

Change 2

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MULTISERVICE HELICOPTER SLING LOAD: SINGLE-POINT RIGGING PROCEDURES

1. This change adds several items that are certified for sling load in the single-point configuration.
2. The United States Marine Corps has changed the Short Title of this manual to MCRP 4-11.3E, Vol II. This Short Title will be included in the next revision of this manual.
3. Change FM 10-450-4, 30 May 1998, as follows:

Remove old pages

iii through xi
1-1 through 1-5
2-1 and 2-2
2-9 through 2-12
2-15 and 2-16
2-23 and 2-24
2-41 through 2-44
2-61 and 2-62

3-1 and 3-2
3-35 and 3-36

4-13 and 4-14
6-17 and 6-18
11-17 and 11-18
Glossary-1 and Glossary-2

Insert new pages

iii through xi
1-1 through 1-5
2-1 and 2-2
2-9 through 2-12
2-15 and 2-16
2-23 and 2-24
2-41 through 2-44
2-61 and 2-62
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6-17 through 6-18.3
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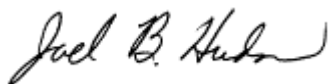
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CHAPTER 1

FUNDAMENTAL PRINCIPLES

1-1. INTRODUCTION

This chapter contains general information about certification for helicopter sling load and explains the role of the Military Traffic Management Command Transportation Engineering Agency (MTMCTEA) and the Department of Defense (DOD) sling load certification authority. This authority rests with the US Army Soldier Systems Center (SSC). This chapter also explains the information contained in the equipment rigging procedures and gives some general rigging instructions.

1-2. CLASSIFICATION DEFINITIONS OF SLING LOADS

a. 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 SSC for sling load certification. These rigging procedures are in Chapters 2 through 14. Only certified sling loads are authorized for the Marine Corps. The US Army SSC 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:

(1) 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.

(2) The load shall be rigged in accordance with the certified rigging procedure.

(3) The recommended stable airspeed specified for the load in the applicability section of the rigging procedure is a recommendation and not a restriction, unless so stated.

(4) 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 jet-tisoning 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.

b. 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 SSC considers to be proven safe. These rigging procedures are in Chapters 15 through 24.

c. 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 unit commander from carrying a load that is not certified. Each service is responsible for determining its policy on carrying loads that have not been certified for sling load.

d. 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.

1-3. CERTIFICATION OF EQUIPMENT FOR HELICOPTER SLING LOAD

a. Objective. The objective of helicopter 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.

b. Responsibilities. Within the US Army, the MTMCTEA is responsible for transportability approval of developmental equipment. Within the DOD, SSC 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 SSC, in cooperation with various test activities, has:

(1) Conducted an engineering analysis of the load and lifting provisions for structural adequacy during sling loading.

(2) Verified that the lift provisions meet the strength requirements of the applicable military standard by means of proof load testing.

(3) Developed and/or validated sling load rigging procedures through static lift testing.

(4) Evaluated flight reports and determined that the particular load meets acceptable flight characteristics with the type helicopter flown during the flight test.

(5) Issued a statement of sling load certification for the particular load, including load configuration(s), weight(s), types of helicopter(s), and recommended airspeed(s) as attained during the flight evaluation(s). Certification is valid only for the conditions specified in the rigging procedures.

1-4. REQUESTS FOR SLING LOAD CERTIFICATION

a. Fielded Equipment. Each service headquarters must designate, request, and prioritize the fielded equipment to be evaluated by SSC 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 SSC will evaluate the equipment on a priority basis. The following agencies are responsible for their branch of service:

(1) US Army - Commander, Combined Arms Support

Command, ATTN: QM Combat Developments, Suite 250, 3901 A Avenue, Fort Lee, VA 23801-1809.

(2) US Marine Corps - Commanding General, Marine Corps System Command (PSE) Quantico, VA 22134-5021.

(3) US Navy - Naval Air Systems Command (NAVAIR).

(4) US Air Force - US Air Force Systems Command.

b. Previously Certified Dual-Point Loads. Loads cannot be certified for dual-point lift based on previously certified dual-point rigging procedures because of the differences in dual hook helicopters, such as the distance between the two cargo hooks. Rigging procedures for dual-point loads must be developed and/or approved by SSC before the test flight.

1-5. UNIQUE ITEMS OF EQUIPMENT OR OPERATIONAL REQUIREMENTS

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.

1-6. EQUIPMENT RIGGING PROCEDURES

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 24 contain the rigging procedures for suitable single-point loads.

a. Applicability Paragraph. The applicability paragraph states whether a load is “certified” or “suitable” for sling

load. It also contains the helicopter types and recommended airspeeds for each helicopter type.

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.**

b. 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.

(1) 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.

(2) 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.

c. 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.

d. 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.

(1) 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.

(2) Appendix A contains NSN component listings for slings, sling sets, cargo nets, and other miscellaneous equipment and materials.

e. 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.

(1) 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 10-450-3 may be used.

(2) 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.

(3) If the tactical environment permits the use of an extended sling set may reduce the risk. Polyester round slings are recommended for use as vertical pendants.

1-7. 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.

a. 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.

b. 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 10-450-3/MCRP 4-23E, VOL I/NWP 3-04.11/AFJMAN 11-223, VOL I/COMDTINST M13482.2A, 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.

c. 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.

(1) Rigging a typical load with four lifting points is begun by connecting -

- (a) Sling leg 1 to the left front lifting provision.
- (b) Sling leg 2 to the right front lifting provision.
- (c) Sling leg 3 to the left rear lifting provision.

(d) Sling leg 4 to the right rear lifting provision.

(2) 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.

(3) 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.

(4) 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.

d. 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.

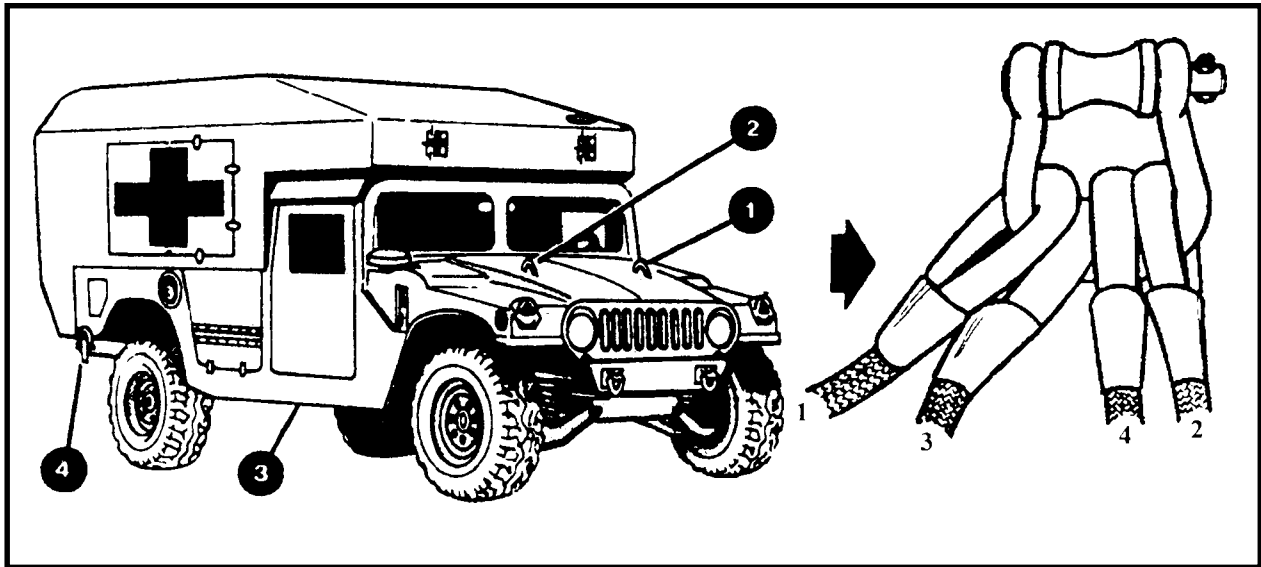


Figure 1-1. Sling Leg Lifting Point Designation

CHAPTER 2

CERTIFIED SINGLE-POINT RIGGING PROCEDURES FOR WHEELED VEHICLES

2-1. INTRODUCTION

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 2-36 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.

2-2. M996/M997/M997A2 Truck, Ambulance, (HMMWV)

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

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

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Truck, Ambulance, M996, HMMWV	7,400	10K	80/30	UH-60 / 60 CH-47 / 110
Truck, Ambulance, M997, HMMWV	7,400	10K	80/30	UH-60 / 80 CH-47 / 75
Truck, Ambulance, M997A2, HMMWV	10,300	25K	65/24	CH-47 / 75

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

(1) Sling set (10,000-pound capacity).

OR

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

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

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

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

(6) Spreader bar assembly (component of vehicle).

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

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

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

(a) 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.

(b) Remove the spreader bar from under the right-hand seat inside the ambulance.

(c) Secure all equipment inside the rear compartment with tape, nylon cord, and/or lashings. Close and secure the door.

(d) Secure all other equipment inside the vehicle with tape, nylon cord, and/or lashings. Close and secure the doors.

(e) Make sure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.

(f) Engage the vehicle parking brake. Place the transmission in neutral.

(g) Make sure that the front wheels are pointed straight ahead. Tie down the steering wheel using the securing device attached under the dashboard.

(h) Secure the Red Cross insignia covers in the closed position.

(i) 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.

(j) 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.

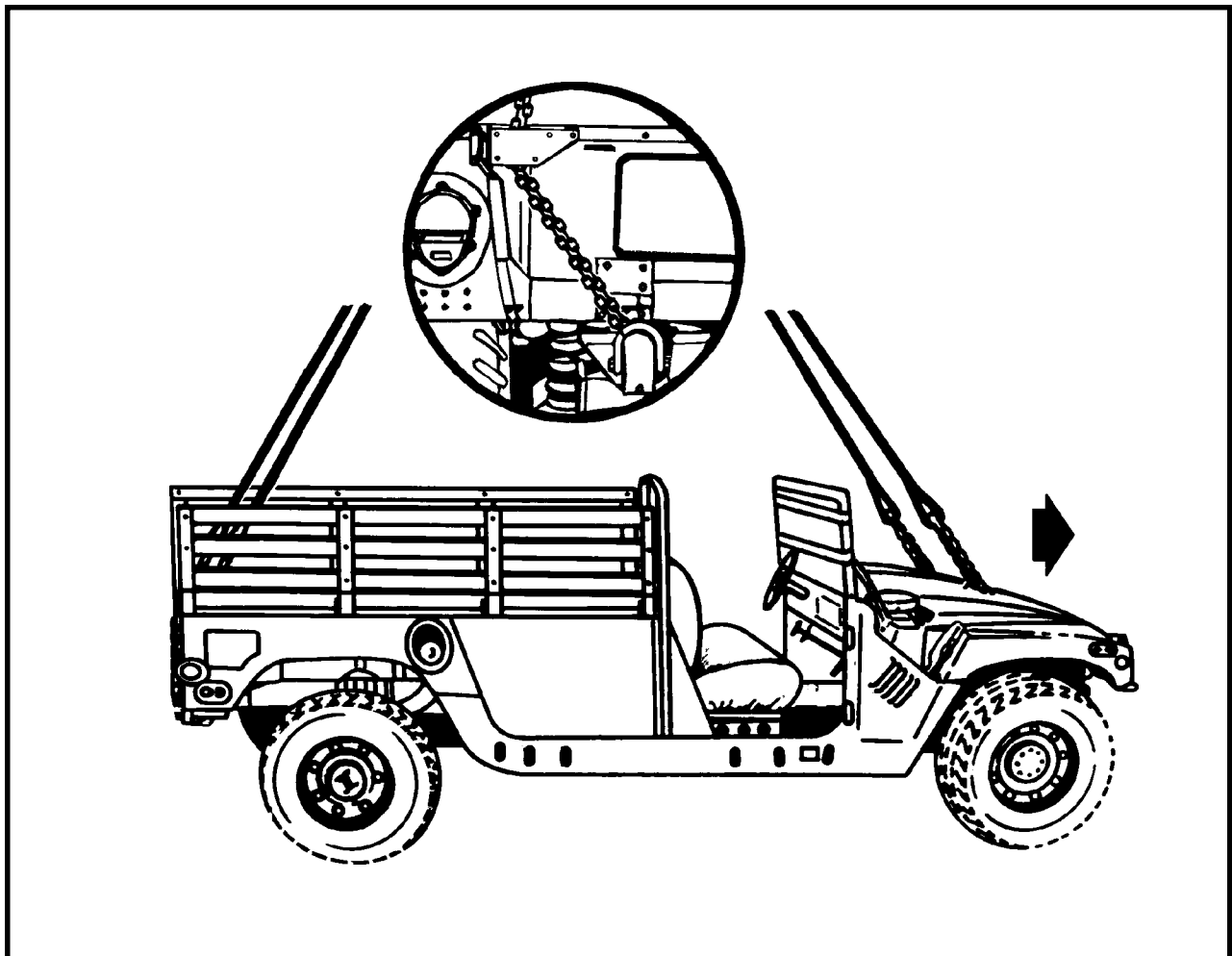
(k) Install lift provisions on the outer ends of the rear bumper by removing the tie-down provisions located inboard of the bumper ends and installing them on the outer ends of the rear bumper, if necessary.

(2) 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.

(3) 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.

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



RIGGING STEPS

1. Position apex fitting 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 or tape (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)

2-5. M1037/M1042/M1097/M1097A1/M1097A2 Shelter Carrier (HMMWV) Without Shelter

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

Table 2-4. M1037/M1042/M1097/M1097A1/M1097A2 Shelter Carrier (HMMWV) Without Shelter

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Shelter Carriers, M1037/M1042	5,220	15K 10K	60/3	100
Shelter Carriers, M1097/M1097A1	10,000	10K	60/3	100
Shelter Carriers, M1097A2	10,300	25K	50/3	100

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

(1) Multileg sling set (15,000-pound capacity or 40,000-pound capacity for CH-53 only).

OR

(2) Sling set (10,000-pound capacity or 25,000-pound capacity for CH-60 and CH-47).

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

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

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

(6) Felt sheet, cattle hair, Type VI, 1/2-inch or suitable substitute.

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

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

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

(a) 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.

(b) Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings. Secure the doors shut if installed.

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

(d) Engage the vehicle parking brake and place the transmission in neutral.

(e) Ensure the front wheels are in pointed straight ahead. Tie down the steering wheel using the securing device attached under the dashboard.

(f) 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.

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

(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.

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

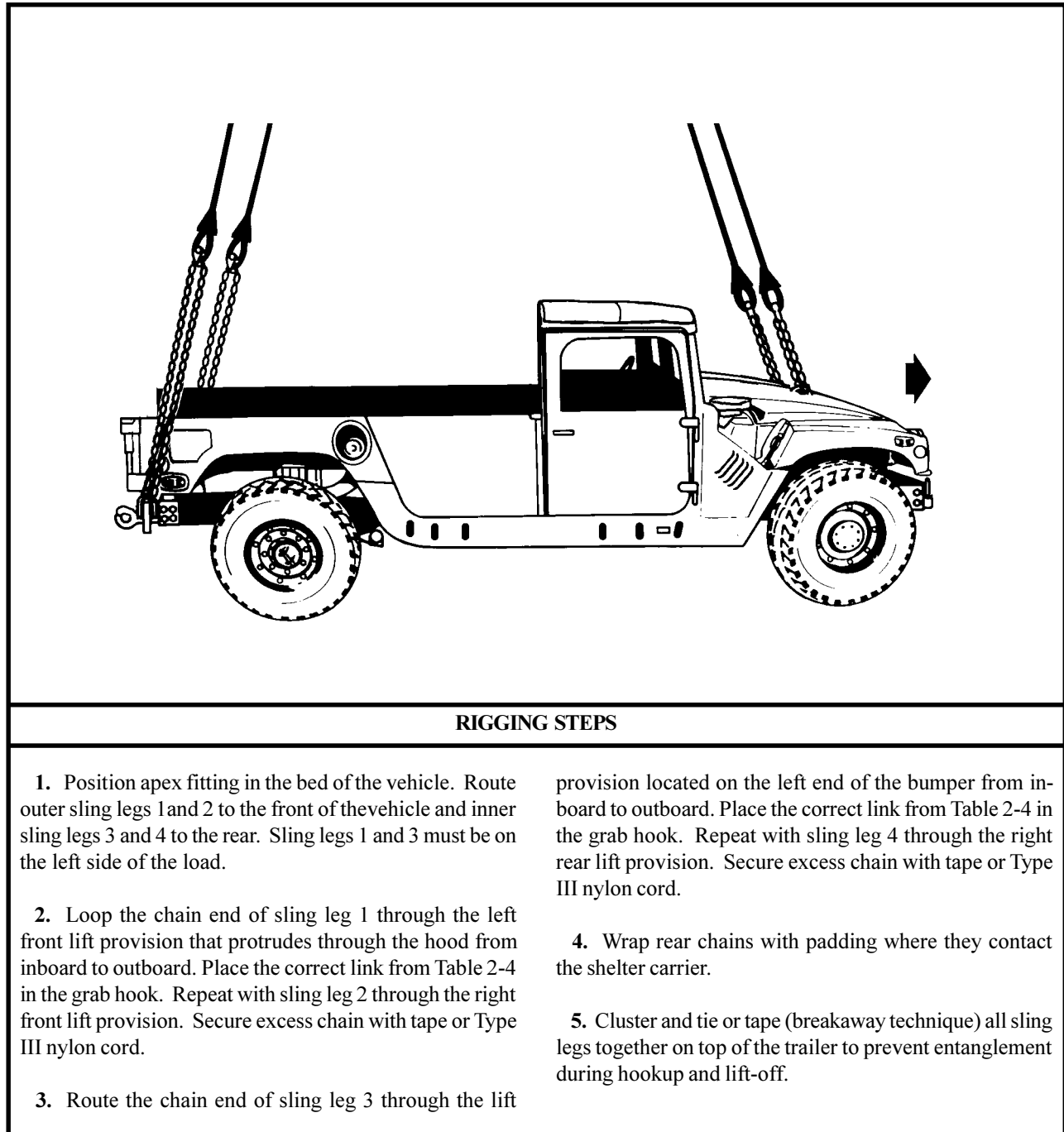


Figure 2-4. M1037/M1042/M1097/M1097A1/M1097A2 Shelter Carrier (HMMWV) Without Shelter

2-6. M1037/M1042 Shelter Carrier (HMMWV) With S-250 or S-250E Shelter

a. Applicability. The following items in Table 2-5 are certified for all helicopters with suitable lift capacity by the US Army Natick Research, Development, and Engineering Center:

Table 2-5. Shelter Carrier (HMMWV) With S-250 or S-250E Shelter

SHELTER VARIANT NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
NC Operations	8,800	10K	80/30	110
NC Switch	8,513	10K	80/30	100
NC LOS (V3)	8,611	10K	80/30	100
NC Management	8,800	10K	80/30	100
NC Support Vehicle	8,400	10K	80/30	100
LEN Operations	8,800	10K	80/30	100
LEN Switch	8,800	10K	80/30	100
LEN LOS (V4)	8,800	10K	80/30	100
LEN Management	8,800	10K	80/30	100
LEN Cable Vehicle	8,180	10K	80/30	100
SCC Command	8,800	10K	80/30	100
SCC Planning	8,300	10K	80/30	100
SCC Technical	8,507	10K	80/30	100
LOS (V1)	8,800	10K	80/30	100
LOS (V2)	8,500	10K	80/30	100
Radio Access Unit	8,800	10K	80/30	100
SEN (V1)	8,800	10K	80/30	100
SEN (V2)	8,800	10K	80/30	100
Maintenance #1	8,084	10K	80/30	100
Maintenance #2	8,350	10K	80/30	100

(h) 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.

(2) **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.

(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 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.

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

2-7. M1097 Shelter Carrier, Heavy HMMWV, With S-250 or S-250E Shelter

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

Table 2-6. Shelter Carrier, (Heavy HMMWV), With S-250/S-250E Shelter

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT / REAR	RECOMMENDED AIRSPEED (KNOTS)
S-250/S-250E	10,001	25K	60/10	120
AN/TRC-170 Communication Shelter	9,240	15K	40/3	130
TRQ-32, Intelligence and Electronic Warfare (IEW) System	9,700	10K	60/10	120
Platoon Operations Center (POC), Intelligence and Electronic Warfare (IEW) System	9,700	10K	60/10	120
Mobile Subscriber Equipment Contingency Communications Package/Light Forces Contingency Communications Package in S-250E	9,993	10K	60/10	120
Mobile Subscriber Equipment Contingency Communications Package/Light Forces Contingency Communications Package in S-250	8,913	10K	60/10	120
LOS (V1)	9,038	10K	60/10	120
LOS (V2)	9,038	10K	60/10	120
LOS (V3)	9,038	10K	60/10	120
LOS (V4)	9,038	10K	60/10	120
NODAL Support Vehicle	8,250	10K	60/10	120

NOTE: All certified shelters in paragraph 2-6 (M1037/M1042 Shelter Carrier, HMMWV, With S-250/S-250E Shelter) are certified for sling loading on the M1097 Shelter Carrier with an increased maximum weight of 300 pounds.

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

(1) Sling set (10,000-pound capacity or 25,000-pound capacity).

OR

(2) Multileg sling set (15,000-pound capacity for the CH-53E only).

(a) Additional chain lengths from the sling set being used (4 each).

(b) Additional coupling links from the sling set being used (4 each).

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

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

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

(6) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.

(7) Padding, Cellulose.

c. Personnel. Two persons can prepare and rig this load in 15 to 25 minutes.

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

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

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

(b) Fold mirrors forward in front of the windshield and tie together with Type III nylon cord. Tape the wind-

shield in an X formation from corner to corner.

(c) 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.

(d) Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings. Secure the doors shut if installed.

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

(f) Engage the vehicle parking brake and put the transmission in neutral.

(g) Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.

(h) 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.

(i) 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.

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

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

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

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

Table 2-9. Lightweight Multipurpose Shelter (LMS) (continued)

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Spare Equipment and Maintenance Shelter AN/TSQ-190 (V) 1	9,220	10K	40/3	120
Tactical Remote Sensor System (TRSS) Sensor Mobile Monitoring System (SMMS)	7,685	10K	40/3	120
Meteorological Measuring Set AN/TMQ-41	7,770	15K	40/3	120
Air Defense Communications Platform AN/MSQ-124	10,000	10K	40/3	120
Forward Area Air Defense Command Control System AN/TSQ-182	9,800	10K	40/3	100
Forward Area Air Defense Command Control System AN/TSQ-183	7,561	10K	40/3	100
Forward Area Air Defense Command Control System AN/TSQ-184	7,297	10K	40/3	100
Mobile Radio Broadcasting Subsystem (MRBS)	9,746	10K	40/3	120
Mobile Radio (MR) Cargo Vehicle	9,907	10K	40/3	120
Mobile Television Broadcasting Subsystem (MTBS)	9,295	10K	40/3	120
Mobile Television (MT) Cargo Vehicle	9,637	10K	40/3	120
Common Ground Station, Joint Surveillance Target Attack Radar (JSTAR) System	10,300	25K 15K	32/5 40/3	120
Advanced Field Artillery Tactical Data Systems (AFATADS), System #1, RWS with a CHS-2 AN/GYG-3(V)1	8,882	10K	50/3	100
Marine Expeditionary Force Intelligence Analysis System S1	9,194	15K	40/3	100
Marine Expeditionary Force Intelligence Analysis System S2	9,126	15K	40/3	100
Tactical Control and Analysis Center	9,300	15K	40/3	100

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

(1) Sling set (10,000-pound capacity or 25,000-pound capacity).

(a) Chain length, part number 38850-00053-101, for a 10,000-pound capacity sling set or chain length, part number 38850-00053-102, for a 25,000-pound capacity sling set (4 each).

(b) Coupling link, part number 577-0615, for a 10,000-pound sling set or coupling link, part number 664241, for a 25,000-pound sling set (4 each).

OR

(2) Multileg sling set (15,000-pound capacity for the CH-53E only).

(a) Additional chain lengths from 15,000-pound capacity sling sets (8 each).

(b) Additional coupling links from 15,000-pound capacity sling sets (8 each).

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

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

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

(6) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.

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

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

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

(a) 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.

(b) Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord.

(c) Secure the shelter to the truck using wire rope or tie-down assemblies.

(d) Secure all equipment inside the shelter with tape, nylon cord, or lashings; close and secure shelter vents and door with nylon cord or tape.

(e) Secure environmental control unit cover with tape.

(f) 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.

(g) Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings. Secure the doors shut if installed.

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

(i) Engage the vehicle parking brake and put the transmission in neutral.

(j) Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.

(k) Tape the windshield in an X formation from corner to corner.

(l) 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.

(m) Remove the upper antenna mounting bracket if installed.

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

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

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

2-18. M1097 (H-HMMWV) With Fiberglass Cargo Bed Cover (CBC)

a. Applicability. The following items in Table 2-17 are certified for all helicopters with suitable lift capacity by the US Army Soldier Systems Center:

Table 2-17. M1097 (H-HMMWV) Fiberglass Cargo Bed Cover (CBC)

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Cargo Bed Cover, HMMWV, Type I, Camouflage, NSN: 5411-01-647-32463	10,000	10K 15K	50/3 62/2	90
Cargo Bed Cover, HMMWV, Type I, Sand, NSN: 5411-01-479-1928	10,000	10K 15K	50/3 62/2	90

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

(1) Sling set (10,000-pound capacity).

(a) Chain length, part number 38850-00053-101, from a 10,000-pound capacity sling set (4 each).

(b) Coupling link, part number 577-0615, from a 10,000-pound sling set (4 each).

OR

(2) Multileg sling set (15,000-pound capacity for the CH-53E only).

(a) Additional chain lengths from the sling set being used (8 each).

(b) Additional coupling links from the sling set being used (8 each).

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

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

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

(6) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.

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

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

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

(a) 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.

(b) Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord.

(c) Secure the cargo bed cover to the truck using wire rope or tie-down assemblies.

(d) 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.

(e) Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings. Secure the doors shut if installed.

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

(g) Engage the vehicle parking brake and put the transmission in neutral.

(h) Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.

(i) Tape the windshield in an X formation from corner to corner.

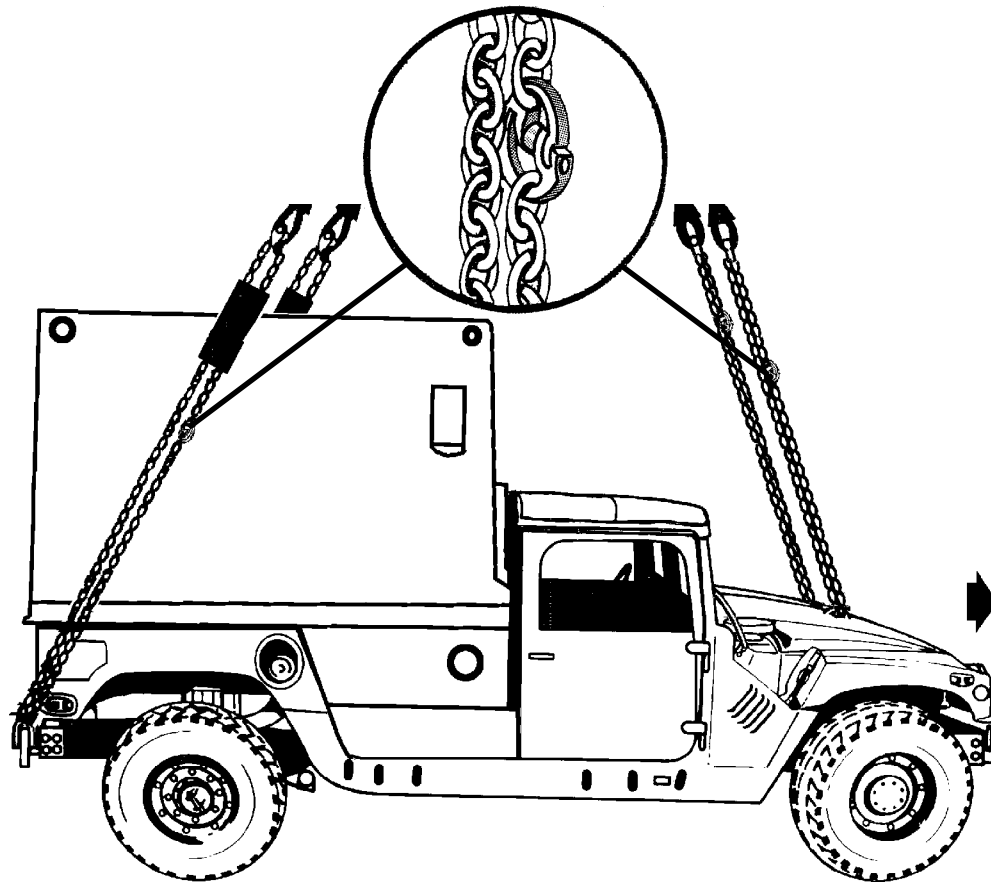
(j) Install the lift provisions on the outer ends of the

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

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

(3) 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.

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



RIGGING STEPS

1. Position apex fitting on top of the 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 2-17 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. 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. Secure excess chain with tape or Type III nylon cord.
4. Wrap the rear slings with padding where they contact the cover sides.
5. Raise the apex fitting above the shelter carrier keeping the slings to the side of the shelter.
6. 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 2-16. M1097 (H-HMMWV) With Fiberglass Cargo Bed Cover

CAUTION

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

2-19. Light Armored Vehicle (LAV) (USMC)

a. Applicability. The following items in Table 2-18 are certified for all helicopters with suitable lift capacity by the US Army Soldier Systems Center:

Table 2-18. Light Armored Vehicle (LAV)

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Command and Control TAMCN E0946	27,060	40K	3/20	95
25-MM, TAMCN E0947	28,200	40K	25/3	85
Logistics TAMCN E0948	28,200	40K	3/10	90
Mortar TAMCN E0949	27,400	40K	25/3	95
Recovery Unit TAMCN E0950	28,400	40K	3/10	90
Tow Anti-Tank TAMCN E0942	27,650	40K	10/3	90

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

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

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

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

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

- (a) Secure all loose items inside the LAV.

(b) Remove all antennae.

(c) Ensure the parking brake is set.

(d) Pad and tape all vision blocks, mirrors, and lights.

(e) Secure all hatches and panels.

(f) Ensure the boom is pinned down and tape the hydraulic cables. (Recovery Unit)

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

(3) **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.

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

2-27. M1113 (HMMWV) With M56 Smoke Generating System

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

Table 2-26. M1113 (HMMWV) With M56 Smoke Generating System

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
M1113 (HMMWV) With M56 Smoke Generating System with Graphite in Tank	9,400	10K	50/3	120
M1113 (HMMWV) With M56 Smoke Generating System without Graphite in Tank	9,400	10K	50-Front 14-Right Rear 3-Left Rear	120

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

- (1) Sling set (10,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (5) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.
- (6) Spreader bar assembly (component of the M996/M997 HMMWV Ambulance).

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

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

- (1) **Preparation.** Prepare the load using the following steps:
 - (a) Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord.
 - (b) 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.

- (c) Ensure the fuel tank is not over 3/4 full. Inspect fuel tank cap, oil filler cap, and battery caps for proper installation.
- (d) Engage the vehicle parking brake and put the transmission in neutral.
- (e) Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.
- (f) Ensure the turbine fuel and both fog oil tanks are not over 3/4 full.
- (g) Set the three-way valve to the OFF position.
- (h) 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.
- (i) Secure all latches and doors with tape or Type III nylon cord.

(j) Extend the spreader bar until the holes line up. Install the pin and engage the keeper.

(k) Position the spreader bar across the rear of the vehicle, resting on the power module and the weapons case. Attach the two spreader bar check cables to the larger hole openings, footman's loop, on the vehicle fenders.

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

(3) **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.

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

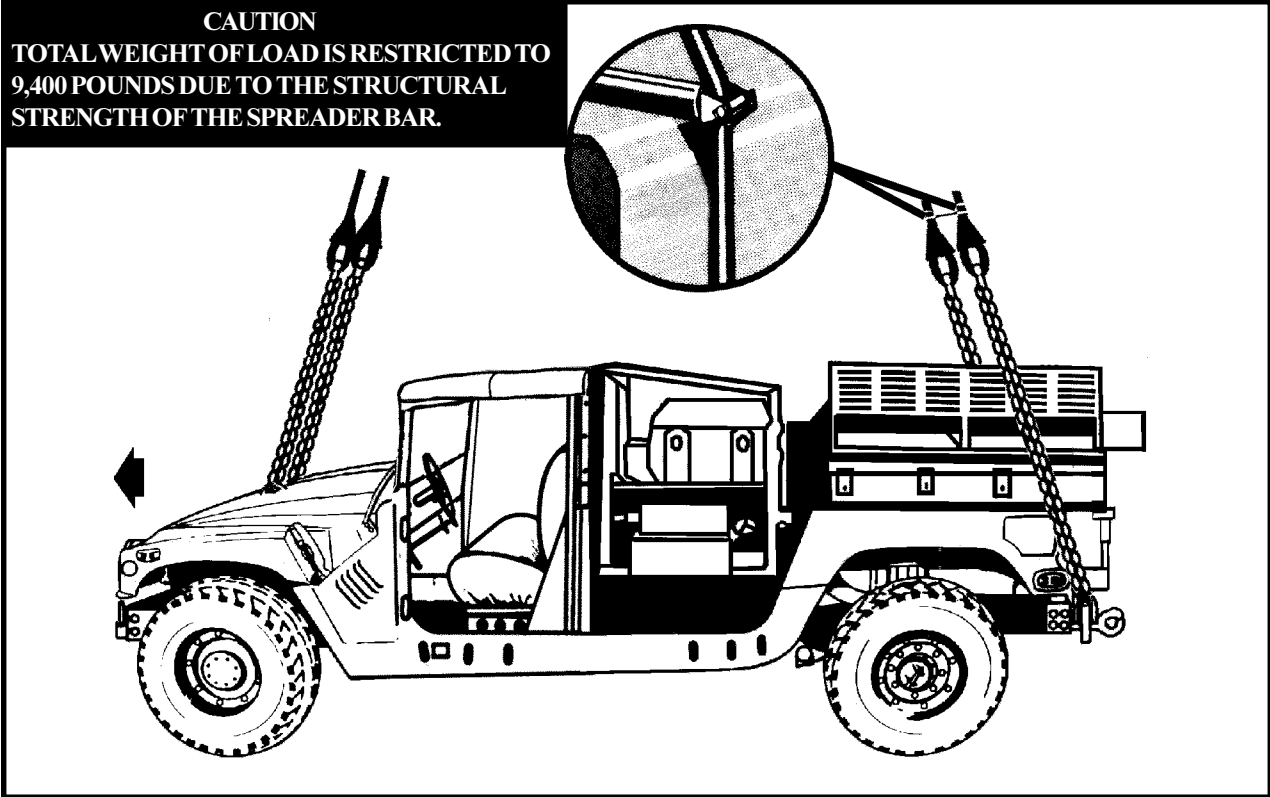
CAUTION TOTAL WEIGHT OF LOAD IS RESTRICTED TO 9,400 POUNDS DUE TO THE STRUCTURAL STRENGTH OF THE SPREADER BAR.	
	
RIGGING STEPS	
<p>1. Position the apex fitting on top of the IR hopper or on the forward end of the fog oil tanks. Route outer sling legs 1 and 2 to the front of the vehicle and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.</p> <p>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 tape or Type III nylon cord.</p>	<p>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 2-26 in the grab hook. Repeat with sling leg 4 and the right rear lift provision.</p> <p>4. Pad the sling legs in the area where they make contact with the structure.</p> <p>5. Cluster and tie or tape (breakaway technique) all sling legs together on top of the shelter to prevent entanglement during hookup and lift-off.</p>

Figure 2-25. M113 (HMMWV) With M56 Smoke Generating System

2-29. M1113 Truck, Utility, Expanded Capacity (HMMWV) With Lightweight Multipurpose Shelter (LMS)

a. Applicability. The following items in Table 2-28 are certified for all helicopters with suitable lift capacity by the US Army Soldier Systems Center:

Table 2-28. M1113 HMMWV with Lightweight Multipurpose Shelter (LMS)

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT / REAR	RECOMMENDED AIRSPEED (KNOTS)
AN/TTC-56 Single Shelter Switch (SSS)	11,500	25K	32/5	120
Digital Topographic Support System-Light (DTSS-L)	11,500	25K	32/5	100

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

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

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

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

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

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

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

(5) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.

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

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

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

(a) 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.

(b) Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord.

(c) Secure all equipment inside the shelter with tape, nylon cord, or lashings; close and secure shelter vents and door with nylon cord or tape.

(d) Secure environmental control unit cover with duct tape.

(e) 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.

(f) Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings. Secure the doors shut if installed.

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

(h) Engage the vehicle parking brake and put the transmission in neutral.

(i) Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.

(j) Tape the windshield in an X formation from corner to corner.

(k) Install the lift provisions on the outer ends of the rear bumper.

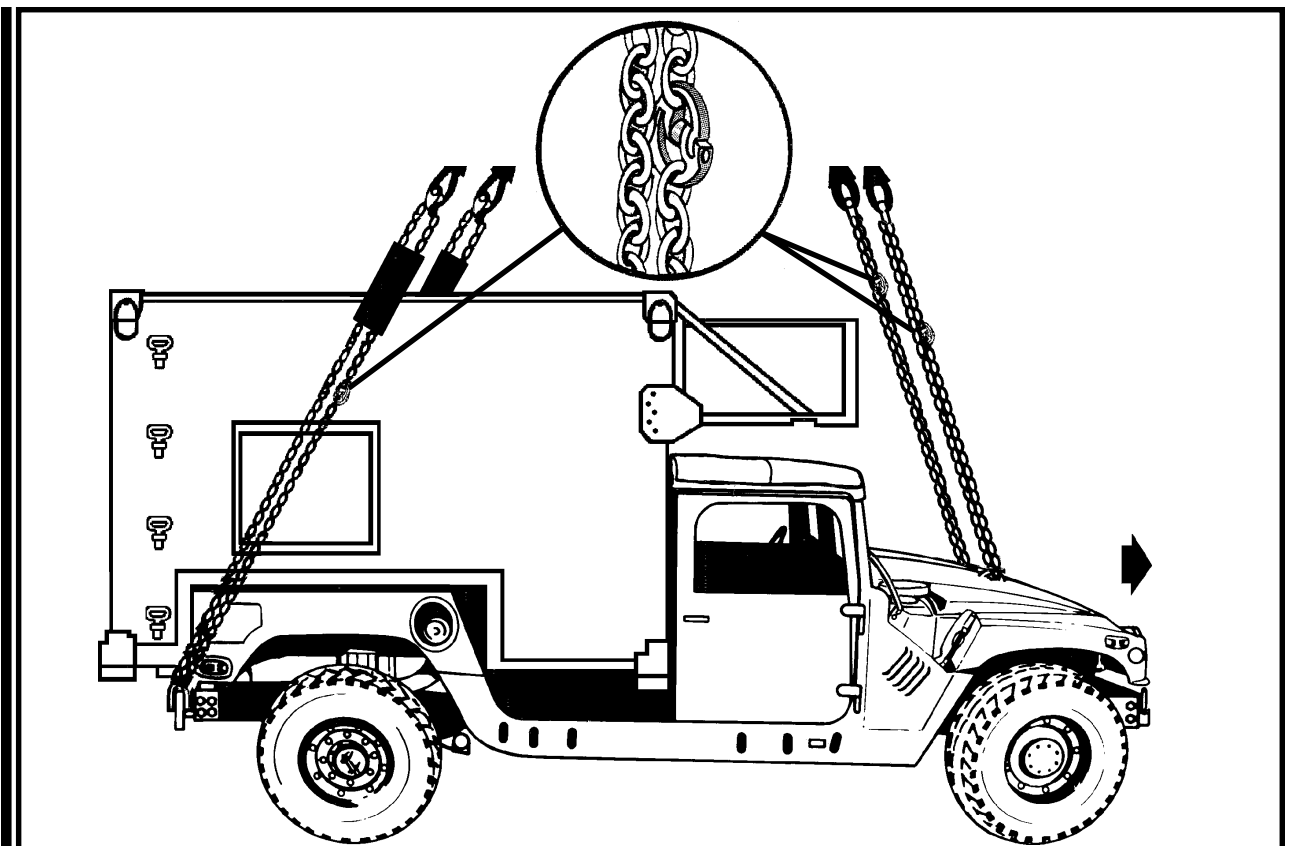
(l) Remove the upper antenna mounting bracket if installed.

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

Figure 2-27.

(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 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.

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



RIGGING STEPS

1. Position the apex fitting on top of the 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 2-28 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 end of the rear bumper. Place the correct link from Table 2-28 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 or tape (breakaway technique) the sling legs in each sling set together to prevent entanglement during hookup and lift-off.

Figure 2-27. LMS Shelter Mounted on the M1113

CAUTION

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

2-30. M1097A2 Shelter Carrier (HMMWV) With Special Operations Media System (SOMS-B) in S-788G Shelter (LMS)

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

Table 2-29. M1097A2 Shelter Carrier (HMMWV) With Special Operations Media System (SOMS-B) in S-788G Shelter (LMS)

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT / REAR	RECOMMENDED AIRSPEED (KNOTS)
Special Operations Media System	9,080	10K	40/3	120

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

(1) Sling set (10,000-pound capacity).

(a) Chain length, part number 38850-00053-101, from a 10,000-pound capacity sling set (4 each).

(b) Coupling link, part number 577-0615, from a 10,000-pound sling set (4 each).

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

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

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

(5) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable padding.

(6) Padding, Cellulose.

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

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

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

(a) 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.

(b) Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord.

(c) Secure all equipment inside the shelter with tape, nylon cord, or lashings; close and secure shelter vents and door with nylon cord or tape.

(d) 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.

(e) Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings. Secure the doors shut if installed.

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

(g) Engage the vehicle parking brake and put the transmission in neutral.

(h) Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.

(i) Tape the windshield in an X formation from corner to corner.

(j) Install the lift provisions on the outer ends of the rear bumper.

(k) Remove the upper antenna bracket if installed.

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

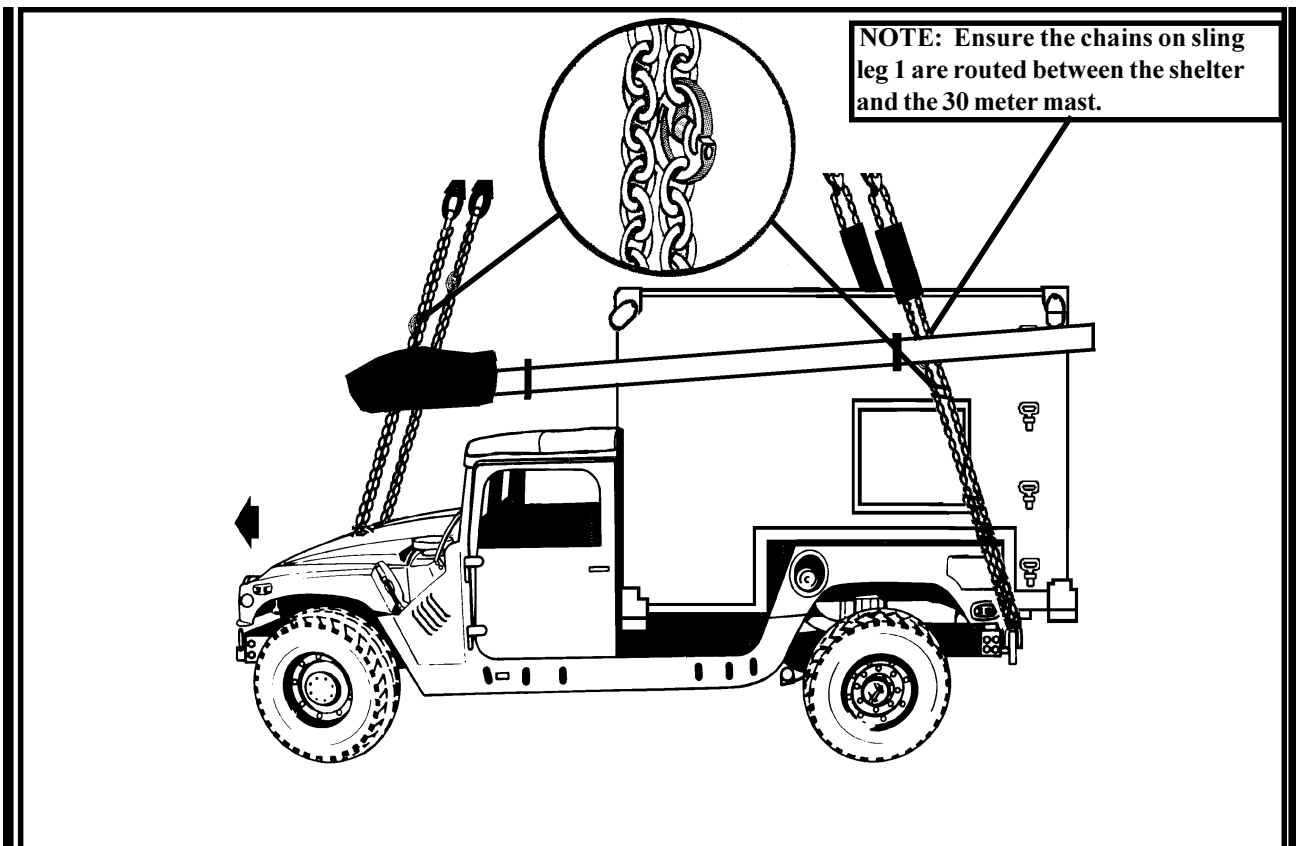
NOTE: Ensure the chains on sling leg 1 are routed between the shelter and the 30 meter mast.

(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 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.

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.

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



RIGGING STEPS

1. Position the apex fitting on top of the 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 2-29 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 end of the rear bumper. Place the correct link from Table 2-29 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 or tape (breakaway technique) the sling legs in each sling set together to prevent entanglement during hookup and lift-off.

Figure 2-28. SOMS-B in LMS Shelter Mounted on the M1097A2

CAUTION

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

2-31. M1037 (HMMWV) With Compressed Air-Foam System, Mobile (CAFSM)

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

Table 2-30. M1037 (HMMWV) With Compressed Air-Foam System, Mobile (CAFSM)

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT / REAR	RECOMMENDED AIRSPEED (KNOTS)
Compressed Air-Foam System, Mobile	6,400 (EMPTY)	15K	40/3	120

Note: The water tank in the CAFSM MUST BE EMPTY for sling loading.

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

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

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

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

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

(a) 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.

(b) Ensure the CAFSM is secured to the truck. Secure all lids, doors, and vents on the CAFSM with tape or Type III nylon cord. Safety tie all chains and hoses with tape or Type III nylon cord.

(c) Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings.

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

(e) Engage the vehicle parking brake and put the transmission in neutral.

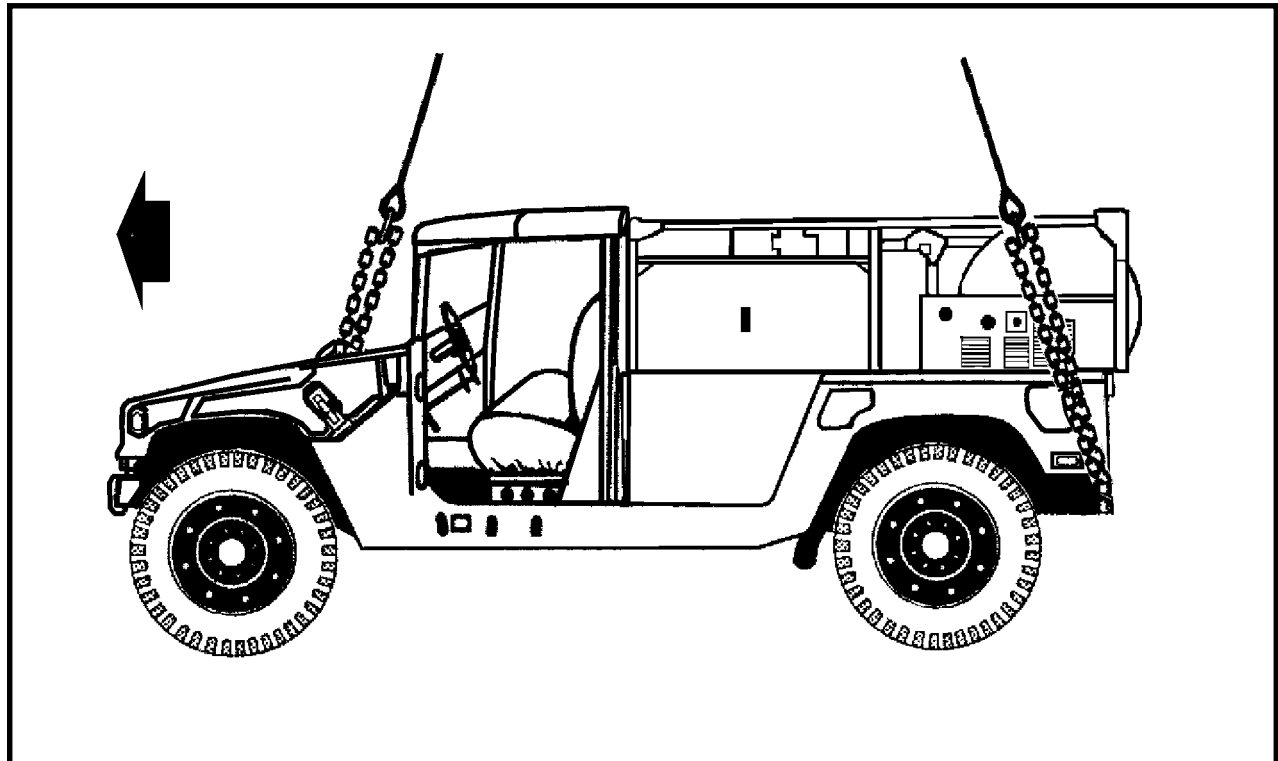
(f) Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.

(g) Tape the windshield in an X formation from corner to corner.

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

(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 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.

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



RIGGING STEPS

1. Position the apex fitting on top of the 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 2-30 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 2-30 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 or tape (breakaway technique) the sling legs in each sling set together to prevent entanglement during hookup and lift-off.

Figure 2-29. M1037 (HMMWV) With Compressed Air-Foam System, Mobile (CAFSM)

CAUTION

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

2-32. Prophet AN/MLQ-40 (V) on M1097 HMMWV

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

Table 2-31. Prophet AN/MLQ-40 (V) on M1097 HMMWV

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT / REAR	RECOMMENDED AIRSPEED (KNOTS)
Prophet AN/MLQ-40 (V)	10,000	10K	55/10	90

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

(1) Sling set (10,000-pound capacity).

(a) Chain length, part number 38850-00053-101, from a 10,000-pound capacity sling set (4 each).

(b) Coupling link, part number 577-0615, from a 10,000-pound sling set (4 each).

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

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

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

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

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

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

(a) Fold mirrors forward inward and tie together with Type III nylon cord.

(b) 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.

(c) 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)

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

(e) Engage the vehicle parking brake and put the transmission in neutral.

(f) Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.

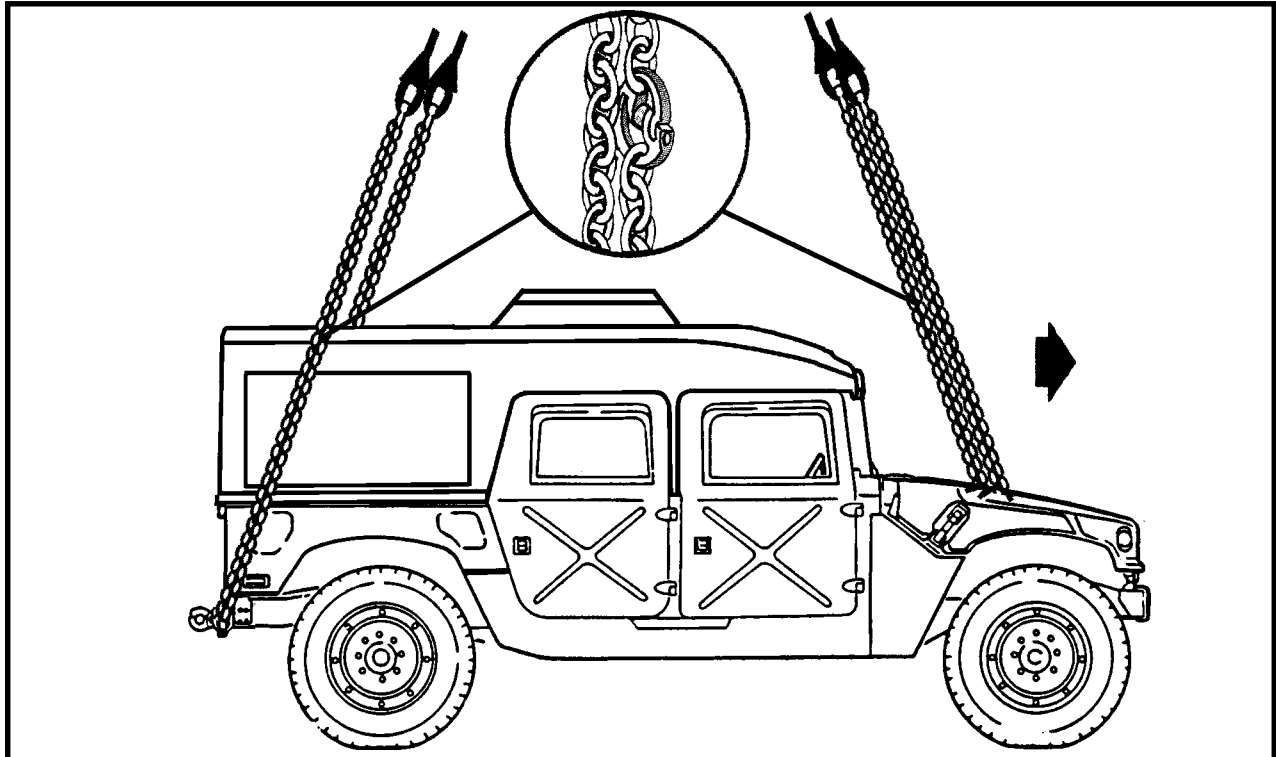
(g) Tape the windshield in an X formation from corner to corner.

(h) 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.

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

(3) **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.

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



RIGGING STEPS

1. Position the apex fitting on top of the 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 2-31 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 2-31 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 or tape (breakaway technique) the sling legs in each sling set together to prevent entanglement during hookup and lift-off.

Figure 2-30. Prophet AN/MLQ-40 (V) on M1097 HMMWV

CAUTION

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

2-33. Helmet Hardtop (Amtech Corp) Cargo Bed Cover on M1097A2 HMMWV

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

Table 2-32. Helmit Hardtop (Amtech Corp) Cargo Bed Cover on M1097A2 HMMWV

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT / REAR	RECOMMENDED AIRSPEED (KNOTS)
Measurements and Signature Intelligence (MASINT)	10,300	25K	45/10	90

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

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

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

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

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

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

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

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

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

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

(a) Fold mirrors forward inward and tie together with Type III nylon cord.

(b) 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.

(c) 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).

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

(e) Engage the vehicle parking brake and put the transmission in neutral.

(f) Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.

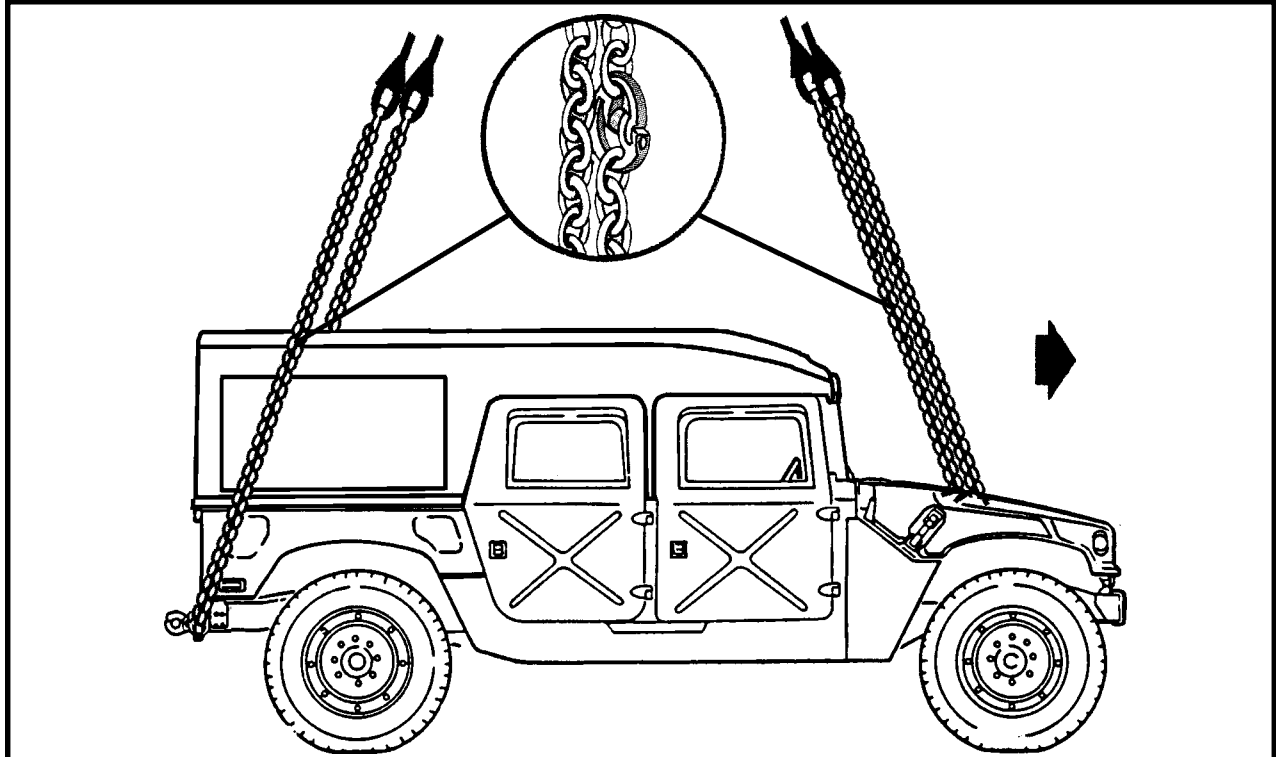
(g) Tape the windshield in an X formation from corner to corner.

(h) 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.

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

(3) **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.

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



RIGGING STEPS

1. Position the apex fitting on top of the 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 2-32 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 2-32 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 or tape (breakaway technique) the sling legs in each sling set together to prevent entanglement during hookup and lift-off.

Figure 2-31. Helmit Hardtop (Amtech Corp) Cargo Bed Cover on M1097A2 HMMWV

CAUTION

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

2-34. Interim Fast Attack Vehicle (IFAV) Truck, Long Wheel Base

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

Table 2-33. Interim Fast Attack Vehicle (IFAV) Truck, Long Wheel Base

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT / REAR	RECOMMENDED AIRSPEED (KNOTS)
Interim Fast Attack Vehicle Truck, Long Wheel Base	5,720	15K	3/15	120

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

- (1) Sling set (15,000-pound capacity).
- (2) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (3) Cord, nylon, Type III, 550-pound breaking strength.
- (4) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (5) Padding, cellulose.
- (6) Strap, cargo, tiedown (as required).

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

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

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

(a) Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord. Remove all canvas covers.

(b) Secure all equipment and cargo inside the vehicle with tape, nylon cord, or tiedown straps.

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

(d) Engage the vehicle parking brake and put the transmission in neutral.

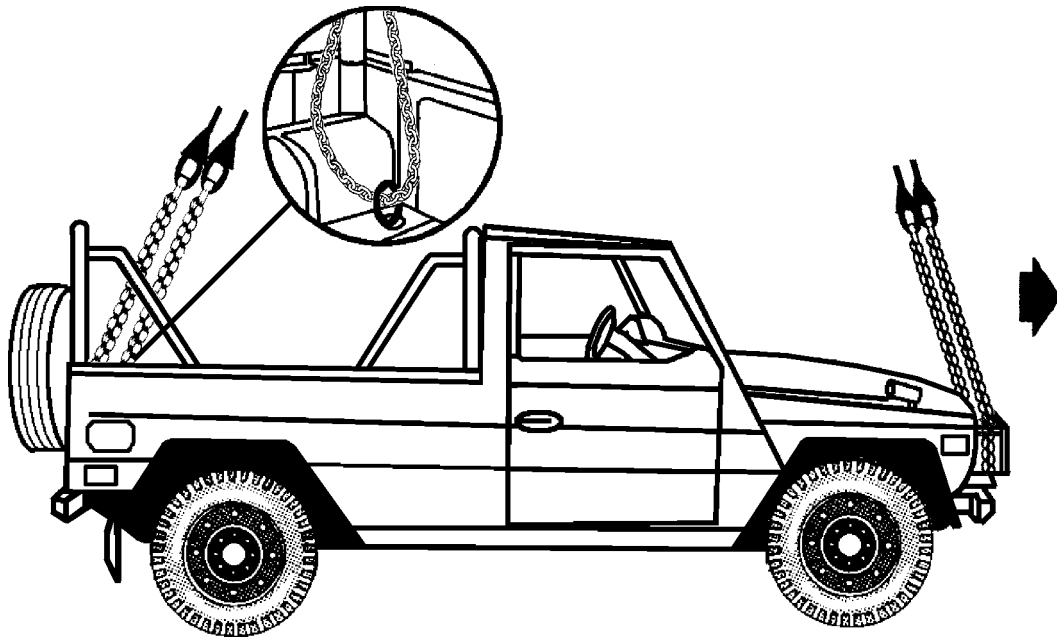
(e) Ensure the front wheels are pointed straight ahead. Tie down the steering wheel using Type III nylon cord.

(f) Tape the windshield in an X formation from corner to corner.

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

(3) 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.

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



RIGGING STEPS

1. Position the apex fitting on top of the 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 2-33 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 2-33 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 or tape (breakaway technique) the sling legs in each sling set together to prevent entanglement during hookup and lift-off.

Figure 2-32. Interim Fast Attack Vehicle (IFAV) Truck, Long Wheel Base

2-35. John Deere M-Gator (Model #VGM6X01001)

a. Applicability. The following items in Table 2-34 are certified for all helicopters with suitable lift capacity by the US Army Soldier Systems Center:

Table 2-34. John Deere M-Gator (Model #VGM6X01001)

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT / REAR	RECOMMENDED AIRSPEED (KNOTS)
John Deere M-Gator (Empty) (Model # VGM6X01001)	1,400	10K	3/30	90
John Deere M-Gator (with load) (Model # VGM6X01001)	2,450	10K	3/40	90

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

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

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

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

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

(a) Secure the gas cap, tailgate, fire extinguisher, and all equipment and cargo inside the vehicle with tape, nylon cord, or lashings.

(b) Place tape on all the lights.

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

(d) Engage the vehicle parking brake and put the transmission in neutral.

(e) 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.

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

(3) 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.

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

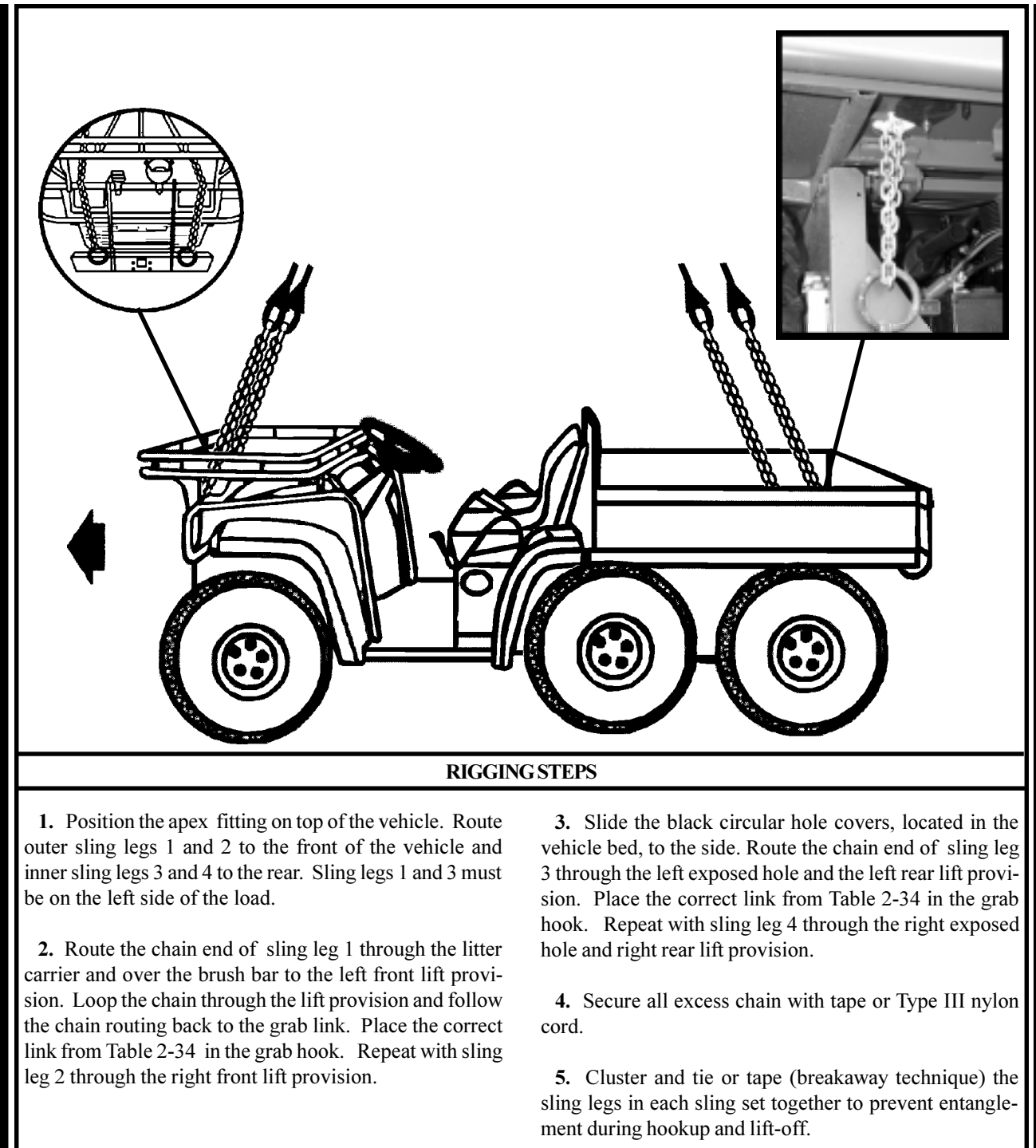


Figure 2-33. John Deere M-Gator (Model #VGM6X01001)

2-36. Two John Deere M-Gators, Model # VGM6X4D01001, Side by Side (Shotgun Method)

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

Table 2-35. Two John Deere M-Gators, Model # VGM6X4D01001, Side by Side (Shotgun Method)

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
John Deere M-Gator, Model # VGM6X4D01001	1,450 each	10K	Listed in Rigging steps	75

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

- (1) Sling set (10,000-pound capacity (2 each)).
- (2) Additional apex fitting from a 10,000-pound capacity sling set (NSN: 4030-01-027-2902).
- (3) Tape, adhesive, pressure-sensitive, 2-inch wide roll.
- (4) Cord, nylon, Type III, 550-pound breaking strength.
- (5) Webbing, cotton, 1/4-inch, 80-pound breaking strength.
- (6) Strap, tiedown, cargo, CGU-1/B (2 each).

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

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

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

(a) 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.

(b) Secure all equipment and cargo inside the vehicle with tape, nylon cord, or lashings.

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

(d) Engage the vehicle parking brake and put the transmission in neutral.

(e) 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.

(f) Tape all lights and gauges.

(g) Reposition the blackout lights and the infrared LED lights so they do not interfere with the routing of the sling legs.

(h) Open the black sling guide covers in the bed of both vehicles.

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

(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 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.

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

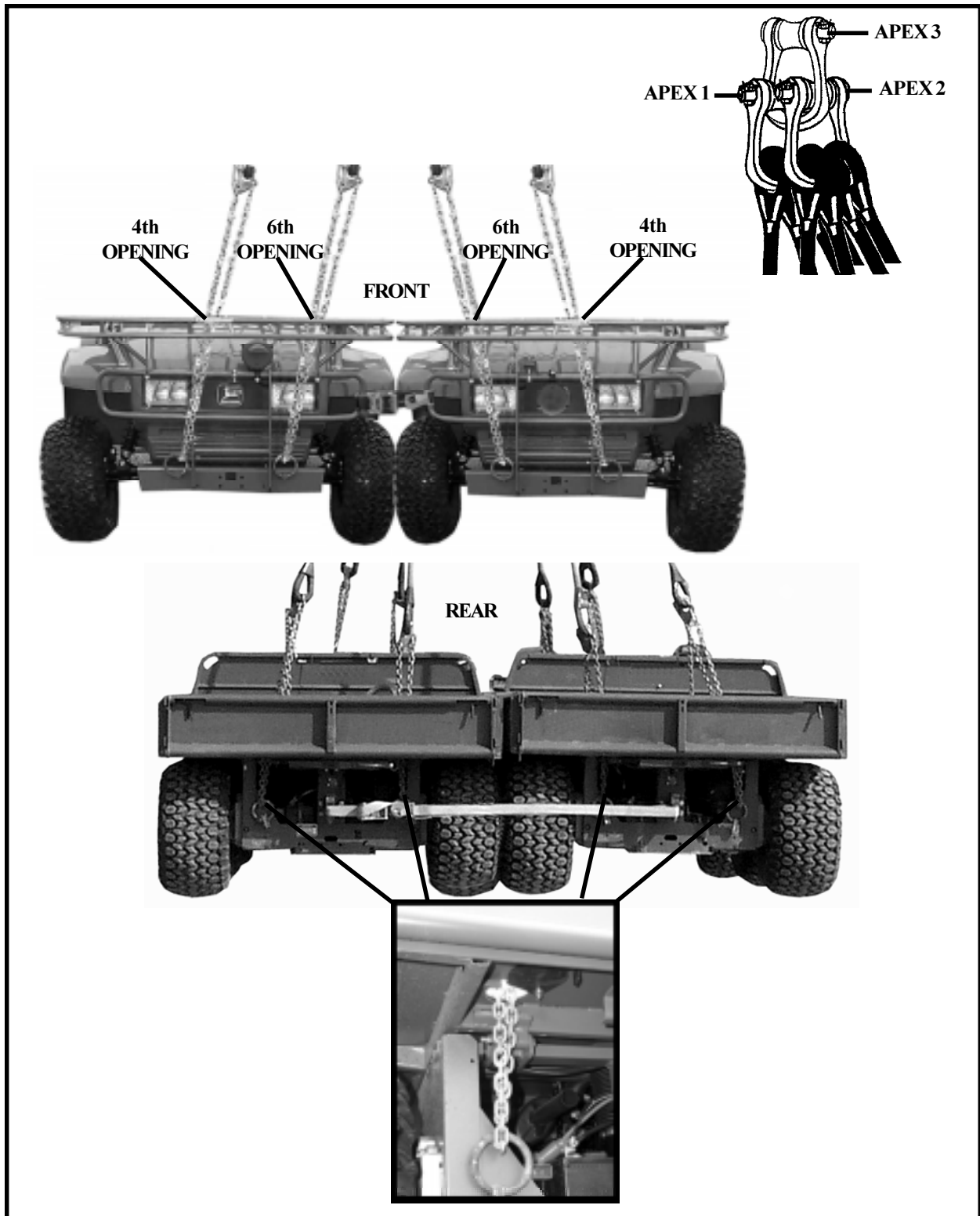


Figure 2-34. Two John Deere M-Gators, Model # VGM6X4D01001, Side by Side (Shotgun Method)

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.
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.

Figure 2-34. Two John Deere M-Gators, Model # VGM6X4D01001, Side by Side (Shotgun Method) (continued)

CHAPTER 3

CERTIFIED SINGLE-POINT RIGGING PROCEDURES FOR TRAILERS

3-1. INTRODUCTION

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 proce-

dures for trailers are in this section. Paragraphs 3-2 through 3-31 give detailed instructions for rigging loads.

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

3-2. M416 1/4 Ton Trailer

a. Applicability. The following item in Table 3-1 is certified for all helicopters with suitable lift capacity by the US Army Soldier Systems Center:

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

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
M416 1/4-Ton Trailer	1,080	10K	3/3	90

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.

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

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

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

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

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

(a) Lower and lock the trailer support leg in the down position.

(b) Tape or tie the light cable firmly to the top of the drawbar.

(c) Load and lash the cargo in the bed of the trailer.

(d) Ensure the parking brake is set.

(2) Rigging. Rig the load according to the steps in Figure 3-1.

(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.

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

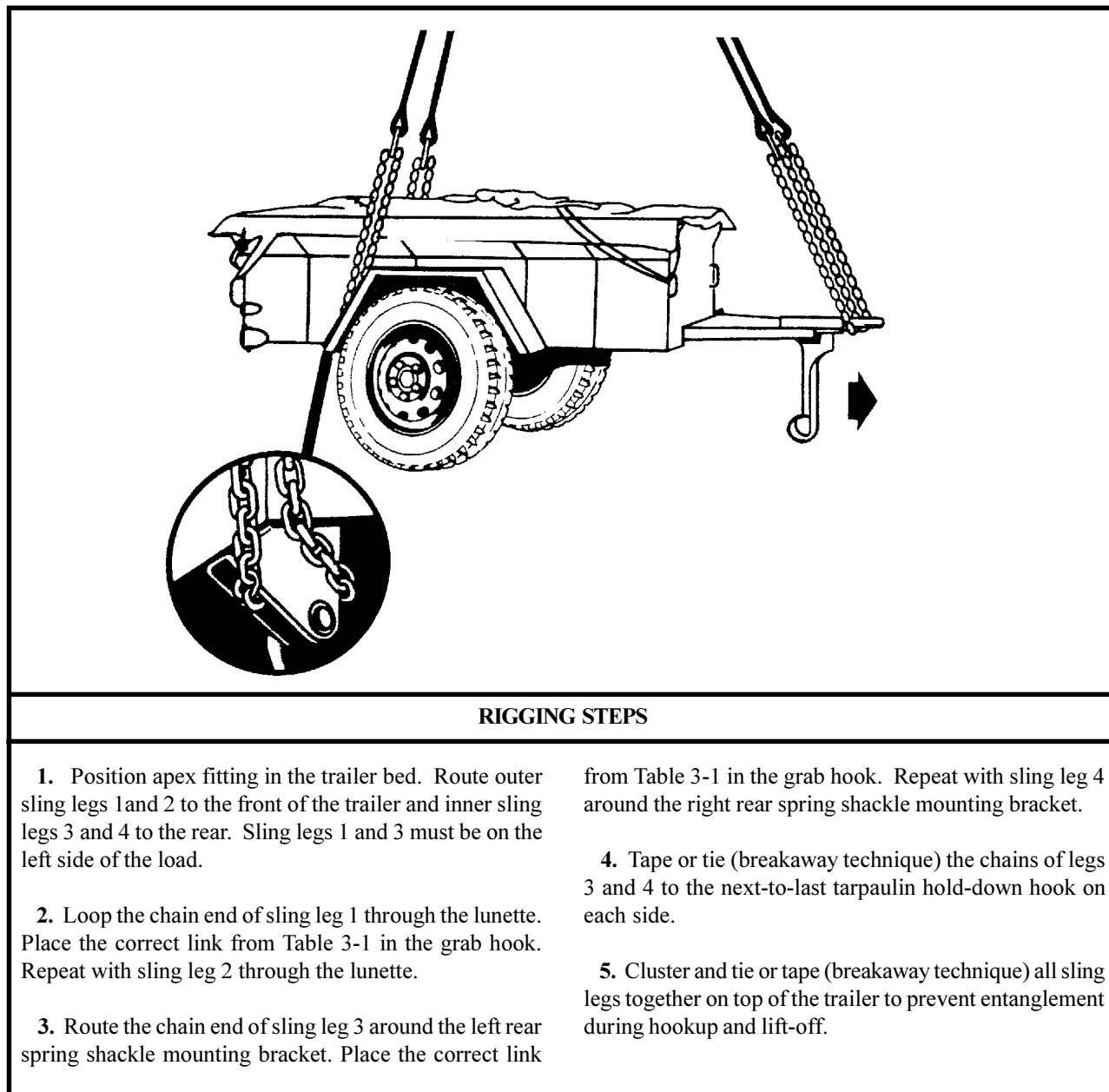


Figure 3-1. M416 1/4 Ton Trailer

3-19. High Mobility Trailers (HMT), M1101/M1102

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

Table 3-18. High Mobility Trailers

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
High Mobility Trailer (Light), M1101	3,400	10K	20/3	120
High Mobility Trailer (Light), M1102	4,200	10K	20/3	120
Tactical Messaging System (TMS) Cargo Carrier, M1102	4,200	10K	20/3	120

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

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

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

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

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

(a) 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.

(b) Install the front jack and lower the lunette as

close to the ground as possible.

(c) 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.

(d) Secure the light cable to the top of the drawbar with Type III nylon cord.

(e) Engage the parking brake.

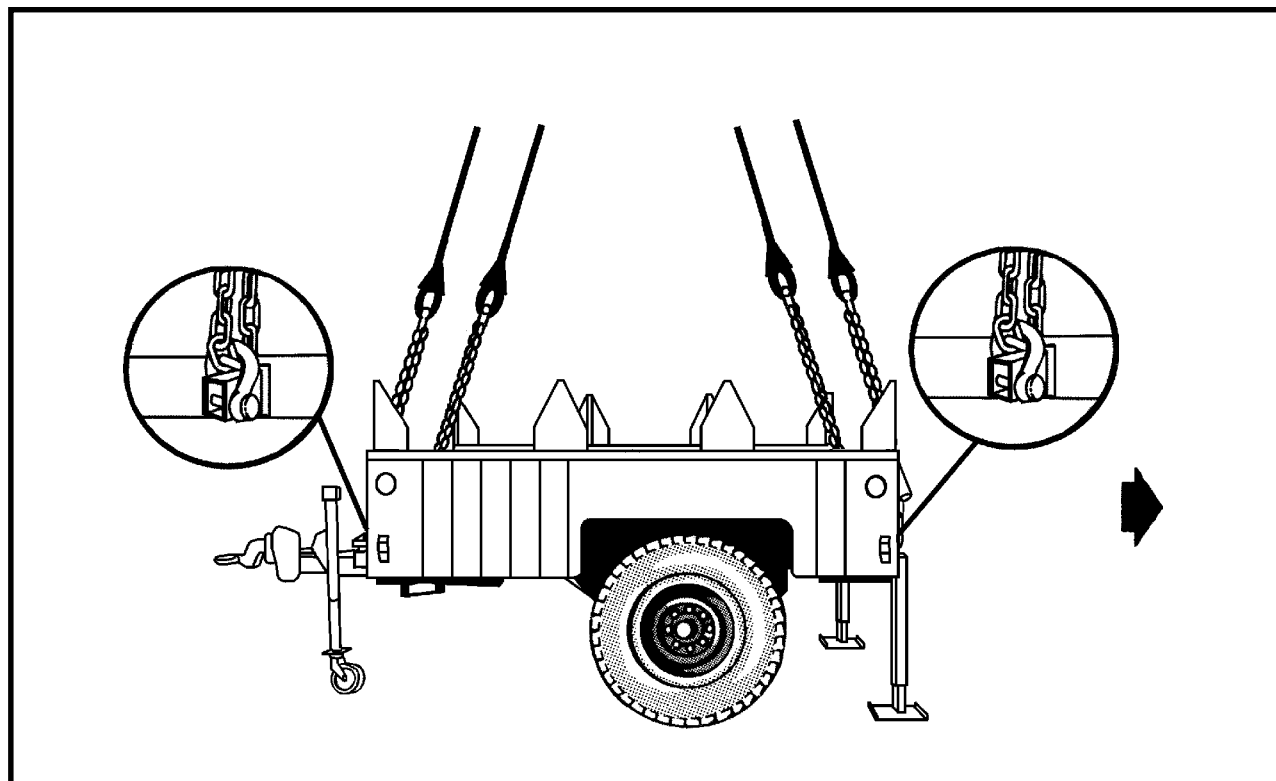
(2) Rigging. Rig the load according to the steps in Figure 3-18.

(3) 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.

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



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. 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 3-18 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. Place the correct link from Table 3-18 in the grab hook. Repeat with sling leg 4 through the right rear lift provision.

4. Pad the chain at and below where the chain contacts the trailer walls.

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

Figure 3-18. High Mobility Trailers

3-28. M1082 Light Medium Tactical Vehicle (LMTV) and M1095 Medium Tactical Vehicle (MTV) Trailers

a. Applicability. The following items in Table 3-27 are certified for all helicopters with suitable lift capacity by the US Army Soldier Systems Center:

Table 3-27. M1082 Light Medium Tactical Vehicle (LMTV) and M1095 Medium Tactical Vehicle (MTV) Trailers

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT / REAR	RECOMMENDED AIRSPEED (KNOTS)
M1082 LMTV Trailer	11,510	25K	10/3	70
M1095 MTV Trailer	15,780	25K	10/3	70

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

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

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

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

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

- (a) Position the trailer's jack stand in the down position so the trailer sets level.
- (b) Secure all loose chains, hoses, and cables to the trailer drawbar with tape or Type III nylon cord.

(c) Engage the parking brake.

(d) 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.

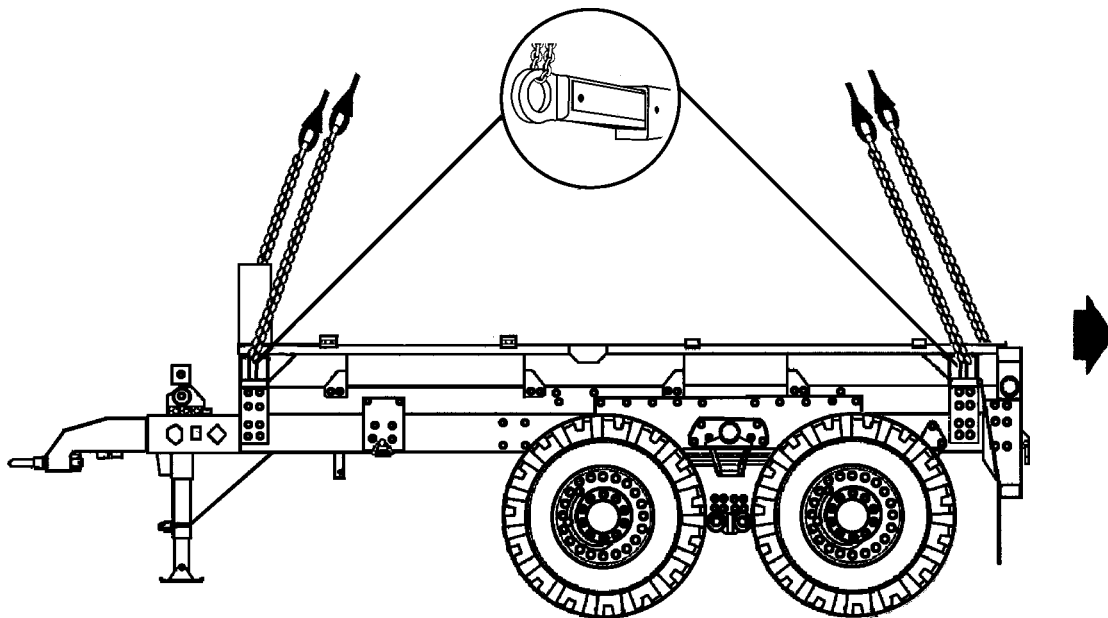
Note: Ensure the lift eyes on the lift provision bars are perpendicular to the ground.

(e) Remove the side and end panels and stow in the storage boxes under the bed of the trailer. Secure the storage latches with tape.

(2) Rigging. Rig the load according to the steps in Figure 3-27.

(3) 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.

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



RIGGING STEPS

1. Position the apex fitting on top of the 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 3-27 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 3-27 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 or tape (breakaway technique) the sling legs in each sling set together to prevent entanglement during hookup and lift-off.

Figure 3-27. M1082 Light Medium Tactical Vehicle (LMTV) and M1095 Medium Tactical Vehicle (MTV) Trailers

3-29. Small Portable Expeditionary Aeromedical Rapid Response (SPEARR) Trailer

a. Applicability. The following item in Table 3-28 is certified for all helicopters with suitable lift capacity by the US Army Soldier Systems Center:

Table 3-28. Small Portable Expeditionary Aeromedical Rapid Response (SPEARR) Trailer

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT / REAR	RECOMMENDED AIRSPEED (KNOTS)
Small Portable Expeditionary Aeromedical Rapid Response (SPEARR) Trailer	6,100	10K	Listed in Rigging Steps	80

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

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

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

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

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

(a) Position the trailer's jack stand in the down position so the lunette is near the ground.

(b) Secure all loose chains, hoses, and cables to the trailer drawbar with tape or Type III nylon cord.

(c) Secure all lids, doors, and caps with tape or Type III nylon cord.

(d) Ensure the stabilizer legs are retracted and stowed.

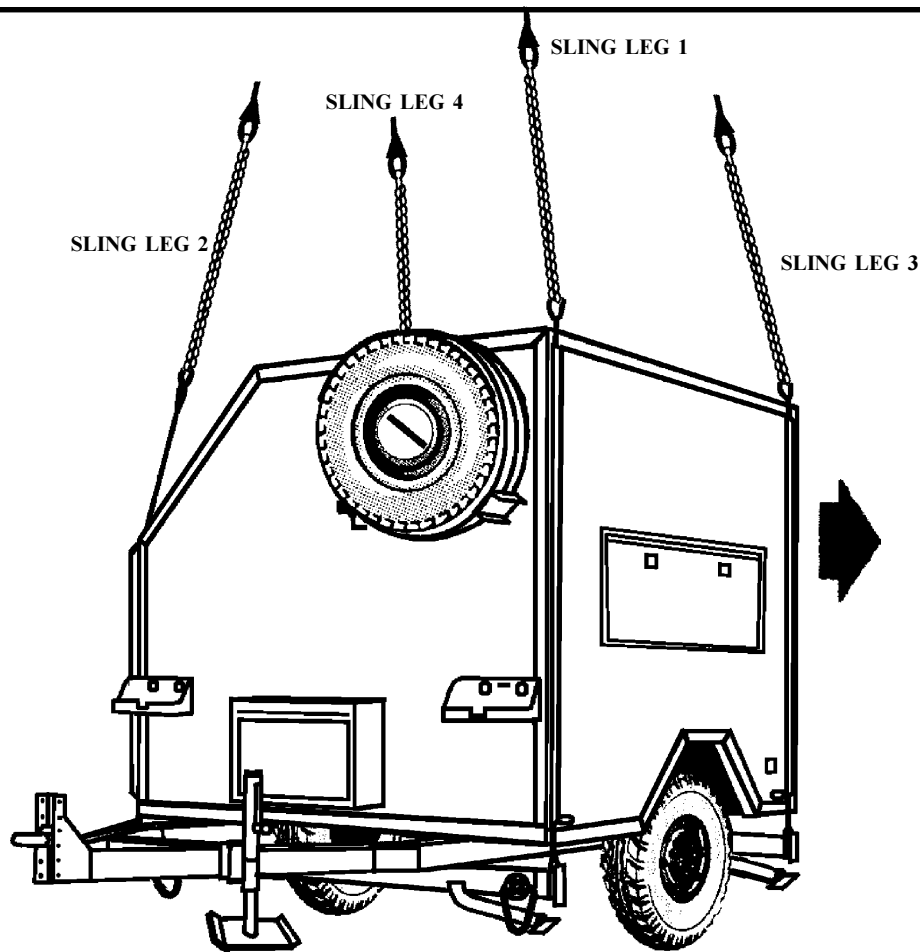
(e) Release the curb side lift provisions from the stowage straps. Secure the stowage straps to the trailer with tape.

(2) **Rigging.** Rig the load according to the steps in Figure 3-28.

(3) **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.

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



RIGGING STEPS

1. Position the apex fitting on top of the 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 3-28. Small Portable Expeditionary Aeromedical Rapid Response (SPEARR) Trailer

3-30. Minimum Operating Strip Lighting System (MOSLS)

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

Table 3-29. Minimum Operating Strip Lighting System (MOSLS)

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT / REAR	RECOMMENDED AIRSPEED (KNOTS)
Minimum Operating Strip Lighting System (MOSLS) with Spreader Bars	3,350	15K	10/3	70

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

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

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

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

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

(a) Position the trailer's jack stand in the down position so the lunette is near the ground.

(b) Secure all loose chains, hoses, and cables to the trailer drawbar with tape or Type III nylon cord.

(c) Secure all lids, doors, and caps with tape or Type III nylon cord.

(d) Ensure the stabilizer legs are retracted and stowed.

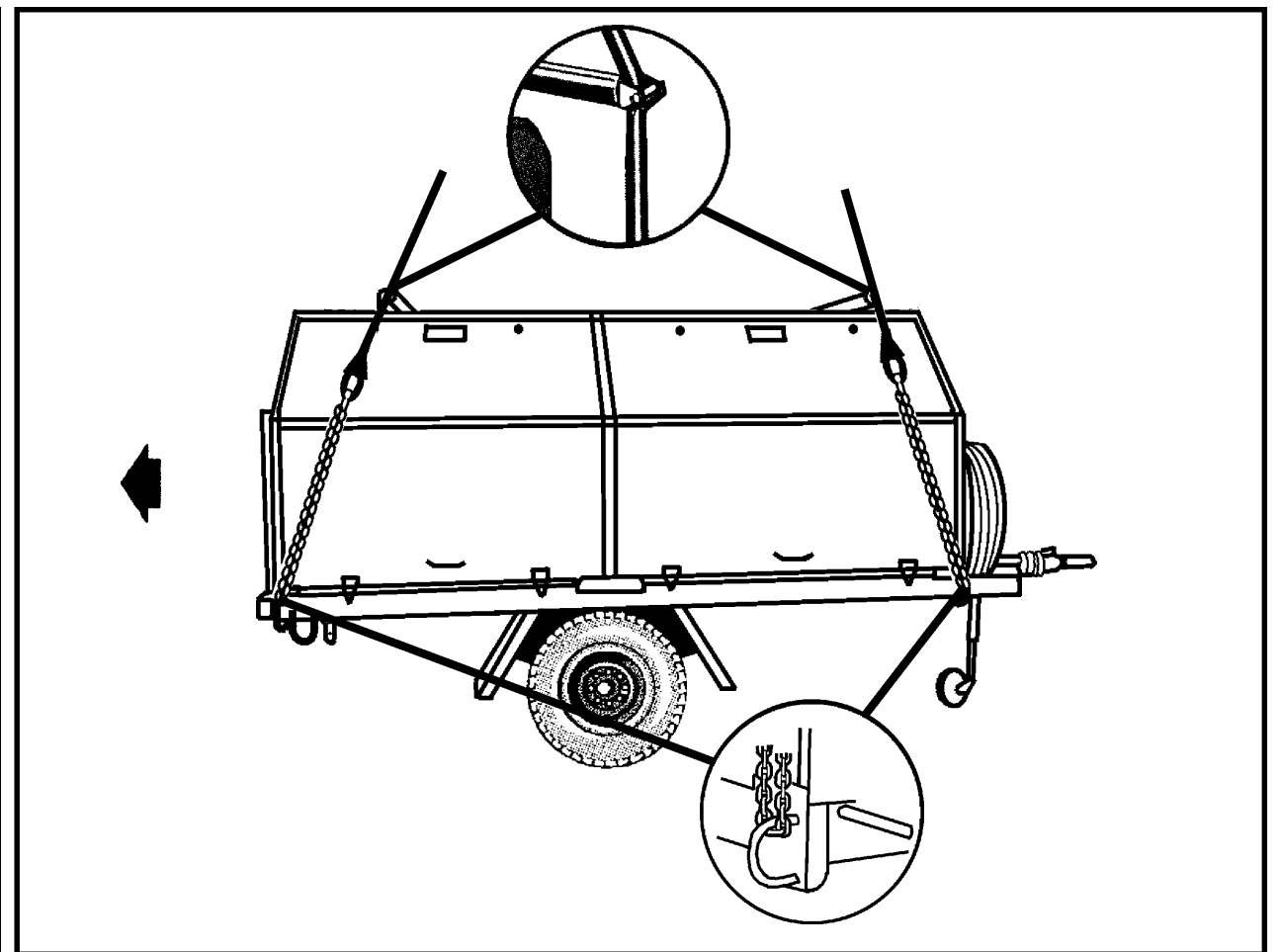
(e) Engage the parking brake.

(2) Rigging. Rig the load according to the steps in Figure 3-29.

(3) 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.

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



RIGGING STEPS

1. Position the apex fitting on top of the 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 vertical left front lift provision located on the left front corner of the trailer (lunette end). Place the correct link from Table 3-29 in the grab hook. Repeat with sling leg 2 through the vertical right front lift provision.
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 3-29 in the grab hook. Repeat with sling leg 4 through the vertical right rear lift provision.
4. Secure all excess chain with tape or 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 or tape (breakaway technique) the sling legs in each sling set together to prevent entanglement during hookup and lift-off.

Figure 3-29. Minimum Operating Strip Lighting System (MOSLS)

3-31. Assault Command Post With High Mobility Wheel Set

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

Table 3-30. Assault Command Post With High Mobility Wheel Set

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT / REAR	RECOMMENDED AIRSPEED (KNOTS)
Assault Command Post (ACP), Housed in Expandable Light Airmobile Shelter (ELAMS), with High Speed Mobile Wheel Set	13,240	25K	ECU is Front 3/3	80

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

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

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

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

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

- (a) Ensure manufacturer approved tiedown assemblies (2 each) are in place between the shelter and each wheel set.

(b) Remove all antennas and secure inside the shelter.

(c) Secure all lids, doors, and caps with tape or Type III nylon cord.

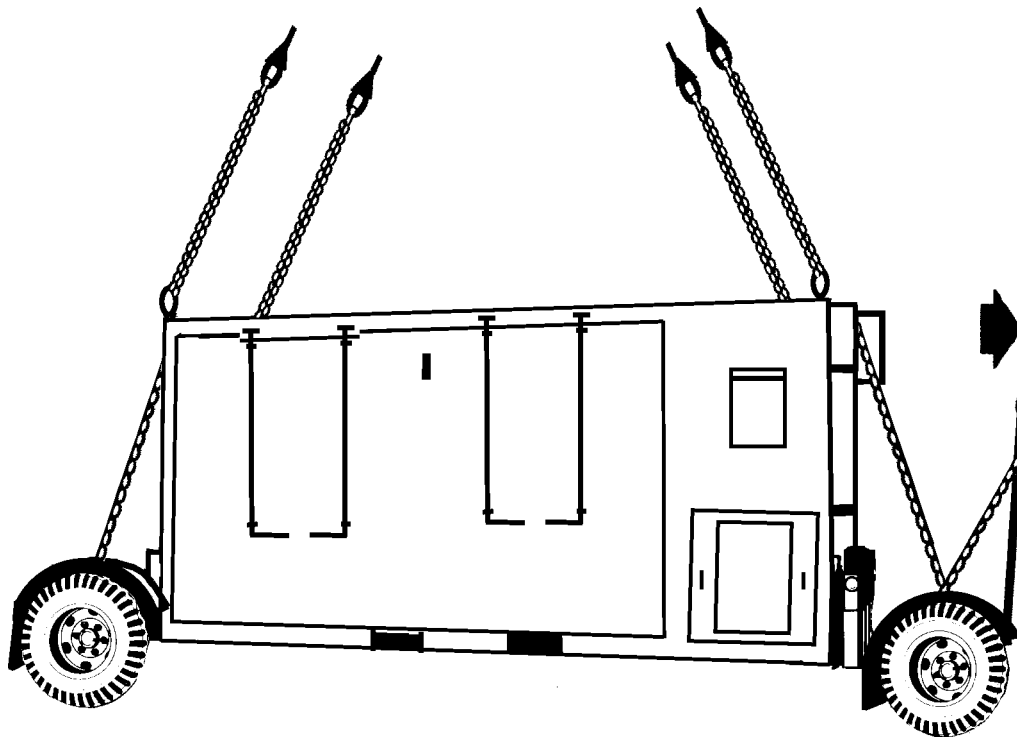
(d) Secure all loose equipment inside the shelter with tape, lashings, or Type III nylon cord.

(e) Secure the tow bar in the up position.

(2) **Rigging.** Rig the load according to the steps in Figure 3-30.

(3) **Hookup.** The hookup teams stand 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.

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



RIGGING STEPS

1. Position the apex fitting on top of the shelter. Route outer sling legs 1 and 2 to the front of the shelter (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 top left front corner of the shelter (lunette end). Place the correct link from Table 3-30 in the grab hook. Repeat with sling leg 2 through the top right front lift provision.

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

lift provision located on the top left rear corner of the shelter. Place the correct link from Table 3-30 in the grab hook. Repeat with sling leg 4 through the top right rear lift provision.

4. Secure all excess chain with tape or Type III nylon cord.

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

Figure 3-30. Assault Command Post With High Mobility Wheel Set

4-7. M116A3 Trailer-Mounted Power Units, Generators, and Power Plants

a. Applicability. The following items in Table 4-6 are certified for all helicopters with suitable lift capacity by the US Army Soldier Systems Center:

Table 4-6. M116A3 Trailer-Mounted Power Units, Generators, and Power Plants

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT / REAR	RECOMMENDED AIRSPEED (KNOTS)
AN/MJQ-43 Power Unit with two (2) MEP-831A, 3 kW, 60 Hz, Generator Sets	2,060	10K	3/3	80
AN/MJQ-35 Power Unit with two (2) MEP-802A, 5 kW, 60 Hz, Generator Sets	3,160	10K	3/3	80
PU-797, 5 kW, 60 Hz, Power Unit with MEP-802A, 5 kW, 60 Hz, Generator Set	2,720	10K	3/3	70
PU-798, 10 kW, 60 Hz, Power Unit with MEP-803A, 10 kW, 60 Hz, Generator Set	2,860	10K	3/3	70
PU-799, 10 kW, 400 Hz, Power Unit with MEP-813A, 10 kW, 400 Hz, Generator Set	2,870	10K	3/3	70
PU-801, 15 kW, 50/60 Hz, Power Unit with MEP-804A, 15 kW, 50/60 Hz, Generator Set	3,160	10K	15/3	100
AN/MJQ-33 Tactical Quiet Generator (TQG)	2,100	10K	3/3	100

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

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

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

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

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

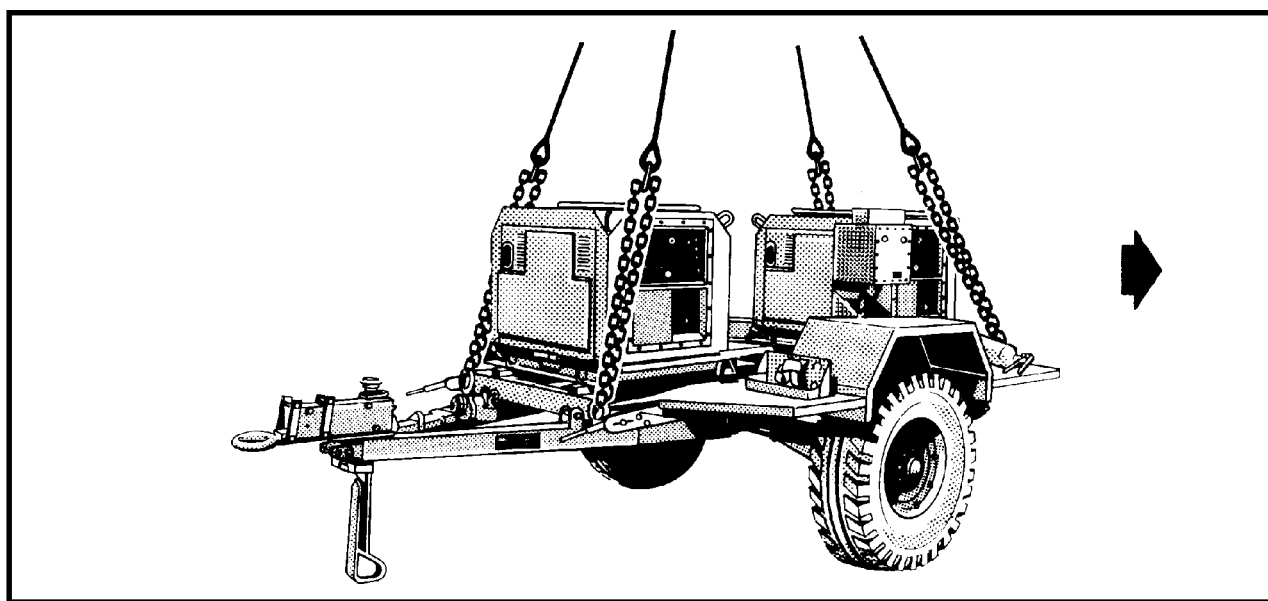
- (a) Engage both hand brakes.
- (b) Secure safety chains and brake hoses to the top of the drawbar with Type III nylon cord.
- (c) Secure all lids, doors, and caps with tape or Type III nylon cord.
- (d) Place additional cargo as close to the center of the trailer as possible. Secure the cargo with CGU-1/B tiedown straps. The cargo must not contact the sling legs during lift-off or flight.

(2) **Rigging.** Rig the load according to the steps in Figure 4-6.

(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.

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



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.

6. Pad the slings in the areas where they contact the tool boxes or the generators.

7. Cluster and tie or tape (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

or Type III nylon cord.

(d) Secure the firing platform (if carried), hand spike, and jack to the trail assembly with Type III nylon cord.

(e) 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.

(f) The sling set chain safety clamp is an additional authorized item. Refer to TM 9-1015-252-10 for NSN and installation information.

(g) 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.

(h) 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.

(i) When moving the howitzer with an accompany-

ing 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.

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

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.

(3) **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.

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

<p>WARNING When moving the howitzer with an accompanying load, the 25,000-pound capacity sling set must be used.</p>	<p>WARNING Accompanying loads must not exceed the weight limits of the cargo net, cargo bag, sling leg, or exceed the lift capability of the helicopter.</p>
<p>RIGGING STEPS</p>	
<ol style="list-style-type: none">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 50 (when using the 10,000-pound capacity sling set) or link 40 (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 55 (when using the 10,000-pound capacity sling set) or link 45 (when using the 25,000-pound capacity sling set) in the grabhook. Secure the excess chain with Type III nylon cord.	<ol style="list-style-type: none">4. Route the chain end of the extended sling leg 3 through the lunette. Place link 35 (when using the 10,000-pound capacity sling set) or link 28 (when using the 25,000-pound capacity sling set) in the grab hook. Secure the excess chain with Type III nylon cord5. Cluster and tie or tape (breakaway technique) the sling legs together on top of the howitzers to prevent entanglement during hookup and lift-off.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.

Figure 6-8. M119 105-MM Howitzer, Forward/Firing Position

6-9.1. M119, 105-MM Howitzer, Forward/Firing Position, Platform Down, with Additional Boxes of Ammunition

a. Applicability. The following items in Table 6-8.1 are certified for all helicopters with suitable lift capacity by the US Army Soldier Systems Center:

Table 6-8.1. M119 105-MM Howitzer, Forward/Firing Position, Platform Down

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
M119 Howitzer with Two Boxes of Ammunition on Firing Platform	4,850	10K	Listed in rigging steps	80
M119 Howitzer with Two Boxes of Ammunition on Firing Platform and Ammunition in A/22 or Cargo Net	7,500	25K	Listed in rigging steps	110

WARNINGS

1. The ammunition boxes must be securely lashed to the firing platform.
2. When using the A/22 cargo bag for an accompanying load do not exceed 2,200 pounds.
3. When using the cargo net for an accompanying load do not exceed 2,650 pounds.

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

(1) Sling set (10,000-pound capacity) (when moving the howitzer without A/22 or cargo net).

OR

(2) Sling set (25,000-pound capacity) (when moving the howitzer with an A/22 or cargo net).

(3) Reach Pendant (11,000 or 25,000-pound capacity).

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

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

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

(7) 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 .

(9) Line, multiloop, Type XXVI, 4-loop, 3-foot (for accompanying load).

(10) Clevis, suspension, medium (2 each) (for A/22 or cargo net).

(11) Bag, cargo A/22 or net, cargo (5,000- or 10,000-pound capacity).

(12) Chain length, part number 38850-00053-102, from a 25,000-pound capacity sling set (1 each) (for A/22 or cargo net).

(13) Coupling link, part number 664241, from a 25,000-pound capacity sling set (1 each)(for A/22 or cargo net).

(14) Strap, cargo, tiedown, CGU-1/B (as required).

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

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

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

(a) Place the howitzer in the forward/firing position. If the firing platform is to be carried in the down position, follow these steps:

1 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.

2 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.

3 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.

4 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.

5 Pad and tape the trailing edge of the platform when carrying an accompanying load in an A/22 cargo bag or a cargo net.

(b) Secure the sight cover to the dial sight with tape or Type III nylon cord.

(c) Secure the firing platform (if carried), hand spike, and jack to the trail assembly with Type III nylon cord.

(d) 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.

(e) 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.

(f) 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.

(2) Rigging. Rig the load according to the steps in Figure 6-8.1.

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.

(3) 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.

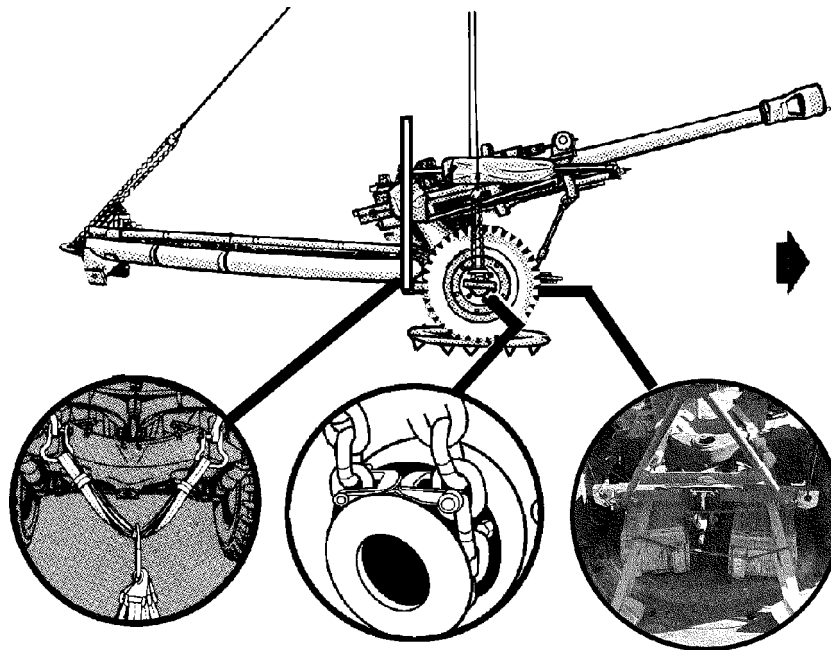
(4) Derigging. Derigging is the reverse of the preparation and rigging procedures in steps d (1) and d (2).

WARNING

When moving the howitzer with an accompanying load, the 25,000-pound capacity sling set must be used.

WARNING

Accompanying loads must not exceed the weight limits of the cargo net, cargo bag, sling leg, or exceed the lift capability of the helicopter.



RIGGING STEPS

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 (looking at the howitzer from the lunette). 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 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 55 (when using the 10,000-pound capacity sling set) or link 45 (when using the 25,000-pound capacity sling set) in the grabhook. Secure the excess chain with Type III nylon cord.
4. Route the chain end of the extended sling leg 3 through the lunette. Place link 35 (when using the 10,000-pound capacity sling set) or link 28 (when using the 25,000-pound capacity sling set) in the grab hook. Secure the excess chain with Type III nylon cord.
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.
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.

Figure 6-8.1. M119 105-MM Howitzer, Forward/Firing Position, Platform Down

11-10. Distributed Explosive Technology (DET) System, Landing Craft, Air Cushioned (LCAC), Landing Interface Kit (LIK) Container, Single

a. Applicability. The following item in Table 11-9 is certified for all helicopters with suitable lift capacity by the US Army Soldier Systems Center:

Table 11-9. Distributed Explosive Technology (DET) System, Landing Craft, Air Cushioned (LCAC), Landing Interface Kit (LIK) Container, Single

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	RECOMMENDED AIRSPEED (KNOTS)
Distributed Explosive Technology (DET) System, Landing Craft, Air Cushioned (LCAC), Landing Interface Kit (LIK) Container	1,550	Navy MK105 O Sling Assembly	N/A	80

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

(1) Sling set, Navy MK105 O Sling Assembly with 91-inch or longer leg assembly.

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

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

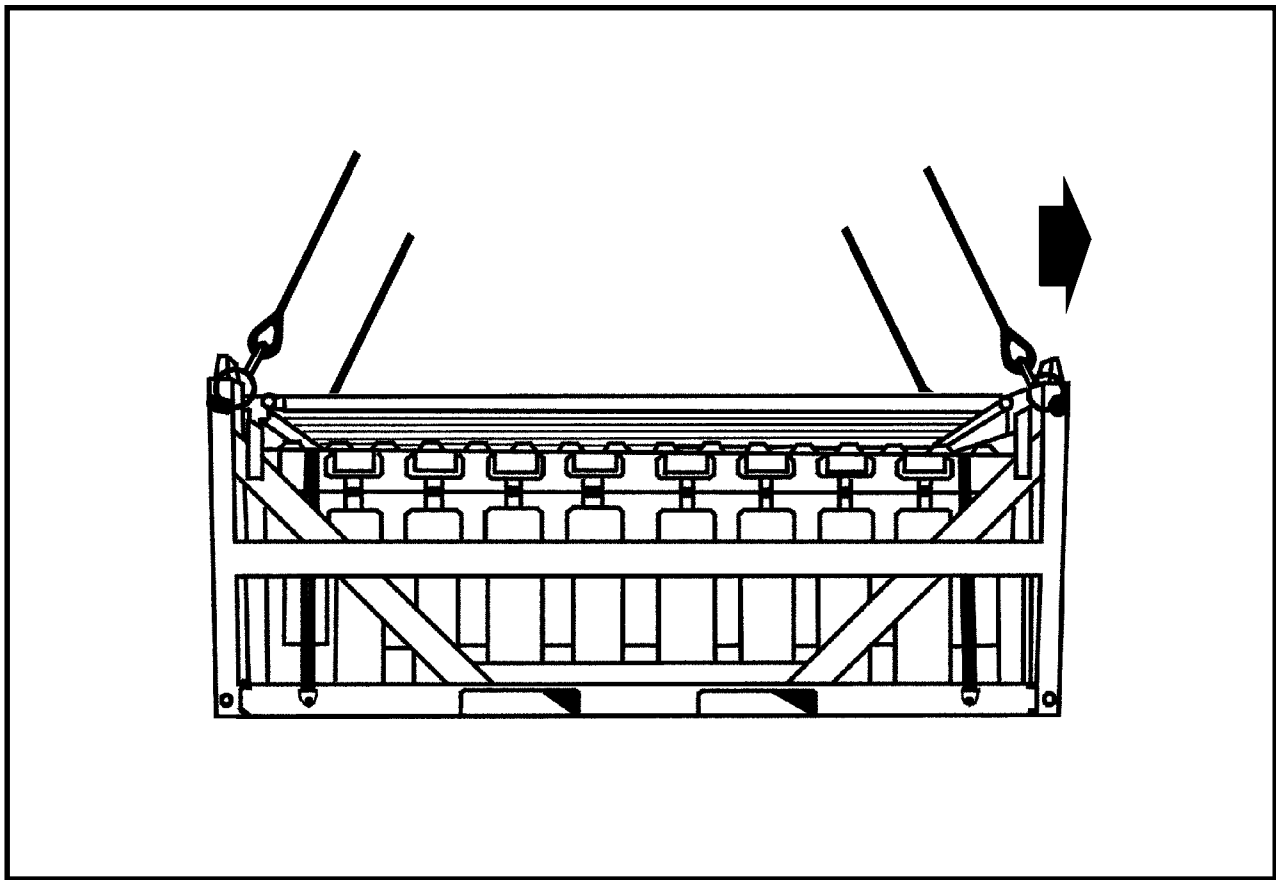
d. Procedures. The following procedures apply to this load:

(1) **Preparation.** Prepare the load by placing a strap over each end of the LIK container and attaching it to the platform in accordance with manufacturer's instructions.

(2) **Rigging.** Rig the load according to the steps in Figure 11-9.

(3) **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.

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



RIGGING STEPS

1. Position apex fitting on top of the 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.

2. Attach the hook on the end of each sling leg to

the respective lift provision located at the top corners of the container.

3. Secure the sling leg hooks in the closed position with Type III nylon cord.

Figure 11-9. Distributed Explosive Technology (DET) System, Landing Craft, Air Cushioned (LCAC), Landing Interface Kit (LIK) Container, Single

GLOSSARY

ACRONYMS AND ABBREVIATIONS

ACP	assault command post	FARE	forward area refueling equipment
ADCGS	aviation direct current generator set	FMOGDS	field medical oxygen generation/distribution system
AETC	auxiliary equipment transportation container	FOPS	falling objects protection system
AFATADS	advanced field artillery tactical data systems	FUPP	full-up power pack
AGPU	aviation ground power unit	GMLA	guided missile launch assembly
ARL-C	airborne reconnaissance low-comint	GPH	gallons per hour
ARL-I	airborne reconnaissance low-imagery	GPM	gallons per minute
ASK	acoustic suppression kit	HATS	hardened army tactical shelter
AS	aviation section	HEMAT	heavy expanded mobility ammunition trailer
ATG	antenna transceiver group	HMD	high mobility downsized
BIDS	biological integrated detection system	HMDA	high mobility digital group multiplexer assemblage
bn	battalion	HMMH	high mobility materiel handler
BSTF	base shop test facility	H-HMMWV	heavy high-mobility multipurpose wheeled vehicle
BTU	British Thermal Unit	HMMWV	high-mobility multipurpose wheeled vehicle
CAFSM	compressed air foam system, mobile	HMT	high mobility trailers
CBC	cargo bed cover	HSTRU	hydraulic system test and repair unit
CFM	cubic feet per minute/cylinder filling module	HZ	hertz
CG	center of gravity	IAS	intelligence analysis system
CLFFK	company level field feeding kit	IEW	intelligence and electronic warfare
CMTH	contact maintenance truck, heavy	IFAV	interim fast attack vehicle
CONEX	container express	IMETS	integrated meteorological systems
CWAR	continuous wave acquisition radar	ISO	International Organization of Standardization
DASC	direct air support central	JSTAR	joint surveillance target attack radar
DAMP	digital antenna mast program	JTIDS	joint tactical information distribution system
DDSS	downsized direct support section	KW	kilowatt(s)
DDGM	downsized digital group multiplexer	LAV	light armored vehicle
DET	distributed explosive technology	LCAC	landing craft air cushioned
DGM	digital group multiplexer	LHGXA	lightweight high gain x-band antenna
DOD	Department of Defense	LJK	landing interface kit
DOM	desert operation motorcycle	LIN	line number
DOT	desert operation trailer	LMS	lightweight multipurpose shelter
DTSS-L	digital topographic support system-light	LMTV	light medium tactical vehicle
EALP	enclosure assembly launch pods	LTACFIRE	lightweight tactical fire control system
EBFL	extendable boom forklift	LTR	light tactical floating raft bridge
ECU	environmental control unit	LVAD	low velocity airdrop
EFOGM	enhanced fiber optic guided missile	MASINT	measurements and signature intelligence
ELAMS	expandable light airmobile shelter	MGB	medium girder bridge
EMI	electromechanical induction		
EPLRS	enhanced position location reporting system		
FAAR	forward area alerting radar		

MHG	meterological hydrogen generator	ROPS	roll-over protection system
MICLIC	mine clearing line charge	ROWPU	reverse osmosis water purification unit
MILSTD	military standard	RP/C	rocket pod/container
MLRS	multiple launch rocket system	RT	rough terrain
mm	millimeter	SCAMP	self-propelled crane for Army aircraft maintenance and positioning
MOSLS	minimum operating strip lighting system	SCOTT	single channel objective tactical terminal
MOST	mobile oversnow transport	SDASS	special diver's air support system
MR	mobile radio	SEE	small emplacement excavator
MRBS	mobile radio broadcasting subsystem	SICPS	standardized integrated command post systems
MSFDCS	multiservice flight data collection sheet	SIXCON	six-compartment container
MT	mobile television	SMART-T	secure mobile anti-jam tactical terminal
MTBS	mobile television broadcasting subsystem	SMMS	sensor mobile monitoring system
MTMCTEA	Military Traffic Management Command Transportation Engineering Agency	SOMS-B	special operations media system
MTS	mobile-track system	SPAM	shop, portable aircraft maintenance
MTV	medium tactical vehicle	SPEARR	small portable expeditionary aeromedical rapid response
NABS	NATO airbase satcom	SSC	Soldier Systems Center
NATO	North Atlantic Treaty Organization	SSS	single shelter switch
NAVAIR	Naval Air Systems Command	SUSV	small unit support vehicle
NCS-E(D)	downsized net control system	TAFDS	tactical airfield fuel dispensing system
NRDEC	Natick Research, Development, and Engineering Center	TAMCN	Table of Authorized Material Control Number
NSN	national stock number	TM	technical manual
OC	operations central	TMS	tactical messaging system
OCG	operational control group	TOW	tube launched, optically tracked, wireguided
OGDM	oxygen generation/distribution module	TQG	tactical quiet generator
OVE	operator vehicle equipment	TRSS	tactical remote sensor system
PN	part number	TSS	tracked suspension system
POC	platoon operations center	TTCS	tactical terminal control system
PTO	pioneer tool outfit	US	United States
QRSA	quick reaction satellite antenna	USA	United States Army
RIE	required individual equipment	USMC	United States Marine Corps
RLST	remote landing site tower		