HEADQUARTERS DEPARTMENT OF THE ARMY
UNITED STATES MARINE CORPS
DEPARTMENT OF THE NAVY
DEPARTMENT OF THE AIR FORCE
UNITED STATES COAST GUARD

Change 1

Washington, DC, 20 August 2001

MULTISERVICE HELICOPTER SLING LOAD: DUAL-POINT RIGGING PROCEDURES

1. This change adds several items that are certified for sling load in the dual-point configuration.

2. The United States Marine Corps has changed the Short Title of this manual to MCRP 4-11.3E, Vol III. This Short Title will be included in the next revision of this manual.

3. Change FM 10-450-5, 30 August 1999, as follows:

Remove old pages	**Insert new pages**
iii through ix	iii through ix
1-1 through 1-4	1-1 through 1-4
2-1 and 2-2	2-1 and 2-2
2-13 through 2-20	2-13 through 2-20
	2-20.1 through 2-20.3
2-45 through 2-50	2-45 through 2-50
2-53 through 2-56	2-53 through 2-56
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5-1 and 5-2	5-1 and 5-2
5-29 through 5-32	5-29 through 5-32
5-55	5-55 through 5-58
7-1 and 7-2	7-1 and 7-2
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8-1 and 8-2	8-1 and 8-2
8-57 through 8-60	8-57 through 8-60
	8-73 and 8-74
10-11 and 10-12	10-11 and 10-12
11-5 through 11-10	11-5 through 11-10
Glossary 1 and Glossary 2	Glossary 1 and Glossary 2

4. New or changed material is identified by a vertical bar in the margin opposite the changed material.

5. File this transmittal sheet in the front of the publication.

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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 13. Only certified sling loads are authorized for the Marine Corps. The following restrictions apply for dual point sling load certification to remain in effect:

(1) The load must be within the lifting capability of the desired helicopter model.

(2) The load shall be rigged in accordance with the certified dual point 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 does not apply to helicopters of different designations (for example, CH-47 versus CH-53E helicopter) because of possible differences in dynamic vibration, helicopter/load mass differential, and rotor wash pattern.

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. 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 Chapter 14.

c. Unique Sling Loads. Unique loads are also 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 certifica-

tion 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 Single-Point Loads. Single point loads which have been certified under any DOD helicopter may be flown in the single point configuration by any DOD helicopter with suitable lift capability.

c. 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 evaluation 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 13 contain the rigging procedures for certified dual-point loads and chapter 14 contains the rigging procedures for suitable dual-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 rec-

ommended 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, 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 loads 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.

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.

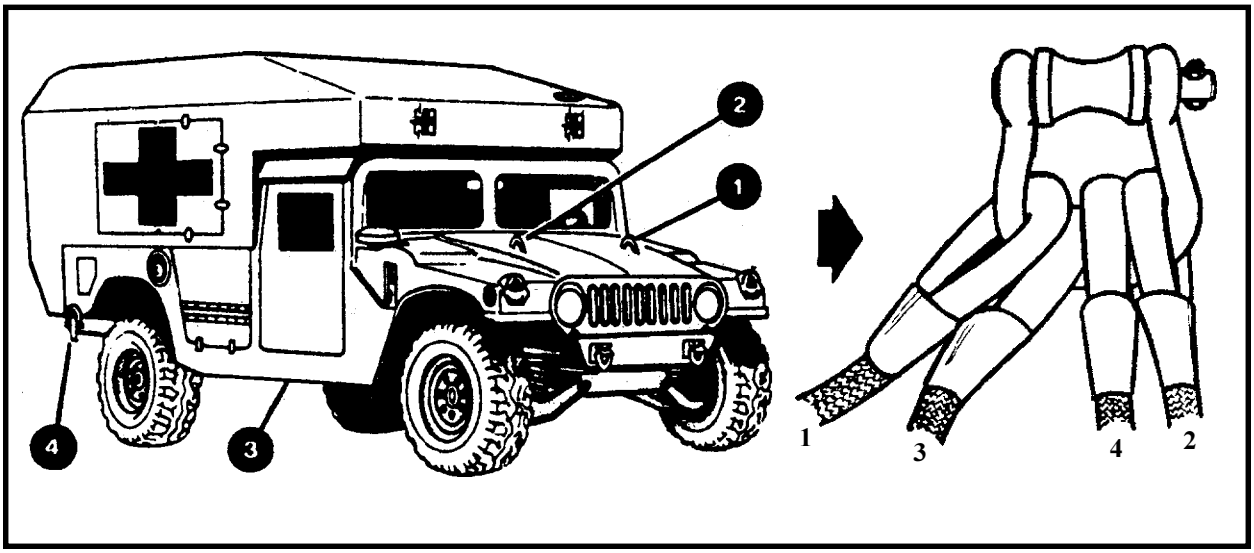


Figure 1-1. Sling Leg Lifting Point Designation

CHAPTER 2

CERTIFIED DUAL-POINT RIGGING PROCEDURES FOR WHEELED VEHICLES

2-1. INTRODUCTION

This chapter contains rigging procedures for dual-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 dual-point rigging procedures for wheeled vehicles are in this section.

Paragraphs 2-2 through 2-34 give detailed instructions for rigging loads. The paragraphs also contain a description of each load and the materials required for rigging it.

NOTE: Reach Pendants may be used on dual point loads. Place a Reach Pendant on each apex fitting. A static discharge person is not required when using a Reach Pendant.

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

a. Applicability. The following items in Table 2-1 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 2-1. Truck, Ambulance (HMMWV)

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Truck, Ambulance, M996, HMMWV	7,400	10K 25K	80/45 66/38	CH-47	130
Truck, Ambulance, M997, HMMWV	7,400	10K 25K	80/45 66/38	CH-47	130
Truck, Ambulance, M997A1, HMMWV, 4-Litter	7,600	15K 40K	25/3 30/9	CH-53	120
Truck, Ambulance, M997A2, HMMWV	10,300	25K	66\38	CH-47	130

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

(1) Sling set (see table) with one additional apex fitting or web ring for the sling set being used.

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

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

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

(5) 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 the mirrors forward in front of the windshield and tie together with Type III nylon cord.

(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) 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. Place 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) 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.

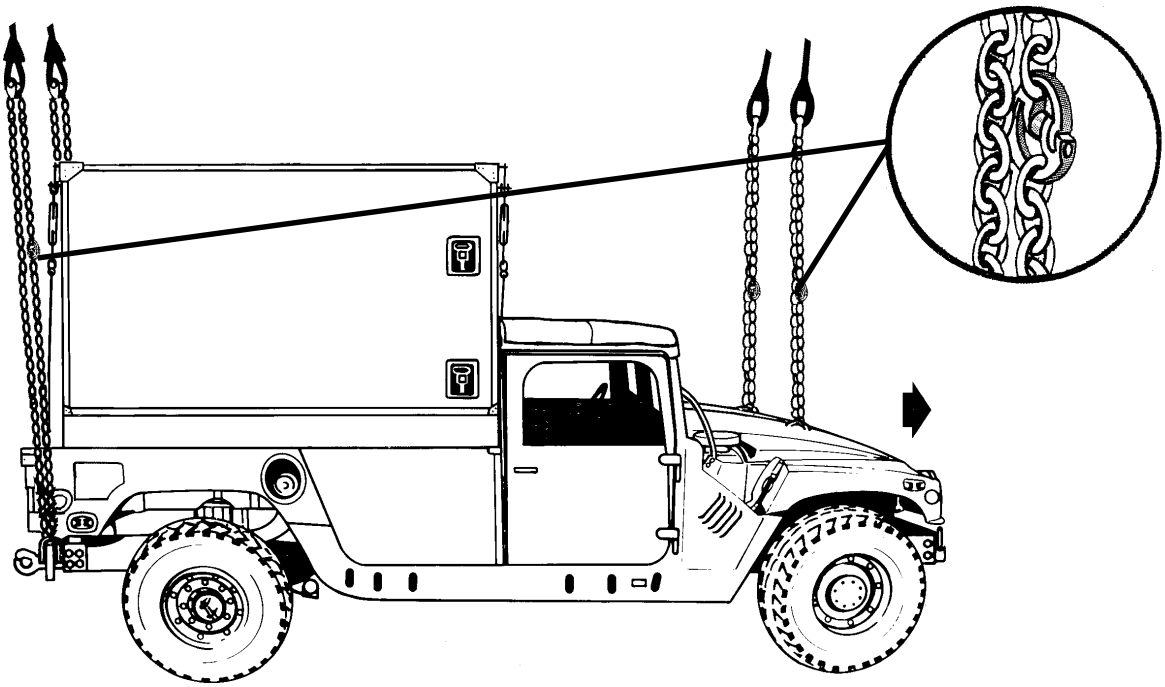
(j) Position the spreader bar across the rear end of the vehicle roof. Attach the spreader bar check cables to the eyebolts located on the aft exterior sidewall of the rear compartment. See rear view insert in Figure 2-1.

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

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

(3) Hookup. The static wand person discharges the static electricity with the static wand. The forward hookup person stands on the hood and places apex fitting 1 onto the forward cargo hook. The aft hookup person stands on the roof and places apex fitting 2 onto the aft 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. Connect 2 sling legs to apex fitting number 1. Position the apex fitting on top of the hood.

2. Loop the chain end of the sling legs through their respective lift provisions that protrudes through the hood. Place the correct link from Table 2-4 in the grab hook.

3. Connect 2 sling legs to apex fitting number 2. Position the apex fitting in the bed of the vehicle.

4. Loop the chain end through the lift shackle on the rear bumper located on the outer ends of the bumper. Place the correct link from Table 2-4 in the grab hook.

5. Wrap the rear slings with padding where they contact the shelter sides.

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 on top of the vehicle to prevent entanglement during hookup and lift-off.

Figure 2-4. M1037 Shelter Carrier with S-250/S-250E Shelter

CAUTION

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

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

a. Applicability. The following items in Table 2-5 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 2-5. Shelter Carrier, (Heavy HMMWV), With S-250/S-250E Shelter

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
S-250/S-250E	10,001	25K	60/10	CH-47	120
AN/TRC-170 Communication Shelter	9,240	15K	40/3	CH-53	130
TRQ-32, Intelligence and Electronic Warfare (IEW) System	9,700	10K	60/10	CH-47	120
Platoon Operations Center (POC), Intelligence and Electronic Warfare (IEW) System	9,700	10K	60/10	CH-47	120
Mobile Subscriber Equipment Contingency Communications Package/Light Forces Contingency Communications Package in S-250E	9,993	10K	60/10	CH-47	120
Mobile Subscriber Equipment Contingency Communications Package/Light Forces Contingency Communications Package in S-250	8,913	10K	60/10	CH-47	120
LOS (V1)	9,038	10K	60/10	CH-47	120
LOS (V2)	9,038	10K	60/10	CH-47	120
LOS (V3)	9,038	10K	60/10	CH-47	120
LOS (V4)	9,038	10K	60/10	CH-47	120
NODAL Support Vehicle	8,250	10K	60/10	CH-47	120

NOTE: All certified shelters in paragraph 2-5 (M1037) 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) with one additional apex fitting for the

sling set being used.

OR

(2) Multileg sling set (15,000-pound capacity for the CH-53E only) with one additional web ring.

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

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

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

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

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

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

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 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. 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.

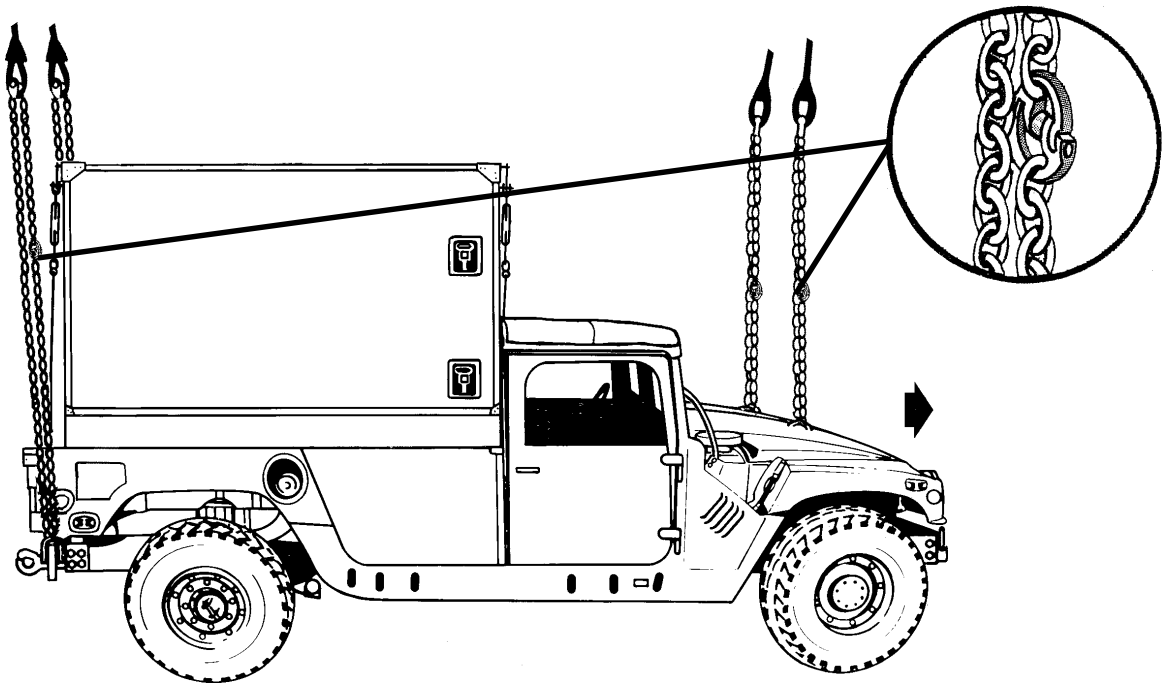
(g) Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.

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

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

(3) Hookup. The hookup team stands on top of the shelter. The static wand person discharges the static electricity with the static wand. The forward hookup person places apex fitting 1 onto the forward cargo hook. The aft hookup person places apex fitting 2 onto the aft 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. Connect 2 sling legs to apex fitting number 1. Position the apex fitting on top of the hood.

2. Loop the chain end of the sling legs through their respective lift provisions that protrudes through the hood. Place the correct link from Table 2-5 in the grab hook.

3. Connect 2 sling legs to apex fitting number 2. Position the apex fitting in the bed of the vehicle.

4. Loop the chain end through the lift shackle on the rear bumper located on the outer ends of the bumper. Place the correct link from Table 2-5 in the grab hook.

5. Wrap the rear slings with padding where they contact the shelter sides.

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 on top of the vehicle to prevent entanglement during hookup and lift-off.

Figure 2-5. M1097 Shelter Carrier with S-250/S-250E Shelter

CAUTION

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

2-7. M1097/M1097A2 Shelter Carrier (HMMWV) With Lightweight Multipurpose Shelter (LMS)

a. Applicability. The following items in Table 2-6 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 2-6. Lightweight Multipurpose Shelter (LMS)

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
High Mobility Downsized (HMD) Direct Air Support Central	8,420	15K	40/3	CH-53	120
Operations Central (OC) Group Firefinder AN/TPQ-36 (V) 8	8,620	10K	40/3	CH-47 CH-53	120 120
Integrated Meteorological Systems (IMETS), Block I & II	9,050	10K	40/3	CH-53	120
Enhanced Position Location Reporting System (EPLRS) Downsized Net Control Station (NCS-E(D))	10,000	15K	40/3	CH-53	120
Digital Group Multiplexer (DGM) AN/TRC-138C	9,020	10K	40/3	CH-47	120
High Mobility Digital Group Multiplexer Assemblage (HMDA) AN/TRC-173B, AN/TRC-174B, AN/TRC-175B	9,100	10K	40/3	CH-47	120
High Frequency Communications Central AN/TRC 120	8,765	15K	40/3	CH-53	150
Marine Expeditionary Force Intelligence Analysis System (IAS)	9,220	15K	40/3	CH-47	120
Spare Equipment and Maintenance Shelter AN/TSQ-190 (V) 1	9,220	10K	40/3	CH-47	120
Tactical Remote Sensor System (TRSS) Sensor Mobile Monitoring System (SMMS)	7,685	15K	40/3	CH-53	120
Meteorological Measuring Set AN/TMQ-41	7,770	15K 10K	40/3 40/3	CH-53 CH-47	110 110

Table 2-6. Lightweight Multipurpose Shelter (LMS) (Continued)

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Air Defense Communications Platform AN/MSQ-124	10,000	15K	40/3	CH-53	120
Forward Area Air Defense Command Control System AN/TSQ-183	7,561	10K	40/3	CH-47	90
Forward Area Air Defense Command Control System AN/TSQ-184	7,297	10K	40/3	CH-47	90
Mobile Radio Broadcasting Subsystem (MRBS)	9,746	10K	40/3	CH-47	120
Mobile Radio (MR) Cargo Vehicle	9,907	10K	40/3	CH-47	120
Mobile Television Broadcasting Subsystem (MTBS)	9,295	10K	40/3	CH-47	120
Mobile Television (MT) Cargo Vehicle	9,637	10K	40/3	CH-47	120
Mission Vehicle for the Common Ground Station, Joint Surveillance Target Attack Radar (JSTAR) System	9,530	10K	40/3	CH-47	120
Marine Expeditionary Force Intelligence Analysis System S1	9,194	15K	40/3	CH-53	100
Marine Expeditionary Force Intelligence Analysis System S2	9,126	15K	40/3	CH-53	100
Tactical Control and Analysis Center	9,300	15K	40/3	CH-53	100
Advanced Field Artillery Tactical Data Systems (AFATADS), System #1, RWS with a CHS-2 AN/GYG-3(V)1	8,882	10K	40/3	CH-47	100

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

(1) Sling set (10,000-pound capacity) with one additional apex fitting.

(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) with one additional web ring.

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

(b) Additional coupling links from the multileg sling set (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.

(7) 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-, 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 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.

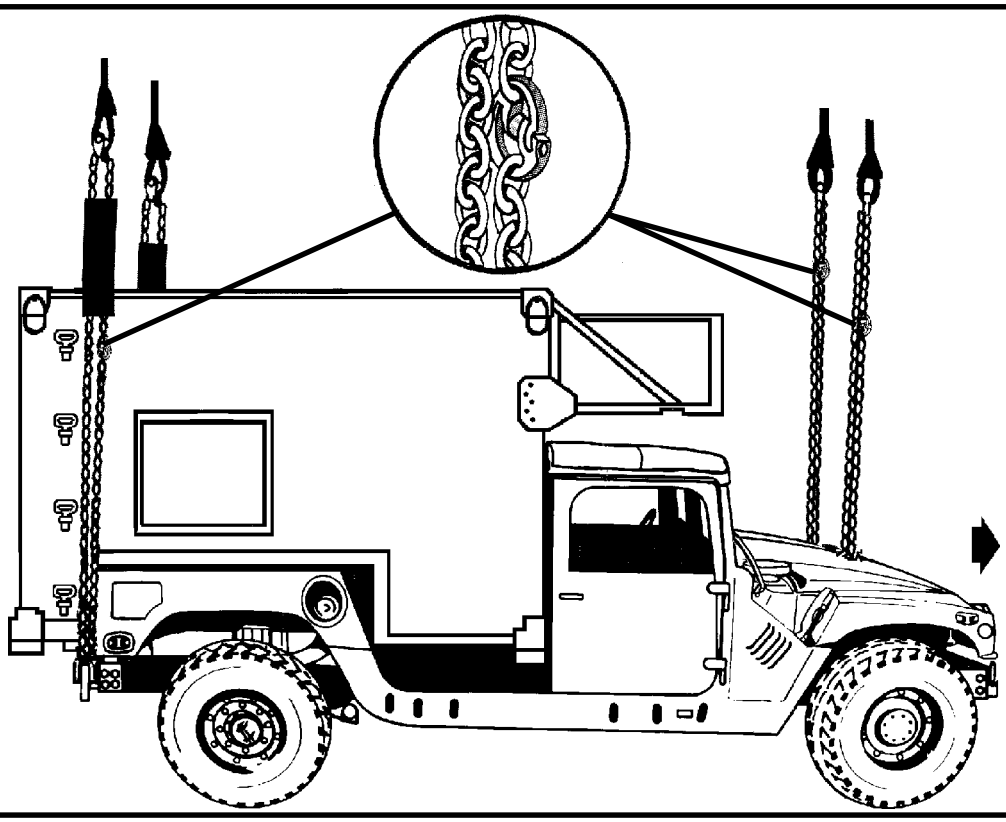
(k) Install the lift provisions on the outer ends of the rear bumper.

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

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

(3) Hookup. The hookup team stands on top of the shelter. The static wand person discharges the static electricity with the static wand. The forward hookup person places apex fitting 1 onto the forward cargo hook. The aft hookup person places apex fitting 2 onto the aft 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. Connect 2 sling legs to apex fitting number 1. Position the apex fitting on top of the shelter.

2. Loop the chain end of the sling legs through their respective lift provisions that protrudes through the hood. Place the correct link from Table 2-6 in the grab hook.

3. Connect 2 sling legs to apex fitting number 2. Position the apex fitting on top of the shelter.

4. Loop the chain end of the sling legs through their respective lift provisions located on the outer ends of the rear bumper. Place the correct link from Table 2-6 in the grab hook.

5. Wrap the rear slings with padding where they contact the shelter sides.

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 on top of the vehicle to prevent entanglement during hookup and lift-off.

Figure 2-6. LMS Shelter Mounted on the M1097 /M1097A2

CAUTION

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

2-7.1. M1113 Truck, Utility, Expanded Capacity (HMMWV) With Lightweight Multipurpose Shelter (LMS)

a. Applicability. The following item in Table 2-6.1 is certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 2-6.1. M1113 HMMWV with Lightweight Multipurpose Shelter (LMS)

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
AN/TTC-56 Single Shelter Switch (SSS)	11,500	25K	5/32	CH-47	120

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

(1) Sling set (25,000-pound capacity) with one additional apex fitting.

(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.

(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 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.

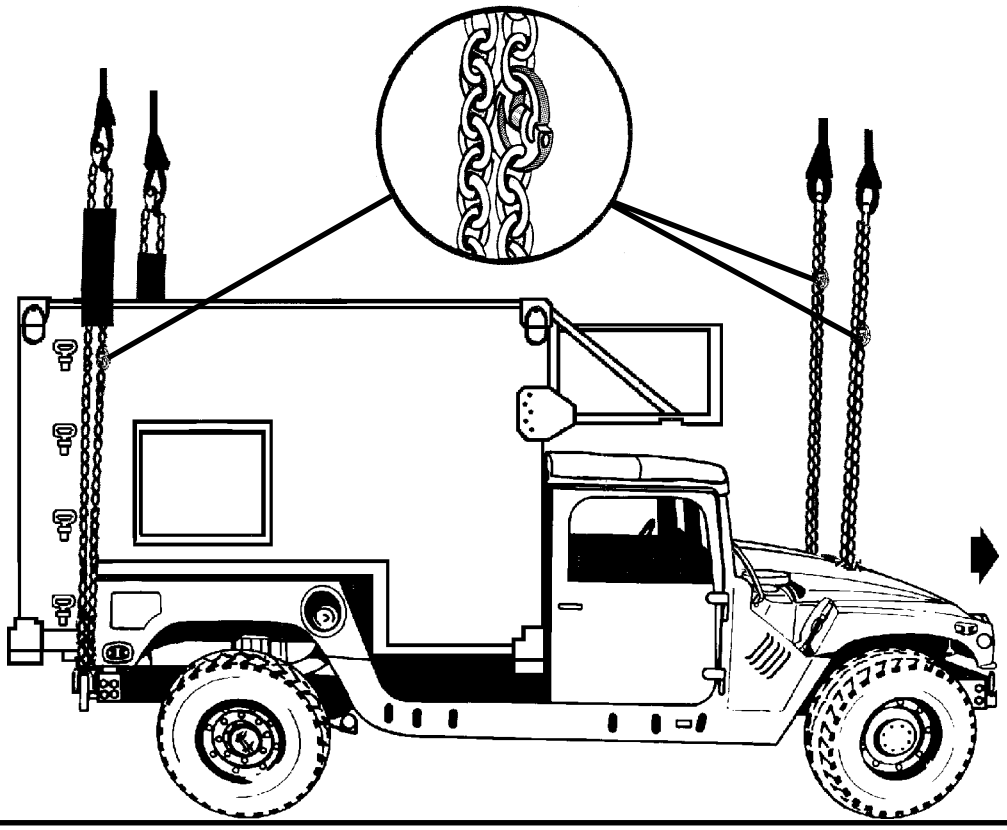
(k) Install the lift provisions on the outer ends of the rear bumper.

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

(2) Rigging. Rig the load according to the steps in Figure 2-6.1.

(3) Hookup. The hookup team stands on top of the shelter. The static wand person discharges the static electricity with the static wand. The forward hookup person places apex fitting 1 onto the forward cargo hook. The aft hookup person places apex fitting 2 onto the aft 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. Connect 2 sling legs to apex fitting number 1. Position the apex fitting on top of the shelter.

2. Loop the chain end of the sling legs through their respective lift provisions that protrudes through the hood. Place the correct link from Table 2-6.1 in the grab hook.

3. Connect 2 sling legs to apex fitting number 2. Position the apex fitting on top of the shelter.

4. Loop the chain end of the sling legs through their respective lift provisions located on the outer ends of the rear bumper. Place the correct link from Table 2-6.1 in the grab hook.

5. Wrap the rear slings with padding where they contact the shelter sides.

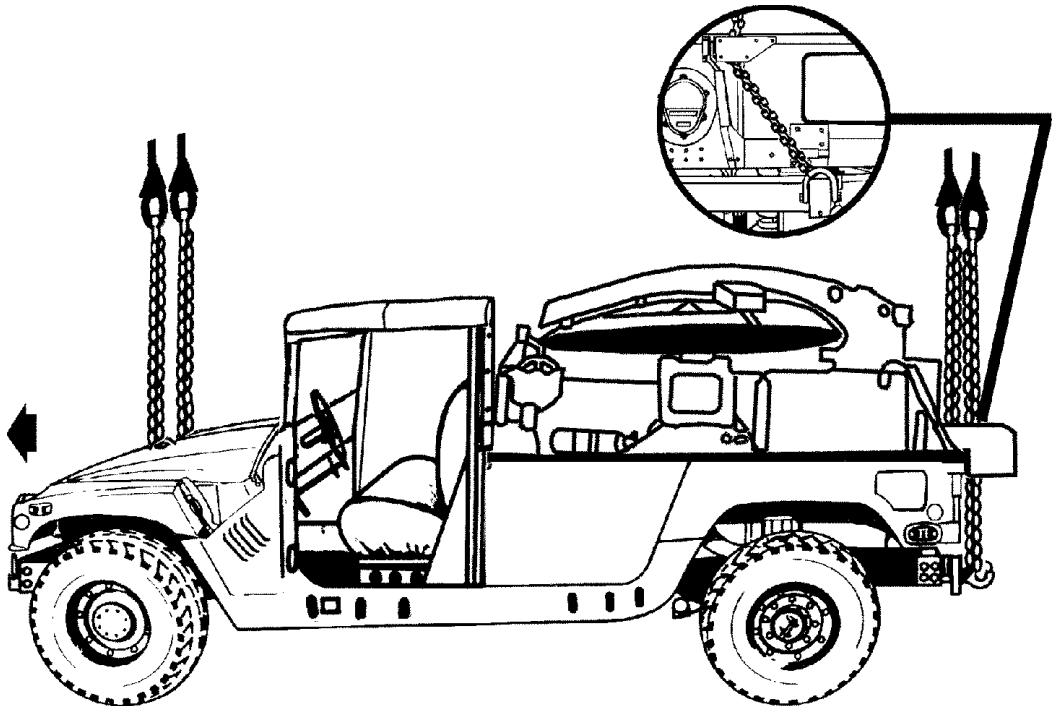
6. Secure all excess chain with tape or Type III nylon cord.

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

Figure 2-6.1. 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.



RIGGING STEPS

1. Connect 2 sling legs to apex fitting number 1. Position the apex fitting on the hood of the vehicle.

2. Loop the chain end of the sling legs through their respective lift provisions that protrudes through the hood. Place the correct link from Table 2-18 in the grab hook.

3. Connect 2 sling legs to apex fitting number 2. Position the apex fitting on top of the pallet.

4. Loop the chain end of the sling legs through their respective eyelet openings in the upper corner of the tailgate. Loop the chain end through the lift shackle on the rear bumper and thread back through the eyelet opening in the tailgate. Place the correct link from Table 2-18 in the grab hook.

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

6. 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.

Figure 2-17. M1097A2 (H-HMMWV) With the Secure Mobile Anti-Jam Tactical Terminal (SMART-T)

2-20. Dual HMMWVs, Side by Side (Shotgun Method)

a. Applicability. The following items in Table 2-19 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 2-19. Dual HMMWVs, Side by Side (Shotgun Method)

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Cargo Troop Carrier, M998/M1038	8,400	10K 15K	Listed in Rigging Steps	CH-47 CH-53	125
Cargo Troop Carrier, M998A1/M1038A1	7,880	10K 15K	Listed in Rigging Steps	CH-47 CH-53	125
Armament Carrier, M1025/M1026/M1025A1/ M1026A1/M1043/M1044	8,400	10K 15K	Listed in Rigging Steps	CH-47 CH-53	125
Armament Carrier, M1025A2	10,000	10K 15K	Listed in Rigging Steps	CH-47 CH-53	125
Armament Carrier, M1043A1/M1044A1	8,580	10K 15K	Listed in Rigging Steps	CH-47 CH-53	125
Armament Carrier, M1043A2	10,000	10K 15K	Listed in Rigging Steps	CH-47 CH-53	125
Tow Missile Carrier, M966/M966A1/M1036/M1045/ M1046	8,400	10K 15K	Listed in Rigging Steps	CH-47 CH-53	125
Tow Missile Carrier, M1045A1/M1046A1	8,580	10K 15K	Listed in Rigging Steps	CH-47 CH-53	125
Tow Missile Carrier, M1045A2	10,000	10K 15K	Listed in Rigging Steps	CH-47 CH-53	125
M1037 Modified	9,400	10K 15K	Listed in Rigging Steps	CH-47 Ch-53	125
Shelter Carrier, M1097/M1097A1/M1097A2	10,000	10K 15K	Listed in Rigging Steps	CH-47 CH-53	125
M1123 HMMWV	10,000	10K 15K	Listed in Rigging Steps	CH-47 CH-53	125

WARNING
ONLY HMMWVs WITH THE 3/4-INCH FRONT LIFT PROVISIONS ARE CERTIFIED FOR SLING LOADING IN THE SIDE BY SIDE (SHOTGUN METHOD).

WARNING

HMMWVs WITH A MANUFACTURER'S SERIAL NUMBER OF LESS THAN 100000 ARE EQUIPPED WITH THE 5/8-INCH FRONT LIFT PROVISIONS BY THE MANUFACTURER BUT CAN BE CHANGED TO THE 3/4-INCH FRONT LIFT PROVISIONS BY QUALIFIED MAINTENANCE PERSONNEL. HMMWVs WITH A MANUFACTURER'S SERIAL NUMBER OF 100000 OR GREATER ARE EQUIPPED WITH THE 3/4-INCH FRONT LIFT PROVISIONS BY THE MANUFACTURER. PRIOR TO SLING LOADING HMMWVs IN THE SIDE BY SIDE (SHOTGUN) METHOD, VERIFY THAT THE HMMWVs ARE EQUIPPED WITH 3/4-INCH FRONT LIFT PROVISIONS BY CHECKING THE MANUFACTURER'S SERIAL NUMBER OR MEASURING THE DIAMETER OF THE FRONT LIFT PROVISION. THE HMMWV MANUFACTURER'S SERIAL NUMBER IS LOCATED ON A DATA PLATE ON THE LOWER RIGHT CORNER OF THE DRIVER'S SIDE DOOR OPENING.

CAUTION

DO NOT sling load (Shotgun Method) any HMMWV shelter carrier (M1097, M1037, etc.) with the shelter installed in the bed of the truck. Ensure all equipment in the bed of the truck is properly secured and does not interfer with the routing of the sling legs.

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

(1) Sling set (10,000-pound capacity) (2 each).

OR

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

(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. Four persons can prepare and rig this load in 15 minutes.

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

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

(a) Fold mirrors forward in front of the windshield for added protection and tie together with Type III nylon cord. Remove the canvas bedcovers from the vehicles. Fold and secure the canvas over the windshields with Type III nylon cord. Remove the doors and secure inside the vehicle.

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

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

(d) Secure the vehicle camouflage net (in the bag) to each vehicle. Attach one camouflage net to the forward door post of one vehicle and the other camouflage net to the hard part of the body covering the fuel tank of the other vehicle.

(e) Position the vehicles, as close as possible, next

to each other. Ensure both vehicles are facing in the same direction.

(f) Engage the vehicle parking brakes and put the transmissions in neutral.

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

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

(3) Hookup. The hookup teams stand in the cargo bed and on the hood of the vehicles. The static wand person discharges the static electricity with the static wand. The forward hookup person places apex fitting 1 onto the forward cargo hook. The aft hookup person places apex fitting 2 onto the aft cargo hook. The hookup team then carefully dismounts the vehicle and remains close to theload as the helicopter removes slack 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).

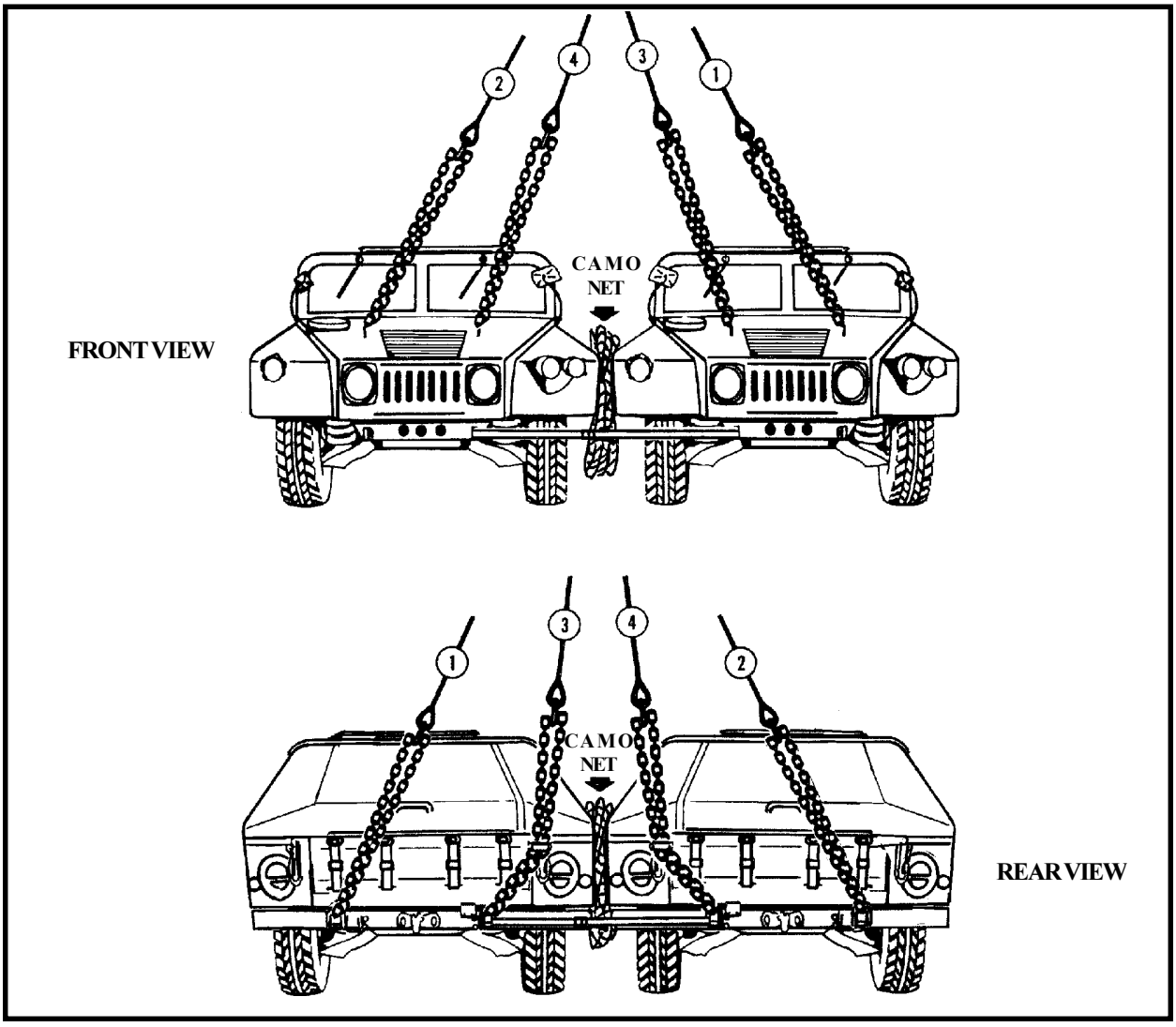


Figure 2-18. Dual HMMWVs, Side by Side (Shotgun Method)

RIGGING STEPS

1. Position one sling set on the hood of one of the vehicles.

2. Loop the chain end of the outside sling legs through their respective outside lift provisions that protrude through the hoods of the vehicles. Place link 30 in the grab hooks.

3. Loop the chain end of the inside sling legs through their respective inside lift provisions that protrude through the hoods of the vehicles. Place link 50 in the grab hooks.

4. Position the other sling set in the bed or on the roof of one of the vehicles.

5. Loop the chain end of the outside sling legs through their respective lift shackle on the outside end of the rear bumper. Place link 3 in the grab hooks.

CAUTION
DO NOT ROUTE THE OUTSIDE SLING LEGS THROUGH THE TAILGATE SLING GUIDES.

6. Route the chain ends of the inside sling legs through their respective inside tailgate guides. Loop the chain ends through their respective lift provisions located on the inside of the rear bumpers and back through the tailgate guides. Place link 7 in the grab hooks.

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

8. 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.

9. Route a CGU-1/B cargo tiedown strap from the front inside lift shackle of one vehicle, through the front inside lift shackle of the other vehicle and connect the hooks together. Tighten the strap.

10. Route a CGU-1/B cargo tiedown strap from the rear inside lift shackle of one vehicle, through the rear inside lift shackle of the other vehicle and connect the hooks together. Ensure the strap is positioned below the sling leg chains. Tighten the strap.

Figure 2-18. Dual HMMWVs, Side by Side (Shotgun Method) (continued)

2-21. Medium Tactical Vehicles M1083/M1083A1/M1084/M1085/M1086/M1090/M1090A1/ M1093/M1094

a. Applicability. The following items in Table 2-20 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 2-20. Medium Tactical Vehicles

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Medium Tactical Vehicle, Cargo, M1083	23,200	25K	30/20	CH-47	110
Medium Tactical Vehicle, Cargo, M1083A1	23,200	25K	30/20	CH-47	110
Medium Tactical Vehicle, Cargo, M1083	28,000	40K	24/16	CH-53	110
Medium Tactical Vehicle, Cargo, M1083A1	28,000	40K	24/16	CH-53	110
Medium Tactical Vehicle, Cargo, with Material Handling Equipment, M1084	28,000	40K	19/16	CH-53	110
Medium Tactical Vehicle, Cargo, Longbed, M1085	28,000	40K	24/16	CH-53	110
Medium Tactical Vehicle, Cargo, Longbed, with Material Handling Equipment, M1086	28,000	40K	17/16	CH-53	110
Medium Tactical Vehicle, Dump Truck, M1090	22,100	25K	30/3	CH-47	110
Medium Tactical Vehicle, Dump Truck, M1090A1	23,200	25K	30/3	CH-47	110
Medium Tactical Vehicle, Dump Truck, M1090	22,100	40K	3/10	CH-53	110
Medium Tactical Vehicle, Dump Truck, M1090A1	24,817	40K	3/10	CH-53	110
Medium Tactical Vehicle, Cargo, Airdrop Variant, M1093	23,200	25K	30/20	CH-47	110
Medium Tactical Vehicle, Dump Truck, Airdrop Variant, M1094	22,770	25K	30/3	CH-47	110

WARNING
EXCEEDING THE RECOMMENDED AIRSPEED LISTED IN TABLE 2-20 MAY RESULT IN DAMAGE TO THE WINDSHIELDS OF THE VEHICLES.

RIGGING STEPS	
1. Connect 2 sling legs to apex fitting number 1. Position the apex fitting on the forward end of the bed.	sling leg using one coupling link. Position the apex fitting on the rear of the cargo bed.
2. Loop the chain end of the sling legs through their respective lift provisions located behind the vehicle cab. Place the correct link from Table 2-20 in the grab hook and secure all excess chain with tape or Type III nylon cord.	**5.** Route the left and right chains through their respective rear load spreader and loop the chain end of the sling legs through their respective lift ring, located on the chassis between the tires. Route the chains back through the rear load spreaders and place the correct link from Table 2-20 in the grab hook. Secure all excess chain with tape or Type III nylon cord.
3. Cluster and tie or tape (breakaway technique) the sling legs on top of the spare tire to prevent entanglement during hookup and lift-off.	**6.** Cluster and tie or tape (breakaway technique) the sling legs together to prevent entanglement during hookup and lift-off.
4. Connect 2 sling legs to apex fitting number 2. Attach one extra chain length to each existing chain on each	

Figure 2-19. Medium Tactical Vehicles (continued)

2-21.1 Light Medium Tactical Vehicles M1078/M1078A1/M1079A1/M1081

a. Applicability. The following items in Table 2-20.1 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 2-20.1. Light Medium Tactical Vehicles

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Light Medium Tactical Vehicle, Cargo, M1078	23,200	25K	30/20	CH-47	110
Light Medium Tactical Vehicle, Cargo, M1078A1	23,200	25K	30/20	CH-47	110
Light Medium Tactical Vehicle, Shopvan, M1079A1	23,200	25K	30/20	CH-47	110
Light Medium Tactical Vehicle, Cargo, M1081	23,000	25K	30/20	CH-47	110

WARNING
EXCEEDING THE RECOMMENDED AIRSPEED LISTED IN TABLE 2-20.1 MAY RESULT IN DAMAGE TO THE WINDSHIELDS OF THE VEHICLES.

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

(1) Sling set (25,000-pound capacity) with one additional apex fitting.

(a) Chain length, part number 38850-00053-102, from a 25,000-pound capacity sling set (6 each).

(b) Coupling link, part number 664241, from a 25,000-pound sling set (6 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 the cab sides up and fasten the roof to the cab if the cab is in the stowed/airdrop position (airdrop variant only).

(b) Extend the front lift provisions and the rear load spreaders and lock in place using the attached pin and safety pin.

(c) Roll up the windows in the cab.

(d) Tape all windows, lights, and reflectors.

(e) Remove the air intake cowling by loosening the the clamp and twisting off. Place the cowling on the floor board of the passenger's side.

(f) Ensure the front wheels are pointed straight ahead. Tie down the steering wheel using the driver's side seat belt.

(g) Fold the side view mirrors back and secure with tape or Type III nylon cord.

(h) Safety the cargo bed walls securing clips in the secured position with tape (only if the cargo bed walls are not stowed in the racks under the bed).

(i) Stow the mud flaps by bending and hooking on the mud flap hooks.

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

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

(l) Tape the filler pipes behind the cab on the driver's side to prevent the sling legs from becoming entangled.

(m) Secure any cargo in the bed of the vehicle.

(2) Rigging. Rig the load according to the steps in Figure 2-19.1.

(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 forward hookup person places apex fitting 1 onto the forward cargo hook. The aft hookup person places apex fitting 2 onto the aft 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).

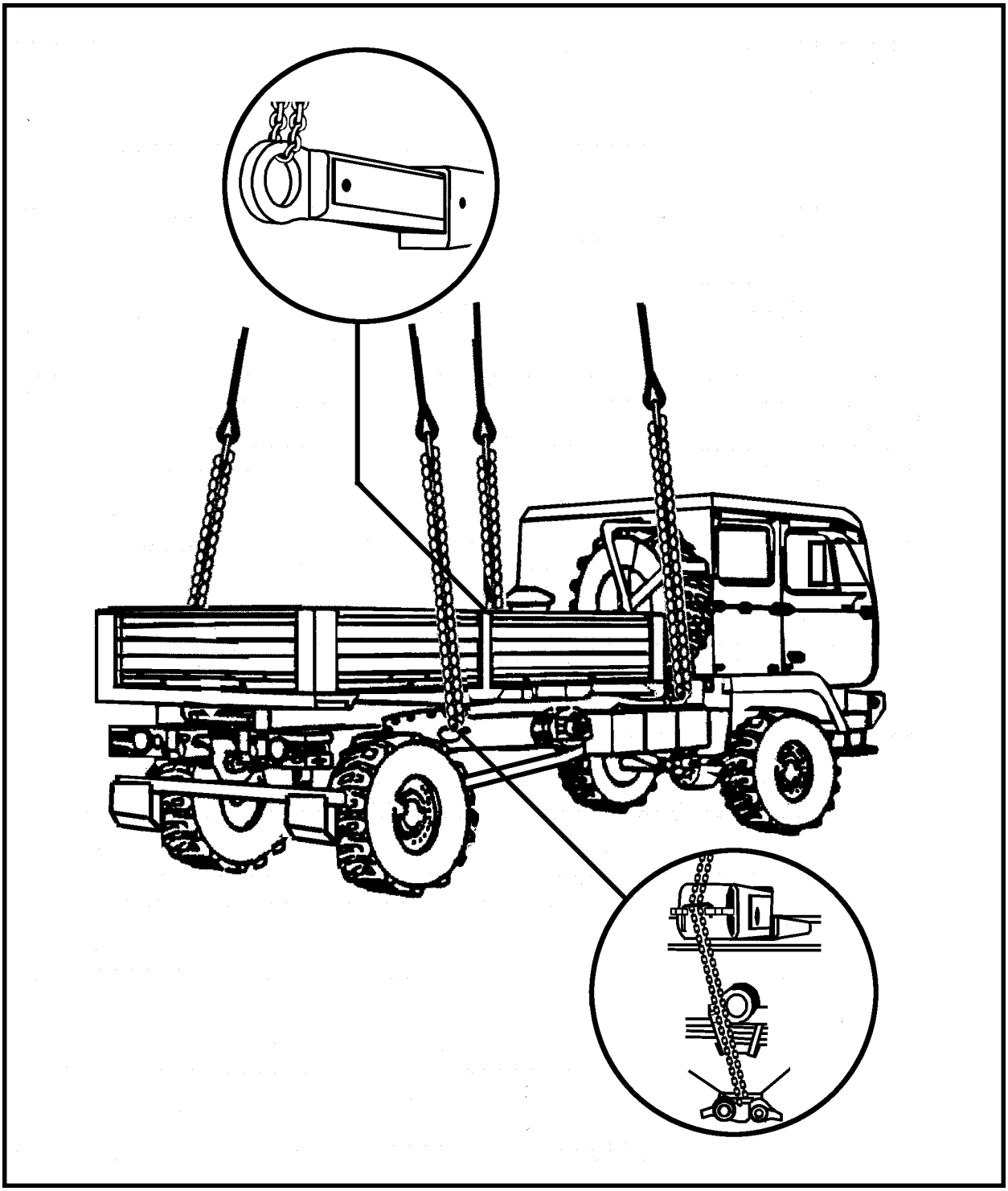


Figure 2-19.1. Light Medium Tactical Vehicles

RIGGING STEPS

1. Connect 2 sling legs to apex fitting number 1. Attach one extra chain length to each existing chain on each sling leg using one coupling link. Position the apex fitting on the forward end of the bed.

2. Loop the chain end of the sling legs through their respective lift provisions located behind the vehicle cab. Place the correct link from Table 2-20.1 in the grab hook and secure all excess chain with tape or Type III nylon cord.

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

4. Connect 2 sling legs to apex fitting number 2. Attach two extra chain lengths to each existing chain on each sling leg using one coupling link for each additional chain length added. Position the apex fitting on the rear of the cargo bed.

5. Route the left and right chains through their respective rear load spreader and loop the chain end of the sling legs through their respective lift ring, located on the chassis near the rear axle. Route the chains back through the rear load spreaders and place the correct link from Table 2-20.1 in the grab hook. Secure all excess chain with tape or Type III nylon cord.

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

Figure 2-19.1. Light Medium Tactical Vehicles (continued)

2-22. Medium Tactical Vehicle, Tractor, M1088/M1088A1

a. Applicability. The following items in Table 2-21 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 2-21. Medium Tactical Vehicles, Tractor, M1088/M1088A1

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Medium Tactical Vehicle, Tractor, M1088	19,740	25K	40/3	CH-47	110
Medium Tactical Vehicle, Tractor, M1088A1	19,740	25K	40/3	CH-47	110
Medium Tactical Vehicle, Tractor, M1088	19,740	40K	3/20	CH-53	110
Medium Tactical Vehicle, Tractor, M1088A1	19,740	40K	3/20	CH-53	110

WARNING
EXCEEDING THE RECOMMENDED AIRSPEED LISTED IN TABLE 2-21 MAY RESULT IN DAMAGE TO THE WINDSHIELDS OF THE VEHICLES.

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

(1) Sling set (25,000-pound capacity) with one additional apex fitting.

(a) Chain length, part number 38850-00053-102, from a 25,000-pound capacity sling set (2 each).

(b) Coupling link, part number 664241, from a 25,000-pound sling set (2 each).

OR

(2) Sling set (40,000-pound capacity) with one additional apex fitting.

(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.

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 front lift provisions and lock in place using the attached pin and safety pin.

(b) Roll up the windows in the cab.

(c) Tape all windows, lights, and reflectors.

(d) Remove the air intake cowling by loosening the the clamp and twisting off. Place the cowling on the floor board of the passenger's side.

(e) Ensure the front wheels are pointed straight ahead. Tie down the steering wheel using the driver's side seat belt.

(f) Fold the side view mirrors back and secure with tape or Type III nylon cord

.

(g) Stow the mud flaps by bending and hooking on the mud flap hooks.

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

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

(j) Tape the filler pipes behind the cab on the driver's side to prevent the sling legs from becoming entangled.

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

(3) Hookup. The hookup team stands on the rear of the vehicle. The static wand person discharges the static electricity with the static wand. The forward hookup person places apex fitting 1 onto the forward cargo hook. The aft hookup person places apex fitting 2 onto the aft 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).

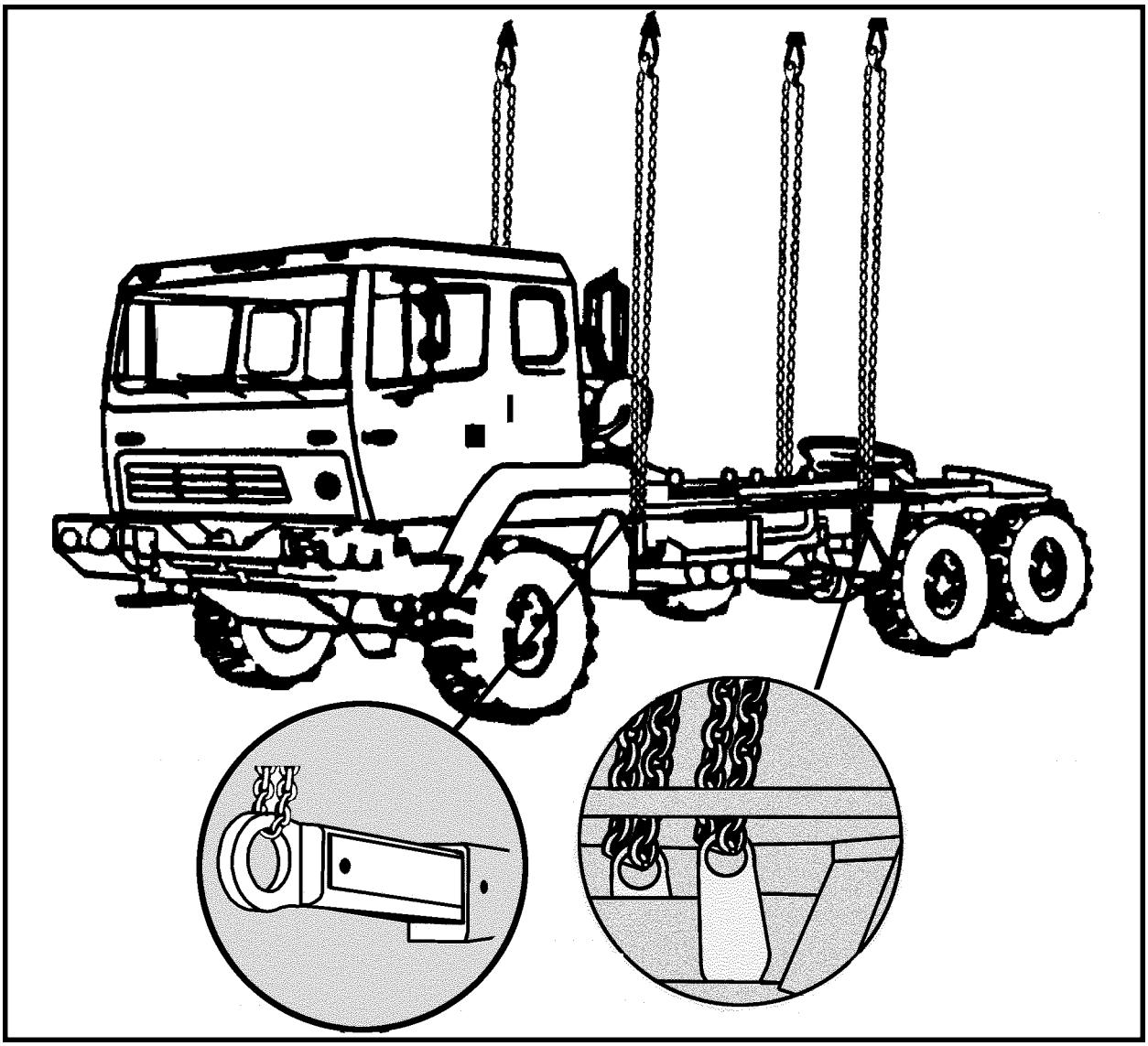


Figure 2-20. Medium Tactical Vehicles, Tractor,M1088/M1088A1

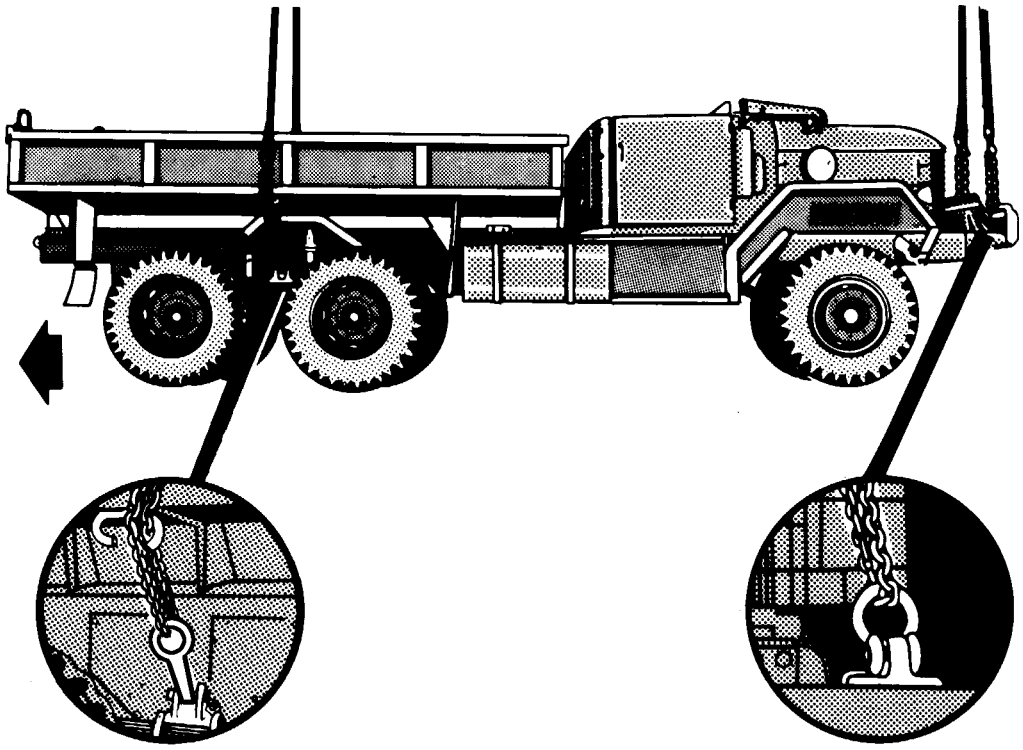
RIGGING STEPS
1. Connect 2 sling legs to apex fitting number 1. Attach one extra chain length to each existing chain on each sling leg using one coupling link (for 25,000-pound capacity sling sets only). Position the apex fitting on the forward end of the bed. **2.** Loop the chain end of the sling legs through their respective lift provisions located behind the vehicle cab. Place the correct link from Table 2-21 in the grab hook and secure all excess chain with tape or Type III nylon cord. **3.** Cluster and tie or tape (breakaway technique) the sling legs on top of the spare tire to prevent entanglement during hookup and lift-off. **4.** Connect 2 sling legs to apex fitting number 2. Position the apex fitting on the rear of the cargo deck. **5.** Loop the chain end of the sling legs through their respective lift ring, located forward of the 5th wheel. Place the correct link from Table 2-21 in the grab hook. Secure all excess chain with tape or Type III nylon cord. **6.** Cluster and tie or tape (breakaway technique) the sling legs together to prevent entanglement during hookup and lift-off.

Figure 2-20. Medium Tactical Vehicles, Tractor M1088/M1088A1 (continued)

NOTE: This vehicle flies aft end forward.

(3) Hookup. Two hookup teams are used for this load. The static discharge person discharges the static electricity. The forward hookup person stands in the truck bed and places apex fitting 1 onto the forward cargo hook. The aft hookup person stands on the passenger seat and places apex fitting 2 onto the aft cargo hook. The hookup teams then carefully dismount the load and remain close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup teams quickly exit the area underneath the helicopter to the designated rendezvous point.

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



RIGGING STEPS

1. Place two sling legs on apex fitting number 1. Position apex fitting number 1 in the bed of the truck.

2. Loop the chain end of the left and right sling legs through their respective extended lift provision located between the rear wheels. Place the correct link from Table 2-29 in the grab hook.

3. Pull each grab hook up against the side of the truck and tie the chain in the chain guide bracket. Pull both grab hooks together over top of the bed and tie together with 1/4-inch cotton webbing.

3. Place two sling legs on apex fitting number 2. Position apex fitting number 2 on the hood.

4. Loop the chain end of the left and right sling legs through their respective lift provision located on the front bumper. Place the correct link from Table 2-29 in the grab hook. Secure the excess chain with tape or Type III nylon cord.

6. Raise the apex fittings above the load. 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. M35A3 2 1/2-Ton Cargo Truck

2-31. M1097A2 (HMMWV) Soft Top Truck With Advanced Field Artillery Tactical Data Systems (AFATADS)

a. Applicability. The following items in Table 2-30 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 2-30. M1097A2 (HMMWV) Soft Top Truck With Advanced Field Artillery Tactical Data Systems (AFATADS)

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
System 2: CHS-2 AN/GYG-3(V)1, with SINGARS AN/VRC-90, AN/VRC-92 and EPLRS installed in the bed. AN/VRC-92 installed in cab.	8,103	10K	50/3	CH-47	100
System 3: CHS-2 AN/GYG-3(V)3, with SINGARS AN/VRC-90, AN/VRC-92 and EPLRS installed in the bed. AN/VRC-92 installed in cab.	8,366	10K	50/3	CH-47	100
System 4: 2 each AN/GYK-37(V)2, with SINGARS AN/VRC-89, AN/VRC-92 and EPLRS.	7,790	10K	50/3	CH-47	100

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

(1) Sling set (10,000-pound capacity) with one additional apex fitting.

(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) Padding, cellulose.

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) 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 and cargo inside the vehicle with tape, nylon cord, or lashings. Remove and secure the doors in the front of the vehicle.

(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.

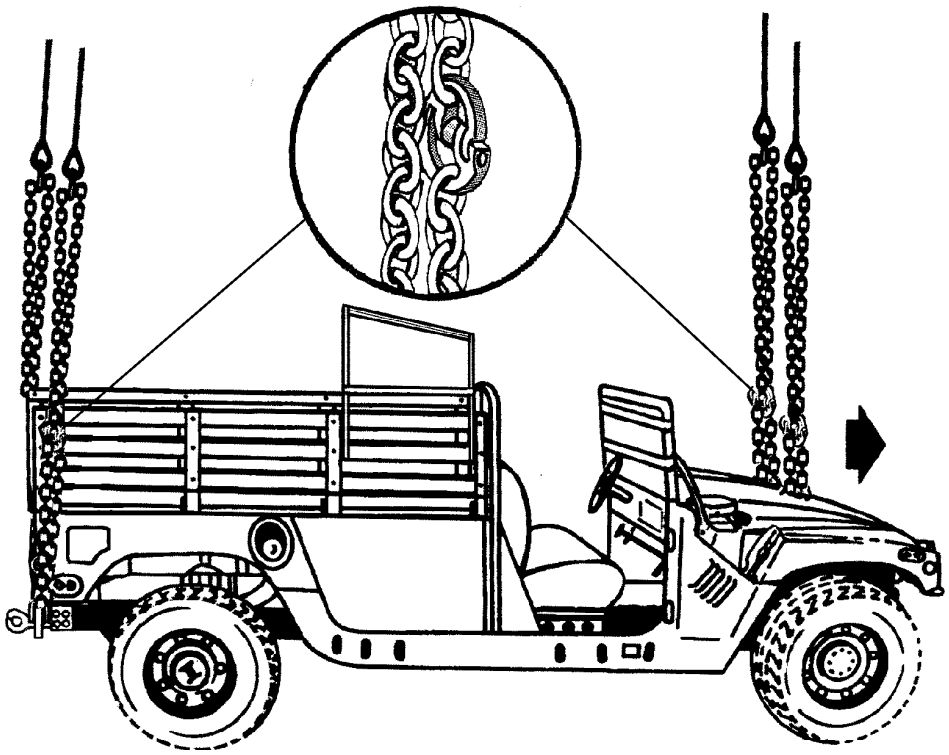
(h) Install the lift provisions on the outer ends of the rear bumper.

(i) Extend the sling leg chains by connecting one additional chain length to each chain using the coupling links.

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

(3) Hookup. The hookup team stands on top of the vehicle. The static wand person discharges the static electricity with the static wand. The forward hookup person places apex fitting 1 onto the forward cargo hook. The aft hookup person places apex fitting 2 onto the aft 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. Connect 2 sling legs to apex fitting number 1. Position the apex fitting on top of the shelter.

2. Loop the chain end of the sling legs through their respective lift provisions that protrudes through the hood. Place the correct link from Table 2-30 in the grab hook.

3. Connect 2 sling legs to apex fitting number 2. Position the apex fitting on top of the shelter.

4. Loop the chain end of the sling legs through their respective lift provisions located on the outer ends of the rear bumper. Place the correct link from Table 2-30 in the grab hook.

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

6. 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.

Figure 2-29. M1097A2 (HMMWV) Soft Top Truck With Advanced Field Artillery Tactical Data Systems (AFATADS)

CAUTION

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

2-32. M1037 (HMMWV) With Compressed Air-Foam System, Mobile (CAFSM)

a. Applicability. The following item in Table 2-31 is certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

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

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Compressed Air-Foam System, Mobile	6,400 (EMPTY)	15K	40/3	CH-53	130

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 for the CH-53 only) with one additional web ring.

(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.

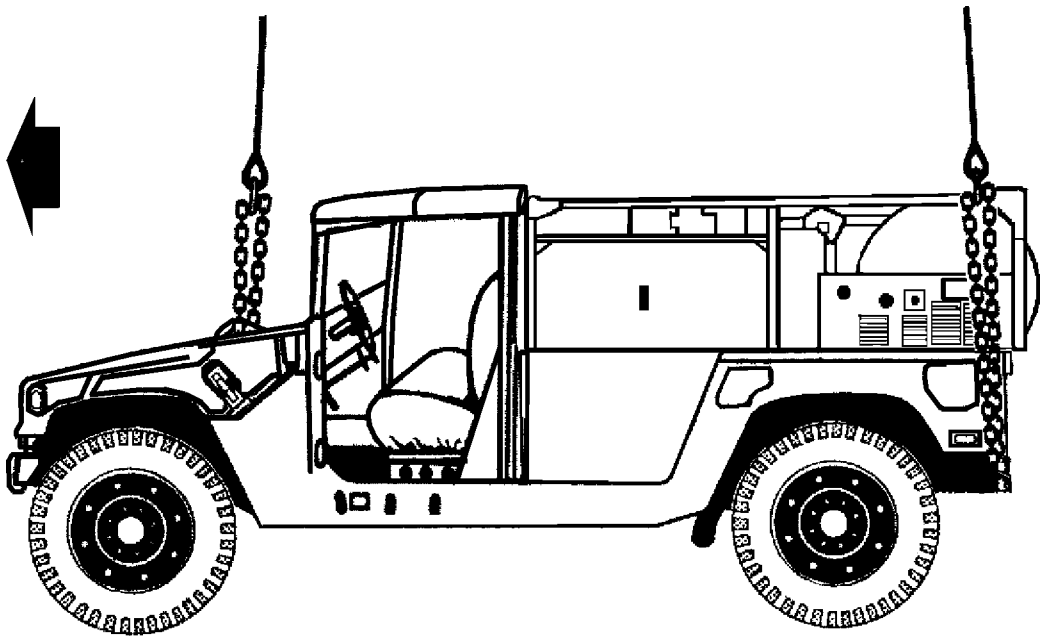
(f) Ensure the front wheels are pointed straight ahead. Tie down the steering wheel, using the securing device attached under the dashboard.

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

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

(3) Hookup. The hookup team stands on top of the vehicle. The static wand person discharges the static electricity with the static wand. The forward hookup person places apex fitting 1 onto the forward cargo hook. The aft hookup person places apex fitting 2 onto the aft 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. Connect 2 sling legs to apex fitting number 1. Position the apex fitting on the hood of the vehicle.

2. Loop the chain end of the sling legs through their respective lift provisions that protrudes through the hood. Place the correct link from Table 2-31 in the grab hook.

3. Connect 2 sling legs to apex fitting number 2. Position the apex fitting in the cargo bed of the vehicle.

4. Loop the chain end of the sling legs through their respective lift shackle on the outside end of the rear bumper. Place the correct link from Table 2-31 in the grab hook.

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

6. 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.

Figure 2-30. 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.

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

a. Applicability. The following item in Table 2-32 is certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

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

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Interim Fast Attack Vehicle Truck, Long Wheel Base	5,720	15K	40/3	CH-53	120

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

(1) Sling set (15,000-pound capacity for the CH-53 only) with one additional web ring.

(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.

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 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.

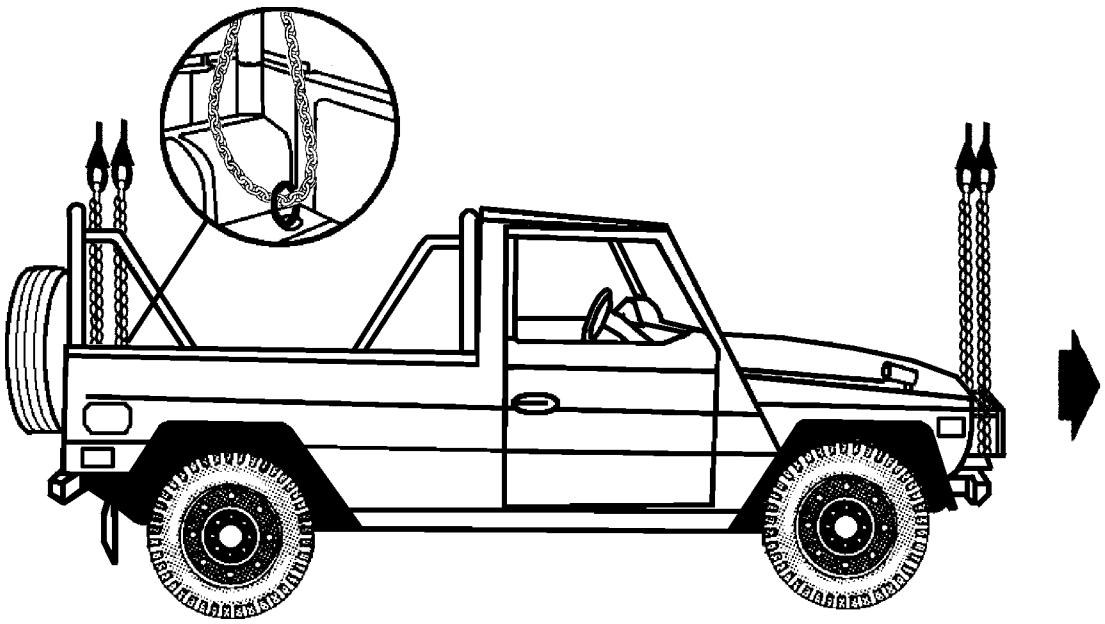
(e) Ensure the front wheels are pointed straight ahead. Tie down the steering wheel using Type III nylon cord.

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

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

(3) Hookup. The hookup team stands on the vehicle. The static wand person discharges the static electricity with the static wand. The forward hookup person places apex fitting 1 onto the forward cargo hook. The aft hookup person places apex fitting 2 onto the aft 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. Connect 2 sling legs to web ring number 1. Position the apex fitting on the hood of the vehicle.

2. Loop the chain end of the sling legs through their respective lift provisions located on the front bumper of the vehicle. Place the correct link from Table 2-32 in the grab hook.

3. Connect 2 sling legs to web ring number 2. Position the apex fitting in the cargo bed of the vehicle.

4. Loop the chain end of the sling legs through their respective lift provision located in the rear corners of the cargo bed. Place the correct link from Table 2-32 in the grab hook.

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

6. 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.

Figure 2-31. Interim Fast Attack Vehicle (IFAV) Truck, Long Wheel Base

2-34. Dual Interim Fast Attack Vehicle (IFAV) Trucks, Long Wheel Base, Side by Side (Shotgun Method)

a. Applicability. The following item in Table 2-33 is certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 2-33. Dual Interim Fast Attack Vehicle (IFAV) Trucks, Long Wheel Base, Side by Side (Shotgun Method)

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Interim Fast Attack Vehicle Truck, Long Wheel Base	11,440	15K	Listed in Rigging Steps	CH-53	120

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

(1) Sling set (15,000-pound capacity (2 each).

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

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

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

(5) Padding, cellulose.

(6) Strap, tiedown, cargo, CGU-1/B (3 each).

c. Personnel. Three 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 all canvas covers.

(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 Type III nylon cord.

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

(g) Secure the vehicle camouflage net (in the bag) to each vehicle. Attach one net to the forward roadside of the right vehicle and the other to the rear curbside of the left vehicle.

(h) Position the vehicles as close together as possible and ensure the vehicles are facing in the same direction. Route a CGU-1/B cargo tiedown strap through the inboard tiedown provision located below the front bumper of each vehicle. Connect the hooks together and tighten the straps.

(i) Route a CGU-1/B cargo tiedown stap through the pintles of both vehicles and connect the hooks together.

Tighten the strap. Route the second CGU-1/B cargo tiedown strap around the inboard roll bars located directly behind the front seat and connect the hooks together. Tighten the straps.

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

(3) Hookup. The hookup team stands on the vehicle. The static wand person discharges the static electricity with the static wand. The forward hookup person places apex fitting 1 onto the forward cargo hook. The aft hookup person places apex fitting 2 onto the aft 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).

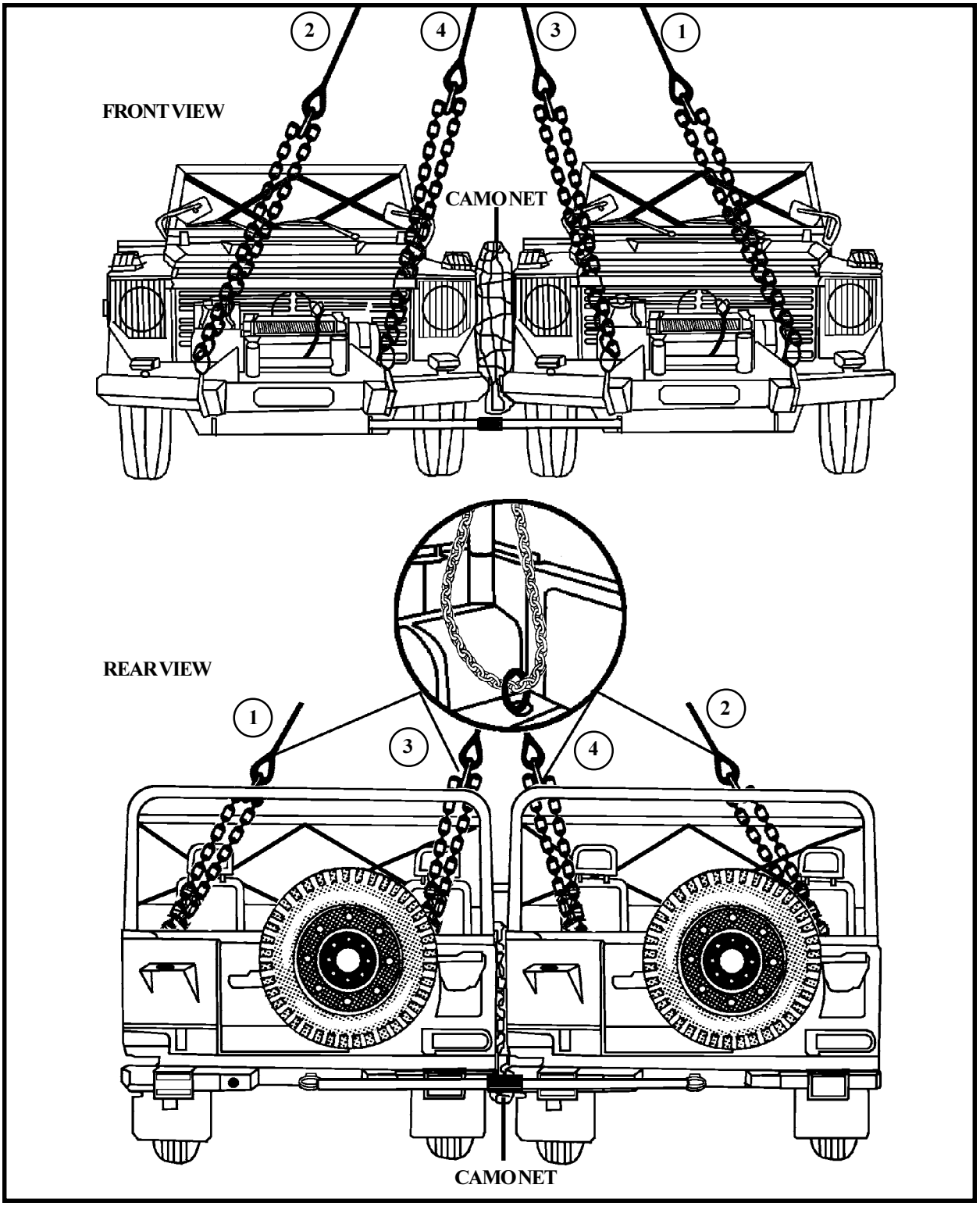


Figure 2-32. Dual Interim Fast Attack Vehicle (IFAV) Trucks, Long Wheel Base, Side by Side (Shotgun Method)

RIGGING STEPS

1. Position sling set 1 on the hood of one of the vehicles.

2. Loop the chain end of sling legs 1 and 2 through their respective outboard lift provisions located on the front of each vehicle. Place link 3 in the grab hook.

3. Loop the chain end of sling legs 3 and 4 through their respective inboard lift provisions located on the front of each vehicle. Place link 10 in the grab hook. Ensure the chains are routed through the chain guides.

4. Position sling set 2 in the bed of one of the vehicles.

5. Loop the chain end of sling legs 1 and 2 through their respective lift provision located in the outside rear corners of the cargo bed. Place link 45 in the grab hook.

6. Loop the chain end of sling legs 3 and 4 through their respective lift provision located in the inside rear corners of the cargo bed. Place link 60 in the grab hook.

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

8. 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.

Figure 2-32. Dual Interim Fast Attack Vehicle (IFAV) Trucks, Long Wheel Base, Side by Side (Shotgun Method) (continued)

CHAPTER 3

CERTIFIED DUAL-POINT RIGGING PROCEDURES FOR TRAILERS

3-1. INTRODUCTION

This chapter contains rigging procedures for dual-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 dual-point rigging procedures for trailers are in this section. Paragraphs 3-2 through 3-18 give detailed instructions for rigging loads.

NOTE: Reach Pendants may be used on dual point loads. Place a Reach Pendant on each apex fitting. A static discharge person is not required when using a Reach Pendant.

3-2. M101A2 3/4-Ton Trailer

a. Applicability. The following items in Table 3-1 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 3-1. M101A2 3/4-Ton Trailer

NOMENCLATURE	CURB WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
M101A2 with Accompanying Load	3,000	10K	3/20	CH-47	100
Command Version 1 Trailer	1,958	10K	3/20	CH-47	100
Command Version 2 Trailer	1,981	10K	3/20	CH-47	100
Len Cable Trailer	2,796	10K	3/20	CH-47	100
NC Support Trailer	2,643	10K	3/20	CH-47	100
Maintenance Trailer #2	1,430	10K	3/20	CH-47	100
Battalion Spares Trailer #1	1,594	10K	3/20	CH-47	100
Battalion Spares Trailer #2	2,206	10K	3/20	CH-47	100
Downsized Direct Support Section Trailer	2,700	10K	3/20	CH-47	100

WARNING

THE M101A2 3/4-TON TRAILER MUST HAVE A GROSS WEIGHT OF 1,575 POUNDS OR MORE. ADD ADDITIONAL WEIGHT OR CARGO TO ANY TRAILER WHICH WEIGHS LESS THAN 1,575 POUNDS. PLACE THE WEIGHT NEAR THE CENTER OF THE TRAILER.

WARNING

MAXIMUM WEIGHT DURING SLING LOAD OPERATIONS FOR ANY VARIANT OF THE M101A2 3/4-TON TRAILER IS 3,000 POUNDS.

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

(1) Sling set (10,000-pound capacity) with one additional apex fitting.

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

(3) Cord, nylon, Type III.

(4) Webbing, cotton, 1/4-inch.

(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) Fasten the tailgate in the open position with the chains on each side hooked through the keeper.

(b) Remove the front rack and place it in the bed of the trailer. Place the accompanying load on top of the front rack. Secure the accompanying load to the trailer using tie-down straps. Route the straps diagonally across the load from the tailgate hinge to the front lifting shackles.

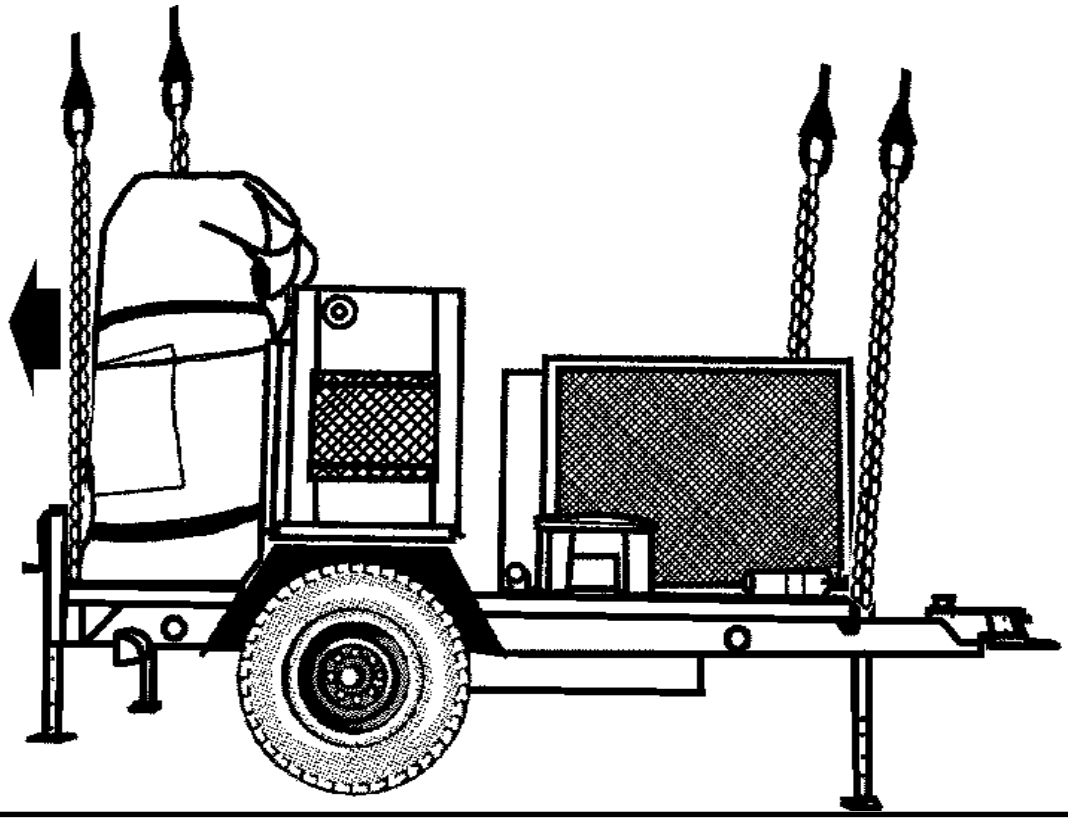
(c) Tape or tie the light cable firmly to the top of the drawbar.

(d) Ensure the parking brake is set.

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

(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 forward hookup person places apex fitting 1 onto the forward cargo hook. The aft hookup person places apex fitting 2 onto the aft 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. Connect 2 sling legs to apex fitting number 1. Position the apex fitting on top of the trailer.

2. Loop the chain end of the sling legs through their respective lift provisions located on the outer ends of the front bumper (generator end). Place the correct link from Table 3-14 in the grab hook.

3. Connect 2 sling legs to apex fitting number 2. Position the apex fitting on top of the trailer.

4. Loop the chain end of the sling legs through their respective lift provisions located on the outer ends of the rear bumper. Place the correct link from Table 3-14 in the grab hook. Secure all excess chain with tape or Type III nylon cord.

5. Pad the chain/sling where they contact the trailer or generator.

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 3-14. Deployable Print Production Center on COPS Trailer

3-16. XM1112 400 Gallon Water Trailer

a. Applicability. The following item in Table 3-15 is certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 3-15. XM1112 400 Gallon Water Trailer

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
XM 1112 400 Gallon Water Trailer, Empy	3,860	10K	20/3	CH-47	130

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

(1) Sling set (10,000-pound capacity) with one additional apex fitting.

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

(b) Ensure the tongue wheel is in the down and locked position.

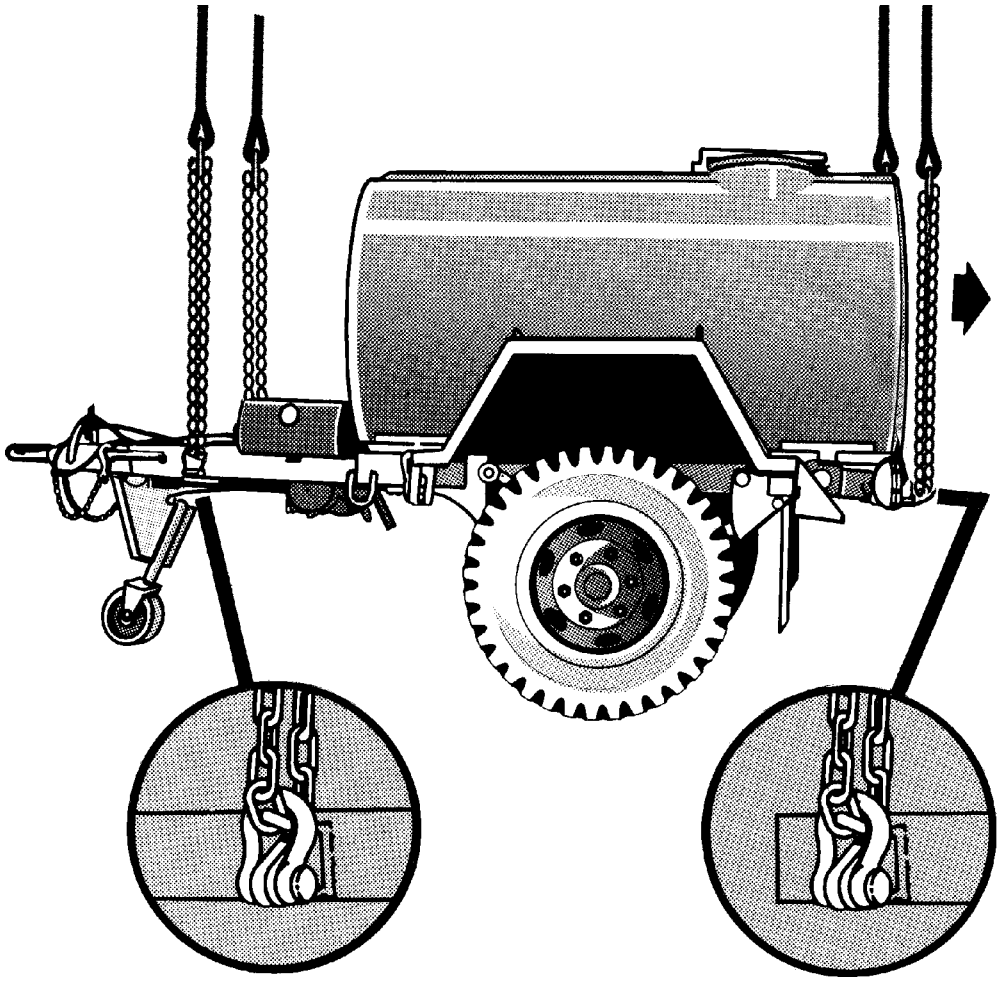
(c) Close and secure the tank lid.

(d) Engage the parking brake.

(2) Rigging. Rig the load according to the steps in Figure 3-15.

(3) Hookup. The hookup teams stand on the trailer fenders or on the front of the trailer. The static wand person discharges the static electricity with the static wand. The forward hookup person places apex fitting 1 onto the forward cargo hook. The aft hookup person places apex fitting 2 onto the aft 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. Connect 2 sling legs to apex fitting number 1. Position the apex fitting on top of the forward end (lunette end) of the trailer.

2. Loop the chain end of the sling legs through their respective lift provisions located in the drawbar of the trailer. Place the correct link from Table 3-15 in the grab hook.

3. Connect 2 sling legs to apex fitting number 2. Position the apex fitting on top of the aft end of the trailer.

4. Loop the chain end of the sling legs through their respective lift provisions located on the rear bumper of the trailer. Place the correct link from Table 3-15 in the grab hook.

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

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 3-15. XM1112 Gallon Water Trailer

3-17. M105A3 Trailer

a. Applicability. The following item in Table 3-16 is certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 3-16. M105A3 Trailer

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
M105A3 Trailer, Empty	2,600	10K	40/3	CH-47	120
M105A3 Trailer, Loaded	5,580	10K	40/3	CH-47	120

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

(1) Sling set (10,000-pound capacity) with one additional apex fitting.

(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) Raise the trailer's jack stand so the pintle is on the ground.

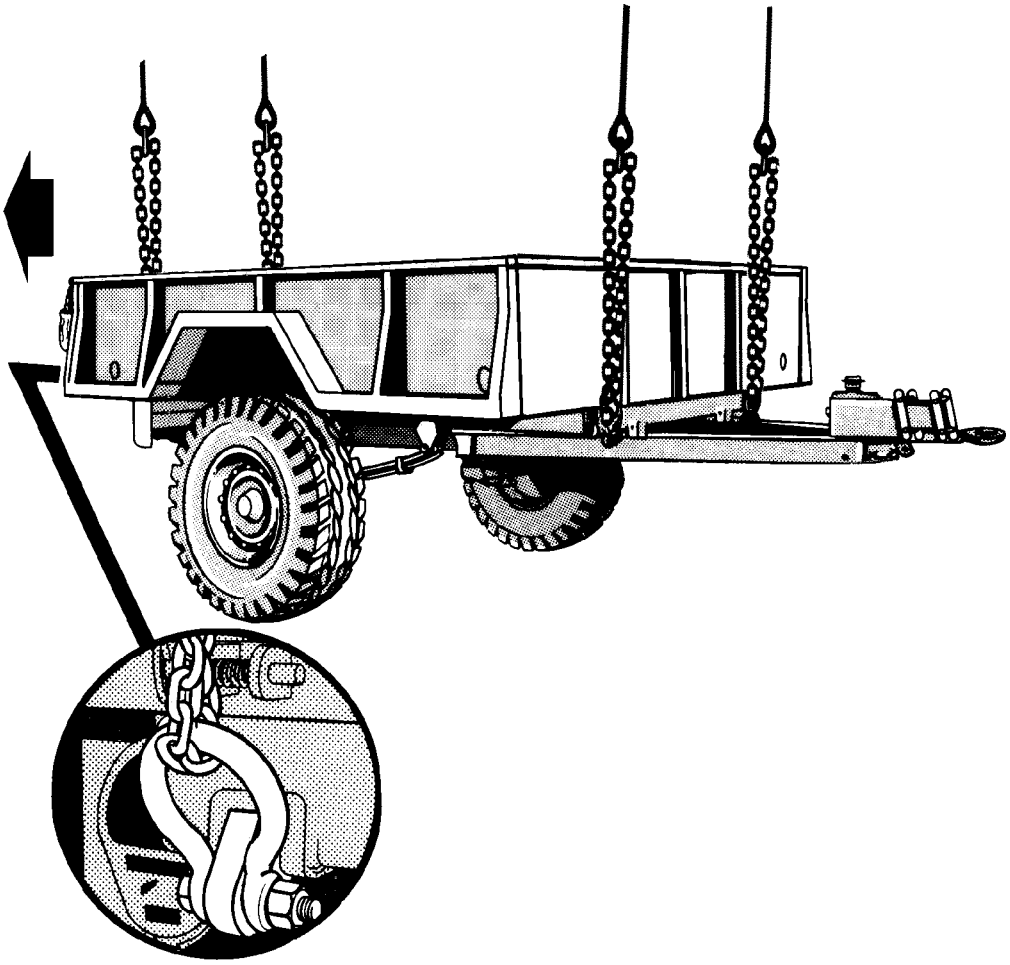
(b) Secure all loose chains, hoses, and cables to the trailer drawbar with tape or Type III nylon cord.

(c) Engage the parking brake.

(2) Rigging. Rig the load according to the steps in Figure 3-16.

(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 forward hookup person places apex fitting 1 onto the forward cargo hook. The aft hookup person places apex fitting 2 onto the aft 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. Connect 2 sling legs to apex fitting number 1. Position the apex fitting on top of the forward end (lunette end) of the trailer.

2. Loop the chain end of the sling legs through their respective lift provisions located in the front of the trailer. Place the correct link from Table 3-16 in the grab hook.

3. Connect 2 sling legs to apex fitting number 2. Position the apex fitting on top of the aft end of the trailer.

4. Loop the chain end of the sling legs through their respective lift provisions located on the aft end of the trailer. Place the correct link from Table 3-16 in the grab hook.

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

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 3-16. M105A3 Trailer

3-18. M1082 Light Medium Tactical Vehicle (LMTV) and M1095 Medium Tactical Vehicle (MTV) Trailers

a. Applicability. The following items in Table 3-17 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 3-17. M1082 Light Medium Tactical Vehicle (LMTV) and M1095 Medium Tactical Vehicle (MTV) Trailers

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
M1082 LMTV Trailer	11,510	25K	10/3	CH-47	120
M1095 MTV Trailer	15,780	25K	20/3	CH-47	70

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

(1) Sling set (25,000-pound capacity) with one additional apex fitting.

(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.

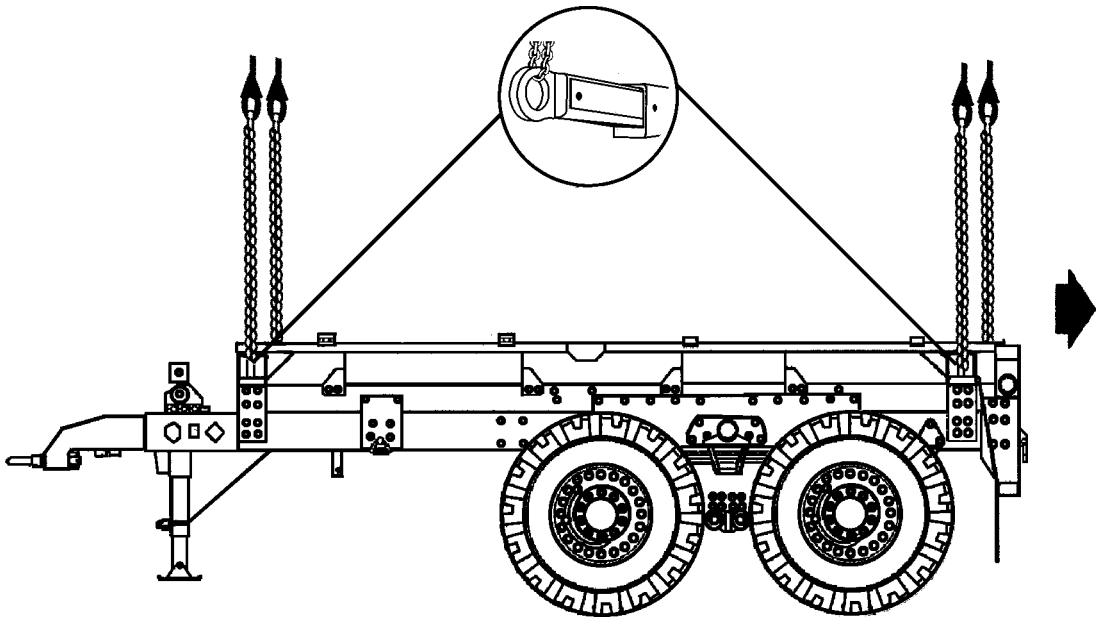
Note: Ensure the lift eyes on the lift provision bars are perpendicular to the ground.

(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 3-17.

(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 forward hookup person places apex fitting 1 onto the forward cargo hook. The aft hookup person places apex fitting 2 onto the aft 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. Connect 2 sling legs to apex fitting number 1. Position the apex fitting on top of the forward end (lunette end) of the trailer.

2. Loop the chain end of the sling legs through their respective lift provision bar located on the front end (lunette end) of the trailer. Place the correct link from Table 3-17 in the grab hook.

3. Connect 2 sling legs to apex fitting number 2. Position the apex fitting on top of the aft end of the trailer.

4. Loop the chain end of the sling legs through their respective lift provision bar located on the aft end of the trailer. Place the correct link from Table 3-17 in the grab hook.

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

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 3-17. M1082 Light Medium Tactical Vehicle (LMTV) and M1095 Medium Tactical Vehicle (MTV) Trailers

CHAPTER 5

CERTIFIED DUAL-POINT RIGGING PROCEDURES FOR TANDEM LOADS

5-1. INTRODUCTION

This chapter contains rigging procedures for dual-point tandem 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 dual-point rigging procedures for tandem loads are in this section. Paragraphs 5-2 through 5-19 give detailed instructions for rigging loads.

NOTE: Reach Pendants may be used on dual point loads. Place a Reach Pendant on each apex fitting. A static discharge person is not required when using a Reach Pendant.

5-2. M998/M1038 Truck, Utility, 1-1/4 Ton (HMMWV) with M101A1/A2 Trailer, Cargo

a. Applicability. The following items in Table 5-1 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

NOTE:

Field commanders should note that minor bending of the front wall of the M101A1/M101A2 trailer may occur as a result of sling loading due to the compression from the slings. The possibility of bending does not pose a safety threat to flight or ground personnel and will not affect the operation of the trailer.

Table 5-1. M998/M1038 Truck, Utility, 1-1/4 Ton with M101A1/A2 Trailer, Cargo

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Truck, 1-1/4 Ton, HMMWV, M998, Empty	5,200	10K	76/3	CH-47	100
Truck, 1-1/4 Ton, HMMWV, M998, Loaded	7,700	10K	76/3	CH-47	110
Truck, 1-1/4 Ton, HMMWV, M1038, Empty	5,327	10K	76/3	CH-47	100
Truck, 1-1/4 Ton, HMMWV, M1038, Loaded	7,700	10K	76/3	CH-47	110
Trailer, Cargo, M101A1/M101A2, Empty	1,280	10K	59/36	CH-47	100
Trailer, Cargo, M101A1/M101A2, Loaded	2,780	10K	59/36	CH-47	110

NOTES:
1. The maximum certified combined load weight is 10,480 pounds.
2. The recommended airspeed for combined loads weighing 6,607 pounds or less is 100 knots.
3. The recommended airspeed for combined loads weighing between 6,607 and 10,480 pounds or less is 110 knots.

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

(1) Sling set (10,000-pound capacity) (2 each).

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

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

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

(5) Strap, cargo, tie-down, CGU-1/B (2 each, or more as required to secure cargo).

(6) Reach Pendant, 11K or 25K, OPTIONAL EQUIPMENT.

c. Personnel. Two persons can prepare and rig the M998/M1038 HMMWVs in 15 minutes. Two persons can prepare and rig the M101A1/M101A2 trailer in 10 minutes.

d. Procedures. Attach the trailer to the truck by placing the lunette on the pintle hook and securing the latch. Secure the safety chains, cables, and hoses to the trailer. Position the vehicle on level ground so both the truck and trailer are in a straight line. 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 and tie together with Type III nylon cord. Remove the doors and secure to the seats with Type III nylon cord.

(b) Secure all equipment and cargo inside the truck with tie-down straps, tape, or Type III nylon cord.

(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) Secure all equipment and cargo inside the trailer with tie-down straps, tape, or Type III nylon cord.

(g) Place the tailgate in the open position.

(h) Remove the tarp and front rack and place it in the bed of the trailer. Place the accompanying load on top of the front rack. Secure the accompanying load to the trailer using tie-down straps. Route the straps diagonally across the load from the tailgate hinge to the front lifting shackles.

(i) Ensure the parking brake is set.

(j) Attach the hook portion of a CGU-1/B tie-down strap down to the left front lift provision on the trailer. Connect the ratchet to the left inside tie-down provision located near the pintle.

(k) Repeat the above procedure on the right side of the load.

(l) Tighten both CGU-1/B tie-down straps at the same time. Safety the ratchet handles in the closed position with tape.

(2) Rigging. Rig the load according to the steps in Figure 5-1.

(3) Hookup. Two hookup teams are required for this load. The static wand person stands in the bed of the HMMWV and discharges the static electricity with the static wand. The forward hookup person stands in the bed of the HMMWV and places apex fitting 1 onto the forward cargo hook. The aft hookup person stands in the bed of the trailer and places apex fitting 2 onto the aft 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

5-10. M1097 Shelter Carrier (HMMWV) with S-250 Shelter and Trailer Generator Sets on M116A2 Trailer

a. Applicability. The following items in Table 5-9 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 5-9. M1097 Shelter Carrier (HMMWV) with S-250 Shelter and Trailer Generator Sets on M116A2 Trailer

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Truck, (HMMWV) M1097 with AN/TSC-93A in S-250 Shelter	9,769	25K	64/22	CH-47	110
PU-753 Generator Set on M116A2 Trailer	3,000	25K	72/56	CH-47	110
Truck, (HMMWV) M1097 with S-250 Shelter, LOS (V1)	9,038	25K	60/20	CH-47	120
Truck, (HMMWV) M1097 with S-250 Shelter, LOS (V2)	9,038	25K	60/20	CH-47	120
Truck, (HMMWV) M1097 with S-250 Shelter, LOS (V3)	9,038	25K	60/20	CH-47	120
Truck, (HMMWV) M1097 with S-250 Shelter, LOS (V4)	9,038	25K	60/20	CH-47	120
PU-751 Generator Set on M116A2 Trailer	3,062	25K	10/15	CH-47	120

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

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

(a) Chain length, part number 38850-00053-102, from a 25,000-pound capacity sling set (8 each).

(b) Coupling link, part number 664241, from a 25,000-pound sling set (8 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) Strap, cargo, tiedown, CGU-1/B (2 each).

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

c. Personnel. Two persons can prepare and rig the M1097 HMMWV in 15 minutes. Two persons can prepare and rig the generator set in 10 minutes.

d. Procedures. Attach the generator set to the truck by placing the lunette on the pintle hook and securing the latch with tape or Type III nylon cord. Secure the safety chains, cables, and hoses. Position the vehicle on level ground so both the truck and generator set are in a straight line. The following procedures apply to this load:

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

(a) Fold mirrors inward and tie together with Type III nylon cord. Remove the doors and secure to the seats with Type III nylon cord.

(b) Ensure the shelter is secured to the vehicle using wire rope or tiedown straps. Secure all loose equipment inside the shelter with tape, Type III nylon cord, or tie-down straps. Close and secure the door.

(c) Secure all equipment and cargo inside the truck with tiedown straps, tape, or Type III nylon cord.

(d) Ensure the fuel tanks are not over 3/4 full. Inspect the 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) Install the lift provisions on the outer ends of the rear bumper by removing the tiedown provisions located on the front bumper and installing on the outer ends of the front bumper and installing on the outer ends of the rear bumper.

(h) Partially retract all landing legs and secure in position with Type III nylon cord.

(i) Retract the lunette leg and secure with Type III nylon cord.

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

(k) Ensure the parking brake is set.

(l) Route the hook portion of a CGU-1/B tiedown strap through the left rear inboard tiedown provision located near the pintle on the rear bumper of the truck and through the mounting bracket on the front of the trailer A-frame. Connect the hook to the ratchet of the CGU-1/B.

(m) Repeat the above procedure on the right side of the load.

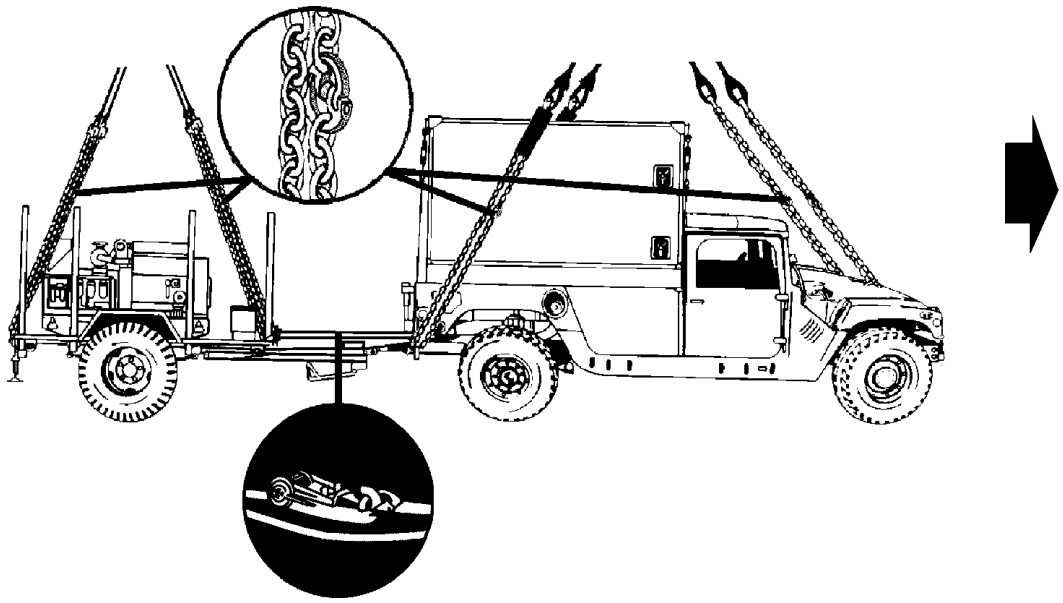
(n) Tighten both CGU-1/B tie-down straps at the same time. Secure the excess strap and safety the ratchet handles in the closed position with tape.

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

(2) Rigging. Rig the load according to the steps in Figure 5-9.

(3) Hookup. Two hookup teams are required for this load. The static wand person discharges the static electricity with the static wand. The forward hookup person kneels on top of the shelter and places apex fitting 1 onto the forward cargo hook. The aft hookup person stands on the generator fender and places apex fitting 2 onto the aft 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 apex fitting on top of the shelter. Route outer sling legs 1and 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 5-9 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. Loop the chain end of the sling legs through their respective lift provisions located on the outer ends of the rear bumper. Place the correct link from Table 5-9 in the grab hook. Secure excess chain with tape or Type III nylon cord.

4. Pad the chain where it contacts the shelter sides.

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

6. Position the apex fitting of sling set 2 on top of the generator set. Route outer sling legs 1and 2 between the two front bows to the front of the generator and inner sling legs 3 and 4 between the two rear bows to the rear of the generator. Sling legs 1 and 3 must be on the left side of the load.

7. 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 5-9 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.

8. Loop the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 5-9 in the grab hook. Repeat with sling leg 4 through the right rear lift provision. Secure excess chain with tape or Type III nylon cord.

9. 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 5-9. M1097 Shelter Carrier (HMMWV) with S-250 Shelter and Trailer Generator Sets on M116A2 Trailer

5-11. M1097 (HMMWV) with AN/TSQ-183, Counter Battery Radar and MEP802A Generator on M116A3 Trailer

a. Applicability. The following items in Table 5-10 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 5-10. M1097 with AN/TSQ-183 Counter Battery Radar and MEP802A Generator on M116A3 Trailer

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Truck, 1 1/4-ton, HMMWV with AN/TSQ-183 Counter Battery Radar	8,500	10K	80/3	CH-47	120
MEP802A Generator on M116A3 Trailer	1,580	10K	15/20	CH-47	120

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

(1) Sling set (10,000-pound capacity) (2 each).

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

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

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

(5) Strap, cargo, tiedown, CGU-1/B (4 each).

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

c. Personnel. Two persons can prepare and rig the M1097 HMMWV in 15 minutes. Two persons can prepare and rig the generator set in 10 minutes.

d. Procedures. Attach the generator set to the truck by placing the lunette on the pintle hook and securing the latch with tape or Type III nylon cord. Secure the safety chains, cables, and hoses. Position the vehicle on level ground so both the truck and generator set are in a straight line. The following procedures apply to this load:

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

(a) Fold mirrors inward and tie together with Type III nylon cord. Remove the doors and secure to the seats with Type III nylon cord.

(b) Roll the shelter canvas forward toward the cab. Install the canvas bows over the canvas and secure with tiedowns or Type III nylon cord.

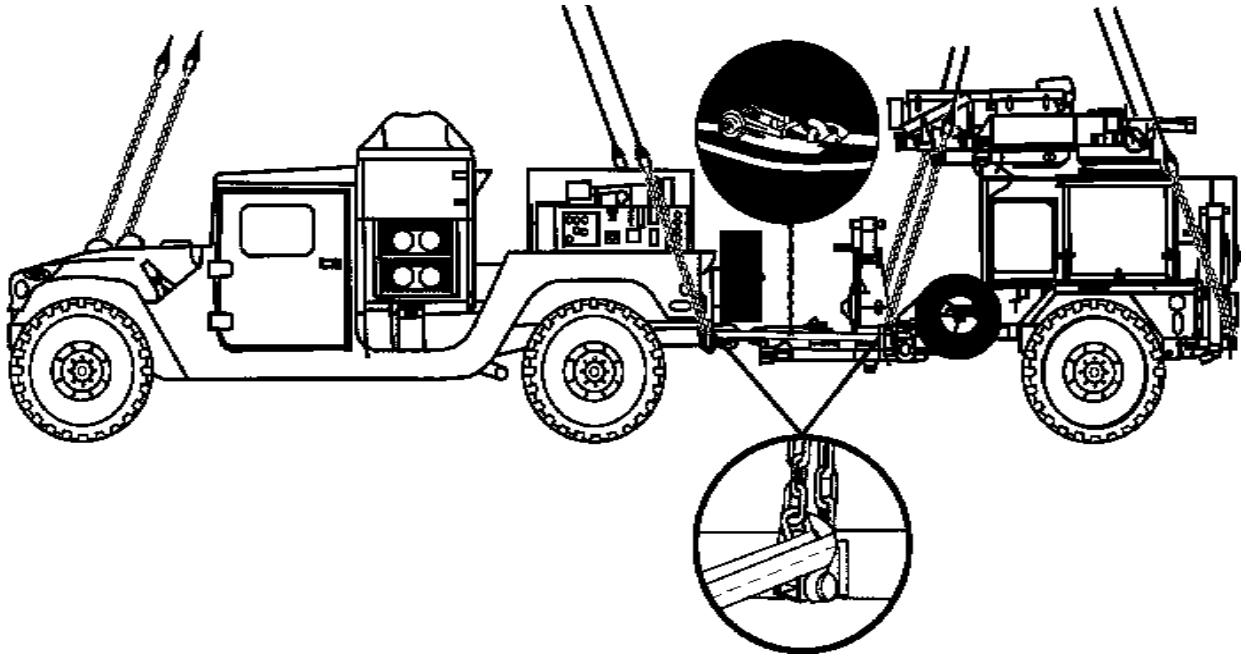
(c) Secure all equipment and cargo inside the truck with tiedown straps, tape, or Type III nylon cord.

(d) Ensure the fuel tanks are not over 3/4 full. Inspect the 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) Install the lift provisions on the outer ends of the rear bumper by removing the tiedown provisions located on the front bumper and installing on the outer ends of the front bumper and installing on the outer ends of the rear bumper.



RIGGING STEPS

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

2. Loop the chain end of sling leg 1 through the left front lift provision that protrudes through the hood. Place the correct link from Table 5-17 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. Loop the chain end of sling legs 3 and 4 through their respective lift provisions located on the outer ends of the rear bumper. Place the correct link from Table 5-17 in the grab hook.

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

5. Position the reach pendant and apex fitting of sling set 2 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 of the trailer. Sling legs 1 and 3 must be on the left side of the load.

6. Route the chain end of sling leg 1 through the left side loop of the spreader bar, through the left front lift provision located on the front of the trailer, and back through the left loop of the spreader bar. Place the correct link from Table 5-17 in the grab hook. Repeat with sling leg 2 through the right spreader bar loop and right front lift provision. Tie or tape (breakaway technique) sling legs 1 and 2 together at 3-foot intervals on top of the trailer.

7. Loop 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 5-17 in the grab hook. Repeat with sling leg 4 through the right rear lift provision. Secure excess chain with tape or Type III nylon cord. Tie or tape (breakaway technique) sling legs 3 and 4 together at 3-foot intervals on top of the trailer.

Figure 5-17. **M1097 HMMWV with AN/MPQ-64 TQG and HMT with Sentinel ATG**

5-19. M1097, 1-1/4 Ton (HMMWV) with Generator Pallet Group and PU 799 G-85/TPQ-36 Generator Group on M116A3 Trailer

a. Applicability. The following items in Table 5-18 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 5-18. M1097, 1-1/4 Ton with Generator Pallet Group and G-85/TPQ-36 Generator Group

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Truck, 1-1/4 Ton, HMMWV, M1097	7,400	10K	80/30	CH-47	120
G-85/TPQ-36 Generator Trailer Group	3,075	10K	52/36	CH-47	120

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

(1) Sling set (10,000-pound capacity) (2 each).

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

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

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

(5) Strap, cargo, tie-down, CGU-1/B (2 each, or more as required to secure cargo).

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

c. Personnel. Two persons can prepare and rig the HMMWV in 15 minutes. Two persons can prepare and rig the generator set in 10 minutes.

d. Procedures. Attach the generator set to the truck by placing the lunette on the pintle hook and secure the latch. Secure the safety chains, cables, and hoses with tape or Type III nylon cord. Position the vehicle on level ground so both the truck and generator set are in a straight line. 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 and tie together with Type III nylon cord. Remove the doors and secure to the seats with Type III nylon cord.

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

(c) Ensure the fuel tanks are 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 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) Retract the lunette leg and secure with Type III nylon cord.

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

(h) Ensure the trailer parking brakes are set.

(i) Route the hook portion of a CGU-1/B tiedown strap through the left rear inboard tiedown provision located near the pintle on the rear bumper of the truck and

through the mounting bracket on the front of the trailer A-frame. Connect the hook to the ratchet of the CGU-1/B.

(j) Repeat the above procedure on the right side of the load.

(k) Tighten both CGU-1/B tiedown straps at the same time. Secure the excess strap and safety the ratchet handles in the closed position with tape.

(2) Rigging. Rig the load according to the steps in Figure 5-18.

(3) Hookup. Two hookup teams are required for this load. The static wand person discharges the static electricity with the static wand. The forward hookup person stands in the bed of the truck and places apex fitting 1 onto the forward cargo hook. The aft hookup person stands on the generator fender and places apex fitting 2 onto the aft 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).

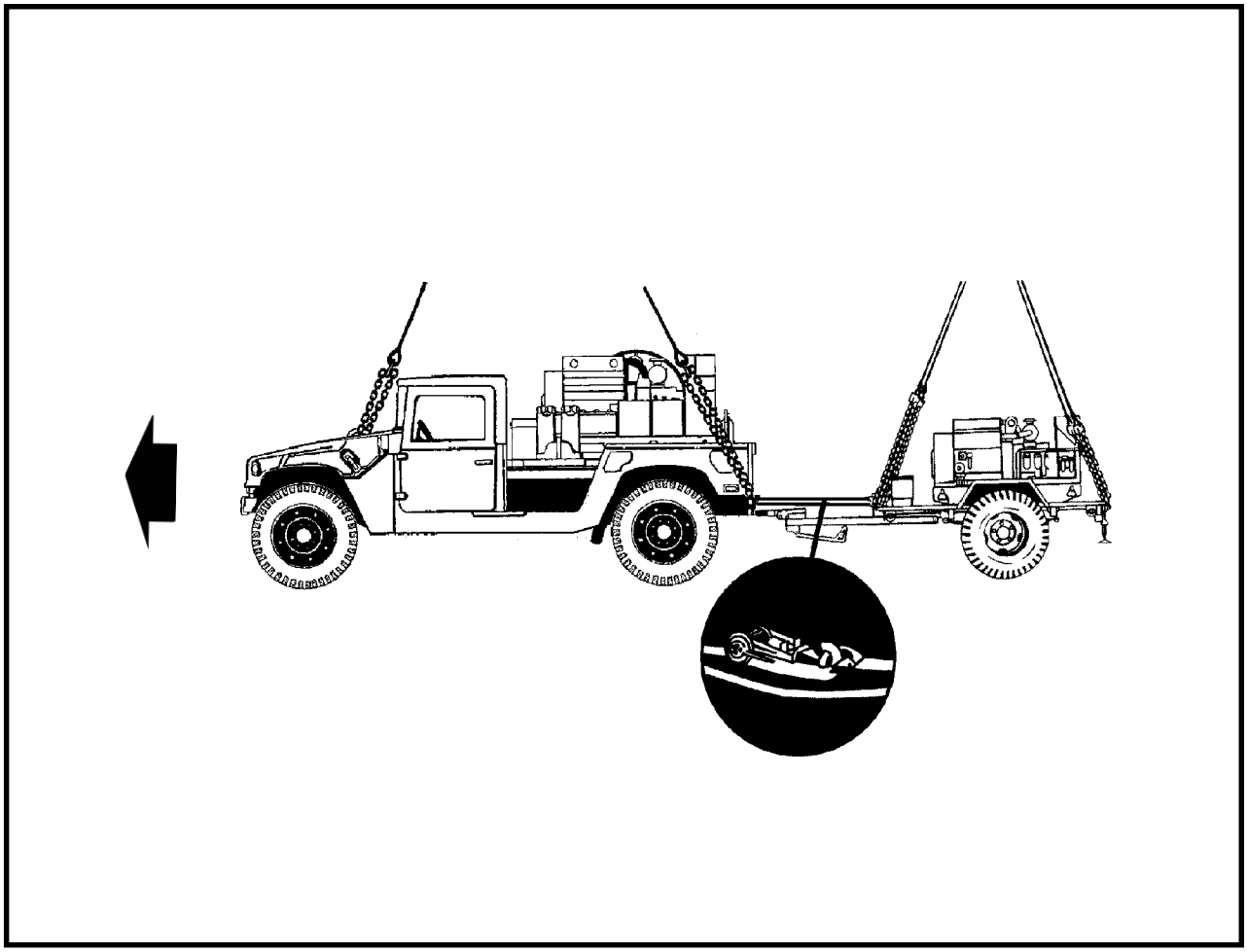


Figure 5-18. M1097, 1-1/4 Ton with Generator Pallet Group and G-85/TPQ-36 Generator Group

RIGGING STEPS

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

2. Loop the chain end of sling leg 1 through the left front lift provision that protrudes through the hood. Place the correct link from Table 5-18 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with tape or Type III nylon cord.

3. Route the chain end of sling leg 3 through the sling guide 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 sling guide in the tailgate. Place the correct link from Table 5-18 in the grab hook. Repeat with sling leg 4 and the right rear lift provision.

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

5. Position apex fitting of sling set 2 on the trailer but not on top of the generator. 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.

6. Loop the chain end of sling leg 1 through the left front lift provision located near the A-frame on the front of the trailer. Place the correct link from Table 5-18 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.

7. Route the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 5-18 in the grab hook. Repeat with sling leg 4 through the right rear lift provision. Secure excess chain with tape or Type III nylon cord.

8. Pad the chains where they contact the load.

9. 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 5-18. M1097, 1-1/4 Ton with Generator Pallet Group and G-85/TPQ-36 Generator Group (continued)

CHAPTER 7

CERTIFIED DUAL-POINT RIGGING PROCEDURES FOR MISSILE SYSTEMS

7-1. INTRODUCTION

This chapter contains rigging procedures for dual-point missile system 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 dual-point rigging procedures for missile system loads are in this section. Paragraphs 7-2 through 7-14 give detailed instructions for rigging loads.

NOTE: Reach Pendants may be used on dual point loads. Place a Reach Pendant on each apex fitting. A static discharge person is not required when using a Reach Pendant.

7-2. M54A1/M54A2 Chaparral Launch Station

a. Applicability. The following items in Table 7-1 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 7-1. M54A1/M54A2 Chaparral Launch Station

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
M54A1 Launch Station	13,000	25K	3/3	CH-47	100
M54A2 Launch Station	13,000	25K	3/3	CH-47	100

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

(1) Sling set (25,000-pound capacity) with one additional apex fitting.

(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 20 minutes.

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

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

(a) Prepare the launch station for sling loading in accordance with TM 9-1425-2585-10-1.

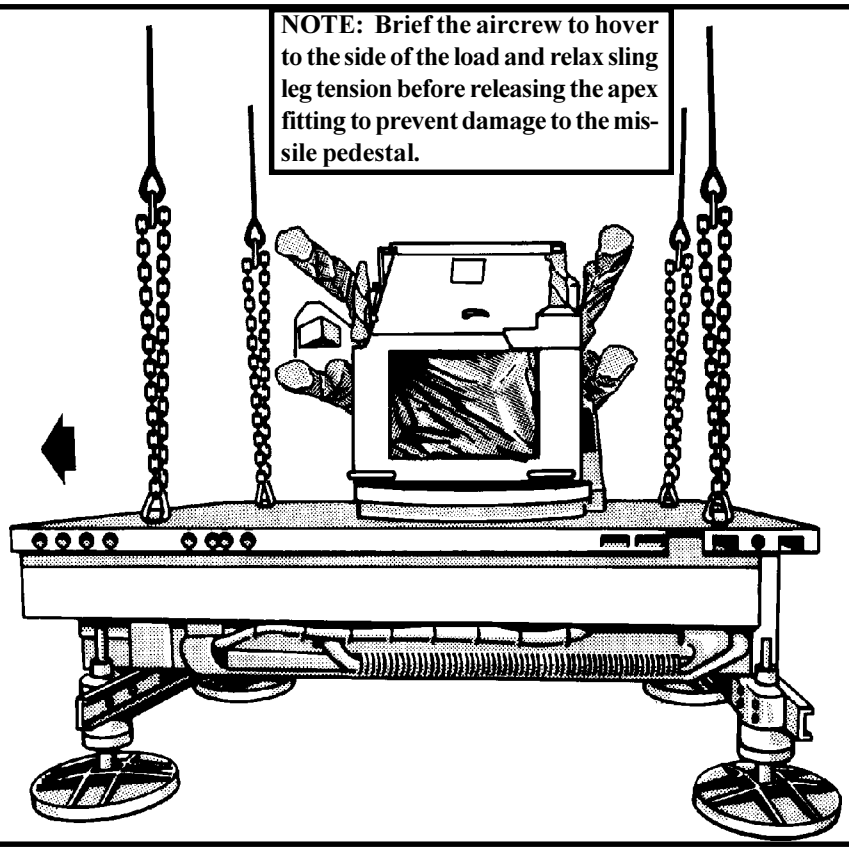
(b) Rotate the missile pedestal 90 degrees from the centerline to avoid sling interference.

(2) Rigging. Rig the load according to the steps in Figure 7-1.

(3) Hookup. Two hookup teams are required for this load. The hookup teams stand on the back of the gunner's compartment. The static wand person discharges the static electricity with the static wand. The forward hookup person places apex fitting 1 onto the forward cargo hook. The aft hookup person places apex fitting 2 onto the aft

cargo hook. The hookup teams then carefully dismount the missile platform and remain close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup teams quickly exit the area underneath the helicopter to the designated rendezvous point.

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



RIGGING STEPS

1. Connect two sling legs to apex fitting number 1. Position the sling set on top of the main power unit end of the platform.

2. Loop the chain end of the left and right sling legs through their respective lift provisions. Place the correct link from Table 7-1 in the grab hook.

3. Connect two sling legs to apex fitting number 2. Position the sling set on top of the opposite end of the platform.

4. Loop the chain end of the left and right sling legs through their respective lift provisions. Place the correct link from Table 7-1 in the grab hook.

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 7-1. M54A1/M54A2 Chaparral Launch Station

RIGGING STEPS

1. Place two sling legs on apex fitting number 1. Connect an additional chain length to each sling leg chain using the coupling links. Position apex fitting number 1 on top of the shelter on the lunette end.

2. Route the chain end of the left sling leg down through the upper lifting ring on the top left corner of the shelter, through the trailer lifting provision located on the front left corner of the trailer chassis, and back up through the upper lifting ring on the top left corner of the shelter. Place the correct link from Table 7-12 in the grab hook.

3. Repeat the above procedures using the right sling leg and the right lifting provision.

NOTE: Do not route the chain ends through the towing provision on the base of the shelter.

4. Choker hitch a 12-foot line around the rear left leveling jack stand on the trailer chassis. Ensure the loop of the knot is facing to the rear of the trailer. Route the free end of the 12-foot multiloop line up through the lifting ring on the top corner of the shelter. Ensure the choker hitch is tight around the jack stand and the individual plies of the multiloop line remain aligned. Tape or tie the multiloop line as necessary.

NOTE: Do not route the 12-foot multiloop line through the towing provision on the base of the shelter.

5. Repeat the above procedures on the right side of the shelter using the remaining 12-foot multiloop line.

6. Place two sling legs on apex fitting number 2. Position apex fitting number 2 on top of the IFF end of the shelter.

7. Loop the chain end of the left sling leg through the open loop at the free end of the 12-foot multiloop line on the left rear corner of the shelter. Place the correct link from Table 7-12 in the grab hook. Secure the excess chain with tape or Type III nylon cord.

8. Repeat the above procedure using the right multiloop line and the right sling leg.

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

Figure 7-12. Platoon Command Post/Battery Command Post (continued)

7-14. Stinger, Pedestal-Mounted on M1097/M1097A1/M1097A2 HMMWV(Avenger) with ECUand PPU with or without Bustle Box Stowed on Roof

a. Applicability. The following item in Table 7-13 is certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 7-13. Avenger with ECU and PPU on M1097/M1097A1/M1097A2 HMMWV

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Stinger, Pedestal-Mounted with ECU and PPU on M1097, (Avenger)	9,800	10K 25K	50/3 40/5	CH-47	90
Stinger, Pedestal-Mounted with ECU and PPU on M1097A1, (Avenger)	9,800	10K 25K	50/3 40/5	CH-47	90
Stinger, Pedestal-Mounted with ECU and PPU on M1097A2, (Avenger)	10,300	25K	40/5	CH-47	90

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

(1) Sling set (25,000-pound capacity) with one additional apex.

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

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

OR

(2) Sling set (10,000-pound capacity) with one additional apex.

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

(b) Coupling link, part number 557-0615, from a 10,000-pound capacity sling set (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.

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 inward and secure with Type III nylon cord.

(b) Ensure the Avenger fire unit is secured to the truck. Secure all equipment inside the fire unit with tape, lashings , or Type III nylon cord. Close and secure the door.

(c) Disconnect the standard vehicle-mounted launcher connectors from the missile pods and secure them to the fire unit with tape or Type III nylon cord.

(d) Secure all equipment inside the vehicle with tape or Type III nylon cord. Secure the doors shut (if installed).

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

(f) Secure the bustle box to the box rack on the roof of the vehicle using the tiedown straps (if needed).

Note: The bustle box can only be carried if the roof rack is installed on the roof.

(g) Engage the vehicle parking brake and place 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 or Type III nylon cord.

(2) Rigging. Rig the load according to the steps in Figure 7-13.

(3) Hookup. Two hookup teams are required for this load. The hookup teams stand on top of the firing unit. The static wand person discharges the static electricity with the static wand. The forward hookup person places apex fitting 1 onto the forward cargo hook. The aft hookup person places apex fitting 2 onto the aft cargo hook. The hookup teams then carefully dismount the vehicle and remain close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup teams quickly exit the area underneath the helicopter to the designated rendezvous point.

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

CAUTION
DO NOT PLACE THE SLING LEGS IN THE SLING LEG GUIDES LOCATED ON TOP OF THE FIRING UNIT

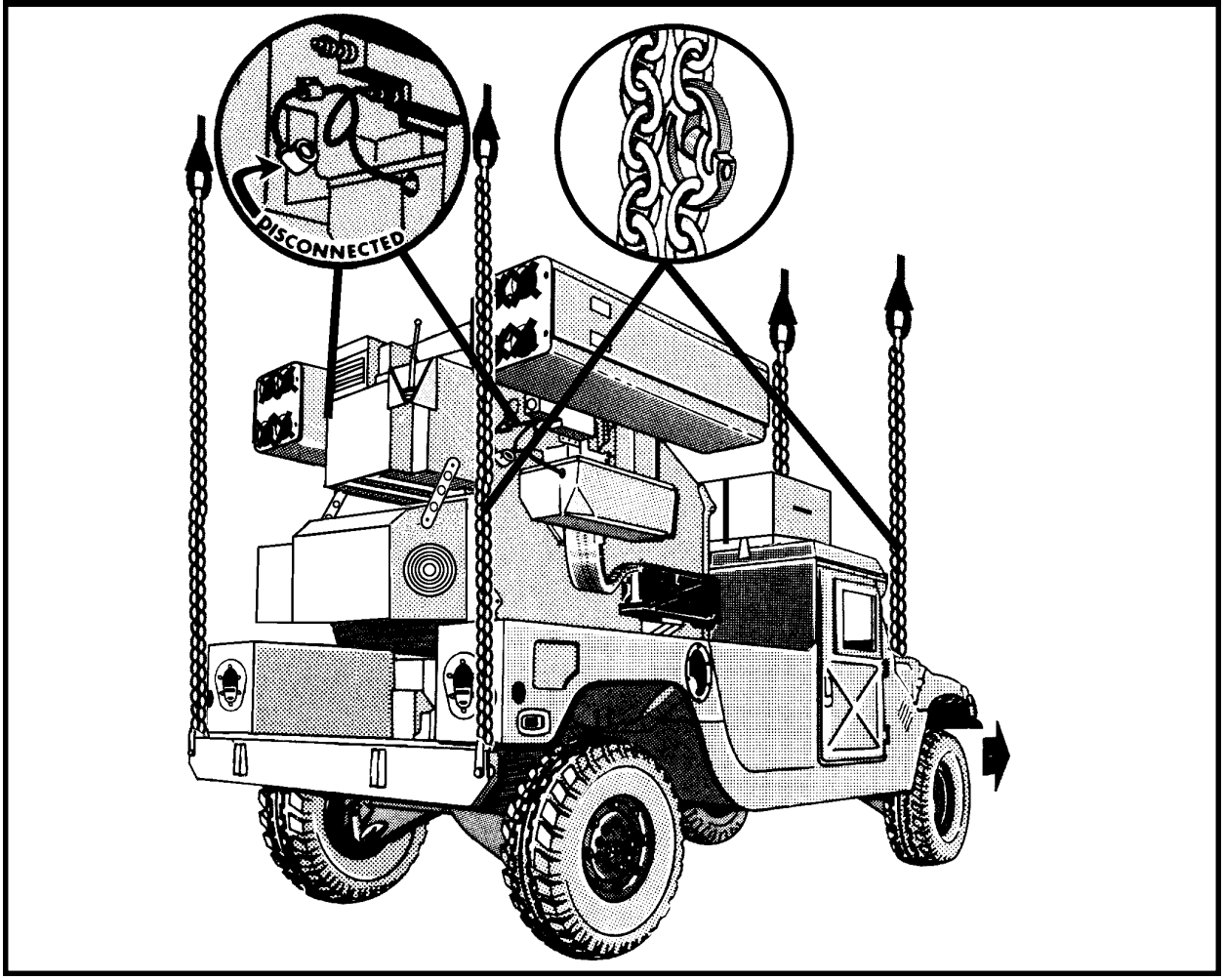


Figure 7-13. Pedestal-Mounted Stinger on M1097/M1097A1/M1097A2 HMMWV (Avenger) with ECUand PPU

RIGGING STEPS

1. Place two sling legs on apex fitting number 1. Attach an additional chain length to each chain using coupling links. Position apex fitting number 1 on top of the vehicle roof or bustle box (if used).

2. Loop the chain end of the left and right sling legs through their respective lift provisions that protrude through the hood of the vehicle. Place the correct link from Table 7-13 in the grab hook. Secure excess chain with tape or Type III nylon cord.

3. Place two sling legs on apex fitting number 2. Attach an additional chain length to each chain using coupling links. Position apex fitting number 2 on top of the firing unit.

4. Loop the chain end of the left and right sling legs through their respective lift provisions located on outside end of the rear bumper. Place the correct link from Table 7-13 in the grab hook.

CAUTION
DO NOT PLACE THE SLING LEGS IN THE SLING LEG GUIDES LOCATED ON TOP OF THE FIRING UNIT.

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 7-13. Pedestal-Mounted Stinger on M1097A2 HMMWV (Avenger) with ECUand PPU (continued)

CAUTION
DO NOT USE THE LIFT SHACKLES LOCATED NEAR THE CENTER OF THE REAR BUMPER FOR SLING LOAD LIFT PROVISIONS.

CHAPTER 8

CERTIFIED DUAL-POINT RIGGING PROCEDURES FOR ENGINEER EQUIPMENT

8-1. INTRODUCTION

This chapter contains rigging procedures for dual-point lift of engineer equipment 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 dual-point rigging procedures for engineer equipment loads are in this section. Paragraphs 8-2 through 8-36 give detailed instructions for rigging loads.

NOTE: Reach Pendants may be used on dual point loads. Place a Reach Pendant on each apex fitting. A static discharge person is not required when using a Reach Pendant.

8-2. D5B Tractor Dozer, Sectionalized

a. Applicability. The following items in Table 8-1 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 8-1. D5B Tractor Dozer, Sectionalized

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Tractor, Dozer, D5B, Power Section	18,915	25K	8/57	CH-47	100
Tractor, Dozer, D5B, Track Section	13,735	25K	12/21	CH-47	110

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

(1) Sling set (25,000-pound capacity) (2 each) with two additional apex fittings.

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

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

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

c. Personnel. Four persons can sectionalize this load in 2 1/2 hours and rig each section in 15 minutes.

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

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

(a) Sectionalize the dozer according to the operator's manual. Do not remove the winch and winch pump.

(b) Remove the exhaust stack and secure it on top of the winch with Type III nylon cord.

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

(d) Tape all lights and gages.

(e) Secure the seat with Type III nylon cord.

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

proper installation.

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

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. Two hookup teams are required for this load. The power section hookup team stands on the top of the power section. The static wand person discharges the static electricity with the static wand. The forward hookup person stands on the driver's seat and places apex fitting 1 onto the forward cargo hook. The aft hookup person stands on the engine compartment and places apex fitting 2 onto the aft cargo hook. The track section hookup team stands on top of the track section. The static wand person discharges the static electricity with the static wand. The forward hookup person places apex fitting 1 onto the forward cargo hook. The aft hookup person places apex fitting 2 onto the aft cargo hook. The hookup teams then carefully dismount the sections and remain close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup teams quickly exit the area underneath the helicopter to the designated rendezvous point.

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

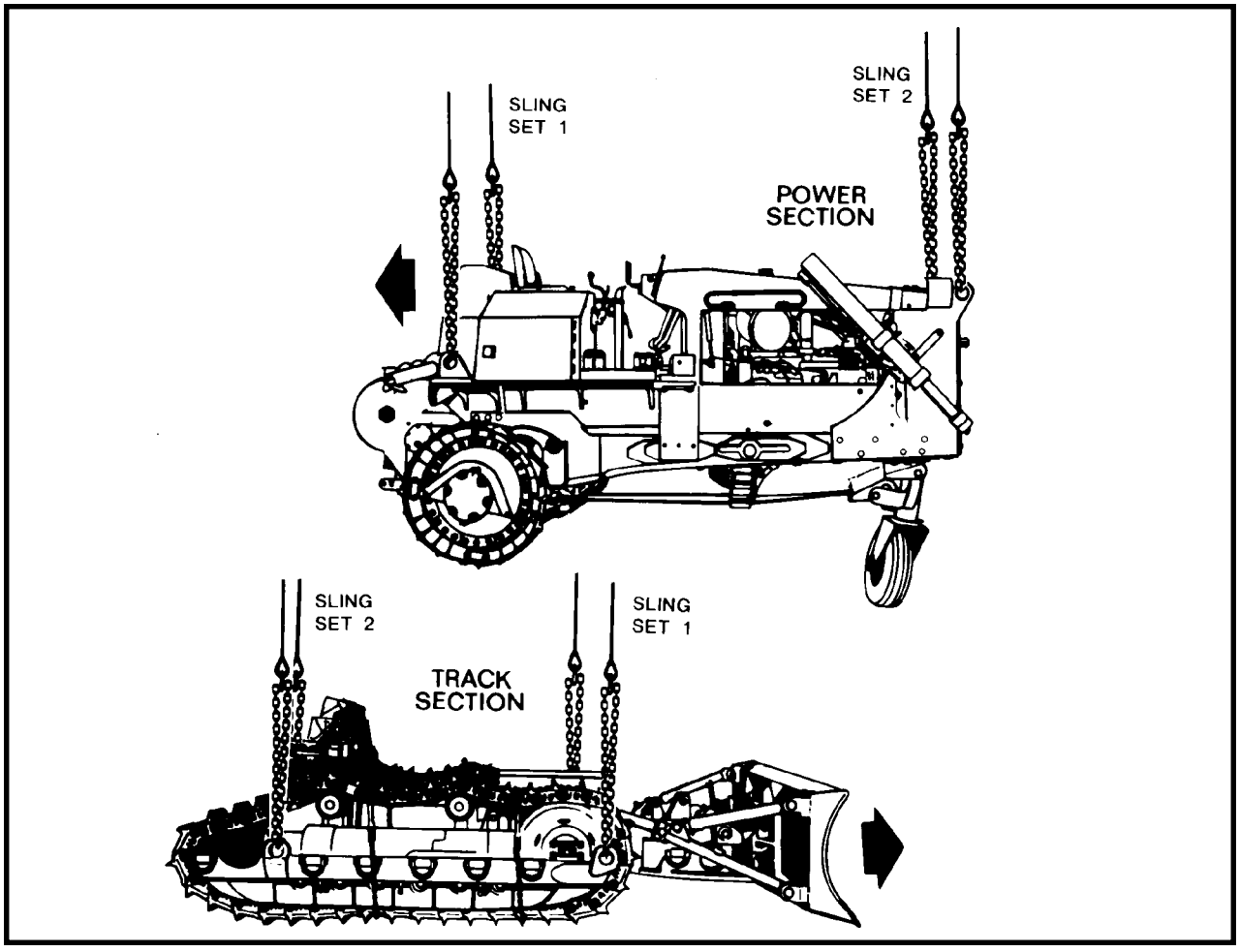


Figure 8-1. D5B Tractor Dozer, Sectionalized

8-28. Ribbon Bridge, Interior Bay

a. Applicability. The following item in Table 8-27 is certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 8-27. Ribbon Bridge, Interior Bay

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Ribbon Bridge, Interior Bay	11,800	25K 15K	3/50	CH-47 CH-53	130 100
Ribbon Bridge, Interior Bay, Improved	14,200	25K 15K	3/50	CH-47 CH-53	130 100

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

(1) Sling set (15,000-pound capacity) (2 each).

OR

(2) Sling set (25,000-pound capacity) with one additional apex fitting.

(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.

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 the end with the roadway lock is the front of the load.

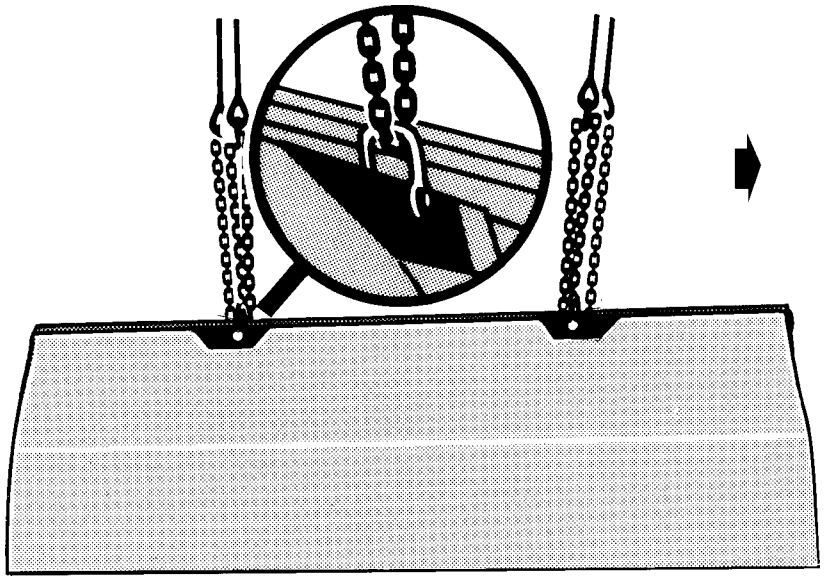
(b) Ensure all the bay latches are securely fastened.

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

NOTE: When using the 15,000-pound capacity multileg sling set, tie or tape the inner sling legs to the outer sling legs.

(3) Hookup. Two hookup teams are required for this load. The static discharge person discharges the static electricity. The forward hookup person stands on top of the bridge and places apex fitting 1 onto the forward cargo hook. The aft hookup person stands on top of the bridge and places apex fitting 2 onto the aft cargo hook. The hookup teams then carefully dismount the load and remain close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup teams quickly exit the area underneath the helicopter to the designated rendezvous point.

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



RIGGING STEPS

1. Place two sling legs on apex fitting number 1. Position sling set number 1 on top of the interior bay.

2. Loop the chain end of the left and right sling legs through their respective lift provisions (a pin located between two plates on the top edge of the bay). Place the correct link from Table 8-27 in the grab hook.

3. Place two sling legs on apex fitting number 2. Position sling set number 2 on top of the bay at the rear.

4. Loop the chain end of the left and right sling legs through their respective lift provisions (a pin located between two plates at the top rear edge). Place the correct link from Table 8-27 in the grab hook. Secure the excess chain with tape or Type III nylon cord.

5. Pull the chain of each sling leg up tightly and tape or tie just above the lift provision.

6. Raise the apex fittings above the load. Cluster and tie or tape (breakaway technique) the sling legs in each sling set together to prevent entanglement during hookup and lift-off.

Figure 8-27. Ribbon Bridge, Interior Bay

8-29. Ribbon Bridge, Ramp Bay

a. Applicability. The following item in Table 8-28 is certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 8-28. Ribbon Bridge, Ramp Bay

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Ribbon Bridge, Ramp Bay	11,560	25K 15K	3/50	CH-47 CH-53	130 70
Ribbon Bridge, Ramp Bay, Improved	13,500	25K 15K	3/50	CH-47 CH-53	130 70

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

(1) Sling set (15,000-pound capacity) (2 each).

OR

(2) Sling set (25,000-pound capacity) with one additional apex fitting.

(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.

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 the short end of the bay is the front of the load.

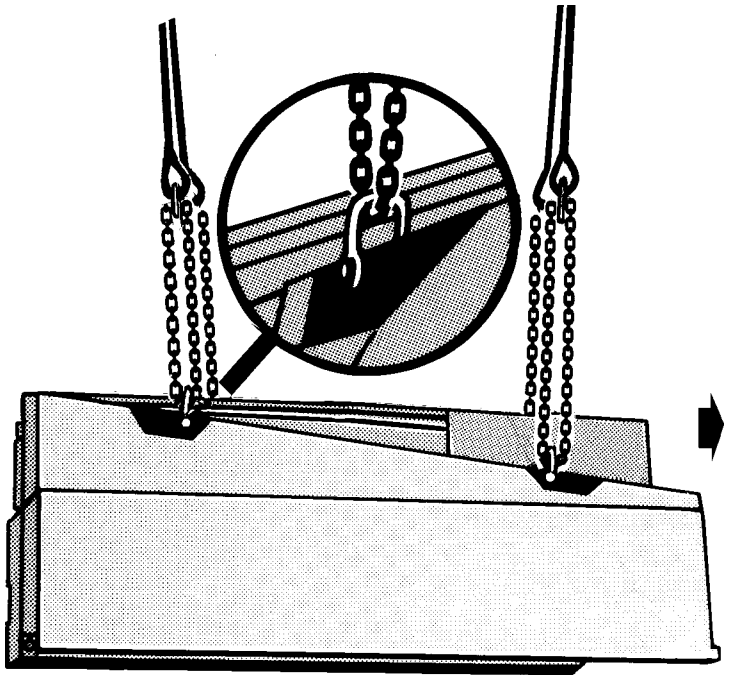
(b) Ensure all the bay latches are securely fastened.

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

NOTE: When using the 15,000-pound capacity multileg sling set, tie or tape the inner sling legs to the outer sling legs.

(3) Hookup. Two hookup teams are required for this load. The static discharge person discharges the static electricity. The forward hookup person stands on top of the ramp bay and places apex fitting 1 onto the forward cargo hook. The aft hookup person stands on top of the ramp bay and places apex fitting 2 onto the aft cargo hook. The hookup teams then carefully dismount the load and remain close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup teams quickly exit the area underneath the helicopter to the designated rendezvous point.

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



RIGGING STEPS

1. Place two sling legs on apex fitting number 1. Position sling set number 1 on top of the front of the ramp bay.

2. Loop the chain end of the left and right sling legs through their respective lift provisions (a pin located between two plates on the top edge of the bay). Place the correct link from Table 8-28 in the grab hook.

3. Place two sling legs on apex fitting number 2. Position sling set number 2 on top of the ramp bay at the rear.

4. Loop the chain end of the left and right sling legs through their respective lift provisions (a pin located between two plates at the top rear edge). Place the correct link from Table 8-28 in the grab hook. Secure the excess chain with tape or Type III nylon cord.

5. Pull the chain of each sling leg up tightly and tape or tie just above the lift provision.

6. Raise the apex fittings above the load. Cluster and tie or tape (breakaway technique) the sling legs in each sling set together to prevent entanglement during hookup and lift-off.

Figure 8-28. Ribbon Bridge, Ramp Bay

8-36. Vibrating Roller, Caterpillar, RO-33

a. Applicability. The following item in Table 8-35 is certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 8-35. Vibrating Roller, Caterpillar, RO-33

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Vibrating Roller, Caterpillar, RO-33	16,425	25K	30/3	CH-47	120

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

(1) Sling set (25,000-pound capacity) with one additional apex fitting..

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

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

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

(5) Lumber, 2-inch x 4-inch (as required).

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

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

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

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

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

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

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

(d) Remove and secure the exhaust stack.

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

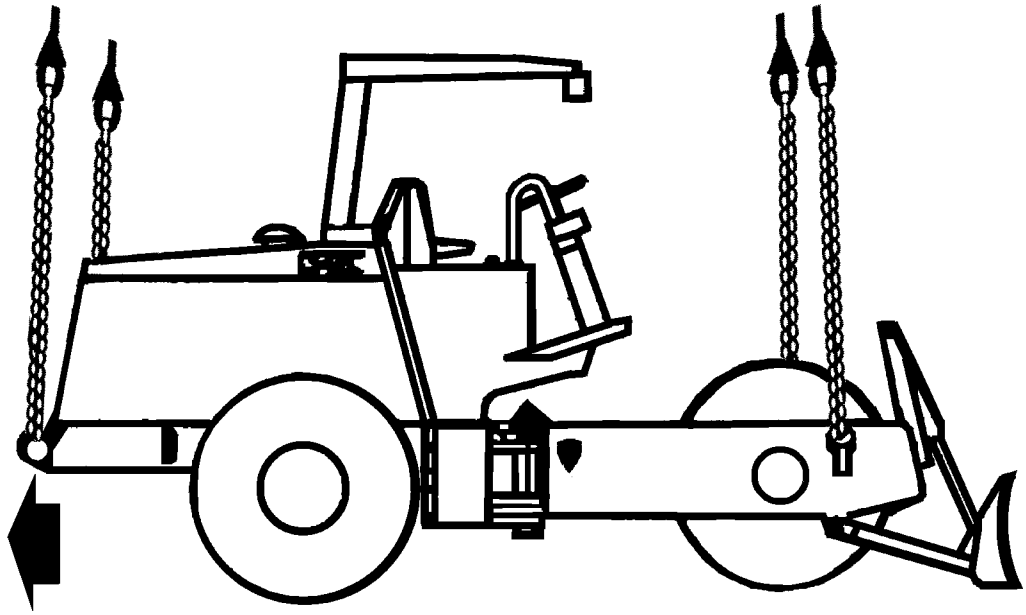
(f) Tie down the steering wheel with Type III nylon cord.

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

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

(3) Hookup. The hookup team stands beside the roller. The static wand person discharges the static electricity with the static wand. The forward hookup person places apex fitting 2 onto the forward cargo hook. The aft hookup person places apex fitting 1 onto the aft 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. Connect 2 sling legs to apex fitting number 1. Position the apex fitting next to the front of the roller.

2. Loop the chain end of the sling legs through their respective lift provisions. Place the correct link from Table 8-35 in the grab hook.

3. Connect 2 sling legs to apex fitting number 2. Position the apex fitting on top of the aft end (engine compartment end) of the roller.

4. Loop the chain end of the sling legs through their respective lift provisions located on the aft end of the roller. Place the correct link from Table 8-35 in the grab hook.

5. Pad the chain where it contacts the engine compartment. Secure all excess chain with tape or Type III nylon cord.

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 8-35. Vibrating Roller, Caterpillar, RO-33

Table 10-5. 8-x 8-x 20-Foot Shelters (continued)

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Non-Divisional AVIM Shop, Electrical / Instrument Shop	Min-11,000 Max-13,200	25K	Door is Aft 5/5	CH-47	120
Non-Divisional AVIM Shop, Production / Quality Control Shop	Min-11,000 Max-13,200	25K	Door is Aft 5/5	CH-47	120
AN/TSQ-108A(V)2	13,050	15K	ECU is Aft 3-20	CH-53	80
Improved Direct Air Support Center	10,000	15K	Door is Front 9-Left Side 3-Right Side	CH-53	70
Shop Set, Maintenance Facility Night Sight, E1713	8,400	15K	Door is Front 3/35	CH-53	80
Shop Set, Maintenance Artillery, E1712	8,400	15K	Door is Front 3/35	CH-53	80
Shop Set, Maintenance Small Arms, E1714	8,400	15K	Door is Front 3/40	CH-53	80
Trojan Transportable Mini-Switch (TTMS) ISO Shelter	14,700	25K	Door is Front 3/3	CH-47	75
EMI, EMC, S717T, Communications, TAMCN A2336	6,400	15K	Door is Front 3/3	CH-53	80
Non-Expandable Communications, TAMCN A2337	10,000	15K	Door is Front 3/3	CH-53	80
Tactical Reconnaissance Processing Evaluation System (TERPES)	13,200	15K	Door is Front 15/3	CH-53	80
Trojan Air Transportable Electronic Reconnaissance System (TATERS), SCINS Communications Subsystem Shelter	13,320	25K	Data Plate is Front 3/20	CH-47	110
Trojan Air Transportable Electronic Reconnaissance System (TATERS), CHIPS Receiver Group Shelter	14,220	25K	Data Plate is 3/20	CH-47	90
Trojan Air Transportable Electronic Reconnaissance System (TATERS), PEELS Electric Power Plant Shelter	15,100	25K	Data Plate is Front 3/20	CH-47	80
Trojan Air Transportable Electronic Reconnaissance System (TATERS), TOTS Nonexpandable Shelter	10,720	25K	Data Plate is Front 3/20	CH-47	60
Containerized Shower (CS)	10,070	25K	Data Plate is Front 3/20	CH-47	60

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

(1) Sling set (as listed in Table 10-5) with one additional apex fitting.

OR

(2) Sling set (15,000-pound capacity) (2 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.

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

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

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

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

(b) Close and secure all doors, vents, hatches, and caps with tape or Type III nylon cord.

(c) Secure the Environmental Control Unit's cover with tape or Type III nylon cord. Ensure the ECU frame mounting bolts are tight.

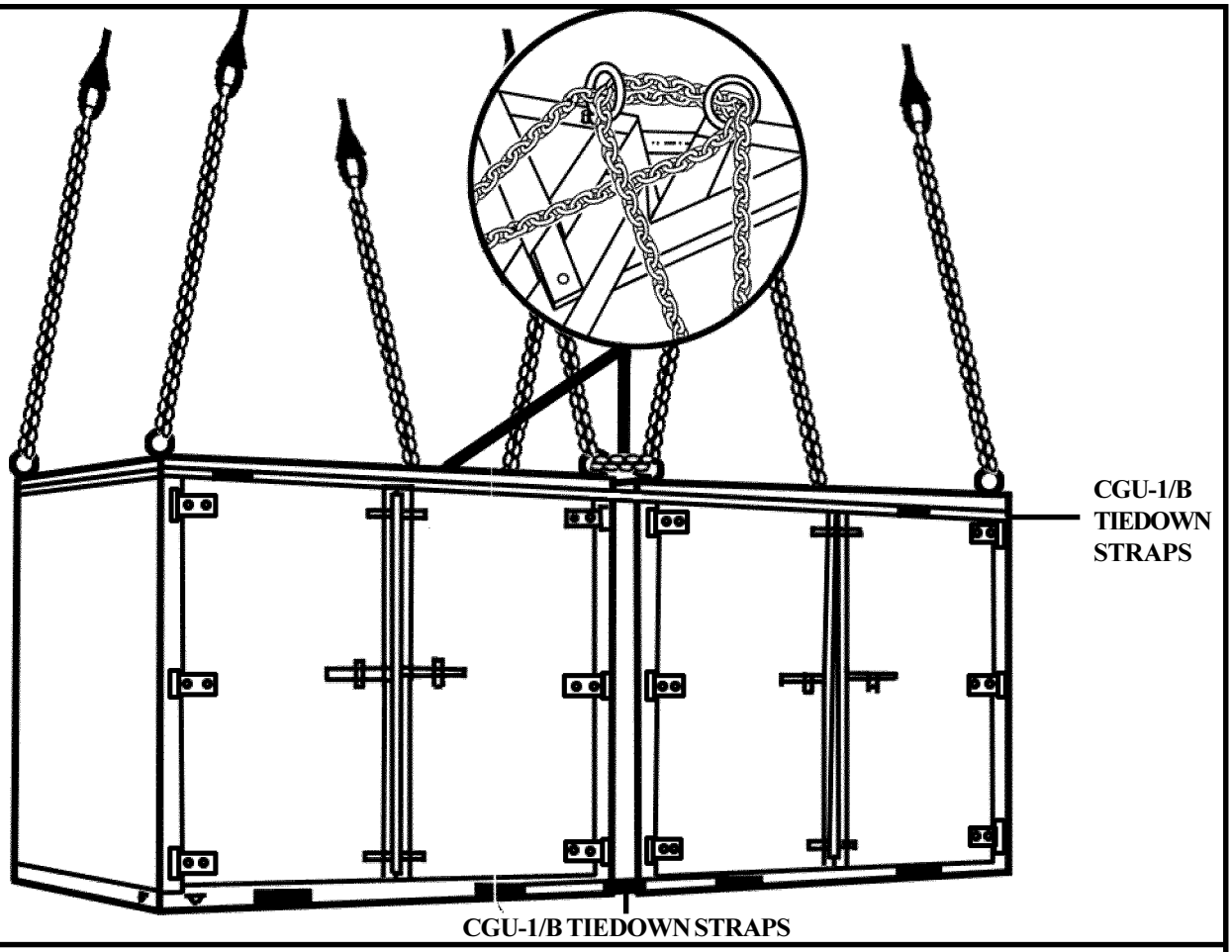
(2) Rigging. Rig the load according to the steps in Figure 10-5.

NOTE: When using the 15,000-pound capacity multileg sling set, tie or tape the inner sling legs to the outer sling legs.

(3) Hookup. Two hookup teams stand on the roof of the shelter. The static discharge person discharges the static electricity. The forward hookup person places apex fitting 1 onto the forward cargo hook. The aft hookup person places apex fitting 2 onto the aft cargo hook. The hookup teams then carefully dismount the load and remain close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup teams quickly exit the area underneath the helicopter to the designated rendezvous point.

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

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



RIGGING STEPS

1. Position sling set one on top of the forward container.

2. Route outer sling legs 1 and 2 to the forward end of the forward container and inner legs 3 and 4 to the rear. Loop the chain end of sling legs 1 and 2 through their respective lift provisions located on the forward end of the container. Place the correct link from Table 11-2 in the grab hook. Loop the chain end of sling legs 3 and 4 through the lift provisions on the rear of the forward container and the front of the rear container. Place the correct link from Table 11-2 in the grab hook.

3. Position sling set two on top of the rear container.

4. Route outer sling legs 1 and 2 to the forward end of the rear container and inner legs 3 and 4 to the rear. Loop the chain end of sling legs 1 and 2 through the lift provisions on the front of the rear container and the rear of the front container. Place the correct link from Table 11-2 in the grab hook. Loop the chain end of sling legs 3 and 4 through their respective lift provisions located on the rear end of the rear container. Place the correct link from Table 11-2 in the grab hook.

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

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

Figure 11-2. Two ISU-90 Shipping/Storage Containers

11-4. Army Tactical Missile Systems Multiple Launch Rocket System or Guided Missile Launch Assembly, Two Containers

a. Applicability. The following items in Table 11-3 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 11-3. Army Tactical Missile Systems Multiple Launch Rocket System or Guided Missile Launch Assembly, Two Containers

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Multiple Launch Rocket System with Two Rocket Pods/Containers, (with Six Rockets)	10,010	25K	3/3	CH-47	110
Two Enclosure Assembly Launch Pods, Guided Missile Launch Assembly	10,222	25K	3/3	CH-47	110

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

(1) Sling set (25,000-pound capacity) with one additional apex fitting.

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

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

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

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

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

(a) Prepare GMLAs/RPCs for travel in accordance with standard procedures.

CAUTION
Do not mix the MLRS and the GMLA in the same load.

(b) Stack the GMLAs/RPCs one on top of the other ensuring both GMLAs/RPCs are facing the same direction.

(c) Lash the stacks of GMLAs/RPCs together using the CGU-1/B tiedown straps. Two of the straps should run through both sets of lifting provisions on each end of the GMLAs/RPCs, to keep them aligned during flight. Evenly space the remaining two straps between the lifting provisions, running them around the GMLAs/RPCs. **DO NOT ROUTE THE STRAPS OVER THE ROCKET TUBES.** Pad all straps in the area where they contact the edges of the GMLAs/RPCs.

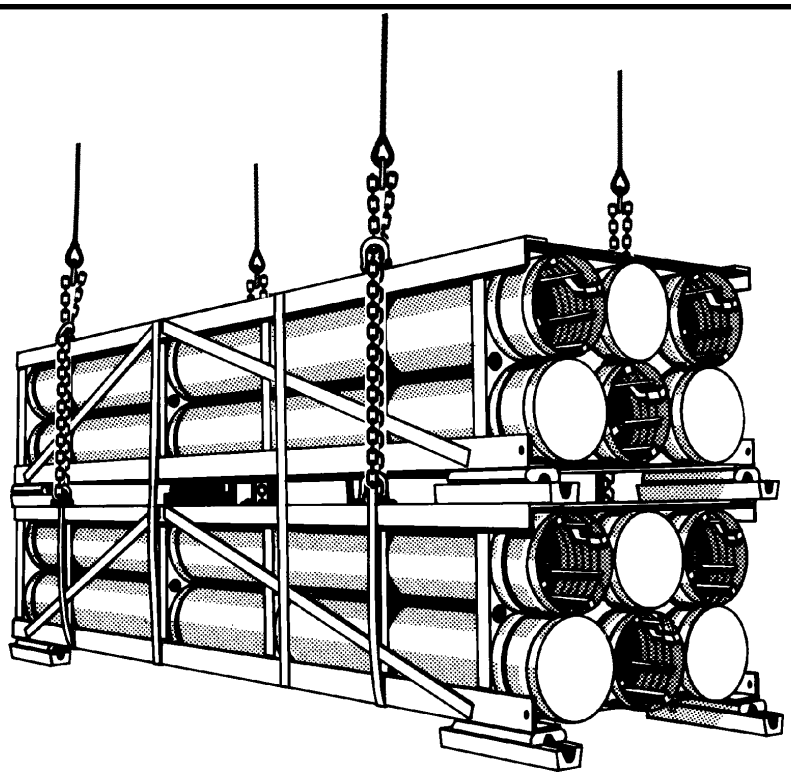
(2) Rigging. Rig the load according to the steps in Figure 11-3.

NOTE: The firing end is considered to be the front of the load.

(3) Hookup. Two hookup teams stand on top of the

container. The static discharge person discharges the static electricity. The forward hookup person places apex fitting 1 onto the forward cargo hook. The aft hookup person places apex fitting 2 onto the aft cargo hook. The hookup teams then carefully dismount the container and remain close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup teams quickly exit the area underneath the helicopter to the designated rendezvous point.

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



RIGGING STEPS

1. Place two sling legs on apex fitting number 1. Position apex fitting number 1 on top of the forward end of the GMLAs/RPCs.

2. Loop the chain end of the left and right sling legs through their respective top front lift provisions of the GMLAs/RPCs, through the front lifting provision on the bottom GMLAs/RPCs, and back through the front top lift provision on the top RP/C. Place the correct link from Table 11-3 in the grab hook.

3. Place two sling legs on apex fitting number 2. Position apex fitting number 1 on top of the aft end of the GMLAs/RPCs.

4. Loop the chain end of the left and right sling legs through their respective top rear lift provisions of the GMLAs/RPCs, through the rear lifting provision on the bottom GMLAs/RPCs, and back through the rear top lift provision on the top GMLAs/RPCs. Place the correct link from Table 11-3 in the grab hook.

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

Figure 11-3. Army Tactical Missile Systems Multiple Launch Rocket System or Guided Missile Launch Assembly, Two Containers

11-5. Army Tactical Missile Systems Multiple Launch Rocket System or Guided Missile Launch Assembly, Four Containers

a. Applicability. The following items in Table 11-4 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 11-4. Army Tactical Missile Systems Multiple Launch Rocket System or Guided Missile Launch Assembly, Four Containers

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT OUTER/ INNER	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Multiple Launch Rocket System (MLRS) Four Enclosure Assembly Launch Pods	20,020	25K	3/14	CH-47	120
Guided Missile Launch Assembly (GMLA), Four Enclosure Assembly Launch Pods	20,444	25K	3/14	CH-47	120

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

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

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

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

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

(5) Strap, cargo, tiedown, CGU-1/B (16 each).

(6) Lumber, 2 X 4 X 65-inches (4 each).

(7) Nails, eightpenny (as required).

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

(9) Crane or forklift (15,000-pound capacity or larger).

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

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

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

(a) Prepare the GMLAs/RPCs for sling loading in accordance with standard procedures.

(b) Prepare two pieces of dunnage to protect the GMLAs/RPCs by nailing two pieces of 2 X 4 X 65-inch lumber together, wide side to wide side.

(c) Make two stacks of GMLAs/RPCs. Use the crane or forklift to stack one stack of GMLAs/RPCs on top of the other with the projectiles facing the same direction. Label the stacks #1 and #2.

CAUTION
Do not mix the MLRS and the GMLA in the same load.

(d) Lash stack #1 together using four tiedown straps. Route a tiedown strap through both sets of lifting provisions on each end of the GMLAs/RPCs. Evenly space the remaining two tiedown straps between the lifting pro-

visions, routing the straps around the GMLAs/RPCs. **DO NOT ROUTE THE STRAPS OVER THE ROCKET TUBES.** Pad the straps where they contact the edges of the EALP.

(e) Lash stack #2 using the above procedures for stack #1.

(f) Position the two pieces of dunnage near the lifting provisions on each end of the GMLAs/RPCs. Secure the dunnage to the GMLAs/RPCs with Type III nylon cord.

(g) Position stack #1 against stack #2 using the crane or forklift. Ensure the dunnage is between the loads.

(h) Lash the top two GMLAs/RPCs together on each end. Connect two tiedown straps together to form each lashing.

(i) Lash the bottom two GMLAs/RPCs together on each end. Connect two tiedown straps together to form each lashing.

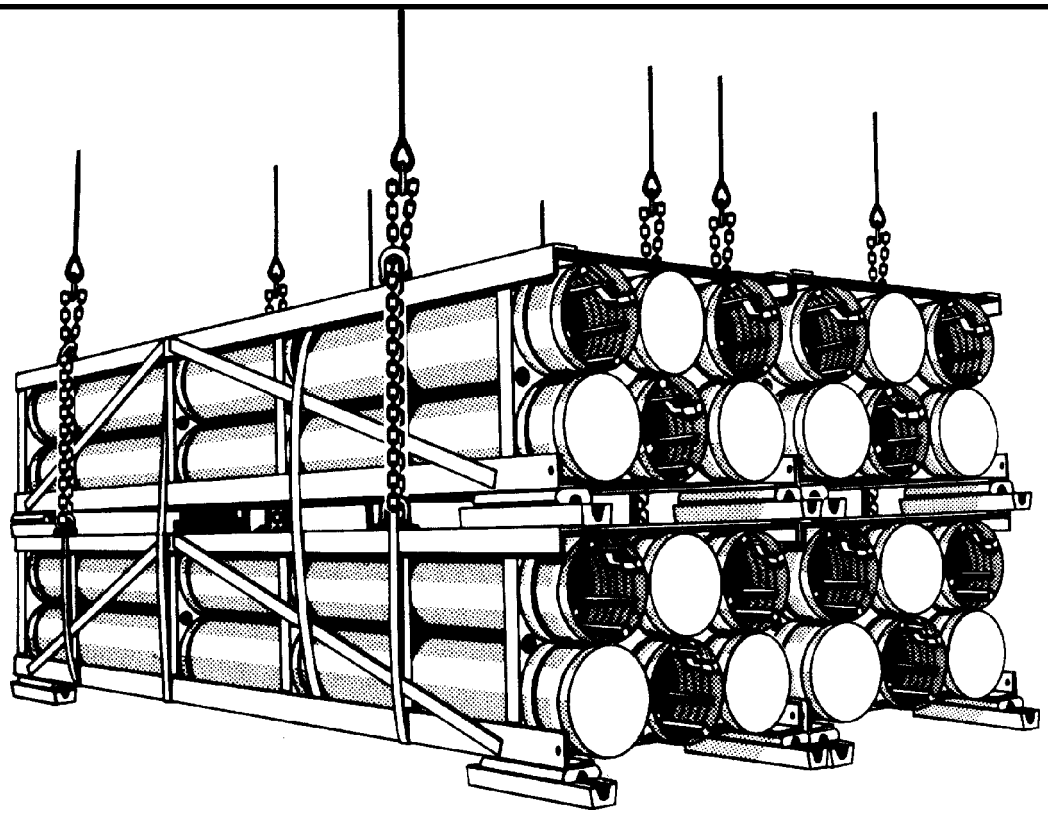
(j) Pad the straps where they contact the edges of the GMLAs/RPCs

(2) Rigging. Rig the load according to the steps in Figure 11-4.

NOTE: The firing end is considered the front of the load.

(3) Hookup. Two hookup teams stand on top of the container. The static discharge person discharges the static electricity. The forward hookup person places apex fitting 1 onto the forward cargo hook. The aft hookup person places apex fitting 2 onto the aft cargo hook. The hookup teams then carefully dismount the container and remain close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup teams quickly exit the area underneath the helicopter to the designated rendezvous point.

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



RIGGING STEPS

1. Position sling set number 1 on top of the forward end of the GMLAs/RPCs.

2. Loop the chain end of outer sling legs 1 and 2 through their respective top front lift provisions of the top GMLAs/RPCs, through the front lifting provision on the bottom GMLAs/RPCs, and back through the front top lift provision on the top GMLAs/RPCs. Place the correct link from Table 11-4 in the grab hook.

3. Loop the chain end of inner sling legs 3 and 4 through their respective top front lift provisions of the top , through the front lifting provision on the bottom GMLAs/RPCs, and back through the front top lift provision on the top GMLAs/RPCs. Place the correct link from Table 11-4 in the grab hook. Secure the excess chain with tape or Type III nylon cord.

4. Position sling set number 2 on top of the aft end of the GMLAs/RPCs.

5. Loop the chain end of outer sling legs 1 and 2 through their respective top rear lift provisions of the top GMLAs/RPCs, through the rear lifting provision on the bottom GMLAs/RPCs, and back through the rear top lift provision on the top GMLAs/RPCs. Place the correct link from Table 11-4 in the grab hook.

6. Loop the chain end of inner sling legs 3 and 4 through their respective top rear lift provisions of the top GMLAs/RPCs, through the rear lifting provision on the bottom GMLAs/RPCs, and back through the rear top lift provision on the top GMLAs/RPCs. Place the correct link from Table 11-4 in the grab hook. Secure the excess chain with tape or Type III nylon cord.

7. Raise the apex fittings above the container. Cluster and tie or tape (breakaway technique) the sling legs in each sling set together to prevent entanglement during hookup and lift-off.

Figure 11-4. Army Tactical Missile Systems Multiple Launch Rocket System or Guided Missile Launch Assembly, Four Containers

GLOSSARY

ACRONYMS AND ABBREVIATIONS

AETC	auxiliary equipment transportation container
AFATADS	advanced field artillery tactical data systems
ARL-C	airborne reconnaissance low-comint
ARL-I	airborne reconnaissance low-imagery
AS	aviation section
ASK	acoustic suppression kit
ATG	antenna transceiver group
BCP	battery command post
bn	battalion
BSTF	base shop test facility
CAFSM	compressed air-foam system, mobile
CBC	cargo bed cover
CHIPS	commom hardware intelligence processing subsystem
CMTH	contact maintenance truck, heavy
CNCE	communications nodal control element
CONEX	container express
COPS	crash-out package system
CS	containerized shower
DASC	direct air support central
DAMP	digital antenna mast program
DGM	digital group multiplexer
DOD	Department of Defense
DPPC	deployable print production center
EALP	enclosure assembly launch pods
EBFL	extendable boom forklift
ECU	environmental control unit
EFOGM	enhanced fiber optic guided missile
EMI	electromechanical induction
EPLRS	enhanced position location reporting system
FAAR	forward area alerting radar
FME	field maintenance equipment
FOPS	falling objects protection system
FUPP	full-up power pack
GMLA	guided missile launch assembly
GPH	gallons per hour
GPM	gallons per minute
GVW	gross vehicle weight
HEMAT	heavy expanded mobility ammunition trailer
HGAG	high gain antenna group
H-HMMWV	heavy high-mobility multipurpose wheeled vehicle
HIPIR	high-power illuminator radar
HMD	high mobility downsized
HMDA	high mobility digital group multiplexer assemblage
HMMH	high mobility materiel handler
HMMWV	high-mobility multipurpose wheeled vehicle
HMT	high mobility trailers
HZ	hertz
IAS	intelligence analysis system
IEW	intelligence and electronic warfare
IFAV	interim fast attack vehicle
IMETS	integrated meteorological systems
IPDS	inland petroleum distribution system
JRSC	jam-resistant secure communications
JSTAR	joint surveillance target attack radar
JTIDS	joint tactical information distribution system
KW	kilowatt(s)
LAV	light armored vehicle
lbs	pounds
LIN	line number
LMS	lightweight multipurpose shelter
LMTV	light medium tactical vehicle
LTACFIRE	lightweight tactical fire control system
LVAD	low velocity airdrop
MANPADS	man portable air defense system
MDS	meteorological data system
MGB	medium girder bridge
MHG	meteorological hydrogen generator
MIL STD	military standard
MLRS	multiple launch rocket system
mm	millimeter
MR	mobile radio
MRBS	mobile radio broadcasting subsystem
MSFDCS	multiservice flight data collection sheet
MT	mobile television
MTBS	mobile television broadcasting subsystem
MTMCTEA	Military Traffic Management Command Transportation Engineering Agency
MTV	medium tactical vehicle
NABS	NATO airbase satcom
NATO	North Atlantic Treaty Organization
NAVAIR	Naval Air Systems Command
NCS-E(D)	downsized net control station
NSN	national stock number
OC	operations central
OCG	operational control group
PCP	platoon command post
PEELS	primary electrical equipment life support
PLS	palletized loading system
PN	part number
POC	platoon operations center
PPU	primary power unit

PSV/MC	platoon support van/maintenance center
PTO	pioneer tool outfit
QRSA	quick reaction satellite antenna
RAC	riverine assault craft
RIE	required individual equipment
RLST	remote landing site tower
ROPS	roll-over protection system
ROWPU	reverse osmosis water purification unit
RP/C	rocket pod/container
SCINS	satellite communications intelsat nodal subsystem
SE	shop equipment
SEE	small emplacement excavator
SICPS	standardized integrated command post systems
SIU	sensor interface unit
SIXCON	six-compartment container
SMART-T	secure mobile anti-jam radar tactical terminal
SMMS	sensor mobile monitoring system
SOMS	special operations media systems
SSC	US Army Soldier Systems Center
SSS	single shelter switch
TAMCN	Table of Authorized Material Control Number
TAOM	tactical air operations module
TATERS	trojan air transportable electronic reconaissance system
TERPES	tactical reconnaissance processing evaluation system
TM	technical manual
TOTS	temporary occupancy troop shelter
TOW	tube launched, optically tracked, wireguided
TQG	tactical quiet generator
TRSS	tactical remote sensor system
TSS	tracked suspension system
TTCS	tactical terminal control system
TTMS	trojan transportable miniswitch
US	United States
USA	United States Army
USMC	United States Marine Corps
W/WO	with/without