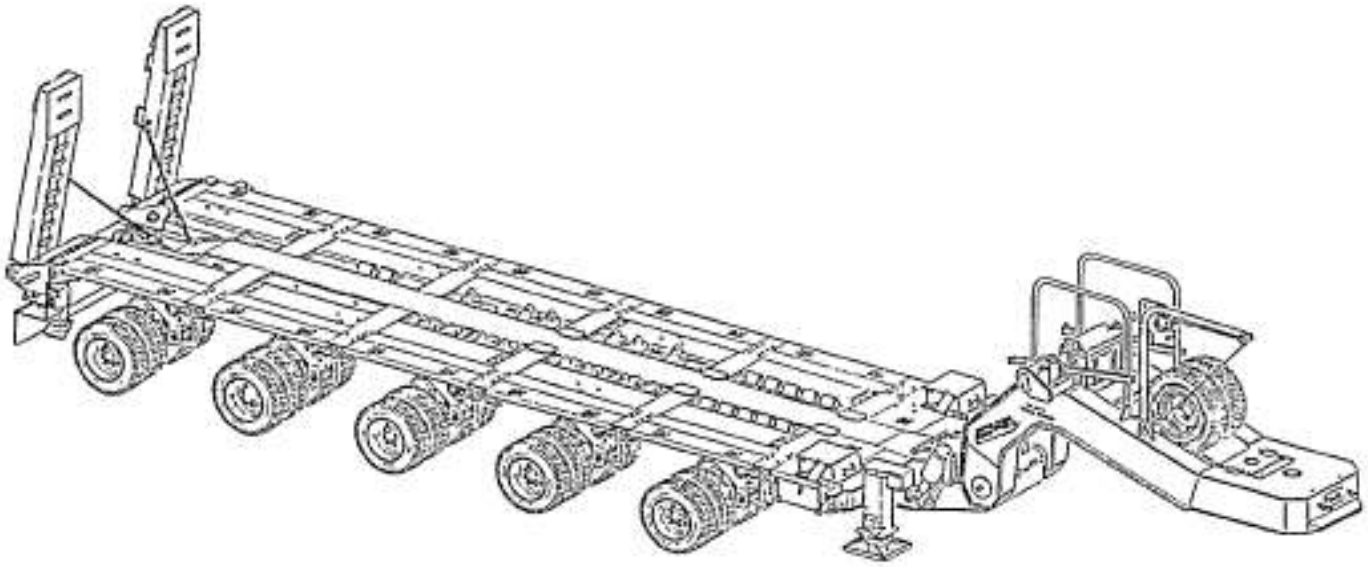
TECHNICAL BULLETIN

OPERATOR'S AND FIELD MAINTENANCE

FOR

SEMITRAILER, TRANSPORTER, HEAVY EQUIPMENT 70 TON, M1000

WHEN LOADED WITH M1 SERIES MAIN BATTLE TANK (MBT) WITH TANK URBAN SURVIVABILITY KIT (TUSK) AND COUNTER-IMPROVISED EXPLOSIVE DEVICE (C-IED) KIT



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HEADQUARTERS, DEPARTMENT OF THE ARMY

SEPTEMBER 2007

FOLLOWING IS A SUMMARY OF WARNINGS PRESENTED WITHIN THIS TECHNICAL BULLETIN:

OBSERVE THE FOLLOWING PRECAUTIONS WHEN DRIVING THE M1070 TRACTOR/M1000 SEMITRAILER OR SERIOUS INJURY OR DEATH TO PERSONNEL AND DAMAGE TO EQUIPMENT MAY OCCUR:

WARNING

- Brake adjustment must be checked before each mission when operating the M1000 semitrailer with the M1 Series MBT with TUSK and C-IED Kit or braking will be uneven.
- When the M1000 semitrailer is loaded with an M1 Series MBT with TUSK and C-IED Kit, under no circumstances shall speeds exceed the following:

  Highway.....40 mph (64 km/h)
  Evasive maneuvers/lane change.....30 mph (48 km/h)
  Secondary.....30 mph (48 km/h)
  Off-road.....15 mph (24 km/h)

OBSERVE THE FOLLOWING PRECAUTIONS DURING LOADING/UNLOADING OPERATIONS OR SERIOUS INJURY OR DEATH TO PERSONNEL AND DAMAGE TO EQUIPMENT MAY OCCUR:

WARNING

- Unnecessary personnel must stand well clear of the vehicles, especially behind the payload (engine/turbine exhaust) during loading/unloading operations.
- At no time during any loading/unloading operation while the payload is moving should personnel be on semitrailer platform. The payload operator must drive the payload slowly up or down the loading ramps and onto the platform or ground.
- At no time during any loading/unloading operations while the payload is being pulled on and/or off with winches should personnel be on semitrailer platform.
- Load/unload an able payload on semitrailer on level ground whenever possible. In adverse conditions, loading/unloading of an able payload can be done on grades up to 10 percent with a maximum offset angle of 10 degrees between tractor and semitrailer. Avoid exceeding these limitations to prevent payload from rolling on/off semitrailer.
- Two ground guides (spotters) are required for able payload loading/unloading operations. The payload operator must know the position of spotters at all times.
- Load/unload a disabled payload on semitrailer on level ground whenever possible. In adverse conditions, loading/unloading of a disabled payload can be done on grades up to 10 percent. Due to the possibility of winch cables piling up against the end flanges of the cable drums and causing injury to personnel and damage to equipment, the following offset limits between tractor and semitrailer must be adhered to: 10° Left; 4° Right.

OBSERVE THE FOLLOWING PRECAUTIONS DURING LOADING/UNLOADING OPERATIONS OR SERIOUS INJURY OR DEATH TO PERSONNEL AND DAMAGE TO EQUIPMENT MAY OCCUR:

WARNING

- Two ground guides (spotters) are required for disabled free-rolling M1 Series MBT payload with TUSK and C-IED Kit with track loading/unloading operations. The winch operator must have visual contact with the spotters at all times.
- If possible, provide ample clear space behind the disabled free-rolling M1 Series MBT with TUSK and C-IED Kit with track when loading/unloading in case cables break while the payload is being loaded/unloaded.
- Make sure winch cables are not kinked, clevises are secured to winch cables, and snatch blocks and shackles are in good condition and properly secured.
- Extreme caution should be exercised during any operation on a slope.
- Hearing protection is required within 10 feet (3m) of the Auxiliary Power Unit (APU) when the APU is running. Use eye and ear protection and protective gloves when inspecting the APU while it is running or injury could result from moving parts, excessive noise level, and engine heat.
- Due to semitrailer being outfitted with various chains (1/2-inch and/or 3/4-inch link sizes), all chains must be inventoried in the platform storage compartment prior to placing chains on the platform. Once chains are inventoried, read and familiarize yourself with the procedures to determine tiedown needed to properly secure the payload.
- Always wear leather gloves when handling winch cable. Never allow cable to run through hands.
- Make sure winch cables are inspected in accordance with TB 43-0142.
- All ground personnel must stand clear of winch cables except when handling the cables.
- Extreme caution must be used when removing winch cables from the payload. Cable may be under tension or be twisted. If winch cable has tension when removed, slowly and carefully, using both hands, rotate cable to relieve tension. Do not allow cable to twist or whip freely.
- Make sure winch cable is disconnected from gooseneck fairlead before moving tractor/semitrailer combination or, as the combination is moved, winch cable can stretch and/or break.
- Do not position a ground guide (spotter) on the gooseneck if payload is to be backed onto semitrailer platform.
- Winch operator and ground guide (spotter) must be completely familiar with the sequence of steps prior to using winches.

OBSERVE THE FOLLOWING PRECAUTIONS DURING LOADING/UNLOADING OPERATIONS OR SERIOUS INJURY OR DEATH TO PERSONNEL AND DAMAGE TO EQUIPMENT MAY OCCUR:

WARNING

- Winch operator must try to maintain even tension on both winch cables during entire offloading procedure. Payload adjustments, side to side (turning), must be kept to a minimum. Ground guide (spotter) must notify winch operator of any required payload adjustments while unloading.
- Always extend safety rails while attaching or removing the payload winch cable.
- Do not disconnect the winch cable until the platform is level and the payload is chocked.
- When on top of the gooseneck, always hold onto semitrailer with one hand to avoid falling.
- Ground guide(s) (spotter(s)) must stand off curbside and/or streetside of semitrailer and maintain visual contact with the winch operator. Spotter(s) must observe cables, snatch blocks, shackles, and payload position during loading/unloading operations.
- During winch-on operations on a downgrade, the payload must be restrained from the rear with some other vehicle to prevent possible loss of control of the payload.
- Do not overload tractor winches. Know the ratings of the winches being used and the existence of any protection devices (such as shear pins).
- Do not attempt bridge crossings of any kind unless verification is made that bridge can support the weight of combined HET system (M1070 Tractor and M1000 Semitrailer) loaded with an M1 Series MBT, with TUSK and C-IED Kit. Injury to personnel or damage to equipment may occur.

LIST OF EFFECTIVE PAGES Insert latest changed pages. Destroy superseded pages.

NOTE

The portion of the text effected by the changes is indicated by a vertical line in the outer margins of the page. Changes to illustrations are indicated by a shadowed or screened area, or by miniature pointing hands.

Dates of issue for original and changed pages are:

Original……1 SEPTEMBER 2007

TOTAL NUMBER OF PAGES ON THIS PUBLICATION IS 92 CONSISTING OF THE FOLLOWING:

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TECHNICAL BULLETIN

No. TB 9-2330-381-13-1

HEADQUARTERS
DEPARTMENT OF THE ARMY

WASHINGTON D.C., 1 SEPTEMBER 2007

TECHNICAL BULLETIN

OPERATOR'S AND FIELD MAINTENANCE

FOR

SEMITRAILER, TRANSPORTER, HEAVY EQUIPMENT, 70 TON, M1000 WHEN LOADED WITH M1 Series

MBT WITH TUSK and C-IED Kit

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this publication. If you find any mistakes, or if you know of a way to improve the procedures, please let us know. Submit your DA Form 2028 (Recommended Changes to Equipment Technical Publications), through the Internet, on the Army Electronic Product Support (AEPS) website. The Internet address is https://aeps.ria.army.mil. The DA Form 2028 is located under the Public Applications section in the AEPS Public Home Page. Fill out the form and click on SUBMIT. Using this form on AEPS will enable us to respond quicker to your comments and better manage the DA Form 2028 program. You may also mail, fax or e-mail your letter or DA Form 2028 directly to: TACOM Life Cycle Management Command, ATTN: AMSTA-LC-LPIT/TECH PUBS, TACOM-RI, 1 Rock Island Arsenal, Rock Island, IL 61299-7630. The e-mail address is ROCK-TACOM-TECH-PUBS@conus.army.mil. The fax number is DSN 793-0726 or Commercial (309) 782-0726.

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CHAPTER 1

INTRODUCTION

Section I. GENERAL INFORMATION

1-1. SCOPE

1-1.1. Type of Manual. Operator's and field maintenance technical bulletin.

1-1.2. Model Number and Equipment Name. M1000 Heavy Equipment Transporter Semitrailer (HETS).

1-1.3. Purpose of Equipment. To load or unload and transport a battle-dressed M1 Series MBT with TUSK and C-IED Kit attached onto the M1000 Heavy Equipment Transporter Semitrailer (HETS), able or disabled, with tracks, during administrative and tactical operations. These conditions do not include the use of a mine clearing blade.

1-2. METRIC UNITS

Metric units, in addition to English units, are included in this manual. An English-to-metric conversion table is included on the inside back cover of this manual.

1-3. LIST OF ABBREVIATIONS

AAL	Additional Authorization List
APU	Auxiliary Power Unit
BII	Basic Issue Items
CCW	Counterclockwise
CTA	Common Table of Allowances
CTIS	Central Tire Inflation System
CW	Clockwise
HETS	Heavy Equipment Transporter Semitrailer
JTA	Joint Table of Allowances
MBT	Main Battle Tank
MLC	Military Load Classification
MTOE	Modification Table of Organization and Equipment
PMCS	Preventive Maintenance Checks and Services
PTO	Power Takeoff
TDA	Table of Distribution and Allowances

1-4. EQUIPMENT DATA

NOTE

Only equipment data elements which are different from those given in TM 9-2330-381-14 are given in this technical bulletin.

M1000 SEMITRAILER (WITH M1 Series MBT WITH TUSK and C-IED Kit)

Weight (fully loaded)..... 199,400 lbs (90,446 kg)

Section II. OPERATIONAL AND MAINTENANCE CONSIDERATIONS

PARA. NO. TITLE

1-5. OPERATIONAL CONSIDERATIONS

CAUTION

- **The M1 Series MBT with TUSK and C-IED Kit exceeds the M1000 semitrailer design maximum payload weight. The M1A2 SEP MBT with TUSK and C-IED Kit exceeds the M1000 semitrailer design maximum payload weight by approximately 9,000 pounds (4,082 kg). Extreme caution is necessary to prevent damage to equipment.**

- **To operate the M1000 semitrailer with the M1 MBT Series with TUSK and C-IED Kit, semitrailer tire pressure must be increased, special loading and unloading procedures must be followed, maximum driving speeds must be reduced in all operational situations and environmental conditions, and stopping distance must be increased to avoid damage to equipment.**

a. Before loading the M1000 semitrailer with the M1 MBT Series with TUSK and C-IED Kit, the tire pressure on all semitrailer tires must be increased to 100-110 psi (690-758 kPa).

b. When loading the Abrams MBT Series with TUSK and C-IED Kit onto the M1000 semitrailer, the special loading and unloading procedures in Chapter 2 of this publication must be followed carefully.

c. When making turns with an up-weighted Abrams tank, reduce vehicle speeds to prevent wheel lift-off.

d. When the Abrams MBT Series with TUSK and C-IED Kit is loaded onto the M1000 semitrailer, the following maximum driving speeds must be observed:

Highway ..... ……..40 mph (64 km/h)
Evasive maneuvers/lane change……..…...30 mph (48 km/h)
Secondary..... ……30 mph (48 km/h)
Off-road……..15 mph (24 km/h)

e. When the M1 MBT Series with TUSK and C-IED Kit is loaded onto the M1000 semitrailer, separation distance in convoys must be increased to account for the greater stopping distance required resulting from the increased weight. Environmental conditions may also warrant even greater separation distance. Such as snow storms, sand storms, fog, and wet roads.

f. The Military Load Classification (MLC) for the vehicle with payload is raised from 96 to 101. The special vehicle classification data plate must be installed per Chapter 2.

1-6. MAINTENANCE CONSIDERATIONS

WARNING

Brake adjustment must be checked before each mission when operating the M1000 semitrailer with the Abrams MBT Series with TUSK and C-IED Kit or braking will be uneven causing serious injury or death to personnel.

a. Before each mission with the M1000 semitrailer loaded with the M1 Series MBT with TUSK and C-IED Kit, check that brakes are in adjustment in accordance with TM 9-2330-381-14, Unit Preventive Maintenance Checks and Services (PMCS). If adjustment is required, perform brake adjustment before loading the special payload.

b. If the same M1000 semitrailers are used to transport the M1 Series MBT with TUSK and C-IED Kit, the following Unit PMCS inspection intervals (TM 9-2330-381-14) must be decreased (inspected more frequently):

Inspection	Interval
Ultra bushing	Quarterly
Wheel bearing	Quarterly
Suspension spindle bearing	Quarterly
Platform weldment	Monthly

CHAPTER 2 OPERATING

INSTRUCTIONS

2-1. GENERAL

This chapter contains the instructions for loading and unloading the M1 Series Main Battle Tank (MBT) with Tank Urban Survivability Kit (TUSK) and Counter-Improvised Explosive Device (C-IED) Kit on or off the M1000 Heavy Equipment Transporter Semitrailer (HETS). Paragraph 2-2 contains the procedures for loading and unloading when the M1 Series MBT can be driven on or off the platform. Paragraph 2-3 contains the procedures for loading and unloading when the M1 Series MBT is disabled and must be pulled on or off the platform using the M1070 Tractor winches.

NOTE

- **Throughout this technical bulletin, the terms used to describe areas and parts of the semitrailer, and their location relative to each other, are referenced as follows:**
- **When a person stands at the loading ramp end (rear) of the semitrailer looking toward the gooseneck on the forward (front) end of the semitrailer, the side on the left is designated as the "streetside" and the side on the right is designated as the "curbside". Locations of areas and items on or under the semitrailer platform will be identified as inboard (toward or nearest the center of the platform) or outboard (farthest from the center). For example, the hydraulic operating controls and gages are located on the curbside of the semitrailer under the front corner of the platform. The crowbar is mounted at the rear of the platform.**

2-2. LOADING AND UNLOADING ABLE PAYLOAD (M1 Series MBT with TUSK and C-IED Kit)

NOTE

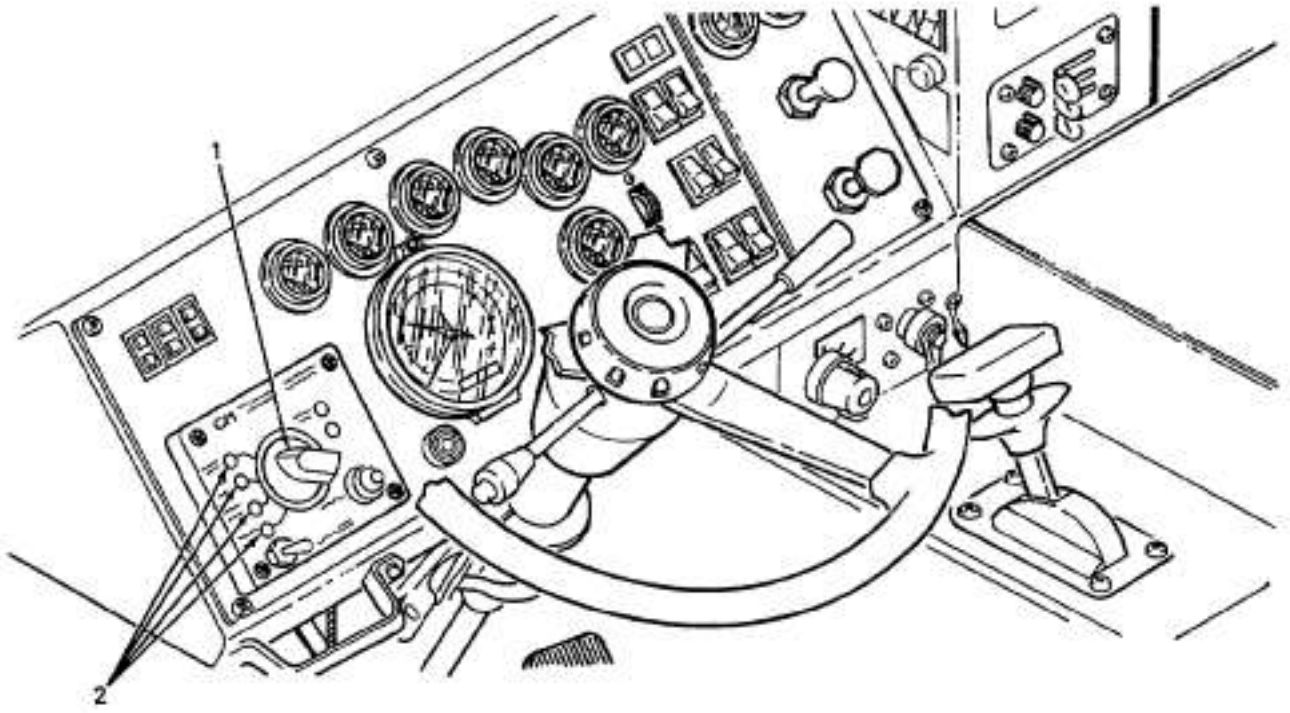
- **The following procedures provide instructions for loading and unloading an able payload with track (M1 Series MBT with TUSK and C-IED Kit) on the M1000 Semitrailer coupled to a U.S. Army M1070 tractor.**
- **M1 Series MBT with TUSK and C-IED Kit cannot be loaded onto the M1000 Semitrailer without tracks installed.**

a. Loading an able payload. To load an able payload, proceed as follows:

(1) Inflate all semitrailer tires to 100 to 110 psi (690 to 758 kPa).

(2) Start tractor per applicable tractor Operating Instructions in TM 9-2320-360-10.

(3) On M1070 tractor, set central tire inflation system (CTIS) switch (1) to setting for expected road/terrain conditions and allow tractor to sit until selected CTIS indicator (2) remains lit for that CTIS setting.



2-2. LOADING AND UNLOADING ABLE PAYLOADS (CONT)

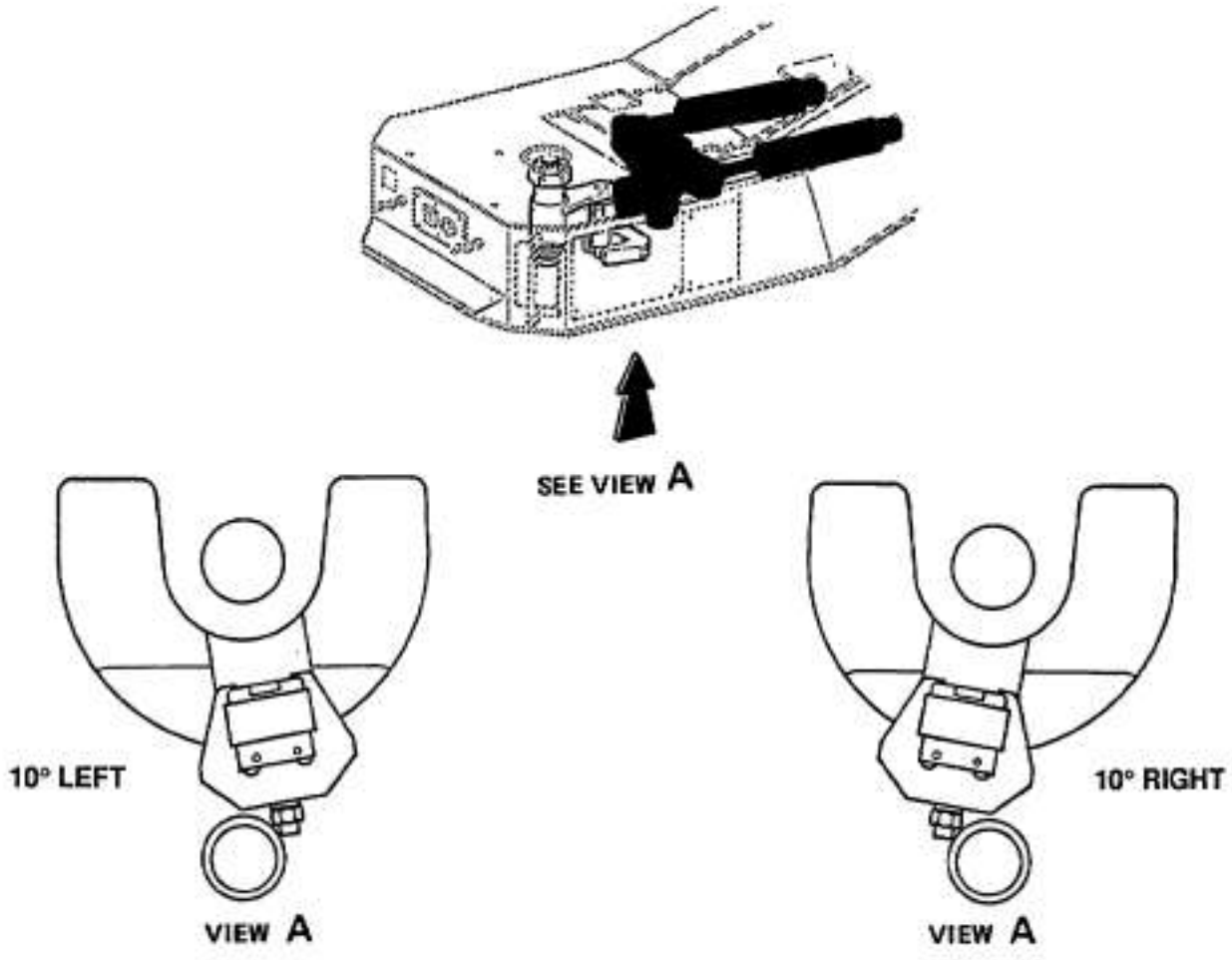
(4) Refer to TM 9-2330-381-14 and couple tractor to semitrailer.

(5) Align back of tractor/semitrailer combination as close as possible to payload, approximately 15 feet (4.6m), on the ground as level as possible.

WARNING

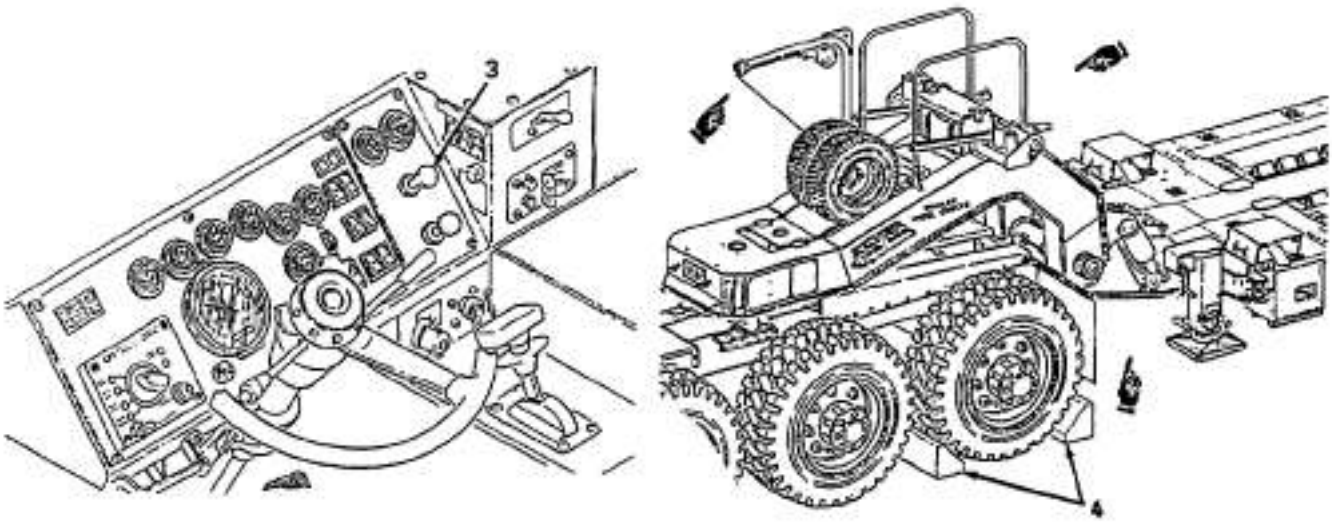
Load semitrailer on level ground whenever possible. In adverse conditions, loading can be done on grades up to 10 percent with a maximum offset angle of 10 degrees between tractor and semitrailer. Avoid exceeding these limitations to prevent payload from rolling on semitrailer and causing serious injury to personnel and damage to equipment.

(6) Visually check tractor/semitrailer offset angle by having spotter check relationship between steering wedge bolt and weld circle at bottom rear of pickup plate. If inside edge of bolt aligns with outside edge of weld circle, offset angle is 10 degrees. Make any required adjustments to tractor.

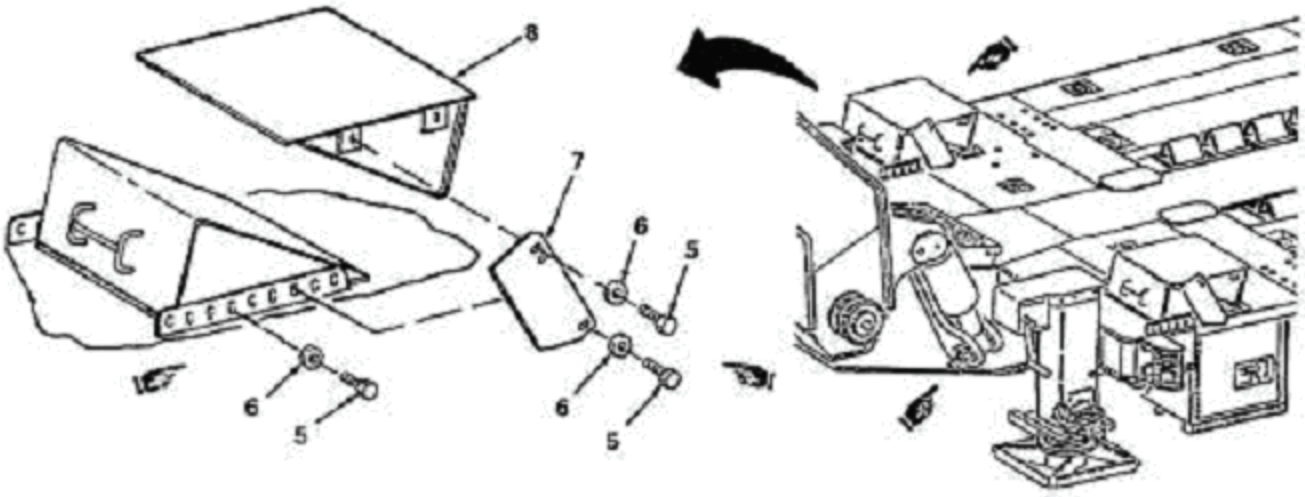


(7) Apply tractor parking brakes by pulling out parking brake valve (3).

(8) Remove four wheel chocks (4) from stowage on tractor and chock wheels on both sides of tractor.



(9) Remove 10 capscrews (5), washers (6), and 4 sheets (7) from two rear payload chocks (8), and remove two rear payload chocks (8) from platform.



2-2. LOADING AND UNLOADING ABLE PAYLOADS (CONT)

NOTE

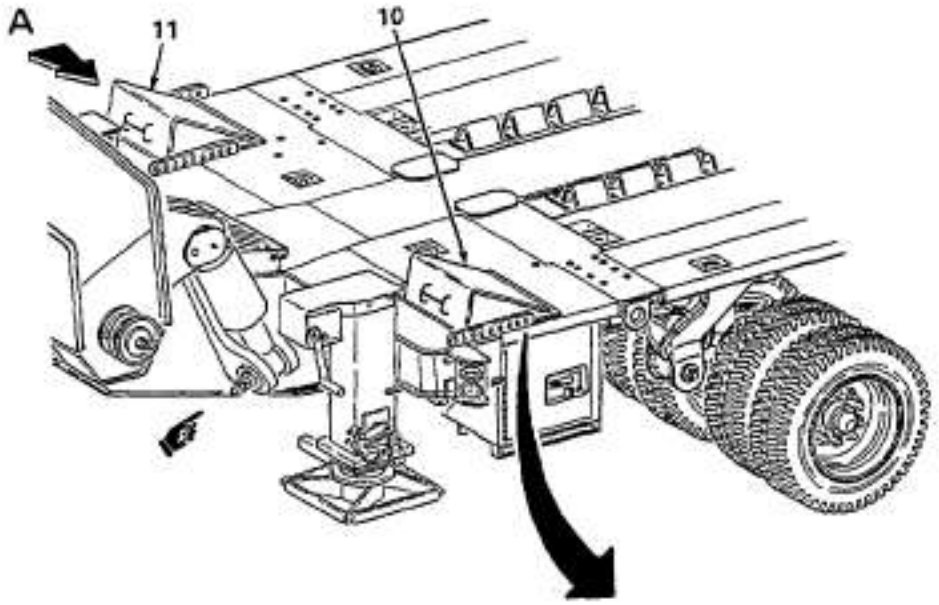
Prior to loading, front payload checks must be adjusted to accommodate the offsetof roadwheels on the M1 Series MBT with TUSK and C-IED Kit, and the tank's braking system shall be released.

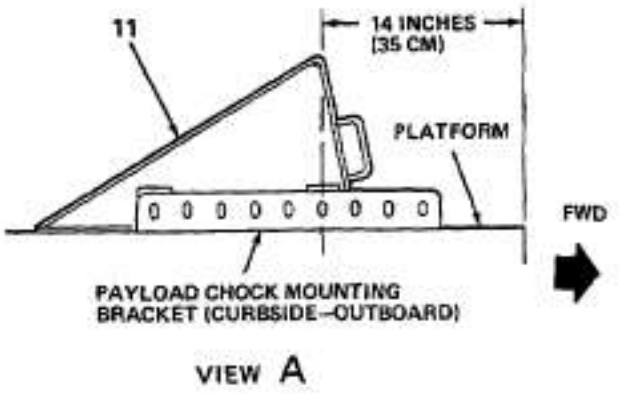
(10) Position streetside front payload chock (10) approximately 10 inches (25 cm) from forward edge of platform.

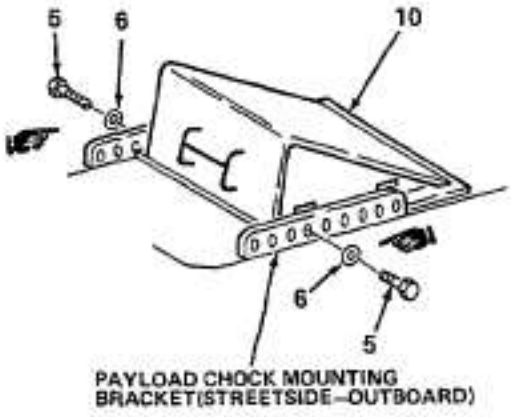
(11) Position curbside front payload chock (11) approximately 14 inches (35 cm) from forward edge of platform.

(12) Align forward mounting holes of streetside and curbside payload chocks (10 and 11) with fourth hole from front of outboard payload chock mounting brackets on platform.

(13) Secure each payload chock (10 and 11) with two capscrews (5) and washers (6).

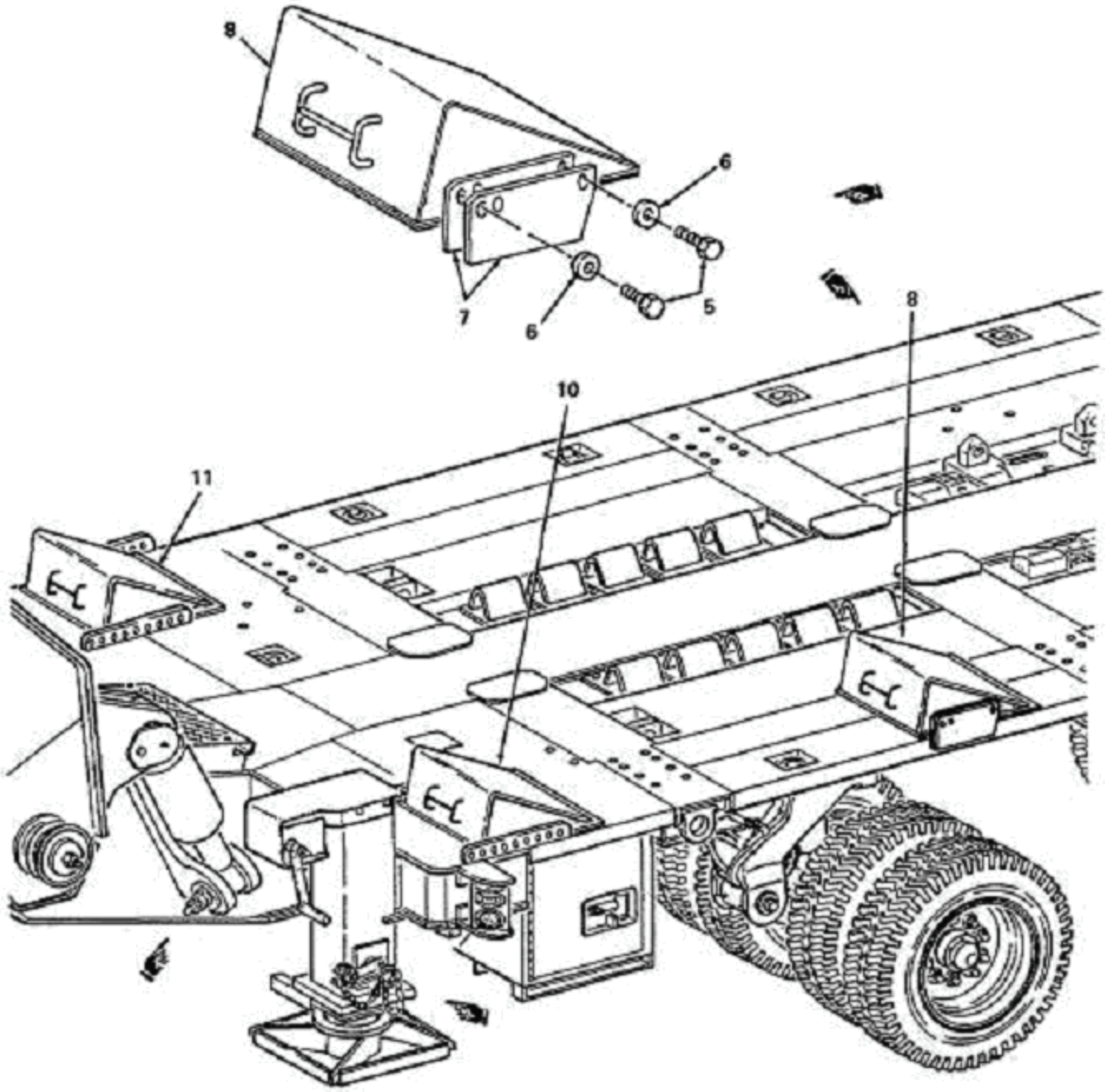






(14) Assemble two sheets (7) to outboard side of each of two rear payload chocks (8) using four capscrews (5) and washers (6).

(15) Position curbside rear payload chock (8) on streetside of platform, over first bogie. Place streetside rear payload chock (8) on the ground at streetside of semitrailer.



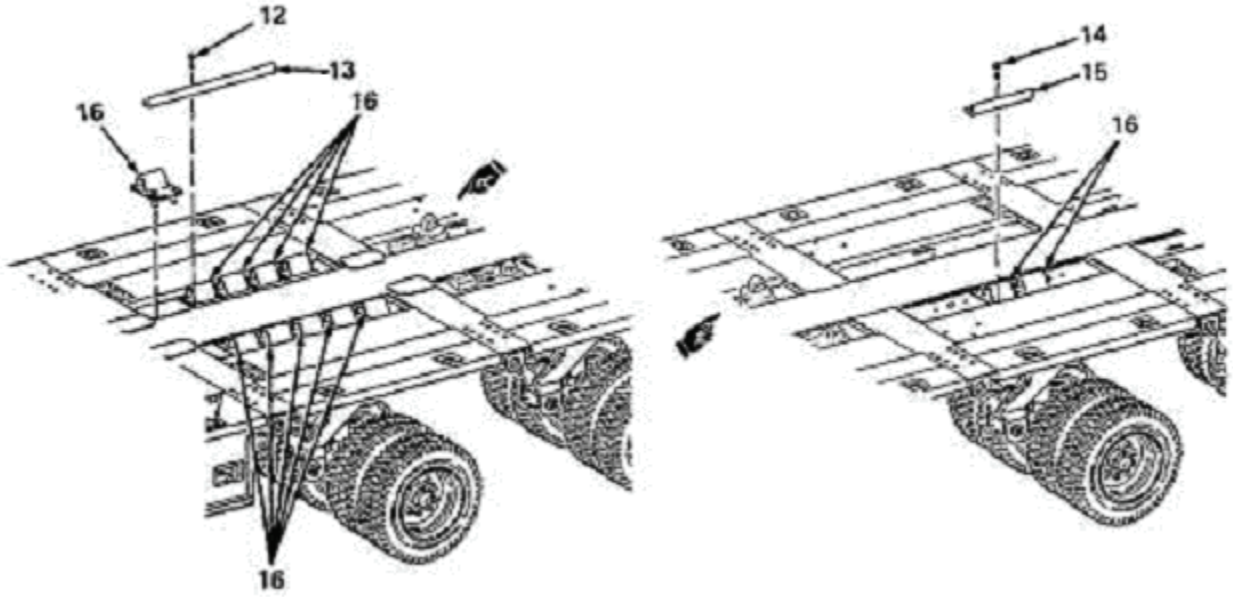
2-2. LOADING AND UNLOADING ABLE PAYLOADS (CONT)

(16) From forward recessed area on platform, remove two capscrews (12) and curb guide stowage brackets (13) from platform.

(17) From aft recessed area on platform, remove capscrew (14) and curb guide stowage bracket (15) from platform.

(18) Remove all 12 curb guides (16) from stowage points on platform.

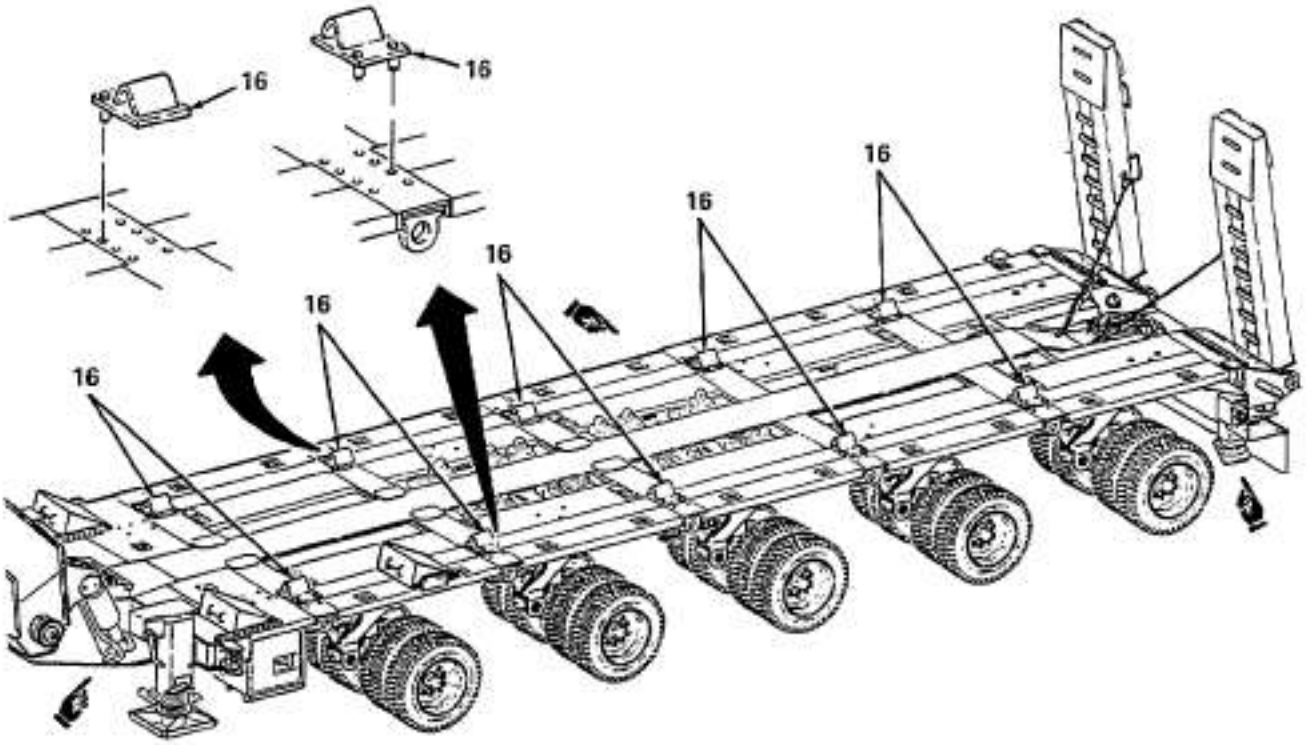
(19) Install curb guide stowage bracket (15) and capscrew (14) in forward recessed area on platform.



NOTE

Two curb guides will be installed on beavertail after the loading ramps are lowered.

(20) Install 10 curb guides (16) (5 on each side) into second hole inboard from platform edge (pin side facing outboard from center of platform). Set two remaining curb guides (16) aside until ramps are lowered.



WARNING

- **Due to semitrailers being outfitted with various chains (1/2-inch and/or 3/4-inch link sizes), all chains must be inventoried in the platform storage compartment prior to placing chains on platform. Once chains are inventoried, read and familiarize yourself with the information in step (21) (a) thru (g) to determine tiedown needed to properly secure the payload or injury to personnel and damage to equipment may result.**

CAUTION

- **Ensure chains and load binders are positioned inboard of both curbside and streetside curb guides or damage to equipment may result when payload is loaded.**

(21) Determine size of all tiedown chains. Read steps (21) (a) thru (g) to determine tiedown requirements and arrange payload tiedown chains as follows:

2-2. LOADING AND UNLOADING ABLE PAYLOADS (CONT)

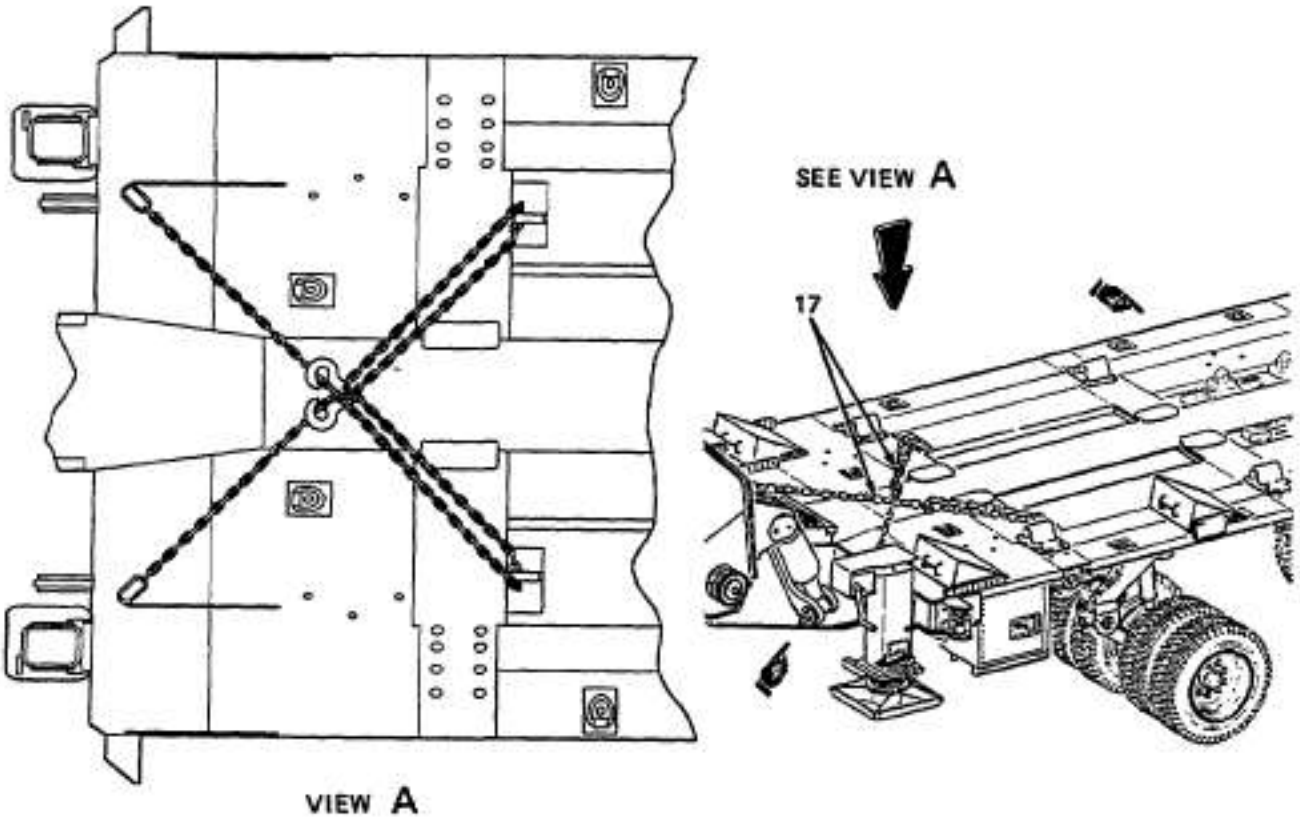
CAUTION

Chains must be the same length and must be properly laid out or loaded payload will contact gooseneck and damage to equipment may result.

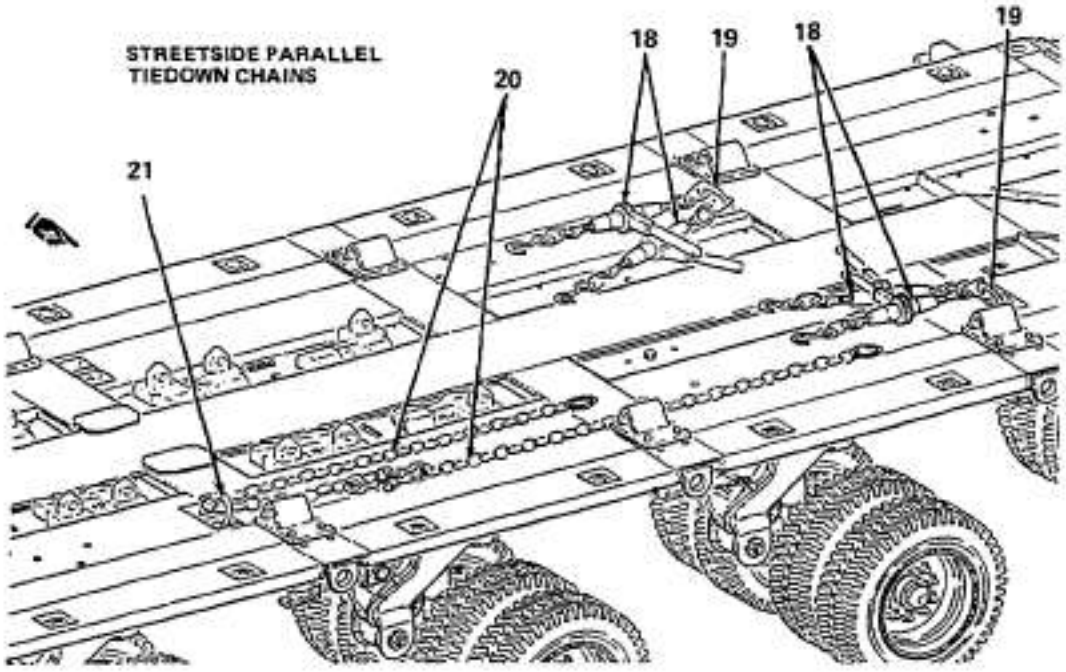
NOTE

With chains crossed, pear-shaped end link should be approximately in front of inboard payload chock stowage bracket.

(a) Loop two 11-foot front tiedown chains (17) (either 3/4-inch or 1/2-inch link size) through two front tiedown rings recessed in platform. Hook chains back to themselves such that each pear-shaped end link is approximately in front of inboard payload chock stowage bracket and that chains are the same length. Lay both chains (17) so that they are crossed near front of platform.



(b) Extend four load binders (18) to show approximately 6.5 inches (16.5 cm) of thread on both ends. Remove two shackles (19) from platform stowage compartment and position near rear payload tiedown rings, recessed in platform.



NOTE

When laying out load binders, ensure parallel load binder is on outboard side of shackle and angled load binder is on inboard side of shackle to prevent load binders from interfering with each other.

(c) Using two shackles (19), secure two load binders (18), small end of pear link toward load binder, to each rear payload tiedown ring. For each pair of load binders (18), place one load binder (18) parallel to edge of platform pointed toward front and other load binder angled toward center of platform. Position handles inboard.

(d) Lay out streetside parallel tiedown chain(s) (20) as follows:

1. If using 3/4-inch link chains, hook two 11-foot chains (20) together.

2. If using 1/2-inch link chains, select one 19-foot chain (20).

3. Route chain(s) (20) forward from streetside parallel load binder (18), parallel with edge of platform, through large shackle (21) (from platform stowage compartment) in streetside center tiedown ring.

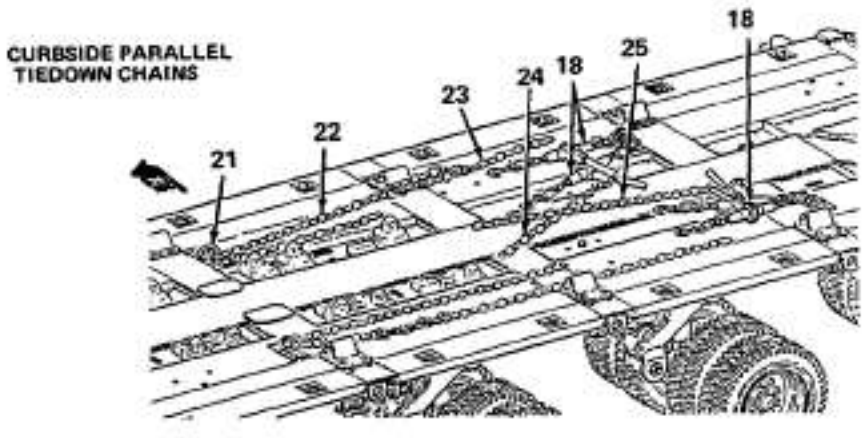
4. Pass chain(s) (20) back toward rear of platform. If using 3/4-inch chains, be sure that junction of the two 3/4-inch chains is aft of large shackle (21). Do not connect chain(s) to load binder (18).

2-2. LOADING AND UNLOADING ABLE PAYLOADS (CONT)

(e) Lay out curbside parallel tiedown chain(s) (22) as follows:

1. If using 3/4-inch link chains, hook one 11-foot chain (22) and one 4-foot chain (23) together. Lay 4-foot chain (23) along side the curbside parallel load binder (18). Route 11-foot chain (22) forward, parallel with curbside edge of platform, and inward through large shackle (21) (from platform stowage compartment) and install shackle (21) in curbside center tiedown ring.

2. If using 1/2-inch link chain, select one 19-foot chain (22). Route chain (22) forward from curbside parallel load binder (18), parallel with edge of platform, through large shackle (21) (from platform stowage compartment) and install shackle (21) in curbside center tiedown ring.



3. Pass chain(s) (22) back toward rear of platform. Do not connect chain(s) to load binder (18).

(f) Lay out curbside angle rear payload tiedown chain (24) as follows:

1. If using 3/4-inch link chain, place a 4-foot chain (24) from curbside angled load binder (18) forward toward center of platform.

2. If using 1/2-inch link chain, place a 7-foot chain (24) from curbside angled load binder (18) forward toward center of platform.

3. Do not connect angle rear tiedown chain (24) to load binder (18).

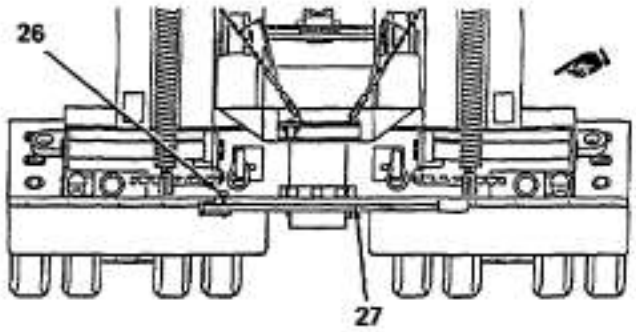
(g) Lay out streetside angle rear payload tiedown chain (25) as follows:

1. If using 3/4-inch link chain, place an 11-foot chain (25) from streetside angled load binder (18) forward toward center of platform.

2. If using 1/2-inch link chain, place a 7-foot chain (25) from streetside angled load binder (18) forward toward center of platform.

3. Do not connect angle rear tiedown chain (25) to load binder (18).

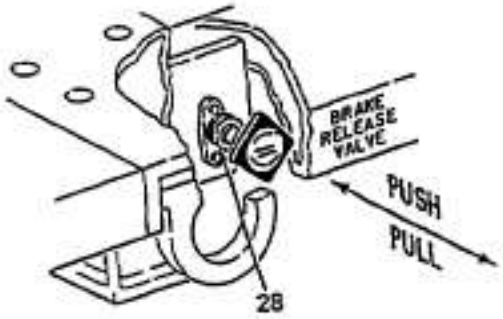
(22) Remove hitch pin (26) and crowbar (27) from rear of semitrailer below loading ramps. Reinstall hitch pin (26) and lower beacon warning light (TM 9-2330-381-14).



(23) Raise ramps perpendicular to platform and adjust ramp span width to match payload (TM 9-2330-381-14).

(24) Start and run APU (TM 9-2330-381-14).

(25) Release semitrailer parking brakes by pushing inward on knob of brake release valve (28).



(26) Adjust platform height (TM 9-2330-381-14) to loading position as follows:

(a) Raise front of semitrailer to 50 inches (127 cm), top mark on crowbar.

(b) Lower rear of semitrailer to approximately 34 inches (86 cm), bottom mark on crowbar.

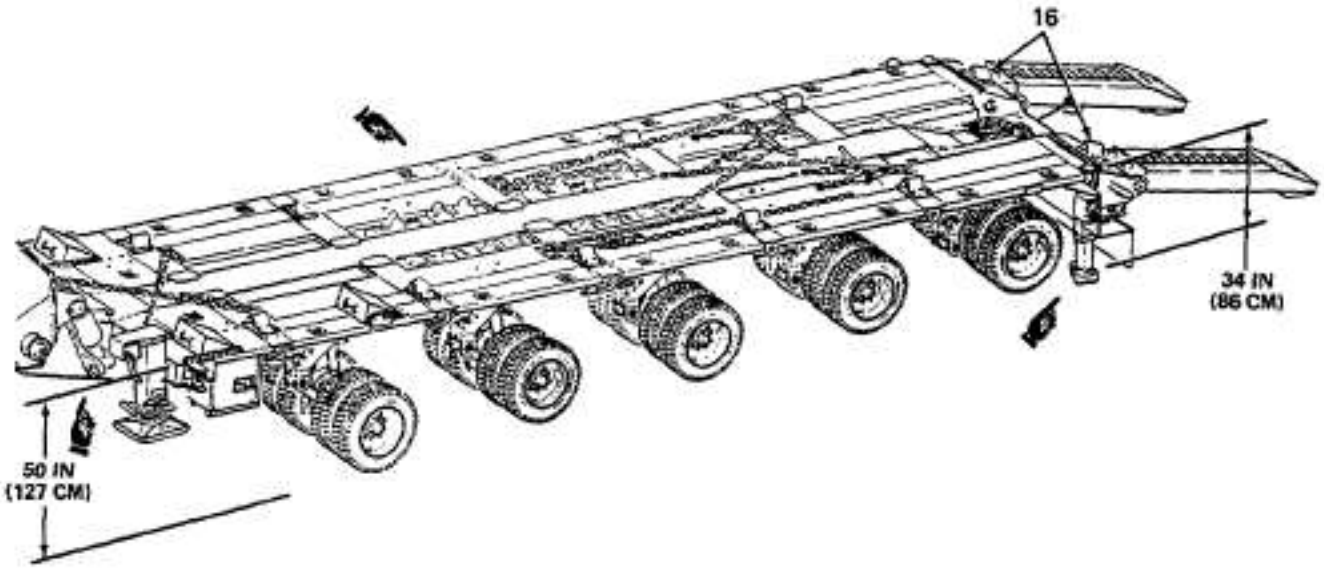
(c) Lower rear support legs until feet are in firm contact with the ground. Turn adjusting nut as necessary to position socket head screw outboard and close cover.

(27) Unhook loading ramp stow chains and lower loading ramps to the ground (TM 9-2330-381-14).

(28) Apply semitrailer parking brakes by pulling outward on knob of brake release valve (28).

2-2. LOADING AND UNLOADING ABLE PAYLOADS (CONT)

(29) Aline and install two curb guides (16) into second hole inboard from platform edge at beavertail, just in front of each loading ramp. Make sure pin side of each curb guide faces outward from center of platform.



WARNING

Two spotters are required for loading and unloading operations. The payload operator must know the position of spotters at all times or injury to personnel may result.

(30) Position spotters as follows:

WARNING

Do not position a spotter on gooseneck if payload is to be backed onto semitrailer platform or injury to personnel may result.

(a) Position one spotter on gooseneck to ensure constant visual contact with payload operator. If backing payload onto semitrailer platform, position spotter behind payload facing forward. Spotter must be in constant view with payload operator.

(b) Position one spotter on curbside of payload to maintain visual contact with spotter located either on gooseneck or at back of payload facing payload operator.

CAUTION

Ensure all chains and load binder handles are inboard of the curb guides and are clear of the payload tracks or damage to equipment may occur.

(31) Start and warm payload. Aline payload to semitrailer prior to loading (center of payload to center of semitrailer).

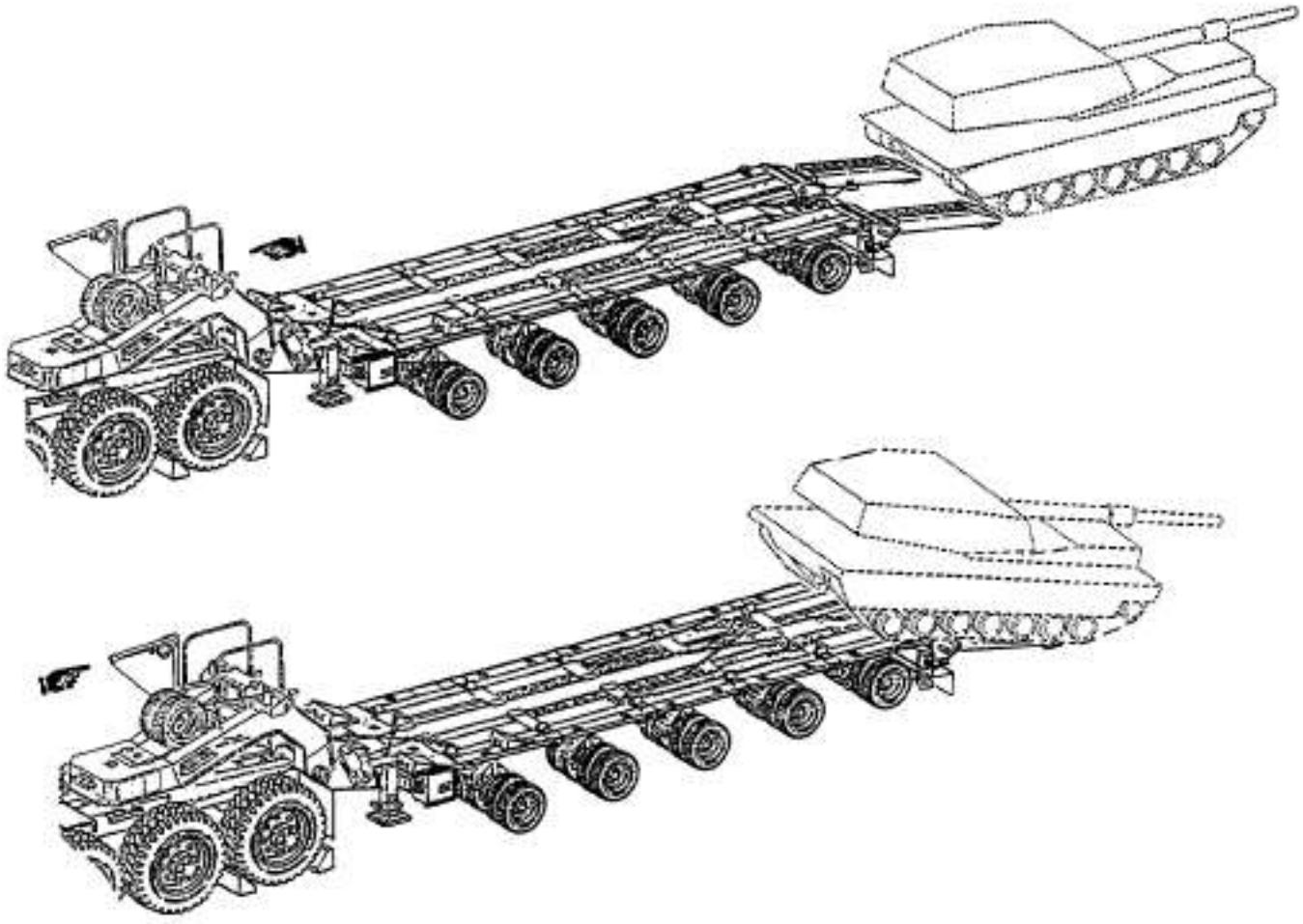
WARNING

- **Unnecessary personnel must stand well clear of the vehicles, especially behind the payload (engine/turbine exhaust) during loading operations. At no time during any loading operation while the payload is moving should personnel be on the semitrailer platform. The payload operator must drive the payload slowly up the loading ramps and onto the platform or injury to personnel and damage to equipment may result.**

- **Payload adjustments, side to side (turning), must be kept to a minimum or serious injury to personnel and damage to equipment may result.**

(32) Using hand signals, gooseneck/aft spotter must signal payload operator to drive payload slowly up onto platform. Curbside spotter must notify gooseneck/aft spotter of any required payload adjustments while loading.

(33) Have payload operator drive payload onto ramps and platform.



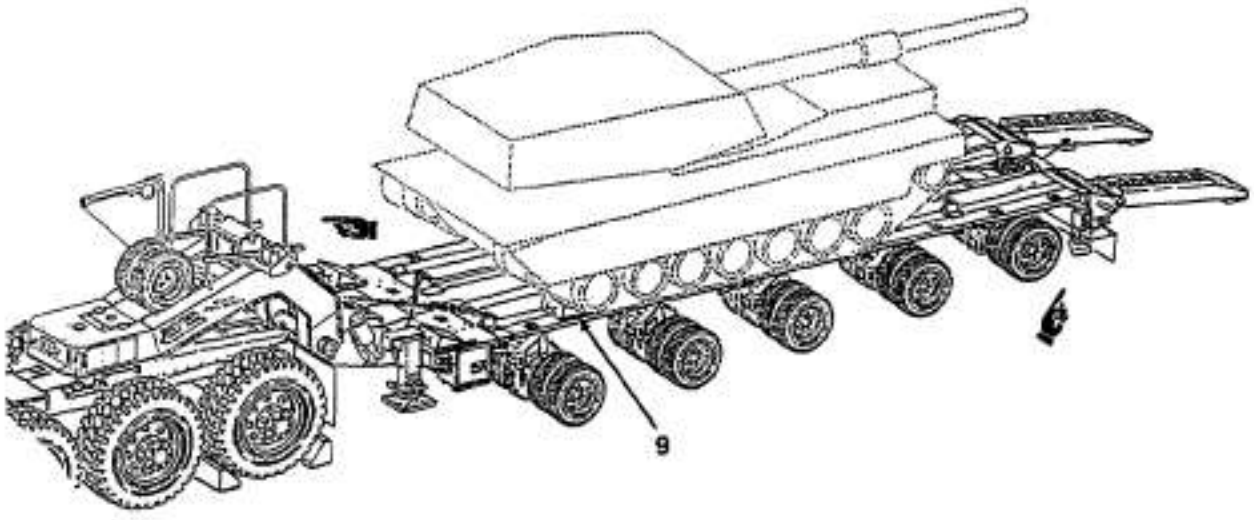
2-2. LOADING AND UNLOADING ABLE PAYLOADS (CONT)

(34) Gooseneck/aft spotter must guide payload operator until firm contact with payload chock (9) on streetside has been made.

WARNING

Failure to set the payload parking brake could allow the payload to roll backward causing injury to personnel and damage to equipment.

(35) Payload operator must apply payload parking brakes.



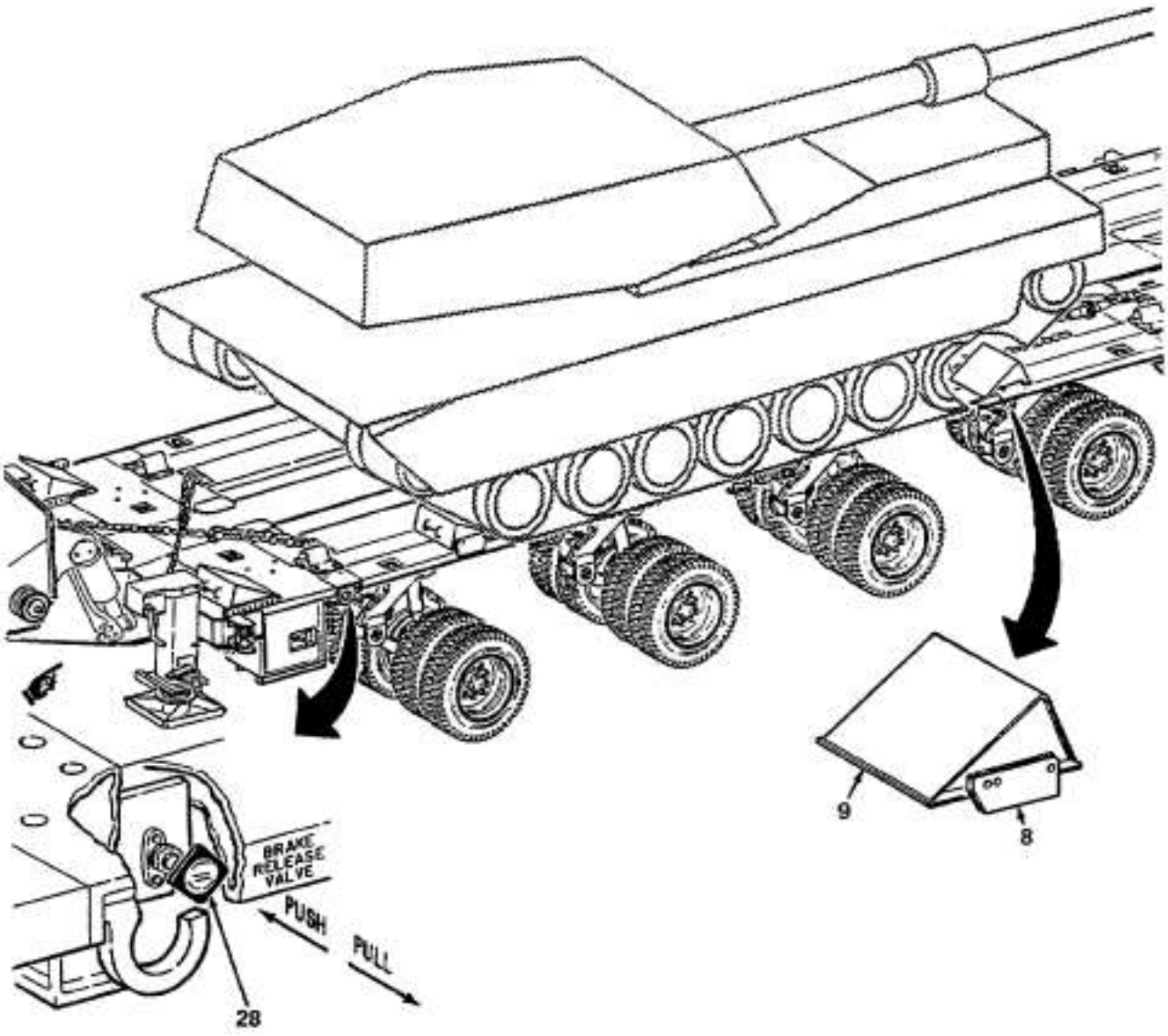
(36) Chock streetside rear of payload with rear streetside payload chock (9) with two sheets (8) attached. Make sure sheets are positioned flush against side of platform to prevent inward shifting of chocks.

(37) Adjust platform to normal running height as follows:

(a) Release semitrailer parking brakes by pushing inward on knob of brake release valve (28).

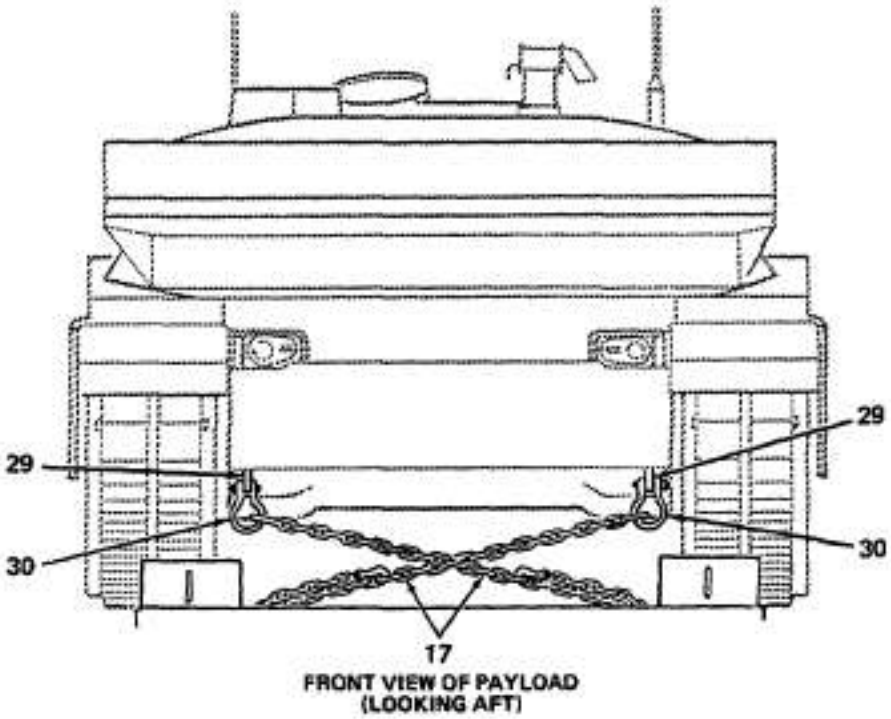
(b) Adjust platform height (TM 9-2330-381-14) to normal running height of 43 inches (109 cm). Using bed height indicators, check each corner of platform for a height of 43 inches (109 cm).

(c) Apply semitrailer parking brakes by pulling outward on knob of brake release valve (28).

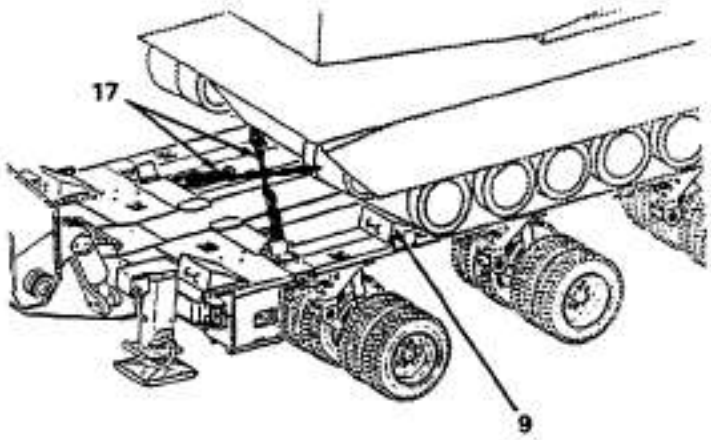

BRAKE RELEASE VALVE
PUSH
PULL
28
9
8

2-2. LOADING AND UNLOADING ABLE PAYLOADS (CONT)

(38) Lift two front tiedown chains (17) and attach to two front towing lugs (29) using two shackles (30) from platform stowage compartment.



FRONT VIEW OF PAYLOAD
(LOOKING AFT)



NOTE

It may be necessary to release the payload parking brake, move the rear streetside payload chock back approximately 12 inches (30 cm), and move the payload back slightly to remove the front streetside payload chock.

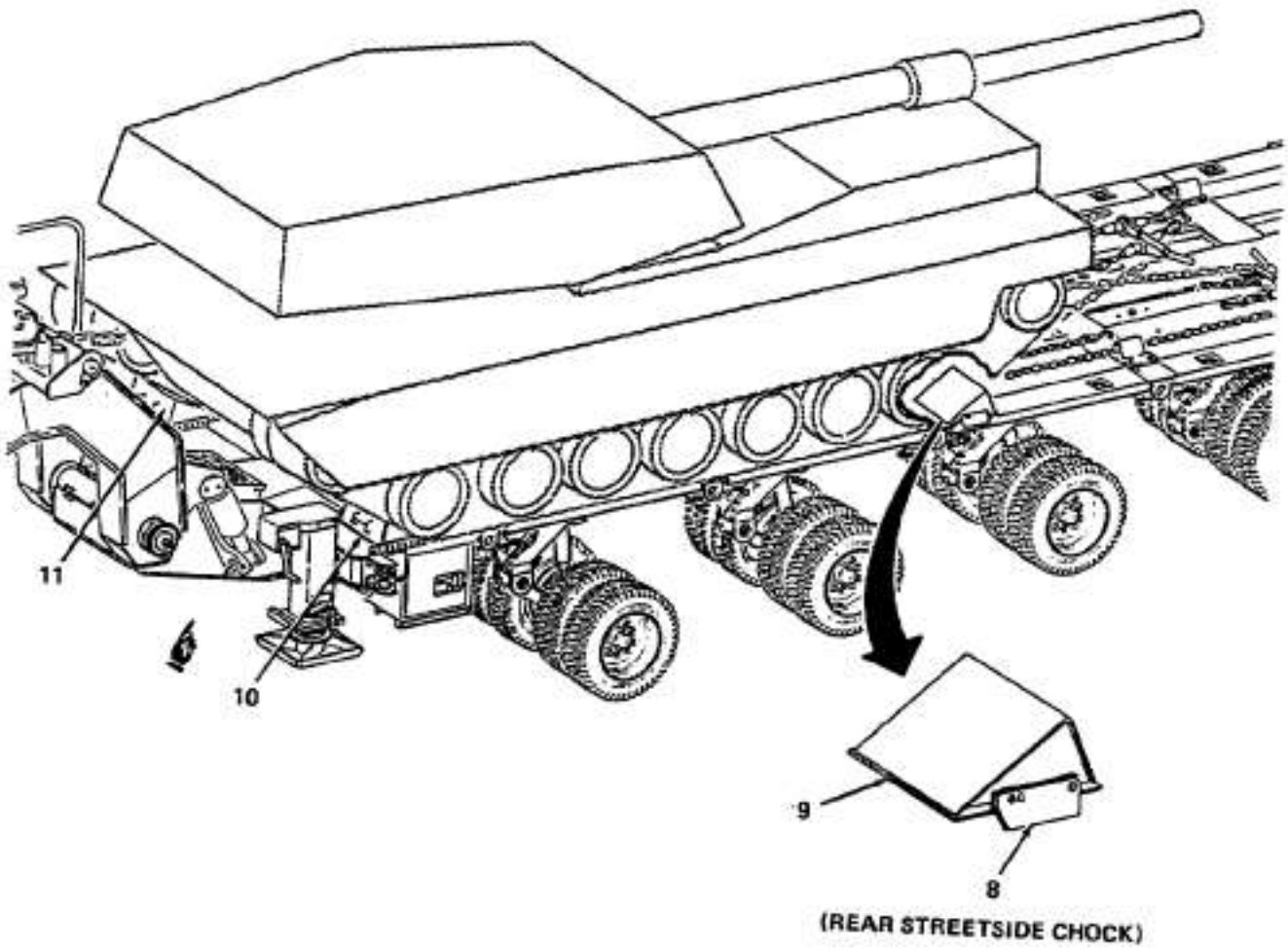
(39) Remove streetside payload chock (9) from front streetside of payload.

(40) Using hand signals, signal payload operator to drive payload slowly forward until front tiedown chains are tight and payload tracks (front roadwheels) are firmly on the front payload chocks (10 and 11). Apply payload parking brakes.

NOTE

Install payload rear chocks with sheets positioned flush against side of platform to prevent inward shifting of chocks.

(41) Place rear payload chocks (9), with sheets (8) attached, to rear curbside and streetside of payload.



2-2. LOADING AND UNLOADING ABLE PAYLOADS (CONT)

(42) Shut down payload and secure payload to semitrailer platform as follows:

(a) Remove two shackles (31) from platform stowage compartment.

NOTE

The streetside parallel chain consists of either two 11-foot 3/4-inch link chains or the 19-foot 1/2-inch link chain. The curbside angle rear payload tiedown chain consists of either the 4-foot 3/4-inch chain or the 7-foot 1/2-inch link chain.

(b) Attach streetside parallel chain (20) and curbside angle rear payload tiedown chain (24) to streetside rear towing lug (32) using shackle (31).

NOTE

The curbside parallel chain consists of either the 11-foot and 4-foot 3/4-inch link chain combination or the 19-foot 1/2-inch link chain. The streetside angle rear payload tiedown chain consists of either the 11-foot 3/4-inch link chain or the 7-foot 1/2-inch link chain.

(c) Attach curbside parallel tiedown chain(s) (22 or 22 and 23) and streetside angle rear payload tiedown chain (25) to curbside rear towing lug (32) using shackle (31).

NOTE

When attaching load binders to tiedown chains, take up as much slack as possible. The remaining slack can be taken up when load binders are operated.

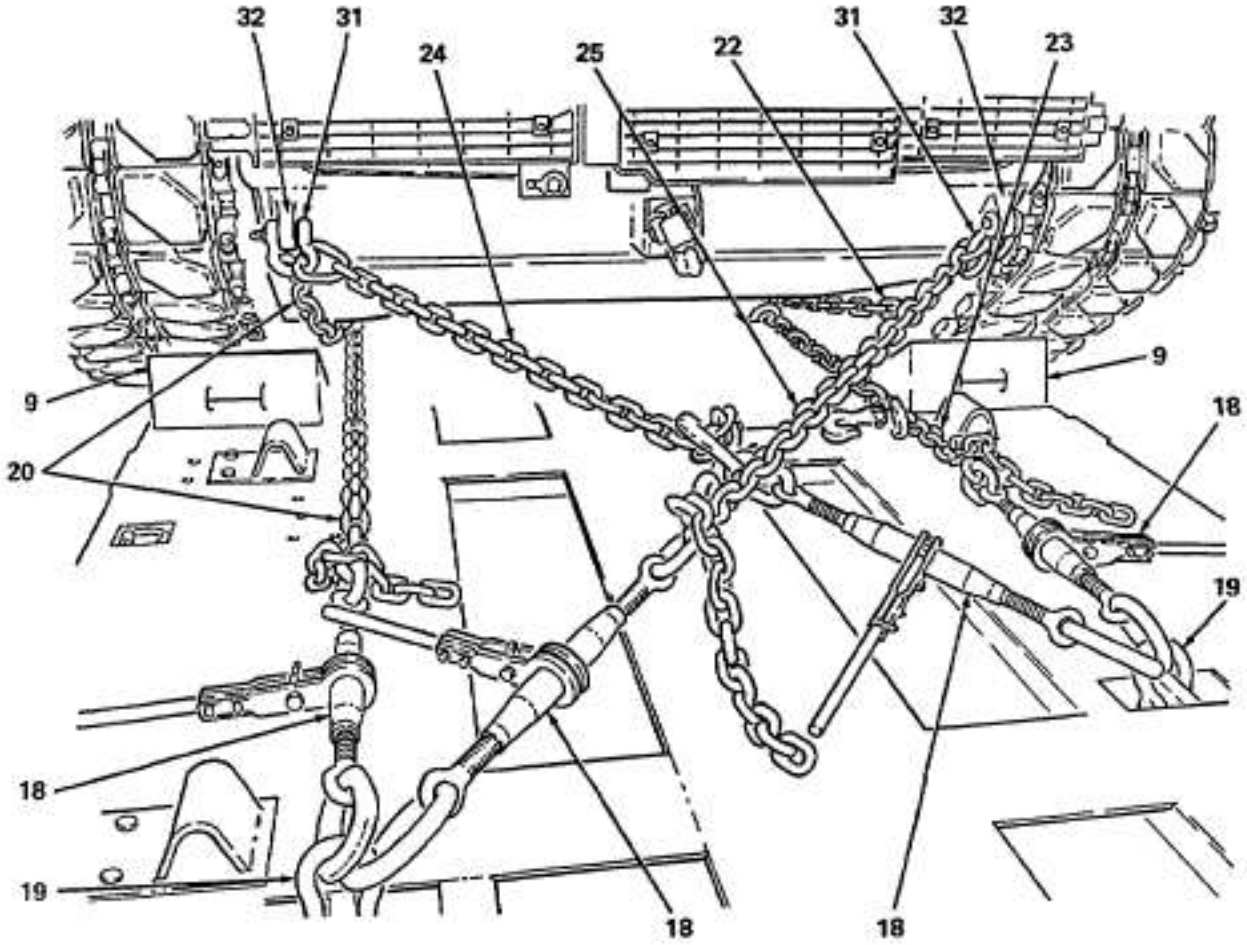
(d) Attach both parallel chains (20 and 22 or 20, 22, and 23) to parallel positioned load binders (18).

(e) Operate load binders (18) to tighten both parallel tiedown chains (20 and 22 or 20, 22, and 23).

NOTE

When attaching load binders to tiedown chains, take up as much slack as possible. The remaining slack can be taken up when load binders are operated.

(f) Attach both curbside and streetside angle rear payload tiedown chains (24 and 25) to angled load binders (18) as follows:



1. Attach free end of curbside angle rear payload tiedown chain (24) to curbside angled load binder (18).

CAUTION

The streetside angle rear payload tiedown chain must cross over the top of the curbside rear payload tiedown chain or the chains will interfere with each other and damage to equipment may result.

2. Attach free end of streetside angle rear payload tiedown chain (25), passing chain over top of curbside angle rear payload tiedown chain (24), to streetside angled load binder (18).

3. Operate both load binders (18) to tighten both angle rear payload tiedown chains (24 and 25). Be sure payload is secure against two rear payload chocks (9).

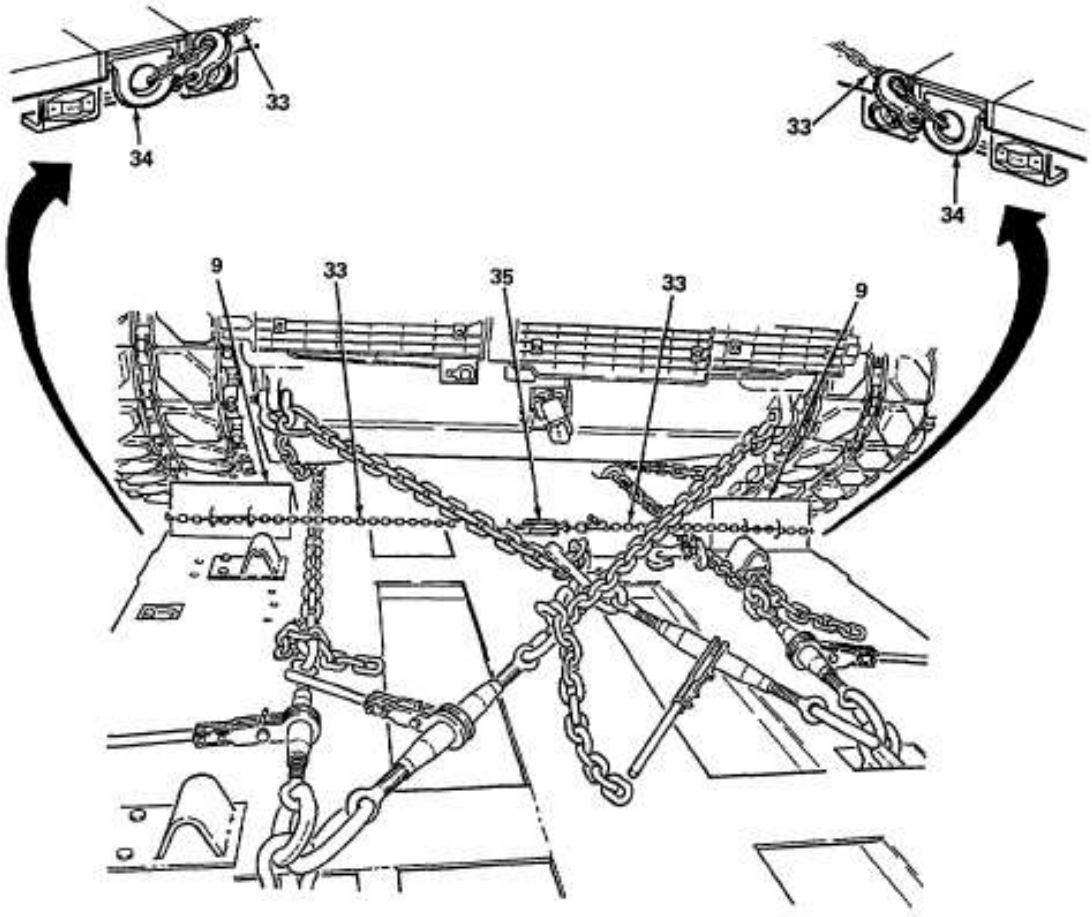
2-2. LOADING AND UNLOADING ABLE PAYLOADS (CONT)

(g) Attach two 11-foot utility chains (33) through tiedown rings (34) on each side of platform just forward of each payload chock (9) and connect hook to each chain (33).

(h) Pass free end of utility chains (33) through both handles of both rear payload chocks (9). Place free ends of both utility chains (33) at center of platform.

(i) Attach load binder (35) to both utility chains (33) taking up as much slack as possible.

(j) Operate load binder (35) to tighten both utility chains (33).



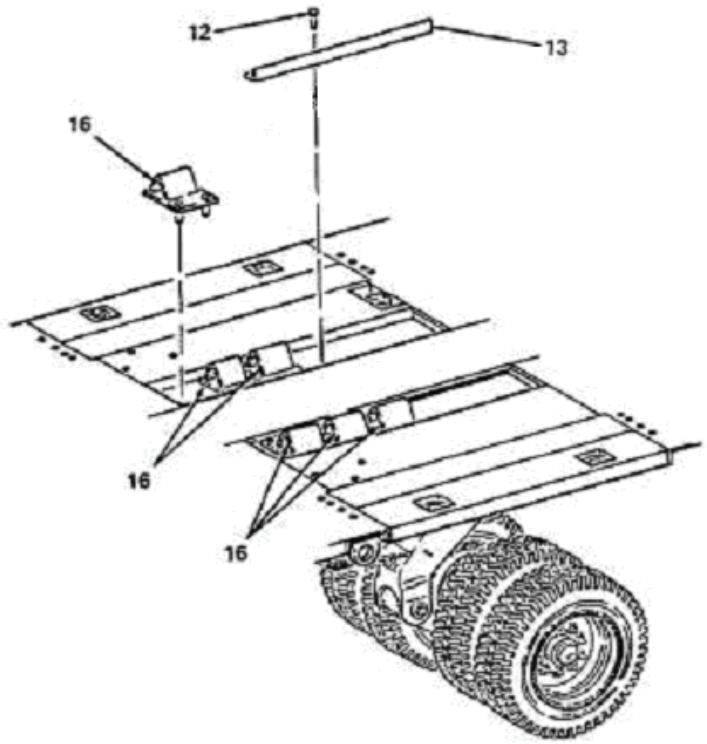
NOTE

Store curb guides in the foremost three positions on each side in the recessed areas.

(43) Remove six curb guides (16) from rear of platform and beavertail and stow in rear recessed area of platform.

(44) Secure six curb guides (16) with two curb guide stowage brackets (13) and capscrews (12).

2-2. LOADING AND UNLOADING ABLE PAYLOADS (CONT)



(45) Raise ramps, adjust ramp span width to furthest inboard position and stow loading ramps for transport (TM 9-2330-381-14).

(46) Shut down APU (TM 9-2330-381-14).

(47) Raise rear support legs and beacon warning light (TM 9-2330-381-14).

(48) Stow crowbar at back of platform and secure in place with hitch pin.

(49) Stow all tools used during loading procedure in platform stowage compartment.

WARNING

Do not attempt bridge crossings of any kind unless verification is made that bridge can support the weight of combined HET System (M1070 Tractor and M1000 Semitrailer) loaded with an M1 Series MBT, with TUSK and C-IED Kit. Injury to personnel or damage to equipment may occur.

CAUTION

- **Measure height from level ground to highest point of payload before transport. Failure to comply may result in damage to equipment.**
- **If width of payload is wider than HET System, measure widest points before transport. Failure to comply may result in damage to equipment.**

(50) Remove four wheel chocks from tractor tires and restow wheel chocks onto tractor.

(51) Have driver pull tractor/semitrailer forward a short distance and stop. Check payload tiedown chains for looseness after stop, and tighten chains as necessary. If either long chain loosened, check that chain is still routed between payload hull and tread before tightening.

(52) Use metal tube to tighten chains until they do not lose tension when tractor/semitrailer is stopped.

(53) Install vehicle classification data plate over existing numbers on curbside front of tractor.

2-2. LOADING AND UNLOADING ABLE PAYLOADS (CONT)

b. Unloading an able payload. To unload an able payload, proceed as follows:

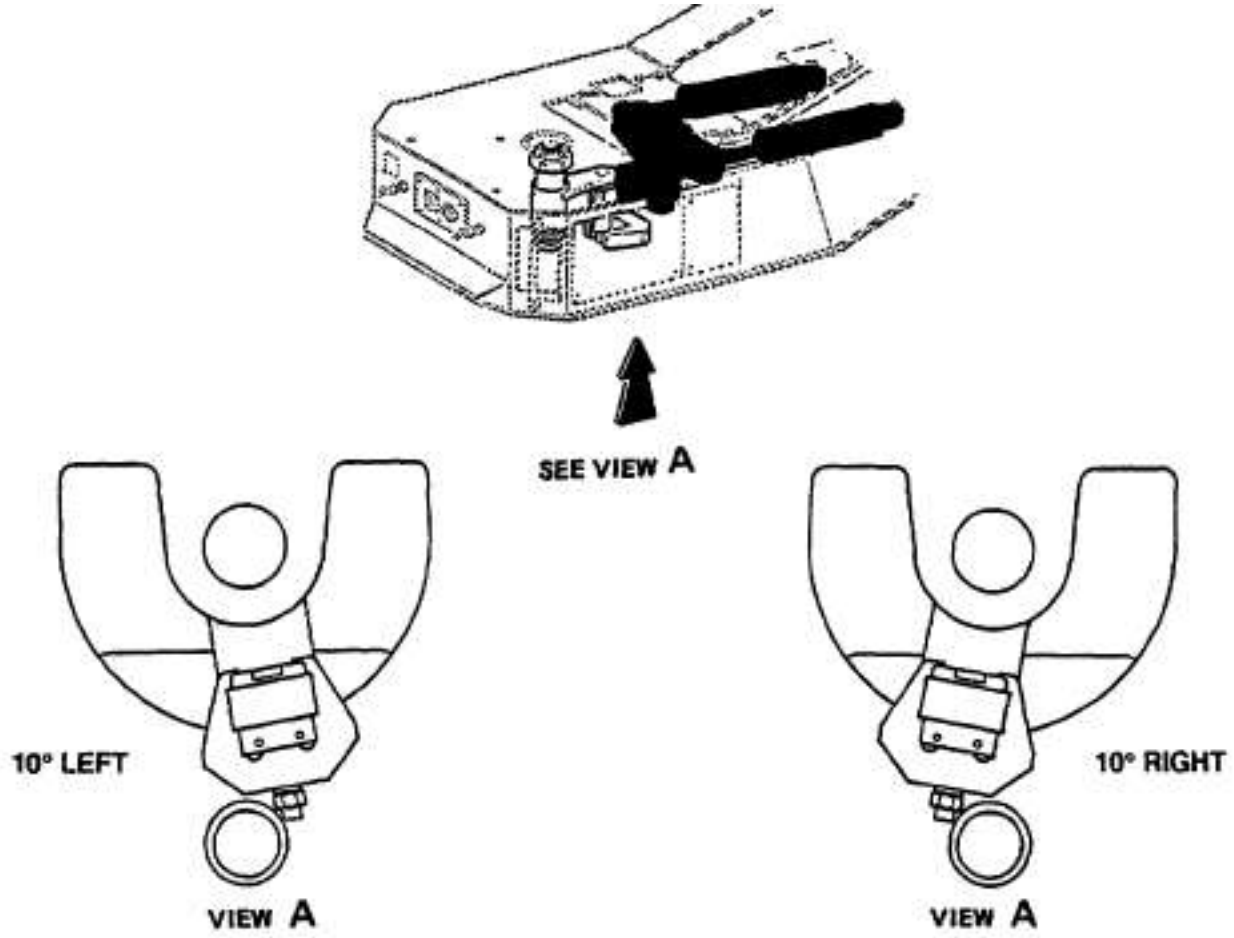
(1) If tractor and semitrailer are already coupled, proceed to steps (2) and (3) of paragraph 2-2a. If tractor/semitrailer are uncoupled, perform steps (2) thru (4) of paragraph 2-2a.

WARNING

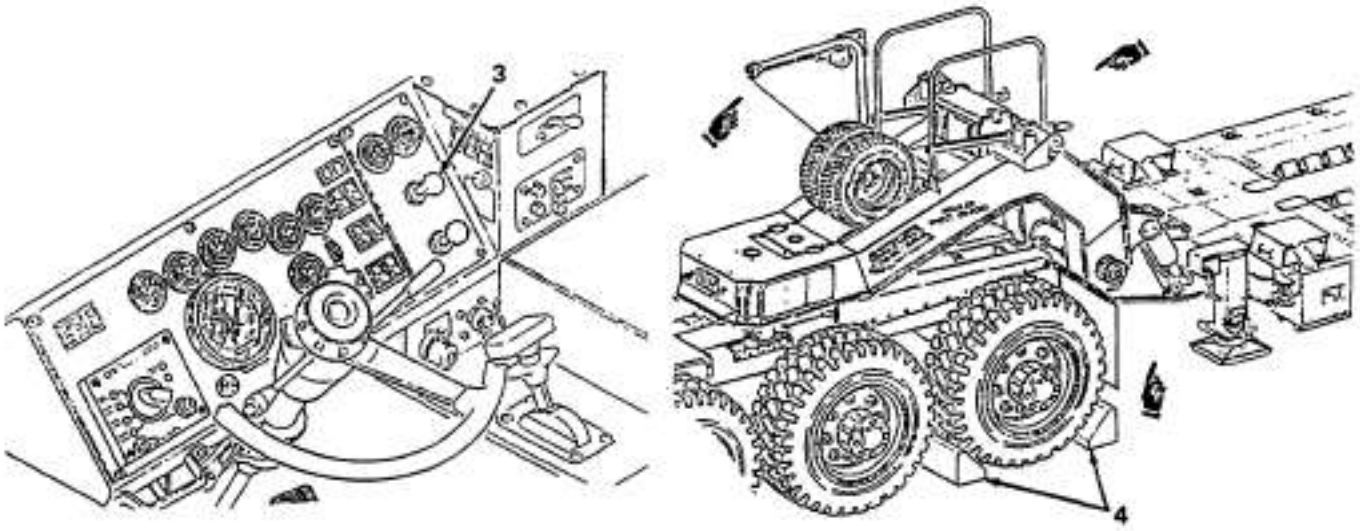
Unload semitrailer on level ground whenever possible. In adverse conditions, unloading can be done on grades up to 10 percent with a maximum offset angle of 10 degrees between tractor and semitrailer. Avoid exceeding this limitation to prevent payload from rolling off semitrailer and causing injury to personnel and damage to equipment.

(2) Aline back of tractor/semitrailer combination with area to be unloaded. Make sure ample amount of space is provided for ramps to be lowered and payload to be off loaded past end of ramps on the ground as level as possible.

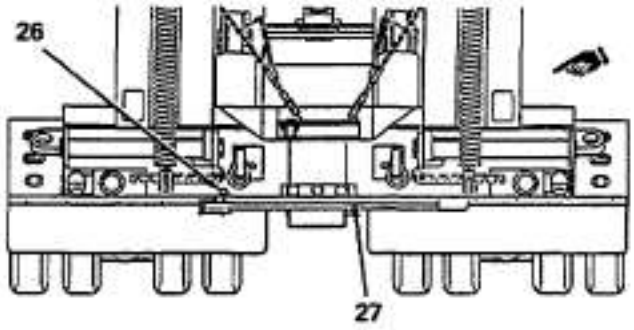
(3) Visually check tractor/semitrailer offset angle by having spotter check relationship between steering wedge bolt and weld circle at bottom rear of pickup plate. If inside edge of bolt alines with outside edge of weld circle, offset angle is 10 degrees. Make any required adjustments to tractor.



(4) Apply tractor parking brakes by pulling out parking brake valve (3). Remove four wheel chocks (4) from stowage on tractor and chock wheels on tractor.



(5) Remove hitch pin (26) and crowbar (27) from rear of semitrailer below loading ramps. Reinstall hitch pin (26) and lower beacon warning light (TM 9-2330-381-14).



(6) Adjust ramp span width to match payload track width as required (TM 9-2330-381-14).

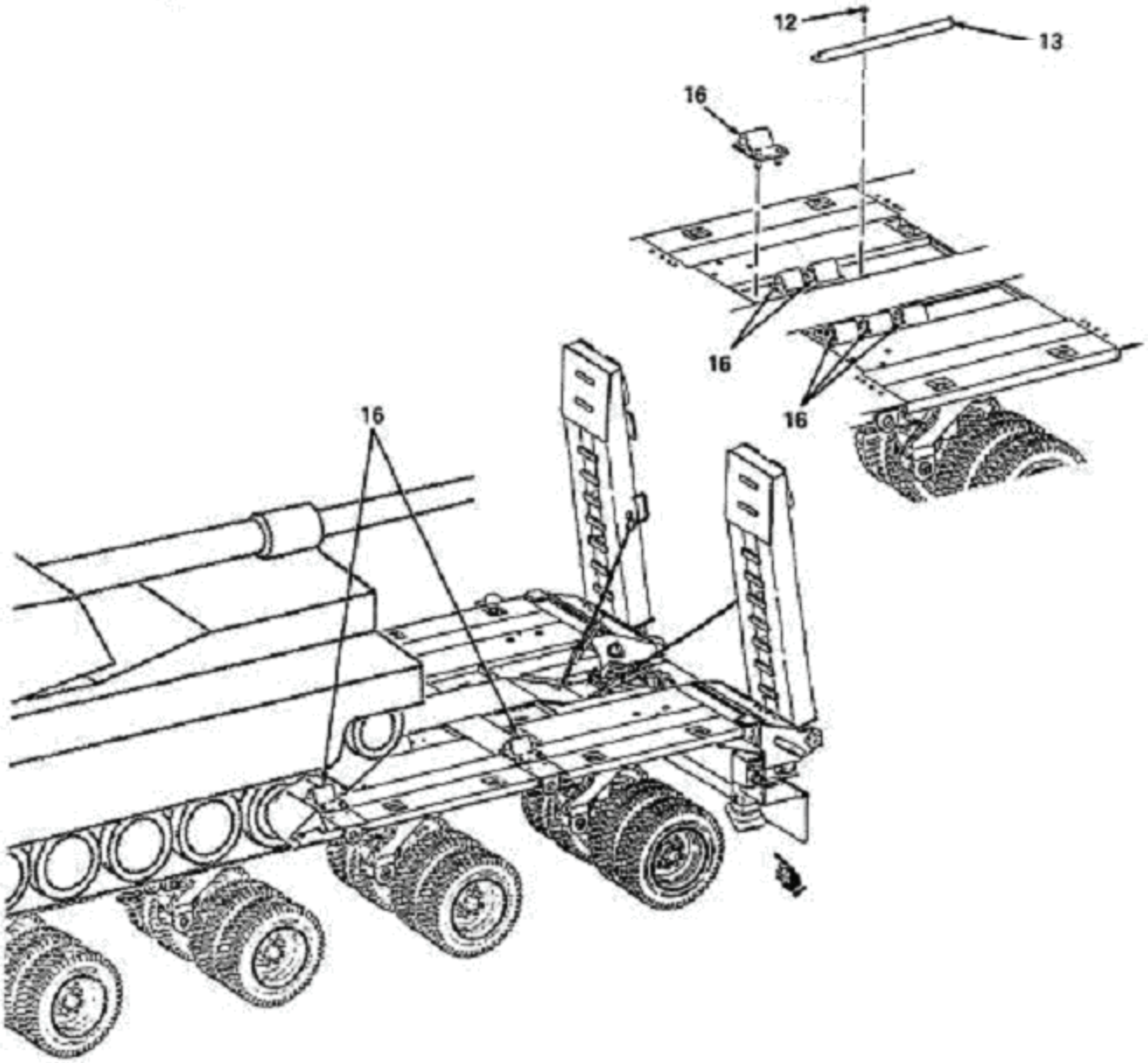
2-2. LOADING AND UNLOADING ABLE PAYLOADS (CONT)

(7) Remove six curb guides (16) from rear recessed area of platform by removing two capscrews (12) and curb guide stowage brackets (13).

NOTE

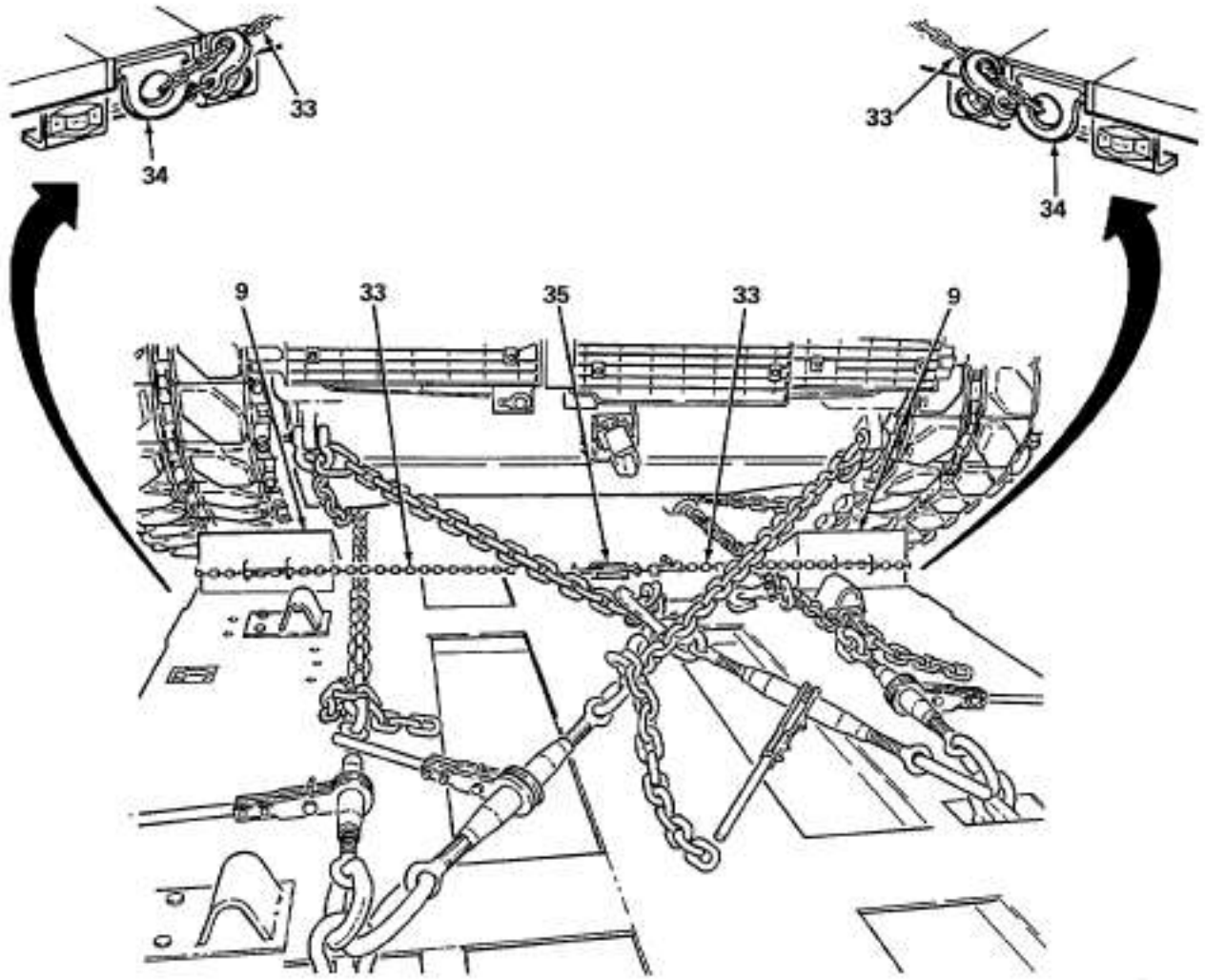
Two curb guides will be installed on beavertail after the loading ramps are lowered.

(8) Place four curb guides (16) on platform (two on each side) into second hole inboard from platform edge (pin side facing outboard from center of platform). Set two remaining curb guides (16) aside until ramps are lowered.



(9) Remove payload tiedowns and payload chock tiedowns from payload as follows:

(a) Open load binder (35) and remove two utility chains (33) from two tiedown rings (34). Remove utility chains (33) from two rear payload chocks (9). Move two utility chains (33) and load binder (35) out of the way.



2-2. LOADING AND UNLOADING ABLE PAYLOADS (CONT)

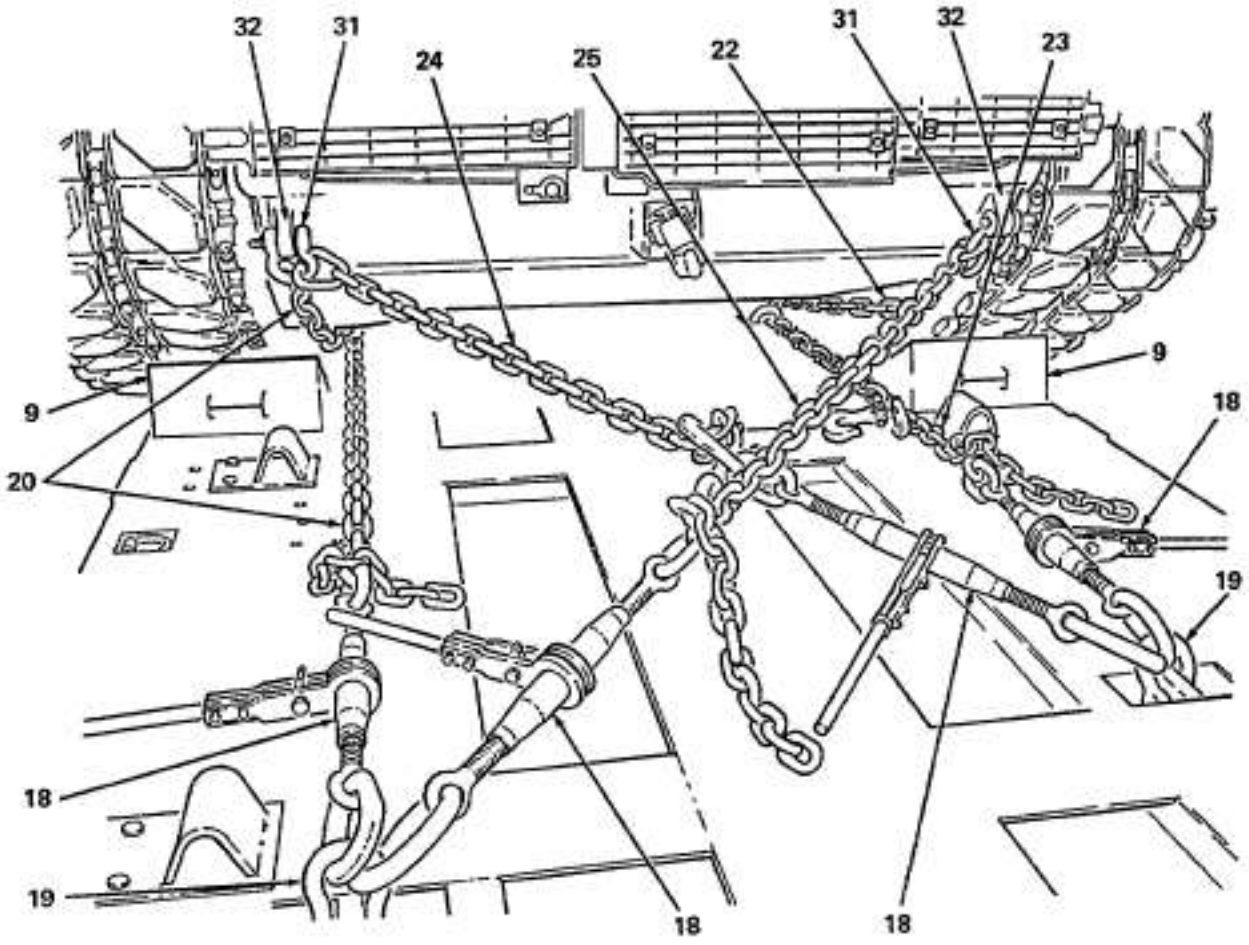
(b) Operate two angled load binders (18) to loosen two angle rear payload tiedown chains (24 and 25).

(c) Disconnect both angle chains (24 and 25) from angled load binders (18).

(d) Payload operator must release payload brakes.

(e) Operate two parallel load binders (18) to tighten both curbside and streetside tiedown chains (20 and 22 or 20, 22, and 23).

(f) Continue to tighten each load binder as tightly as possible to move payload slightly off of two rear payload chocks (9) or at least reduce pressure applied on rear chocks by payload.



(g) Payload operator must apply payload brakes.

(h) If necessary, use crowbar to help move two rear payload chocks (9) out from under payload tracks. Move rear payload chocks (9) back approximately 6 inches (15 cm) along both sides of platform.

(i) Operate two parallel load binders (18) to loosen both curbside and streetside parallel tiedown chains (20 and 22 or 20, 22, and 23). Disconnect parallel chains (20 and 22 or 20, 22, and 23) from parallel load binders (18).

(j) Remove four load binders (18) and two shackles (19) from platform.

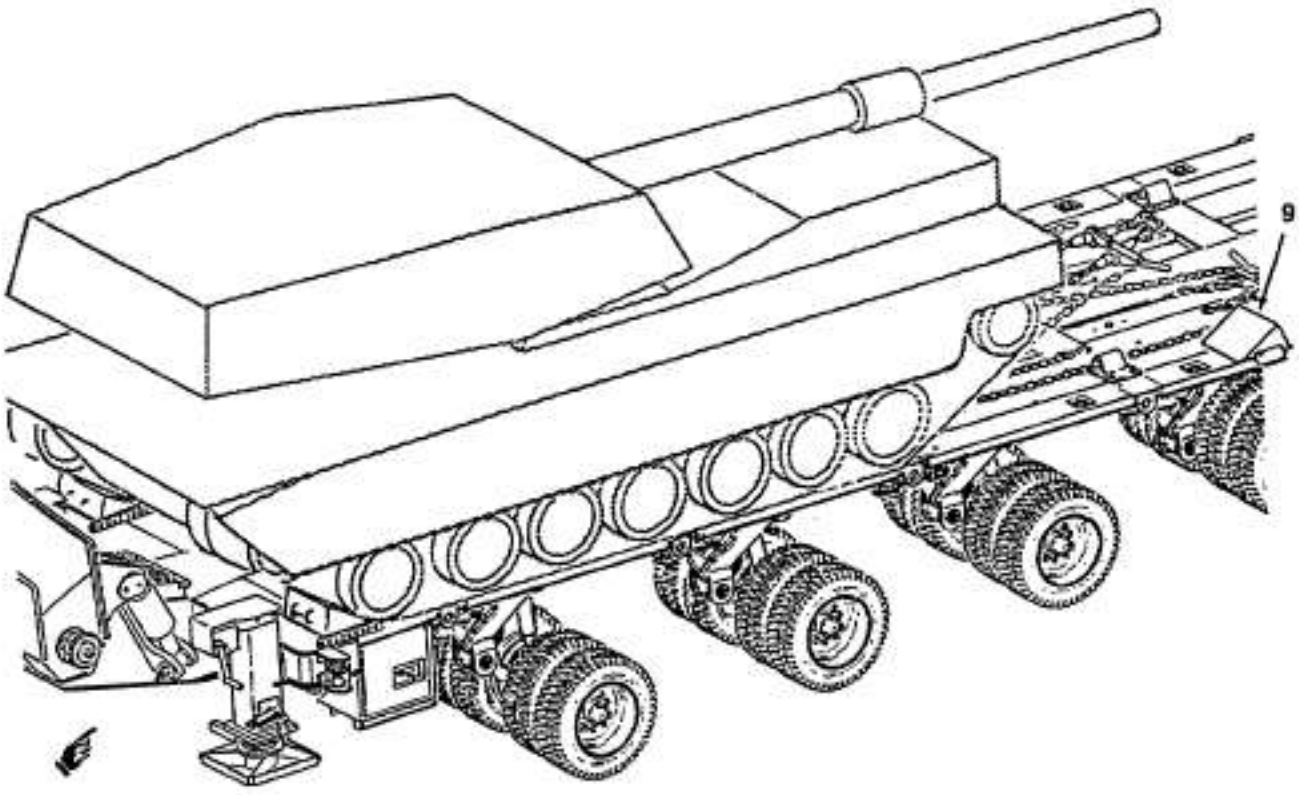
(k) Disconnect two chains (20 and 24) from streetside shackle (31) on towing lug (32) at rear of payload.

(l) Disconnect chains (25 and 23 or 25, 23, and 22) from curbside shackle (31) on towing lug (32) at rear of payload.

(m) Lay chains and load binders toward center of platform, between and clear of the payload tracks, until payload is unloaded.

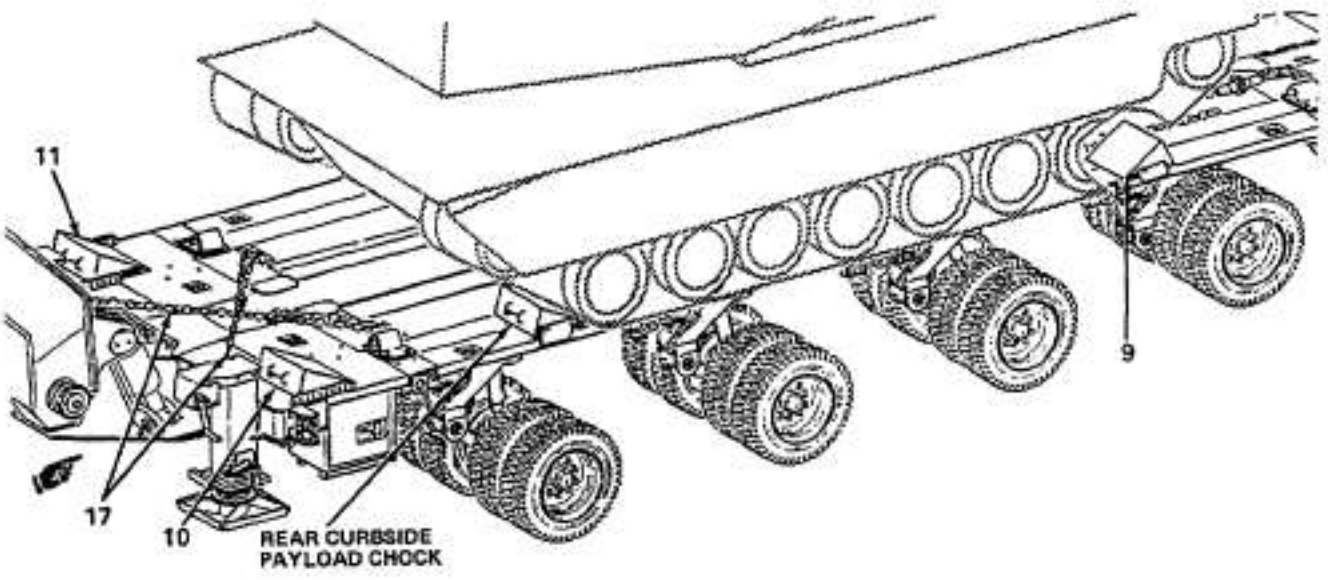
(10) Payload operator must start and warm payload.

(11) Move streetside rear payload chock (9) along streetside platform over #4 bogie. Place curbside rear payload chock near front streetside of platform out of the way.



2-2. LOADING AND UNLOADING ABLE PAYLOADS (CONT)

(12) Gooseneck/aft spotter must signal payload operator to release payload brakes and start slowly backing payload until payload contacts rear streetside payload chock (9).



(13) Stop payload and apply payload brakes. Place rear curbside payload chock in front of payload on streetside to chock in front of payload.

(14) Remove two tiedown chains (17) from shackles on front of payload. Reinstall shackles. Lay two tiedown chains (17) forward toward center of platform.

(15) Gooseneck/aft spotter must signal payload operator to start moving forward just until rear streetside payload chock (9) can be removed. Apply payload brakes.

(16) Perform steps (24) thru (29) of paragraph 2-2a to adjust platform height to platform loading/unloading position, lower ramps, and install two remaining curb guides.

WARNING

- **Unnecessary personnel must stand well clear of the vehicles, especially behind the payload (engine/turbine exhaust) during unloading operations. At no time during any unloading operations while the payload is moving should personnel be on the semitrailer platform. The payload operator must drive the payload slowly down the loading ramps and onto the ground or injury to personnel and damage to equipment may result.**

- **Payload adjustments, side to side (turning), must be kept to a minimum or serious injury to personnel and damage to equipment may result.**

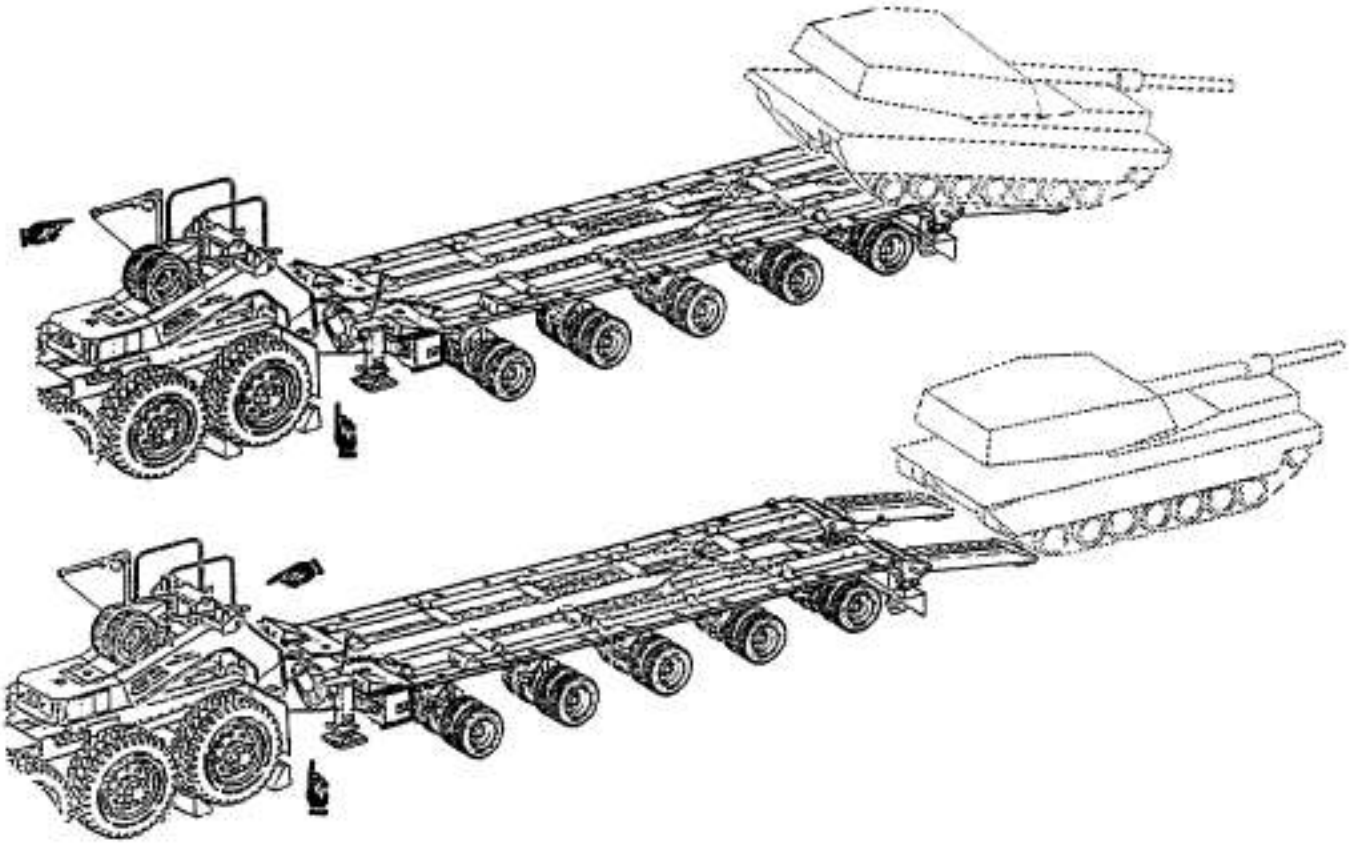
(17) Using hand signals, gooseneck/aft spotter must signal payload operator to slowly drive payload off of platform. Curbside spotter must notify gooseneck/aft spotter of any required payload adjustments while unloading.

(18) Have payload operator drive payload back an extra 5 feet (1.5m) to allow extra clearance for raising and stowing load ramps.

WARNING

Failure to set the payload parking brake may allow the payload to roll and cause injury to personnel and damage to equipment.

(19) Once payload is on the ground and clear of semitrailer, apply payload parking brake. Shut down payload.



(20) Remove all payload and payload chock tiedown chains from platform and restow all chains, load binders, and shackles into platform stowage compartment.

2-2. LOADING AND UNLOADING ABLE PAYLOADS (CONT)

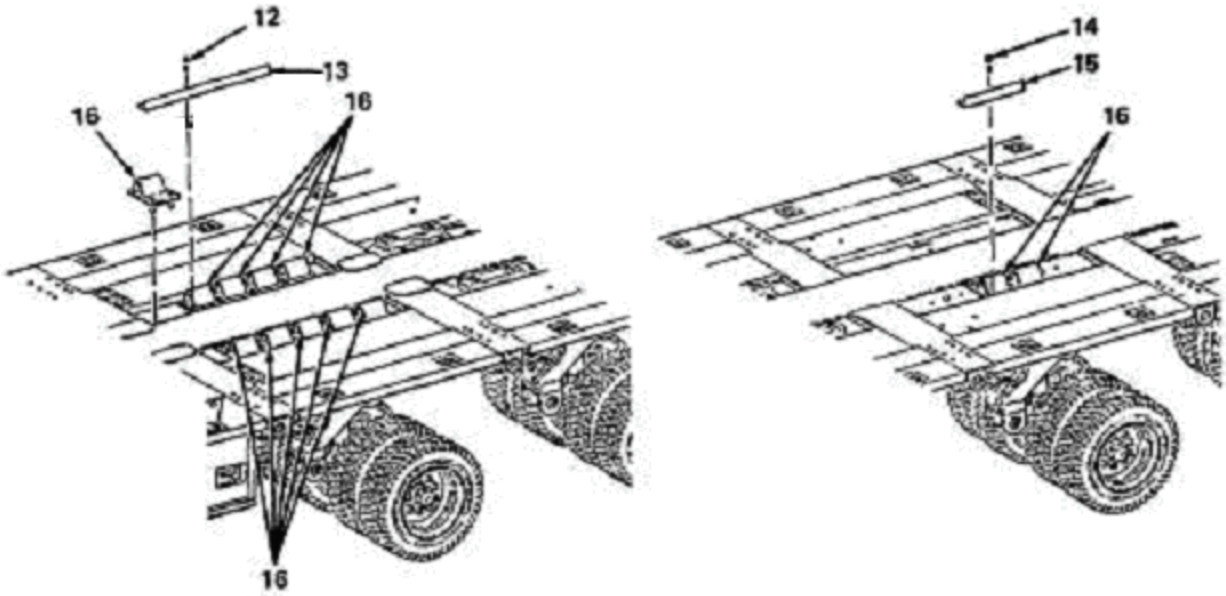
(21) Remove capscrew (12) and curb guide stowage bracket (13) from forward recessed area on platform.

(22) Remove all 12 curb guides (16) from loading positions on platform and place in center of platform for storage (10 curb guides located forward, 2 curb guides located aft).

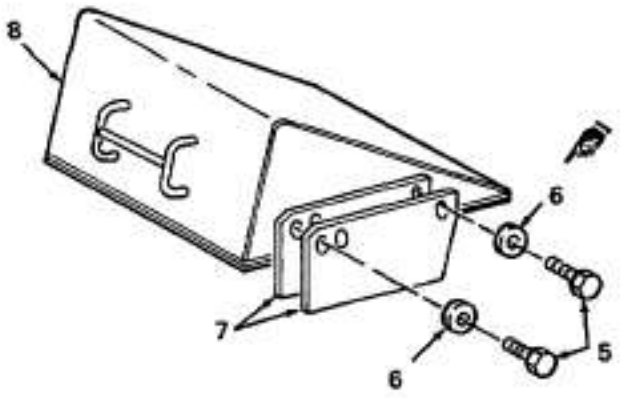
(23) Secure 10 curb guides (16), located forward, by installing 2 curb guide stowage brackets (13) and capscrews (12).

(24) Remove curb guide stowage bracket (15) and capscrew (14) from platform storage compartment.

(25) Secure two curb guides (16), located aft, by installing curb guide stowage bracket (15) and capscrew (14).



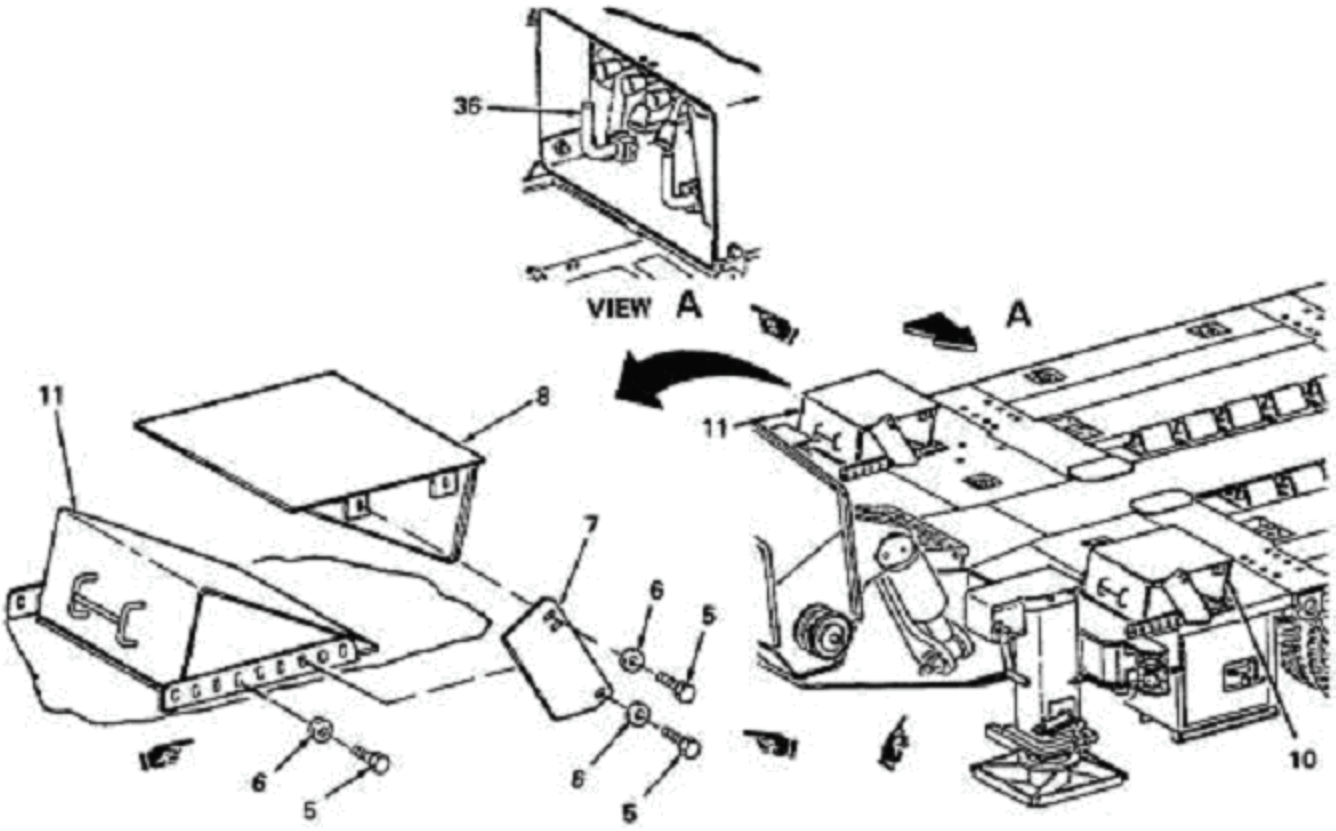
(26) Remove two capscrews (5), washers (6), and two sheets (7) from each of two rear payload chocks (8).



(27) Position two rear payload chocks (8) on top of two front payload chocks (10 and 11). Install four sheets (7), 10 capscrews (5), and washers (6).

(28) Perform step (37) of paragraph 2-2a and adjust platform to normal running height.

(29) Move suspension shutoff lever (36) to RUN position.



2-2. LOADING AND UNLOADING ABLE PAYLOADS (CONT)

(30) Raise rear support legs (TM 9-2330-381-14).

(31) Adjust ramp span width inboard (furthest inboard position) and stow loading ramps for transport as required (TM 9-2330-381-14).

(32) Shut down APU (TM 9-2330-381-14).

(33) Stow crowbar at back of platform and secure in place with hitch pin. Restow all tools and equipment used during this procedure into platform stowage compartment.

(34) Deflate tire pressure to 90 – 100 psi (620 - 689 kPa).

(35) If tractor/semitrailer is not going to remain parked at this time, restow tractor wheel chocks.

(36) Remove vehicle classification data plate from number holder on curbside front of tractor.

2-3. DUAL WINCH LOADING AND UNLOADING DISABLED FREE-ROLLING PAYLOAD WITH TRACK

(M1 Series MBT with TUSK and C-IED Kit)

NOTE

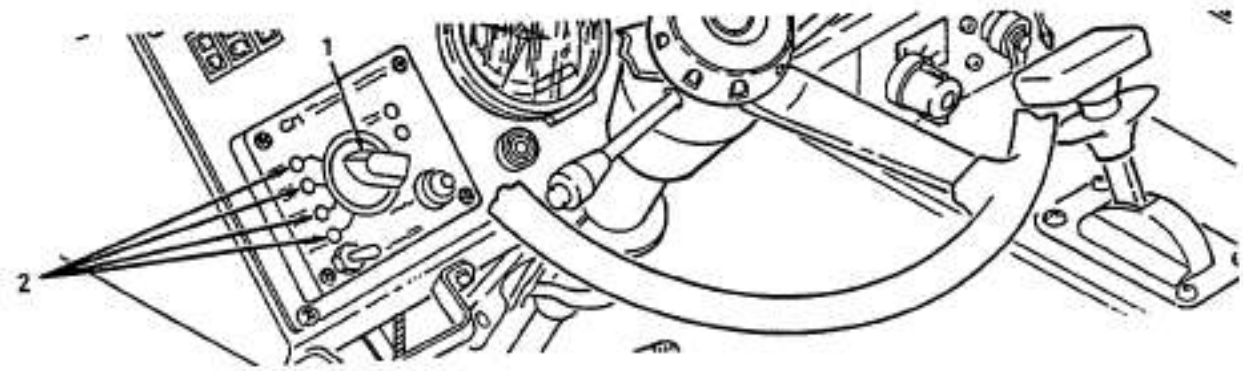
The following procedures provide instructions for loading and unloading a disabled free-rolling payload with track (M1 Series MBT with TUSK and C-IED Kit) on the M1000 Semitrailer coupled to a U.S. Army M1070 tractor.

a. Dual winch loading. To load a disabled free-rolling payload with track, proceed as follows:

(1) Inflate all semitrailer tires to 100 - 110 psi (690 – 758 kPa).

(2) Start tractor per applicable tractor Operating Instructions TM 9-2320-360-10.

(3) On M1070 tractor, set central tire inflation system (CTIS) switch (1) to setting for expected road or terrain conditions and allow tractor to sit until selected CTIS indicator (2) remains lit for that CTIS setting.



(4) If not already coupled, refer to TM 9-2330-381-14 and couple tractor to semitrailer.

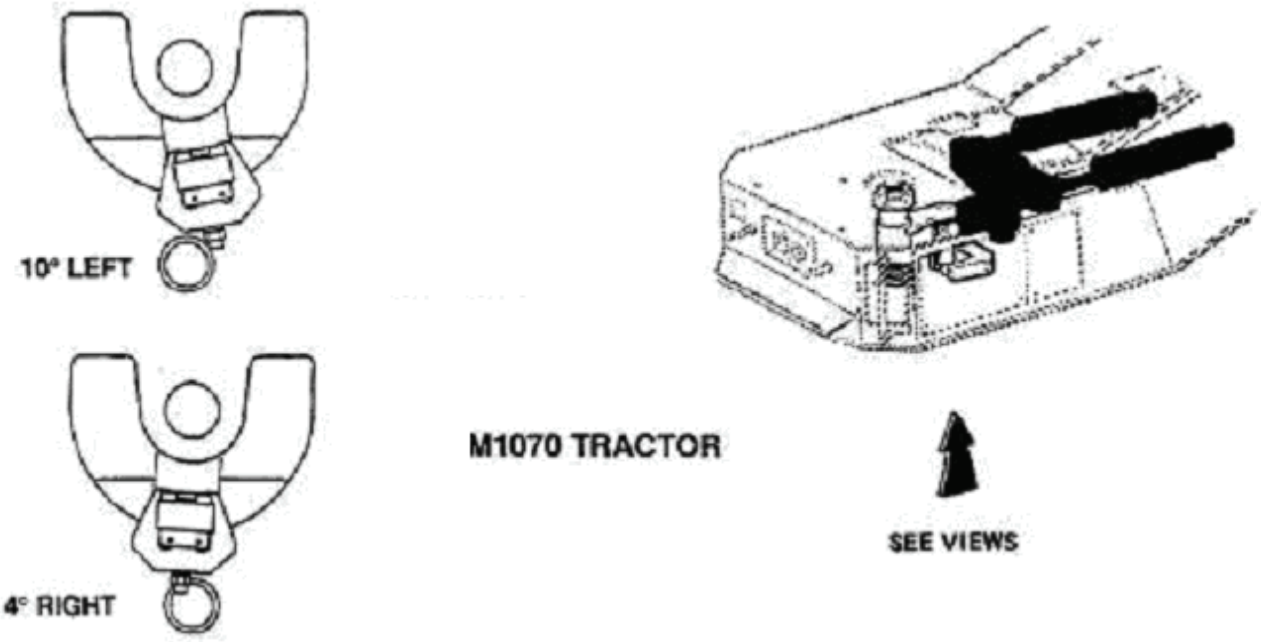
(5) Aline back of tractor/semitrailer combination as close as possible to payload, approximately 15 feet (4.6m) on the ground as level as possible.

WARNING

Load semitrailer on level ground whenever possible. In adverse conditions, loading can be done on grades up to 10 percent. Due to the possibility of winch cables piling up against the end flanges of the cable drums and causing injury to personnel and damage to equipment, the following offset limits between tractor and semitrailer must be adhered to:

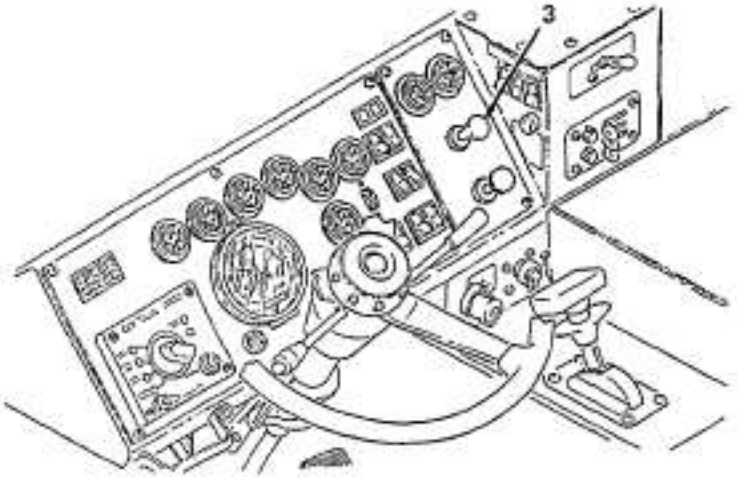
M1070 Tractor: 10° left 4° Right

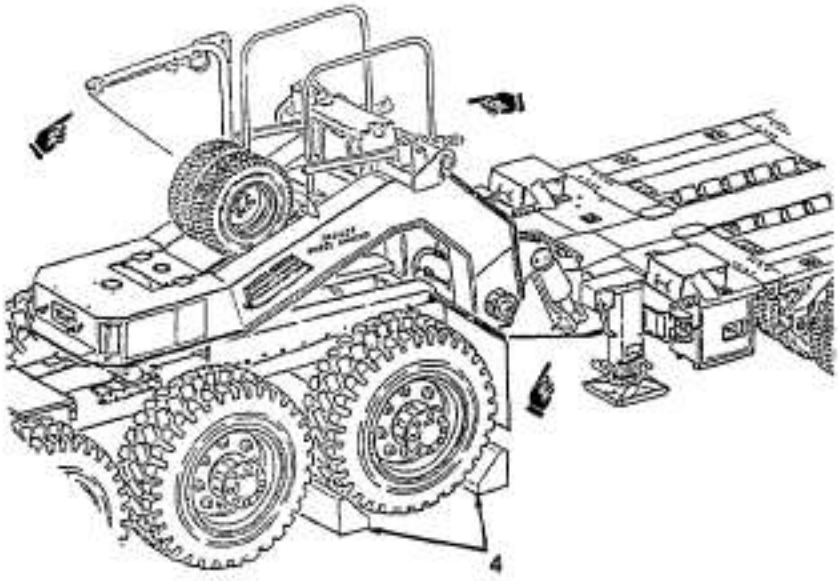
(6) Visually check tractor/semitrailer offset angle. Make any required adjustments to tractor by having spotter check relationship between steering wedge bolt and weld circle at bottom rear of pickup plate. If inside edge of bolt alines with outside edge of weld circle, offset angle is 10 degrees. Make any required adjustments to tractor.

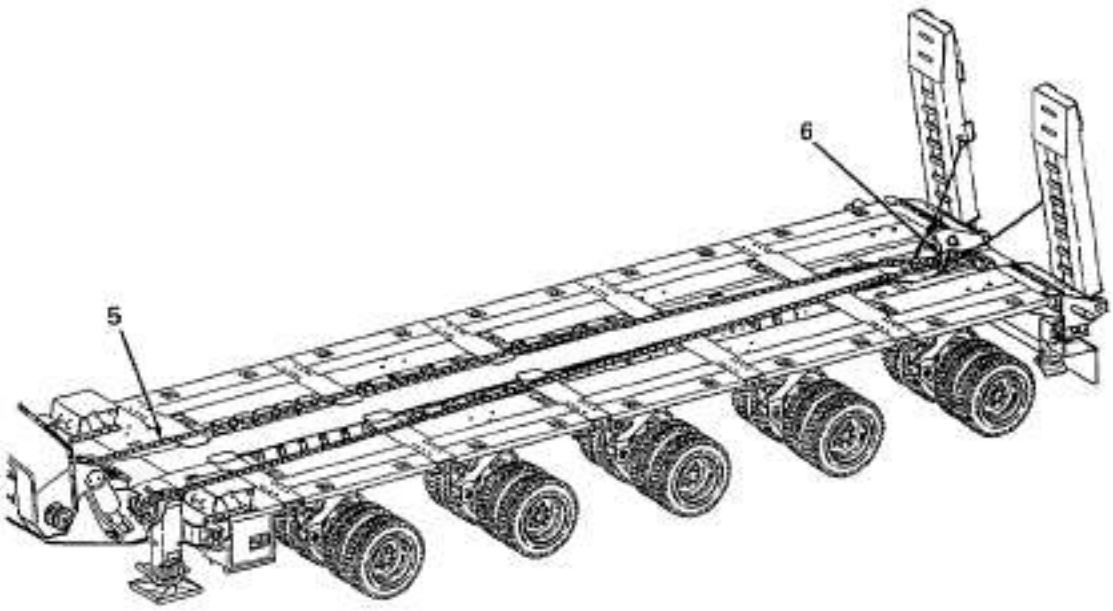


2-3. DUAL WINCH LOADING AND UNLOADING (CONT)

(7) Apply tractor parking brakes by pulling out parking brake valve (3). Remove four wheel chocks (4) from stowage on tractor and chock wheels on both sides of tractor.







(8) Position payload chocks, curb guides, and tiedown chains; adjust platform to loading position; and lower ramps by performing steps (9) thru (29) of paragraph 2-2a.

WARNING

Observe the following precautions during the loading process:

- **If possible, provide ample clear space behind the disabled free-rolling M1 Series MBT with TUSK and C-IED Kit with track during loading to protect personnel and equipment if cables break while payload is being loaded.**
- **Make sure winch cables are not kinked, clevises are secure to winch cables, and snatch blocks and shackles are in good condition and properly secured or injury to personnel may result.**
- **Make sure winch cables are inspected in accordance with TB 43-0142 or injury to personnel may result.**
- **Extreme caution should be exercised during any operation on a slope.**
- **A ground spotter must stand off curbside of semitrailer and maintain visual contact with the winch operator. The spotter must observe cables, snatch blocks, shackles, and payload position during loading or injury to personnel may result.**
- **Do not overload tractor winches. Know the ratings of the winches being used and any protection devices (such as shear pins) or injury to personnel may result.**

2-3. DUAL WINCH LOADING AND UNLOADING (CONT)

WARNING

- **All ground personnel must stand clear of winch cables except when handling or injury to personnel may result.**
- **During winch-on operations on a downgrade, the payload must be restrained from the rear with some other vehicle to prevent possible loss of control of the payload which can cause injury to personnel and damage to equipment.**
- **At no time during loading operations, while the payload is being pulled on with winches, should personnel be on the semitrailer platform or injury to personnel may result.**
- **Always wear leather gloves when handling cable. Never allow cable to run through hands or injury to personnel may result.**

NOTE

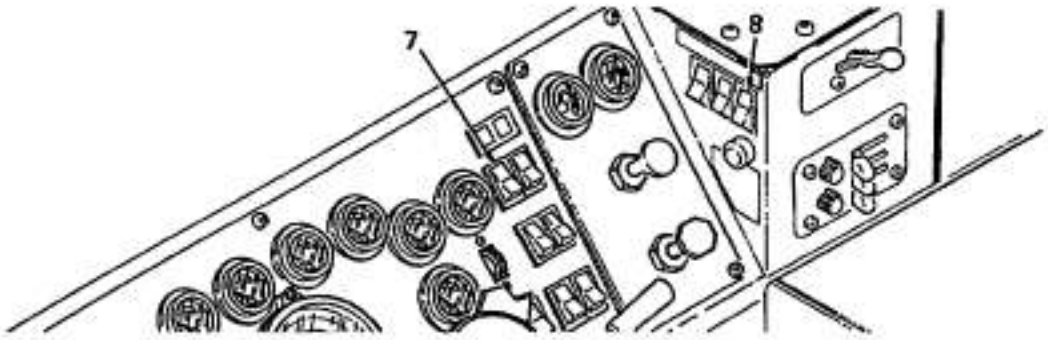
The M1070 tractor has an auxiliary winch system which is used to pay out the main winch cables to the payload.

(9) When using an M1070 tractor, use the auxiliary winch to pay out main winch cables as follows:

NOTE

Make sure that M1070 tractor parking brake is applied. PTO will not engage unless tractor parking brake is set.

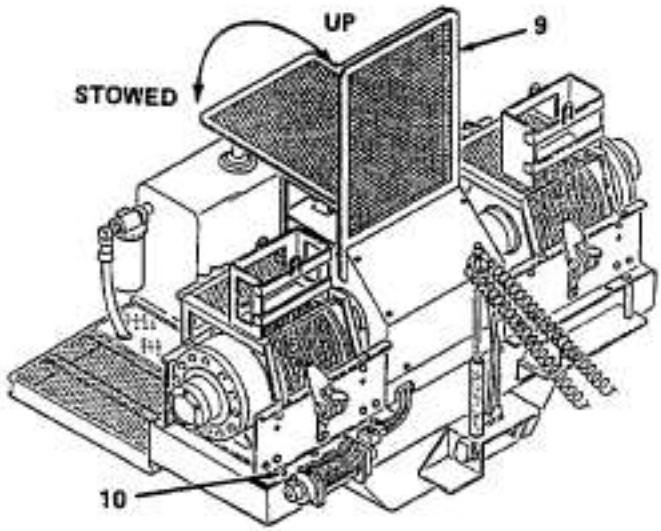
(a) Turn beacon light switch (7) to ON position. With engine idling, set PTO switch (8) to ON.



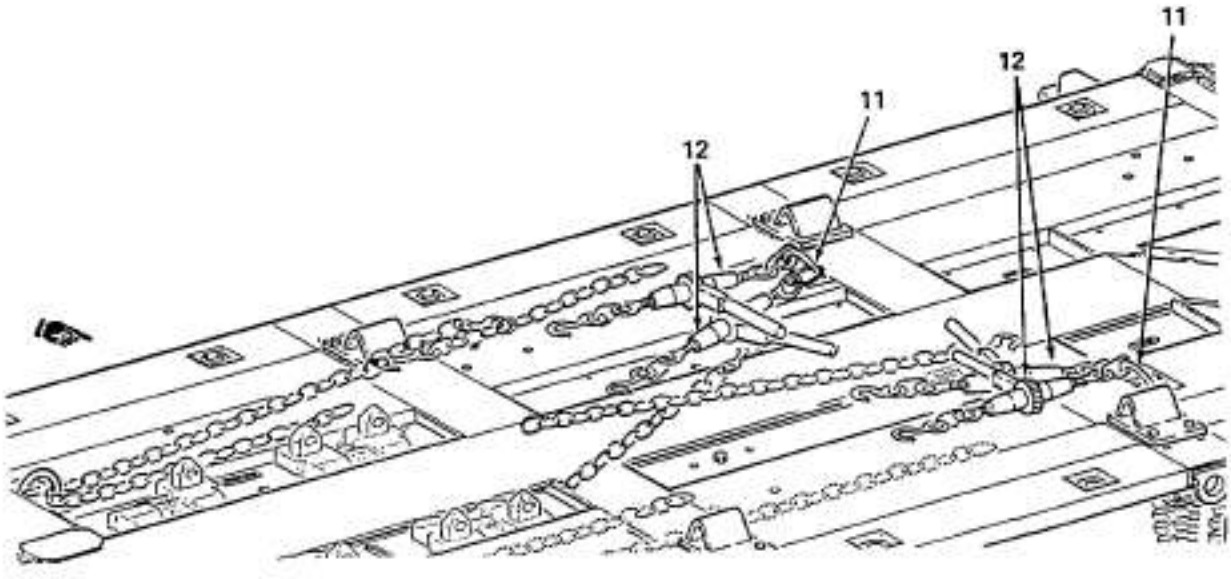
WARNING

Hearing protection must be worn when near winching station or operating winches or injury to personnel may result.

(b) Raise guard (9), lock in upright position, and release AUXILIARY WINCH KICKOUT by lifting and rotating lever (10) counterclockwise.

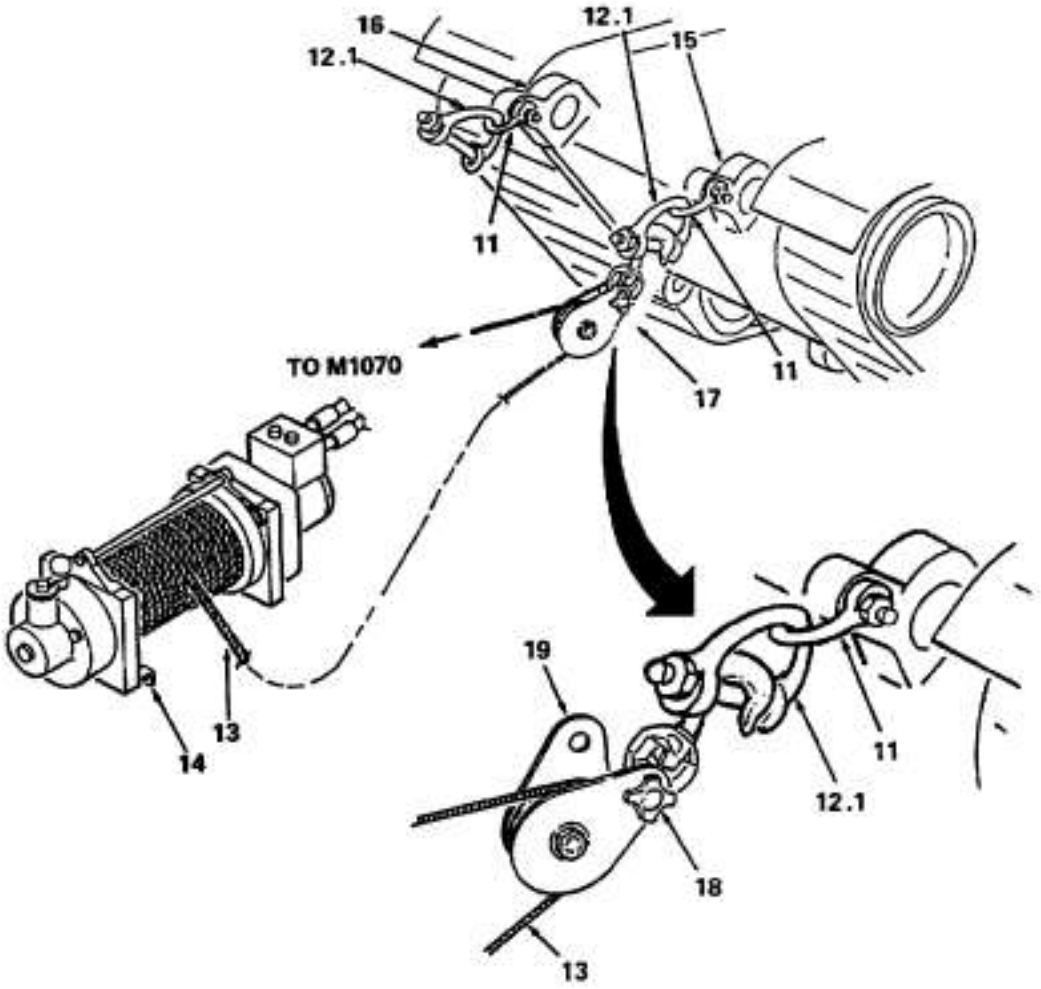


(c) Remove two large shackles (11) from rear payload tiedown rings and four load binders (12). Leave load binders (12) and chains in place on platform.



2-3. DUAL WINCH LOADING AND UNLOADING (CONT)

(d) Remove two smaller shackles (12.1) from Basic Issue Items. Unhook auxiliary winch cable (13) from stow hook (14). Pull auxiliary winch cable (13) along streetside of gooseneck and over platform to front of payload.

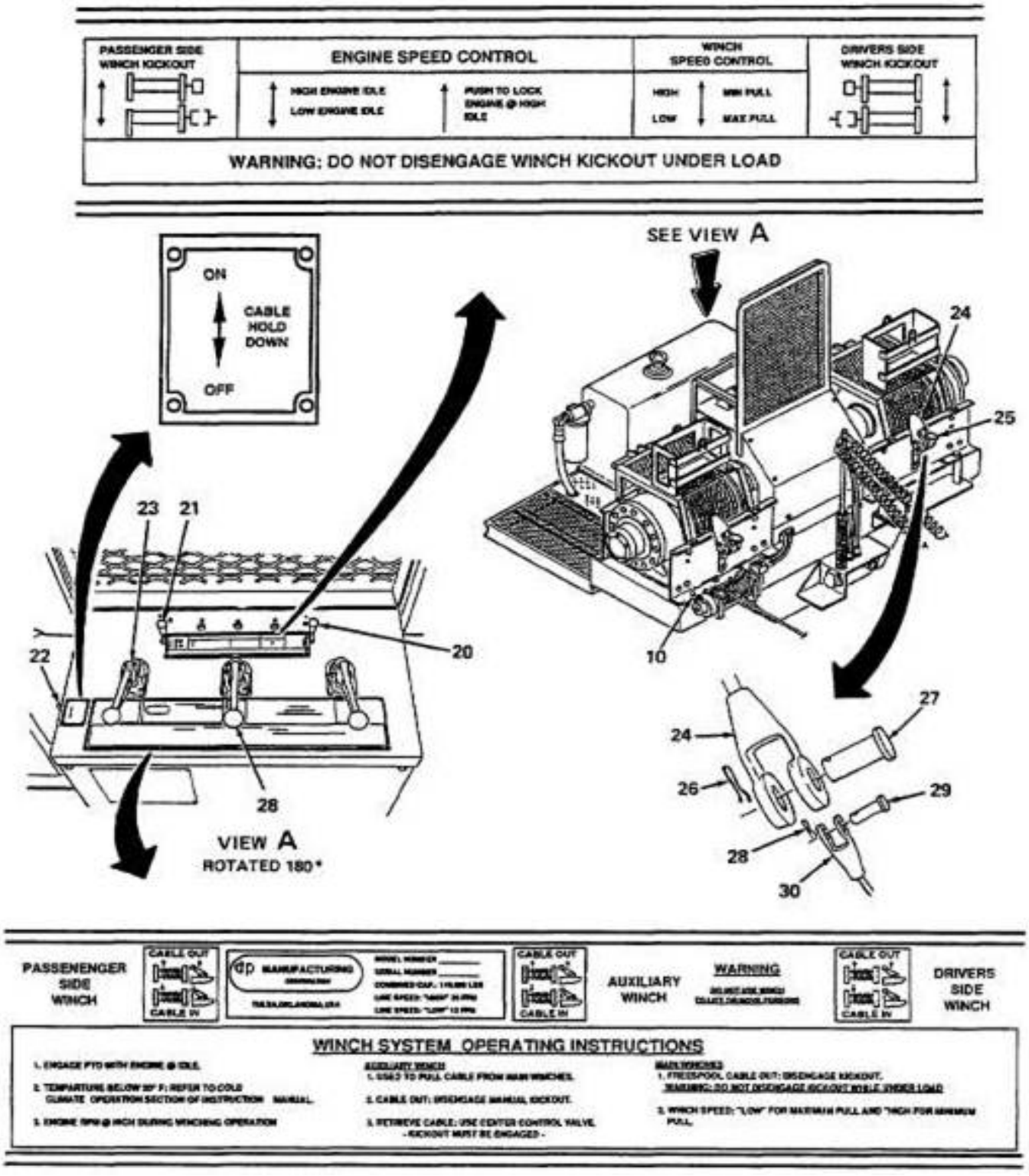


(e) Install two large shackles (11) (from platform) and two smaller shackles (12.1) (from Basic Issue Items) on upper left recovery eye (15) and upper right recovery eye (16). Remove auxiliary snatch block (17) from stowage on M1070 tractor. Attach auxiliary snatch block (17) to smaller shackle (12.1) on upper left recovery eye
(15) of payload.

(f) Unscrew retainer bolt (18), rotate side housing (19) to open auxiliary snatch block (17), pass auxiliary winch cable (13) through auxiliary snatch block (17), and rotate side housing (19) to close. Tighten retainer bolt (18) to secure side housing (19) in closed position.

(g) Pull auxiliary winch cable (13) forward over platform and along curbside of gooseneck toward passenger side of winching station on tractor.

(h) Engage both Drivers Side Winch Kickout (20) and Passenger Side winch Kickout (21) switches by pushing on each switch.



2-3. DUAL WINCH LOADING AND UNLOADING (CONT)

(i) Push CABLE HOLD DOWN lever (22) to ON position.

(j) Pull PASSENGER SIDE WINCH lever (23) upward momentarily until there is enough slack in passenger side winch cable (24) to be removed from stow hook (25). Move clevis on winch cable (24) off of stow hook (25) to unstow winch cable. Continue paying out winch cable (24) until spotter on the ground can reach clevis. Release lever (23).

(k) Remove and retain cotter pin (26) and shouldered pin (27) from clevis on passenger side winch cable (24).

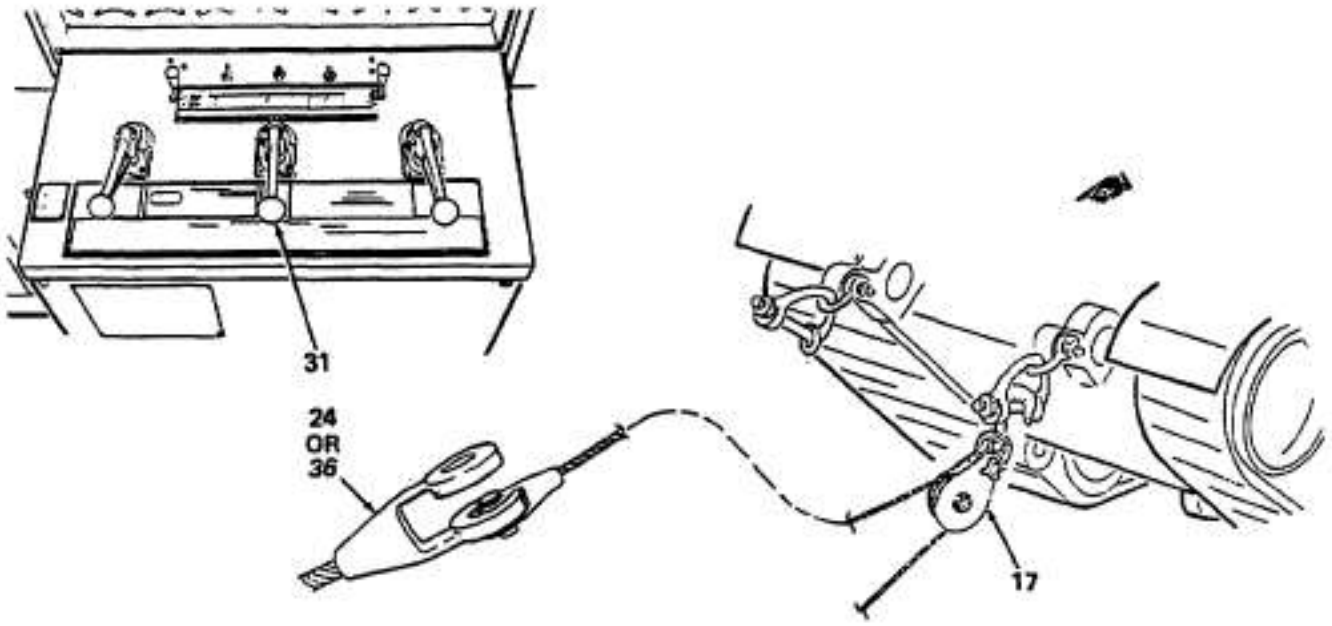
(l) Remove cotter pin (28) and shouldered pin (29) from auxiliary winch cable clevis (30). Install auxiliary winch cable clevis (30) over one ear of clevis on passenger side winch cable (24) and install shouldered pin (29) and cotter pin (28).

(m) Engage AUXILIARY WINCH KICKOUT by lifting and rotating lever (10) clockwise. Disengage PASSENGER SIDE WINCH KICKOUT (21) switch by pulling switch.

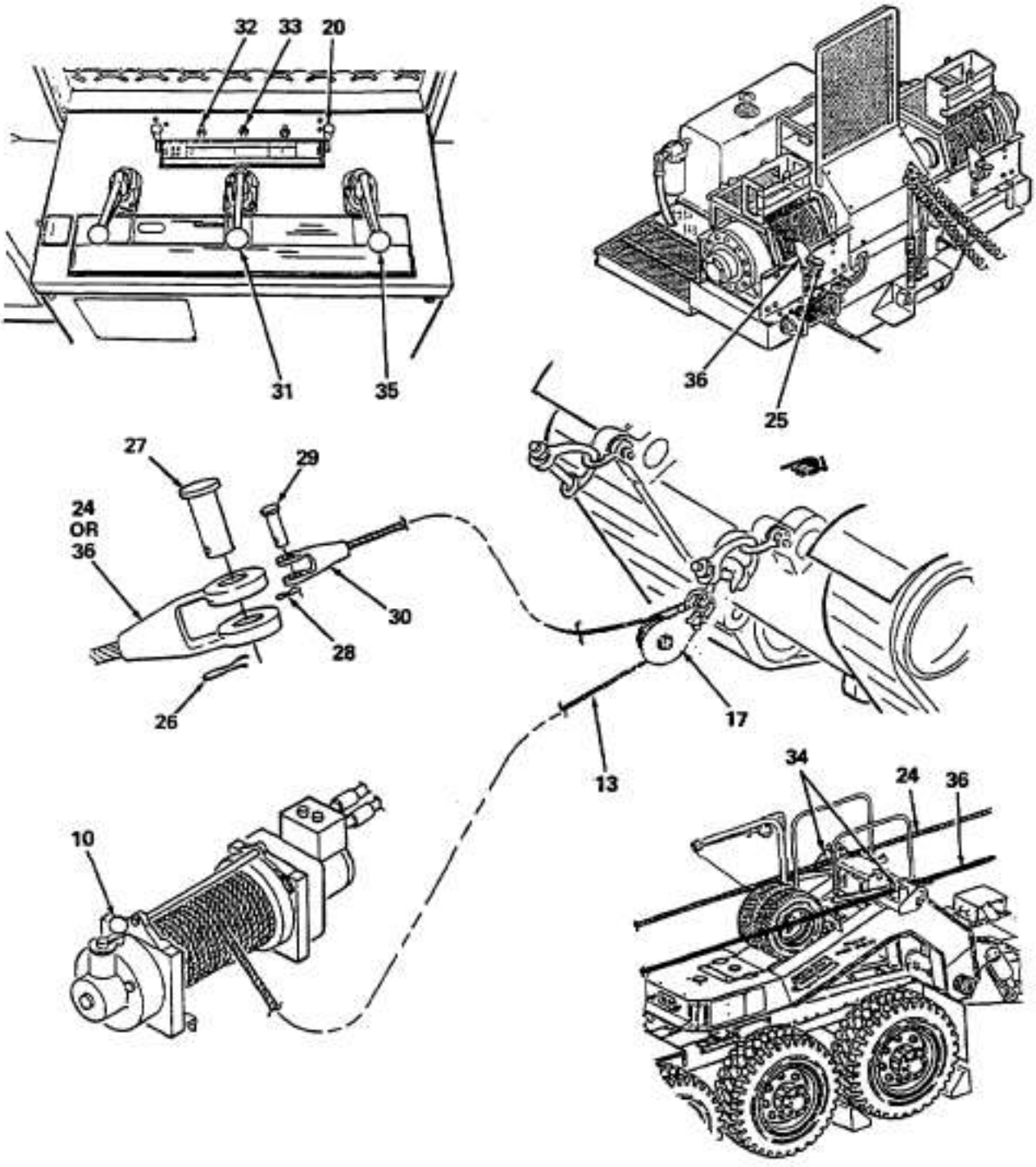
WARNING

Do not allow auxiliary winch cable to cross itself or knot up on winch or injury to personnel may result.

(n) Using one person to operate winch controls and a second person to make sure that winch cable devises do not hang up on platform, push down on AUXILIARY WINCH lever (31) to pull passenger side winch cable (24) toward auxiliary snatch block (17).



(o) If auxiliary winch cable (13) does not pull passenger side winch cable (24), push ENGINE SPEED CONTROL switch (32) to HIGH ENGINE IDLE. Momentarily push ENGINE SPEED CONTROL switch (33) to lock engine speed at high idle (approximately 1500 rpm), and then release switch.



2-3. DUAL WINCH LOADING AND UNLOADING (CONT)

(p) When passenger side winch cable (24) reaches front of platform, release AUXILIARY WINCH lever (31). Route passenger side winch cable (24) through gooseneck cable guide (34). Push down on AUXILIARY WINCH lever (31) and continue to pull passenger winch cable (24) to auxiliary snatch block (17).

(q) Release AUXILIARY WINCH lever (31) when passenger side winch cable (24) is approximately 12 inches (29 cm) from auxiliary snatch block (17). Spotter must continue to pull passenger side winch cable (24) until winch cable has enough slack that it touches the ground.

(r) Remove cotter pin (28) and shouldered pin (29) from auxiliary winch cable clevis (30). Separate auxiliary winch cable (13) from passenger side winch cable (24). Lay passenger side winch cable (24) on the ground in front of payload.

(s) Release AUXILIARY WINCH KICKOUT by lifting and rotating lever (10) counterclockwise.

(t) Pull auxiliary winch cable (13) forward over platform and along streetside of gooseneck toward drivers side of winching station on tractor.

(u) Pull DRIVERS SIDE WINCH lever (35) upward momentarily until there is enough slack in drivers side winch cable (36) to be removed from stow hook (25). Move clevis on winch cable (36) off of stow hook (25) to unstow winch cable. Continue paying out cable (36) until spotter on the ground can reach clevis. Release lever (35).

(v) Remove and retain cotter pin (26) and shouldered pin (27) from clevis on drivers side winch cable (36). Install auxiliary winch cable clevis (30) over one ear of clevis on drivers side winch cable (36) and install shouldered pin (29) and cotter pin (28).

(w) Engage AUXILIARY WINCH KICKOUT by lifting and rotating lever (10) clockwise. Disengage DRIVERS SIDE WINCH KICKOUT (20) switch by pulling switch.

WARNING

Do not allow auxiliary winch cable to cross itself or knot up on winch or injury to personnel my result.

(x) Using one person to operate winch controls and a second person to make sure that winch cable clevises do not hang up on platform, push down on AUXILIARY WINCH lever (31) to pull drivers side winch cable (36) to auxiliary snatch block (17).

(y) If auxiliary winch cable (13) does not pull drivers side winch cable (36), push ENGINE SPEED CONTROL switch (32) to HIGH ENGINE IDLE. Momentarily push ENGINE SPEED CONTROL switch (33) to lock engine speed at high idle (approximately 1500 rpm), and then release switch.

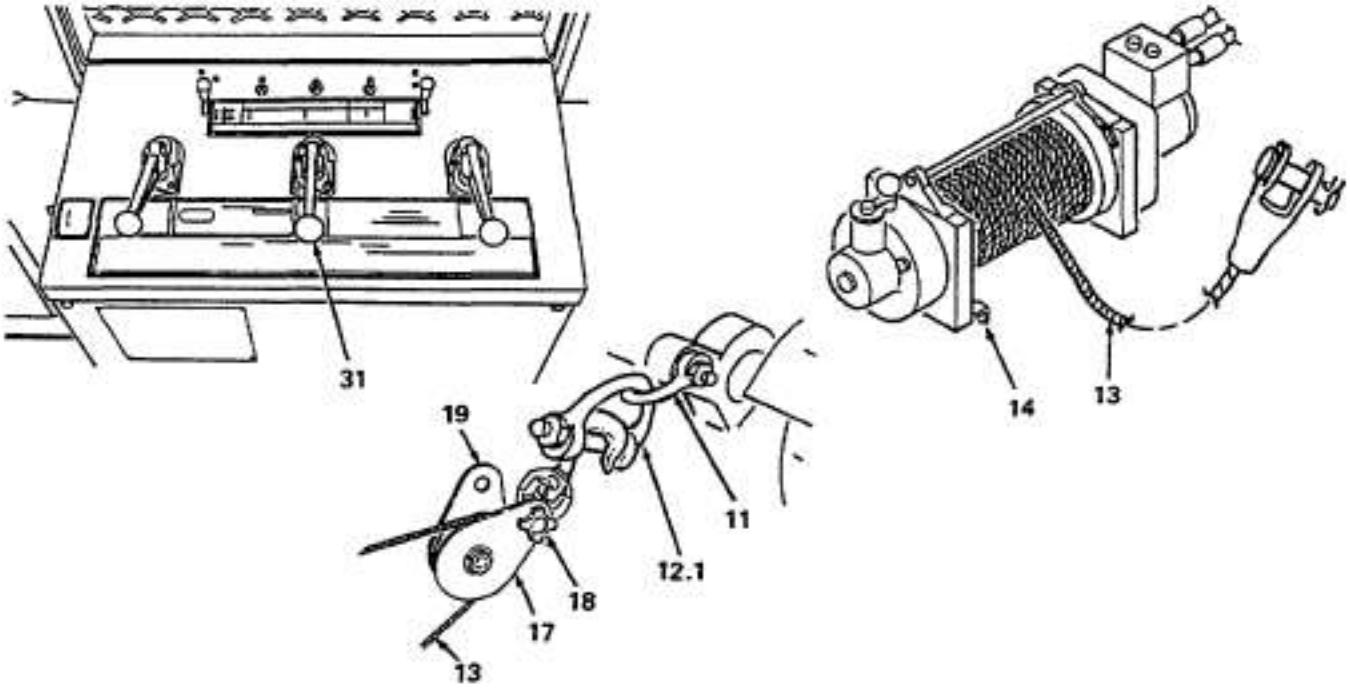
(z) When drivers side winch cable (36) reaches front of platform, release AUXILIARY WINCH lever (31). Route drivers side winch cable (36) through gooseneck cable guide (34). Push down on AUXILIARY WINCH lever (31) and continue to pull drivers side winch cable (36) to auxiliary snatch block (17).

(aa) Release AUXILIARY WINCH lever (31) when drivers side winch cable (36) is approximately 12 inches (30 cm) from auxiliary snatch block (17). Spotter must continue to pull drivers side winch cable (36) until winch cable has enough slack that it touches the ground.

(ab) Remove cotter pin (28) and shouldered pin (29) from auxiliary winch cable clevis (30). Separate auxiliary winch cable (13) from drivers side winch cable (36). Lay drivers side winch cable (36) on the ground in front of payload. Install shouldered pin (29) and cotter pin (28) into auxiliary winch cable clevis (30).

(ac) Restow snatch block and auxiliary winch cable as follows:

1. Unscrew retainer bolt (18) and rotate side housing (19) on auxiliary snatch block (17) to open snatch block.



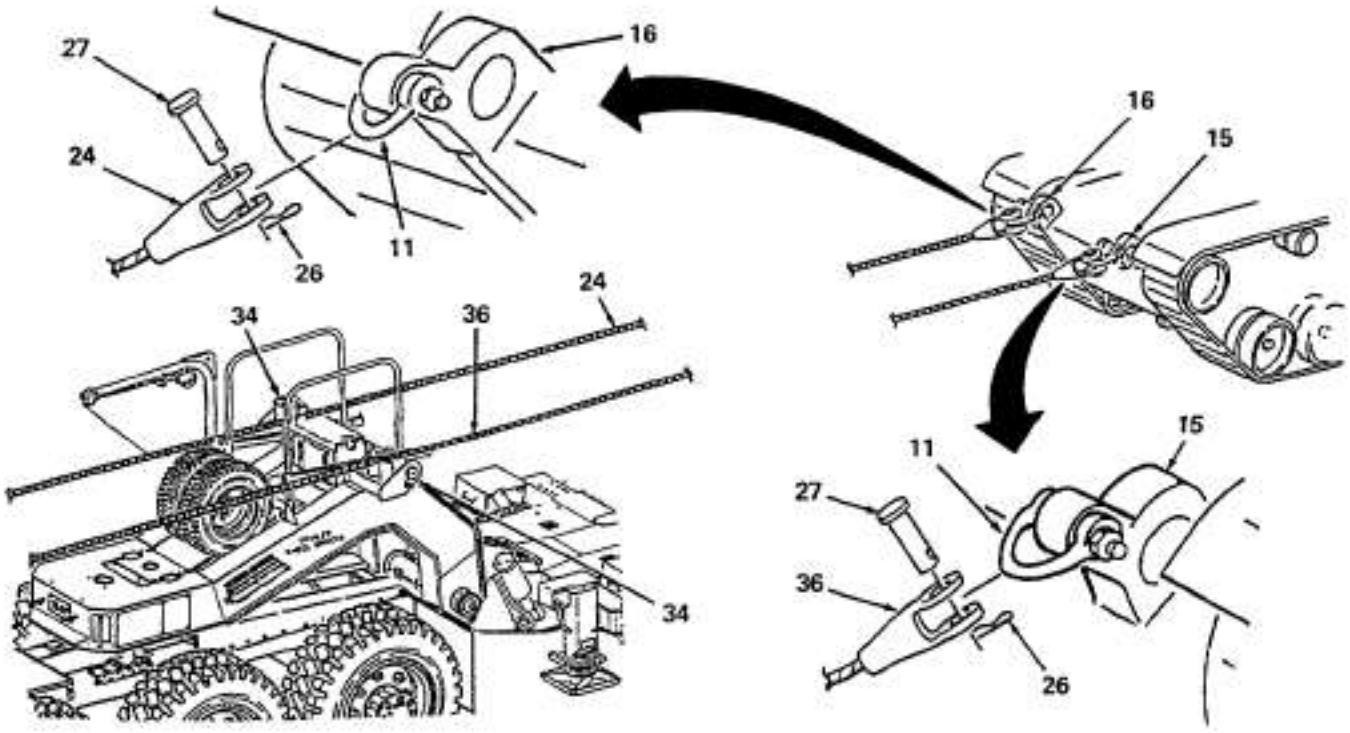
2. Remove auxiliary winch cable (13) from auxiliary snatch block (17), rotate side housing (19) to close, and tighten retainer bolt (18) to secure side housing in closed position.

3. Remove auxiliary snatch block (17) from shackle (12.1) and place back into storage on M1070 tractor.

4. Remove two small shackles (12.1) from larger shackles (11) in upper, left and right recovery eyes. Return smaller shackles to BII.

2-3. DUAL WINCH LOADING AND UNLOADING (CONT)

5. Using one person to push downward on AUXILIARY WINCH lever (31) and one person to maintain tension on auxiliary winch cable (13), retract winch cable (13) and restow on stow hook (14).



NOTE

When winching payloads onto the semitrailer, a straight winch cable pull is the preferred method. Crossed winch cable pulls may be used if significant directional control problems are expected.

(10) Using two people, connect passenger side winch cable (24) to shackle (11) on upper right recovery eye (16) on payload and secure in place by installing shouldered pin (27) and cotter pin (26).

(11) Using two people, connect drivers side winch cable (36) to shackle (11) on upper left recovery eye (15) on payload and secure in place by installing shouldered pin (27) and cotter pin (26).

CAUTION

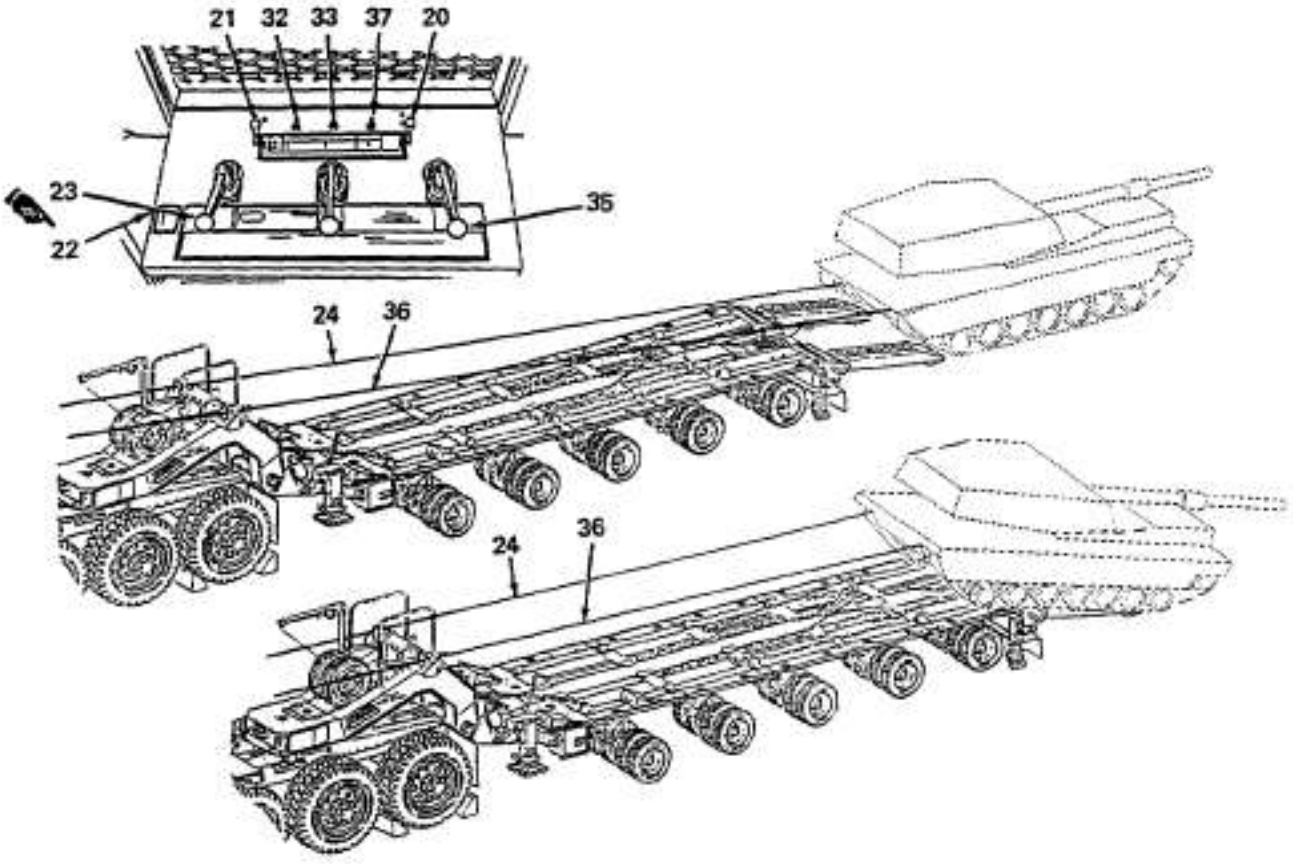
The payload brake system must be released prior to winching payload onto semitrailer or damage to equipment may result.

(12) Ensure payload brakes are released. Station ground spotter on curbside of payload to provide direction to winch operator during winching operation.

CAUTION

WINCH SPEED CONTROL must be placed in LOW for MAX PULL when loading payloads or damage to equipment may result.

(13) Pull WINCH SPEED CONTROL switch (37) to LOW. Push ENGINE SPEED CONTROL switch (32) to HIGH ENGINE IDLE. Momentarily push ENGINE SPEED CONTROL switch (33) to lock engine speed at high idle (approximately 1500 rpm), and then release switch. Engage both DRIVERS SIDE WINCH KICKOUT (20) and PASSENGER SIDE WINCH KICKOUT (21) switches by pushing on each switch.



2-3. DUAL WINCH LOADING AND UNLOADING (CONT)

(14) Winch operator must take up all slack in both drivers and passenger side winch cables (36 and 24) by pushing down on DRIVERS SIDE WINCH lever (35) and PASSENGER SIDE WINCH lever (23). Release both levers when both winch cables get tight.

NOTE

Prior to pulling payload onto the ramps, the spotter must check the alinement of the payload tracks (inboard edge) to the curb guides.

(15) Spotter must check payload for proper alinement. If adjustment is required to aline payload with platform, proceed as follows:

(a) If payload is angled toward curbside of semitrailer, proceed as follows:

1. Spotter must place scrap blocks of wood under streetside of payload, just in front of first roadwheel.

2. Winch operator must push down on PASSENGER SIDE WINCH lever (23) and pull payload into alinement with ramps, and then release lever (23).

(b) If payload is angled toward streetside of semitrailer, proceed as follows:

1. Spotter must place scrap blocks of wood under curbside of payload, just in front of first roadwheel.

2. Winch operator must push down on DRIVERS SIDE WINCH lever (35) and pull payload into alinement with ramps, and then release lever (35).

CAUTION

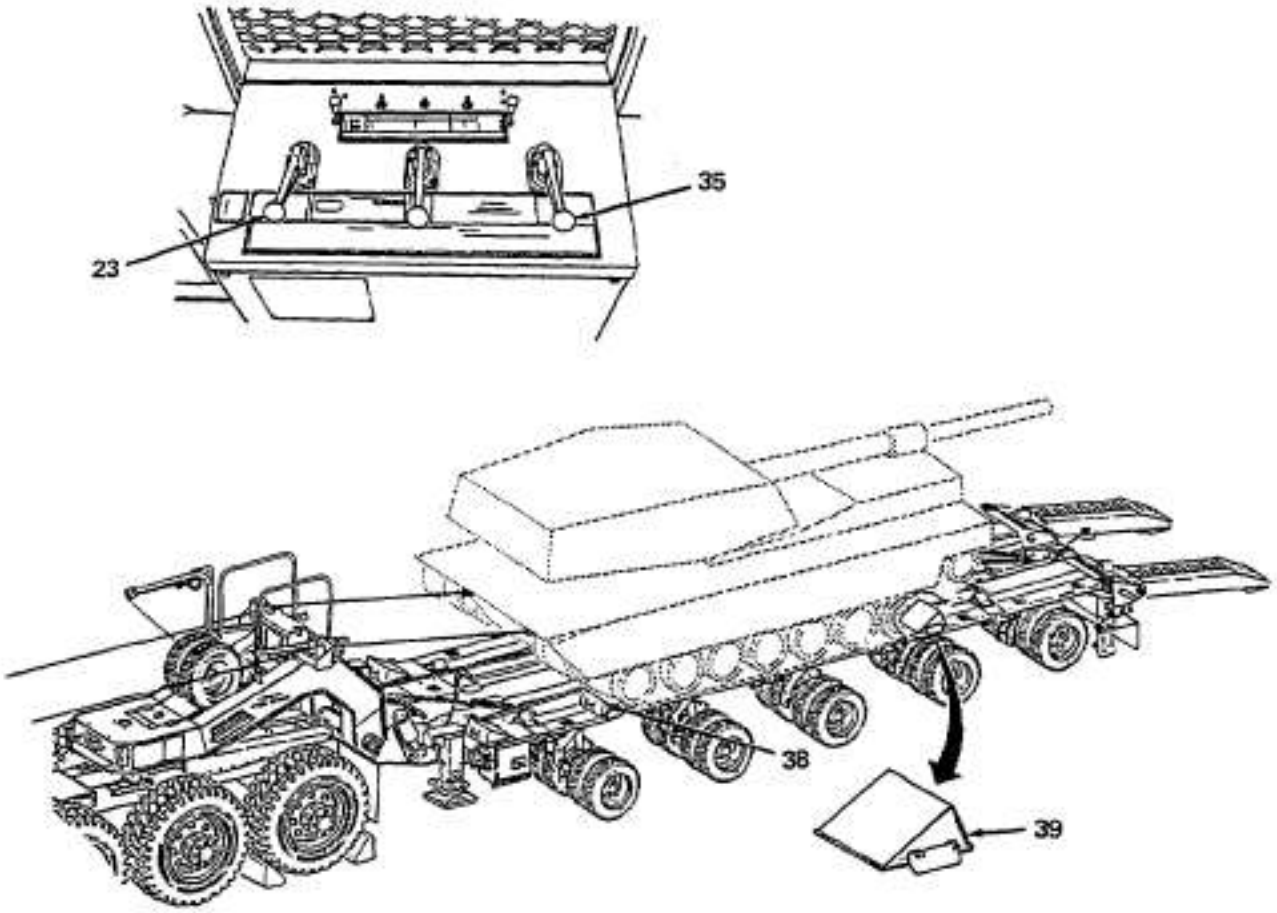
Winch operator must maintain even tension on both winch cables to keep payload centered with semitrailer as payload is loaded or damage to equipment may result.

(16) Winch operator must push down both DRIVERS and PASSENGER SIDE WINCH levers (35 and 23) to pull payload slowly up ramps onto platform, adjusting pull on either cable (36 or 24) as required to maintain alignment of payload tracks to curb guides.

(17) When track on streetside of payload makes contact with curbside rear payload chock (38), winch operator must release both DRIVERS and PASSENGER SIDE WINCH levers (35 and 23) to stop payload.

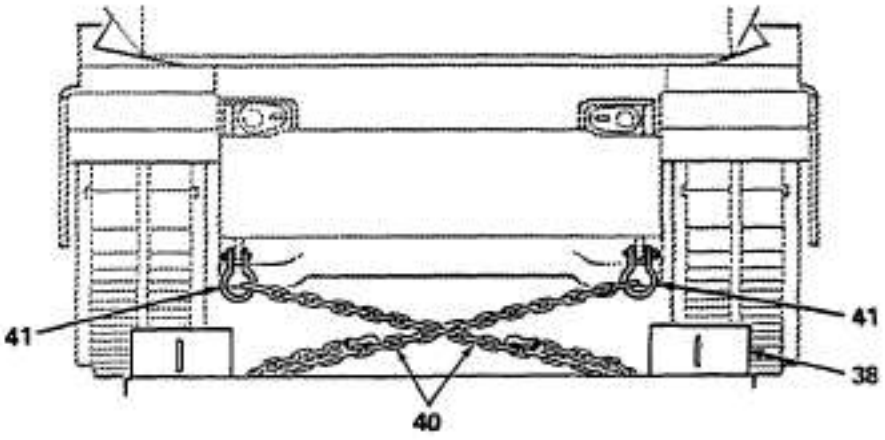
(18) Chock streetside rear of payload using streetside rear payload chock (39).

(19) Perform step (37) of paragraph 2-2a and adjust platform to normal running height.



(20) Lift two front tiedown chains (40) and attach to two front towing lugs using two shackles (41) from platform stowage compartment.

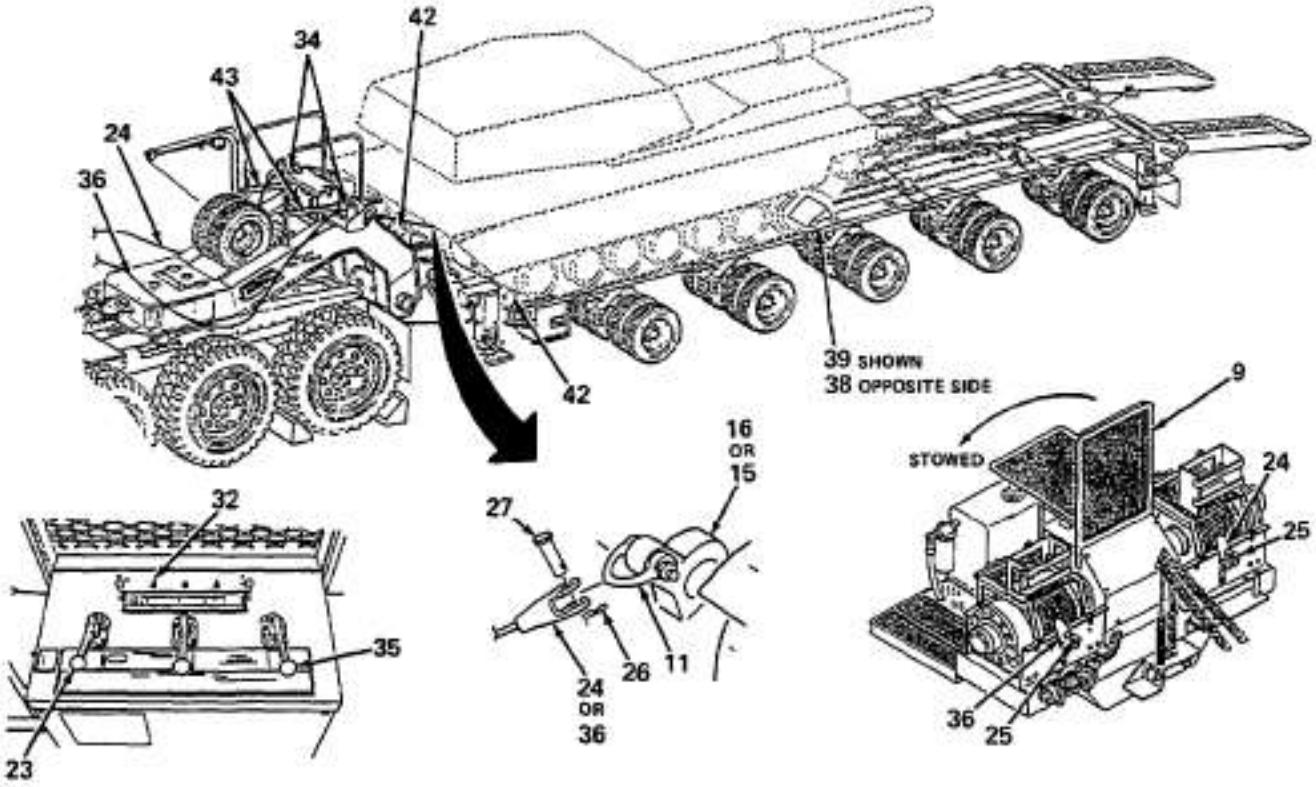
(21) Remove curbside rear payload chock (38) from front streetside of payload.



FRONT VIEW OF PAYLOAD
(LOOKING AFT)

2-3. DUAL WINCH LOADING AND UNLOADING (CONT)

(22) Winch operator must push down on both DRIVERS and PASSENGER SIDE WINCH levers (35 and 23) until front tiedown chains are tight and payload tracks (front roadwheels) are firmly on front payload chocks (42).



(23) Place both rear payload chocks (38 and 39) to rear curbside and streetside of payload.

WARNING

Prior to removing winch cable from payload, winch operator must be sure each cable sags to top of tractor tires to relieve cable twist or injury to personnel may result.

(24) Winch operator must pull up both DRIVERS and PASSENGER SIDE WINCH levers (35 and 23) until each winch cable sags to top of tractor tires.

WARNING

Failure to extend safety rail while attaching or removing payload winch cable may cause injury to personnel.

(25) Unlatch and extend gooseneck safety rail (43).

(26) Check for twist in both winch cables. Remove cotter pins (26) and shouldered pins (27) from clevises on both drivers and passenger side winch cables (36 and 24) and remove cables from shackles (11) on both upper recovery eyes (15 and 16) on payload.

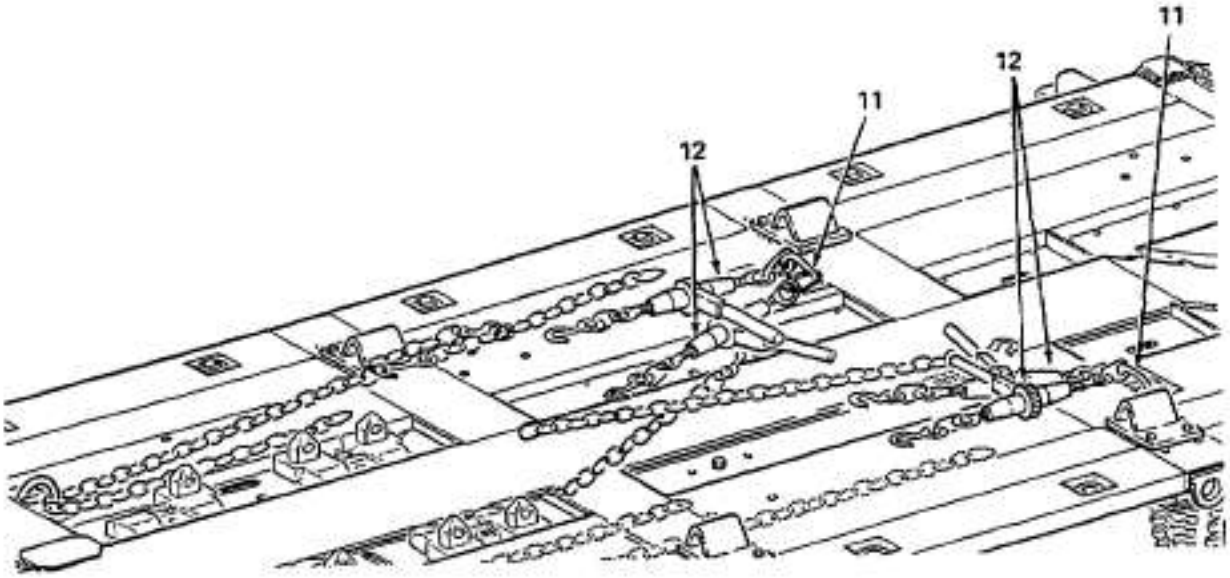
(27) Remove two large shackles (11) from both upper recovery eyes (15 and 16) on payload.

WARNING

Failure to retract and latch gooseneck safety rail before operating tractor/trailer will result in damage to equipment.

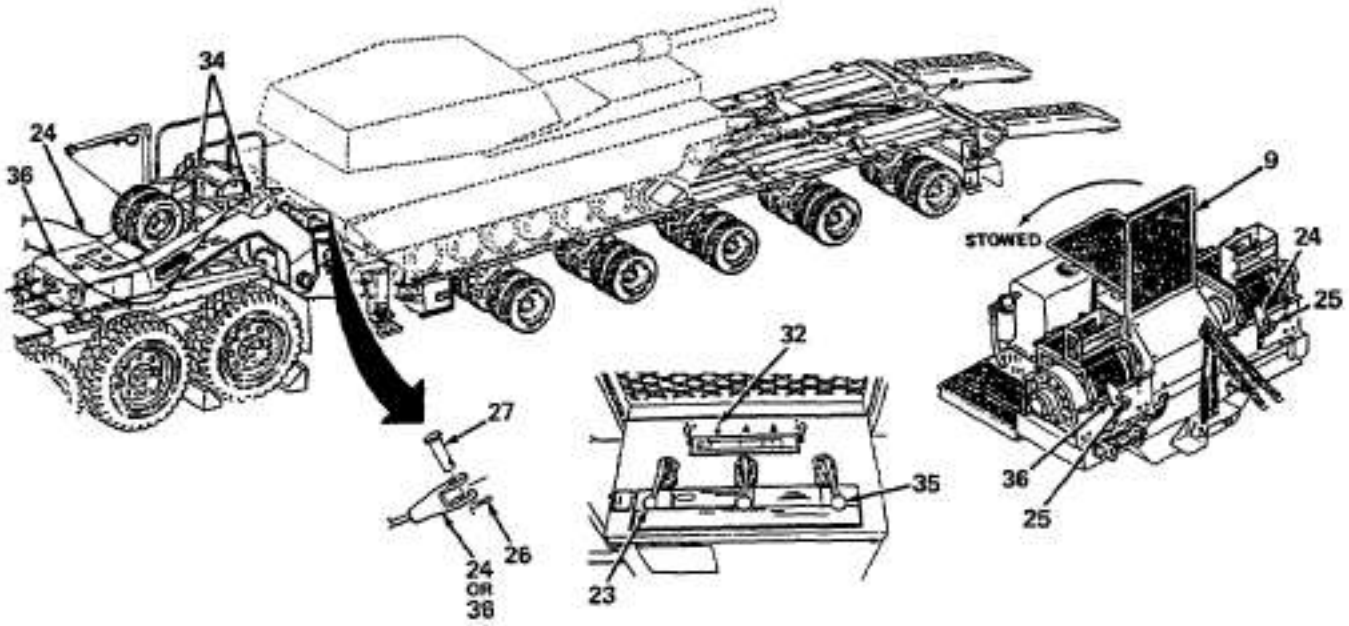
(28) Retract and latch gooseneck safety rail (43).

(29) Install two large shackles (11) and four load binders (12) on rear.



(30) Perform steps 42a thru 42 j of paragraph 2-2a to secure payload to semitrailer platform.

(31) Install shouldered pins (27) and cotter pins (26) into clevises on winch cables (24 or 36).



2-3. DUAL WINCH LOADING AND UNLOADING (CONT)

(32) Remove both winch cables (36 and 24) from gooseneck cable guides (34).

WARNING

Do not allow hands to get between clevis and winch or injury to personnel may result.

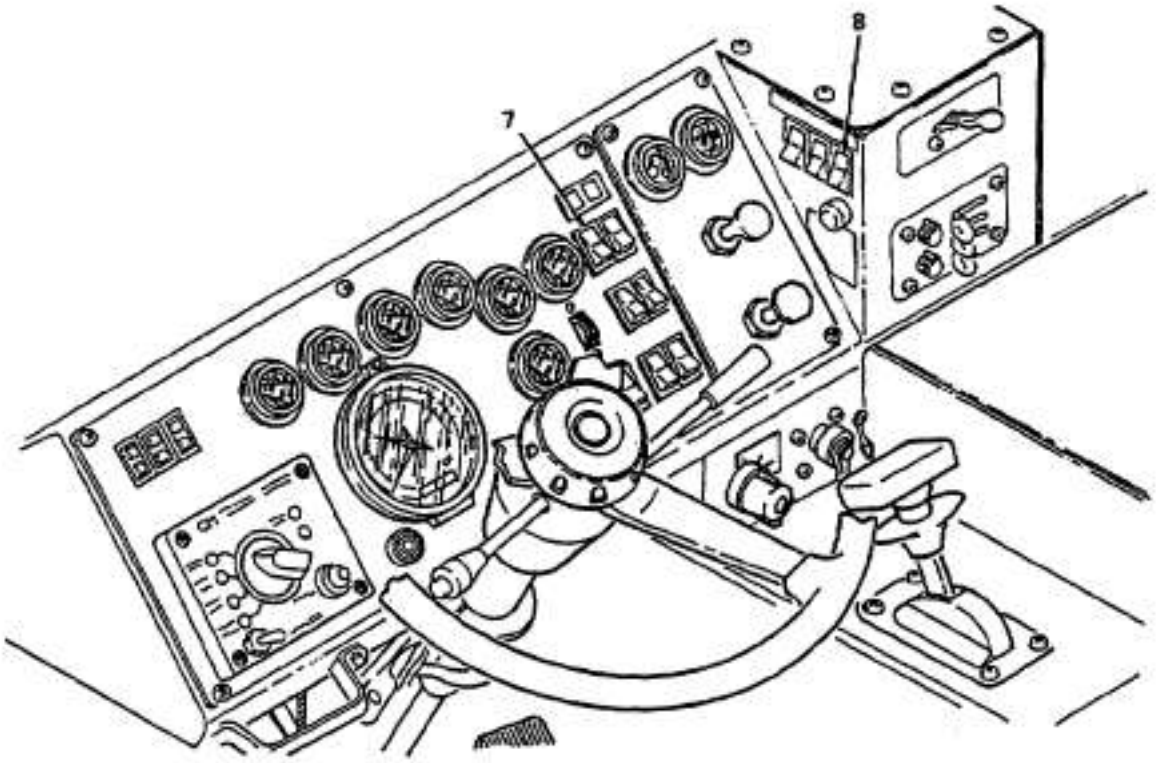
(33) Using one person to push down on DRIVERS SIDE WINCH lever (35) and one person to maintain tension on drivers side winch cable (36), retract and stow winch cable (36) onto stow hook (25). Release lever (35).

(34) Using one person to push down on PASSENGER SIDE WINCH lever (23) and one person to maintain tension on passenger side winch cable (24), retract and stow winch cable (24) onto stow hook (25). Release lever (23).

(35) Pull ENGINE SPEED CONTROL (32) switch to LOW ENGINE IDLE. Lower guard (9) and lock in place.

(36) Perform steps (43) thru (53) of paragraph 2-2a to raise and secure ramps and restow curb guides, crowbar, and all tools used during this procedure.

(37) In M1070 tractor cab, set PTO switch (8) and beacon light switch (7) to OFF position.



2-3. DUAL WINCH LOADING AND UNLOADING (CONT)

b. Dual winch unloading (free-rolling payload) with track. To unload a free-rolling, disabled payload , proceed as follows:

(1) Perform steps (1) thru (8) of paragraph 2-2b to position tractor/ semitrailer, adjust ramp span width, and position curb guides.

WARNING

Observe the following warnings during the unloading process:

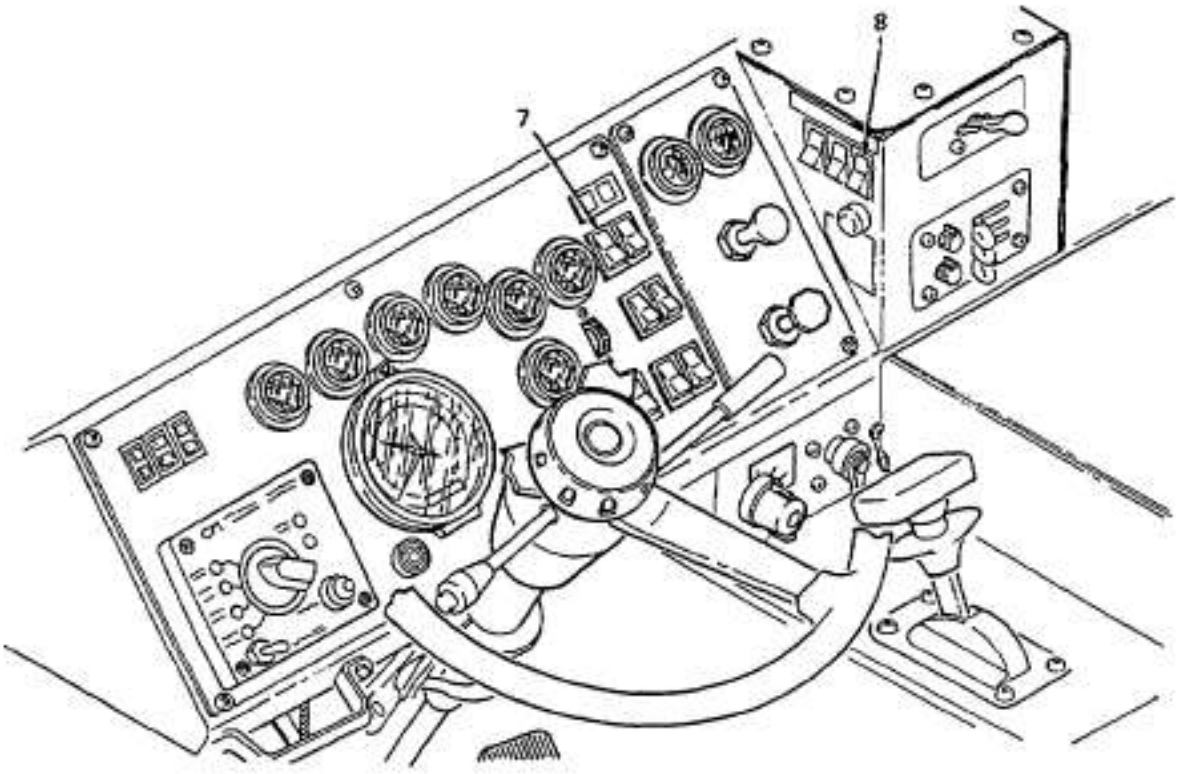
- **If possible, provide ample clear space behind the disabled free-rolling M1 Series MBT with TUSK and C-IED Kit with track to protect personnel and equipment should cables break during unloading.**
- **All ground personnel must stand clear of winch cables except when handling or injury to personnel may result.**
- **Extreme caution should be exercised during any operation on a slope.**
- **Make sure winch cables are not kinked, clevises are secure to winch cables, and snatch blocks and shackles are in good condition and properly secured or injury to personnel may result.**
- **Make sure winch cables are inspected in accordance with TB 43-0142 or injury to personnel may result.**
- **A ground spotter must stand off curbside of semitrailer and maintain visual contact with the winch operator. The spotter must observe cables, snatch blocks, shackles, and payload position during unloading or injury to personnel may result.**
- **Do not overload tractor winches. Know the ratings of the winches being used and any protection devices (such as shear pins) or injury to personnel may result.**
- **At no time during unloading operations, while the payload is being pulled off with winches, should personnel be on the semitrailer platform or injury to personnel may result.**
- **Always wear leather gloves when handling cable. Never allow cable to run through hands or injury to personnel may result.**

NOTE

Make sure that M1070 tractor parking brake is applied. PTO will not engage unless tractor parking brake is set.

(2) Turn beacon light switch (7) to ON position. With engine idling, set PTO switch (8) to ON.

(3) Perform step (9) of paragraph 2-2b to disconnect all rear tiedown chains from payload.



2-3. DUAL WINCH LOADING AND UNLOADING (CONT)

WARNING

Hearing protection must be worn when near winching station or operating winches or injury to personnel may result.

(4) Raise guard (9) and lock in upright position.

(5) Make sure both DRIVERS SIDE WINCH KICKOUT (20) and PASSENGER SIDE WINCH KICKOUT (21) switches are ENGAGED (pushed away from operator).

(6) Make sure CABLE HOLD DOWN lever (22) is ON (pushed away from operator).

(7) Pull DRIVERS SIDE WINCH lever (35) upward momentarily until there is enough slack in drivers side winch cable (36) to be removed from stow hook (25). Move clevis on winch cable (36) off of stow hook (25) to unstow winch cable. Continue paying out winch cable (36) until spotter on the ground can reach clevis. Release lever (35).

(8) Pull PASSENGER SIDE WINCH lever (23) upward momentarily until there is enough slack in passenger side winch cable (24) to be removed from stow hook (25). Move clevis on winch cable (24) off of stow hook to unstow winch cable. Continue paying out winch cable (24) until spotter on the ground can reach clevis. Release lever (23).

(9) Remove cotter pin (26) and shouldered pin (27) from clevis on passenger side winch cable (24) and drivers side winch cable (36).

(10) Remove two large shackles (11) from four load binders (12) and rear payload tiedown rings.

WARNING

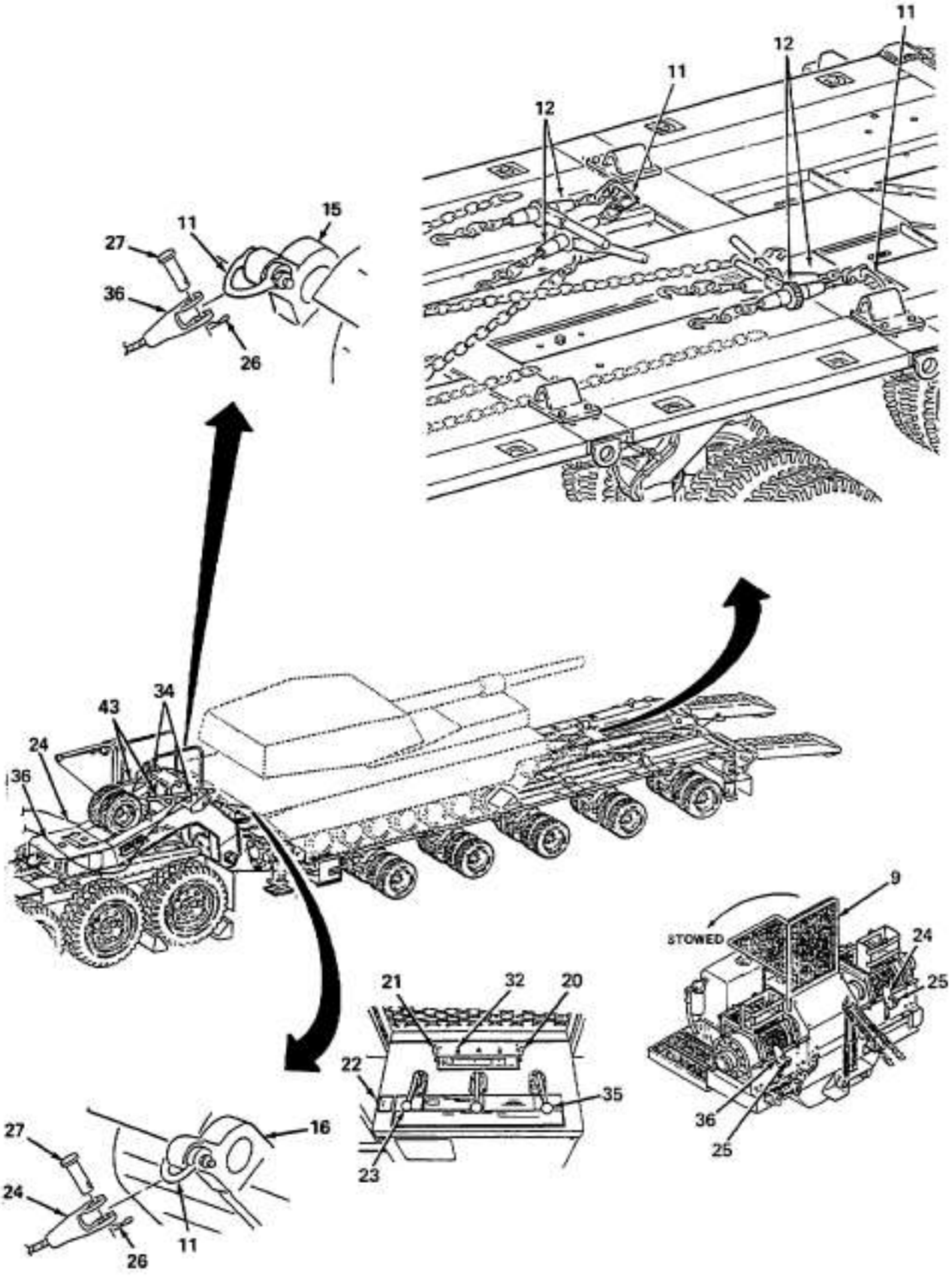
Failure to extend safety rail while attaching or removing payload winch cable may cause injury to personnel.

(11) Unlatch and extend gooseneck safety rail (43).

(12) Install one large shackle (11) each to upper right recovery eye (16) and upper left recovery eye (15).

(13) Pull out passenger aide winch cable (24) and attach clevis to shackle (11) on payload upper right recovery eye (16). Secure winch cable (24) by installing shouldered pin (27) and cotter pin (26).

(14) Pull out drivers side winch cable (36) and attach clevis to shackle (11) on payload upper left recovery eye (15). Secure winch cable (36) by installing shouldered pin (27) and cotter pin (26).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2-3. DUAL WINCH LOADING AND UNLOADING (CONT)

(15) Route both cables through gooseneck cable guides (34). Take slack out of cables.

CAUTION

Failure to retract and latch gooseneck safety rail before operating tractor/trailer will result in damage to equipment.

(16) Retract and latch gooseneck safety rail (43).

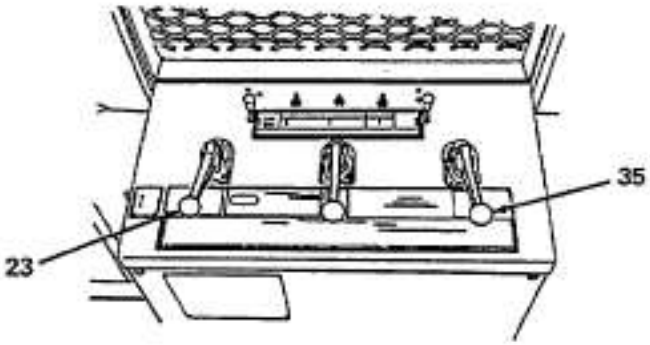
(17) Perform steps (24) thru (29) of paragraph 2-2a to adjust platform height, adjust and lower ramps, and position remaining curb guides.

(18) With winches in low speed, winch operator must push down on both DRIVERS SIDE WINCH lever (35) and PASSENGER SIDE WINCH lever (23) to move payload slightly forward and reduce pressure on rear payload chocks (38 and 39). Release levers. Using crowbar, if necessary, remove both rear payload chocks (38 and 39) and position just in front of bogie #4.

(19) Winch operator must pull up on both levers (23 and 35) to allow payload to roll back until firmly in contact with rear payload chocks (38 and 39). Release both levers (23 and 35).

(20) Disconnect front tiedown chains (40) from payload.

(21) Winch operator must push down both DRIVERS SIDE WINCH lever (35) and PASSENGER SIDE WINCH lever (23) to pull payload slightly forward off of rear payload chocks (38 and 39). Remove rear payload chocks.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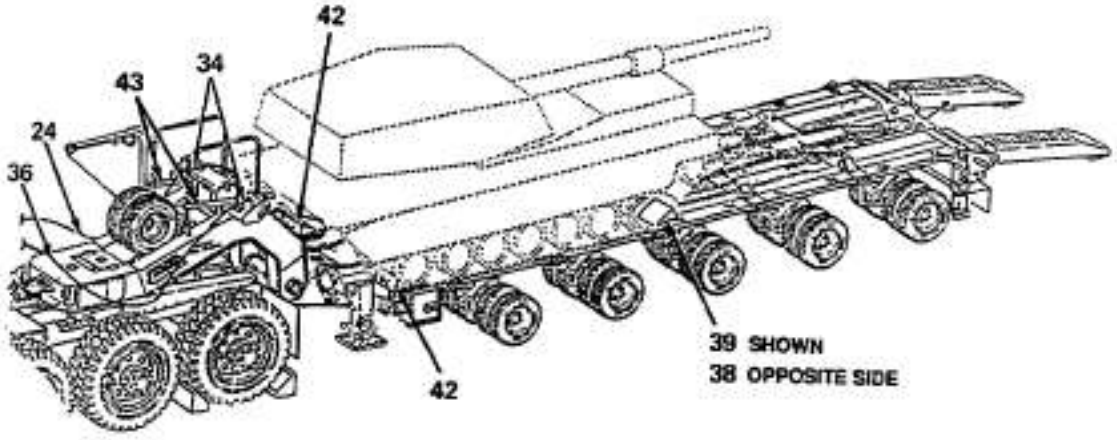
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39 SHOWN
38 OPPOSITE SIDE
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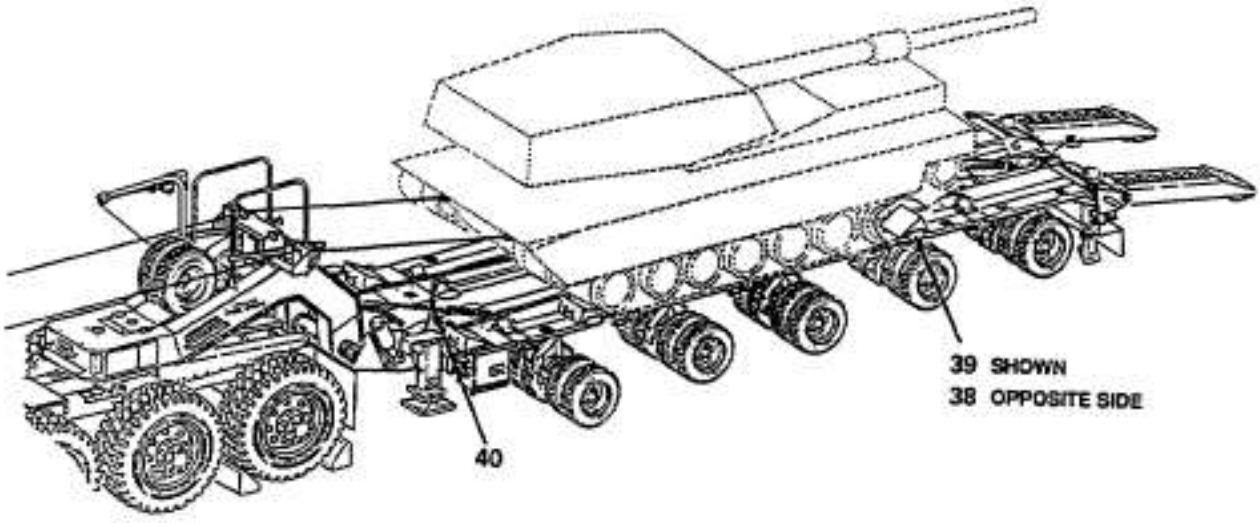
39 SHOWN
38 OPPOSITE SIDE
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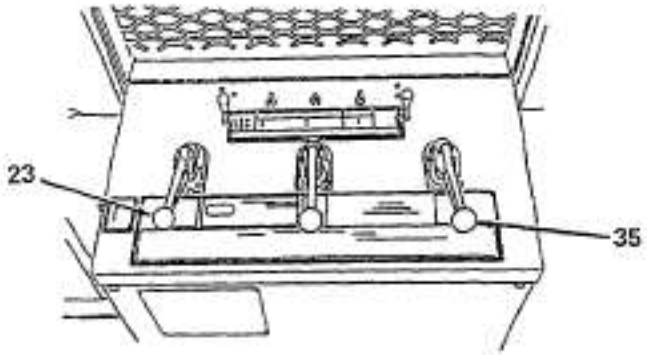
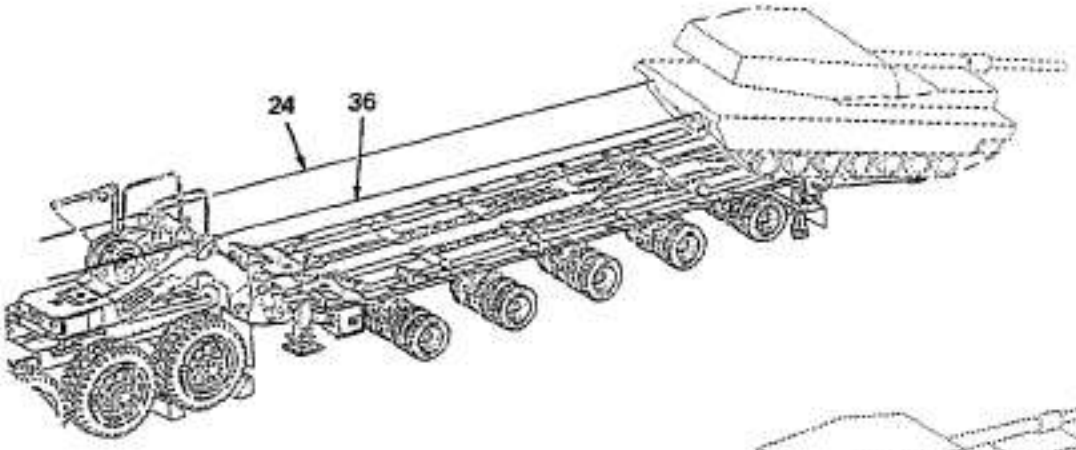
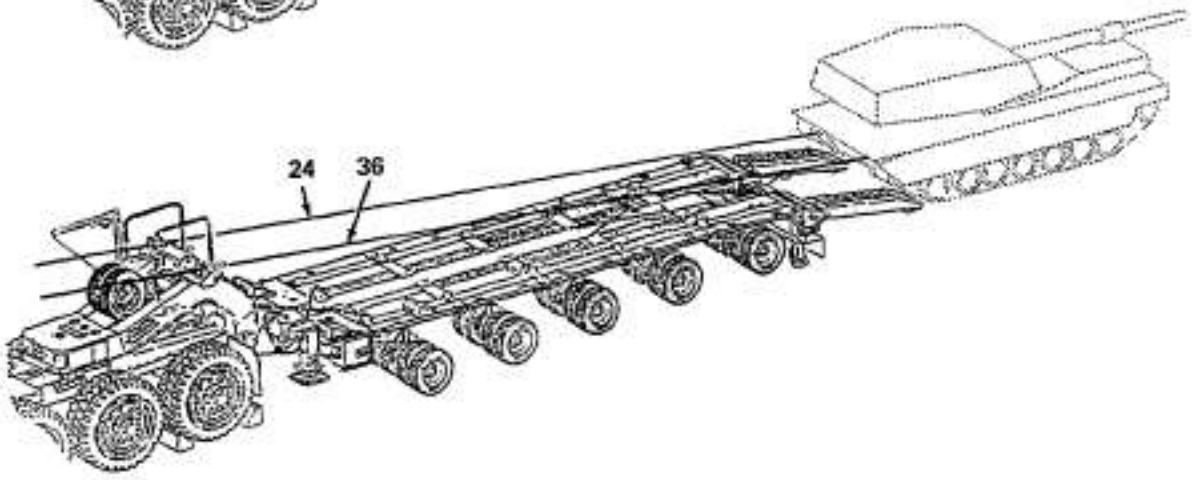
2-3. DUAL WINCH LOADING AND UNLOADING (CONT)

(22) Winch operator must pull up on both DRIVERS SIDE WINCH lever (35) and PASSENGER SIDE WINCH lever (23) to evenly pay out cables (24 and 36) and allow payload to roll off of semitrailer.

(23) Once payload clears curb guides, ensure that it rolls straight down ramps. Pay out cables unevenly if necessary for directional control.







WARNING

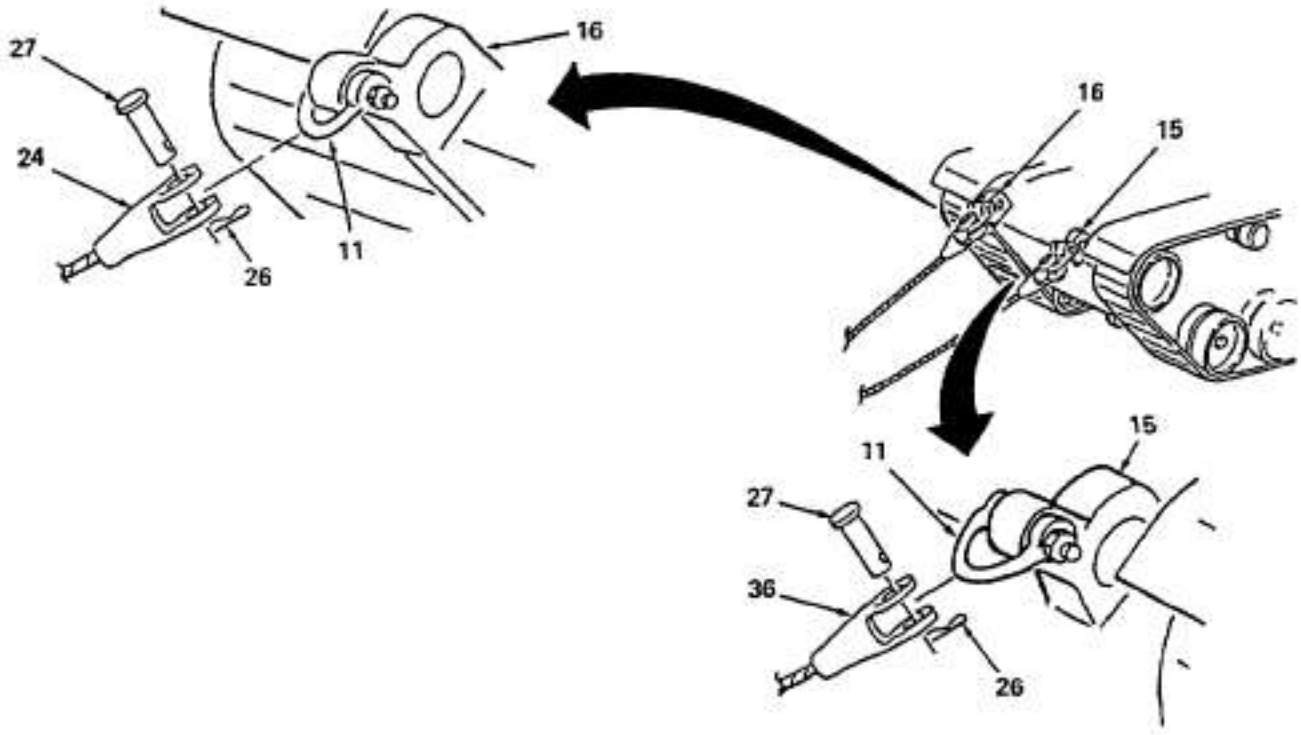
Prior to removing winch cable from payload, winch operator must be sure the winch cables have enough slack to relieve tension in the cable or injury to personnel may result.

(24) Winch operator must continue to pay out both winch cables (24 and 36) until cables are touching platform. Release levers (23 and 35).

WARNING

Extreme caution must be used when removing winch cables from payload. Cable may be under tension or be twisted. If winch cable has tension when removed, slowly and carefully, using both hands, rotate cable to relieve tension. Do not allow cable to twist or whip freely or injury to personnel my result.

(25) Check for twist in both winch cables. Remove cotter pins (26) and shouldered pins (27) from clevises on both drivers and passenger side winch cables (36 and 24) and remove cables from shackles (11) on both upper recovery eyes (15 and 16) on payload.



2-3. DUAL WINCH LOADING AND UNLOADING (CONT)

(26) Push ENGINE SPEED CONTROL switch (32) to HIGH ENGINE IDLE. Momentarily push ENGINE SPEED CONTROL switch (33), to lock engine speed at high idle (approximately 1500 rpm), and then release switch. Push WINCH SPEED CONTROL switch (37) to HIGH.

(27) Remove driver's side winch cable (36) from gooseneck cable guide (34). Leave cable on platform.

(28) Remove passenger side winch cable (24) from gooseneck cable guide (34). Leave cable on platform.

WARNING

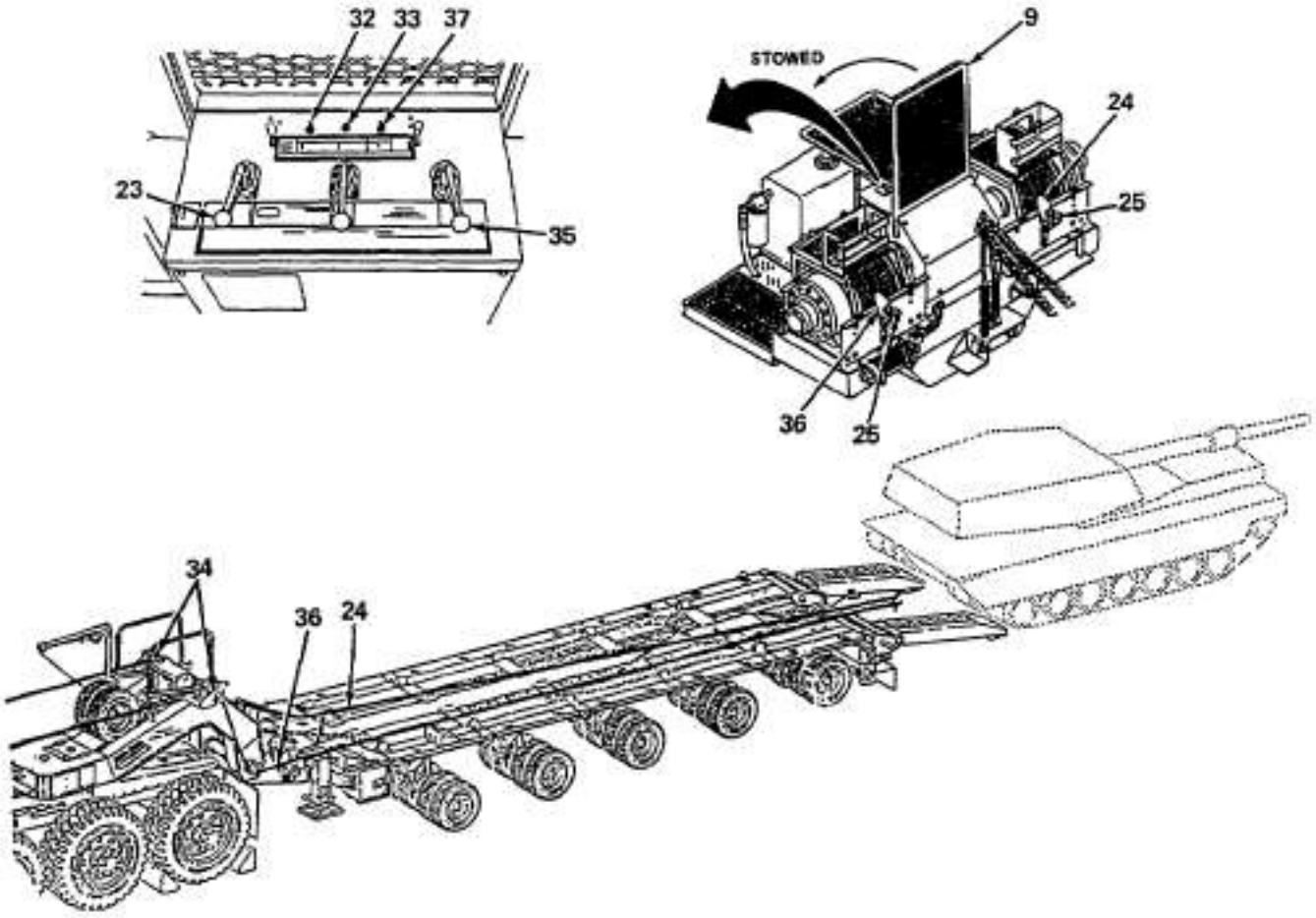
Do not allow hands to get between clevis and winch or injury to personnel may result.

(29) Using one person to push down on DRIVERS SIDE WINCH lever (35) and one person to maintain tension on drivers side winch cable (36), retract and stow winch cable (36) onto stow hook (25). Release lever (35).

(30) Using one person to push down on PASSENGER SIDE WINCH lever (23) and one person to maintain tension on passenger side winch cable (24), retract and stow winch cable (24) onto stow hook (25). Release lever (23).

(31) Pull ENGINE SPEED CONTROL switch (32) to LOW ENGINE IDLE. Lower guard (9) and lock in place.

(32) Remove all chains and load binders from platform and restow in platform storage compartment. Perform steps (20) thru (36) of paragraph 2-2b to stow equipment used during this procedure and prepare tractor and semitrailer for transport.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APPENDIX A

REFERENCES

A-1. SCOPE

This appendix lists forms, technical bulletin, and technical manuals referenced in this technical bulletin for the support of the M1000 Heavy Equipment Transport Semitrailer (HETS) when loaded with the M1 Series (MBT) with TUSK and C-IED Kit.

A-2. FORMS

Recommended Changes to Publications and Blank Forms	DA Form 2028

A-3. TECHNICAL BULLETIN

Safety Inspection and Testing of Lifting Devices	TB 43-0142

A-4. TECHNICAL MANUALS

Operator's, Unit, Direct Support, and General Support Maintenance Manual for Semitrailer, Transporter, Heavy Equipment, 70 Ton, M1000	TM 9-2330-381-14
Operator's Manual for Truck, Tractor, M1070, 8 X 8, Heavy Equipment Transporter (HET)	TM 9-2320-360-10
Operator's Manual for TUSK package for M1A1, M1A2SEP Main Battle Tank (MBT)	TB 9-2350-264-12&P-1 TB 9-2350-388-12&P-1
Operator's Manual for M1A1 and M1A2SEP Main Battle Tank (MBT).	TM 9-2350-264-10 TM 9-2350-388-10

APPENDIX B ADDITIONAL

AUTHORIZATION LIST (AAL)

Section I. INTRODUCTION

B-1. SCOPE

This appendix lists additional items you are authorized in this technical bulletin for the support of the M1000 Heavy Equipment Transport Semitrailer (HETS) when loaded with the Abrams Main Battle Tank (MBT) Series with TUSK and C-IED Kit attached.

B-2. GENERAL

This list identifies items that do not have to accompany the trailer and that do not have to be turned in with it. These items are all authorized to you by Common Table of Allowances (CTA), Modification Table of Organization and Equipment (MTOE), Table of Distribution and Allowances (TDA), or Joint Table of Allowances (JTA).

B-3. EXPLANATION OF LISTING

National stock numbers, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment. The items are listed in alphabetical sequence by item name under the type document (i.e., CTA, MTOE, TDA, or JTA) which authorizes the item(s) to you.

Section II. ADDITIONAL AUTHORIZATION LIST

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION CAGE AND PART NUMBER AND USABLE ON CODE	(3) U/M	(4) QTY AUTH
9905-01-476-7558	Data Plate, Vehicle Classification (19207), 12479566	EA	1

By Order of the Secretary of the Army:

GEORGE W. CASEY, JR.
General, United States Army
Chief of Staff

Official:

JOYCE E. MORROW
Administrative Assistant to the
Secretary of the Army
0721202

Distribution:

To be distributed in accordance with the initial distribution number (IDN) 390990, requirements for TB 9-2330-381-13-1.

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25-30; the proponent agency is ODISC4.	Use Part II *(reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/Supply Manuals (SC/SM).	DATE
TO: *(Forward to proponent of publication or form) (Include ZIP Code)* AMSTA-LC-LPIT / TECH PUBS, TACOM-RI 1 Rock Island Arsenal Rock Island, IL 61299-7630	FROM: *(Activity and location) (Include ZIP Code)*	

PART I – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE
TB 9-2330-381-13-1	1 September 2007	Operator's & Field Manual, Heavy Equipment Transporter Semitrailer, M1000, transporting Abrams tank with TUSK & C-IED Kit

ITEM NO.	PAGE NO.	PARA-GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON *(Provide exact wording of recommended changes, if possible).*

**Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

TO: (*Forward direct to addressee listed in publication*)	FROM: (*Activity and location) (Include ZIP Code)*	DATE
AMSTA-LC-LPIT / TECH PUBS, TACOM-RI 1 Rock Island Arsenal Rock Island, IL 61299-7630		

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER	DATE	TITLE
TB 9-2330-381-13-1	1 September 2007	Heavy Equipment Transporter Semitrailer, M1000, transporting Abrams tank with TUSK & C-IED Kit

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III – REMARKS (*Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

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USAPPC V3.00

THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
1 Kilometer = 1000 Meters = 0.621 Miles

SQUARE MEASURE

1 Sq. Centimeter = 100 Sq. Millimeters = 0.155 Sq. Inches
1 Sq. Meter = 10,000 Sq. Centimeters = 10.76 Sq. Feet 1 Sq. Kilometer = 1,000,000 Sq. Meters = 0.386 Sq. Miles

WEIGHTS

1 Gram = 0 001 Kilograms = 1000 Milligrams = 0.035 Ounces
1 Kilogram = 1000 Grams = 2.2 Lb
1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

CUBIC MEASURE

1 Cu Centimeter = 1000 Cu Millimeters = 0 06 Cu Inches 1 Cu Meter = 1,000,000 Cu Centimeters = 35 31 Cu. Feet

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces 1
Liter = **1000 Milliliters = 33.82 Fluid Ounces**

TEMPERATURE

5/9 (°F - 32) = °C
212° Fahrenheit is equivalent to 100° Celsius
90° Fahrenheit is equivalent to 32 2° Celsius
32° Fahrenheit is equivalent to 0° Celsius
9/5 (°C + 32) = °F

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid	Ounces Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.45
Short Tons	Metric Tons	0.0907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0 155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.195
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters Fluid	Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2 205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621

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PIN: 084171-000