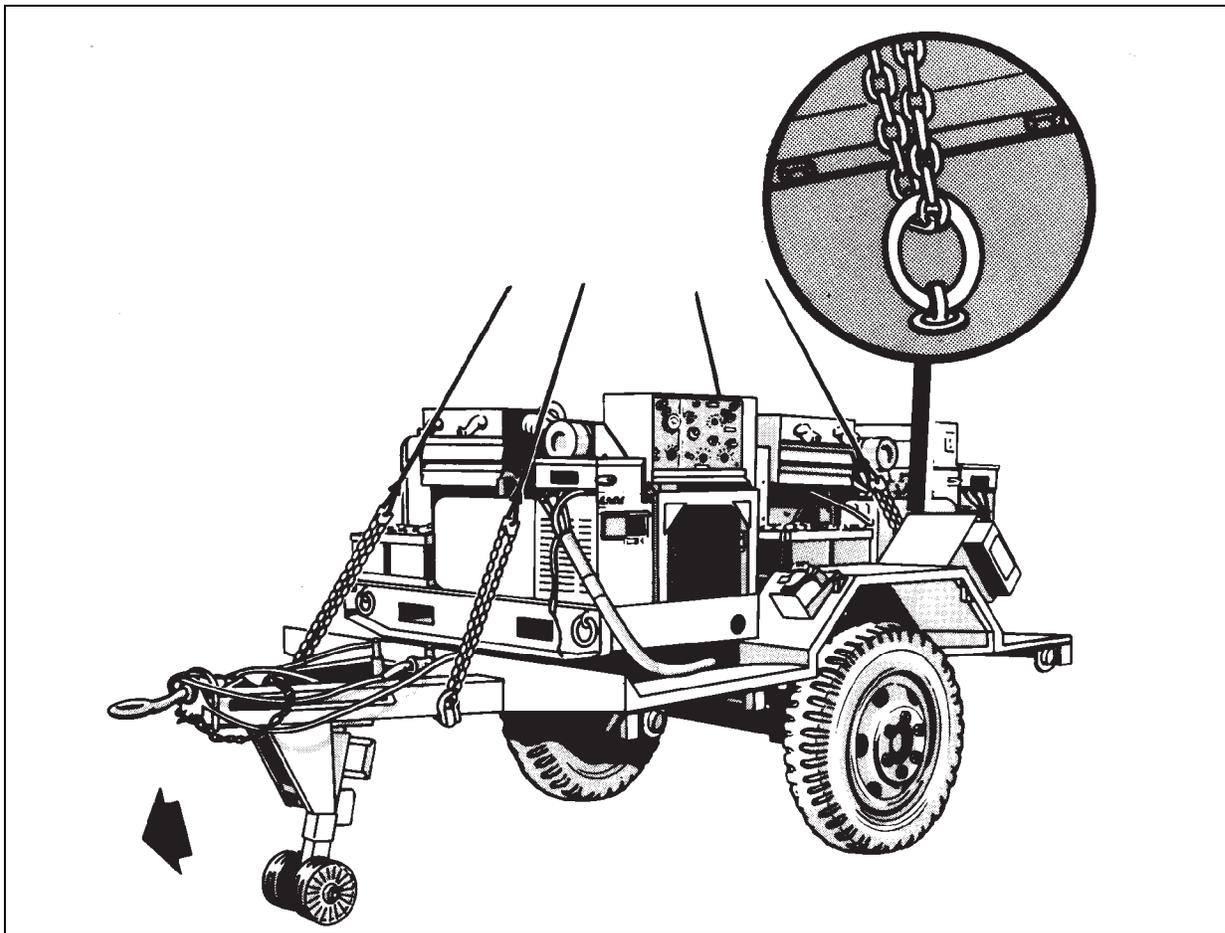
4-4. The M103A3 trailer-mounted power units, generators, and power plants are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 4-3 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center :

Table 4-3. M103A3 Trailer-Mounted Power Units, Generators, and Power Plants

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
AN/MJQ-16 Power Unit, 5 kW, 60 Hz	5,100	10K	5/10
AN/MJQ-18 Power Unit, 10 kW, 60 Hz	5,765	10K	5/10
AN/MJQ-25 Power Unit, 10 kW, 400 Hz	5,750	10K	5/10

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
  - Tie-down strap, CGU/1B (as required).
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Remove the canvas top and bows. Secure the top and bows on the generator trailer or coordinate the transportation for the canvas top and bows.
    - Ensure the fuel tank is less than 3/4 full.
    - Engage both hand brakes.
    - Secure safety chains and brake hoses to the top of the drawbar with Type III nylon cord.
    - Secure all lids, doors, and caps with tape or Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 4-3.
  - **Hookup.** The hookup person stands on top of the generator. The static wand person stands on the wheel well. 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 carefully dismounts the trailer and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting on top of the generator. Route outer sling legs 1 and 2 to the front of the trailer (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 outboard side of the trailer A-frame. Place the correct link from Table 4-3 in the grab hook. Repeat with sling leg 2 through the right side, 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 ring located on the trailer deck aft of the wheel well. Place the correct link from Table 4-3 in the grab hook. Repeat with sling leg 4 through the right rear lift provision.
4. Secure the rear lift provisions in the up position to the generator tiedown provisions with Type III nylon cord.
5. Pad the slings in the areas where they contact the generators.
6. Cluster and tie (breakaway technique) the front sling legs together to prevent entanglement during hookup and lift-off. Repeat the procedure for the rear sling legs.

**Figure 4-3. M103A3 Trailer-Mounted Power Units, Generators, and Power Plants**

## M103A3/A4 TRAILER-MOUNTED POWER UNITS, GENERATORS, AND POWER PLANTS

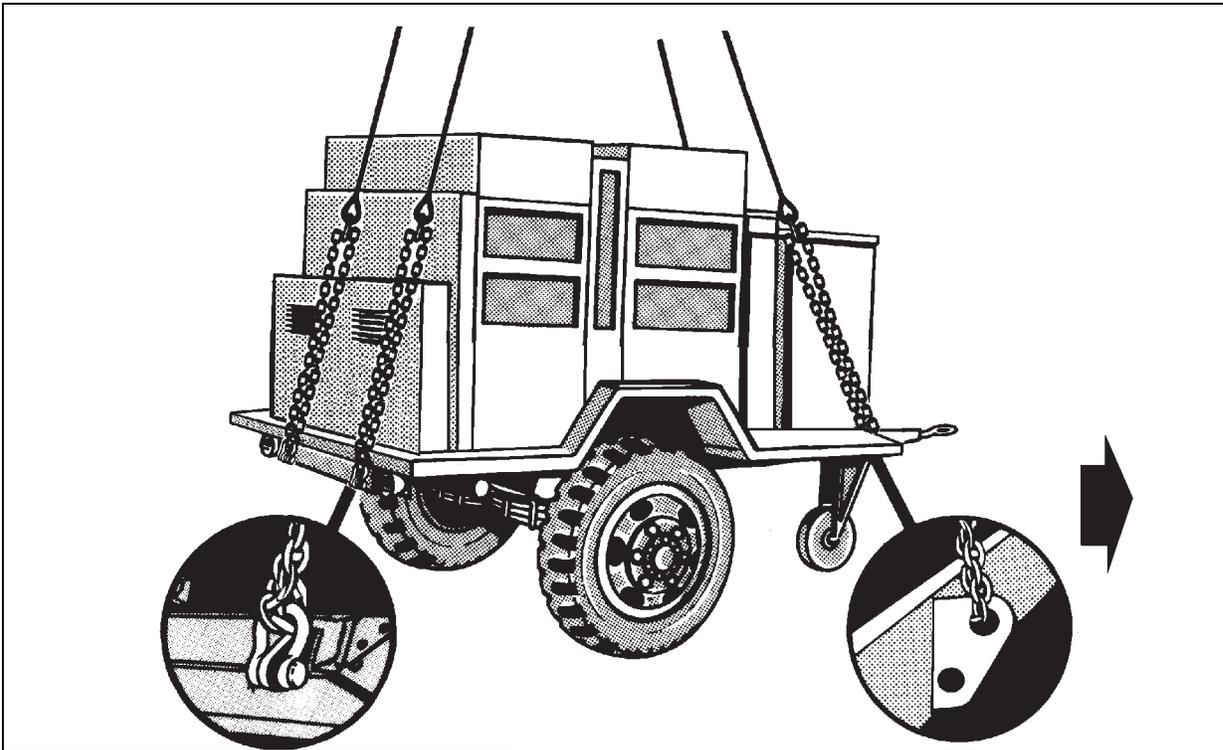
4-5. The M103A3/A4 trailer-mounted power units, generators, and power plants are rigged for single-point sling load using the following procedures:

- **APPLICABILITY.** The following items in Table 4-4 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center :

**Table 4-4. M103A3/A4 Trailer-Mounted Power Units, Generators, and Power Plants**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
AN/MJQ-37 Power Unit, with Two (2) MEP-803A 10 kW, 60 Hz Generator Sets	4,735	10K	15/3
AN/MJQ-38 Power Unit, with Two (2) MEP-813A 10 kW, 400 Hz Generator Sets	4,735	10K	15/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
  - Tie-down strap, CGU/1B (as required).
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Engage both hand brakes.
    - Secure safety chains and brake hoses to the top of the drawbar with Type III nylon cord.
    - Secure all lids, doors, and caps with tape or type III nylon cord.
    - Ensure the rear lift provisions, located on the rear of the trailer frame, are free to rotate. Secure the pins with tape.
    - Place additional cargo as close to the center of the trailer as possible. The cargo must not contact the sling legs during lift-off or flight.
  - **Rigging.** Rig the load according to the steps in Figure 4-4.
  - **Hookup.** The hookup person stands on top of the generator. The static wand person stands on the wheel well. 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 carefully dismounts the trailer and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



#### RIGGING STEPS

1. Position apex fitting on top of the generator. Route outer sling legs 1 and 2 to the front of the trailer (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 side of the trailer A-frame. Place the correct link from Table 4-4 in the grab hook. Repeat with sling leg 2 through the right side, 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 rear of the trailer frame. Place the correct link from Table 4-4 in the grab hook. Repeat with sling leg 4 through the right rear lift provision.
4. Secure the rear lift provisions in the up position to the generator tiedown provisions with Type III nylon cord.
5. Raise the apex fitting above the generators and route the rear slings to the side of the rear generator.
6. Pad the slings in the areas where they contact the generators.
7. Cluster and tie (breakaway technique) the front sling legs together to prevent entanglement during hookup and lift-off. Repeat the procedure for the rear sling legs.

**Figure 4-4. M103A3/A4 Trailer-Mounted Power Units, Generators, and Power Plants**

## M116A2 TRAILER-MOUNTED POWER UNITS, GENERATORS, AND POWER PLANTS

4-6. The M116A2 trailer-mounted power units, generators, and power plants are rigged for single-point sling load using the following procedures:

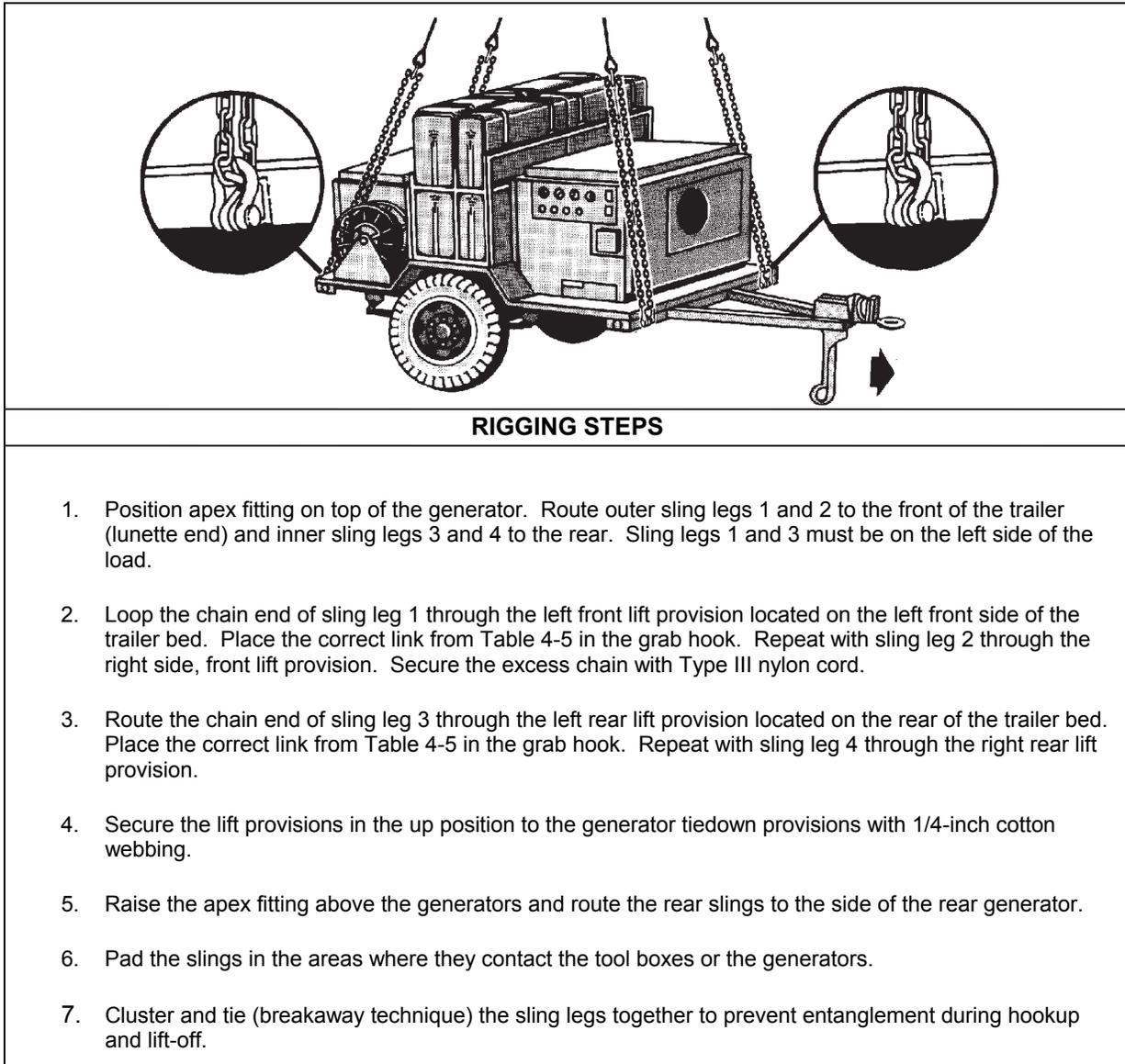
- **Applicability.** The following items in Table 4-5 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center :

**Table 4-5. M116A2 Trailer-Mounted Power Units, Generators, and Power Plants**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
PU-751/M, 5 kW Generator Variants LOS V1,V2/V3/V4 Planning Trailer Radio Access Trailer	3,000	10K	3/40
PU-753/M, 10 kW Generator Variants NC OPS Trailer, SCC TECH Trailer NC MGMT Trailer LEN MGMT Trailer LEN OPS Trailer SEN V1 Trailer SEN V2 Trailer Maintenance #1 Trailer AN/TSQ-182	3,000	10K	3/40
AN/MJQ-32 Power Unit with Acoustic Suppression Kit, 3 kW	3,120	10K	7/3
AN/MJQ-33 Power Unit with Acoustic Suppression Kit, 3 kW	2,858	10K	7/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
  - Tie-down strap, CGU/1B (as required).
- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Engage both hand brakes.
    - Secure safety chains and brake hoses to the top of the drawbar with Type III nylon cord.
    - Secure all lids, doors, and caps with tape or Type III nylon cord.
    - Remove the tarp and bows from the trailer and secure in appropriate place on trailer. Secure the tarp and bows with tiedown straps (if required).
  - **Rigging.** Rig the load according to the steps in Figure 4-5.
  - **Hookup.** The hookup person stands on top of the generator. The static wand person stands on the wheel well. 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 carefully dismounts the trailer and 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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 4-5. M116A2 Trailer-Mounted Power Units, Generators, and Power Plants**

## **M116A3 TRAILER-MOUNTED POWER UNITS, GENERATORS, AND POWER PLANTS**

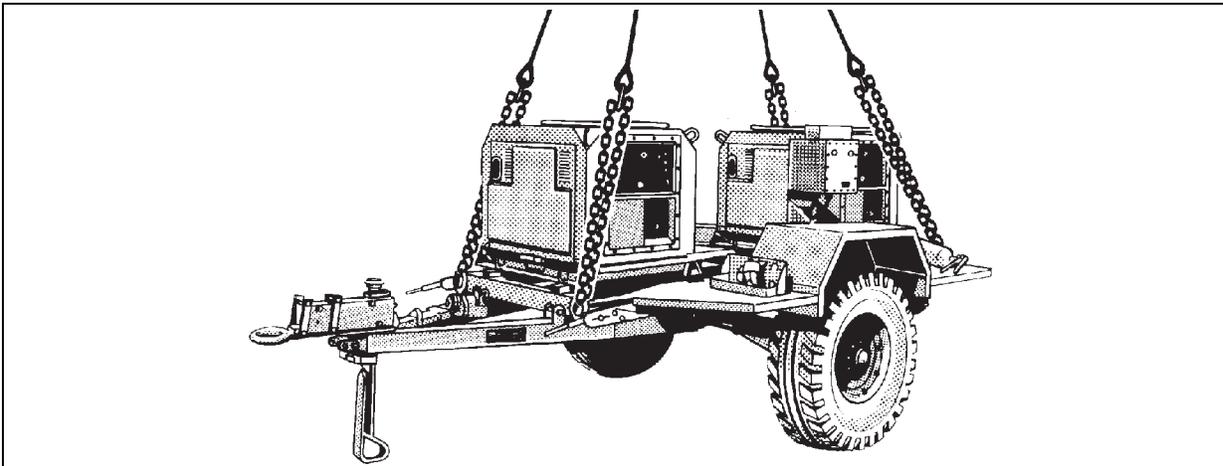
4-7. The M116A3 trailer-mounted power units, generators, and power plants are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 4-6 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center :

Table 4-6. M116A3 Trailer-Mounted Power Units, Generators, and Power Plants

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
AN/MJQ-43 Power Unit with Two (2) MEP-831A, 3 kW, 60 Hz, Generator Sets	2,060	10K	3/3
AN/MJQ-35 Power Unit with Two (2) MEP-802A, 5 kW, 60 Hz, Generator Sets	3,160	10K	3/3
PU-797 5 kW, 60Hz Power Unit with MEP-802A, 5 kW, 60 Hz, 60 Hz, Generator Set	2,720	10K	3/3
PU-798 10 kW, 60Hz Power Unit with MEP-803A, 10 kW, 60 Hz, Generator Set	2,860	10K	3/3
PU-799 10 kW, 400 Hz Power Unit with MEP-813A, 10 kW, 400 Hz, Generator Set	3,160	10K	3/3
PU-801 15 kW, 50/60Hz Power Unit with MEP-804A, 15 kW, 50/60 Hz, Generator Set	3,160	10K	15/3
AN/MJQ-33 Tactical Quiet Generator (TQG)	2,100	10K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
  - Tie-down strap, CGU/1B (as required).
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Engage both hand brakes.
    - Secure safety chains and brake hoses to the top of the drawbar with Type III nylon cord.
    - Secure all lids, doors, and caps with tape or Type III nylon cord.
    - Place additional cargo as close to the center of the trailer as possible. Secure the cargo with CGU-1/B tiedown straps. The cargo must not contact the sling legs during lift-off or flight.
  - **Rigging.** Rig the load according to the steps in Figure 4-6.
  - **Hookup.** The hookup person stands on top of the generator. The static wand person stands on the wheel well. 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 carefully dismounts the trailer and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

**CAUTION**

Do not add cargo to the PU-801 generator set.

1. Position apex fitting on top of the generator. Route outer sling legs 1 and 2 to the front of the trailer (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 side of the trailer bed. Place the correct link from Table 4-6 in the grab hook. Repeat with sling leg 2 through the right side, 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 rear of the trailer bed. Place the correct link from Table 4-6 in the grab hook. Repeat with sling leg 4 through the right rear lift provision.
4. Secure the lift provisions in the up position to the generator tiedown provisions with 1/4-inch cotton webbing.
5. Raise the apex fitting above the generators and route the rear slings to the side of the rear generator. Pad the slings in the areas where they contact the tool boxes or the generators.
6. Cluster and tie (breakaway technique) the front sling legs together to prevent entanglement during hookup and lift-off. Repeat the procedure for the rear sling legs.

**Figure 4-6. M116A3 Trailer-Mounted Power Units, Generators, and Power Plants**

## **HIGH MOBILITY TRAILER (HMT) WITH AN/MJQ-35A POWER PLANT**

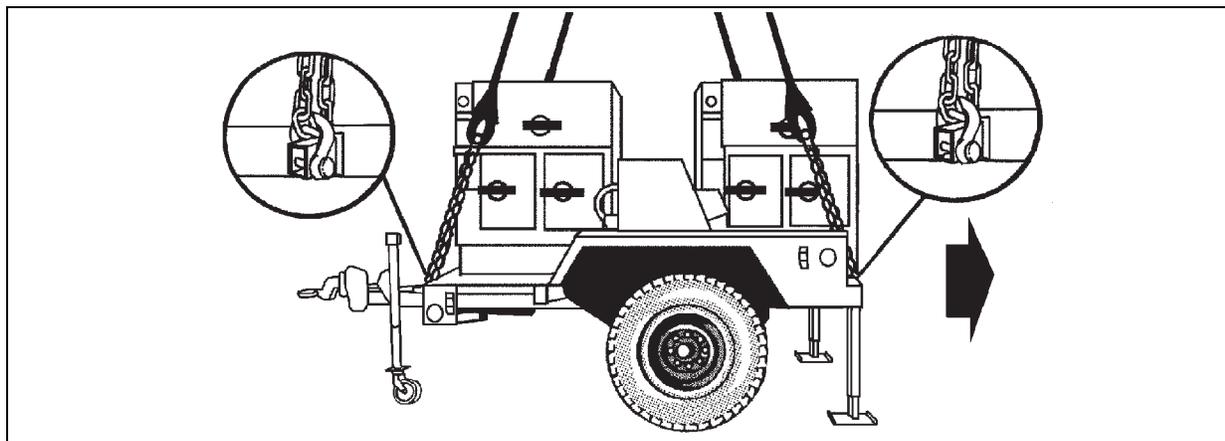
4-8. The high mobility trailer with AN/MJQ-35A power plant is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 4-7 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center :

**Table 4-7. High Mobility Trailer with AN/MJQ-35A Power Plant**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
AN/TMQ-35A 5 kW, 60 Hz Power Plant	3,540	10K	20/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
  - Tie-down strap, CGU/1B (as required).
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Engage the parking brake.
    - Secure safety chains and brake hoses to the top of the drawbar with Type III nylon cord.
    - Secure all lids, doors, and caps with tape or type III nylon cord.
    - Place additional cargo on the trailer bed and secure the cargo with CGU-1/B tiedown straps.
    - Install the rear stabilizer legs with the lower support section fully retracted.
    - Lower the front jack so the lunette is close to the ground.
  - **Rigging.** Rig the load according to the steps in Figure 4-7.
  - **Hookup.** The hookup team stands on the drawbar or the bed 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 carefully dismounts the trailer on the lunette end of the trailer and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 4-7. High Mobility Trailer with AN/MJQ-35A Power Plant**

<b>RIGGING STEPS</b>
<ol style="list-style-type: none"> <li>1. Position apex fitting on top of the generator. Route outer sling legs 1 and 2 to the front of the trailer (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.</li> <li>2. Loop the chain end of sling leg 1 through the left front lift provision located on the left front side of the trailer bed. Place the correct link from Table 4-7 in the grab hook. Repeat with sling leg 2 through the right side, front lift provision. Secure the excess chain with Type III nylon cord.</li> <li>3. Route the chain end of sling leg 3 through the left rear lift provision located on the rear of the trailer bed. Place the correct link from Table 4-7 in the grab hook. Repeat with sling leg 4 through the right rear lift provision.</li> <li>4. Pad the slings in the areas where they contact the tool boxes or the generators.</li> <li>5. Cluster and tie (breakaway technique) the front sling legs together to prevent entanglement during hookup and lift-off. Repeat the procedure for the rear sling legs.</li> </ol>

**Figure 4-7. High Mobility Trailer with AN/MJQ-35A Power Plant (Continued)**

## **HIGH MOBILITY TRAILER (HMT) WITH TACTICAL QUIET GENERATOR POWER UNITS**

4-9. The high mobility trailer with tactical quiet generator power units is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 4-8 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center :

**Table 4-8. High Mobility Trailer with Tactical Quiet Generator Power Units**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
PU-797A 5 kW, 60 Hz, Power Unit with 802A Generator Set	2,657	10K	3/15
PU-798A 10 kW, 60 Hz, Power Unit with 803A Generator Set	2,880	10K	3/15
PU-799A 10 kW, 400 Hz, Power Unit with 813A Generator Set	2,910	10K	3/15
PU-801A 15 kW, 60Hz Power Unit with MEP-804A Generator Set	3,800	10K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
  - Tie-down strap, CGU/1B (as required).
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Engage the parking brake.
    - Secure safety chains and brake hoses to the top of the drawbar with Type III nylon cord.

- Secure all lids, doors, and caps with tape or Type III nylon cord.
- Place additional cargo on the trailer bed and secure the cargo with CGU-1/B tiedown straps.
- Install the rear stabilizer legs with the lower support section fully retracted.
- Lower the front jack so the lunette is close to the ground.
- Secure the four lift rings on the trailer in the up position to a convenient point on the load with 1/4-inch cotton webbing.
- **Rigging.** Rig the load according to the steps in Figure 4-8.

**CAUTION**

The routing of the sling legs is reversed from the standard routing found in this manual. Sling legs 1 and 2 are routed to the rear of the trailer to increase the clearance between the sling legs and the generator.

- **Hookup.** The hookup team stands on the drawbar or the bed 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 carefully dismounts the trailer on the lunette end of the trailer and 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

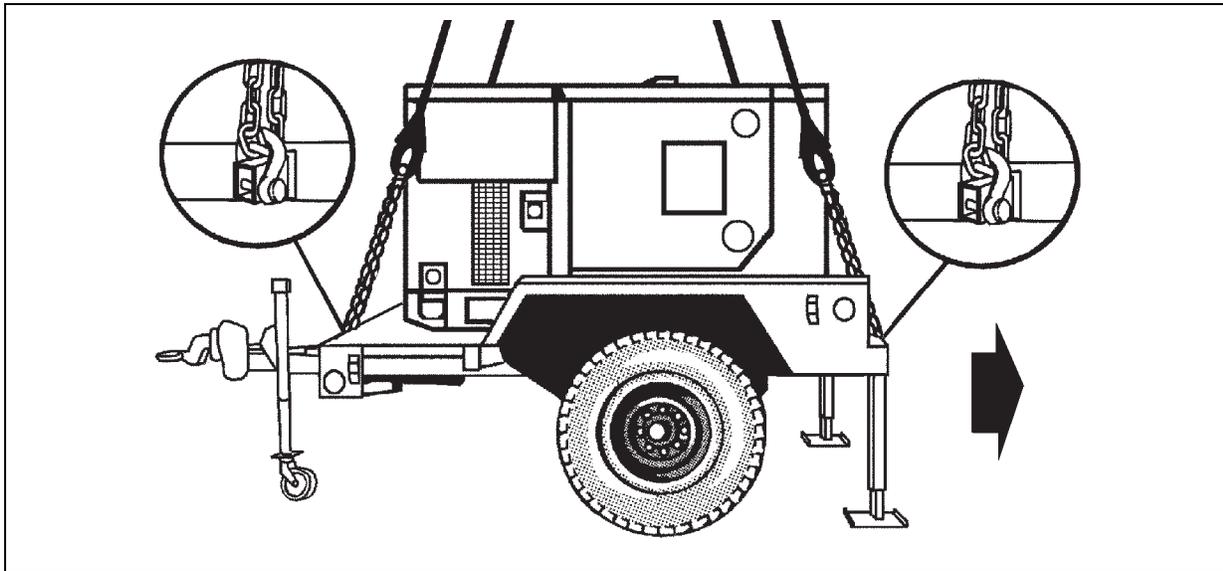


Figure 4-8. High Mobility Trailer with Tactical Quiet Generator Power Units

<b>RIGGING STEPS</b>
<ol style="list-style-type: none"> <li>1. Position apex fitting on top of the generator. Route outer sling legs 1 and 2 to the rear of the trailer and inner sling legs 3 and 4 to the front (lunette end). Sling legs 1 and 3 must be on the left side of the load.</li> <li>2. Loop the chain end of sling leg 1 through the left rear lift provision located on the left rear side of the trailer bed. Place the correct link from Table 4-8 in the grab hook. Repeat with sling leg 2 through the right rear lift provision. Secure the excess chain with Type III nylon cord.</li> <li>3. Route the chain end of sling leg 3 through the left front lift provision located on the front of the trailer bed. Place the correct link from Table 4-8 in the grab hook. Repeat with sling leg 4 through the right front lift provision.</li> <li>4. Pad the slings in the areas where they contact the tool boxes or the generators.</li> <li>5. Cluster and tie (breakaway technique) the sling legs together on top of the generator to prevent entanglement during hookup and lift-off.</li> </ol>

**Figure 4-8. High Mobility Trailer with Tactical Quiet Generator Power Units (Continued)**

## **HIGH MOBILITY TRAILER (HMT) WITH GENERATOR FOR JOINT SURVEILLANCE TARGET ATTACK RADAR (JSTAR) SYSTEM**

4-10. The high mobility trailer with generator for joint surveillance target attack radar system is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 4-9 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center :

**Table 4-9. High Mobility Trailer with Generator for Joint Surveillance Target Attack Radar System**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Mission Trailer without Transfer Cases	3,960	10K	10/3
Support Trailer without Transfer Cases	3,878	10K	10/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
    - Chain length, part number 38850-00053-10, from a 10,000-pound capacity sling set (4 each).
    - Coupling link, part number 577-0415, from a 10,000-pound capacity sling set (4 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:

- Engage the parking brake.
  - Secure safety chains and brake hoses to the top of the drawbar with Type III nylon cord.
  - Secure all lids, doors, and caps with tape or Type III nylon cord.
  - Remove transit cases which will interfere with the sling legs and store them in the shelter.
  - Install the rear stabilizer legs with the lower support section fully retracted.
  - Remove the lunette jack and secure in the trailer bed.
  - Secure the four lift rings on the trailer in the up position to a convenient point on the load with 1/4-inch cotton webbing.
  - Connect one additional chain length to each chain of the sling set with the coupling link.
- **Rigging.** Rig the load according to the steps in Figure 4-9.
  - **Hookup.** The hookup team stands in the bed 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 carefully dismounts the trailer and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

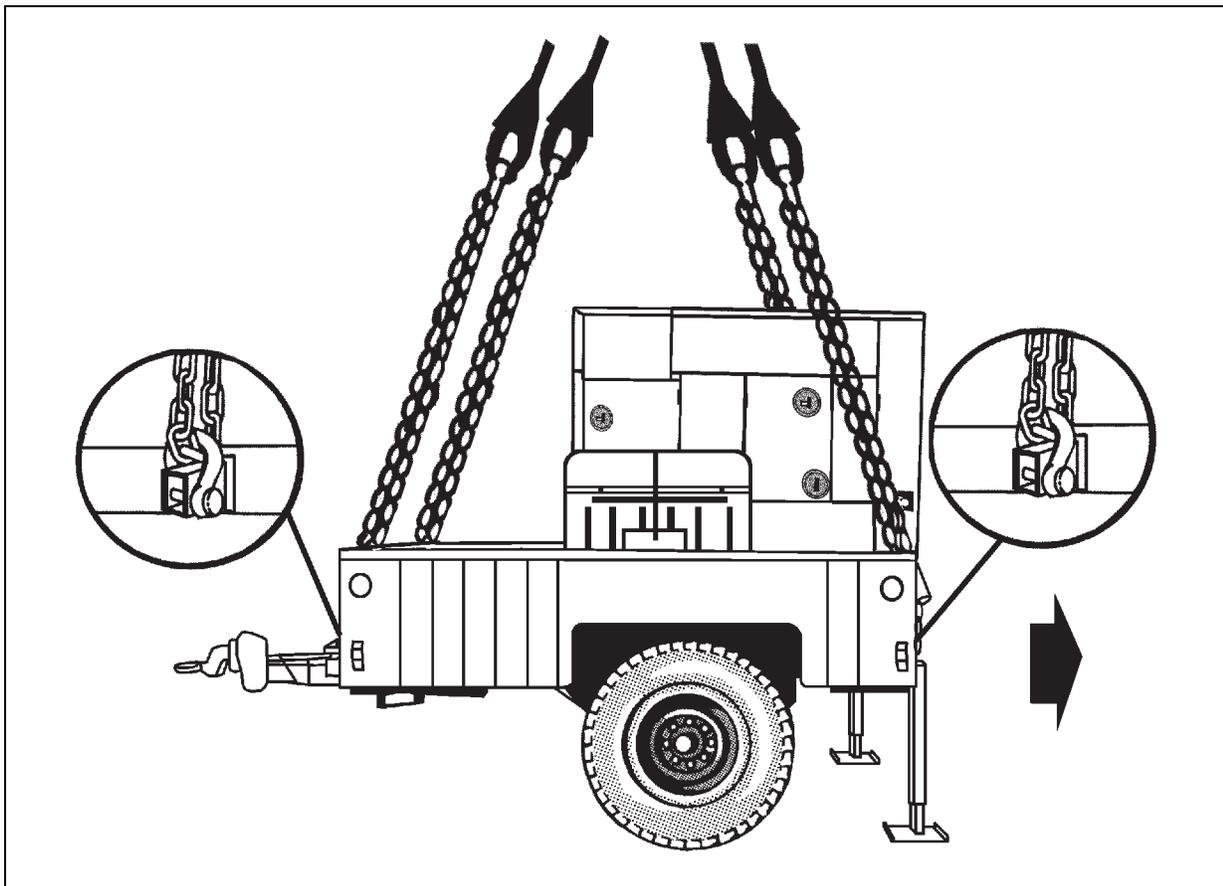


Figure 4-9. High Mobility Trailer with Generator for Joint Surveillance Target Attack Radar System

**RIGGING STEPS**

1. Position apex fitting on top of the generator. Route outer sling legs 1 and 2 to the front of the trailer (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 side of the trailer bed. Place the correct link from Table 4-9 in the grab hook. Repeat with sling leg 2 through 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 rear of the trailer bed. Place the correct link from Table 4-9 in the grab hook. Repeat with sling leg 4 through the right rear lift provision.
4. Pad the slings/chains in the areas where they contact the generators.
5. Cluster and tie (breakaway technique) the sling legs together on top of the generator to prevent entanglement during hookup and lift-off.

**Figure 4-9. High Mobility Trailer with Generator for Joint Surveillance Target Attack Radar System (Continued)**

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## Chapter 5

# Certified Single-Point Rigging Procedures for Truck and Towed Combinations

### INTRODUCTION

5-1. This chapter contains rigging procedures for single-point truck and towed combinations that have 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 trailer loads with mounted generators are in this section. Paragraphs 5-2 and 5-3 give detailed instructions for rigging loads.

### M973/M973E1/M1065/M1066 SMALL UNIT SUPPORT VEHICLE (SUSV)

5-2. The M973/M973E1/M1065/M1066 small unit support vehicle is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 5-1 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 5-1. M973/M973E1/M1065/M1066 Small Unit Support Vehicle**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M973, Cargo, Tracked	Front-6,380 Rear-6,600 Total-12,980	25K	Listed in Rigging Steps
M973E1, Cargo, Tracked	Front-6,380 Rear-6,600 Total-12,980	25K	Listed in Rigging Steps
M1065, Command Post, Tracked	Front-6,380 Rear-6,600 Total-12,980	25K	Listed in Rigging Steps
M1066, Ambulance, Tracked	Front-6,380 Rear-6,600 Total-12,980	25K	Listed in Rigging Steps

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity) (2 sets).
    - Additional chain length, part number 38850-00053-102, from 25,000-pound capacity sling sets (8 each).
    - Additional coupling links, part number 664241, from 25,000-pound capacity sling sets (8 each).
  - Aerial delivery slings, Type XXVI nylon, 4 loop, 20 foot length (2 each) (Used to form 40 foot vertical pendant) (For CH-47 use only).
  - Apex fitting (25,000-pound capacity) (2 each) (For CH-47 use only).

- Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- Tie-down strap, CGU/1B (as required).
- Cord, nylon, Type III, 550-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 30 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all internal cargo and loose items with Type III nylon cord or tie-down straps.
    - Lock the articulated steering unit with the steering cylinder locks.
    - Secure all doors, windows, and roof hatches in the closed position.
    - Tape all lights and glass fixtures including the windshield.
    - Fold side mirrors inboard and tie or tape as required.
    - Tape windshield wipers to windshield.
    - Secure all hoses and cables located between the two cars with tape or nylon cord to avoid entanglement with sling legs.
    - Screw the lifting eyes in as far as possible while ensuring that they are pointing towards the middle of each car. Tie diagonally opposing rings of each car together (for example, the front right ring to the left rear ring) with Type III nylon cord.
    - Place the mud flaps in the up position and tape them in place.
    - Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
  - **Rigging.** Rig the load according to the steps in Figure 5-1.
  - **Hookup.** The helicopter lands near the vehicle. The hookup team crawls under the helicopter. 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 helicopter 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

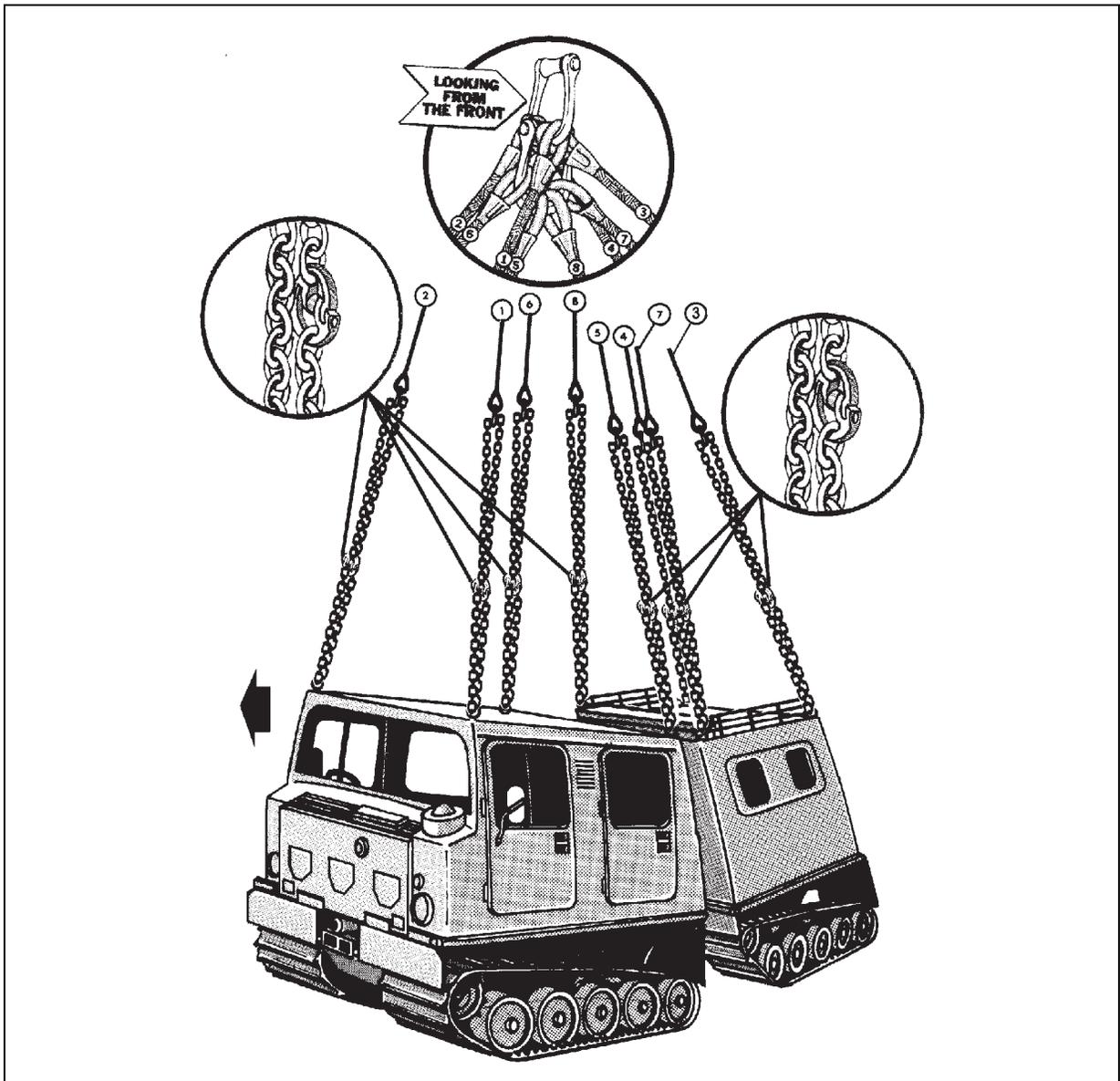


Figure 5-1. Small Unit Support Vehicle

**RIGGING STEPS**

1. Assemble the two sling sets as shown in the insert on page 5-3. Note the sling numbering sequences.
2. Route outer sling legs 1 and 2 to the front of the front provisions of the front car. Route inner sling legs 3 and 4 under the roof rack and to the rear provisions of the rear car. Sling legs 1 and 3 must be on the left side of the load.
3. Route sling legs 5 and 6 to the rear provisions of the front car. Route sling legs 7 and 8 to the front provisions of the rear car. Sling legs 5 and 7 must be on the left side of the load.
4. Loop the chain end of sling leg 1 through the left front lift provision of the front car. Add an additional chain length using the coupling links. The chain must be looped through the lifting provision prior to attaching the additional chain. Place link 40 in the grab hook. Repeat with sling leg 2 through the right front lift provision of the front car. Secure the excess chain with Type III nylon cord.
5. Route the chain end of sling leg 5 through the left rear lift provision of the front car. Add an additional chain length using the coupling links. The chain must be looped through the lifting provision prior to attaching the additional chain. Place link 67 in the grab hook. Repeat with sling leg 6 through the right rear lift provision of the front car. Secure the excess chain with Type III nylon cord.
6. Route the chain end of sling leg 7 through the left front lift provision of the rear car. Add an additional chain length using the coupling links. The chain must be looped through the lifting provision prior to attaching the additional chain. Place link 67 in the grab hook. Repeat with sling leg 8 through the right front lift provision of the rear car. Secure the excess chain with Type III nylon cord.
7. Route the chain end of sling leg 3 through the left rear lift provision of the rear car. Add an additional chain length using the coupling links. The chain must be looped through the lifting provision prior to attaching the additional chain. Place link 40 in the grab hook. Repeat with sling leg 4 through the right rear lift provision of the rear car. Ensure sling legs 3 and 4 are routed under the roof rack. Secure the excess chain with Type III nylon cord.
8. Cluster and tie (breakaway technique) the sling legs together on top of the vehicle to prevent entanglement during hookup and lift-off.
9. When using a CH-47 helicopter, assemble a 40-foot vertical pendant using two 20-foot aerial delivery slings and two 25,000-pound capacity apex fittings. Attach the end of the 40-foot vertical pendant to the top apex fitting of the sling set by removing the bolt from the apex fitting. Insert the looped end of the vertical pendant into the apex fitting and replace the bolt.

**Figure 5-1. Small Unit Support Vehicle (Continued)**

## **M1067 FLATBED SMALL UNIT SUPPORT VEHICLE (SUSV)**

5-3. The M1067 flatbed small unit support vehicle is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 5-2 is certified for the **CH-47 HELICOPTER ONLY** by the US Army Natick Soldier Center:

**Table 5-2. M1067 Flatbed Small Unit Support Vehicle**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M1067, Flatbed, Tracked	Front-6,600 Rear-7150 Total-13,750	25K	Listed in Rigging Steps

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity) (2 sets).
    - Additional chain length, part number 38850-00053-102, from 25,000-pound capacity sling sets (12 each).
    - Additional coupling links, part number 664241, from 25,000-pound capacity sling sets (12 each).
  - Aerial delivery slings, Type XXVI nylon, 4 loop, 20 foot length (2 each) (Used to form 40 foot vertical pendant) (For CH-47 use only).
  - Apex fitting (25,000-pound capacity) (2 each) (For CH-47 use only).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down strap, CGU/1B (as required).
  - Cord, nylon, Type III, 550-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 30 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all internal cargo and loose items with Type III nylon cord or tie-down straps.
    - Lock the articulated steering unit with the steering cylinder locks.
    - Secure all doors, windows, and roof hatches in the closed position.
    - Tape all lights and glass fixtures including the windshield.
    - Fold side mirrors inboard and tie or tape as required.
    - Tape windshield wipers to windshield.
    - Secure all hoses and cables located between the two cars with tape or nylon cord to avoid entanglement with sling legs.
    - Screw the lifting eyes in as far as possible while ensuring that they are pointing towards the middle of each car. Tie diagonally opposing rings of each car together (for example, the front right ring to the left rear ring) with Type III nylon cord.
    - Place the mud flaps in the up position and tape them in place.
    - Cargo in the rear car must be loaded so that it will not make contact with the sling legs and that it is not higher than the sides of the rear car.
  - **Rigging.** Rig the load according to the steps in Figure 5-2.
  - **Hookup.** The helicopter lands near the vehicle. The hookup team crawls under the helicopter. 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 helicopter 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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

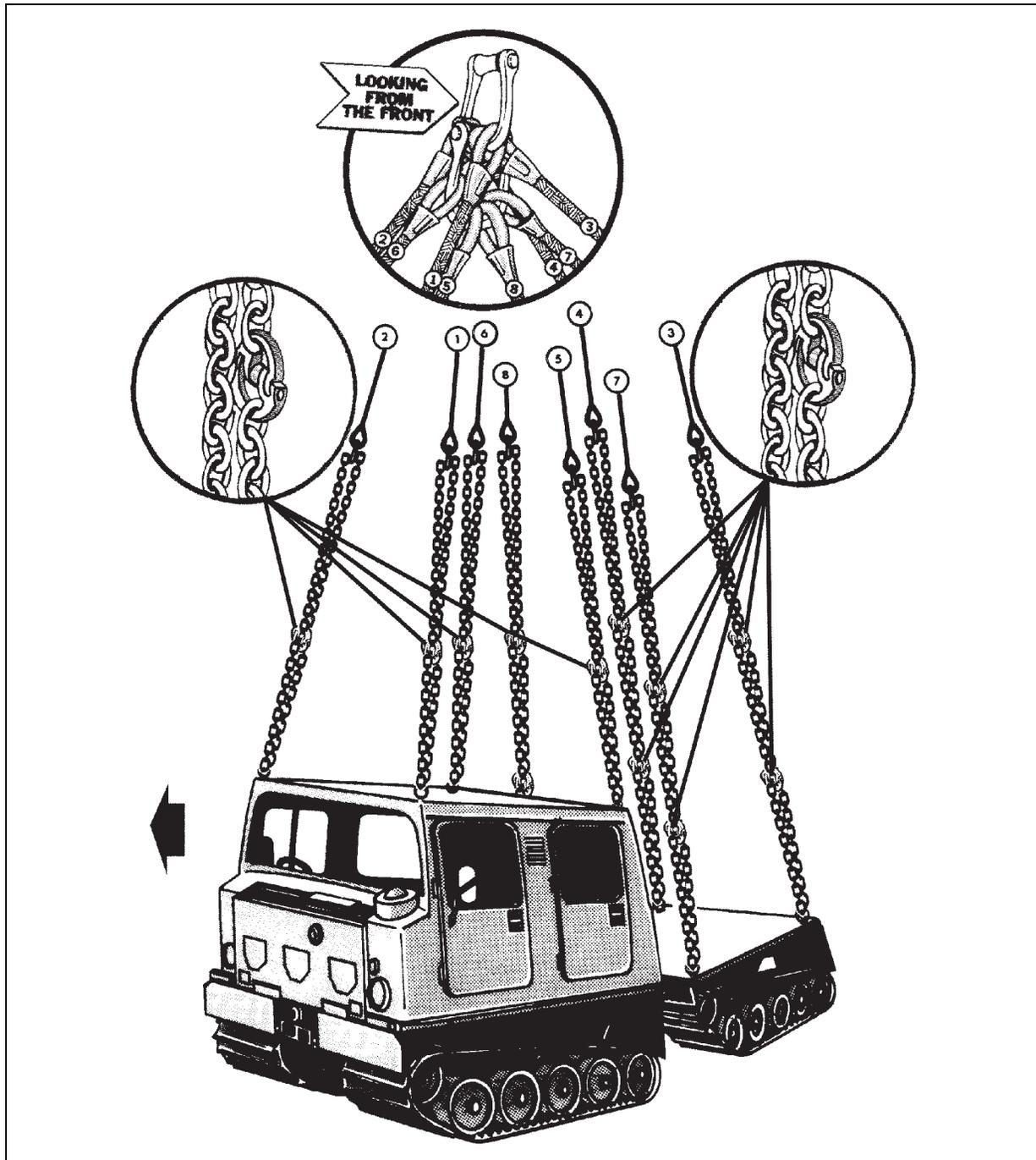


Figure 5-2. Flatbed Small Unit Support Vehicle

**RIGGING STEPS**

1. Assemble the two sling sets as shown on page 5-7. Note the sling numbering sequences.
2. Route outer sling legs 1 and 2 to the front of the front provisions of the front car. Route inner sling legs 3 and 4 to the rear provisions of the rear car. Sling legs 1 and 3 must be on the left side of the load.
3. Route sling legs 5 and 6 to the rear provisions of the front car. Route sling legs 7 and 8 to the front provisions of the rear car. Sling legs 5 and 7 must be on the left side of the load.
4. Loop the chain end of sling leg 1 through the left front lift provision of the front car. Attach an additional chain length using the coupling links. The chain must be looped through the lifting provision prior to attaching the additional chain. Place link **40** in the grab hook. Repeat with sling leg 2 through the right front lift provision of the front car. Secure the excess chain with Type III nylon cord.
5. Route the chain end of sling leg 5 through the left rear lift provision of the front car. Attach an additional chain length using the coupling links. The chain must be looped through the lifting provision prior to attaching the additional chain. Place link **67** in the grab hook. Repeat with sling leg 6 through the right rear lift provision of the front car. Secure the excess chain with Type III nylon cord.
6. Route the chain end of sling leg 7 through the left front lift provision of the rear car. Attach two additional chain lengths using the coupling links. The chain must be looped through the lifting provision prior to attaching the additional chains. Place link **67** in the grab hook. Repeat with sling leg 8 through the right front lift provision of the rear car. Secure the excess chain with Type III nylon cord.
7. Route the chain end of sling leg 3 through the left rear lift provision of the rear car. Attach two additional chain lengths using the coupling links. The chain must be looped through the lifting provision prior to attaching the additional chains. Place link **40** in the grab hook. Repeat with sling leg 4 through the right rear lift provision of the rear car.
8. Cluster and tie or tape (breakaway technique) the sling legs together on top of the vehicle to prevent entanglement during hookup and lift-off.
9. Secure legs 7 and 8 to the outside supports of the spare fuel can racks using 1/4-inch cotton webbing to prevent damage to the racks during lift-off.
10. Assemble a 40-foot vertical pendant using two 20-foot aerial delivery slings and two 25,000-pound capacity apex fittings. Attach the end of the 40-foot vertical pendant to the top apex fitting of the sling set by removing the bolt from the apex fitting, inserting the looped end of the vertical pendant into the apex fitting and replacing the bolt.

**Figure 5-2. Flatbed Small Unit Support Vehicle (Continued)**

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## Chapter 6

# Certified Single-Point Rigging Procedures for Howitzers and Weapons Systems

### INTRODUCTION

6-1. This chapter contains rigging procedures for howitzers and weapons systems that have 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 howitzers and weapons systems are in this section. Paragraphs 6-2 through 6-15 give detailed instructions for rigging loads.

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*Note.* Reach pendants may be used on all single point loads. A static discharge person is not required when using a reach pendant.

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### M101A1 105-MM HOWITZER, WITH OR WITHOUT A-22 CARGO BAGS

6-2. The M101A1 105-MM howitzer, with or without A-22 cargo bags is rigged for single-point sling load using the following procedures:

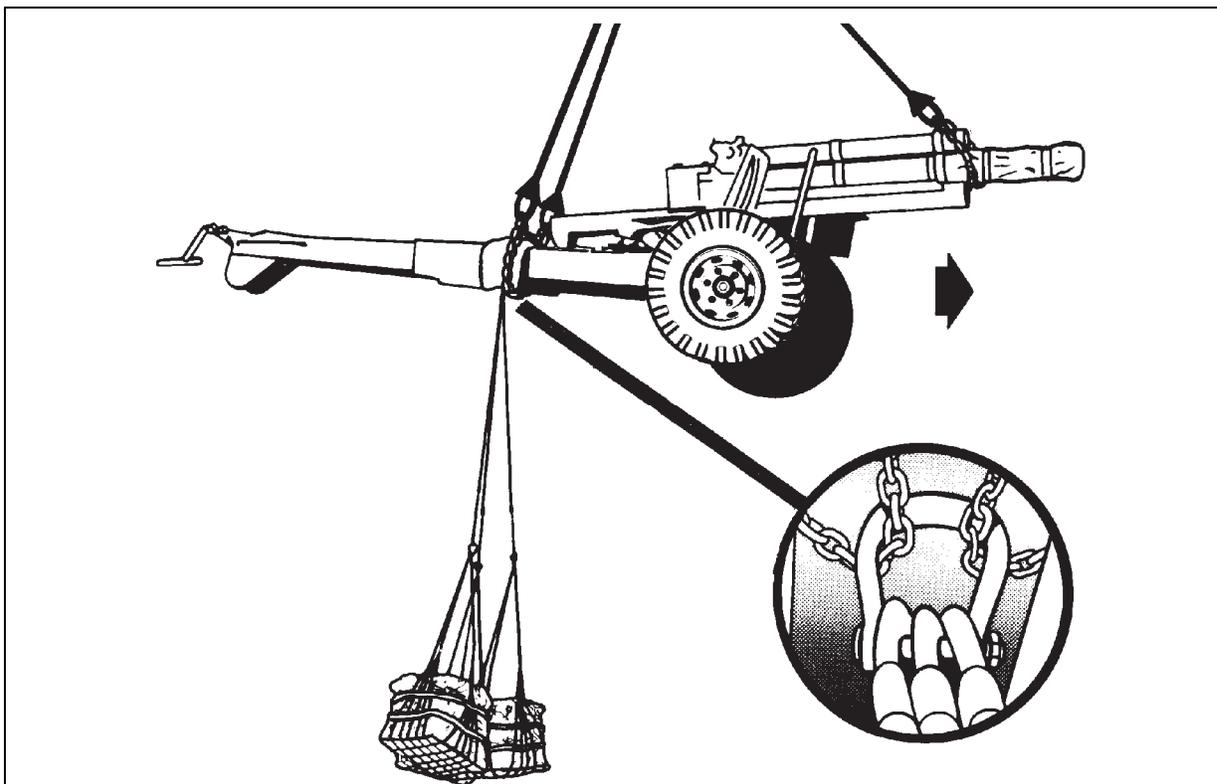
- **Applicability.** The following items in Table 6-1 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 6-1. M101A1 105-MM Howitzer, with or without A-22 Cargo Bags**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M101A1 Howitzer	4,980	10K 15K 25K 40K	30/30 33/3 12/12 22/3
M101A1 Howitzer with one A-22 Cargo Bag	7,180	10K 15K 25K 40K	30/30 33/3 12/12 22/3
M101A1 Howitzer with two A-22 Cargo Bags	9,380	10K 15K 25K 40K	30/30 33/3 12/12 22/3
M101A1 Howitzer with three A-22 Cargo Bags	11,580	10K 15K 25K 40K	30/30 33/3 12/12 22/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000 or 25,000-pound capacity) (USA).

- Sling set (15,000 or 40,000-pound capacity) (USMC).
- Sling leg assembly (2,500-pound capacity) from a 10,000-pound sling set, one per A-22 container.
- Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- Cord, nylon, Type III, 550-pound breaking strength.
- Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- Tie-down strap, CGU/1B (as required).
- Bag, cargo, A-22, as required.
- Apex fitting (10,000-pound capacity), one per A-22 container.
- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Close and lock the breech.
    - Close and secure the trails. Rotate the lunette to the down position. Secure the trail closing lock handle with Type III nylon cord or tape.
    - Remove and secure the muzzle, breech, and tube covers.
    - Pad or remove all sight mounts.
    - Place the gun section equipment chest and other equipment on the trails and secure it with tie-down straps.
    - Engage one hand brake.
    - Pad the gun tube above the cradle and around the forward edge of the recoil damper assembly. Secure the padding with tape or 1/4-inch cotton webbing.
    - Pad the left and right trails aft of the traveling lock shaft area. Secure the padding with tape or 1/4-inch cotton webbing.
  - **Rigging.** Rig the load according to the steps in Figure 6-1.
  - **Hookup.** The hookup team stands on top of the trails or alongside the howitzer. 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 helicopter 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position the apex fitting on top of the breech. Route outer sling legs 1 and 2 to the trails. Route inner sling legs 3 and 4 to the muzzle. Sling legs 1 and 3 must be on the left side of the load.
2. Wrap the chain end of sling leg 1 around the padded area of the left trail. When using the 10,000 or 25,000-pound capacity sling set, make two complete wraps around the left trail. Place the correct link from Table 6-1 in the grab hook. Repeat with sling leg 2 on the right trail. Secure the excess chain with Type III nylon cord.
3. Position the grab hook sling leg 3 on the left side of the gun tube padded area. Wrap the chain end of sling leg 3 one complete turn around the gun tube padded area. Place the correct link from Table 6-1 in the grab hook. Repeat with sling leg 4 with the grab hook on the opposite side of the gun tube. Ensure the chains completely encircle and not just cradle the gun tube.
4. Cluster and tie (breakaway technique) the sling legs together on top of the howitzer to prevent entanglement during hookup and lift-off.
5. Attach the accompanying A-22 (s) by placing an additional apex fitting around the inner chains of sling legs 1 and 2, so the fitting is between the trails. Route the chain end of the additional sling leg through the clevis on the A-22 cargo bag and insert link 3 in the grab hook. Place the other end of the sling leg in the additional apex fitting between the trails. Repeat this procedure for each A-22 cargo bag being lifted.

**Figure 6-1. M101A1 105-MM Howitzer, with or without A-22 Cargo Bags**

## M102 105-MM HOWITZER

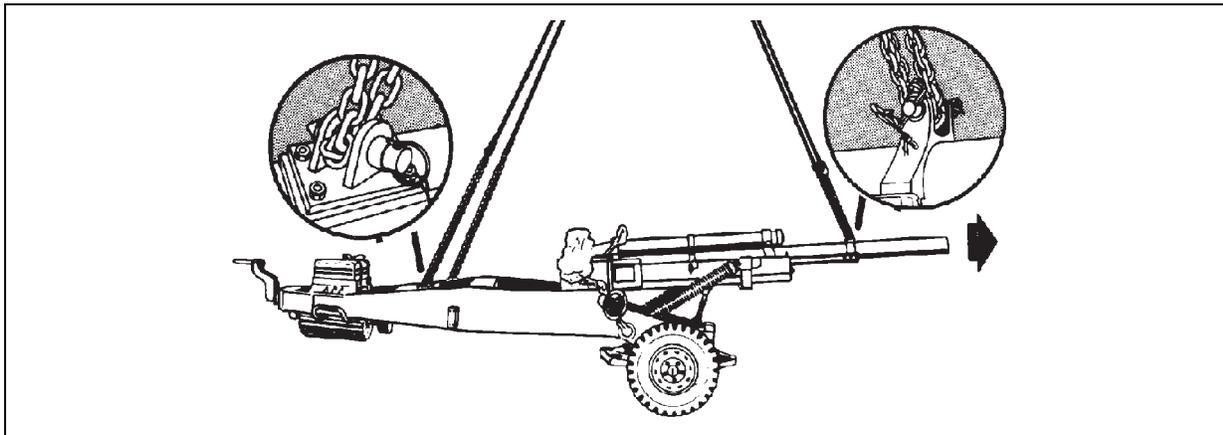
6-3. The M102 105-MM howitzer is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 6-2 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 6-2. M102 105-MM Howitzer**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M102 Howitzer	3,330	10K	55/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down strap, CGU/1B (as required).
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Place the muzzle and sight covers on the howitzer and secure them with Type III nylon cord.
    - Place the section equipment chest on the end of the trails and secure it with tie-down straps.
  - **Rigging.** Rig the load according to the steps in Figure 6-2.
  - **Hookup.** The hookup team stands on top of the trails next to the breech. 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 person then moves clear of the helicopter 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 6-2. M102 105-MM Howitzer**

<b>RIGGING STEPS</b>
<ol style="list-style-type: none"> <li>1. Position the apex fitting on top of the breech. Route outer sling legs 1 and 2 to the trails. Route inner sling legs 3 and 4 to the muzzle. Sling legs 1 and 3 must be on the left side of the load.</li> <li>2. Remove the pin from the lift provision on the left trail. Center the chain end of sling leg 1 in the lift provision. Reinstall the pin in the lift provision. Place the correct link from Table 6-2 in the grab hook. Repeat with sling leg 2 on the right trail. Secure the excess chain with Type III nylon cord.</li> <li>3. Remove the pin from the lift provision on the gun tube. Center the chain end of sling legs 3 and 4 in the lift provision. Reinstall the pin in the lift provision. Place the correct link from Table 6-2 in the grab hook. Secure the excess chain with Type III nylon cord.</li> </ol> <hr/> <p><i>Note.</i> This item may be rigged with only three legs by eliminating one of the sling legs to the gun tube.</p> <hr/> <ol style="list-style-type: none"> <li>4. Cluster and tie (breakaway technique) the sling legs together on top of the howitzer to prevent entanglement during hookup and lift-off.</li> </ol>

**Figure 6-2. M102 105-MM Howitzer (Continued)**

### **M102 105-MM HOWITZER WITH ONE A-22 CARGO BAG**

6-4. The M102 105-MM howitzer with one A-22 cargo bag is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 6-3 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 6-3. M102 105-MM Howitzer with One A-22 Cargo Bag**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M102 Howitzer with One A-22 Cargo Bag	5,660	10K	105/3

**Note.** More than one A-22 may be used with these rigging procedures as long as the total weight of the A-22s does not exceed 2,500 pounds.

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Assembly, tie-down (10,000-pound capacity).
  - Clevis, large
  - Bag, Cargo, A-22.

- **Personnel.** Two persons can prepare and rig this load in 30 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Place the muzzle and sight covers on the howitzer and secure them with Type III nylon cord.
    - Place the section equipment chest on the end of the trails and secure it with tie-down straps.
    - Place a large clevis assembly on the ground between the howitzer trails.
  - **Rigging.** Rig the load according to the steps in Figure 6-3.
  - **Hookup.** The hookup team stands on top of the trails next to the breech. 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 helicopter 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

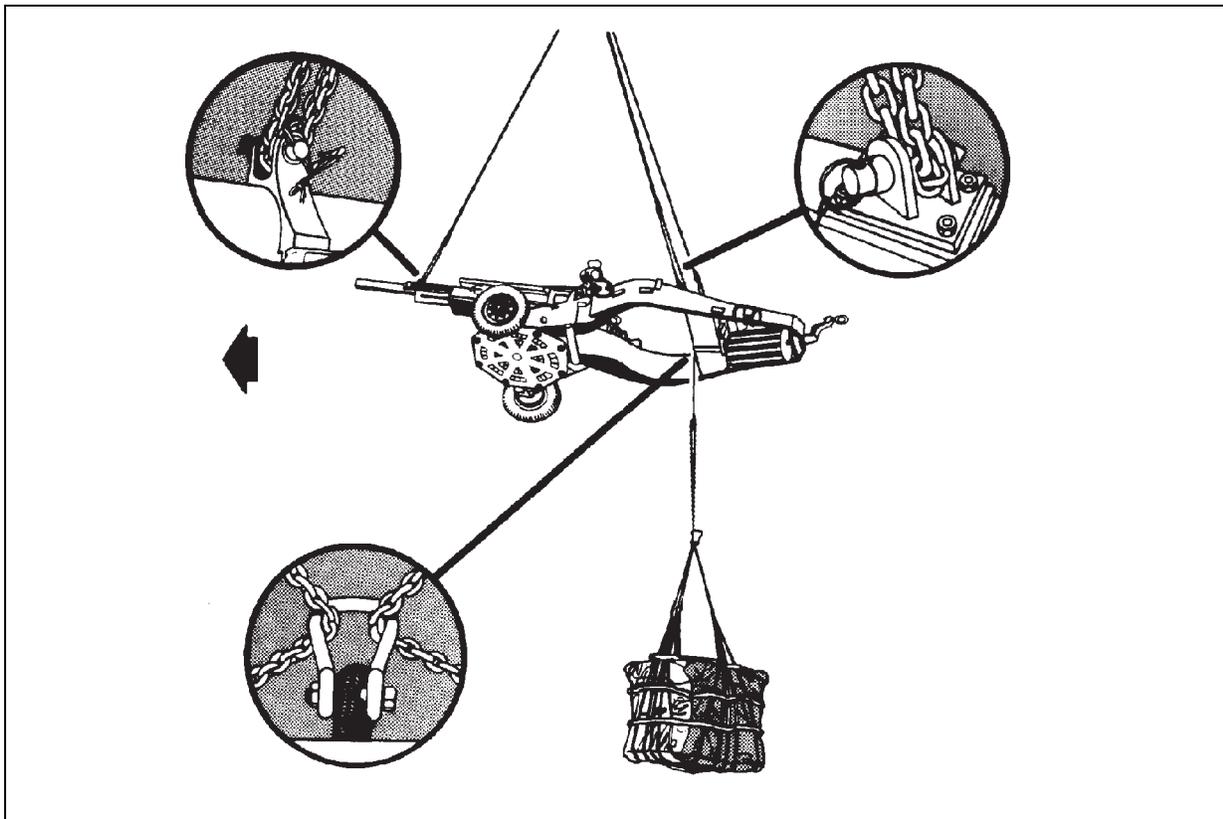


Figure 6-3. M102 105-MM Howitzer with One A-22 Cargo Bag

<b>RIGGING STEPS</b>
<ol style="list-style-type: none"> <li>1. Remove one sling leg from the sling set. This sling leg will be used to lift the A-22 cargo bag.</li> <li>2. Position the apex fitting on top of the breech. Route outer sling legs 1 and 2 to the trails. Route inner sling leg 3 to the muzzle.</li> <li>3. Remove the pin from the lift provision on the left trail. Center the chain end of sling leg 1 in the lift provision. Reinstall the pin in the lift provision. Place the correct link from Table 6-3 in the grab hook. Repeat with sling leg 2 on the right trail. Secure the excess chain with Type III nylon cord.</li> <li>4. Remove the pin from the lift provision on the gun tube. Center the chain end of sling leg 3 in the lift provision. Reinstall the pin in the lift provision. Place the correct link from Table 6-3 in the grab hook. Secure the excess chain with Type III nylon cord.</li> <li>5. Cluster and tie (breakaway technique) the sling legs together on top of the howitzer to prevent entanglement during hookup and lift-off.</li> <li>6. Attach the large clevis around the inner chains of sling legs 1 and 2, so the clevis is between the trails. Route the chain end of the additional sling leg through the clevis on the A-22 cargo bag and insert link 3 in the grab hook. Route the sling leg under the trail and place eye of the sling leg on the bolt of the large clevis between the trails.</li> </ol>

**Figure 6-3. M102 105-MM Howitzer with One A-22 Cargo Bag (Continued)**

## **M102 105-MM HOWITZER WITH TWO OR THREE A-22 CARGO BAGS**

6-5. The M102 105-MM howitzer with two or three A-22 cargo bags is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 6-4 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 6-4. M102 105-MM Howitzer with Two or Three A-22 Cargo Bags**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M102 Howitzer with Two A-22 Cargo Bags	7,560	25K	83/3
M102 Howitzer with Three A-22 Cargo Bags	9,760	25K	83/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
  - Sling leg assembly (2,500-pound capacity) from a 10,000-pound capacity sling set. One for each A-22 cargo bag.
  - Bag, Cargo, A-22, as required.
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Tie-down strap, cargo, CGU-1/B, as required.
  - Clevis, large.
  - Clevis, medium (2 each).

- Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- Fitting, apex (10,000-pound capacity).
- **Personnel.** Two persons can prepare and rig this load in 60 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Place the muzzle and sight covers on the howitzer and secure them with Type III nylon cord.
    - Place the section equipment chest on the end of the trails and secure it with tie-down straps.
    - Place a large clevis assembly on the ground between the howitzer trails.
    - Remove the left trail lift provision pin and place a medium clevis assembly, bell portion down, in the provision. Reinstall the lift provision pin. Repeat the procedures for the lift provision on the right trail.
  - **Rigging.** Rig the load according to the steps in Figure 6-4.
  - **Hookup.** The hookup team stands on top of the trails next to the breech. 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 helicopter 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

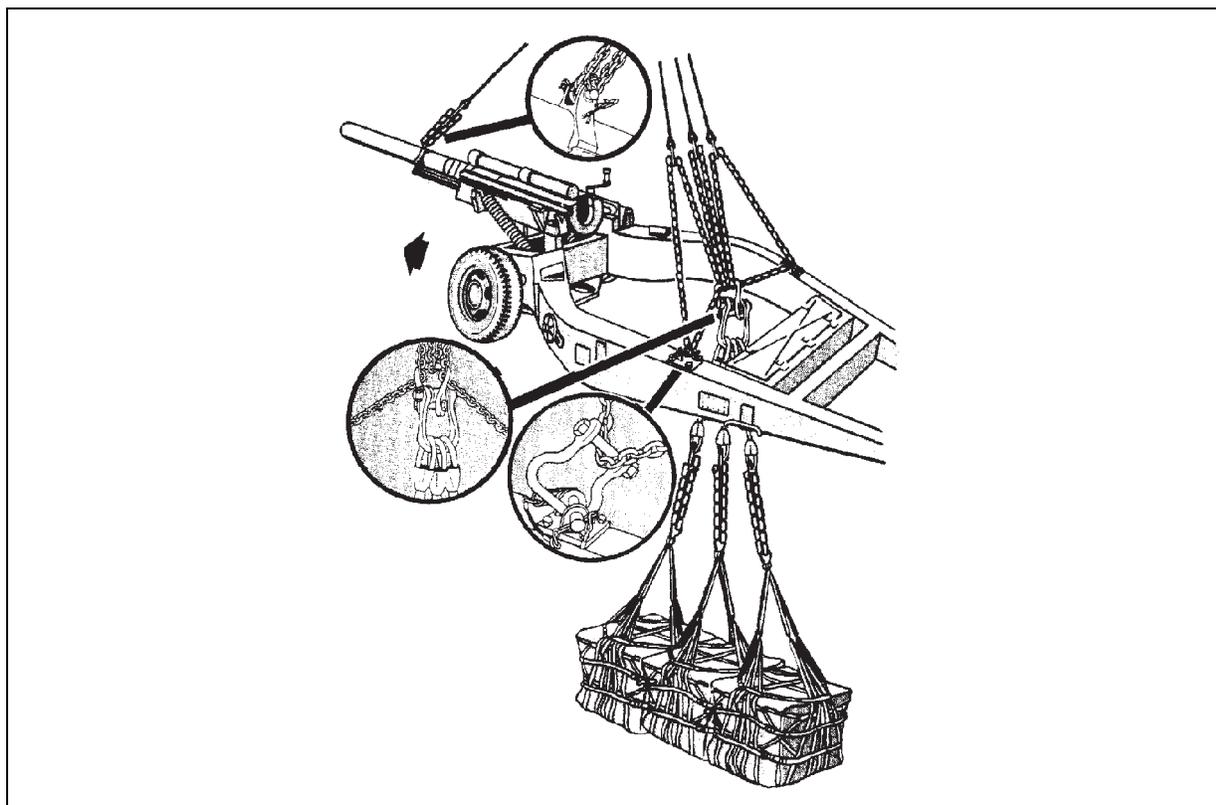


Figure 6-4. M102 105-MM Howitzer with Two or Three A-22 Cargo Bags

<b>RIGGING STEPS</b>
<ol style="list-style-type: none"> <li>1. Position the apex fitting on top of the breech. Route outer sling legs 1 and 2 to the trails. Route inner sling leg 3 to the howitzer tube, and sling leg 4 to the area between the trails.</li> <li>2. Route sling leg 1 through the medium clevis installed on the left trail and through the large clevis on the ground. Place the correct link from Table 6-4 in the grab hook. Repeat with sling leg 2 on the right trail. Secure the excess chain with Type III nylon cord</li> <li>3. Remove the pin from the lift provision on the gun tube. Center the chain end of sling leg 3 in the lift provision. Reinstall the pin in the lift provision. Place the correct link from Table 6-4 in the grab hook. Secure the excess chain with Type III nylon cord.</li> <li>4. Route the chain end of sling leg 4 through the large clevis on the ground and insert link 56 in the grab hook.</li> <li>5. Cluster and tie (breakaway technique) the sling legs together on top of the howitzer to prevent entanglement during hookup and lift-off.</li> <li>6. Route the chain end of the additional sling legs through the clevis on the A-22 cargo bags, one sling leg for each A-22 cargo bag, and insert link 3 in the grab hook. Route the sling legs under the trail and place the eye of the sling legs on an apex fitting. Attach the apex fitting to the large clevis between the trails.</li> </ol>

**Figure 6-4. M102 105-MM Howitzer with Two or Three A-22 Cargo Bags (Continued)**

## **TWO M102 105-MM HOWITZERS**

6-6. The two M102 105-MM howitzers are rigged for single-point sling load using the following procedures:

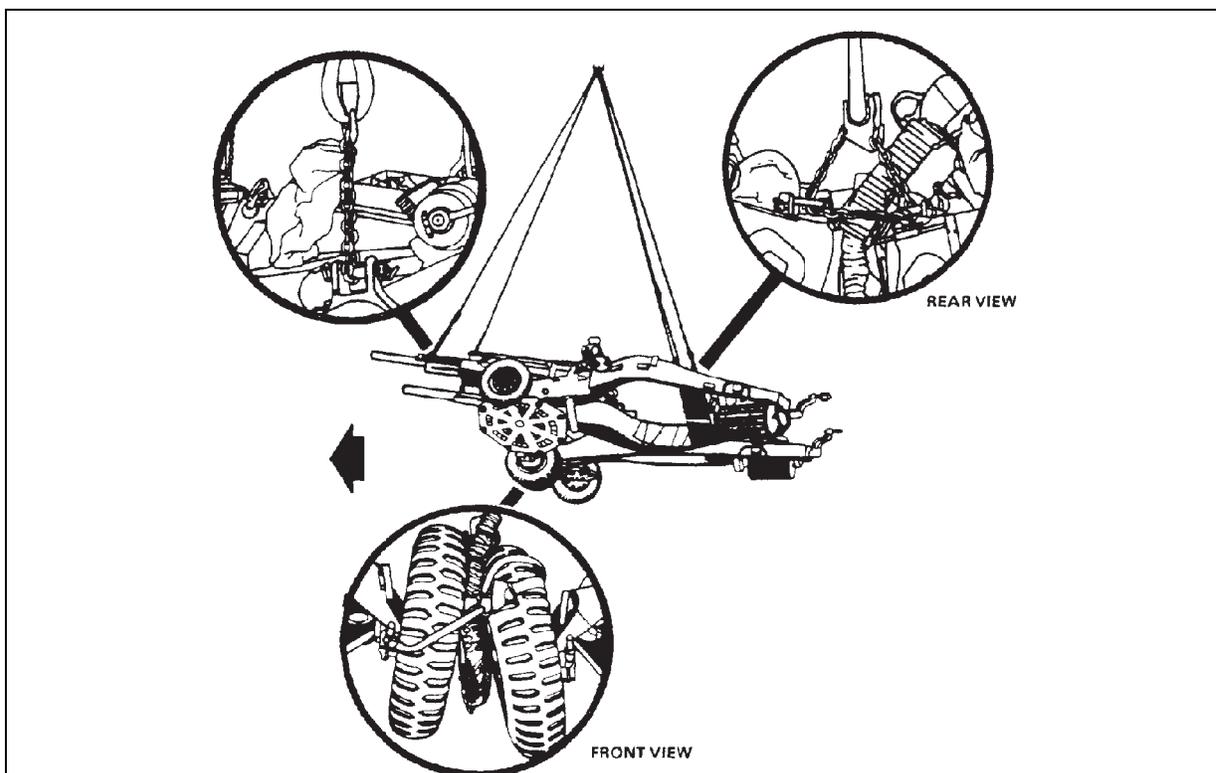
- **Applicability.** The following items in Table 6-5 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center :

**Table 6-5. Two M102 105-MM Howitzers**

<i><b>Nomenclature</b></i>	<i><b>Max Weight (Pounds)</b></i>	<i><b>Sling Set</b></i>	<i><b>Link Count Front/Center/Rear</b></i>
Two M102 Howitzers	6,660	10K	60/20/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity) with one additional sling leg.
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down strap, cargo, CGU-1/B.
  - Pad, energy dissipating, honeycomb, 30- x 36-inch. (A wooden block or four sheets of felt may be substituted for the honeycomb.)
  - Felt sheet, 24- x 60-inch (2 each) or equivalent padding.
- **Personnel.** Two persons can prepare and rig this load in 30 minutes.
- **Procedures.** The following procedures apply to this load:

- **Preparation.** Prepare the load using the following steps:
  - Position two howitzers side by side with the wheels approximately 18 inches apart and the barrels facing the same direction.
  - Place honeycomb padding between the inside wheels of the howitzers. Slide the howitzers together and securely lash the wheels together with the tie-down straps.
  - Wrap one sheet of felt around each inboard trail. Secure the felt with tape or Type III nylon cord. Ensure the lift provisions are accessible.
  - Place the muzzle and sight covers on the howitzer and secure them with Type III nylon cord.
- **Rigging.** Rig the load according to the steps in Figure 6-5.
- **Hookup.** The hookup team stands on top of the padding wrapped around the inside trails. 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 helicopter 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Add the additional sling leg to the sling set. The outer sling legs are numbers 1 and 2, the inner sling legs are numbers 3 and 4, and the center sling leg is number 5.
2. Position the apex fitting on top of the inner wheels at the center of the load. Route outer sling legs 1 and 2 to the barrels. Route inner sling legs 3 and 4 to the outside trails, and center sling leg 5 to the inside trails of both howitzers. Sling legs 1 and 3 must be connected to the left howitzer.
3. Route the chain end of sling leg 1 through the lift provision on the barrel of the left howitzer. Place the correct link from Table 6-5 in the grab hook. Repeat with sling leg 2 on the right howitzer. Secure the excess chain with Type III nylon cord
4. Route the chain end of sling leg 3 through the lift provision on the outside trail of the left howitzer. Place the correct link from Table 6-5 in the grab hook. Repeat with sling leg 4 on the right howitzer. Secure the excess chain with Type III nylon cord.
5. Route the chain end of sling leg 5 through the lift provisions on the inside trails of both howitzers. Place the correct link from Table 6-5 in the grab hook. Secure the excess chain with Type III nylon cord.
6. Cluster and tie (breakaway technique) the sling legs together on top of the howitzers to prevent entanglement during hookup and lift-off.

**Figure 6-5. Two M102 105-MM Howitzers**

## TWO M102 105-MM HOWITZERS WITH ONE, TWO, OR THREE A-22 CARGO BAGS

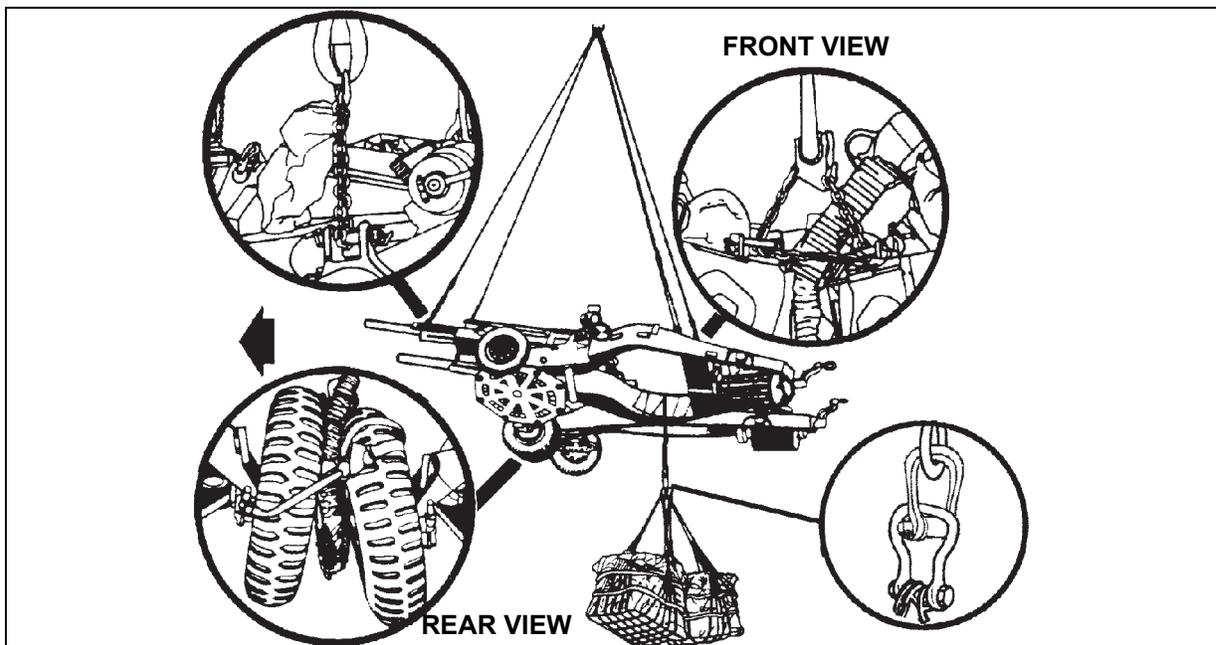
6-7. The two M102 105-MM howitzers with one, two, or three A-22 cargo bags are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 6-6 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 6-6. Two M102 105-MM Howitzers with One, Two, or Three A-22 Cargo Bags**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Center/Rear</i>
Two M102 Howitzers with One A-22 Cargo Bag	8,860	10K	60/20/3
Two M102 Howitzers with Two A-22 Cargo Bags	11,060	25K	48/16/3
Two M102 Howitzers with Three A-22 Cargo Bags	13,260	25K	48/16/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000 or 25,000-pound capacity) with additional sling leg(s) (as required).
  - Bag, Cargo, A-22, as required.
  - Apex fitting (10,000 or 25,000-pound capacity) (as required) (1 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down strap, cargo, CGU-1/B.
  - Pad, energy dissipating, honeycomb, 30- x 36-inch. (A wooden block or four sheets of felt may be substituted for the honeycomb.)
  - Felt sheet, 24- x 60-inch (2 each) or equivalent padding.
- **Personnel.** Two persons can prepare and rig this load in 30 minutes. Add 15 minutes for each A-22 cargo bag.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Position two howitzers side by side with the wheels approximately 18 inches apart and the barrels facing the same direction.
    - Place honeycomb padding between the inside wheels of the howitzers. Slide the howitzers together and securely lash the wheels together with the tie-down straps.
    - Wrap one sheet of felt around each inboard trail. Secure the felt with tape or Type III nylon cord. Ensure the lift provisions are accessible.
    - Place the muzzle and sight covers on the howitzer and secure them with Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 6-6.
  - **Hookup.** The hookup team stands on top of the padding wrapped around the inside trails. 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 helicopter 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Add the additional sling leg to the sling set. The outer sling legs are numbers 1 and 2, the inner sling legs are numbers 3 and 4, and the center sling leg is number 5.
2. Position the apex fitting on top of the inner wheels at the center of the load. Route outer sling legs 1 and 2 to the barrels. Route inner sling legs 3 and 4 to the outside trails, and center sling leg 5 to the inside trails of both howitzers. Sling legs 1 and 3 must be connected to the left howitzer.
3. Route the chain end of sling leg 1 through the lift provision on the barrel of the left howitzer. Place the correct link from Table 6-6 in the grab hook. Repeat with sling leg 2 on the right howitzer. Secure the excess chain with Type III nylon cord.
4. Route the chain end of sling leg 3 through the lift provision on the outside trail of the left howitzer. Place the correct link from Table 6-6 in the grab hook. Repeat with sling leg 4 on the right howitzer. Secure the excess chain with Type III nylon cord.
5. Route the chain end of sling leg 5 through the lift provisions on the inside trails of both howitzers. Place the correct link from Table 6-6 in the grab hook. Secure the excess chain with Type III nylon cord.
6. Cluster and tie (breakaway technique) the sling legs together on top of the howitzers to prevent entanglement during hookup and lift-off.
7. Wrap the chain end of the sling leg(s) around both inboard trails over the felt sheets and insert link 60 in the grab hook. Secure the excess chain with Type III nylon cord.
8. Route the other end of the sling leg(s) under the outside trail of the howitzers and attach the additional apex fitting. Place the medium clevis of the A-22s on the bolt of the apex fitting.

**Figure 6-6. Two M102 105-MM Howitzers with One, Two, or Three A-22 Cargo Bags**

## M119/M119A2 105-MM HOWITZER, FOLDED/TOWED POSITION

6-8. The M119/M119A2 105-MM howitzers, folded/towed position are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 6-7 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 6-7. M119/M119A2 105-MM Howitzer, Folded/Towed Position**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M119/M119A2 Howitzer	4,400	10K	50/10
M119/M119A2 Howitzer with Accompanying Load	7,400	25K	40/10

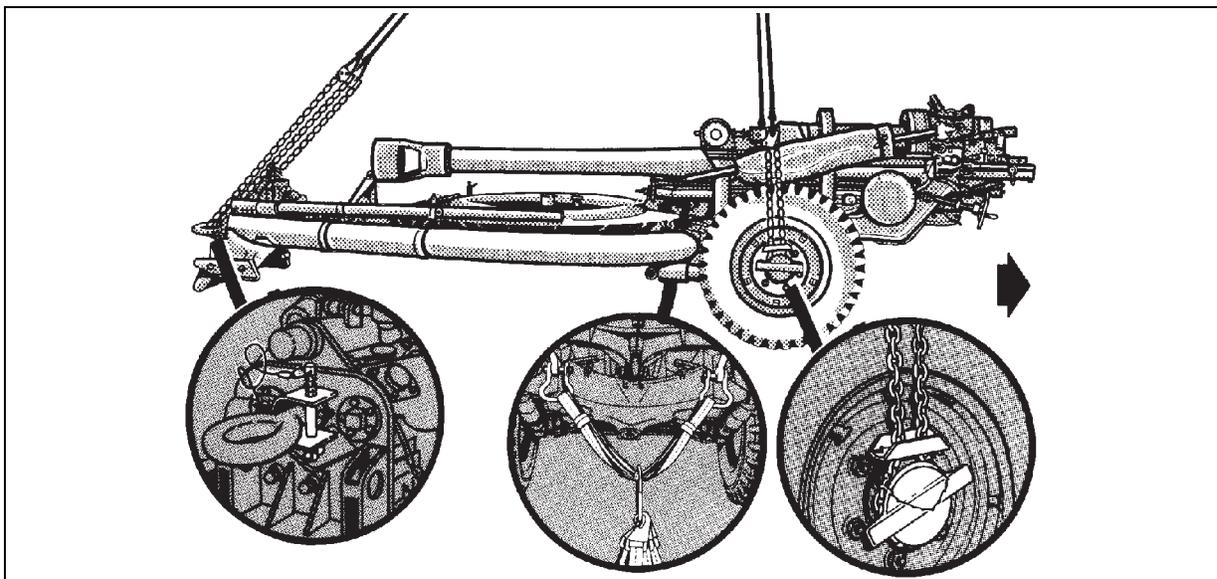
- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity) (when moving the howitzer without accompanying load).
  - Sling set (25,000-pound capacity) (when moving the howitzer with an accompanying load).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Sling set chain safety clamp.
  - Webbing, nylon, tubular, 1/2-inch (as required).
  - Line, multiloop, Type XXVI, 4-loop, 3-foot.
  - Clevis, suspension, medium (2 each).
  - Bag, cargo A-22 or net, cargo (5,000- or 10,000-pound capacity).
  - Apex fitting (10,000- or 25,000-pound capacity) (1 each).
- **Personnel.** Two persons can prepare and rig this load in 30 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Place the howitzer in the folded/towed position. Ensure the wheel knock-off hub is horizontal. Engage the right wheel parking brake (wheel with the knock-off hub).
    - Secure the sight cover to the dial sight with tape or Type III nylon cord.
    - Secure the firing platform, hand spike, and jack to the trail assembly with Type III nylon cord.
    - Ensure the lunette is in the extended position. Install the towing eye stop (C-clamp) on the lunette and secure in place with its retaining pins, when applicable.
    - The sling set chain safety clamp is an additional authorized item. Refer to TM 9-1015-252-10 for NSN and installation information.
    - When the detachable field spade is attached, ensure the two locking pins are installed and locked. Route and tie a length of Type III nylon cord through the key ring of the cable and around the end of the locking pin.
  - **Rigging.** Rig the load according to the steps in Figure 6-7.

**Note.** When an accompanying load requires a sling leg, you may remove and use one of the inner sling legs from the sling set, leaving one sling leg attached to the lunette of the howitzer.

- **Hookup.** The hookup team stands beside the howitzer on the trails. 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 helicopter 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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



#### RIGGING STEPS

#### WARNING

**When moving the howitzer with an accompanying load, the 25,000-pound capacity sling set must be used.**

**Accompanying loads must not exceed the weight limits of the cargo net, cargo bag, sling leg, or exceed the lift capability of the helicopter.**

1. Position the apex fitting on the barrel over the firing platform. Route outer sling legs 1 and 2 to the wheel hubs. Route inner sling legs 3 and 4 to the lunette. Sling legs 1 and 3 must be on the left side of the load.
2. Route the chain end of sling leg 1 around the left wheel hub. Place the link from Table 6-7 in the grab hook. Pull the chain taut and ensure the chain is centered on the hub. Install the sling set chain safety clamp on the two chain links closest to the top of the wheel hub. If using the 25,000-pound capacity sling set, tie the two chain links together with 1/2-inch tubular nylon webbing. Repeat with sling leg 2 on the right wheel hub. Secure the excess chain with Type III nylon cord.
3. Route the chain end of sling legs 3 and 4 through the lunette. Place the correct link from Table 6-7 in the grab hook.

**Figure 6-7. M119/M119A2 105-MM Howitzer, Folded/Towed Position**

<b>RIGGING STEPS (Continued)</b>
4. Cluster and tie or tape (breakaway technique) the sling legs together on top of the howitzers to prevent entanglement during hookup and lift-off.
5. Attach the accompanying load by routing the 3-foot, 4-loop, Type XXVI multiloop line through the eye of the sling leg attached to an A-22 or the apex fitting of a cargo net. Place a medium suspension clevis through the loop on each end of the multiloop line and attach to the provisions located under the howitzer carriage and inboard of the wheels.

**Figure 6-7. M119/M119A2 105-MM Howitzer, Folded/Towed Position (Continued)**

## M119 105-MM HOWITZER, FORWARD/FIRING POSITION

6-9. The M119/M119A2 105-MM howitzers, forward/firing position are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 6-8 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 6-8. M119/M119A2 105-MM Howitzer, Forward/Firing Position**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M119/M119A2 Howitzer	4,400	10K	Listed in Rigging Steps
M119/M119A2 Howitzer with Accompanying Load	7,400	25K	Listed in Rigging Steps

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity) (when moving the howitzer without accompanying load).
  - Sling set (25,000-pound capacity) (when moving the howitzer with an accompanying load).
  - Reach pendant (11,000 or 25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Sling set chain safety clamp.
  - Webbing, nylon, tubular, 1/2-inch (as required).
  - Line, multiloop, Type XXVI, 4-loop, 3-foot (for accompanying load).
  - Clevis, suspension, medium (2 each) (for accompanying load).
  - Bag, cargo A-22 or net, cargo (5,000- or 10,000-pound capacity).
  - Chain length, part number 38850-00053-102, from a 25,000-pound capacity sling set (1 each) (for accompanying load).
  - Coupling link, part number 664241, from a 25,000-pound capacity sling set (1 each) (for accompanying load).
  - Strap, cargo, tiedown, CGU-1/B (as required).
- **Personnel.** Two persons can prepare and rig this load in 30 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Place the howitzer in the forward/firing position.
    - If the firing platform is to be carried in the down position, follow these steps:

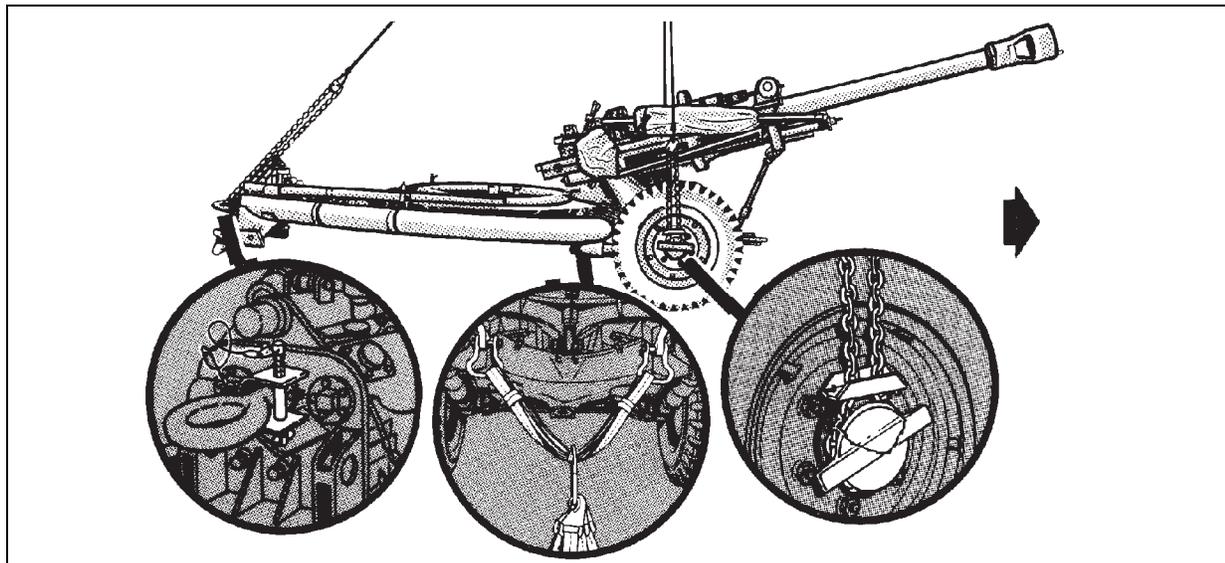
- Mark the wheel hubs at the center of gravity (CG) with tape. The CG is located 6 inches behind (towards the lunette) the center of the hub.
  - Mark the center of the firing platform with tape. Roll the howitzer onto the firing platform aligning the tape strips. The wheel knock-off hub must be horizontal. Engage both parking brakes.
  - Connect the firing platform to the weapon and add an additional CGU-1/B tiedown strap.
  - When the firing platform is carried on top of the trails ensure the wheel knock-off hub is horizontal. Engage the right wheel parking brakes.
  - Secure the sight cover to the dial sight with tape or Type III nylon cord.
  - Secure the firing platform (if carried), hand spike, and jack to the trail assembly with Type III nylon cord.
  - Ensure the lunette is in the extended position. Install the towing eye stop (C-clamp) on the lunette and secure in place with its retaining pins, when applicable.
  - The sling set chain safety clamp is an additional authorized item. Refer to TM 9-1015-252-10 for NSN and installation information.
  - When the detachable field spade is attached to the permanent spades, ensure the two locking pins are installed and locked. Route and tie a length of Type III nylon cord through the key ring of the cable and around the end of the locking pin.
  - When moving the howitzer without an accompanying load, extend the chain on sling leg 3 by removing the chain length and coupling link from sling leg 4 and attaching them to the end of the chain on sling leg 3.
  - When moving the howitzer with an accompanying load and using sling leg 4 on the accompanying load, extend the chain on sling leg 3 by adding an additional length of chain with a coupling link from a 25,000-pound capacity sling set.
- **Rigging.** Rig the load according to the steps in Figure 6-8.

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*Note.* When an accompanying load requires a sling leg, you may remove and use one of the inner sling legs from the sling set, leaving one sling leg attached to the lunette of the howitzer.

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- **Hookup.** The hookup team stands beside the howitzer on the trails. The static wand person discharges the static electricity with the static wand. The hookup person places the top loop of the reach pendant onto the aircraft cargo hook. The hookup team then moves clear of the helicopter 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



### RIGGING STEPS

#### WARNING

When moving the howitzer with an accompanying load, the 25,000-pound capacity sling set must be used.

Accompanying loads must not exceed the weight limits of the cargo net, cargo bag, sling leg, or exceed the lift capability of the helicopter.

1. Attach a reach pendant on the sling set apex fitting.
2. Position the apex fitting and the reach pendant on the breech assembly. Route outer sling legs 1 and 2 to the wheel hubs. Route inner sling leg 3 to the lunette.
3. Route the chain end of sling leg 1 around the left wheel hub. Place link **55** (when using the 10,000-pound capacity sling set) or link **45** (when using the 25,000-pound capacity sling set) in the grab hook. Pull the chain taut and ensure the chain is centered on the hub. Install the sling set chain safety clamp on the two chain links closest to the top of the wheel hub. If the sling set chain safety clamp is unavailable or if the 25,000-pound capacity sling set is being used, tie the two chain links together with 1/2-inch tubular nylon webbing. Repeat with sling leg 2 on the right wheel hub. Place link **50** (when using the 10,000-pound capacity sling set) or link **40** (when using the 25,000-pound capacity sling set) in the grabhook. Secure the excess chain with Type III nylon cord.

Figure 6-8. M119/M119A2 105-MM Howitzer, Forward/Firing Position

<b>RIGGING STEPS (Continued)</b>
<p>4. Route the chain end of the extended sling leg 3 through the lunette. Place link <b>35</b> (when using the 10,000-pound capacity sling set) or link <b>28</b> (when using the 25,000-pound capacity sling set) in the grab hook. Secure the excess chain with Type III nylon cord</p> <p>5. Cluster and tie or tape (breakaway technique) the sling legs together on top of the howitzers to prevent entanglement during hookup and lift-off.</p> <p>6. Attach the accompanying load (if required) by routing the 3-foot, 4-loop, Type XXVI multiloop line through the eye of the sling leg attached to an A-22 or the apex fitting of a cargo net. Place a medium suspension clevis through the loop on each end of the multiloop line and attach to the provisions located under the howitzer carriage and inboard of the wheels.</p>

**Figure 6-8. M119/M119A2 105-MM Howitzer, Forward/Firing Position (Continued)**

## **M119/M119A2, 105-MM HOWITZER, FORWARD/FIRING POSITION, PLATFORM DOWN, WITH ADDITIONAL BOXES OF AMMUNITION**

6-10. The M119/M119A2 105-MM howitzer, forward/firing position, platform down, with additional boxes of ammunition are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 6-9 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 6-9. M119/M119A2 105-MM Howitzer, Forward/Firing Position, Platform Down, with Additional Boxes of Ammunition**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M119/M119A2 Howitzer with Two Boxes of Ammunition on the Firing Platform	4,850	10K	Listed in Rigging Steps
M119/M119A2 Howitzer with Two Boxes of Ammunition on the Firing Platform and Ammunition in A-22 Cargo Bag or Cargo Net	7,500	25K	Listed in Rigging Steps

**WARNINGS**

**The ammunition boxes must be securely lashed to the firing platform.**

**When using the A-22 cargo bag for an accompanying load do not exceed 2,200 pounds.**

**When using the cargo net for an accompanying load do not exceed 2,650 pounds.**

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity) (when moving the howitzer without A/22 or cargo net).
  - OR
  - Sling set (25,000-pound capacity) (when moving the howitzer with an A/22 or cargo net).

- Reach pendant (11,000 or 25,000-pound capacity).
- Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- Cord, nylon, Type III, 550-pound breaking strength.
- Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- Sling set chain safety clamp is an authorized item. Refer to TM 9-1015-252-10 for NSN and installation information. Also authorized is the Suncor Stainless 316 precision cast, heavy duty Jaw and Swivel device, Item # S0156-HD008 (for use with 10K and 25K sling sets) or a safety clamp (Picatinny Arsenal Part # 12591189; Cage Code 19200) designed for the 25K sling set .
- Line, multiloop, Type XXVI, 4-loop, 3-foot (for accompanying load).
- Clevis, suspension, medium (2 each) (for A/22 or cargo net).
- Bag, cargo A/22 or net, cargo (5,000- or 10,000-pound capacity).
- Chain length, part number 38850-00053-102, from a 25,000-pound capacity sling set (1 each) (for A/22 or cargo net).
- Coupling link, part number 664241, from a 25,000-pound capacity sling set (1 each) (for A/22 or cargo net).
- Strap, cargo, tiedown, CGU-1/B (as required).
- **Personnel.** Two persons can prepare and rig this load in 30 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Place the howitzer in the forward/firing position.
      - If the firing platform is to be carried in the down position, follow these steps:
        - Mark the wheel hubs with tape at the center of gravity (CG). The CG is located 6 inches behind (towards the lunette) the center of the hub.
        - Mark the center of the firing platform along the length (lunette to muzzle) and width (side to side) with strips of tape. Ensure the hand holes (used to secure the ammunition boxes) are equally spaced on either side of the long axis of the gun.
        - Roll the howitzer onto the firing platform. Align the CG masking tape with the side to side tape strips. The wheel knock-off hub must be horizontal. Engage both parking brakes.
        - Connect the firing platform to the weapon. Tie the ammunition boxes together with Type III nylon cord. Secure the two ammunition boxes (if carried) by routing a CGU-1/B tiedown strap through the platform hand holes and the carrying handles of each box. Pad the CGU-1/B where it rubs on the boxes and platform.
        - Pad and tape the trailing edge of the platform when carrying an accompanying load in an A/22 cargo bag or a cargo net.
        - Secure the sight cover to the dial sight with tape or Type III nylon cord.
        - Secure the firing platform (if carried), hand spike, and jack to the trail assembly with Type III nylon cord.
        - When the detachable field spade is attached to the permanent spades, ensure the two locking pins are installed and locked. Route and tie a length of Type III nylon cord through the key ring of the cable and around the end of the locking pin.
        - When moving the howitzer without an A/22 cargo bag or a cargo net load, extend the chain on sling leg 3 by removing the chain length and coupling link from sling leg 4 and attaching them to the end of the chain on sling leg 3.
        - When moving the howitzer with an accompanying load and using sling leg 4 on the accompanying load, extend the chain on sling leg 3 by adding an additional length of chain with a coupling link from a 25,000-pound capacity sling set.
  - **Rigging.** Rig the load according to the steps in Figure 6-9.

*Note.* When an accompanying load requires a sling leg, you may remove and use one of the inner sling legs from the sling set, leaving one sling leg attached to the lunette of the howitzer.

- **Hookup.** The hookup team stands on the howitzer or on the trails. The static wand person discharges the static electricity with the static wand. The hookup person places the top loop of the reach pendant onto the aircraft cargo hook. The hookup team then moves clear of the helicopter 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

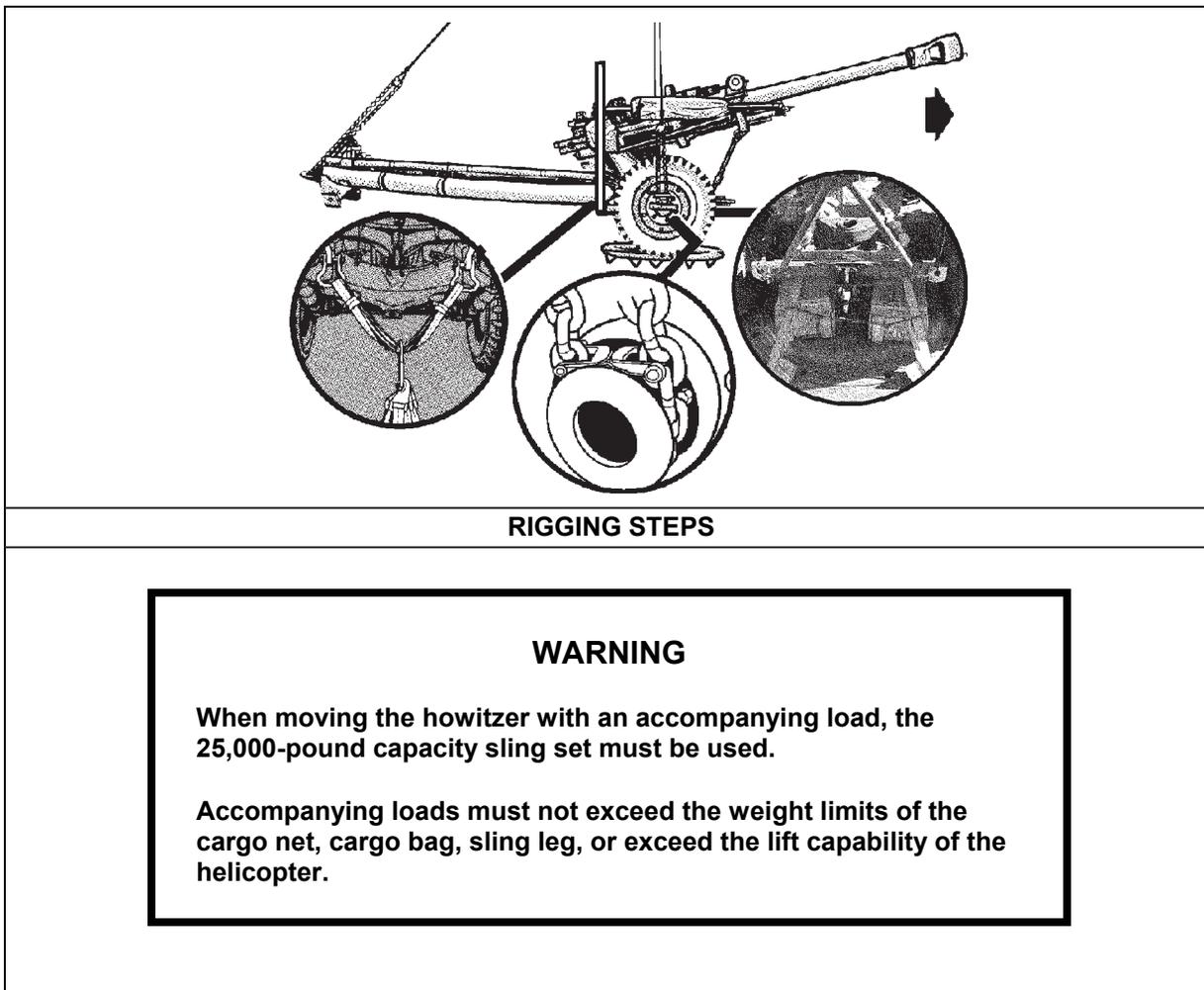


Figure 6-9. M119/M119A2 105-MM Howitzer, Forward/Firing Position, Platform Down, with Additional Boxes of Ammunition

<b>RIGGING STEPS (Continued)</b>
<ol style="list-style-type: none"> <li>1. Attach a reach pendant on the sling set apex fitting.</li> <li>2. Position the apex fitting and the reach pendant on the breech assembly. Route outer sling legs 1 and 2 to the wheel hubs. Route inner sling leg 3 to the lunette.</li> <li>3. Route the chain end of sling leg 1 around the left wheel hub (looking at the howitzer from the lunette). Place link <b>50</b> (when using the 10,000-pound capacity sling set) or link <b>40</b> (when using the 25,000-pound capacity sling set) in the grab hook. Pull the chain taut and ensure the chain is centered on the hub. Install the sling set chain safety clamp on the two chain links closest to the top of the wheel hub. If the sling set chain safety clamp is unavailable, tie the two chain links together with 1/2-inch tubular nylon webbing. Repeat with sling leg 2 on the right (knock-off) wheel hub. Place link <b>55</b> (when using the 10,000-pound capacity sling set) or link <b>45</b> (when using the 25,000-pound capacity sling set) in the grabhook. Secure the excess chain with Type III nylon cord.</li> <li>4. Route the chain end of the extended sling leg 3 through the lunette. Place link <b>35</b> (when using the 10,000-pound capacity sling set) or link <b>28</b> (when using the 25,000-pound capacity sling set) in the grab hook. Secure the excess chain with Type III nylon cord</li> <li>5. Cluster and tie or tape (breakaway technique) the sling legs together on top of the howitzers to prevent entanglement during hookup and lift-off.</li> <li>6. Attach the accompanying load (if required) by routing the 3-foot, 4-loop, Type XXVI multiloop line through the eye of the sling leg attached to an A-22 or the apex fitting of a cargo net. Place a medium suspension clevis through the loop on each end of the multiloop line and attach to the provisions located under the howitzer carriage and inboard of the wheels.</li> </ol>

**Figure 6-9. M119/M119A2 105-MM Howitzer, Forward/Firing Position, Platform Down, with Additional Boxes of Ammunition (Continued)**

## M114A2 155-MM HOWITZER, TOWED

6-11. The M114A2 155-MM howitzer, towed is rigged for single-point sling load using the following procedures:

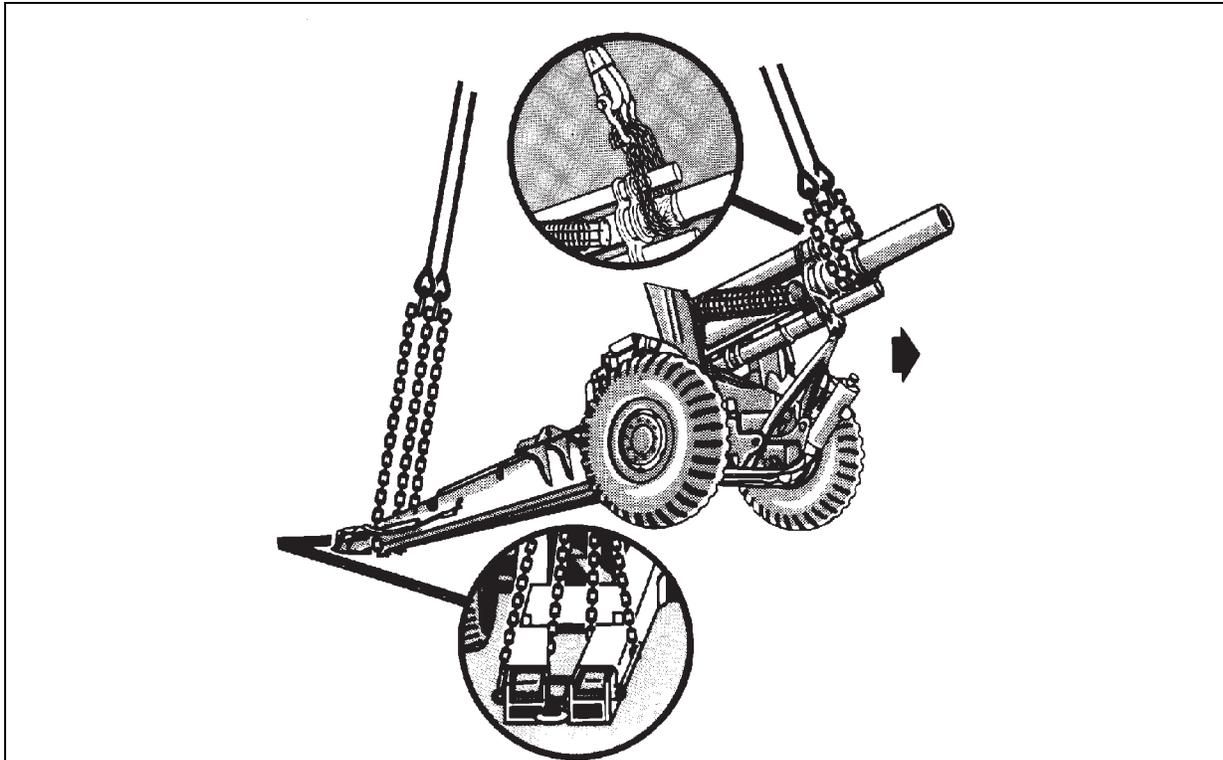
- **Applicability.** The following item in Table 6-10 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 6-10. M114A2 155-MM Howitzer, Towed**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M114A2 Howitzer	12,700	40K	50/10

- **Materials.** The following materials are required to rig this load:
  - Sling set (40,000-pound capacity) with two additional 8-foot chain lengths and coupling links.
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.

- Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- Tie-down strap, cargo, CGU-1/B (2 each).
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Stow all howitzer equipment, including sights, in the proper place, except the spade key. Stow the spade key in the section chest. Secure all equipment with tape or Type III nylon cord.
    - Position the section chest on the rear of the trails.
    - Secure the section chest to the trails by routing the tie-down strap through the handles of the chest and both trail lifting handles.
    - Secure the spades to the brackets with Type III nylon cord. Secure all hoses and cables to the sides of the trails with tape or Type III nylon cord.
    - Engage one parking brake.
    - Pad the barrel forward of the recoil mechanism. Ensure all sight mounts are removed or padded. Ensure the gun jack pin is locked in place.
    - Remove or secure all gun covers.
  - **Rigging.** Rig the load according to the steps in Figure 6-10.
  - **Hookup.** The hookup team stands on the wheels or on the firing platform. 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 helicopter 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



#### RIGGING STEPS

1. Position the apex fitting on the breech assembly. Route outer sling legs 1 and 2 to the barrel. Route inner sling legs 3 and 4 to the trail. Sling legs 1 and 3 must be on the left side of the load. Attach the additional chain lengths to sling legs 3 and 4 using the coupling links.
2. Position the grab link of sling leg 1 on the left side of the gun tube padded area. Route the chain end under the tube and back up to the grab link. Place the correct link from Table 6-10 in the grab hook. Repeat with sling leg 2 with the grab link on the right side of the gun tube. Secure the excess chain with Type III nylon cord.
3. Route the chain end of sling leg 3 down through the spade key bracket on the outboard side of the left trail, under the trail, and up the inboard side of the trail. Place the correct link from Table 6-10 in the grab hook. Repeat with sling leg 4 on the right trail.
4. Cluster and tie (breakaway technique) the sling legs together on top of the howitzers to prevent entanglement during hookup and lift-off.

**Figure 6-10. M114A2 155-MM Howitzer, Towed**

## **M198 155-MM HOWITZER, TOWED/STOWED**

6-12. The M198 155-MM howitzer, towed/stowed is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 6-11 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 6-11. M198 155-MM Howitzer, Towed/Stowed**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M198 Howitzer in Towed Position	15,740	25K	50/3
M198 Howitzer in Stowed Position	15,740	25K	70/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity) with two additional 8-foot chain lengths and coupling links.
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
  - Tie-down strap, cargo, CGU-1/B (2 each).
  - Clevis assembly, suspension, large, one per lift provision.
  - Reach pendant (25,000-pound capacity) required for sling loading in the towed position.
- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure the spades to the trails with the tie-down straps.
    - Secure all hoses and cables to the outboard side of the right trail with tape or Type III nylon cord.
    - Pad the sight mounts and secure the padding with tape or Type III nylon cord.
    - Attach a large clevis assembly to the trail lift provisions located forward of the stowed firing baseplate.
    - Ensure the top carriage locking pin is in place and is secured with a locking safety clip for the towed position.

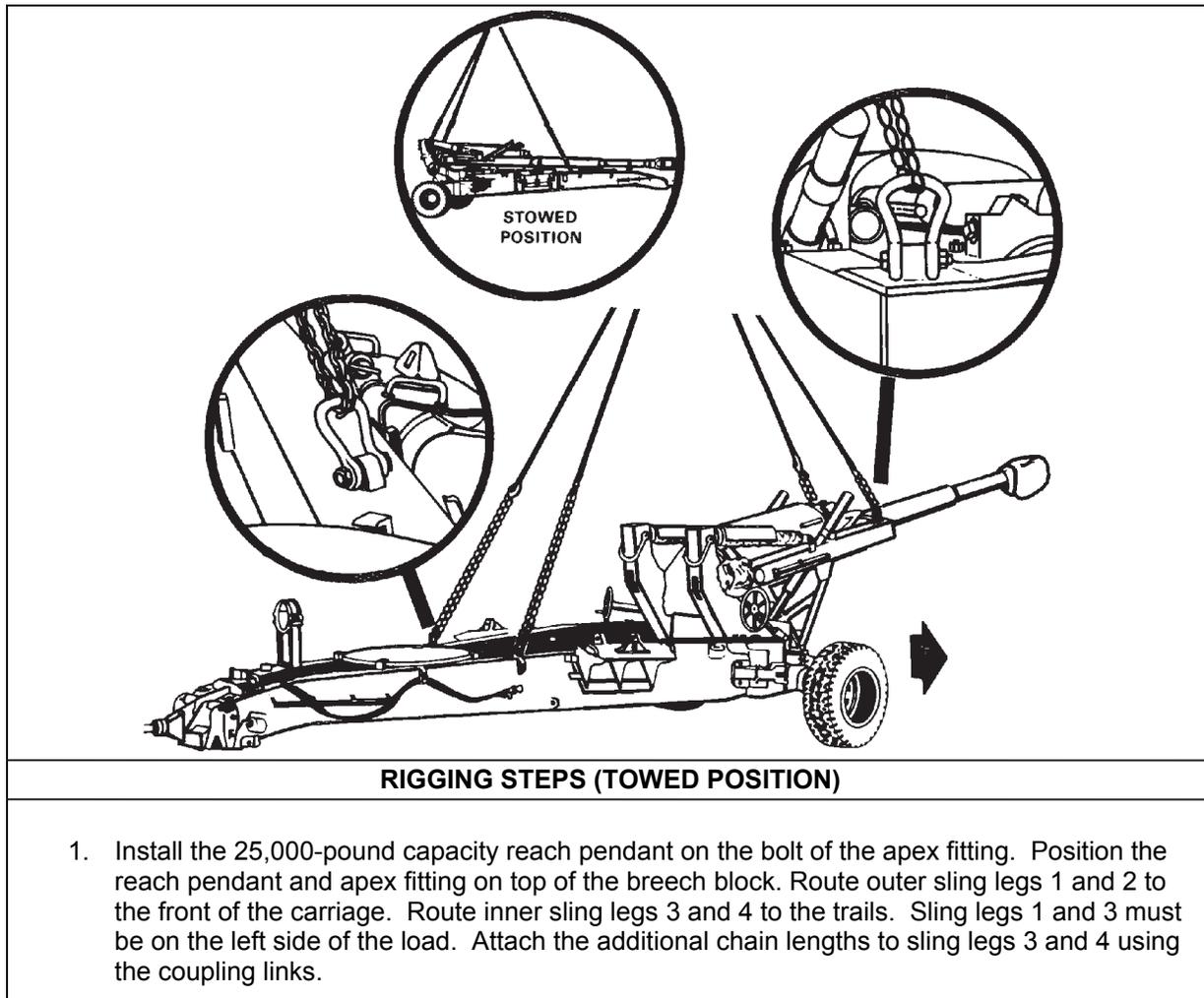
**CAUTION:**

Do not attempt to lift the howitzer if the top carriage lock pin will not drop into place or if the locking safety clip is missing. Either of these conditions could result in the top carriage rotating in flight.

- Position the barrel and install the travel lock; secure with the pins for the towed position.
- Attach a large clevis assembly to the lift provision on each side of the carriage for the towed position.
- Attach a large clevis assembly to the two lift provisions located at the upper end of the equilibrators for the towed position.
- **Rigging.** Rig the load according to the steps in Figure 6-11.

- Notes.**
1. 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.
  2. The helicopter must approach the howitzer over the trails.

- **Hookup.** The hookup team stands on the carriage. 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 helicopter 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 6-11. M198 155-MM Howitzer, Towed/Stowed**

<b>RIGGING STEPS (TOWED POSITION) (Continued)</b>
<ol style="list-style-type: none"> <li>2. Route the chain end of sling leg 1 through the clevis on the lifting provision on the left side of the carriage assembly. Place the correct link from Table 6-11 in the grab hook. Repeat with sling leg 2 and the right front lift provision on the right side of the carriage. Secure the excess chain with Type III nylon cord.</li> <li>3. Route the chain end of sling leg 3 through the clevis on the lift provision on top of the left trail. Place the correct link from Table 6-11 in the grab hook. Repeat with sling leg 4 on the right trail.</li> <li>4. Cluster and tie (breakaway technique) the sling legs together on top of the howitzers to prevent entanglement during hookup and lift-off.</li> </ol>
<b>RIGGING STEPS (STOWED POSITION)</b>
<ol style="list-style-type: none"> <li>1. Position the apex fitting on top of the barrel centered on the load. Route outer sling legs 1 and 2 to the trails. Route inner sling legs 3 and 4 to the breech end. Sling legs 1 and 3 must be on the left side of the load. Attach the additional chain lengths to sling legs 1 and 2 using the coupling links.</li> <li>2. Route the chain end of sling leg 1 through the clevis on the left trail. Place the correct link from Table 6-11 in the grab hook. Repeat with sling leg 2 and the right trail.</li> <li>3. Route the chain end of sling leg 3 through the clevis on the left side of the equilibrator above the breech. Place the correct link from Table 6-11 in the grab hook. Repeat with sling leg 4 on the right side. Secure the excess chain with Type III nylon cord.</li> <li>4. Cluster and tie (breakaway technique) the sling legs together on top of the howitzers to prevent entanglement during hookup and lift-off.</li> </ol>

**Figure 6-11. M198 155-MM Howitzer, Towed/Stowed (Continued)**

## **TWO M101A1 105-MM HOWITZERS**

6-13. The two M101A1 105-MM howitzers are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 6-12 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 6-12. Two M101A1 155-MM Howitzers**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Two M101A1 Howitzers	9,960	40K	Listed in Rigging Steps

- **Materials.** The following materials are required to rig this load:
  - Sling set (40,000-pound capacity) with two additional chain lengths and coupling links for the sling set being used.
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.

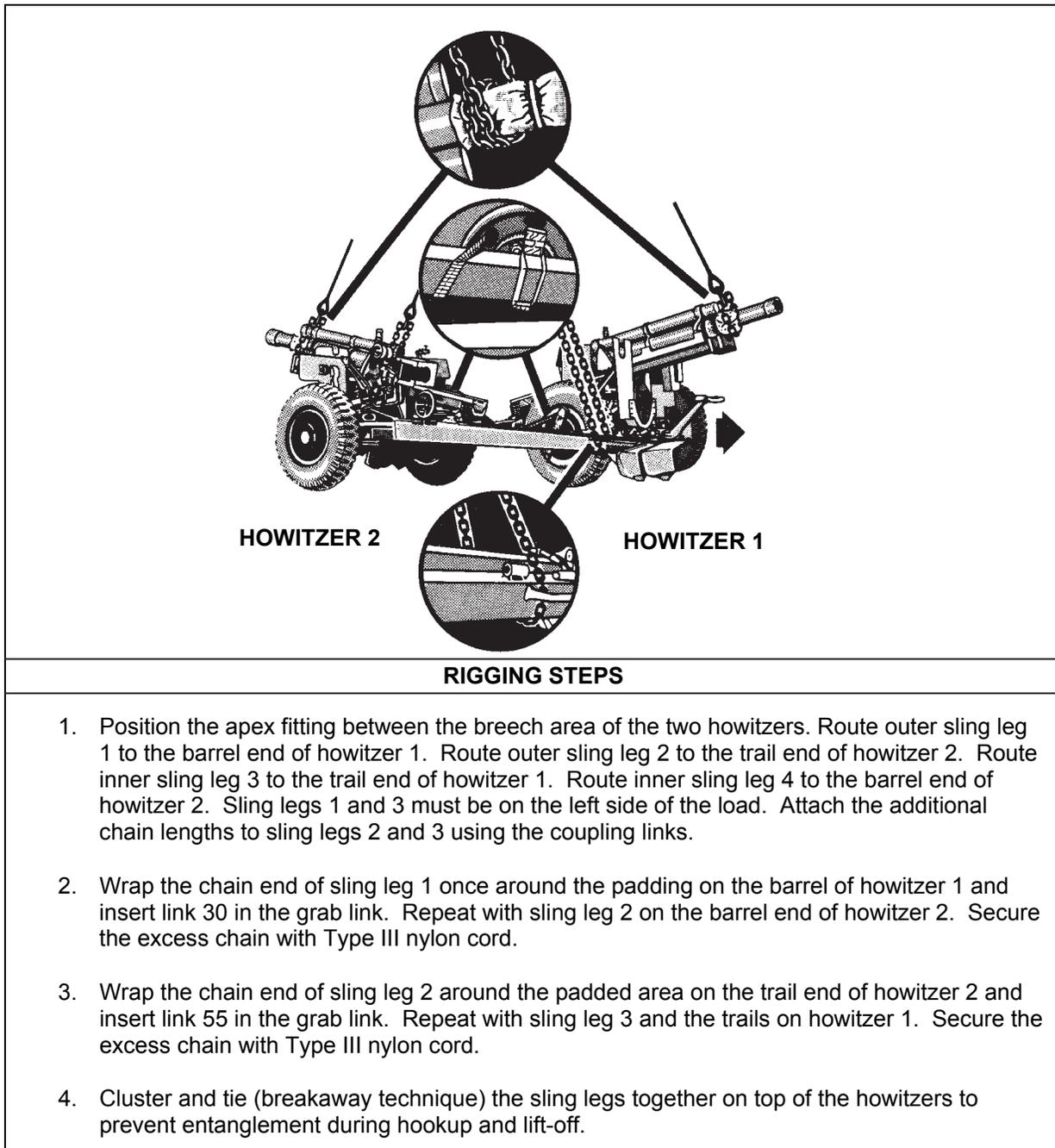
- Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- Tie-down strap, cargo, CGU-1/B (as required).
- Pad, energy-dissipating, 24- x 24-inch (2 each) or 4-x 4- x 24-inch lumber (2 each).
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:

---

*Note.* The howitzer with the gun tube facing in the direction of flight is designated as howitzer 1.

---

- Position the howitzers side by side with the gun tubes facing in opposite directions. Howitzer 1 is on the left side facing forward and howitzer 2 is on the right side facing aft.
- Ensure the trails are secured. Rotate the lunette to the down position. Secure the trail closing lock handles with Type III nylon cord or tape.
- Place honeycomb between the right wheel of howitzer 1 and the right trail of howitzer 2. Route two CGU-1/B cargo tie-down straps through the top of the wheel rim, out the bottom of the rim, and around the honeycomb and trail of howitzer 2. Repeat with the right wheel of howitzer 2 and the right trail of howitzer 1.
- Ratchet the howitzers together as securely as possible. Add more straps as required. A minimum of two straps per wheel is required.
- Close and lock the breech of each gun. Secure or remove the muzzle, breech, and tube covers. Remove or pad the sight mounts.
- Place the gun section equipment chest on the trails and secure it with CGU-1/B tie-down straps.
- Pad the gun tubes above the cradles and around the forward edge of the recoil damper assemblies. Secure the padding with tape or Type III nylon cord.
- Pad the gun trails on both howitzers aft of the traveling lock shaft area.
- Set the hand brakes.
- **Rigging.** Rig the load according to the steps in Figure 6-12.
- **Hookup.** The hookup team stands alongside the howitzer or on top of the trails. 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 helicopter 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 6-12. Two M101A1 105-MM Howitzers**

## BMS-120 BATTALION MORTAR SYSTEM

6-14. The BMS-120 battalion mortar system is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 6-12 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

Table 6-12. BMS-120 Battalion Mortar System

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
BMS 120, Carriage Mounted	764	10K	3/67

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
  - Tie-down strap, cargo, CGU-1B (as required).
- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all loose equipment, chains and wires with tape or Type III nylon cord.
    - Secure the mortar to the carriage by routing the tie-down strap across the mortar base plate and around the axle. Route one end of the strap through the base plate left handle, around the axle, and back through the base plate handle. Continue the strap across the base plate, through the base plate right handle, around the axle, back through the base plate handle, and attach the end of the tie-down strap to the ratchet. Pad the tie-down strap where it makes contact with the sharp edges of the base plate.
  - **Rigging.** Rig the load according to the steps in Figure 6-12.
  - **Hookup.** The hookup team stands alongside the carriage. 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 helicopter 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

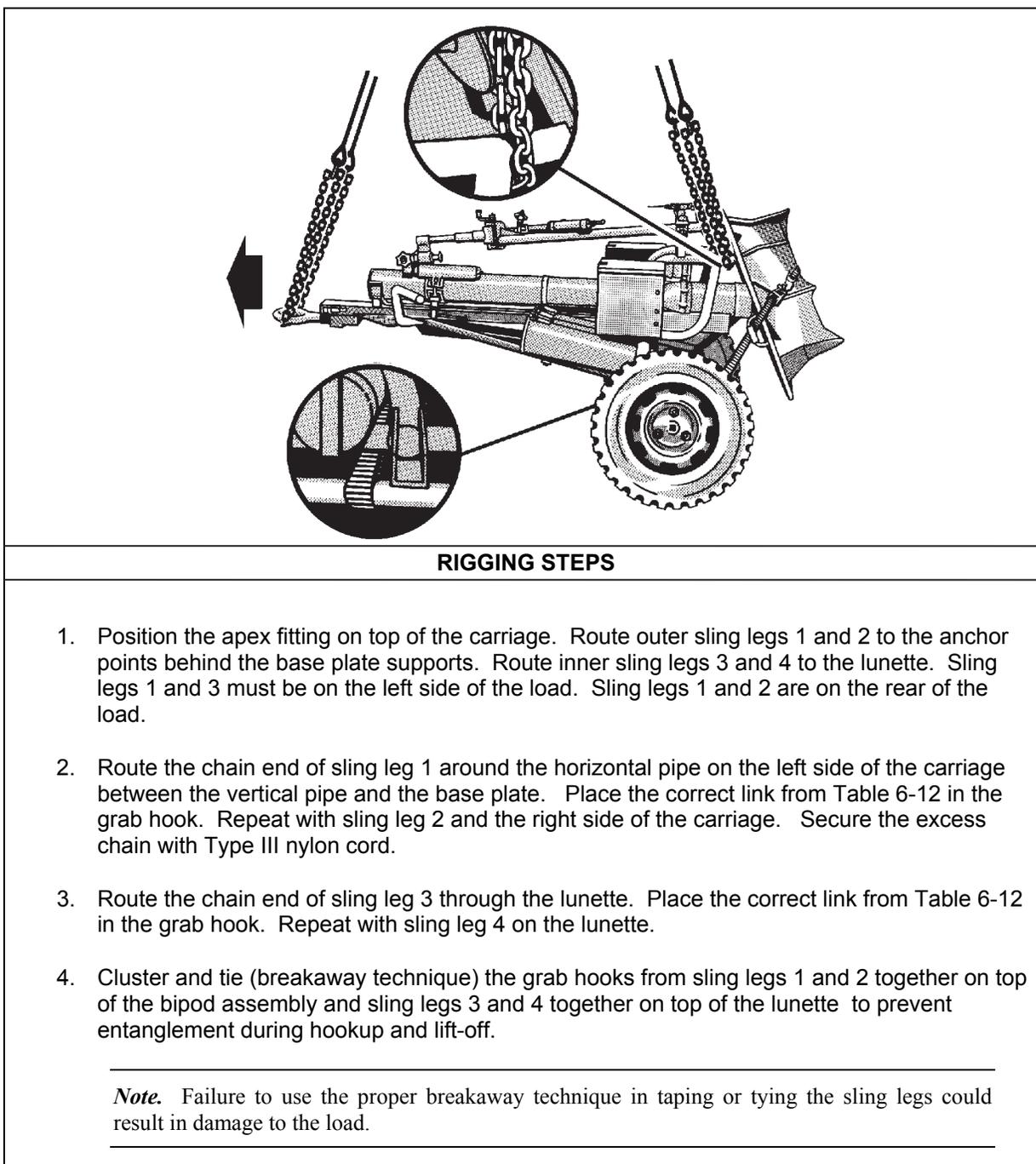


Figure 6-12. BMS-120 Battalion Mortar System

## M777/M777A1/M777A2, 155-MM, LIGHTWEIGHT HOWITZER

6-15. The M777/M777A1/M777A2, 155-mm, lightweight howitzer is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 6-13 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 6-13. M777/M777A1/M777A2, 155-mm, Lightweight Howitzer**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M777, 155-mm, Lightweight Howitzer	9,300	15K 25K	80/3 80/3
M777A1, 155-mm, Lightweight Howitzer	9,800	15K 25K	80/3 80/3
M777A2, 155-mm, Lightweight Howitzer	9,920	15K 25K	80/3 80/3

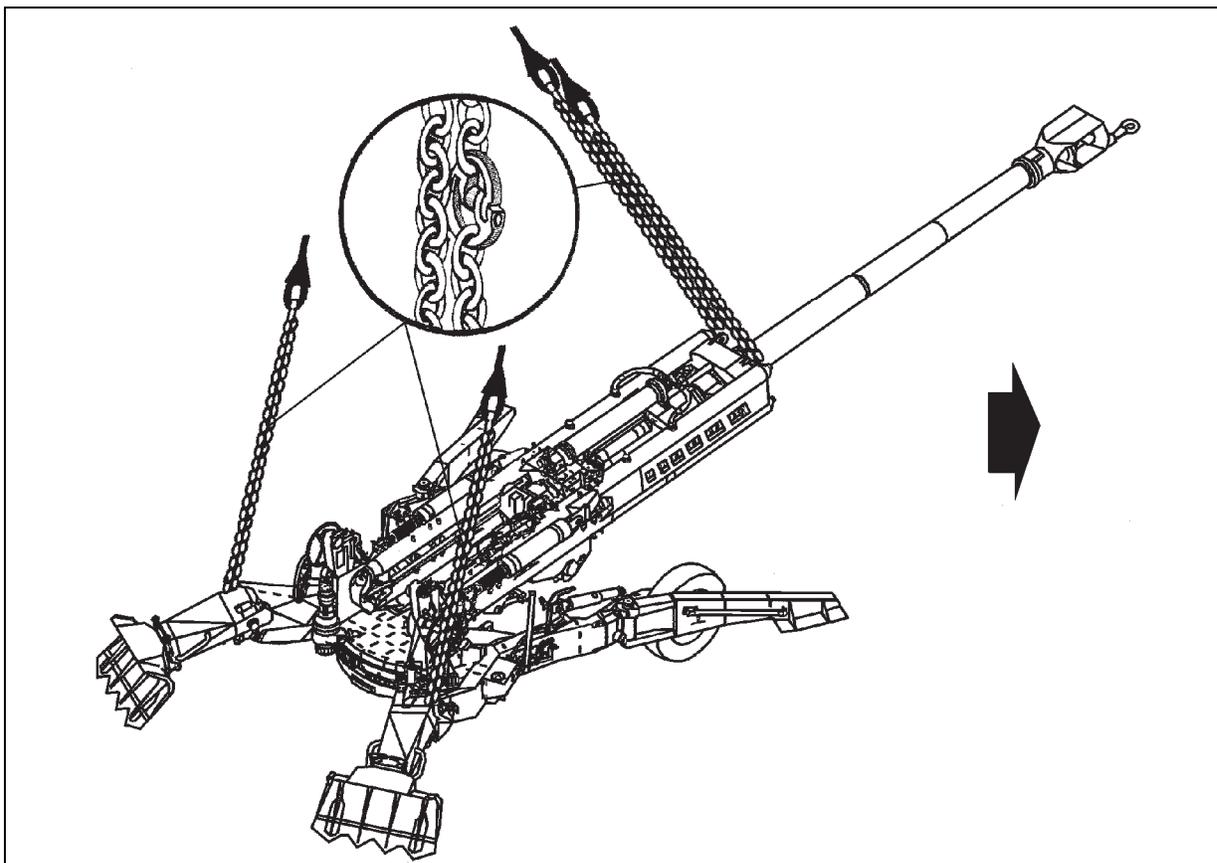
- **Materials.** The following materials are required to rig this load:
  - Sling set (15,000-pound capacity) with one additional web ring.
    - Chain length, part number 34080-4, from a 15,000-pound capacity sling set (4 each).
    - Coupling link, part number 31611, from a 15,000-pound capacity sling set (4 each).
  - OR
  - Sling set (25,000-pound capacity).
    - Chain length, part number 38850-00053-102, from a 25,000-pound capacity sling set (4 each).
    - Coupling link, part number 577-0615, from a 25,000-pound sling set (4 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Ensure the stabilizers are in the firing position.
    - The spades may be in the up (stowed position) or down ( firing position).
    - Secure the air hoses and electrical cable to the supporting structure with Type III nylon cord.
    - Stow and secure all equipment with tape or Type III nylon cord.
    - Ensure the barrel is in the firing position.
    - Extend the sling leg chains by connecting one additional chain length to each chain on the sling set with coupling links.
  - **Rigging.** Rig the load according to the steps in Figure 6-13.
  - **Hookup.** The hookup team stands on top of the gun carriage. The static wand person discharges the static electricity with the static wand. The hookup person places the web ring onto the cargo hook. The hookup team then carefully dismounts the howitzer and 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.

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**Note.** The helicopter must approach the howitzer over the spades.

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- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position the web ring on top of the forward end of the breech. Route outer sling legs 1 and 2 to the front of the howitzer 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 side of the barrel. Place the correct link from Table 6-13 in the grab hook. Repeat with sling leg 2 through the right front lift provision. Secure all excess chain with tape or Type III nylon cord.
3. Loop the chain end of sling leg 3 through the left rear lift provision located on the left side of the supporting frame near the left spade. Place the correct link from Table 6-13 in the grab hook. Repeat with sling leg 4 through the right rear lift provision.
4. Cluster and tie (breakaway technique) the sling legs in each sling set together to prevent entanglement during hookup and lift-off.

**Figure 6-13. M777/M777A1/M777A2, 155-mm, Lightweight Howitzer**

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## Chapter 7

# Certified Single-Point Rigging Procedures for Guided Missile Systems

### INTRODUCTION

7-1. This chapter contains rigging procedures for guided missile systems that have 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 guided missile systems are in this section. Paragraphs 7-2 and 7-3 give detailed instructions for rigging loads.

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*Note.* Reach pendants may be used on all single point loads. A static discharge person is not required when using a reach pendant.

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### AVENGER

7-2. The Avenger is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 7-1 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 7-5. Avenger**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Avenger on M998	8,513	10K	50/5
Avenger on M1097	9,087	10K	50/5

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Fold the mirrors in front of the windshield and tie together with Type III nylon cord.
    - Ensure the Avenger fire unit is secured to the truck. Secure all equipment inside the fire unit with tape, tie-downs, or nylon cord; close and secure the door.
    - Disconnect the standard vehicle mounted launcher connectors from the missile pods and secure them to the fire unit with tape or nylon cord.
    - Secure all equipment inside the vehicle with tape, nylon cord, or tie-downs. Close and secure the doors (if installed).
    - Ensure the fuel tank is not over 3/4 full. Inspect the fuel tank, oil filter, and battery caps for proper installation.

- Place the transmission in neutral and set the parking brake.
- Ensure the front wheels are pointed straight ahead. Secure the steering wheel using the securing device attached under the dashboard.
- **Rigging.** Rig the load according to the steps in Figure 7-1.

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*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.

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- **Hookup.** The hookup team stands on top of the fire 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 helicopter 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



Figure 7-5. Avenger

<b>RIGGING STEPS</b>
<ol style="list-style-type: none"> <li>1. Position the apex fitting on top of the fire unit. Route outer sling legs 1 and 2 to the front of the vehicle and inner sling legs 3 and 4 to the rear of the load. Ensure sling legs 1 and 3 are on the left side of the load.</li> <li>2. Route the chain end of sling leg 1 through the left front lift provision that protrudes through the hood. Place the correct link from Table 7-1 in the grab hook. Repeat with sling leg 2 on the right front lift provision. Secure the excess chain with Type III nylon cord.</li> <li>3. Loop the chain end of sling leg 3 through the left rear lift provision located on the rear bumper. Place the correct link from Table 7-1 in the grab hook. Place the sling leg in the sling guide on top of the fire unit. Repeat with sling leg 4 on the right rear lift provision.</li> <li>4. Cluster and tie (breakaway technique) the sling legs together on top of the fire unit to prevent entanglement during hookup and lift-off.</li> </ol>

**Figure 7-1. Avenger (Continued)**

**AVENGER ON M1097/M1097A1/M1097A2 HMMWV WITH ECU/PPU AND AN ALUMINUM AIRLIFT BUMPER WITH OR WITHOUT BUSTLE BOX STOWED ON THE ROOF**

7-3. The Avenger on M1097/M1097A1/M1097A2 HMMWV with ECU/PPU and an aluminum airlift bumper with or without bustle box stowed on the roof is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 7-2 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 7-2. Avenger on M1097/M1097A1/M1097A2 HMMWV with ECU/PPU and an Aluminum Airlift Bumper with or without Bustle Box Stowed on the Roof**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Avenger with ECU/PPU on M1097	9,800	10K 15K	45/3 30/3
Avenger with ECU/PPU on M1097A1	9,800	10K 15K	45/3 30/3
Avenger with ECU/PPU on M1097A2	10,000 10,300 10,300	10K 15K 25K	45/3 30/3 35/3

**CAUTION**

These sling load rigging procedures are for Avengers that have the Aluminum Airlift Bumpers ONLY. Lift provisions on Steel Airlift Bumpers do not allow for adequate sling clearance.

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).

- Chain length, part number 38850-00053-101, from a 10,000-pound capacity sling set (4 each).
- Coupling link, part number 577-0415, from a 10,000-pound sling set (4 each).

OR

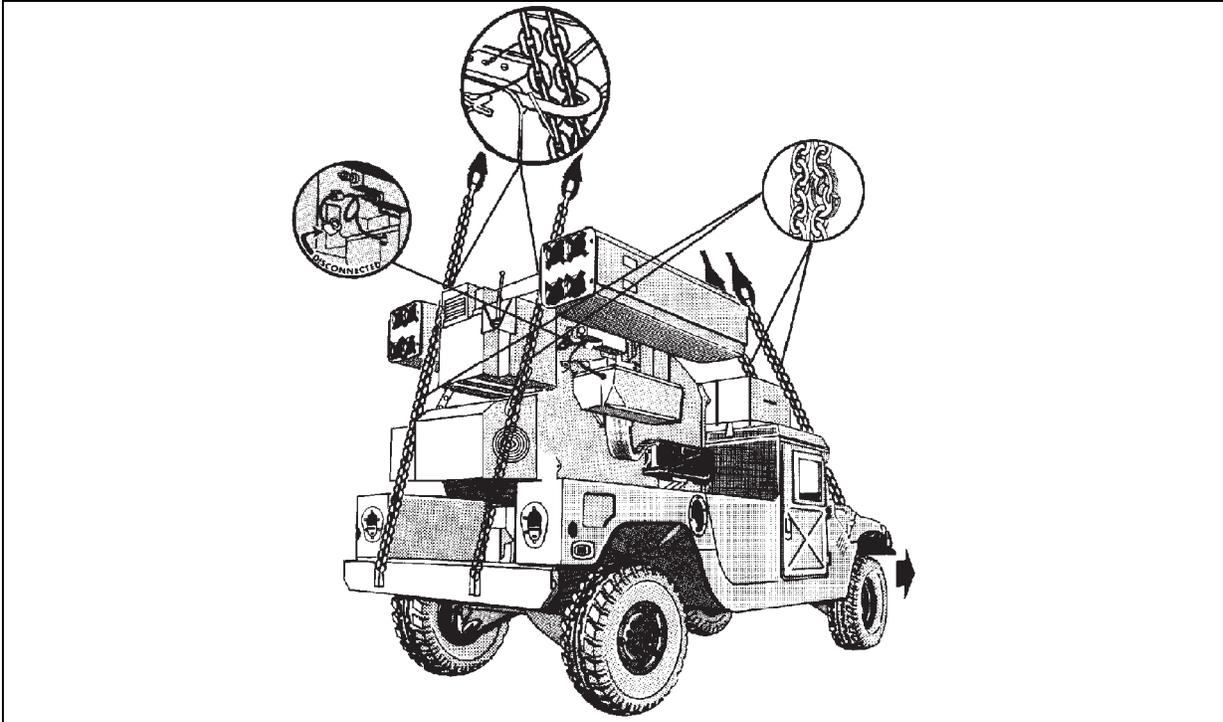
- Sling set (25,000-pound capacity).
  - Chain length, part number 38850-00053-102, from a 25,000-pound capacity sling set (4 each).
  - Coupling link, part number 577-0615, from a 25,000-pound sling set (4 each).
- Multileg sling set (15,000-pound capacity).
  - Chain length, part number 34080-4 from a 15,000-pound capacity sling set (8 each).
  - Coupling link, part number 31611, from a 15,000-pound sling set (8 each).
- Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- Cord, nylon, Type III, 550-pound breaking strength.
- Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- Strap, cargo, tiedown, CGU-1/B (2 each, or more as required to secure cargo).
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Fold the mirrors inward and tie together with Type III nylon cord.
    - Ensure the Avenger fire unit is secured to the truck. Secure all equipment inside the fire unit with tape, tiedown straps, or Type III nylon cord; close and secure the door.
    - Disconnect the standard vehicle mounted launcher connectors from the missile pods and secure them to the fire unit with tape or Type III nylon cord.
    - Secure all equipment inside the vehicle with tape, Type III nylon cord, or tiedown straps. Roll up the windows. Close and secure the doors (if installed).
    - Ensure the fuel tank is not over 3/4 full. Inspect the fuel tank, oil filter, and battery caps for proper installation.
    - Place the transmission in neutral and set the parking brake.
    - Ensure the front wheels are pointed straight ahead. Secure the steering wheel using the securing device attached under the dashboard or Type III nylon cord.
    - Secure the bustle box to the box rack on the roof of the vehicle CGU-1/B tiedown straps (if needed).
    - Tape the zippers on the missile pod covers (if applicable).
    - Extend the sling leg chains by connecting one additional chain length to each chain on a 10,000- or 25,000-pound capacity sling set with coupling links and two chain lengths to each chain on a 15,000-pound capacity sling set with coupling links.
  - **Rigging.** Rig the load according to the steps in Figure 7-2.

---

**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.

---

- **Hookup.** The hookup team stands on top of the fire 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 helicopter 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position the apex fitting on top of the fire unit. Route outer sling legs 1 and 2 to the front of the vehicle and inner sling legs 3 and 4 to the rear of the load. Ensure sling legs 1 and 3 are on the left side of the load.
2. Route the chain end of sling leg 1 through the left front lift provision that protrudes through the hood. Place the correct link from Table 7-2 in the grab hook. Repeat with sling leg 2 on 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 sling guide. Loop the chain through the left rear lift provision located on the rear bumper. Route the chain back through the left sling guide. Place the correct link from Table 7-2 in the grab hook. Pull the chains tight and secure both sides of the chain to the sling guide with Type III nylon cord. Repeat with sling leg 4 using the right rear lift provision and sling guide.
4. Cluster and tie (breakaway technique) the sling legs together on top of the fire unit to prevent entanglement during hookup and lift-off.

**Figure 7-2. Avenger on M1097/M1097A1/M1097A2 HMMWV with ECU/PPU and an Aluminum Airlift Bumper with or without Bustle Box Stowed on the Roof**

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## Chapter 8

# Certified Single-Point Rigging Procedures for Engineer Equipment

### INTRODUCTION

8-1. This chapter contains rigging procedures for 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 8-47 give detailed instructions for rigging loads.

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*Note.* Reach pendants may be used on all single point loads. A static discharge person is not required when using a reach pendant.

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### T-3 TRACTOR, CRAWLER

8-2. The T-3 tractor crawler is rigged for single-point sling load using the following procedures:

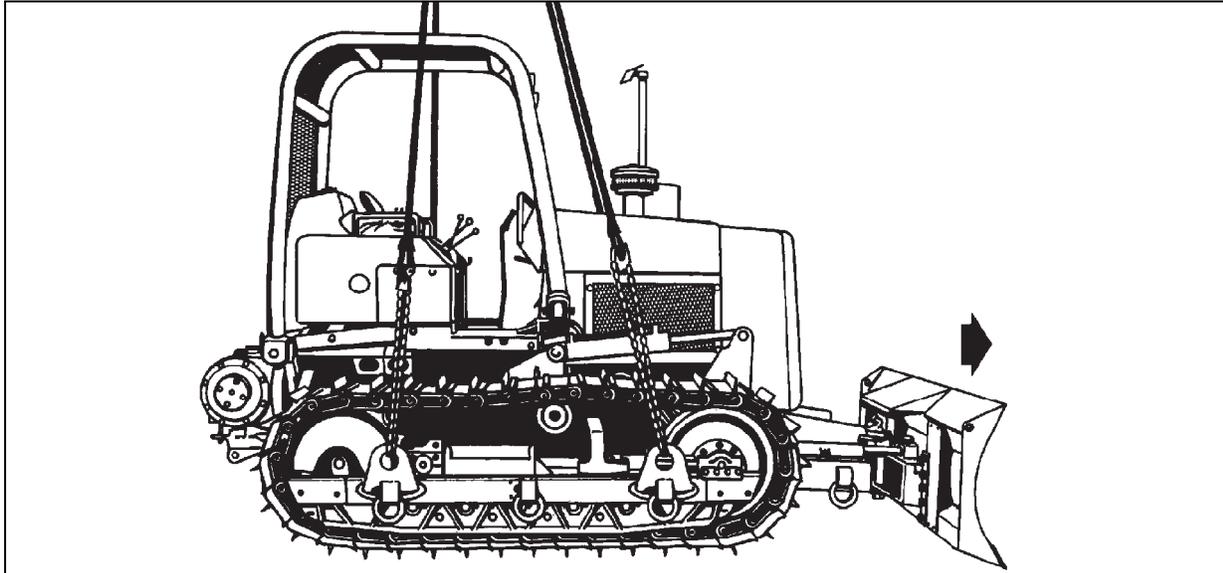
- **Applicability.** The following items in Table 8-1 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 8-1. T-3 Tractor, Crawler**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Tractor, Full-Track, JD550 with Roll Over Protection System (ROPS), Towing Winch, and Hydraulic Angle Blade	16,662	25K	10/20

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure the operator's seat cushion to the seat frame with tape or Type III nylon cord.
    - Remove both canopy lights, wrap in padding, and store in the toolbox.
    - Secure all loose covers and panels with tape.
    - 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.
  - **Rigging.** Rig the load according to the steps in Figure 8-1.

- **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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**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 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 (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**

**D5B TRACTOR, DOZER**

- 8-3. The D5B tractor, dozer is rigged for single-point sling load using the following procedures:
- **APPLICABILITY.** The following items in Table 8-2 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 8-2. D5B Tractor, Dozer**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
D5B Tractor, Dozer, Type II, Power Section	18,915	25K	47/8
D5B Tractor, Dozer, Type II, Track Section	13,735	25K	21/3

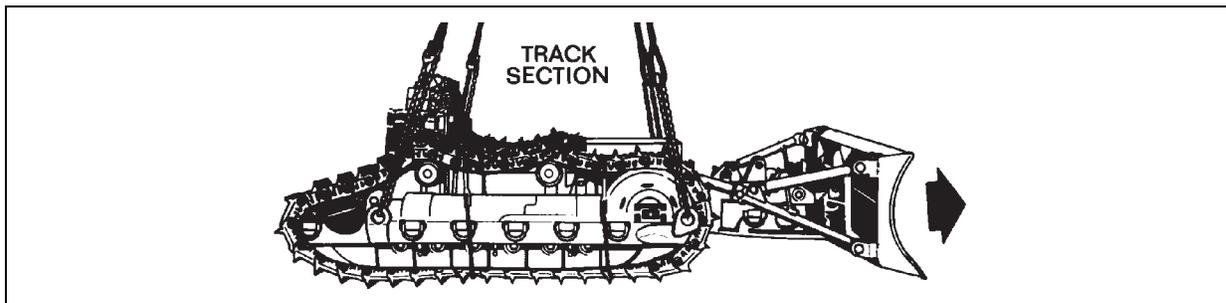
- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity) (2 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Four persons can sectionalize the dozer in 2 1/2 hours and two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Sectionalize the dozer in accordance with the operator's manual. Do not remove the winch or the winch pump.
    - Remove the exhaust stack and secure it on top of the winch with Type III nylon cord.
    - Remove the pre-air cleaner and secure it on the seat with Type III nylon cord.
    - Secure the operator's seat cushion to the seat frame with Type III nylon cord.
    - Tape all lights and gauges.
    - Place the transmission in neutral and secure the safety lock lever with Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 8-2.

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*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.

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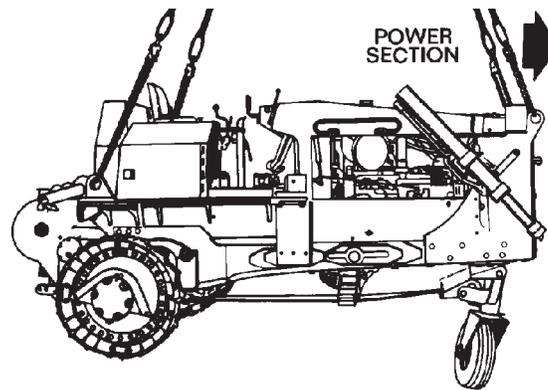
- **Hookup.** The hookup team stands on top of the power or track section. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear of the load but remains close to the load 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 8-2. D5B Tractor, Dozer, Track Section**

**RIGGING STEPS**

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 (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, Track Section (Continued)****RIGGING STEPS**

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 (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, Power Section**

## MC1150E FULL TRACKED TRACTOR

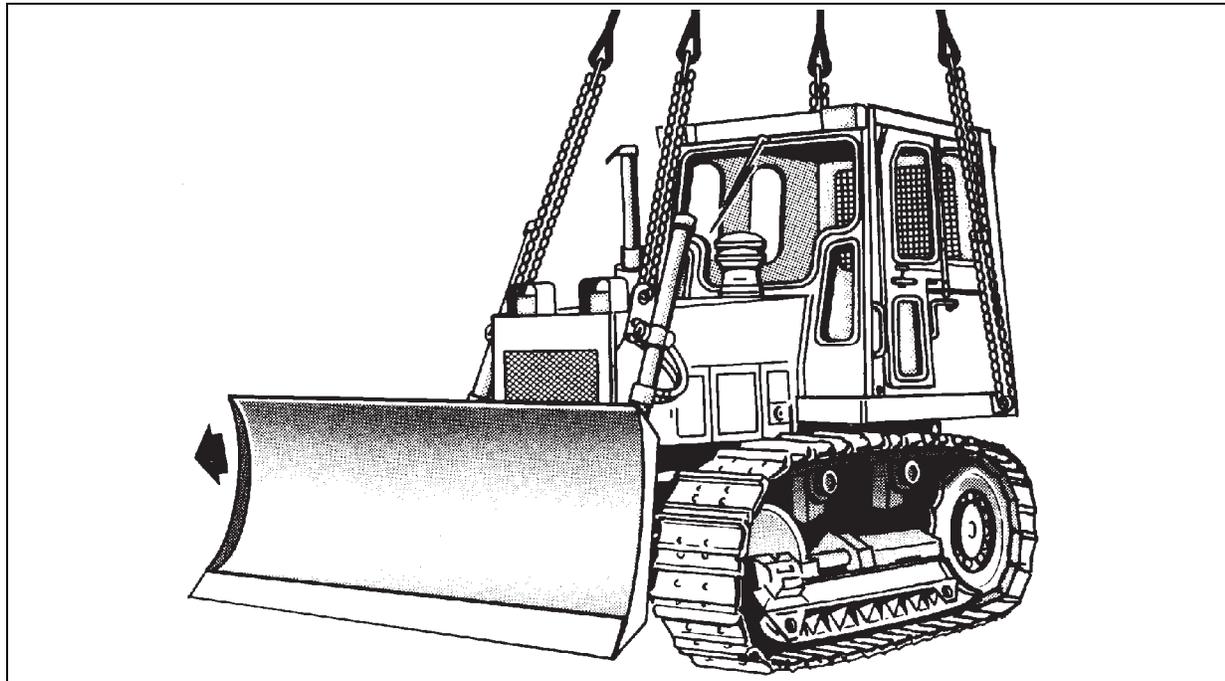
8-4. The MC1150E full tracked tractor is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 8-3 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 8-3. MC1150E Full Tracked Tractor**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
MC1150E Full Tracked Tractor	24,062	40K	5/35

- **Materials.** The following materials are required to rig this load:
  - Sling set (40,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
  - Chain, 8-foot length from 40,000-pound capacity sling set with coupling links (2 each).
  - Tie-down chain assembly (10,000-pound capacity), MB-1.
- **Personnel.** Two persons can prepare and rig this load in 30 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Elevate the blade 2 feet off the ground. Using the tie-down chains, secure the blade in the UP position.
    - Twist the lights on the cab inward. Tape the lights, glass fixtures, and exhaust pipe opening.
    - Ensure all caps, lids, and doors are securely fastened.
    - Place the transmission in neutral and engage the hand brake.
  - **Rigging.** Rig the load according to the steps in Figure 8-3.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



#### 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 (breakaway technique) the sling legs together on top of the crew compartment to prevent entanglement during hookup and lift-off.

**Figure 8-3. MC1150E Full Tracked Tractor**

### JD450G TYPE III FULL-TRACKED TRACTOR DOZER

8-5. The JD450G type III full tracked tractor dozer is rigged for single-point sling load using the following procedures:

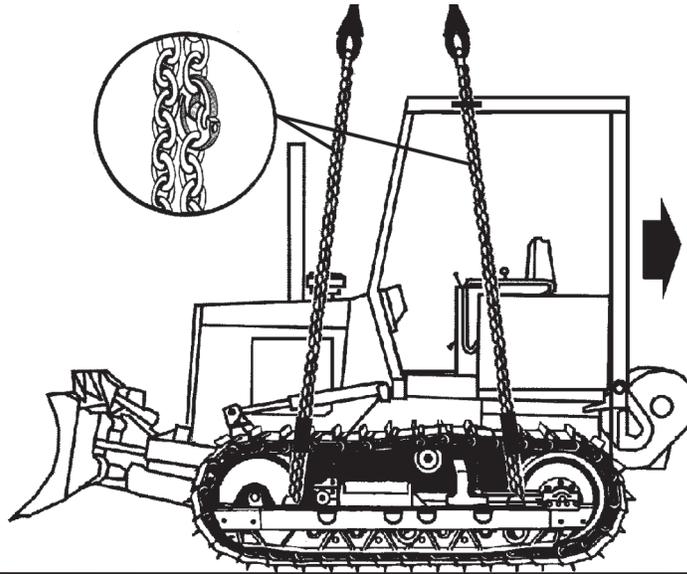
- **Applicability.** The following items in Table 8-4 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Tractor, Dozer, Full-TrackeD, Type III, JD450G	18,400	25K	3/10
Tractor, Dozer, Full-TrackeD, Type III, JD450G without ROPS	17,700	25K	3/10
Tractor, Dozer, Full-TrackeD, Type III, JD450G without ROPS and Winch	16,160	25K	3/10

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
    - Chain length, part number 38850-00053-102, from a 25,000-pound capacity sling set (4 each).
    - Coupling link, part number 664241, from a 25,000-pound capacity sling set (4 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Heavy padding (1/4 section of a steel-belted tire or a length of fire hose or equivalent) (2 each).
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Connect one additional chain length to each chain on each sling set with a coupling link.
    - Prepare the tractor for mission needs using the operator's manual. Special tools may be required to remove the ROPS or winch.
    - Secure all loose equipment with tape or Type III nylon cord.
    - Place the transmission in neutral and set the parking brake.
    - Tape the front sling guides on the ROPS. Tape all lights and gauges.
    - 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.
  - **Rigging.** Rig the load according to the steps in Figure 8-4.
  - **Hookup.** The hookup team stands on top of the dozer. 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

**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**

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

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 8-4 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 8-4 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. Heavily 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 8-4. JD450G Type III Full-Tracked Tractor Dozer**

## **CASE MODEL 580 WHEELED INDUSTRIAL TRACTOR**

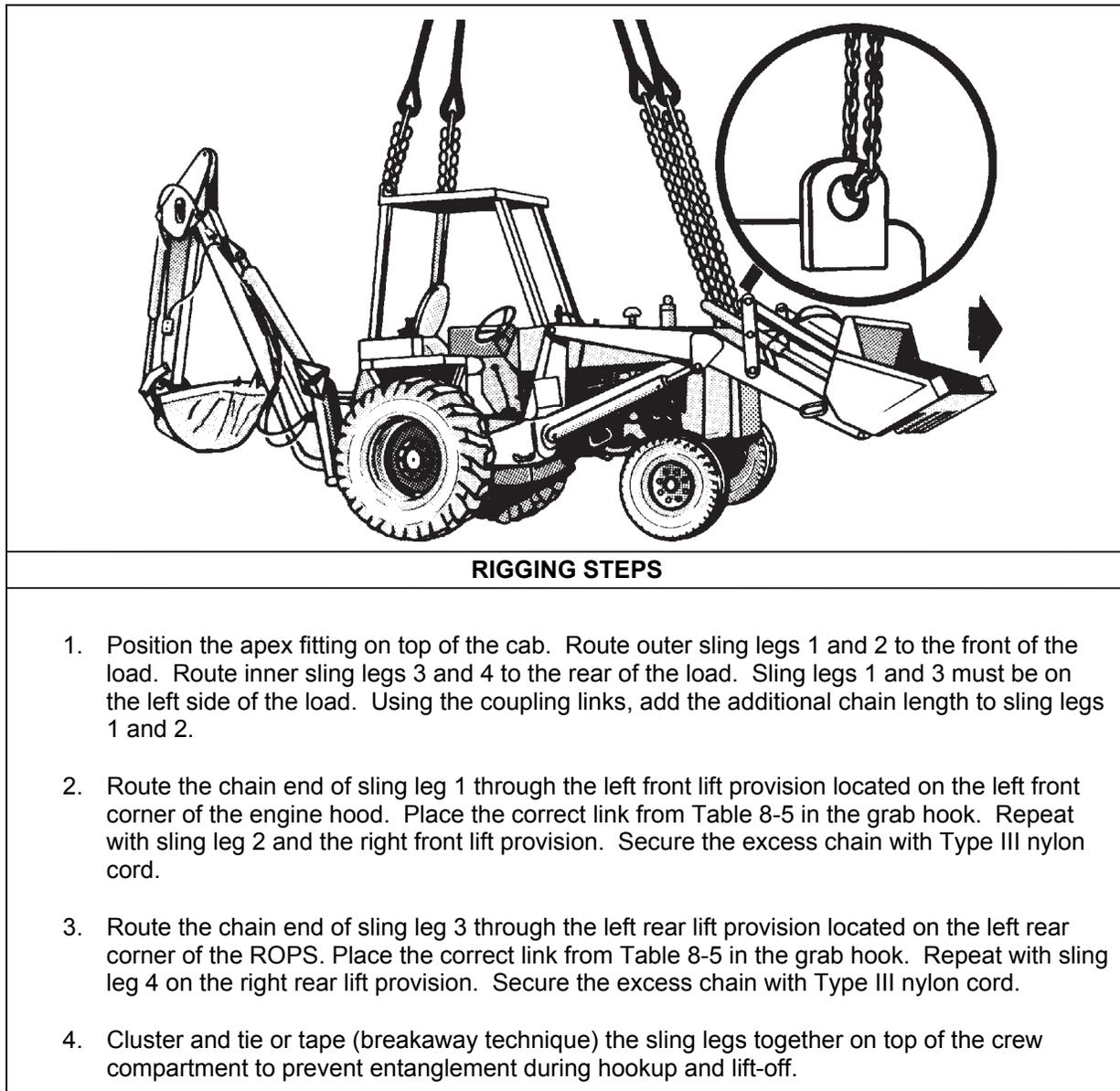
8-6. The Case model 580 wheeled industrial tractor is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 8-5 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 8-5. Case Model 580 Wheeled Industrial Tractor**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Tractor, Case, model 850	10,500	15K	30/54

- **Materials.** The following materials are required to rig this load:
  - Sling set (15,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
  - Chain, 6-foot length from 15,000-pound capacity sling set with coupling links (2 each).
  - Tie-down strap, cargo, CGU-1B (2 each).
- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Elevate the front bucket halfway and tilt the bucket toward the rear.
    - 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.
    - Ensure all caps, lids, and doors are securely fastened.
    - Tape all lights, glass fixtures, and the exhaust cap closed.
    - Place the transmission in neutral and engage the hand brake.
  - **Rigging.** Rig the load according to the steps in Figure 8-5.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 8-5. Case Model 580 Wheeled Industrial Tractor**

## SMALL EMPLACEMENT EXCAVATOR (SEE)

8-7. The small emplacement excavator is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 8-6 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 8-6. Small Emplacement Excavator**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Small Emplacement Excavator	16,240	25K	Listed in Rigging Steps

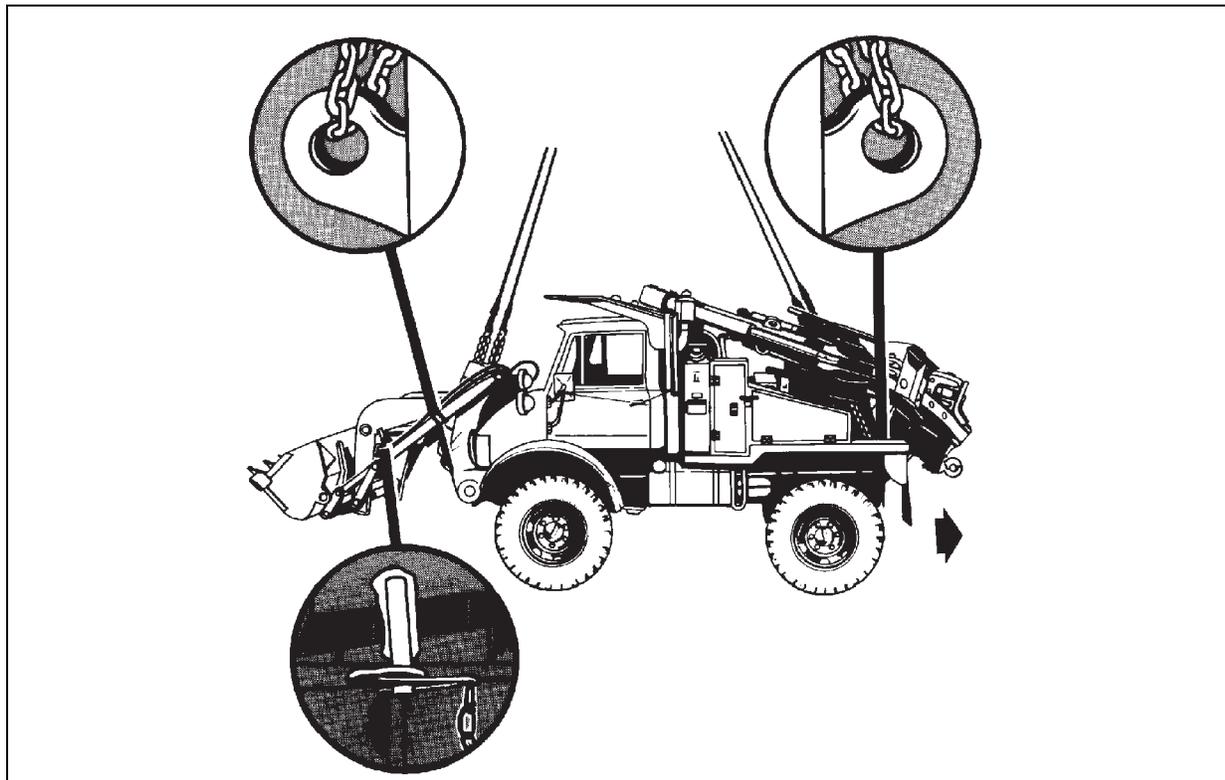
- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- **Personnel.** Two persons can prepare and rig this load in 30 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - 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.
    - Secure the steering wheel, doors, and all loose equipment with tape or Type III nylon cord.
    - Tape all lights, glass fixtures, and the exhaust cap closed.
    - 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.
    - Place the transmission in neutral and engage the hand brake.
    - Tie or tape the hydraulic lines and hoses in close proximity to the forward lift provisions to prevent possible entanglement during hookup.
  - **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.

---

- **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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



### 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 (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 (breakaway technique) the sling legs together on top of the crew compartment to prevent entanglement during hookup and lift-off.

**Figure 8-6. Small Emplacement Excavator**

## HIGH MOBILITY MATERIEL HANDLER (HMMH)

8-8. The high mobility materiel handler is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 8-7 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 8-7. High Mobility Materiel Handler**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
High Mobility Materiel Handler	15,650	25K	3/56

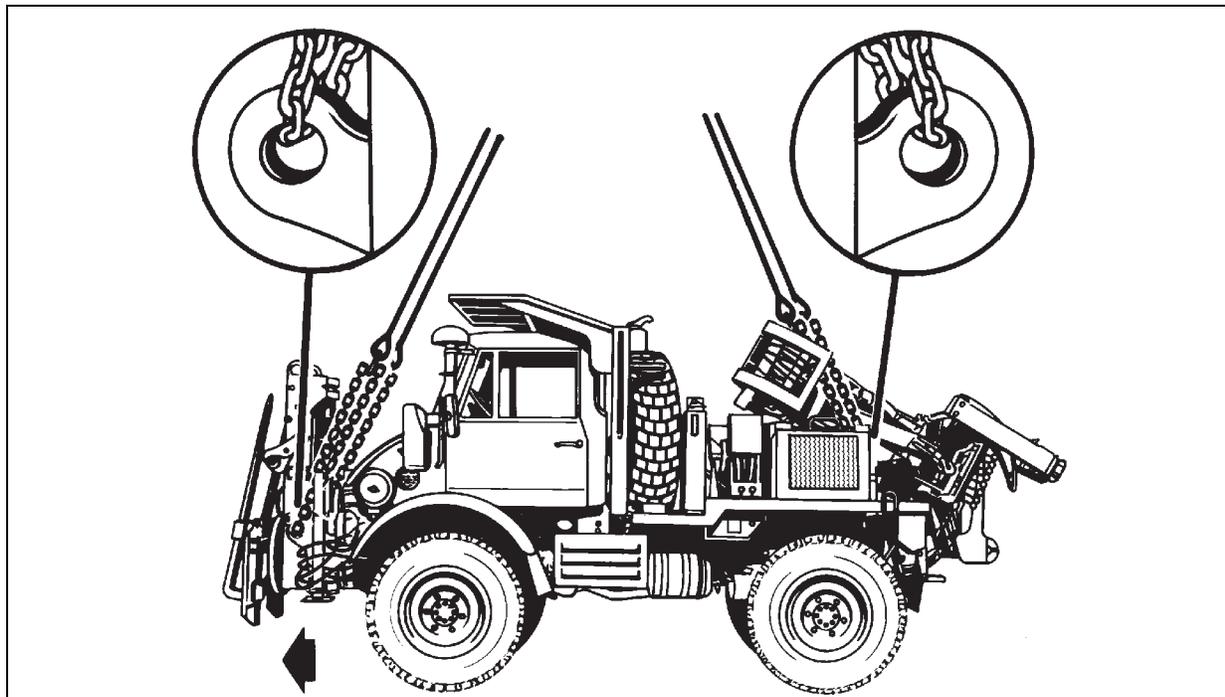
- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- **Personnel.** Two persons can prepare and rig this load in 30 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Ensure all travel locks are properly pinned in place.
    - Secure the steering wheel, doors, and all loose equipment with tape or Type III nylon cord.
    - Tape all lights, glass fixtures, and the exhaust cap closed.
    - 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.
    - Place the transmission in neutral and engage the hand brake.
    - Tie or tape the hydraulic lines and hoses in close proximity to the forward lift provisions to prevent possible entanglement during hookup.
  - **Rigging.** Rig the load according to the steps in Figure 8-7.

---

*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.

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- **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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



#### 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 8-7 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 on the frame inboard of the rear wheel. 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. Secure the padding with tape or Type III nylon cord.
5. Cluster and tie (breakaway technique) the sling legs together on top of the FOPS to prevent entanglement during hookup and lift-off.

**Figure 8-7. High Mobility Materiel Handler**

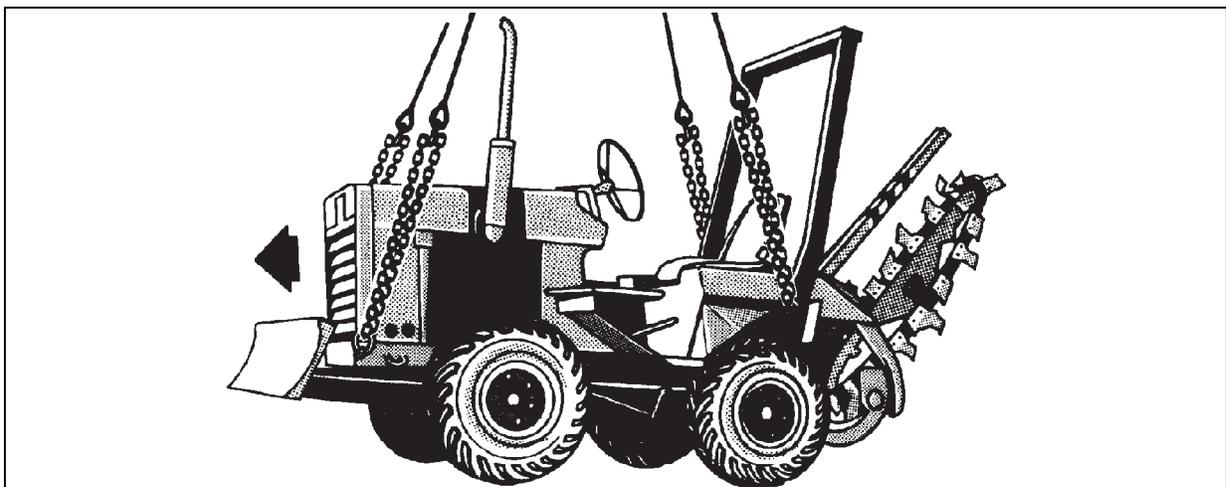
## DITCHING MACHINE

- 8-9. The ditching machine is rigged for single-point sling load using the following procedures:
- **Applicability.** The following item in Table 8-8 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 8-8. Ditching Machine**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Ditching Machine	3,340	15K	3/20

- **Materials.** The following materials are required to rig this load:
  - Sling set (15,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Raise the blade on the front of the vehicle and the digging chain on the rear of the vehicle.
    - 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.
    - Place the transmission in neutral and engage the parking brake.
    - Ensure the front wheels are pointed straight ahead and tie the steering wheel in place with Type III nylon cord.
    - Secure the hood latches with type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 8-8.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 8-8. Ditching Machine**

<b>RIGGING STEPS</b>	
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 8-8 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 8-8 in the grab hook. Repeat with sling leg 4 on the right rear lift provision. Secure the excess chain with Type III nylon cord.
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 (breakaway technique) the sling legs together on top of the FOPS to prevent entanglement during hookup and lift-off.

Figure 8-8. Ditching Machine (Continued)

## 950BS SCOOP LOADER

8-10. The 950BS scoop loader is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 8-9 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

Table 8-9. 950BS Scoop Loader

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
950 BS Scoop Loader, Type II, Work Section	15,830	25K	10/5
950 BS Scoop Loader, Type II, Power Section	16,110	25K	10/20

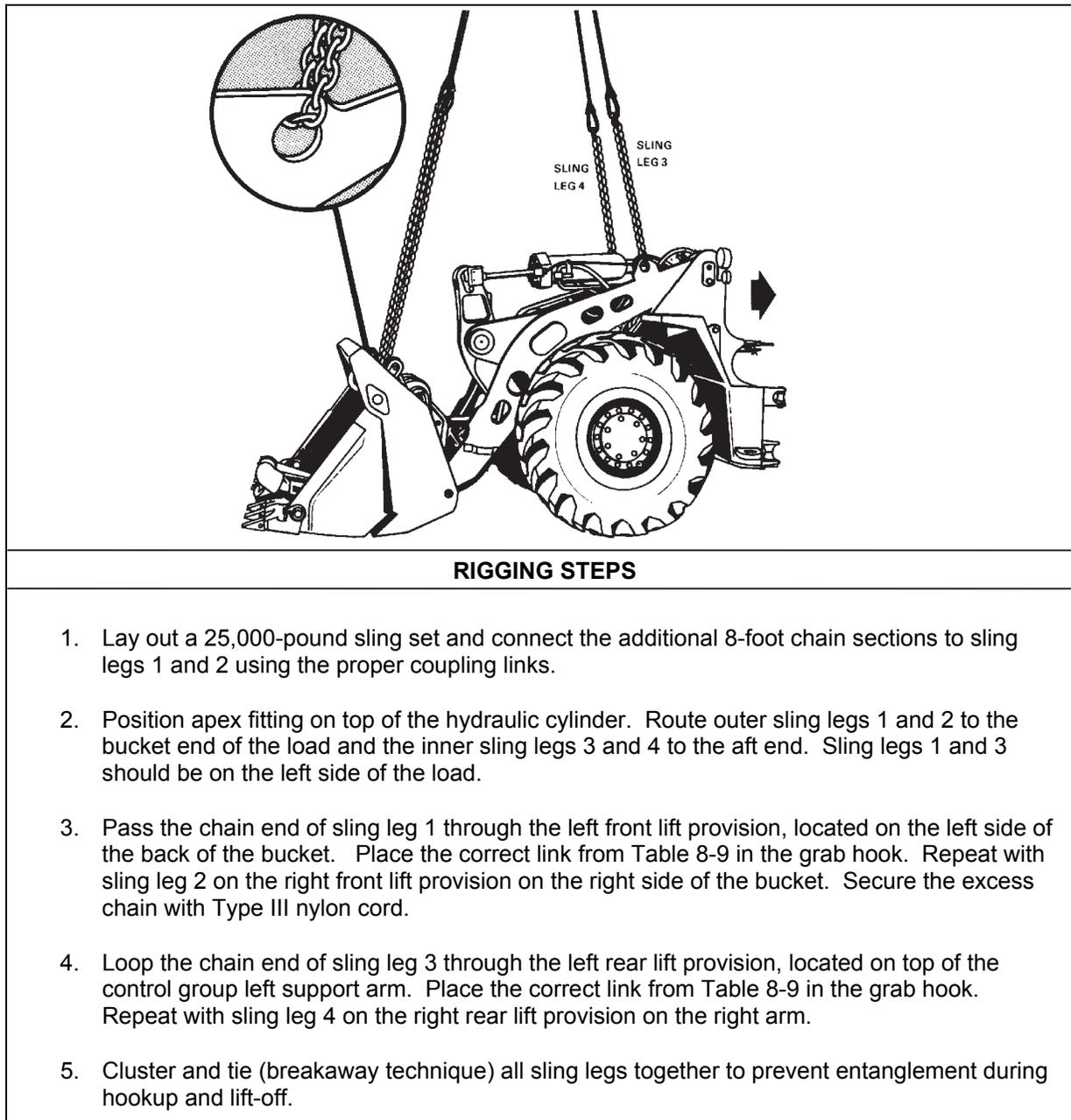
- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
  - Chain, 8-foot length from a 25,000-pound capacity sling set with coupling links.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Tie-down assembly, 15-foot dacron (2 each).
  - Tie-down assembly, chain, MB-1 (2 each).
  - Plastic bags (4 each).
- **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.

- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Sectionalize the loader according to the instructions provided in the operator's manual. 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.

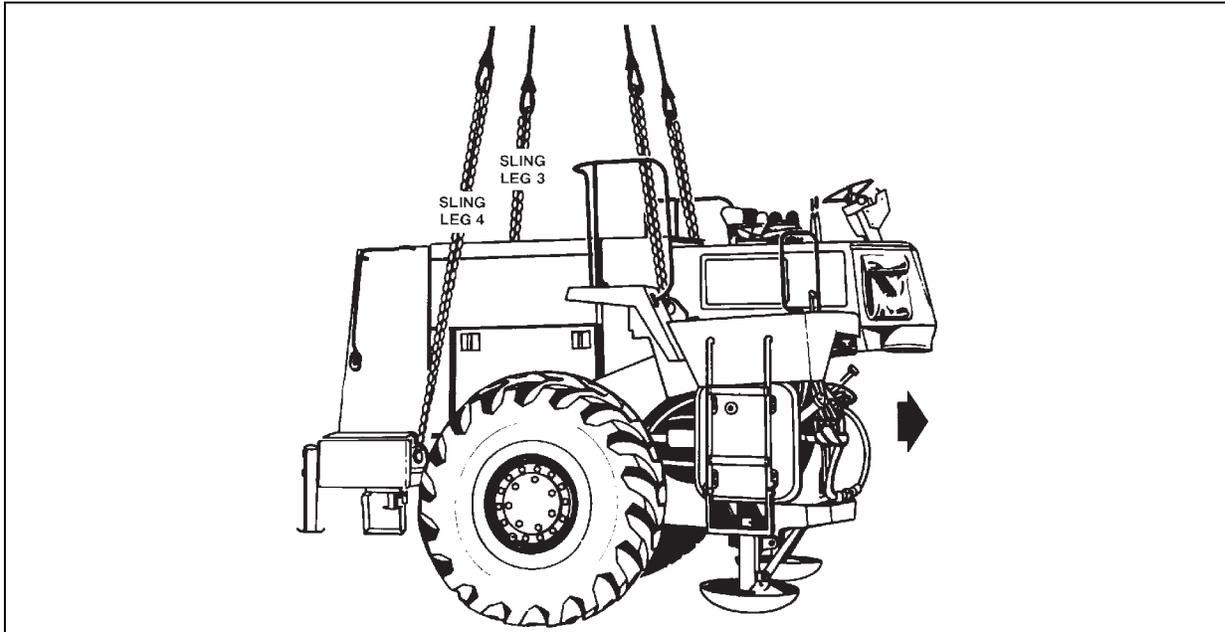
**CAUTION**

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

- Cover all hitch pins and pivot holes with plastic and tape to prevent contamination by dust and dirt.
- Secure tool basket lid, located in the bucket, with nylon cord. Tape all lights.
- Secure all hoses and cables located on front of the power section, with nylon cord to prevent damage.
- 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 load binder with cotton webbing or tape.
- 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.
- Remove exhaust stack and stow on the component tray, mounted in the work section bucket. Cover opening of exhaust stack with tape.
- 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.
- Fold the back of the operator seat down and secure in place with nylon cord. Secure the seat belt over the seat back.
- Tape all lights and instruments.
- Secure all doors and covers with tape or nylon cord.
- Place controls in neutral and release brakes.
- **Rigging.** Rig the load according to the steps in Figure 8-9.
- **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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 8-9. 950BS Scoop Loader (Work Section)**



**RIGGING STEPS**

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 8-9 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 8-9 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 8-9. 950BS Scoop Loader (Power Section )**

## 130GS GRADER

8-11. The 130GS grader is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 8-10 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

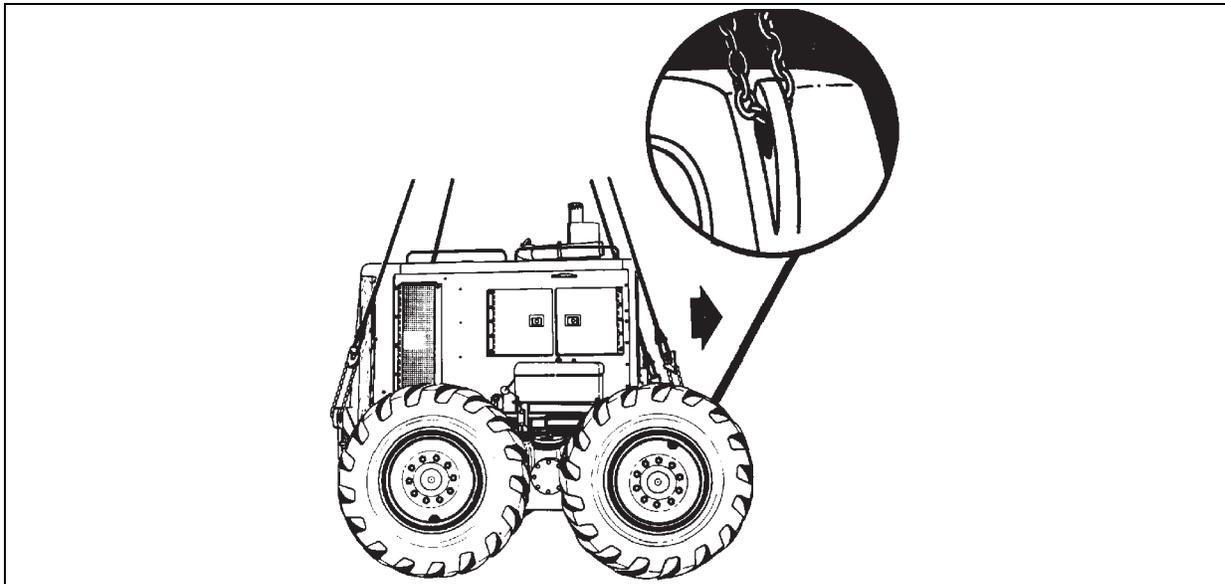
**Table 8-10. 130GS Grader**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
130GS Grader Front Section with Scarifier and ROPS, Low-Velocity Airdrop Suspension Provisions Removed	16,120	25K	3/77
130GS Grader Rear Section	14,270	25K	46/56

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
  - Tie-down, cargo, CGU-1B (2 each).
  - Plastic bags (4 each).
  - Posts, wooden, 4- x 4- x 48-inch (2 each).
- **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.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Sectionalize the loader according to the instructions provided in the operator's manual.
    - Remove ROPS and LVAD suspension provisions mounted on the front bolster.
    - Ensure the fuel tank is not over 3/4 full.
    - Use a tie-down assembly to secure each side of the front axle to front tie-down points on the front end.
    - Loosen front headlight bar, rotate forward 180 degrees, and retighten. Pad lights with padding and tape.
    - Tape work lights on forward edge of operator's platform.
    - Secure steering wheel to horizontal control bar with nylon cord on both sides. Secure seat with nylon cord.
    - 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.
    - Remove throttle handle and secure in toolbox.
    - Pad instrument panel with cellulose padding and tape.
    - Remove air cleaner and exhaust stack and secure to top rail with nylon cord.
    - Tie 4- x 4- x 48-inch posts to inside rear guardrail on the rear section with nylon cord.
    - Pad and tape rear working light and taillights.
    - Secure doors with one loop of nylon cord horizontally around the body of the unit.
  - **Rigging.** Rig the load according to the steps in Figure 8-10.
  - **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.

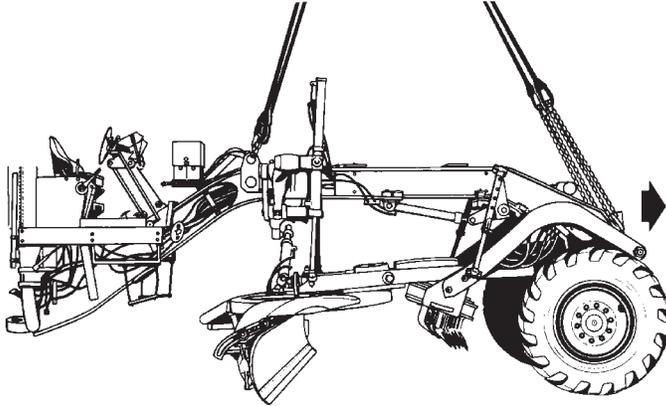
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

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 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 inboard of the left front wheel. Place the correct link from Table 8-10 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 8-10 in the grab hook. Repeat with sling leg 4 on the right rear lift provision.
4. Cluster and tie (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 8-10. 130GS Grader (Rear Section)**



**RIGGING STEPS**

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 8-10 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 8-10 in the grab hook. Repeat with sling leg 4 on the right rear lift provision. Secure excess chain with tape or nylon cord.
4. Cluster and tie (breakaway technique) all sling legs together to prevent entanglement during hookup and lift-off.

**Figure 8-10. 130GS Grader (Front Section)**

## 613BS ELEVATING SCRAPER

8-12. The 613BS elevating scraper is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 8-11 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 8-11. 613BS Elevating Scraper**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
613BS Elevating Scraper Work Section	16,330	25K	3/40
613BS Elevating Scraper Power Section	16,860	25K	Listed in Rigging Steps

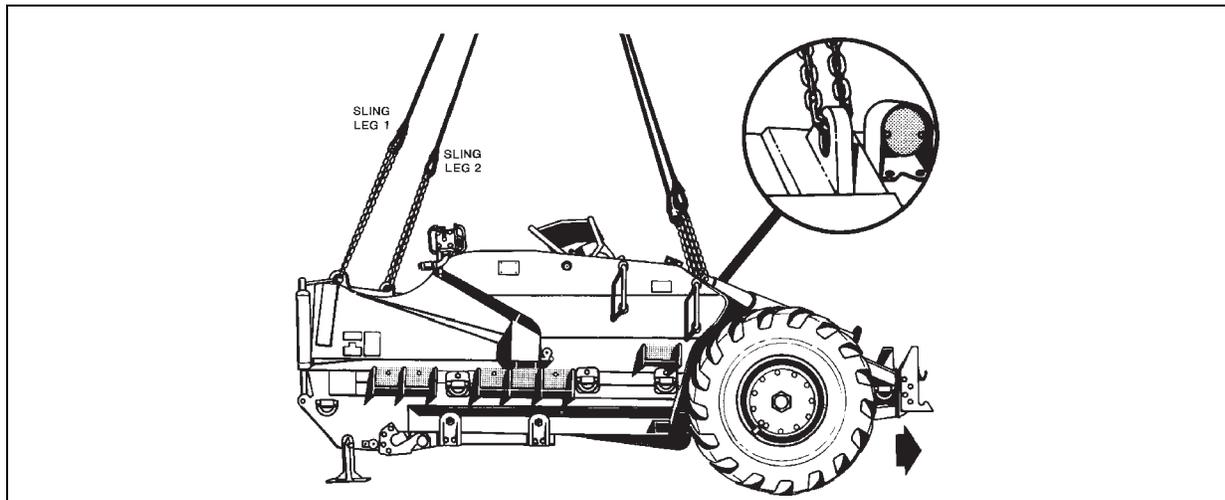
- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.

- Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- Plastic bags (4 each).
- Plywood, 3/4- x 8- x 46-inch (2 each).
- **Personnel.** Four persons can sectionalize the scraper in 1 hour. Two persons can prepare and rig each load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Sectionalize the scraper according to the instructions provided in the operator's manual.
    - Secure the operator's seat with Type III nylon cord.
    - Secure all covers and doors with tape or Type III nylon cord.
    - Secure auxiliary fuel tank in place with Type III nylon cord.
    - Stow elevator motor hoses and hanger arms on elevator flights in the bowl, and secure with nylon cord.
    - Secure hydraulic cylinders up in a stowed position with doubled nylon cord.
    - Secure loose hoses and cables with Type III nylon cord.
    - Fold and secure the steps located on outside of the bowl.
    - Tape all lights.
    - Cover all hitch pins and pin holes with plastic and tape to prevent contamination by dirt and dust.
    - Secure toolbox lid closed with nylon cord.
    - Ensure that steering wheels are aligned.
    - Install front bumper lift provision. Ensure that pin safety clip is installed. If clip is missing, secure the pin in place with nylon cord.
    - 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.
    - Place felt padding over the headlights and tape in place.
    - 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.

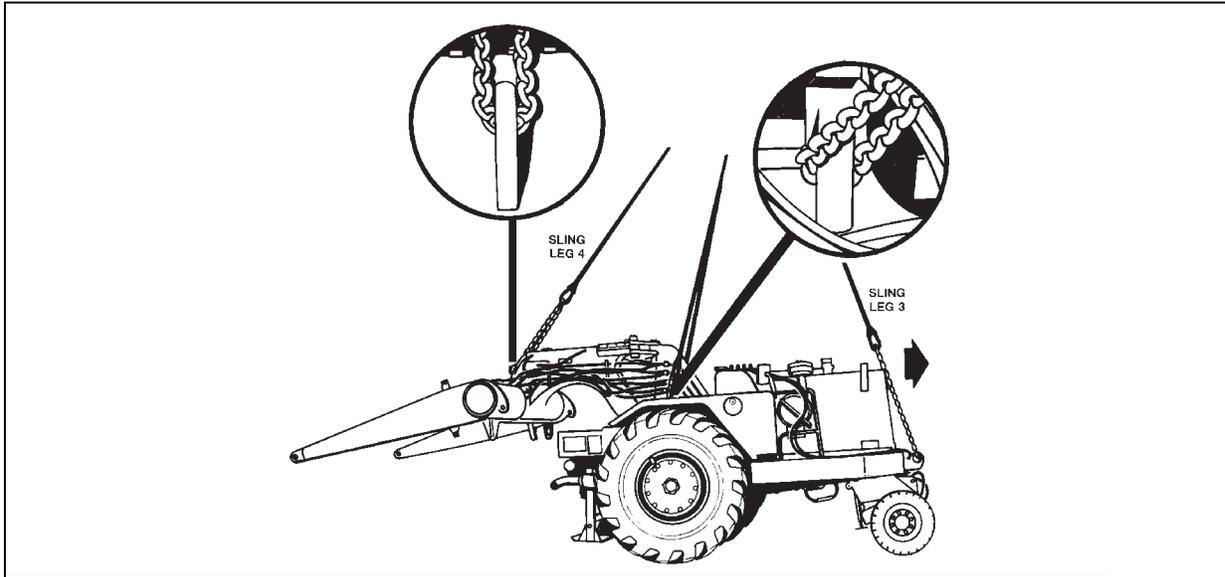
- **Rigging.** Rig the load according to the steps in Figure 8-11.
- **Hookup.** The hookup team stands on top of each section. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Place apex fitting on top of rock guard 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.
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.
3. Pull both sling legs aft and secure (breakaway technique) to elevator and rock guard with cotton webbing or tape.
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.
5. Pull both sling legs forward and secure (breakaway technique) to rock guard with tape or cotton webbing.
6. Cluster and tie or tape (breakaway technique) all sling legs together on top of the rock guard to prevent entanglement during hookup and lift-off.

**Figure 8-11. 613BS Elevating Scraper (Work Section)**



**RIGGING STEPS**

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 (breakaway technique) all sling legs together to prevent entanglement during hookup and lift-off.

**Figure 8-11. 613BS Elevating Scraper (Power Section)**

**613WDS WATER DISTRIBUTOR**

8-13. The 613WDS water distributor is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 8-12 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

Table 8-12. 613WDS Water Distributor

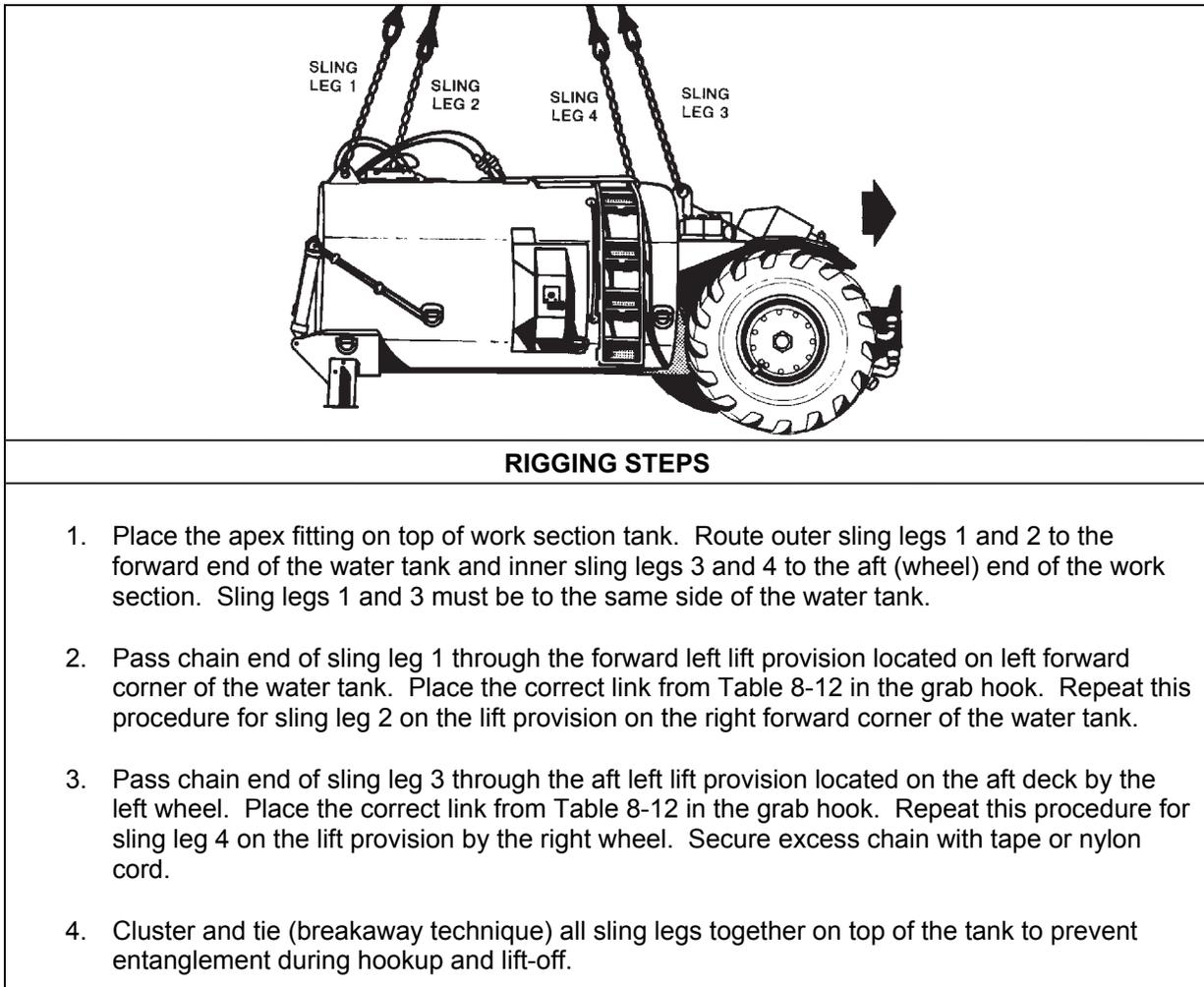
<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
613WDS Water Distributor Work Section	15,400	25K	3/45
613WDS Water Distributor Power Section	16,960	25K	Listed in Rigging Steps

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
  - Plastic bags (4 each).
  - Plywood, 3/4- x 8- x 46-inch (2 each).
- **Personnel.** Four persons can sectionalize the distributor in 1 hour. Two persons can prepare and rig each load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Sectionalize the distributor according to the instructions provided in the operator's manual.
    - Secure the operator's seat with Type III nylon cord.
    - Secure all covers and doors with tape or Type III nylon cord.
    - Secure auxiliary fuel tank in place with Type III nylon cord.
    - Secure the distribution control panel and cable in place on top of the tank with nylon cord.
    - Ensure that the tank manhole cover is closed and secured.
    - Close and secure the toolbox and hose stowage compartment covers with nylon cord.
    - Secure the hose nozzle and reel with nylon cord.
    - Tape all lights.
    - Cover hitch pins and pin holes with plastic and tape to prevent contamination by dust and dirt.
    - Ensure the steering wheels are aligned.
    - Install front bumper lift provision. Ensure that pin safety clip is installed. If clip is missing, secure the pin in place with nylon cord.
    - 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.
    - Place felt padding over the headlights and tape in place.
    - Position the plywood protector on the hood and secure in place at four corners with nylon cord.
    - Secure lift cylinders to the draft arms with a doubled length of nylon cord.

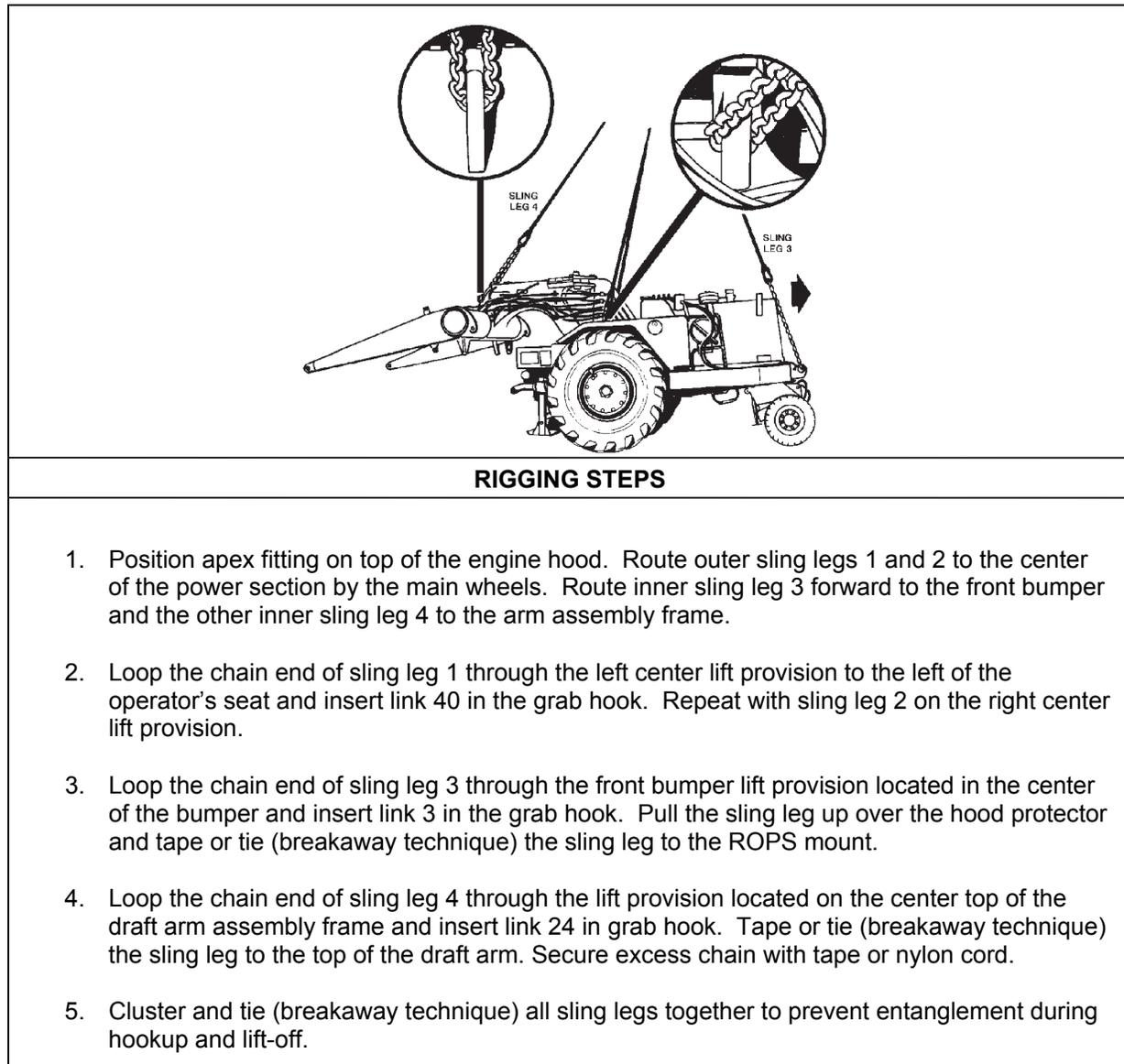
### CAUTION

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

- **Rigging.** Rig the load according to the steps in Figure 8-12.
- **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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 8-12. 613WDS Water Distributor (Work Section)**



**Figure 8-12. 613WDS Water Distributor (Power Section)**

## ROLLER, TOWED, VIBRATING

8-14. The towed vibrating roller is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 8-13 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 8-13. Roller, Towed, Vibrating**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Roller, Towed, Vibrating	4,830	10K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig each load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Lift the tongue and position the support leg in its stowed or travel position and secure it with Type III nylon cord.
    - Ensure the battery box cover, fuel cap, hoses, and all loose items are secured. Tape or tie any loose items as required.
  - **Rigging.** Rig the load according to the steps in Figure 8-13.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

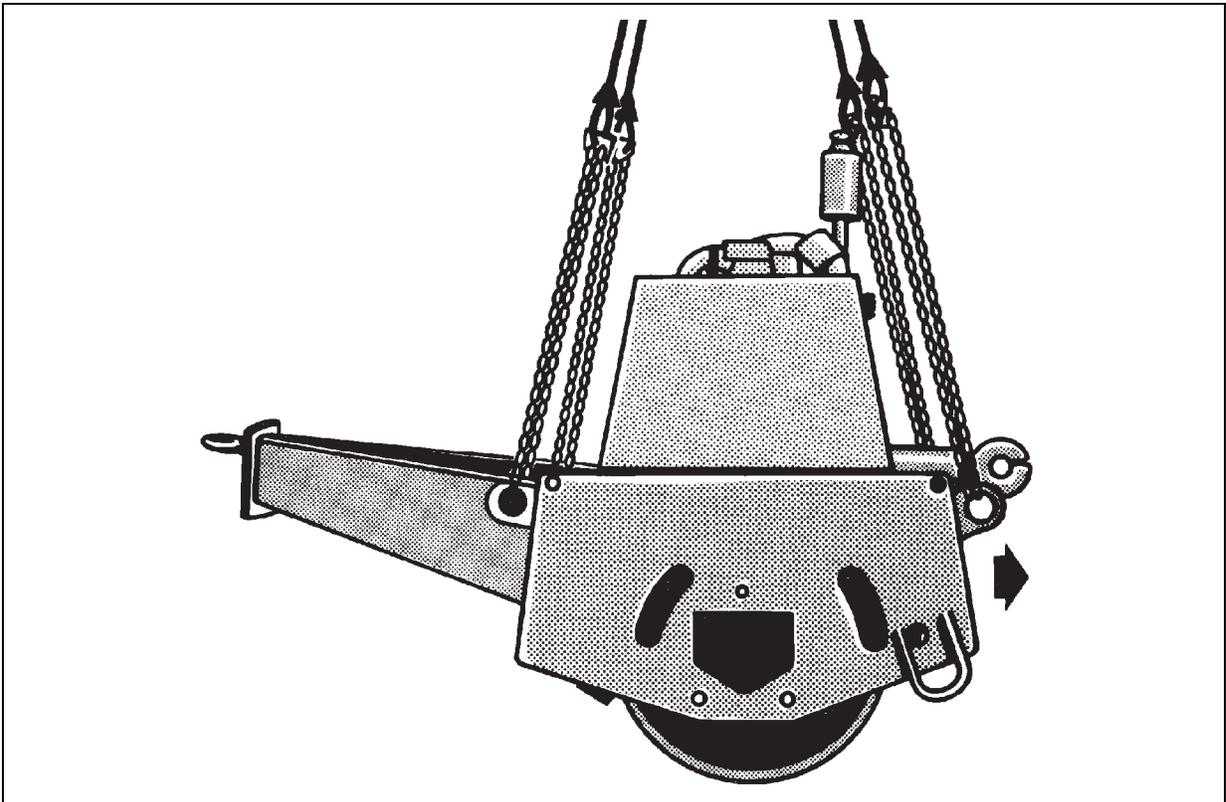


Figure 8-13. Roller, Towed, Vibrating

<b>RIGGING STEPS</b>
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 8-13 in the grab hook.
3. Cluster and tie (breakaway technique) the sling legs together on top of the roller to prevent entanglement during hookup and lift-off.

**Figure 8-13. Roller, Towed, Vibrating (Continued)**

## TOWED ROLLERS

8-15. The towed rollers are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 8-14 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 8-14. Towed Rollers**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Roller, Towed, RO3402	4,600	10K	3/30
Roller, Hercules, PT-11	3,520	10K	3/3

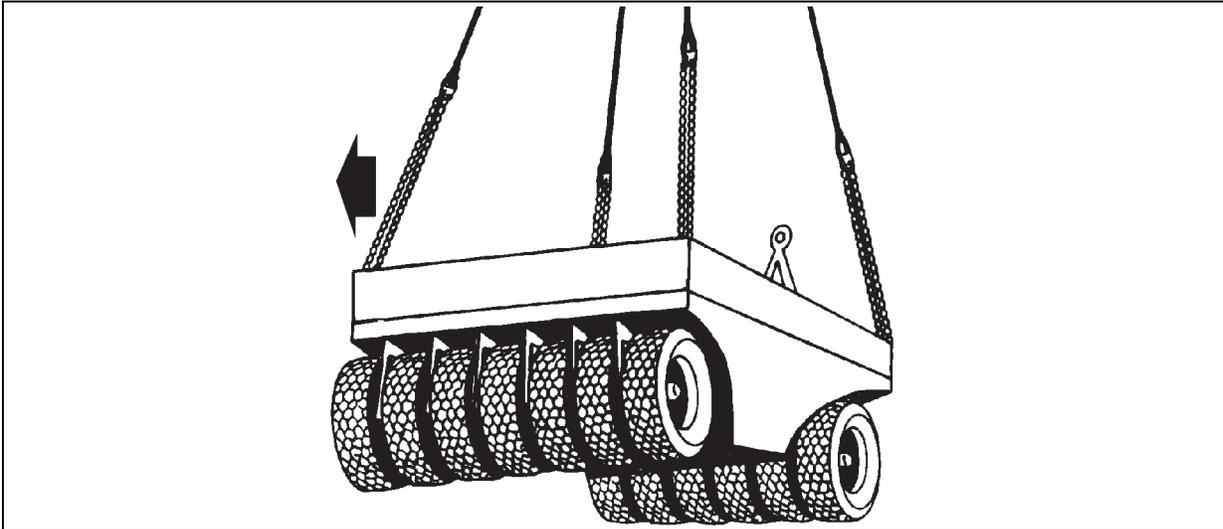
- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down strap, cargo, CGU-1/B (as required).
- **Personnel.** Two persons can prepare and rig each load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure the drain plugs with tape.
    - Raise and secure the tongue with tie-down straps.
  - **Rigging.** Rig the load according to the steps in Figure 8-14.
  - **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.

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**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.

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- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**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 8-14 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 8-14 in the grab hook. Repeat with sling leg 4 and the right rear lift provision.
4. Cluster and tie breakaway technique) all sling legs together on top of the roller to prevent entanglement during hookup and lift-off.

**Figure 8-14. Towed Rollers**

**VIBRATING ROLLER, CATERPILLAR, RO-33**

8-16. The RO-33 Caterpillar vibrating roller is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 8-15 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 8-15. Vibrating Roller, Caterpillar, RO-33**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Vibrating Roller, Caterpillar, RO-33	16,425	25K	30/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Lumber, 2-inch x 4-inch (as required).
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Place the transmission in neutral and set the parking brake.
    - 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.
    - Secure the seat cushion to the frame with tape or Type III nylon cord.
    - Remove and secure the exhaust stack.
    - Tape all lights and gauges. Secure all loose covers and panels with tape or Type III nylon cord.
    - Tie down the steering wheel with Type III nylon cord.
    - Place the wooden block in the pivot point at the center of the roller to prevent the two halves from flexing during flight.
  - **Rigging.** Rig the load according to the steps in Figure 8-15.
  - **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 person 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

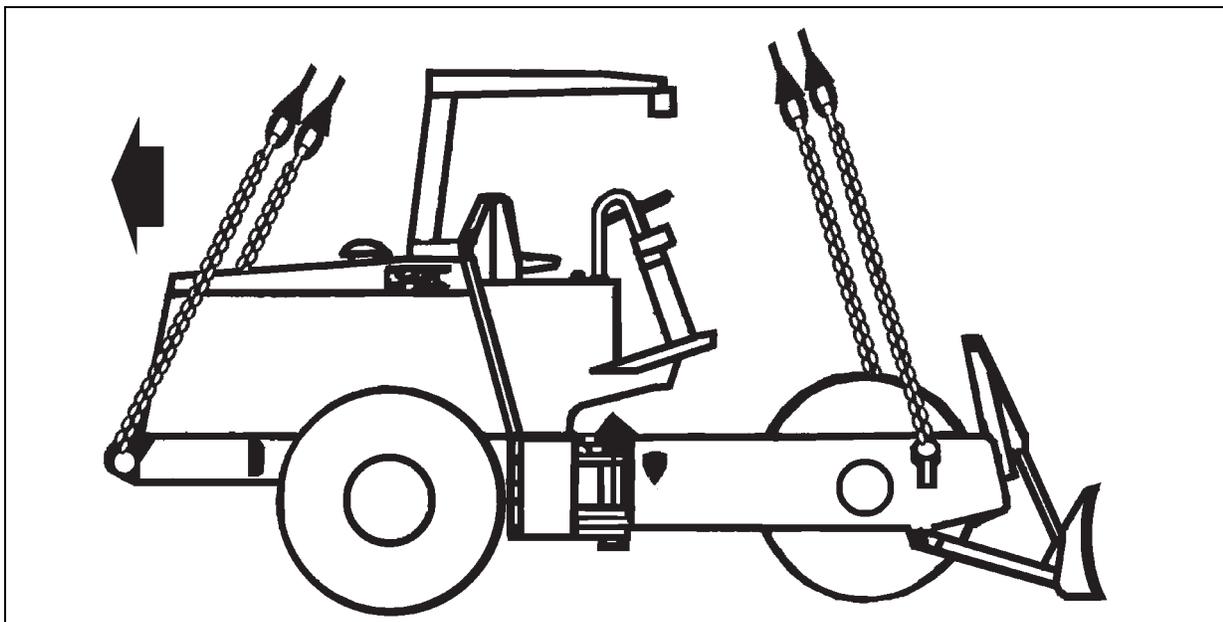


Figure 8-15. Vibrating Roller, Caterpillar, RO-33

<b>RIGGING STEPS</b>
<ol style="list-style-type: none"> <li>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.</li> <li>2. Route the chain end of sling leg 1 through the left front lift provision. Place the correct link from Table 8-15 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.</li> <li>3. Route the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 8-15 in the grab hook. Repeat with sling leg 4 on the right rear lift provision.</li> <li>4. Pad the sling legs/chains in the area where they make contact with the vehicle.</li> <li>5. Cluster and tie (breakaway technique) the sling legs together on top of the roller to prevent entanglement during hookup and lift-off.</li> </ol>

**Figure 8-15. Vibrating Roller, Caterpillar, RO-33 (Continued)**

## **MK155 LAUNCHER, MINE CLEARING**

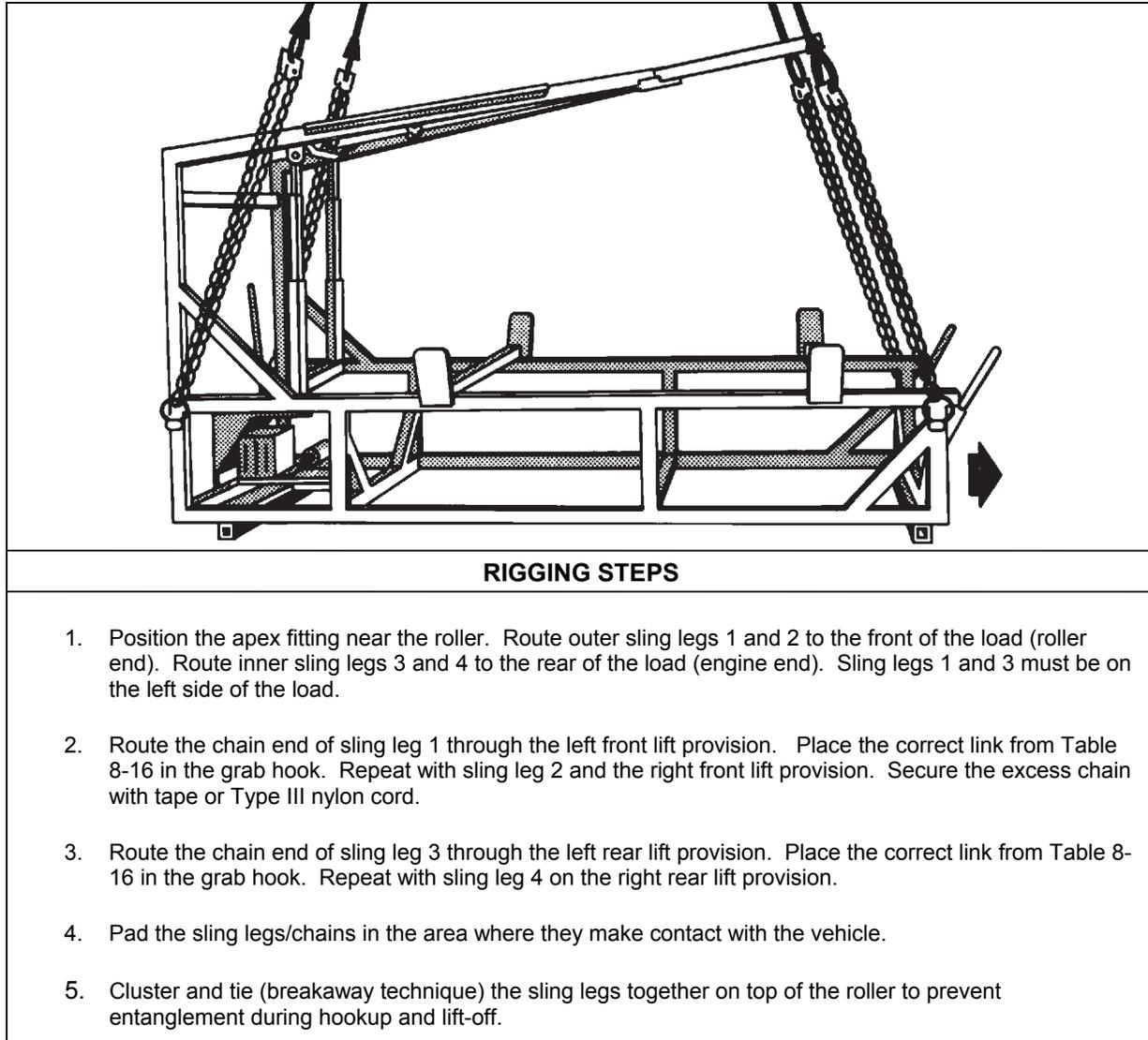
8-17. The Mk155 mine clearing launcher is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 8-16 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 8-16. Mk155 Launcher, Mine Clearing**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Mk155 Launcher, Mine Clearing	860	10K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig each load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Ensure the launch rail is in the collapsed or storage mode and not in its vertical position.
    - Ensure the storage box lid is closed and secured with Type III nylon cord or tape.
  - **Rigging.** Rig the load according to the steps in Figure 8-16.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 8-16. Mk155 Launcher, Mine Clearing**

## M68A2 LINE CHARGE, DEMOLITION WITH OR WITHOUT MK22 ROCKET MOTOR

8-18. The M68A2 line charge, demolition with or without Mk22 rocket motor is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 8-17 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 8-17. M68A2 Line Charge, Demolition with or without Mk22 Rocket Motor**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M68A2 Line Charge, Demolition with Mk22 Rocket Motor	2,672	10K	3/3
M68A2 Line Charge, Demolition Inert	2,486	10K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down strap, CGU-1B (4 each).
- **Personnel.** Two persons can prepare and rig each load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Ensure the end of the load opposite the electrical connectors and fuse storage area is designated as the front of the load.
    - Ensure the storage box lid is closed and secured with Type III nylon cord or tape.
    - Ensure the rocket motor box is secured with metal strapping.
    - Center the rocket motor box on top of the line charge container.
    - 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.
    - 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.

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*Note.* When rigging the line charge without the rocket motor, omit preparation steps 3 through 6.

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- **Rigging.** Rig the load according to the steps in Figure 8-17.
- **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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

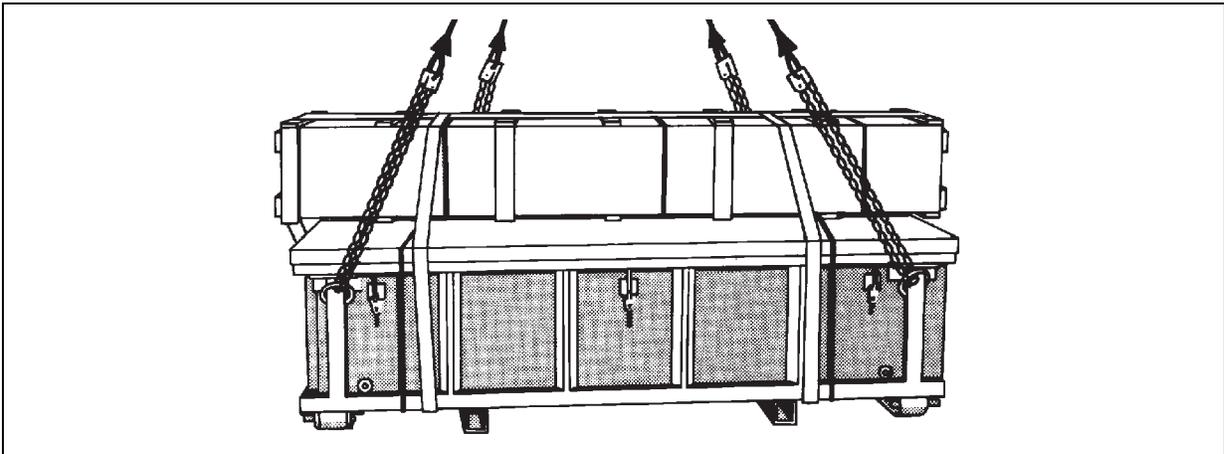


Figure 8-17. M68A2 Line Charge, Demolition with or without Mk22 Rocket Motor

<b>RIGGING STEPS</b>
<ol style="list-style-type: none"> <li>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.</li> <li>2. Loop the chain end of sling leg 1 through the left front lift ring. Place the correct link from Table 8-17 in the grab hook. Repeat with sling leg 2 and the right front lift ring.</li> <li>3. Loop the chain end of sling leg 3 through the left rear lift ring. Place the correct link from Table 8-17 in the grab hook. Repeat with sling leg 4 and the right rear lift ring.</li> <li>4. Cluster and tie (breakaway technique) the sling legs together on top of the launch rail to prevent entanglement during hookup and lift-off.</li> </ol>

**Figure 8-17. M68A2 Line Charge, Demolition with or without Mk22 Rocket Motor (Continued)**

## **MK155 LAUNCHER WITH OR WITHOUT M68A2 DEMOLITION LINE CHARGE AND MK22 ROCKET MOTOR ON M353 TRAILER**

8-19. The Mk155 launcher with or without M68A2 demolition line charge and Mk22 rocket motor on M353 trailer is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 8-18 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

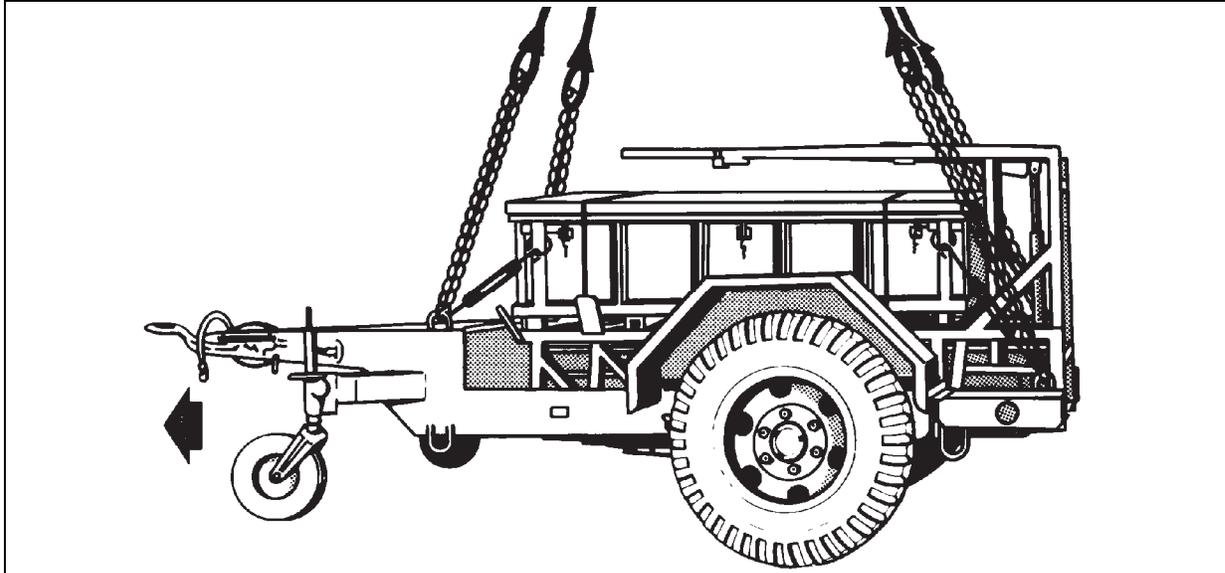
**Table 8-18. Mk155 Launcher with or without M68A2 Demolition Line Charge and Mk22 Rocket Motor on M353 Trailer**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Mk155 Launcher	3,700	10K	3/3
Mk Launcher with M68A2 Line, Demolition Charge and Mk22 Rocket Motor	6,312	10K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down strap, CGU-1B (4 each).
- **Personnel.** Two persons can prepare and rig each load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - 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.
    - Ensure the storage box lid is closed and secured with Type III nylon cord or tape (if installed).
    - Tie off hoses and safety chains and secure any loose items with nylon cord or tape.
    - Set the parking brake.

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

- **Rigging.** Rig the load according to the steps in Figure 8-18.
- **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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**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 left leveling wheel assembly. Place the correct link from Table 8-18 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 trailer left wheel. Place the correct link from Table 8-18 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 8-18. Mk155 Launcher on M353 Trailer**

## MK155 LAUNCHER WITH OR WITHOUT M68A2 DEMOLITION LINE CHARGE AND MK22 ROCKET MOTOR ON M200A1 OR MOBILE-TRAC SYSTEM (MTS) TRAILER

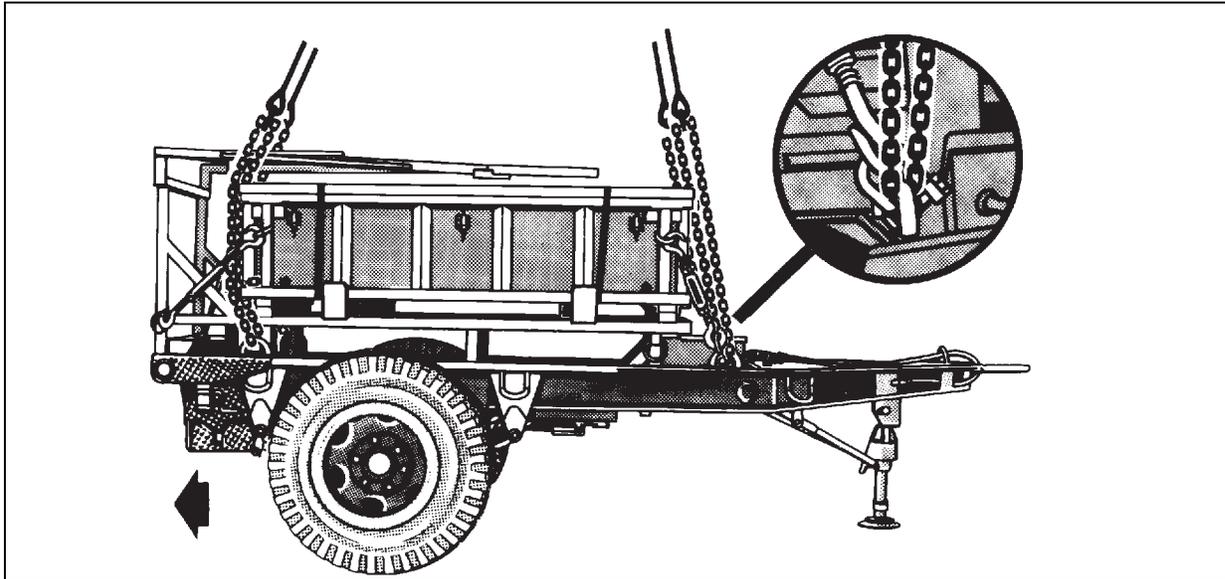
8-20. The Mk155 launcher with or without M68A2 demolition line charge and Mk22 rocket motor on M200A1 or mobile-trac system trailer are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 8-19 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 8-19. Mk155 Launcher with or without M68A2 Demolition Line Charge and Mk22 Rocket Motor on M200A1 or Mobile-Trac System Trailer**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Mk155 Launcher on M200A1 Trailer	3,330	10K	3/3
Mk155 Launcher with M68A2, Demolition Charge and Mk22 Rocket Motor on M200A1 Trailer	5,620	10K	10/3
Mk155 Launcher with M68A2, Demolition Charge and Mk22 Rocket Motor on Mobile-Trac System Trailer	7,172	10K	10/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down strap, CGU-1B (4 each).
- **Personnel.** Two persons can prepare and rig each load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - 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.
    - Ensure the storage box lid is closed and secured with Type III nylon cord or tape (if installed).
    - Tie off hoses and safety chains and secure any loose items with nylon cord or tape.
    - Set the parking brake.
    - Place and secure the Mk22 rocket motor box inside the aircraft using the CGU-1/B tie-down straps (if required).
  - **Rigging.** Rig the load according to the steps in Figure 8-19.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**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 8-19 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 8-19 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 (breakaway technique) all sling legs above the launch rail to prevent entanglement during hookup and lift-off.

**Figure 8-19. Mk155 Launcher on M200A1 or Mobile-Trac System Trailer**

**LRT-110, 7 1/2-TON CRANE**

8-21. The LRT-110, 7 1/2-ton crane is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 8-20 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 8-20. LRT-110, 7 1/2-Ton Crane**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
LRT-110, 7 1/2-Ton Crane	24,230	25K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down strap, CGU-1B (4 each).
  - Webbing, tubular, nylon, 1/2-inch.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- **Personnel.** Two persons can prepare and rig each load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Fold side mirrors in toward cab and tie or tape, as necessary. Tape or secure windshield wipers to windshield.
    - Ensure the wheels are pointing straight ahead. Secure the steering wheel with nylon cord or tape.
    - 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.
    - Secure boom light power cable with nylon cord or tape.
    - 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.
    - Set the parking brake.
  - **Rigging.** Rig the load according to the steps in Figure 8-20.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

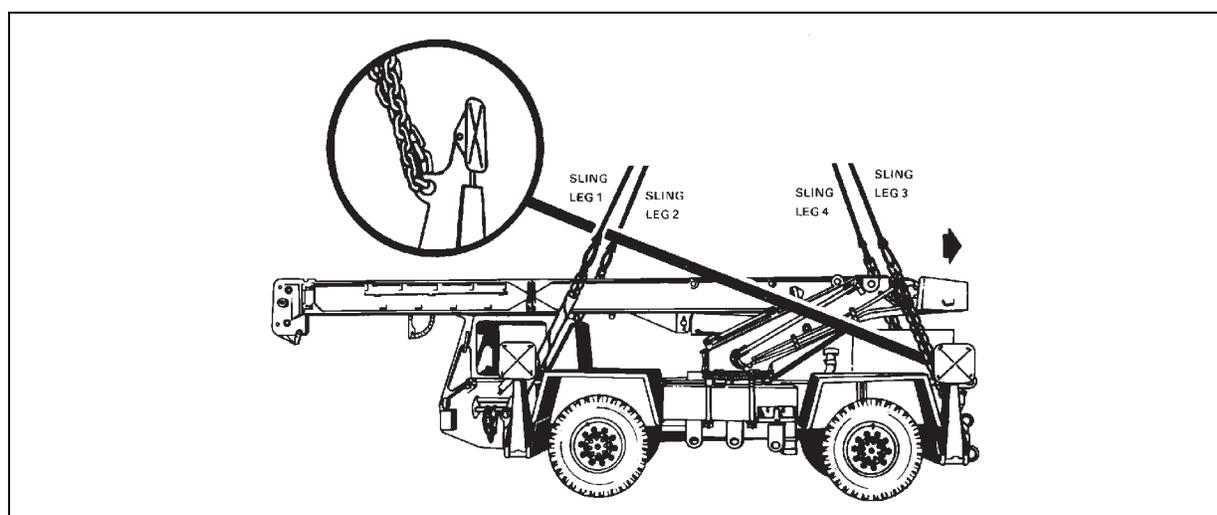


Figure 8-20. LRT-110, 7 1/2-Ton Crane

<b>RIGGING STEPS</b>
<ol style="list-style-type: none"> <li>1. Position apex fitting on top of the boom directly above the boom base. Route outer sling legs 1 and 2 to the front (cab end) of the crane and the inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left (driver's) side of the load.</li> <li>2. Loop the chain end of sling leg 1 through the lift provision located on the inboard side of the front left outrigger. Place the correct link from Table 8-20 in the grab hook. Repeat with sling leg 2 on the right front outrigger.</li> <li>3. Loop the chain end of sling leg 3 through the lift provision located on the inboard side of the left rear outrigger. Place the correct link from Table 8-20 in the grab hook. Repeat with sling leg 4 on the right rear outrigger.</li> <li>4. Pad the sling legs where they contact the crane cab.</li> <li>5. Cluster and tie (breakaway technique) all sling legs together to prevent entanglement during hookup and lift-off.</li> </ol>

**Figure 8-20. LRT-110, 7 1/2-Ton Crane (Continued)**

## **LRT-110, 7 1/2-TON CRANE BOOM**

8-22. The LRT-110, 7 1/2-ton crane boom is rigged for single-point sling load using the following procedures:

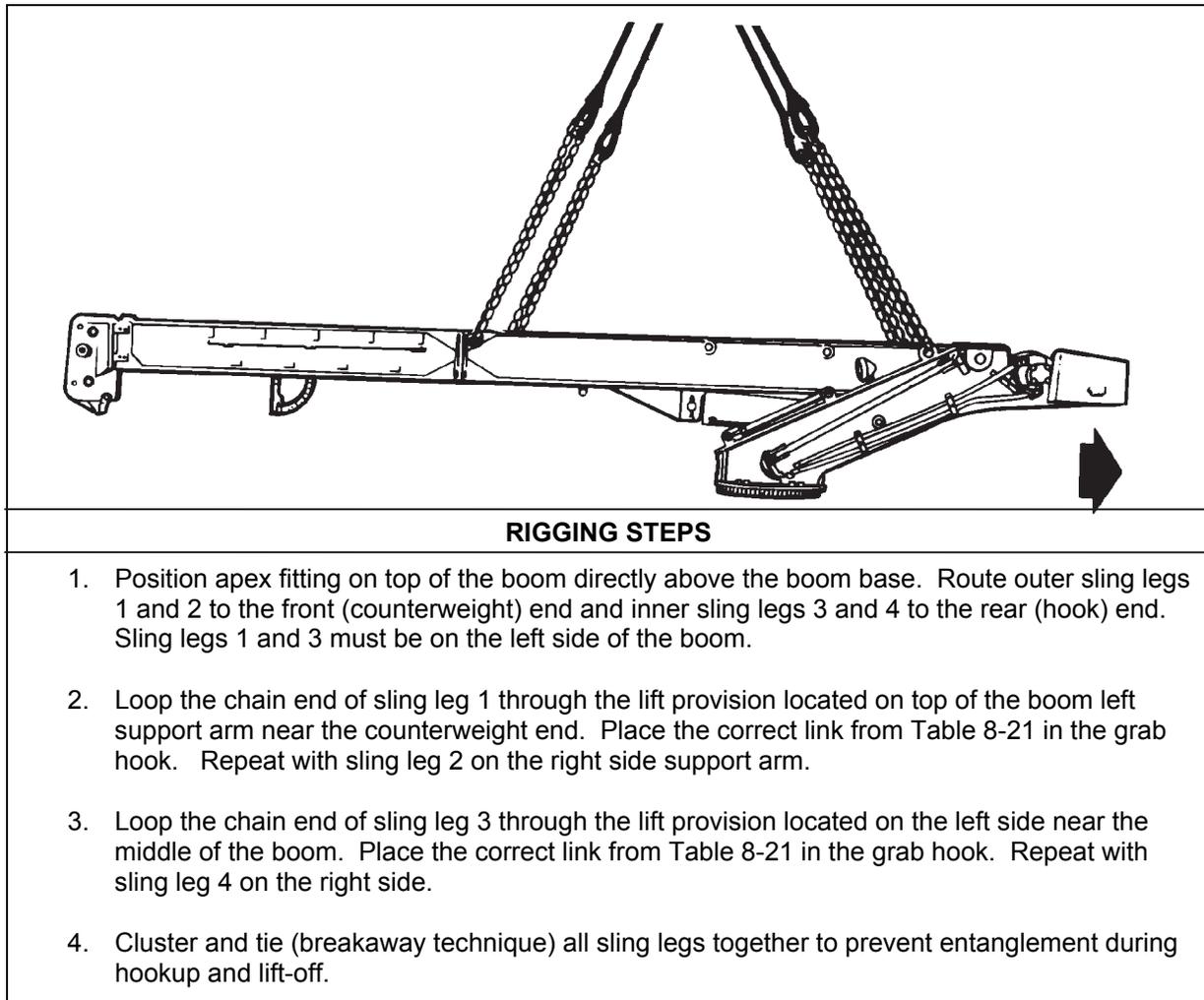
- **Applicability.** The following item in Table 8-21 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 8-21. LRT-110, 7 1/2-Ton Crane Boom**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
LRT-110, 7 1/2-Ton Crane Boom	8,600	10K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down strap, CGU-1B (4 each).
  - Webbing, tubular, nylon, 1/2-inch.
- **Personnel.** Two persons can prepare and rig each load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Sectionalize the crane according to instructions in the operator's manual.
    - Secure hook-block assembly to the end of the boom mast with CGU-1/B cargo tie-down or equivalent.
    - Secure boom light power cable with nylon cord or tape.
    - 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.
    - Secure the boom hydraulic hoses with tape or nylon cord. Make sure the hoses are clear of the boom base.

- **Rigging.** Rig the load according to the steps in Figure 8-21.
- **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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 8-21. LRT-110, 7 1/2-Ton Crane Boom**

## LRT-110, 7 1/2-TON CRANE POWER UNIT

8-23. The LRT-110, 7 1/2-ton crane power unit is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 8-22 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

Table 8-22. LRT-110, 7 1/2-Ton Crane Power Unit

Nomenclature	Max Weight (Pounds)	Sling Set	Link Count Front/Rear
LRT-110, 7 1/2-Ton Crane Power Unit	15,600	25K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down strap, CGU-1B (4 each).
  - Webbing, tubular, nylon, 1/2-inch.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- **Personnel.** Two persons can prepare and rig each load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Sectionalize the crane according to instructions in the operator’s manual.
    - Fold side mirrors in toward cab and tie or tape, as necessary. Tape or secure windshield wipers to windshield.
    - Ensure the wheels are pointing straight ahead. Secure the steering wheel with nylon cord or tape. Engage the parking brake.
    - Secure doors, tool box covers, and all loose equipment with nylon cord or tape.
  - **Rigging.** Rig the load according to the steps in Figure 8-22.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

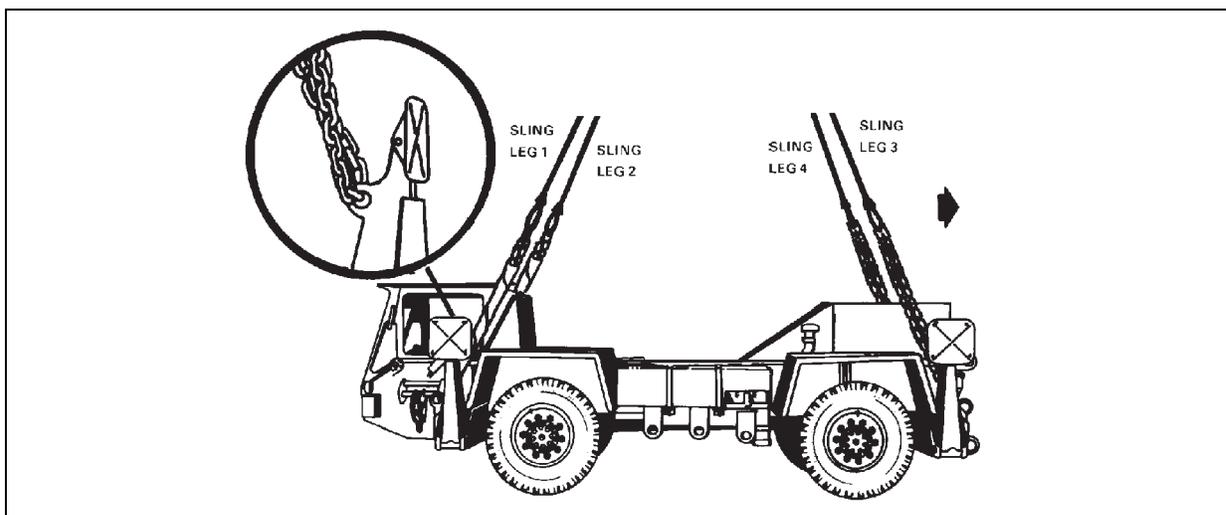


Figure 8-22. LRT-110, 7 1/2-Ton Crane Boom Power Unit

<b>RIGGING STEPS</b>
1. Position apex fitting on top of the boom base attaching point. Route outer sling legs 1 and 2 to the front (cab end) of the crane and the inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left (driver's) side of the load.
2. Loop the chain end of sling leg 1 through the lift provision located on the inboard side of the front left outrigger. Place the correct link from Table 8-22 in the grab hook. Repeat with sling leg 2 on the right front outrigger. Pad the sling legs where they contact the crane cab.
3. Loop the chain end of sling leg 3 through the lift provision located on the inboard side of the left rear outrigger. Place the correct link from Table 8-22 in the grab hook. Repeat with sling leg 4 on the right rear outrigger.
4. Cluster and tie (breakaway technique) all sling legs together to prevent entanglement during hookup and lift-off.

**Figure 8-22. LRT-110, 7 1/2-Ton Crane Boom Power Unit (Continued)**

## TRUCK, FORKLIFT, MC-4000

8-24. The truck, forklift, MC-4000 is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 8-23 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

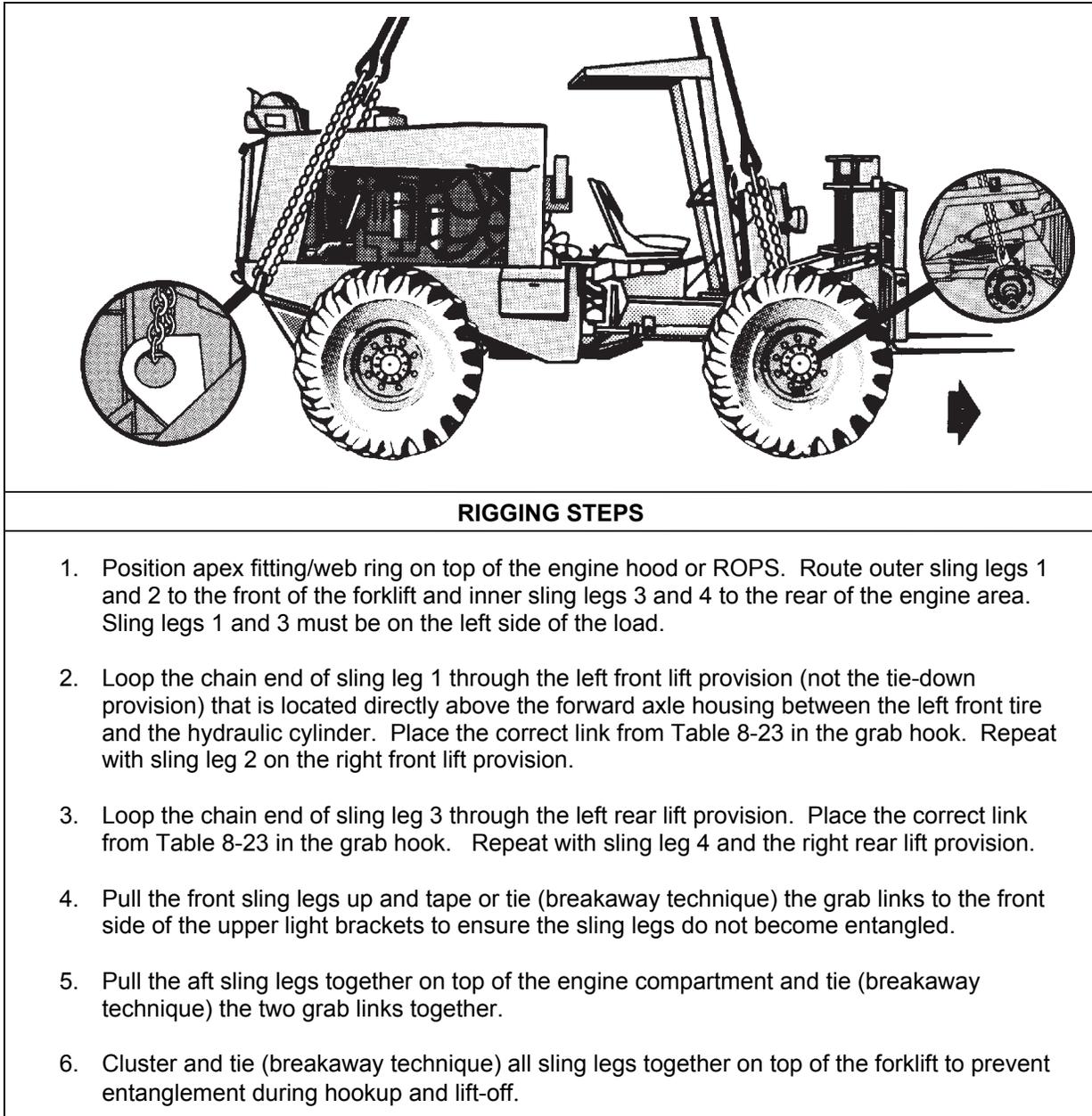
**Table 8-23. Truck, Forklift, MC-4000**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Truck, Forklift, Rough Terrain, MC-4000, TAMCN B2565	8,600	15K	4/10

- **Materials.** The following materials are required to rig this load:
  - Sling set (15,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig each load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Insert the articulating lock pin to keep the front and rear sections from twisting while in flight.
    - Secure the seat cushion and steering wheel with Type III nylon cord. Engage the hand brake and place the transmission in neutral.
    - Ensure the fuel tank is less than 3/4 full.
    - Raise the fork tines 1 foot above the ground.
  - **Rigging.** Rig the load according to the steps in Figure 8-23.
  - **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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 8-23. Truck, Forklift, MC-4000**

## TRUCK, FORKLIFT, RT4000

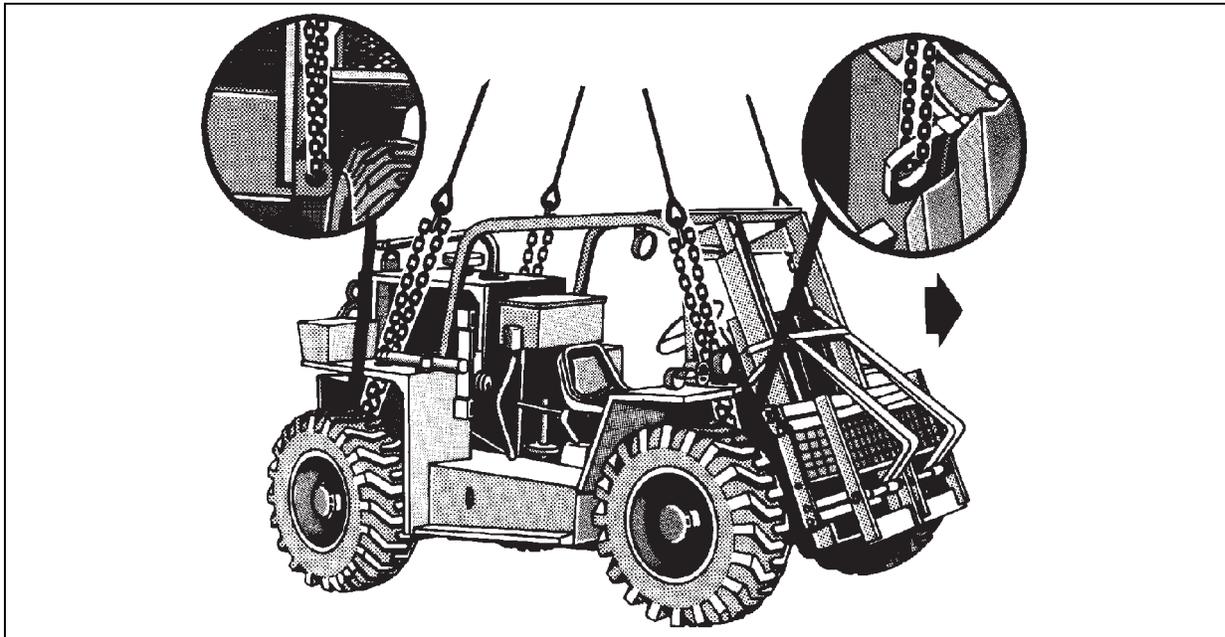
8-25. The truck, forklift, RT4000 is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 8-24 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 8-24. Truck, Forklift, RT4000**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Truck, Forklift, Rough Terrain, RT4000, TAMCN B2566	10,860	15K	3/10

- **Materials.** The following materials are required to rig this load:
  - Sling set (15,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down strap, CGU-1B (4 each).
- **Personnel.** Two persons can prepare and rig each load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure the seat cushion and steering wheel with Type III nylon cord. Engage the hand brake and place the transmission in neutral.
    - Ensure the fuel tank is less than 3/4 full.
    - 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.
    - Tape the end of the exhaust pipe.
  - **Rigging.** Rig the load according to the steps in Figure 8-24.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**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 8-24 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 8-24 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 (breakaway technique) the two grab links together.
6. Cluster and tie (breakaway technique) all sling legs together on top of the FOPS to prevent entanglement during hookup and lift-off.

**Figure 8-24. Truck, Forklift, MC-4000**

**MHE-270/MHE-271 TRUCK, FORKLIFT, RT4000**

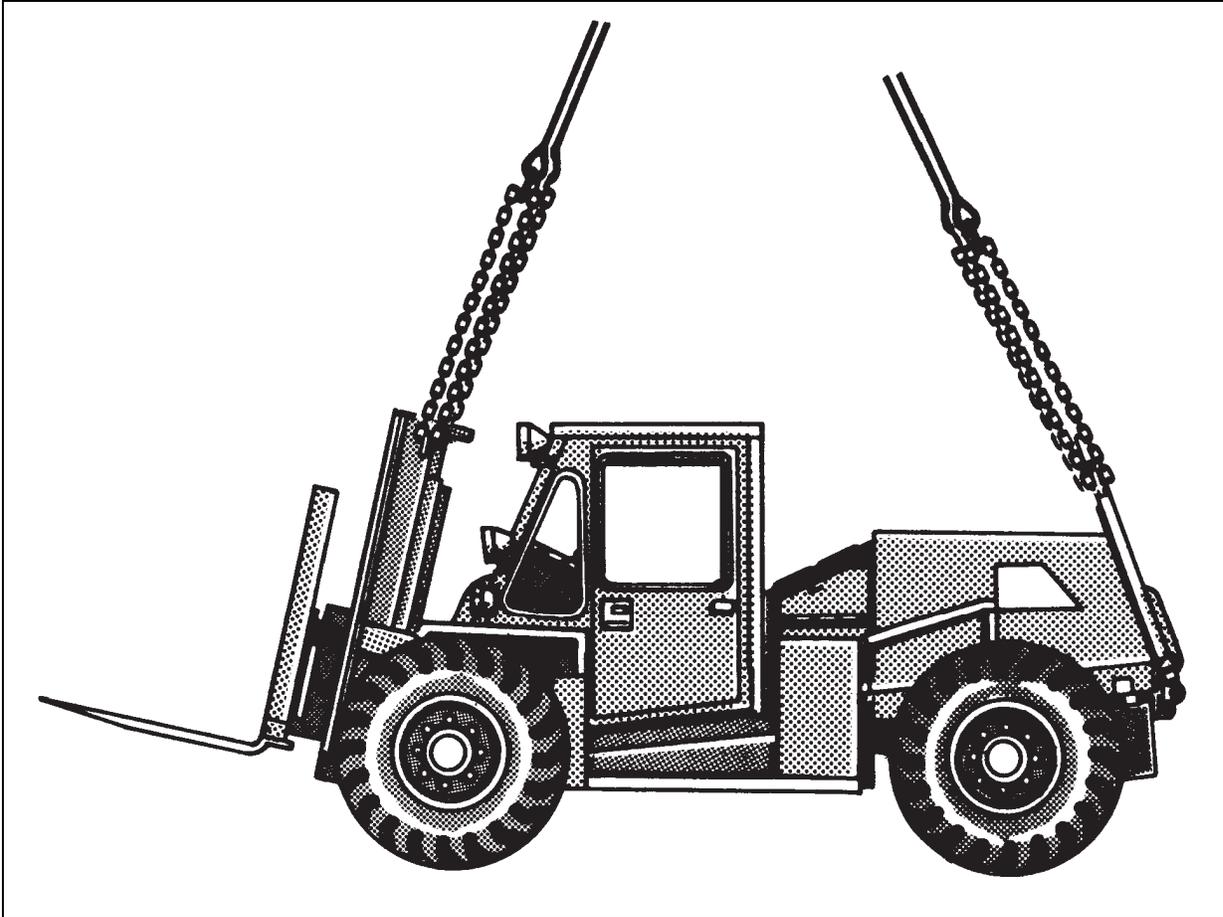
8-26. The MHE-270/MHE-271 truck, forklift, RT4000 is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 8-25 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

Table 8-25. MHE-270/MHE-271 Truck, Forklift, RT4000

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
MHE-270 without Cab, NSN: 3930-01-330-8907	11,700	25K	40/3
MHE-271 with Cab, NSN: 3930-01-330-8906	11,920	25K	40/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig each load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Tilt the mast back as far as it will go.
    - Ensure the fuel tank is less than 3/4 full.
    - 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.
    - Place the transmission in neutral and straighten the front wheels.
    - Engage the parking brake.
    - Secure the doors, chains, fire extinguisher, and all loose equipment with tape or Type III nylon cord.
    - Tape all lights, windows and glass fixtures.
    - Tape the windshield wipers to the windshield.
  - **Rigging.** Rig the load according to the steps in Figure 8-25.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**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 8-25 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 8-25 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 8-25. MHE-270/MHE-271 Truck, Forklift, RT4000**

## TRUCK, FORKLIFT, MC-6000

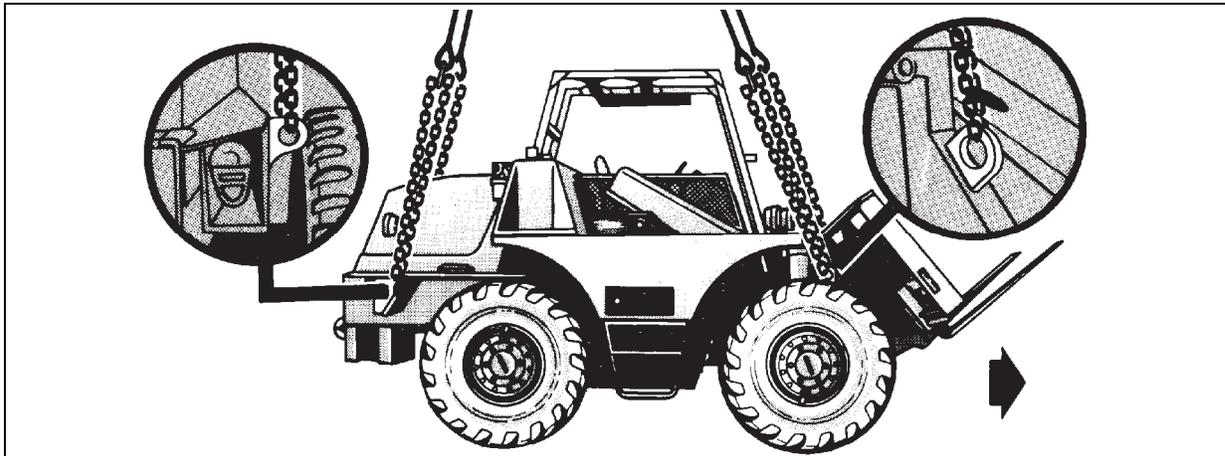
8-27. The truck, forklift, MC-6000 is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 8-26 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 8-26. Truck, Forklift, MC-6000**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Truck, Forklift, MC-6000	19,800	40K	3/16

- **Materials.** The following materials are required to rig this load:
  - Sling set (40,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down strap, CGU-1B (4 each).
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- **Personnel.** Two persons can prepare and rig each load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Position the forks so they are sitting on the travel blocks and are tilted all the way aft.
    - Ensure the fuel tank is less than 3/4 full. Place the transmission in neutral and engage the parking brake.
    - Route two CGU-1/B cargo tie-down straps around the rear access doors.
    - Route two CGU-1/B cargo tie-down straps around the engine access doors.
    - Secure the tool box lid with tape or Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 8-26.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting on top of the roll over protection system (ROPS). Route outer sling legs 1 and 2 to the front of the forklift 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 mounted on the frame inboard of the left front tire. Place the correct link from Table 8-26 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 frame aft of the left rear tire. Place the correct link from Table 8-26 in the grab hook. Repeat with sling leg 4 and the right rear lift provision.
4. Lift the sling leg and tie (breakaway technique) the grab hooks to the ROPS. Cluster and tie (breakaway technique) all sling legs together on top of the forklift to prevent entanglement during hookup and lift-off.

**Figure 8-26. Truck, Forklift, MC-6000**

**EXTENDABLE BOOM FORKLIFT**

8-28. The extendable boom forklift is rigged for single-point sling load using the following procedures:

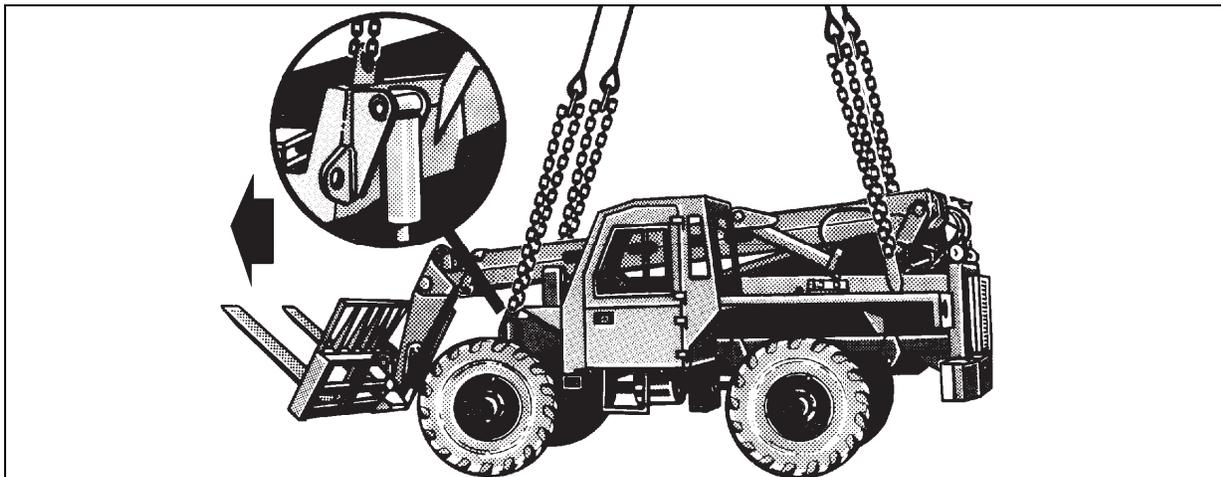
- **Applicability.** The following item in Table 8-27 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 8-27. Extendable Boom Forklift**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Extendable Boom Forklift	25,640	40K	3/20

- **Materials.** The following materials are required to rig this load:
  - Sling set (40,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.

- Tie-down strap, cargo, CGU-1/B (as required).
- **Personnel.** Two persons can prepare and rig each load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure the forks against the carriage using the CGU-1/Bs.
    - Raise the carriage 10 inches off the ground, retract and raise the boom.
    - Set the parking brake.
    - Place the gear selector lever in neutral.
    - Tape the exhaust pipe end.
  - **Rigging.** Rig the load according to the steps in Figure 8-27.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**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 8-27 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 8-27 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 (breakaway technique) all sling legs together on top of the FOPS to prevent entanglement during hookup and lift-off.

**Figure 8-27. Extendable Boom Forklift**

## **EXTENDABLE BOOM FORKLIFT (NEW VERSION)**

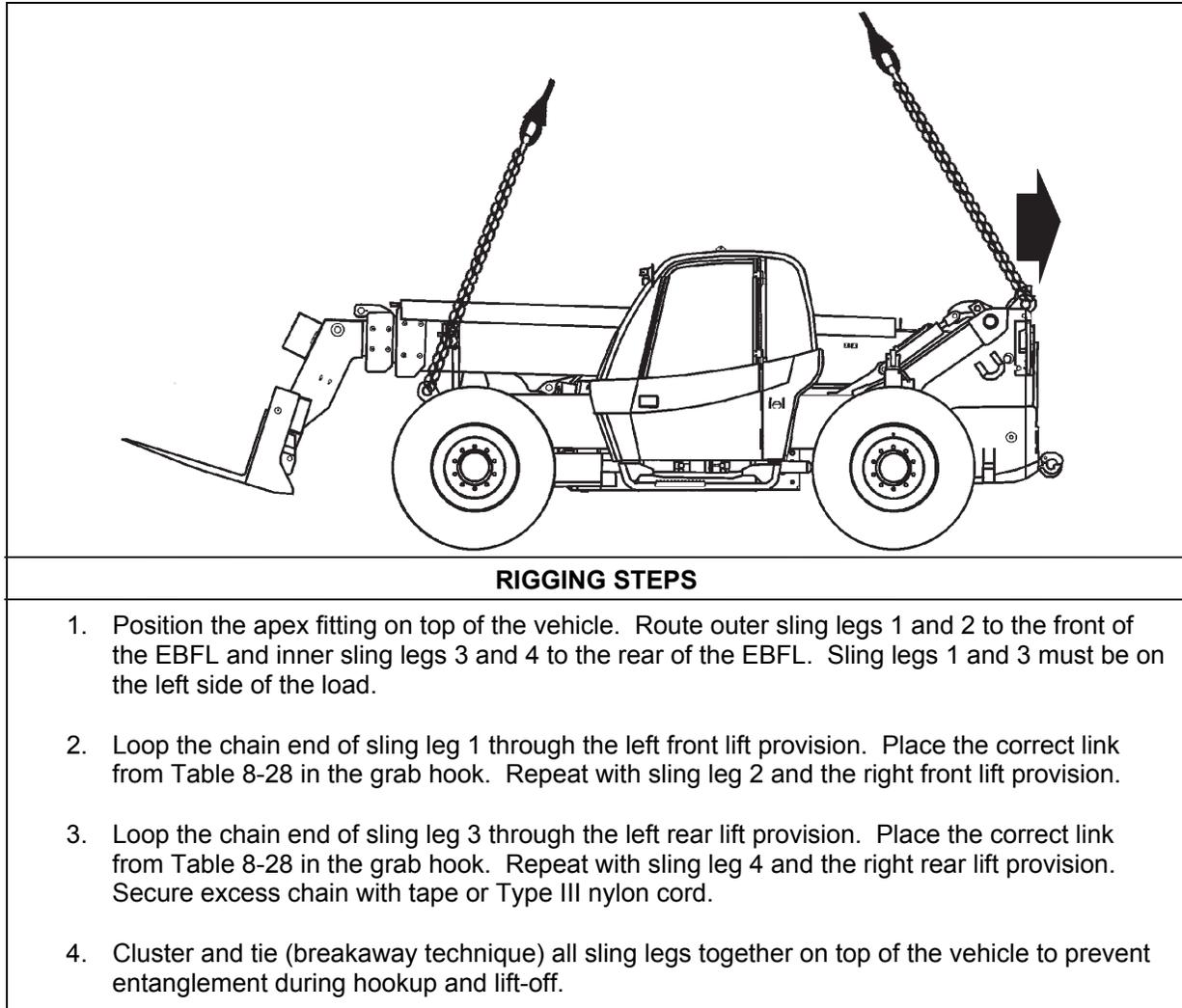
8-29. The extendable boom forklift (new version) is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 8-28 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 8-28. Extendable Boom Forklift (New Version)**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Extendable Boom Forklift (New Version)	28,400	40K	3/48 Cab Side 3/50 Boom Side

- **Materials.** The following materials are required to rig this load:
  - Sling set (40,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tiedown strap, cargo, CGU-1/B (as required).
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure the forks against the carriage using the CGU-1/Bs.
    - Set the parking brake.
    - Place the gear selector lever in neutral.
    - Tape the exhaust pipe end.
    - Lower the boom and tilt the forks all the way back.
    - Secure all latches on the windows with tape or Type III nylon cord.
    - Tape the windshield wipers to the windshield.
    - Tape all lights and mirrors.
    - Secure all equipment in the cab with tape or Type III nylon cord.
    - Ensure the wheels are pointed straight ahead and secure the steering wheel with Type III nylon cord.
    - Secure the engine cover with Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 8-28.
  - **Hookup.** The hookup team stands on the side of 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 8-28. Extendable Boom Forklift (New Version)**

## LIGHT ROUGH TERRAIN FORKLIFT (LRTF)

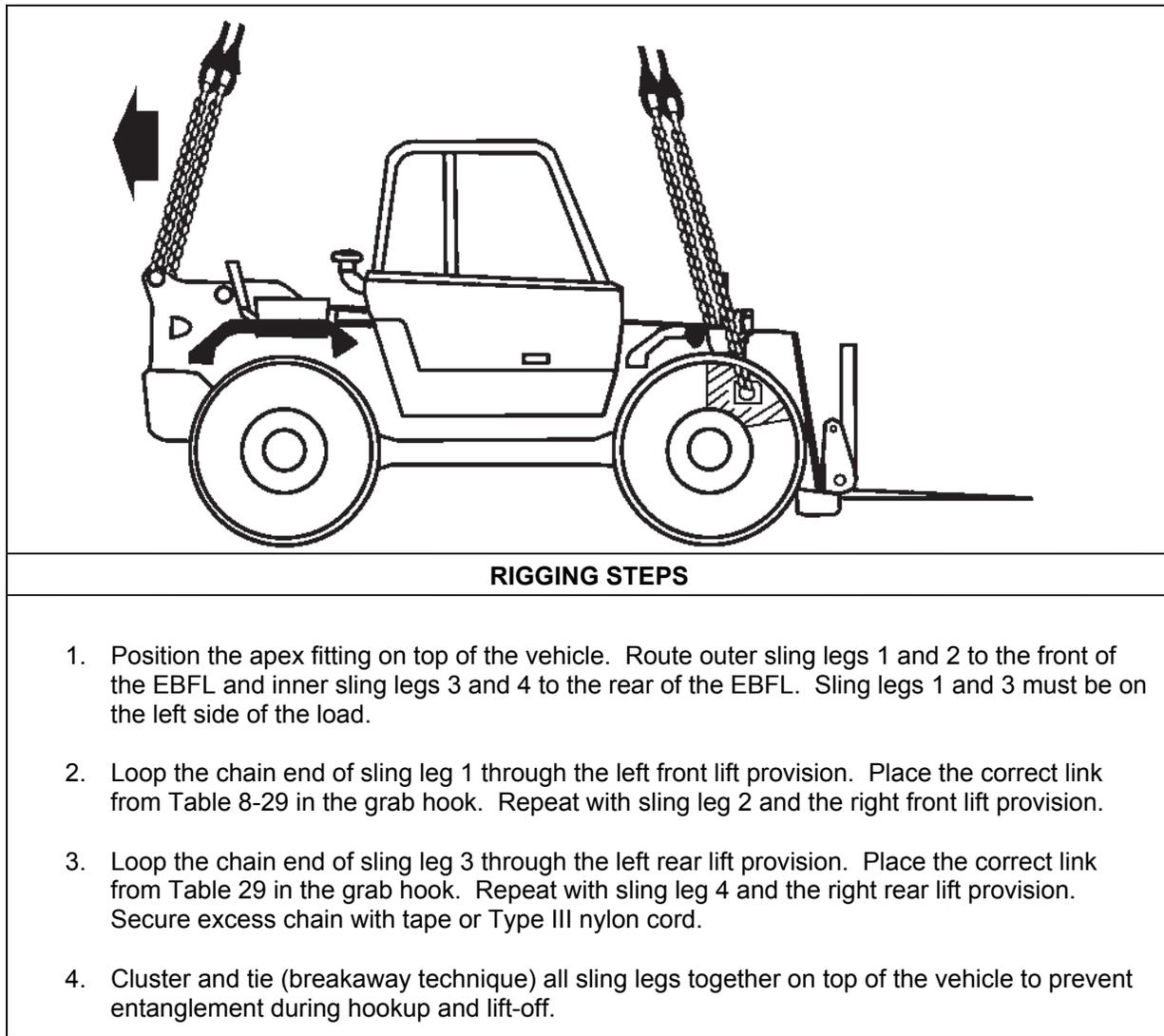
8-30. The light rough terrain forklift is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 8-29 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 8-29. Light Rough Terrain Forklift**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Light Rough Terrain Forklift	13,700	15K	25/3 Cab Side 30/3 Boom Side

- **Materials.** The following materials are required to rig this load:
  - Multileg sling set (15,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tiedown strap, cargo, CGU-1/B (as required).
- **Personnel.** Two persons can prepare and rig each load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Slide and secure the forks together in the middle of the carriage using CGU-1/Bs.
    - Set the parking brake.
    - Place the gear selector lever in neutral.
    - Tape the exhaust pipe end.
    - Secure all latches on the windows with tape or Type III nylon cord.
    - Tape the windshield wipers to the windshield.
    - Tape all lights and mirrors.
    - Secure all equipment in the cab with tape or Type III nylon cord.
    - Ensure the wheels are pointed straight ahead and secure the steering wheel with Type III nylon cord.
    - Secure the engine cover with Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 8-29.
  - **Hookup.** The hookup team stands on the side of 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 8-29. Light Rough Terrain Forklift**

## WELDING SHOP ON M200A1 TRAILER

8-31. The welding shop on M200A1 trailer is rigged for single-point sling load using the following procedures:

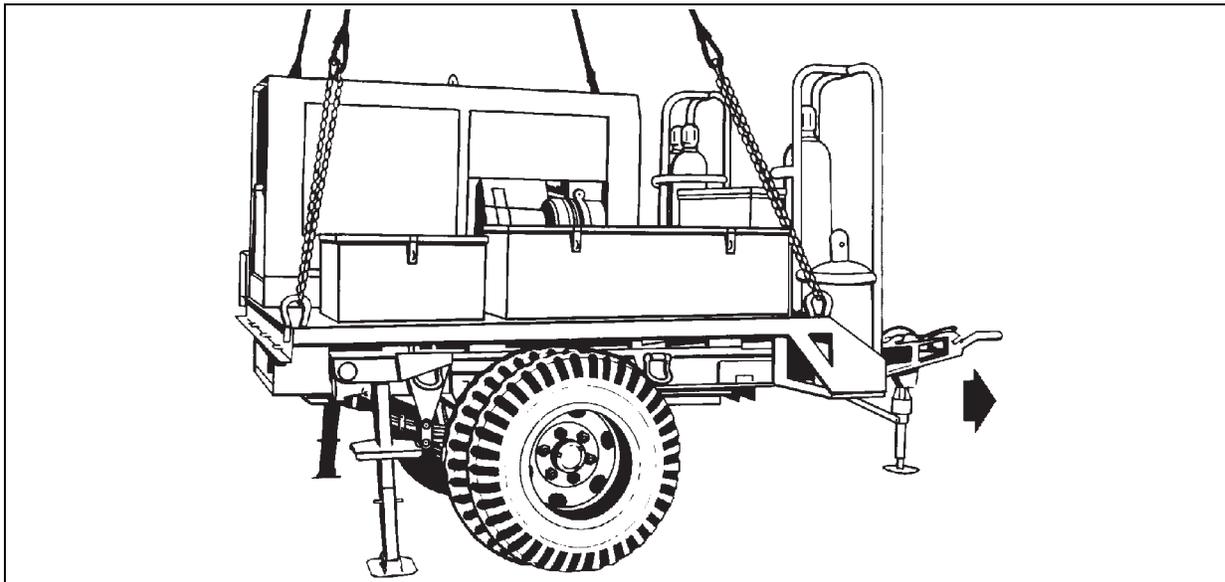
- **Applicability.** The following item in Table 8-30 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 8-30. Welding Shop on M200A1 Trailer**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Welding Shop on M200A1 Trailer	7,220	10K	3/17

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.

- Cord, nylon, Type III, 550-pound breaking strength.
- Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- Webbing, nylon, tubular, 1/2-inch.
- **Personnel.** Two persons can prepare and rig each load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all compressed gas cylinders to trailer with nylon cord. Ensure all the caps are properly installed.
    - Secure the safety chains to tow bar of trailer with tape or Type III nylon cord.
    - 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.
    - Secure engine doors and control panel cover by routing nylon cord around entire engine and tying cord.
    - The front leg must be in full down position.
  - **Rigging.** Rig the load according to the steps in Figure 8-30.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**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 8-30 in the grab hook. Repeat with sling leg 2 on the right front lift provision.

**Figure 8-30. Welding Shop on M200A1 Trailer**

<b>RIGGING STEPS (Continued)</b>
<p>3. Loop the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 8-30 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 (breakaway technique) all sling legs together to prevent entanglement during hookup and lift-off.</p>

**Figure 8-30. Welding Shop on M200A1 Trailer (Continued)**

## 250 CFM AIR COMPRESSOR

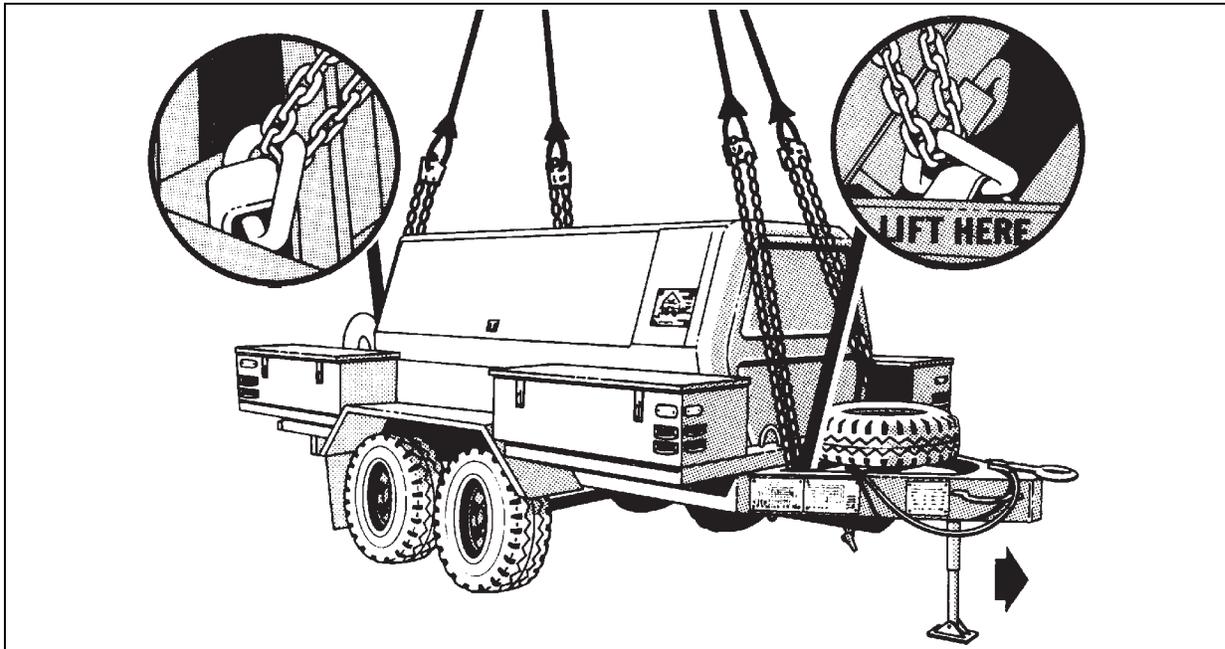
8-32. The 250 CFM air compressor is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 8-31 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 8-31. 250 CFM Air Compressor**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
250 CFM Air Compressor	7,425	10K	3/15

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- **Personnel.** Two persons can prepare and rig each load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - 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.
    - Ensure fuel cap is secure. Pad front corners of shelter along bolt lines with felt and tape.
    - Tape or tie the lift provisions in the UP position to prevent fouling.
  - **Rigging.** Rig the load according to the steps in Figure 8-31.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**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 8-31 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 8-31 in the grab hook. Repeat this procedure for sling leg 4. Tie (breakaway technique) the sling legs to prevent fouling the hose reels. Secure excess chain with tape or nylon cord.
4. Cluster and tie (breakaway technique) all sling legs together to prevent entanglement during hookup and lift-off.

**Figure 8-31. 250 CFM Air Compressor**

**PNEUMATIC TOOL AND COMPRESSOR OUTFIT / HYDRAULIC PIONEER TOOL OUTFIT (PTO) ON M353 TRAILER**

8-33. The pneumatic tool and compressor outfit / hydraulic pioneer tool outfit on M353 trailer are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 8-32 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

Table 8-32. Tool Outfits on M353 Trailer

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Pneumatic Tool and Compressor	8,040	10K	3/18
Hydraulic Pioneer Tool Outfit	6,740	10K	3/20

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- **Personnel.** Two persons can prepare and rig each load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Engage both hand brakes.
    - Ensure fuel cap is secure. Secure all loose gear and doors.
    - Secure the light cable to the drawbar with Type III nylon cord or tape.
    - Tape all lights, reflectors, and glass fixtures.
    - Secure the two small wheels.
  - **Rigging.** Rig the load according to the steps in Figure 8-32.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

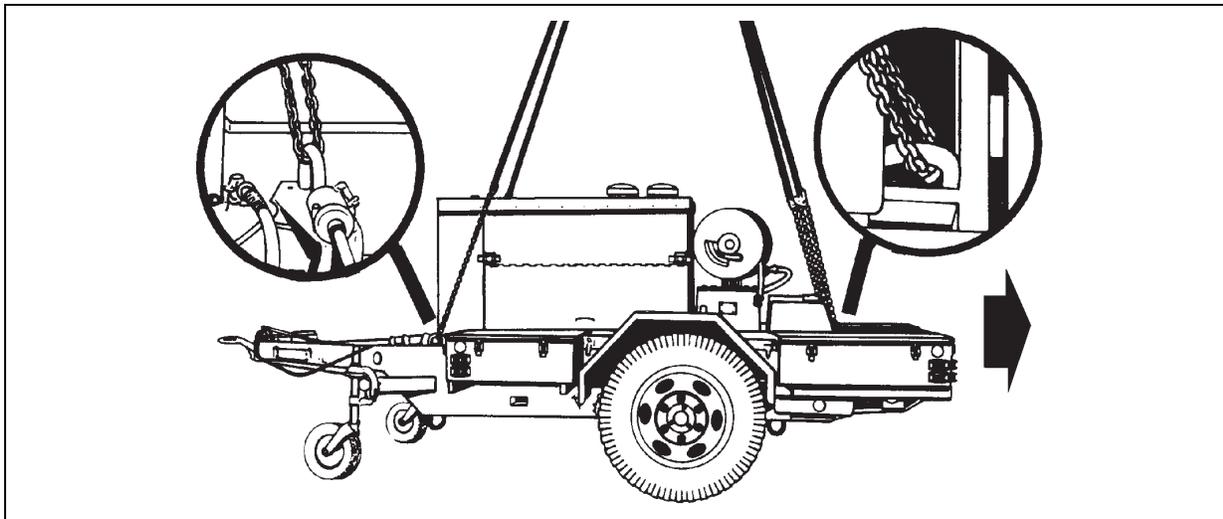


Figure 8-32. Tool Outfits on M353 Trailer

RIGGING STEPS
<ol style="list-style-type: none"> <li>1. Position apex fitting on top of the compressor. 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.</li> <li>2. Loop the chain end of sling leg 1 through the lifting eye located at the left front corner of the trailer. Place the correct link from Table 8-32 in the grab hook. Repeat with sling leg 2 and the lifting eye located at the right front corner of the trailer.</li> <li>3. Loop the chain end of sling leg 3 through the lifting eye at the left rear corner of the trailer. Place the correct link from Table 8-32 in the grab hook. Repeat with sling leg 4 and the lifting eye at the right rear corner of the trailer.</li> <li>4. Cluster and tie (breakaway technique) all sling legs together on top of the air compressor to prevent entanglement during hookup and lift-off. Ensure the rear sling legs are tied so they do not become entangled under the hose reels.</li> </ol>

**Figure 8-32. Tool Outfits on M353 Trailer (Continued)**

## FUEL DISPENSING SYSTEM, TACTICAL AIRFIELD (TAFDS)

8-34. The tactical airfield fuel dispensing system is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 8-33 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

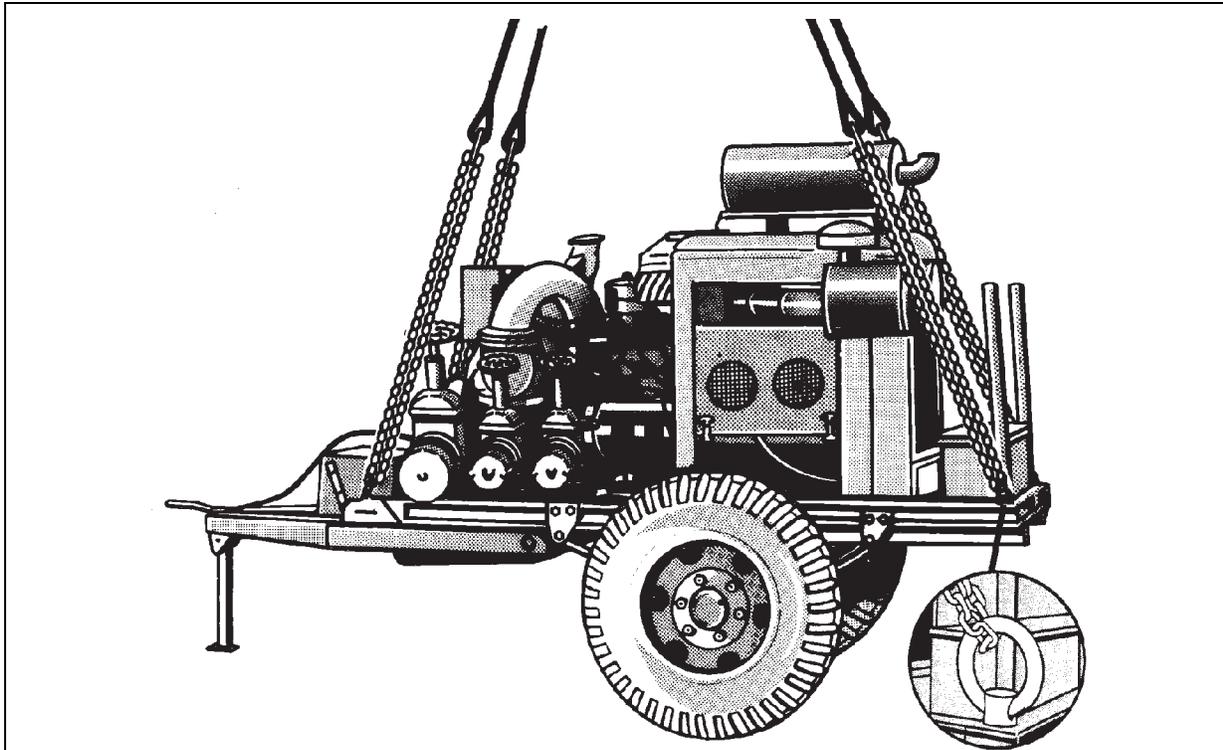
**Table 8-33. Fuel Dispensing System, Tactical Airfield**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Fuel Dispensing System, Tactical Airfield	3,500	15K	5/5

- **Materials.** The following materials are required to rig this load:
  - Sling set (15,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig each load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure the battery cover, inlet plugs, and outlet plugs with tape or Type III nylon cord.
    - Tape the engine intake and exhaust openings.
    - Secure the canvas cover on the pump with Type III nylon cord.
    - Engage one hand brake.
  - **Rigging.** Rig the load according to the steps in Figure 8-33.
  - **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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



#### 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 8-33 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 8-33 in the grab hook. Repeat with sling leg 4 and the right rear lift provision.
4. Cluster and tie (breakaway technique) all sling legs together on top of the pump to prevent entanglement during hookup and lift-off.

**Figure 8-33. Fuel Dispensing System, Tactical Airfield**

## BOAT, BRIDGE ERECTION

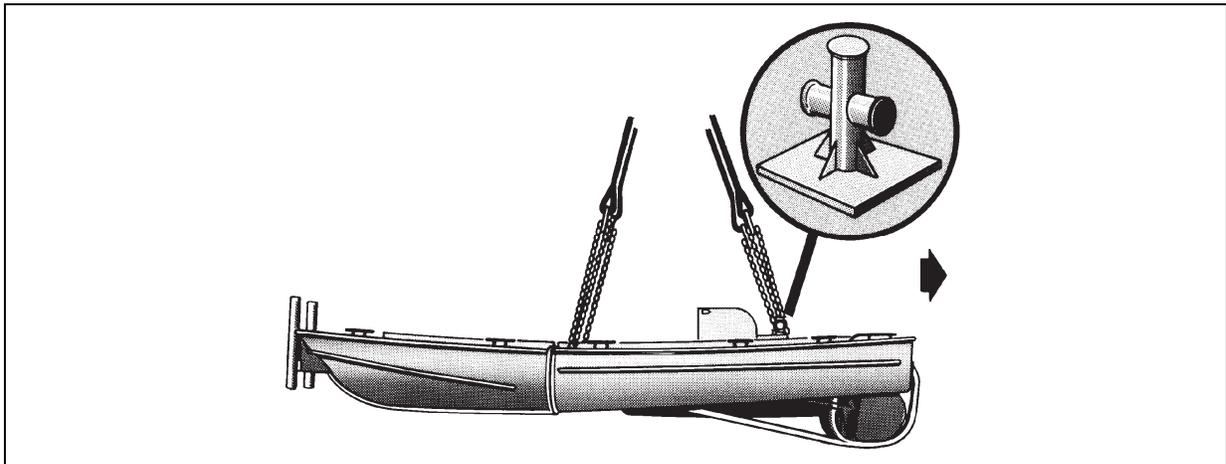
8-35. The bridge erection boat is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 8-34 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 8-34. Boat, Bridge Erection**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Boat, Bridge, Erection	6,000	15K	4/4

- **Materials.** The following materials are required to rig this load:
  - Sling set (15,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig each load in 30 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Remove and secure the canvas cover in the stern of the boat.
    - Remove or secure all loose items of equipment.
    - Attach the front section to the rear section of the boat.
    - Tape all lights, gages, compass, and glass items.
    - Ensure the shipping cradles are removed from both boat sections.
  - **Rigging.** Rig the load according to the steps in Figure 8-34.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 8-34. Boat, Bridge Erection**

<b>RIGGING STEPS</b>
<ol style="list-style-type: none"> <li>1. Position apex fitting on top of the center of the boat. Route outer sling legs 1 and 2 to the stern section and inner sling legs 3 and 4 to the bow section. Make sure chains for sling legs 3 and 4 are forward (toward the bow) of the horizontal arms on the rear towing bitt. Sling legs 1 and 3 must be on the same side of the load.</li> <li>2. Loop the chain end of sling leg 1 through the left rear lifting U-bolt located on the left side of the stern section. Place the correct link from Table 8-34 in the grab hook. Repeat with sling leg 2 and the right rear lifting U-bolt.</li> <li>3. Wrap the chain end of sling leg 3 two times around the vertical post of the rear towing bitt. Wrap the chain end of sling leg 4 two times in the opposite direction around the vertical post of the rear towing bitt. Place the correct link from Table 8-34 in the grab hook. Ensure the chains are below the horizontal arm of the towing bitt.</li> <li>4. Cluster and tie (breakaway technique) all sling legs together on top of the boat to prevent entanglement during hookup and lift-off.</li> </ol>

**Figure 8-34. Boat, Bridge Erection (Continued)**

## BRIDGE, MEDIUM GIRDER, DRY GAP (MGB)

8-36. The bridge, medium girder, dry is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 8-35 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

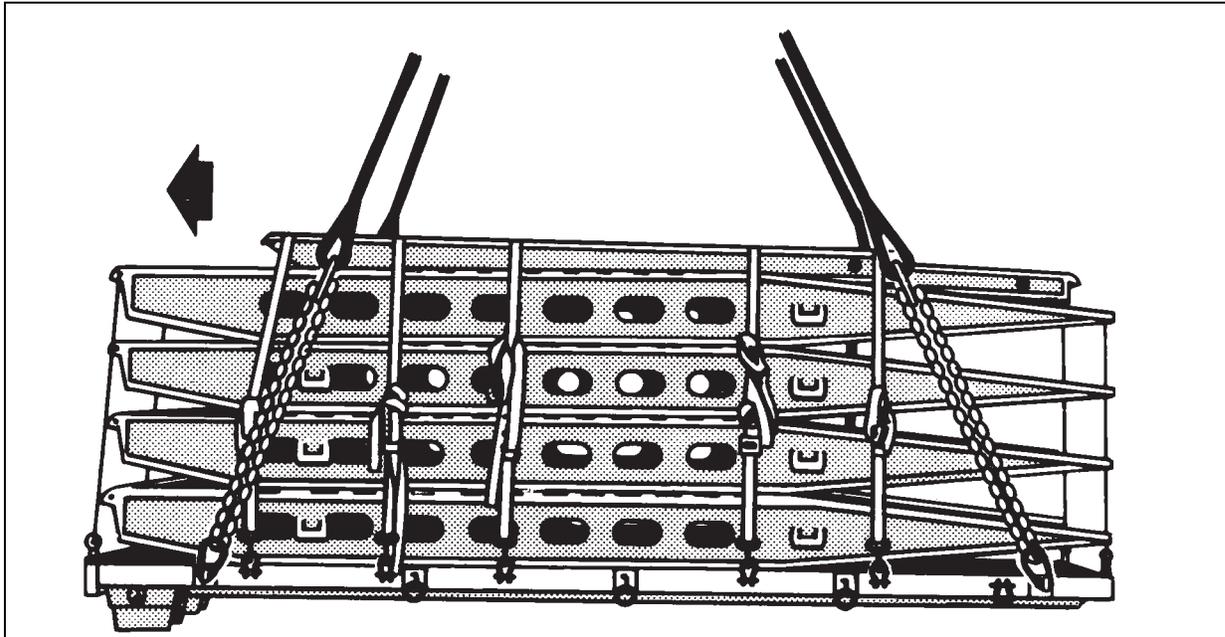
**Table 8-35. Bridge, Medium Girder, Dry**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Medium Girder Bridge, Ramp Section, Palletized, TAMCN BO152	6,500	15K	10/5

- **Materials.** The following materials are required to rig this load:
  - Sling set (15,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down strap, cargo, CGU-1/B (as required).
- **Personnel.** Two persons can prepare and rig each load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - The larger ends of the bridge sections are at the front of the load.
    - 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.
  - **Rigging.** Rig the load according to the steps in Figure 8-35.
  - **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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**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 8-35 in the grab hook. Repeat with sling leg 2 and the pallet right front lift provision. Secure excess chain with nylon cord.
3. Loop the chain end of sling leg 3 through the pallet left rear lift provision. Place the correct link from Table 8-35 in the grab hook. Repeat with sling leg 4 and the pallet right rear lift provision.
4. Cluster and tie (breakaway technique) all sling legs together on top of the bridge ramp sections to prevent entanglement during hookup and lift-off.

**Figure 8-35. Medium Girder Bridge**

## RIBBON BRIDGE, RAMP BAY

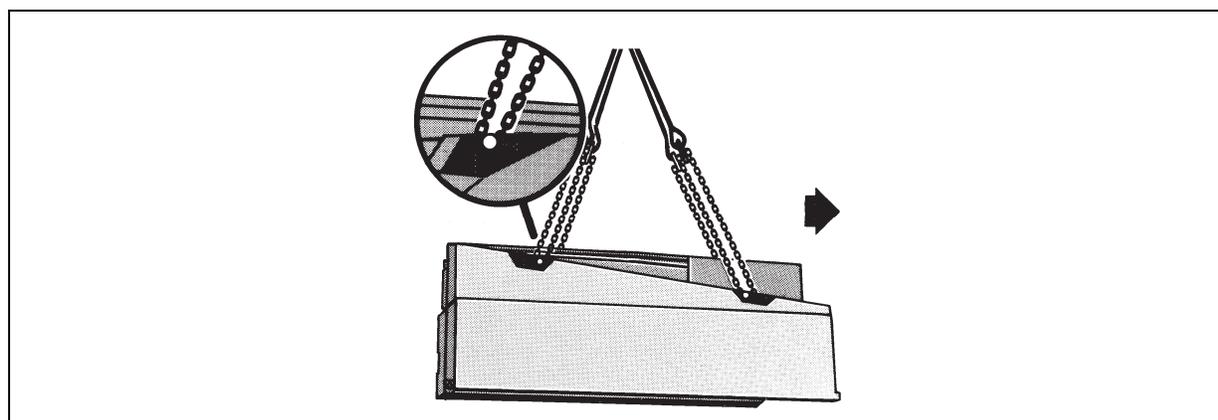
8-37. The ribbon bridge, ramp bay is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 8-36 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 8-36. Ribbon Bridge, Ramp Bay**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Ribbon Bridge, Ramp Bay	11,560	25K	3/60
Improved Ribbon Bridge, Ramp Bay	13,270	25K	3/60

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig each load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - The shorter end of the bay section is the front of the load.
    - Ensure all the bay latches are securely fastened.
  - **Rigging.** Rig the load according to the steps in Figure 8-36.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 8-36. Ribbon Bridge, Ramp Bay**

<b>RIGGING STEPS</b>
<ol style="list-style-type: none"> <li>1. Position the apex fitting on top of the ramp bay. Route outer sling legs 1 and 2 to the front of the bay and inner sling legs 3 and 4 to the rear of the bay. Sling legs 1 and 3 must be on the left side of the load.</li> <li>2. Loop the chain end of sling leg 1 through the left front lift provision (a pin located between two plates on the top edge of the bay). Place the correct link from Table 8-36 in the grab hook. Repeat with sling leg 2 and the right front lift provision.</li> <li>3. Loop the chain end of sling leg 3 through the left rear lift provision (a pin located between two plates on the top left edge of the bay). Place the correct link from Table 8-36 in the grab hook. Repeat with sling leg 4 and the right rear lift provision. Secure the excess chain with Type III nylon cord.</li> <li>4. Pull the chain of each sling leg up tightly, tape or tie with nylon cord just above the lift provisions to prevent the chain from falling down between the plates.</li> <li>5. Cluster and tie (breakaway technique) all sling legs together on top of the bay to prevent entanglement during hookup and lift-off.</li> </ol>

**Figure 8-36. Ribbon Bridge, Ramp Bay (Continued)**

## **RIBBON BRIDGE INTERIOR BAY**

8-38. The ribbon bridge, interior bay is rigged for single-point sling load using the following procedures:

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

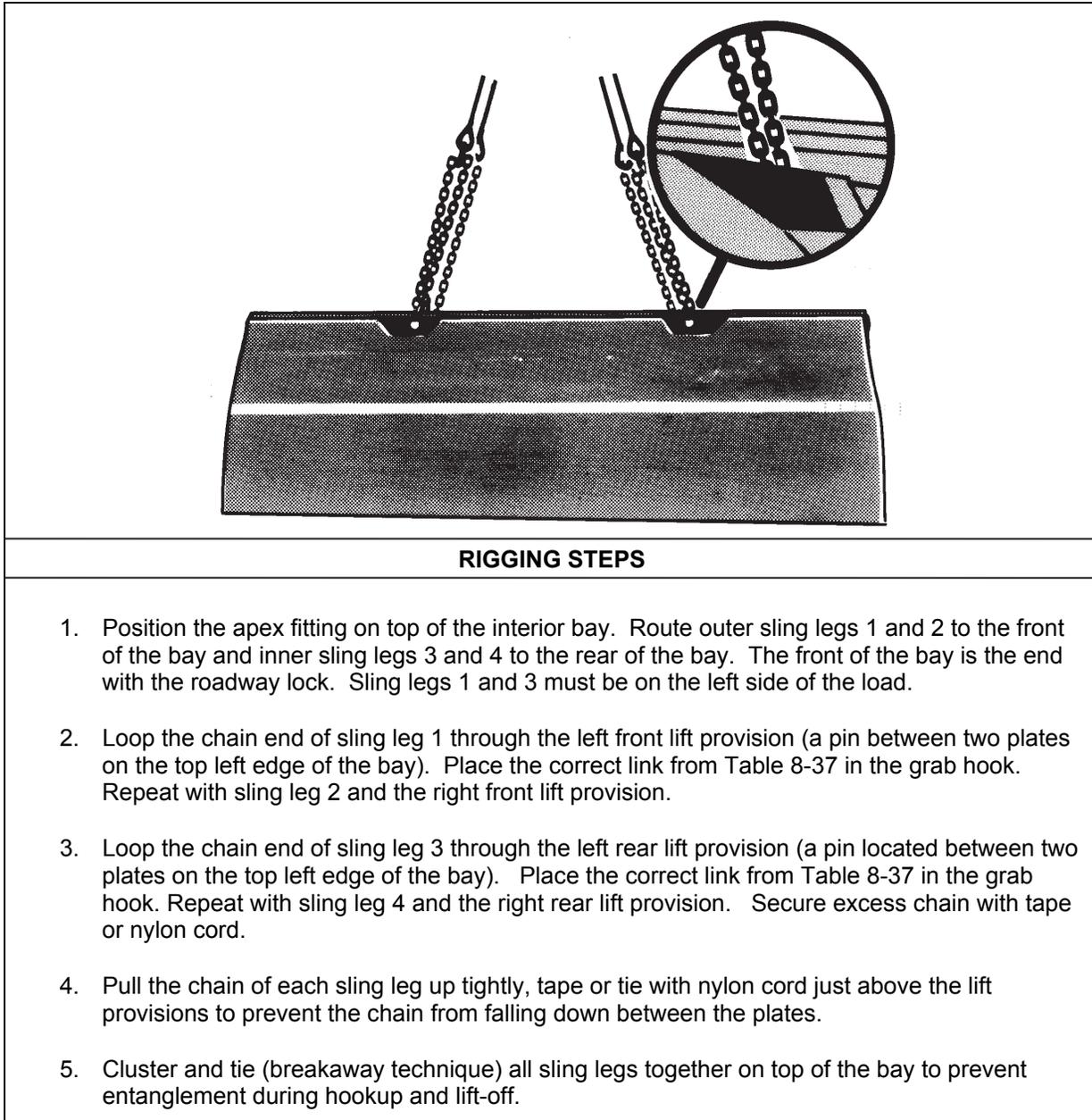
**Table 8-37. Ribbon Bridge, Interior Bay**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Ribbon Bridge, Interior Bay	11,800	25K	3/15
Improved Ribbon Bridge, Interior Bay	13,860	25K	3/15

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig each load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - The end with the roadway lock is the front of the load.
    - Ensure all the bay latches are securely fastened.
  - **Rigging.** Rig the load according to the steps in Figure 8-37.
  - **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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 8-37. Ribbon Bridge, Interior Bay**

## WATER PURIFICATION UNIT-REVERSE OSMOSIS (ROWPU)

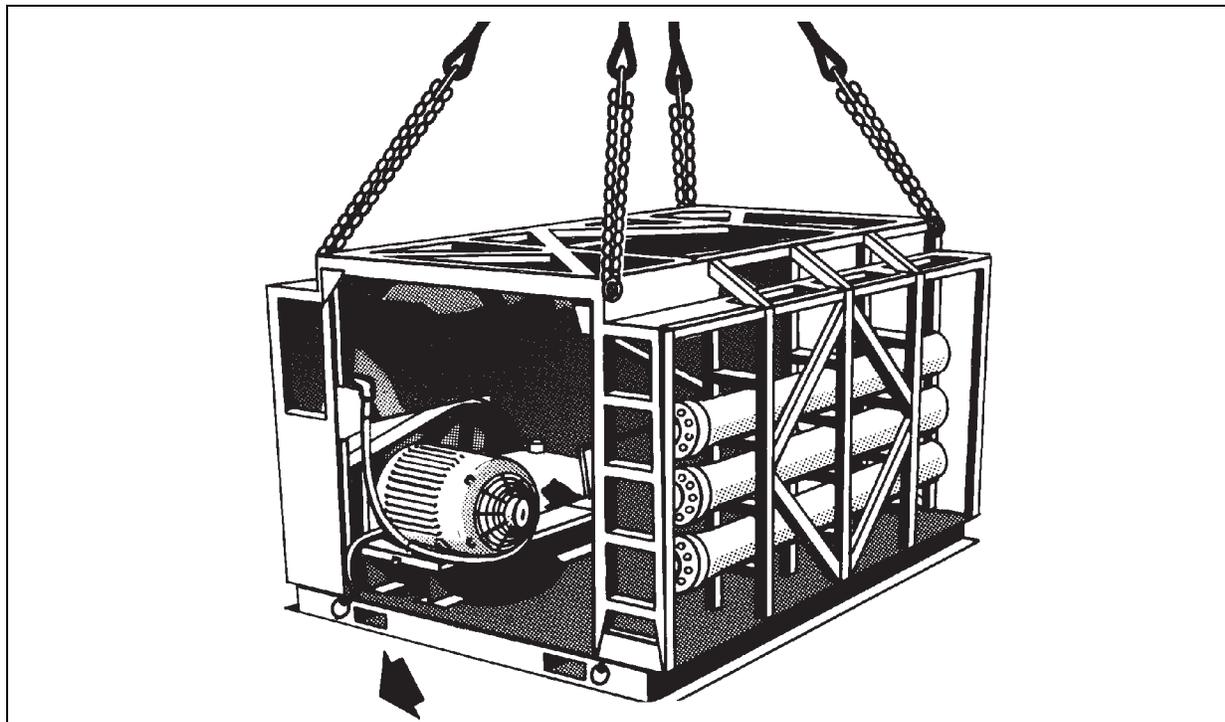
8-39. The water purification unit-reverse osmosis is rigged for single-point sling load using the following procedures:

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

**Table 8-38. Water Purification Unit-Reverse Osmosis**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
MC 257 Water Purification Unit-Reverse Osmosis, 600 Gallons Per Hour, Skid Mounted, TAMCN B2064	7,400	15K	5/5

- **Materials.** The following materials are required to rig this load:
  - Sling set (15,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig each load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - The water pump end is the front of the load.
    - Secure all containers, boxes, and other equipment with tape or Type III nylon cord.
    - Tape all glass fixtures.
  - **Rigging.** Rig the load according to the steps in Figure 8-38.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



#### 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 8-38 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 8-38 in the grab hook. Repeat with sling leg 4 and the right rear lift ring.
4. Cluster and tie (breakaway technique) all sling legs together on top of the unit to prevent entanglement during hookup and lift-off.

Figure 8-38. Water Purification Unit-Reverse Osmosis

## MS114 WFD CONCRETE MIXER

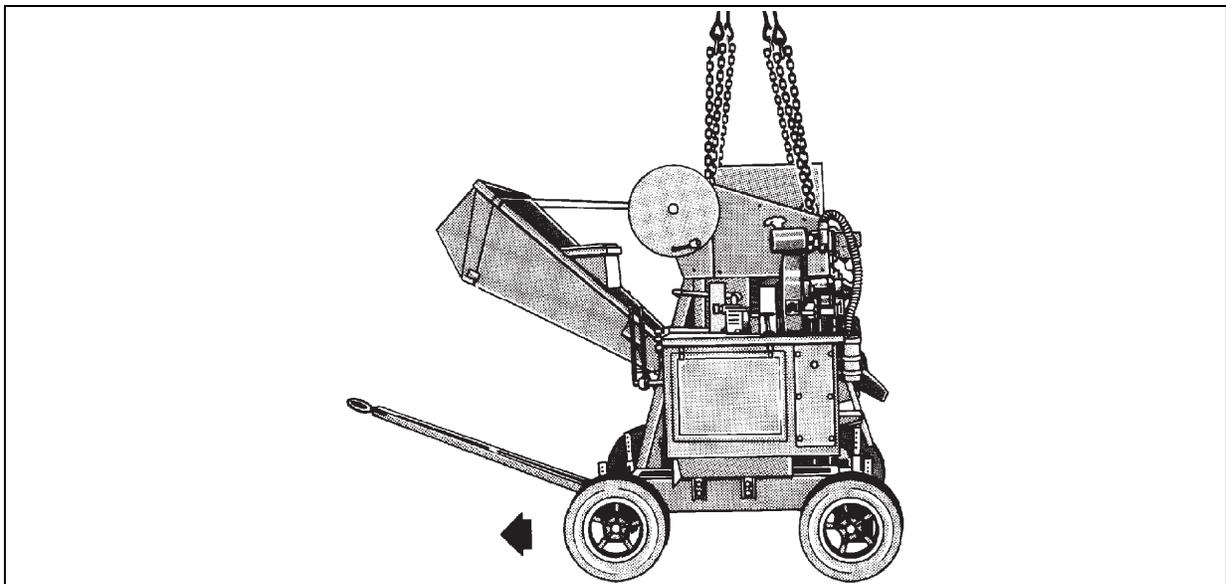
8-40. The MS114 WFD concrete mixer is rigged for single-point sling load using the following procedures:

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

**Table 8-39. MS114 WFD Concrete Mixer**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
MS114 WFD Concrete Mixer	4,223	15K	50/30

- **Materials.** The following materials are required to rig this load:
  - Sling set (15,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down strap, cargo, CGU-1/B (as required).
- **Personnel.** Two persons can prepare and rig each load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all hoses, cables, or chains with tape or nylon cord.
    - Secure the towbar in the raised/locked position.
    - Raise the scoop to the up position and secure the scoop elevating wheel with the tie-down strap.
    - 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.
  - **Rigging.** Rig the load according to the steps in Figure 8-39.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 8-39. MS114 WFD Concrete Mixer**

<b>RIGGING STEPS</b>	
1.	Position the apex fitting on top of the mixer. Route outer sling legs 1 and 2 to the front of the mixer (tow bar 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 8-39 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 8-39 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 (breakaway technique) all sling legs together on top of the mixer to prevent entanglement during hookup and lift-off.

**Figure 8-39. MS114 WFD Concrete Mixer (Continued)**

## COUNTERMINE MINI-FLAIL

8-41. The countermine mini-flail is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 8-40 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

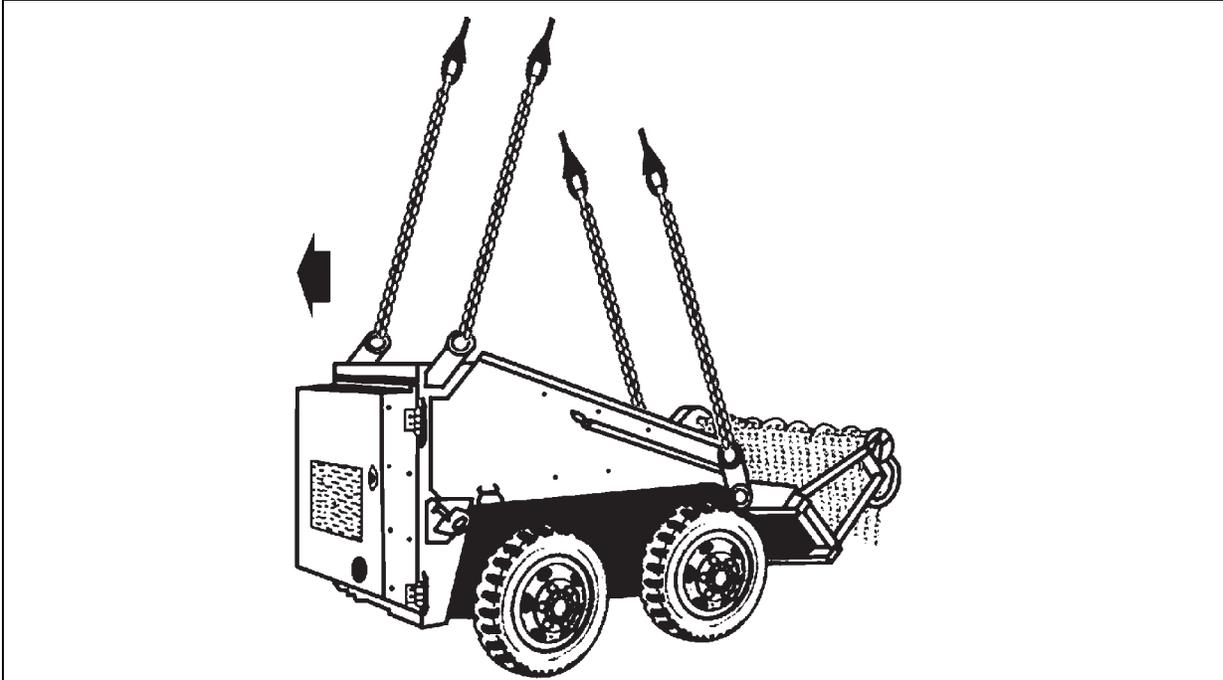
**Table 8-40. Countermine Mini-Flail**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Countermine Mini-Flail	2,420	10K	35/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Tape the flail headspring mechanism to the lift/tie crossmember.
    - Ensure the engine compartment door securing pin is present and safety the pin with tape.
    - Secure loose cables, safety cables, and safety chains with tape or Type III nylon cord.
    - Engage the brakes.
  - **Rigging.** Rig the load according to the steps in Figure 8-40.
  - **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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**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 8-40 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 (flail head end). Place the correct link from Table 8-40 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 (breakaway technique) the sling legs together on top of the vehicle to prevent entanglement during hookup and lift-off.

**Figure 8-40. Countermine Mini-Flail**

## BOBCAT SKID-STEER LOADERS

8-42. The Bobcat skid-steer loaders are rigged for single-point sling load using the following procedures:

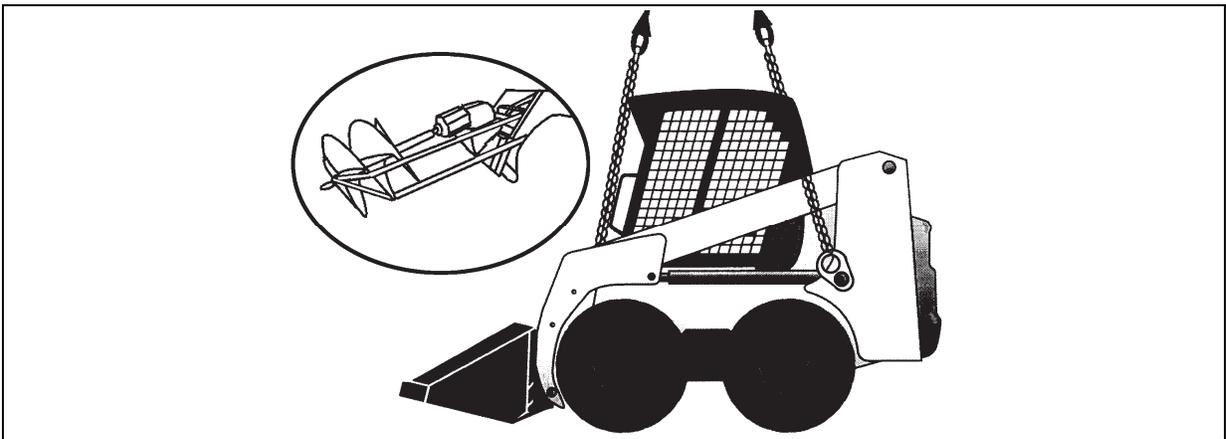
- **Applicability.** The following items in Table 8-41 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 8-41. Bobcat Skid-Steer Loaders**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Bobcat 863 Skid-Steer Loader with Construction and Industrial Bucket	6,870	25K	5/10
Bobcat 863 Skid-Steer Loader with Construction and Industrial Bucket and Tracks	7,720	25K	5/10
Bobcat 863 Skid-Steer Loader with Pallet Forks	7,235	25K	5/10
Bobcat 863 Skid-Steer Loader with Pallet Forks and Tracks	8,085	25K	5/10
Bobcat 863 Skid-Steer Loader with 36-inch Auger Bit	7,690	25K	5/10
Bobcat 863 Skid-Steer Loader with 36-inch Auger Bit and Tracks	8,540	25K	5/10
Bobcat 863 Skid-Steer Loader with Dozer Blade	7,770	25K	5/10
Bobcat 863 Skid-Steer Loader with Dozer Blade and Tracks	8,620	25K	5/10
Bobcat 863 Skid-Steer Loader with Angle Broom	7,910	25K	5/10
Bobcat 863 Skid-Steer Loader with Angle Broom and Tracks	8,760	25K	5/10
Bobcat 763 Skid-Steer Loader with no Attachments	4,840	10K	3/10
Bobcat 763 Skid-Steer Loader with Clamshell Bucket Attachment (NSN 3815-01-502-3528)	5,660	10K	3/10
Bobcat 763 Skid-Steer Loader with Hydraulic Breaker Attachment (NSN 3820-01-502-3530)	5,600	10K	3/10
Bobcat 763 Skid-Steer Loader with Auger Attachment (NSN 3830-01-502-5470)	5,220	10K	3/10
Bobcat 763 Skid-Steer Loader with Pallet Lifting Fork Attachment (NSN 3940-01-502-5469)	5,480	10K	3/10
Bobcat S150 Compact Skid-Steer Loader with no Attachments	5,530	10K	20/3
Bobcat S150 Compact Skid-Steer Loader with Clamshell Bucket Attachment (NSN 3815-01-502-3528)	6,410	10K	25/3
Bobcat S150 Compact Skid-Steer Loader with Hydraulic Breaker Attachment (NSN 3820-01-502-3530)	6,290	10K	25/3
Bobcat S150 Compact Skid-Steer Loader with Auger Attachment (NSN 3830-01-502-5470)	5,910	10K	20/3
Bobcat S150 Compact Skid-Steer Loader with Pallet Lifting Fork Attachment (NSN 3940-01-502-5469)	6,170	10K	20/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - OR
  - Sling set (25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.

- Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- Tiedown strap, cargo, CGU-1/B (as required).
- **Personnel.** Two persons can prepare and rig each load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Adjust the boom arm and attachment angles:
    - Tilt the construction and industrial bucket, pallet forks, dozer blade, or angle broom all the way up and lower the boom all the way down.
    - Tilt the 36-inch auger all the way up and adjust the boom height so the auger point is 8-12 inches off the ground.
    - Secure the 36-inch auger bit and angle broom with CGU-1/B cargo tiedown straps as follows:
      - Swing the 36-inch auger bit all the way to the left and secure with a CGU-1/B cargo tiedown strap. Route the strap around the point of the bit and around the boom arm above the attachment connection. Tighten the strap (see insert Figure 8-41).
      - Route a CGU-1/B cargo tiedown strap around the left side of the angle broom and around the boom arm above the attachment connection. Repeat the above procedures on the right side. Tighten the straps.
      - Detach any attachment hydraulic hoses and cover the ends with tape.
      - Secure each control arm lever to the side of the roll over protection system (ROPS) with Type III nylon cord.
      - Tie the rear lift provisions to the ROPS in the up position with Type III nylon cord.
      - Ensure the fuel tank is not over 3/4 full. Inspect the fuel tank cap for proper installation.
      - Tape all windows, lights and reflectors.
      - Tape the end of the exhaust pipe.
  - **Rigging.** Rig the load according to the steps in Figure 8-41.
  - **Hookup.** The hookup team stands on the rear of the load directly behind 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 8-41. Bobcat Skid-Steer Loaders**

<b>RIGGING STEPS</b>	
1.	Position the apex fitting on top of the ROPS. Route outer sling legs 1 and 2 to the front of the vehicle and inner sling legs 3 and 4 to the rear of the vehicle. 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 8-41 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 8-41 in the grab hook. Repeat with sling leg 4 and the right rear lift provision. Secure excess chain with Type III nylon cord.
4.	Tie the grabhooks from the rear sling legs to the side of the ROPS with Type I, 1/4-inch cotton webbing.
5.	Cluster and tie (breakaway technique) all sling legs together on top of the vehicle to prevent entanglement during hookup and lift-off.

**Figure 8-41. Bobcat Skid-Steer Loaders (Continued)**

## 277 MULTI-TERRAIN LOADER (MTL)

8-43. The 277 multi-terrain loader is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 8-42 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 8-42. 277-Multi-Terrain Loader**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
277 Multi-Terrain Loader	10,900	25K 15K	10/3 20/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig each load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Lower the blade to the ground. Tape the key in the ignition.
    - 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.
    - Place the transmission in neutral and engage the parking brake.
    - Secure the seat cushion with Type III nylon cord.
    - Secure all latches, covers, and panels with tape or type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 8-42.

- **Hookup.** The hookup team stands on top of the MTL. 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

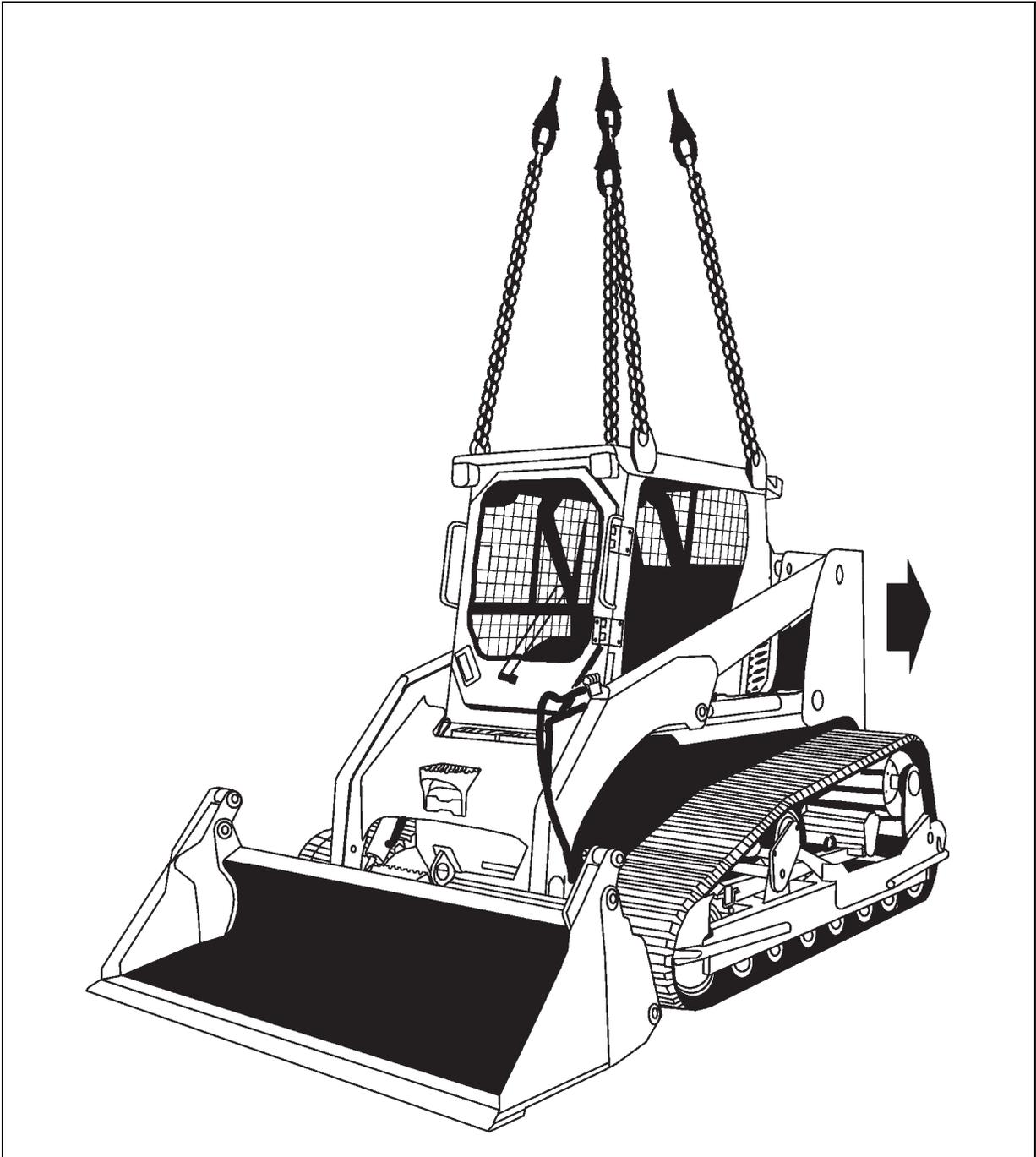


Figure 8-42. 277-Multi-Terrain Loader

<b>RIGGING STEPS</b>
1. Position the apex fitting on top of the roll-over protection system. Route outer sling legs 1 and 2 to the front of the load (bucket 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 on top of the ROPS. Place the correct link from Table 8-42 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 top of the ROPS. Place the correct link from Table 8-42 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 (breakaway technique) the sling legs together on top of the ROPS to prevent entanglement during hookup and lift-off.

**Figure 8-42. 277-Multi-Terrain Loader (Continued)**

## 420-D BACKHOE LOADER

8-44. The 420-D backhoe loader is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 8-43 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 8-43. 420-D Backhoe Loader**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
420-D Backhoe Loader	19,540	25K 40K	20/3 10/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
    - Chain length, part number, 38850-00053-102, from a 25,000-pound capacity sling set (4 each).
    - Coupling link, part number 664241, from a 25,000-pound capacity sling set (4 each).
  - OR
  - Sling set (40,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig each load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all loose equipment in the cab with tape or Type III nylon cord.
    - Remove the exhaust stack and secure it on the floor of the cab.
    - 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.
    - Place the transmission in neutral and engage the parking brake.

- Secure the seat cushion with Type III nylon cord.
- Secure all latches, covers, and panels with tape or type III nylon cord.
- Elevate the bucket halfway and tilt the bucket to the rear. Lower the bucket to the surface. Ensure the front end loader assembly travel locks, located at the ends of both front end loader boom cylinders are properly pinned in place.
- Tie or tape the hydraulic lines and hoses in close proximity to the front lift provisions.
- Connect one additional chain length to each chain of the sling set with the coupling link.
- **Rigging.** Rig the load according to the steps in Figure 8-43.
- **Hookup.** The hookup team stands on top of 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

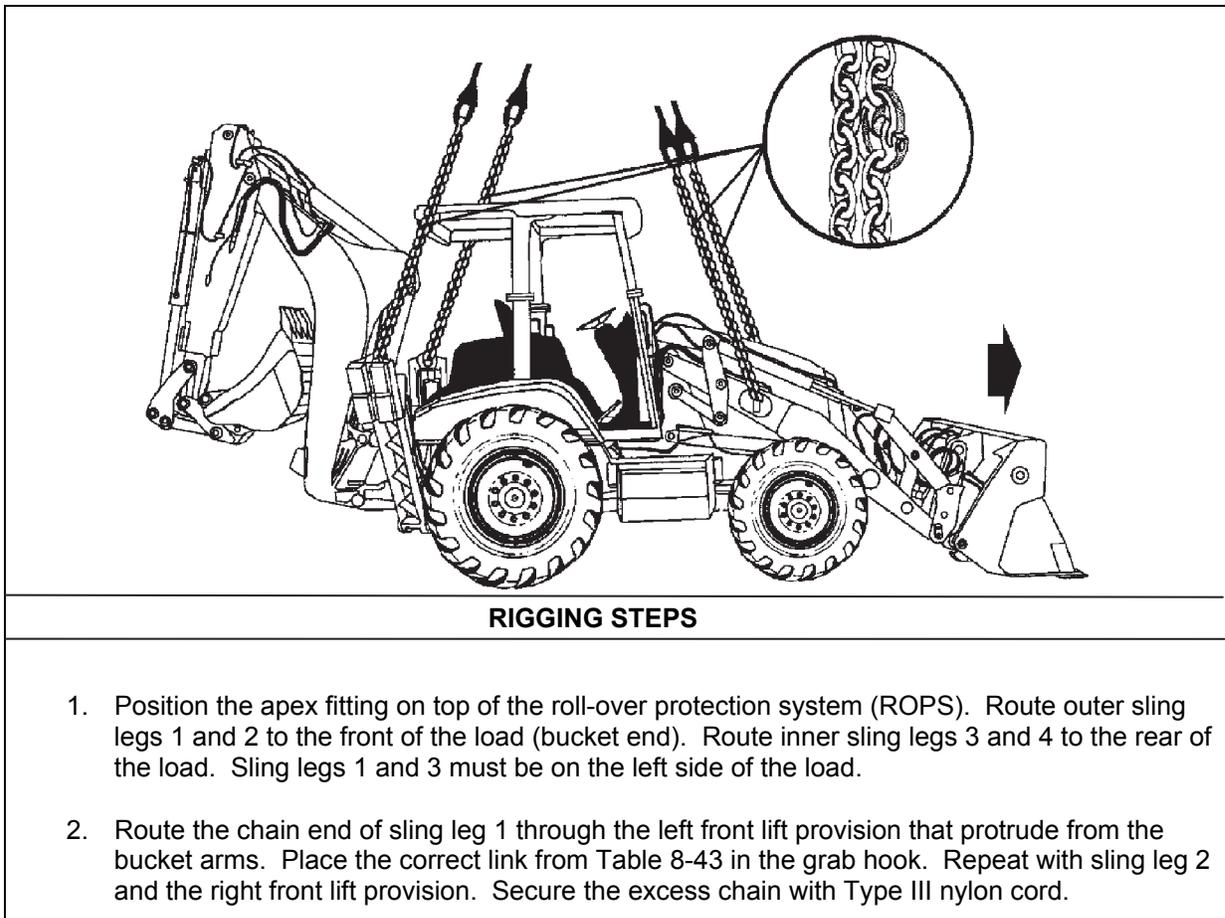


Figure 8-43. 420-D Backhoe Loader

<b>RIGGING STEPS (Continued)</b>
<p>3. Route the chain end of sling leg 3 through the left rear lift provision located on the end of the balance support arms. Place the correct link from Table 8-43 in the grab hook. Repeat with sling leg 4 on the right rear lift provision.</p>
<p>4. Cluster and tie (breakaway technique) the sling legs together on top of the ROPS to prevent entanglement during hookup and lift-off.</p>

**Figure 8-43. 420-D Backhoe Loader (Continued)**

## IC45 CRAWLER CARRIER

8-45. The IC45 crawler carrier is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 8-44 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 8-44. IC45 Crawler Carrier**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
IC45 Crawler Carrier	16,540	25K 40K	15/3 15/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
    - Chain length, part number, 38850-00053-102, from a 25,000-pound capacity sling set (4 each).
    - Coupling link, part number 664241, from a 25,000-pound capacity sling set (4 each).
  - OR
  - Sling set (40,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig each load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all loose equipment with tape or Type III nylon cord.
    - 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.
    - Place the transmission in neutral and engage the parking brake.
    - Secure all latches, covers, and panels with tape or type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 8-44.
  - **Hookup.** The hookup team stands on top of 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

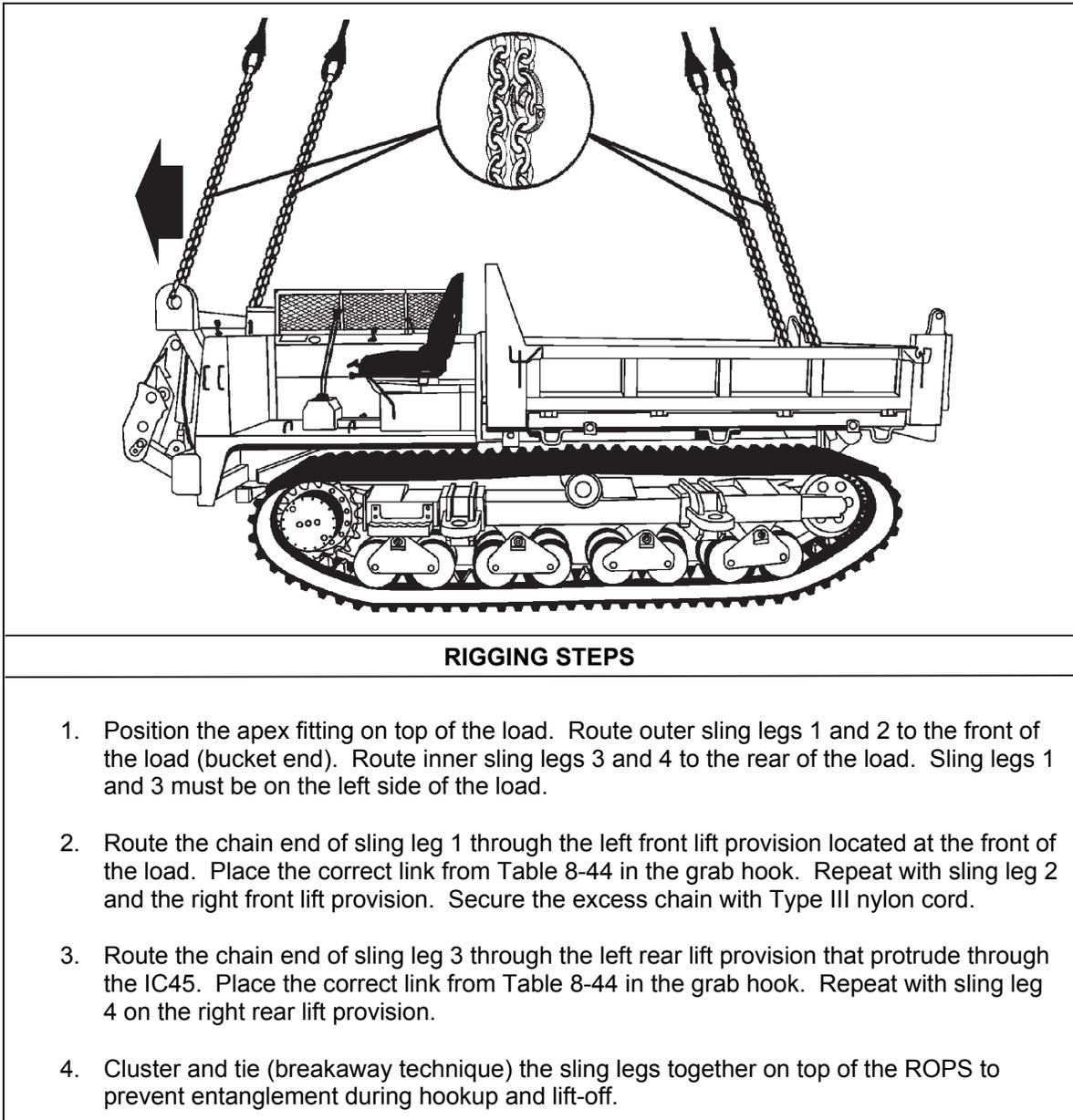


Figure 8-44. IC45 Crawler Carrier

## ALL-PURPOSE REMOTE TRANSPORT SYSTEM (ARTS) VEHICLE

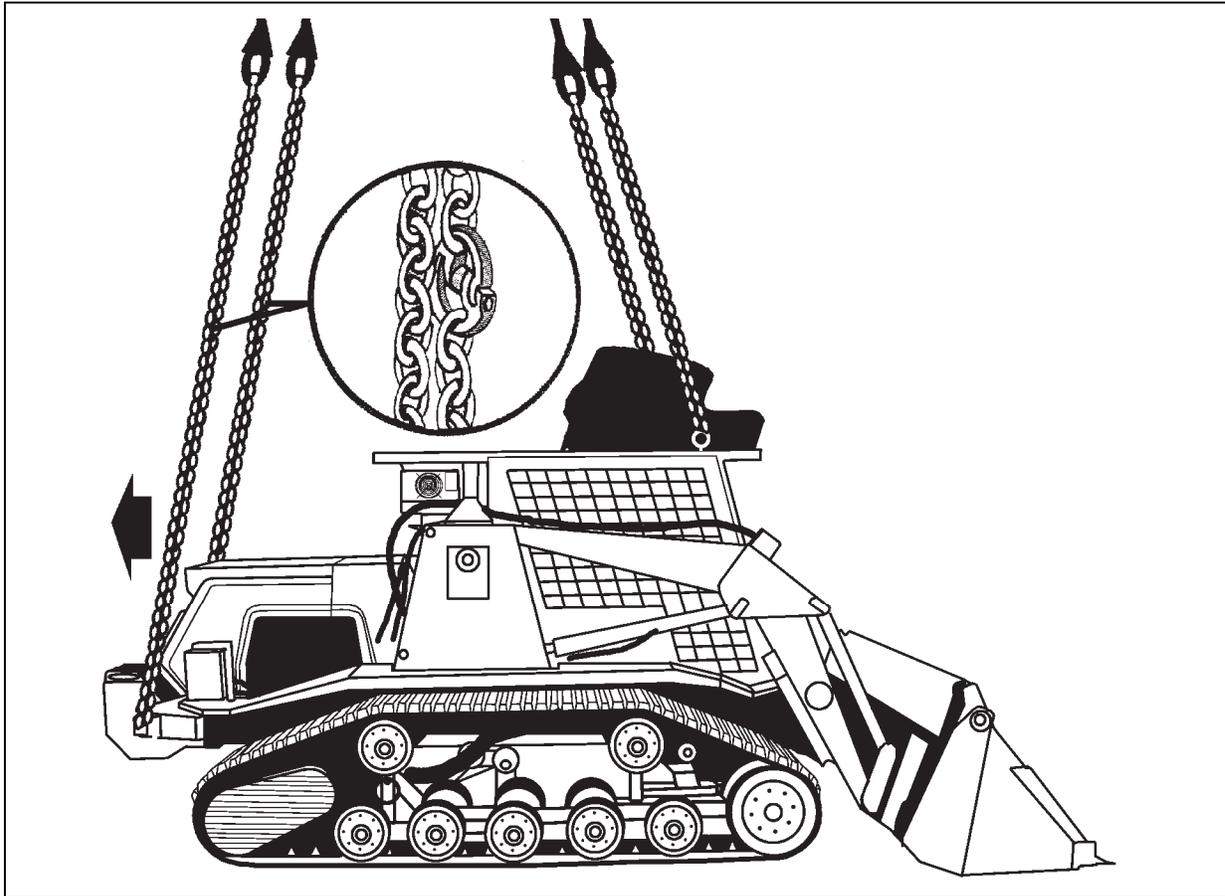
8-46. The all-purpose remote transport system vehicle is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 8-45 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 8-45. All-Purpose Remote Transport System Vehicle**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
All-Purpose Remote Transport System Vehicle	9,200	10K 15K	35/3 50/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
    - Chain length, part number, 38850-00053-101, from a 10,000-pound capacity sling set (2 each).
    - Coupling link, part number 577-0415, from a 10,000-pound capacity sling set (2 each).
  - OR
  - Multileg sling set (15,000-pound capacity).
    - Chain length, part number, 34080-4, from a 15,000-pound capacity multileg sling set (2 each).
    - Coupling link, part number 31611, from a 15,000-pound capacity multileg sling set (2 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch, as required.
- **Personnel.** Two persons can prepare and rig each load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all loose equipment with tape or Type III nylon cord.
    - 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.
    - Engage the parking brake.
    - Remove and store all antennae.
    - Pad all cameras on the ROPS with felt and secure with tape.
    - Pad and tape all vision blocks, mirrors, and lights.
    - Connect one additional chain length to each chain on the rear sling legs with the coupling link.
  - **Rigging.** Rig the load according to the steps in Figure 8-45.
  - **Hookup.** The hookup team stands on top of 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**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 (bucket 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 on top of the ROPS. Place the correct link from Table 8-45 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 just forward of the left track rear wheel. Place the correct link from Table 8-45 in the grab hook. Repeat with sling leg 4 on the right rear lift provision. Tie the rear sling legs to the crew compartment with a breakaway tie.
4. Cluster and tie (breakaway technique) the sling legs together on top of the ROPS to prevent entanglement during hookup and lift-off.

**Figure 8-45. All-Purpose Remote Transport System Vehicle**

## M4 ROBOTIC MINE FLAIL

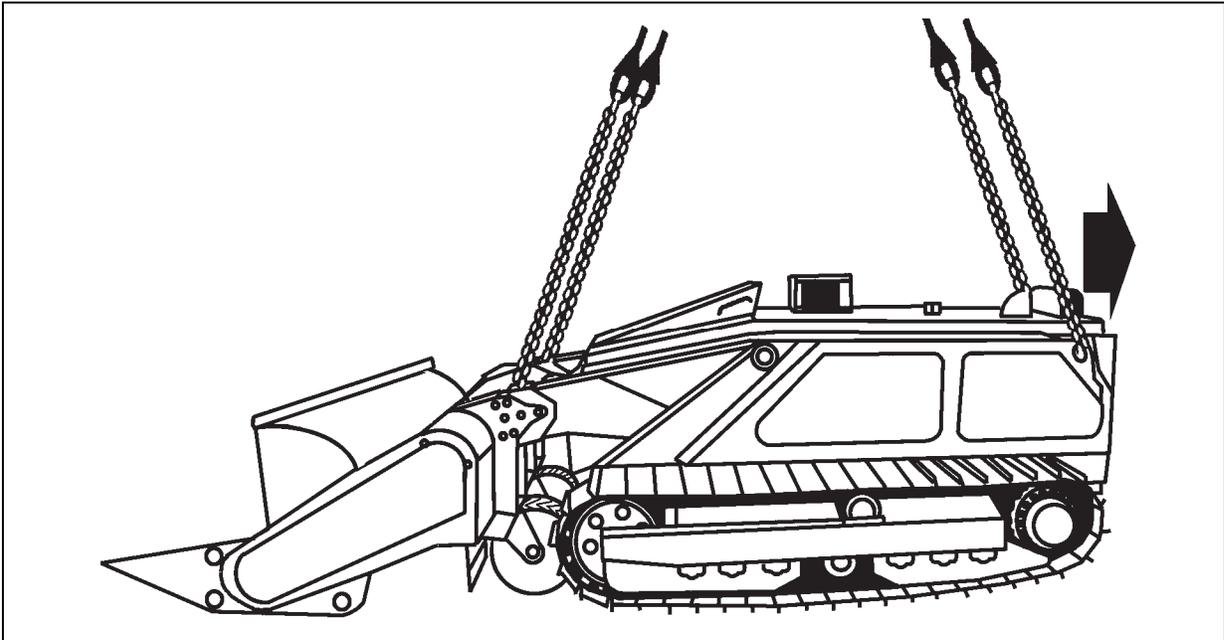
8-47. The M4 robotic mine flail is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 8-46 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 8-46. M4 Robotic Mine Flail**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M4 Robotic Mine Flail	12,440	25K	30/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig each load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Position the vehicle with the rear of the vehicle pointed into the wind.
    - 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.
    - Engage the parking brake and place the transmission in neutral.
    - Remove and store the fire extinguisher and all antennae inside or on top of the vehicle. Secure with Type III nylon cord.
    - Pad the emergency control section with felt, or a suitable substitute material and secure with tape. Tie the cover with Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 8-46.
  - **Hookup.** The hookup team stands on top of 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position the apex fitting on top of the vehicle. Route outer sling legs 1 and 2 to the front of the flail. 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 inboard of the bail lift arms. Place the correct link from Table 8-46 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 8-46 in the grab hook. Repeat with sling leg 4 on the right rear lift provision.
4. Cluster and tie (breakaway technique) the sling legs together on top of the vehicle to prevent entanglement during hookup and lift-off.

**Figure 8-46. M4 Robotic Mine Flail**

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## Chapter 9

# Certified Single-Point Rigging Procedures for Liquid Containers

### INTRODUCTION

9-1. This chapter contains rigging procedures for single-point lift of liquid containers that have 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 liquid containers are in this section. Paragraphs 9-2 through 9-6 give detailed instructions for rigging loads.

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**Note.** Reach pendants may be used on all single point loads. A static discharge person is not required when using a reach pendant.

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### LIGHTWEIGHT COLLAPSIBLE FABRIC TANK

9-2. The lightweight collapsible fabric tank is rigged for single-point sling load using the following procedures:

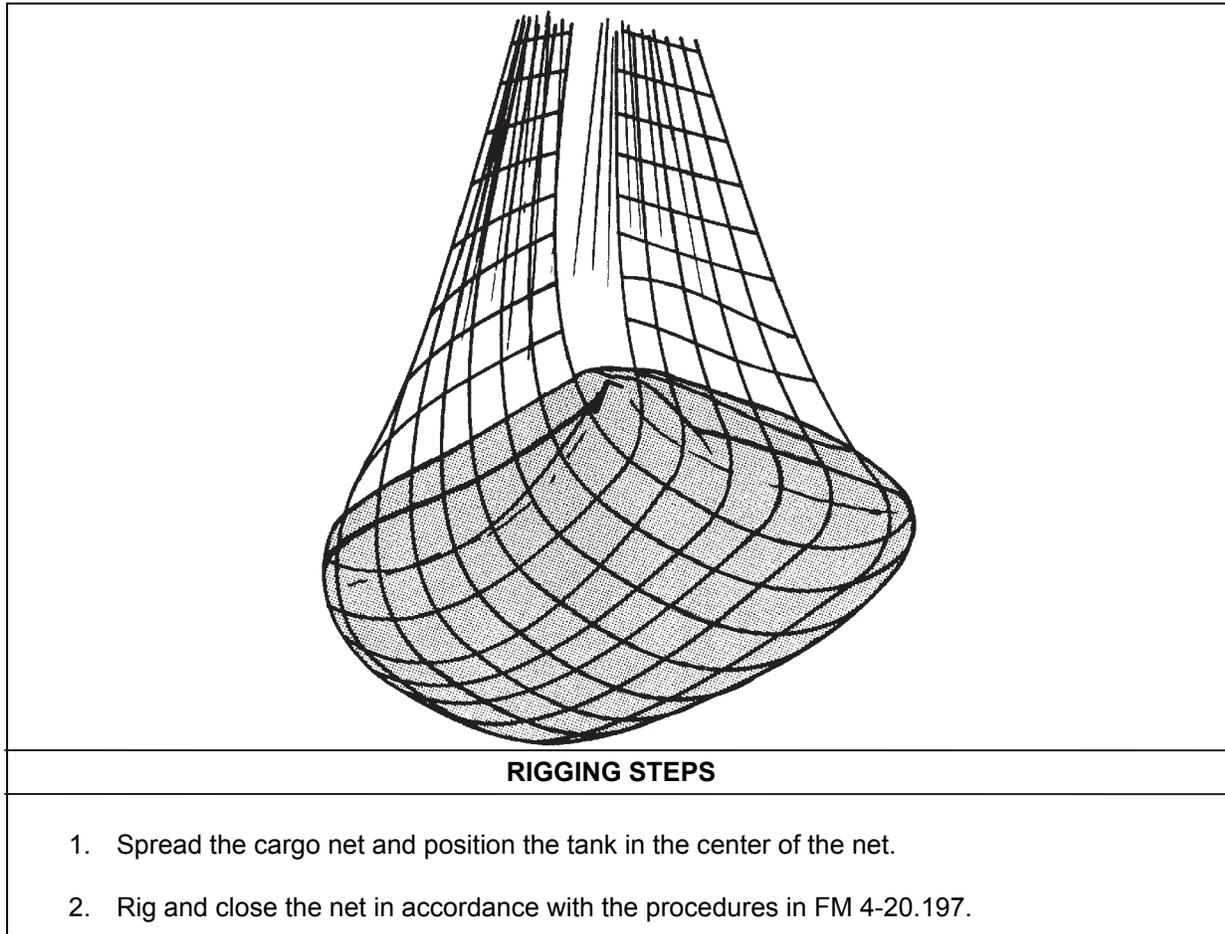
- **Applicability.** The following item in Table 9-1 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 9-1. Lightweight Collapsible Fabric Tank**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Tank, Fabric, Lightweight Collapsible, 160 Gallon	1,400	5000-Pound Capacity Net	N/A

- **Materials.** The following materials are required to rig this load:
  - Net, cargo (5,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Inspect the net in accordance with the inspection procedures in FM 4-20.197.
    - Ensure all sharp edges on the tank are protected.
  - **Rigging.** Rig the load according to the steps in Figure 9-1.
  - **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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 9-1. Lightweight Collapsible Fabric Tank**

## ONE TO FOUR 500-GALLON FUEL DRUMS

9-3. One to four 500-gallon fuel drums are rigged for single-point sling load using the following procedures:

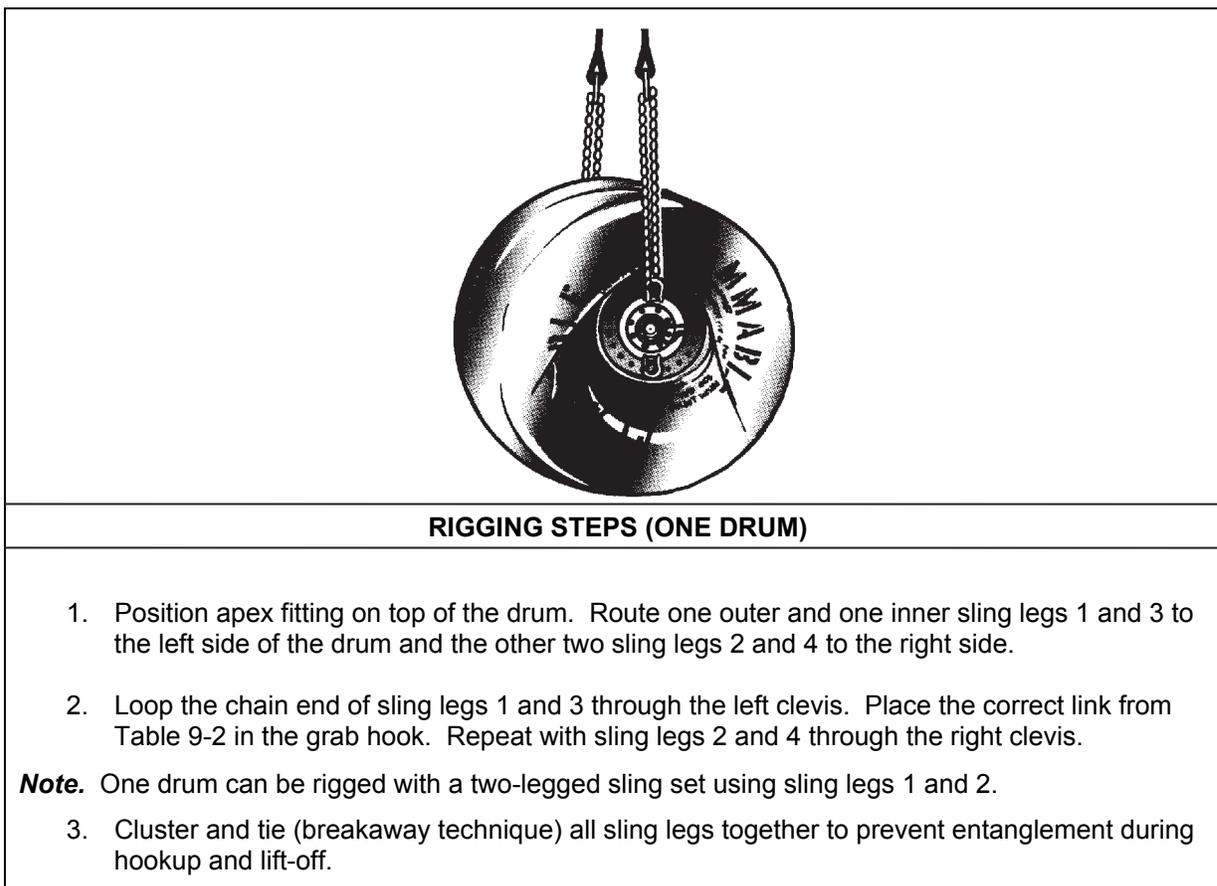
- **Applicability.** The following items in Table 9-2 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 9-2. One to Four 500-Gallon Fuel Drums**

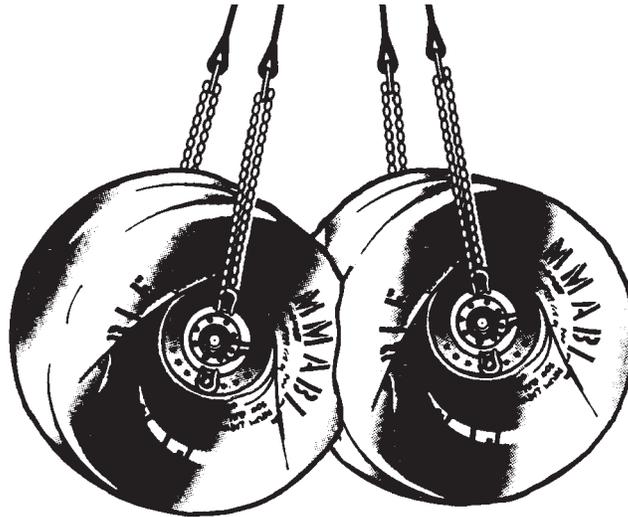
<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Drum, Fabric, Fuel, 500-Gallon (1 each)	4,200	10K	3/3
Drum, Fabric, Fuel, 500-Gallon (2 each)	8,400	10K	3/3
Drum, Fabric, Fuel, 500-Gallon (3 each)	12,600	25K	3/55
Drum, Fabric, Fuel, 500-Gallon (4 each)	16,800	25K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000 or 25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.

- Cord, nylon, Type III, 550-pound breaking strength.
- Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 5 to 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Align the drums side by side in a row.
    - Ensure the lifting clevises are serviceable.
    - Rotate the drum hub so a clevis is in the top position.
  - **Rigging.** Rig the load according to the steps in Figure 9-2.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

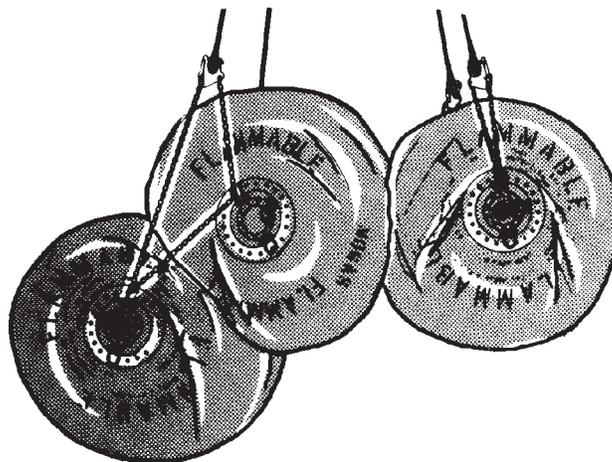


**Figure 9-2. One to Four 500-Gallon Fuel Drums**



**RIGGING STEPS (TWO DRUMS)**

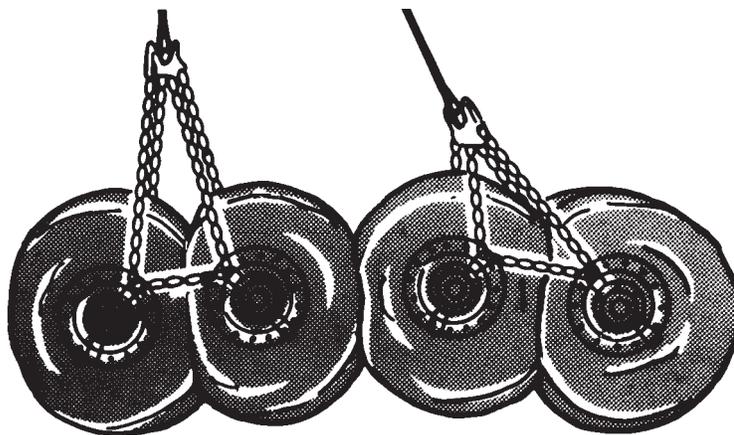
1. Position apex fitting on top of the two drums. Route outer sling legs 1 and 2 to one drum and inner sling legs 3 and 4 to the other drum. Sling legs 1 and 3 should be on the same side of the two drums.
2. Loop the chain end of sling leg 1 through the left clevis. Place the correct link from Table 9-2 in the grab hook. Repeat with sling leg 2 through the right clevis.
3. Loop the chain end of sling leg 3 through the left clevis of the other drum. Place the correct link from Table 9-2 in the grab hook. Repeat with sling leg 4 through the right clevis.
4. Cluster and tie (breakaway technique) all sling legs together to prevent entanglement during hookup and lift-off.



**Figure 9-2. One to Four 500-Gallon Fuel Drums (Continued)**

**RIGGING STEPS (THREE DRUMS)**

1. Position apex fitting on top of the two drums. Route outer sling legs 1 and 2 to one drum and inner sling legs 3 and 4 to the other drum. Sling legs 1 and 3 should be on the same side of the two drums.
2. Loop the chain end of sling leg 1 through the left clevis. Place the correct link from Table 9-2 in the grab hook. Repeat with sling leg 2 through the right clevis.
3. Loop the chain end of sling leg 3 through the left clevis of the other drum. Place the correct link from Table 9-2 in the grab hook. Repeat with sling leg 4 through the right clevis.
4. Cluster and tie (breakaway technique) all sling legs together to prevent entanglement during hookup and lift-off.



**RIGGING STEPS (FOUR DRUMS)**

1. Position the apex fitting on the top of the drums. Route outer sling legs 1 and 2 to two drums and inner sling legs 3 and 4 to the other two drums. Sling legs 1 and 3 should be on the same side of the load.
2. Loop the chain end of sling leg 1 through the clevis on the left hub of one drum, over and through the clevis of the second drum. Place the correct link from Table 9-2 in the grab hook. Repeat with sling leg 2 through the other side of the two drums.
3. Loop the chain end of sling leg 3 through the clevis on the left hub of one of the other drums, over and through the clevis of the second drum. Place the correct link from Table 9-2 in the grab hook. Repeat with sling leg 4 through the other side of the two drums.
4. Cluster and tie (breakaway technique) all sling legs together to prevent entanglement during hookup and lift-off.

**Figure 9-2. One to Four 500-Gallon Fuel Drums (Continued)**

## SIX 500-GALLON FUEL DRUMS, EMPTY

9-4. Six 500-gallon empty fuel drums are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 9-3 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

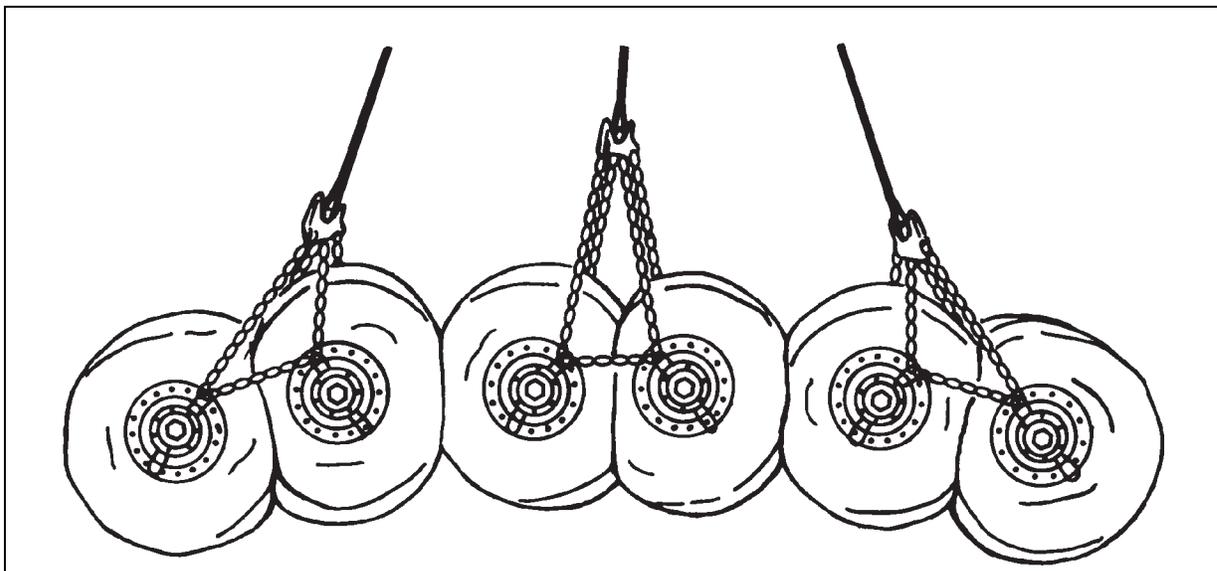
### CAUTION

One to five empty drums are not a stable load and are not certified for sling loading. One to five empty fuel drums may cause damage to the aircraft and endanger the aircrew due to violent oscillations and inherent instability.

**Table 9-3. Six 500-Gallon Fuel Drums, Empty**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Middle/Rear</i>
Drum, Fabric, Fuel, 500 Gallon, Empty (6 each)	4,500	10K	3/3/14

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity), with two additional sling leg assemblies.
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Webbing, tubular, nylon, 1/2-inch.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Four persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Align the drums side by side in a row.
    - Ensure the lifting clevises are serviceable and secure.
    - Rotate the drum hub so a clevis is in the top position.
    - Assemble a six-leg sling set in accordance with the procedures in FM 4-20.197.
  - **Rigging.** Rig the load according to the steps in Figure 9-3.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Route outer sling legs 1 and 2 to the forward outer drum, middle sling legs 3 and 4 to the rearward outer drum, and inner sling legs 5 and 6 to the two center drums.
2. Loop the chain end of sling leg 1 through the left clevis on the outer drum and through the left clevis of the next inner drum. Place the correct link from Table 9-3 in the grab hook. Repeat with sling leg 2 on the right side of the two drums.
3. Loop the chain end of sling leg 3 through the left clevis on the other outer drum and through the left clevis of the next inner drum. Place the correct link from Table 9-3 in the grab hook. Repeat with sling leg 4 on the right side of the two drums.
4. Loop the chain end of sling leg 5 through the left clevis on the two center drums. Place the correct link from Table 9-3 in the grab hook. Repeat with sling leg 6 on the right side of the two center drums. Secure excess chain with wide tape or nylon cord.
5. Sling legs 1, 3, and 5 should be on the left side of the load.

**Note.** At this point, you have effectively rigged three individual, 2-leg sling loads under one apex fitting. Now you must unite the three pairs of drums.

6. Loop a length of tubular nylon through the clevis assemblies on each side of the load. Tighten as securely as possible.
7. Cluster and tie or tape (breakaway technique) all sling legs together to prevent entanglement during hookup and lift-off.

**Figure 9-3. Six 500-Gallon Fuel Drums, Empty**

## STORAGE MODULE, FUEL/WATER, SIX COMPARTMENT CONTAINER (SIXCON), INDIVIDUAL

9-5. The storage module, fuel/water, six compartment container (SIXCON), individual is rigged for single-point sling load using the following procedures:

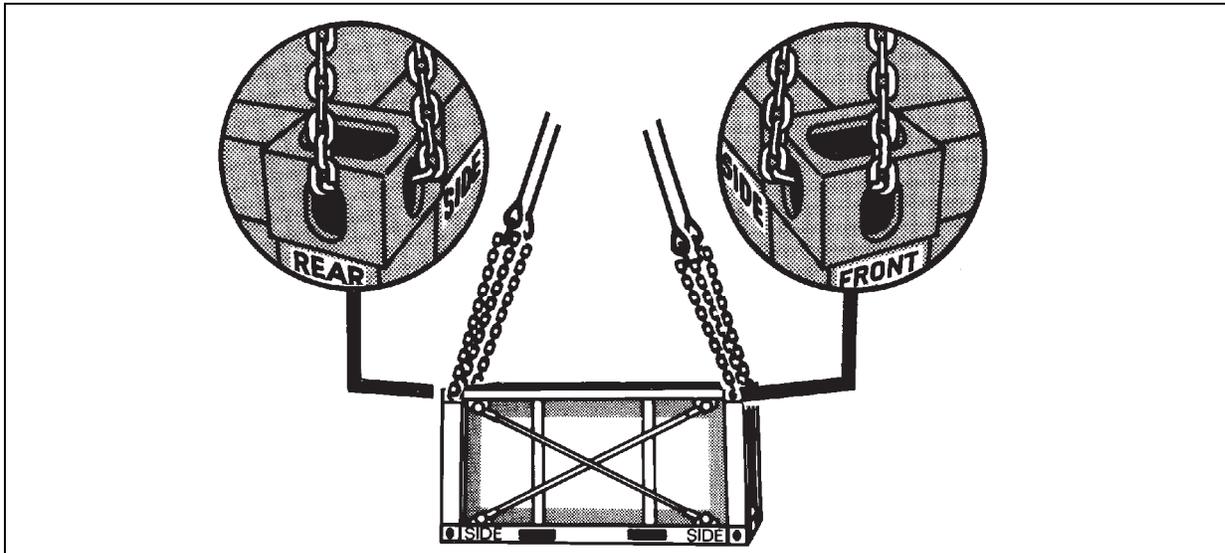
- **Applicability.** The following item in Table 9-4 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 9-4. Storage Module, Fuel/Water, Six Compartment Container, Individual**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Storage Module, Fuel/Water, Six Compartment Container, Individual	10,000	15K	3/3

**Note.** This load is certified at the FULL weight only.

- **Materials.** The following materials are required to rig this load:
  - Sling set (15,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Four persons can prepare and rig this load in 5 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Ensure the storage tank is completely full.
    - Secure all hatches, hoses, valves, and loose equipment.
  - **Rigging.** Rig the load according to the steps in Figure 9-4.
  - **Hookup.** The hookup team stands on top of the SIXCON. 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting on top of the SIXCON. Route outer sling legs 1 and 2 to one end of the SIXCON and inner sling legs 3 and 4 to the other 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 opening on the side of the left front corner international organization of standardization (ISO) lift provision and out through the front opening. Place the correct link from Table 9-4 in the grab hook. Repeat with sling leg 2 and the right front corner ISO lift provision.
3. Loop the chain end of sling leg 3 through the opening on the side of the left rear corner ISO lift provision and out through the rear opening. Place the correct link from Table 9-4 in the grab hook. Repeat with sling leg 4 and the right rear corner ISO lift provision.
4. Cluster and tie (breakaway technique) all sling legs together on top of the SIXCON to prevent entanglement during hookup and lift-off.

**Figure 9-4. Storage Module, Fuel/Water, Six Compartment Container, Individual**

**TWO STORAGE MODULES, FUEL/WATER, SIX COMPARTMENT CONTAINER (SIXCON), STACKED**

9-6. Two storage modules, fuel/water, six compartment container, stacked are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 9-5 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 9-5. Two Storage Modules, Fuel/Water, Six Compartment Container, Stacked**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Two Storage Modules, Fuel/Water, Six Compartment Container, Stacked	20,100	15K	3/3

*Note.* This load is certified at the FULL weight only.

- **Materials.** The following materials are required to rig this load:
  - Sling set (40,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Four persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Position the two SIXCONs on top of each other. Ensure the ISO vertical corner connectors are properly secured.
    - Tape the pins in the ISO vertical corner connectors.
    - Ensure the storage tanks are completely full.
    - Secure all hatches, hoses, valves, and loose gear.
  - **Rigging.** Rig the load according to the steps in Figure 9-5.
  - **Hookup.** The hookup team stands on top of the SIXCONs. 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

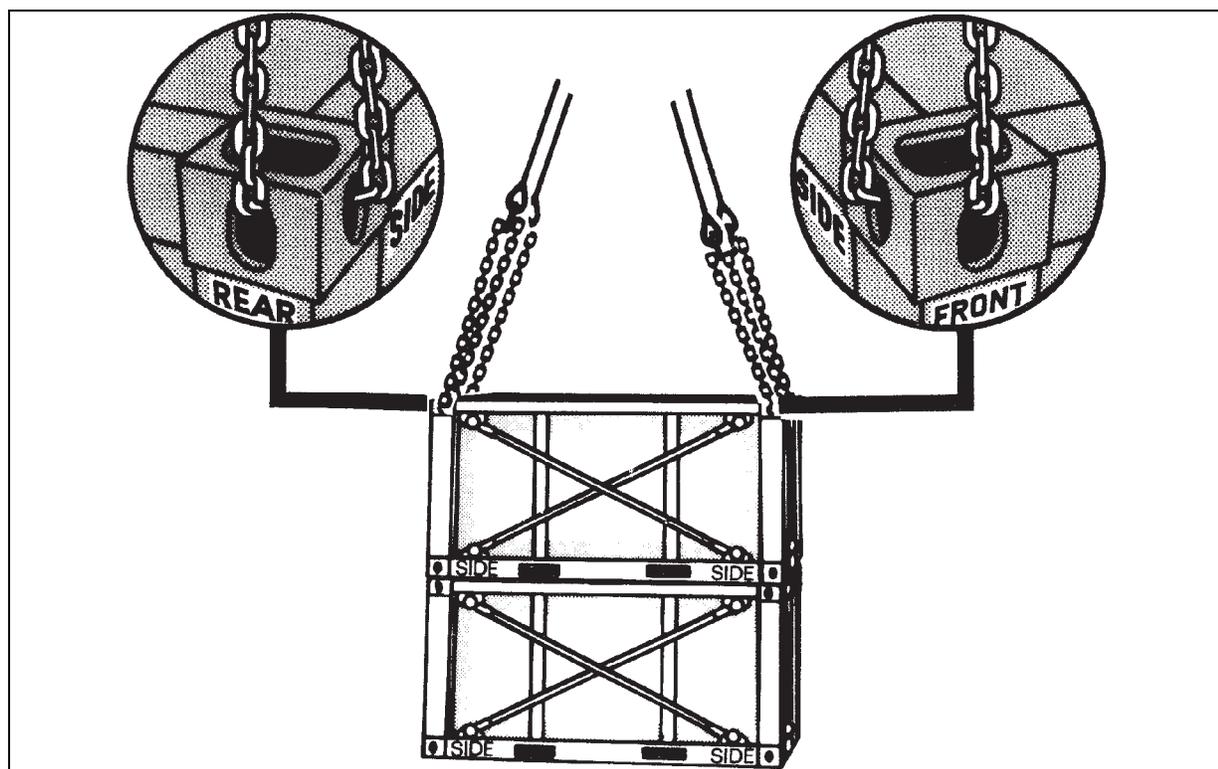


Figure 9-5. Two Storage Module, Fuel/Water, Six Compartment Container, Stacked

**RIGGING STEPS**

1. Position apex fitting on top of the SIXCONS. Route outer sling legs 1 and 2 to one end of the top SIXCON and inner sling legs 3 and 4 to the other 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 opening on the side of the left front ISO lift provision and out through the front opening. Place the correct link from Table 9-5 in the grab hook. Repeat with sling leg 4 and the right front ISO lift provision.
3. Loop the chain end of sling leg 3 through the opening on the side of the left rear corner ISO lift provision and out through the rear opening. Place the correct link from Table 9-5 in the grab hook. Repeat with sling leg 4 and the right rear corner ISO lift provision.
4. Cluster and tie (breakaway technique) all sling legs together on top of the SIXCON to prevent entanglement during hookup and lift-off.

**Figure 9-5. Two Storage Module, Fuel/Water, Six Compartment Container, Stacked  
(Continued)**

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## Chapter 10

# Certified Single-Point Rigging Procedures for Shelters

### INTRODUCTION

10-1. This chapter contains rigging procedures for single-point lift of shelters that have 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 shelters are in this section. Paragraphs 10-2 through 10-15 give detailed instructions for rigging loads.

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*Note.* Reach pendants may be used on all single point loads. A static discharge person is not required when using a reach pendant.

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### AN/ASM-146 OR AN/MSM-108 ELECTRONIC SHOPS

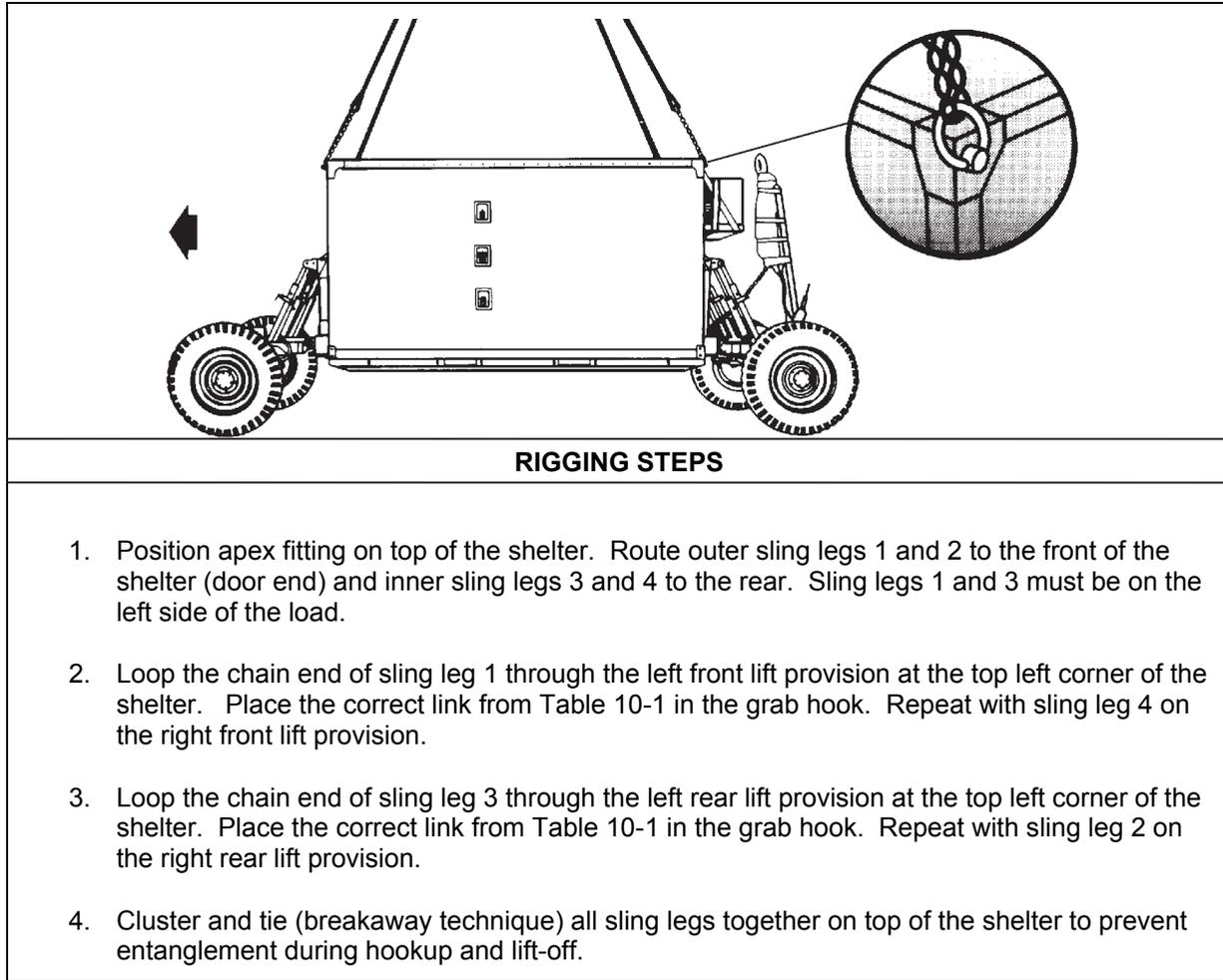
10-2. The AN/ASM-146 or AN/MSM-108 electronic shops are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 10-1 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 10-1. AN/ASM-146 OR AN/MSM-108 Electronic Shops**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
AN/ASM-146	3,940	10K	3/3
AN/MAM-108	3,940	10K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Close and secure all doors, vents, caps, and engage the brakes.
    - Secure the tongue in the up position with the safety chains.
  - **Rigging.** Rig the load according to the steps in Figure 10-1.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 10-1. Electronic Shops**

## COMMUNICATIONS OR ELECTRONIC SYSTEMS HOUSED IN S-250 SHELTERS

10-3. The communications or electronic systems housed in S-250 shelters are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 10-2 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 10-2. Communications or Electronic Systems Housed in S-250 Shelters**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
AN/TRC-93B (V)1 or (V)2	3,250	10K	33/3
AN/TRC-93B (Reconfiguration)	3,660	10K	33/3
AN/TSC-124, Single Channel Objective Tactical Terminal	2,100	10K	33/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.

- Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Close and secure all doors, vents, and caps with tape or Type III nylon cord.
    - Secure all loose equipment (antennas, electrical lines, hoses, etc.) with tape or Type III nylon cord.
    - Ensure all the bolts in the environmental control unit (ECU) mounting frame are present and tight.
    - Secure the ECU cover with tape or Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 10-2.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

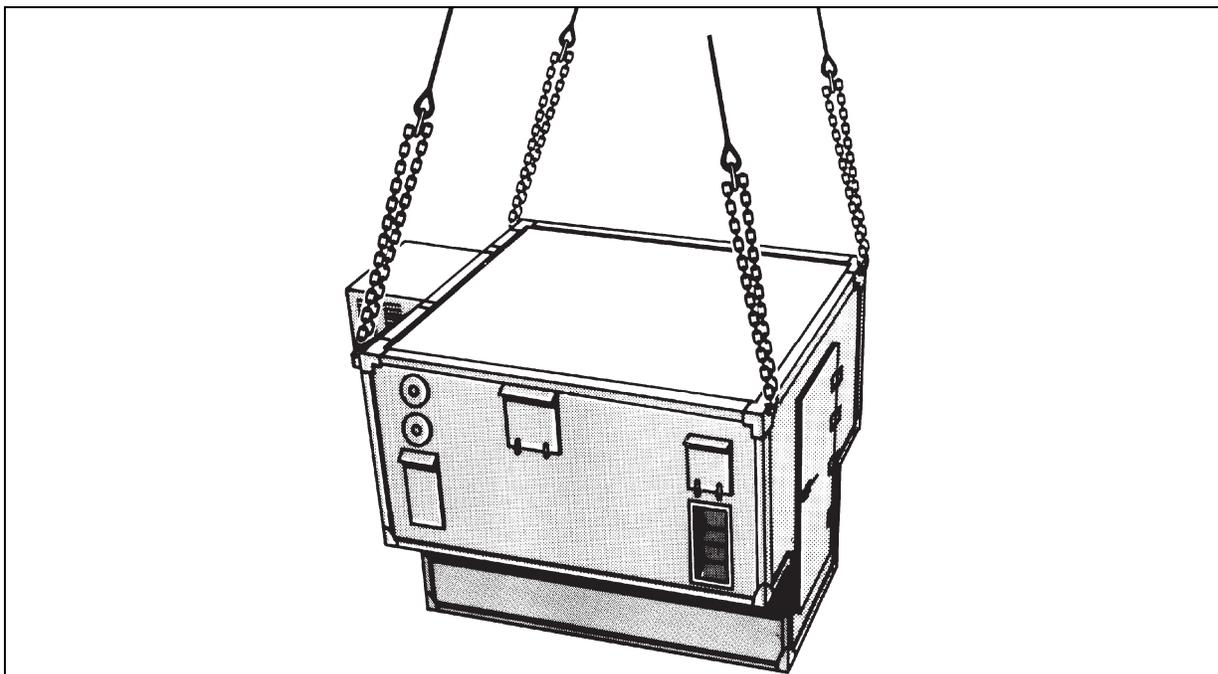


Figure 10-2. S-250 Shelters

<b>RIGGING STEPS</b>	
1.	Position apex fitting on top of the shelter. Route outer sling legs 1 and 2 to the front of the shelter 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.
2.	Loop the chain end of sling leg 1 through the left front lift provision at the top left corner of the shelter. Place the correct link from Table 10-2 in the grab hook. Repeat with sling leg 4 on the right front lift provision. 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 at the top left corner of the shelter. Place the correct link from Table 10-2 in the grab hook. Repeat with sling leg 2 on the right rear lift provision.
4.	Cluster and tie (breakaway technique) all sling legs together on top of the shelter to prevent entanglement during hookup and lift-off.

**Figure 10-2. S-250 Shelters (Continued)**

## COMMUNICATIONS OR ELECTRONIC SYSTEMS HOUSED IN LIGHTWEIGHT MULTIPURPOSE SHELTER (LMS)

10-4. The communications or electronic systems housed in lightweight multipurpose shelters are rigged for single-point sling load using the following procedures:

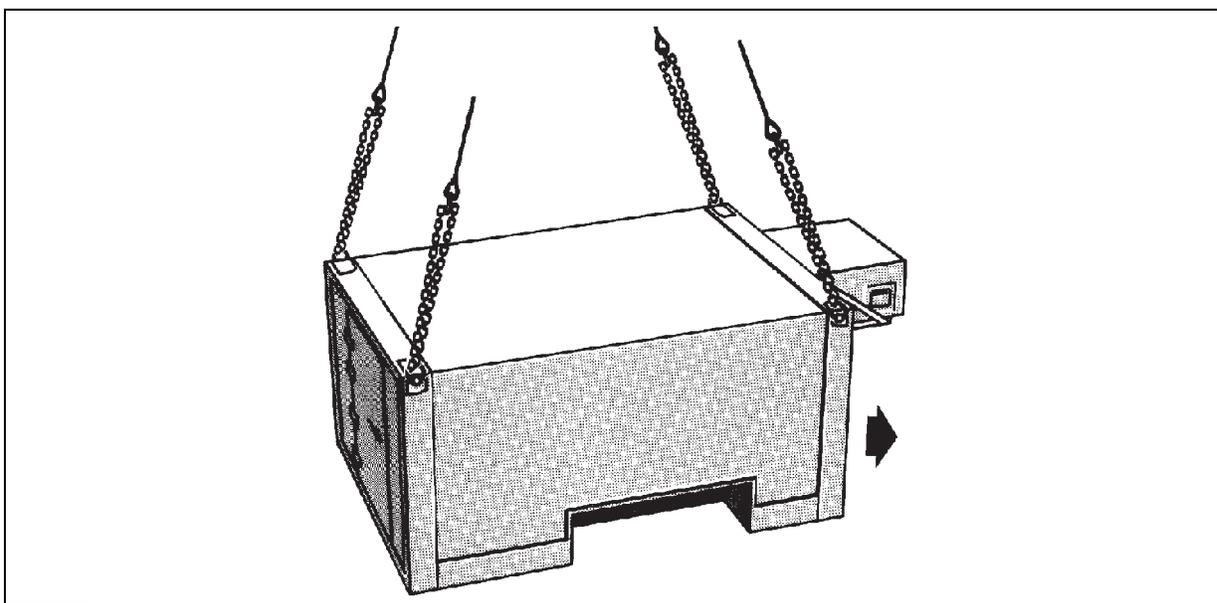
- **Applicability.** The following items in Table 10-3 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 10-3. Communications or Electronic Systems Housed in S-250 Shelters**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Operations Central Shelter, Firefinder AN/TPQ-36 (V)8, S-788	2,869	10K	20/3
Biological Agent, Automatic: Integrated Detection System, S-788	3,300	10K	25/3
Downsized Direct Support Section, Standardized Integrated, Command Post Systems (SICPS)	2,400	10K	10/20
Tactical Airspace Integration System (TAIS), AN/TSQ-221	3,965	10K	10/3
Meteorological Measuring System, Profiler Shelter (SICPS only)			

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Remove all antennas. Disassemble and securely stow inside the shelter.
    - Close and secure all doors, vents, and caps with tape or Type III nylon cord.
    - Secure all loose equipment (antennas, electrical lines, hoses, etc.) with tape or Type III nylon cord.

- Ensure all the bolts in the environmental control unit (ECU) mounting frame are present and tight.
- Secure the ECU cover with tape or Type III nylon cord.
- **Rigging.** Rig the load according to the steps in Figure 10-3.
- **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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting on top of the shelter. Route outer sling legs 1 and 2 to the front of the shelter 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.
2. Loop the chain end of sling leg 1 through the left front lift provision at the top left corner of the shelter. Place the correct link from Table 10-3 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.
3. Loop the chain end of sling leg 3 through the left rear lift provision at the top left corner of the shelter. Place the correct link from Table 10-3 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.
4. Cluster and tie (breakaway technique) all sling legs together on top of the shelter to prevent entanglement during hookup and lift-off.

**Figure 10-3. Lightweight Multipurpose Shelter**

## DIGITAL TECH CONTROLLER (DTC) HOUSED IN A MODIFIED GITCHNER SHELTER

10-5. The digital tech controller housed in a modified Gitchner shelter is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 10-4 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 10-4. Digital Tech Controller Housed in a Modified Gitchner Shelter**

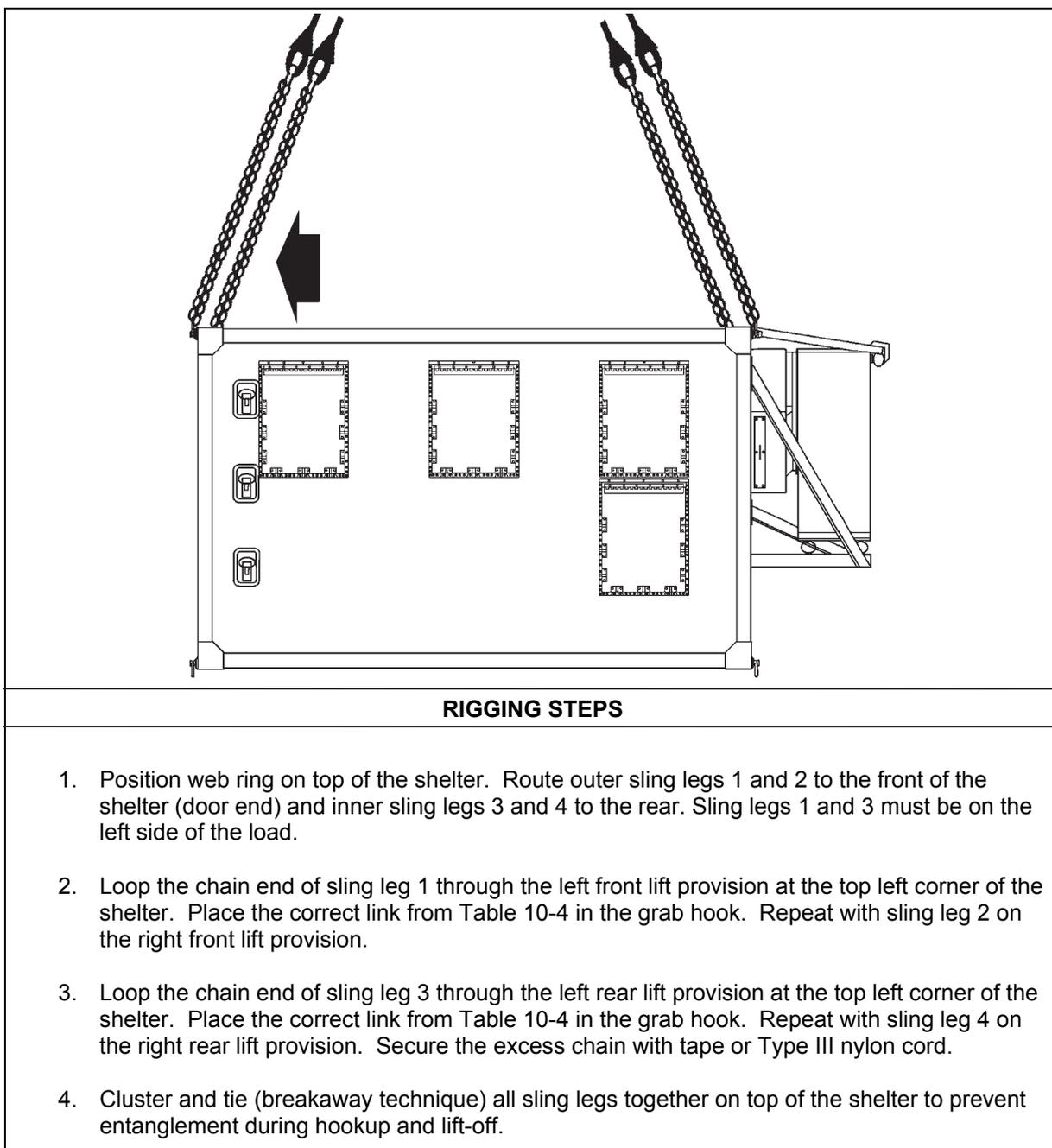
<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Digital Tech Controller Housed in a Modified Gitchner Shelter	9,100	15K	Door is Front 3/30

- **Materials.** The following materials are required to rig this load:
  - Multileg sling set (15,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Inspect the inside and outside of the DTC for any sign of skin separation (delamination) from the frame structure.

### WARNING

**Any separation of the skin from the structural members may indicate a reduction in structural integrity and should not be flown.**

- Remove all antennas. Disassemble and securely stow inside the shelter.
- Close and secure all doors, vents, and caps with tape or Type III nylon cord.
- Secure all loose equipment (antennas, electrical lines, hoses, etc.) inside the shelter with tape or Type III nylon cord.
- Ensure all the bolts in the environmental control unit (ECU) mounting frame are present and tight.
- Secure the ECU cover, if installed, with tape or Type III nylon cord.
- Secure the lift rings in a vertical position with Type III nylon cord.
- **Rigging.** Rig the load according to the steps in Figure 10-4.
- **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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 10-4. Digital Tech Controller Housed in a Modified Gitchner Shelter**

## COMMUNICATIONS OR ELECTRONIC SYSTEMS HOUSED IN S-280 SHELTERS

10-6. The communications or electronic systems housed in S-280 shelters are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 10-5 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

Table 10-5. Communications or Electronic Systems Housed in S-280 Shelters

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Shelter, Battery Servicing, AN/TSM-133	5,240	10K	Door is Front 30/3
Facility, Improved Message, AN/TSC-58A	5,368	10K	Door is Front 37/3
Facility, Improved Message, AN/MSC-29A	5,368	10K	Door is Front 37/3
Station, System Master, Reporting, Position Location, AN/TSQ-129	6,050	15K	ECU is Front 10/4
Station, Enhanced Position Location Reporting System Net, AN/TSQ-158	6,289	15K	ECU is Front 10/4
Terminal, Regency Net Force, AN/TRC-179 (V)1	8,200	10K	Door is Front 30/3
Communications Nodal Control Element, AN/TSQ-111	10,000	25K	Door is Front 3/24
Multiplexer Terminal Set, AN/TSQ-146(V)	6,190	10K	Door is Front 5/50
IFTE Base Shop Test Facility (BSTF), Basic, S-280C/G Shelter, AN/TSM-191(V)3	7,806	10K	ECU is Front 3/3
IFTE BSTF, Hawk, S-280C/G Shelter, AN/TSM-191(V)2	7,748	10K	ECU is Front 3/3
IFTE 60 Hz Storage Shelter, S-280C/G Shelter, S-744/TSM-191(V)	6,365	10K	ECU is Front 3/3
IFTE 400 Hz Storage Shelter, S-280C/G Shelter, S-175/TSM-191(V)	5,119	10K	ECU is Front 3/3
Tactical Satellite Terminal, AN/TSC-85B	6,200	10K	ECU is Front 33/3
E1045 Bottle Cleaning and Charging Station	6,400	15K	Door is Front 3/15
E1022 Maintenance Facility Night Sight	6,400	15K	Door is Front 3/3
AN/TYA-16B, TAMCN A0294	3,325	15K	Door is Front 3/3
Airborne Reconnaissance Low-Imagery (ARL-I) and Airborne Reconnaissance Low-Comint (ARL-C) Fly Away Kit, Type A-1	8,500	10K	ECU is Front 3/10
ARL-I and ARL-C Fly Away Kit, Type B-1	8,500	10K	ECU is Front 3/10
ARL-I and ARL-C Fly Away Kit, Type C-1	8,500	10K	ECU is Front 3/10

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*Note.* Do not allow the sling legs to become entangled with the rope lashing points located near the lift points.

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**Note.** The CH-47 is not recommended for single point sling loading of the Integrated Family of Test Equipment Shelters.

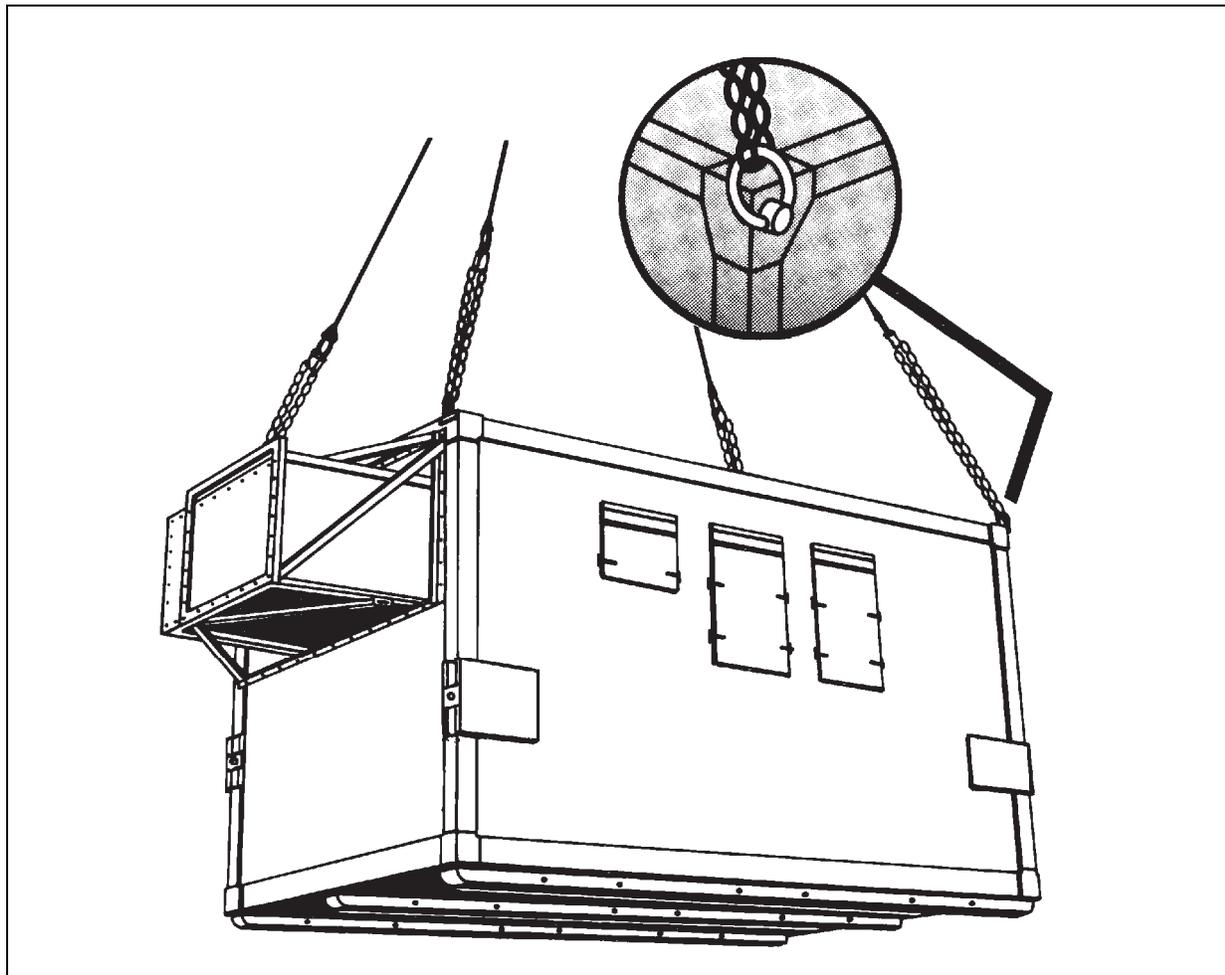
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- **Materials.** The following materials are required to rig this load:
  - Sling set (as listed in Table 10-5).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Remove all antennas. Disassemble and securely stow inside the shelter.
    - Close and secure all doors, vents, and caps with tape or Type III nylon cord.
    - Secure all loose equipment (electrical lines, hoses, etc.) with tape or Type III nylon cord.
    - Ensure all the bolts in the Environmental Control Unit's (ECU) mounting frame are present and tight.
    - Secure the ECU cover with tape or Type III nylon cord.
    - Secure the lift rings in the vertical position with Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 10-5.
  - **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.

**CAUTION**

Brief the helicopter crew to relax the sling leg tension and hover to the side of the load when releasing the apex fitting to prevent damage to the roof of the shelter.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



#### RIGGING STEPS

1. Position apex fitting on top of the shelter. Route outer sling legs 1 and 2 to the front of the shelter 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 at the top left corner of the shelter. Place the correct link from Table 10-5 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.
3. Loop the chain end of sling leg 3 through the left rear lift provision at the top left corner of the shelter. Place the correct link from Table 10-5 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. Cluster and tie (breakaway technique) all sling legs together on top of the shelter to prevent entanglement during hookup and lift-off.

Figure 10-5. S-280 Shelters

## 8- X 8- X 10-FOOT SHELTER SYSTEMS

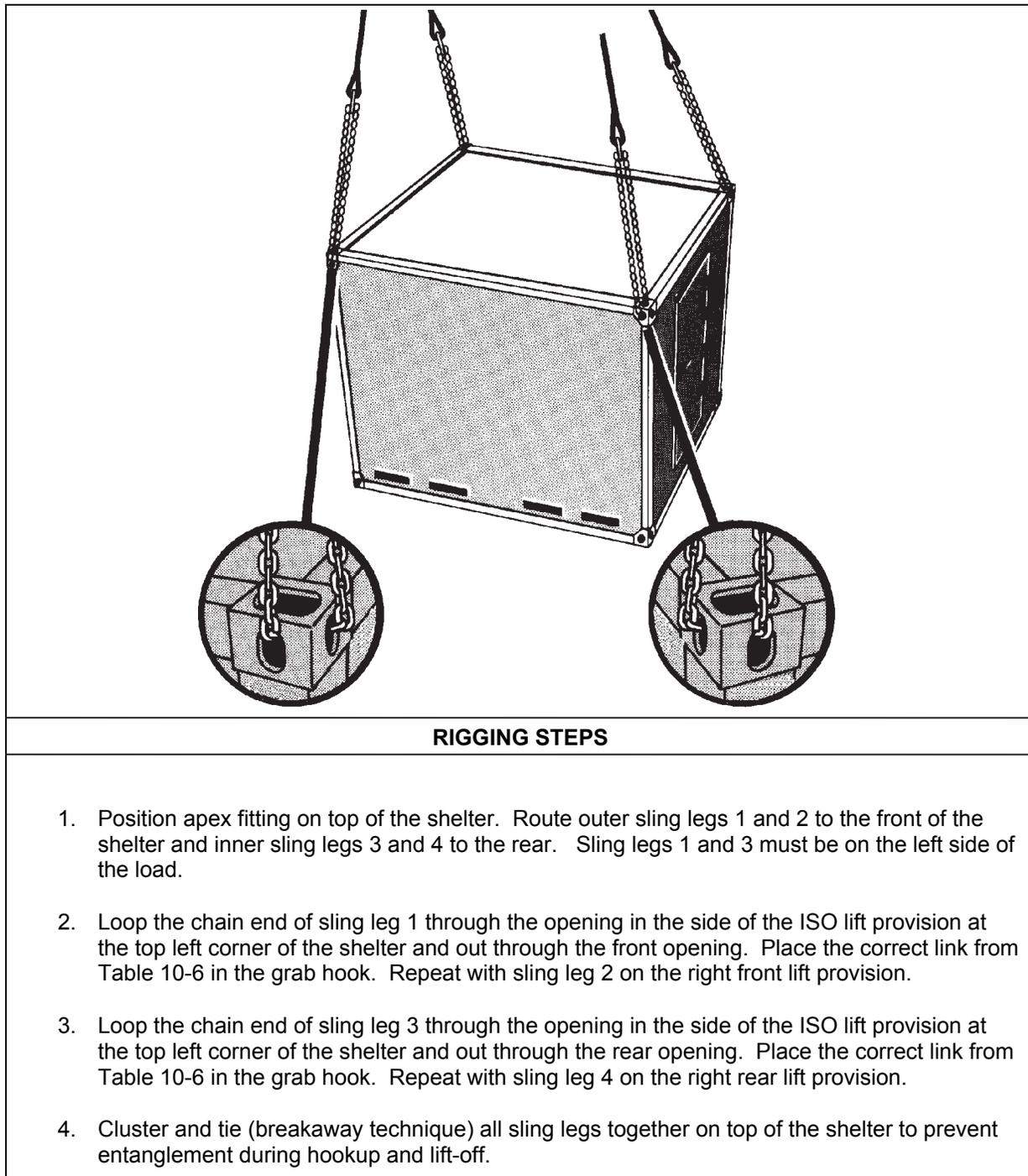
10-7. The 8- x 8- x 10-foot shelter systems are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 10-6 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 10-6. 8- x 8- x 10-Foot Shelter Systems**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Shelter, Electromechanical Induction (EMI), TAMCN C6110	7,700	15K	Door is Front 5/5
S-715/T, Reproduction/Distribution Facility Shelter	4,826	15K	Door is Front 3/3
Electronic EMI HSOP Shelter	4,140	15K	Door is Front 3/3
Shelter, Radar Set, Precision Approach, AN/TPN-22, TAMCN Q2115	7,200	15K	Door is Front 3/3
Shelter, Communications Central, AN/MSC-63A, TAMCN A0258	6,619	15K	Door is Aft 5/5
Air Radar Shelter, AN/TPS-73	14,500	40K	Door is Front 5/8
Radar Shelter, AN/TPS-63B	7,360	15K	Door is Front 3/10
10-Foot Rigid EMD Communications Shelter	7,000 (Minimum Weight)	15K	Door is Front 3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (15,000 or 40,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Remove all antennas. Disassemble and securely stow inside the shelter.
    - Close and secure all doors, vents, and caps with tape or Type III nylon cord.
    - Secure all loose equipment (electrical lines, hoses, etc.) with tape or Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 10-6.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 10-6. 8- x 8- x 10-Foot Shelter Systems**

## **DOWNSIZE DIGITAL GROUP MULTIPLEXER (DDGM) SHELTER ASSEMBLAGES**

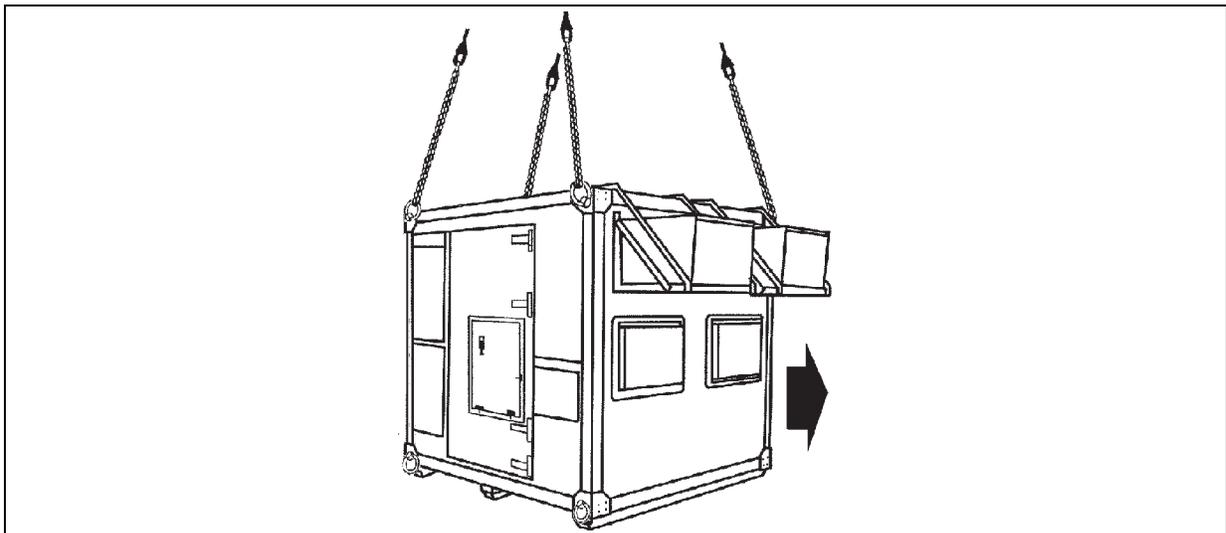
10-8. The downsized digital group multiplexer shelter assemblages are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 10-7 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 10-7. Downsized Digital Group Multiplexer Shelter Assemblages**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
AN/TRC-173A	3,500	10K	3/3
AN/TRC-174A	3,425	10K	3/3
AN/TRC-175A	3,350	10K	3/3
AN/TRC-138B	3,525	10K	3/3
AN/TRC-138C	3,430	10K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all drawers and internal equipment with tape or Type III nylon cord.
    - Close and secure all doors, vents, and caps with tape or Type III nylon cord.
    - Secure the air conditioner cover with Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 10-7.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 10-7. Downsized Digital Group Multiplexer Shelter Assemblages**

<b>RIGGING STEPS</b>	
1.	Position apex fitting on top of the shelter. Route outer sling legs 1 and 2 to the front of the shelter (ECU 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. Place the correct link from Table 10-7 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 10-7 in the grab hook. Repeat with sling leg 4 on the right rear lift provision.
4.	Cluster and tie (breakaway technique) all sling legs together on top of the shelter to prevent entanglement during hookup and lift-off.

**Figure 10-7. Downsized Digital Group Multiplexer Shelter Assemblages (Continued)**

## AN/TYC-5A DATA COMMUNICATIONS TERMINAL

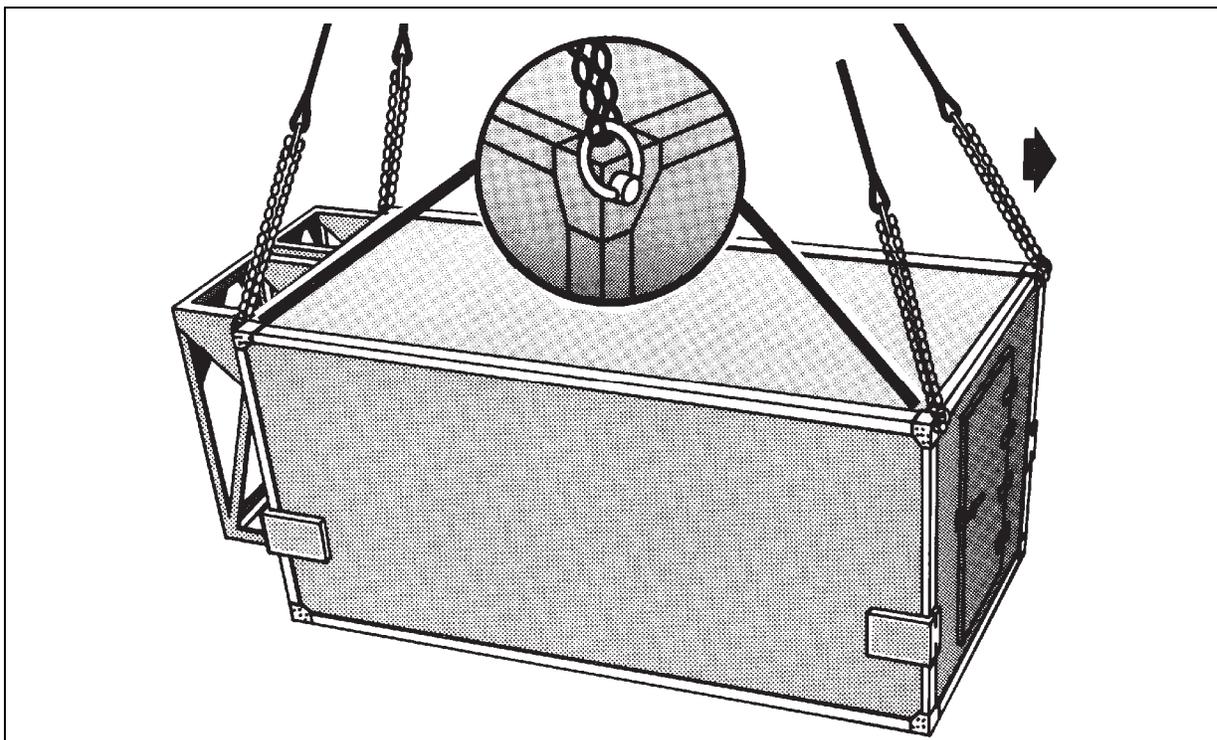
10-9. The AN/TYC-5A data communications terminal is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 10-8 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 10-8. AN/TYC-5A Data Communications Terminal**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
AN/TYC-5A	7,451	15K	5/5

- **Materials.** The following materials are required to rig this load:
  - Sling set (15,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all internal equipment with tape or Type III nylon cord.
    - Close and secure all doors, vents, and caps with tape or Type III nylon cord.
    - Remove the transporter dolly lift sets if attached to the shelter.
  - **Rigging.** Rig the load according to the steps in Figure 10-8.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting on top of the shelter. Route outer sling legs 1 and 2 to the front of the shelter (door 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. Place the correct link from Table 10-8 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 10-8 in the grab hook. Repeat with sling leg 4 on the right rear lift provision.
4. Cluster and tie (breakaway technique) all sling legs together on top of the shelter to prevent entanglement during hookup and lift-off.

**Figure 10-8. AN/TYC-5A Data Communications Terminal**

**AN/TRN-44 TACTICAL AIR NAVIGATION SHELTER**

10-10. The AN/TRN-44 tactical air navigation shelter is rigged for single-point sling load using the following procedures:

- **APPLICABILITY.** The following item in Table 10-9 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

Table 10-9. AN/TRN-44 Tactical Air Navigation Shelter

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
AN/TRN-44 Tactical Air Navigation Shelter	6,800	15K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (15,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all internal equipment with tape or Type III nylon cord.
    - Close and secure all doors, vents, and caps with tape or Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 10-9.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



Figure 10-9. AN/TRN-44 Tactical Air Navigation Shelter

RIGGING STEPS
<ol style="list-style-type: none"> <li>1. Position apex fitting on top of the shelter. Route outer sling legs 1 and 2 to the front of the shelter (door 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.</li> <li>2. Loop the chain end of sling leg 1 through the left front lift provision. Place the correct link from Table 10-9 in the grab hook. Repeat with sling leg 2 on the right front lift provision.</li> <li>3. Loop the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 10-9 in the grab hook. Repeat with sling leg 4 on the right rear lift provision.</li> <li>4. Cluster and tie (breakaway technique) all sling legs together on top of the shelter to prevent entanglement during hookup and lift-off.</li> </ol>

**Figure 10-9. AN/TRN-44 Tactical Air Navigation Shelter >(Continued)**

## HARDENED ARMY TACTICAL SHELTER (HATS)

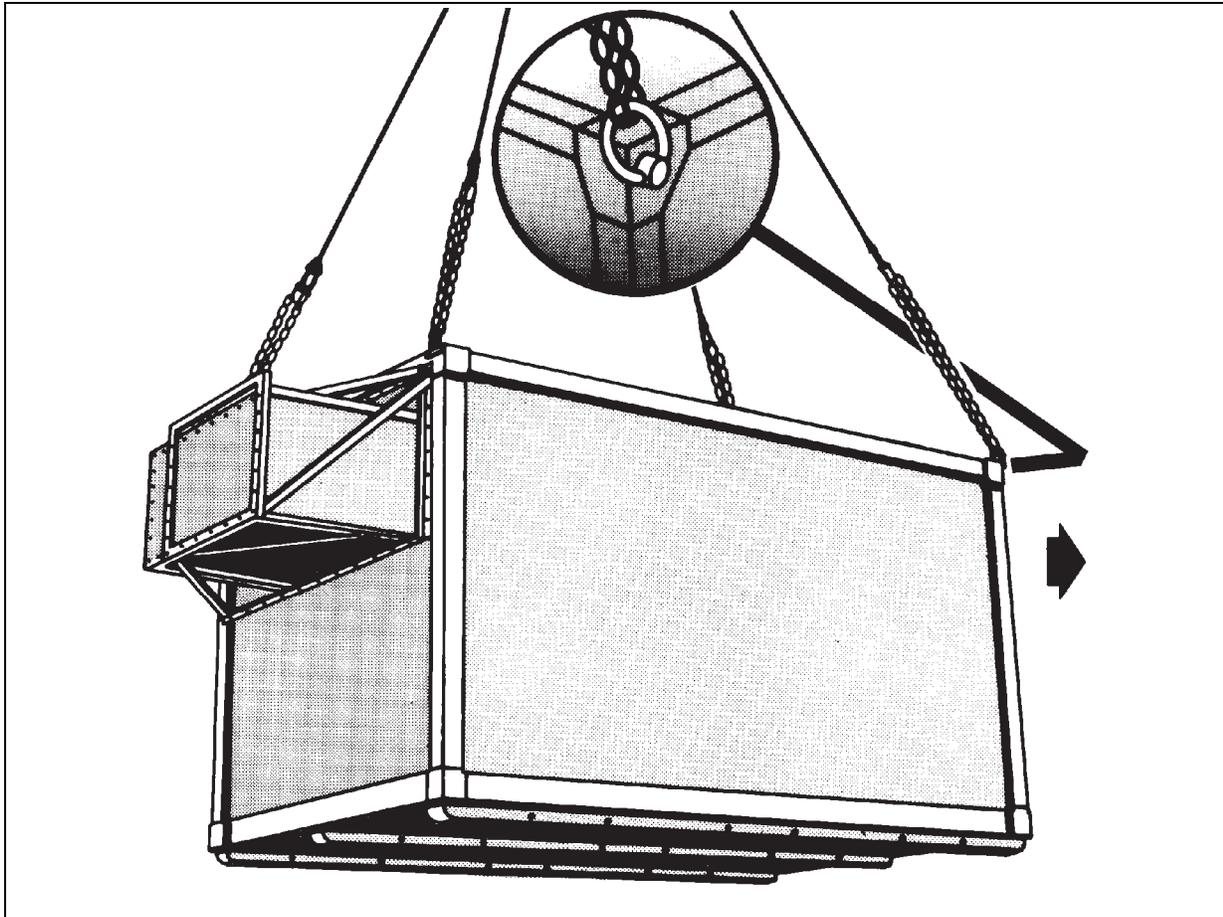
10-11. The hardened Army tactical shelter is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 10-10 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 10-10. Hardened Army Tactical Shelter**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Hardened Army Tactical Shelter	8,160	10K	3/30

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all internal equipment with tape or Type III nylon cord.
    - Close and secure all doors, vents, and caps with tape or Type III nylon cord.
    - Secure the air conditioner panels with tape.
  - **Rigging.** Rig the load according to the steps in Figure 10-10.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting on top of the shelter. Route outer sling legs 1 and 2 to the front of the shelter (door 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. Place the correct link from Table 10-10 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 10-10 in the grab hook. Repeat with sling leg 4 on the right rear lift provision.
4. Cluster and tie (breakaway technique) all sling legs together on top of the shelter to prevent entanglement during hookup and lift-off.

**Figure 10-10. Hardened Army Tactical Shelter**

## CRADLE MOUNTED AN/TPQ-32A RADAR SET, COMPONENT OF THE AN/MPQ-49A FORWARD AREA ALERTING RADAR (FAAR) SYSTEM

10-12. The cradle mounted AN/TPQ-32A radar set, component of the AN/MPQ-49A forward area alerting radar system is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 10-11 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

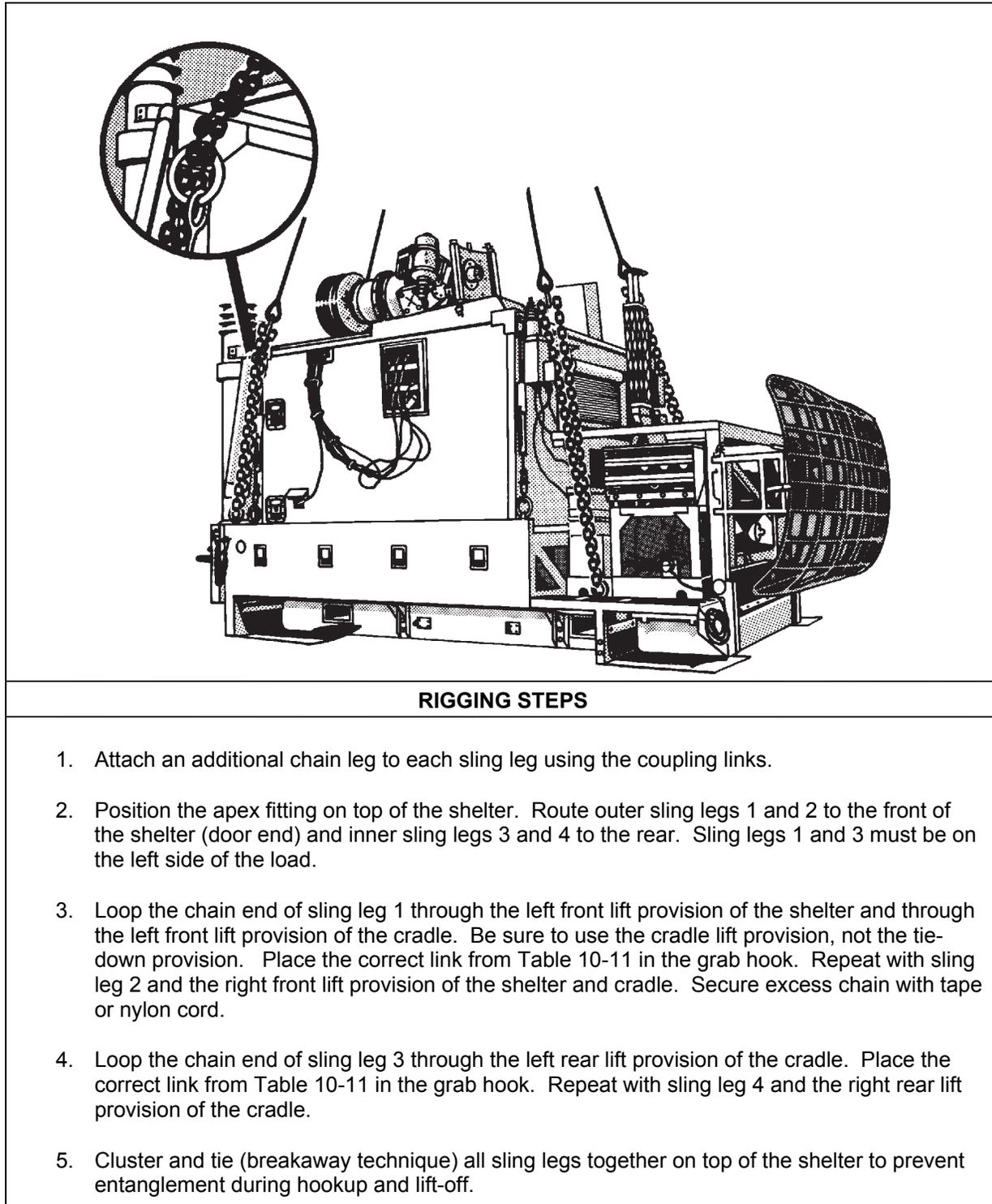
**Table 10-11. Cradle Mounted AN/TPQ-32A Radar Set, Component of the AN/MPQ-49A Forward Area Alerting Radar System**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Cradle Mounted AN/TPQ-32A Radar Set, Component of the AN/MPQ-49A Forward Area Alerting Radar System	7,100	10K	3/20

**Note:** The AN/TPQ-32A must be removed from the truck prior to sling loading.

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Additional chain lengths with couplings (4 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down strap, cargo, CGU-1/B (as required).
  - Wrench, box end, 9/16-inch.
- **Personnel.** Two persons can prepare and rig this load in 25 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Remove the cradle from the modified M35A2 truck and remount the mast in the vertical position in accordance with TM 9-1430-588-10.
    - Remount the antenna reflectors from over the generator assembly to the front of the cradle by removing and replacing the quick release pins.
    - Remove the two turnbuckles located between the front (shelter door end) cradle tie-down provision and the shelter lifting provision using a 9/16-inch box wrench. Store them inside the shelter or in a cradle cabinet.
    - Pin the mud flaps in the up position.
    - Secure all loose equipment inside the shelter and between the cradle and the shelter with Type III nylon cord, tape, or tie-down straps.
    - Close and secure all doors, vents, and caps with tape or Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 10-11.
  - **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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 10-11. Cradle Mounted AN/TPQ-32A Radar Set, Component of the AN/MPQ-49A Forward Area Alerting Radar System**

## NATO AIR BASE SATCOM (NABS) SHELTER PALLET, AN/TSC-93B (V)2

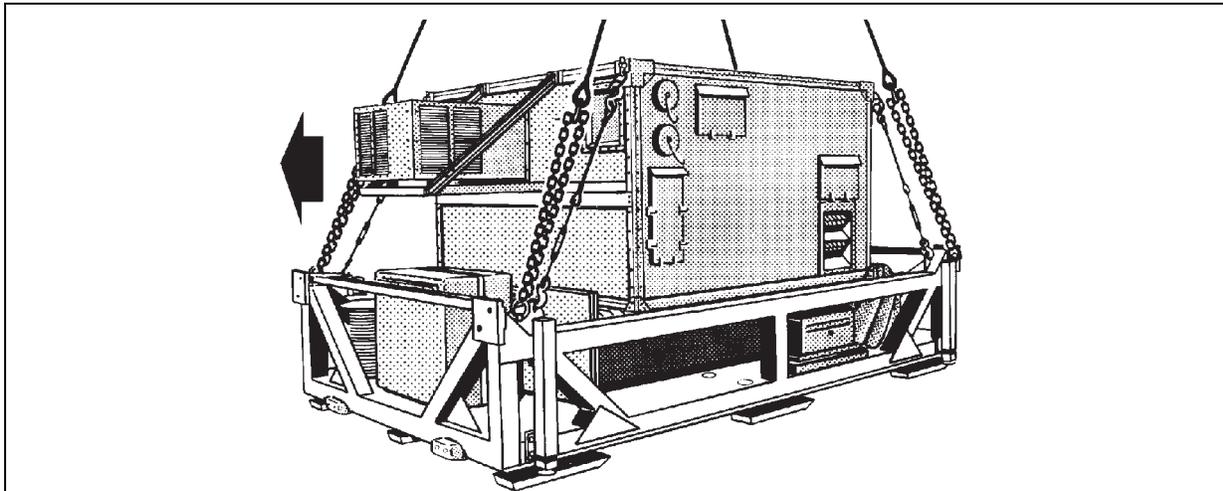
10-13. The NATO air base satcom shelter pallet, AN/TSC-93B (V)2 is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 10-12 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 10-12. NATO Air Base Satcom (NABS) Shelter Pallet, AN/TSC-93B (V)2**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
NATO Air Base Satcom Shelter Pallet, AN/TSC-93B (V)2	5,751	10K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all loose cables and equipment on the shelter pallet with tape or Type III nylon cord.
    - Remove the cargo cover and stow it inside the shelter.
    - Close and secure all doors, vents, and caps with tape or Type III nylon cord. All exhaust vents must be taped.
  - **Rigging.** Rig the load according to the steps in Figure 10-12.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position the apex fitting on top of the shelter. Route outer sling legs 1 and 2 to the front of the pallet (ECU 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.

**CAUTION**

Do not use the lift provisions on the shelter.

2. Loop the chain end of sling leg 1 through the left front lift provision located on the pallet. Place the correct link from Table 10-12 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 pallet. Place the correct link from Table 10-12 in the grab hook. Repeat with sling leg 4 and the right rear lift provision.
4. Cluster and tie (breakaway technique) all sling legs together on top of the shelter to prevent entanglement during hookup and lift-off.

**Figure 10-12. NATO Air Base Satcom (NABS) Shelter Pallet, AN/TSC-93B (V)2**

## REFRIGERATOR, RIGID BOX WITHOUT REFRIGERATOR UNIT

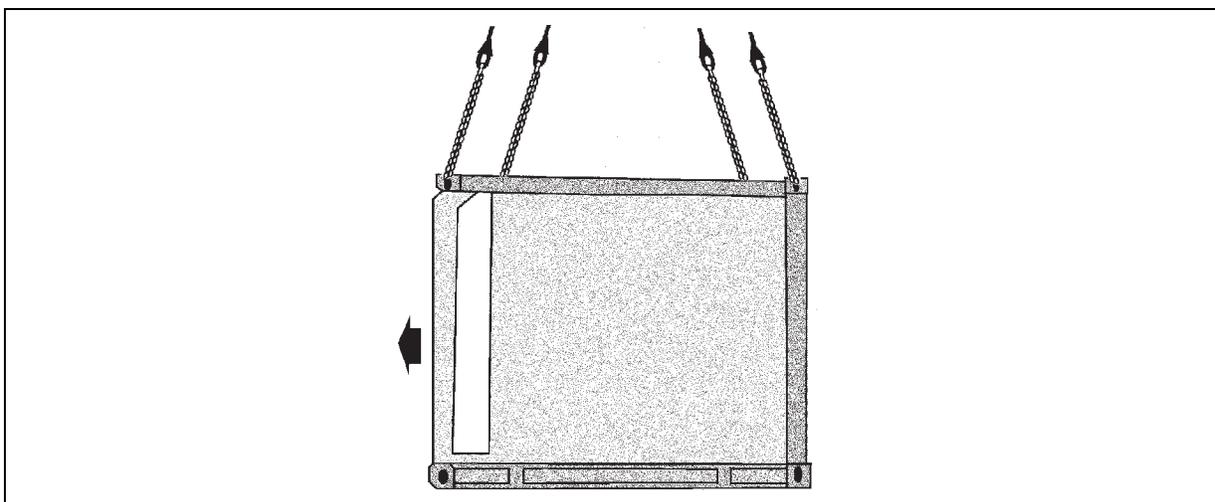
10-14. The refrigerator, rigid box without refrigerator unit is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 10-13 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 10-13. Refrigerator, Rigid Box without Refrigerator Unit**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Refrigerator, Rigid Box without Refrigerator Unit	3,500	15K	5/5

- **Materials.** The following materials are required to rig this load:
  - Sling set (15,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Remove the refrigerator unit from inside the refrigerator box.
    - Secure all equipment inside the box with tape or Type III nylon cord. Close and secure the door latch.
  - **Rigging.** Rig the load according to the steps in Figure 10-13.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 10-13. Refrigerator, Rigid Box without Refrigerator Unit**

<b>RIGGING STEPS</b>
<ol style="list-style-type: none"> <li>1. Position the web ring on top of the refrigerator box. Route outer sling legs 1 and 2 to the front of the box and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.</li> <li>2. Loop the chain end of sling leg 1 through the left front lift provision. Place the correct link from Table 10-13 in the grab hook. Repeat with sling leg 2 and the right front lift provision.</li> <li>3. Loop the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 10-13 in the grab hook. Repeat with sling leg 4 and the right rear lift provision.</li> <li>4. Cluster and tie (breakaway technique) all sling legs together on top of the box to prevent entanglement during hookup and lift-off.</li> </ol>

**Figure 10-13. Refrigerator, Rigid Box without Refrigerator Unit (Continued)**

## PETROLEUM QUALITY ANALYSIS SYSTEM (PQAS) SHELTER

10-15. The petroleum quality analysis system shelter is rigged for single-point sling load using the following procedures:

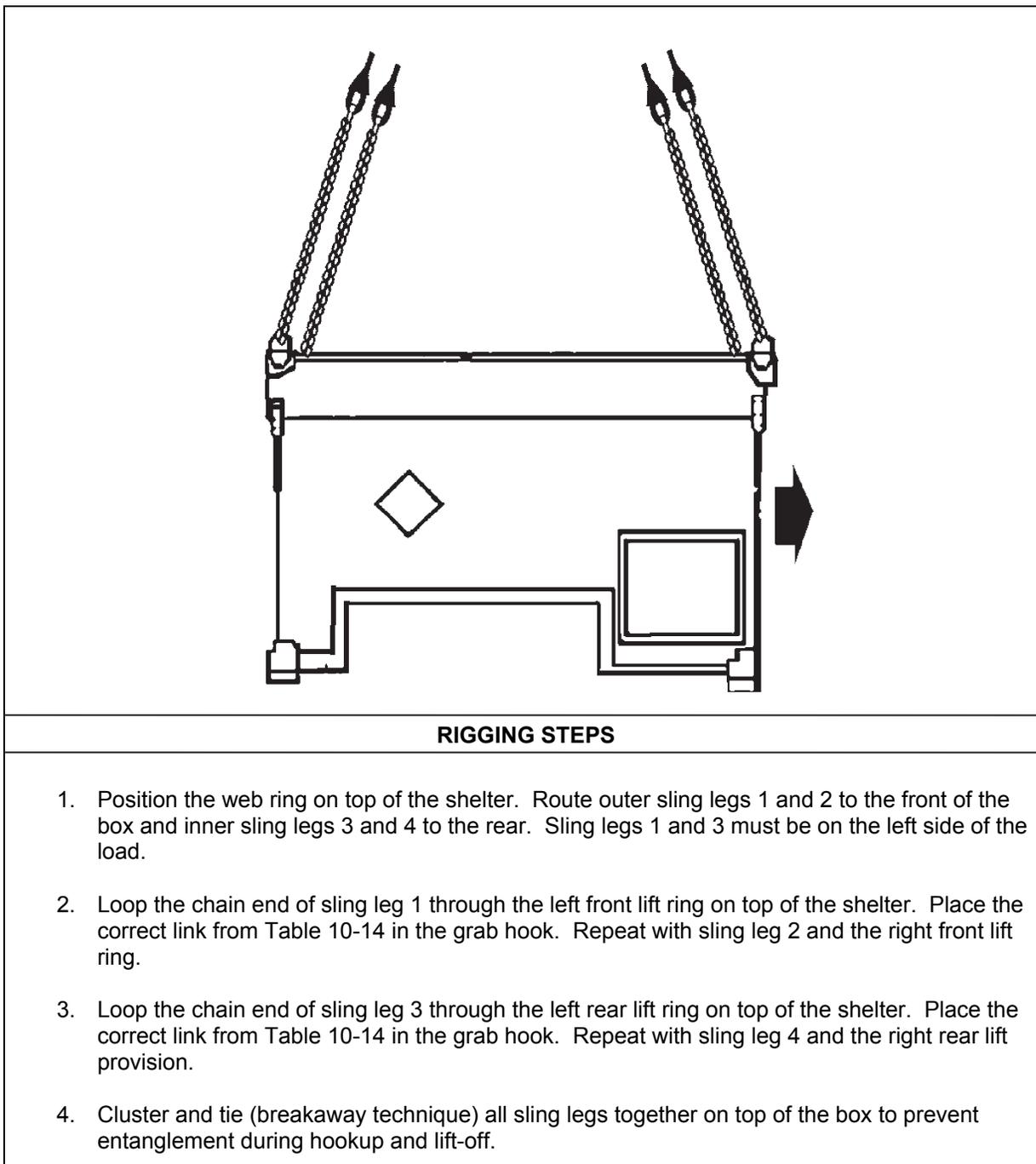
- **Applicability.** The following item in Table 10-14 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 10-14. Petroleum Quality Analysis. System Shelter**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
PQAS Shelter, Dismounted	3,200	10K	5/10

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Webbing, nylon, tubular, 1/2-inch, 1000-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all equipment inside the box with tape or Type III nylon cord. Close and secure the door latch. Raise the roof to the stop and pin in position. Secure the pin with tape.
    - Roll up and tie the large canvas covers on the shelter with Type III nylon cord. Secure the small canvas covers with tape.
  - **Rigging.** Rig the load according to the steps in Figure 10-14.
  - **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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 10-14. Petroleum Quality Analysis System Shelter**

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## Chapter 11

# Certified Single-Point Rigging Procedures for Containers

## INTRODUCTION

11-1. This chapter contains rigging procedures for single-point lift of containers that have 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 containers are in this section. Paragraphs 11-2 through 11-13 give detailed instructions for rigging loads.

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**Note:** Reach pendants may be used on all single point loads. A static discharge person is not required when using a reach pendant.

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## SHIPPING/STORAGE CONTAINERS

11-2. The shipping/storage containers are rigged for single-point sling load using the following procedures:

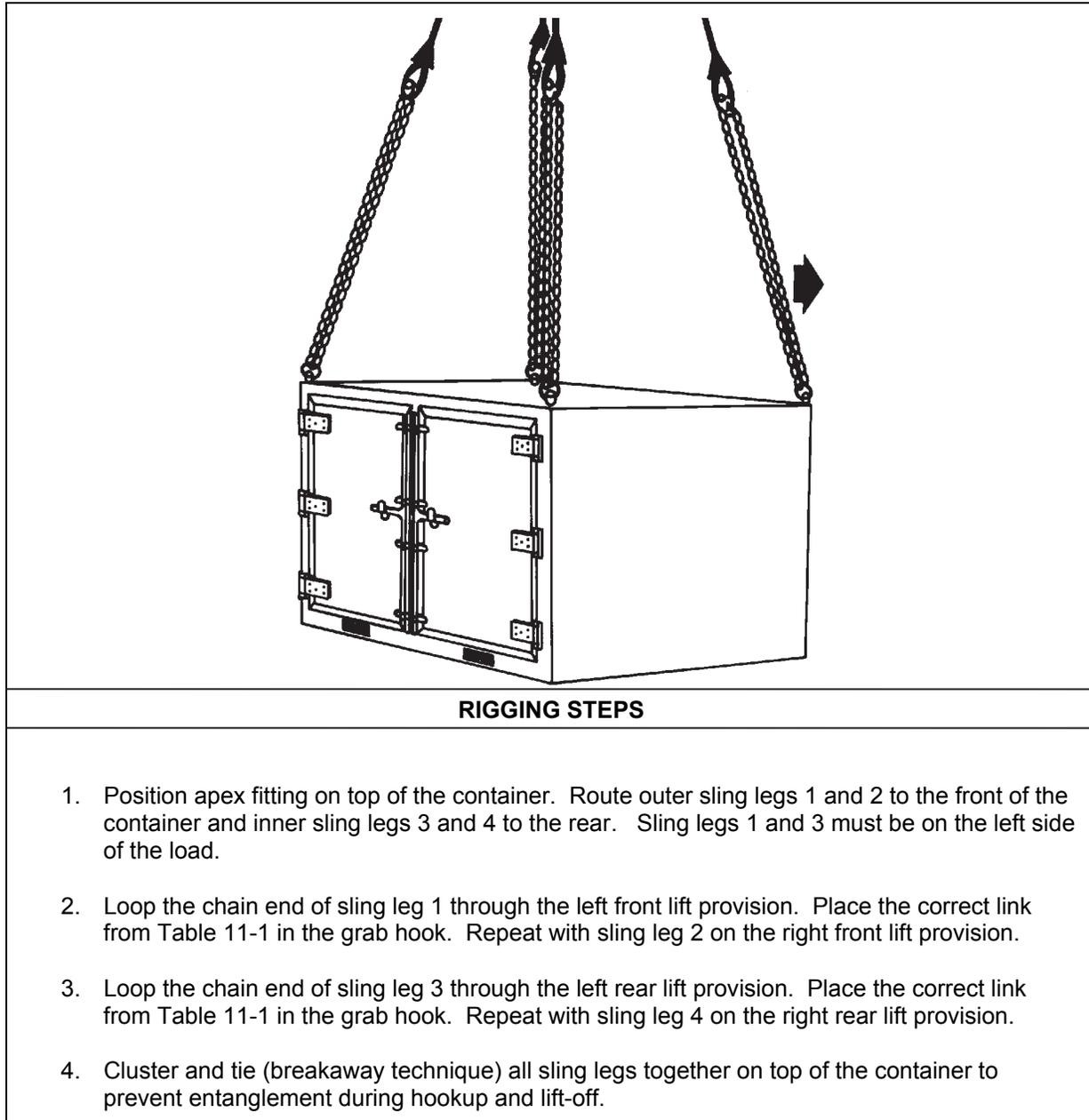
- **Applicability.** The following items in Table 11-1 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 11-1. Shipping/Storage Containers**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
ISU-60 (Loaded)	11,650	25K	3/3
ISU-90 (Loaded)	11,900	25K	3/3
ISU-90 (Empty)	1,900	10K	3/3
ISU-60 with Jump Forward Arming and Refueling Point (FARP), Advanced Aviation Forward Area Refueling System (AAFARS)	4,000	10K	3/3
Advanced Design Refrigerator, 300 Cubic Feet (ADR300), Produced by AAR Cadillac Manufacturing Inc.	11,900	25K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000- or 25,000-pound capacity) (as required).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all cargo inside the container.
    - Secure all doors in the secured and locked position.
  - **Rigging.** Rig the load according to the steps in Figure 11-1.

- **Hookup.** The hookup team stands on top of the container. 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 11-1. Shipping/Storage Containers**

## QUADCONS

11-3. The Quadcons are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 11-2 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 11-2. Quadcons**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
One (1) Quadcon, Empty	1,764	10K	3/3
One (1) Quadcon, Loaded	7,000	10K	3/3
Two (2) Quadcons, Empty	3,528	10K	3/3
Two (2) Quadcons, Loaded	10,000 14,000	10K 25K	3/3 3/3

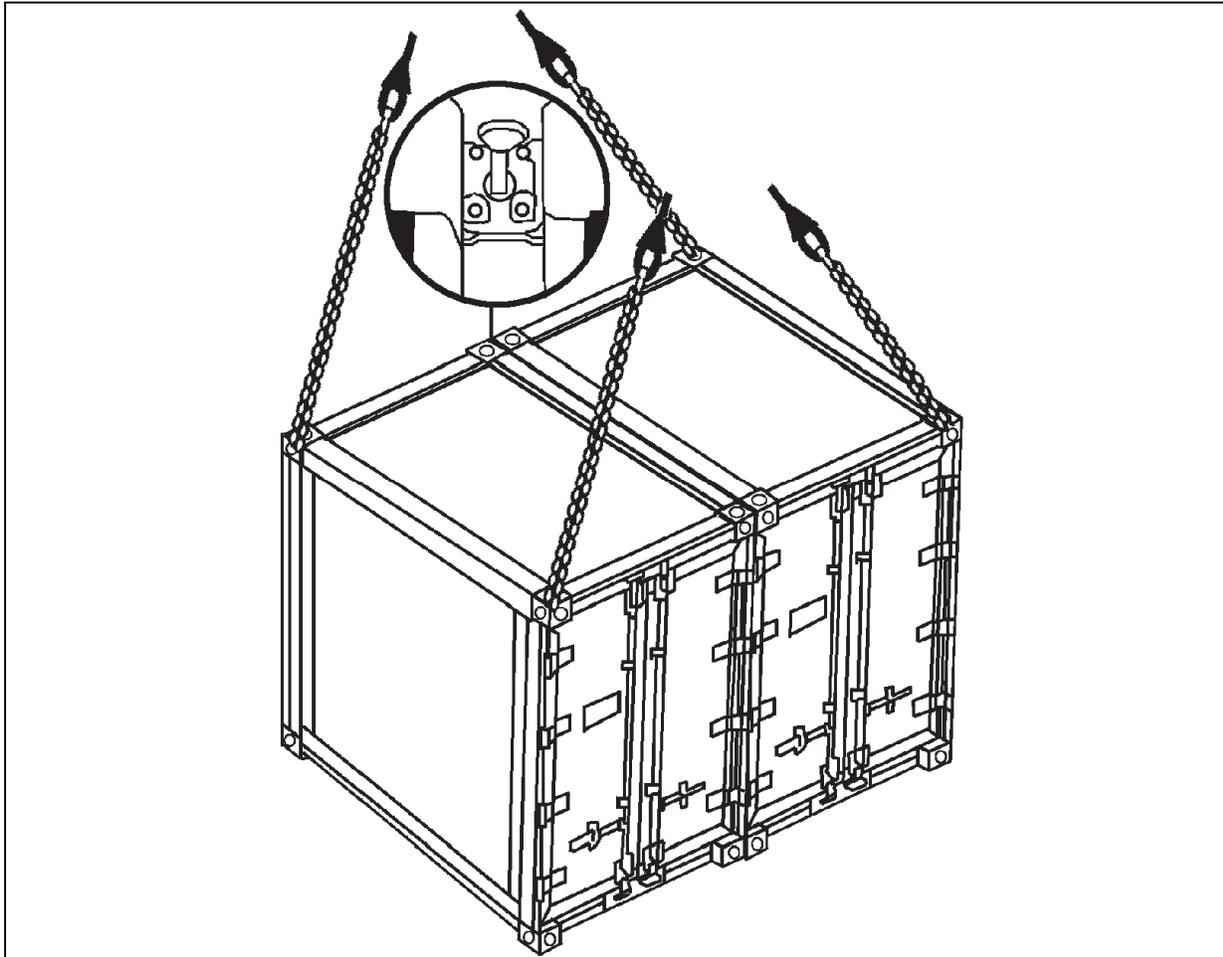
### WARNING

**WEIGHT IS RESTRICTED TO 7,000 POUNDS IN EACH QUADCON FOR SLING LOAD OPERATIONS. QUADCONS MUST BE CENTRALLY LOADED. ENSURE QUADCONS ARE LOADED TO SIMILAR WEIGHTS FOR MULTIPLE QUADCON CONFIGURATIONS. OFF CENTER LOADING OR OVERLOADING MAY RESULT IN ADVERSE FLIGHT CONDITIONS OR DAMAGE TO THE LOAD.**

*Note.* Recommended airspeed will vary based on load configuration and the weight of the load inside the Quadcons.

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000- or 25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Connect the Quadcons together using the manufacture's approved rigid connecting link (Part No. Sealock 1046). Lock all connecting links and wrap with tape.
    - Secure all cargo inside the container. Close and secure all doors in the locked position.
  - **Rigging.** Rig the load according to the steps in Figure 11-2.
  - **Hookup.** The hookup team stands on top of the container. 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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position the apex fitting on the roof of the container. Route outer sling legs 1 and 2 to the front of the container 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 container. Place the correct link from Table 11-2 in the grab hook. Repeat with sling leg 2 through 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 container. Place the correct link from Table 11-2 in the grab hook. Repeat with sling leg 4 through the right rear lift provision.
4. Secure all excess chain with tape or Type III nylon cord.
5. Cluster and tie (breakaway technique) all sling legs together on top of the container to prevent entanglement during hookup and lift-off.

**Figure 11-2. Quadcons**

## AUTHORIZED STOCKAGE LIST MOBILITY SYSTEMS (ASLMS)

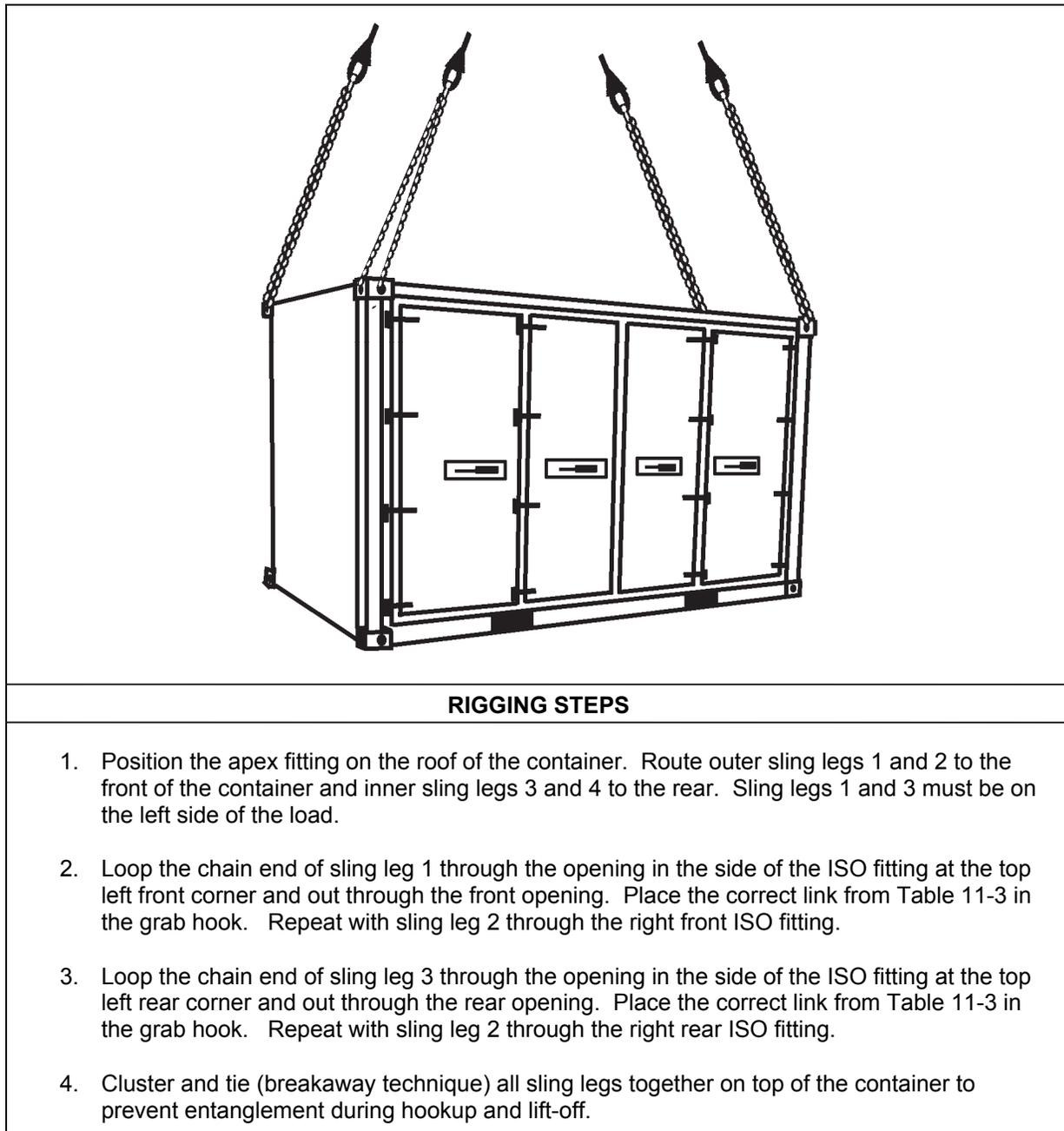
11-4. The Authorized Stockage List Mobility Systems are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 11-3 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 11-3. Authorized Stockage List Mobility Systems**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
ASLMS, Field Pack-Up, FPU-12 (12-Foot Only)	20,000	25K 40K	3/3
ASLMS, Field Pack-Up, FPU-8 (8-Foot Only)	18,000	25K 40K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000- or 40,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all cargo inside the container.
    - Close and secure all doors in the locked position.
  - **Rigging.** Rig the load according to the steps in Figure 11-3.
  - **Hookup.** The hookup team stands on the rear of the container. 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 11-3. Authorized Stockage List Mobility Systems**

## **AUTHORIZED STOCKAGE LIST MOBILITY SYSTEMS, CONNECTED**

11-5. The connected Authorized Stockage List Mobility Systems are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 11-4 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

Table 11-4. Authorized Stockage List Mobility Systems, Connected

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
ASLMS, Field Pack-Up, FPU-8/12 (8 & 12-Foot Sections Connected)	25,000 26,000	25K 40K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000- or 40,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Connect the FPU-8 and FPU-12 together using the manufacturer’s approved rigid connecting link (Tandem Horizontal Connectors, part number 12900BA-1PZ) (FPU-8-12 only).
    - Secure all cargo inside the container.
    - Close and secure all doors in the locked position.
  - **Rigging.** Rig the load according to the steps in Figure 11-4.
  - **Hookup.** The hookup team stands on the rear of the container. 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

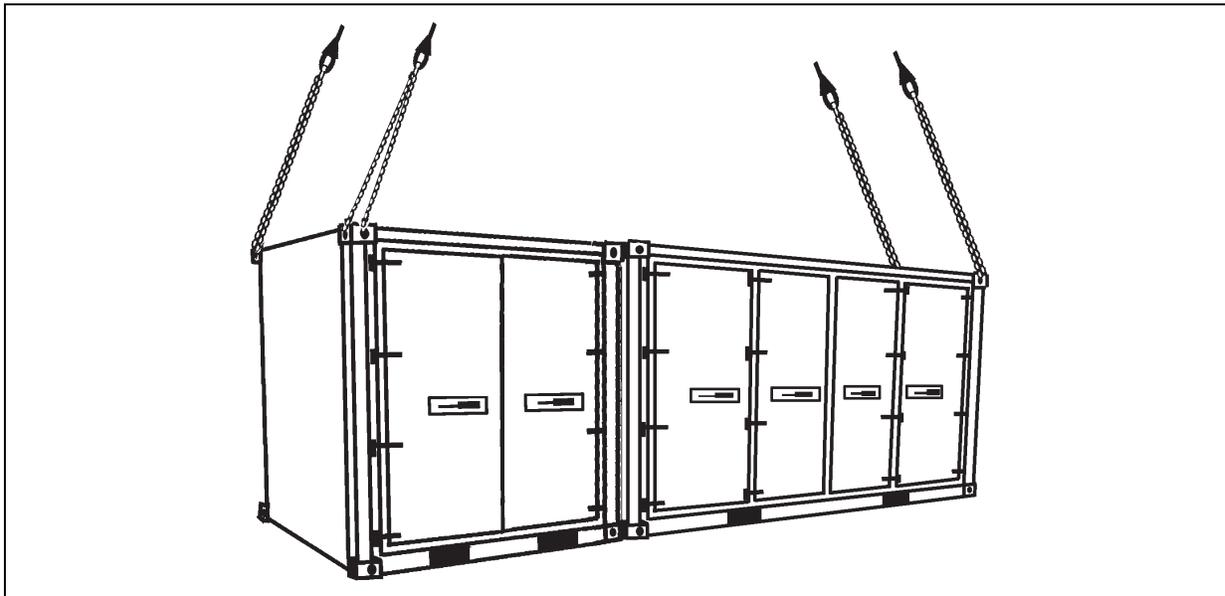


Figure 11-4. Authorized Stockage List Mobility Systems, Connected

<b>RIGGING STEPS</b>	
1.	Position the apex fitting on the roof of the container. Route outer sling legs 1 and 2 to the front of the container 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 opening in the side of the ISO fitting at the top left front corner and out through the front opening. Place the correct link from Table 11-4 in the grab hook. Repeat with sling leg 2 through the right front ISO fitting.
3.	Loop the chain end of sling leg 3 through the opening in the side of the ISO fitting at the top left rear corner and out through the rear opening. Place the correct link from Table 11-4 in the grab hook. Repeat with sling leg 2 through the right rear ISO fitting.
4.	Cluster and tie (breakaway technique) all sling legs together on top of the container to prevent entanglement during hookup and lift-off.

**Figure 11-4. Authorized Stockage List Mobility Systems, Connected (Continued)**

## FIELD MEDICAL OXYGEN GENERATION/DISTRIBUTION SYSTEM (FMOGDS)

11-6. The field medical oxygen generation/distribution system is rigged for single-point sling load using the following procedures:

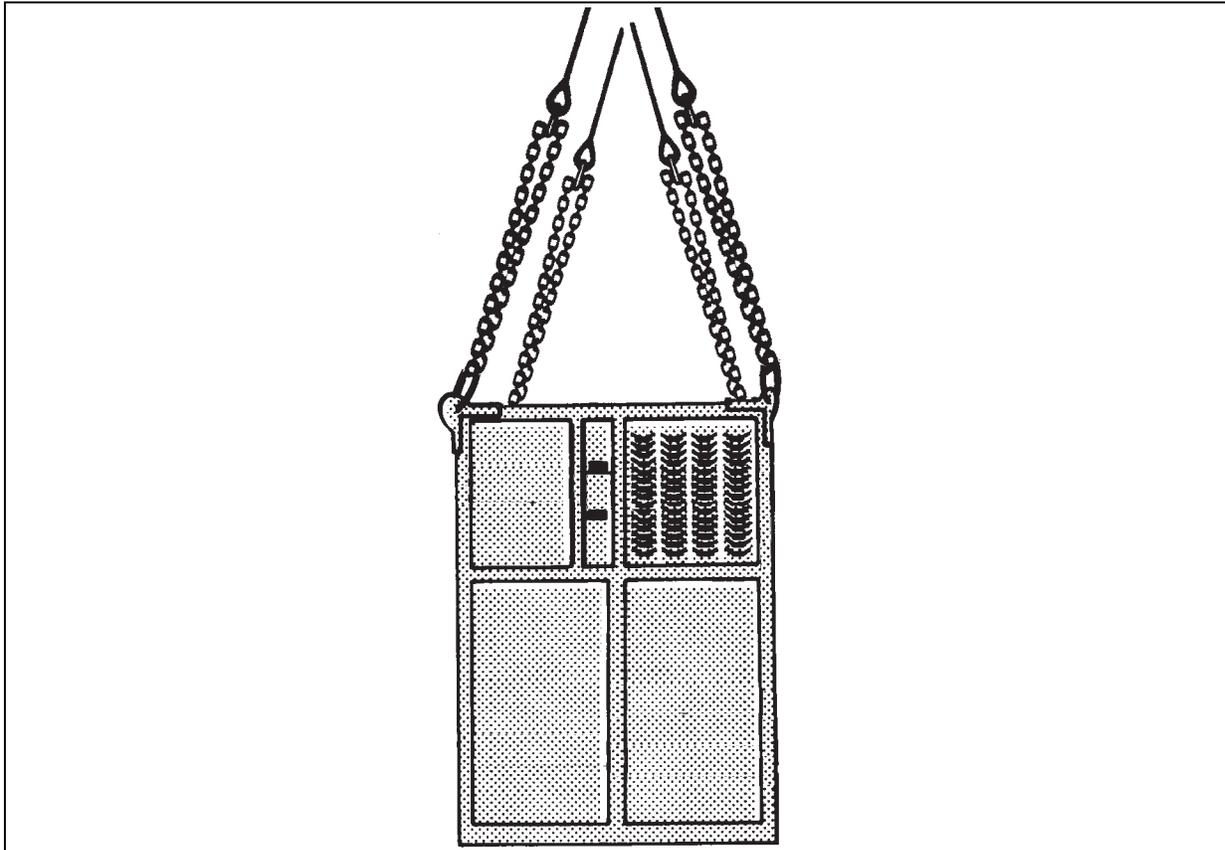
- **Applicability.** The following items in Table 11-5 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 11-5. Field Medical Oxygen Generation/Distribution System**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Oxygen Generation/Distribution Module (OGDM)	3,405	10K	3/3
Cylinder Filling Module	2,049	10K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down strap, cargo, CGU-1/B (as required).
- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Ensure all tools are properly stowed. Secure all loose equipment inside the container with tape or Type III nylon cord.
    - Secure all doors and vents with tape. Secure all hoses and chains with tape or 1/4-inch cotton webbing.
  - **Rigging.** Rig the load according to the steps in Figure 11-5.

- **Hookup.** The hookup team stands on top of the container. 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting on top of the container. Route outer sling legs 1 and 2 to the front of the container (side with the forklift entry holes) 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 11-5 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 11-5 in the grab hook. Repeat with sling leg 4 on the right rear lift provision.
4. Cluster and tie (breakaway technique) all sling legs together on top of the container to prevent entanglement during hookup and lift-off.

**Figure 11-5. Field Medical Oxygen Generation/Distribution System**

## FIELD MEDICAL OXYGEN GENERATION/DISTRIBUTION SYSTEM (FMOGDS) (COMBINED)

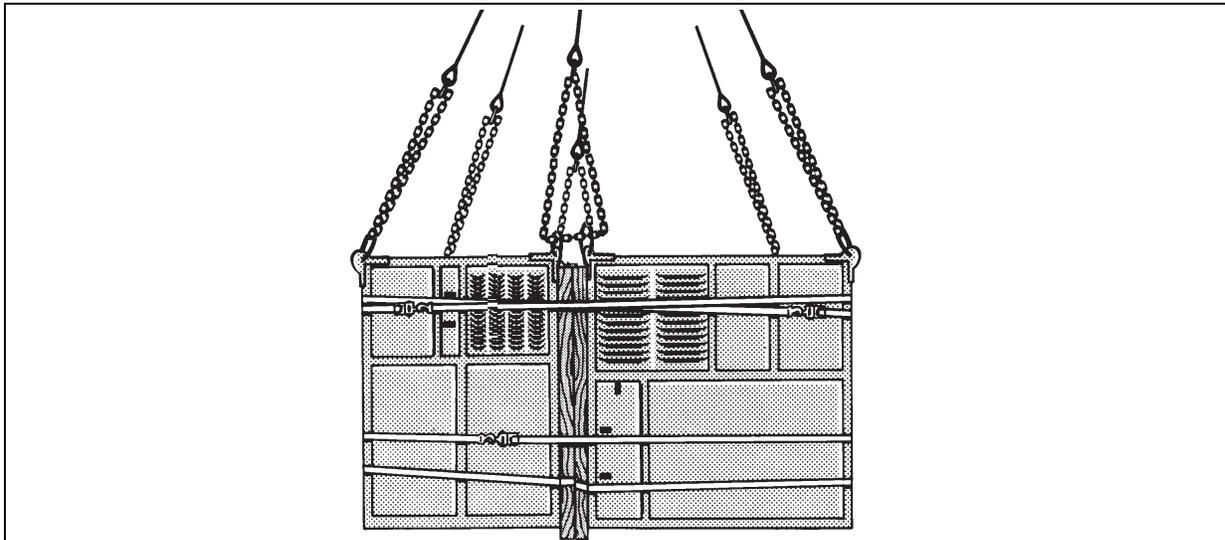
11-7. The combined field medical oxygen generation/distribution system is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 11-6 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 11-6. Field Medical Oxygen Generation/Distribution System (Combined)**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Oxygen Generation/Distribution Module and Cylinder Filling Module	3,405	10K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity) with two additional chain legs.
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down strap, cargo, CGU-1/B (as required).
  - Lumber, 2 x 4 x 72-inch (4 each).
- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Ensure all tools are properly stored. Secure all loose equipment inside the container with tape or Type III nylon cord.
    - Secure all doors and vents with tape. Secure all hoses and chains with tape or 1/4-inch cotton webbing.
    - Position the units together with the "A" sides facing each other.
    - Cut slots in four 2 x 4 x 72-inch pieces of lumber to keep the CGU-1/B tie-down straps from sliding.
    - Place the 2 x 4 x 72-inch pieces of lumber between the OGMD and the CFM as dunnage.
  - **Rigging.** Rig the load according to the steps in Figure 11-6.
  - **Hookup.** The hookup team stands on top of the container. 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Configure a six leg sling set.
2. Attach two (2) 2 x 4 x 72-inch pieces of lumber to the "A" side of each unit using the CGU-1/B tie-down straps. Ensure the straps are routed horizontally around the unit and through the slots in the lumber.
3. Strap OGDM and CFM together using the tiedown straps, two fastenings evenly spaced around the sides. Fasten the straps together as necessary to span the two pieces of equipment.
4. Position apex fitting on top of the units. Route outer sling legs 1 and 2 to the front of the OGDM. Route inner sling legs 3 and 4 to the rear of the CFM and the middle sling legs 5 and 6 to the interface of the OGDM and the CFM. Sling legs 1, 3, and 5 must be on the left side of the load.
5. Route the chain end of sling leg 1 through the left front lift provision located on the front of the OGDM. Place the correct link from Table 11-6 in the grab hook. Repeat with sling leg 2 on the right front lift provision.
6. Route the chain end of sling leg 3 through the left rear lift provision located on the rear of the CFM. Place the correct link from Table 11-6 in the grab hook. Repeat with sling leg 4 on the right rear lift provision.
7. Route the chain end of sling leg 5 through the left lifting provision on the interfacing "A" sides of the OGDM and the CFM. Place the correct link from Table 11-6 in the grab hook. Repeat with sling leg 6 and the right lifting provision on the interfacing "A" sides of the OGDM and the CFM. Secure the excess chain with Type III nylon cord.
8. Cluster and tie (breakaway technique) all sling legs together on top of the ODGM and CFM to prevent entanglement during hookup and lift-off.

**Figure 11-6. Field Medical Oxygen Generation/Distribution System (Combined)**

## LAUNCH POD CONTAINER (LPC) WITH MULTIPLE LAUNCH ROCKET SYSTEM (MLRS) ROCKETS OR GUIDED MULTIPLE LAUNCH ROCKET SYSTEM (G-MLRS) ROCKETS / GUIDED MISSILE LAUNCH ASSEMBLY (GMLA) PODS WITH ARMY TACTICAL MISSILE SYSTEM (ATACMS) MISSILES, ONE CONTAINER

11-8. The launch pod container with multiple launch rocket system rockets or guided multiple launch rocket system rockets / guided missile launch assembly pods with army tactical missile system missiles, one container is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 11-7 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 11-7. Launch Pod Container with Multiple Launch Rocket System Rockets or Guided Multiple Launch Rocket System Rockets / Guided Missile Launch Assembly Pods with Army Tactical Missile System Missiles, One Container**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Launch Pod Container with Multiple Launch Rocket System Rockets or Guided Multiple Launch Rocket System Rockets (with Six Rockets)	5,095	10K	3/3
Guided Missile Launch Assembly Pods with Army Tactical Missile System Missiles	5,111	10K	3/3

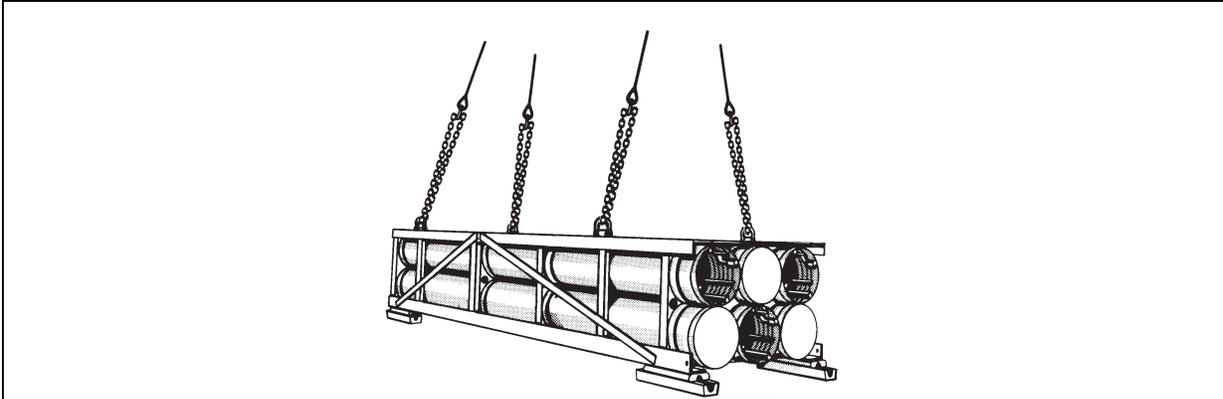
- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the pod for travel in accordance with standard procedures.
  - **Rigging.** Rig the load according to the steps in Figure 11-7.

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*Note.* The firing end is considered to be the front of the load.

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- **Hookup.** The hookup team stands on top of the pod. 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting on top of the pod. Route outer sling legs 1 and 2 to the front of the pod 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 11-7 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 11-7 in the grab hook. Repeat with sling leg 4 on the right rear lift provision.
4. Cluster and tie (breakaway technique) all sling legs together on top of the container to prevent entanglement during hookup and lift-off.

**Figure 11-7. Launch Pod Container with Multiple Launch Rocket System Rockets or Guided Multiple Launch Rocket System Rockets / Guided Missile Launch Assembly Pods with Army Tactical Missile System Missiles, One Container**

**LAUNCH POD CONTAINER (LPC) WITH MULTIPLE LAUNCH ROCKET SYSTEM (MLRS) ROCKETS OR GUIDED MULTIPLE LAUNCH ROCKET SYSTEM (G-MLRS) ROCKETS / GUIDED MISSILE LAUNCH ASSEMBLY (GMLA)PODS WITH ARMY TACTICAL MISSILE SYSTEM (ATACMS) MISSILES, TWO CONTAINERS**

11-9. The launch pod container with multiple launch rocket system rockets or guided multiple launch rocket system rockets / guided missile launch assembly pods with army tactical missile system missiles, two containers are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 11-8 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 11-8. Launch Pod Container with Multiple Launch Rocket System Rockets or Guided Multiple Launch Rocket System Rockets / Guided Missile Launch Assembly Pods with Army Tactical Missile System Missiles, Two Containers**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Launch Pod Container with Multiple Launch Rocket System Rockets or Guided Multiple Launch Rocket System Rockets (with Six Rockets)	10,190	25K	3/3
Guided Missile Launch Assembly Pods with Army Tactical Missile System Missiles	10,222	25K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
  - Tie-down strap, cargo, CGU-1/B (as required).
- **Personnel.** Four persons can prepare and rig this load in 30 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Prepare the pods for travel in accordance with standard procedures.
    - Stack the pods one on top of the other, with both pods facing the same direction.

### CAUTION

Do not mix the MLRS and the GMLA in the same load.

— Lash the stack of pods together using the CGU-1/B tie-down straps. Two of the straps should run through both sets of lifting provisions on each end of the pods, to keep them aligned during flight. Evenly space the remaining two straps between the lifting provisions, running them around the pods. **DO NOT ROUTE THE STRAPS OVER THE ROCKET TUBES.** Pad all straps in the area where they contact the edges of the pods.

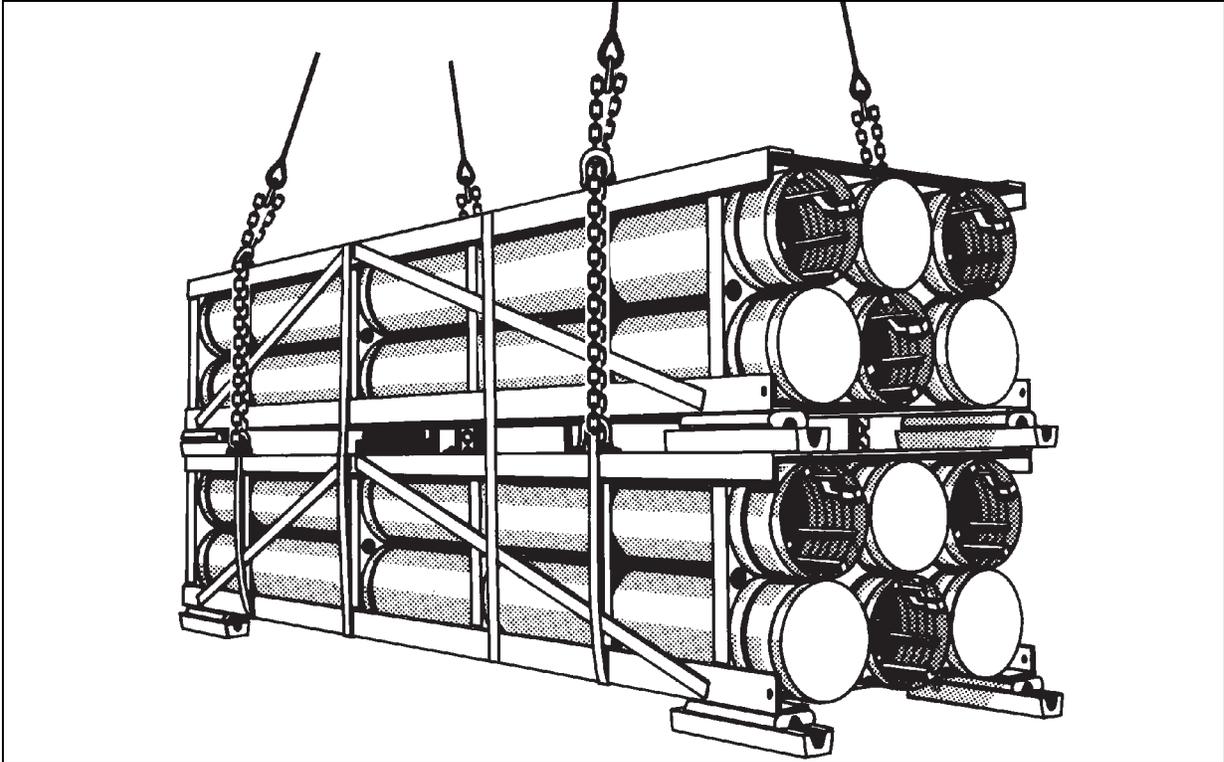
- **Rigging.** Rig the load according to the steps in Figure 11-8.

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*Note.* The firing end is considered the front of the load.

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- **Hookup.** The hookup team stands on top of the pods. 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting on top of the pods. Route outer sling legs 1 and 2 to the front of the pods 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 on the top pod and through the front lift provision on the bottom pod. Thread it back through the front lift provision on the top pod. Place the correct link from Table 11-8 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 on the top pod and through the rear lift provision on the bottom pod. Thread it back through the rear lift provision on the top pod. Place the correct link from Table 11-8 in the grab hook. Repeat with sling leg 4 on the right rear lift provision.
4. Cluster and tie (breakaway technique) all sling legs together on top of the pod to prevent entanglement during hookup and lift-off.

**Figure 11-8. Launch Pod Container with Multiple Launch Rocket System Rockets or Guided Multiple Launch Rocket System Rockets / Guided Missile Launch Assembly Pods with Army Tactical Missile System Missiles, Two Containers**

## M1A1 FULL-UP POWER PACK (FUPP) CONTAINER

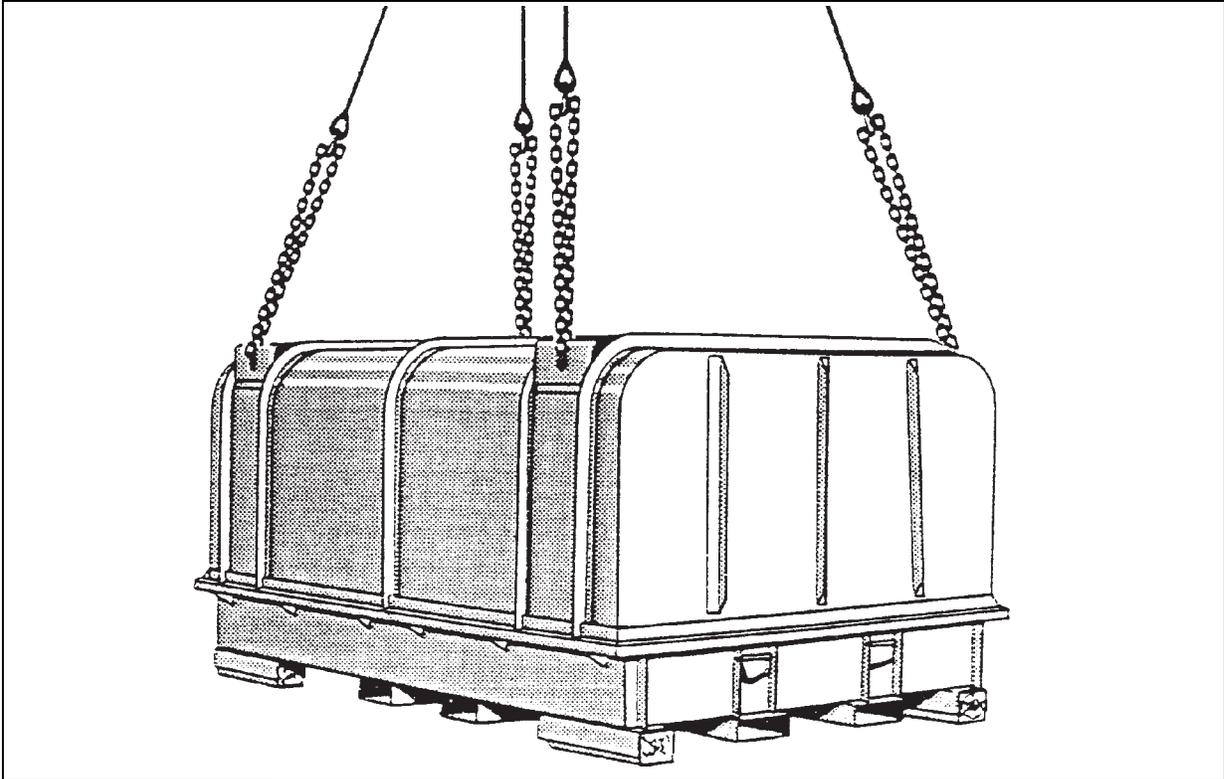
11-10. The M1A1 full-up power pack container is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 11-9 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 11-9. M1A1 Full-Up Power Pack Container**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M1A1 Full-Up Power Pack Container with Full-Up Power Pack, (Metal or Fiberglass)	13,620	25K	3/10

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down strap, cargo, CGU-1/B (as required).
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
  - **Procedures.** The following procedures apply to this load:
    - Secure all equipment inside the container with tape or Type III nylon cord.
    - Close and secure all doors and vents with tape or Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 11-9.
  - **Hookup.** The hookup team stands on top of the container. 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting on top of the container. Route outer sling legs 1 and 2 to the front of the container (transmission 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. Place the correct link from Table 11-9 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. Place the correct link from Table 11-9 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 (breakaway technique) all sling legs together on top of the container to prevent entanglement during hookup and lift-off.

**Figure 11-9. M1A1 Full-Up Power Pack Container**

## DISTRIBUTED EXPLOSIVE TECHNOLOGY (DET) SYSTEM, ARRAY CONTAINER

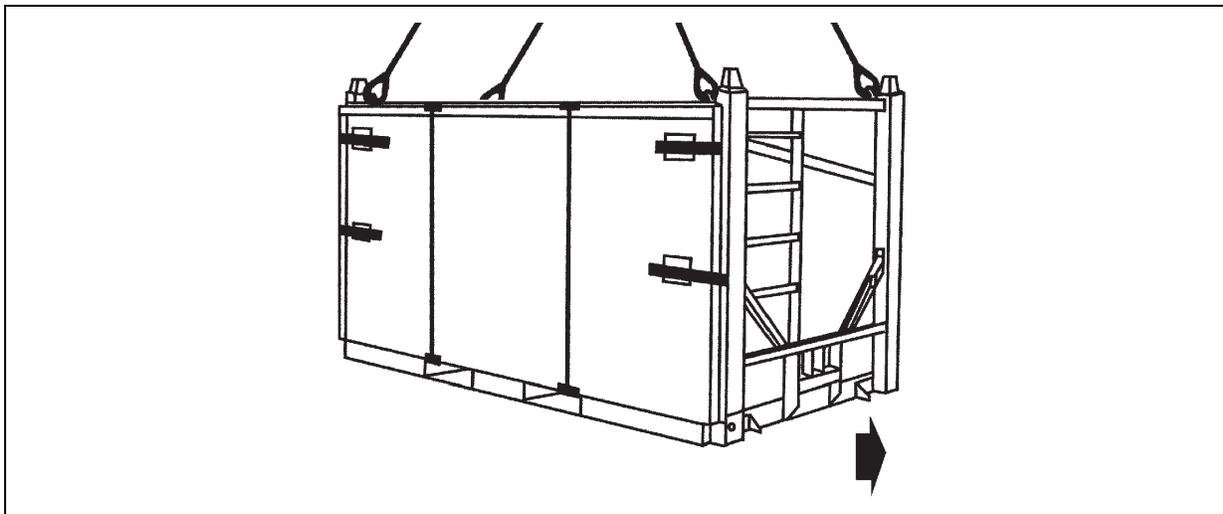
11-11. The distributed explosive technology system, array container is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 11-10 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 11-10. Distributed Explosive Technology System, Array Container**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Distributed Explosive Technology (DET) System, Array Container	4,000	Navy Mk105 O Sling Assembly	N/A

- **Materials.** The following materials are required to rig this load:
  - Sling set, Navy MK105 O Sling Assembly with 91-inch or longer leg assembly.
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load by taping the handles on the sides of the container.
  - **Rigging.** Rig the load according to the steps in Figure 11-10.
  - **Hookup.** The hookup team stands on top of the container. 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 11-10. Distributed Explosive Technology System, Array Container**

RIGGING STEPS
<ol style="list-style-type: none"> <li>1. Position apex fitting on top of the container. Route outer sling legs 1 and 2 to the front of the container. Route inner sling legs 3 and 4 to the rear of the container. Sling legs 1 and 3 must be on the left side of the load.</li> <li>2. Attach the hook on the end of each sling leg to the respective lift provision located at the top corners of the container.</li> <li>3. Secure the sling leg hooks in the closed position with Type III nylon cord.</li> </ol>

**Figure 11-10. Distributed Explosive Technology System, Array Container (Continued)**

### **DISTRIBUTED EXPLOSIVE TECHNOLOGY (DET) SYSTEM, LANDING CRAFT, AIR CUSHIONED (LCAC), LANDING INTERFACE KIT (LIK) CONTAINER, SINGLE**

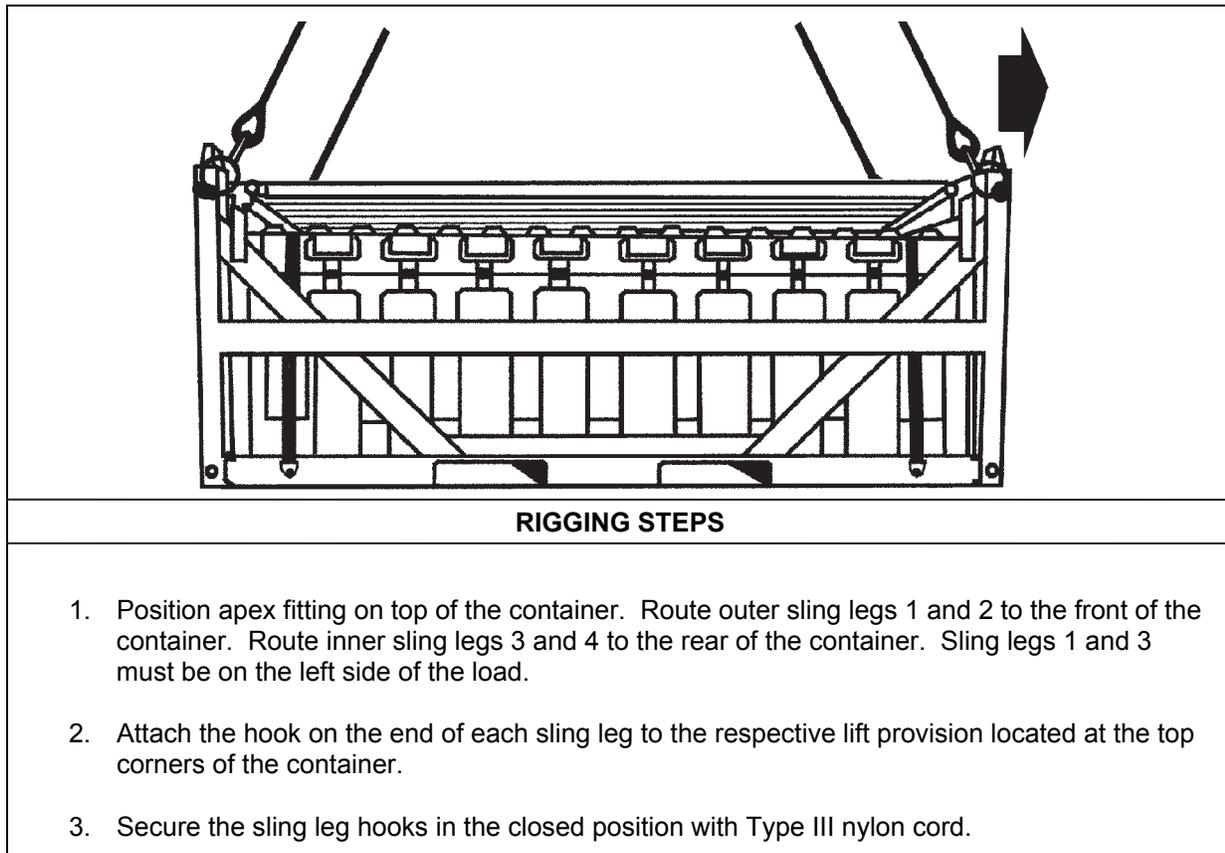
11-12. The distributed explosive technology system, landing craft, air cushioned, landing interface kit container, single is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 11-11 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 11-11. Distributed Explosive Technology System, Landing Craft, Air Cushioned,  
Landing Interface Kit Container, Single**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Distributed Explosive Technology System, Landing Craft, Air Cushioned, Landing Interface Kit	1,550	Navy Mk105 O Sling Assembly	N/A

- **Materials.** The following materials are required to rig this load:
  - Sling set, Navy MK105 O Sling Assembly with 91-inch or longer leg assembly.
  - Cord, nylon, Type III, 550-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load by placing a strap over each end of the LIK container and attaching it to the platform in accordance with manufacturer's instructions.
  - **Rigging.** Rig the load according to the steps in Figure 11-11.
  - **Hookup.** The hookup team stands on top of the container. 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 11-11. Distributed Explosive Technology System, Landing Craft, Air Cushioned, Landing Interface Kit Container, Single**

**DISTRIBUTED EXPLOSIVE TECHNOLOGY (DET) SYSTEM, LANDING CRAFT, AIR CUSHIONED (LCAC), LANDING INTERFACE KIT (LIK) CONTAINER, DOUBLED, STACKED**

11-13. The distributed explosive technology system, landing craft, air cushioned, landing interface kit container, doubled, stacked is rigged for single-point sling load using the following procedures:

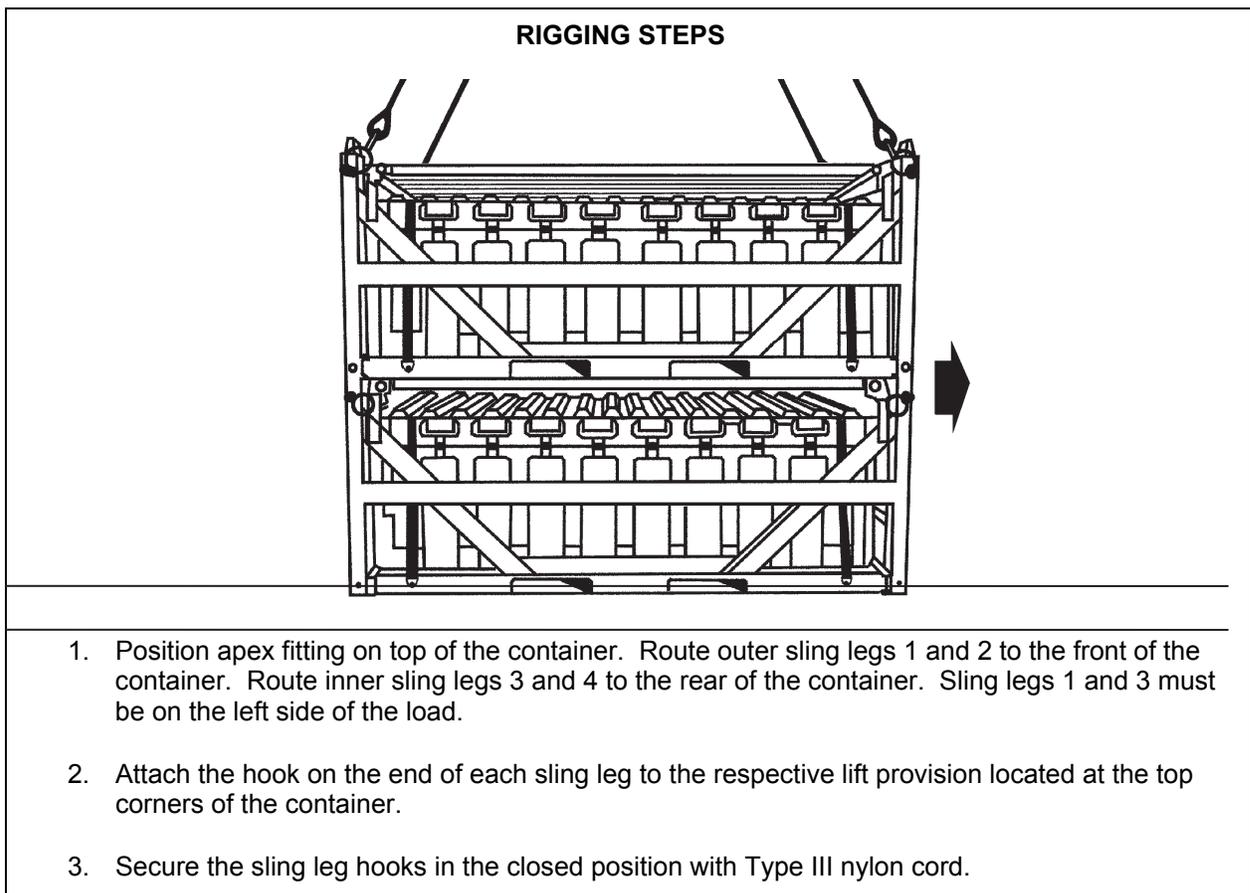
- **Applicability.** The following items in Table 11-12 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 11-12. Distributed Explosive Technology System, Landing Craft, Air Cushioned, Landing Interface Kit Container, Doubled, Stacked**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Distributed Explosive Technology System, Landing Craft, Air Cushioned, Landing Interface Kit, Doubled, Stacked	2,400	Navy Mk105 O Sling Assembly	N/A

- **Materials.** The following materials are required to rig this load:
  - Sling set, Navy MK105 O Sling Assembly with 91-inch or longer leg assembly.
  - Cord, nylon, Type III, 550-pound breaking strength.

- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Place a strap over each end of the LIK container and attach it to the platform in accordance with manufacturer's instructions.
    - Ensure the containers are secured together one on top of the other according to the manufacturer's instructions.
    - Tie the bottom container lift provisions down to a point on the load with Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 11-12.
  - **Hookup.** The hookup team stands on top of the container. 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 11-12. Distributed Explosive Technology System, Landing Craft, Air Cushioned, Landing Interface Kit Container, Double, Stacked**

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## Chapter 12

# Certified Single-Point Rigging Procedures for Radar and Satellite Equipment

### INTRODUCTION

12-1. This chapter contains rigging procedures for single-point lift of radar and satellite equipment that have 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 containers are in this section. Paragraphs 12-2 through 12-13 give detailed instructions for rigging loads.

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*Note.* Reach pendants may be used on all single point loads. A static discharge person is not required when using a reach pendant.

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### AN/TPQ-37 ARTILLERY-LOADING RADAR SET (FIREFINDER)

12-2. The AN/TPQ-37 artillery-loading radar set is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 12-1 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 12-1. AN/TPQ-37 Artillery-Loading Radar Set**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
AN/TPQ-37 Artillery-Loading Radar Set	10,800	25K	68/5

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
  - Ladder.
- **Personnel.** Two persons can prepare and rig this load in 30 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - 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.
    - Ensure the maintenance tent frame and cover are stowed and secured in their proper position.
    - Ensure all cover panels, cabinet doors, and vents are installed and secured.

- Secure all loose items with Type III nylon cord.
- Ensure the rear door is closed and secured with the locking handle. Door rods must be secured in their clips.
- Ensure the antenna transport cover is secured tightly to the lacing brackets with bungee cord. If necessary, secure the antenna with additional nylon cord.
- **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.

- **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.

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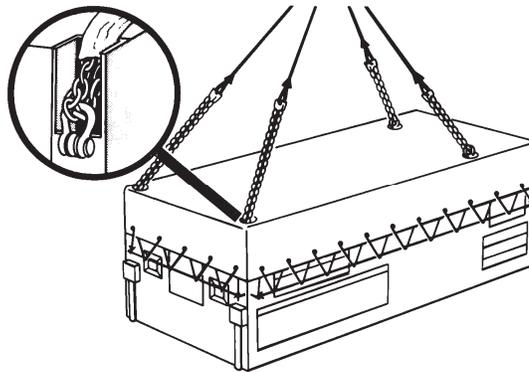
*Note.* Hookup is accomplished by the flight engineer using a cargo-hook loading pole (Shepard's Hook). Ensure the helicopter crew is informed of this in advance.

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- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.
- 

*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.

**Figure 12-1. AN/TPQ-37 Artillery-Loading Radar Set**

<b>RIGGING STEPS (CONTINUED)</b>
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 (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 (Continued)**

## **AN/TMQ-31 RADIO DIRECTION FINDER**

12-3. The AN/TMQ-31 radio direction finder is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 12-2 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

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

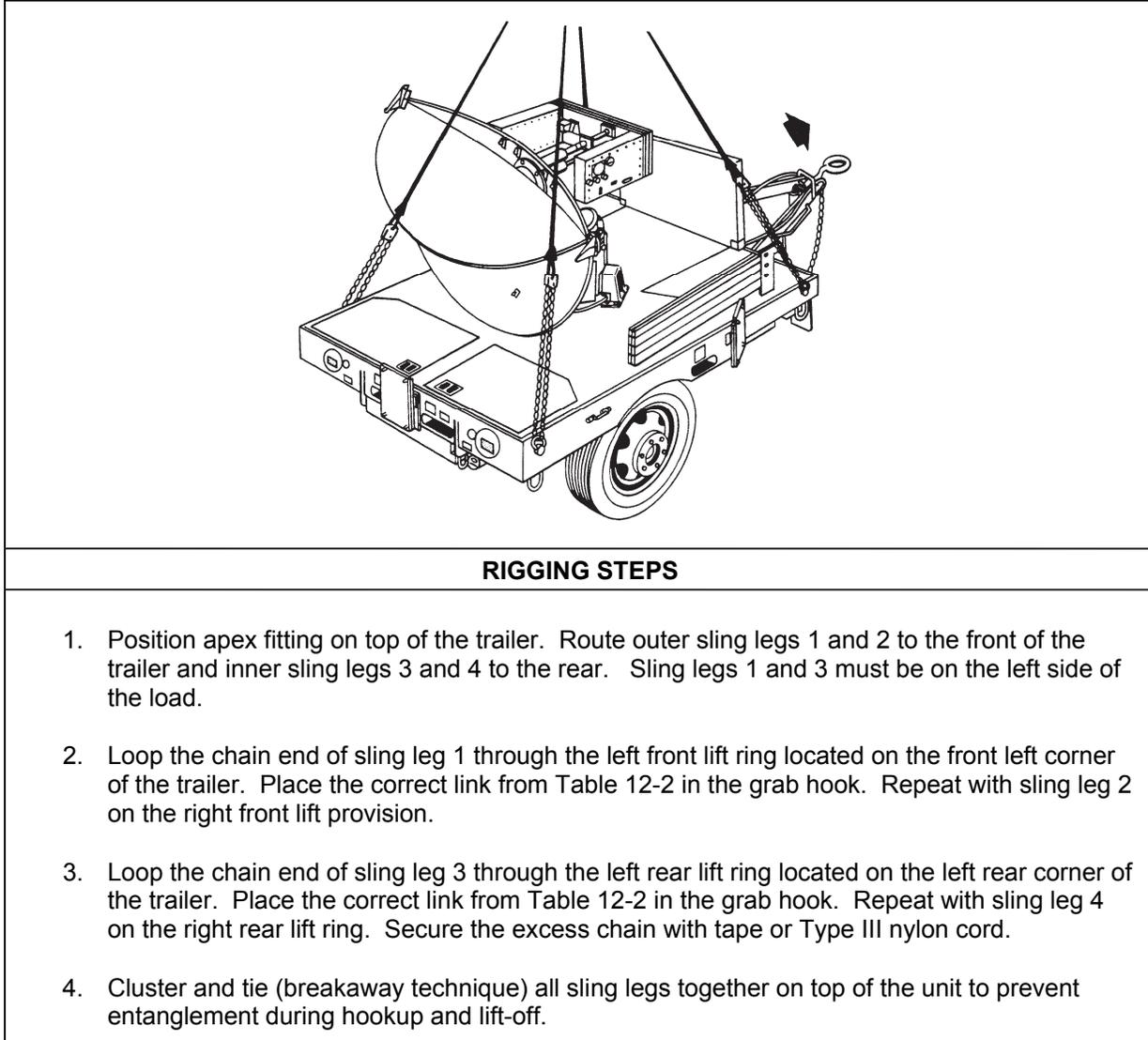
<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
AN/TMQ-31 Radio Direction Finder, Pedestal Mounted on M103A3 Trailer	5,010	10K	3/22

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- **Personnel.** Two persons can prepare and rig this load in 30 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Place the radar set in the travel mode.
    - Secure the air hoses, safety chains, and intervehicular cable to the tongue of the trailer with tape or Type III nylon cord.
    - Engage the trailer hand brakes.
    - Remove the canvas cover and secure it on top of the ladder with Type III nylon cord.
    - Fold the canvas bows down and secure them to the trailer deck with Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 12-2.
  - **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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

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



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

## AN/TPQ-36 FIREFINDER ANTENNA RADAR SET

12-4. The AN/TPQ-36 firefinder antenna radar set is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 12-3 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

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

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
AN/TPQ-36 Firefinder Antenna Radar Set on M103A1 Trailer	4,110	10K	16/11

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Multiloop line, 9-foot, Type XXVI, nylon (4 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Clevis assembly, medium (2 each).
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Engage the trailer hand brakes.
    - Close and secure the doors with Type III nylon cord.
    - Place the radar set in the travel mode.
    - Secure the cover on the antenna.
    - Attach a medium clevis to each rear lift points.
  - **Rigging.** Rig the load according to the steps in Figure 12-3.

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*Note.* The radar panels cannot support any extra weight.

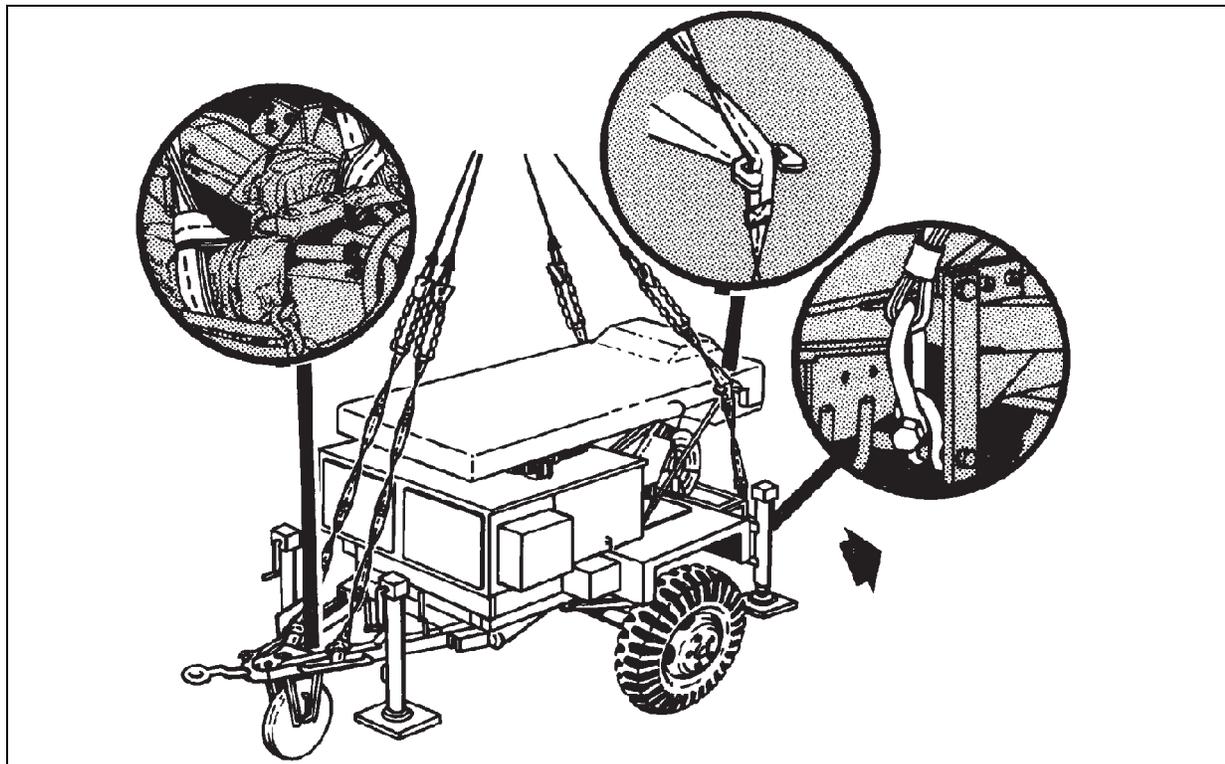
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- **Hookup.** The hookup team stands on the fenders of the unit. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the aircraft cargo hook. The hookup team then moves clear 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

---

*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 (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**

## AN/TPQ-36 FIREFINDER II

12-5. The AN/TPQ-36 firefinder II is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 12-4 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

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

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Firefinder II, AN/TPQ-36 Block II	9,673	25K	11/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity) with four additional chain lengths and coupling links.
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down straps, cargo, CGU-1/B (2 each).
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
  - Spreader bar assemblies, 117 inches and 91.8 inches in length (components of the Firefinder II).
- **Personnel.** Two persons can prepare and rig this load in 30 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:

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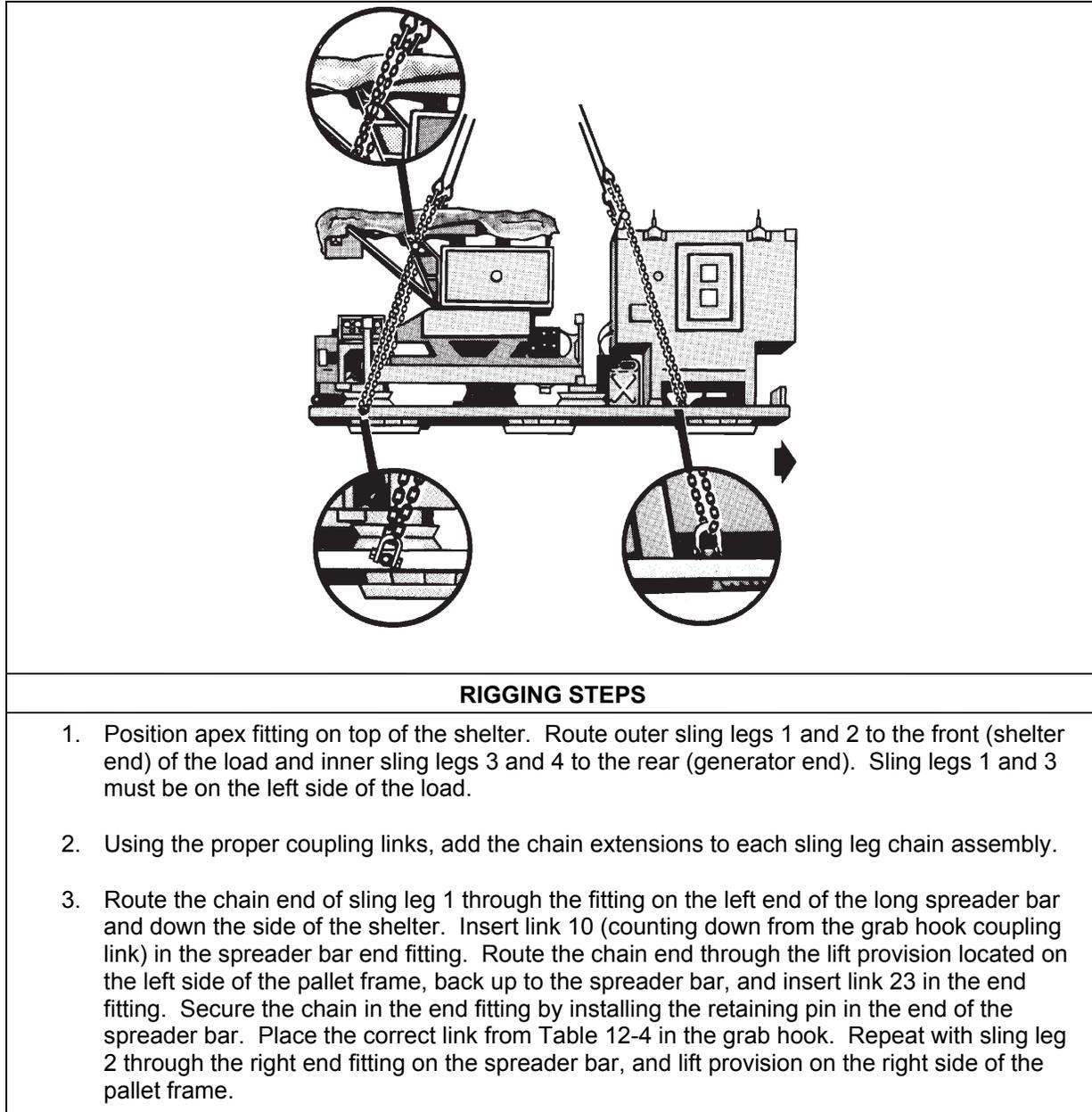
*Note.* Do not stand on the surface of the antenna array at any time.

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- Assemble the two spreader bar assemblies by matching similar sections to form a long (117-inch) and a short (91.8-inch) spreader bar.
- Prepare the Firefinder II for transport in accordance with operator’s manual.
- Secure all loose equipment on the pallet with tape or nylon cord.
- Ensure all latches, doors, and panels are secured with tape or nylon cord.
- Using the two tie-down straps, secure the antenna cover to the antenna array. Route the tie-down straps from front to rear.
- 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.
- 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.
- **Rigging.** Rig the load according to the steps in Figure 12-4.
- **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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

*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**

<b>RIGGING STEPS (CONTINUED)</b>
<p>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.</p> <hr/> <p><i>Note.</i> The chain links do not lock in the end fittings on the short spreader bar like they do on the long spreader bar.</p> <hr/> <p>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.</p> <p>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.</p> <p>7. Cluster and tie (breakaway technique) the front sling legs 1 and 2 together on top of the shelter to prevent entanglement during hookup and lift-off.</p>

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

## **OE-361/G QUICK REACTION SATELLITE ANTENNA**

12-6. The OE-361/G quick reaction satellite antenna is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 12-5 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

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

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
OE-361/G Quick Reaction Satellite Antenna (QRSA)	4,830	10K	3/30

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- **Personnel.** Four persons can prepare and rig this load in 30 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - 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.

- 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.
- 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.
- 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.
- **Rigging.** Rig the load according to the steps in Figure 12-5.
- **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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

**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.

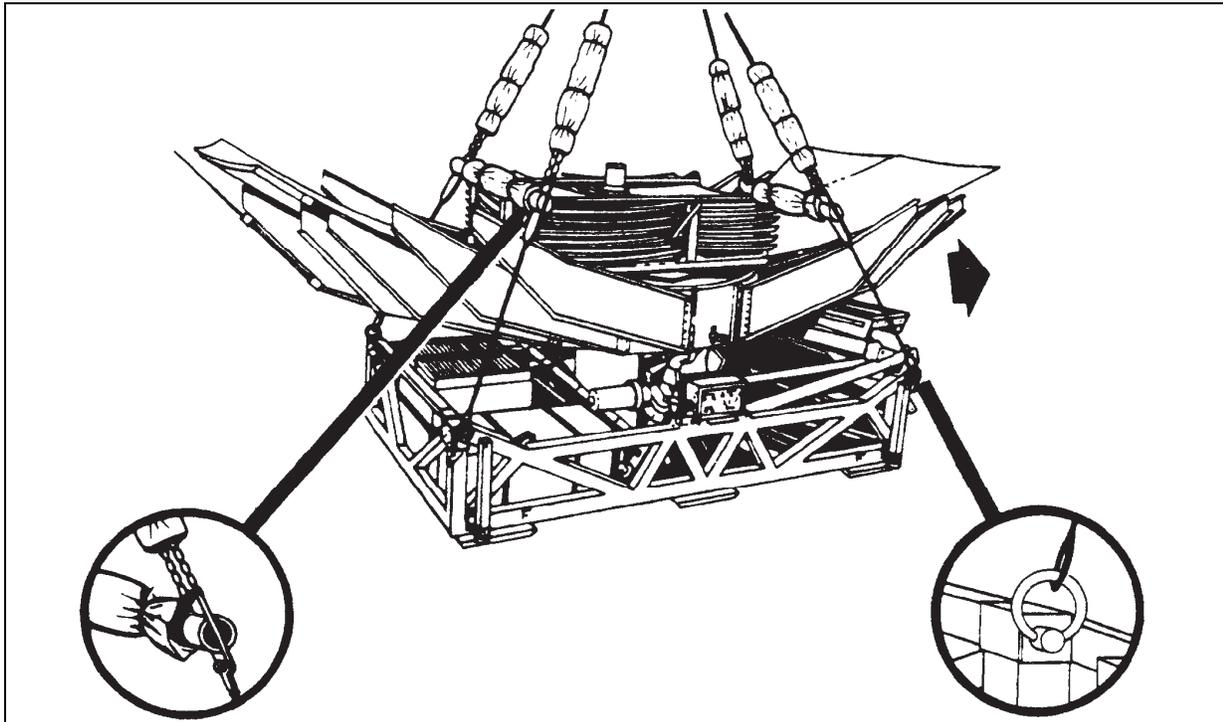


Figure 12-5. OE-361/G Quick Reaction Satellite Antenna

<b>RIGGING STEPS</b>
<ol style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>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.</li> <li>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.</li> <li>5. Cluster and tie (breakaway technique) all sling legs together on top of the antenna to prevent entanglement during hookup and lift-off.</li> </ol>

**Figure 12-5. OE-361/G Quick Reaction Satellite Antenna (Continued)**

### **AS-3471/TPN-22 ANTENNA PALLET (USMC)**

12-7. The AS-3471/TPN-22 antenna pallet is rigged for single-point sling load using the following procedures:

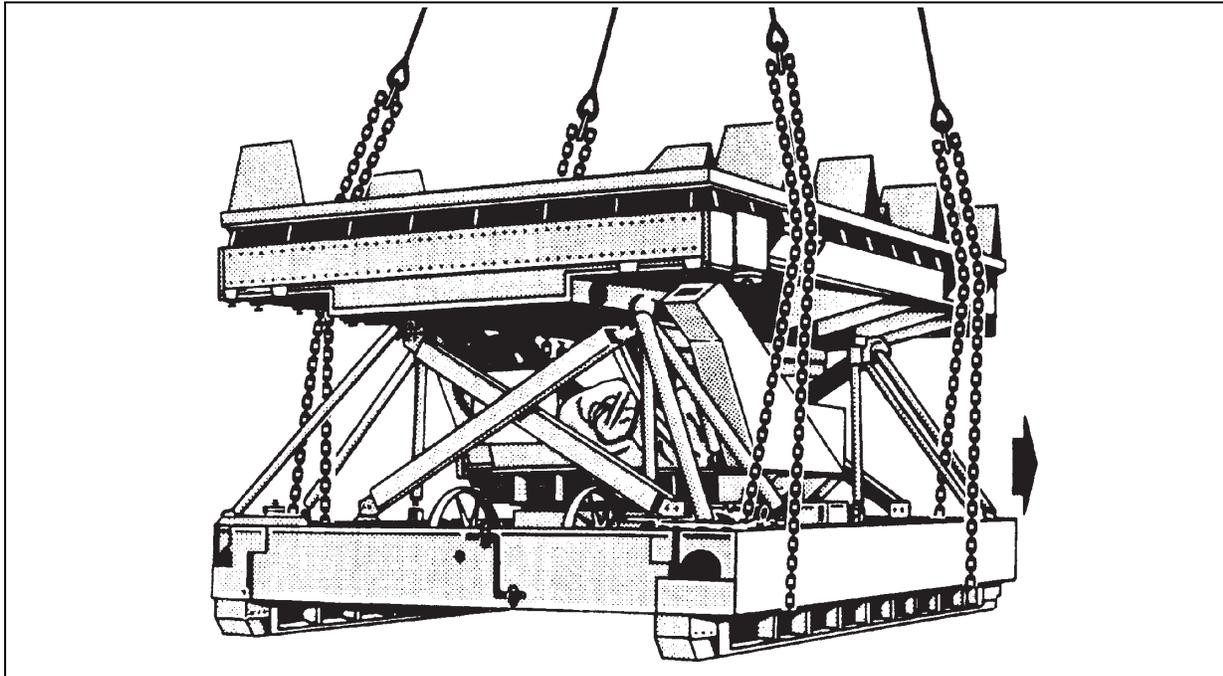
- **Applicability.** The following item in Table 12-6 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

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

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
AS-3471/TPN-22 Antenna Pallet, TAMCN Q2115	5,700	40K	3-5

- **Materials.** The following materials are required to rig this load:
  - Sling set (40,000-pound capacity) with four additional chain lengths and coupling links.
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- **Personnel.** Four persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all handles.
    - Secure the crank handle at the base of the pallet.
    - Add the additional chain length to each leg of the sling set using the coupling links.
  - **Rigging.** Rig the load according to the steps in Figure 12-6.

- **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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**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 (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**

## ANTENNA PALLET TRANSIT FRAME

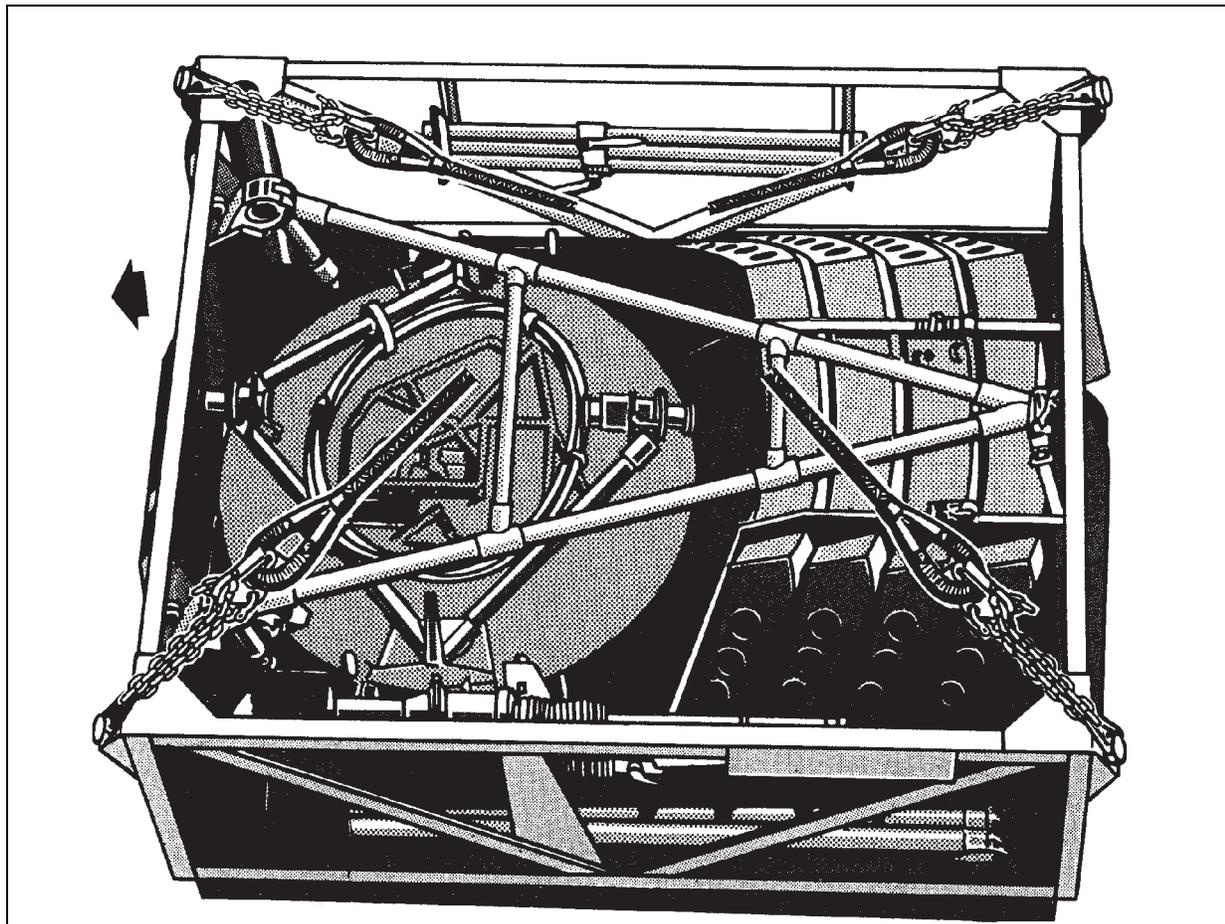
12-8. The antenna pallet transit frame is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 12-7 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

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

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
SM-F 973604-1 used with AN/TSC-93-B	1,970	10K	30/3
SM-F 973604-21 used with AN/TSC-85-B	2,107	10K	30/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Four persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all equipment with the eight ratchet straps supplied. Use tape or Type III nylon cord if additional security is required.
    - Remove and stow the protective cover. Secure with Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 12-7.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



#### 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 (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**

## DIGITAL GROUP MULTIPLEXER (DGM), DIGITAL ANTENNA MAST PROGRAM (DAMP), 2 AND 3 ANTENNA PALLET CONFIGURATIONS

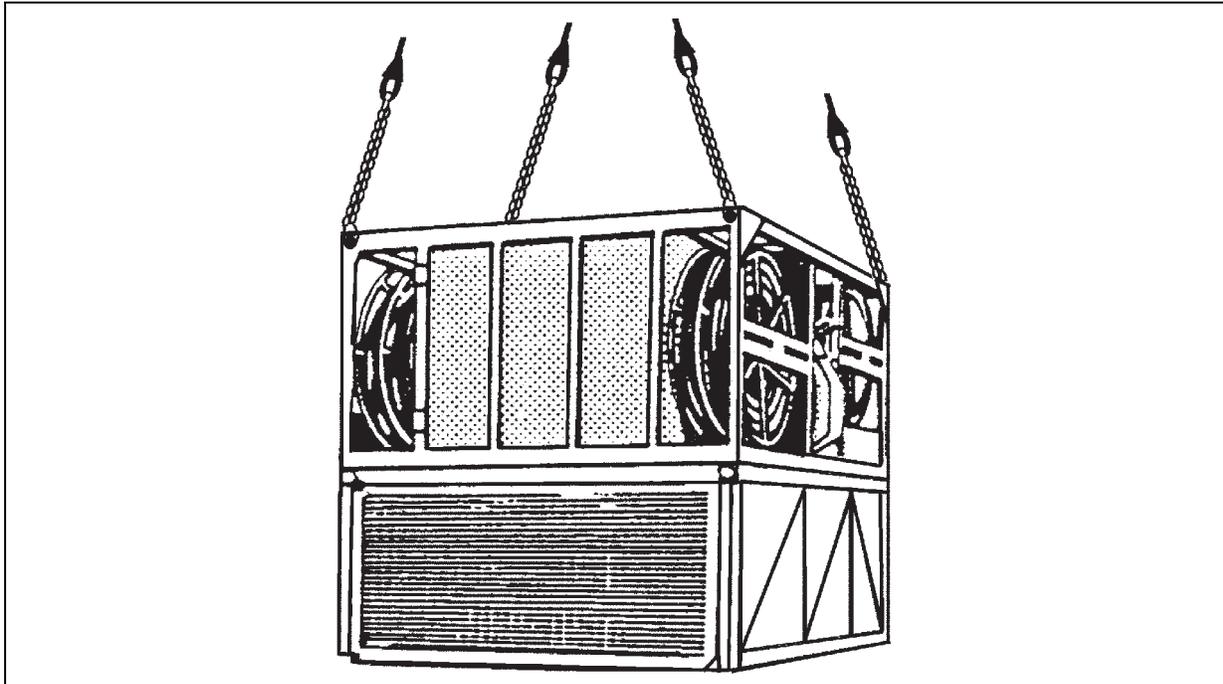
12-9. The digital group multiplexer digital antenna mast program, 2 and 3 antenna pallet configurations are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 12-8 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 12-8. Digital Group Multiplexer, Digital Antenna Mast Program**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
DGM, Damp Pallet, 2 Antenna Configuration	4,300	10K	3/3
DGM, Damp Pallet, 3 Antenna Configuration	5,500	10K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Webbing, tubular, nylon, 1/2-inch, 1000-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- **Personnel.** Four persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure the grating on the cable reels side with Type III nylon cord.
    - Secure the cable reels with Type III nylon cord.
    - 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.
  - **Rigging.** Rig the load according to the steps in Figure 12-8.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



#### 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 (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, Digital Antenna Mast Program**

## DIGITAL GROUP MULTIPLEXER (DGM), AUXILIARY EQUIPMENT TRANSPORTATION CONTAINER (AETC), 2 AND 3 MAST CONFIGURATIONS

12-10. The digital group multiplexer, auxiliary equipment transportation container, 2 and 3 mast configurations are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 12-9 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

Table 12-9. Digital Group Multiplexer, Auxiliary Equipment Transportation Container

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
DGM, AETC, 2 Antenna Configuration	3,028	10K	3/3
DGM, AETC, 3 Antenna Configuration	4,014	10K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Four persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all loose equipment inside the AETC with tape or Type III nylon cord.
    - Remove and stow the AETC cover. Secure the cover with Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 12-9.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

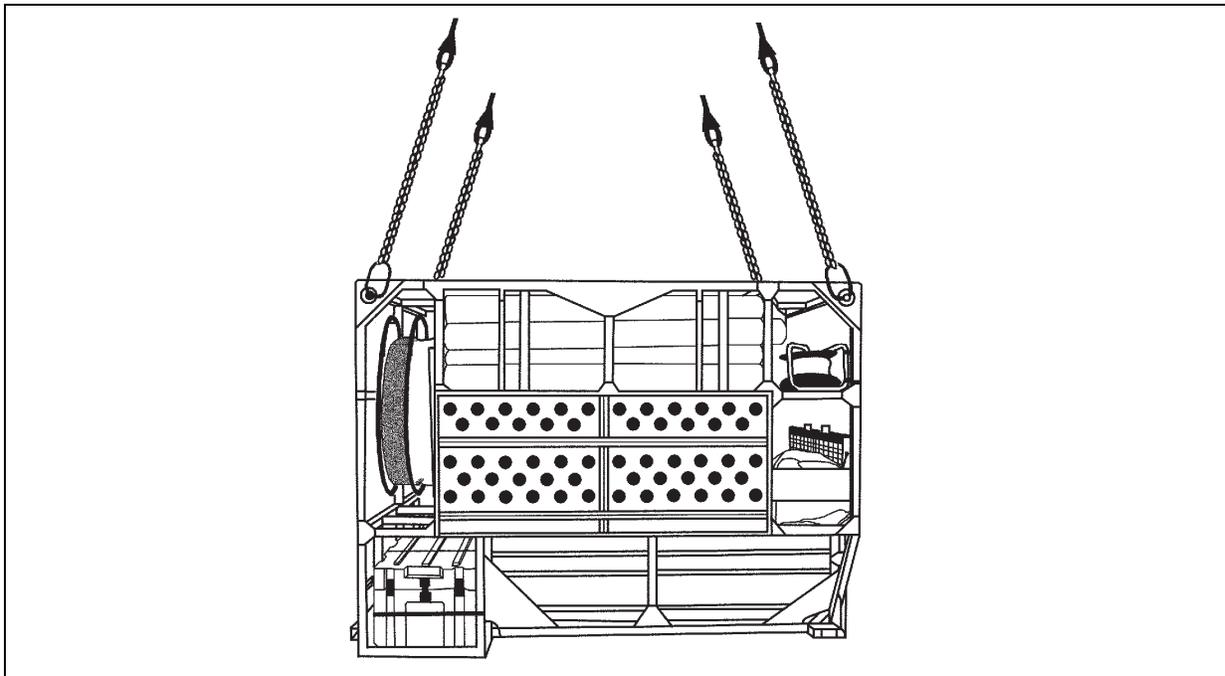


Figure 12-9. Digital Group Multiplexer, Auxillary Equipment Transportation Container

<b>RIGGING STEPS</b>	
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 (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, Auxillary Equipment Transportation Container (Continued)**

## **LIGHTWEIGHT GENERATOR FRAME ASSEMBLY (AN/TSC-93B RECONFIGURATION) SATELLITE COMMUNICATIONS TERMINAL**

12-11. The lightweight generator frame assembly (AN/TSC-93B reconfiguration) satellite communications terminal is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 12-10 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

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

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
AN/TSC-93B Satellite Communications Terminal without ALTA	3,644	10K	3/3
AN/TSC-93B Satellite Communications Terminal with ALTA	3,957	10K	3/3

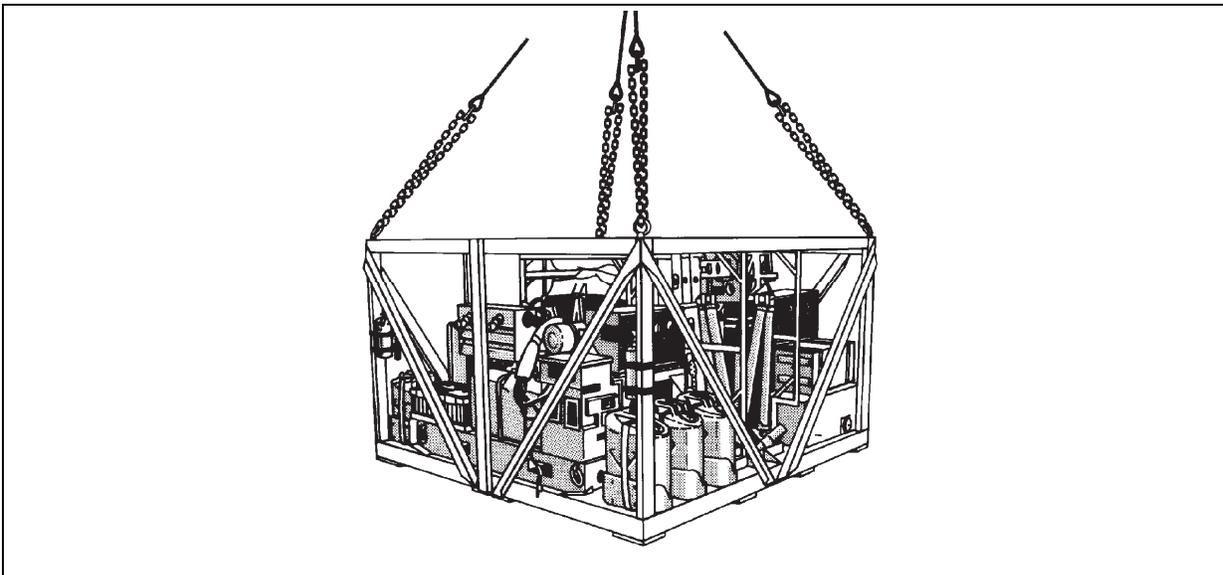
- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down strap, cargo, CGU-1/B (3 each).
- **Personnel.** Four persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all loose equipment with CGU-1/B tie-down straps, tape, or Type III nylon cord.
    - Remove and stow the cover. Secure the cover with Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 12-10.
  - **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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**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 (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)**

## SECURE MOBILE ANTI-JAM RELIABLE TACTICAL TERMINAL (SMART-T) PALLET

12-12. The secure mobile anti-jam reliable tactical terminal pallet is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 12-11 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 12-11. Secure Mobile Anti-Jam Reliable Tactical Terminal Pallet**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Secure Mobile Anti-Jam Reliable Tactical Terminal Pallet	2,440	10K	3/30

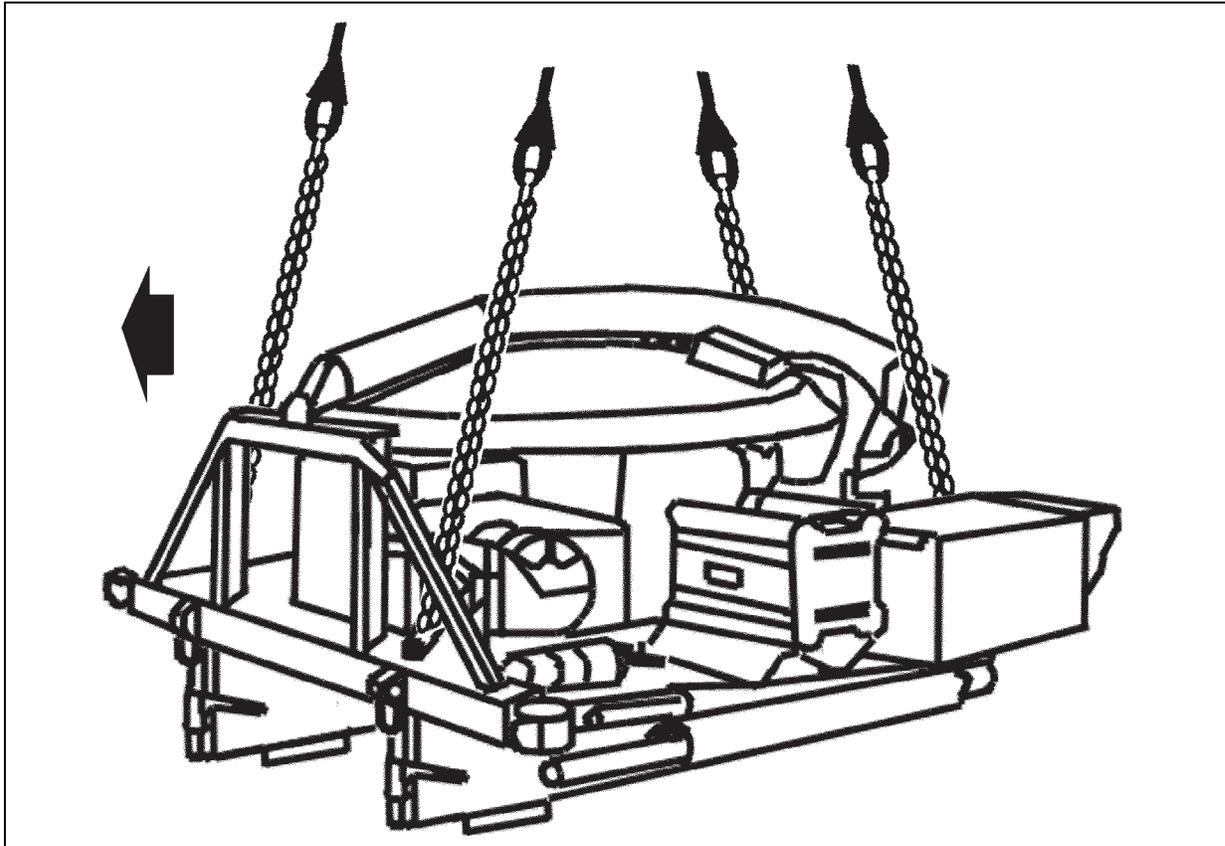
- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Four persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all loose equipment with tape or Type III nylon cord. Ensure the fuel cans at the end of the pallet are locked in position.
    - Secure the antenna dish.
  - **Rigging.** Rig the load according to the steps in Figure 12-11.

---

*Note.* The fuel can brackets are on the rear of the load.

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- **Hookup.** The hookup team stands beside 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position the apex fitting beside the pallet. 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 12-11 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 12-11 in the grab hook. Repeat with sling leg 4 on the right rear lift provision. Secure excess chain with tape or Type III nylon cord.
4. Cluster and tie (breakaway technique) all sling legs together on top of the load to prevent entanglement during hookup and lift-off.

**Figure 12-11. Secure Mobile Anti-Jam Reliable Tactical Terminal Pallet**

**UNMANNED THREAT EMITTER (UMTE) SYSTEM**

12-13. The unmanned threat emitter (UMTE) system is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 12-12 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

Table 12-12. Unmanned Threat Emitter System

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Remote Power Unit, PU-818/TPT-T1 (V) (P/N9805-8500-1) without Antenna	3,941	10K	3/15
Remote Power Unit, PU-818/TPT-T1 (V) (P/N9805-8500-1) withTK1, 51-inch Antenna (8811-1900)	4,006	10K	3/15
Remote Power Unit, PU-818/TPT-T1 (V) (P/N9805-8500-1) withTK2, 28-inch Antenna (8811-2900)	4,006	10K	3/15
Remote Power Unit, PU-818/TPT-T1 (V) (P/N9805-8500-1) withTK3, 46-inch Antenna (8811-3900)	4,006	10K	3/15
Remote Power Unit, PU-818/TPT-T1 (V) (P/N9805-8500-1) withTK4, 76-inch Antenna (8811-4900)	4,061	10K	3/15
Remote Power Unit, PU-818/TPT-T1 (V) (P/N9805-8500-1) withTK9, 40.4-inch Antenna (9805-8900)	3,979	10K	3/15
Remote Power Unit, PU-809A/TPT-T1 (V) (P/N100905-8500-1) without Antenna	4,085	10K	3/15
Remote Power Unit, PU-809A/TPT-T1 (V) (P/N1009-8500-1) withTK1, 51-inch Antenna (8811-1900)	4,150	10K	3/15
Remote Power Unit, PU-809A/TPT-T1 (V) (P/N1009-8500-1) withTK2, 28-inch Antenna (8811-2900)	4,150	10K	3/15
Remote Power Unit, PU-809A/TPT-T1 (V) (P/N1009-8500-1) withTK3, 46-inch Antenna (8811-3900)	4,150	10K	3/15
Remote Power Unit, PU-809A/TPT-T1 (V) (P/N1009-8500-1) withTK4, 76-inch Antenna (8811-4900)	4,205	10K	3/15
Remote Power Unit, PU-809A/TPT-T1 (V) (P/N1009-8500-1) withTK9, 40.4-inch Antenna (9805-8900)	4,123	10K	3/15
Remote Emitter Unit (REU) Threat Kit (TK) 1, (P/N 1006-1001-1)	3,712	10K	3/15
Remote Emitter Unit (REU) Threat Kit (TK) 4, (P/N 1006-4001-1)	3,986	10K	3/15
Remote Emitter Unit (REU) Threat Kit (TK) 9, (P/N 9805-8001-1)	3,497	10K	3/15

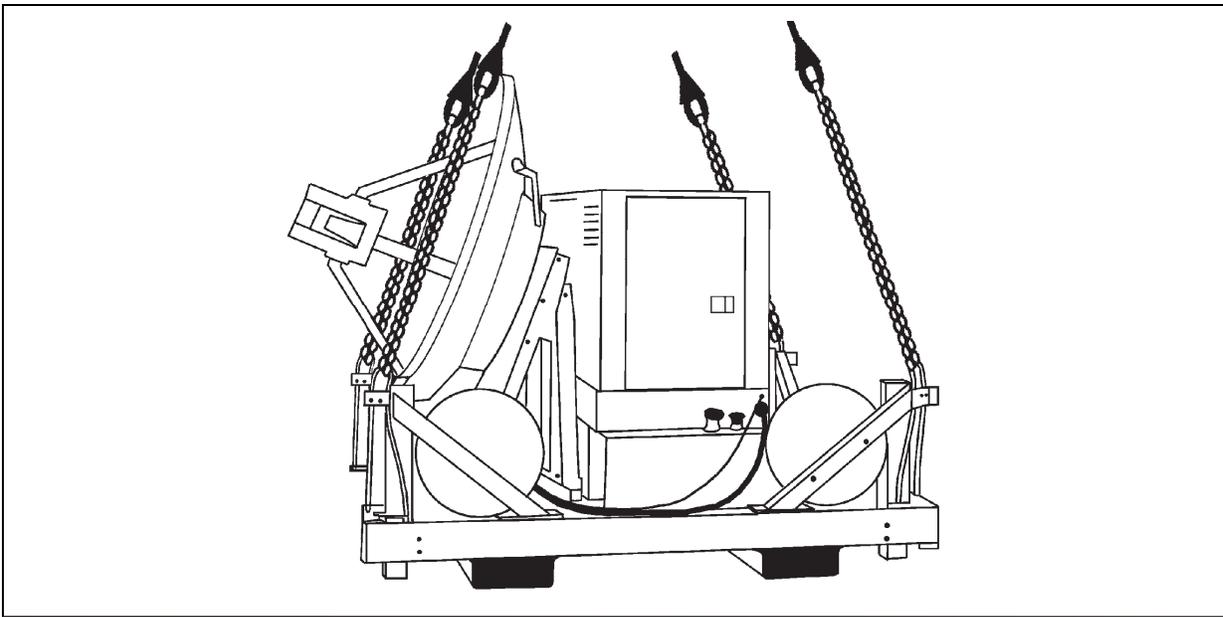
- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
    - Additional chain lengths, part number 38850-00053-101, from a 10,000-pound capacity sling set (4 each).
    - Coupling link, NSN 4010-01-231-3388, from a 10,000-pound capacity sling set (4 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Four persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Connect one additional chain length to each chain of the sling set with the coupling link.
    - Place the UMTE in the shipping configuration.
    - Secure all loose equipment.
    - Coil and secure the power cable to the platform with tiedown straps.
    - Ensure the fuel tank is not over 3/4 full. Inspect the fuel tank cap for proper installation.

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

**CAUTION**

The antenna faces the rear of the load. Rigging the load in reverse could cause the load to become unstable.

- **Hookup.** The hookup team stands beside 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position the apex fitting on top of the pallet. Route outer sling legs 1 and 2 to the front of the RPU or REU and inner sling legs 3 and 4 to the rear (antenna end). Sling legs are routed inside the antenna. 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 12-12 in the grab hook. Repeat with sling leg 2 on the top right corner of the frame. Secure 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 12-12 in the grab hook. Repeat with sling leg 4 on the right rear lift provision. Secure excess chain with tape or Type III nylon cord.

**Figure 12-12. Unmanned Threat Emitter System**

<b>RIGGING STEPS (Continued)</b>
<ol style="list-style-type: none"><li>4. Extend the chain from each leg above the pallet and secure the chain to the load with Type I, 1/4-inch cotton webbing (breakaway technique).</li><li>5. Cluster and tie (breakaway technique) all sling legs together on top of the load to prevent entanglement during hookup and lift-off.</li></ol>

**Figure 12-12. Unmanned Threat Emitter System (Continued)**

## Chapter 13

# Certified Single-Point Rigging Procedures for Generator Sets

### INTRODUCTION

13-1. This chapter contains rigging procedures for single-point lift of generator sets that have 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 generator sets are in this section. Paragraphs 13-2 through 13-7 give detailed instructions for rigging loads.

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

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### AVIATION GROUND POWER UNIT (AGPU)

13-2. The aviation ground power unit is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 13-1 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 13-1. Aviation Ground Power Unit**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Aviation Ground Power Unit	4,190	10K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down strap, cargo, CGU-1/B (4-each).
  - Webbing, nylon, tubular, 1/2-inch, 1000-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Stow and secure the tow bar with 1/2-inch tubular nylon.
    - Close all doors, secure handles with tape, and attach four CGU-1/B tie-down straps.
    - Route one tie-down strap horizontally around the power unit. Position it approximately 16 inches down from the top of the power unit. Repeat using another tie-down strap positioned approximately 8 inches higher than the first tie-down strap.

- Route another tie-down strap through the forklift lift provisions and then vertically around the power unit. Repeat this procedure using another tie-down strap through the other lift provision.
- Secure all equipment inside the unit with nylon cord or tape.
- Secure exhaust cover closed with tape.

**CAUTION**

Pay careful attention to securing the exhaust cover closed to preclude possible damage during flight. If cover cannot be adequately secured, it should be removed.

- Ensure that fuel tank is not more than 3/4 full. Inspect fuel tank cap, oil filler caps, and battery caps to ensure they are secure.
- Engage the parking brake.
- **Rigging.** Rig the load according to the steps in Figure 13-1.
- **Hookup.** The hookup team stands on top of the power 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

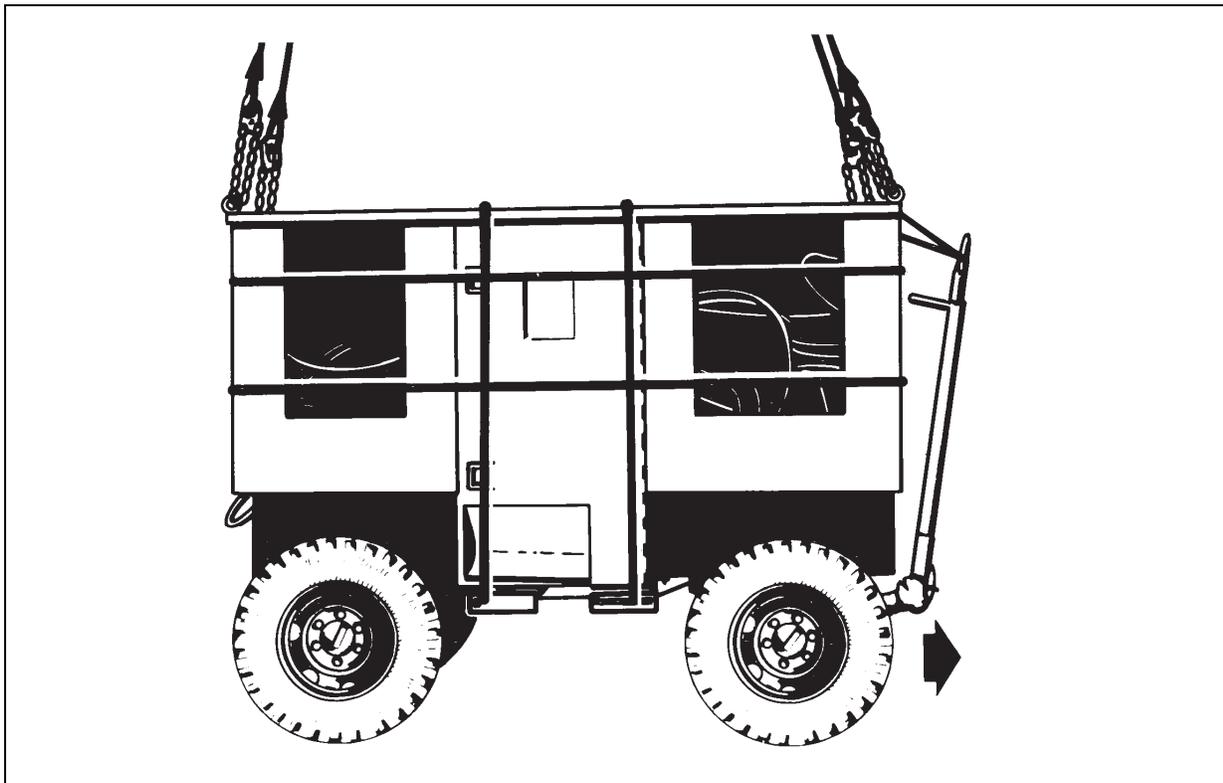


Figure 13-1. Aviation Ground Power Unit

RIGGING STEPS
<ol style="list-style-type: none"> <li>1. Position apex fitting on top of the unit. Route outer sling legs 1 and 2 to the front (tongue) of the trailer and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 should be on the left side of the load.</li> <li>2. Loop the chain end of sling leg 1 through the left front lift ring. Place the correct link from Table 13-1 in the grab hook. Repeat with sling leg 2 on the right front lift ring.</li> <li>3. Loop the chain end of sling leg 3 through the left rear lift ring. Place the correct link from Table 13-1 in the grab hook. Repeat with sling leg 4 on the right rear lift ring.</li> <li>4. Cluster and tie (breakaway technique) all sling legs together on top of the unit to prevent entanglement during hookup and lift-off.</li> </ol>

**Figure 13-1. Aviation Ground Power Unit (Continued)**

## AVIATION DIRECT CURRENT GENERATOR SET (ADCGS)

13-3. The aviation direct current generator set is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 13-2 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

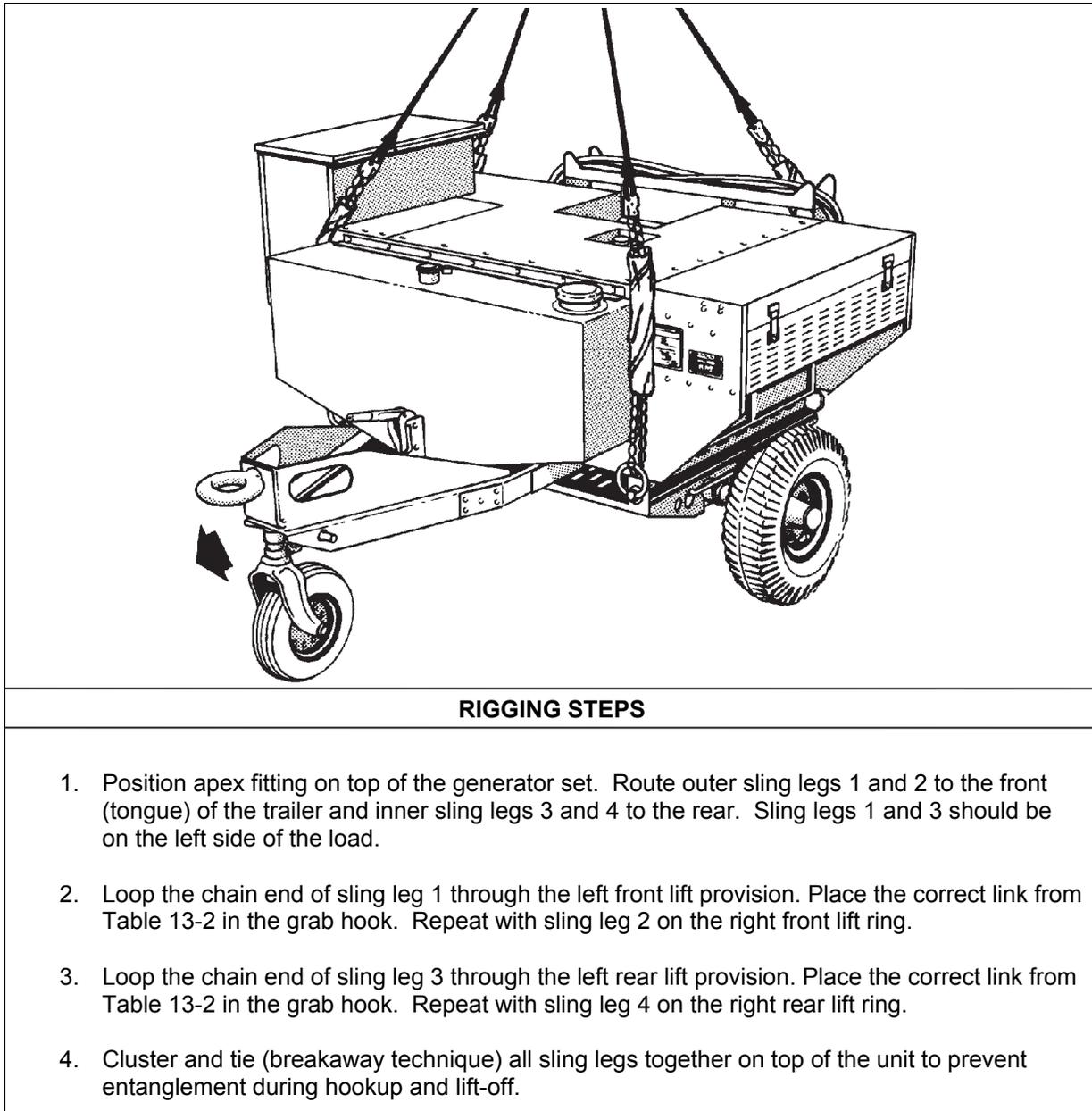
**Table 13-2. Aviation Direct Current Generator Set**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Aviation Direct Current Generator Set	1,100	10K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute, 30- x 36-inch (4 sheets).
- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Fold and tape ground cable to the inside of the tongue frame. Roll rear cable in the rack provided. Tape hold-down latch on rear cable rack.
    - Cover cable receptacles. Secure door latches and tape exhaust stack cover down.
    - Route a single length of Type III nylon cord under and through the frame, over the exhaust stack cover and instrument cover, and tie to secure both covers. Tape the fuel tank gage.
    - Set the wheel brakes in the ON position.
  - **Rigging.** Rig the load according to the steps in Figure 13-2.
  - **Hookup.** The hookup team stands on the side of 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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 13-2. Aviation Direct Current Generator Set**

## SKID MOUNTED GENERATORS

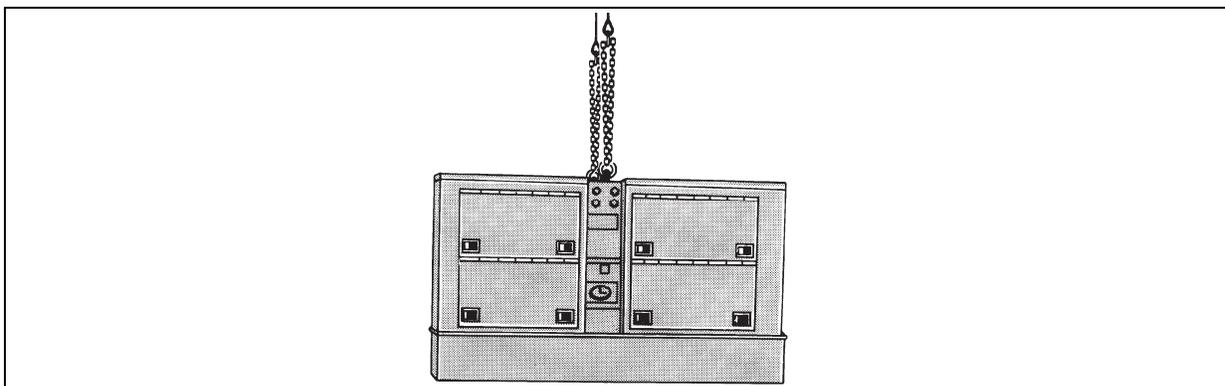
13-4. The skid mounted generators are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 13-3 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 13-3. Skid Mounted Generators**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
MEP-004AAS with Acoustic Suppression Kit, 15 KW	4,031	10K	3/3
MEP-005AAS with Acoustic Suppression Kit, 30 KW	4,556	10K	3/3
MEP-103A with Acoustic Suppression Kit, 15 KW	4,230	10K	3/3
MEP-104A with Acoustic Suppression Kit, 30 KW	4,830	10K	3/3
MEP-113A with Acoustic Suppression Kit, 15 KW	4,230	10K	3/3
MEP-114A with Acoustic Suppression Kit, 30 KW	4,830	10K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute, 30- x 36-inch (4 sheets).
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Remove two sling legs from the sling set.
    - Secure all lids, doors, and caps with tape or Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 13-3.
  - **Hookup.** The hookup team stands on top of 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 13-3. Skid Mounted Generators**

<b>RIGGING STEPS</b>
1. Position apex fitting on top of the generator set. Route the left sling leg to the left lift provision

and the right sling leg to the right lift provision.

2. Loop the chain end of left sling leg through the left lift provision. Place the correct link from Table 13-3 in the grab hook. Repeat with the right sling leg on the right lift provision.
3. Cluster and tie (breakaway technique) all sling legs together on top of the unit to prevent entanglement during hookup and lift-off.

**Figure 13-3. Skid Mounted Generators (Continued)**

## MEP112A GENERATOR PALLET

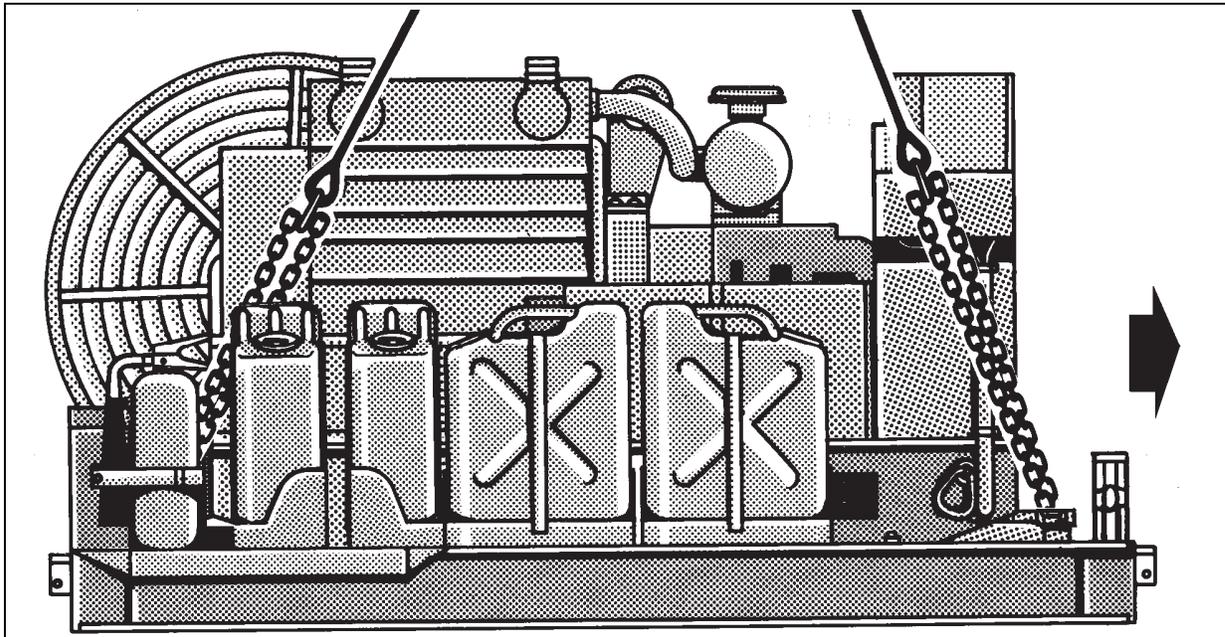
13-5. The MEP112A generator pallet is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 13-4 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 13-4. MEP112A Generator Pallet**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
MEP-813 TQG, Generator Pallet, Sentinel Radar System	1,600	10K	7/3
MEP-812A Generator Pallet	2,150	10K	7/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all chains and hoses with tape or Type III nylon cord.
    - Secure all lids, doors, vents, and caps with tape or Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 13-4.
  - **Hookup.** The hookup team stands on top of 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting on top of the generator set. Route outer sling legs 1 and 2 to the front of the pallet and inner sling legs 3 and 4 to the rear. 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. Place the correct link from Table 13-4 in the grab hook. Repeat with sling leg 2 on the right front lift ring.
3. Loop the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 13-4 in the grab hook. Repeat with sling leg 4 on the right rear lift ring.
4. Cluster and tie (breakaway technique) all sling legs together on top of the unit to prevent entanglement during hookup and lift-off.

**Figure 13-4. MEP112A Generator Pallet**

**NATO AIR BASE SATCOM (NABS) POWER PALLET AN/TSC-85(V)2**

13-6. The NATO air base satcom power pallet AN/TSC-85(V)2 is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 13-5 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 13-5. NATO Air Base Satcom Power Pallet AN/TSC-85(V)2**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
NATO Air Base Satcom (NABS) Power Pallet AN/TSC-85 (V)2	8,630	10K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).

- Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- Cord, nylon, Type III, 550-pound breaking strength.
- Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all loose equipment and cables on the pallet with tape or Type III nylon cord.
    - Close and secure all access covers, vents, and doors. All exhaust covers must be taped.
    - Remove the cargo cover and store it on the prime mover.
  - **Rigging.** Rig the load according to the steps in Figure 13-5.

*Note.* The Required Individual Equipment (RIE) case is designated as the forward end for rigging purposes.

- **Hookup.** The hookup team stands on top of 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.

### CAUTION

Brief the pilot to relax sling tension and hover to the side of the load when releasing the apex fitting to prevent damage to the pallet.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

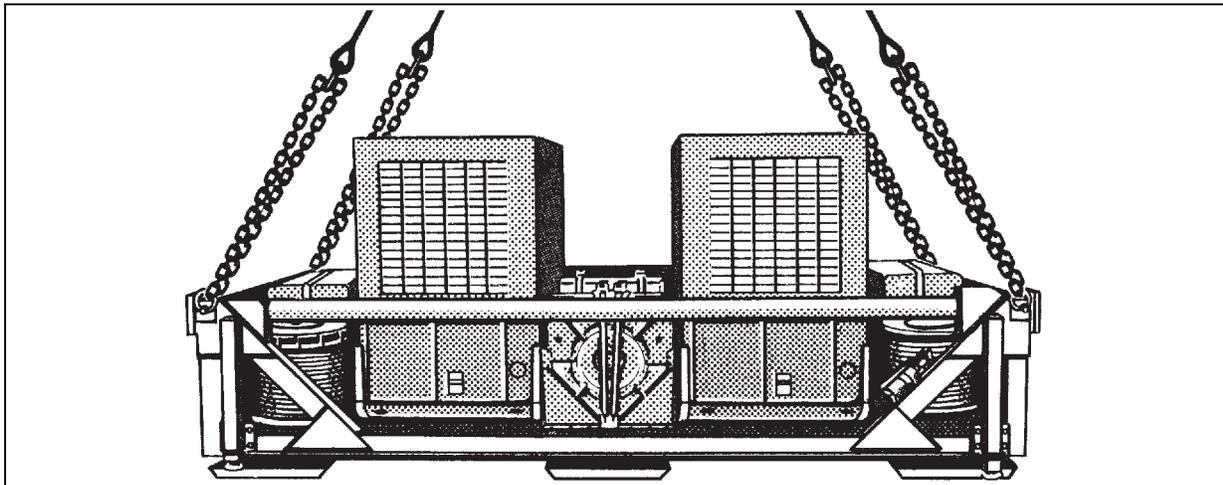


Figure 13-5. NATO Air Base Satcom Power Pallet AN/TSC-85(V)2

RIGGING STEPS
<p>1. Position apex fitting on top of the generators. Route outer sling legs 1 and 2 to the front of the pallet and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 should be on the left side of the load.</p> <p><b>Note.</b> Do not use the lift provisions on the generators.</p> <p>2. Loop the chain end of sling leg 1 through the left front lift provision located on the pallet. Place the correct link from Table 13-5 in the grab hook. Repeat with sling leg 2 on the right front lift ring.</p> <p>3. Loop the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 13-5 in the grab hook. Repeat with sling leg 4 on the right rear lift ring.</p> <p>4. Cluster and tie (breakaway technique) all sling legs together on top of the unit to prevent entanglement during hookup and lift-off.</p>

**Figure 13-5. NATO Air Base Satcom Power Pallet AN/TSC-85(V)2 (Continued)**

## SKID MOUNTED TACTICAL QUIET GENERATOR SETS

13-7. The skid mounted tactical quiet generator sets are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 13-6 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 13-6. Skid Mounted Tactical Quiet Generator Sets**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
MEP831, 3KW, 60HZ Generator Set	325	10K	3/3
MEP802A, 5KW, 60HZ Generator Set	890	10K	3/3
MEP812A, 5KW, 400HZ Generator Set	900	10K	3/3
MEP803A, 10KW, 60HZ Generator Set	1,180	10K	3/3
MEP813A, 10KW, 400HZ Generator Set	1,280	10K	3/3
MEP804A, 15KW, 50/60HZ Generator Set	2,125	10K	3/3
MEP814A, 15KW, 50/60HZ Generator Set	2,240	10K	3/3
MEP805A, 30KW, 50/60HZ Generator Set	3,005	10K	3/3
MEP805B, 30KW, 50/60HZ Generator Set	3,040	10K	3/3
MEP815A, 30KW, 400HZ Generator Set	3,015	10K	3/3
MEP815B, 30KW, 400HZ Generator Set	3,060	10K	3/3
MEP806A, 60KW, 50/60HZ Generator Set	3,760	10K	3/3
MEP806B, 60KW, 50/60HZ Generator Set	4,042	10K	3/3
MEP816A, 60KW, 400HZ Generator Set	3,850	10K	3/3
MEP816B, 60KW, 400HZ Generator Set	4,240	10K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).

- Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- Cord, nylon, Type III, 550-pound breaking strength.
- Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Close, lock, and secure all doors and panels with tape.
    - Close and secure the exhaust cover with tape.
    - Close vents on the fuel cap.
  - **Rigging.** Rig the load according to the steps in Figure 13-6.
  - **Hookup.** The hookup team stands on top of 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

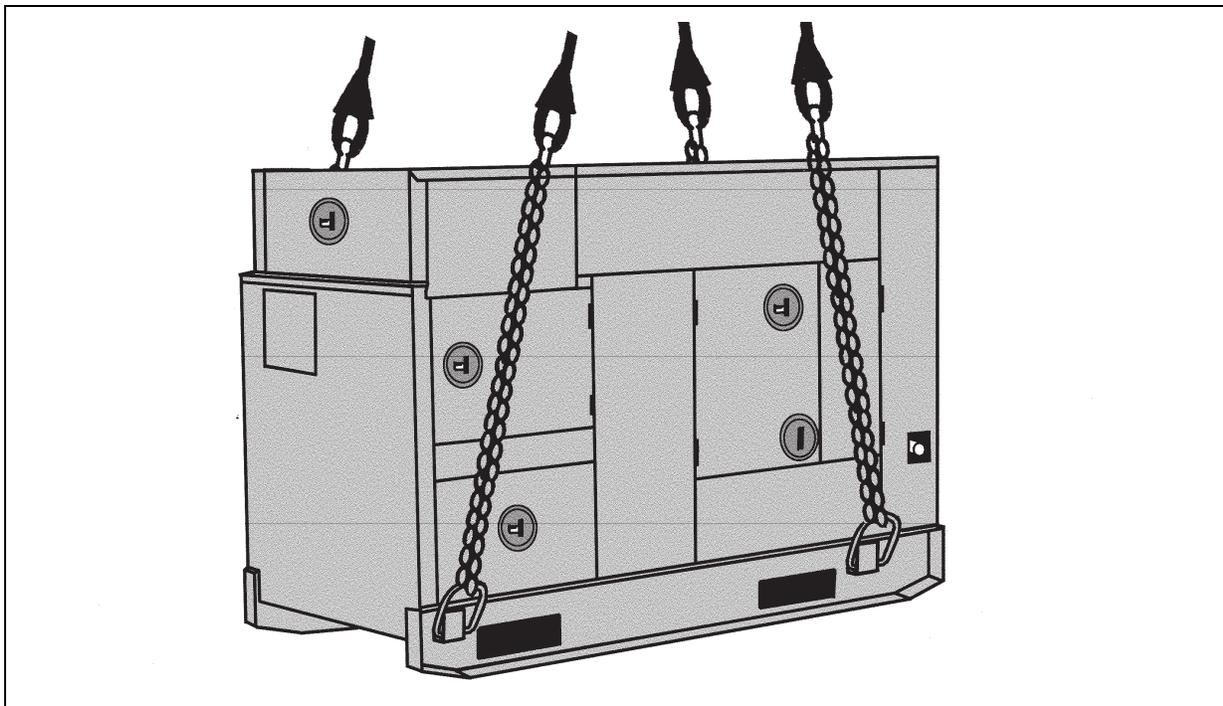


Figure 13-6. Skid Mounted Tactical Quiet Generator Sets

**RIGGING STEPS**

1. Position apex fitting on top of the generator. Route outer sling legs 1 and 2 to the front of the generator and inner sling legs 3 and 4 to the rear. 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 at the front of the generator inside of the left skid. Place the correct link from Table 13-6 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 at the rear of the generator and inside the skid. Place the correct link from Table 13-6 in the grab hook. Repeat with sling leg 4 on the right rear lift provision.
4. Secure the lift provision in the up position with tape and pad the slings where they contact the generator.
5. Cluster and tie (breakaway technique) all sling legs together on top of the unit to prevent entanglement during hookup and lift-off.

**Figure 13-6. Skid Mounted Tactical Quiet Generator Sets (Continued)**

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## Chapter 14

# Certified Single-Point Rigging Procedures for Miscellaneous Equipment

### INTRODUCTION

14-1. This chapter contains rigging procedures for single-point lift of miscellaneous equipment that have 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 miscellaneous equipment are in this section. Paragraphs 14-2 through 14-9 give detailed instructions for rigging loads.

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

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### FORWARD AREA REFUELING EQUIPMENT (FARE)

14-2. The forward area refueling equipment is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 14-1 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

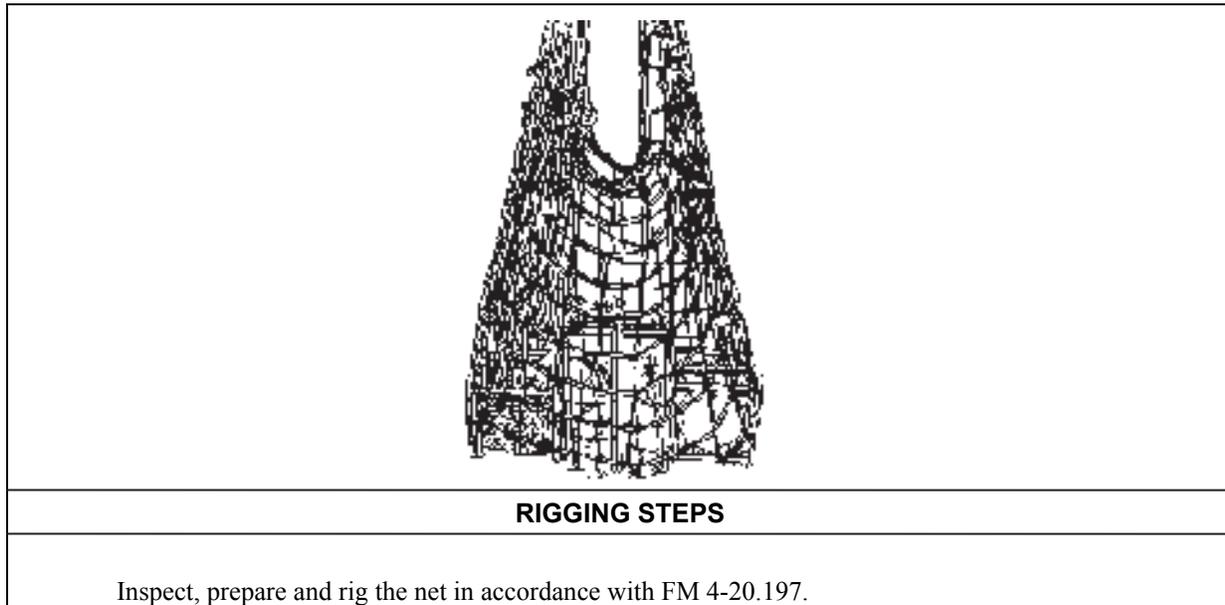
**Table 14-1. Forward Area Refueling Equipment**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Generator, 1.5KW, Fuel Hoses with Reels and Carrying Bags (2 each), Assembly Pump, Fire extinguishers (3 each)	820	5K Cargo Net	N/A

- **Materials.** The following materials are required to rig this load:
  - Net, cargo (5,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down strap, cargo, CGU-1/B (4 each).
  - Webbing, nylon, tubular, 1/2-inch, 1,000-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure the two fire extinguishers to the inside frame of the fuel hose reels with 1/2-inch tubular nylon webbing. Secure the two fuel hose reels together with Type III nylon cord.
    - Spread a 5,000-pound capacity cargo net on the ground. Center the two fuel hose reels on the net. Place the pump assembly on either side of the reels. Place the 1.5KW

generator, with 5-gallon gas can attached, on the opposite side of the reels. Place fuel hose carrying bags in front of the reels. Secure the two carrying bags with the remaining fire extinguisher together with nylon cord. Secure the carrying bag to the reels.

- **Rigging.** Rig the load according to the steps in Figure 14-1.
- **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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 14-1. Forward Area Refueling Equipment**

## FIRE EXTINGUISHER, DRY CHEMICAL

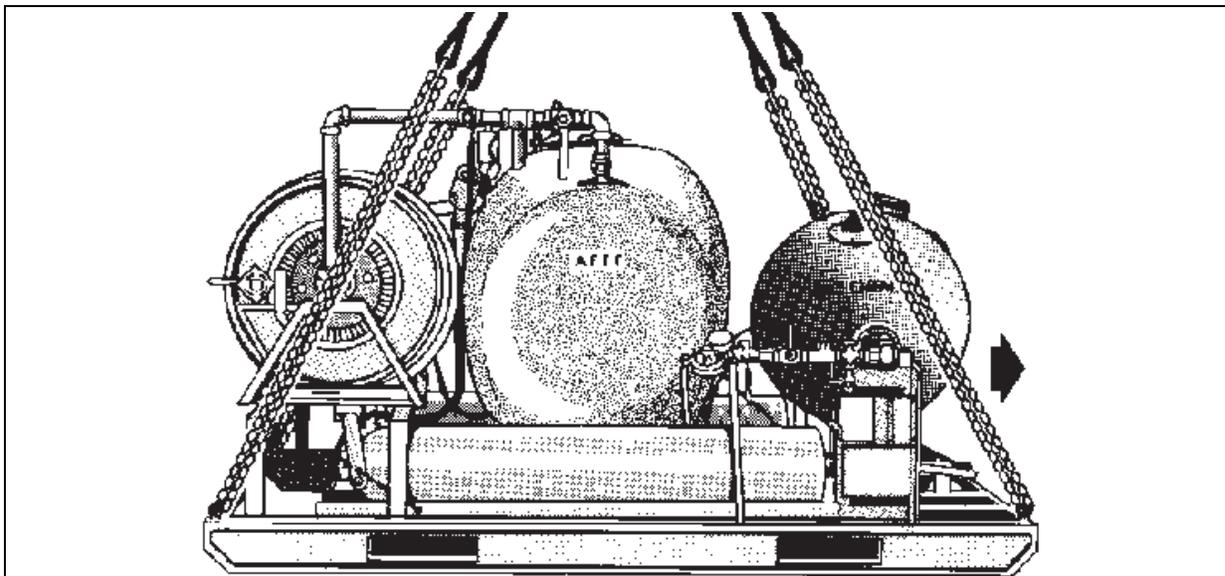
14-3. The fire extinguisher, dry chemical is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 14-2 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 14-2. Fire Extinguisher, Dry Chemical**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Fire Extinguisher, Dry Chemical, Self Contained, TAMCN C4765	3000	15K	5/5

- **Materials.** The following materials are required to rig this load:
  - Sling set (15,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Tie hose reel and nozzle to the frame with Type III nylon cord.
    - Secure or remove all loose attachments. Tape all glass including the gages.
  - **Rigging.** Rig the load according to the steps in Figure 14-2.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting/web ring on top of the fire extinguisher. Route outer sling legs 1 and 2 to the front of the fire extinguisher and inner sling legs 3 and 4 to the rear end (hose reel). 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 corner of the frame near the pressure vessel. Place the correct link from Table 14-2 in the grab hook. Repeat with sling leg 2 and the right front lift provision.

**Figure 14-2. Fire Extinguisher, Dry Chemical**

<b>RIGGING STEPS (Continued)</b>
<p>3. Loop the chain end of sling leg 3 through the left rear lift provision located at the top corner of the frame near the hose reel. Place the correct link from Table 14-2 in the grab hook. Repeat with sling leg 4 and the right rear lift provision.</p>
<p>4. Cluster and tie (breakaway technique) all sling legs together on top of the fire extinguisher to prevent entanglement during hookup and lift-off. Pay close attention to the pipes and valves.</p>

**Figure 14-2. Fire Extinguisher, Dry Chemical (Continued)**

## RIGID RAIDING CRAFT

14-4. The rigid raiding craft is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 14-3 is certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 14-3. Rigid Raiding Craft**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Rigid Raiding Craft	3,200	40K	5/10

- **Materials.** The following materials are required to rig this load:
  - Sling set (40,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Tighten all straps on the anchor, paddles, cushions, and loose equipment.
    - Stow the boat utility bags in the console. Remove the anchor chain and line and stow in the console. Protect the battery from the chain.
    - Secure the console hatch with tape. Secure the anchor to the deck and secure the loose end of the anchor.
    - Secure the running lights to an inner handrail with tape or Type III nylon cord.
    - Secure the base of the outboard motors tightly to the bar directly above with Type III nylon cord.
    - Tape the compass glass on top of the console.
  - **Rigging.** Rig the load according to the steps in Figure 14-3.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting on top of the boat. Route outer sling legs 1 and 2 to the front (bow end) of the boat and inner sling legs 3 and 4 to the rear 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 left front lift ring located on the inside of the hull. Place the correct link from Table 14-3 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 ring located on the inside of the hull. Place the correct link from Table 14-3 in the grab hook. Repeat with sling leg 4 and the right rear lift provision.
4. Cluster and tie (breakaway technique) all sling legs together on top of the boat to prevent entanglement during hookup and lift-off.

**Figure 14-3. Rigid Raiding Craft**

**2.75-INCH ROCKET FASTPACK PALLET**

14-5. The 2.75-inch rocket fastpack pallet is rigged for single-point sling load using the following procedures:

- **Applicability.** The Following items in Table 14-4 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

Table 14-4. 2.75-inch Rocket Fastpack Pallet

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
PA 150 Pallet with Twelve (12) 2.75-inch Rockets	2,200	10K	3/3
PA 151 Pallet with Twelve (12) 2.75-inch Rockets	2,000	10K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Close the safety latches on the lids of the rocket containers. Secure the lids with Type III nylon cord.
    - Secure the loose ends of any cables, bands, or chains with tape or Type III nylon cord.
    - Ensure the 1-1/4-inch steel banding around the pallet is in serviceable condition and the containers are locked together.
    - Tape the upper corners of the pallet from the top to the second row of rockets.
  - **Rigging.** Rig the load according to the steps in Figure 14-4.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

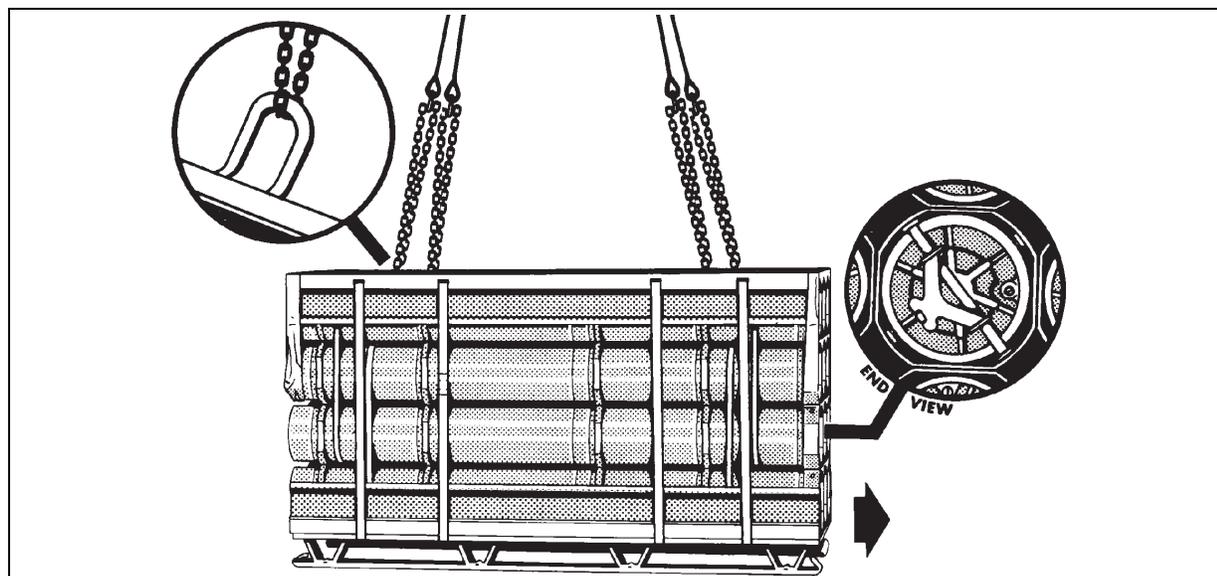


Figure 14-4. 2.75-inch Rocket Fastpack Pallet

<b>RIGGING STEPS</b>
<ol style="list-style-type: none"> <li>1. Position apex fitting on top of the pallet. Route outer sling legs 1 and 2 to the front of the pallet and inner sling legs 3 and 4 to the rear end. Sling legs 1 and 3 must be on the left side of the load.</li> <li>2. Loop the chain end of sling leg 1 through the left front lift provision. Place the correct link from Table 14-4 in the grab hook. Repeat with sling leg 2 and the right front lift provision.</li> <li>3. Loop the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 14-4 in the grab hook. Repeat with sling leg 4 and the right rear lift provision.</li> <li>4. Cluster and tie (breakaway technique) all sling legs together on top of the pallet to prevent entanglement during hookup and lift-off.</li> </ol>

**Figure 14-4. 2.75-inch Rocket Fastpack Pallet (Continued)**

## **SPECIAL DIVERS AIR SUPPORT SYSTEM (SDASS)**

14-6. The special divers air support system is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 14-5 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

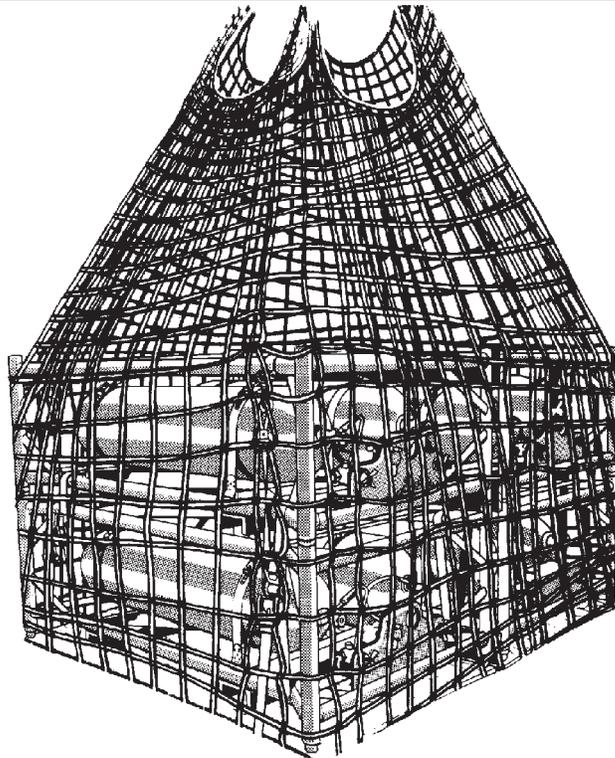
**Table 14-5. Special Divers Air Support System**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Four SDASS Racks with Two Empty Air Cylinders each in a 2 X 2 Configuration	1,800	10K Cargo Net	N/A

- **Materials.** The following materials are required to rig this load:
  - Net, cargo (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down strap, cargo, CGU-1/B (4 each).
  - Dunnage material.
  - Plywood 44 X 75 X 1/2-inch (2 each).
- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Inspect the cargo net in accordance with FM 4-20.197.
    - Prepare the plywood sheets and the dunnage.
  - **Rigging.** Rig the load according to the steps in Figure 14-5.
  - **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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Spread the cargo net on the ground.
2. Position the bottom two racks on the plywood sheets. Secure each rack to the plywood using CGU-1/B tie-down straps.
3. Place the remaining two racks on top of the bottom racks, fitting together the feet at each of the five junction points.
4. Insert dunnage between the two stacks of racks and secure the dunnage to the stacks with Type III nylon cord.
5. Route two CGU-1/B tie-down straps around the lower bottom racks and two CGU-1B tie-down straps around the upper racks.
6. Rig the net in accordance with FM 4-20.197.

**Figure 14-5. Special Divers Air Support System**

## **TWO MOBILE OVERSNOW TRANSPORT (MOST) SNOWMOBILES WITH OR WITHOUT TWO SLEDS**

14-7. The two mobile oversnow transport snowmobiles with or without two sleds are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 14-6 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 14-6. Two Mobile Oversnow Transport Snowmobiles with or without Two Sleds**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Polaris Indy Wide-Track Snowmobile	638 each	10K Cargo Net	N/A
Norwegian Pulk Sled, Model BN 2010C	381 each	10K Cargo Net	N/A

- **Materials.** The following materials are required to rig this load:
  - Net, cargo (10,000-pound capacity) (2 each).
  - One sling leg from a sling set (10,000-pound capacity).
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
  - Pad, energy dissipating, honeycomb (2 sheets).
- **Personnel.** Eight persons can prepare and rig this load in 10 minutes. The large number of personnel is required to lift and position the MOST.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Inspect the cargo net in accordance with FM 4-20.197.
    - Position the two MOSTs on level ground.
    - Secure the canvas cargo cover over the sled.
    - Secure the fuel cap on the MOST with tape.
    - Remove the snap-off wind screen from the MOST, pad it with felt, and secure it over the seat with Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 14-6.
  - **Hookup.** The hookup team consists of four people. The hookup team stands alongside the load. The static wand person discharges the static electricity with the static wand. One hookup person places the apex fitting onto the aircraft cargo hook. The other two people kneel, one on each side of the load, to ensure the net does not catch on the handle bars, tie-down points, or trailer hitch as the load is lifted. As the first net is lifted off the ground, after successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point. This will ensure the hookup team is not struck by the second cargo net as it is being lifted off the ground.

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*Note.* Brief the pilot to hover to the side after the sleds are on the ground to lower the MOSTs to the ground. Once the MOSTs are on the ground, the pilot must hover to the side before releasing the apex fitting.

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- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



#### RIGGING STEPS

1. Lay out the first 10,000-pound cargo net. Place two MOSTs side-by-side facing in opposite directions with two sheets of honeycomb between them. Close the net to the apex fitting of the cargo net. Gather the excess net above the load and tape the net together every 3 feet from the apex down (breakaway technique).
2. Lay out the second 10,000-pound cargo net next to the first one and center the two sleds on the net side-by-side facing opposite directions. Close the net to the apex fitting of the cargo net. Gather the excess net above the load and tape the net together every 3 feet from the apex down (breakaway technique).
3. Attach the chain from the 10,000-pound sling leg to the apex of the cargo net holding the sleds. Insert link 4 in the grabhook. The end of the sling leg with the apex attached is fed under the net holding the two MOSTs along the axis of the honeycomb. It is passed through the net at the center and pulled upward between the two sheets of honeycomb and attached to the apex of the net using the apex. This will allow the sleds to hang directly below the MOST.

**Figure 14-6. Two Mobile Oversnow Transport Snowmobiles with or without Two Sleds**

## CONTAINER ROLL-IN/OUT PLATFORM (CROP), M3/M3A1, TWO EMPTY PLATFORMS, STACKED

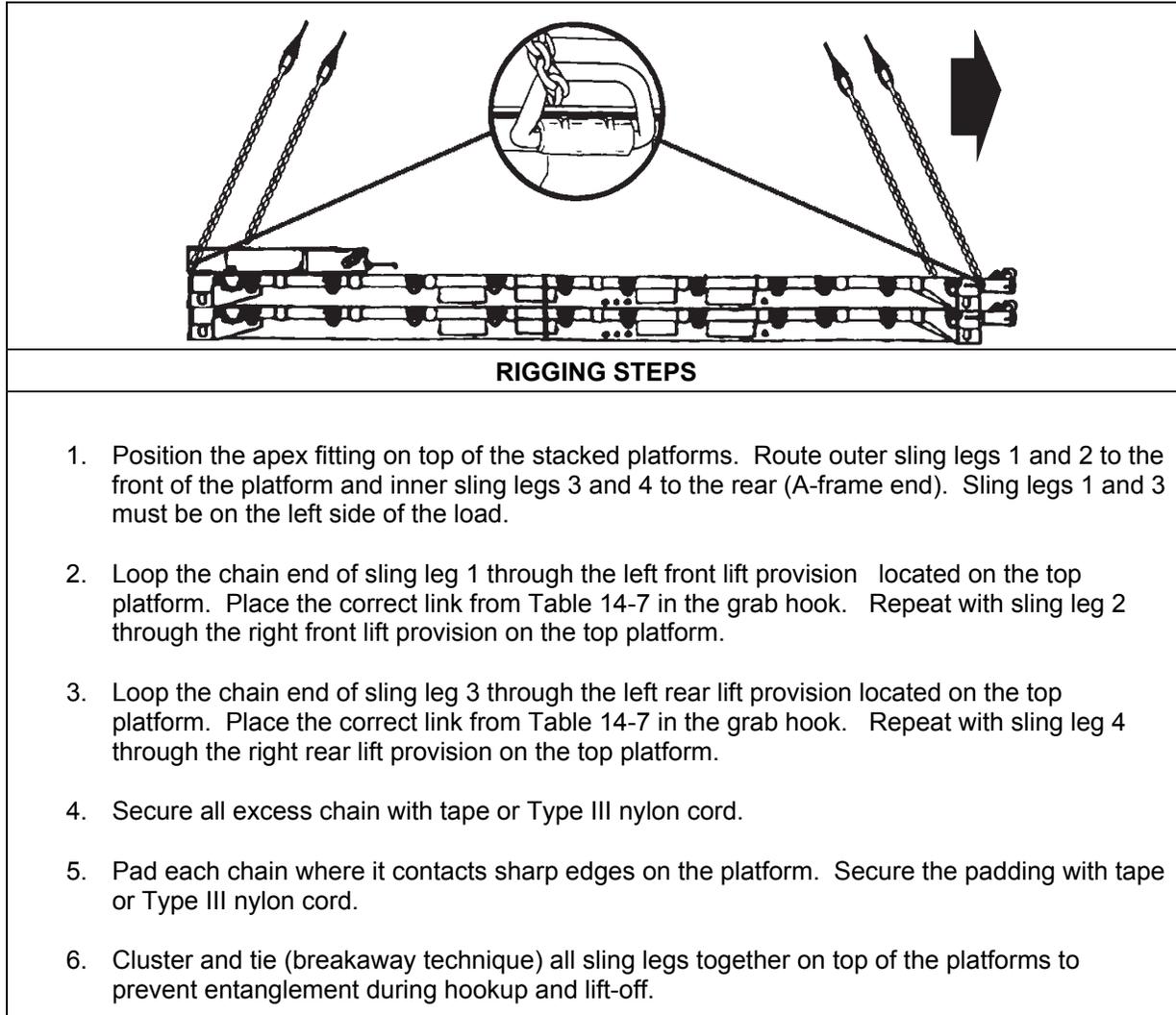
14-8. The container roll-in/out platform, M3/M3A1, two empty platforms, stacked are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 14-6 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 14-7. Container Roll-in/out Platform, M3/M3A1, Two Empty Platforms, Stacked**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Two CROPs, M3, Empty, Stacked	7,300	10K	30/3
Two CROPs, M3A1, Empty, Stacked	7,300	10K	30/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Ensure the load restraints are in the stowed position.
    - Secure the A-frames in the down position.
    - Stack the platforms with the A-frames at the same end and secure the platforms together with the straps provided with the platform (a minimum of two straps per platform are required). Ensure the straps have operational keepers on the hook ends. Secure the loose strap ends with tape or 1/4-inch cotton webbing.
  - **Rigging.** Rig the load according to the steps in Figure 14-7.
  - **Hookup.** The hookup team stands on the stacked platforms. The static wand person discharges the static electricity with the static wand. The hookup person places the apex fitting onto the cargo hook. The hookup team then carefully dismounts the platform and 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 14-7. Container Roll-in/out Platform, M3/M3A1, Two Empty Platforms, Stacked**

## **SPECIAL OPERATIONS CRAFT-RIVERINE (SOC-R) AND NAVAL SPECIAL WARFARE RIGID INFLATABLE BOAT (NSWRIB) TRAILER**

14-9. The special operations craft-riverine and naval special warfare rigid inflatable boat trailer is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 14-8 are certified for all helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 14-8. Special Operations Craft-Riverine and Naval Special Warfare Rigid Inflatable Boat Trailer**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Special Operations Craft-Riverine (SOC-R) Trailer	3,716	15K	5/3
Naval Special Warfare Rigid Inflatable Boat (NSWRIB) Trailer	4,300	15K	5/3

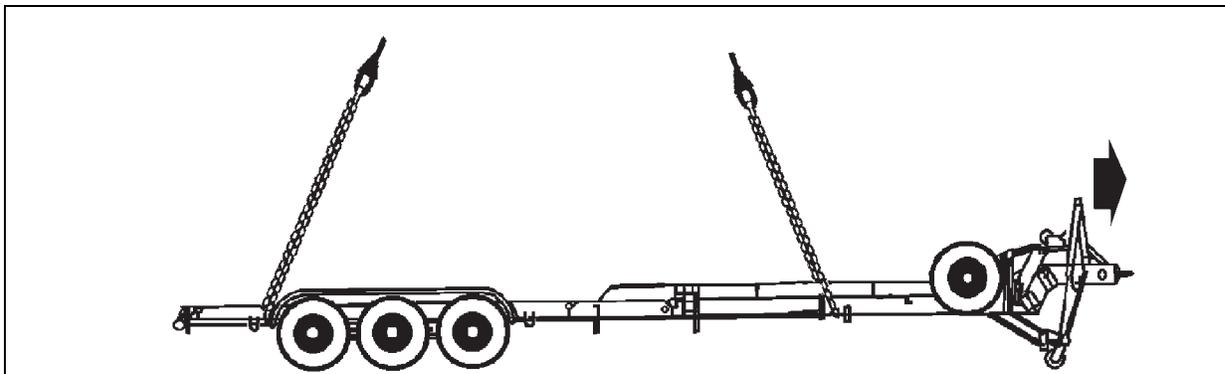
- **Materials.** The following materials are required to rig this load:
  - Multileg sling set (15,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure the utility box lid with Type III nylon cord.
    - Lower the lunette close to the ground and secure it in place with a 5,000-pound tiedown strap and load binder.
    - Secure safety chains, intervehicular electrical cables, and brake cables on top of the drawbar with tape or Type III nylon cord.
    - Engage the parking brake and secure it in the engaged position.
    - Tape the rails on the trailer together to ensure the slings do not become entangled.
    - Tape all lights.
  - **Rigging.** Rig the load according to the steps in Figure 14-8.

---

*Note.* This load is flown with the lunette in front.

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- **Hookup.** The hookup team stands next to the trailer. The static discharge person discharges the static electricity. The hookup person places the apex on the cargo hook. The hookup teams then carefully dismount the boat and remain close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup teams quickly exit the area underneath the helicopter to the designated rendezvous point.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 14-8. Special Operations Craft-Riverine and Naval Special Warfare Rigid Inflatable Boat Trailer**

**RIGGING STEPS**

1. Position the apex fitting on top of the trailer.
2. Loop the chain end of sling leg 1 around the main support frame in front of the tiedown provision on the left side of the trailer. Place the correct link from Table 14-8 in the grab hook. Repeat this step with sling leg 2 on the right side of the trailer.
3. Loop the chain end of sling leg 3 around the frame and through the lift provision on the left rear of the trailer. Place the correct link from Table 14-8 in the grab hook. Repeat this step with sling leg 4 on the right side of the trailer. Secure the excess chain with tape or Type III nylon cord.
4. Raise the apex fittings above the load. Cluster and tie (breakaway technique) the sling legs in each sling set together to prevent entanglement during hookup and lift-off.

**Figure 14-8. Special Operations Craft-Riverine and Naval Special Warfare Rigid Inflatable Boat Trailer (Continued)**

## Chapter 15

# Suitable Single-Point Rigging Procedures for Wheeled Vehicles

### INTRODUCTION

15-1. This chapter contains rigging procedures for single-point lift of wheeled vehicles that are suitable 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 suitable loads. The suitable single-point rigging procedures for wheeled vehicles are in this section. Paragraphs 15-2 through 15-6 give detailed instructions for rigging loads.

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*Note.* Reach pendants may be used on all single point loads. A static discharge person is not required when using a reach pendant.

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### M342A2 2 1/2-TON DUMP TRUCK WITH WINCH

15-2. The M342A2 2 1/2-ton dump truck with winch is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 15-1 is suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 15-1. M342A2 2 1/2-Ton Dump Truck with Winch**

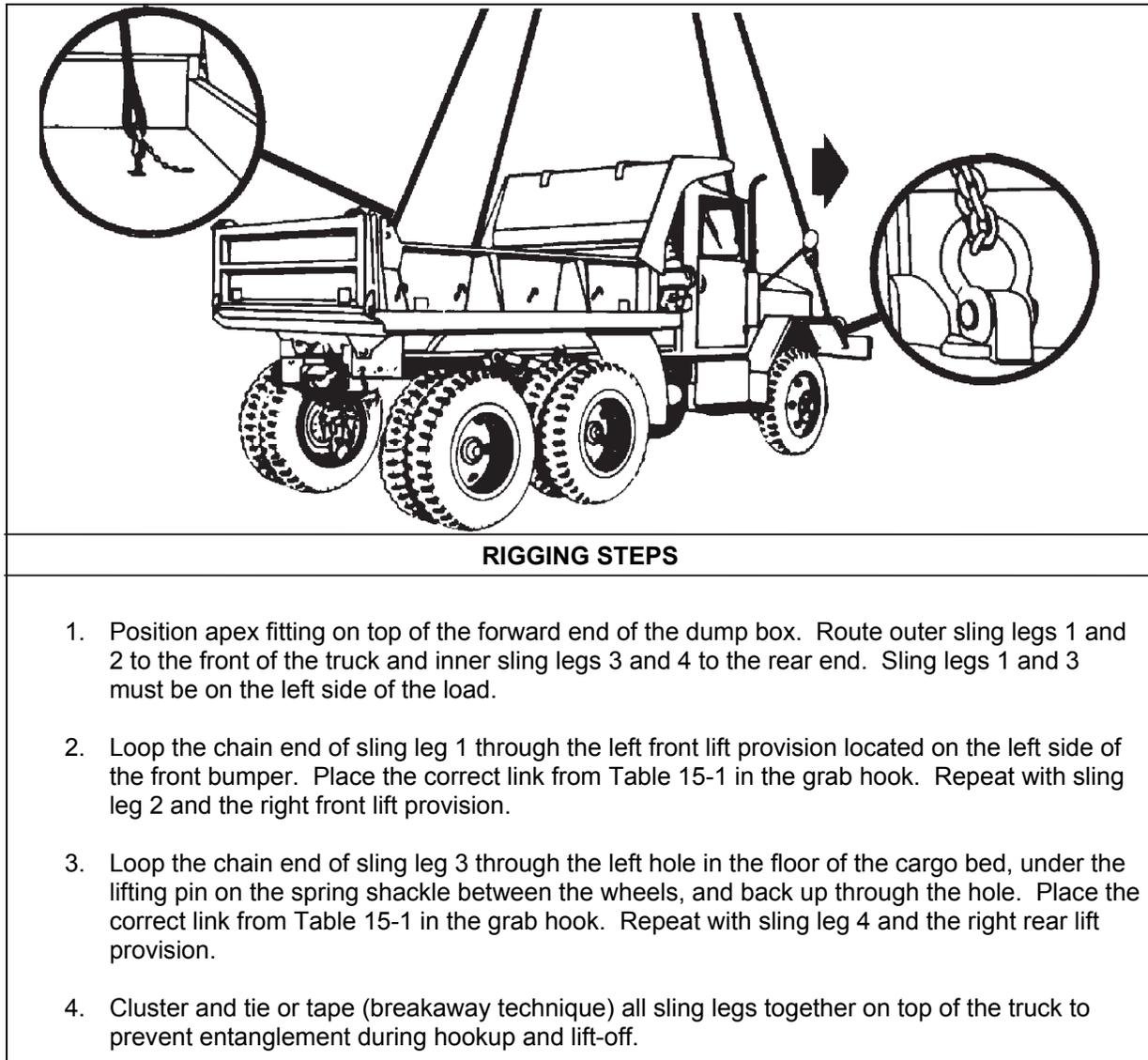
<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M342A2 2 1/2-Ton Dump Truck with Winch	15,770	25K	3/30

### WARNING

**DO NOT LIFT THIS LOAD WITH THE ORIGINAL VEHICLE LIFT PROVISION.**

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** One person can prepare and rig this load (after modifying the bed) in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Modify the cargo bed. Secure the bed in the down position.
    - Place the transmission in neutral and engage the hand brake.

- Secure the steering wheel and doors with Type III nylon cord.
- Tape the windshield wipers to the windshield.
- Secure the hood with Type III nylon cord routed from the grill through the hood latches.
- **Rigging.** Rig the load according to the steps in Figure 15-1.
- **Hookup.** The hookup team stands in the cargo bed of the truck. 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 15-1. M342A2 2 1/2-Ton Dump Truck with Winch**

## M35A1/A2 2 1/2-TON CARGO TRUCK WITH WINCH

15-3. The M35A1/A 2, 2 1/2-ton cargo truck with winch is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 15-2 are suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

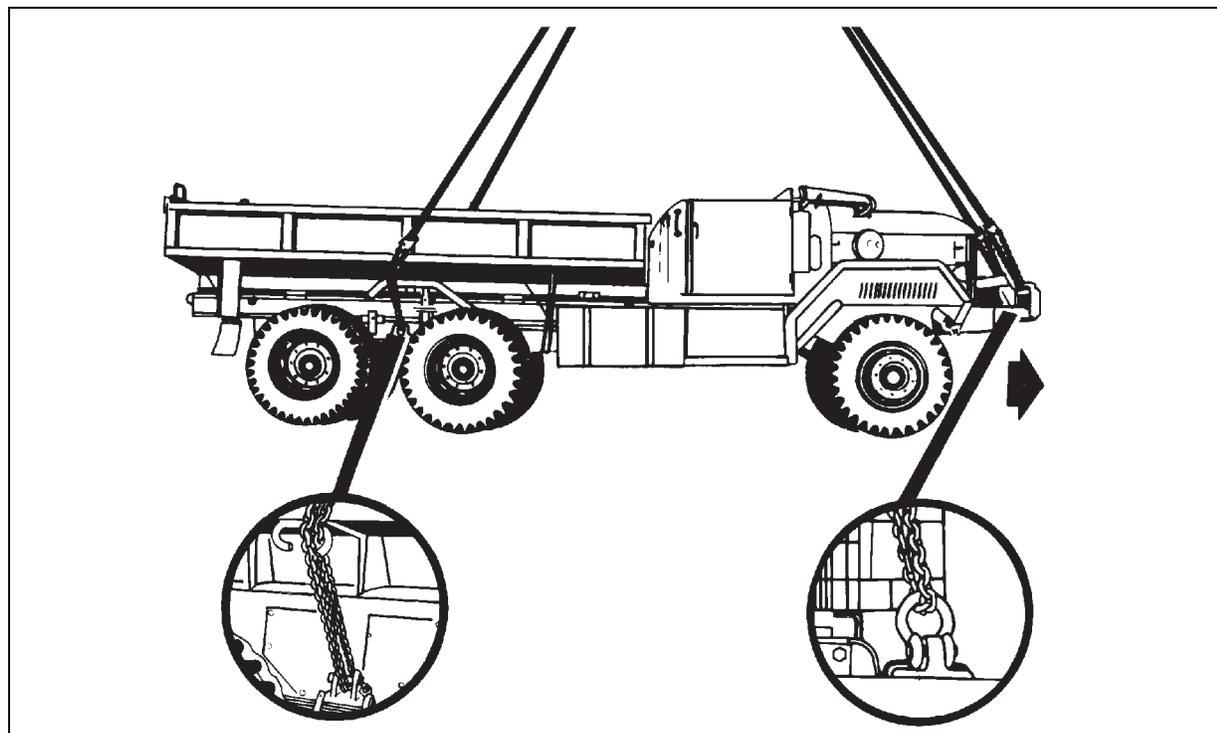
**Table 15-2. M35A1/A2 2 1/2-Ton Cargo Truck with Winch**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M35A1 2 1/2-Ton Cargo Truck with Winch	13,550	25K	13/3
M35A2 2 1/2-Ton Cargo Truck with Winch	13,570	25K	13/3

### WARNING

**DO NOT LIFT THIS LOAD WITH THE ORIGINAL VEHICLE LIFT PROVISION.**

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Padding, cellulose.
  - Tie-down, cargo, CGU-1/B (as required).
- **Personnel.** Two persons can prepare and rig this load in 25 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Remove the bed tarpaulin and bows and secure them in the truck bed with tie-down straps or Type III nylon cord.
    - Remove the cab tarpaulin, lower and secure the windshield, and secure the tarpaulin over the windshield with Type III nylon cord.
    - Secure the hood with Type III nylon cord routed from the grill through the hood latches.
    - Ensure the fuel cap, oil filler cap, radiator cap, and battery caps are properly installed and the battery compartment door is fastened.
    - Secure the seats and doors with Type III nylon cord.
    - Place the transmission in neutral and engage the hand brake.
    - Straighten the front wheels and secure the steering wheel with Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 15-2.
  - **Hookup.** The hookup team stands in the cargo bed of the truck. 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



#### RIGGING STEPS

1. Position apex fitting in the bed of the truck near the cab. Route outer sling legs 1 and 2 to the front of the truck and inner sling legs 3 and 4 to the rear 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 left front lift provision located on the left side of the front bumper. Place the correct link from Table 15-2 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. Loop the chain end of sling leg 3 through the left lifting pin on the spring shackle between the rear wheels. Place the correct link from Table 15-2 in the grab hook. Pull the grab hook up against the side of the truck and tie the chain in the chain guide bracket with 1/4-inch cotton webbing. Ensure the hook side of the grab hook faces outward. Repeat with sling leg 4 and the right rear lift provision.
4. Tie the rear grab hooks together across the bed of the truck with 1/4-inch cotton webbing.
5. Pull the front sling legs up over the hood and secure the grab hooks to the hood latch attachment with Type III nylon cord.
6. Tape sling legs 1 and 2 to the top of the steering wheel. Cluster and tie (breakaway technique) all sling legs together on top of the truck to prevent entanglement during hookup and lift-off.

**Figure 15-2. M35A1/A2 2 1/2-Ton Cargo Truck with Winch**

## M54A2 5-TON CARGO TRUCK WITH WINCH

15-4. The M54A2, 5-ton cargo truck with winch is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 15-3 is suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

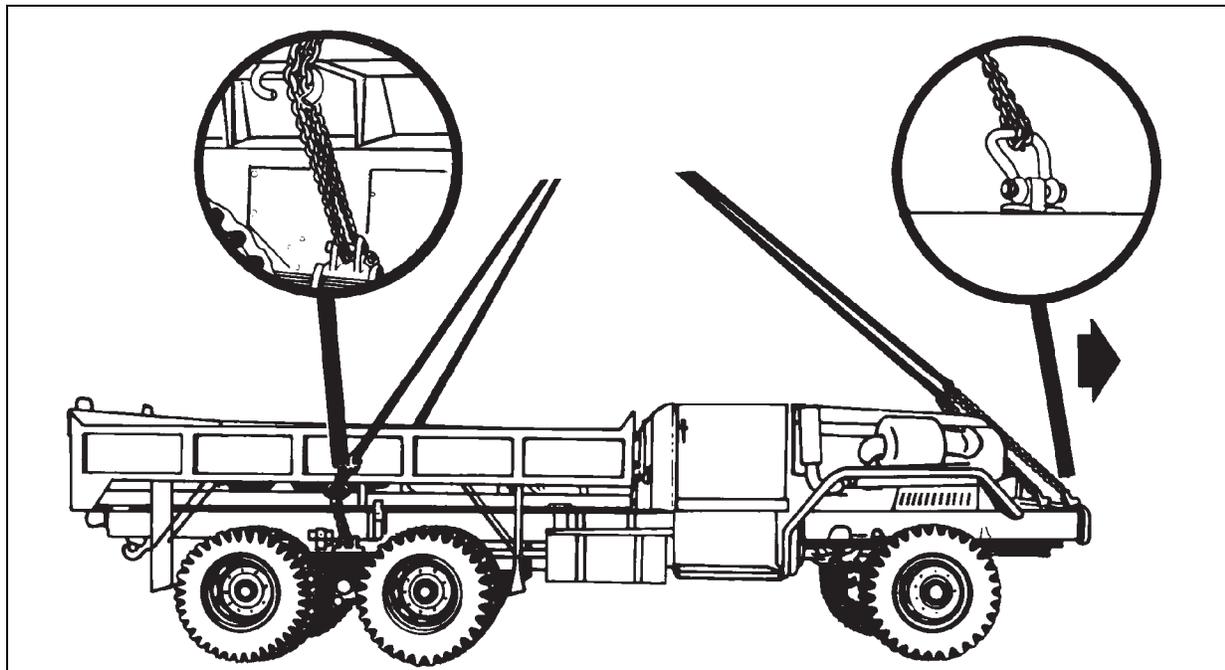
**Table 15-3. M54A2 5-Ton Cargo Truck with Winch**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M54A2 5-Ton Cargo Truck with Winch	20,782	25K	13/3

### WARNING

**DO NOT LIFT THIS LOAD WITH THE ORIGINAL VEHICLE LIFT PROVISION.**

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Padding, cellulose.
  - Tie-down, cargo, CGU-1/B (as required).
- **Personnel.** Two persons can prepare and rig this load in 25 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Remove the bed tarpaulin and bows and secure them in the truck bed with tie-down straps or Type III nylon cord.
    - Remove the cab tarpaulin, lower and secure the windshield, and secure the tarpaulin over the windshield with Type III nylon cord.
    - Secure the hood with Type III nylon cord routed from the grill through the hood latches.
    - Ensure the fuel cap, oil filler cap, radiator cap, and battery caps are properly installed and the battery compartment door is fastened.
    - Secure the seats and doors with Type III nylon cord.
    - Place the transmission in neutral and engage the hand brake.
    - Straighten the front wheels and secure the steering wheel with Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 15-3.
  - **Hookup.** The hookup team stands in the cargo bed of the truck. 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



#### RIGGING STEPS

1. Position apex fitting in the bed of the truck near the cab. Route outer sling legs 1 and 2 to the front of the truck and inner sling legs 3 and 4 to the rear 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 left front lift provision located on the left side of the front bumper. Place the correct link from Table 15-3 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. Loop the chain end of sling leg 3 through the left lifting pin on the spring shackle between the rear wheels. Place the correct link from Table 15-3 in the grab hook. Pull the grab hook up against the side of the truck and tie the chain in the chain guide bracket with 1/4-inch cotton webbing. Ensure the hook side of the grab hook faces outward. Repeat with sling leg 4 and the right rear lift provision.
4. Tie the rear grab hooks together across the bed of the truck with 1/4-inch cotton webbing.
5. Pull the front sling legs up over the hood and secure the grab hooks to the hood latch attachment with Type III nylon cord.
6. Tape sling legs 1 and 2 to the top of the steering wheel. Cluster and tie (breakaway technique) all sling legs together on top of the truck to prevent entanglement during hookup and lift-off.

Figure 15-3. M54A2 5-Ton Cargo Truck with Winch

## M52A2 OR M818 5-TON TRACTOR WITH WINCH

15-5. The M52A2 or M818, 5-ton tractor with winch is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 15-4 are suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

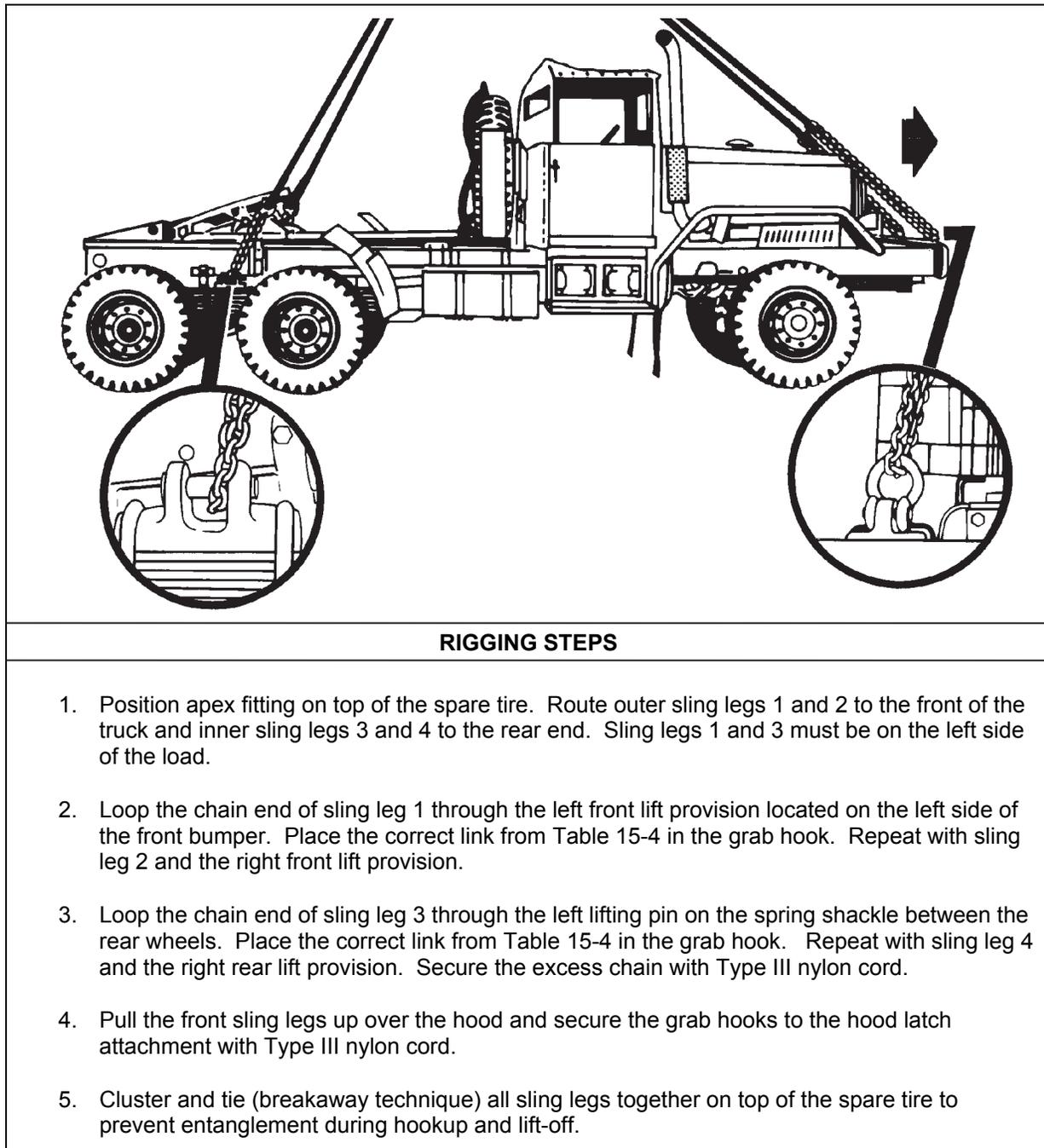
**Table 15-4. M54A2 5-Ton Cargo Truck with Winch**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M52A2 5-Ton Tractor with Winch	18,430	25K	3/43
M818 5-Ton Tractor with Winch	20,107	25K	3/43

### WARNING

**DO NOT LIFT THIS LOAD WITH THE ORIGINAL VEHICLE LIFT PROVISION.**

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Place the transmission in neutral and engage the hand brake.
    - Straighten the front wheels and secure the steering wheel with Type III nylon cord. Secure the doors with Type III nylon cord.
    - Place the air hoses in the brackets and secure with Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 15-4.
  - **Hookup.** The hookup team stands on the rear of the hood. 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 15-4. M524A2 5-Ton Tractor with Winch**

## **CRANE, SELF-PROPELLED, FOR ARMY AIRCRAFT MAINTENANCE AND POSITIONING (SCAMP)**

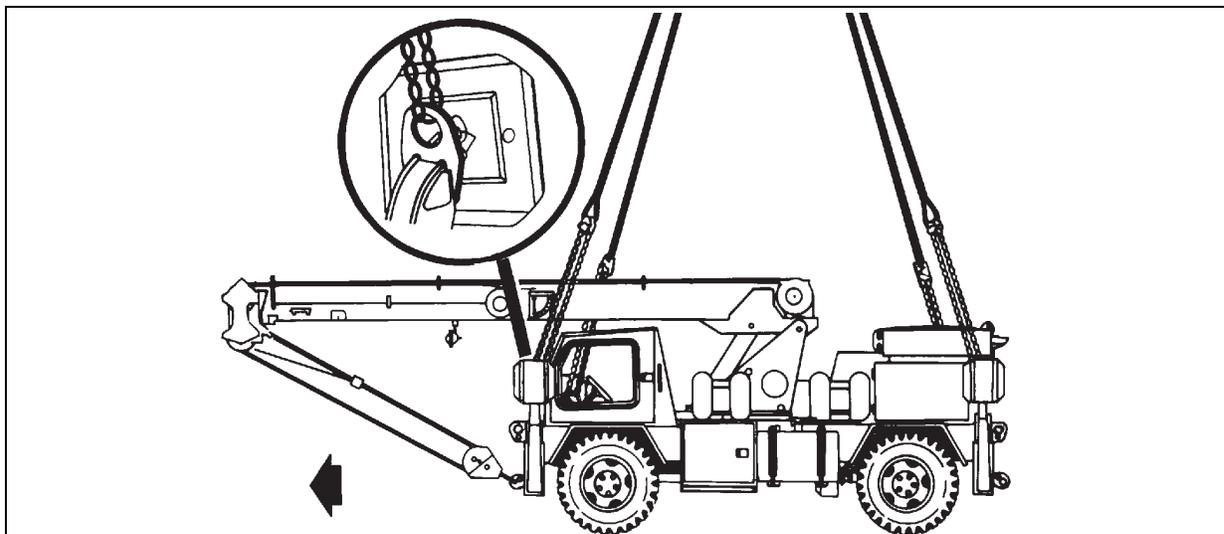
15-6. The crane, self-propelled, for army aircraft maintenance and positioning is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 15-5 is suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 15-5. Crane, Self-Propelled, for Army Aircraft Maintenance and Positioning**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Crane, Self-Propelled for Army Aircraft Maintenance and Positioning	14,600	25K	3/40

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Attach the block and tackle to the front pintle hook (the cable must be snug).
    - Rotate the mirrors in toward the cab and tape all the glass.
    - Secure the engine cover, tow bar, and tow wheels in place with Type III nylon cord.
    - Secure all loose equipment, doors, or panels with tape or Type III nylon cord.
    - Place the transmission in neutral and engage the parking brake.
  - **Rigging.** Rig the load according to the steps in Figure 15-5.
  - **Hookup.** The hookup team stands between the end of the boom and the engine cover. 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting on top of the boom. Route outer sling legs 1 and 2 to the front of the

crane and inner sling legs 3 and 4 to the rear 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 left front lift provision located on the left front outrigger. Place the correct link from Table 15-5 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 outrigger. Place the correct link from Table 15-5 in the grab hook. Repeat with sling leg 4 and the right rear lift provision. Secure the excess chain with Type III nylon cord.
4. Cluster and tie (breakaway technique) all sling legs together on top of the crane to prevent entanglement during hookup and lift-off.

- 
- Notes.*
1. The rear sling leg routed on the exhaust must be secured above the exhaust pipe to prevent entangling the sling.
  2. This load will fly with the boom low to prevent the boom from striking the aircraft.
- 

**Figure 15-5. Crane, Self-Propelled, for Army Aircraft Maintenance and Positioning**

## Chapter 16

# Suitable Single-Point Rigging Procedures for Trailers

## INTRODUCTION

16-1. This chapter contains rigging procedures for single-point lift of trailers that are suitable 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 suitable loads. The suitable single-point rigging procedures for trailers are in this section. Paragraphs 16-2 through 16-13 give detailed instructions for rigging loads.

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*Note.* Reach pendants may be used on all single point loads. A static discharge person is not required when using a reach pendant.

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## M105 1 1/2-TON TRAILER

16-2. The M105 1 1/2-ton trailer is rigged for single-point sling load using the following procedures:

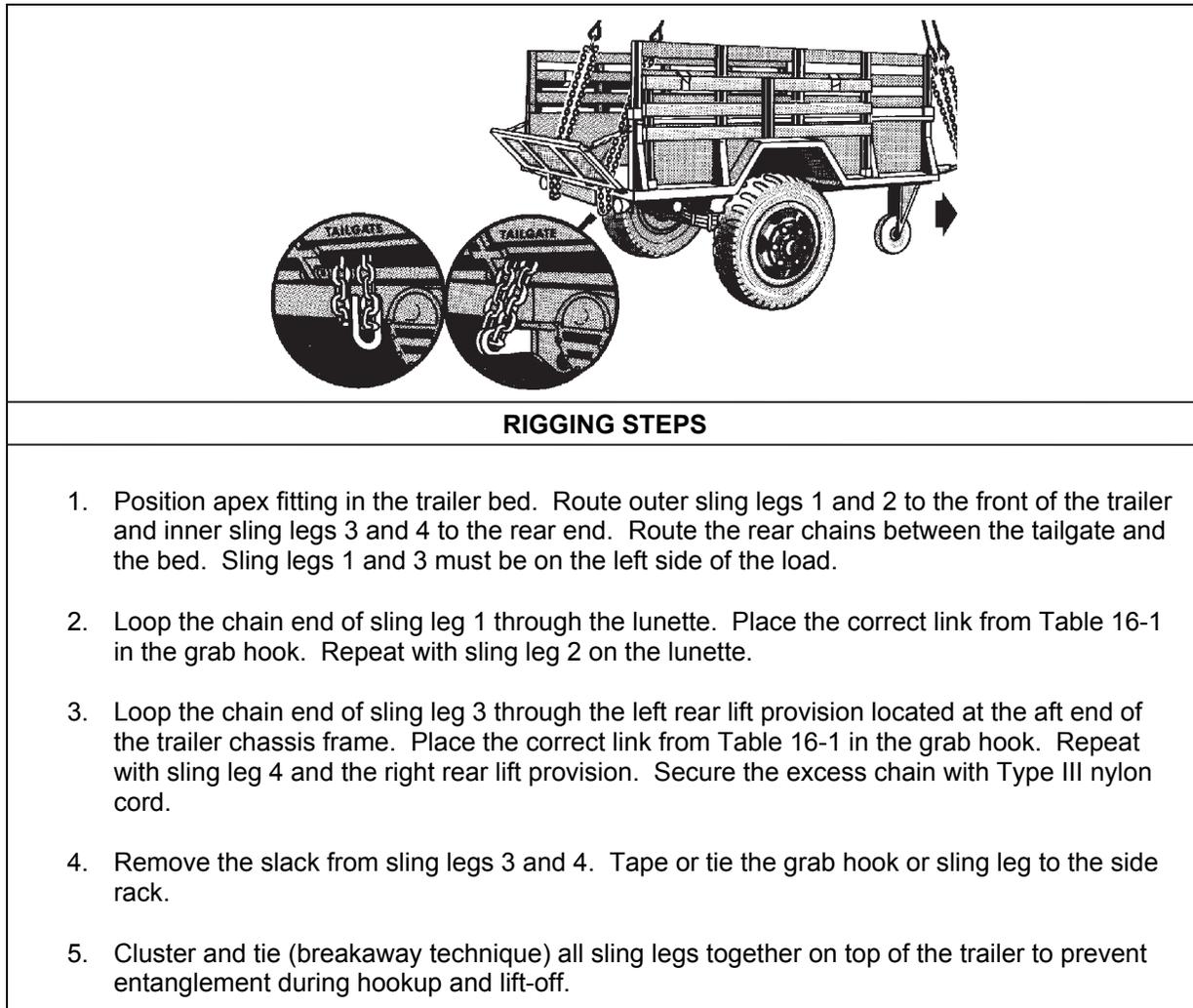
- **Applicability.** The following item in Table 16-1 is suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 16-1. M105 1 1/2-Ton Trailer**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M105 1 1/2-Ton Trailer	5,750	10K	4/30

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down, cargo, CGU-1/B (as required).
- **Personnel.** Two persons can prepare and rig this load in 25 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Remove the top tarpaulin and bows.
    - Remove the front and rear racks, stow in the slots provided on each side of the trailer, and secure them in place with Type III nylon cord.
    - Stow the bows and tarpaulin in the trailer bed and secure them with Type III nylon cord.
    - Fasten the tailgate in the open position with the chains on each side hooked through the keepers.
    - Secure the cargo in the bed using the CGU-1/B cargo straps.
    - Secure the light cable to the drawbar with tape or Type III nylon cord.
    - Engage the parking brake.

- If the trailer has modified lift provisions, remove the push pin and rotate the provisions downward.
- **Rigging.** Rig the load according to the steps in Figure 16-1.
- **Hookup.** The hookup team stands in the cargo bed 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 16-1. M105 1 1/2-Ton Trailer**

## M270A1 SEMITRAILER, WRECKER

16-3. The M270A1 semitrailer, wrecker is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 16-2 is suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

Table 16-2. M270A1 Semitrailer, Wrecker

Nomenclature	Max Weight (Pounds)	Sling Set	Link Count Front/Rear
Semitrailer, Lowbed, Wrecker, 12-Ton, 4-Wheel	17,500	25K	55/3

**WARNING**

**DO NOT LIFT THIS LOAD WITH THE ORIGINAL VEHICLE LIFT PROVISION.**

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** One person can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** None required.
  - **Rigging.** Rig the load according to the steps in Figure 16-2.
  - **Hookup.** The hookup team stands on 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.
  - **Derigging.** Derigging is the reverse of the rigging procedures in step d (2).

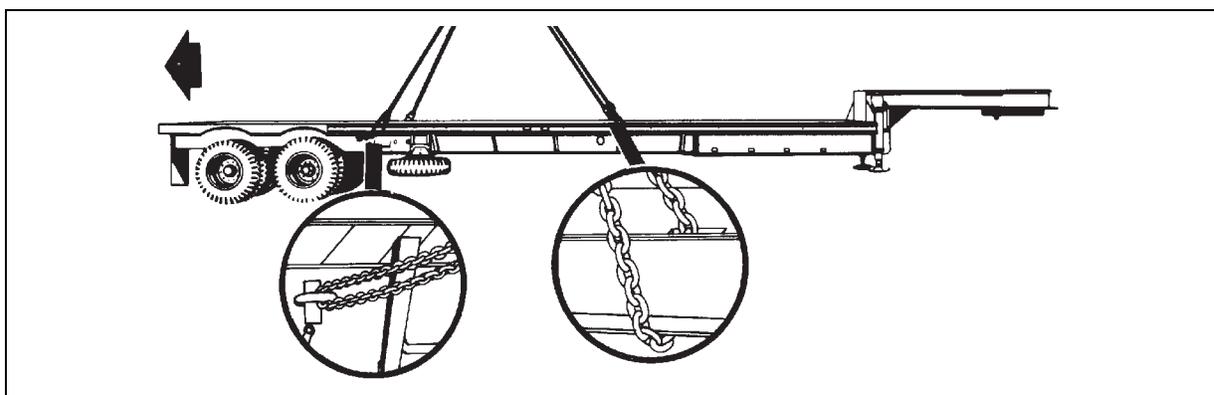


Figure 16-2. M270A1 Semitrailer, Wrecker

<b>RIGGING STEPS</b>	
1.	Position apex fitting on the trailer in the vicinity of the spare tire. Route outer sling legs 1 and 2 to the front of the trailer and inner sling legs 3 and 4 to the rear 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 third stake pocket on the left side from the forward end of the trailer. Place the correct link from Table 16-2 in the grab hook. Repeat with sling leg 2 on the right side. Secure the excess chain with Type III nylon cord.
3.	Loop the chain end of sling leg 3 through the left lift provision on the frame forward of the wheels. Place the correct link from Table 16-2 in the grab hook. Repeat with sling leg 4 and the right rear lift provision.
4.	Cluster and tie (breakaway technique) all sling legs together on top of the trailer to prevent entanglement during hookup and lift-off.

**Figure 16-2. M270A1 Semitrailer, Wrecker (Continued)**

## M172A1 SEMITRAILER, LOWBED

16-4. The M172A1 semitrailer, lowbed is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 16-3 is suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 16-3. M172A1 Semitrailer, Lowbed**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M172A1 Semitrailer, Lowbed	16,500	25K	3/60

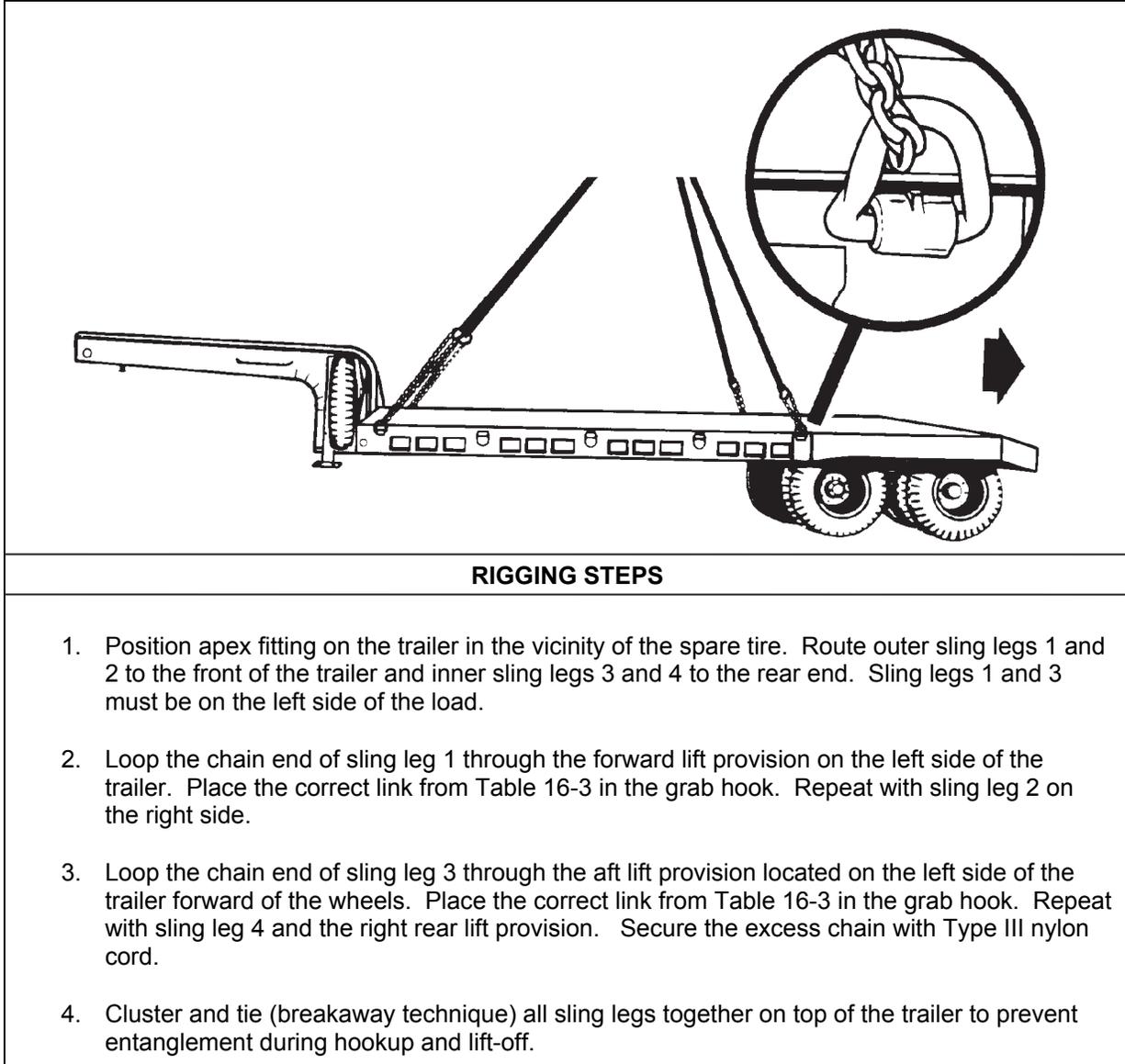
### WARNING

**DO NOT LIFT THIS LOAD WITH THE ORIGINAL VEHICLE LIFT PROVISION.**

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** One person can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** None required.
  - **Rigging.** Rig the load according to the steps in Figure 16-3.
  - **Hookup.** The hookup team stands on 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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 16-3. M172A1 Semitrailer, Lowbed**

## TRAILER, FLATBED, TILT DECK, 15-TON, 8-WHEEL

16-5. The trailer, flatbed, tilt deck, 15-ton, 8-wheel is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 16-4 is suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

Table 16-4. Trailer, Flatbed, Tilt Deck, 15-Ton, 8-Wheel

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Trailer, Flatbed, Tilt Deck, 15-Ton, 8-Wheel	9,000	10K	50/30

**WARNING**

**DO NOT LIFT THIS LOAD WITH THE ORIGINAL VEHICLE LIFT PROVISION.**

- **MATERIALS.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure the air hoses and safety chains to the drawbar with Type III nylon cord.
    - Ensure the spare tire is securely attached.
    - Engage the parking brake.
  - **Rigging.** Rig the load according to the steps in Figure 16-4.
  - **Hookup.** The hookup team stands on 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

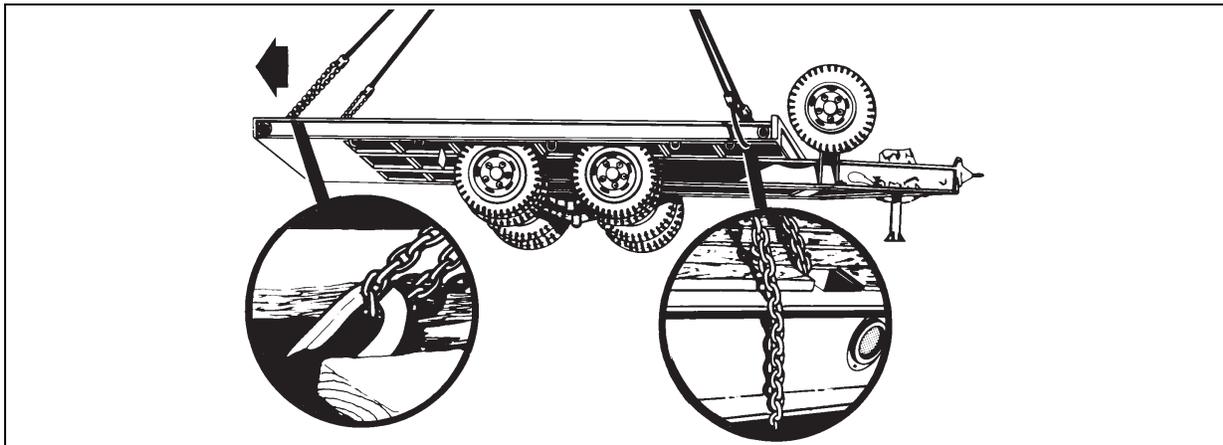


Figure 16-4. Trailer, Flatbed, Tilt Deck, 15-Ton, 8-Wheel

**RIGGING STEPS**

1. Position apex fitting on the trailer bed. Route outer sling legs 1 and 2 to the front of the trailer and inner sling legs 3 and 4 to the rear 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 first hole on the side of the trailer on the left front corner. Place the correct link from Table 16-4 in the grab hook. Repeat with sling leg 2 on the right side. Secure the excess chain with Type III nylon cord.
3. Loop the chain end of sling leg 3 through the lift ring located on top of the trailer in the left rear corner. Place the correct link from Table 16-4 in the grab hook. Repeat with sling leg 4 and the right rear lift provision. Secure the excess chain with Type III nylon cord.
4. Cluster and tie (breakaway technique) all sling legs together on top of the trailer to prevent entanglement during hookup and lift-off.

**Figure 16-4. Trailer, Flatbed, Tilt Deck, 15-Ton, 8-Wheel (Continued)**

## TRAILER-MOUNTED WELDING SHOP

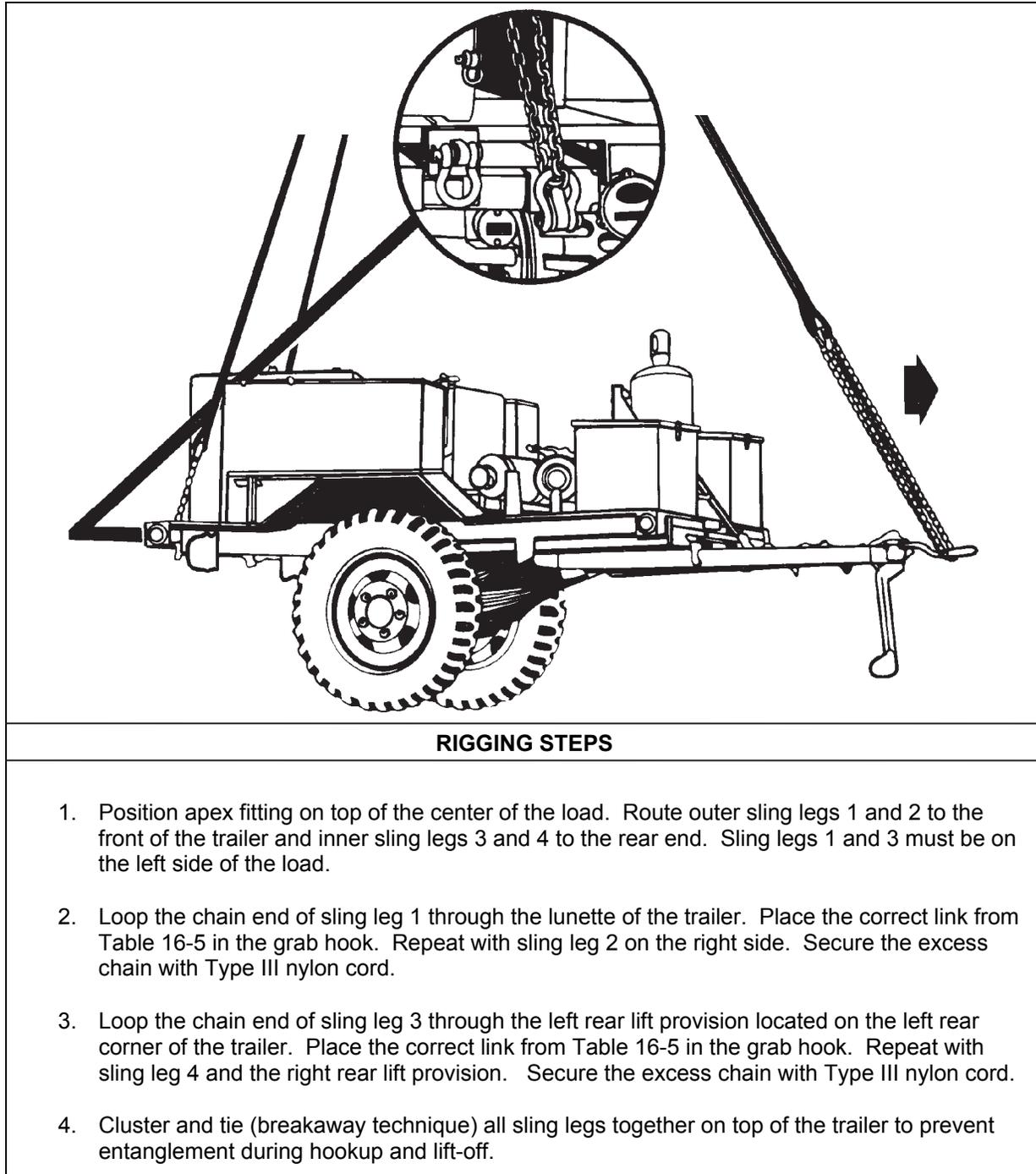
16-6. The trailer-mounted welding shop is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 16-5 is suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 16-5. Trailer-Mounted Welding Shop**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Trailer-Mounted Welding Shop	2,960	10K	10/65

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all tie-down handles on tanks with Type III nylon cord. Secure the safety chains and intervehicular cable to the trailer tongue with tape or Type III nylon cord.
    - Ensure all covers, doors, lids, and latches are securely fastened.
    - Engage the parking brake.
  - **Rigging.** Rig the load according to the steps in Figure 16-5.
  - **Hookup.** The hookup team stands on the platform to the rear of the trailer near the vise. 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 16-5. Trailer-Mounted Welding Shop**

## LEB 300 WELDING MACHINE ON 2 1/2-TON TRAILER CHASSIS

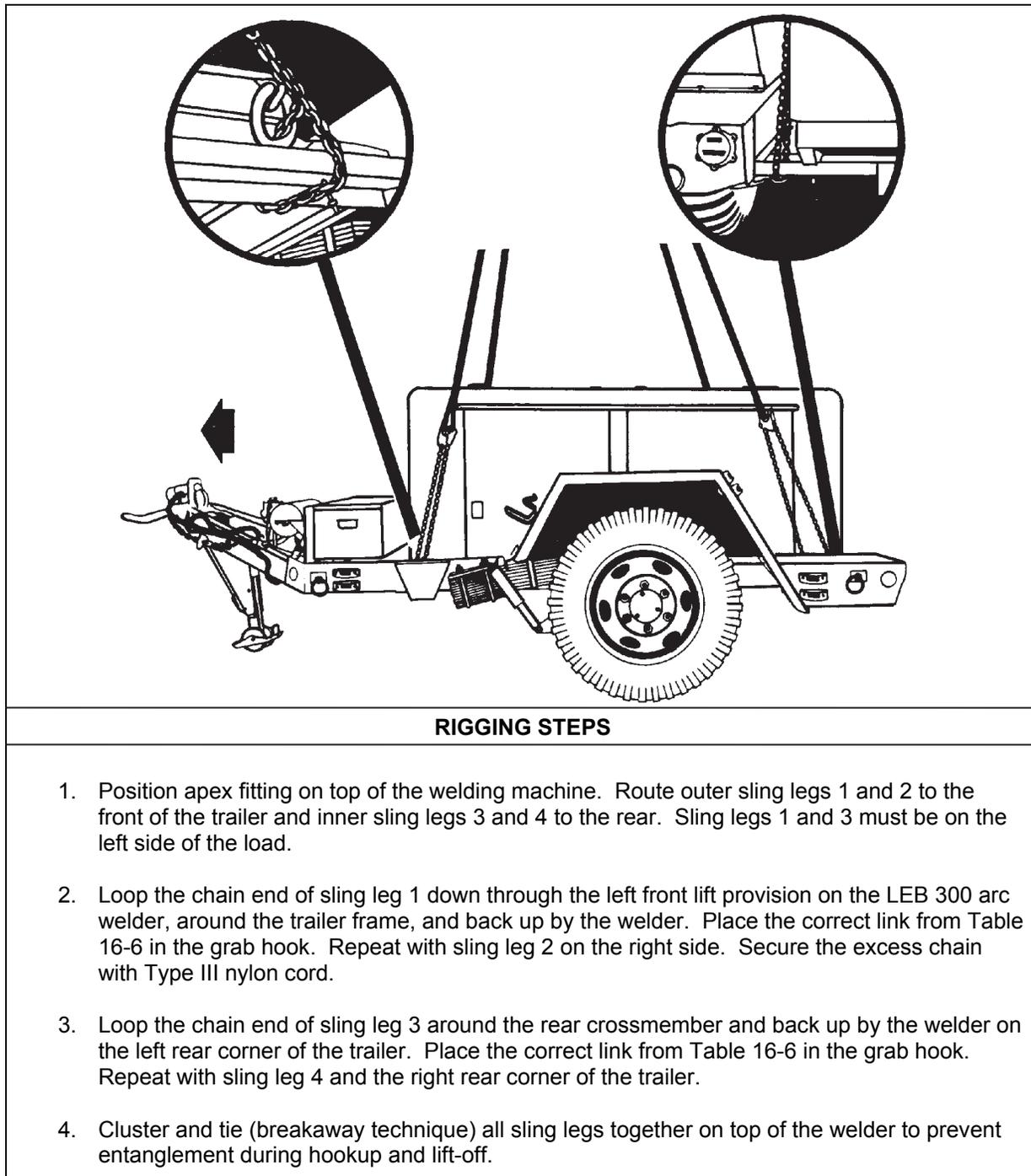
16-7. The LEB 300 welding machine on 2 1/2-ton trailer chassis is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 16-6 is suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 16-6. LEB 300 Welding Machine on 2 1/2-ton Trailer Chassis**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Welding Machine, Arc, LEB 300 on 2 1/2-Ton Trailer	5,310	10K	28/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Chock blocks (2 each) (addition to OVE blocks).
- **Personnel.** One person can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Place chock blocks in front and behind the wheels.
    - Secure the brake hoses, safety hoses, and chains to the trailer tongue with tape or Type III nylon cord.
    - Secure the OVE chock blocks on the trailer racks with Type III nylon cord.
    - Close and secure all lids, doors, and caps.
  - **Rigging.** Rig the load according to the steps in Figure 16-6.
  - **Hookup.** The hookup team stands on the platform to the rear of the trailer near the vise. 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 16-6. LEB 300 Welding Machine on 2 1/2-ton Trailer Chassis**

## TRAILER-MOUNTED COMPRESSOR, RECIPROCATING

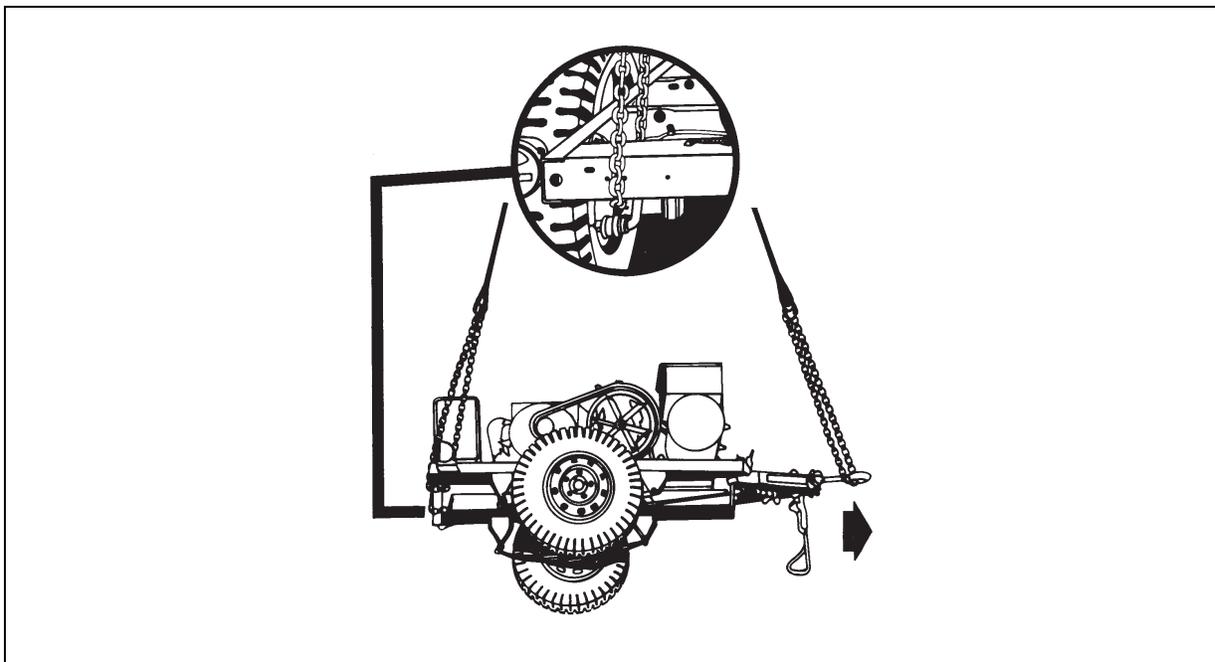
16-8. The trailer-mounted compressor, reciprocating is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 16-7 is suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 16-7. Trailer-Mounted Compressor, Reciprocating**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Trailer-Mounted Compressor, Reciprocating	900	10K	10/15

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure the front leg in the down position.
    - Secure the brake hoses, safety hoses, and chains to the trailer tongue with tape or Type III nylon cord.
    - Close and secure all lids, doors, and caps.
    - Engage parking brake.
  - **Rigging.** Rig the load according to the steps in Figure 16-7.
  - **Hookup.** The hookup team stands along side 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 16-7. Trailer-Mounted Compressor, Reciprocating**

<b>RIGGING STEPS</b>	
1.	Position apex fitting on top of the compressor. 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 lunette. Place the correct link from Table 16-7 in the grab hook. Repeat with sling leg 2 on the right side. Secure the excess chain with Type III nylon cord.
3.	Loop the chain end of sling leg 3 around the rear frame member to the left of the fuel tank. Place the correct link from Table 16-7 in the grab hook. Repeat with sling leg 4 and the right rear corner of the trailer. Secure the excess chain with Type III nylon cord.
4.	Cluster and tie (breakaway technique) all sling legs together on top of the compressor to prevent entanglement during hookup and lift-off.

**Figure 16-7. Trailer-Mounted Compressor, Reciprocating (Continued)**

## TRAILER-MOUNTED AN/MTC-10

16-9. The trailer-mounted AN/MTC-10 is rigged for single-point sling load using the following procedures:

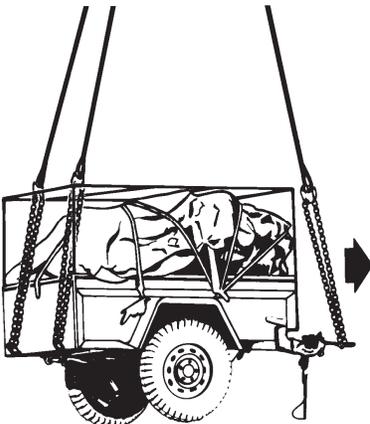
- **Applicability.** The following item in Table 16-8 is suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 16-8. Trailer-Mounted AN/MTC-10**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
AN/MTC-10 Telephone Control Office Group on M416 Trailer	1,800	10K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 30 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Remove the tarpaulin and all external items; stow in the bed of the trailer.
    - Stow the accompanying load in the trailer bed and secure with Type III nylon cord.
    - Tape all fittings on the trailer and tongue.
    - Fold rear stand before hookup to helicopter.
  - **Rigging.** Rig the load according to the steps in Figure 16-8.
  - **Hookup.** The hookup team stands on top of 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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**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 ensuring they are forward of the aft top frame. 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 lunette. Place the correct link from Table 16-8 in the grab hook. Repeat with sling leg 2 on the right side.
3. Loop the chain end of sling leg 3 under the left rear corner of the trailer and around the left rear spring shackle. Place the correct link from Table 16-8 in the grab hook. Repeat with sling leg 4 and the right rear corner of the trailer.
4. Cluster and tie or tape (breakaway technique) all sling legs to the upper frame to prevent entanglement during hookup and lift-off.

**Figure 16-8. Trailer-Mounted AN/MTC-10**

## TRAILER-MOUNTED TOOL OUTFIT

16-10. The trailer-mounted tool outfit is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 16-9 is suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 16-9. Trailer-Mounted Tool Outfit**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Trailer-Mounted Tool Outfit	2,450	10K	3/35

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure the covers and doors with tape or Type III nylon cord.
    - Secure the intervehicular cable and safety chains to the trailer tongue with tape or Type III nylon cord.
    - Engage the parking brake.
  - **Rigging.** Rig the load according to the steps in Figure 16-9.
  - **Hookup.** The hookup team stands on top of 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

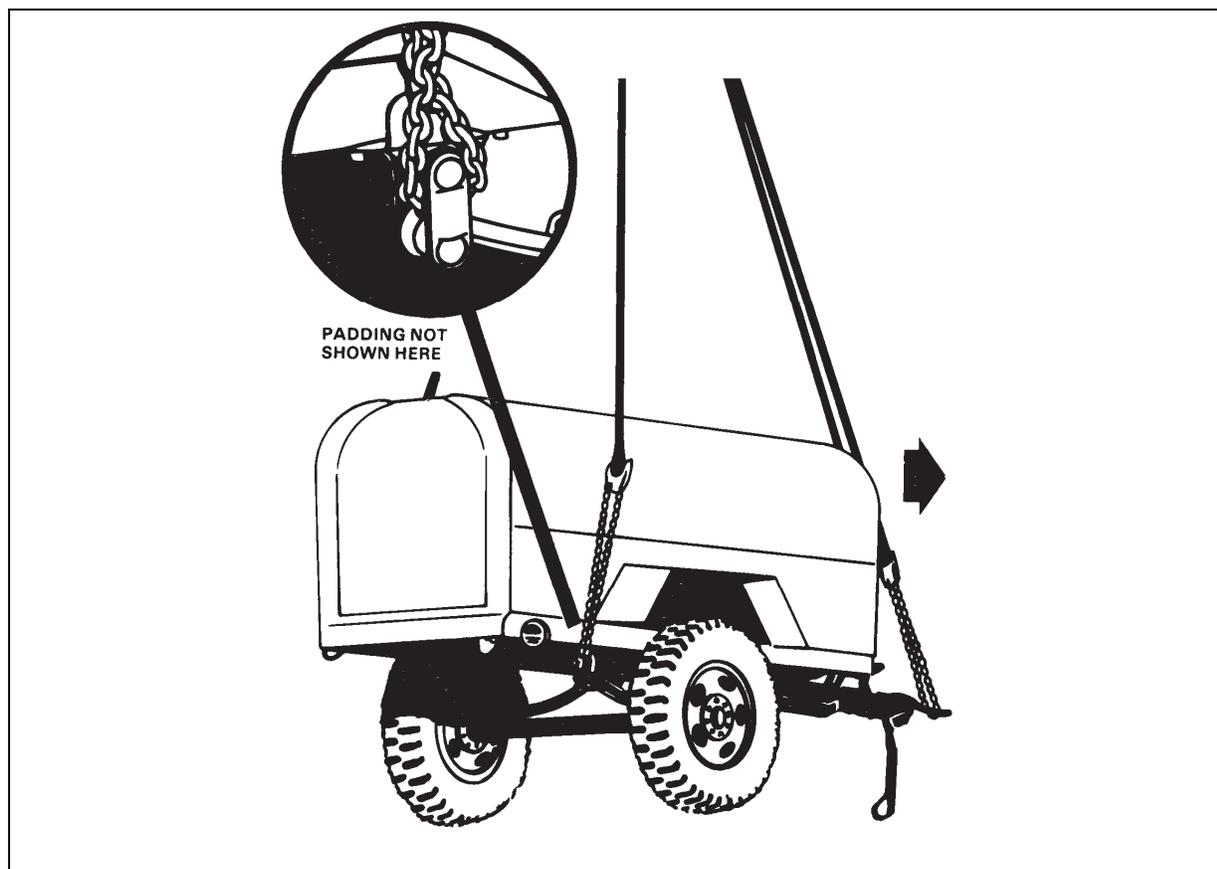


Figure 16-9. Trailer-Mounted Tool Outfit

<b>RIGGING STEPS</b>	
1.	Position apex fitting on top of the tool outfit cover. 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 lunette. Place the correct link from Table 16-9 in the grab hook. Repeat with sling leg 2 on the right side.
3.	Loop the chain end of sling leg 3 under the left rear corner of the trailer and around the left rear spring shackle. Place the correct link from Table 16-9 in the grab hook. Repeat with sling leg 4 and the right rear corner of the trailer. Secure the excess chain with Type III nylon cord.
4.	Cluster and tie (breakaway technique) all sling legs together on top of the tool outfit to prevent entanglement during hookup and lift-off.

**Figure 16-9. Trailer-Mounted Tool Outfit (Continued)**

## TRAILER-MOUNTED, LUBE, SERVICE UNIT

16-11. The trailer-mounted, lube, service unit is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 16-10 is suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

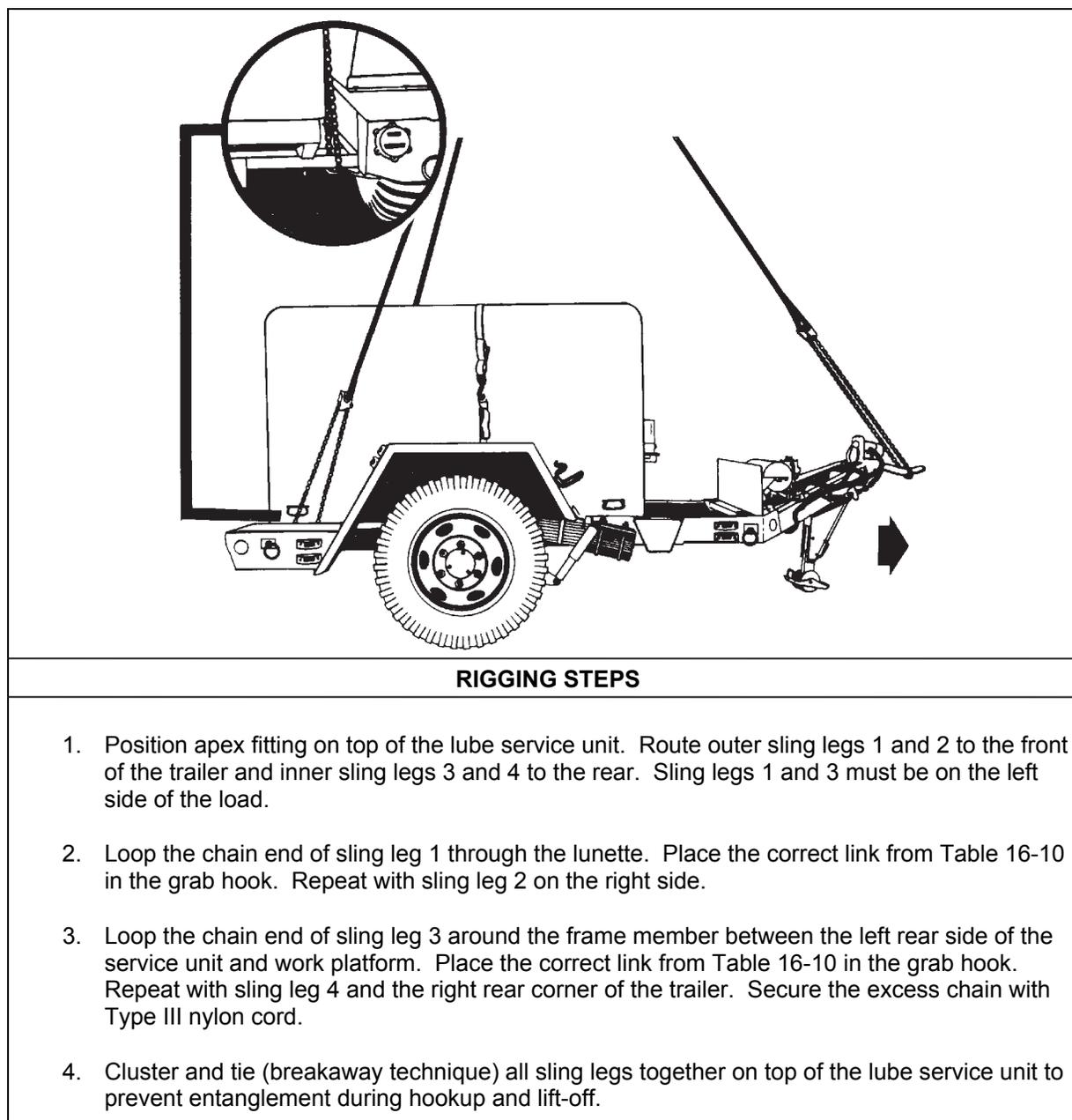
**Table 16-10. Trailer-Mounted, Lube, Service Unit**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Lube Service Unit, Engine 3A, Trailer-Mounted	5,540	10K	5/20

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down, cargo, CGU-1B (2 each).
- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Ensure the batteries and loose equipment under the cover is secure.
    - Secure the doors with Type III nylon cord.
    - Secure the box to the frame with the CGU-1/Bs.
    - Secure the brake hoses and safety chains to the tongue of the trailer with Type III nylon cord.
    - Engage the parking brake.
  - **Rigging.** Rig the load according to the steps in Figure 16-10.
  - **Hookup.** The hookup team stands on top of 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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 16-10. Trailer-Mounted, Lube, Service Unit**

## TRAILER, BOLSTER, M796

16-12. The trailer, bolster, M796 is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 16-11 is suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

Table 16-11. Trailer, Bolster, M796

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Trailer, Bolster, M796	6,340	10K	100/8

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure the front leg in the down position.
    - Secure the brake hoses and safety chains to the tongue of the trailer with Type III nylon cord.
    - Engage the parking brake.
  - **Rigging.** Rig the load according to the steps in Figure 16-11.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

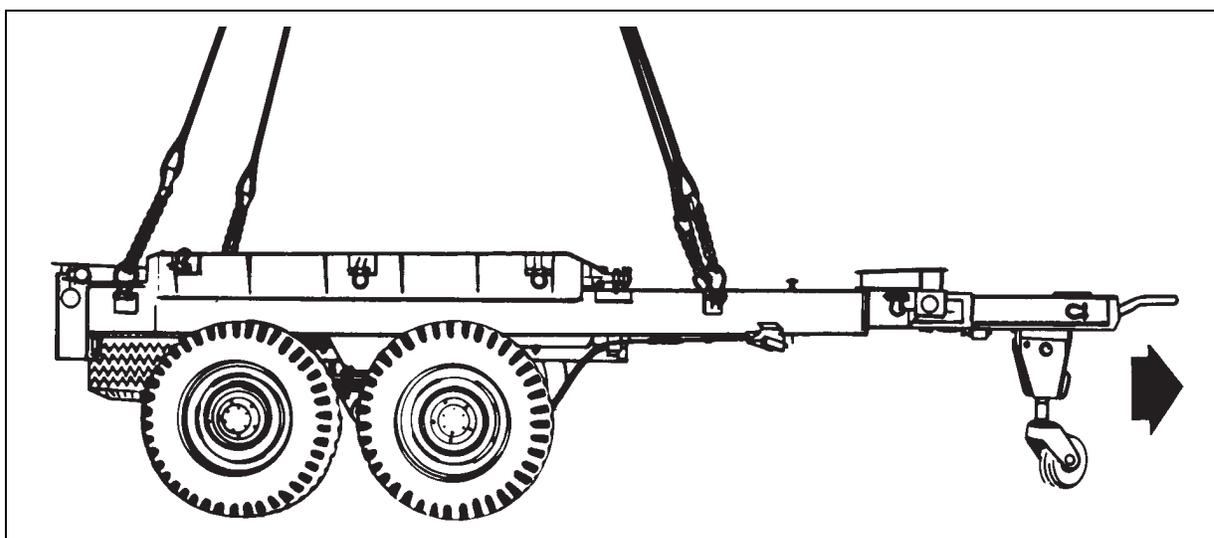


Figure 16-11. Trailer, Bolster, M796

<b>RIGGING STEPS</b>	
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 provision located aft of the left hand brake. Place the correct link from Table 16-11 in the grab hook. Repeat with sling leg 2 on the right side. Secure the excess chain with Type III nylon cord.
3.	Loop the chain end of sling leg 3 through the left rear lift provision located aft of the left wheel. Place the correct link from Table 16-11 in the grab hook. Repeat with sling leg 4 and the right rear of the trailer.
4.	Cluster and tie (breakaway technique) all sling legs together on top of the trailer to prevent entanglement during hookup and lift-off.

**Figure 16-11. Trailer, Bolster, M796 (Continued)**

## M149 SERIES WATER TRAILERS

16-13. The M149 series water trailers are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 16-12 are suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 16-12. M149 Series Water Trailers**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Trailer, Water, M149	6,060	10K	75/90
Trailer, Water, M149A1	6,060	10K	75/90
Trailer, Water, M149A2	6,060	10K	75/90

### WARNING

**THE M149, M149A1, AND M149A2 WATER TRAILERS, WITHOUT THE MODIFIED CLEVIS-TYPE LIFT PROVISIONS, ARE NOT CURRENTLY CERTIFIED FOR SLING LOADING DUE TO INADEQUATE LIFT PROVISION STRENGTH WHEN THE TRAILER IS LOADED.**

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.

- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure the brake hoses and safety chains to the tongue of the trailer with Type III nylon cord.
    - Place the support leg and wheel in the DOWN position.
    - Tape the top edge of the aft end of the water tank to prevent the sling legs from chafing on the top of the tank.
    - Engage both hand brakes.
    - Ensure the fill port is securely closed. Tape if necessary.
  - **Rigging.** Rig the load according to the steps in Figure 16-12.
  - **Hookup.** The hookup team stands on each wheel fender. 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

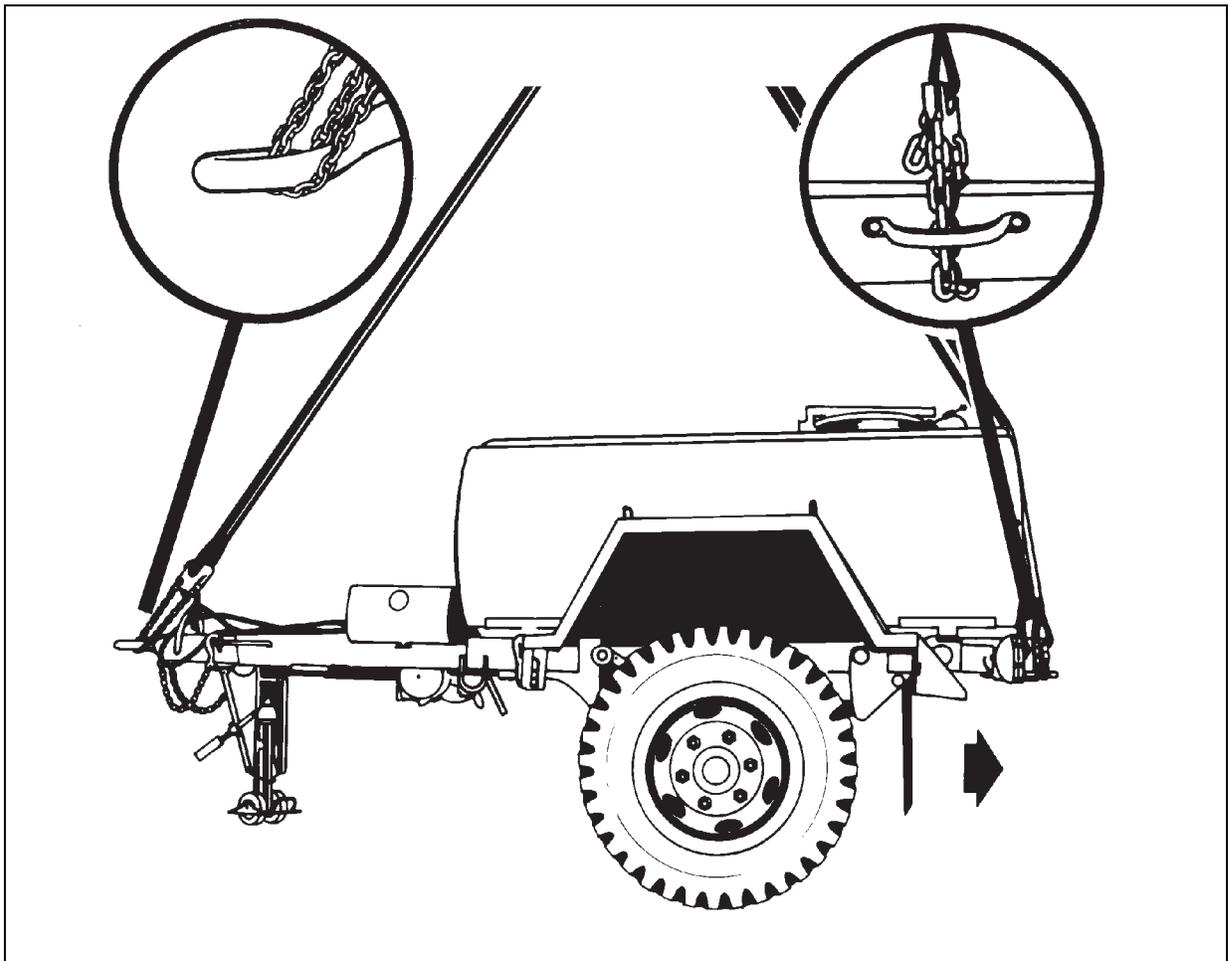


Figure 16-12. M149 Series Water Trailers

**RIGGING STEPS**

1. Position apex fitting on top of the tank. 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 lunette. Place the correct link from Table 16-12 in the grab hook. Repeat with sling leg 2 on the right side. Secure the excess chain with Type III nylon cord.
3. Using the rear lift provisions as a guide to keep the chains in place, route the chain end of sling leg 3 down between the tank and the crossmember, under the rear crossmember, and back up through the lift provision. Place the correct link from Table 16-12 in the grab hook. Repeat with sling leg 4 and the right rear of the trailer. Secure the excess chain with Type III nylon cord.
4. Cluster and tie or tape (breakaway technique) all sling legs together on top of the water tank to prevent entanglement during hookup and lift-off.

**Figure 16-12. M149 Series Water Trailers (Continued)**

## Chapter 17

# Suitable Single-Point Rigging Procedures for Engineer Equipment

### INTRODUCTION

17-1. This chapter contains rigging procedures for single-point lift of engineer equipment that is suitable 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 suitable loads. The suitable single-point rigging procedures for engineer equipment are in this section. Paragraphs 17-2 through 17-12 give detailed instructions for rigging loads.

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**Note.** Reach pendants may be used on all single point loads. A static discharge person is not required when using a reach pendant.

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### MRS-100 WHEELED INDUSTRIAL TRACTOR

17-2. The MRS-100 wheeled industrial tractor is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 17-1 is suitable for all **ARMY** helicopters with suitable lift capacity by the US Army Natick Soldier Center:

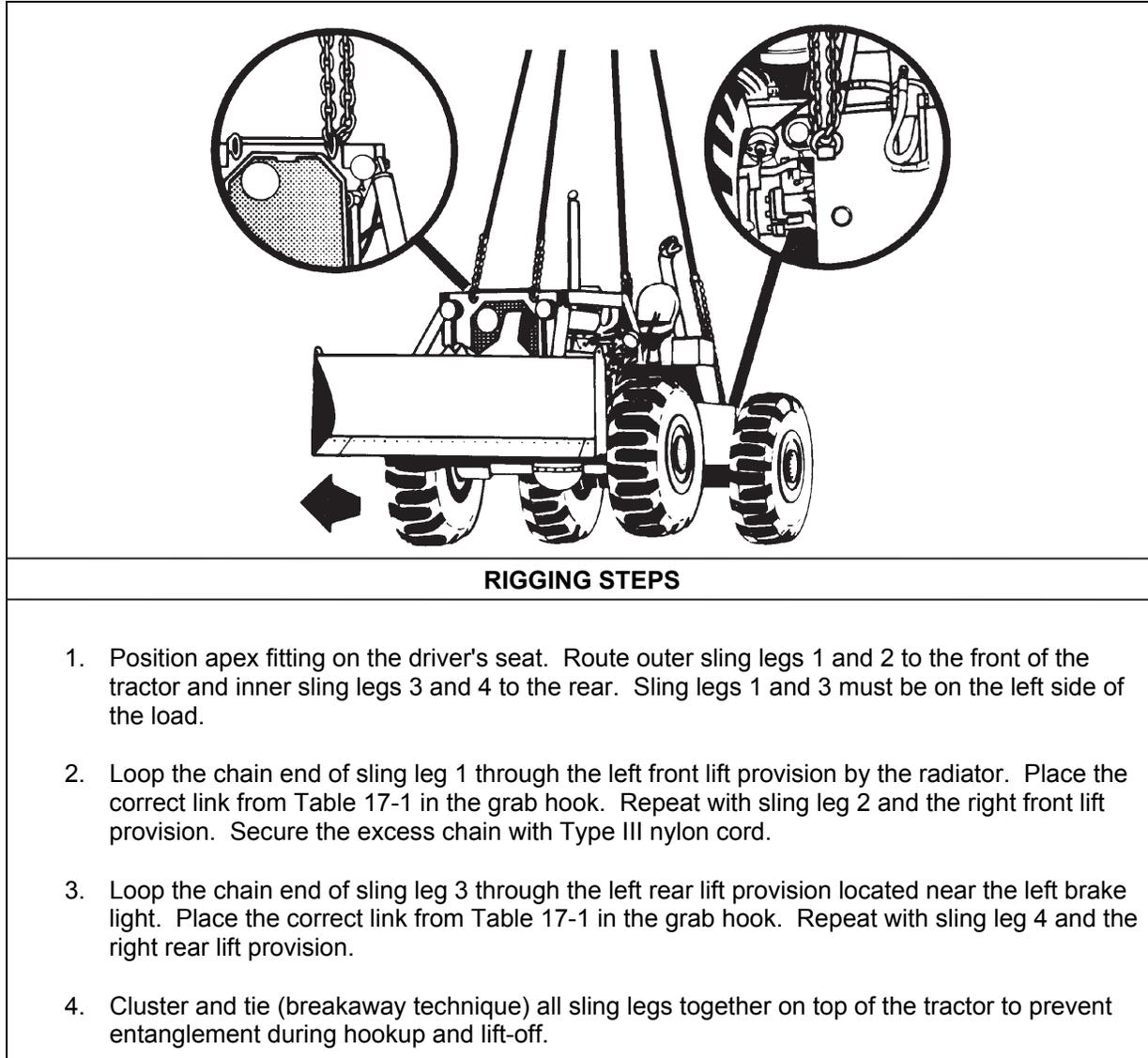
**Table 17-1. MRS-100 Wheeled Industrial Tractor**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
MRS-100 Wheeled Industrial Tractor	21,100	25K	53/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** One person can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Sectionalize the tractor from the scraper according to the operator's manual.
    - Secure the hydraulic lift cylinder in the carrying bracket.
    - Secure all caps, lids, and hatches.
    - Place the transmission in neutral and set the hand brake.
    - Lock the blade in the locked position.
  - **Rigging.** Rig the load according to the steps in Figure 17-1.
  - **Hookup.** The hookup team stands on the driver's seat. 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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 17-1. MRS-100 Wheeled Industrial Tractor**

## M5 8-FOOT AGGREGATE SPREADER

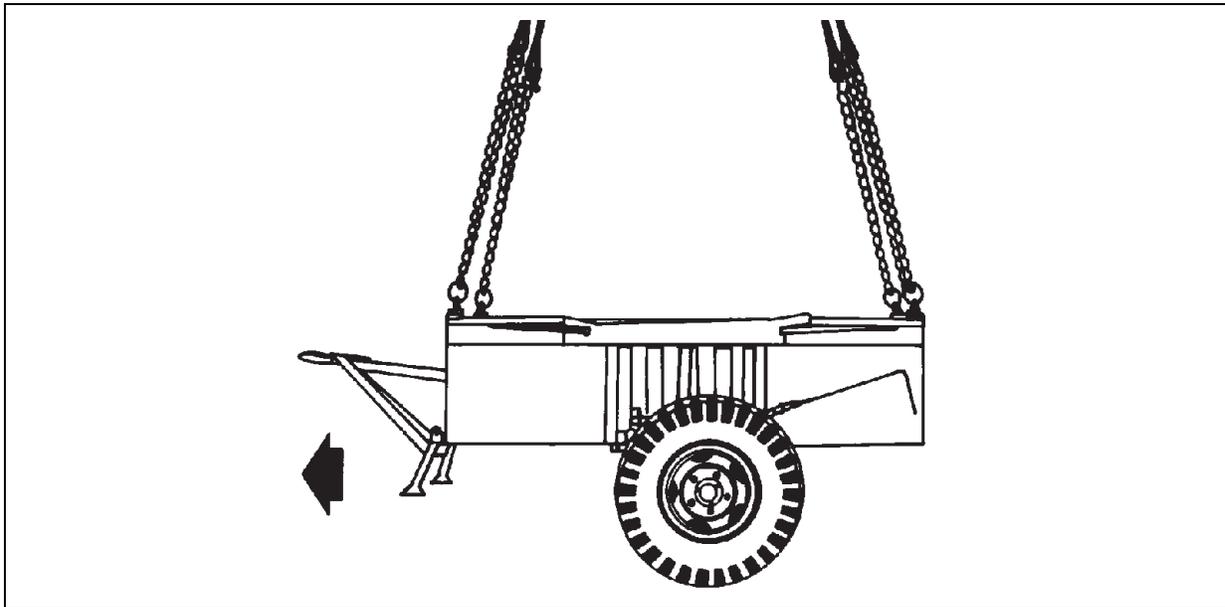
17-3. The M5 8-foot aggregate spreader is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 17-2 is suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 17-2. M5 8-Foot Aggregate Spreader**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M5 8-Foot Aggregate Spreader	2,290	10K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** One person can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Remove the operator's platform and block off plates.
    - Stow and secure the platform and plates in the spreader.
  - **Rigging.** Rig the load according to the steps in Figure 17-2.
  - **Hookup.** The hookup team stands on top of the spreader. 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 17-2. M5 8-Foot Aggregate Spreader**

<b>RIGGING STEPS</b>
<ol style="list-style-type: none"> <li>1. Position apex fitting on top of the spreader. Route outer sling legs 1 and 2 to the front (tongue end) of the spreader and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.</li> <li>2. Loop the chain end of sling leg 1 through the left front lifting eye located on the front left corner of the spreader. Place the correct link from Table 17-2 in the grab hook. Repeat with sling leg 2 and the right front lift provision.</li> <li>3. Loop the chain end of sling leg 3 through the left rear lifting eye located on the left rear corner of the spreader. Place the correct link from Table 17-2 in the grab hook. Repeat with sling leg 4 and the right rear lift provision.</li> <li>4. Cluster and tie (breakaway technique) all sling legs together on top of the spreader to prevent entanglement during hookup and lift-off.</li> </ol>

**Figure 17-2. M5 8-Foot Aggregate Spreader (Continued)**

## ROLLER, TOWED, VIBRATING, 1-DRUM, 5-TON, VR55TM

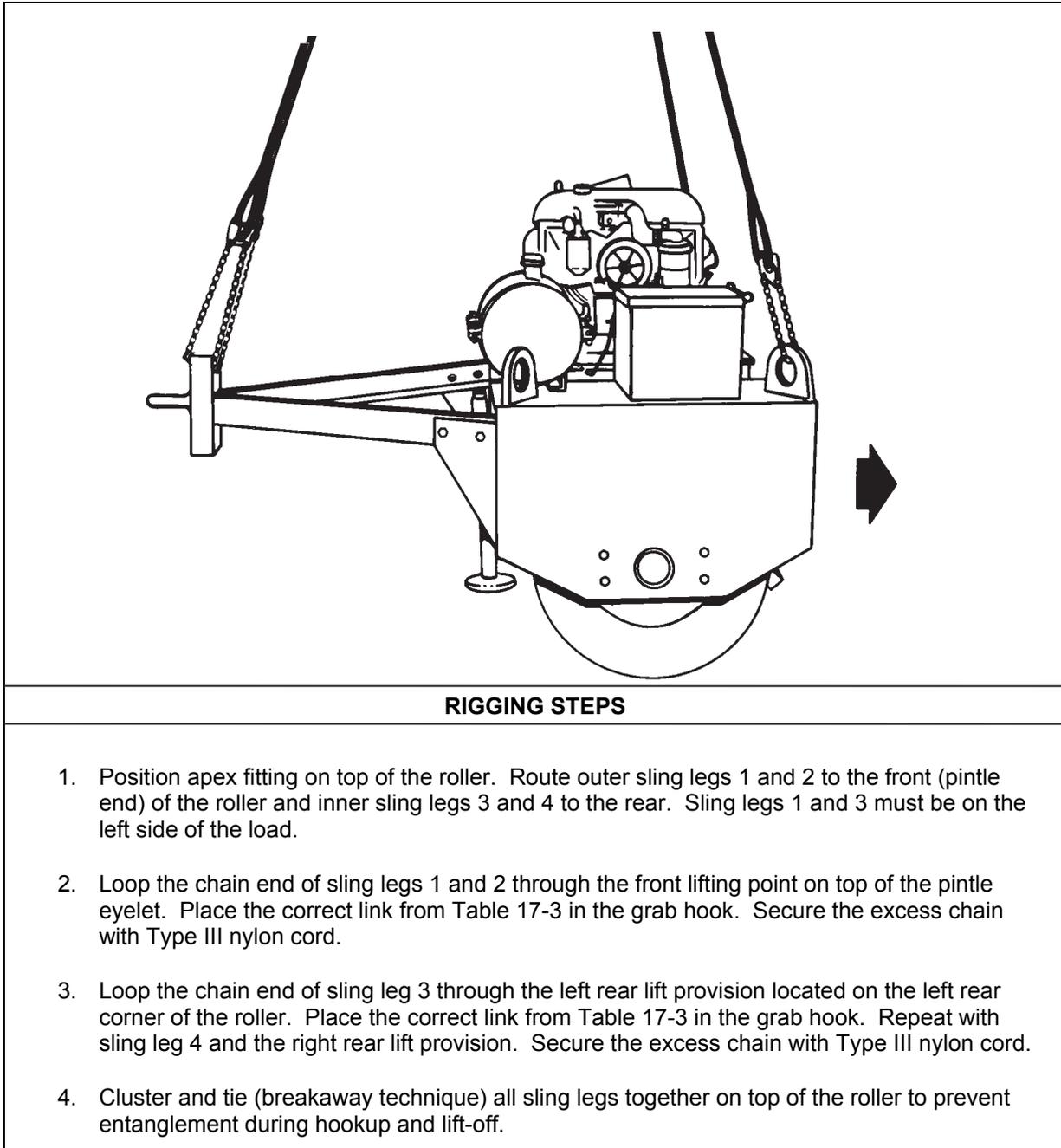
17-4. The roller, towed, vibrating, 1-drum, 5-ton, VR55TM is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 17-3 is suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 17-3. Roller, Towed, Vibrating, 1-Drum, 5-Ton, VR55TM**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Roller, Towed, Vibrating, 1-Drum, VR55TM	3,450	10K	20/90

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure the front and rear support legs in the DOWN position with Type III nylon cord.
    - Secure the battery box cover and engine top cover with Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 17-3.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 17-3. Roller, Towed, Vibrating, 1-Drum, 5-Ton, VR55TM**

## **ROLLER, ROAD, TOWED, WHEELED, 13-TIRE, 9-TON**

17-5. The roller, road, towed, wheeled, 13-tire, 9-ton is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 17-4 is suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

Table 17-4. Roller, Road, Towed, Wheeled, 13-Tire, 9-Ton

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Roller, Road, Towed, Wheeled, 13-Tire, 9-Ton	3,300	10K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down, cargo, CGU-1/B.
  - Chock blocks (2 each).
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure the drain plugs with tape.
    - Raise the tongue and secure it in place with the CGU-1/B cargo tie-down strap.
    - Place the chock blocks by each set of rollers.
  - **Rigging.** Rig the load according to the steps in Figure 17-4.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

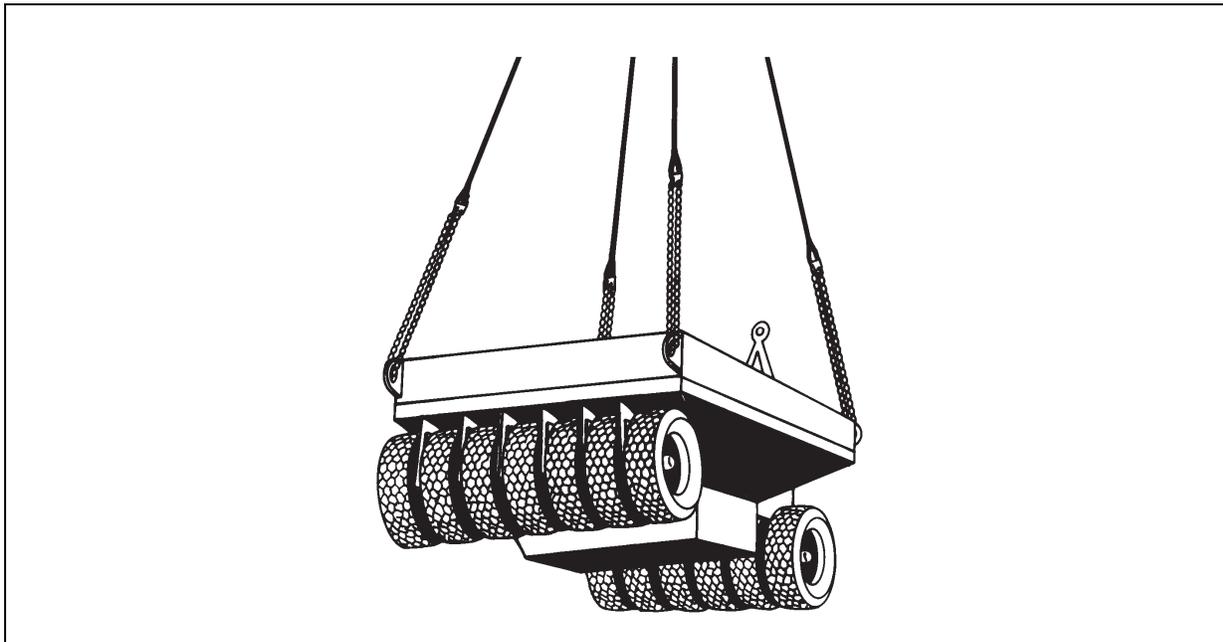


Figure 17-4. Roller, Road, Towed, Wheeled, 13-Tire, 9-Ton

<b>RIGGING STEPS</b>
<ol style="list-style-type: none"> <li>1. Position apex fitting on top of the roller. Route outer sling legs 1 and 2 to the front of the roller and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.</li> <li>2. Loop the chain end of sling leg 1 through the left front lift provision located on the front left corner of the roller. Place the correct link from Table 17-4 in the grab hook. Repeat with sling leg 2 and the right front lift provision.</li> <li>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 17-4 in the grab hook. Repeat with sling leg 4 and the right rear lift provision.</li> <li>4. Cluster and tie (breakaway technique) all sling legs together on top of the roller to prevent entanglement during hookup and lift-off.</li> </ol>

**Figure 17-4. Roller, Road, Towed, Wheeled, 13-Tire, 9-Ton (Continued)**

## TAR KETTLES

17-6. The tar kettles are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 17-5 are suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

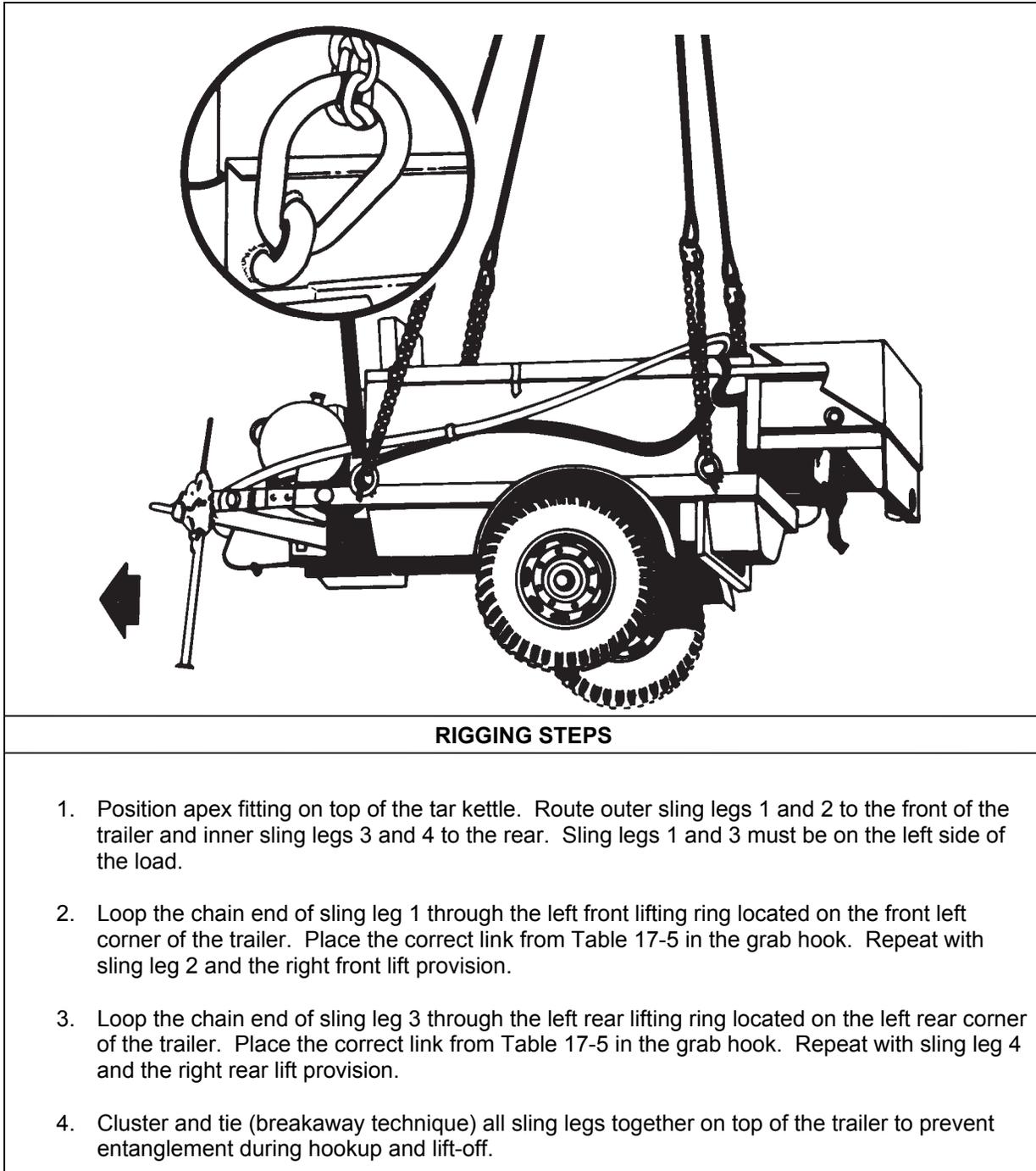
**Table 17-5. Tar Kettles**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Kettle, Heating, Bitumen, 165-Gallon	1,750	10K	5/20
Kettle, Bitumen, Trailer-Mounted, 7ZPSAP	1,900	10K	5/20

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure the trailer front support leg in the DOWN position. Secure all safety chains, cables, and hoses with tape or Type III nylon cord.
    - Secure all loose covers with Type III nylon cord.
    - Engage the parking brake.
  - **Rigging.** Rig the load according to the steps in Figure 17-5.
  - **Hookup.** The hookup team stands on the frame alongside the kettle. 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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 17-5. Tar Kettles**

## 16SM CONCRETE MIXER

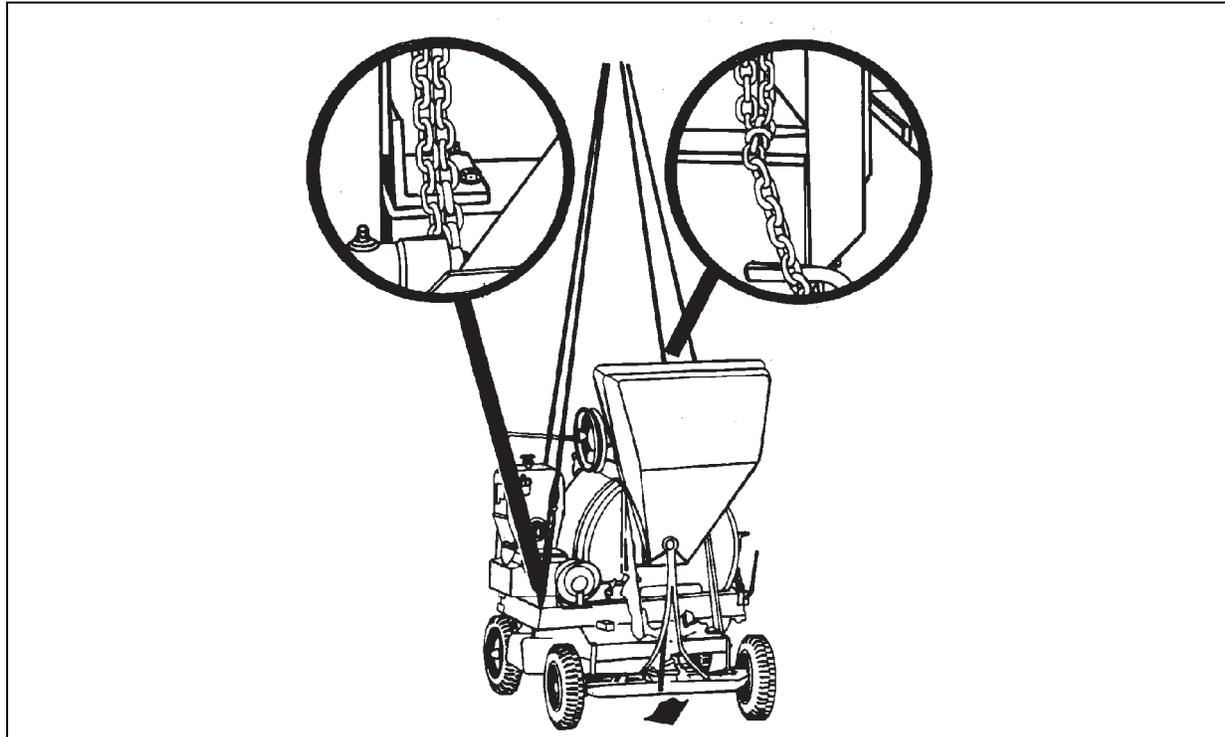
17-7. The 16SM concrete mixer is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 17-6 is suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 17-6. 16SM Concrete Mixer**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Mixer, Concrete, Trailer-Mounted, 16SM	6,040	10K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Chock blocks, 6 x 6 x 24-inch (4 each).
  - Tie-down, cargo, CGU-1/B (as required).
- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Place the chock blocks to the inside of each wheel.
    - Secure the tongue in the raised position using the CGU-1/B cargo tie-down strap.
    - Secure the scoop elevating wheel with the scoop in the raised position with rope or Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 17-6.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



#### RIGGING STEPS

1. Position apex fitting on top of the mixer. Route outer sling legs 1 and 2 to the front (tongue end) of the mixer 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 lifting ring located on the front left corner of the trailer frame near the left front wheel. Place the correct link from Table 17-6 in the grab hook. Repeat with sling leg 2 and the right front lift provision.
3. Route sling leg 3 inside the scoop elevating wheel and loop the chain end through the left rear lifting ring located on the left rear corner of the trailer frame near the left rear wheel. Place the correct link from Table 17-6 in the grab hook.
4. Route sling leg 4 inside the fan belt housing and loop the chain end through the right rear lifting ring on the trailer frame near the right rear wheel. Place the correct link from Table 17-6 in the grab hook.
5. Cluster and tie (breakaway technique) all sling legs together on top of the trailer to prevent entanglement during hookup and lift-off.

**Figure 17-6. 16SM Concrete Mixer**

## ROAD SWEEPER, TOWED

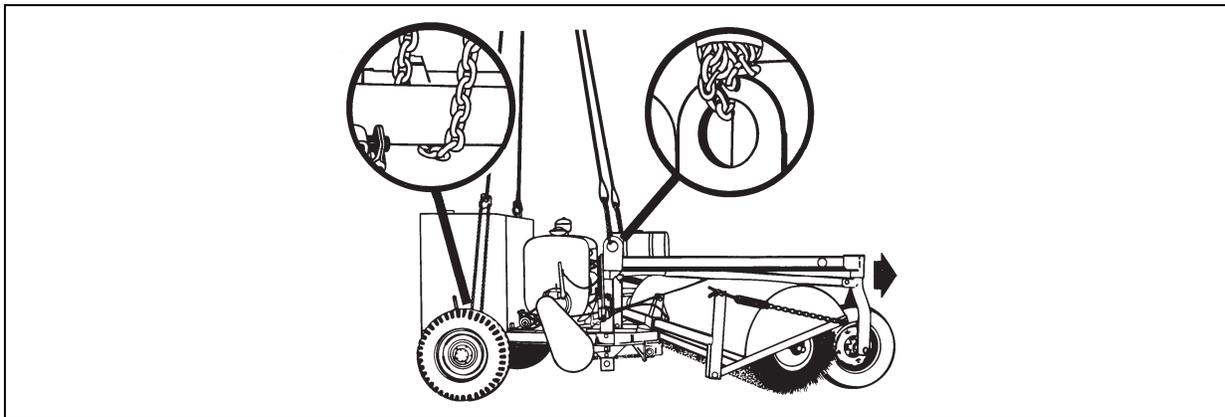
17-8. The road sweeper, towed is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 17-7 is suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 17-7. Road Sweeper, Towed**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Sweeper, Rotary, Towed with 150-Gallon Water Tank Sprinkling System	2,120	10K	90/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Rotate the towing bar around and secure it in place to the top horizontal bar. Secure safety chains in place with Type III nylon cord.
    - Rotate the brush to the last locking hole and secure it with the locking pin.
    - Secure the hydraulic handle in the UP position with Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 17-7.
  - **Hookup.** The hookup team stands on the frame next to the engine. 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 person 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 17-7. Road Sweeper, Towed**

<b>RIGGING STEPS</b>	
1.	Position apex fitting on top of the road sweeper. Route outer sling legs 1 and 2 to the front of the engine and inner sling legs 3 and 4 to the rear axle. 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 lifting point. Place the correct link from Table 17-7 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.	Loop the chain end of sling leg 3 around the left rear axle near the left rear wheel. Place the correct link from Table 17-7 in the grab hook. Repeat with sling leg 4 and the right rear axle.
4.	Cluster and tie (breakaway technique) all sling legs together on top of the sweeper to prevent entanglement during hookup and lift-off.

**Figure 17-7. Road Sweeper, Towed (Continued)**

## SHEEPSFOOT ROLLER, TWO-DRUM, MD-96

17-9. The sheepsfoot roller, two-drum, MD-96 is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 17-8 is suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

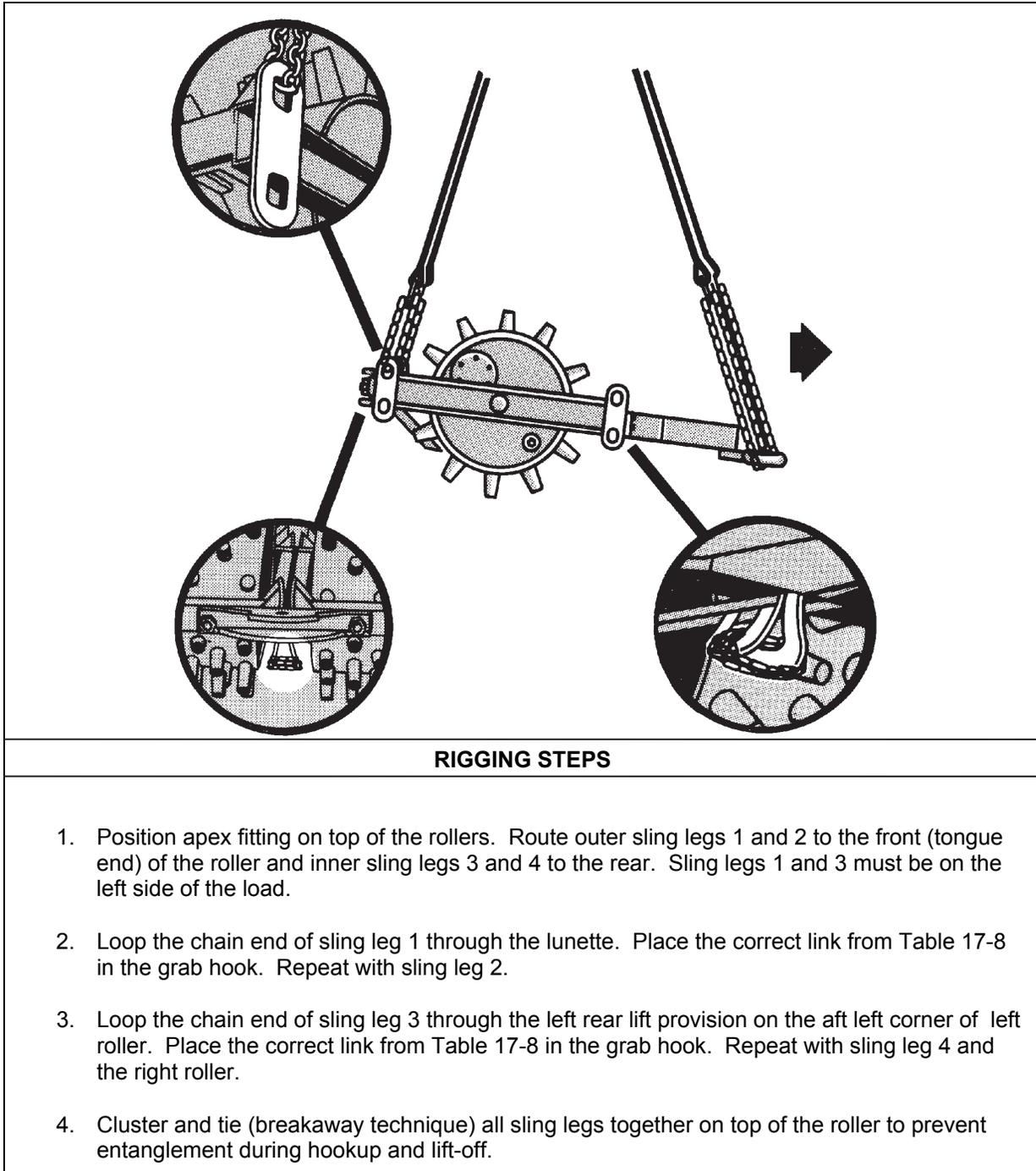
**Table 17-8. Sheepsfoot Roller, Two-Drum, MD-96**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Sheepsfoot Roller, Two-Drum, MD-96	7,500	10K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Chain assembly (2 each).
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Wrap a chain four or five times around the two lower tie-down points aft of the inner sections of the drums and engage hook in the chain end to prevent the two drum sections from pivoting upwards. Secure the hook with tape or Type III nylon cord so the hook will not disengage.
    - Repeat using the other chain on the two forward lower tie-down points.
  - **Rigging.** Rig the load according to the steps in Figure 17-8.
  - **Hookup.** The hookup team stands beside 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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 17-8. Sheepsfoot Roller, Two-Drum, MD-96**

## MODEL 1150 FULL TRACKED TRACTOR

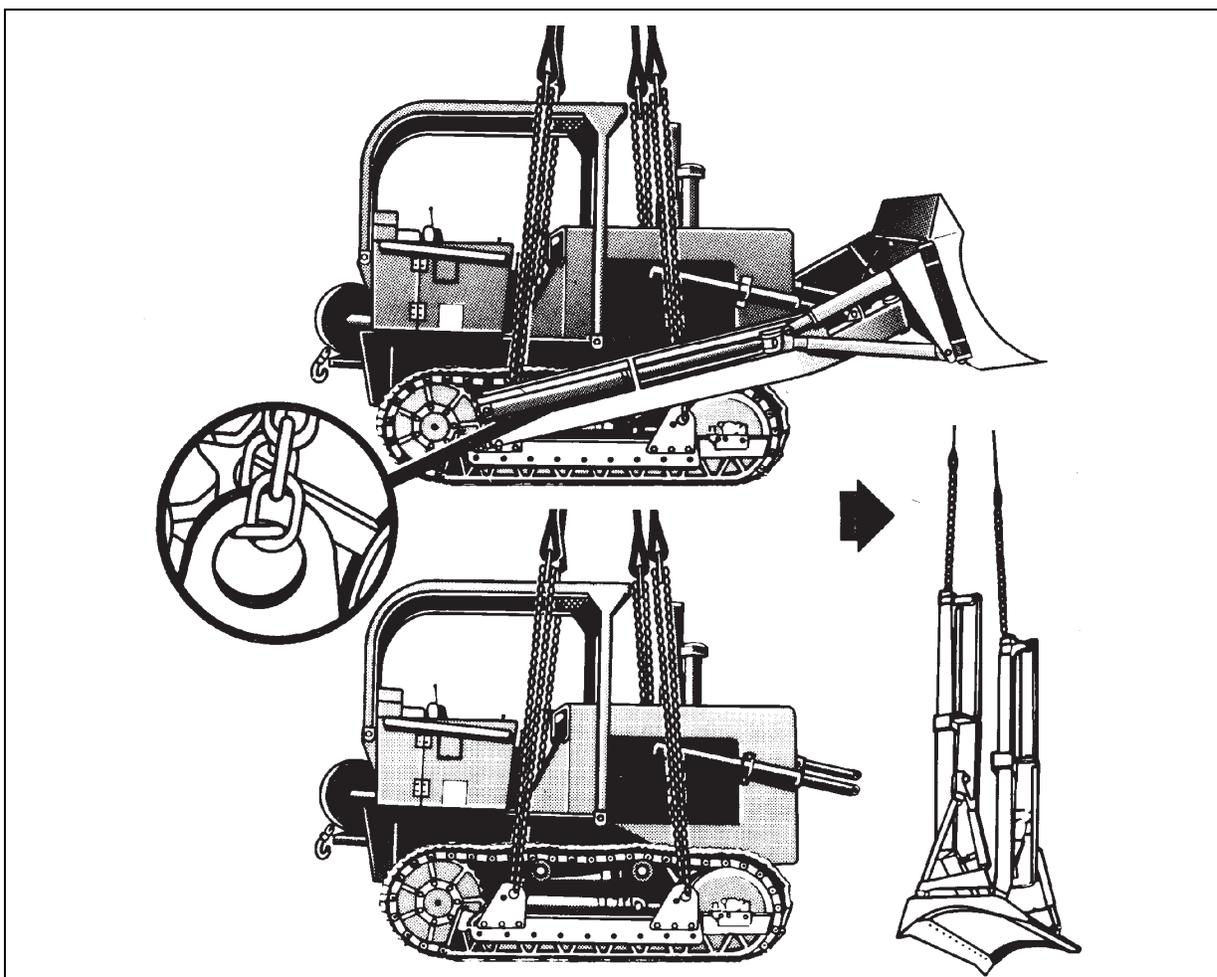
17-10. The model 1150 full tracked tractor is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 17-9 are suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 17-9. Model 1150 Full Tracked Tractor**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Tractor, Full-TrackeD, Case Model 1150 without Roll Over Protection System	21,930	25K	3/3
Tractor, Full-TrackeD, Case Model 1150 without Blade	18,740	25K	3/3
Blade	N/A	10K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
  - Sling set (10,000-pound capacity) (2 legs only).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Two protective plugs for hydraulic lines, if sectionalizing the tractor.
- **Personnel.** One person can rig each load in 5 minutes. Two persons can remove ROPS and sectionalize the tractor and blade in 2 hours.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Sectionalize the load, if required, according to the operator's manual. Install protective caps over the hoses and install trunnion caps securely.
    - Place the transmission in neutral.
  - **Rigging.** Rig the load according to the steps in Figure 17-9.
  - **Hookup.** The hookup team stands on the driver's seat or beside the blade assembly. 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS FOR TRACTOR**

1. Position apex fitting on top of the center of the tractor. Route outer sling legs 1 and 2 to the front of the tractor 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 by the front idler. Place the correct link from Table 17-9 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 outboard of the drive sprocket. Place the correct link from Table 17-9 in the grab hook. Repeat with sling leg 4 and the right lift provision.
4. Cluster and tie (breakaway technique) all sling legs together on top of the tractor to prevent entanglement during hookup and lift-off.

**Figure 17-9. Model 1150 Full Tracked Tractor**

<b>RIGGING STEPS FOR BLADE</b>
<ol style="list-style-type: none"> <li>1. Position apex fitting between the trunnion arms.</li> <li>2. Loop the chain end of the left sling leg through the hole in the left trunnion cap. Place the correct link from Table 17-9 in the grab hook.</li> <li>3. Loop the chain end of the right sling leg through the hole in the right trunnion cap. Place the correct link from Table 17-9 in the grab hook.</li> <li>4. Cluster and tie (breakaway technique) all sling legs together on top of the tractor to prevent entanglement during hookup and lift-off.</li> </ol>

**Figure 17-9. Model 1150 Full Tracked Tractor (Continued)**

## M4K 4000-POUND FORKLIFT

17-11. The M4K 4000-pound forklift is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 17-10 is suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

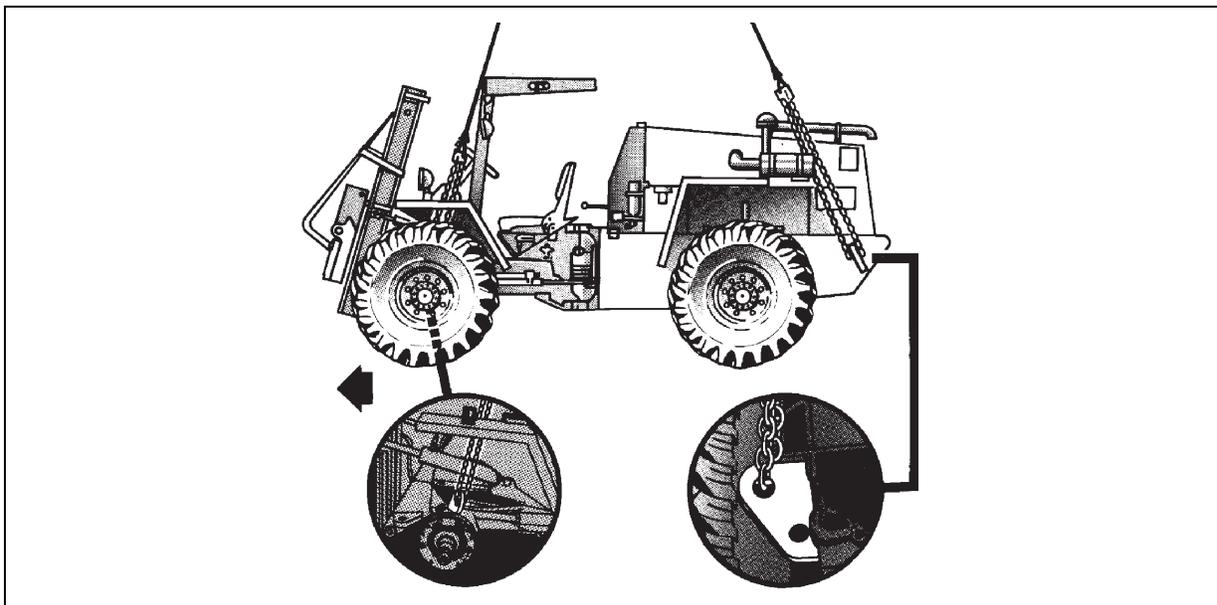
**Table 17-10. M4K 4000-Pound Forklift**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Forklift Rough Terrain, 4000-Pound, M4K	9,725	10	25/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
  - Tie-down strap, cargo, CGU-1/B (as required).
- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Insert the locking pin or bolt and nut to prevent the front and rear ends from pivoting.
    - Secure the steering wheel with Type III nylon cord. Engage the hand brake.
    - Ensure the fuel tank is less than 3/4 full.
    - Pad the forward edge of the roll over protection system (ROPS). Secure the padding with tape or Type III nylon cord.
    - Raise the fork tines approximately 1 foot above the ground. Lift the ends of the fork tines by hand to point upward and secure the fork tines to the lift cylinder frame using the tie-down strap.
  - **Rigging.** Rig the load according to the steps in Figure 17-10.
  - **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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting on top of the engine hood. Route outer sling legs 1 and 2 to the front of the forklift. Ensure the sling legs are routed behind the lower driving light box beam mounted on the front fenders. Route 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 directly above the forward axle housing between the left front tire and the hydraulic cylinder. Place the correct link from Table 17-10 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. Loop the chain end of sling leg 3 through the top hole in the left rear lift provision. Place the correct link from Table 17-10 in the grab hook. Repeat with sling leg 4 and the right rear lift provision.
4. Pull the aft sling legs together on top of the engine compartment and tie (breakaway technique) the grab hooks together.
5. Cluster and tie (breakaway technique) all sling legs together on top of the forklift to prevent entanglement during hookup and lift-off.

**Figure 17-10. M4K 4000-Pound Forklift**

## FLOODLIGHT SET, TRAILER-MOUNTED

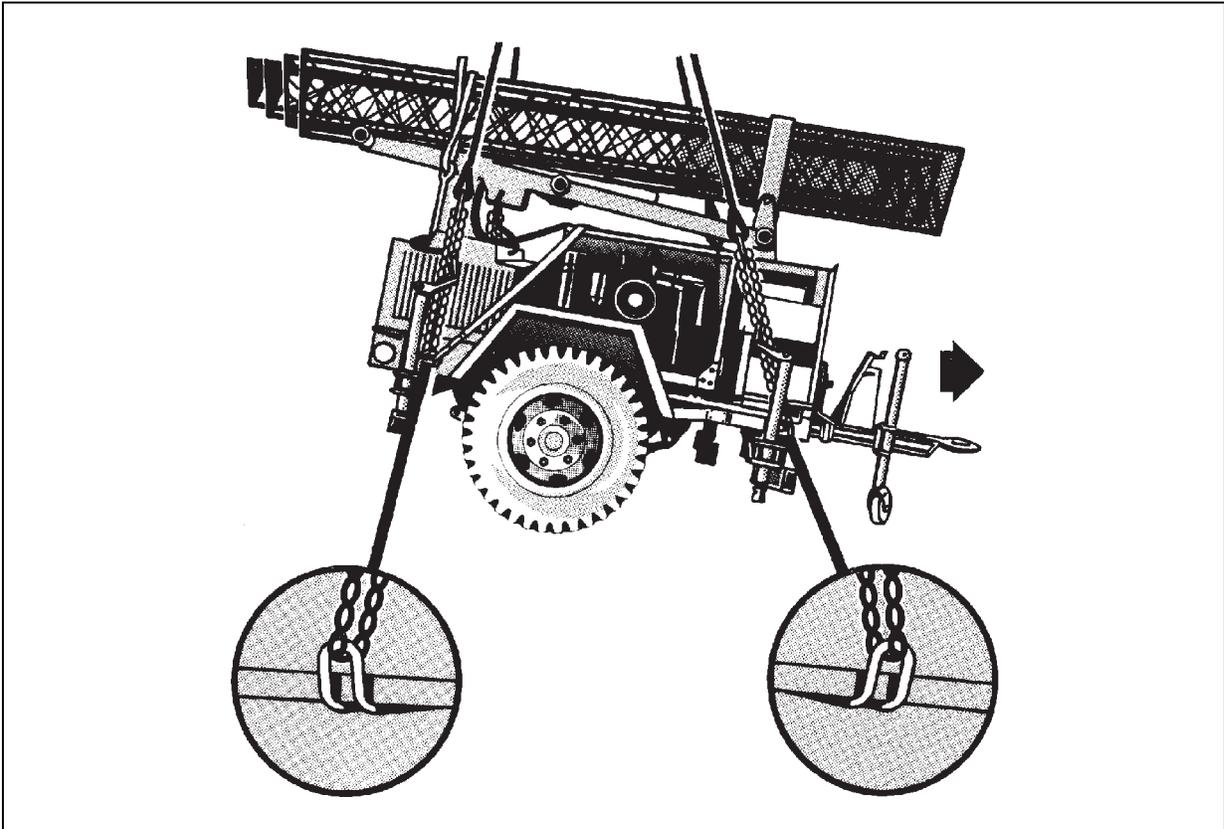
17-12. The floodlight set, trailer-mounted is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 17-11 is suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 17-11. Floodlight Set, Trailer-Mounted**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Floodlight Set, Trailer-Mounted, Model No. HLT-3KW-M.1	2,300	10	40/100

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down strap, cargo, CGU-1/B (as required).
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Ensure the generator set is secured in place with the security bolts. Use the CGU-1/B tie-down straps if necessary.
    - Secure the mast section and lights in place with Type III nylon cord.
    - Secure all cables, hoses, and chains to the trailer tongue with tape or Type III nylon cord.
    - Engage the parking brake. Raise all the leveling legs to the full up position. Secure the trailer tongue leg in the down position.
  - **Rigging.** Rig the load according to the steps in Figure 17-11.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**RIGGING STEPS**

1. Position apex fitting on top of the floodlight set. 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 side of the trailer. Place the correct link from Table 17-11 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. Loop the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 17-11 in the grab hook. Repeat with sling leg 4 and the right rear lift provision. Secure the excess chain with Type III nylon cord.
4. Cluster and tie (breakaway technique) all sling legs together on top of the floodlight set to prevent entanglement during hookup and lift-off.

**Figure 17-11. Floodlight Set, Trailer-Mounted**

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## Chapter 18

# Suitable Single-Point Rigging Procedures for Liquid Containers

### INTRODUCTION

18-1. This chapter contains rigging procedures for single-point lift of liquid containers that are suitable 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 suitable loads. The suitable single-point rigging procedures for liquid containers are in this section. Paragraphs 18-2 through 18-4 give detailed instructions for rigging loads.

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

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### TANK, FABRIC, COLLAPSIBLE, 10,000-GALLON

18-2. The tank, fabric, collapsible, 10,000-gallon is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 18-1 is suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 18-1. Tank, Fabric, Collapsible, 10,000-Gallon**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Tank, Fabric, Collapsible, 10,000-Gallon	1,040	10K	100/100

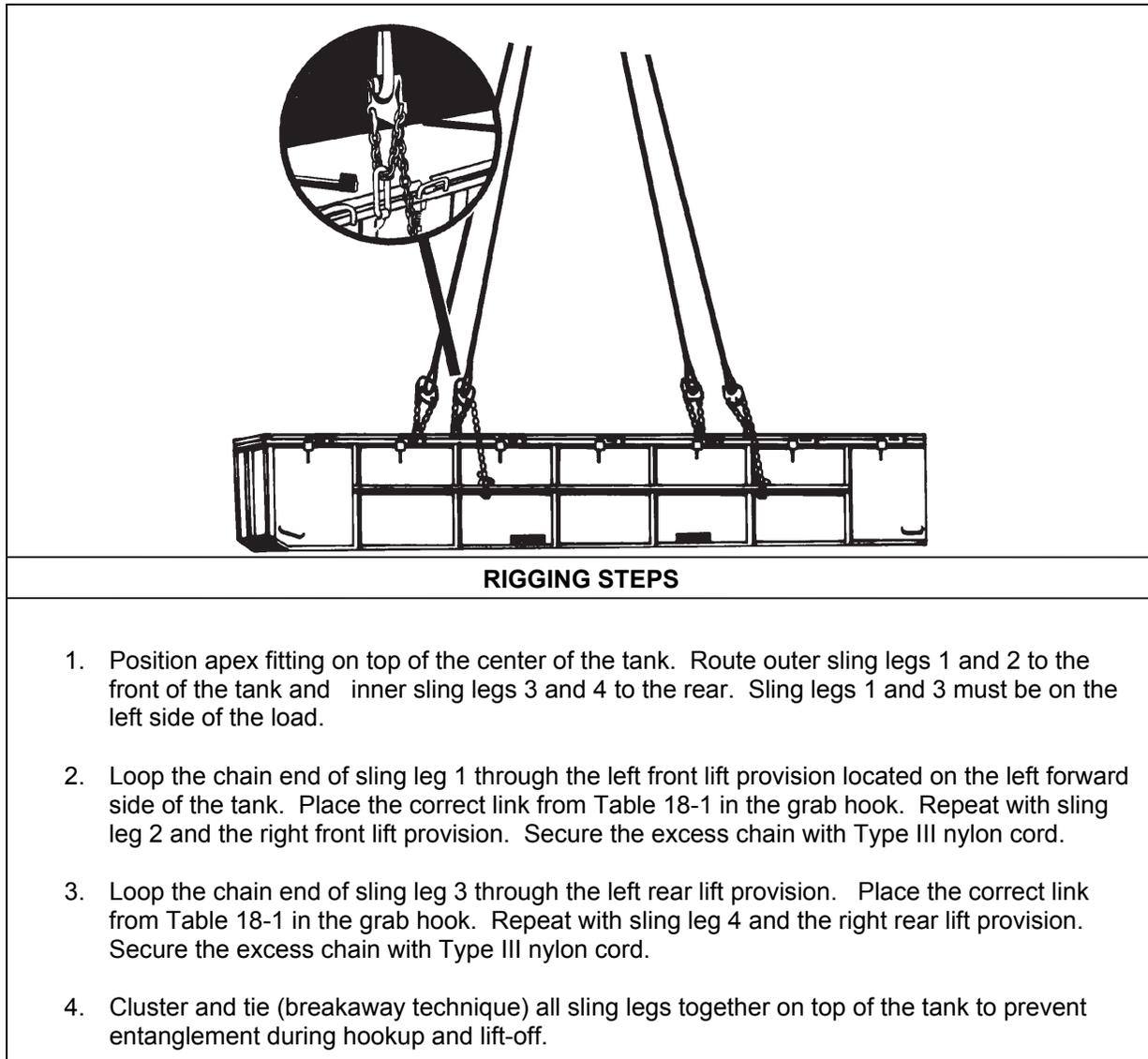
#### CAUTION

This load may become unstable at airspeeds above 35 knots.

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Ensure all safety latches on the cover are securely closed.
  - **Rigging.** Rig the load according to the steps in Figure 18-1.

*Note.* Do not carry more than one tank at a time.

- **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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 18-1. Tank, Fabric, Collapsible, 10,000-Gallon**

## 60,000-GALLON FUEL SYSTEM SUPPLY POINT

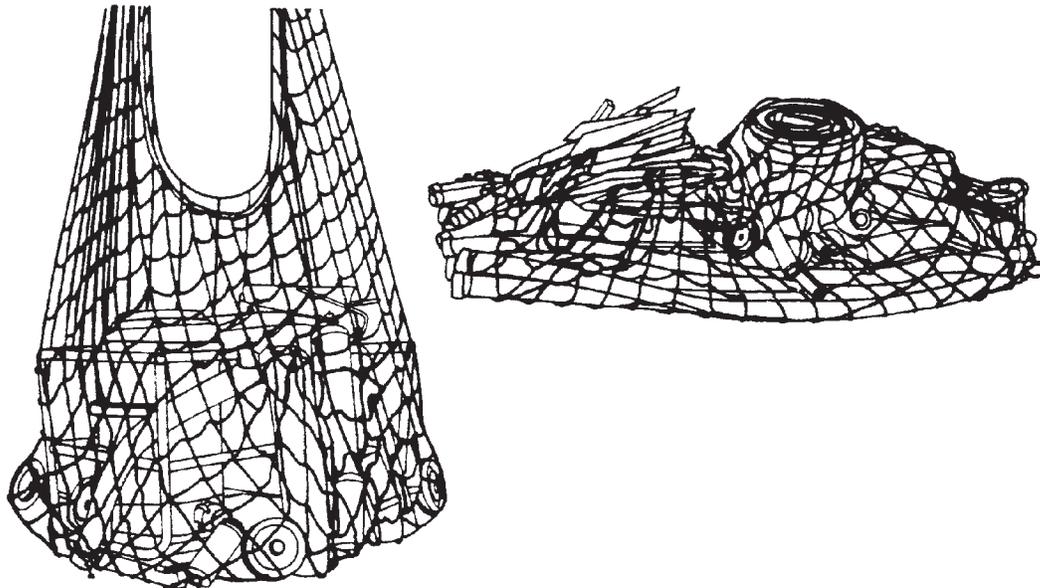
18-3. The 60,000-gallon fuel system supply point is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 18-2 are suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 18-2. 60,000-Gallon Fuel System Supply Point**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
60,000-Gallon Fuel System Supply Point	N/A	N/A	N/A
Net # 1 – Pump	1,300	5K Net	N/A
Net # 2 – Tanks	6,000	10K Net	N/A
Net # 3 – Hoses	2,000	5K Net	N/A
Net # 4 – Hoses	2,200	5K Net	N/A
Net # 5 – Hoses	4,000	5k Net	N/A

- **Materials.** The following materials are required to rig this load:
  - Net, cargo (5,000-pound capacity) (4 each).
  - Net, cargo (10,000-pound capacity).
  - Sling set (10,000-pound capacity) (2 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Apex fitting (25,000-pound capacity).
- **Personnel.** Eight persons can prepare and rig this load in 60 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
  - **Rigging.** Rig the load according to the steps in Figure 18-2.
    - Spread out all five nets side by side.
    - Center the pump on net #1 (5,000-pound capacity).
    - Center two metal containers with tanks and fittings on net #2 (10,000-pound capacity). Position the third container on top of the bottom two containers.
    - Center both filters on net #3. Tie three fire extinguishers to each side of the filters with Type III nylon cord. Place six rolled hoses on top of the filters. Pull the net up around the load and tie the corners to the pumps.
    - Place 15 long hoses centered on net #4 (5,000-pound capacity). Build a pyramid of 120 hoses.
    - Secure all signs on a pallet and secure with Type III nylon cord. Center the net on net #5. Secure four fire extinguishers on a second pallet and center on the net. Pile all remaining hoses on the pallets.
  - **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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.


<p><b>Note.</b> If both loads are being moved as one load, place both sling set apex fittings on a 25,000-pound capacity apex fitting.</p>
<p><b>RIGGING STEPS LOAD 1</b></p>
<ol style="list-style-type: none"> <li>1. Loop the chain end of one sling leg through the apex fitting of net 1 and insert link 3 in the grab hook.</li> <li>2. Loop the chain end of three sling legs through the apex fitting of net 2 and insert link 3 in the grab hook.</li> </ol>
<p><b>RIGGING STEPS LOAD 2</b></p>
<ol style="list-style-type: none"> <li>1. Loop the chain end of one sling leg through the apex fitting of net 3 and insert link 3 in the grab hook.</li> <li>2. Loop the chain end of one sling leg through the apex fitting of net 4 and insert link 3 in the grab hook.</li> <li>3. Loop the chain end of two sling legs through the apex fitting of net 5 and insert link 3 in the grab hook.</li> </ol>

**Figure 18-2. 60,000-Gallon Fuel System Supply Point**

## ONE TO SIX 250-GALLON WATER DRUMS

18-4. One to six 250-gallon water drums are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 18-3 are suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 18-3. One to Six 250-Gallon Water Drums**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
One Drum, Fabric, Water, 250-Gallon	2,210	10K	3
Two Drums, Fabric, Water, 250-Gallon	4,420	10K	3/3
Three Drums, Fabric, Water, 250-Gallon	6,630	10K	3/20
Four Drums, Fabric, Water, 250-Gallon	8,840	10K	3/3
Five Drums, Fabric, Water, 250-Gallon	11,050	10K	3/3/33
Six Drums, Fabric, Water, 250-Gallon	13,260	10K	3/3/22

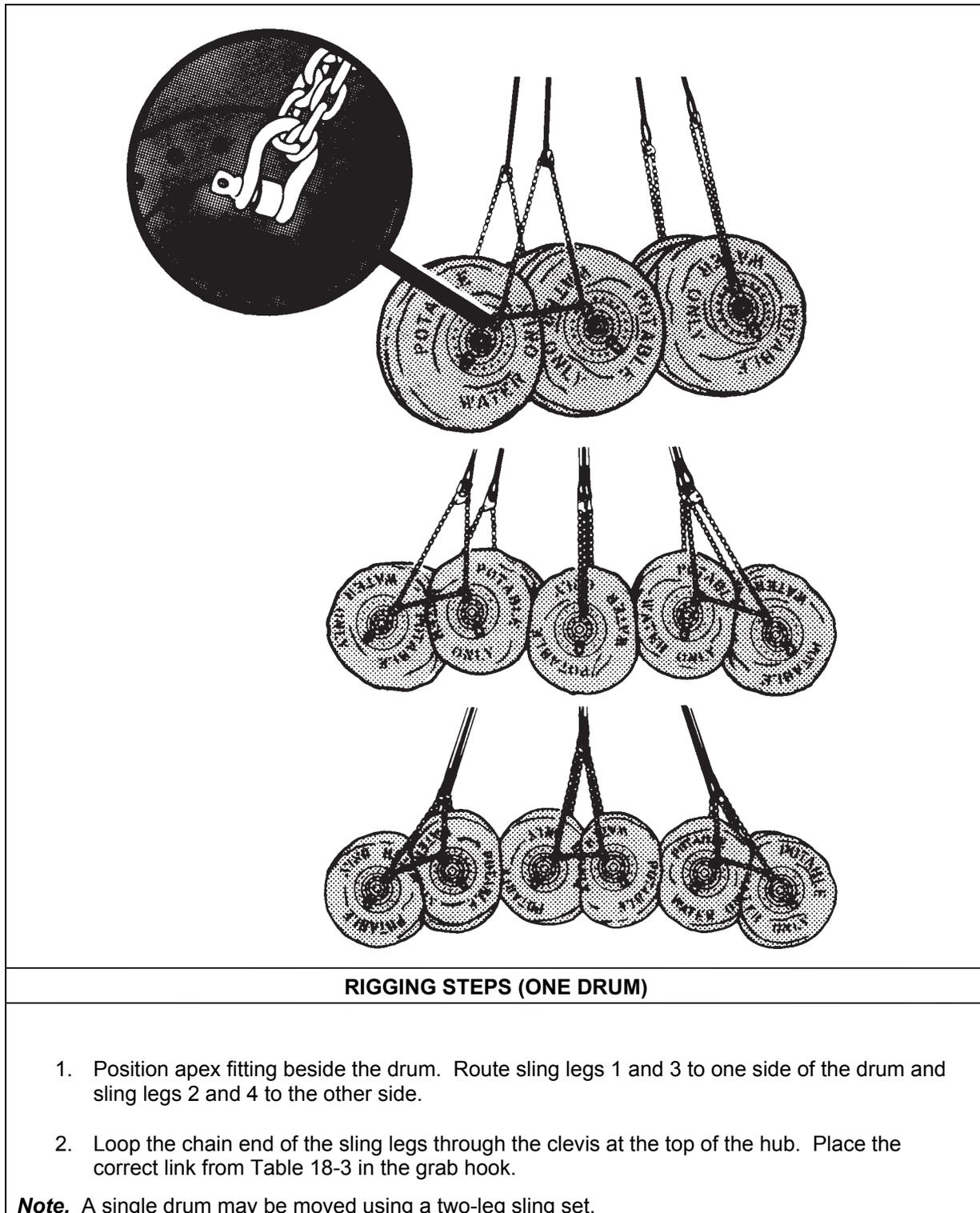
- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity) with 2 additional sling legs.
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Apex fitting (25,000-pound capacity).
- **Personnel.** One person can prepare and rig one drum in 5 minutes; add 5 minutes for each additional drum.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Align all drums side by side (if appropriate) and rotate the hubs of each drum so a clevis is positioned at the top.
  - **Rigging.** Rig the load according to the steps in Figure 18-3.

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*Note.* Route the sling legs so the odd numbered sling legs are to one side of the drum(s) and the even numbered sling legs are to the other side.

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- **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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 18-3. One to Six 250-Gallon Water Drums**

<b>RIGGING STEPS (TWO DRUMS)</b>
<ol style="list-style-type: none"> <li>1. Position apex fitting beside or on top of the two drums. Route outer sling legs 1 and 2 to the front drum and inner sling legs 3 and 4 to the rear drum.</li> <li>2. Loop the chain end of the sling leg through the appropriate clevis at the top of the hub for each drum. Place the correct link from Table 18-3 in the grab hook.</li> </ol>
<b>RIGGING STEPS (THREE DRUMS)</b>
<ol style="list-style-type: none"> <li>1. Position apex fitting beside or on top of the drums. Route outer sling legs 1 and 2 to the front drum and inner sling legs 3 and 4 to the rear drum.</li> <li>2. Loop the chain end of sling leg 1 through the clevis at the top of the outer drum and through the clevis at the top of the center drum. Place the correct link from Table 18-3 in the grab hook.</li> <li>3. Loop the chain end of sling leg 3 through the clevis at the top of the hub of the outer drum. Place the correct link from Table 18-3 in the grab hook. Repeat with sling leg 4 on the other side of the drum. Secure the excess chain with Type III nylon cord.</li> </ol>
<b>RIGGING STEPS (FOUR DRUMS)</b>
<ol style="list-style-type: none"> <li>1. Position apex fitting beside or on top of the drums. Route outer sling legs 1 and 2 to the front drum and inner sling legs 3 and 4 to the rear drum.</li> <li>2. Loop the chain end of sling leg 1 through the clevis at the top of the outer drum and through the clevis at the top of the next inner drum. Place the correct link from Table 18-3 in the grab hook. Repeat with sling leg 2 on the other side of the drums.</li> <li>3. Loop the chain end of sling leg 3 through the clevis at the top of the hub of the rear outer drum and through the clevis at the top of the next inner drum. Place the correct link from Table 18-3 in the grab hook. Repeat with sling leg 4 on the other side of the drums.</li> </ol>
<b>RIGGING STEPS (FIVE DRUMS)</b>
<ol style="list-style-type: none"> <li>1. Configure a six-leg sling set using a 25,000-pound capacity apex fitting and six sling leg assemblies.</li> <li>2. Position apex fitting on top of the drums. Route outer sling legs 1 and 2 to the front drum, middle sling legs 3 and 4 to the rear drum and inner sling legs 5 and 6 to the center drum.</li> <li>3. Loop the chain end of sling leg 1 through the left clevis on outer drum and through the left clevis of an adjacent drum. Place the correct link from Table 18-3 in the grab hook. Repeat with sling leg 2 on the right side of the drums.</li> <li>4. Loop the chain end of sling leg 3 through the left clevis on outer drum and through the left clevis of an adjacent drum. Place the correct link from Table 18-3 in the grab hook. Repeat with sling leg 4 on the right side of the drums.</li> <li>5. Loop the chain end of sling leg 5 through the top clevis of the center drum. Place the correct link from Table 18-3 in the grab hook. Repeat with sling leg 6 on the right side of the drum. Secure the excess chain with Type III nylon cord.</li> </ol>

**Figure 18-3. One to Six 250-Gallon Water Drums (Continued)**

<b>RIGGING STEPS (SIX DRUMS)</b>
<ol style="list-style-type: none"><li>1. Configure a six-leg sling set using a 25,000-pound capacity apex fitting and six sling leg assemblies.</li><li>2. Position apex fitting on top of the drums. Route outer sling legs 1 and 2 to the front drum, middle sling legs 3 and 4 to the rear drum and inner sling legs 5 and 6 to the center drum.</li><li>3. Loop the chain end of sling leg 1 through the left clevis on outer drum and through the left clevis of an adjacent drum. Place the correct link from Table 18-3 in the grab hook. Repeat with sling leg 2 on the right side of the drums.</li><li>4. Loop the chain end of sling leg 3 through the left clevis on outer drum and through the left clevis of an adjacent drum. Place the correct link from Table 18-3 in the grab hook. Repeat with sling leg 4 on the right side of the drums.</li><li>5. Loop the chain end of sling leg 5 through the top clevis of both center drums. Place the correct link from Table 18-3 in the grab hook. Repeat with sling leg 6 on the right side of the drums. Secure the excess chain with Type III nylon cord.</li></ol>

**Figure 18-3. One to Six 250-Gallon Water Drums (Continued)**

## Chapter 19

# Suitable Single-Point Rigging Procedures for Shelters

## INTRODUCTION

19-1. This chapter contains rigging procedures for single-point lift of shelters that are suitable 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 suitable loads. The suitable single-point rigging procedures for shelters are in this section. Paragraphs 19-2 and 19-3 give detailed instructions for rigging loads.

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

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## TOOL SET, AVIATION MAINTENANCE, SE 1, AIRMOBILE

19-2. The tool set, aviation maintenance, SE 1, airmobile is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 19-1 is suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

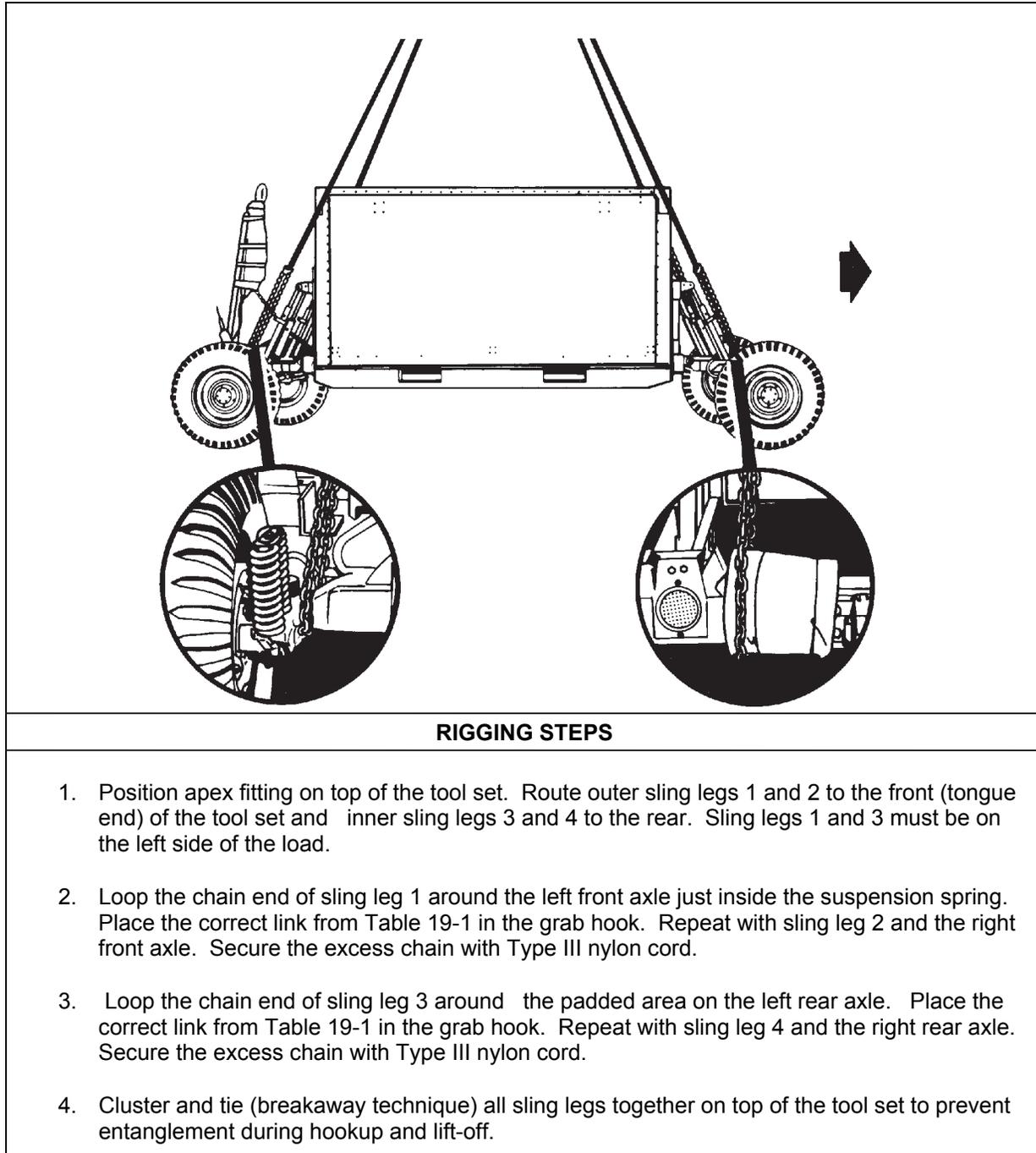
**Table 19-1. Tool Set, Aviation Maintenance, SE 1, Airmobile**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Tool Set, Aviation Maintenance, SE 1, Airmobile	3,030,	10K	30/30

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure the tongue in the UP position with Type III nylon cord. Secure the safety chains and hoses to the tongue with tape or Type III nylon cord. Secure the jack handles in position with tape or Type III nylon cord.
    - Pad the rear axle on each side of the towing pintle and secure the padding with tape or Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 19-1.
  - **Hookup.** The hookup team stands on top of the tool set. 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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 19-1. Tool Set, Aviation Maintenance, SE 1, Airmobile**

## SHOP, PORTABLE, AIRCRAFT MAINTENANCE (SPAM)

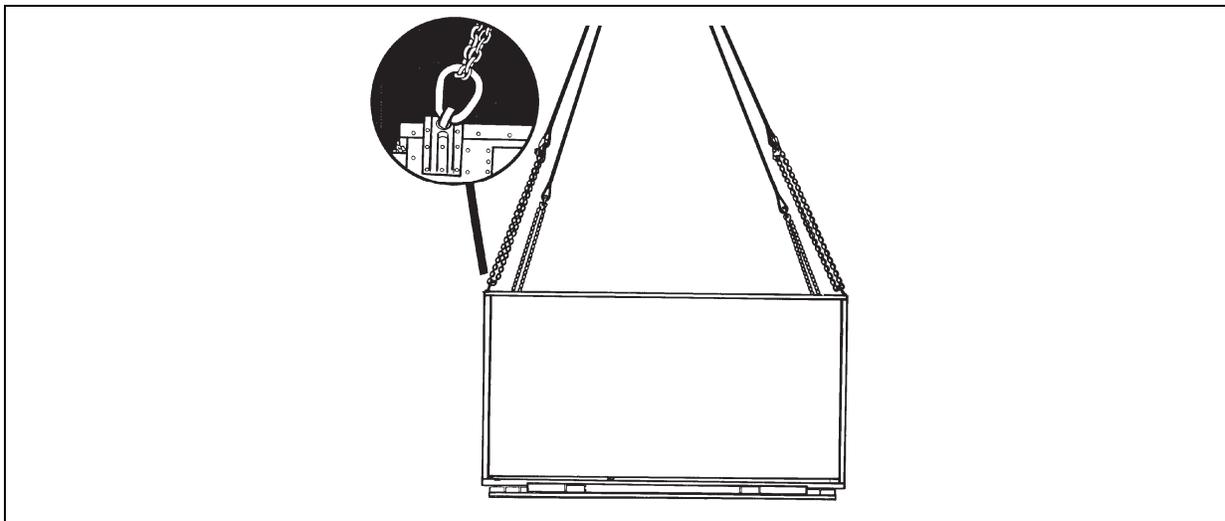
19-3. The shop, portable, aircraft maintenance is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 19-2 is suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 19-2. Shop, Portable, Aircraft Maintenance**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Shop Portable, Aircraft Maintenance	5,425	10K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 5 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure all vents and doors with tape or Type III nylon cord.
    - Secure the fold-out safety cable with tape or Type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 19-2.
  - **Hookup.** The hookup team stands on top of the SPAM. 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 19-2. Shop, Portable, Aircraft Maintenance**

**RIGGING STEPS**

1. Position apex fitting on top of the shop. Route outer sling legs 1 and 2 to the front (door end) of the tool set 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. Place the correct link from Table 19-2 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 19-2 in the grab hook. Repeat with sling leg 4 and the right rear lift ring.
4. Cluster and tie (breakaway technique) all sling legs together on top of the shop to prevent entanglement during hookup and lift-off.

**Figure 19-2. Shop, Portable, Aircraft Maintenance (Continued)**

## Chapter 20

# Suitable Single-Point Rigging Procedures for Containers

## INTRODUCTION

20-1. This chapter contains rigging procedures for single-point lift of containers that are suitable 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 suitable loads. The suitable single-point rigging procedures for containers are in this section. Paragraphs 20-2 and 20-3 give detailed instructions for rigging loads.

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*Note.* Reach pendants may be used on all single point loads. A static discharge person is not required when using a reach pendant.

---

## ONE CONEX CONTAINER

20-2. One CONEX container is rigged for single-point sling load using the following procedures:

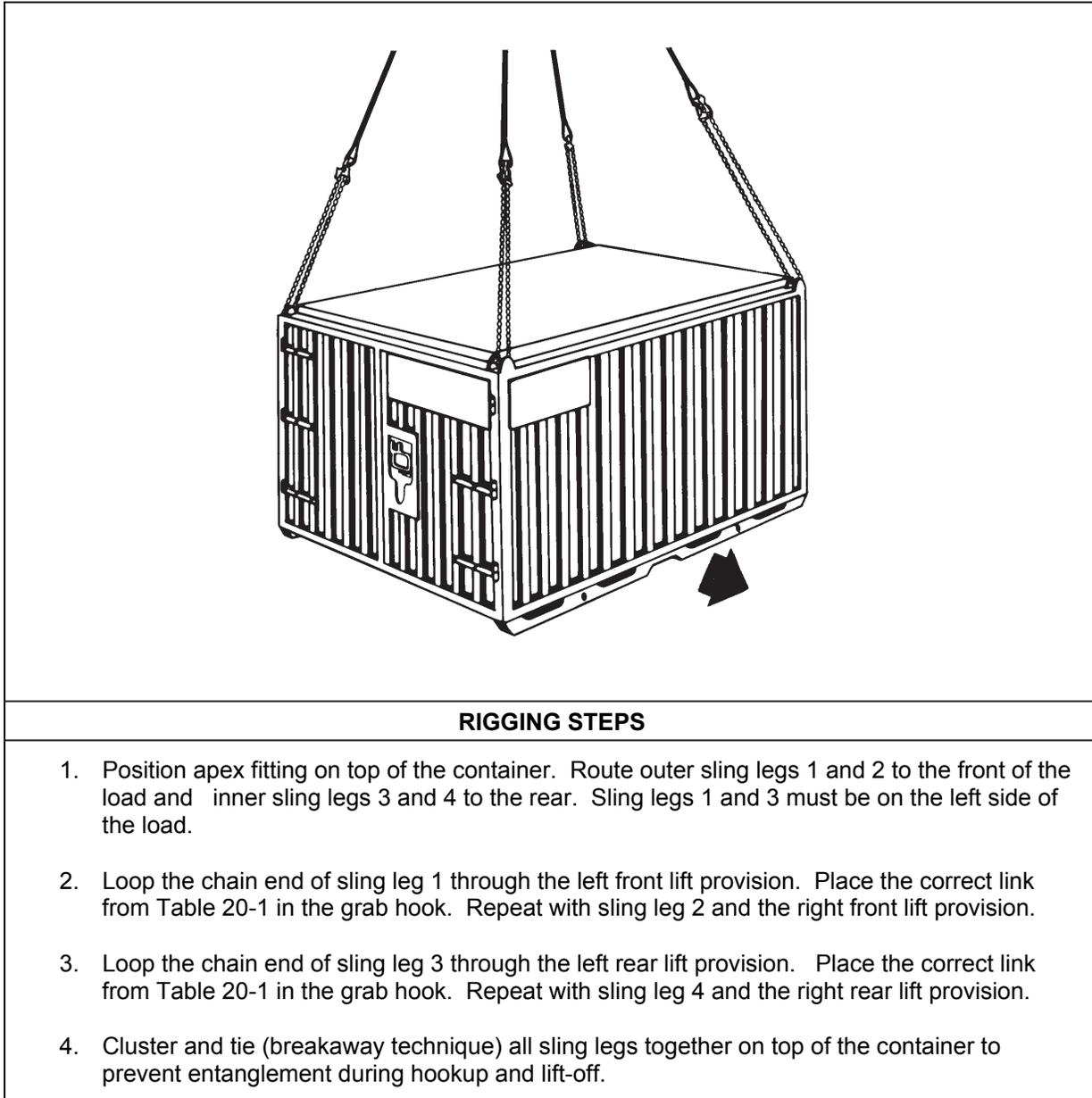
- **Applicability.** The following items in Table 20-1 are suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 20-1. One CONEX Container**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Box, Metal, Shipping, Conex, 270 Cubic Feet	1,560	10K	3/3
Box, Metal, Shipping, Conex, 295 Cubic Feet	2,140	10K	3/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down strap CGU-1/B.
- **Personnel.** One person can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Close the doors.
    - Secure the doors by routing CGU-1/Bs around the entire container.
  - **Rigging.** Rig the load according to the steps in Figure 20-1.
  - **Hookup.** The hookup team stands on top of the container. 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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 20-1. One CONEX Container**

## TWO CONEX CONTAINERS

- 20-3. Two CONEX containers are rigged for single-point sling load using the following procedures:
- **Applicability.** The following items in Table 20-2 are suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

Table 20-2. Two CONEX Containers

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Two Boxes, Metal, Shipping, Conex, 270 Cubic Feet	10,000	10K	3/60/3
Two Boxes, Metal, Shipping, Conex, 295 Cubic Feet	10,000	10K	3/60/3

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity) with two additional sling leg assemblies.
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Tie-down strap CGU-1/B.
- **Personnel.** Two persons can prepare and rig this load in 20 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Position the containers side by side with the doors facing the same direction.
    - Close and secure the doors by routing CGU-1/Bs around the entire container.
  - **Rigging.** Rig the load according to the steps in Figure 20-2.
  - **Hookup.** The hookup team stands on top of the containers. 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

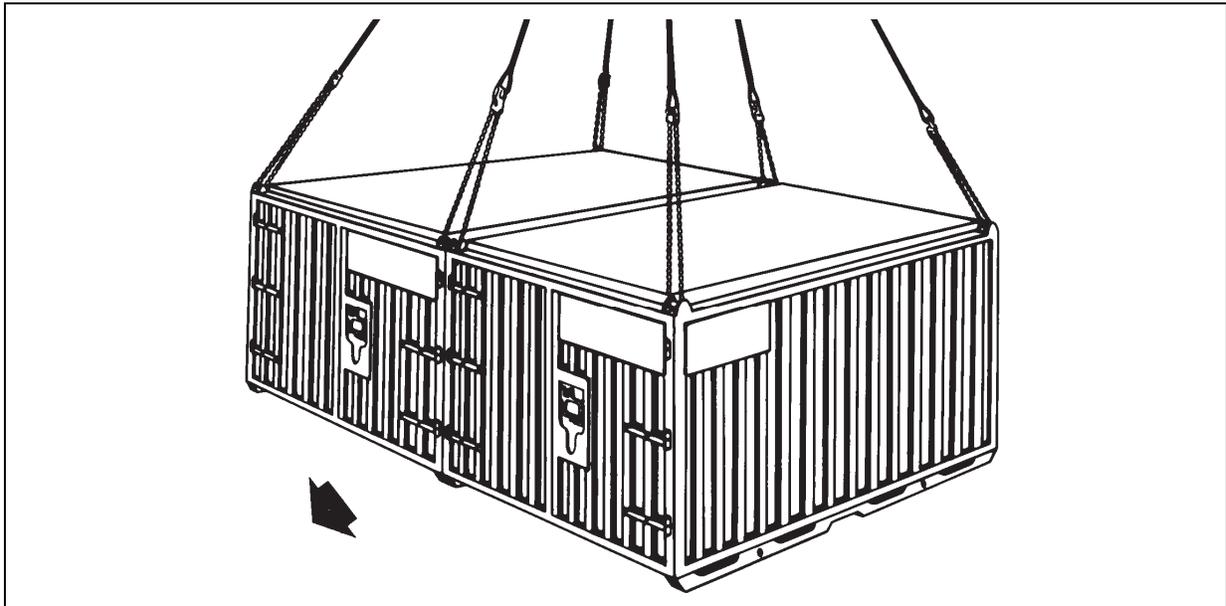


Figure 20-2. Two CONEX Containers

**RIGGING STEPS**

1. Configure a six-leg sling set by adding the two additional sling legs to the sling set.
2. Position apex fitting on top of the containers. Route outer sling legs 1 and 2 to the front (door end) of the containers, middle sling legs 3 and 4 to the rear, and inner sling legs 5 and 6 to the center of the containers. Sling legs 1, 3, and 5 must be on the left side of the load.
3. Loop the chain end of sling leg 1 through the left front lift provision of the left container. Place the correct link from Table 20-2 in the grab hook. Repeat with sling leg 2 and the right front lift provision.
4. Loop the chain end of sling leg 3 through the left rear lift provision on the left container. Place the correct link from Table 20-2 in the grab hook. Repeat with sling leg 4 and the right rear lift provision.
5. Loop the chain end of sling leg 5 through the front inboard lift provision of both containers. Place the correct link from Table 20-2 in the grab hook. Repeat with sling leg 6 and the rear inboard lift provisions. Secure the excess chain with Type III nylon cord.
6. Cluster and tie (breakaway technique) all sling legs together on top of the containers to prevent entanglement during hookup and lift-off.

**Figure 20-2. Two CONEX Containers (Continued)**

## Chapter 21

# Suitable Single-Point Rigging Procedures for Radar Equipment

### INTRODUCTION

21-1. This chapter contains rigging procedures for single-point lift of radar equipment that is suitable 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 suitable loads. The suitable single-point rigging procedure for radar equipment is in this section. Paragraph 21-2 gives detailed instructions for rigging the load.

---

*Note.* Reach pendants may be used on all single point loads. A static discharge person is not required when using a reach pendant.

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### AN/MPQ-4A RADAR SET

21-2. One AN/MPQ-4A radar set is rigged for single-point sling load using the following procedures:

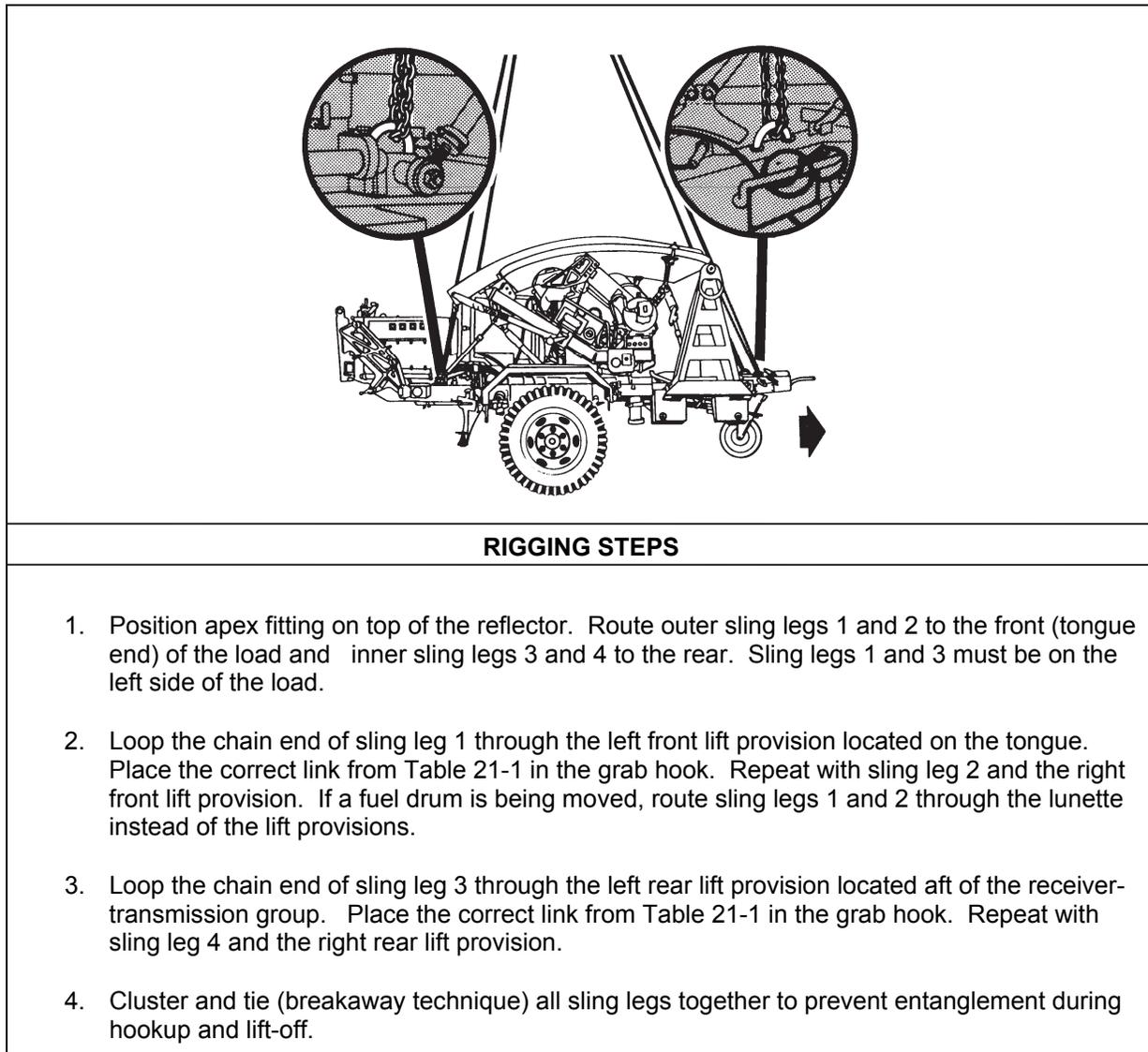
- **Applicability.** The following items in Table 21-1 are suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier

**Table 21-1. AN/MPQ-4A Radar Set**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Radar Set, Trailer-Mounted, AN/MPQ-4A Radar Set without 55-Gallon Drum of Fuel	6,290	10K	3/55
Radar Set, Trailer-Mounted, AN/MPQ-4A Radar Set with 55-Gallon Drum of Fuel	6,690	10K	3/55

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Webbing, nylon, tubular, 1/2-inch.
  - Padding, felt, 1/2- x 24- x 60-inch (2 sheets), 1/2- x 30- x 36-inch (1 sheet).
- **Personnel.** Two persons can prepare and rig this load in 30 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Place the radar set in the travel mode. Secure the safety chains and the air hoses to the trailer tongue with tape or Type III nylon cord.
    - Secure the handles of the rear outriggers and all pins with tape.
    - Place a 24- x 48-inch sheet of felt padding over the receiver-transmission group and secure with tape.

- Place two sheets of felt side by side on top of the reflector, tape the centerline, and secure in place with Type III nylon cord routed from one step over the receiver-transmission group and reflector to the other step.
- Secure the fuel drum with 1/2-inch tubular nylon to the step.
- **Rigging.** Rig the load according to the steps in Figure 21-1.
- **Hookup.** The hookup team stands on the trailer fenders. 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 21-1. AN/MPQ-4A Radar Set**

## Chapter 22

# Suitable Single-Point Rigging Procedures for Generator Sets

## INTRODUCTION

22-1. This chapter contains rigging procedures for single-point lift of generator sets that are suitable 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 suitable loads. The suitable single-point rigging procedures for generator sets are in this section. Paragraph 22-2 and 22-3 give detailed instructions for rigging the load.

---

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

---

## TRAILER-MOUNTED GENERATORS

22-2. Trailer mounted generators are rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 22-1 are suitable for all **ARMY** helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 22-1. Trailer Mounted Generators**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Generator Set, 5KW, PU-620/M Mounted on M116 Trailer	2,840	10K	3/50
Generator Set, 10KW, PU-619 Mounted on M105 Trailer	3,530	10K	30/30
Generator Set, 10KW, PU-304 Mounted on M105 Trailer	4,110	10K	40/50

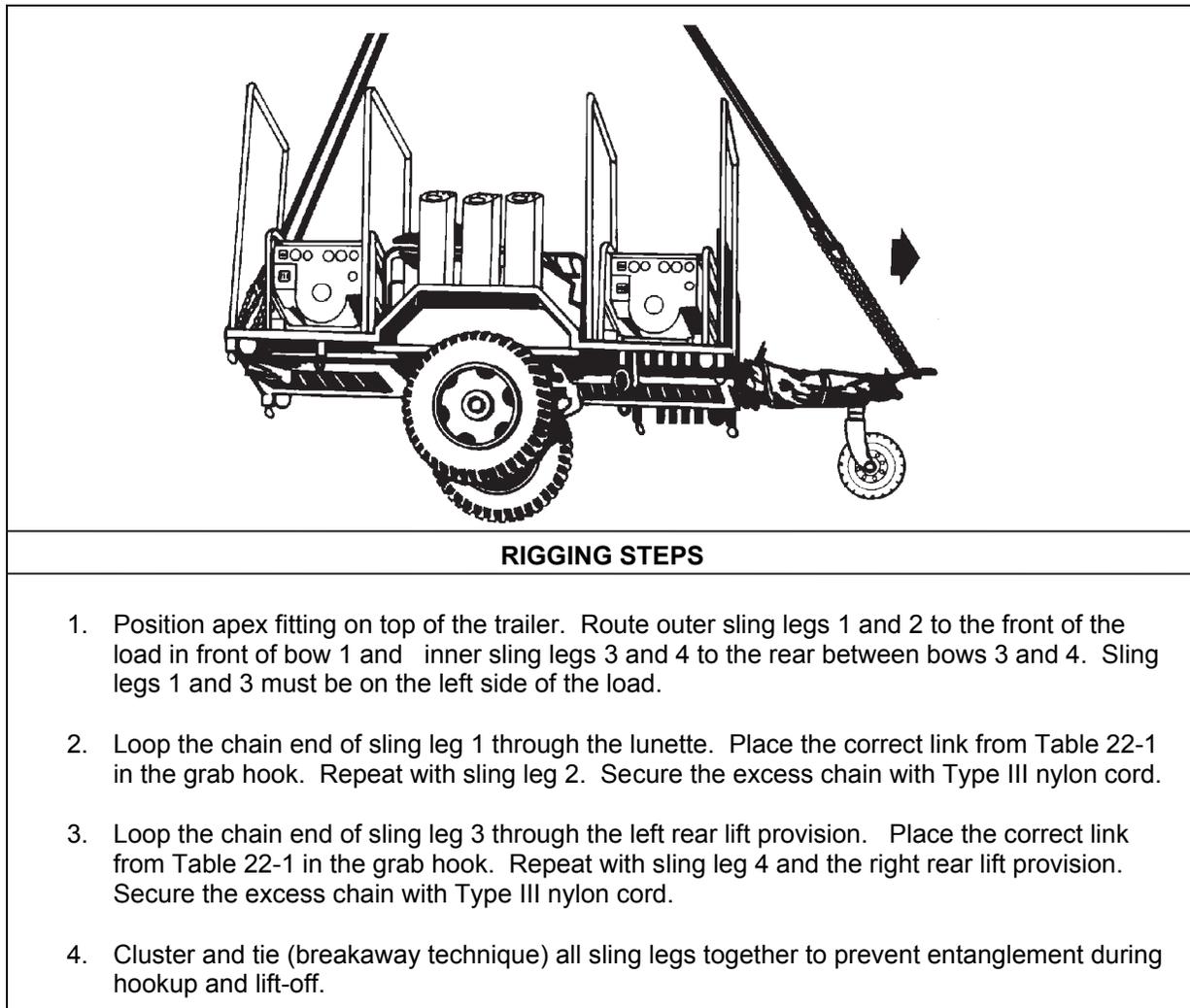
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*Note.* The PU-619/M generator set mounted on the M105 trailer is not currently approved for lift with the original lift provisions.

---

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 15 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Remove the canvas cover and secure on top of the generator with Type III nylon cord.
    - Secure the 5-gallon gas cans with Type III nylon cord.
    - Engage the parking brakes.

- Secure the safety chains, air hoses, and intervehicular cable to the tongue with tape or Type III nylon cord.
- Inspect the lift provisions for cracks in the welds.
- **Rigging.** Rig the load according to the steps in Figure 22-1.
- **Hookup.** The hookup team stands on 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 22-1. Trailer Mounted Generators**

## 7.5KW GENERATOR SET

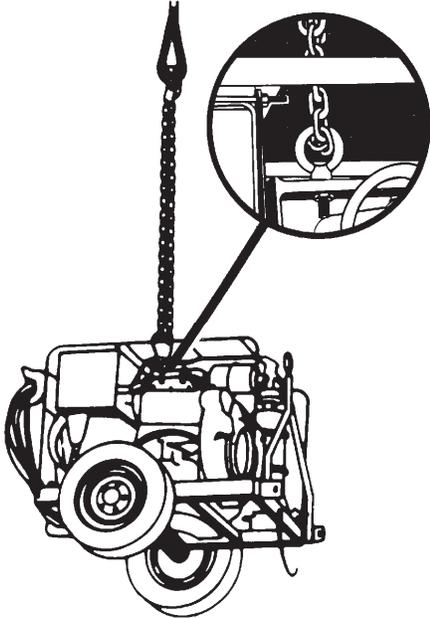
22-3. The 7.5KW generator set is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 22-2 is suitable for all **ARMY** helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 22-2. Trailer Mounted Generators**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Generator Set, Wheel Mounted 7.5 KW	810	10K or 5K Net	3

- **Materials.** The following materials are required to rig this load:
  - One sling leg from a 10,000-pound capacity sling set with apex fitting.
  - Net, cargo (5,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** One person can prepare and rig this load in 5 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Tie the tow bar in the raised position with Type III nylon cord.
    - Secure the safety chains, air hoses, and intervehicular cable to the tongue with tape or type III nylon cord.
  - **Rigging.** Rig the load according to the steps in Figure 22-2.
  - **Hookup.** The hookup team stands beside the generator. 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.


<b>RIGGING STEPS FOR SLING LEG</b>
<ol style="list-style-type: none"><li>1. Position apex fitting beside the generator set.</li><li>2. Loop the chain end of the sling leg through the lift provision located on top of the generator. Place the correct link from Table 22-2 in the grab hook. Repeat with sling leg 2. Secure the excess chain with Type III nylon cord.</li><li>3. Tape the sling leg to the upper frame to prevent entanglement during hookup and lift-off.</li></ol>
<b>RIGGING STEPS FOR CARGO NET</b>
<ol style="list-style-type: none"><li>1. Spread the net out flat on the ground. Center the generator on the net.</li><li>2. Close and rig the net in accordance with FM 4-20.197.</li></ol>

**Figure 22-2. 7.5KW Generator Set**

## Chapter 23

# Suitable Single-Point Rigging Procedures for Miscellaneous Equipment

### INTRODUCTION

23-1. This chapter contains rigging procedures for single-point lift of miscellaneous equipment that is suitable 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 suitable loads. The suitable single-point rigging procedures for miscellaneous equipment are in this section. Paragraphs 23-2 through 23-5 give detailed instructions for rigging the load.

---

*Note.* Reach pendants may be used on all single point loads. A static discharge person is not required when using a reach pendant.

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### 350-GPM PUMP ASSEMBLY

23-2. The 350-GPM pump assembly is rigged for single-point sling load using the following procedures:

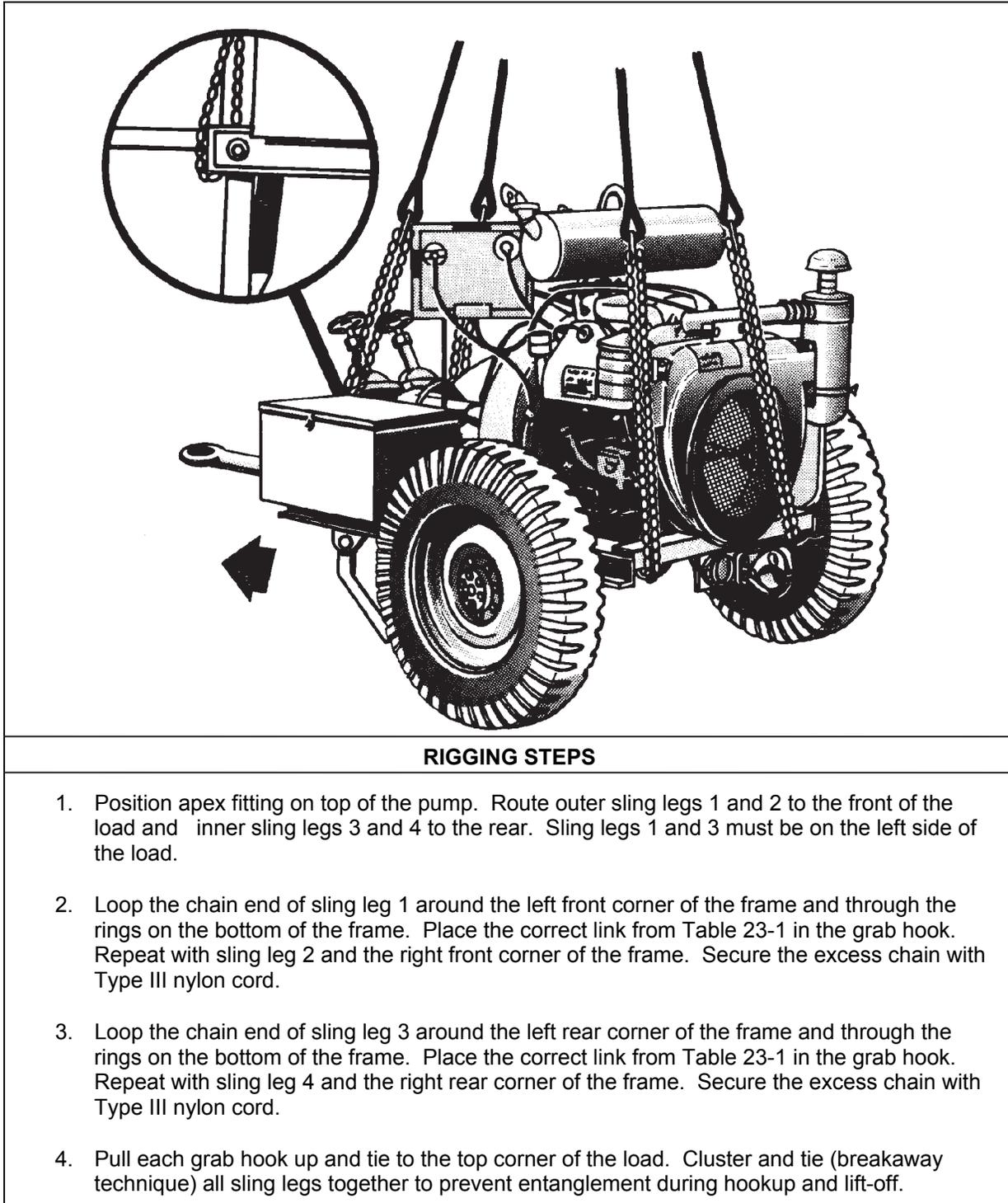
- **Applicability.** The following item in Table 23-1 is suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 23-1. 350-GPM Pump Assembly**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
350-GPM Pump Assembly	1,165	10K	50/50

- **Materials.** The following materials are required to rig this load:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Secure the engine cover and any other loose equipment with Type III nylon cord.
    - Slide the tow bar all the way in and secure with safety pins.
  - **Rigging.** Rig the load according to the steps in Figure 23-1.
  - **Hookup.** The hookup team stands beside the pump. 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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 23-1. 350-GPM Pump Assembly**

## LIGHT TACTICAL FLOATING RAFT BRIDGE

23-3. The light tactical floating raft bridge is rigged for single-point sling load using the following procedures:

- **Applicability.** The following items in Table 23-2 are suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 23-2. Light Tactical Floating Raft Bridge**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
M796 Bolster Trailer with Eight Half-Pontoons and Cradle	10,620	25K	3/13
Eight Half-Pontoons and Cradle	6,000	10K	3/3
LTR Superstructure, Light Bundle	5,250	10K	3/3
LTR Superstructure, Medium Bundle	7,000	10K	3/3
LTR Superstructure, Heavy Bundle	10,000	25K	3/3
Two Motors and Mounting Brackets	1,290	5K Net	N/A

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

- Bolster trailer with pontoons and cradle:
  - Sling set (25,000-pound capacity).
  - Tie-down assemblies (10,000-pound capacity) (6 each).
  - Tie-down strap, cargo, CGU-1/B (as required)
  - Webbing, cotton, 1/4-inch.
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III.
- Pontoons and cradle:
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III.
  - Webbing, cotton, 1/4-inch.
- LTR (light bundle).
  - Sling set (10,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III.
  - Webbing, cotton, 1/4-inch.
  - Webbing, nylon, tubular, 1/2-inch.
  - Panel, deck (4 each).
  - Panel, filler, deck (8 each).
  - Panel, filler, short deck (6 each).
  - Panel, end, ramp (2 each).
  - Assembly, articulating (2 each).
  - Curb, normal (4 each).
  - Curb, short (6 each).
  - Cable, 5/8-inch, 26-feet long (2 each).
  - Clamp, cable, 5/8-inch (8 each).
  - Turnbuckle, 5/8- x 24-inch (2 each).
- LTR (medium bundle).

- Sling set (10,000-pound capacity).
- Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- Cord, nylon, Type III.
- Webbing, cotton, 1/4-inch.
- Webbing, nylon, tubular, 1/2-inch.
- Panel, deck (6 each).
- Panel, filler, deck (6 each).
- Panel, filler, short deck (2 each).
- Panel, end, ramp (4 each).
- Curb, normal (6 each).
- Curb, short (4 each).
- Cable, 5/8-inch, 26-feet long (2 each).
- Clamp, cable, 5/8-inch (8 each).
- Turnbuckle, 5/8- x 24-inch (2 each).
- LTR (heavy bundle).
  - Sling set (25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III.
  - Webbing, cotton, 1/4-inch.
  - Webbing, nylon, tubular, 1/2-inch.
  - Panel, deck (8 each).
  - Panel, filler, deck (16 each).
  - Panel, filler, short deck (12 each).
  - Panel, end, ramp (4 each).
  - Curb, normal (8 each).
  - Curb, short (12 each).
  - Cable, 5/8-inch, 40-feet long (2 each).
  - Clamp, cable, 5/8-inch (8 each).
  - Turnbuckle, 5/8- x 24-inch (2 each).
  - Assembly, articulating (4 each).
- Two motors and mounting brackets:
  - Net, cargo (5,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III.
  - Webbing, cotton, 1/4-inch.
  - Webbing, nylon, tubular, 1/2-inch.
- **Personnel.** Eleven persons can prepare and rig these loads in the following time:
  - Bolster trailer with pontoons and cradle, 30 minutes.
  - Pontoons and cradle, 20 minutes.
  - LTR (light bundle), 20 minutes.
  - LTR (medium bundle), 25 minutes.
  - LTR (heavy bundle), 30 minutes.
  - Two motors and mounting brackets, 10 minutes.
- **Procedures.** The following procedures apply to these loads:
  - **Preparation.** Prepare the loads using the following steps:
    - Bolster trailer with pontoons and cradle:
    - Secure the pontoons on the cradle and trailer according to the operator's manual.

- Secure both sides of the cradle to the trailer with tie-downs.
- Under the bottom pontoon and on top of the cradle, secure the cradle to the trailer by wrapping one tie-down strap around the cradle and trailer frame at each side of the load in the vicinity of the rear wheels. Repeat this procedure at the forward wheels.
- **Pontoons and cradle:** Secure the pontoons to the cradle according to the operator's manual.
- **LTR superstructure (light bundle):**
  - Place two timbers on the ground as shoring approximately 6 feet apart.
  - Lay both cables on the ground parallel to and on the outside of the timbers.
  - Stack the four deck panels on the timbers. Face the deck plates of the bottom and third panels down and the second and top panels up. All male ends must be in the same direction.
  - Connect the two articulating assemblies and place them on top of the stack of deck panels.
  - Place two end ramp panels, butt end to butt end, on top of the articulating assemblies.
  - Place six deck filler panels in the space between the bottom and second deck panels.
  - Place remaining two deck filler panels, six short deck filler panels, and six short curbs in the space between the third and top deck panels.
  - Place the four normal curbs in the space between the top deck panel and the articulating assemblies.
  - Close off the ends of the deck panels and articulating assemblies by lacing 1/2-inch tubular nylon webbing across the ends of the stack.
  - Bring cables up over load, route each end through the turnbuckle, secure each end with two cable clamps, and tighten turnbuckle.

**CAUTION**

Do not over tighten the cables as damage to the load will occur.

- Tie the two cables together with 1/2-inch tubular nylon webbing.
- **LTR superstructure (medium bundle):**
  - Place two timbers on the ground as shoring approximately 6 feet apart.
  - Lay both cables on the ground parallel to and on the outside of the timbers.
  - Stack two parallel sets of deck panels, three panels high, with male ends facing in same direction.
  - Place two end ramp panels, butt end to butt end, on top of each stack of deck panels.
  - Place deck filler panels between deck panels.
  - Close off ends of deck panels by lacing 1/2-inch tubular nylon webbing across ends of stacks.
  - Place three normal curbs on each side of load, alternating short curbs in between the normal curbs.
  - Bring cables up over load, route each end through turnbuckle, secure each end with two cable clamps, and tighten turnbuckle.

**CAUTION**

Do not over tighten the cables as damage to the load will occur.

- Tie each short curb to the turnbuckle with nylon webbing.
- Tie the two cables together with 1/2-inch tubular nylon webbing.
- LTR superstructure (heavy bundle):
  - Place two timbers on the ground as shoring approximately 6 feet apart.
  - Lay both cables on the ground parallel to and on the outside of the timbers.
  - Configure two light bundle stacks side-by-side and secure each end of the load with cables.
- **Rigging.** Rig the load according to the steps in Figure 23-2.
- **Hookup.** The hookup team stands on top of the pontoons, on top of the superstructure bundles, or alongside the cargo net, depending on 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.
- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.

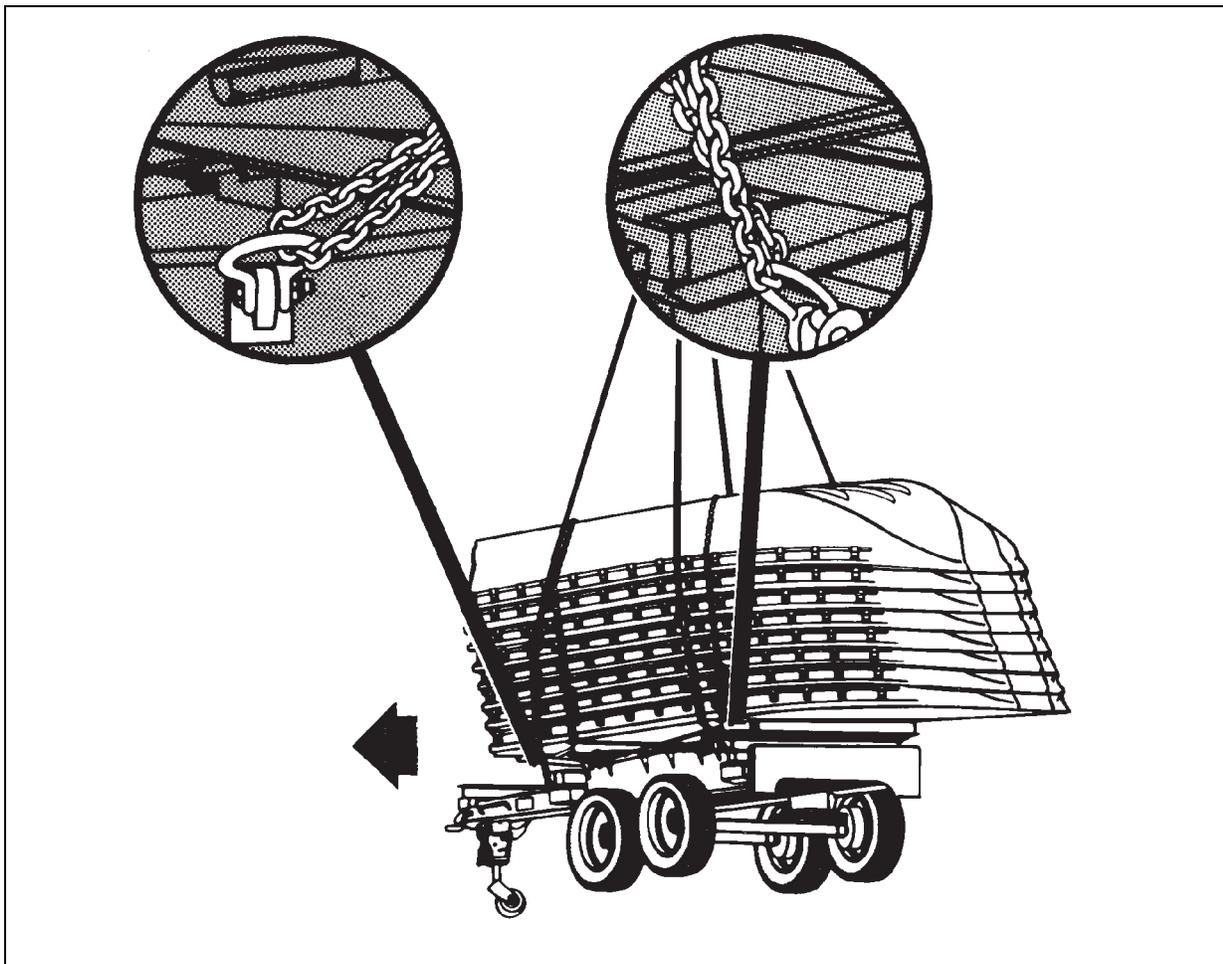
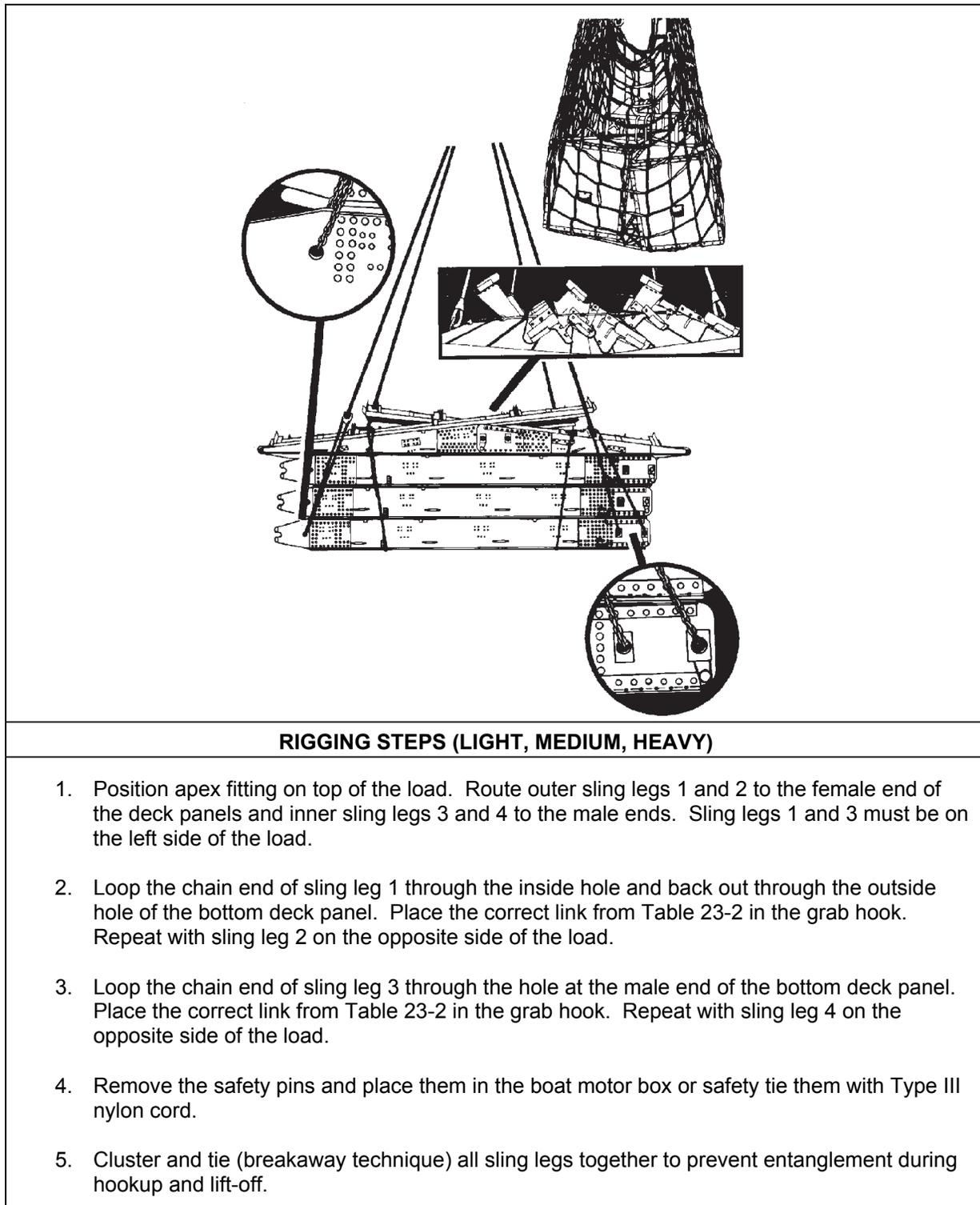


Figure 23-2. Light Tactical Floating Raft Bridge

<b>RIGGING STEPS (BOLSTER TRAILER)</b>
<ol style="list-style-type: none"><li>1. Position apex fitting on top of the pontoons. 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.</li><li>2. Loop the chain end of sling leg 1 through the left front lift provision mounted on the left front corner of the frame. Place the correct link from Table 23-2 in the grab hook. Repeat with sling leg 2 and the right front corner of the trailer.</li><li>3. Loop the chain end of sling leg 3 through the left rear lift provision mounted on the left rear corner of the trailer. Place the correct link from Table 23-2 in the grab hook. Repeat with sling leg 4 and the right rear corner of the trailer. Secure the excess chain with Type III nylon cord.</li><li>4. Pull each grab hook up and tie to one of the boat rails with 1/4-inch cotton webbing. Cluster and tie (breakaway technique) all sling legs together to prevent entanglement during hookup and lift-off.</li></ol>
<b>RIGGING STEPS (CRADLE AND PONTOONS ONLY)</b>
<ol style="list-style-type: none"><li>1. Position apex fitting on top of the pontoons. 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.</li><li>2. Loop the chain end of sling leg 1 through the left front lift provision located on the cross beam of the cradle. Place the correct link from Table 23-2 in the grab hook. Repeat with sling leg 2 and the right front lift provision.</li><li>3. Loop the chain end of sling leg 3 through the left rear lift provision located on the cross beam of the cradle. Place the correct link from Table 23-2 in the grab hook. Repeat with sling leg 4 and the right rear lift provision.</li><li>4. Pull each grab hook up and tie to one of the boat rails with 1/4-inch cotton webbing. Cluster and tie or tape (breakaway technique) all sling legs together to prevent entanglement during hookup and lift-off.</li></ol>

**Figure 23-2. Light Tactical Floating Raft Bridge (Continued)**



**Figure 23-2. Light Tactical Floating Raft Bridge (Continued)**

<b>RIGGING STEPS (MOTORS AND BRACKETS)</b>
<ol style="list-style-type: none"> <li>1. Spread the 5,000-pound capacity cargo net on the ground.</li> <li>2. Secure the motors, pins, paddles, and miscellaneous items in the containers. Secure the lid closed with Type III nylon cord.</li> <li>3. Center the containers on the cargo net.</li> <li>4. Place the mounting brackets on top of the containers.</li> <li>5. Rig and close the cargo net in accordance with FM 4-20.197.</li> </ol>

**Figure 23-2. Light Tactical Floating Raft Bridge (Continued)**

## MEDIUM-SPAN BRIDGE

23-4. The medium-span bridge is rigged for single-point sling load using the following procedures:

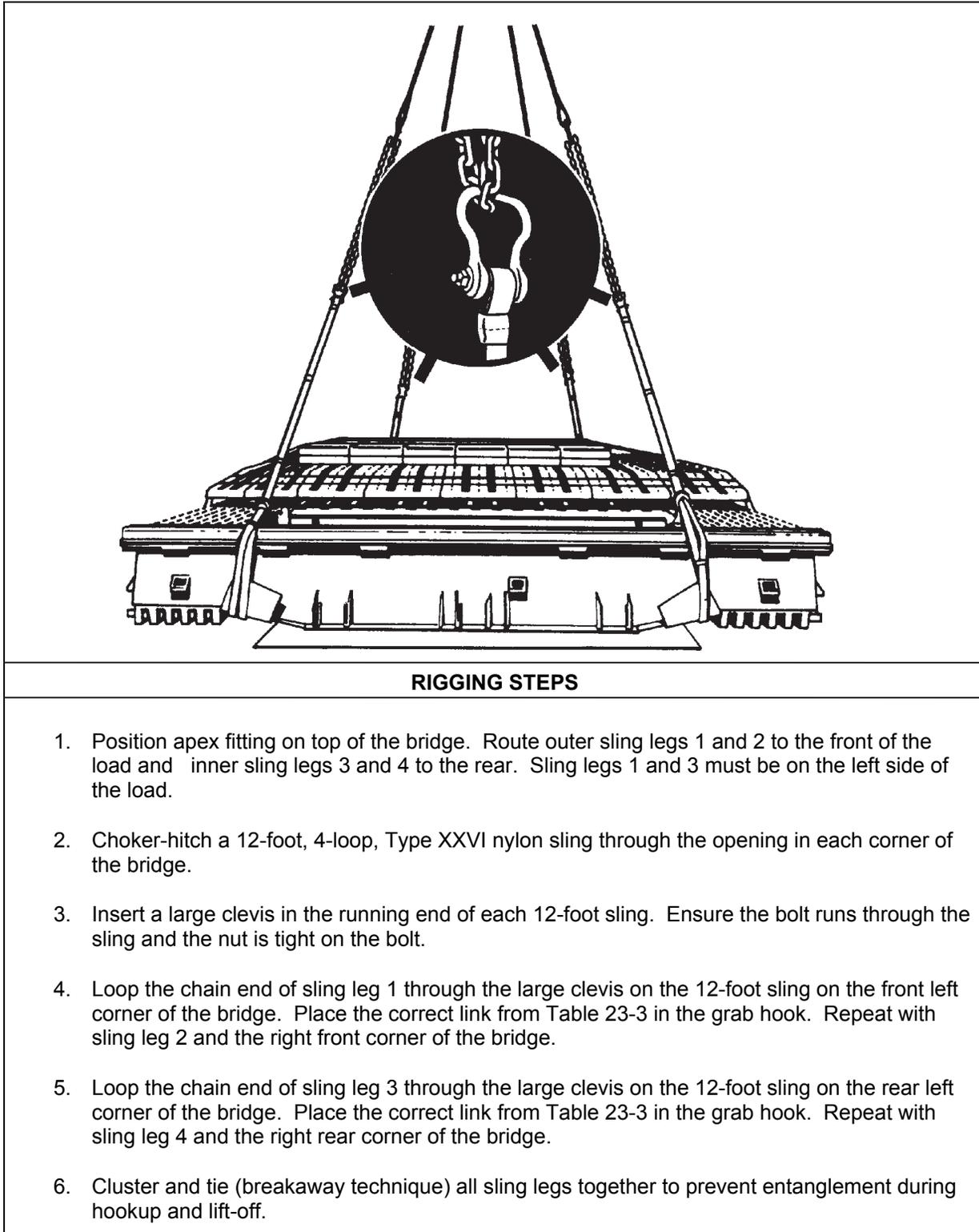
- **Applicability.** The following item in Table 23-3 is suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 23-3. Medium-Span Bridge**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Bridge Erection Set, Medium Girder Section	13,800	25K	5/5

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
  - Multiloop line, Type XXVI nylon, 12-foot, 4-loop (4 each).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
  - Padding, felt or suitable substitute.
  - Clevis, large (4 each).
  - Tie-down strap, cargo, CGU-1/B (as required).
- **Personnel.** Six persons can prepare and rig this load in 30 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Prepare the load using the following steps:
    - Position the ramp sections on top of the bridge main structure. Secure with tie-down straps.
    - Secure the four pieces of padding on the bottom side at each corner where the nylon straps are choker-hitched.
  - **Rigging.** Rig the load according to the steps in Figure 23-3.
  - **Hookup.** The hookup team stands on top of the bridge center. 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.

- **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 23-3. Medium-Span Bridge**

## M4T6 BRIDGE

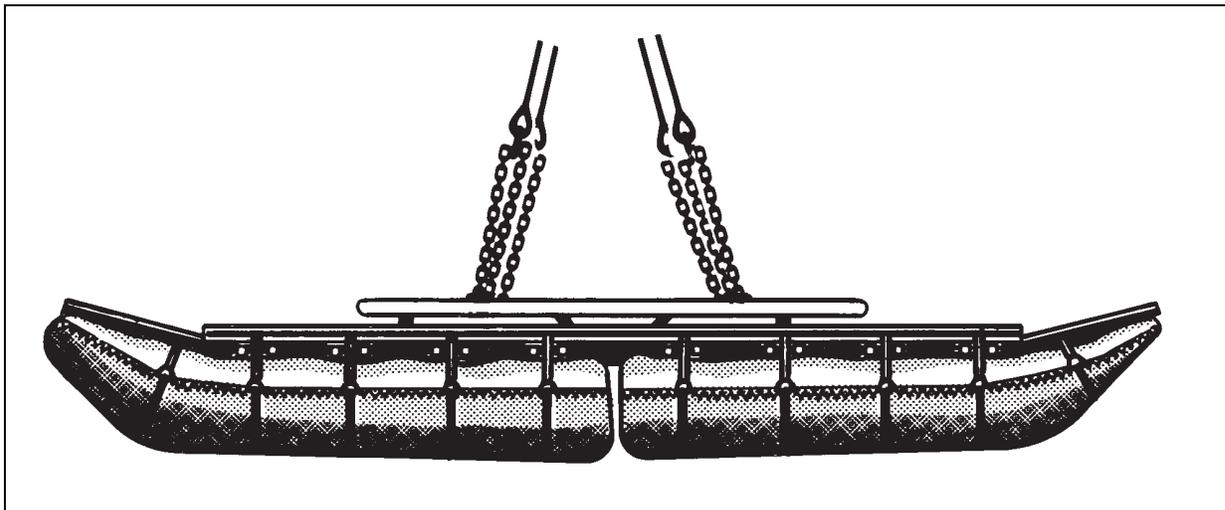
23-5. The M4T6 bridge is rigged for single-point sling load using the following procedures:

- **Applicability.** The following item in Table 23-4 is suitable for all ARMY helicopters with suitable lift capacity by the US Army Natick Soldier Center:

**Table 23-4. M4T6 Bridge**

<i>Nomenclature</i>	<i>Max Weight (Pounds)</i>	<i>Sling Set</i>	<i>Link Count Front/Rear</i>
Bridge Floating, Aluminum, Highway Type, Deck-Balk Superstructure on Pneumatic Floats, M4T6	9,000	25K	4/4

- **Materials.** The following materials are required to rig this load:
  - Sling set (25,000-pound capacity).
  - Tape, adhesive, pressure-sensitive, 2-inch wide roll.
  - Cord, nylon, Type III, 550-pound breaking strength.
  - Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- **Personnel.** Two persons can prepare and rig this load in 10 minutes.
- **Procedures.** The following procedures apply to this load:
  - **Preparation.** Ensure all components are securely attached together.
  - **Rigging.** Rig the load according to the steps in Figure 23-4.
  - **Hookup.** The hookup team stands on top of the bridge. 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.
  - **Derigging.** Derigging is the reverse of the preparation and rigging procedures.



**Figure 23-4. M4T6 Bridge**

**RIGGING STEPS**

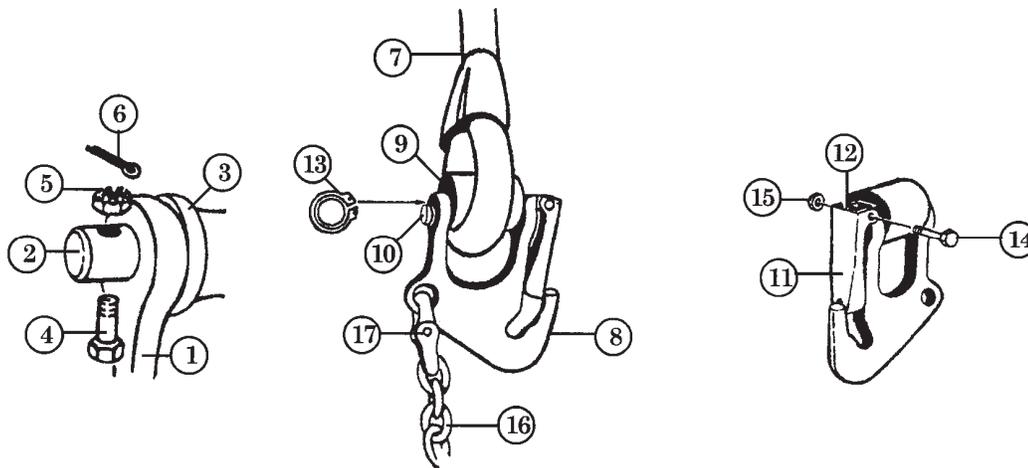
1. Position apex fitting on top of the center of the bridge. Route outer sling legs 1 and 2 to the forward end of the balk connecting stiffener and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.
2. Loop the chain end of sling leg 1 around the seventh balk connection pin from the forward end on the left balk connecting stiffener. Place the correct link from Table 23-4 in the grab hook. Repeat with sling leg 2 and the seventh connection pin from the forward end of the right balk stiffener.
3. Loop the chain end of sling leg 3 around the seventh balk connection pin from the rear end on the left balk connecting stiffener. Place the correct link from Table 23-4 in the grab hook. Repeat with sling leg 4 and the seventh connection pin from the rear end of the right balk stiffener.
4. Cluster and tie (breakaway technique) all sling legs together to prevent entanglement during hookup and lift-off.

**Figure 23-4. M4T6 Bridge (Continued)**

## Appendix A

# National Stock Numbers for Slings, Nets, and Spare Parts

**10,000- OR 25,000- POUND CAPACITY SLING SET (CIRCLED NUMBERS CORRESPOND WITH NSNs OF IDENTIFIED PARTS)**



### 10,000-POUND CAPACITY SLING SET COMPONENTS

	<i>NSN</i>	<i>PART NUMBER</i>	<i>DESCRIPTION</i>	<i>QTY PER SET</i>
	1670-01-027-2902	38850-00001-043	Sling Set Assembly Complete LIN T79003	1 ea
1	4030-01-048-4045	38850-00004-045	Shackle Assembly	1 ea
2	5315-01-115-3482	38850-00008-101	Pin, Apex Fitting	1 ea
3	5365-01-235-0908	38850-00015-104	Spacer, Apex	1 ea
4	5306-00-944-1536	NAS1306-16D	Bolt	1 ea
5	5310-00-207-9274	AN 320C6	Nut, Castellated	1 ea
6	5315-00-2341864	MS 24665-302	Cotter Pin	1 ea
7	4020-01-047-6814	38850-00009-055	Rope Assembly	4 ea
8	4030-01-048-4046	38850-00011-041	Grabhook Assembly	4 ea
9	5364-01-109-2543	38850-00015-101	Spacer, Grabhook	4 ea
10	5315-01-121-0497	38850-00008-103	Pin, Spacer	4 ea
11	4030-01100-1684	38850-00017-101	Keeper, Grabhook	4 ea
12	5360-01-115-6833	38850-00019-101	Keeper, Spring	4 ea
13	5325-01-046-3670	MS 3217-1050	Snap Ring	4 ea
14	5306-00-771-7621	NAS 1303-21	Bolt, Shear	4 ea
15	5310-00-807-1467	MS 21042-3	Nut, Lock	4 ea
16	4010-01-058-4772	38850-00053-101	Chain, 8-foot Length	4 ea
17	4010-01-231-3388	5779125/664228	Link, Coupling	4 ea
18	8460-00-606-8366	Mil-41835	Kit Bag, Flyer's	1 ea

### 25,000-POUND CAPACITY SLING SET COMPONENTS

	<i>NSN</i>	<i>PART NUMBER</i>	<i>DESCRIPTION</i>	<i>QTY PER SET</i>
	1670-01-027-2900	38850-00001-044	Sling Set Assembly Complete LIN T79009	1 ea
1	4030-01-048-4044	38850-00004-046	Shackle Assembly	1 ea
2	5315-01-119-9065	38850-00008-102	Pin, Apex Fitting	1 ea
3	1670-01-235-0907	38850-00015-105	Spacer, Apex	1 ea
4	5306-00-944-2659	NAS1306-22D	Bolt	1 ea
5	5310-00-207-9274	AN 320C6	Nut, Castellated	1 ea
6	5315-00-234-1864	MS 24665-302	Cotter Pin	1 ea
7	1670-01-047-6815	38850-00009-056	Rope Assembly	4 ea
8	4030-01-048-4047	38850-00011-046	Grabhook Assembly	4 ea
9	1670-01-109-2544	38850-00015-102	Spacer, Grabhook	4 ea
10	5315-01-121-2874	38850-00008-104	Pin, Spacer	4 ea
11	4030-01-100-1685	38850-00017-102	Keeper, Grabhook	4 ea
12	5360-01-115-6833	38850-00019-101	Keeper, Spring	4 ea
13	5365-00-261-3918	MS 3217-1075	Snap Ring	4 ea
14	5306-00-771-7621	NAS 1303-21	Bolt, Shear	4 ea
15	5310-00-807-1467	MS 21042-3	Nut, Lock	4 ea
16	4010-01-058-4771	38850-00053-102	Chain, 8-foot Length	4 ea
17	4010-01-231-3388	664241	Link, Coupling	4 ea
18	8460-00-606-8366	Mil-k-41835	Kit Bag, Flyer's	1 ea

### 15,000-POUND CAPACITY MULTILEG SLING SET ASSEMBLY

	<i>NSN</i>	<i>PART NUMBER</i>	<i>DESCRIPTION</i>	<i>QTY PER SET</i>
	1670-00-902-3080	3900061	Sling Multileg Assembly, LIN T79009, TAMCN B2030	1 ea
1	1670-00-946-8719	AC6000292	Web Ring Assembly	1 ea
2	1670-00-719-6243	MS24553-1	Link Assembly, Web Ring	1 ea
3	1670-00-946-8631	3110167	Sling Leg Assembly	4 ea
4	N/A	3910112-5	Keeper, 5-inch, Leg Assembly	4 ea
5	N/A	391011-1	Keeper, 6 1/4-inch, Leg Assembly	4 ea
6	1670-00-719-6243	MS24553-1	Link Assembly, Sling Leg	4 ea
7	N/A	31610	Grab Link	4 ea
8	N/A	FE 7623-3	Keeper, Grab Link	4 ea
9	N/A	34012-18	Spring Keeper, Grab Link	4 ea
10	5310-00-167-0818	AN960-10	Pin, Keeper, Grab Link	4 ea
11	5315-00-812-3765	MS20392-2033	Latch, Safety Hook	4 ea
12	5315-00-839-2325	MS24665-132	Cotter Pin, Keeper, Grab Link	4 ea
13	N/A	31611	Coupling Link	4 ea
14	N/A	34080-4	Chain	4 ea

**40,000-POUND CAPACITY SLING SET COMPONENTS**

	<i><b>NSN</b></i>	<i><b>PART NUMBER</b></i>	<i><b>DESCRIPTION</b></i>	<i><b>QTY PER SET</b></i>
	3940-01-183-2118	TAMCN B 2035	Sling Set Assembly Complete	1 ea
1	4838-01-199-9562	FE8109-1	Apex Shackle Assembly	1 ea
2	N/A	FE8109-5	Shackle	1 ea
3	N/A	FE8109-3	Pin, Shackle, Apex	1 ea
4	N/A	FE8109-2	Spacer, Shackle, Apex	1 ea
5	5306-00-944-1538	NAS1306-21D	Bolt	1 ea
6	5310-00-176-8110	AN 320C6	Nut, Castellated	1 ea
7	5315-00-234-1864	MS 24665-302	Cotter Pin	1 ea
8	3940-01-194-9364	JETSWMC-2000	Sling Leg	4 ea
9	4030-01-197-1629	FE8103-1	Grab Link Assembly	4 ea
10	N/A	FE8103-4	Spacer, Grab Link	4 ea
11	5306-00-151-1482	AN12-42	Bolt, Grab Link	4 ea
12	5310-00-167-1292	AN310-12	Nut, Grab Link	4 ea
13	5315-00-285-7161	MS24665-377	Cotter Pin, Grab Link	4 ea
14	N/A	FE7623-3	Keeper, Grab Link	4 ea
15	5310-00-812-3765	MS20392-2033	Pin, Keeper, Grab Link	4 ea
16	N/A	34012-18	Spring, Keeper, Grab Link	4 ea
17	5310-00-167-0818	AN960-10	Washer, Keeper, Grab Link	4 ea
18	5315-00-839-2325	MS24665-132	Cotter Pin, Keeper, Grab Link	4 ea
19	4010-01-081-5114	577-0815	Link, Coupling	4 ea
20	N/A	607050	Chain, 8-Foot	4 ea

**TYPE XXVI NYLON MULTILoop LINE**

<i><b>NSN</b></i>	<i><b>Description</b></i>
1670-01-062-6301	2-loop, 3 foot
1670-01-062-6306	4-loop, 3 foot
1670-01-062-6304	2-loop, 9 foot
1670-01-062-6305	4-loop, 9 foot
1670-01-063-7760	2-loop, 11 foot
1670-01-062-6310	4-loop, 11 foot
1670-01-062-6303	2-loop, 12 foot
1670-01-062-6307	4-loop, 12 foot
1670-01-063-7761	2-loop, 16 foot
1670-01-062-6308	4-loop, 16 foot
1670-01-062-6302	2-loop, 20 foot
1670-01-064-4453	4-loop, 20 foot

### ROUNDSLINGS

<i>NSN</i>	<i>PART NUMBER</i>	<i>CAPACITY</i>	<i>LENGTH</i>
1670-01-388-6789	PRS 2E008	5,300-pound	8 foot
1670-01-388-3845	PRS 2E017	5,300-pound	17 foot
1670-01-388-8480	PRS 3E008	8,400-pound	8 foot
1670-01-388-8479	PRS 3E017	8,400-pound	17 foot
1670-01-388-3917	PRS 5E030	13,200-pound	30 foot
1670-01-388-3901	PRS 7E065	21,200-pound	65 foot
1670-01-388-3965	PRS 7E070	21,200-pound	70 foot

### 5,000- AND 10,000-POUND CAPACITY CARGO NETS AND COMPONENTS

<i>NSN</i>	<i>PART NUMBER</i>	<i>DESCRIPTION</i>	<i>QTY</i>
1670-01-058-3811	6018-5	Net, 5,000-pound capacity, LIN N02776, TAMCN J3121	1 ea
1670-01-058-3810	6018-10	Net, 10,000-pound capacity, LIN N02708, TAMCN J3120	1 ea
1670-01-070-5276	6019	Apex fitting	1 ea
1670-01-067-9989	6020	Hook	4 ea
4020-01-118-5826	6018-15	Repair cord, used on part no. 6018-5	As req
4020-01-119-5994	6018-20	Repair cord, used on part no. 6018-10	As req
8030-01-152-2286	2300-3	Antiabrasion compound, olive drab	As req
8030-01-154-2327	WB1003 black	Antiabrasion compound, black	As req
1080-00-108-1155	13226EO964-2	Transportease	1 ea*
8460-00-606-8366	MIL-K-41835	Kit bag, flyers	1 ea*
* Alternate NSN is 1080-00-107-8580. These cases are designed and marked for use with the camouflage screen. Camouflage system markings should be replaced with "Helicopter External Cargo Net, 10,000-pound capacity."			

### PROTECTIVE EQUIPMENT

<i>NSN</i>	<i>Description</i>
4240-00-052-3776	Eye goggles
8415-01-158-9445	Gloves, electrical workers, size 9
8415-01-158-9446	Gloves, electrical workers, size 10
8415-01-158-9447	Gloves, electrical workers, size 11
8415-01-158-9448	Gloves, electrical workers, size 12
8415-00-268-7859	Gloves, leather
4240-00-759-3290	Protector, hearing
8415-00-071-8786	Helmet, flight deck (USN/USMC/USAF)
6515-00-137-6345	Plugs, ear, hearing protection

## MISCELLANEOUS EQUIPMENT AND MATERIAL

<i>NSN</i>	<i>Description</i>
4030-00-360-0304	Clevis assembly, small, MS 70087-1
5305-00-726-2553	Bolt
5310-00-835-2037	Nut
4030-00-678-8562	Clevis assembly, medium, MS 70087-2
5305-00-940-8069	Bolt
5310-00-842-1190	Nut
4030-00-090-5354	Clevis assembly, large, MS 70087-3
5305-00-177-5617	Bolt
5310-00-891-3428	Nut
4020-00-240-2146	Cord, nylon, Type III, 550-pound breaking strength
8305-00-958-3685	Felt sheeting, 1/2-inch thick, 30-inch wide
8305-00-191-1101	Felt sheeting, 1/2-inch thick, 60-inch wide
7520-00-079-0286	Ink, marking, parachute, orange-yellow, marker
7520-00-634-6583	Ink, marking, parachute, orange-yellow, liquid
7520-00-230-2734	Ink, marking, parachute, strata-blue, marker
7520-00-286-5362	Ink, marking, parachute, strata-blue, liquid
5825-00-917-3738	Light, beacon, beanbag
6260-01-074-4230	Light, chemical wand, 30-minute glow time
6260-00-106-7478	Light, chemical wand, 6-hour glow time
6260-01-074-4229	Light, chemical wand, 12-hour glow time
1670-00-783-5988	Link assembly, Type IV
1670-00-212-1149	MB-1 chain assembly, 10,000-pound capacity
1670-00-516-8405	Chain assembly
1670-00-753-3928	Pad, energy-dissipating, honeycomb
8135-00-664-6958	Padding, cellulose, 20-inch by 60-foot
8135-00-808-6446	Padding, cellulose, 24-inch by 125-foot
8345-00-174-6865	Panel, marker, red-yellow, VS-17
4020-00-231-2581	Rope, 3/8-inch, TR605
4020-00-968-1357	Rope, fibrous, 1/2-inch, MIL-R-17343
6850-00-264-9038	Solvent, dry cleaning, PD-680
7510-00-266-5016	Tape, adhesive, pressure-sensitive, 2-inch wide roll, green
7510-00-074-4969	Tape, adhesive, pressure-sensitive, 2-inch wide roll, red
1670-00-725-1437	Tie-down strap, CGU-I/B, 5,000-pound capacity
5340-01-204-3009	Tie-down strap, web nylon, 5,000-pound capacity
1670-00-937-0271	Tie-down strap, web nylon, 10,000-pound capacity
5365-00-937-0147	D-Ring, aerial delivery
1670-00-937-0272	Load binder assembly
1670-00-360-0340	Quick-fit strap fastener

**Two-point link assembly components:**

<b>NSN</b>	<b>Description</b>
5306-00-435-8994	Bolt, 1-inch diameter, 4-inch long (2 each)
5310-00-232-5165	Nut, 1-inch diameter (2 each)
1670-00-003-1954	Plate, side, 5 1/2-inch long (2 each)
5365-00-007-3414	Spacer, large

**Wand**

<b>NSN</b>	<b>Description</b>
1670-00-574-8044	Wand, static discharge
1670-01-192-5535	Wand, static discharge, 3-foot, PN 1610AS100-1, TAMCN C6254
5920-01-347-0728	Wand, static discharge, 5-foot, PN 1610AS100-2, TAMCN C6252

**Webbing**

<b>NSN</b>	<b>Description</b>
8305-00-082-5752	Webbing, nylon, tubular, 1/2-inch, 1,000-pound breaking strength
8305-00-268-2411	Webbing, cotton, 1/4-inch, 80-pound breaking strength

**External Lift Devices**

<b>NSN</b>	<b>Description</b>
1670-00-587-3421	Bag, cargo, A-22, LIN B 14181, TAMCN C4070
3940-00-892-4380	Cargo net, 14-foot square, 10-inch mesh
3940-00-892-4374	Cargo net, 14-foot square, 8-inch mesh
1450-01-219-4360	Mk105 pendant
1450-00-414-7172	Mk105 hoisting sling assembly, 6,000-pound capacity
1450-00-881-8736	Mk105 sling leg assembly
4020-01-365-3115	Pendant, reach, 11,000-pound capacity
4020-01-337-3185	Pendant, reach, 25,000-pound capacity
1670-01-003-0803	Releasable swivel hook pendant sling AC6000500 Mod 1
1450-00-169-6927	Sling, pallet, Mk86, LIN S80670
1398-00-004-9175	Sling, pallet, Mk100, LIN S80738
1670-00-103-6617	Swivel hook sling leg, AC6000153 (USMC, USN)
1670-01-531-1882	Spreader bar, 15,000-pound

**Appendix B**  
**Sling Conversion Chart**

**Sling Conversion Chart**

10,000-POUND SLING SET CHAIN LINK NUMBER	25,000-POUND SLING SET CHAIN LINK NUMBER	40,000-POUND SLING SET CHAIN LINK NUMBER	15,000-POUND MULTILEG SLING SET CHAIN LINK NUMBER
	3		51
	4		52
3	5		53
4	6		54
5	6		54
6	7	3	55
7	8	4	56
8	9	4	57
9	9	5	57
10	10	6	58
11	11	6	59
12	11	7	59
13	12	7	60
14	13	8	61
15	14	9	62
16	14	9	62
17	15	10	NO FURTHER CONVERSIONS FOR 15,000-POUND MULTILEG SLING SET
18	16	11	
19	16	11	
20	17	12	
21	18	13	
22	19	13	
23	19	14	
24	20	15	
25	21	15	
26	21	16	
27	22	16	
28	23	17	
29	24	18	
30	24	28	
31	25	19	
32	26	20	
33	27	20	
34	27	21	

**Sling Conversion Chart (Continued)**

<b>10,000-POUND SLING SET CHAIN LINK NUMBER</b>	<b>25,000-POUND SLING SET CHAIN LINK NUMBER</b>	<b>40,000-POUND SLING SET CHAIN LINK NUMBER</b>	<b>15,000-POUND MULTILEG SLING SET CHAIN LINK NUMBER</b>
35	28	21	NO FURTHER CONVERSIONS FOR 15,000-POUND MULTILEG SLING SET
36	29	22	
37	30	22	
38	31	23	
39	31	24	
40	32	24	
41	33	25	
42	34	25	
43	34	26	
44	35	26	
45	36	27	
46	37	28	
47	38	28	
48	39	29	
49	39	29	
50	40	30	
51	41	30	
52	42	31	
53	43	32	
54	44	32	
55	45	33	
56	45	33	
57	46	34	
58	47	34	
59	48	35	
60	49	36	
61	50	36	
62	50	37	
63	51	37	
64	52	38	
65	53	38	
66	54	39	
67	54	40	
68	55	40	
69	56	41	
70	57	41	

## Sling Conversion Chart (Continued)

10,000-POUND SLING SET CHAIN LINK NUMBER	25,000-POUND SLING SET CHAIN LINK NUMBER	40,000-POUND SLING SET CHAIN LINK NUMBER	15,000-POUND MULTILEG SLING SET CHAIN LINK NUMBER
71	57	42	NO FURTHER CONVERSIONS FOR 15,000-POUND MULTILEG SLING SET
72	58	42	
73	59	43	
74	60	44	
75	61	44	
76	61	45	
77	62	46	
78	63	46	
79	64	47	
80	65	48	
81	65	48	
82	66	49	
83	67	49	
84	68	50	
85	68	51	
86	69	51	
87	70	52	
88	71	53	
89	72	53	
90	72	54	
91	73	55	
92	74	55	
93	75	56	
94	76	57	
95	76	57	
96	77	58	
97	78	58	
98	79	59	
99	79	60	
100	80	60	
101	81	61	
102	82	62	
103	83	62	
104	83	63	
105	84	64	
106		64	
107		65	

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## Appendix C

# AIRSPEED FACTORS

Each certified sling load under goes a flight test before it is certified. In the table that follows: the nomenclature, weight of the item, paragraph number of the item, and the maximum tested airspeed is represented.

**Airspeed Factors**

<i>Nomenclature</i>	<i>Paragraph Number</i>	<i>Max Weight (Pounds)</i>	<i>Tested Air Speed (Knots)</i>
Truck, Ambulance, M996, HMMWV	2-2	7,400	UH-60 / 60 CH-47 / 110
Truck, Ambulance, M997, HMMWV	2-2	7,400	UH-60 / 80 CH-47 / 75
Truck, Ambulance, M997A2, HMMWV	2-2	10,300	CH-47 / 75
TOW Missile Carrier, HMMWV, M966/M1036/ M1045/M1046	2-3	Varies by Model	CH-47 / 90 CH-53 / See Note 1 UH-60 / See Note 2
TOW Missile Carrier, HMMWV, M1045A2	2-3	10,300	CH-47 / 90 CH-53 / See Note 1
Armament Carrier, HMMWV, M1025/M1026/ M1043A2	2-3	Varies by Mode	CH-47 / 90 CH-53 / See Note 1 UH-60 / See Note 2
Armament Carrier, HMMWV, M1025A2/ M1043A2	2-3	10,300	CH-47 / 90 CH-53 / See Note 1
Armament Carrier, HMMWV, M1025A2, Line of Sight Anti-Tank (LOSAT), Resupply Vehicle with Reloader Crane	2-3	8,240	CH-47 / 80 CH-53 / See Note 1 UH-60L / 80
Armament Carrier, HMMWV, M1043A2 with MAK (USMC)	2-3	10,300	CH-53 / 85
Armament Carrier, HMMWV, M1151 (Empty)	2-3	7,300	CH-47 / 90 UH-60 / 100 CH-53 / 80

<i>Nomenclature</i>	<i>Paragraph Number</i>	<i>Max Weight (Pounds)</i>	<i>Tested Air Speed (Knots)</i>
Armament Carrier, HMMWV, M1151 (Loaded)	2-3	11,500	CH-47 / 90 CH-53 / 80
Truck, 1 1/4-ton, HMMWV, M998/M1038	2-4	7,700	CH-47 / 90 CH-53 / See Note 1 UH-60 / See Note 2
Truck, 1 1/4-ton, HMMWV, M998A1	2-4	7,500	CH-47 / 90 CH-53 / See Note 1 UH-60 / See Note 2
Truck, 1 1/4-ton, HMMWV, M998 with AN/MRC110-A Radio Set	2-4	7,700	CH-47 / 90 CH-53 / See Note 1 UH-60 / See Note 2
Truck, 1 1/4-ton, HMMWV, Modified , (GVW 9,400 lbs), M1037	2-4	9,400	90
Truck, 1 1/4-ton, Heavy HMMWV, Cargo Variant, M1097	2-4	10,001	90
Truck, 1 1/4-ton, Heavy HMMWV, Cargo Variant, M1097A2	2-4	10,300	90
Integrated System Control (ISYSCON), Support Carrier/Radio, Truck, 1 1/4-ton, Heavy HMMWV, M1097.	2-4	10,300	90
Truck, 1 1/4-ton, HMMWV, with MAK, M1123, 2 Door or 4 Door Passenger Compartment	2-4	10,300	90
Truck, 1 1/4-ton, Heavy HMMWV, Cargo Variant M1152 (Empty)	2-4	7,300	90
Truck, 1 1/4-ton, Heavy HMMWV, Cargo Variant M1152 (Loaded)	2-4	11,500	90
Shelter Carriers, M1037/M1042	2-5	5,220	100
Shelter Carriers, M1097/M1097A1	2-5	10,000	100
Shelter Carrier, M1097A2	2-5	10,300	100
Shelter Carrier, M1113 (Empty)	2-5	6,400	100
Shelter Carrier, M1152 (Empty)	2-5	7,300	100
Shelter Carrier, M1152 (Loaded)	2-5	11,500	100
NC Operations	2-6	8,800	110
NC Switch	2-6	8,513	100
NC LOS (V3)	2-6	8,611	100
NC Management	2-6	8,800	100
NC Support	2-6	8,400	100
LEN Operations	2-6	8,800	100

<i>Nomenclature</i>	<i>Paragraph Number</i>	<i>Max Weight (Pounds)</i>	<i>Tested Air Speed (Knots)</i>
LEN Switch	2-6	8,800	100
LEN LOS (V4)	2-6	8,800	100
LEN Management	2-6	8,800	100
LEN Cable Vehicle	2-6	8,180	100
SSC Command	2-6	8,800	100
SSC Planning	2-6	8,300	100
SSC Technical	2-6	8,507	100
LOS(V1)	2-6	8,800	100
LOS(V2)	2-6	8,500	100
Radio Access Unit	2-6	8,800	100
SEN(V1)	2-6	8,800	100
SEN(V2)	2-6	8,800	100
Maintenance #1	2-6	8,084	100
Maintenance #2	2-6	8,350	100
Battalion Spares	2-6	8,800	100
Company Spares	2-6	7,850	100
AN/TLQ-17A (V3)	2-6	8,040	100
Deployable Media Production Center	2-6	7,840	120
Operational Control Group (OCG), Firefinder AN/TPQ-36 Block I	2-6	7,500	100
TLQ-37 Intelligence and Electronic Warfare (IEW) System	2-6	8,200	100
S-250/S-250E	2-7	10,001	120
AN/TRC-170 Communication Shelter	2-7	9,240	130
TRQ-32, Intelligence and Electronic Warfare (IEW) System	2-7	9,700	120
Platoon Operations Center (POC), Intelligence and Electronic Warfare (IEW) System	2-7	9,700	120
Mobile Subscriber Equipment Contingency Communications Package/Light Forces Contingency Communications Package in S-250E	2-7	9,993	120
Mobile Subscriber Equipment Contingency Communications Package/Light Forces Contingency Communications Package in S250	2-7	8,913	120
LOS (V1)	2-7	9,038	120
LOS (V2)	2-7	9,038	120
LOS (V3)	2-7	9,038	120
LOS (V4)	2-7	9,038	120
NODAL Support Vehicle	2-7	8,250	120
NC Operations	2-7	9,100	120

<i>Nomenclature</i>	<i>Paragraph Number</i>	<i>Max Weight (Pounds)</i>	<i>Tested Air Speed (Knots)</i>
NC Switch	2-7	8,813	120
NC LOS (V3)	2-7	8,911	120
NC Management	2-7	9,100	120
NC Support	2-7	8,700	120
LEN Operations	2-7	9,100	120
LEN Switch	2-7	9,100	120
LEN LOS (V4)	2-7	9,100	120
LEN Management	2-7	9,100	120
LEN Cable Vehicle	2-7	8,480	120
SSC Command	2-7	9,100	120
SSC Planning	2-7	8,600	120
SSC Technical	2-7	8,807	120
LOS(V1)	2-7	9,100	120
LOS(V2)	2-7	8,800	120
Radio Access Unit	2-7	9,100	120
SEN(V1)	2-7	9,100	120
SEN(V2)	2-7	9,100	120
Maintenance #1	2-7	8,384	120
Maintenance #2	2-7	8,650	120
Battalion Spares	2-7	9,100	120
Company Spares	2-7	8,150	120
ANTLQ-17A (V3)	2-7	8,340	120
Deployable Media Production Center	2-7	8,140	120
Operational Control Group (OCG)/ Firefinder AN/TPQ-36 Bloc II	2-7	7,800	120
TLQ37 Intelligence and Electronic Warfare (IEW) System	2-7	8,500	120
Downsized Direct Support Section (DDSS)	2-8	8,030	100
S-318 Shelter Mounted on M1037	2-9	7,440	100
Spare Equipment and Maintenance Shelter AN/TSQ-190 (V) 1	2-10	9,220	120
Tactical Remote Sensor System (TRSS) Sensor Mobile Monitoring System (SMMS)	2-10	7,685	120
Meteorological Measuring Set AN/TMQ-41 (USMC)	2-10	7,770	120
Meteorological Measuring Set AN/TMQ-41	2-10	8,200	120
Air Defense Communications Platform AN/MSQ-124	2-10	10,000	120
Forward Area Air Defense Command Control System AN/TSQ-182	2-10	9,800	100
Forward Area Air Defense Command Control System AN/TSQ-183	2-10	7,561	100

<i>Nomenclature</i>	<i>Paragraph Number</i>	<i>Max Weight (Pounds)</i>	<i>Tested Air Speed (Knots)</i>
Forward Area Air Defense Command Control System AN/TSQ-184	2-10	7,297	100
Mobile Radio Broadcasting Subsystem (MRBS)	2-10	9,746	120
Mobile Radio (MR) Cargo Vehicle	2-10	9,907	120
Mobile Television Broadcasting Subsystem (MTBS)	2-10	9,295	120
Mobile Television (MT) Cargo Vehicle	2-10	9,637	120
Common Ground Station, Joint Surveillance Target Attack Radar (JSTAR) System	2-10	10,300	120
Advanced Field Artillery Tactical Data Systems (AFATADS), System #1, RWS with a CHS-2 AN/GYG-3(V)1	2-10	8,882	100
Marine Expeditionary Force Intelligence Analysis System S1	2-10	9,194	100
Marine Expeditionary Force Intelligence Analysis System S2	2-10	9,126	100
Tactical Control and Analysis Center	2-10	9,300	100
High Mobility Downsized (HMD) Direct Air Support Central	2-10	8,420	120
Operations Central (OC) Group Firefinder AN/TPQ-36 (V) 8	2-10	8,620	120
Biological Integrated Detection System (BIDS)	2-10	9,000	110
Integrated Meteorological Systems (IMETS), Block I & II	2-10	9,050	120
Enhanced Position Location Reporting System (EPLRS) Downsized Net Control Station (NCS-E(D))	2-10	10,000	120
Digital Group Multiplexer (DGM) AN/TRC-138C	2-10	9,020	115
High Mobility Digital Group Multiplexer Assemblage (HMDA) AN/TRC-173B, AN/TRC-174B, AN/TRC-175B	2-10	9,100	100
High Frequency Communications Central AN/TRC 120	2-10	8,765	120
Marine Expeditionary Force Intelligence Analysis System (IAS)	2-10	9,220	120
Communications Data Link System on M1097A2	2-10	9,900	120
Analysis Control Team-Enclave, AN/TYQ-103	2-11	10,300	125
High Frequency Communications Central, AN/TSC-120	2-12	8,365	120
Analysis Control Team-Enclave (ACT-E)	2-13	11,500	125

<i>Nomenclature</i>	<i>Paragraph Number</i>	<i>Max Weight (Pounds)</i>	<i>Tested Air Speed (Knots)</i>
Common Ground Station (CGS), Joint Surveillance Target Attack Radar (JSTAR) System (V)2	2-13	11,500	100
Digital Topographic Support System-Light (DTSS-L)	2-13	11,500	100
Integrated System Control (ISYSCON), AN/TYQ-76B, (V)1, (V)2, and Degraded configurations	2-13	11,500	100
Meteorological Measuring System Profiler, (MMS-P), AN/TMQ-52	2-13	11,500	100
Shadow Tactical Unmanned Vehicle (TUAV), Air Vehicle Transport	2-13	11,500	100
Shadow Tactical Unmanned Vehicle (TUAV), Ground Control Station	2-13	11,500	100
Shadow Tactical Unmanned Vehicle (TUAV), Maintenance Section Multifunctional	2-13	11,500	100
Single Shelter Switch (SSS), AN/TTC-56	2-13	11,500	120
Tactical Airspace Integration System (TAIS)	2-13	11,500	100
Trojan Spirit Lite (V)3 Support Vehicle, AN/TSQ-226 (V)3	2-13	11,500	100
Joint Tactical Information Distribution System (JTIDS), AN/TYQ-JTIDS Shelter on M1097 HMMWV	2-14	10,000	120
AN/TSM-210 Electronic Shop on Enhanced Capacity Vehicle, M1113 HMMWV	2-14	10,360	120
Special Operations Media System	2-15	9,080	120
Tactical Data Network (TDN) Gateway on M1097A1 HMMWV	2-16	9,580	100
Smoke Generator Set, M157 on M1037	2-17	7,400	100
Smoke Generator Set, M157 on M1097	2-17	8,025	120
Smoke Generator Set, M157A1E1 on M1097	2-17	8,035	120
M1113 (HMMWV) With M56 Smoke Generating System with Graphite in Tank	2-18	9,400	120
M1113 (HMMWV) With M56 Smoke Generating System without Graphite in Tank	2-18	9,400	120
Cargo Bed Cover, HMMWV, Type I, Camouflage, NSN: 5411-01-647-3246	2-19	10,000	90
Cargo Bed Cover, HMMWV, Type I, Sand, NSN: 5411-01-479-1928	2-19	10,000	90
CMTH, Aviation Section (AS)	2-20	9,400	120
M1097A1 (HMMWV) With Remote Landing Site Tower (RLST)	2-21	8,460	120
Prophet AN/MLQ-40 (V) 1	2-22	10,000	90
Prophet AN/MLQ-40 (V) 3	2-22	10,000	90

Prophet Control Vehicle	2-22	10,000	90
<b><i>Nomenclature</i></b>	<b><i>Paragraph Number</i></b>	<b><i>Max Weight (Pounds)</i></b>	<b><i>Tested Air Speed (Knots)</i></b>
Measurements and Signature Intelligence (MASINT)	2-23	10,300	90
OA-9134/TSC Pallet Group, Antenna AS-3036/TSC on M1097	2-24	7,129	110
2 Mast AETC Configuration	2-25	8,500	110
3 Mast AETC Configuration	2-25	9,500	110
M1097A2 (HMMWV) With Secure Mobile Anti-Jam Tactical Terminal (SMART-T) Pallet	2-26	8,540	100
M1113 HMMWV with ATNAVICS Radar Sensor Pallet	2-27	11,500	120
Trojan Spirit Lite (V)2, Central Communications AN/TSQ-226 (V)2 on M1113 HMMWV	2-28	11,500	100
AN/MRC-142B Radio Terminal Set w/ 30 Meter Mast on M998	2-29	7,500	110
M998 with Two MRC-127 Stacks	2-30	8,010	110
LTACFIRE, Single Station	2-31	5,927	90
LTACFIRE, Dual Station	2-31	6,215	90
AN/TSQ-198 TTCS	2-31	6,015	90
System 2: CHS-2 AN/GYG-3(V)1, with SINCGARS AN/VRC-90, AN/VRC-92, and EPLRS installed in the bed. AN/VRC-92 installed in cab.	2-32	8,103	100
System 3: CHS-2 AN/GYG-3(V)3, with SINCGARS AN/VRC-90, AN/VRC-92, and EPLRS installed in the bed. AN/VRC-92 installed in cab.	2-32	8,366	100
System 4: 2 each AN/GYK-37(V)2, with SINCGARS AN/VRC-89, AN/VRC-92, and EPLRS	2-32	7,790	100
System 2: CHS-2 AN/GYG-3(V)1, with SINCGARS AN/VRC-90, AN/VRC-92, and EPLRS installed in the bed. AN/VRC-92 installed in cab. Full Size Stick.	2-33	8,103	100
System 3: CHS-2 AN/GYG-3(V)3, with SINCGARS AN/VRC-90, AN/VRC-92, and EPLRS installed in the bed. AN/VRC-92 installed in cab. Full Size Stick.	2-33	8,366	100
System 4: 2 each AN/GYK-37(V)2, with SINCGARS AN/VRC-89, AN/VRC-92, and EPLRS. Full Size Stick.	2-33	7,790	100
ANTPQ-36 Firefinder Generator Pallet	2-34	7,700	110
M1097 with Sentinel AN/MPQ-64 Tactical Quiet Generator	2-35	7,800	120
AN/TPQ-42, Meteorological Hydrogen	2-36	10,000	120

<i>Nomenclature</i>	<i>Paragraph Number</i>	<i>Max Weight (Pounds)</i>	<i>Tested Air Speed (Knots)</i>
Generator			
Compressed Air Foam System, Mobile	2-37	6,400 (Empty)	120
M1113 with Tactical Super High Frequency Satellite Terminal	2-38	10,340	120
M1113 with Tactical Super High Frequency Satellite Terminal Mobile Power Unit MEP 803A, 10 KW, TQG	2-39	10,520	120
PQAS Mission Vision, M1113 with PQAS Shelter	2-40	9,460	110
Interim Fast Attack Vehicle Truck, Long Wheel Base	2-41	5,720	120
John Deere M-Gator, Empty, (Model # VGM6X01001)	2-42	1,400	90
John Deere M-Gator, with load, (Model # VGM6X01001)	2-42	2,450	90
Two John Deere M-Gators, Empty, (Model # VGM6X01001)	2-43	1,450	75
Command and Control, TAMCN E0946	2-44	27,060	95
25-MM, TAMCN E0947	2-44	28,200	85
Logistics, TAMCN E0948	2-44	28,200	90
Mortar, TAMCN E0949	2-44	27,400	95
Recovery Unit, TAMCN E0950	2-44	28,400	90
Tow Anti-Tank, TAMCN E0942	2-44	27,650	90
M416 1/4-Ton Trailer	3-2	1,080	90
M101A2/A3 with Accompanying Load	3-3	3,000	65
Command Version 1 Trailer	3-3	1,958	65
Command Version 2 Trailer	3-3	1,981	65
Len Cable Trailer	3-3	2,796	65
NC Support Trailer	3-3	2,643	65
Maintenance Trailer #2	3-3	1,430	65
Battalion Spares Trailer #1	3-3	1,594	65
Battalion Spares Trailer #2	3-3	2,206	65
Marine Expeditionary Force Intelligence Analysis System M101A3 Trailer	3-3	3,000	65
Technical Control and Analysis Center Production Improvement Program M101A3 Trailer	3-3	3,000	65
M1048 Trailer	3-4	5,880	120
M1073 Trailer	3-4	6,260	110
M1048 Trailer (TSS)	3-5	7,880	120
M149A2 Water Trailer Modified with Clevis Type Lift Provisions	3-6	6,100	90

M989 HEMAT (Empty)	3-7	7,640	120
<b><i>Nomenclature</i></b>	<b><i>Paragraph Number</i></b>	<b><i>Max Weight (Pounds)</i></b>	<b><i>Tested Air Speed (Knots)</i></b>
M989A1 HEMAT II	3-8	10,650	125
Mk14 Container Hauler Trailer	3-9	16,000	100
Mk15 Wrecker/Recovery Trailer	3-10	26,000	90
Mk16 Fifth-Wheel Adapter Trailer	3-11	16,000	90
Mk17 Drop-Side Cargo Trailer	3-12	23,000	75
M116A2 Trailer with Antenna Groups, AS-3954/TRC (2 each)	3-13	3,230	65
M116A2 Trailer with AN/TPQ-36 Firefinder Antenna TraNSRDECeiver Group	3-14	3,320	105
M116A2 Trailer with M894 18,000-BTU Air Conditioner and MEP-003A Generator	3-15	2,620	80
M116A2 Trailer, Single Channel Objective Tactical Terminal	3-16	2,830	85
M116A3 Trailer with OE334 Antenna Coupler Group	3-17	3,280	80
M105A3 Trailer (Empty)	3-18	2,600	80
M105A3 Trailer (Loaded)	3-18	5,580	110
High Mobility Trailer (Light), M1101	3-19	3,400	120
High Mobility Trailer (Light), M1102	3-19	4,200	120
Tactical Messaging System (TMS) Cargo Carrier, M1102	3-19	4,200	120
Sentinel AN/MPQ-64 Antenna Transmitter Group	3-20	3,900	80
HMT Trailer With Remote Landing Site Tower	3-21	3,600	120
Line of Sight Anti-Tank Resupply Trailer with 8 Missiles and 4 Crew Doors from the LOSAT Vehicle	3-22	4,230	100
MKT-90	3-23	5,730	70
MKT-95	3-23	6,731	70
MKT-99	3-23	6,731	70
Hydraulic System Test and Repair Unit	3-24	2,878	70
Desert Operation Trailer with Desert Operation Motorcycle	3-25	3,300	80
M332 Ammunition Trailer, 1 1/2-Ton	3-26	5,780	120
AS-4492/TSC, Lightweight, High Gain, X-band Antenna Trailer	3-27	3,820	90
M1112 400 Gallon Water Trailer, Empty	3-28	3,860	80
M1082 LMTV Trailer	3-29	11,510	70
M1095 MTV Trailer	3-29	15,780	70
Small Portable Expeditionary Aeromedical Rapid Response Trailer	3-30	6,100	80

Minimum Operating Strip Lighting System with Spreader Bars	3-31	3,350	70
<b><i>Nomenclature</i></b>	<b><i>Paragraph Number</i></b>	<b><i>Max Weight (Pounds)</i></b>	<b><i>Tested Air Speed (Knots)</i></b>
Assault Command Post, Housed in Expandable Light Airmobile Shelter with High Speed Mobile Wheel Set	3-32	13,240	80
Upgraded, Assault Command Post, Housed in Expandable Light Airmobile Shelter with High Speed Mobile Wheel Set	3-32	14,600	80
Trailer Support System (TSS 2000655) on Crash-Out-Package System (COPS) Trailer with Base-X Expeditionary Shelter	3-33	4,320	80
Shadow Tactical Unmanned Aerial Vehicle (TUAV) Launcher/Recovery Trailer	3-34	4,100	100
Transporter (Trailer), SEE, 2-Axel, 20,000-Pound Capacity	3-35	10,800	110
Trailer Mounted Environmental Control System	3-36	4,200	70
Petroleum Quality Analysis System Trailer	3-37	3,380	70
M353 Trailer Chassis	4-2	2,720	100
MEP-005A	4-2	6,220	100
MEP-006A	4-2	7,720	100
MEP-0114A	4-2	6,220	100
MEP-0115A	4-2	6,320	100
Generator set, 15 kW, 6113	4-3	5,119	100
Generator set, 30 kW, CE301ACWK1	4-3	5,625	100
Generator set, 45 kW, 52300	4-3	6,885	100
Generator set, 60 kW, MEP-006A	4-3	7,347	100
AN/MJQ-12A, Unit A, 60 kW, 50/60 Hz Power Unit with MEP 006A, 60 kW, 50/60 Hz, generator set with switch box	4-3	8,060	90
AN/MJQ-12A, Unit B, 60 kW, 50/60 Hz Power Unit with MEP 806A, 60 kW, 50/60 Hz, generator set (no switch box)	4-3	7,980	90
AN/MJQ-39, Unit A, 15 kW, 400 Hz Power Unit with MEP 814A, 15 kW, 400 Hz, generator set with switch box	4-3	5,255	80
AN/MJQ-39, Unit B, 15 kW, 400 Hz Power Unit with MEP 814A, 15 kW, 400 Hz, generator set (no switch box)	4-3	5,255	80
AN/MJQ-40, Unit A, 30 kW, 50/60 Hz Power Unit with MEP 805A, 30 kW, 50/60 Hz, generator set with switch box	4-3	6,100	90
AN/MJQ-40, Unit B, 30 kW, 50/60 Hz Power Unit with MEP 805A, 30 kW, 50/60 Hz, generator set (no switch box)	4-3	6,100	90

AN/MJQ-40B, Unit A, PU-803B/G, PU-804B/G	4-3	7,410	110
<b><i>Nomenclature</i></b>	<b><i>Paragraph Number</i></b>	<b><i>Max Weight (Pounds)</i></b>	<b><i>Tested Air Speed (Knots)</i></b>
AN/MJQ-40B, Unit B, PU-803B/G, PU-804B/G	4-3	7,410	110
AN/MJQ-41B, Unit A, PU-805B/G, PU-806B/G	4-3	7,410	90
AN/MJQ-41, Unit A, 60 kW, 50/60 Hz Power Unit with MEP 806A, 60 kW, 50/60 Hz, generator set with switch box	4-3	6,720	70
AN/MJQ-41, Unit B, 60 kW, 50/60 Hz Power Unit with MEP 806A, 60 kW, 50/60 Hz, generator set (no switch box)	4-3	6,720	70
AN/MJQ-41B, Unit B, PU-805B/G, PU-806B/G	4-3	7,410	90
PU-405 A/M Power Unit, 15 kW, without acoustic suppression kit (ASK)	4-3	6,119	100
PU-405 A/M Power Unit, 15 kW, with acoustic suppression kit (ASK)	4-3	6,740	80
PU-406 B/M Power Unit, 30 kW, with acoustic suppression kit (ASK)	4-3	7,520	80
PU-650 B/G, 60 kW, 50/60 Hz Power Unit with MEP 006A, 60 kW, 50/60 Hz generator set	4-3	7,800	90
PU-707 A/M, 60 kW, 400 Hz Power Unit with MEP 115A, 60 kW, 400 Hz generator set	4-3	7,800	90
PU-732 Power Unit, 15 kW, with acoustic suppression kit (ASK)	4-3	6,690	80
PU-760 Power Unit, 30 kW, with acoustic suppression kit (ASK)	4-3	7,240	80
PU-800, 15 kW, 400 Hz Power Unit with MEP 814A, 15 kW, 400 Hz, generator set	4-3	5,255	80
PU-802, 15 kW, 50/60 Hz Power Unit with MEP 804A, 15 kW, 50/60 Hz, generator set	4-3	5,320	80
PU-803, 30 kW, 50/60 Hz Power Unit with MEP 805A, 30 kW, 50/60 Hz, generator set	4-3	6,100	90
PU-804, 30 kW, 400 Hz Power Unit with MEP 815A, 30 kW, 400 Hz, generator set	4-3	6,130	90
PU-805, 60 kW, 50/60 Hz Power Unit with MEP 806A, 60 kW, 50/60 Hz, generator set	4-3	7,120	70
PU-806, 60 kW, 400 Hz Power Unit with MEP 816A, 60 kW, 400 Hz, generator set	4-3	7,215	70
PU-794/G Regency Net Power Unit	4-3	6,600	90
AN/MJQ-16 Power Unit, 5 kW, 60 Hz	4-4	5,100	120
AN/MJQ-18 Power Unit, 10 kW, 60Hz	4-4	5,765	120

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AN/MJQ-25 Power Unit, 10 kW, 400 Hz	4-4	5,750	120
AN/MJQ-37 Power Unit with Two (2) MEP-803A, 10kW, 60 Hz, Generator Sets	4-5	4,735	90
<b><i>Nomenclature</i></b>	<b><i>Paragraph Number</i></b>	<b><i>Max Weight (Pounds)</i></b>	<b><i>Tested Air Speed (Knots)</i></b>
AN/MJQ-38 Power Unit with Two (2) MEP-813A, 10kW,400 Hz, Generator Sets	4-5	4,735	90
PU-751/M, 5 kW Generator Variants, LOS V1,V2/V3/V4, Planning Trailer, Radio Access Trailer	4-6	3,000	75
PU-753/M, 10 kW Generator Variants NC OPS Trailer SCC TECH Trailer NC MGMT Trailer LEN MGMT Trailer LEN OPS Trailer SEN V1 Trailer SEN V2 Trailer Maintenance #1 Trailer AN/TSQ-182	4-6	3,000	75
AN/MJQ-32 Power Unit with Acoustic Suppression Kit, 3 kW	4-6	3,120	120
AN/MJQ-33 Power Unit with Acoustic Suppression Kit, 3 kW	4-6	2,858	100
AN/MJQ-43 Power Unit with Two (2) MEP-831A, 3 kW, 60 Hz, Generator Sets	4-7	2,060	80
AN/MJQ-35 Power Unit with Two (2) MEP-802A, 5 kW, 60 Hz, Generator Sets	4-7	3,160	80
PU-797 5 kW, 60Hz Power Unit with MEP-802A, 5 kW, 60 Hz, 60 Hz, Generator Set	4-7	2,720	70
PU-798 10 kW, 60Hz Power Unit with MEP-803A,10 kW, 60 Hz, Generator Set	4-7	2,860	70
PU-799 10 kW, 400 Hz Power Unit with MEP-813A,10 kW, 400 Hz, Generator Set	4-7	3,160	70
PU-801 15 kW, 50/60Hz Power Unit with MEP-804A,15 kW, 50/60 Hz, Generator Set	4-7	3,160	100
AN/MJQ-33 Tactical Quiet Generator (TQG)	4-7	2,100	100
AN/TMQ-35A, 5 kW, 60 Hz Power Plant	4-8	3,540	80
PU-797A 5 kW, 60 Hz, Power Unit with 802A Generator Set	4-9	2,657	70
PU-798A 10 kW, 60 Hz, Power Unit with 803A Generator Set	4-9	2,880	70
PU-799A 10 kW, 400 Hz, Power Unit with 813A Generator Set	4-9	2,910	70
PU-801A 15 kW, 60Hz Power Unit with MEP-804A Generator Set	4-9	3,800	100
Mission Trailer, without Transit Cases	4-10	3.960	90
Support Trailer, without Transit Cases	4-10	3.878	90

M973, Cargo, Tracked	5-2	Front-6,380 Rear-6,600 Total-12,980	80
<b><i>Nomenclature</i></b>	<b><i>Paragraph Number</i></b>	<b><i>Max Weight (Pounds)</i></b>	<b><i>Tested Air Speed (Knots)</i></b>
M973E1, Cargo, Tracked	5-2	Front-6,380 Rear-6,600 Total-12,980	80
M1065, Command Post, Tracked	5-2	Front-6,380 Rear-6,600 Total-12,980	80
M1066, Ambulance, Tracked	5-2	Front-6,380 Rear-6,600 Total-12,980	80
M1067 Flatbed, Tracked	5-3	Front-6,600 Rear-7,150 Total-12,980	70
M101A1 Howitzer	6-2	4,980	95
M101A1 Howitzer with one A-22 Cargo Bag	6-2	7,180	75
M101A1 Howitzer with two A-22 Cargo Bags	6-2	9,380	80
M101A1 Howitzer with three A-22 Cargo Bags	6-2	11,580	75
M102 Howitzer	6-3	3,330	80
M102 Howitzer with One A-22 Cargo Bag	6-4	5,660	90
M102 Howitzer with Two A-22 Cargo Bags	6-5	7,560	80
M102 Howitzer with Three A-22 Cargo Bags	6-5	9,760	80
Two M102 Howitzers	6-6	6,660	90
Two M102 Howitzers with One A-22 Cargo Bag	6-7	8,860	90
Two M102 Howitzers with Two A-22 Cargo Bags	6-7	11,060	90
Two M102 Howitzers with Three A-22 Cargo Bag	6-7	13,260	90
M119/M119A2 Howitzer Folded/Towed	6-8	4,400	120
M119/M119A2 Howitzer with accompanying load Folded/Towed	6-8	7,400	120
M119/M119A2 Howitzer Forward/Firing	6-9	4,400	110
M119/M119A2 Howitzer with Accompanying Load Forward/Firing	6-9	7,400	110
M119/M119A2 Howitzer with Two Boxes of Ammunition on Firing Platform	6-10	4,850	80
M119/M119A2 Howitzer with Two Boxes of Ammunition on Firing Platform and Ammunition in A-22 or Cargo Net	6-10	7,500	110
M114A2 Howitzer	6-11	12,700	110
M198 Howitzer in Towed Position	6-12	15,740	110

M198 Howitzer in Stowed Position	6-12	15,740	110
Two M101A1 Howitzers	6-13	9,960	100
BMS120, Carriage Mounted	6-15	764	60
M777, 155-mm, Lightweight Howitzer	6-16	9,300	120
<b><i>Nomenclature</i></b>	<b><i>Paragraph Number</i></b>	<b><i>Max Weight (Pounds)</i></b>	<b><i>Tested Air Speed (Knots)</i></b>
M777A1, 155-mm, Lightweight Howitzer	6-16	9,800	120
M777A2, 155-mm, Lightweight Howitzer	6-16	9,920	120
Stinger, Pedestal-Mounted on M998 (Avenger)	7-2	8,513	90
Stinger, Pedestal-Mounted on M1097 (Avenger)	7-2	9,087	90
Stinger, Pedestal-Mounted, with ECU/PPU on M1097 HMMWV	7-3	9,800	70
Stinger, Pedestal-Mounted, with ECU/PPU on M1097A1 HMMWV	7-3	9,800	70
Stinger, Pedestal-Mounted, with ECU/PPU on M1097A2 HMMWV	7-3	10,300	70
Tractor, Full-Track, JD550 with Roll Over Protection System (ROPS), Towing Winch and Hydraulic Angle Blade	8-2	16,662	90
D5B Tractor, Dozer, Type II, Power Section without ROPS	8-3	18,915	70
D5B Tractor, Dozer, Type II, Track Section	8-3	13,735	90
MC1150E Full Tracked Tractor	8-4	24,062	75
Tractor (Dozer), Full-Track, Type III, JD450G	8-5	18,400	100
Tractor (Dozer), Full-Track, Type III, JD450G, without ROPS	8-5	17,700	100
Tractor (Dozer), Full-Track, Type III, JD450G, without ROPS and Winch	8-5	16,160	100
Tractor, Case, Model 850	8-6	10,500	80
Small Emplacement Excavator	8-7	16,240	95
High Mobility Materiel Handler	8-8	15,650	115
Ditching Machine	8-9	3,340	100
950BS Scoop Loader, Type II, Work Section	8-10	15,830	100
950BS Scoop Loader, Type II, Power Section	8-10	16,110	90
130GS Grader Front Section with Scarifier and ROPS, Low-Velocity Airdrop Suspension Provisions Removed	8-11	16,120	100
130GS Grader Rear Section	8-11	14,270	100
613BS Elevating Scraper Work Section	8-12	16,330	110
613BS Elevating Scraper Power Section	8-12	16,860	110
613WDS Water Distributor Power Section	8-13	16,960	110
613WDS Water Distributor Work Section	8-13	15,400	110

Roller, Towed, Vibrating	8-14	4,830	120
Roller, Towed, RO3402	8-15	4,600	120
Roller, Hercules, PT-11	8-15	3,520	85
Vibrating Roller, Caterpillar, RO-33	8-16	16,425	120
Mk155 Launcher, Mine Clearing	8-17	860	80
<b><i>Nomenclature</i></b>	<b><i>Paragraph Number</i></b>	<b><i>Max Weight (Pounds)</i></b>	<b><i>Tested Air Speed (Knots)</i></b>
M68A2 Line Charge, Demolition Inert	818	2,486	70
M68A2 Line Charge, Demolition with Mk22 Rocket Motor	8-18	2,672	70
Mk155 Launcher	8-19	3,700	90
Mk155 Launcher with M68A2, Demolition Charge and Mk22 Rocket Motor	8-19	6,312	100
Mk155 Launcher on M200A1 Trailer	8-20	3,330	90
Mk155 Launcher with M68A2, Demolition Charge and Mk22 Rocket Motor on M200A1 Trailer	8-20	5,620	110
Mk155 Launcher with M68A2, Demolition Charge and Mk22 Rocket Motor on Mobile-Trac System Trailer	8-20	7,172	110
LRT-110, 7 ½-Ton Crane	8-21	24,230	120
LRT-110 7 ½-Ton Crane Boom	8-22	8,600	140
LRT-110, 7 ½-Ton Crane Power Unit	8-23	15,600	140
Truck, Forklift, MC-4000 TAMCN B2565	8-24	8,600	90
Truck, Forklift, Rough Terrain, RT4000, TAMCN B2566	8-25	10,860	120
MHE-270 without Cab, NSN: 3930-01-330-8907	8-26	11,700	125
MHE-270 with Cab, NSN: 3930-01-330-8967	8-26	11,920	125
Truck, Forklift, MC6000	8-27	19,800	85
Extendable Boom Forklift	8-28	25,640	105
Extendable Boom Forklift (New Version)	8-29	28,400	110
Light Rough Terrain Forklift	8-30	13,700	110
Welding Shop on M200A1 Trailer	8-31	7,220	120
250 CFM Air Compressor	8-32	7,425	100
Pneumatic Pool and Compressor, TAMCN B0395	8-33	8,040	75
Hydraulic Pioneer Tool Outfit	8-33	6,740	100
Fuel Dispensing System, Tactical Airfield	8-34	3,500	60
Boat, Bridge Erection	8-35	6,000	60
Medium Girder Bridge, Ramp Section, Palletized TAMCN BO152	8-36	6,500	70
Ribbon Bridge, Ramp Bay	8-37	11,560	90
Improved Ribbon Bridge, Ramp Bay	8-37	13,270	90

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Ribbon Bridge, Interior Bay	8-38	11,800	70
Improved Ribbon Bridge, Interior Bay	8-38	13,860	70
MC257 Water Purification Unit-Reverse Osmosis, 600 Gallons per Hour , Skid Mounted, TAMCN B2064	8-39	7,400	90
MS114 WFD Concrete Mixer	8-40	4,223	70
<b><i>Nomenclature</i></b>	<b><i>Paragraph Number</i></b>	<b><i>Max Weight (Pounds)</i></b>	<b><i>Tested Air Speed (Knots)</i></b>
Countermine Mini-Flail	8-41	2,420	100
Bobcat 863 Skid-Steer Loader with Construction and Industrial Bucket	8-42	6,870	100
Bobcat 863 Skid-Steer Loader with Construction and Industrial Bucket and Tracks	8-42	7,720	100
Bobcat 863 Skid-Steer Loader with Pallet Forks	8-42	7,235	100
Bobcat 863 Skid-Steer Loader with Pallet Forks and Tracks	8-42	8,085	100
Bobcat 863 Skid-Steer Loader with 36-inch Auger Bit	8-42	7,690	100
Bobcat 863 Skid-Steer Loader with 36-inch Auger Bit and Tracks	8-42	8,540	100
Bobcat 863 Skid-Steer Loader with Dozer Blade	8-42	7,770	100
Bobcat 863 Skid-Steer Loader with Dozer Blade and Tracks	8-42	8,620	100
Bobcat 863 Skid-Steer Loader with Angle Broom	8-42	7,910	100
Bobcat 863 Skid-Steer Loader with Angle Broom and Tracks	8-42	8,760	100
Bobcat 763 Skid-Steer Loader with no Attachments	8-42	4,840	100
Bobcat 763 Skid-Steer Loader with Clamshell Bucket Attachment (NSN 3815-01-502-3528)	8-42	5,660	100
Bobcat 763 Skid-Steer Loader with Hydraulic Breaker Attachment (NSN 3820-01-502-3530)	8-42	5,600	100
Bobcat 763 Skid-Steer Loader with Auger Attachment (NSN 3830-01-502-5470)	8-42	5,220	100
Bobcat 763 Skid-Steer Loader with Pallet Lifting Fork Attachment (NSN 3940-01-502-5469)	8-42	5,480	100
Bobcat S150 Compact Skid-Steer Loader with no Attachments	8-42	5,530	100
Bobcat S150 Compact Skid-Steer Loader with Clamshell Bucket Attachment	8-42	6,410	100

(NSN 3815-01-502-3528)			
Bobcat S150 Compact Skid-Steer Loader with Hydraulic Breaker Attachment (NSN 3820-01-502-3530)	842	6,290	100
Bobcat S150 Compact Skid-Steer Loader with Auger Attachment (NSN 3830-01-502-5470)	8-42	5,910	100
<b><i>Nomenclature</i></b>	<b><i>Paragraph Number</i></b>	<b><i>Max Weight (Pounds)</i></b>	<b><i>Tested Air Speed (Knots)</i></b>
Bobcat S150 Compact Skid-Steer Loader with Pallet Lifting Fork Attachment (NSN 3940-01-502-5469)	8-42	6,170	100
277-Multi-Terrain Loader	8-43	10,900	140
420-D Backhoe Loader	8-44	19,450	110
IC45 Crawler Carrier	8-45	16,540	115
All-Purpose Remote Transport System Vehicle	8-46	9,200	110
M4 Robotic Mine Flail	8-47	12,440	90
Tank, Fabric, Lightweight Collapsible, 160 Gallon	9-2	1,400	N/A
Drum, Fabric, Fuel, 500Gallon (1 each)	9-3	4,200	80
Drum, Fabric, Fuel, 500Gallon (2 each)	9-3	8,400	80
Drum, Fabric, Fuel, 500Gallon (3 each)	9-3	12,600	80
Drum, Fabric, Fuel, 500Gallon (4 each)	9-3	16,800	80
Drum, Fabric, Fuel, 500Gallon, Empty (6 each)	9-4	4,500	90
Storage Module, Fuel/Water, Six Compartment Container, Individual	9-5	10,000	100
Two, Storage Modules, Fuel/Water, Six Compartment Container, Stacked	9-6	20,100	110
AN/ASM-146	10-2	3,940	80
AN/MSM-108	10-2	3,940	80
AN/TRC-93B (V)1 or (V)2	10-3	3,250	115
AN/TRC-93B (Reconfiguration)	10-3	3,660	115
AN/TSC-124, Single Channel Objective Tactical Terminal (SCOTT)	10-3	2,100	60
Operations Central Shelter, Firefinder AN/TPQ-36 (V)8, S-788	10-4	2,869	80
Biological Agent, Automatic: Integrated Detection System, S-788	10-4	3,300	100
Downsized Direct Support Section, Standardized Integrated, Command Post Systems (SICPS)	10-4	2,400	90
Tactical Airspace Integration System (TAIS), AN/TSQ-221	10-4	3,965	100

Meteorological Measuring System, Profiler Shelter (SICPS only)	10-4	3,700	100
Digital Tech Controller Housed in a Modified Gitchner Shelter	10-5	9,100	90
Shelter, Battery Servicing, AN/TSM-133	10-6	5,240	65
Facility, Improved Message, AN/TSC-58A	10-6	5,368	55
Facility, Improved Message, AN/MS-29A	10-6	5,368	55
<b><i>Nomenclature</i></b>	<b><i>Paragraph Number</i></b>	<b><i>Max Weight (Pounds)</i></b>	<b><i>Tested Air Speed (Knots)</i></b>
Station, System Master, Reporting, Position Location, AN/TSQ-129	10-6	6,050	75
Station, Enhanced Position Location Reporting System Net AN/TSQ-158	10-6	6,289	75
Terminal, Regency Net Force, AN/TRC-179(V)1	10-6	8,200	70
Communications Nodal Control Element, AN/TSQ-111	10-6	10,000	80
Multiplexer Terminal Set, AN/TSQ-146(V)	10-6	6,190	90
IFTE Base Shop Test Facility (BSTF), Basic, S-280C/G Shelter, AN/TSM-191(V)3	10-6	7,806	50
IFTE BSTF, Hawk, S-280C/G Shelter, AN/TSM-191(V)2	10-6	7,748	50
IFTE 60 Hz Storage Shelter, S-280C/G Shelter, S-744/TSM-191(V)	10-6	6,365	70
IFTE 400 Hz Storage Shelter, S-280C/G Shelter, S-175/TSM-191(V)	10-6	5,119	70
Tactical Satellite Terminal, AN/TSC-85B	10-6	6,200	70
E1045 Bottle Cleaning and Charging Station	10-6	6,400	70
E1022 Maintenance Facility Night Sight	10-6	6,400	70
AN/TYA-16B, TAMCN A0294	10-6	3,325	65
Airborne Reconnaissance Low-Imagery (ARL-I) and Airborne Reconnaissance Low-Comint (ARL-C) Fly Away Kit, Type A-1	10-6	8,500	80
ARL-I and ARL-C Fly Away Kit, Type B-1	10-6	8,500	80
ARL-I and ARL-C Fly Away Kit, Type C-1	10-6	8,500	80
Shelter, Electromechanical Induction (EMI), TAMCN C6110	10-7	7,700	70
S-715/T, Reproduction/Distribution Facility Shelter	10-7	4,826	50
Electronic EMI HSOP Shelter	10-7	4,140	60
Shelter, Radar Set, Precision Approach, AN/TPN-22, TAMCN Q2115	10-7	7,200	80
Shelter, Communications Central, AN/MS-63A, TAMCN A0258	10-7	6,619	85
Air Radar Shelter, AN/TPS-73	10-7	14,500	80

Radar Shelter, AN/TPS-63B	10-7	7,360	70
10Foot Rigid EMD Communications Shelter	10-7	7,000 (Minimum Weight)	70
AN/TRC-173A	10-8	3,500	80
AN/TRC-174A	10-8	3,425	80
AN/TRC-175A	10-8	3,350	80
AN/TRC-138B	10-8	3,525	80
AN/TRC-138C	10-8	3,430	80
<b><i>Nomenclature</i></b>	<b><i>Paragraph Number</i></b>	<b><i>Max Weight (Pounds)</i></b>	<b><i>Tested Air Speed (Knots)</i></b>
AN/TYC-5A Data Communications Terminal	10-9	7,451	70
AN/TRN-44 Tactical Air Navigation Shelter	10-10	6,800	75
Hardened Army Tactical Shelter	10-11	8,160	70
Cradle Mounted AN/TPQ-32A Radar Set, Component of the AN/MPQ-49A Forward Area Alerting Radar System	10-12	7,100	90
NATO Air Base Satcom (NABS) Shelter Pallet, AN/TSC-93B (V)2	10-13	5,751	90
Refrigerator, Rigid Box without Refrigerator Unit	10-14	3,500	90
PQAS Shelter, Dismounted	10-15	3,200	110
ISU60 (Loaded)	11-2	11,650	80
ISU90 (Loaded)	11-2	11,900	100
ISU90 (Empty)	11-2	1,900	105
ISU60 with Jump Forward Arming and Refueling Point (FARP), Advanced Aviation Forward Area Refueling System (AAFARS)	11-2	4,000	65
Advanced Design Refrigerator, 300 Cubic Feet (ADR300), Produced by AAR Cadillac Manufacturing Inc.	11-2	11,900	80
One (1) Quadcon, Empty	11-3	1,764	100
One (1) Quadcon, Loaded	11-3	7,000	100
Two (2) Quadcons, Empty	11-3	3,528	90
Two (2) Quadcons, Loaded	11-3	10K-10,000 25K-14,000	100
ASLMS, Field Pack-Up (FPU), FPU-12 (12-Foot Section Only)	11-4	20,000	100
ASLMS, FPU-8 (8-Foot Section Only)	11-4	18,000	90
ASLMS, Field Pack-Up (FPU), FPU-8/12 (8 & 12-Foot Sections Connected)	11-5	26,000	100
Oxygen Generation/Distribution Module (OGDM)	11-6	3,405	70
Cylinder Filling Module (CFM)	11-6	2,049	70
Oxygen Generation/Distribution Module and Cylinder Filling Module	11-7	5,454	85

Multiple Launch Rocket System with Rocket Pod Container (with Six Rockets)	11-8	5,005	90
Guided Missile Launch Assembly (GMLA)	11-8	5,071	90
Multiple Launch Rocket System with Two Rocket Pods/Containers (with Six Rockets)	11-9	10,010	85
Two Enclosure Assembly Launch Pods, Guided Missile Launch Assembly	11-9	10,142	85
M1A1 Full-Up Power Pack) Container with Full-Up Power Pack, (Metal or Fiberglass)	11-10	13,620	110
<b><i>Nomenclature</i></b>	<b><i>Paragraph Number</i></b>	<b><i>Max Weight (Pounds)</i></b>	<b><i>Tested Air Speed (Knots)</i></b>
Distributed Explosive Technology (DET) System, Array Container	11-11	4,000	90
Distributed Explosive Technology System, Landing Craft, Air Cushioned, Landing Interface Kit	11-12	1,550	80
Distributed Explosive Technology System, Landing Craft, Air Cushioned, Landing Interface Kit, Doubled, Stacked	11-13	2,400	85
AN/TPQ-37 Artillery-Loading Radar Set	12-2	10,800	90
AN/TMQ-31 Radio Direction Finder, Pedestal Mounted on M103A3 Trailer	12-3	5,010	90
AN/TPQ-36 Firefinder Antenna Radar Set on M103A1	12-4	4,110	110
Firefinder II, AN/TPQ-36 Block II	12-5	9,673	120
OE-36/G Quick Reaction Satellite Antenna(QRSA)	12-6	4,830	80
AS-3471/TPN-22 Antenna Pallet, TAMCN Q2115	12-7	5,700	80
SM-F 973604-1 used with AN/TSC-93B	12-8	1,970	75
SM-F 973604-21 used with AN/TSC-85B	12-8	2,107	75
DGM, DAMP Pallet, 2 Antenna Configuration	12-9	4,300	90
DGM, DAMP Pallet, 3 Antenna Configuration	12-9	5,500	90
DGM, AETC, 2 Antenna Configuration	12-10	3,028	100
DGM, AETC, 3 Antenna Configuration	12-10	4,014	100
AN/TSC-93B Satellite Communications Terminal without ALTA	12-11	3,644	110
AN/TSC-93B Satellite Communications Terminal with ALTA	12-11	3,957	110
Secure Mobile Anti/Jam Reliable Tactical Terminal Pallet	12-12	2,440	100
Remote Power Unit, PU-818/TPT-T1 (V) (P/N9805-8500-1) without Antenna	12-13	3,941	70
Remote Power Unit, PU-818/TPT-T1 (V) (P/N9805-8500-1) withTK1, 51-inch Antenna (8811-1900)	12-13	4,006	70
Remote Power Unit, PU-818/TPT-T1 (V)	12-13	4,006	70

(P/N9805-8500-1) withTK2, 28-inch Antenna (8811-2900)			
Remote Power Unit, PU-818/TPT-T1 (V) (P/N9805-8500-1) withTK3, 46-inch Antenna (8811-3900)	12-13	4,006	70
Remote Power Unit, PU-818/TPT-T1 (V) (P/N9805-8500-1) withTK4, 76-inch Antenna (8811-4900)	12-13	4,061	70
Remote Power Unit, PU-818/TPT-T1 (V) (P/N9805-8500-1) withTK9, 40.4-inch Antenna (9805-8900)	12-13	3,979	70
	<b>Nomenclature</b>	<b>Paragraph Number</b>	<b>Max Weight (Pounds)</b>
			<b>Tested Air Speed (Knots)</b>
Remote Power Unit, PU-809A/TPT-T1 (V) (P/N100905-8500-1) without Antenna	12-13	4,085	70
Remote Power Unit, PU-809A/TPT-T1 (V) (P/N1009-8500-1) withTK1, 51-inch Antenna (8811-1900)	12-13	4,150	70
Remote Power Unit, PU-809A/TPT-T1 (V) (P/N1009-8500-1) withTK2, 28-inch Antenna (8811-2900)	12-13	4,150	70
Remote Power Unit, PU-809A/TPT-T1 (V) (P/N1009-8500-1) withTK3, 46-inch Antenna (8811-3900)	12-13	4,150	70
Remote Power Unit, PU-809A/TPT-T1 (V) (P/N1009-8500-1) with TK4, 76-inch Antenna (8811-4900)	12-13	4,205	70
Remote Power Unit, PU-809A/TPT-T1 (V) (P/N1009-8500-1) withTK9, 40.4-inch Antenna (9805-8900)	12-13	4,123	70
Remote Emitter Unit (REU) Threat Kit (TK) 1, (P/N 1006-1001-1)	12-13	3,712	70
Remote Emitter Unit (REU) Threat Kit (TK) 4, (P/N 1006-4001-1)	12-13	3,986	70
Remote Emitter Unit (REU) Threat Kit (TK) 9, (P/N 9805-8001-1)	12-13	3,497	70
Aviation Ground Power Unit	13-2	4,190	90
Aviation Direct Current Generator Set	13-3	1,100	90
MEP-004AAS with Acoustic Suppression Kit, 15KW	13-4	4,031	40
MEP-005AAS with Acoustic Suppression Kit, 30KW	13-4	4,556	65
MEP-103A with Acoustic Suppression Kit, 15KW	13-4	4,230	40
MEP-104A with Acoustic Suppression Kit, 30KW	13-4	4.830	40
MEP-113A with Acoustic Suppression Kit, 15KW	13-4	4,230	40
MEP-114A with Acoustic Suppression Kit,	13-4	4.830	40

**Appendix C**

30KW			
MEP-813 TQG Generator Pallet, Sentinel Radar System	13-5	1,600	70
Mep-812A Generator Pallet	13-5	2,150	70
NATO Air Base Satcom (NABS) Power Pallet AN/TSC-85(V)2	13-6	8,630	120
MEP-831, 3KW, 60HZ Generator Set	13-7	325	80
MEP-802A, 5KW, 60HZ Generator Set	13-7	890	50
MEP-812A, 5KW, 400HZ Generator Set	13-7	900	50
MEP-803A, 10KW, 60HZ Generator Set	13-7	1,180	50
	<b>Nomenclature</b>	<b>Paragraph Number</b>	<b>Max Weight (Pounds)</b>
			<b>Tested Air Speed (Knots)</b>
MEP-813A, 10KW, 400HZ Generator Set	13-7	1,280	50
MEP-804A, 15KW, 50/60HZ Generator Set	13-7	2,125	70
MEP-814A, 15KW, 50/60HZ Generator Set	13-7	2,240	70
MEP-805A, 30KW, 50/60HZ Generator Set	13-7	3,005	70
MEP-805B, 30KW, 50/60HZ Generator Set	13-7	3,040	70
MEP-815A, 30KW, 400HZ Generator Set	13-7	3,015	70
MEP-815B, 30KW, 400HZ Generator Set	13-7	3,060	70
MEP-806A, 60KW, 50/60HZ Generator Set	13-7	3,760	80
MEP-806B, 60KW, 50/60HZ Generator Set	13-7	4,042	80
MEP-816A, 60KW, 400HZ Generator Set	13-7	3,850	80
MEP-816B, 60KW, 400HZ Generator Set	13-7	4,240	80
Generator, 1.5KW, Fuel Hoses with Reels and Carrying Bags (2 each), Assembly Pump, Fire Extinguishers (3 each)	14-2	820	60
Fire Extinguisher, Dry Chemical, Self Contained, TAMCN C4765	14-3	3,000	100
Rigid Raiding Craft	14-4	3,200	75
PA 150 Pallet with Twelve (12) 2.75-inch Rockets	14-5	2,200	60
PA 151 Pallet with Twelve (12) 2.75-inch Rockets	14-5	2,000	60
Four SDASS Racks with Two Empty Air Cylinders each in a 2 X 2 Configuration	14-6	1,800	70
Polaris Indy Wide-Track Snowmobile	14-7	638 each	70
Norwegian Pulk Sled, Model BN 2010C	14-7	381 each	70
Two CROPs, M3/M3A1 Empty, Stacked	14-8	7,300	110
Special Operations Craft-Riverine (SOC-R) Trailer	14-9	3,716	50
Naval Special Warfare Rigid Inflatable Boat (NSWRIB) Trailer	14-9	4,300	50
M342A2 2 ½-Ton Dump Truck with Winch	15-2	15,770	85
M335A1 2 ½-Ton Cargo Truck with Winch	15-3	13,550	90
M335A2 2 ½-Ton Cargo Truck with Winch	15-3	13,570	90

M54A2 5-Ton Cargo Truck with Winch	15-4	20,782	80	
M52A2 5-Ton Tractor with Winch	15-5	18,430	85	
M818 5-Ton Tractor with Winch	15-5	20,107	85	
Crane, Self-Propelled, for Army Aircraft Maintenance and Positioning	15-6	14,600	85	
M105 1 ½-Ton Trailer	16-2	5,750	45	
Semitrailer, Lowbed, Wrecker, 12Ton, 4Wheel	16-3	17,500	80	
M172A1 Semitrailer, Lowbed	16-4	16,500	80	
Trailer, Flatbed, Tilt Deck, 15-Ton, 8-Wheel	16-5	9,000	70	
Trailer-Mounted Welding Shop	16-6	2,960	110	
	<b>Nomenclature</b>	<b>Paragraph Number</b>	<b>Max Weight (Pounds)</b>	<b>Tested Air Speed (Knots)</b>
Welding Machine, Arc, LEB 300 on 2 ½-ton Trailer	16-7	5,310	100	
Trailer-Mounted Compressor, Reciprocating	16-8	900	90	
AN/MTC-10 Telephone Control Office Group on M416 Trailer	16-9	1,800	70	
Trailer-Mounted Tool Outfit	16-10	2,450	70	
Lube Service Unit, Engine 3A, Trailer-Mounted	16-11	5,540	120	
Trailer, Bolster, M796	16-12	6,340	110	
Trailer, Water, M149	16-13	6,060	80	
Trailer, Water, M149A1	16-13	6,060	80	
Trailer, Water, M149A2	16-13	6,320	80	
MRS-100 Wheeled Industrial Tractor	17-2	21,100	80	
M5 8-Foot Aggregate Spreader	17-3	2,290	90	
Roller, Towed, Vibrating, 1-Drum, 5-Ton, VR55TM	17-4	3,450	90	
Roller, Road, Towed, Wheeled, 13-Tire, 9-Ton	17-5	3,300	90	
Kettle, Heating, Bitumen, 165-Gallon	17-6	1,750	70	
Kettle, Bitumen, Trailer-Mounted, 7ZPSAP	17-6	1,900	70	
Mixer, Concrete, Trailer-Mounted, 16SM	17-7	6,040	90	
Sweeper, Rotary, Towed, with 150-Gallon Water Tank Sprinkling System	17-8	2,120	80	
Sheepsfoot Roller, Two-Drum, MD-96	17-9	7,500	80	
Tractor, Full-Track, Case Model 1150 without Roll Over Protection, System	17-10	21,930	90	
Tractor, Full-Track, Case Model 1150 without Blade	17-10	18,740	90	
Blade	17-10	N/A	90	
Forklift Rough Terrain, 4000-Pound, M4K	17-11	9,725	100	
Floodlight Set, Trailer-Mounted, Model No. HLT-3KW-M.1	17-12	2,300	85	

**Appendix C**

Tank, Fabric, Collapsible, 10,000-Gallon	18-2	1,040	35	
Net #1 Pump, 60,000-Gallon Fuel System Supply Point	18-3	1,300	100	
Net #2 Tanks, 60,000Gallon Fuel System Supply Point	18-3	6,000	100	
Net #3 Hoses, 60,000-Gallon Fuel System Supply Point	18-3	2,000	100	
Net #4 Hoses, 60,000-Gallon Fuel System Supply Point	18-3	2,200	100	
Net #5 Hoses, 60,000-Gallon Fuel System Supply Point	18-3	4,000	100	
	<b><i>Nomenclature</i></b>	<b><i>Paragraph Number</i></b>	<b><i>Max Weight (Pounds)</i></b>	<b><i>Tested Air Speed (Knots)</i></b>
One Drum, Fabric, Water, 250-Gallon	18-4	2,210	80	
Two Drums, Fabric, Water, 250-Gallon	18-4	4,420	80	
Three Drums, Fabric, Water, 250-Gallon	18-4	6,630	80	
Four Drums, Fabric, Water, 250-Gallon	18-4	8,840	80	
Five Drums, Fabric, Water, 250-Gallon	18-4	11,050	80	
Six Drums, Fabric, Water, 250-Gallon	18-4	13,260	80	
Tool Set, Aviation Maintenance, SE 1, Airmobile	19-2	3,030	90	
Shop, Portable, Aircraft Maintenance	19-3	5,425	60	
Box, Metal , Shipping, Conex, 270 Cubic Feet	20-2	1,560	60	
Box, Metal , Shipping, Conex, 295 Cubic Feet	20-2	2,140	60	
Two Boxes, Metal , Shipping, Conex, 270 Cubic Feet	20-3	10,000	95	
Two Boxes, Metal , Shipping, Conex, 295 Cubic Feet	20-3	10,000	95	
Radar Set, Trailer-Mounted, AN/MPQ-4A Radar Set without 55-Gallon Drum of Fuel	21-2	6,290	80	
Radar Set, Trailer-Mounted, AN/MPQ-4A Radar Set with 55-Gallon Drum of Fuel	21-2	6,690	80	
Generator Set, 5KW, PU-620/M Mounted on M116 Trailer	22-2	2,840	58	
Generator Set, 10KW, PU-619 Mounted on M105 Trailer	22-2	3,530	120	
Generator Set, 10KW, PU-304 Mounted on M105 Trailer	22-2	4,110	100	
Generator Set, Wheel Mounted 7.5 KW	22-3	810	80	
350-GPM Pump Assembly	23-2	1,165	60	
M796, Bolster Trailer with Eight Half-Pontoons and Cradle	23-3	10,620	80	
Eight Half-Pontoons and Cradle	23-3	6,000	80	
LTR Superstructure, Light Bundle	23-3	5,250	80	

LTR Superstructure, Medium Bundle	23-3	7,000	80
LTR Superstructure, Heavy Bundle	23-3	10,000	80
Two Motors and Mounting Brackets	23-3	1,290	80
Bridge Erection Set, Medium Girder Section	23-4	13,800	60
Bridge, Floating, Aluminum, Highway Type, Deck-Balk Superstructure on Pneumatic Floats, M4T6	23-5	9,000	50

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# Glossary

<b>AAFARS</b>	advanced aviation forward area refueling system
<b>ACP</b>	assault command post
<b>ADCGS</b>	aviation direct current generator set
<b>ACT-E</b>	analysis control team - enclave
<b>ADR</b>	advanced design refrigerator
<b>AETC</b>	auxiliary equipment transportation container
<b>AFATADS</b>	advanced field artillery tactical data systems
<b>AGPU</b>	aviation ground power unit
<b>ARL-C</b>	airborne reconnaissance low-comint
<b>ARL-I</b>	airborne reconnaissance low-imagery
<b>ARTS</b>	all-purpose remote transport system
<b>AS</b>	aviation section
<b>ASLMS</b>	authorized stockage list mobility system
<b>ASK</b>	acoustic suppression kit
<b>ATG</b>	antenna traNSRDECeiver group
<b>ATNAVICS</b>	air traffic navigation and control system
<b>BIDS</b>	biological integrated detection system
<b>bn</b>	battalion
<b>BSTF</b>	base shop test facility
<b>BTU</b>	British Thermal Unit
<b>CAFSM</b>	compressed air foam system, mobile
<b>CBC</b>	cargo bed cover
<b>CFM</b>	cubic feet per minute/cylinder filling module
<b>CG</b>	center of gravity
<b>CGS</b>	common ground station
<b>CLFFK</b>	company level field feeding kit
<b>CMTH</b>	contact maintenance truck, heavy
<b>CONEX</b>	container express
<b>COPS</b>	crash-out-package system
<b>CROP</b>	container roll-in/out platform
<b>CWAR</b>	continuous wave acquisition radar
<b>DASC</b>	direct air support central
<b>DAMP</b>	digital antenna mast program
<b>DDSS</b>	downsized direct support section
<b>DDGM</b>	downsized digital group multiplexer
<b>DET</b>	distributed explosive technology
<b>DGM</b>	digital group multiplexer
<b>DOD</b>	Department of Defense

<b>DOM</b>	desert operation motorcycle
<b>DOT</b>	desert operation trailer
<b>DTC</b>	digital tech controller
<b>DTSS-L</b>	digital topographic support system-light
<b>EALP</b>	enclosure assembly launch pods
<b>EBFL</b>	extendable boom forklift
<b>ECU</b>	environmental control unit
<b>ELAMS</b>	expandable light airmobile shelter
<b>EMI</b>	electromechanical induction
<b>EPLRS</b>	enhanced position location reporting system
<b>FAAR</b>	forward area alerting radar
<b>FARE</b>	forward area refueling equipment
<b>FARP</b>	forward arming and refueling point
<b>FM</b>	field manual
<b>FMOGDS</b>	field medical oxygen generation/distribution system
<b>FOPS</b>	falling objects protection system
<b>FUPP</b>	full-up power pack
<b>GMLA</b>	guided missile launch assembly
<b>GPH</b>	gallons per hour
<b>GPM</b>	gallons per minute
<b>HATS</b>	hardened army tactical shelter
<b>HEMAT</b>	heavy expanded mobility ammunition trailer
<b>HMD</b>	high mobility downsized
<b>HMDA</b>	high mobility digital group multiplexer assemblage
<b>HMMH</b>	high mobility materiel handler
<b>H-HMMWV</b>	heavy high-mobility multipurpose wheeled vehicle
<b>HMMWV</b>	high-mobility multipurpose wheeled vehicle
<b>HMT</b>	high mobility trailers
<b>HSTRU</b>	hydraulic system test and repair unit
<b>HZ</b>	Hertz
<b>IAS</b>	intelligence analysis system
<b>IEW</b>	intelligence and electronic warfare
<b>IFAV</b>	interim fast attack vehicle
<b>IMETS</b>	integrated meteorological systems
<b>ISO</b>	International Organization of Standardization
<b>ISYSCON</b>	integrated system control
<b>JSTAR</b>	joint surveillance target attack radar
<b>JTIDS</b>	joint tactical information distribution system
<b>KW</b>	kilowatt(s)
<b>LAV</b>	light armored vehicle
<b>LCAC</b>	landing craft air cushioned

<b>LHGXA</b>	lightweight high gain x-band antenna
<b>LIK</b>	landing interface kit
<b>LIN</b>	line number
<b>LMS</b>	lightweight multipurpose shelter
<b>LMTV</b>	light medium tactical vehicle
<b>LOSAT</b>	line of site anti-tank
<b>L/R-T</b>	launcher recovery trailer
<b>LRTF</b>	light rough terrain forklift
<b>LTACFIRE</b>	lightweight tactical fire control system
<b>LTR</b>	light tactical floating raft bridge
<b>LVAD</b>	low velocity airdrop
<b>MAK</b>	Marine armor kit
<b>MASINT</b>	measurements and signature intelligence
<b>MGB</b>	medium girder bridge
<b>MHG</b>	meterological hydrogen generator
<b>MICLIC</b>	mine clearing line charge
<b>MIL STD</b>	military standard
<b>MLRS</b>	multiple launch rocket system
<b>mm</b>	Millimeter
<b>MOSLS</b>	minimum operating strip lighting system
<b>MOST</b>	mobile oversnow transport
<b>MPU</b>	mobile power unit
<b>MR</b>	mobile radio
<b>MRBS</b>	mobile radio broadcasting subsystem
<b>MSFDCS</b>	multiservice flight data collection sheet
<b>MT</b>	mobile television
<b>MTBS</b>	mobile television broadcasting subsystem
<b>MTL</b>	multi-terrain loader
<b>MTMCTEA</b>	Military Traffic Management Command Transportation Engineering Agency
<b>MTS</b>	mobile-track system
<b>MTV</b>	medium tactical vehicle
<b>NABS</b>	NATO airbase satcom
<b>NATO</b>	North Atlantic Treaty Organization
<b>NAVAIR</b>	Naval Air Systems Command
<b>NCS-E(D)</b>	downsized net control system
<b>NSN</b>	Natick Soldier Center
<b>NSN</b>	national stock number
<b>NSWRIB</b>	naval special warfare rigid inflatable boat
<b>OC</b>	operations central
<b>OCG</b>	operational control group
<b>OGDM</b>	oxygen generation/distribution module

<b>OVE</b>	operator vehicle equipment
<b>PN</b>	part number
<b>POC</b>	platoon operations center
<b>PQAS</b>	petroleum quality analysis system
<b>PTO</b>	pioneer tool outfit
<b>QRSA</b>	quick reaction satellite antenna
<b>RIE</b>	required individual equipment
<b>RLST</b>	remote landing site tower
<b>ROPS</b>	roll-over protection system
<b>ROWPU</b>	reverse osmosis water purification unit
<b>RP/C</b>	rocket pod/container
<b>RPU</b>	remote power unit
<b>RT</b>	rough terrain
<b>SCAMP</b>	self-propelled crane for Army aircraft maintenance and positioning
<b>SCOTT</b>	single channel objective tactical terminal
<b>SDASS</b>	special diver's air support system
<b>SEE</b>	small emplacement excavator
<b>SICPS</b>	standardized integrated command post systems
<b>SIXCON</b>	six-compartment container
<b>SMART-T</b>	secure mobile anti-jam tactical terminal
<b>SMMS</b>	sensor mobile monitoring system
<b>SOC-R</b>	special operation craft-riverine
<b>SOMS-B</b>	special operations media system
<b>SPAM</b>	shop, portable aircraft maintenance
<b>SPEARR</b>	small portable expeditionary aeromedical rapid response
<b>SSS</b>	single shelter switch
<b>STIK</b>	soft top installation kit
<b>SUSV</b>	small unit support vehicle
<b>TAFDS</b>	tactical airfield fuel dispensing system
<b>TAIS</b>	tactical airspace integration system
<b>TAMCN</b>	Table of Authorized Material Control Number
<b>TDN</b>	tactical data network
<b>TM</b>	technical manual
<b>TMECS</b>	trailer mounted environment control system
<b>TMS</b>	tactical messaging system
<b>TOW</b>	tube launched, optically tracked, wire guided
<b>TQG</b>	tactical quiet generator
<b>TRSS</b>	tactical remote sensor system
<b>TSS</b>	tracked suspension system
<b>TSST</b>	tactical super high frequency satellite terminal
<b>TTCS</b>	tactical terminal control system

<b>TUAV</b>	tactical unmanned vehicle
<b>UMTE</b>	unmanned threat emitter
<b>US</b>	United States
<b>USA</b>	United States Army
<b>USMC</b>	United States Marine Corps

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By Order of the Secretary of the Army:

**RAYMOND T. ODIERNO**  
*General, United States Army*  
*Chief of Staff*

Official:

  
**GERALD B. O'KEEFE**  
*Acting Administrative Assistant*  
*to the Secretary of the Army*  
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**Lieutenant General, USMC**  
**Deputy Commandant for Combat**  
**Development and Integration**

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