

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 5-18 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.

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 strength.
- (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

point.

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

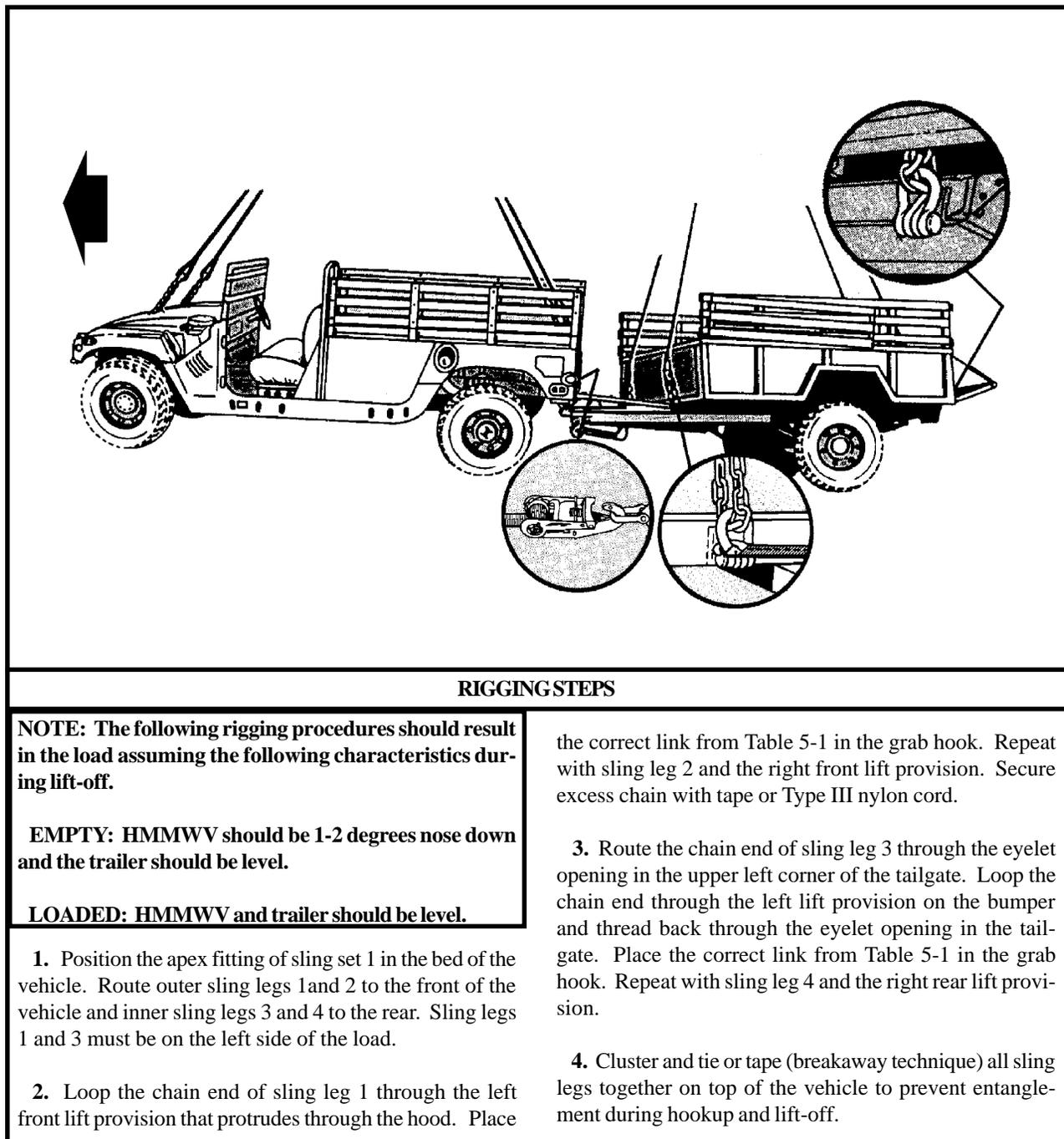


Figure 5-1. M998/M1038 Truck, Utility, 1-1/4 Ton (HMMWV) with M101A1/A2 Trailer, Cargo

RIGGING STEPS	
<p>5. Position apex fitting of sling set 2 in the trailer bed. Route outer sling legs 1 and 2 to the front of the trailer and inner sling legs 3 and 4 to the rear. Route the rear chains through the opening between the tailgate and the trailer bed inside of the tailgate hinges. Sling legs 1 and 3 must be on the left side of the load.</p> <p>6. 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 5-1 in the grab hook. Repeat with sling leg 2 through the right front lift provision.</p>	<p>Secure excess chain with tape or Type III nylon cord.</p> <p>7. Route the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 5-1 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.</p> <p>8. Cluster and tie or tape (breakaway technique) all sling legs together on top of the trailer to prevent entanglement during hookup and lift-off.</p>

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

5-3. M1037 Shelter Carrier (HMMWV) with M101A2 Trailer, Cargo

a. Applicability. The following items in Table 5-2 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 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 5-2. M1037 Shelter Carrier with M101A2 Trailer, Cargo

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
M1037 NC Support Vehicle	8,227	10K	80/30	CH-47	110
M1037 LEN Cable Vehicle	8,148	10K	80/30	CH-47	110
M1037 with SCC Command V1 S-250 Shelter	8,346	10K	80/30	CH-47	110
M1037 with SCC Command V2 S-250 Shelter	8,346	10K	80/30	CH-47	110
M1037 with Management 2 S-250 Shelter	7,905	10K	80/30	CH-47	110
NC Support M101A2 Trailer	2,643	10K	90/70	CH-47	110
LEN Cable Vehicle M101A2 Trailer	2,796	10K	90/70	CH-47	110
SCC Command V1 M101A2 Trailer	1,981	10K	90/70	CH-47	110
SCC Command V2 M101A2 Trailer	1,430	10K	90/70	CH-47	110
Management 2 M101A2 Trailer	1,430	10K	90/70	CH-47	110

NOTE: The NC support vehicle and the LEN cable vehicle have an enclosed canvas cargo bed, not the S-250 shelter.

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

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

(a) Chain length, part number 38850-00053-101, from a 10,000-pound capacity sling set (8 each).

(b) Coupling link, part number 577-0615, from a 10,000-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, 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 M1037 HMMWV in 15 minutes. Two persons can prepare and rig the 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) Ensure the shelter is secured to the vehicle using wire rope or tie-down 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 tie-down straps, tape, or Type III nylon cord.

(d) Ensure the fuel tank is 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 rear bumper.

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

(i) Place the tailgate in the open position.

(j) 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.

(k) Ensure the parking brake is set.

(l) 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.

(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 ratchet handles in the closed position with tape.

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

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

(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 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 point.

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

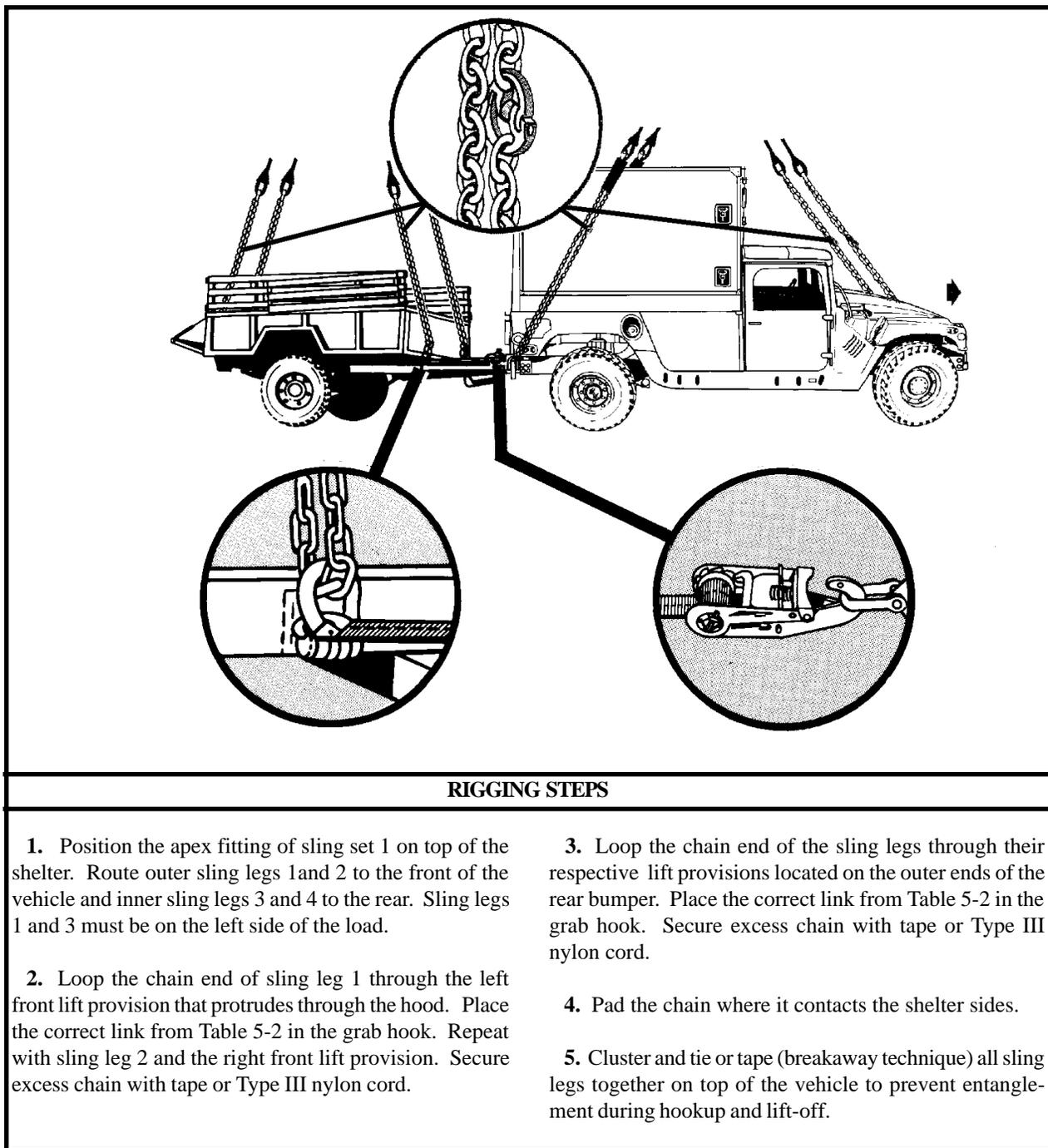


Figure 5-2. M1037 Shelter Carrier with M101A2 Trailer, Cargo

RIGGING STEPS	
<p>6. Position the apex fitting of sling set 2 in the trailer bed. Route outer sling legs 1 and 2 to the front of the trailer and inner sling legs 3 and 4 to the rear. Route the rear chains through the opening between the tailgate and the trailer bed and inside of the trailer hinges. Sling legs 1 and 3 must be on the left side of the load.</p> <p>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 5-2 in the grab hook. Repeat with sling leg 2 through the right front lift provision.</p>	<p>Secure excess chain with tape or Type III nylon cord.</p> <p>8. Route the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 5-2 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.</p> <p>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.</p>

Figure 5-2. M1037 Shelter Carrier with M101A2 Trailer, Cargo (continued)

5-4. M1037 Shelter Carrier (HMMWV) with S-250/S-250E Shelter and M116A2 Trailer Mounted Generators, PU-751/PU753/PU-620/M

a. Applicability. The following items in Table 5-3 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 5-3. M1037 Shelter Carrier with S250/S-250E Shelter and M116A2 Trailer Mounted Generators

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF A/C	RECOMMENDED AIRSPEED (KNOTS)
M1037 with LOS (V1) S-250 Shelter and PU-751/M Generator	M1037-8,246 PU-751-2,772	10K	HMMWV-80/30 PU-751-90/20	CH-47	110
M1037 with LOS (V2) S-250 Shelter and PU-751/M Generator	M1037-7,851 PU-751-2,776	10K	HMMWV-80/30 PU-751-90/20	CH-47	110
M1037 with NC LOS (V3) S-250 Shelter and PU-751/M Generator	M1037-8,225 PU-751-2,772	10K	HMMWV-80/30 PU-751-90/20	CH-47	110
M1037 with LEN LOS (V4) S-250 Shelter and PU-751/M Generator	M1037-8,125 PU-751-2,772	10K	HMMWV-80/30 PU-751-90/20	CH-47	110
M1037 with SCC Planning S-250E Shelter and PU-751/M Generator	M1037-8,003 PU-751-2,531	10K	HMMWV-80/30 PU-751-90/20	CH-47	110
M1037 with Radio Accessories S-250 Shelter and PU-751/M Generator	M1037-8,226 PU-751-2,751	10K	HMMWV-80/30 PU-751-90/20	CH-47	110
M1037 with SEN (V1) S-250E Shelter and PU-753/M Generator	M1037-8,231 PU-753-2,759	10K	HMMWV-80/30 PU-751-90/20	CH-47	110
M1037 with SEN (V2) S-250E Shelter and PU-753/M Generator	M1037-8,354 PU-753-2,759	10K	HMMWV-80/3 PU-751-90/20	CH-47	110
M1037 with Maintenance 1 S-250 Shelter and PU-753/M Generator	M1037-8,084 PU-753-2,680	10K	HMMWV-80/3 PU-751-90/20	CH-47	110
M1037 with NC Operations S-250E Shelter and PU-753/M Generator	M1037-8,222 PU-753-2,681	10K	HMMWV-80/3 PU-751-90/20	CH-47	110
M1037 with NC Management S-250E Shelter and PU-753/M Generator	M1037-7,921 PU-753-2,681	10K	HMMWV-80/3 PU-751-90/20	CH-47	110
M1037 with LEN Operations S-250E Shelter and PU-753/M Generator	M1037-8,309 PU-753-2,759	10K	HMMWV-80/3 PU-751-90/20	CH-47	110

**Table 5-3. M1037 Shelter Carrier with S250/S-250E Shelter and M116A2 Trailer Mounted Generators
(continued)**

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF A/C	RECOMMENDED AIRSPEED (KNOTS)
M1037 with LEN Management S-250E Shelter and PU-753/M Generator	M1037-8,288 PU-753-2,681	10K	HMMWV-80/30 PU-751-90/20	CH-47	110
M1037 with SCC Technical S-250E Shelter and PU-753/M Generator	M1037-8,075 PU-753-2,681	10K	HMMWV-80/30 PU-751-90/20	CH-47	110
M1037 S-250 Shelter and PU-625/G Generator	M1037-8,800 PU-625-2,000	10K	HMMWV-80/30 PU-751-90/20	CH-47	110

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

- (1) Sling set (10,000-pound capacity) (2 each).
 - (a) Chain length, part number 38850-00053-101, from a 10,000-pound capacity sling set (8 each).
 - (b) Coupling link, part number 577-0615, from a 10,000-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, 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 M1037 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. 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 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) Ensure the shelter is secured to the vehicle using wire rope or tie-down 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 tie-down 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.

(m) 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.

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

(o) 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.

(p) 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 5-3.

(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).

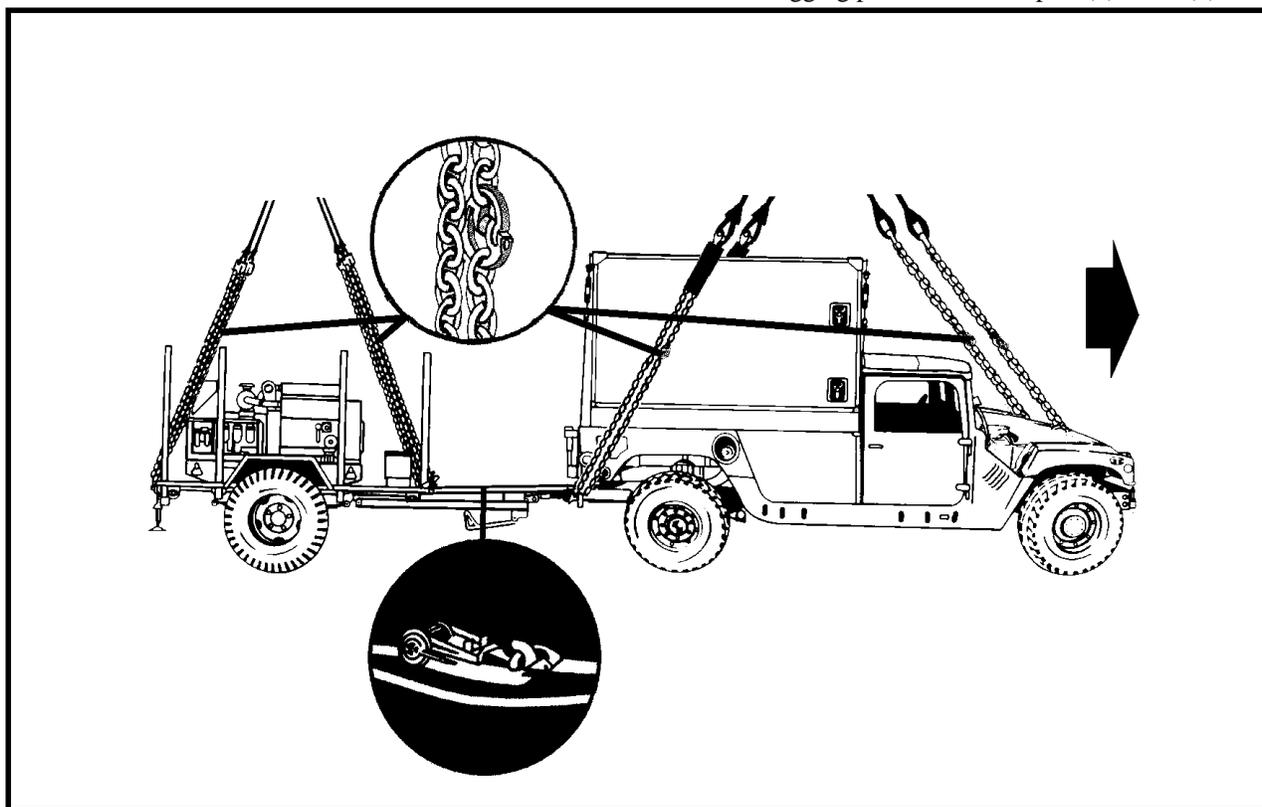


Figure 5-3. M1037 Shelter Carrier with S250/S-250E Shelter and M116A2 Trailer Mounted Generators

RIGGING STEPS

1. Position the apex fitting of sling set 1 on top of the shelter. Route outer sling legs 1 and 2 to the front of the vehicle and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.
2. Loop the chain end of sling leg 1 through the left front lift provision that protrudes through the hood. Place the correct link from Table 5-3 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 5-3 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 1 and 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 5-3 in the grab hook. Repeat with sling leg 2 through the right front lift provision. Secure excess chain with tape or Type III nylon cord.
8. Loop the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 5-3 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. Tape sling leg 1 to the front bow of the trailer (breakaway technique) to prevent entanglement with the cable reel handle.
10. 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 5-3. M1037 Shelter Carrier with S250/S-250E Shelter and M116A2 Trailer Mounted Generators
(continued)*

5-5. M998/M1038 Truck, Utility, 1-1/4 Ton (HMMWV) and G-85/TPQ-36 (V)7 Generator Group on M116A2 Modified Trailer

a. Applicability. The following items in Table 5-4 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 5-4. M998/M1038 Truck, Utility, 1-1/4 Ton and G-85/TPQ-36 (V)7 Generator Group

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Truck, 1-1/4 Ton, HMMWV, M998/M1038	7,000	10K	79/3	CH-47	120
G-85/TPQ-36 (V) 7 Generator Trailer Group	3,475	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 securing the latch. 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 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 5-4.

(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).

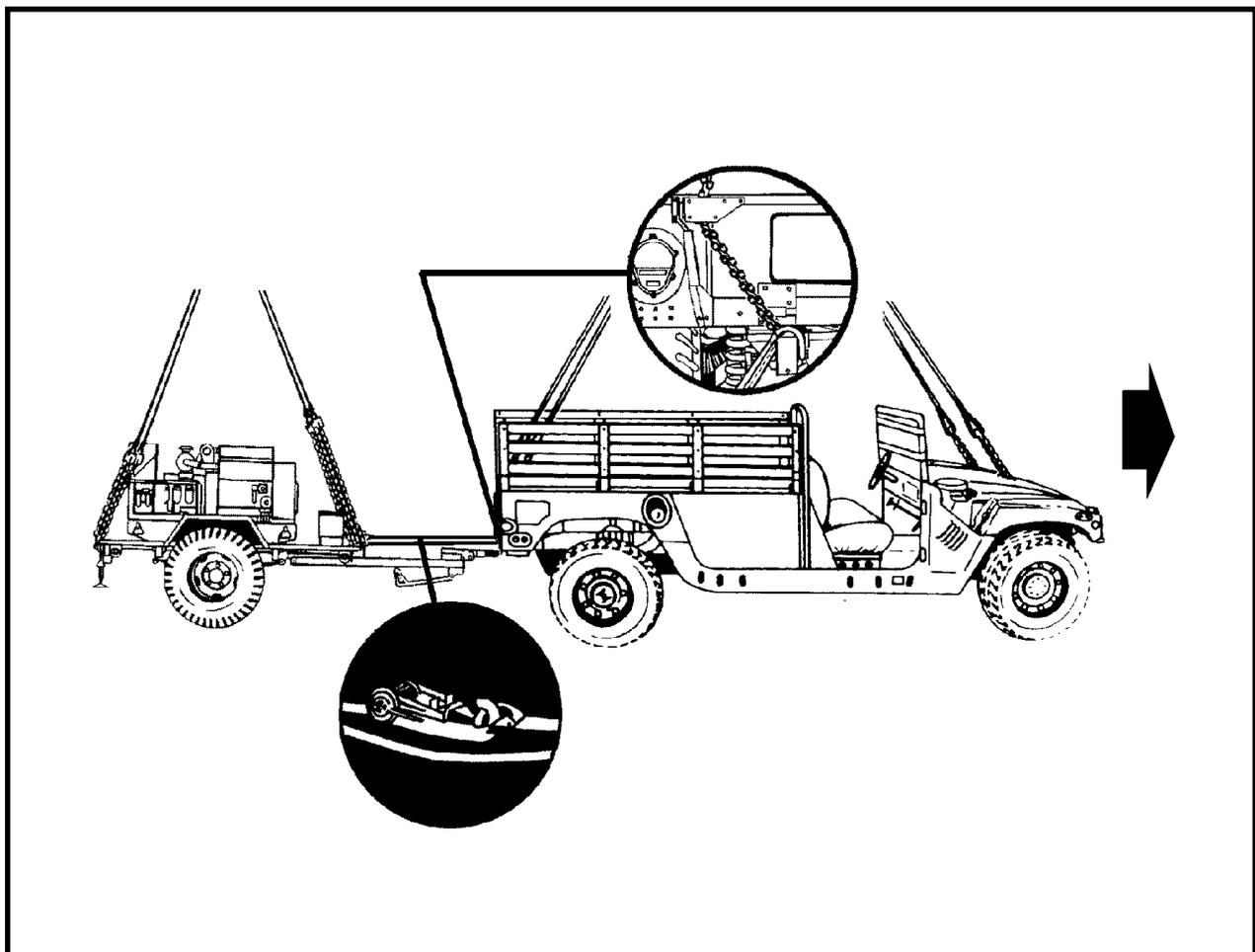


Figure 5-4. M998/M1038 Truck, Utility, 1-1/4 Ton and G-85/TPQ-36 (V)7 Generator Group

RIGGING STEPS	
<p>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.</p> <p>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 5-4 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with tape or Type III nylon cord.</p> <p>3. 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 5-4 in the grab hook. Repeat with sling leg 4 and the right rear lift provision.</p> <p>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.</p>	<p>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.</p> <p>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 5-4 in the grab hook. Repeat with sling leg 2 through the right front lift provision. Secure excess chain with tape or Type III nylon cord.</p> <p>7. Route the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 5-4 in the grab hook. Repeat with sling leg 4 through the right rear lift provision. Secure excess chain with tape or Type III nylon cord.</p> <p>8. Pad the chains where they contact the load.</p> <p>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.</p>

Figure 5-4. M998/M1038 Truck, Utility, 1-1/4 Ton and G-85/TPQ-36 (V)7 Generator Group (continued)

5-6. M1097 Truck, Utility, 1-1/4 Ton (HMMWV) with Pallet Group OA-9134/TSC, Antenna AS-3036/TSC and PU-753 Generator Set on M116A2 Trailer

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

Table 5-5. M1097 Truck, Utility, 1-1/4 Ton (HMMWV) with Pallet Group OA-9134/TSC, Antenna AS-3036/TSC and PU-753 Generator Set on M116A2 Trailer

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Truck, Utility, 1 1/4-ton , M1097 with Pallet Group OA-9134/TSC, Antenna AS-3036/TSC	7,120	25K	62/3	CH-47	110
PU-753 Generator Set on M116A2 Trailer	3,000	25K	70/54	CH-47	110

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, 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.
- (7) Spreader bar assembly (component of the M996/M997 Ambulance).
- (8) Reach pendant, 11,000- or 25,000-pound capacity.

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. 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 the mirrors in and tie together with Type III nylon cord. Remove the doors and secure to the seats with Type III nylon cord.

(b) Ensure the antenna support structure assembly is secured to the vehicle. Secure all loose equipment inside the antenna support structure with tape, Type III nylon cord, or tiedown straps.

(c) Secure all equipment and cargo inside the truck with tie-down 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 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 trailer hand 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. Tape the CGU-1/B every 24 inches to prevent flapping.

(o) Attach one reach pendant on each sling set apex fitting.

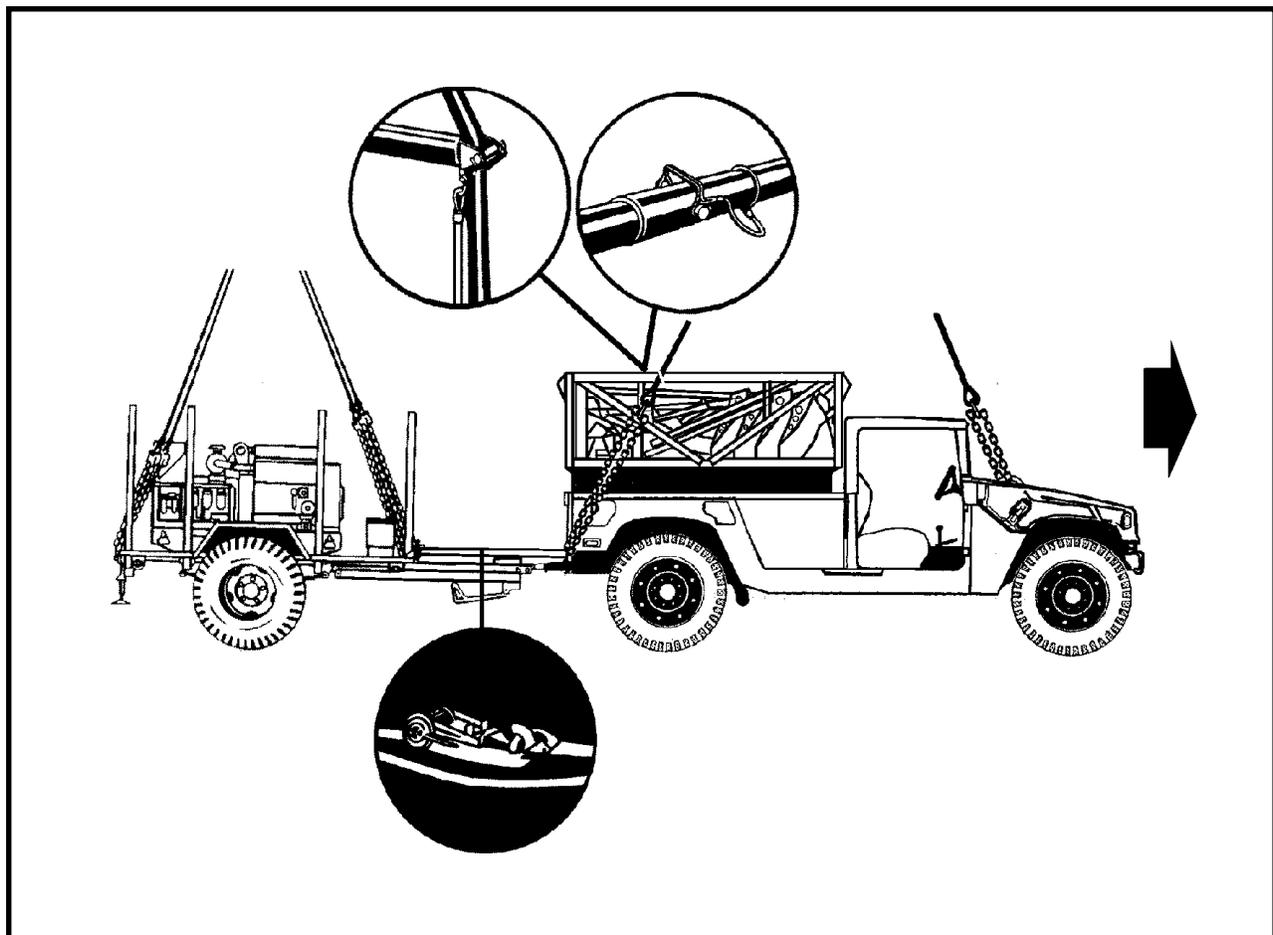
(2) **Rigging.** Rig the load according to the steps in Figure 5-5.

(3) **Hookup.** Two hookup persons are required for this load. The forward hookup person stands on top of the support structure 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.

CAUTION

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

(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 and reach pendant on top of the antenna support structure assembly. Route outer sling legs 1 and 2 to the front of the vehicle and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.

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 5-5 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with tape or Type III nylon cord.

3. Position the spreader bar assembly 12 inches from

the rear of the antenna support structure. Route the rear sling ropes through the guides on the end of the spreader bar. Secure the sling ropes in the guides with the retainer pins and keepers.

4. Route the chain end of sling leg 3 through the lift provision located on the left end of the rear bumper from inboard to outboard. Place the correct link from Table 5-5 in the grab hook. Repeat with sling leg 4 and the right rear lift provision.

5. Remove all slack from sling legs 3 and 4. Install a breakaway tie using 1/4-inch cotton webbing around each leg and around the top bar of the antenna support structure.

Figure 5-5. M1097 Truck, Utility, 1-1/4 Ton (HMMWV) with Pallet Group OA-9134/TSC, Antenna AS-3036/TSC and PU-753 Generator Set on M116A2 Trailer

RIGGING STEPS	
CAUTION Do not use Type III nylon cord to make the breakaway ties.	<p>must be on the left side of the load.</p> <p>9. 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 5-5 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.</p> <p>10. Loop the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 5-5 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.</p> <p>11. Pad the chains where they contact the load.</p> <p>12. Cluster and tie or tape (breakaway technique) all sling legs together on top of the trailer to prevent entanglement during hookup and lift-off.</p>
<p>6. Extend the spreader bar retainer cable down the length of the sling leg and secure to the chain with Type III nylon cord.</p> <p>7. Cluster and tie or tape (breakaway technique) all sling legs together on top of the support structure to prevent entanglement during hookup and lift-off.</p> <p>8. Position the apex fitting and Reach Pendant of sling set 2 on top of the generator set. Route outer sling legs 1 and 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</p>	

Figure 5-5. M1097 Truck, Utility, 1-1/4 Ton (HMMWV) with Pallet Group OA-9134/TSC, Antenna AS-3036/TSC and PU-753 Generator Set on M116A2 Trailer (continued)

5-7. M1097 Shelter Carrier, 1-1/4 Ton (HMMWV) with AN/TPQ-36 (V) 7, (S-250 Shelter), Operations Control Group and Radar Set Antenna Mounted on M116A2 Trailer

a. Applicability. The following items in Table 5-6 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 5-6. M1097 Shelter Carrier, 1-1/4 Ton (HMMWV) with AN/TPQ-36 (V) 7, (S-250 Shelter), Operations Control Group and Radar Set Antenna Mounted on M116A2 Trailer

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Truck, Shelter Carrier, 1 1/4-Ton, M1097 with OKG-398/TPW, Operations Control Group, (S-250 Shelter)	8,500	10K	80/30	CH-47	120
Radar Set Antenna, AN/TPQ-36 (V) 7 on M116A2 Trailer	2,975	10K	68/80	CH-47	120

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

- (1) Sling set (10,000-pound capacity) (2 each).
 - (a) Chain length, part number 38850-00053-101, from a 10,000-pound capacity sling set (8 each).
 - (b) Coupling link, part number 577-0615, from a 10,000-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, 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.
- (7) Plywood, 4 feet x 8 feet x 3/4 inches.
- (8) Reach Pendant, 11,000- or 25,000-pound capacity.

(9) Heater hose, 3/4-inch (as required).

c. Personnel. Two persons can prepare and rig the M1097 HMMWV in 15 minutes. Two persons can prepare and rig the antenna trailer in 20 minutes.

NOTE: The plywood is a full sheet which is notched to fit around the bracket located at the top of the antenna array. Attach a piece of 3/4-inch heater hose, split lengthwise along the forward edge of the plywood to protect the sling legs from fraying.

d. Procedures. Attach the antenna trailer to the truck by placing the lunette on the pintle hook and securing the latch. Secure the safety chains, cables, and hoses. Position the vehicle on level ground so both the truck and radar set are in a straight line. The following procedures apply to this load:

- (1) **Preparation.** Prepare the load using the following steps:
- (a) Fold the mirrors in and tie together with Type III nylon cord. Remove the doors and secure to the seats with Type III nylon cord.
 - (b) Secure all loose equipment inside the shelter with tape, Type III nylon cord, or tiedown straps.

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

(d) Ensure the fuel tank is 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 rear bumper.

(h) Raise the landing leg and secure in position with safety pins and tape.

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

(j) Ensure the trailer hand brake is set.

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

(l) Place the sheet of plywood on the top of the antenna, firmly against the BSU. Route and secure a CGU-1/B across the width of the plywood at the center of the array. Hook a second CGU-1/B to the front right tiedown provision located on the front of the right side of the trailer. Route the tiedown diagonally over the plywood and secure the ratchet to the left rear of the stowed ground rod, the lower tiedown provision, or the trailer frame. Repeat the procedure on the left side of the antenna routing the tiedown diagonally over the plywood.

(m) 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.

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

(o) 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. Tape the CGU-1/B every 24 inches to prevent flapping.

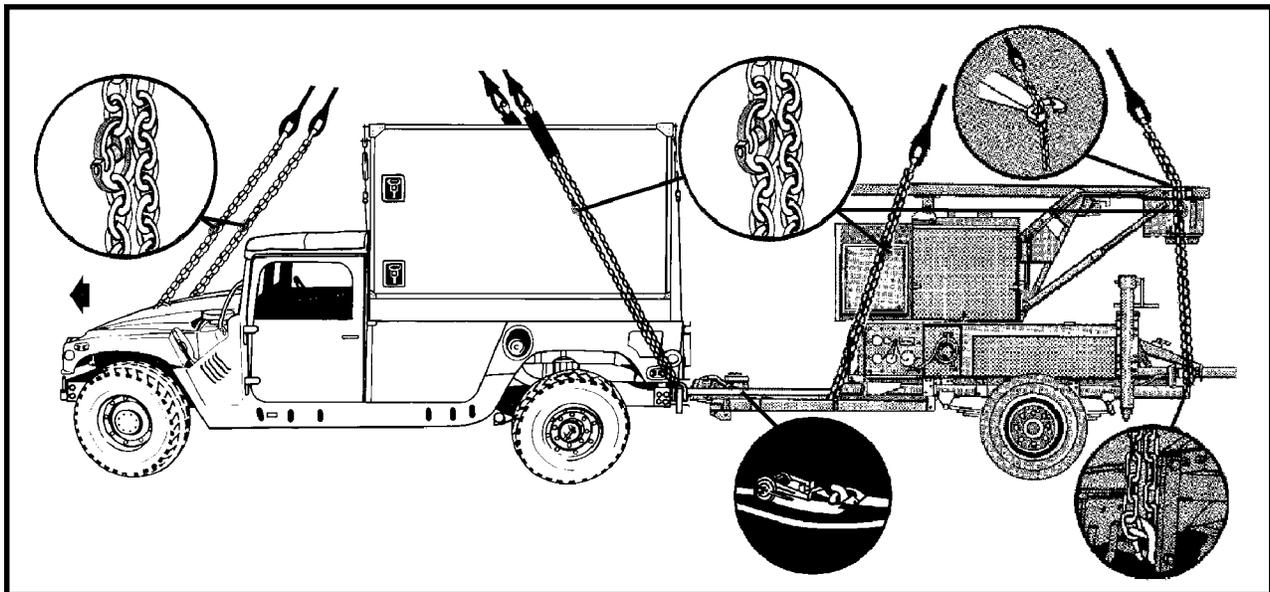
(p) Attach one reach pendant on each sling set apex fitting.

(q) 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 5-6.

(3) Hookup. Two hookup persons are required for this load. The forward hookup person stands on cab of the truck and places apex fitting 1 onto the forward cargo hook. The aft hookup person stands on the fender 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 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 and reach pendant on top of the truck. Route outer sling legs 1 and 2 to the front of the vehicle and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.

2. Loop the chain end of sling leg 1 through the left front lift provision that protrudes through the hood from inboard to outboard. Place the correct link from Table 5-6 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with tape or Type III nylon cord.

3. 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 5-6 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 trailer but not on top of the radar panel. Route outer

sling legs 1 and 2 to the front of the trailer and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.

7. Loop the chain end of sling leg 1 through the left front lift provision located on the front of the trailer near the A-frame. Place the correct link from Table 5-6 in the grab hook. Remove the slack from the sling leg and pad the sling/chain where it contacts the antenna and plywood. Secure the sling leg with a breakaway tie routed through a hole drilled in the plywood. 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 (the upper shackle on the deck frame). Place the correct link from Table 5-6 in the grab hook. Remove the slack from the sling leg and pad the sling/chain where it contacts the sling leg guide on the antenna. Place the sling leg in the guide and secure with a breakaway tie. 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 5-6. M1097 Shelter Carrier, 1-1/4 Ton (HMMWV) with AN/TPQ-36 (V) 7, (S-250 Shelter), Operations Control Group and Radar Set Antenna Mounted on M116A2 Trailer

5-8. M1097, 1-1/4 Ton (HMMWV) with Generator Pallet Group, G-86-TPQ-36 (V)7, and Radar Set Antenna Mounted on M116A2 Trailer

a. Applicability. The following items in Table 5-7 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 5-7. M1097, 1-1/4 Ton (HMMWV) with Generator Pallet Group, G-86-TPQ-36 (V)7, and Radar Set Antenna Mounted on M116A2 Trailer

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Truck, (HMMWV) M1097 with Generator Pallet Group, G-86-TPQ-36 (V) 7	7,400	10K	80/30	CH-47	120
Radar Set Antenna, AN/TPQ-36 (V) 7 on M116A2 Trailer	2,975	10K	68/80	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 (5 each).
- (6) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- (7) Plywood, 4 feet x 8 feet x 3/4 inches.
- (8) Reach pendant, 11,000- or 25,000-pound capacity.
- (9) Heater hose, 3/4-inch (as required).

c. Personnel. Two persons can prepare and rig the M1097 HMMWV in 15 minutes. Two persons can prepare and rig the antenna trailer in 20 minutes.

NOTE: The plywood is a full sheet which is notched to fit around the bracket located at the top of the antenna array. Attach a piece of 3/4-inch heater hose, split lengthwise along the forward edge of the plywood to protect the sling legs from fraying.

d. Procedures. Attach the antenna trailer to the truck by placing the lunette on the pintle hook and securing the latch. Secure the safety chains, cables, and hoses. Position the vehicle on level ground so both the truck and radar set are in a straight line. The following procedures apply to this load:

- (1) **Preparation.** Prepare the load using the following steps:
 - (a) Fold the mirrors in 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) 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 rear bumper.

(g) Raise the landing leg and secure in position with safety pins and tape.

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

(i) Ensure the trailer hand brake is set.

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

(k) Place the sheet of plywood on the top of the antenna, firmly against the BSU. Route and secure a CGU-1/B across the width of the plywood at the center of the array. Hook a second CGU-1/B to the front right tie-down provision located on the front of the right side of the trailer. Route the tiedown diagonally over the plywood and secure the ratchet to the left rear of the stowed ground rod, the lower tiedown provision, or the trailer frame. Repeat the procedure on the left side of the antenna routing the tiedown diagonally over the plywood.

(l) Route the hook portion of a CGU-1/B tiedown strap through the left rear inboard tiedown provision lo-

cated 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.

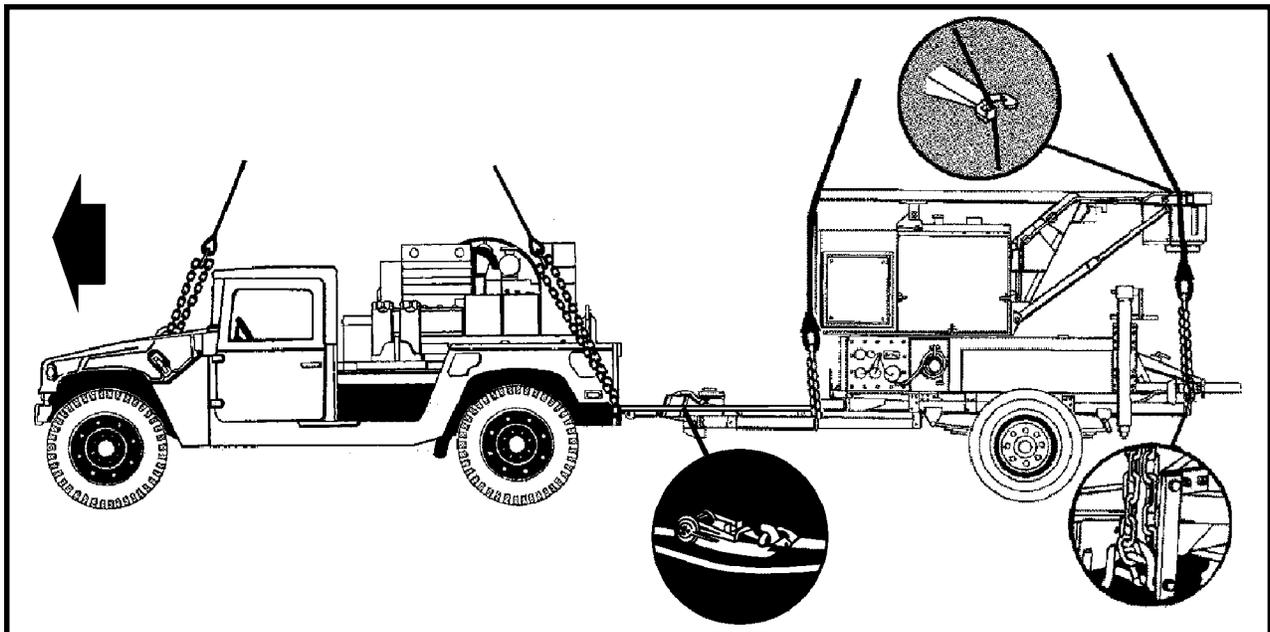
(n) Tighten both CGU-1/B tie-down straps at the same time. Secure the excess strap and safety ratchet handles in the closed position with tape. Tape the CGU-1/B every 24 inches to prevent flapping.

(o) Attach one reach pendant on each sling set apex fitting.

(2) Rigging. Rig the load according to the steps in Figure 5-7.

(3) Hookup. Two hookup persons are required for this load. The forward hookup person stands on cab of the truck and places apex fitting 1 onto the forward cargo hook. The aft hookup person stands on the fender 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 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 and reach pendant on top of the truck. Route outer sling legs 1 and 2 to the front of the vehicle and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.
2. Loop the chain end of sling leg 1 through the left front lift provision that protrudes through the hood from inboard to outboard. Place the correct link from Table 5-7 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with tape or Type III nylon cord.
3. 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 5-7 in the grab hook. Secure excess chain with tape or Type III nylon cord.
4. Cluster and tie or tape (breakaway technique) all sling legs together on top of the vehicle to prevent entanglement during hookup and lift-off.
5. Position the apex fitting of sling set 2 on top of the trailer but not on top of the radar panel. Route outer sling legs 1 and 2 to the front of the trailer 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. Loop the chain end of sling leg 1 through the left front lift provision located on the front of the trailer near the A-frame. Place the correct link from Table 5-7 in the grab hook. Remove the slack from the sling leg and pad the sling/chain where it contacts the antenna and plywood. Secure the sling leg with a breakaway tie routed through a hole drilled in the plywood. Repeat with sling leg 2 through the right front lift provision. Secure excess chain with tape or Type III nylon cord.
7. Loop the chain end of sling leg 3 through the left rear lift provision (the upper shackle on the deck frame). Place the correct link from Table 5-7 in the grab hook. Remove the slack from the sling leg and pad the sling/chain where it contacts the sling leg guide on the antenna. Place the sling leg in the guide and secure with a breakaway tie. 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 or sling legs when 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 5-7. M1097, 1-1/4 Ton (HMMWV) with Generator Pallet Group, G-86-TPQ-36 (V)7, and Radar Set Antenna Mounted on M116A2 Trailer

5-9. M1037 Shelter Carrier, 1-1/4 Ton (HMMWV) with AN/TPQ-36, (S-250 Shelter), Operations Control Group and Radar Set Antenna Mounted on M103A1 Trailer

a. Applicability. The following items in Table 5-8 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 5-8. M1037 Shelter Carrier, 1-1/4 Ton (HMMWV) with AN/TPQ-36, (S-250 Shelter), Operations Control Group and Radar Set Antenna Mounted on M103A1 Trailer

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Truck, (HMMWV) M1037 with AN/TPQ-36, S-250 Shelter	8,800	10K	52/3	CH-47	110
Antenna, Radar, AN/TPQ-36 Mounted on an M103A1 Trailer	4,100	10K	20/20	CH-47	110

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

- (1) Sling set (10,000-pound capacity) (2 each).
 - (a) Chain length, part number 38850-00053-101, from a 10,000-pound capacity sling set (8 each).
 - (b) Coupling link, part number 577-0615, from a 10,000-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 (5 each).
- (6) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- (7) Plywood, 4 feet x 8 feet x 3/4 inches.
- (8) Reach Pendant, 11,000- or 25,000-pound capacity.

c. Personnel. Two persons can prepare and rig the M1037 HMMWV in 15 minutes. Two persons can prepare and rig the antenna trailer in 20 minutes.

NOTE: The plywood is a full sheet which is notched to fit around the bracket located at the top of the antenna array.

d. Procedures. Attach the antenna trailer to the truck by placing the lunette on the pintle hook and securing the latch. Secure the safety chains, cables, and hoses. 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 the mirrors in 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 with wire rope or tiedown assemblies. Secure all loose equipment inside the shelter with tape, Type III nylon cord, or tiedown straps.
 - (c) Secure all equipment and cargo inside the truck with tiedown straps, tape, or Type III nylon cord.

(d) Ensure the fuel tank is 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 rear bumper. Place the lift provisions in the up position.

(h) Pad and tape the trailer A-frame on the areas where the lunette handles are located.

(i) Raise the landing leg and secure in position with safety pins and tape.

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

(k) Ensure the trailer hand brake is set.

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

(m) Place the sheet of plywood on the top of the antenna, firmly against the BSU. Route and secure a CGU-1/B across the width of the plywood at the center of the array. Hook a second CGU-1/B to the front right tiedown provision located on the front of the right side of the trailer. Route the tiedown diagonally over the plywood and secure the ratchet to the left rear of the stowed ground rod, the lower tiedown provision, or the trailer frame. Repeat the procedure on the left side of the antenna routing the tiedown diagonally over the plywood.

(n) 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.

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

(p) 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. Tape the CGU-1/B every 24 inches to prevent flapping.

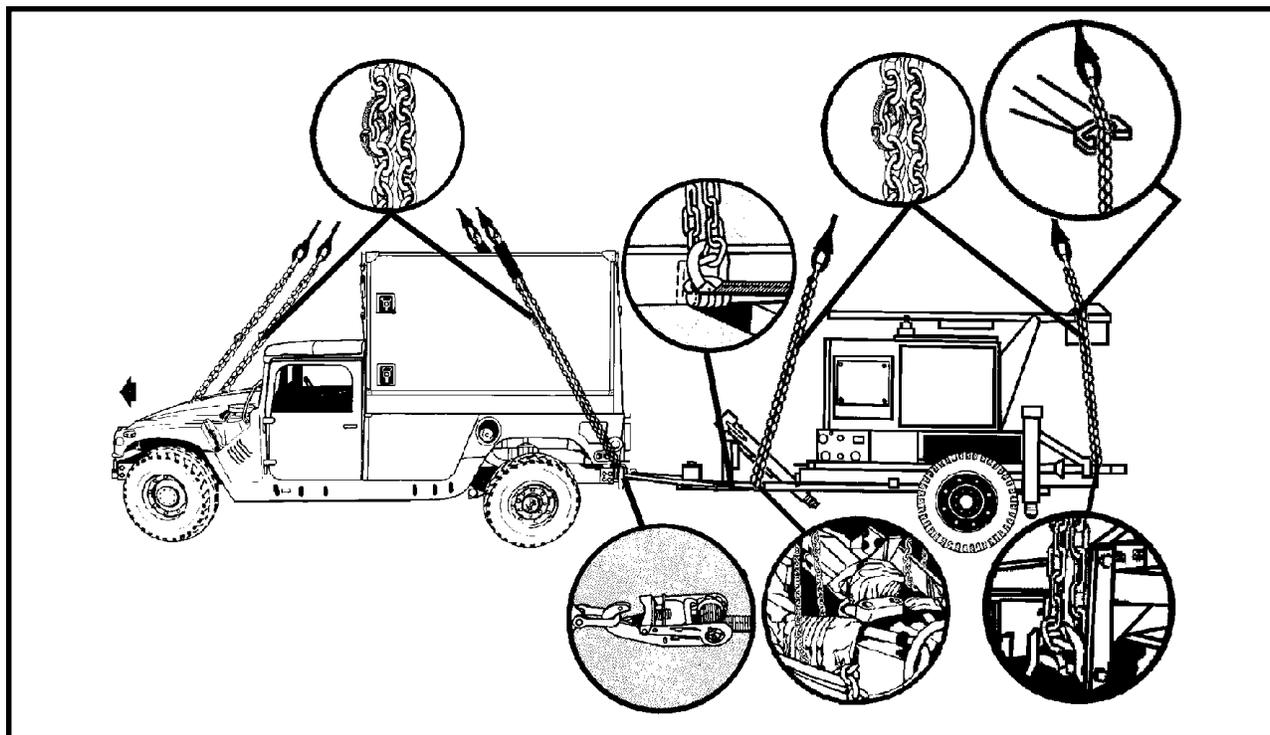
(q) Attach one reach pendant on each sling set apex fitting.

(r) 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 5-8.

(3) **Hookup.** Two hookup persons are required for this load. The forward hookup person stands on cab of the truck and places apex fitting 1 onto the forward cargo hook. The aft hookup person stands on the fender 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 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 and reach pendant on top of the shelter. Route outer sling legs 1 and 2 to the front of the vehicle and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.
2. Loop the chain end of sling leg 1 through the left front lift provision that protrudes through the hood of the truck. Place the correct link from Table 5-8 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with tape or Type III nylon cord.
3. 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 5-8 in the grab hook.
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 trailer but not on top of the radar panel. Route outer sling legs 1 and 2 to the front of the trailer and inner sling legs 3 and 4 to the rear of the trailer. Sling legs 1 and 3 must be on the left side of the load.
7. Loop the chain end of sling leg 1 around the left side of the lunette in the padded area inside the handle. Place the correct link from Table 5-8 in the grab hook. Ensure the chain is aft of the CGU-1/B tiedown strap. 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 5-8 in the grab hook. Remove the slack from the sling leg and pad the sling/chain where it contacts the sling leg guide on the antenna. Place the sling leg in the guide and secure with a breakaway tie. 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 5-8. M1037 Shelter Carrier, 1-1/4 Ton (HMMWV) with AN/TPQ-36, (S-250 Shelter), Operations Control Group and Radar Set Antenna Mounted on M103A1 Trailer

5-10. M1097 Shelter Carrier (HMMWV) with AN/TSC-93A, S-250 Shelter and PU-753 Generator 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 with AN/TSC-93A, S-250 Shelter, and PU-753 Generator 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

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 tiedown 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 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).

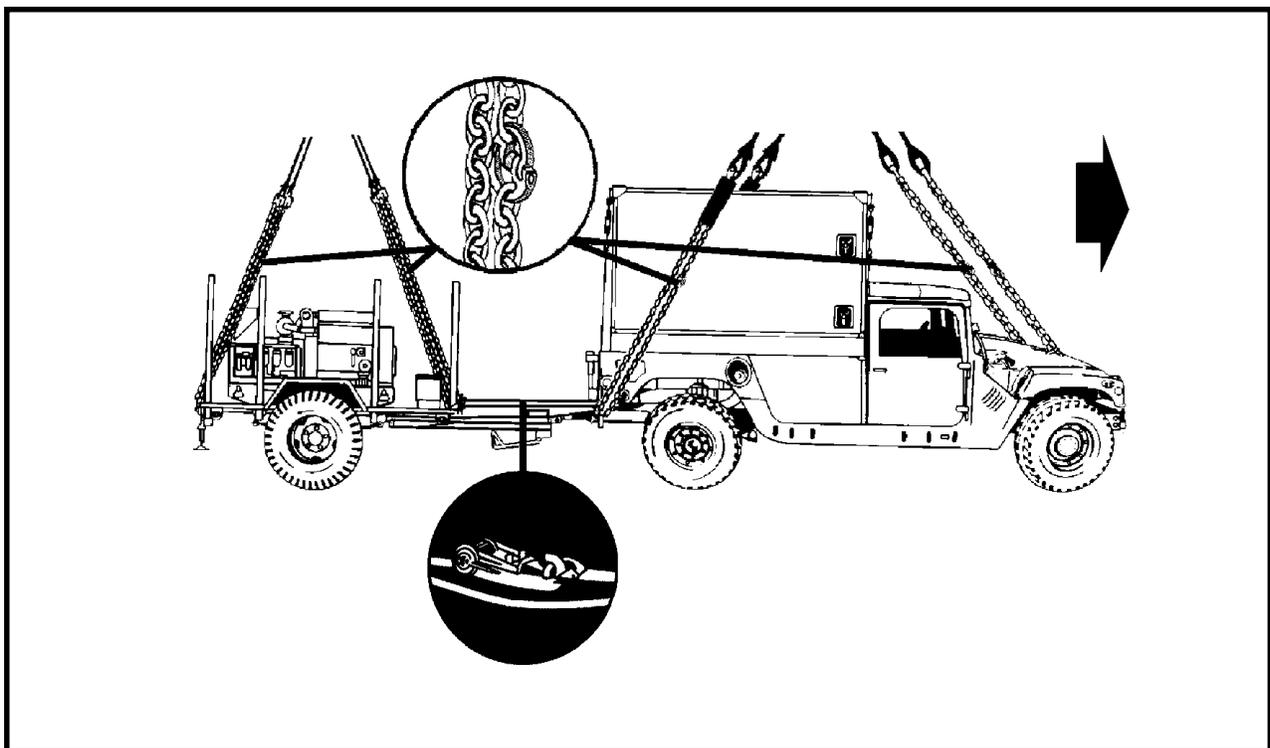


Figure 5-9. M1097 Shelter Carrier with AN/TSC-93A, S250 Shelter, and PU753 Generator on M116A2 Trailer

RIGGING STEPS	
<p>1. Position apex fitting on top of the shelter. Route outer sling legs 1 and 2 to the front of the vehicle and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.</p> <p>2. Loop the chain end of sling leg 1 through the left front lift provision that protrudes through the hood from inboard to outboard. Place the correct link from Table 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.</p> <p>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.</p> <p>4. Pad the chain where it contacts the shelter sides.</p> <p>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.</p>	<p>6. Position the apex fitting of sling set 2 on top of the generator set. Route outer sling legs 1 and 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.</p> <p>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.</p> <p>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.</p> <p>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.</p>

*Figure 5-9. M1097 Shelter Carrier with AN/TSC-93A, S250 Shelter, and PU753 Generator on M116A2 Trailer
(continued)*

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.

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

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

(j) Ensure the parking brake is set.

(k) 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.

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

(m) 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 5-10.

(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 vehicle 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).

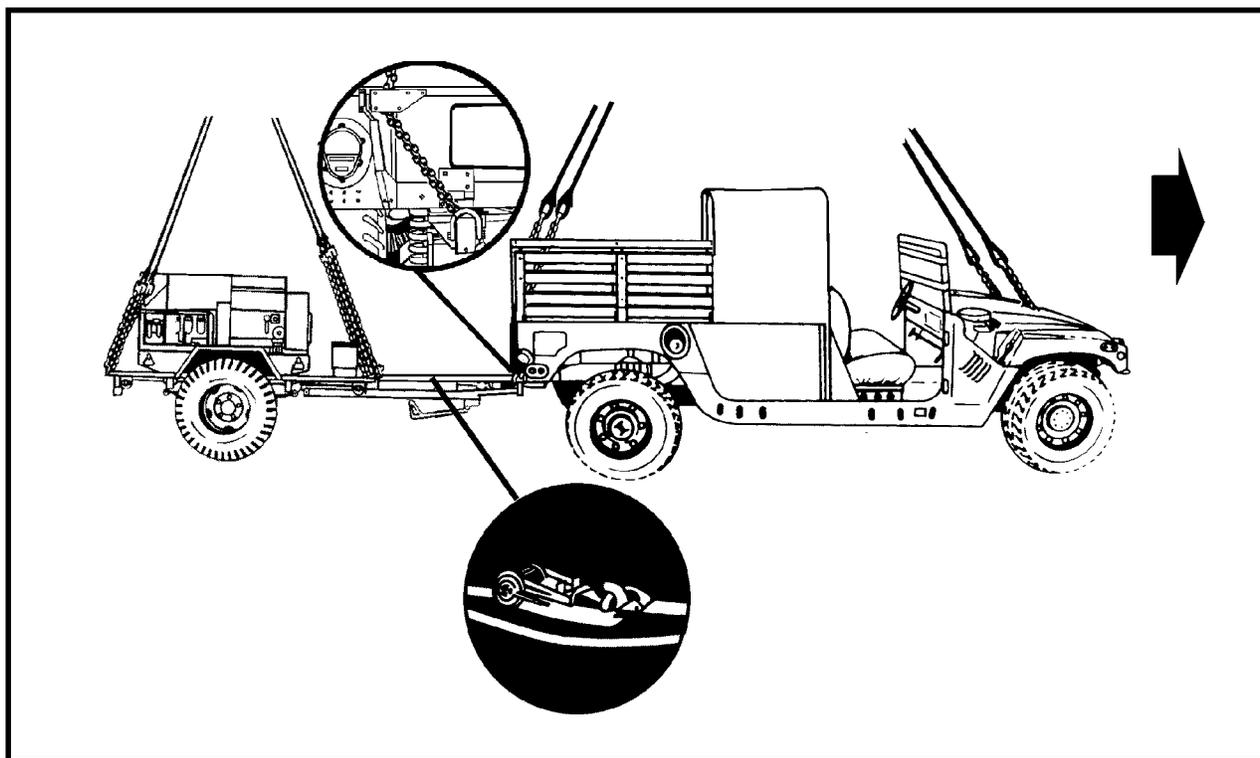


Figure 5-10. M1097 with AN/TSQ-183 Counter Battery Radar and MEP802A Generator on M116A3 Trailer

RIGGING STEPS

1. Position apex fitting on top of the truck. Route outer sling legs 1 and 2 to the front of the vehicle and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.
2. Loop the chain end of sling leg 1 through the left front lift provision that protrudes through the hood of the vehicle. Place the correct link from Table 5-10 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with tape or Type III nylon cord.
3. Route the chain end of sling leg 3 through the eyelet opening in the upper left corner of the tailgate. Loop the chain end through the left lift provision on the bumper and thread back through the eyelet opening in the tailgate. Place the correct link from Table 5-10 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 the apex fitting of sling set 2 on top of the generator set. Route outer sling legs 1 and 2 to the front of the generator and inner sling legs 3 and 4 to the rear of the generator. 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 on the front of the trailer. Place the correct link from Table 5-10 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. Loop the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 5-10 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 loads.
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 5-10. M1097 with AN/TSQ-183 Counter Battery Radar and MEP802A Generator on M116A3 Trailer
(continued)*

5-12. M1097 (HMMWV) with AN/TSQ-183, Counter Battery Radar and M101A2 Trailer

a. Applicability. The following items in Table 5-11 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 5-11. M1097 with AN/TSQ-183 Counter Battery Radar and M101A2 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
M101A2 Trailer	2,300	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 trailer 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 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 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 tie down straps, tape, or Type III nylon cord.

(d) Ensure the fuel tank is 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) Retract the lunette leg and secure with Type III nylon cord.

(i) Ensure the parking brake is set.

(j) Remove the trailer rack and place in the bed of the trailer. Place the cargo on top of the rack and secure with CGU-1/B cargo straps by routing the strap diagonally over the cargo.

(k) Place the trailer tailgate in the open position and hook the chain in the keeper.

(l) Route a CGU-1/B tiedown strap around the bumper on the left side of the rear bumper of the truck, back to and around the left side of the trailer axle. Do not interfere with the hydraulic lines or brake cable on the axle. Attach the hook portion and the ratchet of the CGU-1/B together.

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

(n) 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 5-11.

(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 vehicle 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).

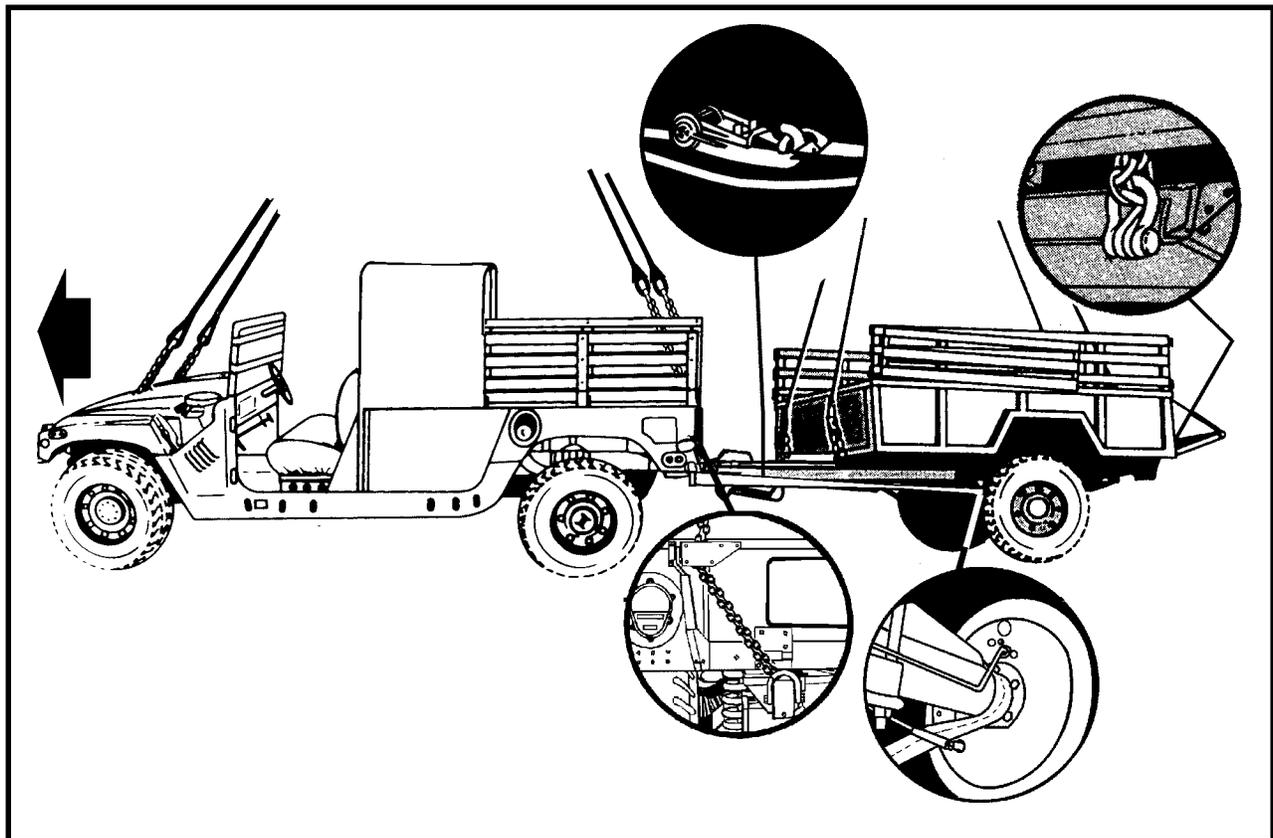


Figure 5-11. M1097 with AN/TSQ-183 Counter Battery Radar and M101A2 Trailer

RIGGING STEPS

1. Position apex fitting on top of the truck. Route outer sling legs 1 and 2 to the front of the vehicle and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.
2. Loop the chain end of sling leg 1 through the left front lift provision that protrudes through the hood of the vehicle. Place the correct link from Table 5-11 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with tape or Type III nylon cord.
3. Route the chain end of sling leg 3 through the eyelet opening in the upper left corner of the tailgate. Loop the chain end through the left lift provision on the bumper and thread back through the eyelet opening in the tailgate. Place the correct link from Table 5-11 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 the 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. 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 5-11 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. Loop the chain end of sling leg 3 through the left rear lift provision. Place the correct link from Table 5-11 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 loads.
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 5-11. M1097 with AN/TSQ-183 Counter Battery Radar and M101A2 Trailer (continued)

5-13. Joint Surveillance Target Attack Radar (JSTAR) System, M1097 (HMMWV) Mission Vehicle with LMS Shelter and Mission Trailer, HMT with Generator

a. Applicability. The following items in Table 5-12 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 5-12. JSTAR Mission Vehicle and Mission Trailer

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
JSTAR Mission Vehicle, M1097 with LMS Shelter	9,530	10K	60/10	CH-47	120
JSTAR Mission Trailer, HMT with Generator Set	3,960	10K	40/40	CH-47	120

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

- (1) Sling set (10,000-pound capacity) (2 each).
 - (a) Chain length, part number 38850-00053-101, from a 10,000-pound capacity sling set (8 each).
 - (b) Coupling link, part number 577-0615, from a 10,000-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) Remove the two transfer cases from the trailer and stow and secure inside the shelter. Secure all loose equipment inside the shelter with tape, Type III nylon cord, or tiedown straps.
 - (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) Retract the lunette leg and secure with Type III nylon cord.

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

(j) Ensure the parking brake is set.

(k) Route the hook portion of a CGU-1/B tiedown strap through the left rear inboard tie down provision located near the pintle on the rear bumper of the truck. Loop the tiedown through the left front trailer lift provision located on the left front of the trailer. Attach the hook portion of the tiedown strap to the ratchet.

NOTE: Do not attach the tiedown strap to the rear wheels of the vehicle. The rear wheels may rotate during flight causing slack in the straps.

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

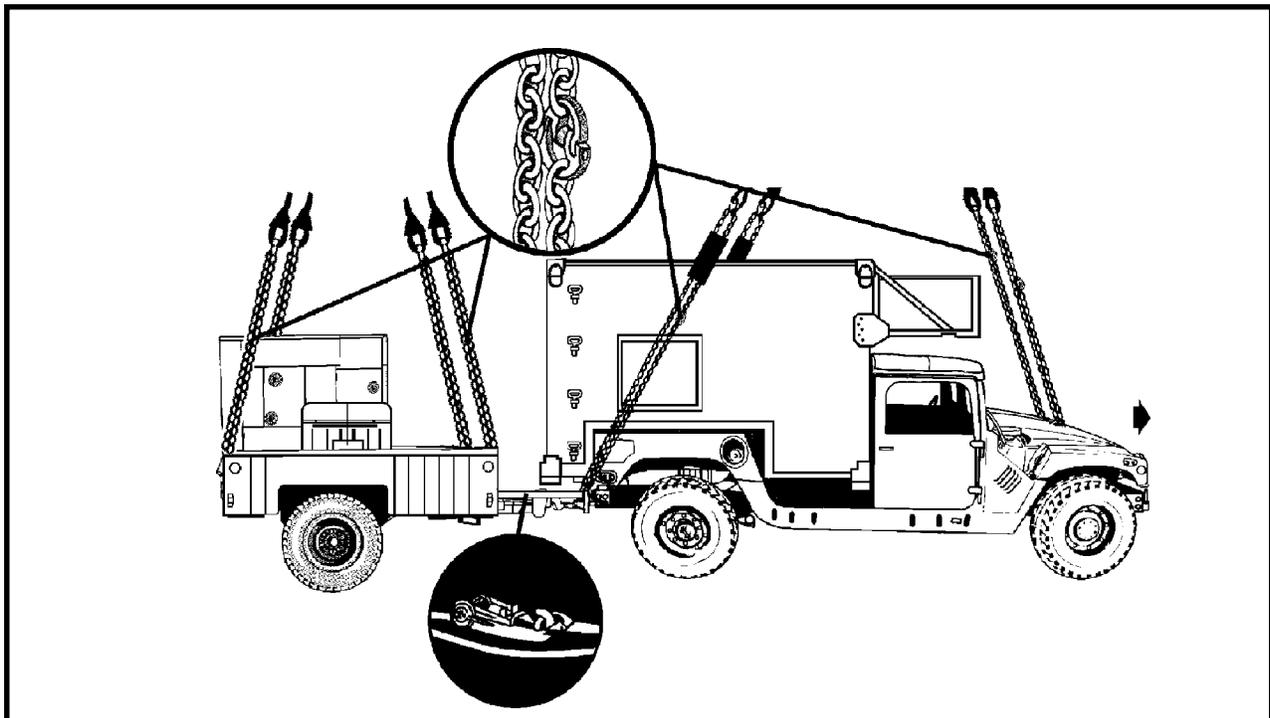
(m) Tighten both CGU-1/B tiedown straps at the same time. Secure the excess strap and safety the ratchet handles in the closed position with tape.

(n) 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 5-12.

(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 kneels on top of the generator 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 1 and 2 to the front of the vehicle and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.
2. Loop the chain end of sling leg 1 through the left front lift provision that protrudes through the hood from inboard to outboard. Place the correct link from Table 5-12 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 5-12 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 1 and 2 to the front of the generator and inner sling legs 3 and 4 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 5-12 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 5-12 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 5-12. Joint Surveillance Target Attack Radar (JSTAR) System, M1097 (HMMWV) Mission Vehicle with LMS Shelter and Mission Trailer, HMT with Generator

5-14. M1097 Shelter Carrier, 1-1/4 Ton (HMMWV) with AN/TPQ-36(V)7, (S-250 Shelter), Operations Control Group, OKG-398/TPW, and M116A2 Equipment Trailer Group

a. Applicability. The following items in Table 5-13 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 5-13. M1097 Shelter Carrier, 1-1/4 Ton (HMMWV) with AN/TPQ-36(V)7, (S-250 Shelter), Operations Control Group, OKG-398/TPW, and M116A2 Equipment Trailer Group

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Truck, Shelter Carrier, 1 1/4-Ton, M1097 with OKG-398/TPW, Operations Control Group, (S-250 Shelter)	8,500	10K	80/5	CH-47	120
Equipment Trailer Group, M116A2	2,300	10K	90/70	CH-47	120

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

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

(a) Chain length, part number 38850-00053-101, from a 10,000-pound capacity sling set (8 each).

(b) Coupling link, part number 577-0615, from a 10,000-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, 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 M1097 HMMWV in 15 minutes. Two persons can prepare and rig the trailer in 15 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. 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 the mirrors in and tie together with Type III nylon cord. Remove the doors and secure to the seats with Type III nylon cord.

(b) Secure all loose equipment inside the shelter with tape, Type III nylon cord, or tiedown straps.

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

(d) Ensure the fuel tank is 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 rear bumper.

(h) Raise the landing leg and secure in position with safety pins and tape.

(i) Ensure the trailer hand brake is set.

(j) Secure the equipment, canvas, and bows in the bed of the trailer with tiedown straps. Route the straps diagonally over the equipment from front to rear.

(k) 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.

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

(m) 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. Tape the CGU-1/B tiedown strap every 24 inches to prevent flapping.

(n) 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 5-13.

(3) **Hookup.** Two hookup persons are required for this load. The forward hookup person stands on cab of the truck and places apex fitting 1 onto the forward cargo hook. The aft hookup person stands on the fender 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 point.

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

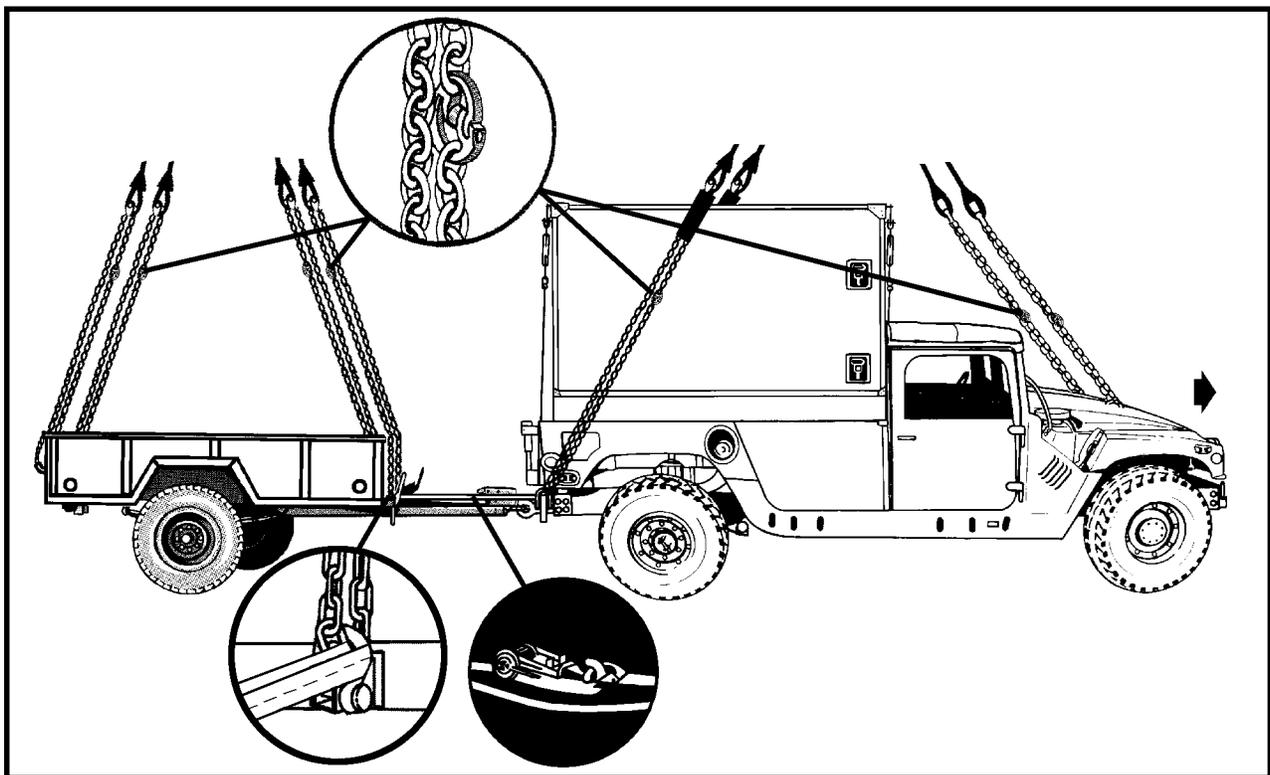


Figure 5-13. M1097 Shelter Carrier, 1-1/4 Ton (HMMWV) with AN/TPQ-36(V)7, (S-250 Shelter), Operations Control Group, OKG-398/TPW, and M116A2 Equipment Trailer Group

RIGGING STEPS

1. Position apex fitting on top of the truck. Route outer sling legs 1 and 2 to the front of the vehicle and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.
2. Loop the chain end of sling leg 1 through the left front lift provision that protrudes through the hood from inboard to outboard. Place the correct link from Table 5-13 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 5-13 in the grab hook.
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 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.
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 5-13 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 5-13 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 5-13. M1097 Shelter Carrier, 1-1/4 Ton (HMMWV) with AN/TPQ-36(V)7, (S-250 Shelter), Operations Control Group, OKG-398/TPW, and M116A2 Equipment Trailer Group (continued)

5-15. M998/M1038, 1-1/4 Ton Truck, Cargo (HMMWV) and M167 Gun (Vulcan)

a. Applicability. The following items in Table 5-14 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 5-14. M998/M1038, 1-1/4 Ton Truck, Cargo (HMMWV) and M167 Gun (Vulcan)

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Truck, Cargo, 1 1/4-Ton, M998/M1038 with Accompanying Load	7,600	10K	80/3	CH-47	130
Gun, AA, Towed, 20-mm, M167	3,400	10K	20/90	CH-47	130

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 (2 each, or more as required to secure cargo).

c. Personnel. Two persons can prepare and rig the M998/M1038 HMMWV in 15 minutes. Two persons can prepare and rig the M167 gun in 10 minutes.

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

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

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

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

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

(d) Engage the vehicle parking brake and 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 the brake light cable to the drawbar on the gun. Place the radar in the upright position. Engage the handbrakes on the gun.

(g) Attach the hook portion of a CGU-1/B tiedown strap to the anchored U-bolt on the left underside of the truck and the ratchet end of the strap to the anchored U-bolt on the left forward part of the gun frame.

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

(i) 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 5-14.

(3) **Hookup.** Two hookup persons 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 frame of the trailer on the same side as the radar dish and places apex fitting 2 onto the aft cargo hook. The hookup team then carefully dismantles the

load 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).

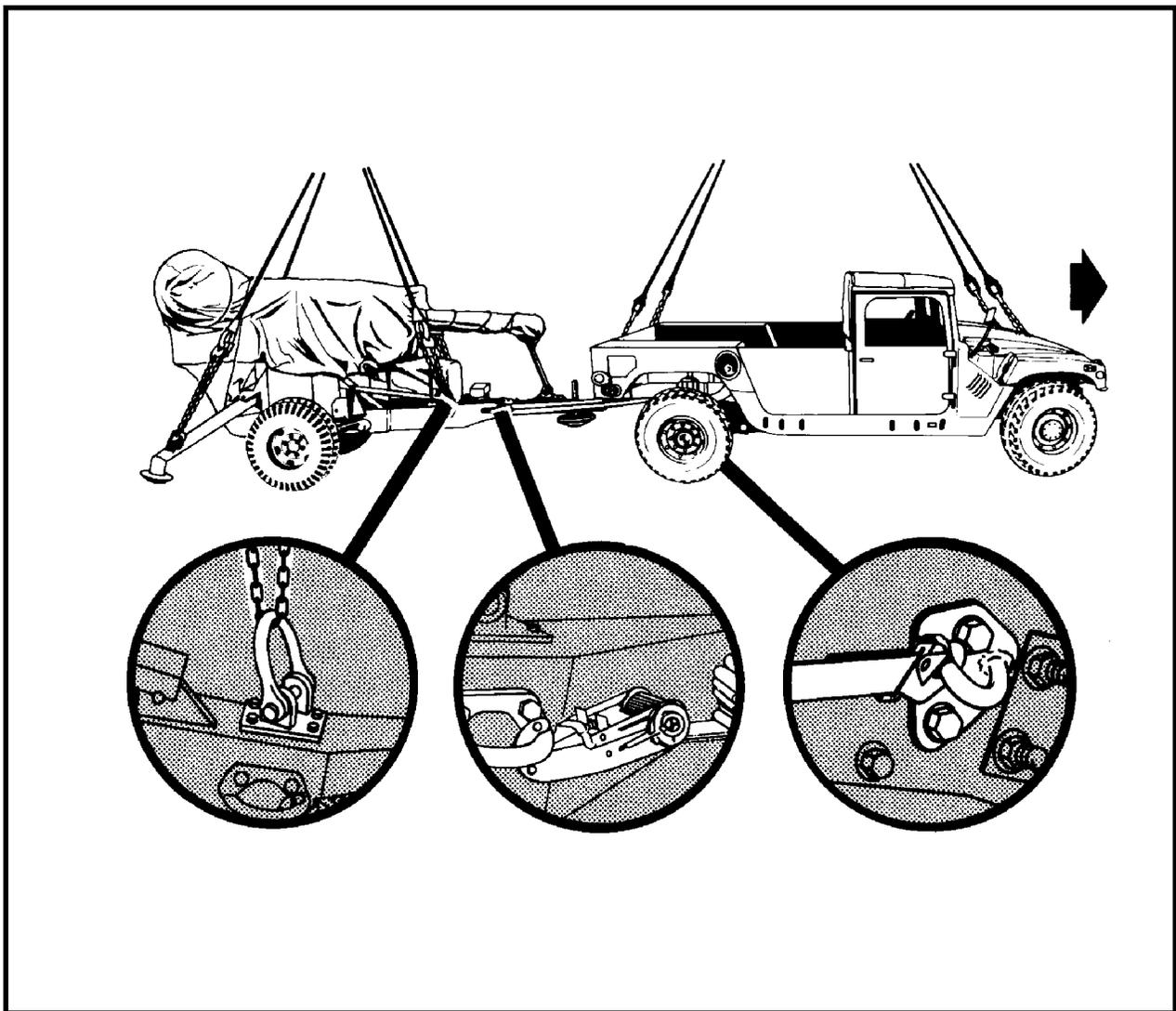


Figure 5-14. M998/1038, 1-1/4 Ton Truck, Cargo (HMMWV) and M167 Gun (Vulcan)

RIGGING STEPS

1. Position apex fitting on top of the truck. Route outer sling legs 1 and 2 to the front of the vehicle and inner sling legs 3 and 4 to the rear. Sling legs 1 and 3 must be on the left side of the load.
2. Loop the chain end of sling leg 1 through the left front lift provision that protrudes through the hood of the vehicle. Place the correct link from Table 5-14 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with tape or Type III nylon cord.
3. Route the chain end of sling leg 3 through the eyelet opening in the upper left corner of the tailgate. Loop the chain end through the left lift provision on the bumper and thread back through the eyelet opening in the tailgate. Place the correct link from Table 5-14 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 apex fitting of sling set 2 on top of the gun. Route outer sling legs 1 and 2 to the rear extended trails and inner sling legs 3 and 4 to the tongue end. Sling legs 1 and 3 must be on the same side of the load. Sling legs 1 and 2 are routed to the rear because the lift provisions on the rear trails are wider apart than the lifting provisions on the tongue.
6. Loop the chain end of sling leg 1 through the lift provision on the left trail. Place the correct link from Table 5-14 in the grab hook. Repeat with sling leg 2 on the right trail lift provision. Secure excess chain with tape or Type III nylon cord.
7. Loop the chain end of sling leg 3 through the lift provision located on the left side of the tongue. Place the correct link from Table 5-14 in the grab hook. Repeat with sling leg 4 on the right tongue lift provision. Secure excess chain with tape or Type III nylon cord.
8. 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 5-14. M998/1038, 1-1/4 Ton Truck, Cargo (HMMWV) and M167 Gun (Vulcan) (continued)

5-16. M998/M1038 1 1/4-Ton Cargo Truck (HMMWV) and M102, 105-mm Howitzer

a. Applicability. The following items in Table 5-15 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 5-15. M998/M1038 1 1/4-Ton Cargo Truck (HMMWV) and M102, 105-mm Howitzer

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Truck, Cargo, 1 1/4-Ton, M998/M1038 without Accompanying Load	7,700	10K	36/8	CH-47	90
Truck, Cargo, 1 1/4-Ton, M998/M1038 with Accompanying Load	7,700	10K	40/8	CH-47	90
Howitzer, M102, without Accompanying Load	3,160	10K	83/9	CH-47	90
Howitzer, M102, with Accompanying Load	3,160	10K	58/6	CH-47	90
Accompanying Load	2,860	5K or 10K Net	N/A	CH-47	90

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 (2 each).
- (6) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.
- (7) Clevis assembly, Type V platform, NSN 1670-01-162-2372, (2 each, 5 each if using a 25,000-pound capacity sling set). Three medium clevis assemblies may be substituted for the three Type V platform clevises used on the

howitzer when using 25,000-pound capacity sling sets.

- (8) 5,000- or 10,000-pound capacity net (used for accompanying load).
- (9) Clevis assembly, large, or apex fitting (10,000-pound capacity).

c. Personnel. Two persons can prepare and rig the M998/M1038 HMMWV in 15 minutes. Two persons can prepare and rig the howitzer in 10 minutes.

d. Procedures. Attach the howitzer 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. Position the vehicle on level ground so both the truck and howitzer 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) Secure all equipment and cargo inside the truck with tiedown straps, tape, or Type III nylon cord.

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

(d) Engage the vehicle parking brake and 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 the brake light cable to the howitzer trail with tape or Type III nylon cord.

(g) Secure the cover over the howitzer sights.

(h) Place the section equipment chest on the end of the trails and secure with tiedown straps.

(i) Engage the howitzer hand brake.

(j) Position a Type V platform clevis assembly in the tiedown provision located on the outboard side of the truck frame above the left rear wheel. Ensure the bolt end of the clevis is facing toward the howitzer. Route the free end of one tiedown strap under the howitzer left trail, up over the trail box cross member support, through the Type V platform clevis, and connect it to the hook on the ratchet.

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

(l) Position padding between the strap and the angled bracket (gusset) located forward of the rear lift provision on the truck.

(m) 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.

CAUTION

Do not attach the tiedown straps to the rear wheels. The wheels may rotate in flight and the straps may become loose.

(n) Prepare and rig the cargo net, if used, in accordance with FM 10-450-3. Position the cargo net close enough to the howitzer so the lifting legs and apex fitting can be routed under the howitzer trails. Connect the large clevis or 10,000-pound capacity apex fitting to the cargo net apex fitting.

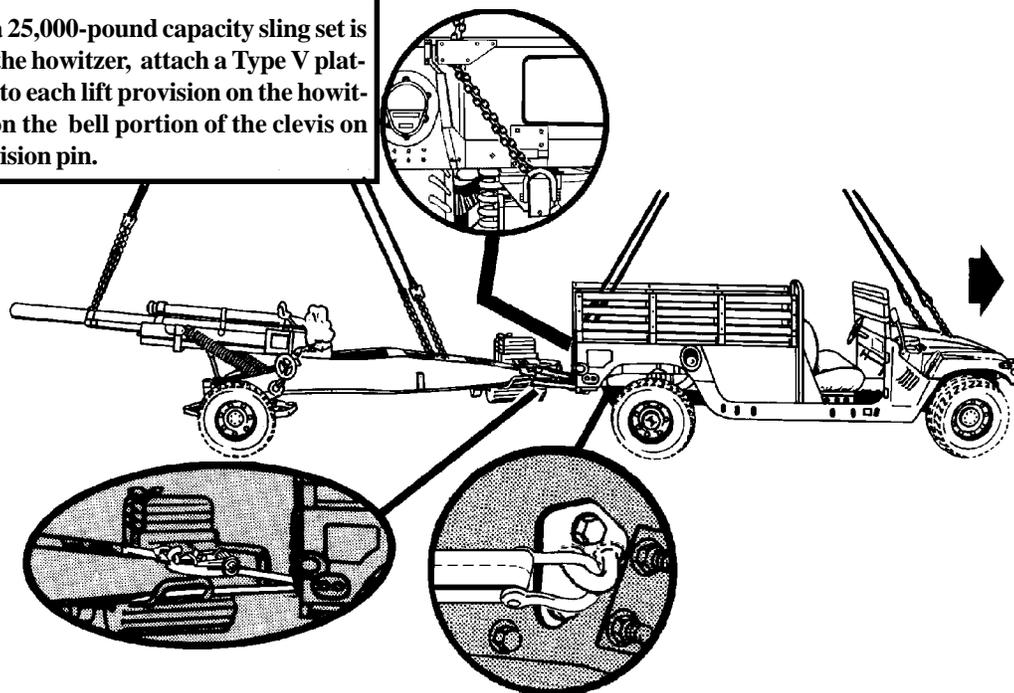
(2) **Rigging.** Rig the load according to the steps in Figure 5-15.

(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 vehicle and places apex fitting 1 onto the forward cargo hook. The aft hookup person stands on the trails of the howitzer and places apex fitting 2 onto the aft cargo hook. The hookup team then carefully dismounts the load and remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

NOTE: Advise the aircraft commander to release the sling set apex fitting on the side of the howitzer away from the gun sights to prevent damage.

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

NOTE: If a 25,000-pound capacity sling set is used to rig the howitzer, attach a Type V platform clevis to each lift provision on the howitzer. Position the bell portion of the clevis on the lift provision pin.



RIGGING STEPS

1. Position apex fitting on top of the truck bed. 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 of the vehicle. Place the correct link from Table 5-15 in the grab hook. Repeat with sling leg 2 and the right front lift provision. Secure excess chain with tape or Type III nylon cord.
3. Route the chain end of sling leg 3 through the eyelet opening in the upper left corner of the tailgate. Loop the chain end through the left lift provision on the bumper and thread back through the eyelet opening in the tailgate. Place the correct link from Table 5-15 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 the apex fitting of sling set 2 on top of the breech. Route outer sling legs 1 and 2 to the trails and inner sling legs 3 and 4 to the barrel. 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 lift provision located on the left trail. If an accompanying load is carried, loop the chain end through the lift provision, through the large clevis or apex fitting connected to the accompanying load. Place the correct link from Table 5-15 in the grab hook. Repeat with sling leg 2 through the lift provision on the right trail. Secure excess chain with tape or Type III nylon cord.
7. Loop the chain end of sling legs 3 and 4 through the lift provision located on the howitzer barrel. Place the correct link from Table 5-15 in the grab hook. Secure excess chain with tape or Type III nylon cord.
8. 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 5-15. M998/M1038 Cargo Truck (HMMWV) and M102, 105-mm Howitzer

5-17. M1037/M1097 Truck, Utility, 1 1/4-Ton (HMMWV) and M119, 105-mm Howitzer

a. Applicability. The following items in Table 5-16 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

Table 5-16. M1037/M1097 Truck, Utility, 1 1/4-Ton (HMMWV) and M119, 105-mm Howitzer

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
Truck, 1 1/4-Ton HMMWV, M1037/M1097	7,320	10K	80/3	CH-47	120
Howitzer, 105-mm, M119, (M1037 HMMWV as Prime Mover)	4,160	10K	leg 1 - 28 leg 2 - 30 leg 3 - 20	CH-47	120
Howitzer, 105-mm, M119, (M1097 HMMWV as Prime Mover)	4,160	10K	leg 1 - 55 leg 2 - 40 leg 3 - 30	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.
- (7) Clevis assembly, Type V platform, NSN 1670-01-162-2372, (2 each).
- (8) Webbing, nylon, tubular, 1/2-inch, 1,000-pound breaking strength.

c. Personnel. Two persons can prepare and rig the M1037/M1097 HMMWV in 15 minutes. Two persons can prepare and rig the howitzer in 10 minutes.

d. Procedures. Attach the howitzer 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. Position the vehicle on level ground so both the truck and howitzer 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) Secure all equipment and cargo inside the truck with tiedown straps, tape, or Type III nylon cord.

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

(d) Engage the vehicle parking brake and 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) Place the howitzer in the folded-towed position. Ensure the knock-off hub is in the horizontal position. Engage the right wheel parking brake (wheel with knock-off hub) only.

(g) Ensure the lunette is in the extended position. Install the towing eye stop (C-clamp) on the lunette and secure in position with its retaining pin.

(h) Secure the brake light cable to the trails with tape or Type III nylon cord.

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

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

(k) If the detachable field spade is attached to the permanent spades, ensure the two locking pins are installed and locked in place. Route and tie a length of Type III nylon cord through the key ring of the safety cable and around the other end of the locking pin.

(l) Position a Type V platform clevis assembly in the tiedown provision located on the outboard side of the truck frame above the left rear wheel. Ensure the bolt end of the clevis is facing toward the howitzer. Route the free end of one tiedown strap under the howitzer left trail, through the Type V platform clevis, and connect it to the hook on the ratchet.

(m) Route a second strap under and around the trail tube, aft (closer to the gun wheel hub), of the triangular brace on the M119 trails, through the Type V platform clevis, and connect it to the hook on the ratchet.

(n) Repeat the procedures in paragraphs (l) and (m) on the right side of the load.

(o) Position padding between the strap and the angled bracket (gusset) located forward of the rear lift provision on the truck.

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

CAUTION

Do not attach the tiedown straps to the rear wheels. The wheels may rotate in flight and the straps may become loose.

(2) **Rigging.** Rig the load according to the steps in Figure 5-16.

(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 vehicle and places apex fitting 1 onto the forward cargo hook. The aft hookup person stands on the firing platform of the howitzer and places apex fitting 2 onto the aft cargo hook. The hookup team then carefully dismounts the load and remains close to the load as the helicopter removes slack from the sling legs. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point.

NOTE: Advise the aircraft commander to release the sling set apex fitting on the side of the howitzer away from the gun sights to prevent damage.

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

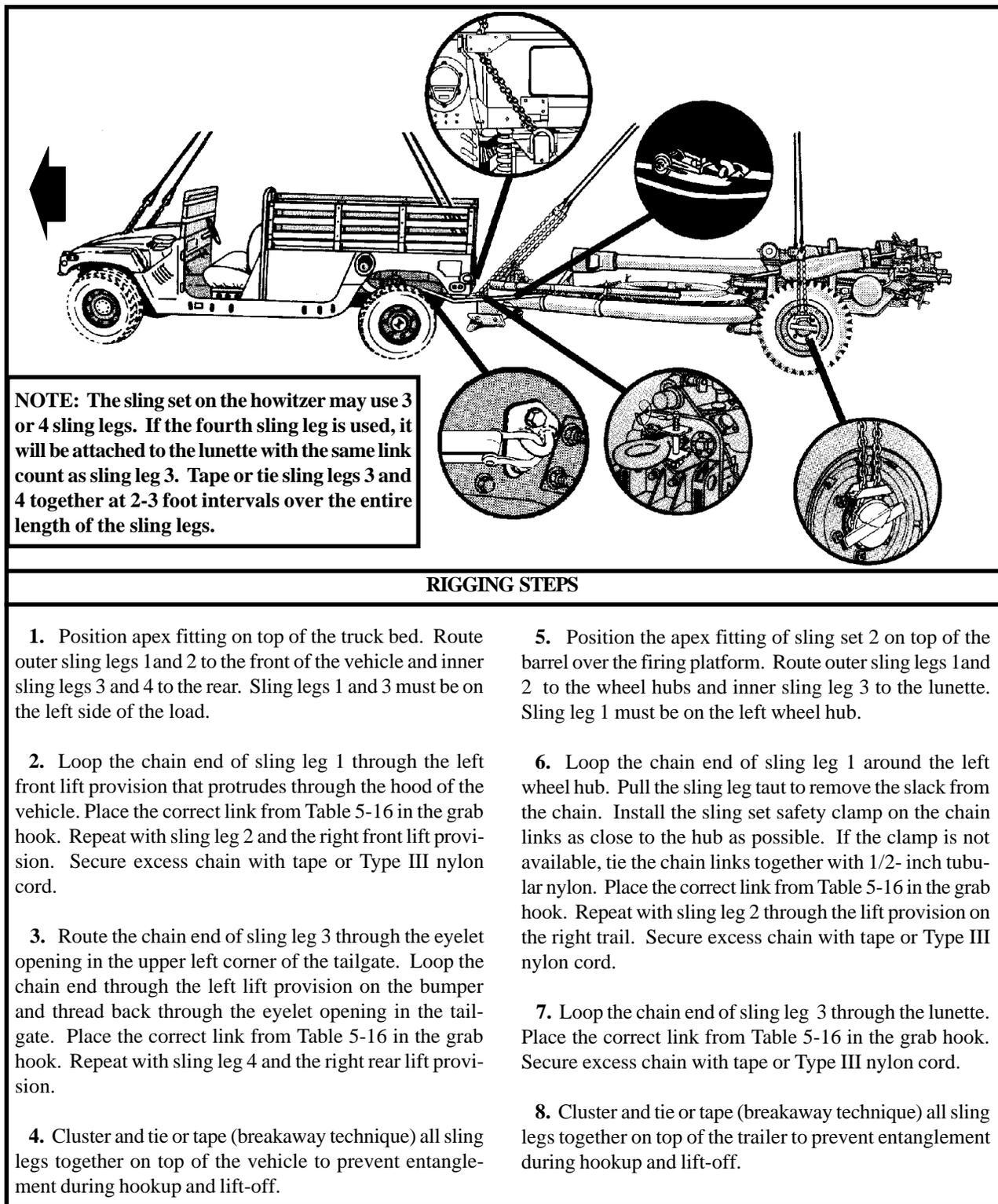


Figure 5-16. M1037/M1097 Truck, Utility, 1 1/4-Ton (HMMWV) and M119, 105-mm Howitzer

5-18. M1097 Truck, Utility, 1 1/4-Ton (HMMWV) with AN/MPQ-64 Tactical Quiet Generator (TQG) and High Mobility Trailer (HMT) with Sentinel Antenna Transceiver Group (ATG)

a. Applicability. The following items in Table 5-17 are certified for the helicopter(s) listed in the following table by the US Army Soldier Systems Center:

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

NOMENCLATURE	MAX WEIGHT (POUNDS)	SLING SET	LINK COUNT FRONT/ REAR	TYPE OF AIRCRAFT	RECOMMENDED AIRSPEED (KNOTS)
M1097 HMMWV with AN/MPQ-64 TQG	7,800	10K	27/3	CH-47	100
HMT with Sentinel ATG with Spreader Bar Modification	3,900	10K	6/30	CH-47	100

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 (2 each).
- (6) Plywood, 3/4-inch x 4-foot x 6-foot.
- (7) Reach pendants (2 each).
- (8) Spreader bar assembly (component of ATG/Trailer).
- (9) Felt sheet, cattle hair, Type IV, 1/2-inch or suitable substitute.

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

d. Procedures. Attach the ATG trailer 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 ATG 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 inward and tie together with Type III nylon cord. Remove the doors and the rear window. Secure the doors and window to the seats with Type III nylon cord.

(b) Ensure all vents are closed and secured. Secure all loose equipment inside the vehicle with tape, Type III nylon cord, or tiedown straps.

(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) 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 rear bumper.

(g) Partially retract all landing legs and secure with Type III nylon cord.

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

(i) Ensure the parking brake is set.

(j) 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. Loop the tiedown through the left front trailer lift provision located on the left front of the trailer. Attach the hook portion of the tiedown strap to the ratchet.

NOTE: Do not attach the tiedown strap to the rear wheels of the vehicle. The rear wheels may rotate during flight causing slack in the straps.

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

(l) 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.

(m) Pad the top Sensor Interface Unit (SIU) latch on the roadside to prevent sling leg interference.

(n) Cut and position pieces of plywood over the antenna boxes on top of the ATG. Secure the plywood by

drilling holes and lacing Type III nylon cord through the holes to convenient places on the load. Ensure the plywood is securely tied to prevent it from flying off during flight.

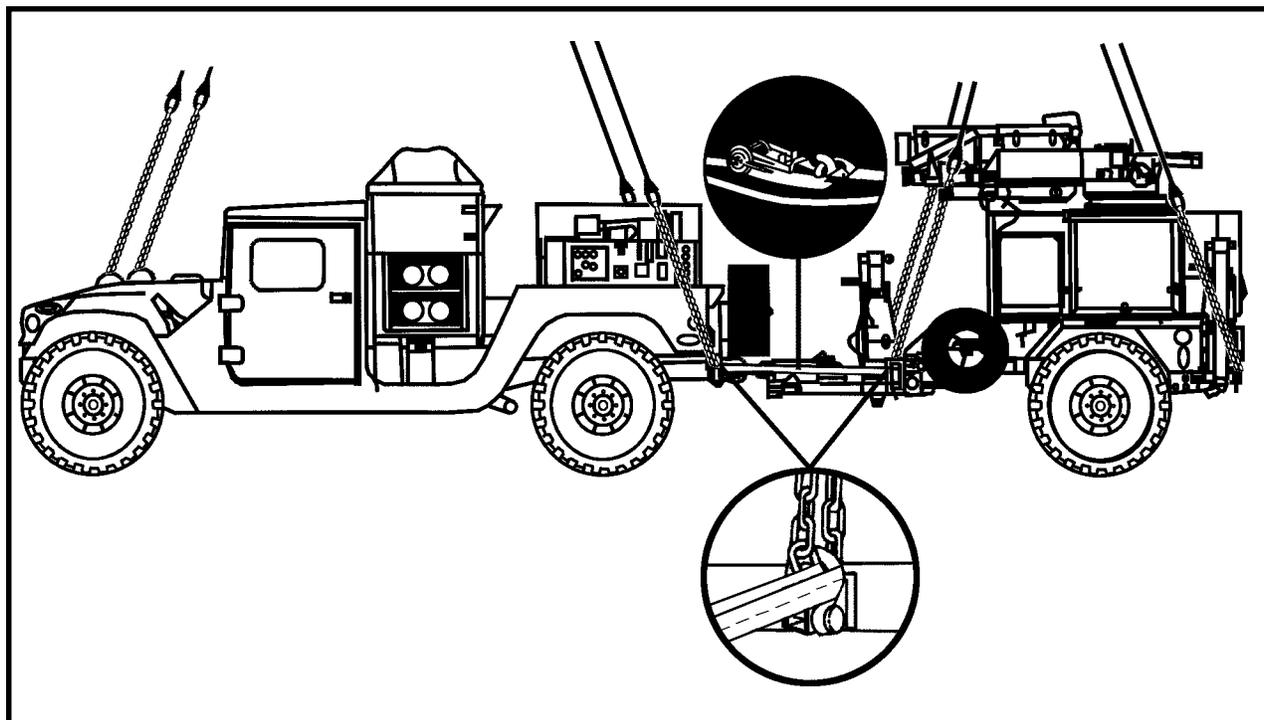
(o) Attach a reach pendant on each sling set in accordance with FM 10-450-3.

(2) **Rigging.** Rig the load according to the steps in Figure 5-17.

(3) **Hookup.** Two hookup teams are required for this load. The forward hookup person stands on top of the HMMWV wheel well and places the reach pendant with apex fitting 1 onto the forward cargo hook. The aft hookup person stands on top of the trailer wheel well and places the reach pendant with apex fitting 2 onto the aft cargo hook. The hookup team then carefully dismounts the load and remains close to the load as the helicopter removes slack from the sling legs. If the CGU-1/B tiedown straps loosen up the load should be set down and the tiedown straps retightened. When successful hookup is assured, the hookup team quickly exits the area underneath the helicopter to the designated rendezvous point

NOTE: Advise the aircraft commander to release the sling set apex fitting on the side of the HMMWV and ATG to prevent damage.

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



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