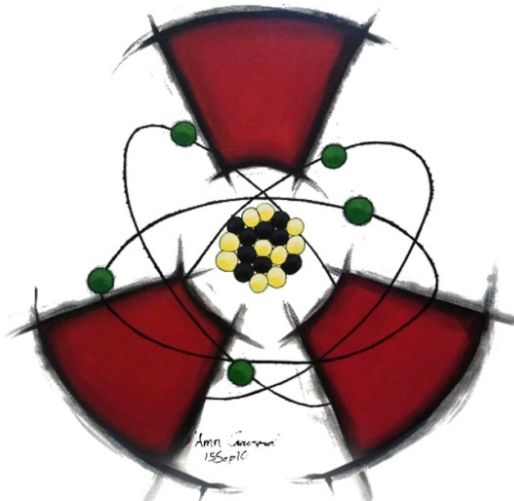


CDC 2W251B

Nuclear Weapons Journeyman

Volume 1. Nuclear Accountability, Weapons Handling, and Transportation Procedures



**Air Force Career Development Academy
Air University
Air Education and Training Command**

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VOLUME 1 of Career Development Course (CDC) 2W251B, *Nuclear Weapons Journeyman*, discusses nuclear accountability procedures. It also covers basic weapons handling procedures and equipment common to this career field. Unit 1 covers nuclear accounts, terms, reports, custody transfer, and general shipment information, as well as some basic procedures for controlling military and base spares. Unit 2 describes several munitions handling trailers and gives specific procedures for inspecting and operating these trailers. It also illustrates various munitions lift vehicles. Since many procedures are the same for each vehicle, this unit covers general principles on how to inspect, operate, and adjust lift trucks. Unit 3 touches on various methods for weapons transfer, tie-down operations, and weapons air and ground movements.

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A glossary is included for your use.

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NOTE:

In this volume, the subject matter is divided into self-contained units. A unit menu begins each unit, identifying the lesson headings and numbers. After reading the unit menu page and unit introduction, study the section, answer the self-test questions, and compare your answers with those given at the end of the unit. Then complete the unit review exercises.

	<i>Page</i>
Unit 1. Nuclear Accounts and Custody Transfer	1-1
1-1. Management of Nuclear Accounts	1-1
1-2. Reports	1-8
1-3. Custody Transfer and General Shipment	1-12
1-4. Specific Nuclear Accountability Procedures.....	1-20
Unit 2. Munitions Handling Trailers and Lift Vehicles.....	2-1
2-1. The 25- and 40-Foot MHU-141/M Trailers	2-1
2-2. MHU-196/M and 204/M Munitions Handling Trailers.....	2-12
2-3. Lift vehicles.....	2-31
2-4. Forklifts	2-41
Unit 3. Weapons Handling Operations and Movement	3-1
3-1. Tie-down and Handling Equipment	3-1
3-2. Specific Handling Operations	3-12
3-3. General Weapons Movement Procedures	3-20
3-4. Logistic Movement Procedures.....	3-24
<i>Glossary.....</i>	<i>G-1</i>

Unit 1. Nuclear Accounts and Custody Transfer

1–1. Management of Nuclear Accounts	1–1
001. Materiel categories and terms	1–1
002. Administrative duties.....	1–4
1–2. Reports	1–8
003. Stockpile inventory reports.....	1–8
004. Location inventory listing.....	1–10
1–3. Custody Transfer and General Shipment	1–12
005. Weapons custody	1–13
006. Shipment of materiel.....	1–16
1–4. Specific Nuclear Accountability Procedures.....	1–21
007. Requisitions and receipts	1–21
008. Preparing and processing shipping documents	1–24
009. Issues, turn-ins, and expenditures	1–25

IN THIS UNIT, we discuss general nuclear accountability responsibilities, reporting procedures, and terms to keep your unit stockpile records current. Unit records and reports on nuclear materiel inform numerous agencies that are responsible for tracking the stockpile and nuclear materiel within the Department of Defense (DOD). We also briefly discuss the Defense Integration and Management of Nuclear Data Services (DIAMONDS) database, which automates the majority of the accountability processes.

1–1. Management of Nuclear Accounts

Management and accountability of nuclear accounts present unique challenges to nuclear weapons maintenance technicians. Due to the critical nature of the materiel being controlled, we cannot overemphasize the importance of accuracy. You need to understand nuclear accountability procedures and processes. You may perform maintenance and request replacement parts or be directly involved with managing an account in the nuclear accountability and reporting section (NARS).

001. Materiel categories and terms

Air Force Instruction (AFI) 21–203, *Nuclear Accountability*, provides guidance and procedures for the accountability, custody, and logistics movement of nuclear weapons and their components and related support equipment. AFI 21–203 prescribes supply procedures to support the Air Force (AF) nuclear weapons program and provides supplementary guidance to Technical Orders (TO) 11N–100–2, *Supply Management of Limited Life Components*; 11N–100–4, *Custody, Accountability, and Control of Nuclear Weapons and Nuclear Materiel*; and 11N–100–3150, *Joint Reporting Structure*. In this lesson, we discuss nuclear materiel categories and cover some common terms and items used in NARS.

Categories

We identify most nuclear ordnance commodity management (NOCM) or nuclear items by the materiel management code “CM” (nuclear ordnance materiel) suffixed to the national stock number (NSN). Nuclear materiel required to support the AF nuclear weapons programs falls into two categories: military spares (MS) and base spares (BS).

Military spares

MS are those parts and components funded for and procured and owned by the Air Force. The following list includes examples of MS:

- Training weapons (type 3) to include training bolsters and containers.
- Cable test (CT) and disablement equipment (DE).
- Test (T) and handling (H) equipment except Department of Energy (DOE)-owned items.
- Loading and handling shapes.
- Launchers and clip-in assemblies.
- Reentry vehicles and systems.
- Weapon storage vaults.

NOTE: This list is *not* all-inclusive.

Base spares

BS are those parts and components furnished to the Air Force to use in maintaining and repairing war reserve (WR) nuclear weapons and DOE-owned equipment supplied to the DOD with WR weapons. These items remain the property of DOE regardless of custody. The following list includes examples of BS:

- WR weapons.
- WR major assemblies, components, and limited life components (LLC).
- T and H equipment to include permissive action link (PAL) equipment.
- WR containers and bolsters.
- Accessories (cables, etc.).
- Group-X kits.
- Spare parts for these items listed.

NOTE: This list is *not* all-inclusive.

DOE furnishes BS items to the Air Force for maintaining DOE-owned weapons and equipment. You *cannot* use BS items for other purposes unless you are authorized to do so by unsatisfactory report (UR) channels. Likewise, you *cannot* use MS items to maintain DOE-owned weapons. All nuclear ordnance items are considered investment items and are excluded from the stock fund regardless of expendability, recoverability, reparability category (ERRC) code. Payment for these items does not come out of unit funding but is provided by major commands (MAJCOM) for MS or DOE for BS materiel.

The key to determining whether an item is AF owned or DOE owned is by the *part number*. As a rule, DOE-owned items have a six-position (all numbers) part number followed by a dash (–), and two additional numbers (e.g., 301121–00, 311830–01, 315651–02, etc.). Sometimes, part number suffixes include the letter “W” (e.g., 301121–00W, etc.) as a designator for a DOE-owned item. Part numbers for AF-owned items have an almost unlimited range of configurations. If a part number is configured similar to a DOE part number and the last digit is an “S” or “T” instead of a “W,” the item is AF owned. All other part numbers that do not end with a letter, but do convert to a NSN suffixed with “CM” are also AF owned. DOE part numbers that fall within the 800,000 and 900,000 series range cross reference to both “CM” and common (non-CM) stock numbers. Those items that convert to common NSNs are generally for training purposes and must be ordered through base supply channels (not nuclear accounts).

Refer to assets as either reparable items or unit spares authorization list (USAL) items. Repairable items are larger BS, capable of being refurbished for continued use. USAL items are specialized, DOE-designed nuts; bolts; or other expendable parts, similar to bench stock. We normally identify the spares by NSNs and list them in the C1100 CD.

FK and FV accounts

The FK and FV accounts are special accounts set up within a munitions organization to provide for the receipt, issue, and control of nonnuclear and nuclear munitions. There are two types of munitions materiel accounts. The symbol “FK” designates a manual supply account, which in the nuclear weapons community, the nuclear munitions accountable systems officer (MASO) and NARS maintain. The symbol “FV” designates a conventional munitions account and is maintained in the Combat Ammunition System-Base (CAS-B).

Stock record account number

A stock record account number (SRAN) identifies all active or contingency munitions accounts. SRANs are six-digit alphanumeric codes. SRANs identify records of transactions involving property in the account—primarily assets received, stored, issued, or shipped. The SRAN appears in the first six positions of the document number of these transactions. The first two positions are alphabetic and designate the service and type account. The code you use is “F,” which indicates that the account belongs to an AF activity. The second position of the SRAN (type account) identifies either the type of organization or the type of materiel. FK/FV indicates nuclear weapons/munitions. The last four positions of the SRAN are numeric and identify individual accounts by address or command.

Expendability, recoverability, reparability category code

AF supplies are categorized into two basic types: expendable and nonexpendable. Expendable supplies are consumed in use or lose their identity when they are attached to another assembly. Nonexpendable items refer to equipment items. Every item is assigned an ERRC designator code. This three-digit alphanumeric code designates the expendable status, level of repair, and cost category. Some common codes are XD3, XB3, NF1, and so forth. The first position identifies the expendability of the item (X—expendable, N—nonexpendable); the second position identifies the highest authorized repair level (B—user, F—field, D—depot); and the third position identifies the cost category or, for equipment items, is the equipment management code. These codes do not apply to NOCM items.

C1100 management data list

The federal stock group (FSG) 1100CM, C1100–ML/IL–AF (CM), C–1100–ML/IL (CM), *Nuclear Ordnance Stock Listing* CD (classified/unclassified), or C1100 as we commonly call it, is the list that comprises all stock numbered items that fall within the NOCM program. The C1100 includes items in FSG 11 and those that are peculiar by application or initial design to nuclear ordnance, regardless of the stock class. It provides item identification (ID) data and information to determine the appropriate supply management and control for individual items at base level. The Nuclear Control Point (NCP) manages items listed in the C1100 CD with a materiel management code of “CM” affixed to the end of their NSNs. Items that don’t have a “CM” are managed by other air logistics complexes (ALC) and are ordered through normal supply channels. NOCM items that belong to the munitions materiel account (FV/FK) have a “CM” and non-equipment ERRC of XB3, XF3, or XD2. All others belong to the FB (base) or FE (equipment) account in base supply.

A C1100 is published monthly. This publication is set up in NSN sequence. The C1100 combines several different supply catalogs into a single publication and has four distinctive parts:

1. Introduction—describes the kinds of items referenced and explains the catalog.
2. Manufacturer’s index—contains federal supply codes for manufacturers that convert to a specific item manufacturer and address.
3. Cross-reference—converts part numbers or reference numbers to NSNs.
4. Management list/ID list—lists items in NSN sequence and contains both management and ID data.

The item ID section is divided into two parts: classified and unclassified. The classified part contains all FSG 11 classes. The classified part is classified because it the complete listing of the FSG 11 classes and individual classified item descriptions. The unclassified portion contains all other FSG classes.

Unit spares authorization list

NOCM items are not procured through normal base supply channels. These items are identified by the materiel management code “CM,” and they are managed and controlled by the NCP. The USAL is a list of BS items required as stock to support special weapons. You can think of a USAL item as a special-level item in support of a nuclear weapon. The USAL is stock supplied to NARS accounts. NARS issues the stock to maintenance activities when necessary. USAL assets are provided to field units to avoid transportation expenses and to provide more timely support to maintenance organizations. USAL stock is intended for use on red (unserviceable) weapons and to replace defective components identified during maintenance to maintain a weapon or specialized equipment in operational status.

A USAL list provided for all WR weapons systems. NARS normally requisitions replenishment of stock unless otherwise directed by the NCP. Units may request changes to authorized levels by submitting required changes to the MAJCOM by letter showing the NSN, DOE part number, nomenclature, unit of issue, and levels requested. The MAJCOM coordinates the request with outside agencies to determine availability. The MAJCOM then returns a copy of the approved or disapproved change to the unit.

NARS maintains the USAL stock levels and the stock listing. If during WR maintenance, you need to replace an item because it is damaged (such as a high-torque screw or a fin), check the USAL to see if a special level is maintained at your base. USAL items are listed by their stock number and/or part number on the list. Once you verify the item is on the USAL, complete an AF Form 2005, Issue/Turn-In Request, or the designated local form replacement, and take it to NARS. They verify the quantity you need is on-hand and issue your replacement item.

002. Administrative duties

By understanding the responsibilities of key players in NOCM management, you can see where you fit in the accountability process.

MAJCOM

MAJCOMs are the primary points of contact in overseeing nuclear weapon and nuclear component accountability at assigned units. They also coordinate technical support and provide guidance on accountability issues beyond unit capability. Some other MAJCOM responsibilities are as follows:

- Assist units with maintenance items ordered and not received by the 120-day point or sooner if requested.
- Execute actions required to participate in and support stockpile emergency verification (SEV) plans and establish a 24-hour point of contact (POC) (such as command post) for Secret Internet Protocol Router Network (SIPRNET) capability to send/receive stockpile messages.

Nuclear Control Point

The NCP oversees nuclear weapon, nuclear component, and nuclear-related support equipment accountability. They also coordinate support and provide guidance on accountability issues beyond the unit’s capability and establish authorized levels of BS by approval of the USAL.

Commanders

Wing commanders appoint and certify the MASO. They also designate personnel to receipt for classified DOE end items and components. The maintenance group commander designates

individuals that are authorized to order BS and MS. Munitions activity squadron commanders recommend for appointment a MASO to the wing commander.

MASO

The MASO is a munitions and missile maintenance officer (Air Force specialty code [AFSC] 21M) or qualified civilian who is responsible to the wing commander for the daily management and oversight of the local nuclear stockpile. The MASO exercises custodial control over assigned nuclear weapons, nuclear components, and LLCs. Some MASO responsibilities include but are not limited to the following:

1. Assuming liability for loss, damage, or destruction of accountable property resulting from negligence, willful misconduct, or deliberate unauthorized use.
2. Submitting timely and accurate property transactions and maintaining all required records.
3. Inventorying accountable property on records of assigned account and properly reporting the inventories.
4. Providing adequate safeguards for property in the MASO's custody.
5. Identifying urgency and validity of requests for materiel and promptly submitting request.
6. Identifying, requesting disposition (if required), and disposing of unserviceable, reparable, or excess property on accounts.
7. Conducting checks to determine accuracy of accountable records and validity of warehouse locations and balances.
8. Maintaining asset balances within approved stock levels.
9. Providing management guidance and training to users and custodians.
10. Making sure property transactions are recorded accurately, maintaining current records pertaining to the account, and reconciling inventories with accountable records.
11. Reporting to the appointing commander any losses, damage, or other irregularities.
12. Ensuring inspection of incoming classified property promptly and coordinate with maintenance for verification inspection of nuclear weapons or components according to technical data.

The MASO develops and publishes local procedures to ensure proper control, protection, accountability, and reporting of weapons, major assemblies, and related components. These procedures include activities involving nuclear maintenance, munitions control, and NOCM. The MASO carries a heavy burden with strict accountability of munitions and the associated documents. See Air Force Manual (AFMAN) 21-200, *Munitions and Missile Maintenance Management*, and AFI 21-203 for more duties not listed here.

NARS monitors

As you noticed, the MASO has numerous management duties and can be overwhelming. To assist with his or her responsibilities, the MASO designates, in writing, the following positions to ensure MAS duties are accurately performed:

- Primary and alternate NARS monitors trained and fully qualified to perform all NARS duties to include opening/closing, inspecting, storing, transferring, and shipping H1616 and H1700 containers. If the unit does not have H1616 or H1700 containers, then NARS do not require training or qualification.
- Monitors authorized access to document control files.
- Primary and alternate time compliance technical order (TCTO) and retrofit kit monitors.
- Primary and alternate reparable item monitors.
- Monitors authorized access to the NARS warehouse.

- Monitors authorized to receive classified items from the traffic management office (TMO).
- Monitors authorized to perform quality control (QC) checks and reviews accountable documents. These individuals may do so only when the MASO is not available (i.e., TDY, leave). The intent is ensuring continuity of transmitting, posting, or filing of reports when the MASO is not available. Upon the MASO's return, he or she will review all accountable documents that took place during his or her absence.

Reparable item custodians

Reparable item custodians account for and maintain control of reparable items issued to the maintenance section. They accurately record property transactions and maintain current records pertaining to the account. If you are such a custodian, promptly report any losses, damage, destruction, or other irregularities to the appointing commander and the MASO. Custodians must verify the accuracy of their custodial records with records maintained by the MASO at least semiannually.

Self-Test Questions

After you complete these questions, you may check your answers at the end of the unit.

001. Materiel categories and terms

1. Which AFI provides guidance and procedures for the accountability, custody, and logistics movement of nuclear weapons and their components and related support equipment?
2. What are the two categories of NOCM?
3. Who owns MSs?
4. BSs are used for what?
5. What is the difference between reparable items and USAL items?
6. What do the account symbols FK and FV designate?
7. What type of records does the SRAN identify?
8. Where does the SRAN appear in the document number for munitions account transactions?
9. What does the ERRC code designate?

10. What does an “X” or “N” in the first digit of the ERRC code tell you?
11. How do you know which items in the C1100 belong to the munitions materiel accounts (FV/FK)?
12. Explain how the C1100’s items ID section is divided.
13. Who manages and controls NOCM items with a materiel management code “CM”?
14. Why are USAL assets provided to field units?
15. What form is used to order an item on the USAL?

002. Administrative duties

1. Match the NOCM management responsibility in column A with the responsible agency or person in column B. Items in column B are used once or more than once.

<i>Column A</i>	<i>Column B</i>
____ (1) Establishes authorized levels of BS via approval of the USAL.	a. NCP.
____ (2) Assumes liability for loss, damage, or destruction of accountable property.	b. MAJCOM.
____ (3) Performs QC checks when MASO is absent.	c. Wing commander.
____ (4) Assists units with items ordered and not received by the 120-day point or sooner if requested.	d. MASO.
____ (5) Maintains asset balances within approved stock levels.	e. Group commander.
____ (6) Is trained and qualified to open/close, store, and ship H1616 containers.	f. NARS monitor.
____ (7) Maintains control of reparable items that have been issued to the maintenance section.	g. Reparable item custodian.
____ (8) Designates individuals authorized to order base and MS.	
____ (9) Receives classified items from the TMO.	
____ (10) Oversees nuclear weapon, nuclear component, and nuclear-related support equipment accountability.	
____ (11) Appoints and certifies the MASO.	
____ (12) Establishes a 24-hour POC to send/receive stockpile messages.	

2. How often does the reparable item custodian verify the accuracy of custodial records maintained by the MASO?

1-2. Reports

As you have probably figured out by now, we don't do anything to nuclear weapons, nuclear components, or NOCM items without thorough documentation and timely notification to various agencies. Accurate accounting and reporting are standard operating procedures we must follow, just like the two-person concept (TPC) or compliance with TOs. Reports provide information concerning stockpile condition, inventory quantities/balances, serial numbers, weapon and code changes, locations, expended special nuclear materiel, components, container asset status, and so forth. As we cover some of the frequently submitted reports, you'll understand why it is important to agencies in the DOD and DOE.

003. Stockpile inventory reports

The inventory process involves the physical counting of property, comparing this count to record balances, identifying and correcting any discrepancies, and reporting the results of the inventory. You may participate in the inventory process several ways:

- Opening and closing structures.
- Maintaining structure surveillance or TPC.
- Assisting persons who are performing the inventory (i.e., reading off serial numbers).
- Inventorying saddlebags and associated accessories.
- Performing inventory/verification procedures.
- Using DIAMONDS to prepare reports and update records.

Your role in the inventory process depends on the type of inventory being performed and your shop's designated responsibilities. The MASO at each unit develops local operating instructions to ensure compliance with TO 11N-100-3150 and AFI 21-203, *Nuclear Accountability*, which outline specific inventory procedures and reporting requirements. There are two main types of stockpile inventories:

1. Semiannual inventory report (SIR).
2. Stockpile emergency verification (SEV).

SIR

Once initiated, the SIR takes precedence over all maintenance activities. If there is a conflict in maintenance scheduling or support, the group commander makes the final approval/disapproval for determining mission essential work activities. The SIR is an independent blind inventory that reports the status, location, and configuration of the national nuclear weapon stockpile by serial number and quantity for each location. In conjunction with the SIR, the BS, MS, and DOE-owned equipment items are inventoried. Two commissioned officers perform the SIR: (1) The MASO, who is appointed as the inventory officer and (2) the verifying officer. The verifying officer is a disinterested party assigned to a different unit who was not involved in the last two SIRs

SEV

The SEV is a rapid special inventory for the president, secretary of defense (SecDef), and the Joint Staff to promptly verify all or selected portions of the DOD stockpile of nuclear weapons are indeed in possession of authorized DOD agents. The SEV requires a physical weapon count be compared with accountable records, followed by physical serial number verification and reconciliation with the weapons custody list (WCL) provided by Defense Threat Reduction Agency (DTRA). The WCL is an extract from the stockpile database showing a unit's nuclear assets by serial number.

The Joint Staff initiates and terminates SEV and SEV tests. They send a FLASH or IMMEDIATE message containing SEV parameters through the National Military Command Center (NMCC) to DTRA, commanders, and services. SEVs may be limited to specific locations or types of weapons.

Once notified of the SEV parameters, DTRA prepares and transmits the WCLs. Upon direction of a SEV, each responsible unit begins phase I, immediately followed by phase II. Speed and accuracy are extremely important. Opening and closing structures are a joint effort within the flight to expedite the count by NARS personnel.

Phase I

The SEV notification message will state if your unit must perform a physical verification or a records check verification.

Records check verification

For a records check verification, compare weapon serial numbers from your unit accountable records against the WCL provided from DTRA. No physical verification actions are required. No phase I actions or reports are required (only phase II reporting is required for a records check).

Physical verification

The physical verification is a physical count of all nuclear weapons (without any disassembly or removal from containers) compared with unit accountability records. Submit a report when phase I actions are completed.

Phase II

After you complete phase I, immediately start phase II. Phase II consists of a physical serial number verification of weapons with accountable records and with the WCL provided by DTRA. Transmit phase II SEV reports to MAJCOMs, commanders, and DTRA. To prevent opening structures a second time, you can record serial numbers during the phase I count if it does not interfere with phase I completion.

DIAMONDS

DIAMONDS is the integration of DTRA's nuclear stockpile management information systems. It is a computer-based program that combines numerous, existing programs, all from one computer. It provides standard automated programs and procedures for all DOD services to facilitate TO 11N-100-3150 reporting requirements. DIAMONDS combines the following DTRA programs:

- Publications (currently the Joint Nuclear Weapons Publication System [JNWPS]).
- Unsatisfactory reporting.
- Unit level stockpile accounting and reporting.
- Stockpile tracking and reporting.
- Logistics.
- Maintenance bay/facility data entry and distribution IRCs, weapon information reports (WIR), and so forth.
- Decision support and forecasting.

DIAMONDS provides a user friendly, single entry system that enhances all users' day-to-day job performance, from maintenance technicians to headquarters' staffs. Basically, you enter information in one computer and then update DTRA's database by secure virtual private network (VPN). The system operates at the Secret level and supports processing restricted data (RD) and formerly restricted data (FRD) information.

Weapon status report

We must maintain nuclear weapons and their components in a constant state of readiness. The weapon status report (WSR) provides information for managers at all levels for tracking the status of the WR stockpile. The maintenance activity report (MAR) is used to record operations and

transactions that affect a major assembly or weapon. Maintenance activities submit an MAR to NARS each day a reportable change occurs. The MAR serves as a source document or blueprint for preparing the WSR.

NARS prepares and submits the WSR as outlined in TO 11N-100-3150 and AFI 21-203. The WSR provides data on nuclear warheads and WR components of nuclear weapons. Submit a WSR any time a change occurs to a nuclear weapon or component in one of the following categories:

- Balance.
- Operational unit identification code (OUIC) weapons are supporting.
- Weapon code or charge code.
- Shipment or receipt.
- Alteration (ALT) code.
- Component installation, removal, or component code.
- Color code.
- Weapon deletion (expended or destroyed).
- Component addition or deletion.
- Location addition (new storage site) or location deletion (permanent closing of storage site).

004. Location inventory listing

The location inventory listing (LIL) is used to schedule maintenance and is updated after maintenance actions. It is very important to keep this document current and to identify and resolve discrepancies quickly.

Description

DTRA provides the monthly LIL to the appropriate military service for control of nuclear weapons inventories. This document is extracted from the consolidated nuclear weapons database at DTRA in four parts. The LIL shows exactly what nuclear weapons and associated components you have and how many are in your possession. It is a by-product of all WSRs submitted by NARS. The table below provides a description of each part of the LIL.

LIL Parts	
Part	Description
I	Lists accountable and reportable items according to TO 11N-100-3150 in the following sequence: charge code, location code, weapon code, serial number, alteration code, operational status code, and overall total. Totals are noted by operational status code, weapon code, charge code, and location code.
II	Lists all uninstalled LLC component data.
III	Lists installed LLC serial numbers, component codes, and due dates.
IV	Lists accountable and reportable items by OUIC and operational status by location code, weapon code, and serial number.

Purpose of the LIL

MAJCOMs and field units use the monthly LIL information to keep track of nuclear weapon and component inventories at their locations and to schedule necessary maintenance. The LIL is sent through the DIAMONDS email to the NARS at the beginning of each month. From that point, NARS

representatives are required to reconcile or review the new LIL against the old LIL, within 5 days of receipt. If errors are discovered, other than increases due to receipt or decreases due to shipments, NARS personnel notifies the NCP immediately. The NCP oversees LIL discrepancies and problems for the Air Force.

This document is used to schedule maintenance and is updated after maintenance actions such as limited life component exchange (LLCE), shipment, receipt, ALT code change, and operation status change. The LIL is used with other available inventory records when an actual or exercise SEV occurs. The LIL is also used to reconcile the DIAMONDS database during the SIR.

Self-Test Questions

After you complete these questions, you may check your answers at the end of the unit.

003. Stockpile inventory reports

1. What determines your role in the inventory process?
2. What are the two main types of stockpile inventories?
3. What does the SIR provide?
4. Who is the SEV for, and what is its purpose?
5. What is the WCL?
6. How does the Joint Staff initiate a SEV?
7. What actions are required for a SEV records check verification?
8. When does phase II of the SEV start?
9. What verification procedures do you perform during phase II of a SEV?
10. What is DIAMONDS?

11. What current DTRA programs are combined into DIAMONDS?
12. What serves as the source document or blueprint for preparing a WSR?

004. Location inventory listing

1. Who provides the LIL, and how many parts does it have?
2. What accountable and reportable items are listed in part I of the LIL?
3. What data is listed in part II of the LIL?
4. What information is listed in part IV of the LIL?
5. How do MAJCOMs and field units use the information on the LIL?
6. Who is required to reconcile the LIL, and upon receipt, within what time frame must they reconcile it?
7. List five examples of maintenance actions that require updating the LIL.
8. List three ways to use the LIL for managing weapons at your base.

1-3. Custody Transfer and General Shipment

Custody transfer and shipment of NOCM specialized assets involves more than just preparing documents and forwarding the items to the transportation activity for shipment. The nature of these assets makes it necessary to maintain extremely tight security, precise handling, and timely transportation measures at all times. These measures also apply when an organization receives nuclear materiel. Let us first look at custody transfer.

005. Weapons custody

Custody is the responsibility for the control, transfer, movement of, and access to, nuclear weapons and components. The MASO is the individual that has the guardianship and safekeeping of nuclear weapons and their components. The MASO also authorizes personnel to serve as sole vouching authority (SVA), by the access, approval, and authority list (AAAL) or other similar entry authorization list (EAL). The SVA has temporary custody of the weapons and grants access to the immediate area where the weapons are located. No documentation is required when transfer custody between authorized individuals (SVA) occurs within a weapon storage area (WSA), a weapons storage and security system (WS3), or the Kirtland Underground Munitions and Maintenance Storage Complex (KUMMSC).

Custody transfer is taking control of a weapon from another individual or relinquishing control of the weapon to another person. It is used when a weapon is convoyed outside the WSA to or from a missile site or to or from alert aircraft. Although there are a number of circumstances that require custody transfer, we discuss only four in this lesson:

1. An intercontinental ballistic missile (ICBM) reentry system (RS) to/from alert status.
2. ICBM RS swap between launch facilities.
3. Tracking weapons mated to/from multiple carriage launch gear during transfer to/from combat aircraft.
4. Missile/bomb and pylon/launcher to/from combat aircraft.

For all custody transfers concerning the situations above, use an AF Form 504, Weapons Custody Transfer Document, to properly record transactions until the weapons are returned to storage.

ICBM RS to/from alert status

The typical flow of events and the duties of individuals responsible for an RS custody transfer are described in the paragraphs below.

The MASO

The MASO performs the following duties for RS custody transfers:

1. Prepares an original and one copy of AF Form 504, leaving the individual signature blocks blank. Annotates the names on the document at the time of transfer. Establishes control of the document by annotating the control register using an AF Form 3126, General Purpose, or a locally produced equivalent.
2. Completes the first line in Block 6 of AF Form 504, and then transfers custody, by RS serial number only, to an RS/RV maintenance team chief (TC) supervisor, who in turn transfers custody to the transport supervisor who is responsible for transporting and subsequent mating of the RS to the missile. The transfer is done by obtaining the signature of the supervisor and entering the required data on the transfer document.
3. Receives the original transfer document after the RS mate is completed and the missile combat crew commander (MCCC) who accepts the RS signs it. Annotates the date returned on the control register and files the document in the active file.

The transporting and mating supervisor

For RS custody transfers, the transporting and mating supervisor performs the following duties:

1. The transporting supervisor receives all AF Forms 504 from the RS/RV TC and accepts custody by signing and entering other required data on the transfer document.
2. Upon transport, the transporting supervisor transfers custody to the mating supervisor, if applicable.

3. The mating supervisor obtains verification of missile and warhead status from launch facility, after the RS is placed on alert.
4. The mating supervisor enters RS location, name of the MCCC or deputy missile combat crew commander (DMCCC), date, and time of transfer on the original transfer document.
5. The mating supervisor returns the completed weapons custody transfer document (original) to the missile maintenance operations center (MMOC) for the MCCC or DMCCC to sign.

The MCCC or DMCCC on duty

The MCCC or DMCCC reports to the MMOC to sign the original transfer document after returning from missile alert duty.

NOTE: Download of a RS is virtually the same in reverse order.

ICBM RS swap between launch facilities

The typical flow of events and individual responsibilities for a missile warhead swap between launch facilities are covered in the following paragraphs.

The MASO

For a missile warhead swap on alert status between launch facilities, the MASO does the following:

1. Prepares an original and one copy of AF Form 504, leaving the individual signature blocks blank. Establishes control of the document by annotating the control register using an AF Form 3126 or local equivalent.
2. Verifies the RS serial number with missile combat crew (MCC).
3. Gives the AF Form 504 (original) to the demating or transporting TC.
4. On return of transfer document from MMOC (no later than the next duty day), places the original in the active file and destroys the suspense copy.

The demating and transporting team chief

The demating and transporting TC has the following duties for a missile warhead swap on alert status between launch facilities:

1. Upon demate, the demating TC contacts MCC to confirm RS serial number.
2. The demating TC enters the name of the MCCC or DMCCC, position, organization, date, time, and location on AF Form 504 (original) on removal of the RS from the launch facility.
3. The demating TC performs a visual verification to ensure the information on the AF Form 504 matches the serial number of the RS.
4. On transport, the demating TC transfers custody to the transporting supervisor, if applicable.

The mating team chief

For a missile warhead swap between launch facilities, the duties of the mating TC are as follows:

1. Before lowering the RS onto the missile, the transport TC and mate TC perform visual verification to ensure the information on the AF Form 504 matches the serial number of the RS.
2. Upon completion, contacts MCC to confirm RS serial number.
3. Enters on the AF Form 504 the location, organization, time, date, name, and position of the MCCC or DMCCC.
4. Returns completed weapons custody transfer document (original) to the MMOC.

The MCCC or DMCCC

The MCCC or DMCCC on duty releases or accepts custody of each RS demated or mated during the shift by annotating the date, time, launch facility number, and name of the mating/demating TC on AF Form 504. They send a facsimile (FAX) to the MASO. Once off alert duty, the MCCC or DMCCC signing the FAX AF Form 504, must report to the MMOC and sign the original AF Form 504.

Tracking weapons mated to/from multiple carriage launch gear during transfer to/from combat aircraft

In addition to AF Form 504 procedures, weapon status and location are tracked carefully by various agencies during loading operations or exercises (i.e., munitions control, wing operations, maintenance operation center, and command post). Security is paramount to ensure weapons are delivered to the flight line and returned to storage without incident. We do not discuss United States Air Forces in Europe (USAFE) procedures in this lesson.

Transporting and uploading weapons to combat aircraft

The MASO prepares an AF Form 504 for each launcher/pylon configuration in three copies for the weapon movement based on mission tasking. The MASO retains copy 3 for suspense and give copies 1 and 2 to the transport driver.

Upon entering the structure, the MASO verifies the pylon/launcher, missile(s), bomb(s), and/or warhead(s) serial numbers against the AF Form 504, as applicable, and annotates the first line of Block 6 on the custody transfer document. With the MASO, the transport driver conducts the same verification and annotates the next line of Block 6, taking custody of the package.

Before transporting the weapons, the driver confirms the delivery destination with munitions control. When the weapons are delivered to an aircraft, the driver marks the aircraft tail number on the AF Form 504 and transfers custody to the aircraft SVA. When the weapons are uploaded, the munitions expeditor takes copy 2 of the AF Form 504 and returns it to the MASO. Copy 1, with all original signatures, stays with the package until the weapons are returned to storage. Upon notification that the aircraft has been placed on alert, prepare a MAR in DIAMONDS to reflect in-hand status of weapons and forward it to the MASO.

NOTE: The download process is basically the same, except in reverse order.

Relocating, deploying, or dispersing combat aircraft loaded with nuclear weapons

Munitions control must continually monitor the status and location of combat aircraft when they are loaded with nuclear weapons. If aircraft are relocated to another parking location on base, update the location on appropriate status boards or in any automated tracking system(s). If nuclear loaded aircraft are deployed or dispersed, prepare a MAR showing an in-hand shipment to the deployed or dispersed location and forward it to the MASO.

If deployed or dispersed aircraft are returned to home station, ascertain from the aircraft commander if any changes to the aircraft load configuration occurred while it was away from home station. Arrange for MASO verification of the new configuration and prepare a MAR showing in-hand receipt for weapons returned to home station.

Weapons recertification and document disposition

Before the weapons can be loaded to another aircraft after they are downloaded, they must be recertified. Recertified means the weapons must be checked out and verified that they are still operational, safe, and have no major discrepancies (per the technical manuals).

The weapons maintenance shop holds the work order until they complete recertification of the weapon. After completing recertification action, they notify munitions control. The weapons maintenance shop sends copy 1 of the work order to munitions control as they complete action.

Munitions control performs necessary verification of the documentation for any follow-on scheduling, location changes, serial number status, or other required actions. If the weapons maintenance shop notes no discrepancies, remove copy 1 of the delivery work order from the suspense file. Destroy both the delivery and return work orders.

Missile/bomb and pylon/launcher to/from combat aircraft

We use the typical procedures to track nuclear weapons mated to launch gear transfer to and from combat aircraft. Multiple carriage launch gear for nuclear weapons are rotary launcher assembly (RLA) for B-2 bombers and common strategic rotary launcher (CSRL) and SUU-67 pylons for B-52 bombers.

Preparing, using, and certifying manual nuclear weapons configuration records

The manual nuclear weapons configuration record is commonly referred to as the “buildup” sheet. When building up pylons and launchers, prepare a buildup sheet to reflect the association of warhead serial numbers to air launched missiles and the built-up missiles or bombs with the pylon or launcher. The maintenance TC responsible for final assembly must prepare and sign the buildup sheet for (as a minimum) all nuclear weapons related materiel (NWRM) and replaced parts/components. A bay chief or above must physically verify the serial numbers and configuration and certify doing so by signing the buildup sheet. The TC and certifying individual must both initial beside any changes to the sheet. This certified document becomes the source document for tracking the location of those weapons during aircraft generation, alert, and return to the WSA.

Use the buildup sheet only as the source document to establish the configuration of the pylon or launcher. If reportable changes occurred because of the buildup, prepare a MAR to report those changes. Forward the original of the certified buildup sheet (and MAR, if applicable) to the MASO. Maintain a copy of the certified buildup sheet in munitions control.

Swap of a single missile on a pylon or launcher or a single bomb on loaded combat aircraft

For a swap of a single missile on a pylon or launcher or a single bomb on a loaded combat aircraft, use the original AF Form 504 as the controlling document. Prepare a separate AF Form 504 for the missile, warhead, or bomb going to the pylon or launcher, and another AF Form 504 for the missile, warhead, or bomb being removed. Both forms must contain standard entries with different document control numbers and appropriate warhead or bomb serial numbers.

Reference the original document control number of the AF Form 504 being held in suspense on each AF Form 504 prepared for the swap. At the time mating is completed, annotate the configuration change on the original AF Form 504 and return the other AF Forms 504 to the MASO. Prepare an updated certified buildup sheet. Forward the original of the updated buildup sheet to the MASO and a copy to munitions control.

Munitions control posts changes and cross-references the applicable work order movement documents to the original so it shows the current status of the load at all times. File the work orders and the copy of the updated buildup sheet with the original upload suspense paperwork until the weapons package is downloaded, returned, and recertified.

If the swap occurred after the aircraft assumed alert, prepare a MAR showing applicable in-hand or on-hand changes for the swapped warheads or bombs, and forward it to the MASO.

As you can see, custody transfer is a very serious transaction; therefore, you must maintain a very clear custody trail. This is to ensure that someone is in control of the weapon at all times.

006. Shipment of materiel

When shipping nuclear weapons and components, you must be familiar with the governing directives to plan the entire movement operation. Each location/base develops local directives and operation

plans (OPLAN) to cover procedures for shipping weapons. We cover specific transportation and handling operations later.

General guidelines

The following is a quick reference of selected publications and their use in shipping nuclear weapons assets.

AFMAN 13-526, Nuclear Airlift Operations

This instruction explains policy and prescribes procedures for nuclear airlift aircrew and base nuclear shipment agencies.

11N-45-51-series technical orders

Use the 11N-45-51-series publications for all shipments of nuclear weapons materiel by military air, truck, trailer, or contracted air. These publications include specific and general transportation procedures, courier responsibilities, and documentation/custody transfer requirements. You will find a lot of the information needed to prepare for shipments in these TOs:

- 11N-45-51, *Transportation of Nuclear Weapons Materiel, General Shipping and Limited Life Component (LLC) Data*. This basic manual provides general guidelines for all items.
- 11N-45-51A, *Transportation of Nuclear Weapons (Supplement), Shipping and Identification Data for Stockpile Major Assemblies*, contains descriptive data for nuclear assets.
- 11N-45-51B, *Transportation of Nuclear Weapons Materiel (Supplement), Loading and Unloading Flatbed Truck or Tractor Trailer, Safeguards Transporter (SGT), Limited Life Component (LLC) Truck, Military Air Shipment, and Palletized Cargo*, provides procedures for many transport and tie-down operations.

11N-100-2, Supply Management of Limited Life Components

This *classified* TO provides supply management procedures and instructions for preparing documents for LLC kits.

11N-100-4, Custody, Accountability, and Control of Nuclear Weapons and Nuclear Materiel

This TO contains useful information on accountability, transferring custody, and preparing documents for nuclear weapons shipments.

11N-100-3150, Joint Reporting Structure

This *classified* publication prescribes procedures for reporting nuclear weapon information for all DOD storage and operational custodial units.

Shipments modes and actions required

Since you are involved in various stages of the shipping process, it is important you understand the modes of transportation and some of the actions required for shipping special weapons assets.

Special assignment airlift mission

A special assignment airlift mission (SAAM) is the movement of nuclear and nuclear-related cargo by DOD aircraft. Headquarters Air Mobility Command (AMC) assigns designated aircraft/aircrews to transport nuclear materiel as prescribed by the nuclear ordnance shipping schedule (NOSS). These movements are scheduled each month and require careful planning and coordination.

Logistic movements of nuclear and nuclear-related cargo are directed by the NOSS. The MAJCOM submits a monthly NOSS forecast for airlift requirements to the NCP. The NOSS states requirements for the next month and forecasts weapon shipments for the next 60 and 90 days. NCP coordinates with AMC to set up the movement. AMC plans and operates SAAMs according to the NOSS.

Safeguards transporters

Safeguards transporters (SGT) are modified semitrailers operated by the DOE for highway transit of special nuclear materiel, including nuclear weapons within the United States. The SGT is used primarily to transport nuclear weapons materiel between DOE and DOD locations.

LLC shipment via aircraft

The DOE uses contractor-operated aircraft and DOE couriers for transfer of LLCs between DOE and DOD within the United States.

Notification

DOD locations are notified of a special asset shipment by a SAAM forecast schedule message. Special weapons and components are identified by the NOSS. LLC kits are identified by time-change item schedules. The messages identify the item being shipped. The notification is classified and descriptive data may be expressed as referenced “line numbers” from TO 11N-20-11, *General Firefighting Guidance*, or “item numbers” from TO 11N-45-51A. These line and item numbers translate into specific weapon/component configuration data.

Pre-mission planning

Units are notified of support requirements for air shipments in the form of itinerary messages. When notification arrives that assets are being shipped, various base agencies must be notified of the ground support required for the mission. The nature of the items being shipped, as well as the mode of shipment, dictates the type and amount of support required. Shipments involving LLC kits may not require notifying the same agencies as shipments involving weapons, unless crew rest, refueling, and other ground support are required. The notification message helps determine which agencies need to be notified. Base agencies such as the wing (installation) commander, base operations, security police, maintenance activities, base fuels, fire department, transportation, services, quality assurance, and safety must be notified for ground support. A pre-mission briefing is held to discuss details and requirements. Later you will learn the specific requirements for weapon tie-down and transportation procedures. We discuss only the administrative/accountability procedures here.

Courier transfer

Shipping documents and courier receipts are prepared for shipments. The MASO or designated representative in NARS is responsible for transferring custody and accountability of special weapons assets to the courier. NARS personnel verify the individual’s name, social security number (SSN), and photo (military ID) against either itinerary messages or previously submitted letters of authorization. It is essential that custody transfer be made only to the proper officials. The courier then signs for receipt of the assets from the munitions account and assumes custody and accountability for the items being shipped. The courier makes a visual inspection of the items being shipped and annotates Department of Defense (DD) Form 1911, Materiel Courier Receipt, with comments concerning any defects that were found.

Post actions

Maintenance personnel submit a shipment MAR, listing part numbers, serial numbers, condition, PAL code, association, and so forth. NARS personnel use the MAR to update accountable transactions in the DIAMONDS system and submit a WSR showing the items shipped to another location. Later, we discuss how to process shipments.

Self-Test Questions

After you complete these questions, you may check your answers at the end of the unit.

005. Weapons custody

1. What is *custody*?
2. What is a *custody transfer*?
3. What form do you use when transferring custody of an RS?
4. What does the MASO do first to prepare for transfer custody of an RS to or from alert status?
5. After the RS is placed on the missile and the AF Form 504 is annotated, what does the MCCC or his deputy do?
6. For a missile warhead swap on alert status between launch facilities, who enters the name of the MCCC or DMCCC, date, time, and assigned organization on AF Form 504, on removal of the RS from the launch facility?
7. What form does the MASO use to document a custody transfer to an aircraft?
8. When transporting and uploading a weapon to an alert aircraft, who verifies the weapon serial number on the work order to ensure it matches the serial number of the weapon?
9. After a weapon is delivered to an aircraft, what does the transport driver do?
10. When transporting and uploading weapons, upon notification that the aircraft has been placed on alert, what do you need to do?
11. Who must continually monitor the status and location of combat aircraft when they are loaded with nuclear weapons?

12. What is weapon recertification?
13. When building up pylons and launchers, what document do you prepare to reflect the association of warhead serial numbers to air launched missiles and the built-up missiles or bombs with the pylon or launcher?
14. When doing a single missile or bomb swap on a pylon or launcher, how many AF Forms 504 are needed, and why?

006. Shipment of materiel

1. Match the publication's use in column A with its title in column B. Items in column B are used once.

Column A

- ____ (1) Contains descriptive data for nuclear assets.
- ____ (2) Prescribes procedures for reporting nuclear weapon information for DOD storage and operational units.
- ____ (3) Provides procedures for many transport and tie-down operations.
- ____ (4) Provides procedures and instructions for preparing LLC kit documents.
- ____ (5) Prescribes procedures for nuclear airlift aircrew and base nuclear shipment agencies.
- ____ (6) Contains information on accountability, transferring custody, and preparing weapons shipment documents.

Column B

- a. AFMAN 13-526.
- b. TO 11N-100-3150.
- c. TO 11N-45-51A.
- d. TO 11N-45-51B.
- e. TO 11N-100-2.
- f. TO 11N-100-4.

2. What does the DOE use to transfer LLCs between DOE and DOD within the United States?
3. What items does the NOSS identify?
4. What agencies must be notified of ground support requirements for special weapons shipments?
5. Who is responsible for transferring custody of special weapons assets to the courier?
6. How is verification made to make sure custody is transferred to proper officials?
7. What post actions are required for a special weapons shipment?

1-4. Specific Nuclear Accountability Procedures

In this section, we discuss some specific nuclear accounting procedures. Some of these procedures include requisition, receipt, issue, turn-in, and expenditures of NOCM materiel and BS. We also discuss some forms used to accomplish these procedures. Let us first look at processing shipments.

007. Requisitions and receipts

NARS personnel are responsible for processing requisitions and receipts for spares and specialized assets. Requisitions and receipts for specialized assets involve a few additional requirements due to the classified nature of the items and their mode of transportation.

Requisitions

The requisitioning of BS/MS and WR containers and bolsters is done from the Nuclear Security Campus (NSC). You accomplish this by using the base military supply system (BMSS) Web site or FAX to order necessary items. Order items at a priority no higher than that authorized for the situation; if a lower priority will satisfy the need, use the lower priority. Order items only in the quantities you need. Try to consolidate routine orders to allow more efficient shipping practices and reduce shipping costs (i.e., monthly or quarterly requisitions versus daily or weekly requisitions of the same item).

When requisitioning nuclear weapons materiel, the procedures in TO 11N-100-1, *Supply of Nuclear Weapons Materiel*, and the following guidelines apply:

- If a requisition is made because an issue request from maintenance that cannot be filled from existing stock, prepare AF Form 2005, Issue/Turn-in Document (fig. 1-1).
- Assign a requisition number from the off-base register for each part number ordered and post requisitions to the register at the time requisitions are placed.
- If items are not received or a backorder is not established within time frames shown in the table below, follow up with personnel at NSC to determine status and estimated delivery date. If an established delivery date is unacceptable to meet your mission requirements, coordinate with your MAJCOM to determine the best alternative course of action. The table below shows the delivery time for continental United States (CONUS) and outside the United States (OCONUS).

Nuclear Weapons Materiel Delivery Times		
Requisitions From:	Priority A	Priority B
CONUS	5 Days	10 Days
OCONUS	15 Days	30 Days

- If items are not received by the estimated delivery date for backordered items, continue to follow up (at least every 30 days) until items are delivered or a new estimated delivery date is established.

Unless directed to do so by MAJCOM, NCP, or a UR response, do not requisition the following items:

- DOE major assemblies, LLCs, Group-X kits, and test items.
- TCTO or retrofit kits unless specifically directed by the TCTO or retrofit order.
- Items in excess of authorized levels.
- Individual items to replace unserviceable or damaged items in Group-X kits unless specifically authorized to do so by UR instructions.

- Replacement H1616 containers.
- Replacement parachutes.
- Replacement parts that are the subject of UR until a UR response has been received authorizing their replacement.

Normally, maintenance or support section personnel prepare issue requests using AF Form 2005 (fig. 1-1), or a local equivalent, when certain items are needed. Procedures vary from base to base, NARS monitors may prepare the form and have maintenance or support individuals sign them. Above all, regardless of where the form was initiated, NARS monitors must review the form for accuracy and validity before taking the next step. Once all required information has been verified, whether the item is in stock, NARS personnel order or request the item that's needed.

TRIC		1 2 3		4 5 6		7		A. INSPECTOR, NAME, DATE (TIN)		B. INSPECTOR, NAME-STAMP, DATE (TIN)	
ISU								Robert C. Randolph, T3GT		22 Oct 08 EXT 6-1234	
REQUESTED, TIME & DATE (TIN)										OPC "A"	
STOCK NUMBER		ADDN		ISS/JP		QUANTITY		C.		DOCUMENT NUMBER	
5315011071893		CM		EA		00002				R863WM62964002	
PART NUMBER											
D. PART NUMBER/MGR CODE OR NAME/REMARKS										E. T.O. REFERENCE/TECHNICAL PUBLICATION OR END-ITEM APPLICATION/NEAT	
58313-40174-1										HIN-H5083-4 FIG 5 INDEX 124	
										FOR MHU-196/M TRAILER	
WORK ORDER		SHIP TO		PROJECT		PRI		HIS IN/OUT		UJC	
45 46 47 48 49 50		51 52		53 54 55 56 57 58 59		60 61		62 63 64		65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80	
						05				CZ006T2178WBWD	
G. TIME & DATE OF DELIVERY		H. DELIVERY TIME								J. NOMENCLATURE	
										PINS, LOCKING	
AF 2005, 20080826, V4										PREVIOUS EDITION WILL BE USED	

Figure1-1. Sample, AF Form 2005.

Receipts

Spares are forwarded from NSC to the FK activity through normal transportation or mail channels (Federal Express). You pick these items up from the base TMO or receive them through base distribution. Specialized assets are shipped by courier services by DOE or DOD aircraft.

Authorization

Personnel must be authorized in writing to receipt for nuclear ordnance at each FK account. AFI 21-203 gives a sample letter showing required information and proper format. It also lists several agencies that need a copy of the letter. The wing commander that appoints the MASO signs the letter. The letter must include the following information about individuals authorized to receive and sign for classified property:

- Name and grade.
- Position title.
- Security clearance.
- Date clearance was granted.
- Duty phone number.
- SSN.
- ID card number.
- Citizenship.
- Home phone number.

The letter for NOCM specialized assets requires updating and distribution at least annually, 30 days or more before the current letter expires, or as changes occur. Military members can be certified for

the specific period of military assignment with the organization to avoid re-accomplishing the entire letter to delete an individual. It is important to keep this letter current because couriers use it to identify authorized recipients before transferring custody of the assets. The courier will not turn over custody of the assets unless an individual listed on the letter is present to sign for receipt.

At least semiannually, the MASO exchanges receipt for classification letters with the TMO. Deletions can be made by entering a single line through the deleted entry and having the MASO initial the deletion. Additions require a new letter.

Documentation

The shipper is responsible for completing the various shipping documents that accompany property received at your base. Authorized personnel sign accepting receipt (custody) for NOCM items and route copies of shipping documents as required. A DD Form 1348-1A, Issue Release/Receipt Document, usually accompanies property shipped to a base. Use this form as the receipt document in the posting process and as the audit document in the file. Attach any other documents forwarded from the shipping agency to the DD Form 1348-1A as supporting material and file them in document control file. Process the DD Form 1348-1A or equivalent, as outlined in the table below.

DD Form 1348-1A Process	
Classified Property	Items Containing Source and Special (SS) Nuclear Materiel
<p>Sign item 7 (received by and date) and enter the current date.</p> <p>Return the signed original copy to the shipper for NOCM materiel with a security classification of Secret or higher.</p> <p>Return the signed original copy to the shipper for all reportable items listed in Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3150.04B, <i>Nuclear Weapons Stockpile Logistics Management and Nuclear Weapons Reports under the Joint Reporting Structure</i>, with a security classification of Confidential or higher.</p>	<p>Sign all copies.</p> <p>Retain copy 1.</p> <p>Send copy 2 to shipper's control point.</p> <p>Send copy 3 to receivers control point.</p> <p>Send copy 4 to DTRA.</p> <p>Send copy 5 to shipper.</p>

Process receipt documents for WR, components, and test items according to TO 11N-100-2 and TO 11N-100-4. For items containing DOE source and special (SS) nuclear materiel, also process DOE/NCR Form 741, Nuclear Materiel Transaction Report. This form is not available through the Air Force. Annotate these forms, which accompany nuclear materiel received from the DOE.

Inspecting nuclear materiel upon receipt

After you receive incoming classified property, physically inspect it as soon as practical to verify the identity, quantity, and serial numbers with data shown on the shipping document. Also at this time, look for obvious damage or unusual conditions. Open shipping containers for this verification. Do not disassemble warhead sections, reentry vehicles, or bombs for verification. Satisfy the verification requirement by comparing visible information on the weapon with the accompanying shipping document and the weapon's electronic inspection record card (eIRC). Do *not* open H1616 containers upon receipt; verification of component serial numbers occurs only during unpacking before use. Use the serial numbers on the shipping documents and the containers to report receipt. If you find a discrepancy between the shipping document and the container, contact your MAJCOM and submit a UR. Obtain the internal component data from the DIAMONDS item data report provided with the shipment. Verify accuracy of the information against the LIL and component part numbers from the item TO.

As a post action, maintenance personnel submit a receipt/verification MAR, listing part numbers, serial numbers, condition, PAL code, association, and so forth. Then, NARS personnel use the MAR to update accountable transactions in the DIAMONDS system showing the items “on hand” and submit a WSR to show the items received to the account.

008. Preparing and processing shipping documents

In this lesson, we discuss some of the forms that accompany items being shipped. Always refer to specific TOs, publications, or local directives when completing these documents.

Follow the procedures in TO 11N-45-51-series publications and AFMAN 13-526, *Nuclear Airlift Operations*, for all shipments of nuclear weapons materiel by military air or by DOE truck, trailer, or contracted air. Included are specific and general transportation procedures and courier responsibilities, and documentation and custody transfer requirements. Do not package military spare and BS items together, except in a consolidated shipment where the items are prepackaged separately.

DD Form 1348-1A

The DD Form 1348-1A is the source document (shipping document) governing shipment and transfer actions. Use this form for all shipments. Include standard entries on DD Form 1348-1A or automated product. For LLCs, you will find the item numbers and unit cube in the tables of TO 11N-45-51A and the line numbers in TO 11N-20-11. As mentioned above, TO 11N-100-4 and TO 11N-100-2 contains procedures and distribution information for preparation of DD Form 1348-1A for WR major assemblies, components, and test items. TO 11N-100-2 gives you a sample DD Form 1348-1A with instructions and procedures for shipment of LLCs and kits. TO 11N-100-3150 gives the minimum required entries for reportable items and for LLC shipments.

For MS and BS items, prepare the DD Form 1348-1A according to instructions in AFI 21-203. Place a copy of the shipping document in the suspense file awaiting receipt of a signed copy from the consignee for classified item shipments. Start follow-up action through your MAJCOM if you do not receive the signed copy within 30 days for CONUS or 45 days for OCONUS shipments. Be sure to post the shipment action (decreasing asset balances) to applicable stock records in DIAMONDS.

DD Form 1911

The DD Form 1911 (fig. 1-2) is a standardized certification receipt form for custody transfer of nuclear weapons materiel couriered within the DOD. The shipper prepares the DD Form 1911 as an original and four copies (as a minimum). Local procedures may require additional copies. The form is unclassified when filled in. Do not make any entries that could or would classify the DD Form 1911. Receipts will not be accepted if the name, SSN, and organization are not legible. Keep a signed copy of the DD Form 1911 in the document control file.

MATERIEL COURIER RECEIPT		SHIPPER'S CONTROL/DOCUMENT NO. FV466160940912		PRIVACY ACT STATEMENT	
SHIPPER 7 EMS / LGMWZ DYESS AFB, TX		SUPPLY ACCOUNT NUMBER FV4661		AUTHORITY: 5 U.S.C., Sec 552a(PL 92-579) PRINCIPLE PURPOSES: To provide a receipt for transfer of controlled material. The use of the SSAN is required and is necessary to provide positive identification of the individuals receipting for the material. ROUTINE USES: To document transfer of materiel from a shipper to a courier, courier to courier and/or receiver. DISCLOSURE IS VOLUNTARY: Since the SSN must be used, refusal to provide SSAN may be grounds for action to remove the individual concerned from duties involving the material transferred by use of this form.	
DESTINATION 898 MUNS/LGWMF KIRTLAND AFB NM		SUPPLY ACCOUNT NUMBER FK2365			
I certify by signature that I have received the materiel listed on this form and am aware of the applicable safety and security requirements.				SHIPMENT DESCRIPTION	
				LINE NUMBER	QUANTITY
				SERIAL NUMBERS	REMARKS
SHIPMENT TRANSFERS				123H-12	3 EA
				0001, 0002, 0003	
FIRST	LOCATION OF TRANSFER DYESS AFB, TX	DATE (YR/MO/DAY) 09/04/03	123H-13	1 EA	0001
RECIPIENT'S PRINTED NAME (LAST, FIRST, MI) JAMES, ROBERT E.		ORGAN. OR ACCOUNT NO. DOE/TS D	123H-10	2 EA	0001, 0003
SIGNATURE Robert E. James		SOCIAL SECURITY NUMBER 123-45-6789	456H-4	6 EA	0001, 0002, 0003 0004, 0005, 0007
SECOND	LOCATION OF TRANSFER	DATE (YR/MO/DAY)	N/A	1 EA	N/A
RECIPIENT'S PRINTED NAME (LAST, FIRST, MI)		ORGAN. OR ACCOUNT NO.	N/A	1 EA	N/A
SIGNATURE		SOCIAL SECURITY NUMBER	LAST ITEM		
THIRD	LOCATION OF TRANSFER	DATE (YR/MO/DAY)			
RECIPIENT'S PRINTED NAME (LAST, FIRST, MI)		ORGAN. OR ACCOUNT NO.			
SIGNATURE		SOCIAL SECURITY NUMBER			
FOURTH	LOCATION OF TRANSFER	DATE (YR/MO/DAY)			
RECIPIENT'S PRINTED NAME (LAST, FIRST, MI)		ORGAN. OR ACCOUNT NO.			
SIGNATURE		SOCIAL SECURITY NUMBER			
FIFTH	LOCATION OF TRANSFER	DATE (YR/MO/DAY)			
RECIPIENT'S PRINTED NAME (LAST, FIRST, MI)		ORGAN. OR ACCOUNT NO.			
SIGNATURE		SOCIAL SECURITY NUMBER			

DD FORM 1911, MAY 82

SI965305004

Figure 1-2. Sample, DD Form 1911.

009. Issues, turn-ins, and expenditures

Except for 11N-100-3150 reportable items and their associated containers and bolsters, which are issued or turned in automatically (if required), authorized individuals (NARS monitors) request issue or turn-in of items by phone or in person. Whether or not an item is in stock, a monitor must fill out an AF Form 2005 (as we discussed in an earlier lesson) or a local equivalent. The AF Form 2005 is used when certain items are issued or turned in. Normally, maintenance or support personnel fill out this form. NARS personnel prepare the appropriate issue/turn-in documents for signature by authorized individuals (reparable item custodian) upon issue or turn-in of the property.

You issue/turn in DOE spares repair list (DSRL) items to or from the maintenance section using custody procedures. The designated custodian or alternate must sign these documents.

You issue/turn in unassociated WR containers and bolsters used for routine maintenance (i.e., ones that are not associated to TO 11N-100-3150 reportable items placed in storage) or WR containers and bolsters that are associated to weapons trainers to or from the applicable maintenance section. The designated custodian or alternate must sign these documents.

You need to issue Group-X kits to the weapons maintenance section based on consumption. Normally, you issue the oldest kits first. Do not issue Group-X kits in bulk. Instead, issue Group-X kits on a one-for-one basis per LLC not to exceed the quantity required per weekly maintenance schedule.

You issue expendable non-DSRL BS and MS to authorized maintenance personnel on a consumption basis also. Sometimes you may need to turn in these items. For example, when a mission change eliminates the need for some expendable USAL items stocked in the maintenance section, good supply discipline dictates that you turn in these USAL items or if a UR exhibit needed to be shipped out for examination, you would have to turn it in before shipment. If you must turn in expendable items, use found-on-base (FOB) turn-in procedures. This keeps the audit trail for accountable records (i.e., DIAMONDS or CAS) accurate.

DD Form 1150

Turn in items FOB using DD Form 1150, Request for Issue or Turn-in (fig. 1-3), and FOB turn-in procedures in DIAMONDS. The FOB turn-in program provides the capability to turn in items FOB when the origins can't be determined or to process serviceable or unserviceable items. FOB turn-in is required for any item not currently reflected on the account, but which must be picked up on account to properly establish and maintain accountability or to process the item for shipment. For some items, you must submit a disposition request to NCP before you ship the items. Based on serviceability, post the DD Form 1150 to stock records according to AFI 21-203. The following are some examples of items requiring FOB turn-in:

- DSRL or DOE support equipment items not currently on account but discovered to be on hand.
- Serviceable excess non-DSRL items possessed by maintenance, but that require processing for shipment.
- Non-DSRL items that are UR exhibits and must be shipped out for further examination.

REQUEST FOR ISSUE OR TURN-IN		<input checked="" type="checkbox"/> ISSUE <input type="checkbox"/> TURN-IN		SHEET NO.	NO. OF SHEETS	5. REQUEST NUMBER	
1. FROM: FK1234		6. DATE MATERIEL REQUIRED			7. PRIORITY		
2. TO: Bryan D. Kuhn, Lt Col, USAF		8. VOUCHER NUMBER XXXXXX			9. POSTED		DATE DATE BY
3. ACCOUNTING AND FUNDING DATA							
4. END ITEM IDENTIFICATION	a. NAME AND MANUFACTURER	b. MODEL	c. SERIAL NUMBER		d. PUBLICATION		
ITEM NO. a	STOCK NUMBER, DESCRIPTION, AND CODING OF MATERIEL AND/OR SERVICES b	UNIT OF ISSUE c	QUANTITY e	SUPPLY ACTION f	UNIT PRICE g	TOTAL COST h	
1.	8510-01-651-1324, Cable Assembly, P/N 368512-01	EA	1			0.00	
	S/N 23584					0.00	
						0.00	
	Classified Item					0.00	
						0.00	
						0.00	
					SHEET TOTAL		
					0.00		
*ISSUE - I - Initial; R - Replacement							
TURN-IN - U - Unserviceable; S - Serviceable							
GRAND TOTAL							
10. ISSUE OR TURN-IN OF QUANTITIES IN "QUANTITY" COLUMN IS REQUESTED		DATE	BY	11. RECEIVED QUANTITIES IN "SUPPLY ACTION" COLUMN		DATE	BY
						15 Oct 08	

DD FORM 1150, OCT 57

REPLACES EDITION OF 1 JUL 56 WHICH MAY BE USED

SI02 5305032

Figure 1-3. Sample, DD Form 1150.

For nuclear weapons, components, and LLCs (11N-100-3150 reportable items) use DIAMONDS-generated documents according to procedures in TO 11N-100-4. Prepare issue and turn-in documents using DIAMONDS-generated documents using DD Form 1150. Prepare separate

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documents for each part number. Include the following minimum descriptive data on the DD Form 1150:

- NSN.
- Part number.
- Serial number.
- Quantity.
- Accountable officer's account number.
- Custodian's identity.
- "Classified item."
- Voucher number.

For end items with associated WR containers and bolsters, prepare a separate document according to AFI 21-203 to document custody of the containers and bolsters. For DSRL or non-DSRL BS and MS items and WR container and bolsters, use DIAMONDS-generated documents.

You need to prepare an "expenditure" turn-in document for test items expended during stockpile flight testing or other operational test and evaluation testing. In addition to standard entries, include the following statement in the Remarks block:

I certify that the items listed hereon have been expended while implementing _____ operations order number _____ (or other directive), date _____.

The MASO's signature on the document certifies the expenditure statement.

Post issue and turn-in documents to DIAMONDS or manual (if required) stock records on the date the issue or turn-in is made. Post "expenditure" turn-in documents on the date the expenditure is reported by the MASO. File original documents in the document control files. When custody accounting procedures apply, provide copies of documents to the applicable custodian for his or her records.

Accounting for TCTO and retrofit kits

TCTO and retrofit kits are normally force shipped to units based on quantities of items that the unit possesses requiring the TCTO or retrofit. Issue TCTO and retrofit kits to maintenance using consumption or custody procedures, as applicable, based on whether the TCTO or retrofit requires return of removed items to the vendor. Each week, issue only a sufficient number of kits required to accomplish work scheduled for that week. Issue training TCTO and retrofit kits using consumption and custody procedures, as applicable. Issue extended-level attrition and tool kits, as needed, using custody procedures. Ensure local procedures are established to report the status of the retrofit as required.

Self-Test Questions

After you complete these questions, you may check your answers at the end of the unit.

007. Requisitions and receipts

1. Who is responsible for processing requisitions and receipts for spares and specialized assets?
2. How do you requisition BS/MS WR containers?

3. What form do you use if a requisition is made because of an issue request from maintenance that cannot be filled from existing stock?
4. Whom must you coordinate with if delivery dates are not acceptable for mission needs?
5. Give five examples of items you do not requisition, unless directed by your MAJCOM, the NCP, or a UR response.
6. Who reviews the AF Form 2005 for accuracy?
7. How do you receive spares forwarded from NCP?
8. Who signs the letter authorizing individuals to receipt for nuclear ordnance at each FK account?
9. How often is the letter for NOCM specialized assets updated?
10. Why is it important to keep the authorization letter current?
11. Who is responsible for completing the shipping documents that accompany property received at your base?
12. What form usually accompanies classified property or NOCM assets that are sent to your base?
13. Which TOs give guidance for processing receipt documents for WR major assemblies, components, and test items?
14. How do you inspect incoming classified property after receipt?

15. What items are not disassembled for verification or opened for receipt?
16. What do you do if a discrepancy exists between the shipping document and the container?

008. Preparing and processing shipping documents

1. What form serves as the source document governing shipment and transfer actions?
2. What TOs provide the item numbers, unit cube, and line number for LLCs?
3. What TO provides a sample DD Form 1348-1A for LLC kits?
4. What publication provides instructions for preparing the DD Form 1348-1A for MS and BS?
5. You start follow-up action through your MAJCOM if you have *not* received signed shipping documents within how many days?
6. What is the standardized certification receipt form for custody transfer of nuclear weapons couriered within the DOD?

009. Issues, turn-ins, and expenditures

1. Who prepares the appropriate issue/turn-in documents for signature by authorized individuals (reparable item custodian) upon issue or turn-in of the property?
2. Who signs for issued/turned-in DSRL items or WR containers?
3. How are Group-X kits issued to the weapons maintenance section?
4. What form do you use to turn in FOB items and nuclear weapons, components, and LLCs?

5. What is the *minimum* descriptive data to be entered on a DD Form 1150?
6. What publication do you use to fill out the DD Form 1150 for DSRL or non-DSRL BS and MS items and WR container and bolsters?
7. When do you need to prepare an “expenditure” turn-in document?
8. When do you post issue and turn-in documents to DIAMONDS or manual (if required) stock records?
9. Where do you file original documents?
10. How are TCTO and retrofit kits issued to maintenance?

Answers to Self-Test Questions

001

1. AFI 21-203.
2. MS and BS.
3. The Air Force.
4. Maintaining and repairing WR nuclear weapons and DOE-owned equipment.
5. Reparable items are larger BS, capable of being refurbished for continued use. USAL items are specialized, DOE-designed nuts; bolts; or other expendable parts, similar to bench stock.
6. FK designates *manual supply account* in the nuclear weapons community maintained by the nuclear MASO and NARS. FV designates a *conventional munitions account* maintained within CAS-B.
7. Munitions account records of transactions involving property in the account (primarily assets received, stored, issued, or shipped).
8. It is the first six positions of the document number.
9. Expendable status, level of repair, and cost category.
10. X for expendable and N for nonexpendable.
11. These items have a materiel management code “CM.”
12. Classified and unclassified.
13. NCP.
14. To avoid transportation expenses, provide more timely support to maintenance organizations, and maintain weapons in operational status.
15. AF Form 2005 or the designated local form replacement.

002

1. (1) a.
 (2) d.
 (3) f.
 (4) b.
 (5) d.
 (6) f.
 (7) g.
 (8) e.
 (9) f.
 (10) a.
 (11) c.
 (12) b.
2. At least semiannually.

003

1. The type of inventory being performed and your shop's designated responsibilities.
2. SIR and SEV.
3. An independent blind inventory that reports the status, location, and configuration of the nuclear weapon stockpile by serial number and quantity for each location.
4. President, SecDef, and Join Staff; to promptly verify all or selected portions of the DOD stockpile of nuclear weapons are indeed in possession of authorized DOD agents.
5. An extract from the DOD stockpile database showing a unit's nuclear assets by serial number.
6. By sending a FLASH or IMMEDIATE message containing SEV parameters through the NMCC to DTRA, commanders, and services.
7. Compare weapon serial numbers from your unit accountable records against the WCL.
8. Immediately after phase I is completed.
9. A physical serial number verification of weapons with accountable records and with the WCL provided by DTRA.
10. The integration of DTRA's nuclear stockpile management information systems. It provides standard automated programs and procedures for all DOD services to facilitate TO 11N-100-3150 reporting requirements.
11. (1) Publications (currently the JNWPS).
 (2) Unsatisfactory reporting.
 (3) Unit level stockpile accounting and reporting.
 (4) Stockpile tracking and reporting.
 (5) Logistics.
 (6) Maintenance, bay/facility data entry and distribution IRCs, WIRs, etc.
 (7) Decision support and forecasting.
12. MAR.

004

1. DTRA; four parts.
2. Charge code, location code, weapon code, serial number, alteration code, operational status code, and overall total.
3. All uninstalled LLC data.

4. Accountable and reportable items by OUIIC and operational status by location code, weapon code, and serial number.
5. To keep track of nuclear weapon and component inventories at their locations and also to determine and schedule necessary maintenance.
6. NARS representatives; within 5 days of receipt.
7.
 - (1) LLC exchange.
 - (2) Shipment.
 - (3) Receipt.
 - (4) ALT code change.
 - (5) Operation status changes.
8. To schedule maintenance, with other inventory records when an actual or exercise SEV occurs, and to reconcile the DIAMONDS database during the SIR.

005

1. The responsibility for the control, transfer, and movement of, and access to, nuclear weapons and components.
2. Taking control of a weapon from another individual or relinquishing control of the weapon to another person.
3. AF Form 504.
4. Prepare an original and one copy of AF Form 504, annotate the names on the document at the time of transfer, and establish control of the document by annotating the control register using an AF Form 3126 or locally produced equivalent.
5. Reports to the MMOC to sign the original transfer document after returning from missile alert duty.
6. The demating TC.
7. AF Form 504.
8. The MASO and the transport driver.
9. Marks the aircraft tail number on the AF Form 504 and transfers custody to the aircraft SVA.
10. Prepare a MAR to reflect the in-hand status of weapons and forward it to the MASO.
11. Munitions control.
12. The weapons must be checked out and verified they are still operational, safe, and have no major discrepancies (per the technical manuals).
13. Manual nuclear weapons configuration record or a buildup sheet.
14. Two; one for the missile or bomb being uploaded and one for the one being downloaded.

006

1.
 - (1) c.
 - (2) b.
 - (3) d.
 - (4) e.
 - (5) a.
 - (6) f.
2. Contractor-operated aircraft and DOE couriers.
3. Special weapons and components.
4. Wing (installation) commander, base operations, security police, maintenance activities, base fuels, fire department, transportation, services, and safety.
5. The MASO or designated representative in NARS.
6. By verifying the individual's name, SSN, and photo (military ID) against either itinerary messages or previously submitted letters of authorization.

7. Maintenance personnel submit a shipment MAR that is used to update accountable transactions in DIAMONDS. A WSR is submitted, showing the items shipped to another location.

007

1. NARS personnel.
2. The BMSS Web site or FAX.
3. AF Form 2005.
4. MAJCOM.
5.
 - (1) DOE major assemblies, LLC kits, Group-X kits, and test items.
 - (2) TCTO or retrofit kits unless specifically directed by the TCTO or retrofit order.
 - (3) Items in excess of authorized levels.
 - (4) Individual items to replace unserviceable or damaged items in Group-X kits unless specifically authorized to do so by UR instructions.
 - (5) Replacement H1616 containers.
 - (6) Replacement parachutes.
 - (7) Replacement parts that are the subject of UR until a UR response has been received authorizing their replacement.
6. NARS monitors.
7. By picking them up from the base TMO or through base distribution.
8. The wing commander.
9. At least annually, 30 days or more before expiration of the current letter, or as changes occur.
10. Because couriers use it to identify authorized recipients before transferring custody of the assets. They will not turn over custody of the assets unless an individual listed on the letter is present to sign for receipt.
11. The shipper.
12. DD Form 1348-1A.
13. TOs 11N-100-2 and 11N-100-4.
14. Physically verify the identity, quantity, and serial numbers with data shown on the shipping document. Also, look for obvious damage or unusual conditions. Open shipping containers for this verification.
15. Warhead sections, reentry vehicles, and bombs are not disassembled for verification; H1616 containers are not opened for receipt.
16. Contact MAJCOM and submit a UR.

008

1. DD Form 1348-1A.
2. TO 11N-45-51A for the item number and unit cube; TO 11N-20-11 for the line number.
3. TO 11N-100-2.
4. AFI 21-203.
5. 30 days for CONUS and 45 days for OCONUS.
6. DD Form 1911.

009

1. NARS personnel.
2. The designated custodian or alternate in the applicable maintenance section.
3. On a consumption basis or on a one-for-one basis per LLC not to exceed the quantity required per weekly maintenance schedule.
4. DD Form 1150.
5. NSN, part number, serial number, quantity, accountable officer's account number, custodian's identity, "classified item," and voucher number.

6. AFI 21-203.
7. When items are expended during stockpile flight-testing or other operational test and evaluation testing.
8. On the date the issue or turn-in is made.
9. Document control files.
10. Using consumption or custody procedures based on whether the TCTO or retrofit requires return of removed items to the vendor and each week, issue only a sufficient number of kits required to accomplish work scheduled for that week.

Do the unit review exercises before going to the next unit.

Unit Review Exercises

Note to Student: Consider all choices carefully, select the *best* answer to each question, and *circle* the corresponding letter. When you have completed all unit review exercises, transfer your answers to the Field-Scoring Answer Sheet.

Do not return your answer sheet to the Air Force Career Development Academy (AFCDA).

1. (001) Nuclear items are identified by the materiel management code
 - a. "CM" (nuclear ordnance material) prefixed to the national stock number (NSN).
 - b. "CM" suffixed to the NSN.
 - c. "NM" (nonexplosive material) suffixed to the NSN.
 - d. "NM" prefixed to the NSN.
2. (001) Which parts or components are funded, procured, and owned by the Air Force?
 - a. Base spares.
 - b. Military spares.
 - c. Department of Energy (DOE) spares.
 - d. Major command (MAJCOM) spares.
3. (001) Which parts or components are furnished to the Air Force but remain the property of Department of Energy (DOE) regardless of custody?
 - a. Weapon storage vaults.
 - b. Clip-in assemblies.
 - c. Practice bombs.
 - d. Group-X kits.
4. (001) The "X" in the expendability, recoverability, reparability category (ERRC) code "XB3" means the item is
 - a. expendable.
 - b. nonexpendable.
 - c. repairable.
 - d. nonrepairable.
5. (001) What agency manages and controls the unit spares authorization list items?
 - a. Nuclear Control Point.
 - b. Nuclear Certification Division.
 - c. Nuclear Systems Integration Branch.
 - d. San Antonio Air Logistics Service Center.
6. (001) If units require a change to authorized unit spares authorization list levels, they submit changes to the
 - a. Nuclear Weapons Center.
 - b. Department of Defense.
 - c. Department of Energy.
 - d. Major command.
7. (002) Who develops and publishes local procedures to ensure proper control, protection, accountability, and reporting of weapons, major assemblies, and related components?
 - a. Munitions accountable systems officer (MASO).
 - b. Maintenance superintendent.
 - c. Senior technical advisor.
 - d. Unit commander.

8. (003) Which procedure is *not* performed during the stockpile emergency verification (SEV)?
 - a. Physical serial number verification.
 - b. Inventory of saddlebags and accessories.
 - c. Reconciliation with the weapons custody list.
 - d. Physical weapon count with accountable records.
9. (003) Phase I actions of a stockpile emergency verification (SEV) can be a physical verification or
 - a. a records check verification.
 - b. a handling gear verification.
 - c. an associated equipment check.
 - d. an unassociated equipment check.
10. (004) How often does the Defense Threat Reduction Agency (DTRA) provide field units location inventory listings?
 - a. Weekly.
 - b. Monthly.
 - c. Annually.
 - d. Biannually.
11. (004) The location inventory listing (LIL) is extracted from the consolidated nuclear weapons database at
 - a. Headquarters United States Air Force (HQ USAF).
 - b. the Nuclear Control Point (NCP).
 - c. Defense Threat Reduction Agency (DTRA).
 - d. the major command (MAJCOM).
12. (004) Which actions do *not* require you to update the location inventory listing (LIL)?
 - a. Receipt.
 - b. Shipment.
 - c. Parachute replacement.
 - d. Limited life component exchange (LLCE).
13. (005) Who has *temporary* custody of the weapons and grants access to the immediate area where the weapons are located?
 - a. Anyone in the weapons storage area.
 - b. Weapons transfer agent.
 - c. Weapon load supervisor.
 - d. Sole vouching authority (SVA).
14. (005) Taking control of a weapon from another individual or relinquishing control of the weapon to another person is known as
 - a. custody transfer.
 - b. custody recontrol.
 - c. command and control.
 - d. command relinquishment.
15. (005) What form does the transporting and mating supervisor sign to accept custody of a Minuteman III reentry system (RS)?
 - a. A locally created automated product.
 - b. Air Force (AF) Form 525, Records Disposition Recommendation.
 - c. Air Force Technical Order (AFTO) Form 359, Maintenance Data Collection Record.
 - d. AF Form 504, Weapons Custody Transfer Document.

16. (005) For reentry system (RS) custody transfer, who prepares an original and one copy of the Air Force (AF) Form 504, Weapons Custody Transfer Document, leaving the individual signature blocks blank?
 - a. Munitions accountable systems officer (MASO).
 - b. Deputy launch commander.
 - c. Breakout crew chief.
 - d. Launch commander.
17. (005) After delivering the weapons to the alert aircraft, what does the driver mark on the work order?
 - a. The trailer serial number.
 - b. The aircraft tail number.
 - c. The words "Mission Completed."
 - d. The words "Complied With."
18. (005) What must you do after a weapon is uploaded and notification is received that the aircraft has been placed on alert to reflect in-hand status?
 - a. Fill-out work order.
 - b. Prepare a maintenance activity report (MAR).
 - c. Prepare a Department of Defense (DD) Form 369, Police Record Check.
 - d. Annotate the Air Force (AF) Form 244, Industrial/Support Equipment Record.
19. (005) What must be done to nuclear weapons before they can be loaded to another aircraft after they are downloaded?
 - a. Recertified.
 - b. Revitalized.
 - c. Inventoried.
 - d. Accounted for.
20. (005) The maintenance team chief responsible for final assembly must prepare and sign the buildup sheet. Who *must* physically verify the serial numbers and configuration and certify them by signing the buildup sheet?
 - a. Any noncommissioned officer (NCO).
 - b. Bay chief or above.
 - c. Knowledgeable NCO.
 - d. Munitions operations.
21. (006) Who submits monthly nuclear ordnance shipping schedule (NOSS) forecasts to the Nuclear Control Point (NCP)?
 - a. Defense Threat Reduction Agency (DTRA).
 - b. Department of Energy (DOE).
 - c. Joint Chiefs of Staff (JCS).
 - d. Major commands (MAJCOM).
22. (006) Specific weapon and descriptive data are referenced in the shipping message by line numbers from technical order (TO) 11N-20-11, *General Firefighting Guidance*, and by
 - a. item numbers from TO 11N-45-51A, *Transportation of Nuclear Weapons (Supplement), Shipping and Identification Data for Stockpile Major Assemblies*.
 - b. configuration numbers from TO 11N-100-4, *Custody, Accountability, and Control of Nuclear Weapons and Nuclear Materiel*.
 - c. serial number only, so the notification is *not* classified.
 - d. both weapon type and serial number, which classifies the notification.

23. (006) Which document do we use to update accountable transactions in Defense Integration and Management of Nuclear Data Systems (DIAMONDS)?
- a. Maintenance activity report (MAR).
 - b. Weapons information report (WIR).
 - c. Electronic inspection record card (eIRC).
 - d. Weapon status report (WSR).
24. (007) If units do *not* receive nuclear ordnance controlled material items by the estimated delivery date for backordered items, the nuclear accountability and reporting section (NARS) follows up with Nuclear Security Campus (NSC) personnel *at least*
- a. daily.
 - b. weekly.
 - c. every 30 days.
 - d. every 45 days.
25. (007) Who processes the Air Force (AF) Form 2005, *Issue/Turn-in Request*?
- a. Flight chief or flight commander.
 - b. Plans and scheduling coordinators.
 - c. Maintenance officer or superintendent.
 - d. Nuclear accountability and reporting section (NARS) monitors.
26. (007) After receiving incoming classified property, when do you physically inspect it?
- a. Within 1 day.
 - b. Within 1 hour.
 - c. As soon as practical.
 - d. By the end of the week.
27. (008) For outside the continental United States (OCONUS) shipments, start follow-up action if you *do not* receive a signed Department of Defense (DD) Form 1348-1A, Issue Release/Receipt Document, within how many days?
- a. 15.
 - b. 30.
 - c. 45.
 - d. 90.
28. (008) Who is responsible for preparing the Department of Defense (DD) Form 1911, Materiel Courier Receipt?
- a. Munitions accountable systems officer.
 - b. Weapon custodian.
 - c. Receiver.
 - d. Shipper.
29. (009) Who signs the Air Force (AF) Form 2005, Issue/Turn-in Request, upon issue or turn-in of property?
- a. Repairable item custodian.
 - b. Maintenance superintendent.
 - c. Noncommissioned officer in charge (NCOIC) weapons support g.
 - d. NCOIC plans and scheduling.

30. (009) Do *not* issue Group-X kits
- a. in bulk.
 - b. one for one.
 - c. on a consumption basis.
 - d. on an amount required for weekly maintenance schedule.
31. (009) What form do you use to turn in items that are found-on-base (FOB)?
- a. Department of Defense (DD) Form 1149, Requisition and Invoice/Shipping Document.
 - b. DD Form 1150, Request for Issue or Turn-in.
 - c. Air Force Technical Order (AFTO) Form 244, Industrial/Support Equipment Record.
 - d. Air Force (AF) Form 2009, Manual Supply Accounting Record.
32. (009) Whose signature certifies the expenditure statement, for test items expended during stockpile flight testing or other operational test and evaluation testing, on expenditure documents?
- a. Wing commander.
 - b. Squadron commander.
 - c. Munitions control.
 - d. Munitions accountable systems officer.

Please read the unit menu for unit 2 and continue ➔

Student Notes

Unit 2. Munitions Handling Trailers and Lift Vehicles

2-1. The 25- and 40-Foot MHU-141/M Trailers	2-1
010. Description of the 25- and 40-foot semitrailers	2-1
011. Description of the MHU-141/M munitions handling trailer	2-6
012. Inspecting the MHU-141/M munitions handling trailer.....	2-9
2-2. MHU-196/M and 204/M Munitions Handling Trailers.....	2-12
013. Description of the MHU-196/204/M munitions handling trailers.....	2-12
014. Operating the MHU-196/M and MHU-204/M munitions handling trailers	2-20
2-3. Lift vehicles	2-30
015. Lift vehicle features	2-30
016. Inspecting lift vehicles	2-35
017. Operating and using lift vehicles	2-36
2-4. Forklifts	2-40
018. Description of forklift	2-40
019. Inspecting and operating forklifts	2-42

THE TRAILERS USED to transport munitions can vary from the flatbed MHU-141/M munitions handling trailer (MHT) to the very sophisticated MHU-196/M MHT. The trailers you use in doing your job depend on your unit's specific mission. Your base may have some or all of the trailers discussed in this unit. Throughout your career in nuclear weapons, you should have the opportunity to work with all of these trailers. This unit describes some common handling trailers and discusses how to inspect and operate them.

No matter what type or model of trailer you use, it must be nuclear certified. Verify the trailer is listed on the United States Air Force (USAF) master nuclear certification list (MNCL) before using it with nuclear weapons. Be sure to pay special attention to any restrictions listed for the trailer, such as maximum towing speeds, load limitations, tie-down points, and transport restrictions.

2-1. The 25- and 40-Foot MHU-141/M Trailers

This section describes the 25- and 40-foot semitrailers to transport gravity weapons and shipping containers and the MHU-141/M munitions handling trailer for temporary storage and transport of weapons.

010. Description of the 25- and 40-foot semitrailers

You use 25- and 40-foot trailers to transport bolstered bombs and warheads packaged in shipping and storage containers. There are many models and manufacturers for trailers. You must perform any inspections according to the specific trailer's TO or commercial manual. Again, do not use a trailer until you verify it is nuclear certified and check whether any restrictions limit its use. This lesson discusses the 7Q1E-10 40-foot, 25-ton semitrailer, one of the many models of trailers you can use (fig. 2-1).

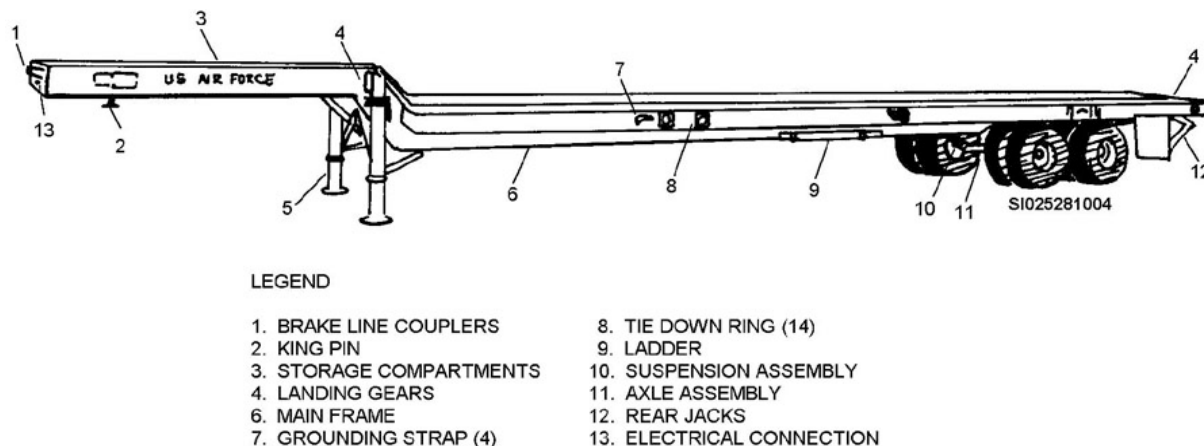


Figure 2-1. 7Q1E-10, 40-foot, 25-ton semitrailer.

Structural components

The 7Q1E-10 semitrailer meets the nuclear surety requirements of AFMAN 91-118, *Safety Design and Evaluation Criteria for Nuclear Weapon Systems*, and meets the nuclear certification requirements listed in the Master Nuclear Certification List. The structural components of the trailer consist of the mainframe, landing gears, and related components.

The main trailer frame is made of high strength alloy steel components welded together to form a unified frame. The trailer bed is made of wood. The suspension system, landing gears, rear jacks, and other miscellaneous components attach to the frame.

The landing gears operate manually and provide support for the trailer when it is disconnected from the tow vehicle. The two landing gears operate simultaneously with the use of one crank handle and have a self-leveling footpad. The landing gears have a static load rating of 140,000 pounds (lb.) and a lifting capacity of 50,000 lb. The king pin is a standard 2-inch (in.) pin that is welded permanently to the trailer frame. You use the king pin to mechanically lock the trailer to a tow vehicle.

You manually operate the two 8-in. screw jacks (mounted at the rear of the trailer) to stabilize the trailer during loading and unloading operations. They deploy and operate separately. Two stepladders provide access to the trailer bed and store under the trailer frame when not in use. Tie-down rings are located along both sides, front, and rear of the trailer frame.

The trailer uses conventional air-operated brake shoe/drum assemblies on both axle assemblies. Double-diaphragm brake air chambers provide air service, parking brakes, and spring-operated parking brakes if there is a loss of air pressure. The trailer has conventional trailer lighting (stop and taillights, turn signals, license plate light, side marker lights, and reflectors) and meets the requirements of Interstate Commerce Commission (ICC) highway regulations. Reel-type grounding cables are located at the front and rear of the trailer and grounding straps are located along each side of the trailer.

Trailer restrictions

The 7Q1E-10 semitrailer bed outer support beams are constructed of “C” channels rather than the normal “I” beams used on most 25- or 40-foot trailers. This construction substantially weakens the 7Q1E-10 semitrailer bed and limits the placement of materials on the trailer. Due to this unique construction, the load is limited to a maximum of 3,500 lb. for every four tie-down points with no tie-down point being used twice. This includes single-stacked or double-stacked configurations.

CAUTION: The overall load cannot exceed the manufacturer’s maximum weight rating of 25 tons (50,000 lb.). Failure to comply with these restrictions could damage the equipment.

Pre- and post-use inspections

You must perform a pre-use inspection on the trailer before loading. Next, perform a visual inspection of the trailer, checking for obvious damage. Repair or arrange repair of any structural damage (i.e., cracked welds or broken mounts) before loading. Inspect the wood on the trailer bed for cracks, loose or missing boards, or any other condition that would prevent the safe loading of a weapon. Also, check for any foreign objects or material. Inspect air service lines and connectors for serviceability (serviceability inspection). Inspect the whole length of the air service lines, which extend from the front of the trailer to the rear axle. Check the tires for serviceability and inspect wheel hubs for the proper oil level. Make sure the lights operate properly and check the reflectors for damage. Perform a post-use inspection when you are finished using the trailer and open-air tank drain valve to drain the moisture from the air tank.

Load/offload truck/tractor and trailer

The loading requirements and procedures contained here are intended to be a general guide. The conditions and equipment vary at different locations, and such variations should be anticipated and latitude is allowed whenever possible. Containers may be loaded onto a flatbed truck or tractor-trailer from a loading dock or loading platform, or they may be loaded with a forklift. When loading from a dock or platform, anchor the ramp between the trailer and the dock or platform to ensure that separation does not occur.

Placing containers

Ensure the cargo is secured to the forklift whenever lifting. For wheeled or non-wheeled containers, a forklift or similar equipment may be used to position on a flatbed truck or tractor-trailer. Slings may be used with a hoist to raise and place containers. Small component containers weighing up to 200 lb. may be manually placed on a flatbed truck or tractor-trailer.

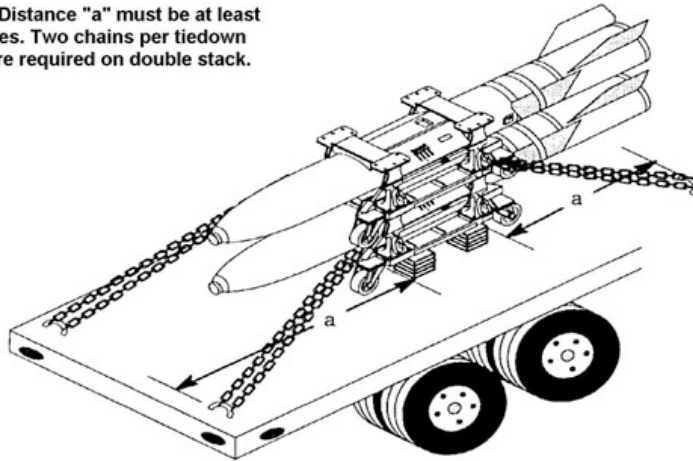
NOTE: The orientation of the front or rear of the container to the front of the flatbed truck or tractor-trailer is optional if proper tie-down pattern and sufficient space between containers are maintained.

Securing containers

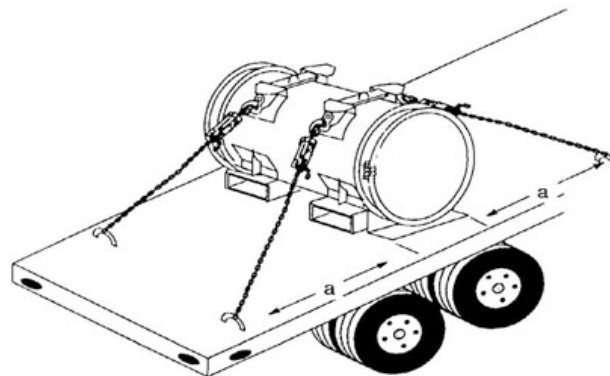
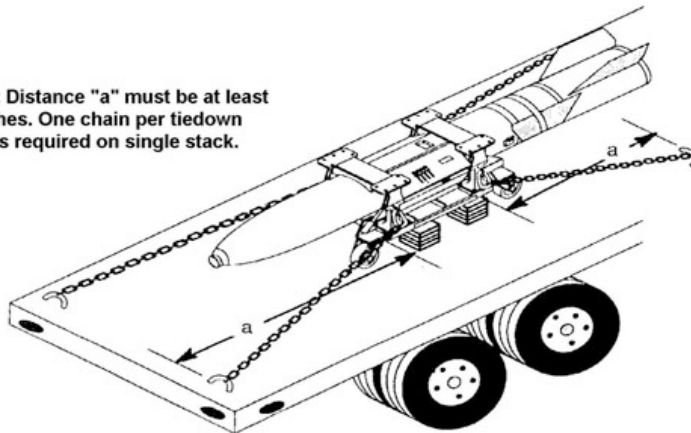
Handling equipment and warhead containers can be transported on 25- or 40-foot flatbed trailers (fig. 2-2). It's a good idea to be familiar with which trailers are available at the logistics readiness squadron (LRS). The trailer you select for transporting weapons must be nuclear certified, be clean, have sound floorboards, and be free from protruding nails. Because conditions and equipment vary at different locations, loading requirements and procedures in 11N-45-51B are intended as a general guide.

NOTE: Nylon tie-down straps have a rated working load of 5,000 lb. As an alternative, two nylon tie-down straps may be used in lieu of each tensioner and chain assembly for single-stacked weapons configuration. Chains *must* be used for all double-stacked weapons configurations.

NOTE: Distance "a" must be at least 24 inches. Two chains per tiedown point are required on double stack.



NOTE: Distance "a" must be at least 18 inches. One chain per tiedown point is required on single stack.



NOTE: Distance "a" must be 12 inches minimum both sides, Maximum vehicle speed 25 mph and MB-1/CGU-4E chains only.

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Figure 2-2. Flatbed tie-down examples.

Unit-per-load restrictions

For the remaining loading procedure, we will be discussing the loading of a bomb in an H1125A bomb cradle on a 40-foot trailer. Normally, you orient the nose of the bomb to face the back of the trailer. Make sure you adhere to the unit-per-load restrictions. This means the maximum number of

units per load must be compatible with the weight carrying capacity of the trailer/truck, the length of the truck/trailer, and the presence of appropriate tie-down points.

Use with bombs

When using a forklift to load a flatbed truck or tractor-trailer from a dock or platform, anchor the ramp so separation does not occur. Depending on the weapon and configuration, you can use a H563 wire rope sling assembly, H1004, or forklift to lift the bomb and hand truck onto the trailer. After the bomb has been positioned on the trailer, place two diagonally opposite casters 90 degrees (°) from the longitudinal centerline of the bolster then lock all four casters.

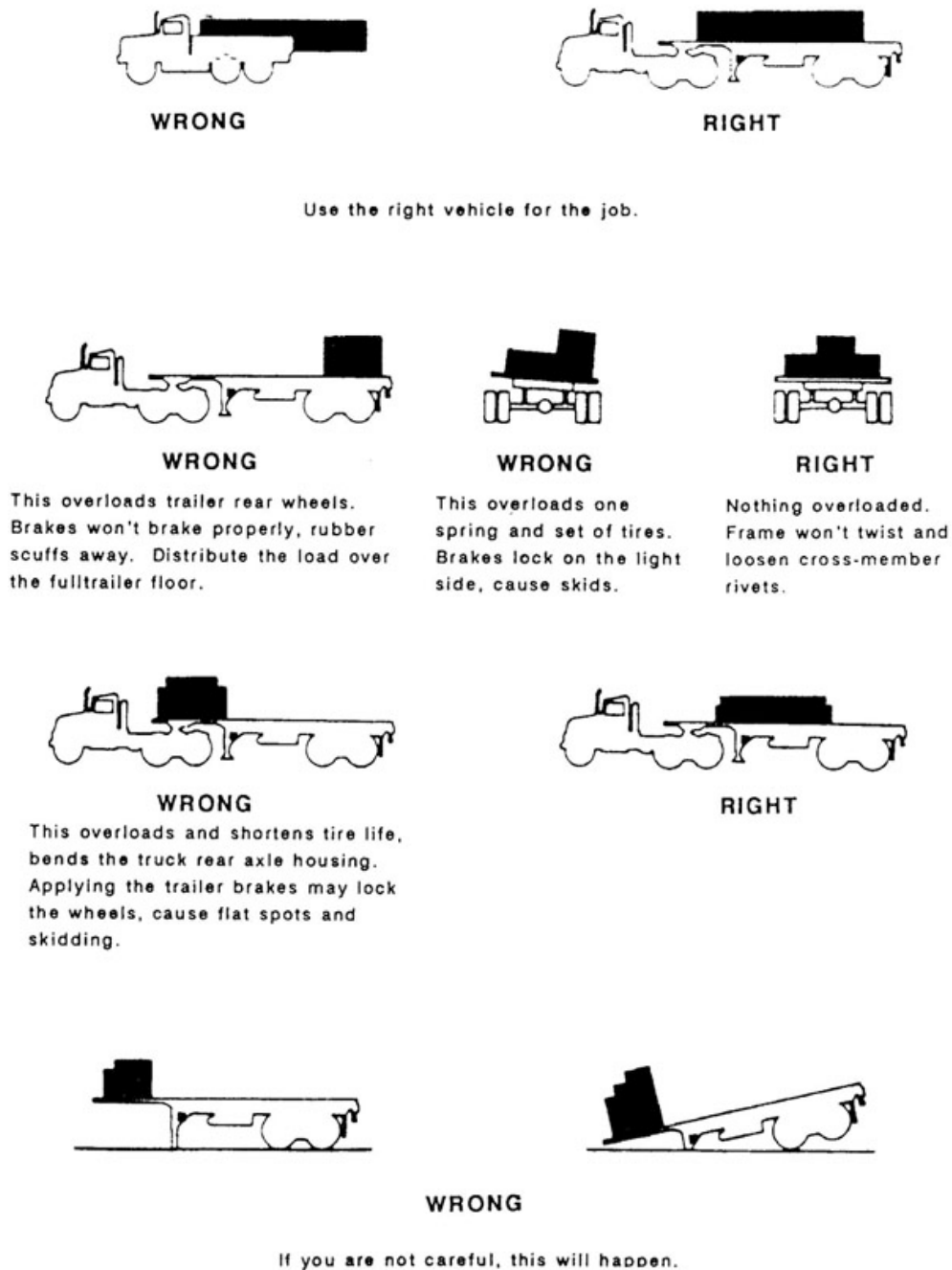
For a double stack of B61s, you may attach and secure the chains to the upper or lower lifting links. Blocking is not required as long as the flatbed truck or tractor-trailer is transported over smooth, on base roads at a speed not to exceed 20 miles per hour (mph).

For a double stack of B83s attach the chains to the lifting links of the upper unit and use blocking to relieve casters of the weight. For B83 single stack, blocking must be used if the transportation speed will exceed 20 mph.

Use with containers

When tying down a shipping and storage container and the tie-down to the trailer interferes with the tensioner assembly or nylon tie-down strap, an additional chain may be attached to the flatbed or trailer tie-down points so it can be used as a tie-down adapter. TO 11N-45-51B shows you the typical tie-down pattern for securing containers to the flatbed or trailer. Several shipping and storage containers require a tensioner assembly or nylon tie-down strap through the forward skid channel to secure the load.

If transporting other cargo, distribute it evenly on the trailer (fig. 2-3). Incorrect cargo distribution can definitely decrease the life of the tires, axles, frame, and other vehicle parts. Incorrect load distribution can also affect how the trailer and tractor handles during operation.



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Figure 2-3. Cargo distribution.

011. Description of the MHU-141/M munitions handling trailer

The MHU-141/M can safely transport loads up to 5,500 lb. (fig. 2-4). This flat-deck trailer provides temporary storage and transportation of both conventional and nuclear munitions. The center section of the deck is hinged and lifts open to provide a hatchway across the full width of the vehicle (fig. 2-5).

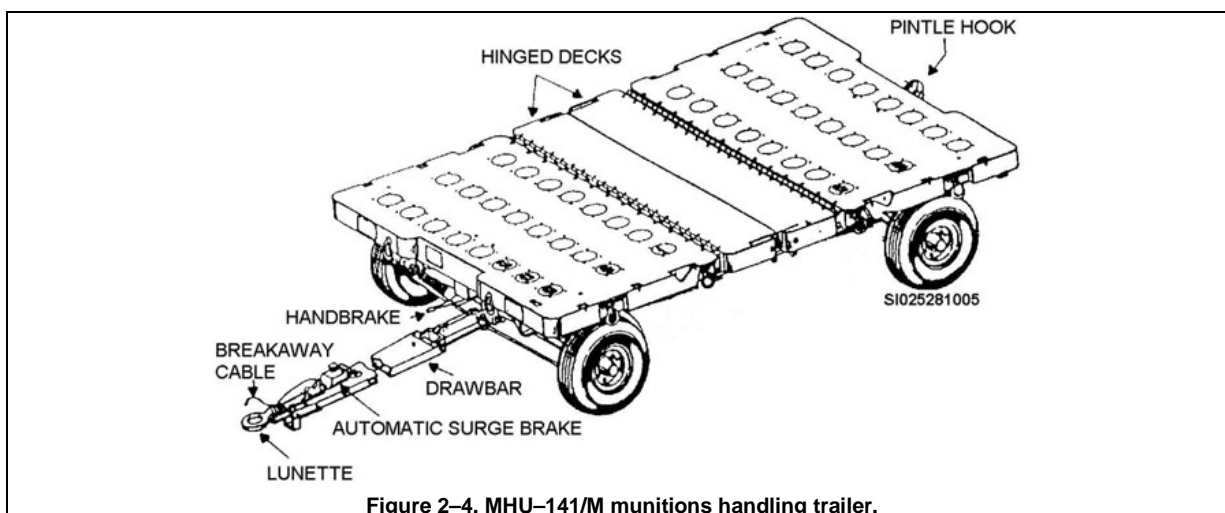


Figure 2-4. MHU-141/M munitions handling trailer.

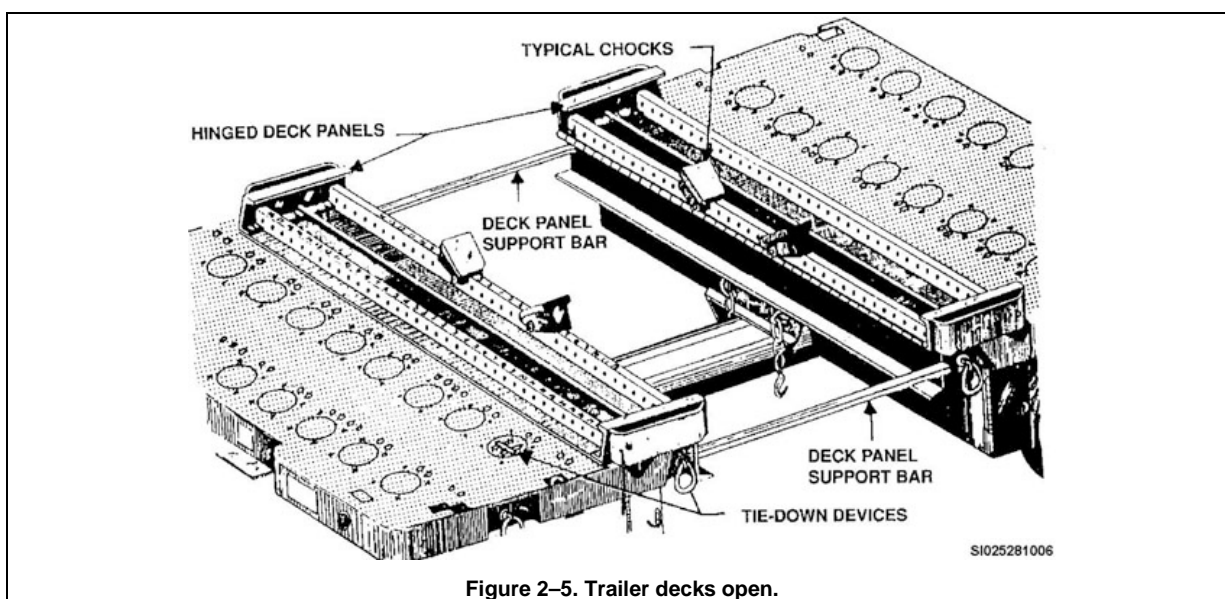


Figure 2-5. Trailer decks open.

Drawbar

A lunette-end (circle end) drawbar connects the trailer to the tow vehicle. The front wheels connect by tie-rod assemblies and spindle and knuckle subassemblies similar to those found in most passenger cars. The entire system connects to the drawbar to ensure good tracking when you tow the trailer. Steering is accomplished by directional movement of the lunette-end of the drawbar. The maximum turning angle of the trailer is 40° with a minimum turning radius of 200 in. See figure 2-6 for maximum towing speeds.

Number	Smooth Surface		Rough Surface	
	Loaded	Unloaded	Loaded	Unloaded
Trailers in Tow				
1	15	20	10	15
2 (max)	10	15	10	10

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Figure 2-6. Maximum towing speeds in mph.

Brakes

The service brake system operates hydraulically. It consists of a master cylinder, four internal expanding brakes (one on each wheel), and associated tubing. The automatic surge brake (mounted on the drawbar) operates the system. The surge brake consists of the lunette and the hydraulic master cylinder (fig. 2-4). When the towing vehicle decelerates, the forward pressure of inertia from the trailer pushes against the drawbar. This pressure compresses the lunette end of the drawbar and operates the hydraulic master cylinder. The master cylinder activates the wheel brakes to slow or stop the trailer, depending on the movement of the towing vehicle.

The drawbar is in line with the master cylinder piston and actuates the piston with a sliding push rod mounted on the drawbar. A pre-load coil spring serves as a hold off to prevent premature, intermittent, or otherwise undesirable brake surges. For example, uneven road surfaces or pitching of the trailer could cause the brakes to activate. The working stroke of the drawbar is about 2 in. Beyond this point, the master cylinder piston bypasses a relief slot, allowing the brakes to release. Brake release allows free backing of the trailer. As an added safety feature, a breakaway cable connects between the surge brake breakaway lever on the trailer and the towing vehicle to stop the trailer in case it accidentally breaks away.

The parking brakes are the standard mechanical automotive type. The handbrake lever (located in the middle of the forward deck) operates the brakes in the two rear wheels.

Trailer deck

The trailer deck (fig. 2-4) is composed of a fore and an aft section. Each section has 24 tie-down devices you can use to secure a load. Also, two D-rings on the sides of each section serve as additional tie-down devices. The main beam forms the framework that supports and attaches the two decks. A pintle hook assembly mounts on the aft deck so you can tow a trailer in tandem. The forward and aft decks have an electrical receptacle to transfer power between the tow vehicle and trailer(s).

Refer back to figure 2-5 and notice the hinged deck panels. The two horizontal frames contain holes so you can mount the chocks. Chocks are held in place by quick-release pins. The bomb's diameter and the specific trailer load determine their placement. You use the numbers above the holes in the two horizontal frames to find the location for the chocks.

When you use the trailer with the deck panels open, you must position the deck panel support bars and lock them in place with the attached quick-release pins. Also, before transporting a load, make sure the support bars are secured between the two decks.

Electrical system

The towing vehicle supplies 12 volts direct current (VDC) through an inter-vehicular cable assembly to a front-mounted electrical connector. This direct current (DC) power operates both stop and tail lamp assemblies and supplies power to the rear-mounted electrical connector.

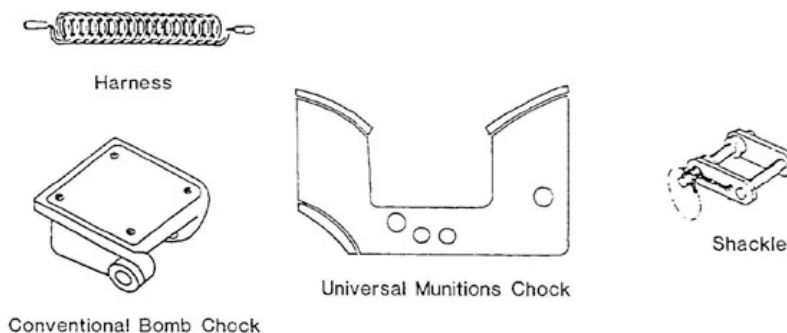
Accessories

Figure 2-7 shows accessories associated with the trailer when it is shipped or received. It also shows optional items available, depending on mission requirements. When not in use, store all accessories in the toolbox mounted at the rear of the trailer.

BASIC TRAILER MHU-141/M REQUIRED ITEMS

When a trailer is shipped or received, it must contain the following items:

- 1 Each, Cable Harness (Intervehicular Harness).
- Either 16 each, Universal Bomb Chocks or 24 each, Conventional Bomb Chocks.
- 8 Each, Shackles.



OPTIONAL ITEMS AVAILABLE FOR THE MHU-141/M TRAILER

Items available for the trailer, depending on mission requirements are:

- 1 Each, M-10 Missile Adapter Assembly.
- 1 Each, Roller Adapter Sliding Assembly.
- 4 Each, Cable Tiedown(s).
- 16 Each, Strap(s), Tiedown.

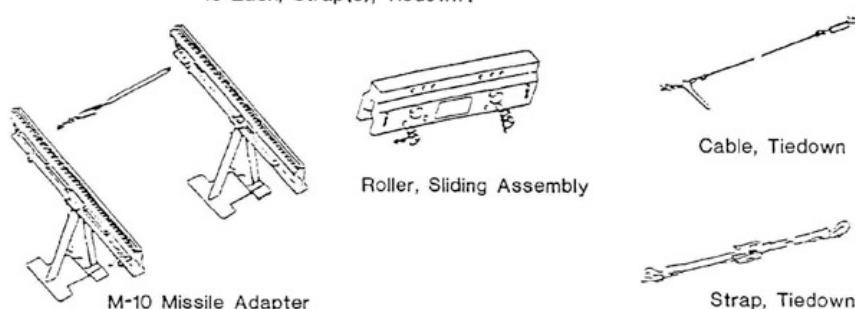


Figure 2-7. Trailer accessories.

012. Inspecting the MHU-141/M munitions handling trailer

You must perform a prior-to-use inspection of the MHU-141/M before using it for any reason. After completing the maintenance task, you must perform a post-use inspection on the trailer. TO 35D3-11-36-6WC-2, *Prior to Use, Operator Inspection, Post Use Munitions Handling Equipment Types MHU 141/M*, contains prior-to-use and post-use inspection requirements for the MHU-141/M.

Prior-to-use inspection

Complete the prior-to-use inspection before loading weapons on the trailer or before towing the trailer (loaded or unloaded). The prior-to-use inspection is a visual inspection. You don't need any special tools or equipment to complete the inspection. You perform this inspection to make sure the trailer is safe to use before loading or towing. First, check the trailer Air Force Technical Order (AFTO) Form 244, Industrial/Support Equipment Record, for any recorded discrepancies. Any discrepancy that affects the safe operation of the trailer must be fixed before you can use the trailer. Record discrepancies you find during your inspection on the AFTO Form 244. Also, make sure no inspections are overdue in Part III of AFTO Form 244.

If you are preparing to tow the trailer, make sure the tow vehicle's pintle hook is between 10 and 30 in. from the ground and the tow vehicle has a point to connect the trailer surge brake breakaway

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cable. This point must be capable of holding the breakaway cable until the surge brake can activate. The connecting point should be next to the pintle hook of the vehicle. Next, make sure all trailer accessories are secure (installed or stored). If weapons are loaded, check for proper tie-down and security. Listed below are some of the items you must perform to complete the inspection. (**NOTE:** You perform them as applicable, depending on whether you are loading or towing the trailer).

1. Position the deck panels and deck panel supports as required.
2. Inspect tires for serviceability. Use TO 1-1A-15, *General Maintenance Instructions for Support Equipment*, chapter 27 for inspection criteria.
3. Make sure the quick-disconnect fitting on the hydraulic flexhose is securely connected to the trailer's drawbar fitting.
4. Check the pintle hook for serviceability and security. Verify the safety pin is properly installed through the pintle hook. No safety pin required if PH 30 pintle hook is used.
5. Make sure the breakaway cable travels freely through the surge brake eyelet and the cable is not kinked. Make sure the eyelet is not crushed or bent down.
6. Inspect the electrical cable connectors for loose or damaged pins before connecting; then attach the breakaway cable to the tow vehicle. Once you connect the electrical cable, make sure the lights operate. Also, check the reflectors for excessive damage.
7. Make sure the handbrake and the automatic brake work properly.
8. Check the top and bottom of the trailer for foreign objects.
9. Visually inspect the trailer rail extender, all accessories, and forward and rear deck panel supports for cracked welds and any other defects.

Annotate on AFTO Form 244 any damage or defects you find during the inspection. If the defect is a safety issue, it must be fixed before you use the trailer.

Post-use inspection

You perform the post-use inspection after you finish towing the trailer. This inspection ensures the trailer was not damaged during the tow operation. First, set the trailer parking brake. Do not set the parking brake during extremely cold weather; chock the trailer wheels instead (non-steering wheels). Once you set the parking brake or position the trailer wheel chocks, disconnect the drawbar and the electrical and breakaway cables. Finally, you must visually inspect the trailer for damage. If you find any damage, record the discrepancies on the trailer AFTO Form 244 and report the damage.

Self-Test Questions

After you complete these questions, you may check your answers at the end of the unit.

010. Description of the 25- and 40-foot semitrailers

1. How do the two landing gears operate on the 7Q1E-10 semitrailer?
2. How do you stabilize the trailer during loading and unloading?
3. Explain the braking system used on the 7Q1E-10 semitrailer.

4. What effect does the “C” channel support beam construction have on the 7Q1E-10 semitrailer?
5. What is the load limit of the 7Q1E-10 semitrailer for every four tie-down points?
6. When performing the trailer pre-use inspection, what do you check?
7. What equipment is used to position smaller wheeled containers on flatbed truck or tractor-trailer?
8. What is the orientation of the container to the flatbed truck or tractor-trailer when proper tie-down patterns and spacing is achieved?
9. How many nylon straps may be used to replace each chain assembly for a double-stacked weapons configuration?
10. What does it mean to ensure adherence to unit-per-load restrictions?
11. Once the bomb hand trucks are placed on the trailer, how are the casters positioned?
12. What effect does incorrect distribution of cargo have on a flatbed trailer?

011. Description of the MHU-141/M munitions handling trailer

1. What is the transport capacity of the MHU-141/M?
2. How does the MHU-141/M steer?
3. Explain how the surge brake system operates to stop the MHU-141/M.
4. How does the breakaway cable act as an added safety feature?

5. What determines chock placement on the horizontal frames?
6. How do you position the panel support bars before transporting a load?
7. Where do you store the MHU-141/M's accessories when you are not using them?

012. Inspecting the MHU-141/M munitions handling trailer

1. When do you complete the prior-to-use inspection on the trailer?
2. What items do you check on the trailer's AFTO Form 244 during the prior-to-use inspection?
3. If towing the trailer, what is the tow vehicle's pintle hook requirement?
4. What TO do you use to inspect the trailer tires for serviceability?
5. What pintle hook assembly part do you check for proper installation?
6. Why do you perform a trailer post-use inspection?

2-2. MHU-196/M and 204/M Munitions Handling Trailers

This section describes the MHU-196/M and the MHU-204/M munitions lift trailers, which we use for temporary storage and transport of weapons on pylons and launchers. This section also covers inspections and procedures you perform before and after using the trailers and explains how to operate the MHTs.

013. Description of the MHU-196/204/M munitions handling trailers

Throughout this lesson, we refer to the MHU-196/M and MHU-204/M as the MHTs. The two MHTs are, basically, the same with only a few differences. We point out these differences as we describe the main components of the MHT.

The MHT is a heavy-duty, U-type frame trailer with a maximum load capacity of 40,000 lb. It transports missiles and gravity bombs mated on launchers or pylons. Approved tow vehicles can only tow the MHT. The MHT needs a 120/208-volt (V), 400-hertz (Hz), 3-phase primary power source to

power all electrical and hydraulic functions. The MHT's frame width adjusts to accept various widths of weapon adapters. Loading and positioning operations are precise with the use of the handheld portable control unit (PCU). The PCU provides 15 operational modes for controlling wheel steering, drive, and load positioning (fig. 2-8). To prevent personnel injury or equipment damage, each mode automatically shuts off when either one of two team members press a remote stop switch or when the dead-man switch is released on the PCU.

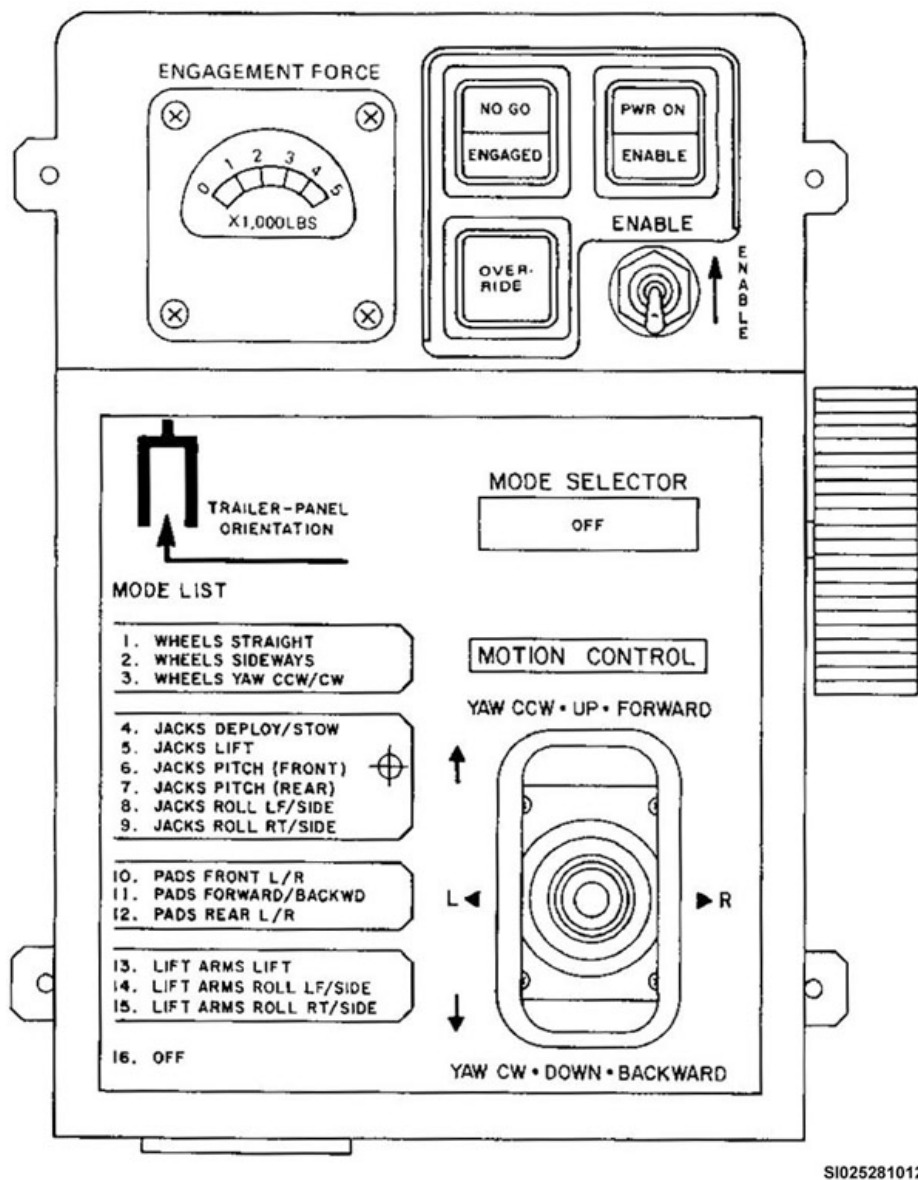
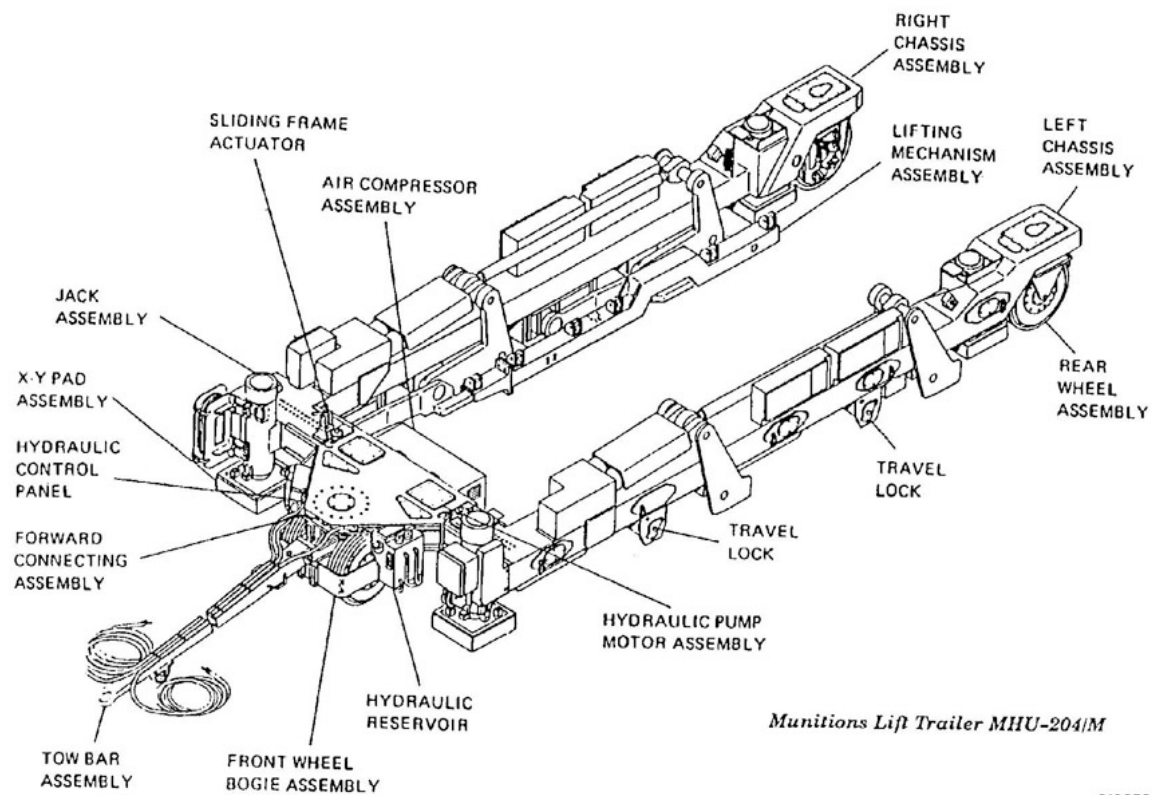
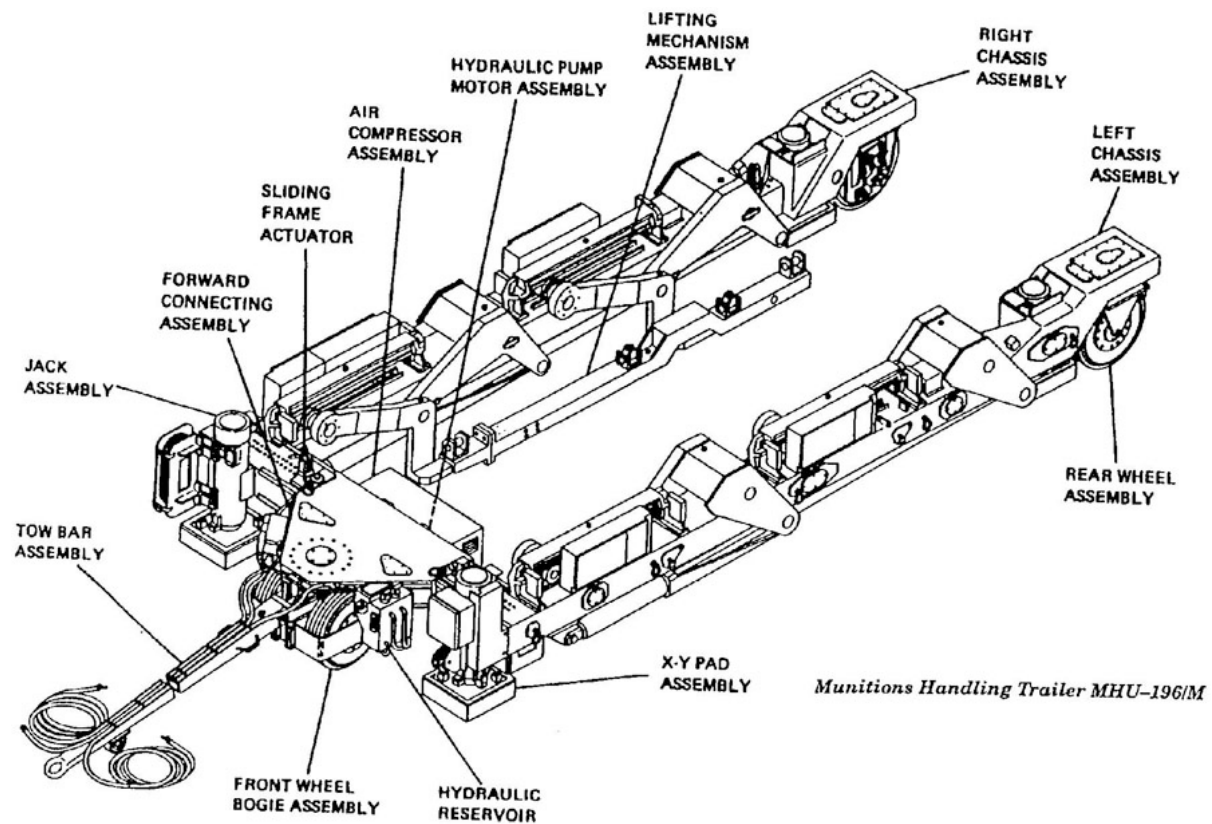


Figure 2-8. Portable control unit.

Chassis assemblies

The left and right chassis assemblies (chassis beams) connect to the forward connecting assembly to form the U-type frame of the MHTs (fig. 2-9). The chassis assemblies form the support structure for various electrical and mechanical components and serve as a housing for electrical cables, hydraulic lines, and pneumatic lines. The width of the frame adjusts for various load adapters by extending or retracting the chassis assemblies. Each chassis assembly has 21 alphabetically coded holes to adjust the frame width.

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Figure 2-9. MHT physical layout.

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Forward connecting assembly

The forward connecting assembly is the connecting point for the chassis assemblies and front wheel bogie assembly. It houses the electrical, hydraulic, mechanical, and pneumatic components of the trailer.

Front wheel bogie assembly

The front wheel bogie assembly is a dual-wheel assembly that contains wheel motors, brake chambers, a rotary actuator, a rotary manifold, pneumatic lines, and hydraulic lines. During towing operations, a fixed mechanical stop limits turns to 45° counterclockwise (CCW) and a retractable stop limits the steering of the front wheel bogie assembly to 45° clockwise (CW). Use the PCU to set the bogie to the straight, sideways, and vertical axis (YAW) positions when operating the MHT. Steering is done using hydraulic pressure inputs to the wheel motors to supply the drive (propulsion).

Tow bar assembly

The tow bar assembly is 10 feet 4½ in. long and weighs 170 lb. Always use at least two people to lift the tow bar. The tow bar tows and steers the MHT. One end of the tow bar connects to the tow vehicle's pintle hook; the other end connects to the front-wheel bogie assembly on the MHT.

Rear-wheel assemblies

The rear-wheel assembly is a single-wheel unit with a wheel motor, a yoke, a brake chamber, pneumatic lines, and hydraulic lines. Manual spring-loaded locking pins mechanically lock the rear wheels into a straight-line position for towing operations. In operation, the rear-wheel assemblies are steerable in wheel sideways mode only. The wheel assemblies are driven in all three-wheel modes.

Jack assembly

Four hydraulically controlled jack assemblies mount onto the MHT chassis assembly. An X-Y pad attaches to the base of each jack assembly. In loading operations, the jacks deploy to place the X-Y pads on the ground, adjusting them to the ground and, thus, leveling the MHT and load. In lifting operations, the jacks are used to lift the MHT and weapons off the ground and to adjust attitude changes in pitch and roll.

X-Y pad assembly

An X-Y pad attaches to a swivel ball on the bottom of each of the four jack assemblies. Hydraulic cylinders within each pad give precise lateral (X) and longitudinal (Y) positioning corrections to the MHT during lifting operations. In operation, the X-Y pads move the MHT as if it were riding on a cushion of air.

Air compressor assembly and braking

The air compressor supplies pneumatic pressure to all brake chambers to release the brakes whenever the MHT is in self-propelled operation. A loaded MHT is capable of holding on an 11.5° slope. It is also capable of stopping within 40 feet at a speed of 20 mph.

Lifting mechanism assemblies

The lift system consists of two mirror image lifting mechanisms mounted on the chassis assemblies. Each lifting mechanism is made up of two trunnions, two bell cranks, two lift arms, two track assemblies, two lift cylinders, a connecting link, and a lift beam. The lift beam raises and lowers by the two lift arms that pivot the lift beam. The lifting mechanisms lift in a vertical straight-line movement and remain parallel to the chassis assembly throughout the entire lift stroke. Simultaneous operation of the lifting mechanisms results in lifting or lowering of the load. Independent operation of either lifting mechanism rolls the load. Retractable travel locks located on the chassis assemblies support the bell cranks during transport. Attaching fittings (on each lift beam) secure the load

adapters to the lift beam. Fixed attaching fittings are located on the right lift beam and pendulum-attaching fittings are located on the left lift beam. Only two attaching fittings per lift beam are used at any time. The forward end of each lift beam has a removable lift beam extension to hold the various load adapter configurations.

Control systems

The MHT has six major control systems: Refer to figure 2-10 for their locations as you read the descriptions of the control systems.

- Main control unit.
- Power control unit.
- Stop switch/portable light storage cabinet.
- PCU storage cabinet.
- PCU cable/pump handle storage cabinet.
- Hydraulic control panel.

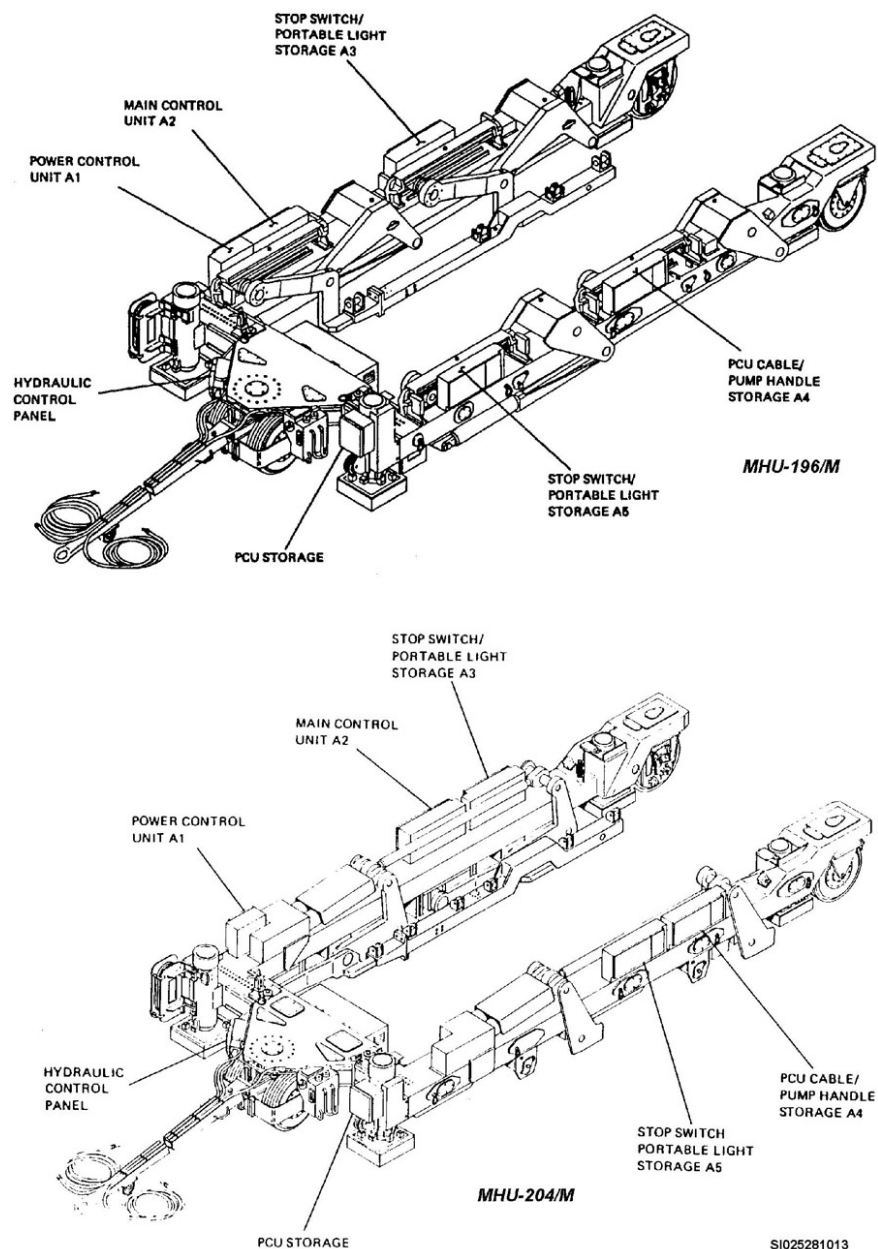


Figure 2-10. MHT controls and indicators.

Main control unit

The main control unit houses electronic circuit modules used to control MHT operational functions (fig. 2-11). Controls and indicators mount on the front panel. The circuit boards are enclosed in a cabinet with covers that are hinged. The cabinet secures with latches and provides a dustproof enclosure when secured. The main control unit is located on the top of the right chassis assembly.

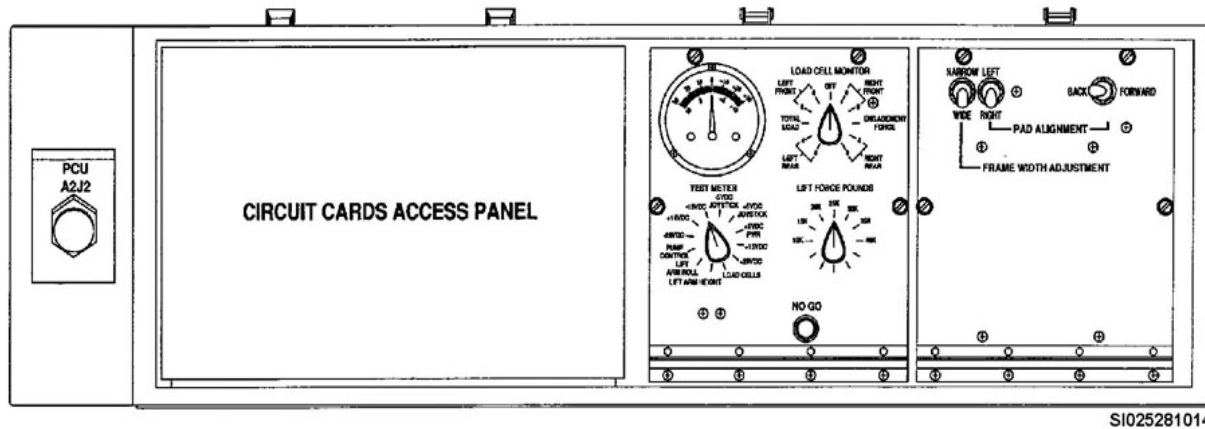


Figure 2-11. Main control unit.

Power control unit

This unit houses five DC power supplies and controls alternating current/direct current (AC/DC) power distribution (fig. 2-12). The circuit breakers and switches you need to start the trailer are located on the power control unit. The power control unit also contains a series of indicator lamps to show the three main systems: pump, compressor, and power. Each lamp lights when that system is operating. The power control unit is located on the top right chassis assembly beside the main control unit on the MHU-196/M. It is located on the top forward end of the right chassis assembly on the MHU-204/M.

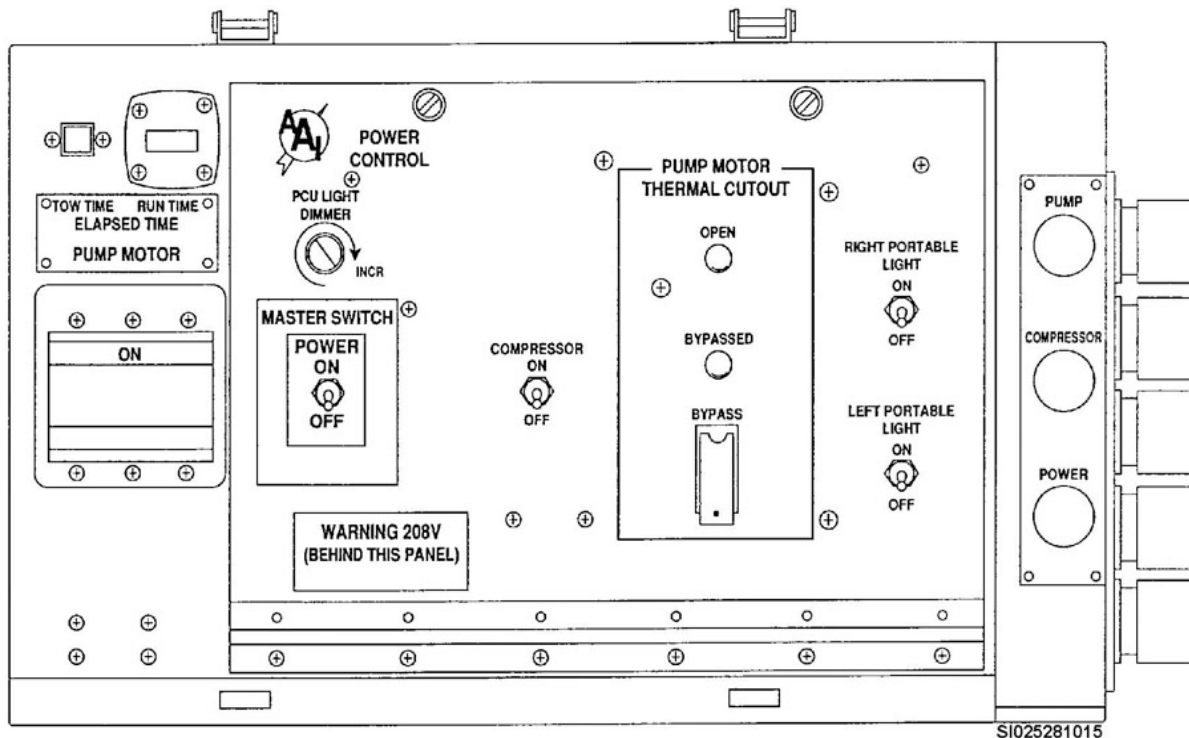


Figure 2-12. Power control unit.

Stop switch/portable light storage cabinet

There is a stop switch/portable light storage cabinet on each side of the trailer. Each cabinet provides storage for one stop switch and one floodlight.

PCU storage cabinet

The PCU provides 15 operational modes for controlling wheel steering, drive, and load positioning. When not in use, store the PCU in the storage cabinet located on the left front jack assembly.

PCU cable/pump handle storage cabinet

The PCU cable/pump handle storage cabinet is located on the left side of the trailer. It provides storage for the PCU cable and a pump handle.

Hydraulic control panel

The hydraulic control panel contains the gauges, manual valves (MV), and manual pumps for monitoring and controlling the hydraulic system (fig. 2-13). You use the manual pumps for emergency lift operations during power failure.

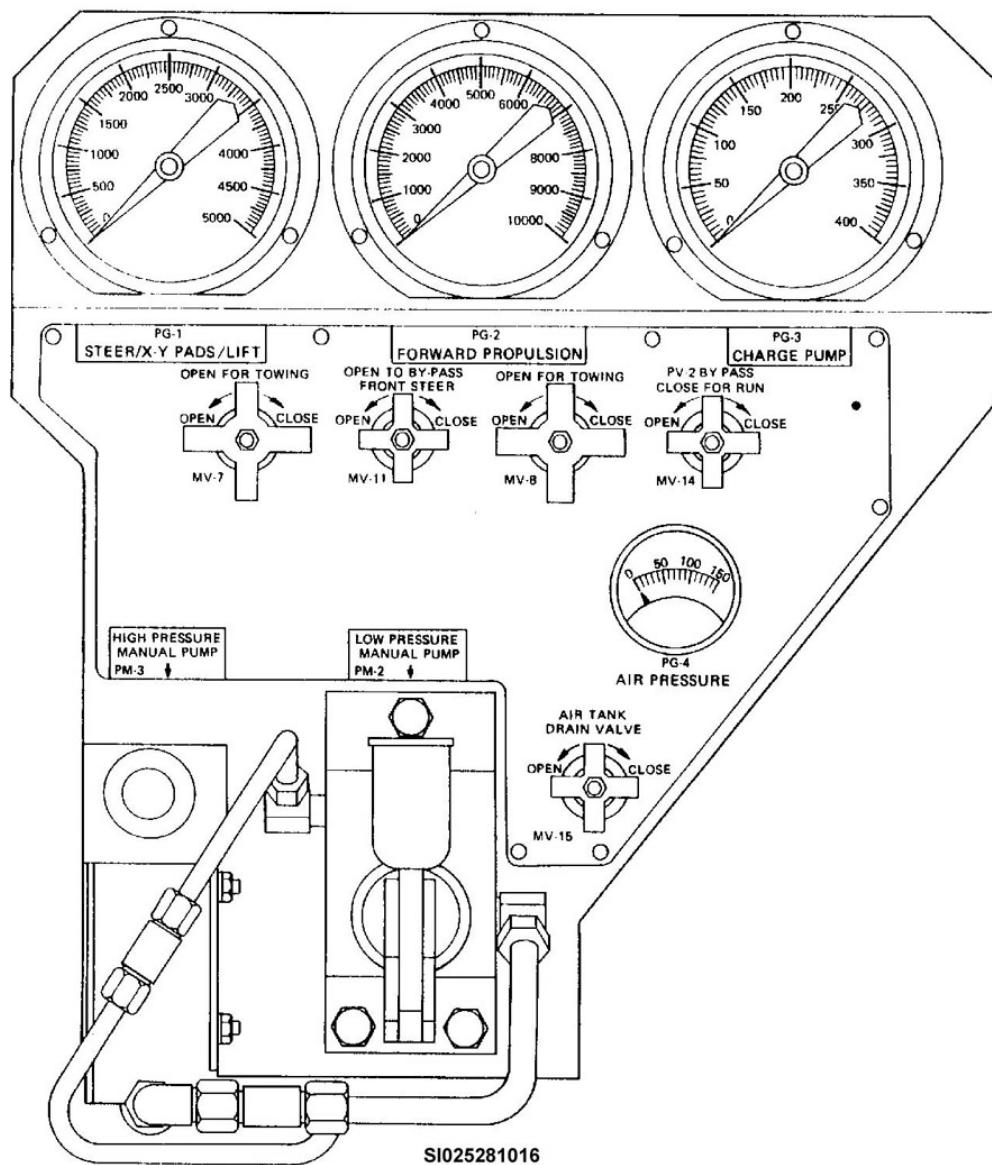


Figure 2-13. Hydraulic control panel.

014. Operating the MHU-196/M and MHU-204/M munitions handling trailers

The MHU-196/M and the MHU-204/M (earlier referred to as the MHTs) have many different operational uses. They transport the B-52 CSRL, the B-2 RLA, and the SUU-67/A pylons. In the integrated maintenance facility (IMF), the MHTs load launchers and pylons into the suspended loading and checkout frame. The MHU-196/M's loads launchers and pylons to B-52 aircraft. The MHU-204/M loads launchers to B-2 aircraft. Since their original design, some MHU-204/Ms have been modified to load B-52 aircraft.

Pre- and post-use inspections

You use the same inspection techniques for trailers as you use for a nuclear weapon. Refer to these TOs for procedures on handling and operating the MHTs:

- TO 35D3-29-3-1, *Ground Handling Procedures MHU-196/M Munitions Handling Trailer and MHU-204/M Munitions Lift Trailer*.
- TO 35D3-29-3-2, *Operating and Maintenance Instructions MHU-196/M Munitions Handling Trailer*.
- TO 35D3-29-3-2-1, *Operating and Maintenance Instructions MHU-204/M Munitions Lift Trailer*.

Before using a trailer for any reason, always check the trailer's AFTO Form 244. Section V of this form lists any defects previously noted on the trailer. A red X indicates a defect that affects safe operation and presents a hazard. Do not use any trailer that has a red X on its AFTO Form 244.

Towing procedures

Preparing the trailer for tow is a relatively simple task. Walk around the trailer to verify all required items are stored properly and adjust the hydraulic control valves to the right positions. After you make sure the trailer is safe for use, perform a complete visual inspection of the MHT, looking for any obvious damage. For the MHU-204/M, you also perform a visual inspection of the track support block welds (8 places). Perform weapons safety checks according to the applicable weapons TO if weapons are loaded. Ensure all adapter hooks are fully engaged with lift beam attaching fittings and make sure the shims and quick-release pins are properly installed. If an ADU-490, ADU-555/E, or ADU-728/E (loading adapter) is mated, make sure the adapter legs are retracted and secure.

Secure launcher cables so they do not extend forward of the launcher cable reel and do not extend below the bottom of the launcher loader adapter. Secure launcher-disconnect cables to the launcher wire harness cage using the three straps provided. Make sure the lift beams are positioned on the travel locks.

CAUTION: The forward and aft bell cranks (4 places) should contact travel locks when the lift arms are in the travel configuration. Minor movement of the travel locks may occur dependent upon ambient temperature, trailer configuration, or parking surface. This is acceptable, providing the travel locks *cannot* be removed. Failure to comply may cause damage to equipment."

Make sure the X-Y pads are centered and the jacks are stowed. Also, make sure the MHT power cable is stowed on the cable reel; the grounding reel cables are stowed; and the PCU, PCU cable, stop switch cables, pump handle, and floodlights are stowed and cabinets are closed/secured. Position MVs on the hydraulic control panel as follows (fig. 2-14):

- OPEN FOR TOWING (MV-7) OPEN.
- OPEN TO BYPASS FRONT STEER (MV-11) CLOSE.
- OPEN FOR TOWING (MV-8) OPEN.
- PV-2 BYPASS CLOSE FOR RUN (MV-14) CLOSE.
- AIR TANK DRAIN VALVE (MV-15) CLOSE.

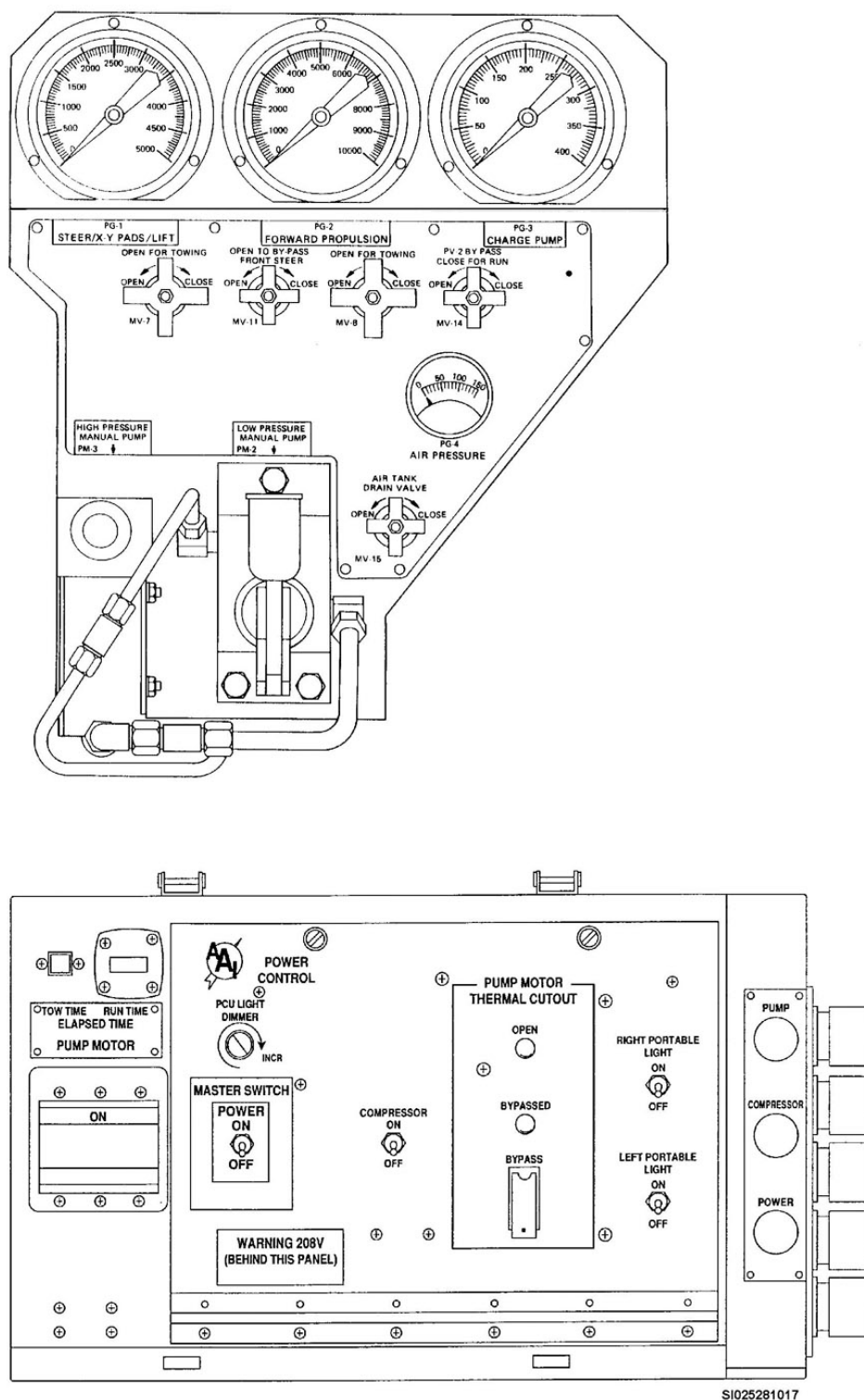


Figure 2-14. Hydraulic control panel and power control unit.

Ensure the wheels are in the straight position and the rear-wheel locking pins are engaged. Position the front wheel retractable stop lever in the forward position. Install the tow bar by inserting the pin from left to right while you face the MHT.

Towing

Connect the tow bar to the tow vehicle then turn off the tow vehicle's ignition. Connect the truck-trailer jumper cable on the tow bar and make sure the cable is in the cable retainer. Connect the truck-trailer EMERGENCY and SERVICE air hoses on the tow bar to MHT couplings. Turn the tow vehicle ignition to the "on" position without starting the engine and make sure the 12-V pump is running, if the pump is not running you will cause damage to the equipment. Now start the tow vehicle and make sure all lights are working properly and that the air gauge reads a minimum of 90 pounds per square inch (psi). Actuate the brakes to verify they work and there is no air leakage at the EMERGENCY and SERVICE air couplings. Air leakage at either coupling may cause improper air brake operation, which may result in injury or damage to equipment.

Post-towing

You must perform post-towing procedures after any towing operation. You do these procedures to complete the towing operation:

1. Connect either forward or rear grounding reel cable clamp to a suitable ground, if applicable.
2. Check all cabinet access doors to make sure they are closed and latched.
3. Open AIR TANK DRAIN VALVE (MV-15) on the hydraulic control panel and drain moisture from the air tank. Close the valve after draining the air tank. Do this if you have completed all MHT operations.
4. Perform a visual inspection of the track support block welds (8 places) on the MHU-204/M.

Pre-use inspection

As with any piece of AF equipment you use, before you operate the trailer, check the MHT forms to make sure the trailer is serviceable, no periodic inspections are past due, and the trailer has no serious defects. Never remove power from the MHT during any lifting or lowering operation. This could cause damage to the equipment.

To begin any operation, first verify that the hydraulic reservoir fluid level is between the stenciled HI and LO markings. Disconnect the air hoses and the electrical cable from the MHT. Using two or more people, remove the tow bar. Then, position the front-wheel retractable stop lever to the aft position and disengage the rear-wheel locking pins. There are cautions to ensure the lever and pins are positioned correctly. Connect the PCU and two remote stop switches (dead-man switches). On the MHU-204/M check each load cell assembly; eight places are not cocked between the concave button and convex insert. Before you connect power to the trailer, ensure all switches are in the OFF position and the trailer is grounded.

Startup procedures

Refer to figure 2-14 as we discuss the valves and gauges during trailer startup. First, ensure hydraulic control valves MV-7, 8, 11, 14, and 15 are CLOSED. Make sure the auxiliary power unit (APU) and facility power are OFF and connect the MHT power cable to the power outlet. Then put the MASTER SWITCH POWER, COMPRESSOR, and PUMP MOTOR circuit breakers (on the power control unit) in the ON position. As you turn each switch on an indicator lamp to the right of the panel lights up. Check the CHARGE PUMP (PG-3) gauge to make sure it reaches its operating pressure of 190 ± 50 psi. Next, verify the STEER/X-Y PADS/LIFT (PG-1) gauge reads between $1,000 \pm 100$ psi.

PG-1 must indicate $1,000 \pm 100$ psi within 30 seconds after the PUMP MOTOR circuit breaker is positioned to ON, or severe damage to the trailer may occur. Check the FORWARD PROPULSION (PG-2) gauge; the reading must be less than 500 psi. The last gauge to check is the AIR PRESSURE (PG-4); its reading should be 110 ± 20 psi. During extremely cold weather, it may take up to 15 minutes for hydraulic pressure to come up to the required pressure on the CHARGE PUMP and the STEER/X-Y PADS/LIFT gauges.

Safety check

Verify the safety devices (dead-man and remote stop switches) are working properly each time you apply power to the trailer. Put the mode selector in the JACKS DEPLOY/STOW position and enable the PCU. Release the PCU dead-man switch; the ENABLE lamp should go out. The safety device is functioning properly when any effort to move the jacks with the joystick fails.

Next, enable the PCU again. While holding the dead-man switch in, push one of the remote stop switches. The ENABLE lamp should go out, indicating that the remote stop switch is working properly. To check the other remote stop switch, repeat this procedure. If there is no power to the trailer (such as in a power loss) or if you disengage the PCU by either releasing the DEADMAN switch or pressing one of the remote stop switches, the trailer brakes lock automatically.

Movement

Although this trailer is overwhelming in size and complexity, it is not difficult to operate. The trailer operates like a remote-controlled toy tank; its operation is just a little more sophisticated. To do any operation, you first select the mode with the MODE SELECTOR switch on the PCU. Press the DEADMAN switch, and momentarily push the ENABLE spring-loaded toggle switch to enable. Then, as you do with a video game, move the joystick in the appropriate direction to operate the trailer. Joystick operation and trailer movement are synchronized with you standing at the rear of the trailer facing forward. This sounds simple and it is. There are three modes for trailer movement using the wheels (fig. 2-15):

- Straight.
- Sideways.
- YAW.

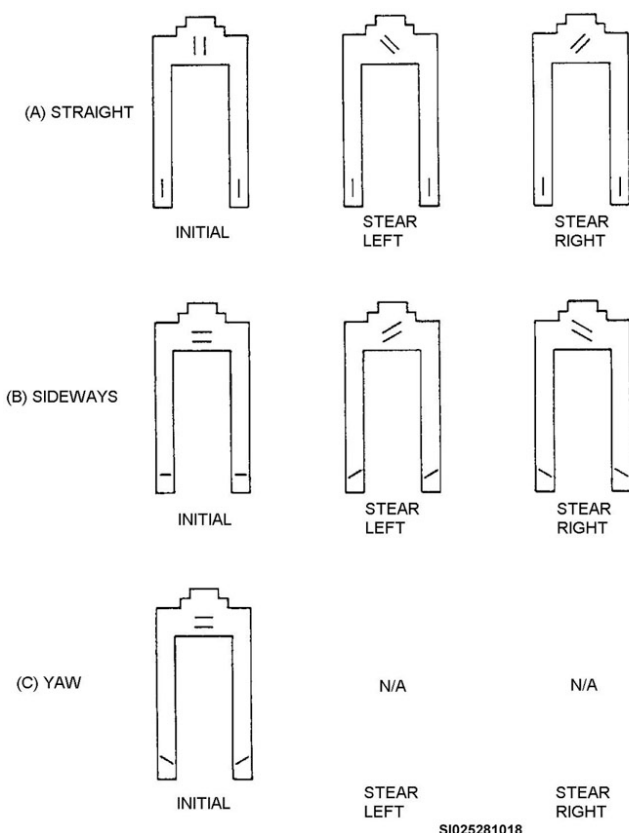


Figure 2-15. MHT wheel steering positions.

Straight refers to the front wheels controlling the direction of the trailer as it moves. Sideways occurs when the trailer wheels are at 90° to the longitudinal axis. In this mode, the rear wheels are steerable. YAW occurs when the front wheels are at 90° and the rear wheels are pointed inward (pigeon-toed) so the trailer can rotate in a circle CW or CCW.

Before you move the trailer under its own power, make sure to disengage the rear-wheel locking pins (in the WHEELS STRAIGHT position, the locking pins are engaged). Do not steer the trailer (turn the wheels) unless the trailer is in motion. This prevents two problems. First, it prevents undue stress on the equipment. Second, it prevents flat spots on the wheel rubber.

Straight

To move the trailer, simply put the mode selector in WHEELS STRAIGHT. Then, use the joystick to drive (move) the trailer in the desired direction. It steers just like a car, both forward and backward. Although a turtle probably moves faster, you must be careful not to run over anything, such as power or control cables. The speed of the trailer is directly proportional to the deflection of the joystick.

Sideways

To move the trailer sideways, first use the jack assemblies to lift the trailer off the ground. Then, select the WHEELS SIDEWAYS mode and enable the PCU. Enabling the PCU makes the wheels automatically rotate 90°. Next, lower the trailer back to the ground. Finally, use the joystick to move the trailer sideways, either right or left.

If you need the wheels at an angle less than 90°, interrupt their rotation by momentarily moving the joystick either right or left and then back to the neutral position. Continue moving the joystick either right or left until you get the correct angle. Then set the trailer back on its wheels.

WHEELS SIDEWAYS is the only operational mode in which all the wheels steer in the same direction at the same time. Moving the joystick forward or backward at an angle causes the trailer to move at that angle.

YAW

To use the YAW mode, use the jack assemblies to pick the trailer up, select the mode, and enable the PCU. Set the trailer back on its wheels and drive the trailer CW by moving the joystick backward. To drive the trailer CCW, simply move the joystick forward. In this mode, steering is not possible. Wheel rotating is done the same way as we just covered in the SIDEWAYS mode and *must* be done first.

As with the WHEELS STRAIGHT position, the speed of the trailer in the WHEELS SIDEWAYS and WHEELS YAW CCW/CW position is directly proportional to the amount of deflection of the joystick. When moving the MHT, remember to observe the necessary cautions in TOs 35D3-29-3-2 and 35D3-29-3-2-1. You cannot see both sides at once because the MHT is so large. The possibility of injuring people or damaging equipment is high if the crew is not alert during operations.

Lifting

Lifting the trailer or load is necessary for many operations. Lifting refers to using the jack assemblies, X-Y pads, or the lift arms. Use these trailer components to turn the wheels and position the trailer for loading or unloading.

Jack assemblies

Make sure the jack assemblies are stowed (all the way up) if not needed for an operation. During a positioning operation (such as loading), you can leave them about 4 in. off the ground; you may use them again during the operation to position or steady the trailer. The jack assemblies have four modes:

1. Deploy/stow.
2. Lift.

3. Roll.
4. Pitch.

The DEPLOY/STOW mode either lowers the X-Y pads to the ground or raises them off the ground. To operate, select the mode and move the joystick forward (UP) or backward (DOWN). In this mode, the jacks cannot lift the MHT loaded or unloaded. The jacks automatically adjust for uneven surfaces; this prevents overstressing the trailer's frame.

When the JACKS LIFT mode is selected, you can raise or lower the MHT wheels off the ground during load or unloading operations. When you move the joystick forward, the jacks travel downward raising the trailer. All four jacks operate at the same time and the motion is at a fixed rate. The wheels of the MHT must be properly aligned to the desired position before lowering the MHT wheels to the ground.

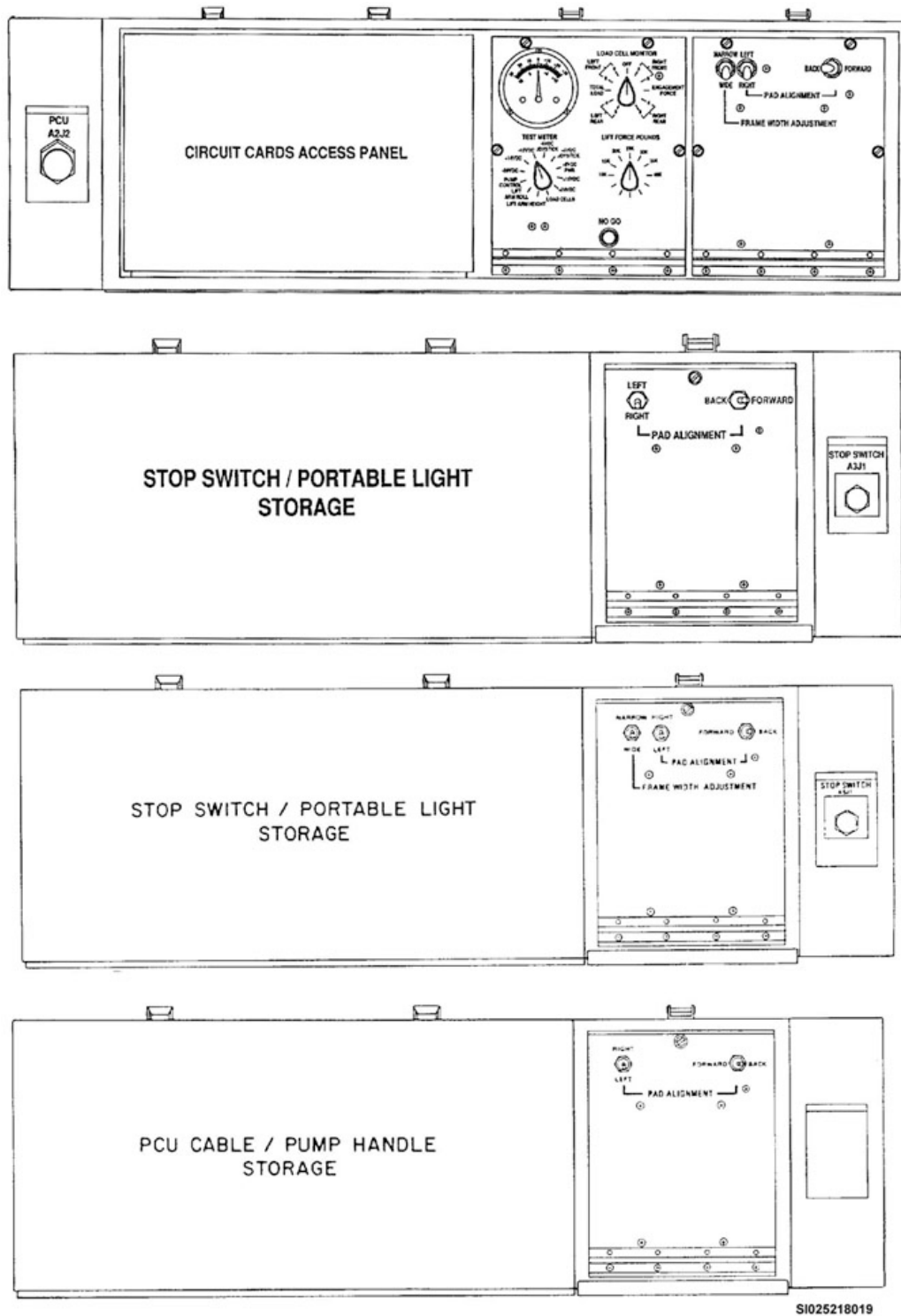
The JACKS ROLL mode rolls the MHT to the left or right. When JACKS ROLE LF/SIDE is selected and you move the joystick to the left, the left lift jacks retract and the right jacks remain stationary. When you move the joystick to the right, the left side jacks extend and the right jacks remain stationary. The reverse is true when you select JACKS ROLE RT/ SIDE.

In the PITCH mode, you can raise or lower the front or rear of the MHT. When you select JACKS PITCH (FRONT) mode and move the joystick forward, the front jacks extend and the rear jacks remain stationary. When you move the joystick backward, the front jacks retract and the rear jacks remain stationary. When the JACKS PITCH (REAR) mode is selected, you move the rear jacks in the same manner.

X-Y pads

The X-Y pads are a unique invention. Although they look like a solid box, the top panel (attached to the jack assembly) actually “glides” around. The pads have three selectable modes (fig. 2-16):

1. Front left/right.
2. Forward/backward.
3. Rear left/right.



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Figure 2-16. MHT pad alignment controls.

Their titles are a good description of their function, so you should have an idea on how to make them work. The FRONT LEFT/RIGHT mode affects only the front pads when you move the joystick left or right. This mode provides precise movement of the pads (4 in.) for final positioning of the trailer.

The FORWARD/BACKWARD mode affects all four X-Y pads when you move the joystick forward or backward. In this mode, 5 in. of movement provides for the final positioning of the trailer during the loading or unloading operation.

The REAR LEFT/RIGHT mode affects only the rear pads when you move the joystick left or right. This mode provides precise movement of the pads (4 in.). This helps for final positioning of the trailer during loading and unloading.

Since the top panels are “out of position” after you use these modes, at some point you need to center them. After you raise the pads, center each pad individually by operating its centering switch. There is one on each corner of the trailer. Simply move the applicable spring-loaded toggle switches in the right direction to center each pad.

Lifting mechanism assembly

The lift arms have three basic modes:

1. Lift arms.
2. Lift arms roll left/side.
3. Lift arms roll right/side.

Joystick movement for the different modes is the same as for the jack assemblies. The difference is that the mode selections are for LIFT ARMS, and they are used only for loading or unloading items into or out of the trailer. In the ROLL mode, the lift arm roll is limited to ± 6 in. When this limit is reached, lift arm movement can operate only in the direction that decreases the 6-in. difference between the arms.

Post operations

Before shutting down the trailer, engage the travel locks and lower the lift arms until they are in the travel position. Minor movement of the travel locks may occur; this is acceptable providing the travel locks cannot be removed. Position the wheels straight and engage the rear-wheel locking pins. You can manually shake the yoke assembly to help engage the locking pins. If after shaking you still can't engage the locking pins, deploy jacks so the wheels are off the ground and try shaking again. If the locking pins won't engage, fully disengage both locking pins and momentarily enable WHEELS SIDEWAYS then WHEELS STRAIGHT until movement stops then engage the locking pins. Lower the trailer onto the ground, center the X-Y pads, and stow the jacks.

Shutdown procedures and post-use inspection

Shutting the trailer down is a simple operation. First, position circuit breakers of the pump motor, compressor, and master switch power, in this order, to their off position. These circuit breakers are on the power control unit. Next, remove APU or facility power and stow MHT power cable, PCU, and stop switches. If MHT operations have been completed, open the air tank drain valve and drain accumulated moisture from the tank. When the tank is drained, retighten the valve.

NOTE: It may be necessary to shut the trailer down quickly in an emergency. You do this by positioning the master switch power circuit breaker to the off position on the power control unit. Then remove APU or facility power.

Self-Test Questions

After you complete these questions, you may check your answers at the end of the unit.

013. Description of the MHU-196/204/M munitions handling trailers

1. What items can the MHT transport?
2. How many operational modes for controlling wheel steering, drive, and load positioning does the PCU of the MHT provide?
3. What MHT switches (when activated) prevent personnel injury or equipment damage by automatically shutting off the trailer?
4. What limits the MHT turn to 45° in the CCW direction? The CW direction?
5. At a minimum, how many people does it take to lift the MHT tow bar?
6. During towing operations, how are the rear wheels mechanically locked into a straight-line position?
7. Why do you use the jacks during lifting operations?
8. Explain how to lift, lower, and roll the load with the MHT.
9. Name the six major control systems of the MHT.
10. What does the hydraulic control panel contain?

014. Operating the MHU-196/M and MHU-204/M munitions handling trailers

1. What does a red X condition on AFTO Form 244, Section V, tell you about operating the MHT?
2. When preparing the MHT for towing, what do you look for during the visual inspection?
3. What is the difference between the visual inspection on the MHU-196/M and the MHU-204/M?
4. What is the CAUTION concerning the lift beams and travel locks?
5. On the hydraulic control panel, how are the valves positioned for towing?
6. When towing, how do you position the front wheel retractable stop lever?
7. During towing operations, what is the *minimum* psi the air pressure gauge must read?
8. When do you drain moisture from the air tank?
9. Why do you *never* remove power from the MHT during a lifting operation?
10. What must you do before connecting power to the trailer?
11. What should each gauge read after you turn on all the circuit breakers at the power control unit?
12. *Explain* how to verify the safety devices are working.
13. What are three modes you can select for trailer movement?

14. How are the wheels oriented in the YAW mode?
15. Which of the operational modes is the only one that steers all the wheels in the same direction at the same time?
16. Name the four modes you can select for the jack assemblies.
17. When do you use the DEPLOY/STOW mode?
18. What is the purpose of the PITCH mode?
19. List the three selectable modes for the X-Y pads.
20. In the FRONT LEFT/RIGHT mode, how much movement is provided for final positioning?
21. Once the lift arm roll limit is reached, how does the lift arm movement operate?
22. What is the normal trailer shutdown order?

2-3. Lift vehicles

This section covers general information of lift vehicles (commonly referred to as lift trucks) and inspecting and operating them. Teaching you *how* to drive is not the purpose. You'll learn how to drive and operate lift trucks through hands-on experience. The lessons in this section cover pre-use inspections and basic operating principles. Many inspection procedures and operation principles are the same for each vehicle; the type of motor causes the majority of the differences. We specify differences between procedures by the type of lift truck and the specific model. Otherwise, the procedures generally apply across the board.

015. Lift vehicle features

Lift trucks are also called jammers; we primarily use them to load externally carried munitions, pylons, and fuel tanks onto aircraft. These jammers also load trucks and trailers with munitions that are too heavy to handle by hand. You use them for mating and demating nuclear weapons to and from launchers and pylons, as well as for loading the MHU-141 trailer. We use them within the munitions facility and on the flight line. The description below is general and applies to most lift trucks. There

are always exceptions to the rule and these exceptions will be covered in the discussions about the individual lift trucks.

Description

The main parts of a lift truck are the chassis, drive train, hydraulic system, lift arm mechanism, and manipulator head assembly (cradle). Lift trucks have a low-slung, heavy-duty, U-shaped frame construction and small high capacity wheels to support the frame. Located within the “U” is a lifting mechanism called a “lift arm.” The lift arm raises or lowers the load to the desired height. Located at the front of the lift arm is the manipulator head assembly. It holds the load level during the lifting operation.

Steering controls

The lift truck is steerable by a conventional automotive steering wheel located in the midsection of the vehicle. The steering wheel controls the rear wheels (the drive wheels of the lift truck). Lift trucks have automotive-type brakes—disk brakes on the front and standard drum brakes on the rear. The brake pedal functions like that of a car.

The drive train consists of a motor, transmission, and differential. The motor can be gasoline, electric, or diesel. Lift trucks use a hydrostatic drive unit (automatic transmission). The directional control lever found on the instrument panel selects either forward or reverse direction. The “accelerator” engages and releases a clutch to move the jammer.

The hydraulic system is the heart of the lift truck. It supplies the pressure to run the steering and piston pumps. The steering pump provides power for easy handling and the piston pump provides pressure to work the lifting mechanism and the manipulator. Counterbalance valves in the system prevent the lift arms from falling rapidly if the hydraulic system fails. If the motor fails, the hand pump operates any part of the hydraulic system.

Operator controls

The driver’s area is at the rear of the truck. Controls to run most parts of the lift truck are within easy reach of the driver. Besides the controls used to drive the truck, there are control levers that operate the lift arm and manipulator head. These controls provide the initial positioning or coarse adjustment of the lift arm and manipulator assembly. Lift arm and manipulator head control levers may also be located at the front of the lift arm. Forward-mounted controls make the final load adjustments. These control levers are three-position and self-centering. They automatically return to the center (neutral) position when you release them.

Two factors control the movement speed of the lifting mechanism and manipulator head assembly. First, increasing the engine speed increases the hydraulic fluid flow. Second, the movement becomes faster as the lever is deflected farther from the center (neutral) position.

Each control lever performs a specific function or movement. The direction of movement (fig. 2-17) is determined when you are standing at the rear of the lift truck looking forward. You can move the lift arm in two directions:

1. Up and down.
2. Right and left (azimuth).

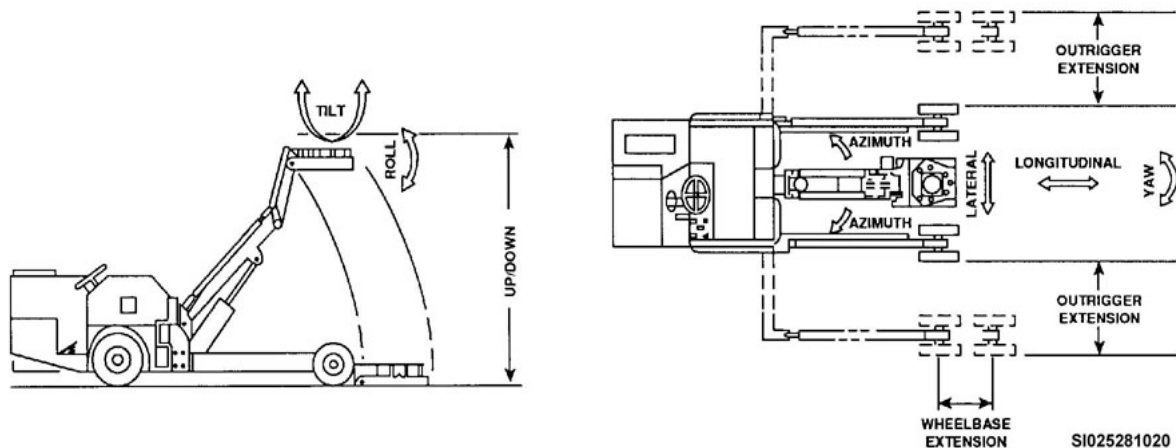


Figure 2-17. Lift truck control movements.

The manipulator head assembly provides these weapon movements:

- Lateral—right or left.
- Longitudinal—fore or aft.
- Tilt—front up/back down.
- Roll—longitudinal axis rotation.
- YAW—vertical axis rotation.

Specific features

In addition to the common features that apply to most lift trucks, some features apply to only specific trucks. The particular differences we point out in the discussions of the following trucks.

MHU-83 series lift truck

The MHU-83B/E lift truck (fig. 2-18) is a gasoline-powered, self-propelled hydraulic lift truck. We use it to lift and attach weapons and munitions onto pylons and launchers. It can lift loads weighing up to 7,000 lb. We primarily use this gasoline-powered lift truck on the flight line.

Hydraulic control levers are located at two places on the lift truck. Two levers located on the control panel at the driver's section control the lift arm. One lever raises and lowers the arm. The other lever moves the arm left or right (azimuth). The operator can also control tilt, roll, and YAW of the manipulator head from this control panel. A duplicate set of control levers is located on the lift arm. Use these levers for more precise control of the lift arm and manipulator head. The lift arm has an additional lever, which controls the longitudinal movement of the manipulator head.

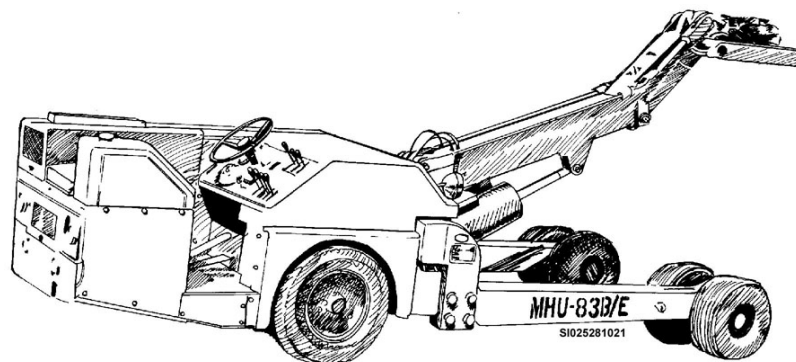


Figure 2-18. MHU-83B/E lift truck.

MHU-174/E lift truck

The MHU-174/E (fig. 2-19) is an electric-powered, self-propelled hydraulic lift truck. We use it to lift and attach weapons and munitions onto pylons and launchers within the IMF. It can lift loads weighing up to 7,000 lb. If you work with air-launched cruise missiles (ALCM), you'll probably use this lift truck.

The electrical system consists of the power receptacle, start and stop switch, and 7.5 horsepower (hp) electric motor. The power needed for this jammer is 208 to 230 volts alternating current (VAC), 3-phase, 60 Hz. The maximum jammer speed is 3 mph when loaded. Hydraulic controls for the MHU-174/E are identical to the MHU-83B/E. Hydraulic control levers are located at two places on the lift truck. Two levers located on the control panel at the driver's section control the lift arm. One lever raises and lowers the arm. The other lever moves the arm left or right (azimuth).

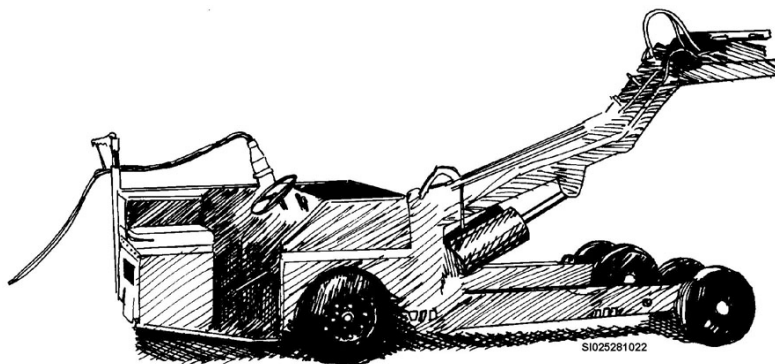


Figure 2-19. MHU-174/E lift truck.

The operator can also control tilt, roll, and YAW of the manipulator head from this control panel. A duplicate set of control levers is located on the lift arm. Use these levers for more precise control of the lift arm and manipulator head. The lift arm has an additional lever, which controls the longitudinal movement of the manipulator head.

MJ-1 lift truck

The MJ-1 lift truck (fig. 2-20), is a gasoline/diesel (depending on the model) rear-wheel, self-propelled hydraulic operated lift truck. Its maximum lifting capacity is 3,000 lb. Dual control valves are provided for raising and lowering the arms. One lever is located at the driver's position that raises or lowers the lift arms; the other control (fig. 2-21), is mounted on the bomb cradle and is used for more precise movement of the lift arms such as tilt, lateral movement, longitudinal control, and lift up or down. To turn the bomb or load about the YAW you manually push or pull on the load to spin the table. The amount of movement to the control handles to some degree will control the rate of operation. Each control is spring-centered so they will return to the neutral position when released. With the valve in the neutral position, the load will be held at the desired point.

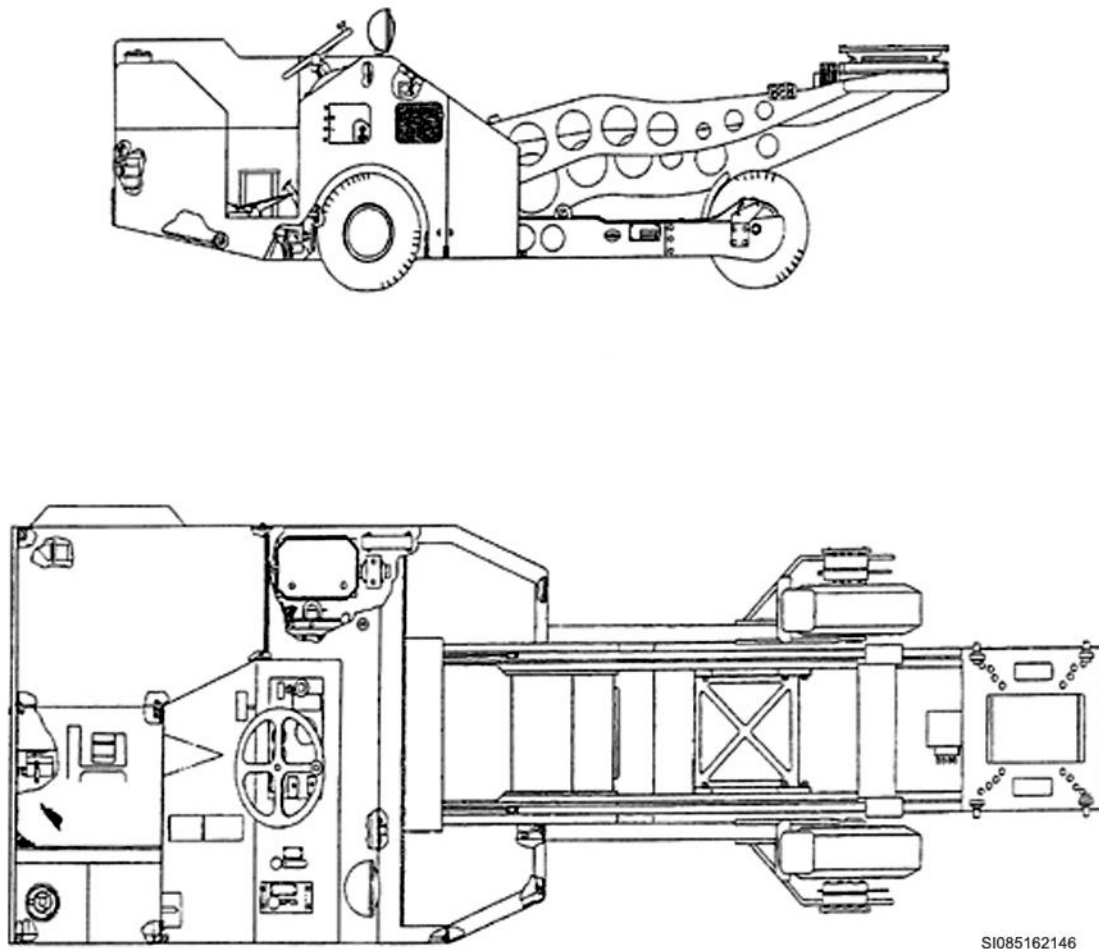


Figure 2-20. MJ-1 lift truck.

Figure 2-21 shows the MJ-1's bomb cradle control levers. When driving with a load on the lift truck for long distances, raise the lift arms until you can manually rotate the transport beam against the lift arm mount. Now lower the lift arms until the load is supported on the transport beam. This relieves all hydraulic load from the lift arms. It is not necessary to use the transport beam for short distances.

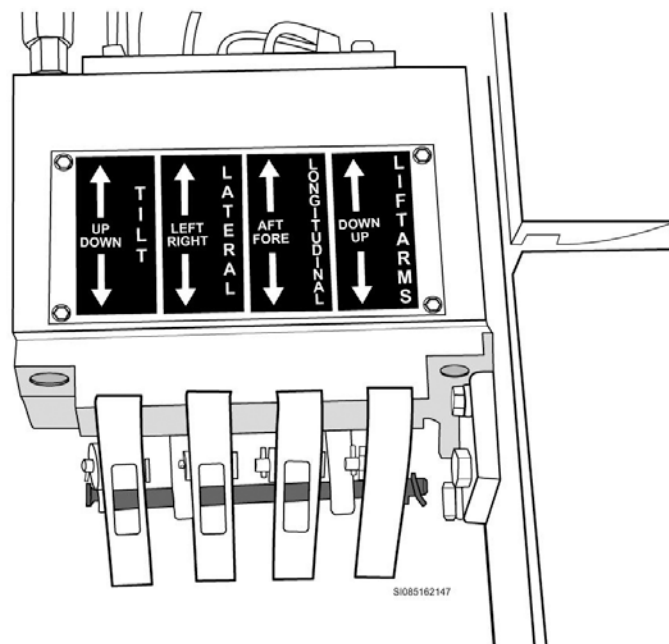


Figure 2-21. MJ-1 lift truck control levers.

MJ-40/E lift truck

The MJ-40/E lift truck operates electrically and is for use within the IMF. When looking at the MJ-40/E, your first impression may lead you to believe it is physically the same size as the MHU-174/E. In reality, it is slightly larger, with a beefed up structural frame. These modifications allow the MJ-40/E to lift larger and heavier loads, up to 10,000 lb. The MJ-40/E controls are located in the operator's compartment and/or on the remote control unit (RCU) (fig. 2-22).

Cradle movement is controlled using the RCU, a hand-held cradle controller. Actuate the RCU by using the toggle switch located on the handle of the RCU. Using a multiposition switch, you select any of the 14 functions on the RCU. Twelve positions are operational and two are off positions. Cradle movements controlled from the RCU are longitudinal, lift, roll, azimuth, tilt, YAW, and ram motions. The RCU connects to the MJ-40/E by a flexible electrical cord. This gives the operator freedom to move around the truck. A holder is provided to store the control unit and cable when not in use.

016. Inspecting lift vehicles

Before driving or operating a lift truck, you must do a serviceability inspection. All lift trucks have similar parts to check before you begin an operation. Use the applicable TO to do this inspection. It covers all areas to check before operating the lift truck. Enter any discrepancies you find in Section V of AFTO Form 244. Periodic inspections and maintenance on the lift truck are the responsibility of the equipment/trailer maintenance shop or transportation. Still, as

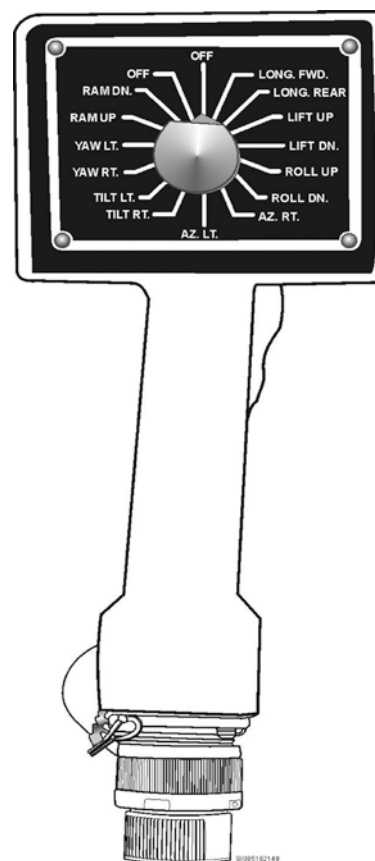


Figure 2-22. MJ-40/E's remote control unit.

an operator, you must check certain items before each day's use.

Performing pre-use inspection for gasoline/diesel lift vehicle

To begin inspecting a lift truck, check the AFTO Form 244. If the form shows a defective condition that creates a hazard, use another (suitable) lift truck. Next, visually examine the physical condition of the entire truck. This includes looking for any evidence of fluid leaks, physical damage, and tire condition. If you find a defect during this inspection, log it on AFTO Form 244 and report it to munitions control or the equipment maintenance shop. If the defect is serious enough, get another truck.

Before starting the lift vehicle, check the fuel, oil, and hydraulic fluid levels. The hydraulic fluid level should be just visible above the screen in the filler neck. When the engine starts, check the oil-pressure gauge. If the gauge does not show pressure within 30 seconds, stop the engine and check for malfunctions. If the oil-pressure gauge is reading in the normal range, let the engine warm up for 3 minutes to reach optimum running temperature, and then cycle all control valves for table and lift motions. During the warm-up and cycling operation, listen for unusual noises and work all controls to ensure they function properly. All motions should be smooth and all controls should return to NEUTRAL when released. Also, check for hydraulic fluid leaks.

To start a diesel engine, put the directional control in NEUTRAL, pull the throttle control out until it is fully extended, and turn the ignition switch to ON. Hold the preheater/start switch to the PREHEAT position for 30 to 60 seconds to heat the glow plugs for starting. Then move the preheat/start switch to START and "crank" the engine for 20 seconds. If the engine does not start, allow the starter to cool for 80 seconds and repeat the procedures.

Performing pre-use inspection for electric lift vehicles

The pre-inspection for electric lift trucks is similar to that for diesel-operated lift trucks. The differences are engine checkout and start-up procedures. Check the jammer's electrical power supply connector for serviceability before connecting to the facility power. Start the motor, cycle all control valves, and listen and look for proper operation. All motions should be smooth and all controls should return to the NEUTRAL position when released. Also, check for hydraulic fluid leaks.

Starting an electric lift truck is easy. Be sure to follow prescribed guidelines so you do not receive an electrical shock or damage equipment. Before connecting power to the lift truck, make sure the power source and truck's main circuit breakers are off. The circuit breakers for the lift truck are under the motor cover. After connecting the power cable, turn both circuit breakers on. After a red light on the control panel illuminates, push the start button on the truck's control panel.

Post-use inspection

Turning off an electric lift truck is the reverse of starting it. Still, you must follow set guidelines. To shut down the lift truck, put the directional control in NEUTRAL, lower the lifting mechanism/cradle to the ground, and apply the parking brake. On diesel- or gasoline-powered lift trucks, you must push the throttle control all the way in and turn the ignition switch to the OFF position. On electric lift trucks, push the STOP button and move the main circuit breakers to the OFF position. Disconnect the power cable as necessary.

017. Operating and using lift vehicles

Sometimes, diesel engines can be stubborn and will not start. This lesson discusses some operating problems and their remedies. It also covers lift vehicle adjustments you make to support different size loads and weights.

Operating problems

Temperature (cold and hot weather), inadequate fuel transfer, air in the fuel line, and rough engine running can affect engine starting. Cold temperatures also affect how the hydraulic system works.

Cold weather

Cold weather affects how a gasoline or diesel engine starts. Lift trucks are not exempt from this phenomenon. Also, because fluids thicken in cold weather, the cold can make the hydraulic system very sluggish. In extremely cold temperatures (below freezing), you “may” need to preheat the engine and hydraulic system. To preheat the engine, use an external, high volume, forced-air heater. Set the temperature control to 260 degrees Fahrenheit (°F) and direct the hot air into the engine compartment for about 20 minutes. Also, use this procedure to heat the hydraulic system of the lift trucks. Direct the hot air onto the tank and into the compartment for about 10 minutes. Run all hydraulically controlled parts through two full cycles of operation before placing any load on the lift trucks once the compartment has warmed up.

Hot weather

During lift truck operations at high temperatures, engine overheating may become a problem. If possible, avoid prolonged periods of idling. Immediately shut down the engine and allow it to cool if the engine’s overheat indicator illuminates.

Diesel fuel primer pump

Diesel lift trucks sometimes get air in their fuel lines. This problem not only prevents the truck from starting, but also damages the fuel injection pump. To overcome this problem, diesel lift trucks have a fuel primer pump. The primer pump is located on top of the fuel feed pump. To “bleed” the system, first open the bleed port on the fuel filter. Then remove the primer pump handle from its storage place and pump the handle until fuel that is free of air bubbles emerges from the bleed port. Close the bleed port and secure the pump handle.

Electric motor

An electric motor can have starting problems; the motor can become “locked” due to system hydraulic pressure. If the truck motor will not start when you push the start button, you may need to bleed pressure off the hydraulic system. To bleed the system, first, press the STOP button. Then, move the lift arm control valve in the UP direction and hold it for 2 seconds. Repeat this step with the control valve in the DOWN position. The motor should now start when you push the START button.

Towing

If you can’t move a lift truck under its own power, you can tow it at low speeds. To prepare the lift truck for towing, disengage the parking brake and the rear-wheel drive hubs. Each rear wheel has a large knob similar to that found on the front wheels of a four-wheel drive vehicle. These rear wheels have two positions marked ENGAGE and DISENGAGE. Using your hand, simply rotate both hubs to the DISENGAGE position and release the parking brake. On the MHU-174/E, make sure you disconnect the power cable before you tow it.

Making adjustments

The width and wheelbase of the MHU-174/E, MHU-83B/E, and MJ-40/E lift trucks adjust to support different size loads and weights. To make either adjustment, use the lift arm control to raise the front wheels off the ground. Use only the outrigger control lever when adjusting the width. Each outrigger and wheel set adjusts individually. You do not have to adjust them equally. This allows the lift truck to conform to restrictions in your working area.

Width

To adjust a lift truck's width, first lower the lifting mechanism to the ground. Hold the control lever in the DOWN position until the front wheels are off the ground. Release the lever, and then use the proper outrigger control lever to extend (OUT) or retract (IN) the side frames. Once the wheels and the side frames are in the right position (specified in the TO for the load you are handling), release the lever and lower the lift truck wheels to the ground.

Wheelbase

Adjusting the wheelbase starts the same way, by lifting the front wheels off the ground. Remove the quick-release pin (fig. 2-23), manually move the wheels the required length, and reinstall the quick-release pin. Once the quick-release pin is reinstalled, lower the wheels back to the ground.

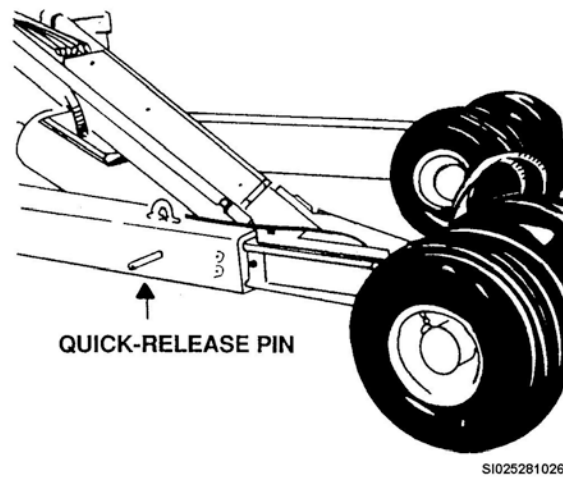


Figure 2-23. Quick-release pin.

Self-Test Questions

After you complete these questions, you may check your answers at the end of the unit.

015. Lift vehicles features

1. For what purposes do you use lift trucks within the munitions facility?
2. What are the *main* functional components of a lift truck?
3. How does a lift truck steer?
4. What type of brakes is on lift trucks?

5. In a hydraulic failure, what prevents the lift arms from falling rapidly?
6. What controls the movement speed of the lifting mechanism and manipulator head assembly?
7. What is the difference between lateral and longitudinal movement?
8. On the MHU-83B/E, when do you use the control levers located on the lift arms?
9. List the main differences between the MHU-174/E and MHU-83B/E.
10. What is the load capacity of the MHU-174/E?
11. On the MJ-1, the transport beam is used for what?
12. What is the lift capacity of the MJ-40/E?

016. Inspecting lift vehicles

1. What action is required if you discover a hazardous defective condition on the lift truck during a pre-use inspection?
2. What items do you check before starting fuel-powered lift trucks?
3. What do you check during the warm-up and cycling operation of a gasoline- or diesel-operated lift truck?
4. Explain how to start a diesel lift truck engine.
5. To prevent damage to equipment or electrical shock, what procedures are required before connecting power to the lift truck?

017. Operating and using lift vehicles

1. What items can affect starting a gasoline/diesel engine?
2. How do you preheat the engine of a lift truck?
3. What effect does air in the fuel lines have on lift trucks?
4. Explain how to “bleed” air from the system.
5. Explain how to bleed the hydraulic system if it becomes “locked.”
6. What feature allows you to configure the lift truck to the restrictions in your work area?
7. How do you adjust the width of a lift truck?
8. Explain how to adjust the wheelbase.

2-4. Forklifts

We use a variety of forklifts in our career field; the basic function of each is the same. The first lesson in this section covers the common features of forklifts. The second lesson describes how to inspect and operate forklifts.

018. Description of forklift

Although the forklift is a lift vehicle, the difference between a forklift and a jammer is very broad. Operational requirements and the work environment determine the type and size of the forklift you use. Some of the more common forklift sizes are as follows:

- 2,000 lb. (2 thousand (K)).
- 4,000 lb. (4K).
- 6,000 lb. (6K).
- 10,000 lb. (10K).

Forklifts are rated according to the weight they can safely lift. They are gasoline, diesel, or electric powered. Forklifts handle and transport materiel that is too heavy to carry or move by hand. Use forklifts to lift and transport weapons when authorized to do so by the applicable TO.

The forklift we discuss in this unit is the 6K gasoline engine forklift. It is commonly used throughout the maintenance field. The description and operation discussions generally apply to all forklifts. Always consult the TO or manual for the specific forklift you are using, especially for inspection and operating procedures.

The forklift is a counterbalanced vehicle (fig. 2-24). It carries a load on forks that are forward of the front wheels. The truck chassis and a counterweight at the rear of the truck are offset by the weight of the load. The counterweight is a fixed weight and never changes. The engine, transmission, driver's seat, and lift controls attach to the vehicle chassis. The upright and carriage assembly attaches to the front of the lift truck (the fork end). The front is the direction the driver faces when sitting in the seat.

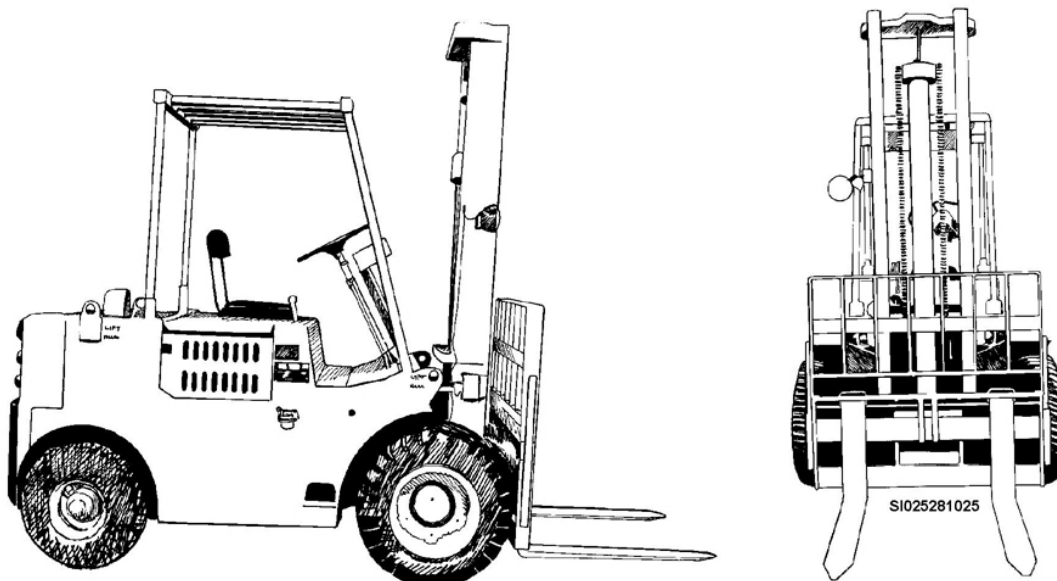


Figure 2-24. 6K forklift.

Instruments

The instrument cluster and housing group mounts on the steering column support and contains the following components:

- Fuel gauge.
- Starter switch.
- Ignition switch.
- Engine oil-pressure gauge.
- Ammeter to indicate battery-charging rate.
- Light switch for operating taillight and spotlight.
- Engine hour meter, which indicates elapsed engine running time.
- Fuse panel for the horn, stoplight, taillight, spotlight, and ignition.
- Warning light to indicate when oil temperature rises above safe operating limits.

Engine and transmission

The engine is an in-line, four- or six-cylinder, internal combustion gasoline assembly. Accessories we normally consider as part of the engine assembly are the generator, starting motor, water pump, fuel pump, governor, carburetor, and distributor. A hydraulic pump also mounts on the engine. The transmission assembly consists of a torque converter and a single-speed transmission. This unit bolts

directly to the engine. A propeller shaft connects the transmission to a drive axle and provides power to the front wheels.

Lift controls

The lift controls operate hydraulically to lift and lower the forks. Tilt controls the tilt of the carriage assembly forward or backward. The controls are located to the right of the operator's seat, or on the right side of the instrument panel. Their exact location depends on the forklift type and model. These controls are three-position, spring-loaded levers that return to the neutral position when released.

Upright and carriage assembly

The upright and carriage assembly is the actual lifting part of the forklift. The main parts of the upright and carriage assembly are the upright, backrest, forks, cylinder, and carriage.

019. Inspecting and operating forklifts

Before driving or operating a forklift, you must first understand some of the safety precautions applicable to operating and handling a forklift.

Safety precautions

As the forklift operator, you should know every aspect of the forklift before operating it, especially when a nuclear weapon is secured to it. Fully understanding the forklifts limitation and special handling instructions includes the safety precautions.

NOTE: Only licensed drivers operate the forklift. This lesson does *not* automatically qualify you on operating forklifts.

The unit vehicle trainers at your location will assist you with detailed knowledge and, more importantly, the performance portion of the training (i.e., driving and tine adjustments) to familiarize you with the forklift's maneuverability and controls. Here are a few other precautions to take when operating a forklift:

1. Always observe speed and safety precautions while carrying loads.
2. Keep loads within the rated capacity of the forklift.
3. Travel with the forks raised a maximum of 6 in. above the surface, measured from the most bottom part of the tines to the surface.
4. When moving loads that obstruct view, travel in reverse.
5. Do *not* extend hands and arms through the mast of the forklift.
6. *Only* allow the operator to ride in the forklift.
7. If following other vehicles, allow *at least* three vehicle lengths between you and the driver ahead of you.
8. If the load is bulky or wide, check side clearances often to avoid damage.
9. Avoid driving close to the edge of any elevated areas of operation.
10. *Never* descend ramps with a load in the front.
11. Lift with the mast vertical, and tilt slightly back to avoid the load from slipping off the tines.
12. To park the forklift, set the hand brake, lay the fork tines flat on the ground, and turn the engine off.
13. For nuclear loads, verify forklift certification in the MNCL and comply with any restrictions listed.
14. *Never* exceed the rated load of the forklift since the loads may tilt the entire forklift forward.
15. Do *not* allow people under a hoisted load.
16. Spread forks according to the load width.

Perform pre-use inspection

With the safety precautions in mind, it's time to perform the pre-use inspection. Do a pre-use inspection to determine the forklift condition and serviceability before using it. As a vehicle operator, you're responsible for checking certain items each day before use. The use of technical data and checklists are not limited to weapons maintenance and handling operations, but also applies to the vehicles too. The AF Form 1800, Operator's Inspection Guide and Trouble Report, is a guide used to help operators inspect every facet of the forklift and identifies other specialized requirements not covered by the adding additional inspection points in blocks labeled "OTHER." Use the AF Form 1800 to check for the items covered in the following paragraphs.

Damage

Inspect the general condition of the vehicle. Check for tampering or damage that may have occurred since the vehicle was last operated. Inspect doors, windows, windshields, seats, and upholstery. Examine paint condition and legibility of markings. This is your cue to walk around the vehicle and discover any damage before you assume liability of the vehicle.

Fuel, oil, steering, coolant, and brake fluids

Check fuel, engine oil, steering, coolant, and brake fluids. Since this vehicle is a forklift, make sure the hydraulic fluid is checked. Add the amounts necessary to bring them to the correct levels. Use the dipstick to check and recheck the fluid levels.

Battery

Remove your watch, rings, and all jewelry before checking or inspecting the battery. Inspect fluid levels unless the battery is a maintenance free battery (i.e., gel filled). Check terminals and clamps for security and remove corrosion. Tighten any loose terminal connections and make sure the battery is properly secured (not loose).

Drive belts and pulley

Inspect belts for deterioration, wear, and proper tension.

Leaks

With the engine compartment opened, look around the engine block and areas where oils or fluids are located, and look for any fluid tracks. Fluid tracks provide evidence of leaks and should be brought to the attention of the vehicle maintenance section at the LRS. After looking around the engine block, it's time to look under the vehicle for additional evidence of leaks, which is evident of small pools of fluid.

Tires

Be sure the lug nuts are tight. Verify the tires have the correct air pressure when compared to the stencil on, or near the wheel hub. Additionally, the AF Form 1800 is documented on page two with the correct tire pressure, which needs to be checked, refilled if necessary, and signed off by the 10th of each month. Also, ensure the tire treads have at least $\frac{4}{32}$ -in. remaining.

Horn

Verify the horn works and is clearly audible when pressed. This should be loud enough to let all technicians know that a forklift is coming around the corner or behind technicians.

Lights and reflectors

Inspect all lights (including panel indicator lights) by having someone stand outside and watch the lights as you operate them; this is the easiest way to inspect the lights. Check lens covers and reflectors for damage.

Instruments

While the vehicle is running, monitor all instrument readings for proper indications. Do not continue to operate the vehicle if instrument readings are not within acceptable limits or if warning lights appear.

Windshield wipers

Make sure the wiper assembly works and the blades are serviceable.

Windshield

The windshield and other glass should be clean; nothing should block your view. Fill the windshield washer reservoir as required.

Safety devices

Inspect the condition and operation of all safety devices, such as seat belts, warning decals, lights, warning buzzer, horn, and fire extinguisher.

Brakes

Inspect the brake pedal for free travel; it should not exceed one-half of the total pedal travel distance. This includes checking the parking brake for the proper setting. First, with the tires off the ground, engage the parking brake and set the directional lever to the forward position. Next, slowly depress the accelerator and make sure the forklift is *not* moving. Any movement detected during this test is *unacceptable* and the parking brake needs to be readjusted. Make the necessary adjustments and retest to ensure forklift does not move.

Start-up procedures

Before you start the forklift, make sure the parking brake is set and the transmission lever is in NEUTRAL. The tilt and lift levers are self-centering and should be in the center or neutral position. If the engine is cold, pull the choke all the way out. If the engine is warm from a previous operation, use the choke sparingly or not at all. Turn the ignition switch to the ON position. Depress the accelerator slightly and hold it in this position while you press the starter switch. Do not hold the starter switch down for more than 30 seconds. If the engine fails to start, allow the starter to cool for 15 seconds before trying again. If the engine fails to start after several attempts, turn the switch off and get assistance from LRS vehicle maintenance.

When the engine starts, push the choke in until the engine idles smoothly. Hold the accelerator down to keep the engine at high idle (800 to 1,000 revolutions per minute [rpm]) until the engine is warm enough to run at idle speed with the choke pushed in. If the oil-pressure gauge does not register over 7 psi within 30 seconds after the engine starts, immediately turn the engine off. If you cannot determine the reason for low oil pressure, turn the vehicle into vehicle maintenance for repairs.

In addition to checking the oil-pressure gauge, you must also check the ammeter (charging rate of the battery). When the engine first starts, the ammeter normally indicates a high charging rate; then it decreases after a reasonable length of time. If it registers discharge or zero or if it moves erratically, stop the engine and determine the cause. The engine coolant temperature gauge should read between 165° F and 190° F after the engine is warm.

After starting the forklift, make sure all controls operate correctly through their full range of motion. Use the applicable TO or local guidance for forklift inspections. It covers all areas to be checked before operating the forklift. Once complete, the person checking out the forklift must sign off the AF Form 1800 on the corresponding date the inspection was accomplished. The vehicle operator signs his or her first name initial and last name to show completion of the inspection, even if the forklift had reportable discrepancies.

NOTE: Before you document any discrepancies on the AF Form 1800, be sure to review the permanent waiver card associated to the forklift to determine if the deficiency you discovered was already documented and accepted by vehicle maintenance.

Post-use inspections

Before turning the engine off, set the parking brake and lower the tines (forks) to the ground. Lowering the tines to the ground relieves pressure from the hydraulic system and prevents a tripping hazard. To turn the engine off, simply turn the ignition switch to the OFF position. Local procedures may direct you to chock one of the nonsteering wheels when the forklift is parked.

Hydraulic controls

The hydraulic control levers are mounted to the right of the operator's seat or on the right side of the instrument panel. They are part of the control valve assembly and control hoist and tilt operations. You use the hoist control lever to raise and lower the forks. Move the lever to the UP position to raise the forks. When the forks have reached the desired height, release the lever; it automatically returns to the center (neutral) position. The idle speed of the engine determines the travel speed of the forks. The higher the engine rpms, the faster the forks go up. To lower the forks, move the lever to the DOWN position; release the lever when the forks reach the correct position. Gravity is the acting force for lowering the forks; engine rpms have no effect.

The tilt control, which is located next to the lift control lever, tilts the upright assembly in (toward the driver) or out (away from the driver). Like the lift control, the tilt control lever is self-centering and returns to neutral when released.

Forklift use

Weapon bolsters, warhead containers, and reentry system dolly trucks are designed with slots, recesses, or other points for the forklift tines. Your use of a forklift to move double-stacked weapons is almost identical to moving a single weapon. The appropriate -1 TO directs which slots you use.

Self-Test Questions

After you complete these questions, you may check your answers at the end of the unit.

018. Description of forklift

1. How are forklifts rated?
2. How is the weight of the load offset on the forklift?
3. What accessories are considered part of the engine assembly?
4. What controls move the carriage assembly forward or backward?

5. What determines the location of the operator controls?
6. Name the parts of the upright and carriage assembly.

019. Inspecting and operating forklifts

1. Who provides detailed knowledge and the performance portion of vehicle training?
2. What are the forklift time requirements for traveling with a load?
3. The load on the forklift should *never* be in which position when descending a ramp?
4. What is a requirement for a forklift to handle a nuclear load?
5. What form is used to help vehicle operators inspect the forklift?
6. What item is used to determine fluid levels are at their correct levels?
7. What does a fluid track provide?
8. How loud should horns be for forklifts?
9. What are examples of safety devices that should be inspected during the pre-use inspection?
10. When starting the forklift, how long do you hold the accelerator?
11. What should the oil-pressure gauge register within 30 seconds after the engine start?

12. How does the vehicle operator sign off the AF Form 1800 to signify the vehicle's inspection was complete?
13. Why do you lower the forklift tines to the ground before turning the engine off?
14. What is the acting force for lowering the forklift tines?
15. Into what do you insert the tines of a forklift to use the weapon bolsters and warhead containers?

Answers to Self-Test Questions

010

1. Manually and simultaneously with the use of one crank handle.
2. By manually operating the two 8-in. screw jacks mounted at the rear of the trailer.
3. It uses conventional air-operated brake shoe/drum assemblies on both axle assemblies. Double-diaphragm brake air chambers provide air service, parking brakes, and spring-operated parking brakes if there is a loss of air pressure.
4. It substantially weakens the trailer bed and limits the placement of materials on the trailer.
5. 3,500 lb. with no tie-down point being used twice.
6. Look for obvious damage or structural damage; inspect the wood for cracks, loose or missing boards, or any condition that prevents safe loading of a weapon; inspect air service lines and tires for serviceability; inspect wheel hubs for proper oil level; make sure the lights operate properly; and check the reflectors for damage.
7. Forklift or similar equipment like slings with a hoist.
8. It's optional if proper tie-down pattern and sufficient space between containers is maintained.
9. None, chains must be used.
10. The maximum number of units per load must be compatible with the weight carrying capacity of the trailer/truck, the length of the truck/trailer, and the presence of appropriate tie-down points.
11. Place two diagonally opposite casters 90° from the longitudinal centerline of the bolster then lock all four casters.
12. It decreases the life of the tires, axles, frame, and other vehicle parts; it can also affect how the trailer and tractor handles.

011

1. 5,500 lb.
2. By directional movement of the lunette-end of the drawbar.
3. When the towing vehicle decelerates, the forward pressure of inertia from the trailer pushes against the drawbar. This pressure compresses the lunette end of the drawbar and operates the hydraulic master cylinder, which activates the wheel brakes.
4. It connects between the surge brake breakaway lever on the trailer and the towing vehicle to stop the trailer in case it accidentally breaks away.
5. The bomb's diameter and the specific trailer load.

6. They are secured between the two decks.
7. In the toolbox mounted at the rear of the trailer.

012

1. Prior to loading weapons on the trailer or before towing the trailer (loaded or unloaded).
2. See whether there are any recorded discrepancies that affect the safe operation of the trailer and make sure no inspections are overdue in Part III.
3. The pintle hook must be between 10 and 30 in. from the ground.
4. TO 1-1A-15.
5. The safety pin.
6. To ensure the trailer was not damaged during the towing operation.

013

1. Missiles and gravity bombs mated on launchers or pylons.
2. 15.
3. Remote stop switch and the dead-man switch.
4. A fixed mechanical stop. A retractable stop.
5. At least two people.
6. By manual spring-loaded locking pins.
7. To lift the MHT and weapons off the ground and to adjust attitude changes in pitch and roll.
8. Simultaneous operation of the lifting mechanisms lifts or lowers the load; independent operation of either lifting mechanism rolls the load.
9.
 - (1) Main control unit.
 - (2) Power control unit.
 - (3) Stop switch/portable light storage cabinet.
 - (4) PCU storage cabinet.
 - (5) PCU cable/pump handle storage cabinet.
 - (6) Hydraulic control panel.
10. Gauges, MVs, and manual pumps for monitoring and controlling the hydraulic system.

014

1. Do not use the MHT because it has a defect that affects safe operation and presents a hazard.
2. Any obvious damage.
3. On the MHU-204/M, visually inspect the track support block welds (8 places).
4. Forward and aft bell cranks must contact travel locks when the lift arms are in the transport position and the MHT is on a level surface. Minor movement of the travel locks may occur if the MHT is on an uneven surface. This is acceptable, providing the travel locks cannot be removed. Failure to comply may damage equipment.
5. MV-7, OPEN; MV-11, CLOSE; MV-8, OPEN; MV-14, CLOSE; and MV-15, CLOSE.
6. In the forward position.
7. 90 psi.
8. When you have completed all MHT operations; drain during the post-tow operation.
9. This could cause damage to the equipment.
10. Ensure all switches are in the OFF position and the trailer is grounded.
11. PG-1 reads between 1,000 \pm 100 psi; PG-2 reading must be less than 500 psi; PG-3 should reach 190 \pm 50 psi; and PG-4 reading should be 110 \pm 20 psi.
12. Put the mode selector in the JACKS DEPLOY/STOW position and enable the PCU. Release the PCU dead-man switch; the ENABLE lamp should go out. The safety device is functioning properly when any effort to

move the jacks with the joystick fails. Next, enable the PCU again. While holding the dead-man switch in, push one of the remote stop switches. The ENABLE lamp should go out, indicating that the remote stop switch is working properly. To check the other remote stop switch, repeat this procedure.

13. Straight, sideways, and YAW.
14. The front wheels are at 90° and the rear wheels are pointed inward (pigeon-toed) so the trailer can rotate in a circle CW or CCW.
15. WHEELS SIDEWAYS.
16. (1) Deploy/stow.
(2) Lift.
(3) Roll.
(4) Pitch.
17. On uneven surfaces to level the trailer and prevent overstressing the trailer's frame.
18. To raise or lower the front or rear of the MHT.
19. (1) Front left/right.
(2) Forward/backward.
(3) Rear left/right.
20. 4 in.
21. Only in the direction that decreases the 6-in. difference between the arms.
22. Position circuit breakers of the pump motor, compressor, and master switch power in this order to their off position. Remove APU or facility power.

015

1. For mating and demating nuclear weapons to and from launchers and pylons, as well as for loading the MHU-141/M.
2. Chassis, drive train, hydraulic system, lift arm mechanism, and manipulator head assembly (cradle).
3. By a conventional automotive steering wheel that controls the rear wheels (the drive wheels of the lift truck).
4. Automotive: disk brakes on the front and standard drum brakes on the rear.
5. Counterbalance valves.
6. First, increasing the engine speed increases the hydraulic fluid. Second, the movement becomes faster as the lever is deflected farther from the center (neutral) position.
7. Lateral moves the weapon left or right, whereas longitudinal moves the weapon fore or aft.
8. For more precise control of the lift arm and manipulator head.
9. The MHU-174/E is electric-powered and used within the integrated maintenance facility; the MHU-83B/E is gasoline-powered and used primarily on the flight line.
10. 7,000 lb.
11. When driving with a load on the lift truck for long distances the lift arms rest on the transport beam to relieve all hydraulic load from the lift arms.
12. 10,000 lb.

016

1. Log it on AFTO Form 244, report it to munitions control or the equipment maintenance shop, and get another truck.
2. Fuel, oil, and hydraulic fluid levels.
3. Listen for unusual noises, operate all controls to ensure they function properly, and check for hydraulic fluid leaks.

4. Put the directional control in NEUTRAL, fully extend the throttle control, and turn the ignition switch to ON. Hold the preheater/start switch to the PREHEAT position for 30 to 60 seconds. Move the preheat/start switch to START and “crank” the engine for 20 seconds.
5. Make sure the power source and truck’s main circuit breakers are off.

017

1. Temperature (cold and hot weather), inadequate fuel transfer, air in the fuel line, and rough engine running.
2. Use an external, high volume, forced-air heater with its temperature control set to 260° F for about 20 minutes.
3. It prevents the truck from starting and damages the fuel injection pump.
4. First, open the bleed port on the fuel filter. Then, remove the primer pump handle from its storage location and pump the handle until fuel, free of air bubbles, emerges from the bleed port.
5. First, press the STOP button. Then, move the lift arm control valve in the UP direction and hold it for 2 seconds. Repeat this step with the control valve in the DOWN position. The motor should start when you push the START button.
6. Each outrigger and wheel set adjusts individually and does not have to be adjusted equally.
7. First, lower the lifting mechanism to the ground. Hold the control lever DOWN until the front wheels are off the ground. Release the lever and use the proper outrigger control to extend (OUT) or retract (IN) the side frames.
8. Lift the front wheels off the ground. Remove the quick-release pin, manually move the wheels, and reinstall the quick-release pin. Lower the wheels back to the ground.

018

1. According to the weight they can safely lift.
2. By the truck chassis and a counterweight at the rear of the truck.
3. The generator, starting motor, water pump, fuel pump, governor, carburetor, and distributor.
4. Tilt controls.
5. The forklift type and model.
6. The upright, backrest, forks, cylinder, and carriage.

019

1. Unit vehicle trainers.
2. Forks raised a maximum of 6 in. above the surface, measured from the most bottom part of the tines to the surface.
3. *Never* in the front.
4. Verify forklift certification in the MNCL.
5. AF Form 1800.
6. Dipstick.
7. Evidence of a leak.
8. Loud enough for technicians to know if a forklift is coming around the corner or behind technicians.
9. Seat belts, warning decals, lights, warning buzzer, horn, and fire extinguisher.
10. 30 seconds.
11. 7 psi.
12. First name initial and last name.
13. To relieve pressure from the hydraulic system and prevent a tripping hazard.
14. Gravity.
15. Slots, recesses, or other points.

Do the unit review exercises before going to the next unit.

Unit Review Exercises

Note to Student: Consider all choices carefully, select the *best* answer to each question, and *circle* the corresponding letter. When you have completed all unit review exercises, transfer your answers to the Field-Scoring Answer Sheet.

Do not return your answer sheet to the Air Force Career Development Academy (AFCDA).

33. (010) To mechanically lock the 7Q1E-10 semitrailer to a tow vehicle, what do we use?
 - a. Quick-release pin.
 - b. Pintle hook.
 - c. Draw bar.
 - d. King pin.
34. (010) What type of inspection *must* you perform on the 7Q1E-10 semitrailer before loading?
 - a. Annual.
 - b. Pre-use.
 - c. Periodic.
 - d. Semi-annual.
35. (010) How many CGU-1/B nylon webbing and tie-down straps can be used to replace a MB-1 tie-down device/chain assembly for a double-stacked weapons configuration?
 - a. None.
 - b. One.
 - c. Two.
 - d. Three.
36. (010) When transporting B83s on a 40-foot trailer, when (if ever) is blocking used?
 - a. When you have more than one bomb on the trailer.
 - b. For a single stack B83 when *not* exceeding 25 miles per hour (mph).
 - c. For a double stack of B83s.
 - d. Always.
37. (011) How does the service brake system on the MHU-141/M munitions handling trailer operate?
 - a. Standard automotive brakes.
 - b. Action of the automatic surge brake.
 - c. Air hoses between the trailer and tow vehicle.
 - d. Electrical cable between the trailer and tow vehicle.
38. (011) How do you find the location for the chocks on the MHU-141/M munitions handling trailer?
 - a. Use the alpha characters above the holes in the two horizontal frames.
 - b. Use the numbers above the holes in the two horizontal frames.
 - c. Count over the number of holes moving from left to right.
 - d. Position chocks with the weapon's center of gravity.
39. (011) How much power does it take to operate the MHU-141/M munition handling trailer's tail and stop lamps?
 - a. 12 volts direct current (VDC).
 - b. 12 volts alternating current (VAC).
 - c. 24 VDC.
 - d. 24 VAC.

40. (012) What is the *first* item to check during the prior-to-use inspection on the MHU-141/M munitions handling trailer?
- Tires for serviceability.
 - Pintle hook for security and serviceability.
 - Top and bottom of the trailer for foreign objects.
 - Air Force Technical Order (AFTO) Form 244, Industrial/Support Equipment Record, for any recorded discrepancies.
41. (012) If during the prior-to-use inspection you find a discrepancy that affects the safe operation of the MHU-141/M munitions handling trailer, document it on
- Air Force (AF) Form 1800, Operator's Inspection guide and Trouble Report.
 - Air Force Technical Order (AFTO) Form 244, Industrial/Support Equipment Record.
 - AFTO Form 95, Significant Historical Data Record.
 - Department of Defense (DD) Form 1577, Unserviceable (Condemned) Tag - Materiel.
42. (012) Which post-use inspection procedure do you *not* do on the MHU-141/M munitions handling trailer during *extremely* cold weather?
- Setting the parking brake.
 - Chocking the trailer wheels.
 - Disconnecting the drawbar.
 - Disconnecting the electrical and breakaway cables.
43. (013) What is the *maximum* load capacity of the MHU-196/M and MHU-204/M munitions handling trailers (MHT)?
- 40,000 pounds (lb.).
 - 30,000 lb.
 - 20,000 lb.
 - 10,000 lb.
44. (013) During munitions handling trailer (MHT) towing operations, a fixed mechanical stop limits the front wheel bogie assembly turning to how many degrees counterclockwise (CCW)?
- 35.
 - 40.
 - 45.
 - 50.
45. (013) On the munitions handling trailer (MHT), how many attaching fittings per lift beam are used at any one time?
- 1.
 - 2.
 - 3.
 - 4.
46. (013) You use the manual pumps on the munitions handling trailer (MHT)
- during lift operations for critical adjustments.
 - simultaneously with the portable control unit.
 - to deploy the jack assemblies and level the load.
 - for emergency lift operations during power failure.

-
-
47. (014) When preparing a munitions handling trailer (MHT) for tow, make sure the wheels are in the straight position and the
- forward-wheel locking pin is engaged.
 - forward-wheel locking pin is disengaged.
 - rear-wheel locking pins are engaged.
 - rear-wheel locking pins are disengaged.
48. (014) During extremely cold weather, up to how many minutes can it take the hydraulic pressure to reach the required pressure on the munitions handling trailer (MHT)?
- 5.
 - 10.
 - 15.
 - 30.
49. (014) Which munitions handling trailer (MHT) selectable mode affects all four X-Y pads and provides 5 inches of movement during loading or unloading?
- FORWARD/BACKWARD.
 - FRONT LEFT/RIGHT.
 - REAR LEFT/RIGHT.
 - PITCH.
50. (014) What do you do after *all* munitions handling trailer (MHT) operations are completed?
- Attach tow bar.
 - Drain the air tank.
 - Release the lock pins.
 - Chock the rear wheels of the trailer.
51. (015) Which lift truck component holds the load level during lifting operations?
- Manipulator head assembly.
 - Lift arm mechanism.
 - Hydraulic system.
 - Drive train.
52. (015) How many pounds is the lift capacity of the MHU-83B/E gasoline-powered, self-propelled hydraulic lift truck?
- 5,000.
 - 7,000.
 - 8,000.
 - 10,000.
53. (015) The *maximum* jammer speed of the MHU-174/E electric-powered, self-propelled hydraulic lift truck when loaded is
- 9 miles per hour (mph).
 - 7 mph.
 - 5 mph.
 - 3 mph.
54. (015) What do you do when driving loads long distances with the MJ-1 lift truck?
- Lower the lift arms until the load is supported on the transport beam.
 - Raise the lift arms 24 inches off the ground.
 - Drive less than 3 miles per hour.
 - Drive with two spotters.

55. (016) Which form do you document discrepancies you find during a lift truck pre-use inspection?
- a. Department of Defense (DD) Form 1574, Serviceable Tag-Materiel.
 - b. Air Force Technical Order (AFTO) Form 95, Significant Historical Data Record.
 - c. AFTO Form 244, Industrial/Support Equipment Record.
 - d. Air Force (AF) Form 1800, Operator's Inspection Guide and Trouble Report.
56. (016) On gasoline/diesel lift trucks, the hydraulic fluid level should be
- a. above the full and add indicator lines.
 - b. just visible above the screen in the filler neck.
 - c. two to three inches below the top of the opening.
 - d. no more than one inch below the full indicator line.
57. (016) After starting a diesel lift truck, what is the *maximum* time to wait for the oil pressure gauge to show pressure before stopping the engine and checking for malfunctions?
- a. 15 seconds.
 - b. 20 seconds.
 - c. 25 seconds.
 - d. 30 seconds.
58. (016) How many minutes should you allow the lift truck engine to warm up to reach the *optimum* running temperature?
- a. 1.
 - b. 2.
 - c. 3.
 - d. 5.
59. (017) Before starting a gasoline or diesel lift truck engine during *extremely* cold weather, you *may* need to
- a. preheat the engine and hydraulic system.
 - b. start the lift truck and move it inside.
 - c. run the lift truck for 20 minutes.
 - d. cover the lift truck.
60. (017) On diesel lift trucks, remove air in the fuel lines by using which pump?
- a. Piston.
 - b. Steering.
 - c. Fuel primer.
 - d. Fuel oscillation.
61. (017) If the electric lift truck motor will *not* start when you push the start button, you may need to
- a. allow the starter to cool for 80 seconds and adjust the engine revolutions per minute (rpms).
 - b. hold the preheater/start switch to PREHEAT for 30 to 60 seconds.
 - c. make sure the oil pressure gauge indicates pressure.
 - d. bleed pressure off the hydraulic system.
62. (017) When preparing the MHU-174/E lift truck for towing, make sure you
- a. set the parking brake.
 - b. connect the power cable.
 - c. disengage the rear-wheel drive hubs.
 - d. equally adjust the width and wheelbase.

63. (017) The width and wheelbase of the MHU-174/E, MHU-83B/E, and MJ-40/E lift trucks adjust to support different
- a. shapes and surfaces.
 - b. weights and shapes.
 - c. size loads and surfaces.
 - d. size loads and weights.
64. (018) When can you use forklifts to lift and transport weapons?
- a. When authorized to do so by the applicable technical order (TO).
 - b. Anytime the forklift rated capacity fits operational requirements.
 - c. For loads weighing 80 percent of the rated capacity of the forklift.
 - d. When a lifting method is not specified in the TO.
65. (018) What happens when the forklift oil temperature rises above safe operating limits?
- a. The starter switch cranks, but the engine will not continue running.
 - b. The engine oil pressure gauge reads zero.
 - c. The ammeter needle reads upscale.
 - d. The warning light appears.
66. (018) On the 6K gasoline engine forklift, how do the lift controls operate?
- a. Pneumatically.
 - b. Mechanically.
 - c. Hydraulically.
 - d. Electrically.
67. (018) The three-position, spring-loaded levers on the 6K gasoline engine forklift
- a. turn the forklift off automatically when engaged.
 - b. turn the forklift on automatically when engaged.
 - c. return to the standby position when released.
 - d. return to the neutral position when released.
68. (019) What is the *minimum* amount of tread a forklift's tire can have and still be acceptable?
- a. $\frac{1}{16}$ inch.
 - b. $\frac{3}{16}$ inch.
 - c. $\frac{3}{32}$ inch.
 - d. $\frac{4}{32}$ inch.
69. (019) When starting a forklift, do *not* hold the starter switch down more than how many seconds?
- a. 30.
 - b. 40.
 - c. 45.
 - d. 50.
70. (019) On a forklift, what determines the travel speed of the forks?
- a. Up or down movement of the throttle control lever.
 - b. Hydraulic control lever deflection.
 - c. Hoist control lever deflection.
 - d. The idle speed of the engine.

Please read the unit menu for unit 3 and continue ➔

Student Notes

Unit 3. Weapons Handling Operations and Movement

3-1. Tie-down and Handling Equipment	3-1
020. Using the MB-1 tie-down device/chain assembly, load binder, and CGU-1/B nylon webbing tie-down strap	3-1
021. Lifting bolstered/unbolstered bombs and warhead containers.....	3-5
3-2. Specific Handling Operations.....	3-12
022. Using munitions handling trailer with unbolstered bombs	3-12
023. Stacking and loading bombs on a munitions handling trailer	3-14
024. Using munitions handling trailer with warheads	3-17
3-3. General Weapons Movement Procedures	3-20
025. Shipments	3-20
026. Maneuverability of hand trucks and containers with casters	3-22
3-4. Logistic Movement Procedures	3-24
027. Military air logistics shipments.....	3-24
028. Department of Energy Transportation Safeguards System.....	3-25

SO FAR, THE first two units described some trailers and lift vehicles you use for handling operations within the maintenance facility, in the WSA, and on the flight line. You now understand the basic operating procedures for materiel handling equipment (MHE). This unit describes some common tie-down equipment and discusses how to inspect and operate them. We also discuss some specific handling and movement operations.

3-1. Tie-down and Handling Equipment

This section introduces several different types of tie-down equipment we use to secure weapons and warheads. We address their use in various areas throughout the remainder of this volume. Depending on the handling operation, we use straps, load binders, or tie-down devices. This section explains how to inspect, attach, and tighten the types of tie-down equipment you'll use on the job.

020. Using the MB-1 tie-down device/chain assembly, load binder, and CGU-1/B nylon webbing tie-down strap

The most common tie-down equipment is the MB-1 tie-down device/chain assembly. It is the most versatile tie-down equipment and is authorized for use in most weapon-to-trailer tie-down operations.

MB-1 tie-down device/chain assembly

The MB-1 consists of an adjuster and chain. We use it to secure bolstered weapons and warheads onto MHTs and flatbed trailers. We also use it when loading weapons in aircraft and SGT. Before using the device, inspect it and the chain for any damage that may affect the function of the assembly. Replace the tie-down device if it has any cracks or bent/worn parts. Replace the chain if you find any deformed, cracked, or damaged links. Check for any excessive wear or corrosion.

Preparation

To prepare the tie-down device for installation, fully extend the hook and open the chain recess. The tie-down device has a take-up wheel that extends or retracts the hook depending on the direction in which you turn the wheel. You must hold the locking lever open to extend the hook. However, when retracting or tightening, the locking lever will slip (ratchet). To open the chain recess, unlatch the quick-release lever and rotate the chain recess. Then lock the quick-release lever back into place.

Installation

To install the chain assembly, first attach the tie-down device hook and chain to the specified tie-down points. When you are using the chain assembly (fig. 3-1), run the chain hook through the applicable tie-down ring, shackle, or link and secure the hook to the chain.

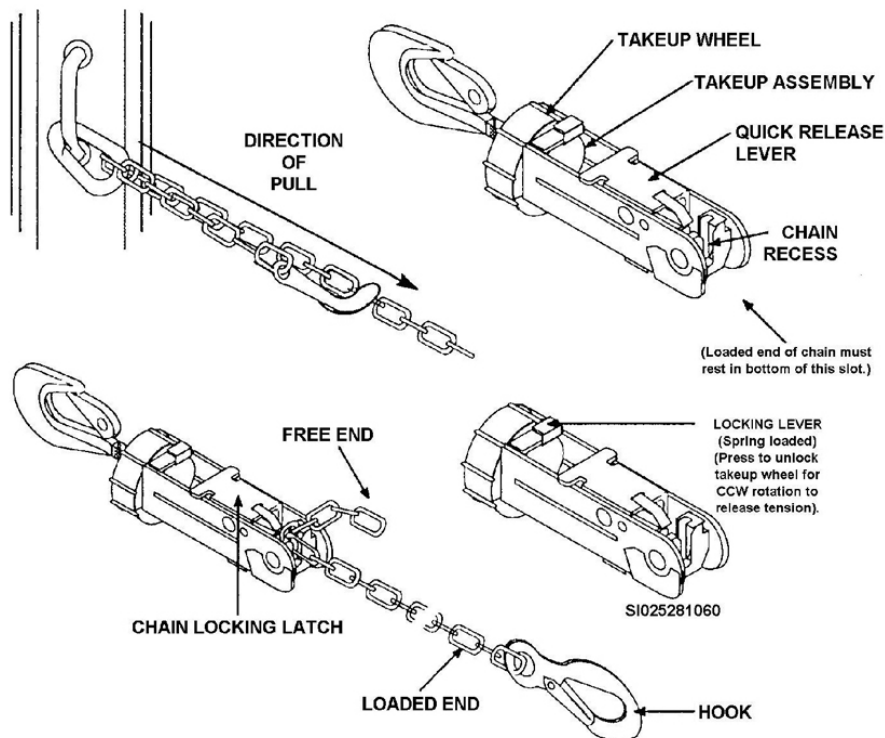


Figure 3-1. MB-1 tie-down device/chain assembly.

CAUTION: When using the MB-1, when you install the chain link into the chain recess, the loaded end of the chain must rest in the bottom of the chain recess slot. If you place the free end of the chain in the bottom of the chain recess slot, the locking mechanism can be broken or the take-up assembly can be pulled apart.

Next, pull the chain as tightly as possible by hand and place the link of the chain into the chain recess of the tie-down device. Close the chain recess and make sure the locking latch is secure. Attach the other assemblies in the locations specified for the operation you are doing.

NOTE: When the hookup interferes with the weapon surface or with another chain, it is permissible to reverse the chain direction.

Tightening

To tighten the chain assemblies, turn the take-up wheel on the tie-down device CW by hand. Don't tighten one chain so that its tension moves the container before you tighten the remaining assemblies and do not use a strap wrench, tools, or any other mechanical means to assist in tightening the chain and tensioner assembly. Make sure there are no twisted links or knots in the chain; then tighten all the assemblies evenly around the container. After the initial tightening of each tie-down device, grasp the chain firmly in the center between the tie-down points and pull hard (back and forth) to take up chain slack. Retighten the take-up wheels a second time by hand. Repeat the above procedures until you can't tighten the take-up wheel any further by hand, or until the chain deflection is less than $\frac{3}{4}$ in. using only nominal hand pressure sideways on the chain.

To prevent damage during shipment, secure the loose ends of the chain with adhesive tape, cables, zip ties, or other suitable material. You can loop or coil the excess chain around the tightened portion of the chain or other convenient fixture, but don't wrap the loose ends of the chain around the tie-down device or attach tape to the tie-down device.

Removal

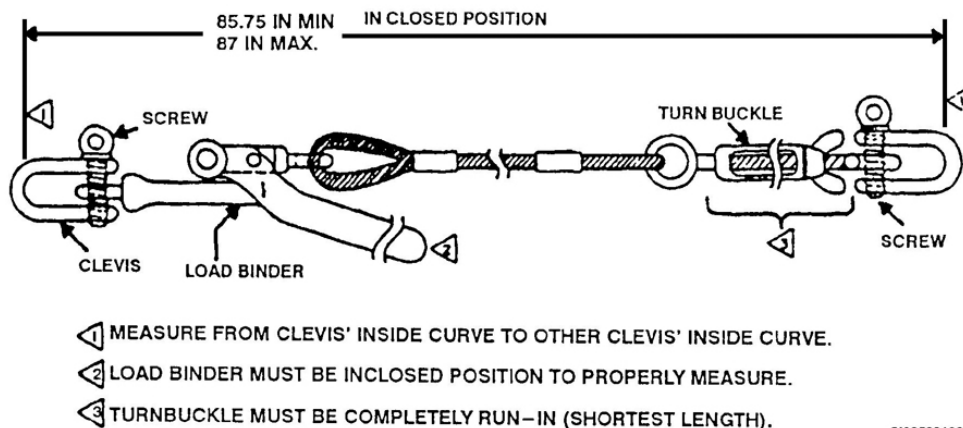
When you remove the MB-1 from a container, the chain is under tension. Before releasing the quick-release lever, remove the tension from the chain assembly by depressing the locking lever and turning the take-up wheel CCW. If you can't release the tension this way, wear a glove to protect your hand and manually restrain both ends of the chain as you activate the MB-1's quick-release lever.

Load binders

Use the load binder with tie-down operations according to TO 11N-B1004-1, *Weapons Loading and Tie-down Procedures*. Always refer to the applicable TO for typical tie-down locations and patterns and any restrictions concerning weapon tie-down procedures.

You use the load binder on MHU-141/Ms to secure unbolstered weapons. In figure 3-2, you notice there is a clevis at each end instead of hooks. Also, there is a turnbuckle at one end of the cable. Use the clevises to attach the ends to the tie-down points. You use the turnbuckle to remove excess slack from the cable.

Since the load binder is for a specific trailer, it must be a specific length. Part of the serviceability inspection includes verifying the length is within tolerance. To measure the assembly's length, first close the load binder and run in the turnbuckle to its shortest length. Make your measurement from the inside curves of the clevises. Use only cables with lengths varying between 85.75 in. minimum to 87.0 in. maximum. If the length is not within these tolerances, replace the load binder.



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Figure 3-2. Load binder with cable.

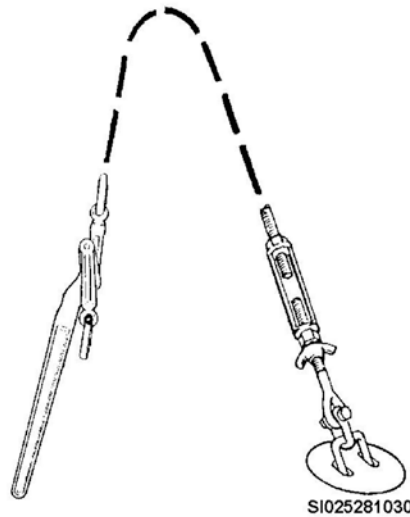


Figure 3-3. Load binder with cable attachment.

To install the load binder with cable attachment (fig. 3-3), extend the turnbuckle and open the handle. Next, loop the cable over the weapon. Remove the screw from each clevis and insert the clevises through the tie-down attachment points. Reattach the clevises to the load binder and turnbuckle and close the load binder handle. It is not necessary to center the clevis on the tie-down point.

Adjust the final tension of the load binder with the handle closed. This prevents damage to the tie-down cables or the trailer. To remove cable slack, rotate the turnbuckle in the proper direction. Once you remove the slack, verify threads (more than one) are exposed inside the turnbuckle. Finally, tighten the wing nut securely against the turnbuckle.

CGU-1/B nylon webbing and tie-down strap

We use the CGU-1/B (fig. 3-4) to secure cargo or weapons to forklifts and trailers. It is made of nylon webbing and has a rated working load of 5,000 lb. When loading single stacked weapons configurations onto a flatbed truck or tractor trailer, you are authorized to use two CGU-1/Bs for one MB-1 anywhere the MB-1 is specified. Chains must be used for all double-stacked weapons configurations.

Since the CGU-1/B is made of webbing, it is more susceptible to damage or abuse. Thoroughly examine the webbing for tears, punctures, frayed edges, or excessive wear before each use. Inspect the adjusting mechanism, tensioning mechanism, and the adjusting mechanism release for defects. Make sure the CGU-1/B opens and closes without binding. Reject all unserviceable assemblies. If the fixed hook is still serviceable, remove it and turn it in to supply for reuse.

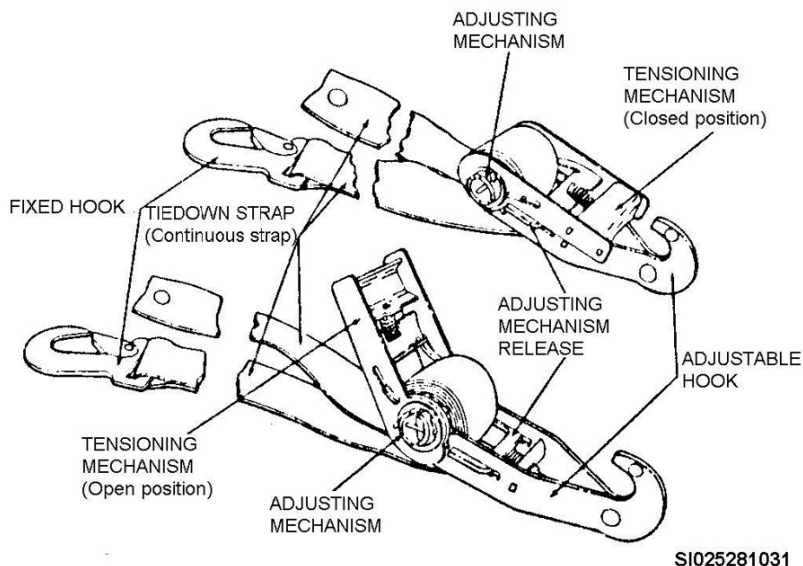


Figure 3-4. CGU-1/B nylon webbing and tie-down strap.

Use the figures in the 11N-45-51-series TOs for the correct attachment points and routing. When attaching the strap, use existing tie-down or lifting points on the cargo, if possible. Try to protect the strap from being cut by sharp corners, edges, and highly abrasive surfaces. Where practical, position the metal parts of the strap assembly so they do not contact the container.

To extend the strap, release the adjusting mechanism on the adjustable hook. Pull as much strap as needed to connect the strap between the two tie-down points. Remove knots or twists; they could interfere with tightening the strap or damage the item being secured. Remove any excess strap by pulling on the loose end. Then tighten the assembly by operating the tensioning mechanism. There must be at least one-half wrap of strap on the take-up spool after webbing-to-webbing contact. Retighten each strap by applying equal tension throughout the tie-down arrangement to prevent the cargo from moving. Return the tensioning mechanism to the closed position and secure the loose end of the strap. To release the strap assembly, pull the adjusting mechanism release and pull on the tight part of the strap. Loosen the strap enough to unhook the strap hooks.

021. Lifting bolstered/unbolstered bombs and warhead containers

Lifting methods vary depending on the bomb's configuration (i.e., bolstered or unbolstered; single or double stacked) and TO procedures. Warhead containers can also be lifted. As you go through this lesson, keep in mind these general requirements: weight limitations of the lifting equipment and the weapon center of gravity (CG).

Bolstered bombs

Bolstered bombs are either single or double (two-high) stacked. A couple of situations may require you to lift a bolstered bomb. The most common reason is to transfer a bomb or bombs onto a trailer in preparation for transport. You stack or unstack bolstered bombs to transport them for shipment, storage, and maintenance. To do these tasks, use one of two methods:

- Overhead hoist or crane.
- Lift vehicle.

In many operations, you use the H563 or the H1004 with a hoist or crane to lift the bomb. Normally, when you use a forklift, the load is placed on top of the forklift tines. In certain situations, you can use the H1004 with a forklift.

H563 Wire rope slings

To pick up a bolstered bomb using the H563, attach the sling to the hoist or crane hook and position the sling over the bomb(s). Align the beam portion of the sling so it is perpendicular to the bomb's longitudinal axis (fig. 3-5) and over the bomb's CG. Hold the wire ropes as you lower the sling so they don't hit the bomb(s). When they are within reach, attach the sling hooks to the bolster D-rings. Then verify the hook safety latches are closed.

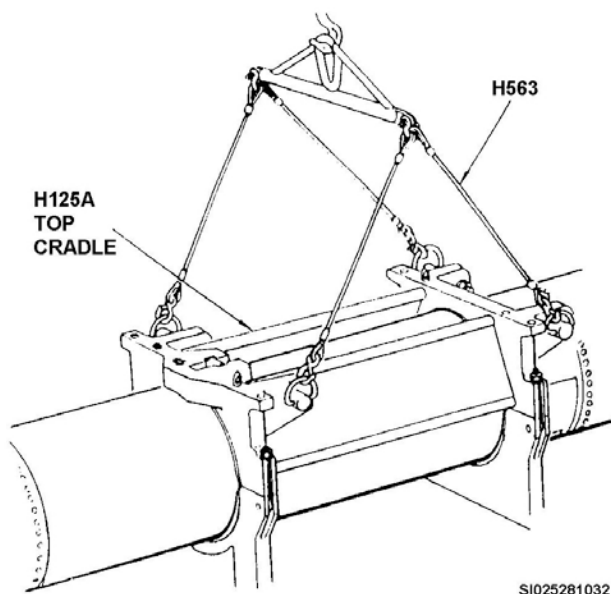


Figure 3-5. Attachment of lifting sling.

The H563 can be used to pick up a single or double stack of B61s. When using the H563 to lift a double stack of B61s the sling must be attached to the lifting rings on the upper H1125A's swivel eyes. Use the H563 to pick up a single B83. As you raise the bomb, make sure that the D-rings or hooks don't bind or become twisted. Do not use the H563 to lift a double stack of B83s; use a forklift only.

H1004 bomb-hoisting adapter

Use the H1004 when authorized to lift bolstered bombs. Install the H1004 on the bomb lifting lugs; verify the quick-release pin is installed fully and the keeper is fully engaged. To lift the bomb, use the H1004 with an overhead hoist, crane, or forklift. When you use an overhead hoist or crane, install the H1004 and move the lifting eye as necessary to align the CG. Be sure to reinstall fully the quick-release pin. Attach the hoist and check for proper balance as you slowly raise the bomb.

If you use a forklift, insert the tines through the slots in the H1004 and secure it to the forklift.

CAUTION: Do *not* use tire chains on the forklift when using this method. Tire chains create vibrations that can put excessive stress on equipment (such as the lifting beam) and possibly cause the bomb to fall.

Forklifts

When using a nuclear-certified forklift, you are limited by the weight restrictions of the forklift, the working environment, and proper ventilation. All bomb bolsters have forklift tine slots. Normally, the tines are inserted into these slots to lift the bomb(s). There are instances when the slots are too small to accommodate the tines. When authorized to lift the bolster from the bottom, take care not to damage the casters and allow for the reduced stability. Before any lifting is conducted, service personnel need to secure the cargo to the forklift with a tensioner assembly or a nylon tie down strap as appropriate for loading and off-loading operations.

When picking up a single or a double stack of B61s in a H1125A, insert the tines through the lower bolster tine slots. On some H1125As, there are recessed vertical braces in the forklift slots. Make sure you don't hit the braces with the forklift or you could damage the bomb and the H1125A.

When you pick up a single B83 using a forklift, the preferred method is to use the H1004. Using the H1004 to lift a double stack of B83s is *not* authorized because the combined weight would exceed the weight capacity of the H1004. If you use a forklift to lift a single B83, there are several places you can lift the bolster. If the H1095 stacking fixture is installed, lift the bolster by placing the tines through or under the H1095. If the H1095 is removed, lift the bolster under the cradle assembly between the mounting pads. There are also several places to lift double-stacked weapons. Specific procedures for lifting single- or double-stacked weapons are listed in the -1 TO.

If you are moving the bomb(s) on the forklift, insert the tines as far as possible so that the bolster rests firmly on the forklift. Depending on the forklift make and model, you may need to place forklift spacers on the tines (fig. 3-6). Before raising the weapon, use a strap to secure the bolster to the forklift. There is no set method for doing this. The only requirement is to install the restraining device to prevent the bomb(s) from inadvertently sliding off the tines. One recommended method is to run the strap through the bolster D-rings closest to the forklift and attach the ends to any convenient location on the forklift. This procedure applies to both single- and double-stacked bombs. As with forklift procedures using the H1004, do *not* lift or move bolstered weapons on a forklift that is equipped with tire chains.

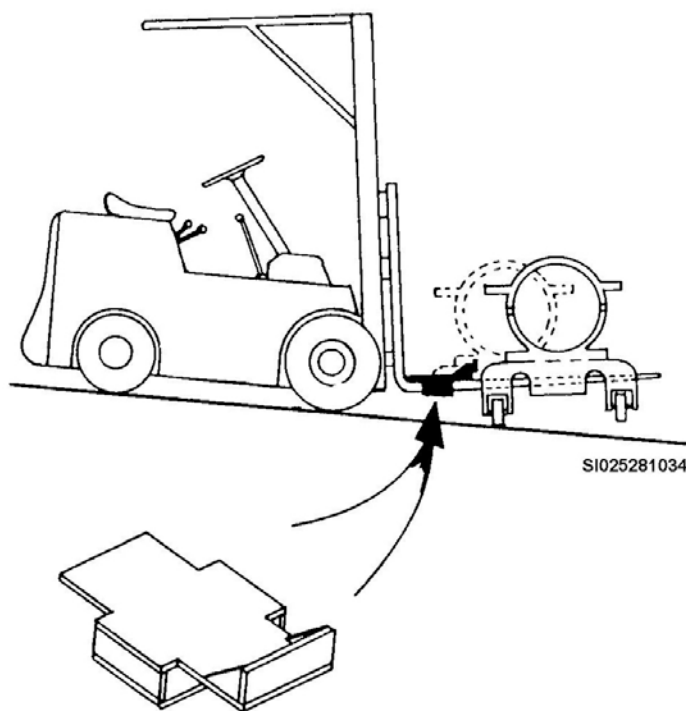


Figure 3-6. Forklift tine spacer.

Unbolstered bombs

Certain tasks require you to lift and move an unbolstered bomb. Normally, this occurs when you transfer the bomb to a workstand, a lift vehicle, or a trailer. The lifting task itself may begin with the bomb in or out of the bolster. In any case, use a lifting adapter, like the H1004, as an interface between the bomb and the lifting device.

If the bomb is in a bolster, remove the securing devices and use the same procedures we just discussed for installing and lifting with an H1004 (fig. 3-7). When using an overhead hoist or crane as the lifting device, make sure you adjust the lifting eye location of the H1004 to the bomb's CG. If you are using a forklift or lift truck with tines as the lifting device, make sure the H1004 is properly secured to the vehicle tines. As you lift the bomb, observe all the precautions for the lifting method used.

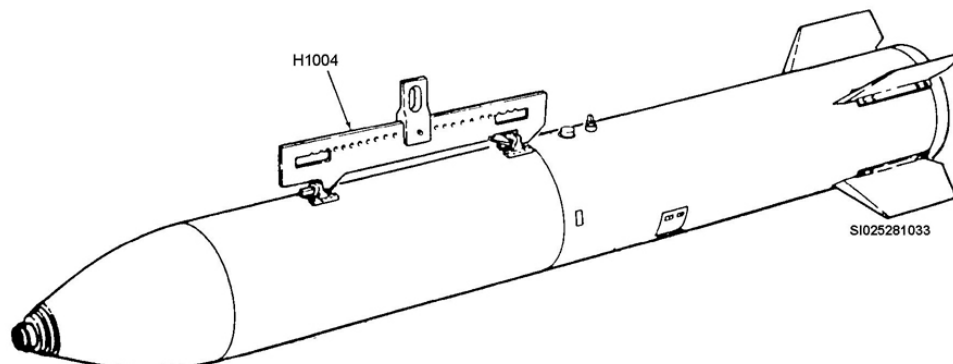


Figure 3-7. H1004 bomb-hoisting adapter lifting an unbolstered bomb.

Weapon transfer to a lift vehicle

You transfer an unbolstered weapon to a lift vehicle (e.g., MHU-174/E or MHU-83B/E) in preparation for launcher mate. The transfer procedure requires lifting the bomb by the lugs and placing it onto the lift truck manipulator head. Basic preparation of the lift truck involves installing two gravity weapons load adapters (fig. 3-8) onto the manipulator head (fig. 3-9). Secure the adapters in place using four quick-release pins. The support block locations are specified in the TO and are determined by the weapon's diameter. Four rollers may also be installed in the necessary holes on the manipulator head for some transfer operations.

Use the same procedures for lifting an unbolstered weapon using the H1004. Install the H1004 and position the lifting eye over the weapon's CG; then attach the overhead hoist. As the weapon is lifted, use one person at each end to control the weapon. Slowly lift the bomb and check for proper balance. Before placing the weapon onto the loading adapter, make sure the adapter straps are clear. After aligning the weapon CG with the adapter table, lower the weapon onto the table. Monitor the clearance between the lift truck and weapon fins during this process. After the weapon surface seats evenly against the support blocks, transfer the full weight of the weapon to the lift truck, tighten the safety straps, and remove the overhead hoist.

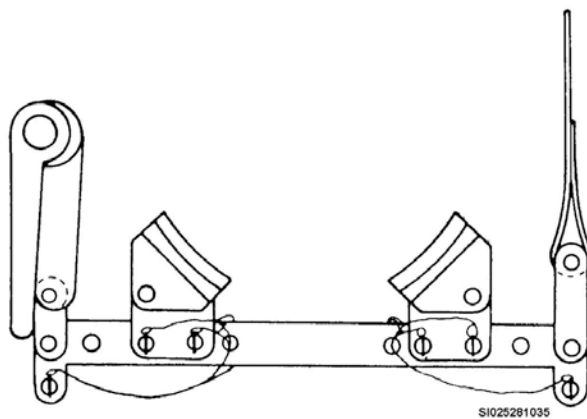


Figure 3-8. Lift truck adapter.

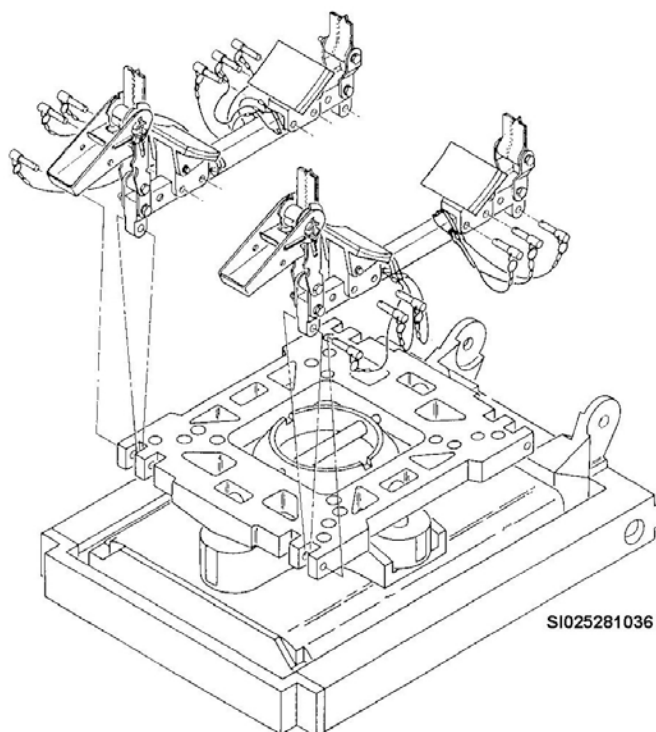


Figure 3-9. Installation of adapters on lift truck manipulator head.

Warhead containers

Warhead containers are also lifted and moved. You lift these containers much in the same manner you do a bolstered weapon, with a forklift or wire rope sling with a hoist. Warhead containers are designed with slots, recesses, or other points for the forklift tines. You use these slots when lifting with a forklift. For empty containers, two containers may be moved simultaneously if the tines extend beyond the load and nylon strap or other authorized device is used to secure both containers to the forklift. Secure the weapon (or empty containers) to the forklift, mast before lifting by using a cargo strap or other authorized device. Some containers have rings for attaching slings or other handling gear. You attach the sling or handling gear to the rings and hook it to a hoist. In both cases, you simply move the container to the desired location, set it down, and secure it as necessary. The specific weapon TO normally gives you specific lifting instructions.

Wheeled pry bars

An alternative method to transferring warhead containers is using the wheeled pry bars. At least a pair of wheeled pry bars must be used. Two or three wheeled pry bars are authorized for use to transfer weapons in containers (without wheels or casters) on flatbed truck or tractor-trailer. Weapons may be moved limited distance inside storage or maintenance facility. Wheeled pry-bars used to position or lift a weapon must be inspected for serviceability using service directives or manufacturer's instructions for the specific wheeled pry bar. Some item you will inspect for are cracks or deterioration in the handle; loose, bent or broken axle bearings; wheels that are cut cracked or separated from the hub or a hub that is cracked, dented or has a worn bearing surface. Check to see wheel rotates freely. Inspect the pry-bar's tip to make sure it is not bent, broken. Inspect the metal parts for rust, corrosion, or broken welds. Also, check for missing bolts nuts washers or cotter pins. You should check the four bolts that attach the handle to the pry-bar tip for proper torque at least every three months.

Using the wheeled pry bars

At least two personnel must use the wheeled pry bars simultaneously as one cohesive unit. Each member must insert the wheeled pry bar into the forklift slot diagonally opposite of one another. Each member must work together to synchronize their movement from lifting the container together and moving the container to its final resting place. It is advisable to have a third member to maintain control of the container since most floors are not entirely flat (e.g., ramps). Additionally, he or she can ensure unison movements by calling out instructions as a team lead.

Self-Test Questions

After you complete these questions, you may check your answers at the end of the unit.

020. Using the MB-1 tie-down device/chain assembly, load binder, and CGU-1/B nylon webbing tie-down strap

1. Explain what damage to the MB-1 warrants replacing the assembly.
2. What preparation is required for MB-1 installation?
3. When using the MB-1, what can happen if you place the free end of the chain in the bottom of the chain recess slot?
4. Why is it important to evenly tighten the chain assemblies around the container when installing the MB-1?
5. When installing the MB-1, how do you know the tie-down devices and chain assemblies are tight enough?
6. If you *cannot* remove the tension on the MB-1 chain assembly by using the locking lever, what do you do?
7. Explain how to measure a load binder with cables.
8. What are the length tolerances for load binders?
9. Explain how to adjust the final tension on the load binder after the handle is closed.
10. What is the rated working load of the CGU-1/B?

11. When loading single stacked weapons configurations onto a flatbed truck or tractor trailer, how many CGU-1/Bs are you authorized to use for one MB-1?
12. Explain how to inspect the CGU-1/B.
13. How much strap must be on the take-up spool after webbing-to-webbing contact?
14. What is the last step when tightening the CGU-1/B?
15. Explain how to remove the CGU-1/B.

021. Lifting bolstered/unbolstered bombs and warhead containers

1. What methods do we use to lift bolstered bombs?
2. How do you position the H563 over a bolstered bomb?
3. Can the H563 be used to lift a double stack of B83s?
4. Why *can't* you use tire chains on a lift vehicle when using the H1004 to lift a bomb?
5. List three limitations to consider when deciding which nuclear-certified forklift to use.
6. What do you need to lookout for when using a forklift on the H1125A's swivel eyes?
7. Why *can't* you use the H1004 to lift a double stack of B83s?
8. What do you do to prepare the lift truck to receive a weapon?

9. What do we use to lift warhead containers?

10. How many wheeled pry bars must be used when moving warhead containers?

3-2. Specific Handling Operations

There are many methods of lifting and moving gravity bombs, missiles, and warheads. The method you use is determined by specific TO procedures, how the weapons are configured, and what you are putting the weapons in or on. In this section, you will learn several different methods for lifting bombs with and without bolsters. You will also learn how to transfer and secure bombs to the MHT. We cover missiles and warheads later.

022. Using munitions handling trailer with unbolstered bombs

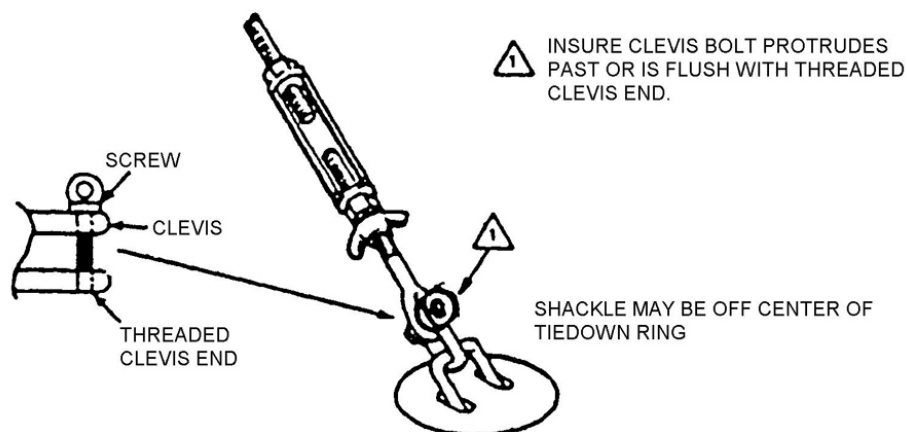
Depending on your mission, you transfer unbolstered bombs to certain types of trailers in support of an operational movement to the flight line. For example, you may tie down bombs on an MHU-141/M to transport to the flight line for loading on strike aircraft. This lesson covers general points of bomb transfer and tie-down.

General requirements

You can load bombs onto a trailer in one of three locations: right, left, and center. Single-bomb configurations should use the center location, but they can be loaded in any location. Don't use the center position for a two-bomb load of B83s. You may use the center position for a two-bomb load of B61s as long as the trailer remains in the same area (e.g., the quick-reaction area). Specific locations are determined by mission requirements or TO procedures.

Bomb nose orientation on the trailer is optional to meet operational needs. Nose orientation does not affect cable routing. The installation of chocks and the MHU-28/E adapter depends on the type of bomb and fin orientation. Tables and illustrations in TO 11N-B1004-1 show specific trailer setup and cable routing. There are three types of tie-down points on a trailer:

- Rings—on the trailer deck.
- Links—along the trailer deck's edge.
- Chains—between the decks of the trailer.



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Figure 3-10. Correct rotation of trailer tie-down rings.

When you attach the cable clevis to a tie-down ring, pull the ring all the way up. Be sure to rotate the ring so it is in line with the pull of the cable (fig. 3-10). When you attach the weapon tie-down cable to the chain link, pull up the slack, and make sure the chain link is in line with the direction of the pull. Also, make sure the chain links are not secured together with the snap hooks. You determine the number of chain links needed to provide the proper tension on the cable. However, when attaching the tie-down clevis, make sure that you don't pinch an unused link between the attaching link and the clevis.

Transfer method

The below transfer procedures for a bomb are for those using the H1004. Use either an overhead hoist, forklift, or lift truck to lift the bombs and place them on the trailer. When using either a forklift or a lift truck as the lifting device, observe these restrictions:

1. Do *not* use tire chains on lift vehicles.
2. Secure the H1004 to the lift vehicle with a strap.

Trailer preparation

To prepare the trailer for loading, open the trailer decks and secure them in place with quick-release pins. Install the chocks on the trailer deck rails in the locations specified for the load configuration and secure them in place. If the MHU-28/E (fig. 3-11) is required, install it first. The terms "in" and "out" referenced in the figures and tables of TO 11N-B1004-1 refer to inner and outer holes of the MHU-28/E.

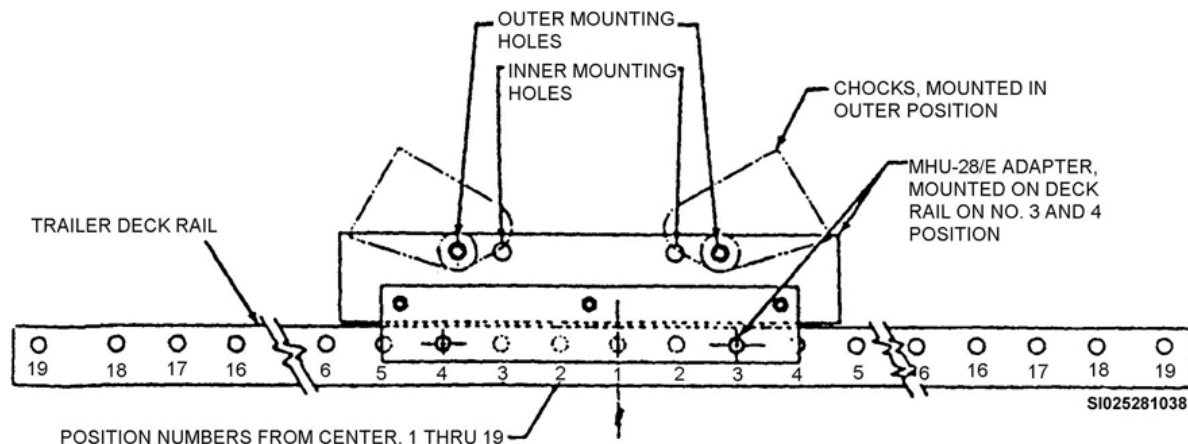


Figure 3-11. MHU-28/E adapter and chock installation.

Bomb preparation

Before loading a bomb onto a trailer, visually inspect the bomb, attach the lifting device, and, if applicable, loosen the bomb from its hand truck. Use the applicable -1 TO for these procedures. If required, make sure the "preparation for strike" procedures are completed.

Bomb transfer

While transferring a bomb to a trailer, monitor the clearances between the bomb, bomb fins, and trailer chocks. Place the bomb on the trailer so the chocks support the bomb. You may use talcum powder on the chocks to prevent them from sticking to the weapon. For B-61s, place the access door approximately $\frac{5}{16}$ in. forward of the rear chock; for B-83s, line up the aft suspension lug with the center of the rear chocks. It is acceptable if the chocks extend beyond the weapons chocking area.

Bomb tie-down

After your bombs are properly positioned on the trailer, secure them by using a load binder with an attached cable. Route the tie-down cables around the bomb lugs and attach them to the tie-down

points as specified in TO 11N-B1004-1. Figure 3-12 illustrates the tie-down and chock points for loading three B61 bombs on a trailer with the MHU-28/E installed.

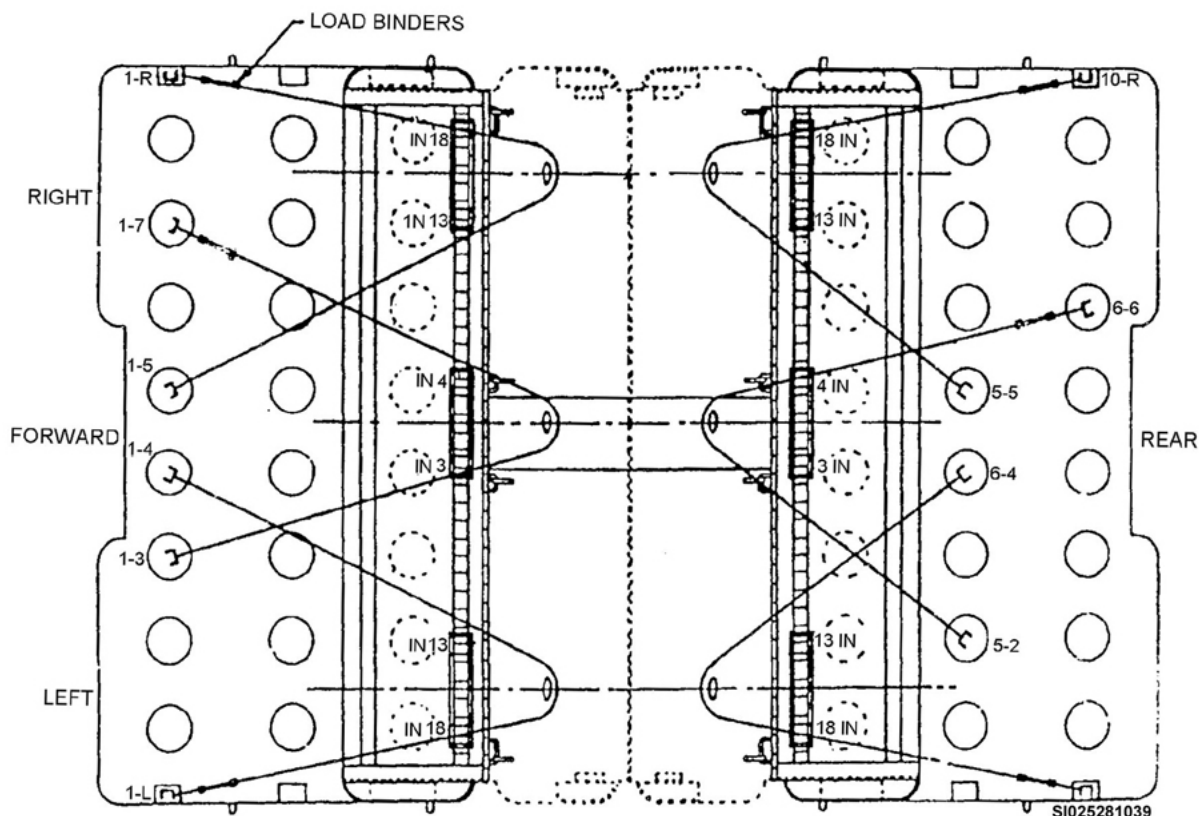


Figure 3-12. Typical tie-down locations for unbolstered bombs.

Use the procedures we covered earlier to tighten the cables. Make sure you observe the precautions we mentioned about their use. Whenever possible, install load binders and turnbuckles so they do not touch the bomb. If necessary, reverse the location of the load binder (direction of the cable). When contact cannot be avoided, place a pad of rubberized hair or other suitable padding between the tie-down device and the bomb.

023. Stacking and loading bombs on a munitions handling trailer

You can stack most bombs two-high for shipping and storage purposes. Arrange bombs nose-to-nose when stacked (fig. 3-13). Before you try a stacking operation, make sure the fins are in the proper pattern. On most units, the fins must be in the X position. If you try to stack with the fins in the + position, the fins will be damaged because there is not enough clearance.

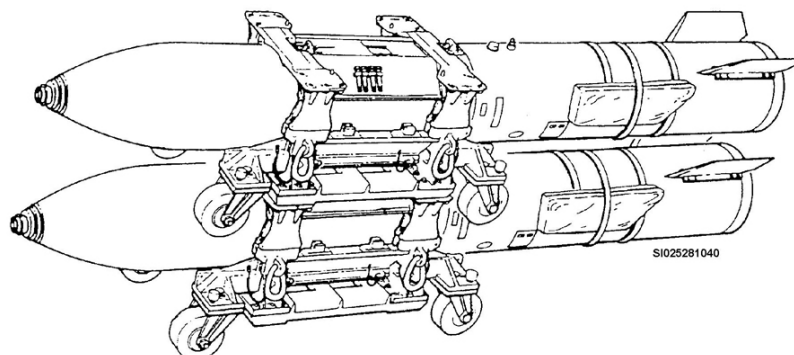


Figure 3-13. Example of stacked bombs.

Stacking

When stacking bombs, first remove the caster assemblies, if applicable (H1242 caster assemblies on the B61), from the bomb that will be the upper unit of the stack (fig. 3-14). Using any of the methods we already covered, hoist the upper bomb and position it over the lower unit so the bombs are aligned nose-to-nose. As you slowly lower the bomb, check that the alignment pins on the bottom bolster engage the holes on the upper bolster. Continue to lower the bomb until its bolster rests firmly on the bottom bolster.

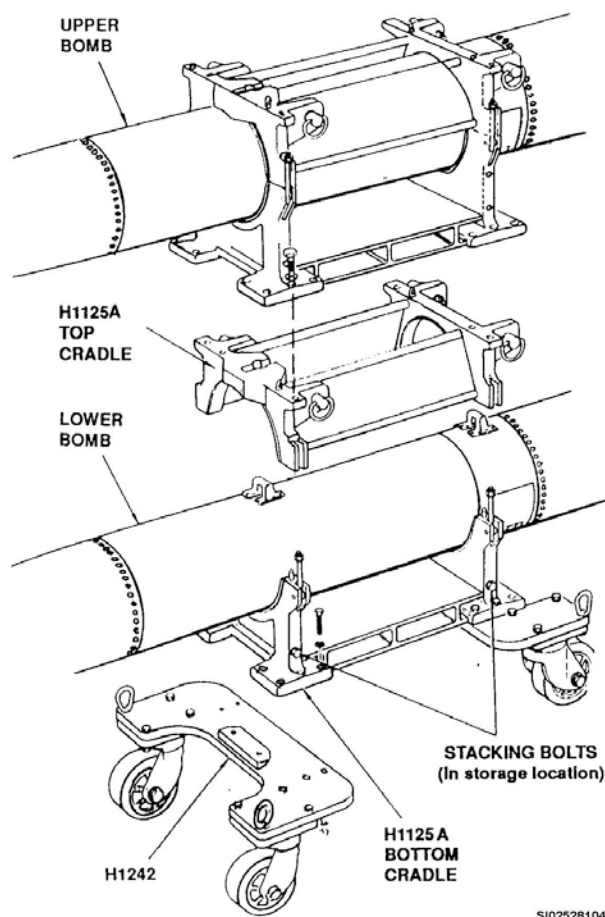


Figure 3-14. Bomb hand truck components.

Get the required number of bolts (in this case, four) from their storage location on the upper bolster or canvas bag and secure the upper bolster to the lower one. In this case, install the bolt in the center bolt-hole of the upper bolster pad. Tighten each bolt securely. Bolt location and number of bolts you use differ for each weapon system and are specified in the -1 TO. Reverse these procedures to unstack weapons.

Bolstered bomb loading procedures

The MHU-141/M is one type of trailer we use to transport bolstered weapons. Bolstered weapons can be loaded on the trailer's centerline or side-by-side. Specific loads and locations are specified in TO 11N-B1004-1. Bomb weight and size limit the number of weapons you can place on the MHT. For example, two B61 double stacks can be loaded on the trailer; however, you can load only one B83. You can load two single-bolstered B83s for storage only; ground transportation is not permitted. Figure 3-15 shows some typical tie-down locations. Nose orientation for all gravity bombs is optional and does not affect the tie-down pattern.

When using the MHU-141/M for this type of movement, close the center deck panels and secure them with quick-release pins. Before loading, set the handbrake and chock the trailer wheel. Before you load the trailer, visually inspect the bomb and verify that it is properly secured in the bolster.

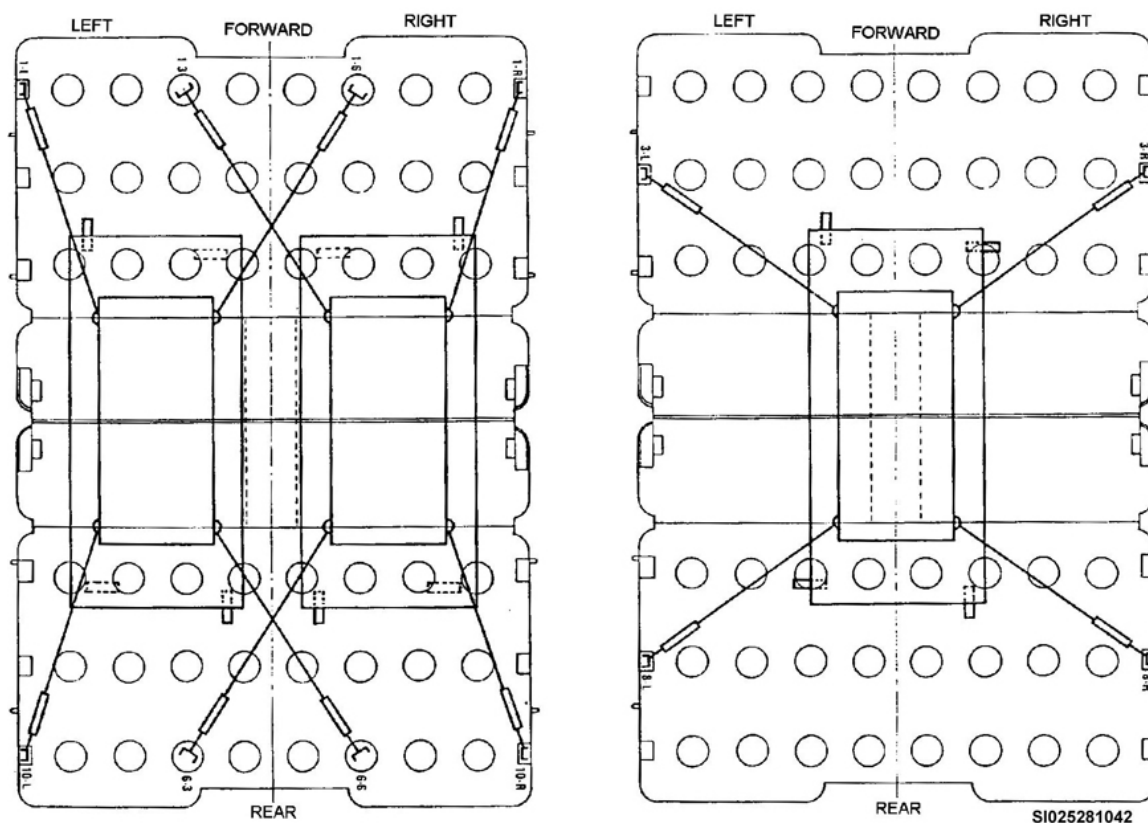


Figure 3-15. Typical tie-down locations for bolstered bombs.

Bomb transfer

Use any of the methods we discussed earlier to lift and move bolstered bombs. These methods may involve an overhead hoist, a forklift, an H1004, or an H563. Observe all safety precautions for the proper method. After attaching and securing the lifting device, unlock the bolster casters. Lift the bomb and move it into position over the trailer deck as specified in TO 11N-B1004-1 for your bomb load configuration.

It is a good idea to lock the casters in the required position before positioning the bomb on the trailer. Caster positions differ, depending on the type of load. For single loads, lock two diagonally opposite casters 90° *outboard* to the bomb's longitudinal axis. For dual hand truck loads (side by side), either one- or two-high stack, position and lock two diagonally opposite casters 90° *inboard* from the longitudinal axis of the bomb. For either single or double loads, lock the two remaining casters outboard and parallel to the axis of the bomb (fig. 3-15). Lower the bomb(s) onto the trailer deck. If you haven't already done so, position lock the casters in the proper positions. Remove the lifting device and attach the tie-downs.

Bomb tie-down

Use four MB-1s to secure each bolster to the trailer bed using the unit lifting rings. For a two-high stacked load, attach the MB-1s to the lower unit hand truck lifting links. Attach one chain to each bolster D-ring and then attach the adjusters to the trailer deck in the locations specified in the TO. Pull

the chains tight and connect them to the adjusters. Finish the operation by removing the lifting device and tightening the MB-1s securely. Secure the loose chain ends according to earlier procedures.

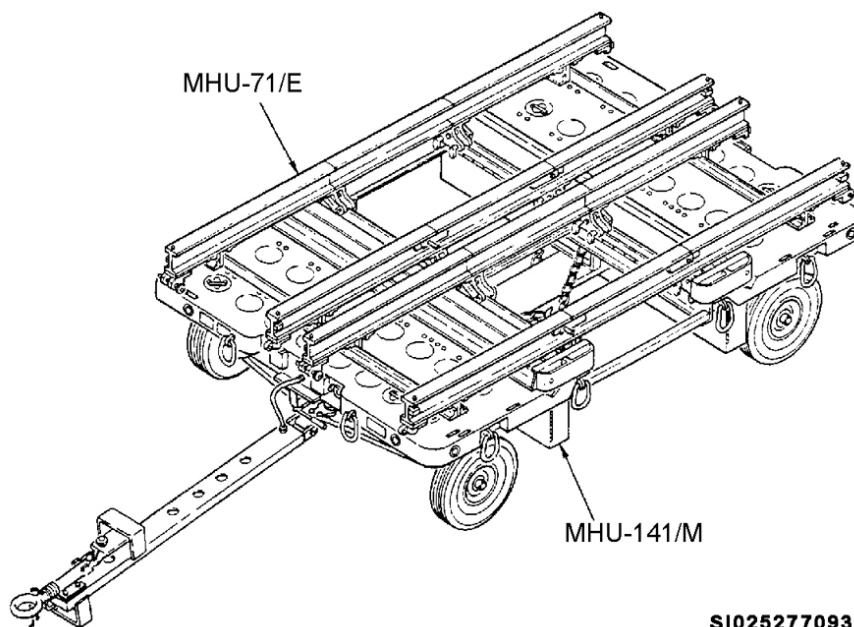
024. Using munitions handling trailer with warheads

To be able to transport the W80 warhead on the MHU-141/M, you need to configure the trailer to be able to accept the warheads by installing the MHU-71/E guided missile handling rail set (fig. 3-16).

Installing the rail set

Position the trailer parallel to the rail set, open the trailers forward and aft loading platforms, and stow the spreader bar if required. Place two rail bases on the trailer so the fixed and movable locking arms are locked into the anchor holes in the platforms of the trailer then tighten the thumbscrews at each rail base finger tight.

Place four rail assemblies onto the trailer and position the supports where the chock rail pins have been removed. Attach the supports with two quick-release pins at each support, and then attach the opposite end of the rail assemblies to the rail base with a quick-release pin. Place two hinged rail sections on hinge pins, and lock each section in place with the quick-release pins.



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Figure 3-16. MHU-71/E on a MHU-141/M.

Payload transfer

If the payload is on a twin rail handling assembly (MHU-71/E or MMU-89/E workstand) the payload may be transferred to any other twin rail handling assembly using an overhead hoist or a lift truck with fork adapters installed. Transfer the payload as follows:

1. On the MHU-141/M, set the brakes and chock the wheels.
2. Position two MHU-69A/E handling cradles on the rails.
3. Make sure the safety stop quick-release pins on the payload transfer assembly are stowed to keep them from striking the payload.
4. Align the transfer assembly with the FWD arrow facing the forward end of the payload and install four quick-release pins to attach the transfer assembly to the MHU-161/E guided missile warhead handling unit.

5. Attach the lifting device.
6. Remove the payload restraint straps if required.
7. Check that all rail stops are extended. For safety, all rail stops must be extended when payloads are on the rail sets.
8. Remove the quick-release pins holding the cradle adapters to the cradle and lift the payload.
9. Move the payload to the rail handling assembly on the MHU-141/M, set the cradle adapters in the center of the cradles and install the four quick-release pins.
10. Remove the lifting device and check to make sure the cradle brakes are properly adjusted, and then lock the cradle brakes.
11. Remove the transfer assembly. When removing the transfer assembly make sure the quick-release pins do not strike the payload.
12. Install two payload restraint straps between the warhead handling unit and trailer tie-downs for each payload on the munitions handling trailer.

Payload transport

Check the trailer rails stops and make sure they are extended. During transportation, the payload(s) must be located on the solid portion of the rail sections. If they need to be moved, unlock the cradles and move the payload to the solid portion of the rails, lock the cradles, and install the restraint straps. If required, cover the payload with the CVU-138/E guided missile component protective cover (fig. 3-17).

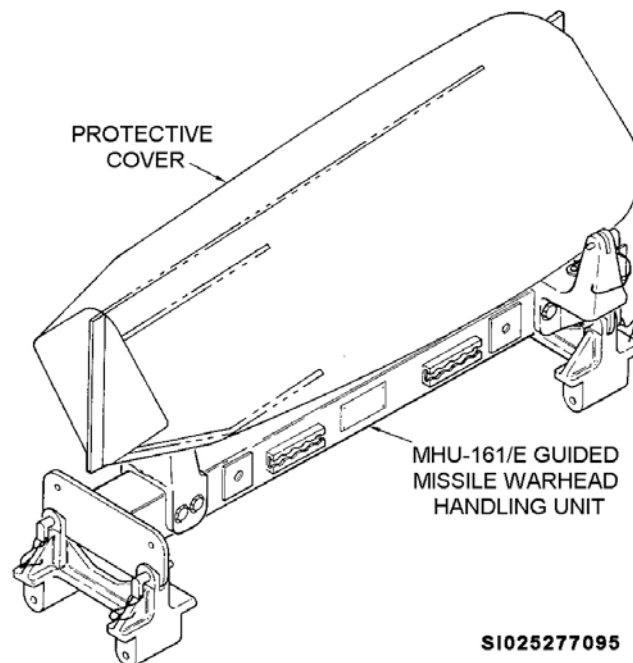


Figure 3-17. CVU-138/E guided missile component protective cover.

Up to four payloads can be transported on the MHU-141/M. Perform the pre-towing checks per TO 35D3-11-36-6WC-2. Next remove and stow the chocks and transport the payload(s). After the transport is complete, chock the wheels of the trailer and perform post towing checks.

Self-Test Questions

After you complete these questions, you may check your answers at the end of the unit.

022. Using munitions handling trailer with unbolstered bombs

1. When can you use the center position for a two-bomb load of B61s?
2. What TO has tables and illustrations for specific cable routing?
3. How do you orient the tie-down ring when attaching the cable clevis?
4. List the two restrictions to observe when using a forklift or a lift truck.
5. What do the terms “in” and “out” refer to in the figures and tables of TO 11N-B1004-1?
6. What do you monitor when transferring a bomb to the trailer?
7. What do you do if you cannot avoid contact between the load binders and the bomb?

023. Stacking and loading bombs on a munitions handling trailer

1. Why must the fins of most units be in the X position before stacking?
2. What do you check when lowering the upper bolster onto the lower bolster?
3. Where do you find the bolts to secure the bolsters together?
4. What effect does nose orientation have on the tie-down configuration?
5. When lifting bolstered weapons onto the MHU-141, how do the caster positions differ for a single and a dual hand truckload of bombs?
6. How many MB-1 tie-down devices do you use to tie down a bolster on a trailer?

024. Using munitions handling trailer with warheads

1. What do you install in the MHU-141/M to be able to transport W80 warheads?
2. How many rail assemblies are attached to the trailer?
3. What can be used to transfer a payload from one twin rail handling assembly to another?
4. For safety, what do you need to check when payloads are on the rail sets?
5. How many payload restraint straps are installed for each payload?
6. During transportation, where on the rail sets must the payloads be located?

3-3. General Weapons Movement Procedures

This section covers methods used by DOE and DOD to move weapons. Moving weapons is an important task that requires training and preparation. Weapon movements can be broken down into two types: logistic movements and operational movements. This section covers general applications to DOE and DOD shipments and some methods we use to move weapons.

025. Shipments

Nuclear weapons are moved by the safest and most secure routes practical. A logistic movement is a method used to transport nuclear weapons in connection with supply or maintenance operations and involves moving weapons from one base to another, depot to base, or base to depot.

Purpose and applicability

The purpose of TO 11N-45-51 is to provide information, instructions, and procedures for transportation and courier responsibilities for logistics movement of nuclear weapons materiel within DOD and DOE. This technical data applies to nuclear weapons materiel shipment made by the DOE, DTRA, Navy, Air Force, or any other DOD activity by the carrier modes and funding.

Major assemblies and containers

The normal flow for shipment of major assemblies and warheads between the DOE and DOD agencies and between DOD MAJCOMs is directed by the Joint Chiefs of Staff (JCS), as shown in figure 3-18. The management and materiel flow of major assemblies is enormous. Shipments within a MAJCOM must be done according to service directives.

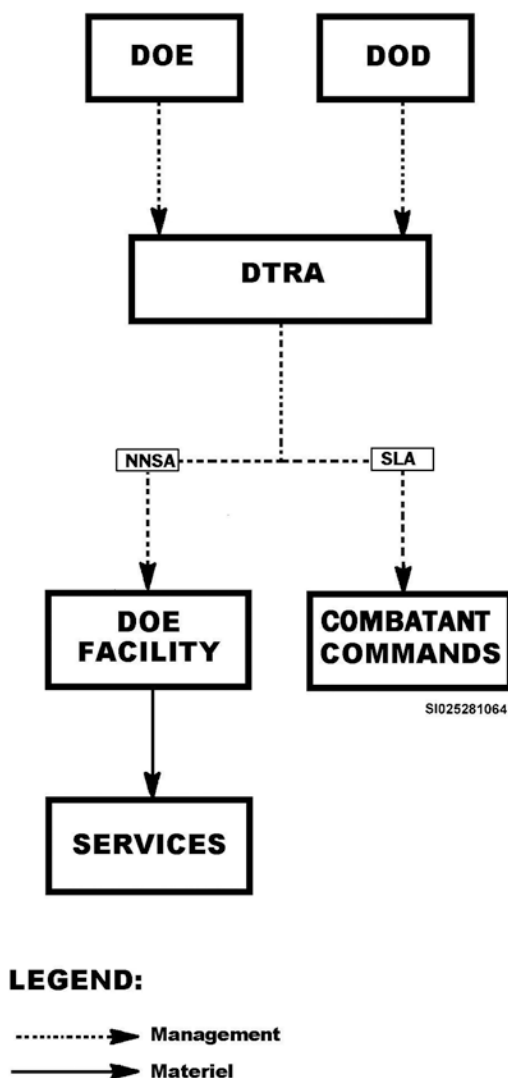


Figure 3-18. Major assembly flow for shipment.

Limited life component

The normal flow of LLCs is a little different. Management and materiel for LLCs normally flow from DOE facilities to DOD military first destinations (MFD). A MFD is the first military base that accounts for or stores LLC materiel. It is then sent to the appropriate location. MFDs are not limited to LLCs; they also account for or store other nuclear materiel.

Loading, blocking, and shoring

The loading, blocking, and shoring procedures are intended as a general guide; therefore, the conditions and equipment may vary at different locations. Such variations are anticipated and latitude is allowed whenever possible. The responsibilities concerning delivery or receipt of nuclear cargo for loading aboard military aircraft are as follows:

1. The shipper is responsible for the delivery of nuclear weapons materiel for loading in aircraft.
2. The receiving courier is responsible for accepting custody of nuclear cargo that has been positioned for loading.

3. The designated loading team supervisor or cargo master is responsible for loading and tying down materiel after final positioning at the aircraft cargo hatch.
4. The host organization must provide all necessary safety-certified MHE; this includes any tow bars, castering tools, and qualified equipment operators.
5. Airlift units will supply any shoring, if needed.
6. Loading team supervisor or cargo master must ensure that jettisonable materiel will be easily accessible in flight without moving other cargo.

026. Maneuverability of hand trucks and containers with casters

When movement of hand trucks and castered containers is necessary, the degree of maneuverability and the definition of the degree are discuss in the following paragraphs.

Hand

You can move both single and double-stacked weapons by hand with one exception: two high-stack configurations must be moved by hand. When moving weapons in this manner, lock the front casters in the trailing position and unlock the rear casters. Stacked weapons have a tendency to be top-heavy. Moving stacked weapons sideways over uneven surfaces or ruts, curbs, or slanted ramps can cause the whole assembly to become unstable. To stabilize them, lock the casters on the side facing the direction of movement in the outboard (outward) position.

Towing

To tow the bolster, use quick-release pins to attach the tow bar to the nose end of the bolster. Lock the rear casters in the trailing position and unlock the forward casters. Attach the tow bar to the pintle hook of the tow vehicle, close the latch, and make sure you insert the safety pin.

When towing bolstered weapons or castered containers, don't hook them up to a vehicle and speed off. There are some restrictions. Design characteristics of the bolsters limit the speed and distance you may move them. Therefore, they are rated for maneuverability and roadability as follows:

- Limited maneuverability.
- Maneuverable.
- Roadable.

Limited maneuverability

A weapon container rated as having limited maneuverability is not intended for towing. When moving these types of containers, you're restricted to manually pushing or pulling the container over any hard surface that will support the casters and is level enough to allow appropriate movement. The handling equipment in this category is the H1125A/H1671 bomb cradle/H1242 and H1473 shipping and storage container.

Maneuverable

Bomb trucks or weapon containers rated as maneuverable can be towed on hard surfaces up to 2 miles at 5 mph or less, over hard surfaces such as shop and bay floors; aprons around buildings and storage areas; ship decks; and primary roads of concrete, bituminous macadam, or sheet asphalt. The handling equipment in this category is the H1347/1347A bomb hand truck.

NOTE: The H1347/1347A with a bomb installed may be towed over smooth hard surfaces for a distance up to 1 mile at speeds not to exceed 5 mph or up to 1,000 feet at slow walking speed for two-high stack. Otherwise, the H1347/1347A is considered in the "limited maneuverability" category.

Roadable

If a container is rated roadable, you can tow it at speeds of up to 20 mph over paved roads and 10 mph over improved unpaved roads. The one handling equipment in this category is the MHU-141/M.

Self-Test Questions

After you complete these questions, you may check your answers at the end of the unit.

025. Shipments

1. What is the purpose of TO 11N-45-51?
2. Who normally directs the flow of major assembly shipments between DOE and DOD?
3. Where does the management and materiel for LLCs normally flow after DOE?
4. Who is responsible for accepting custody of nuclear cargo that has been positioned for loading?
5. What should the host organization provide during delivery or receipt of nuclear cargo?

026. Maneuverability of hand trucks and containers with casters

1. When moving both single and double-stacked weapons by hand, how do you position the casters?
2. When towing a hand truck, how do you position the casters?
3. What limits the speed and distance of hand trucks?
4. A hand truck is restricted to what limited maneuverability?
5. What is the towing restriction for bomb hand trucks on hard surfaces or weapon containers rated as *maneuverable*?
6. What is the *exception* with how the H1347/1347A is categorized?
7. What is an example of a handling equipment that is roadable?

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3-4. Logistic Movement Procedures

We can break down logistic movements into two types: airborne logistic movements and ground logistic movements (truck). First, let's discuss air shipments.

027. Military air logistics shipments

Military logistics shipments is the transport of nuclear weapons by military airlift and involves moving weapons from one base to another, depot to base, or base to depot. This lesson covers DOD air shipments or SAAMs and some factors to consider when moving weapons. Prime nuclear airlift force (PNAF) is another term used with air missions but these missions are usually classified.

Policy and purpose

It is US policy that military transport aircraft used in logistics capacity is normally used for airborne logistics movement of nuclear weapons. With one exception, when special circumstances justify the use of civilian aircraft, the SecDef must give approval. If so, the US military must maintain full custody. The military certification program directory is the approved list for direct delivery of DOE-classified matter to a DOD destination. The list includes shipping addresses, appropriate receiving personnel, and certification expiration dates issued by the Office of Secure Transportation (OST).

Custody transfer of nuclear weapons, component, or test items to/from logistics aircraft

Before each shipment, a list of the couriers is sent to your base, as is a list of the authorized recipients. These lists are updated as changes occur or at least annually and contain personal information. Such information includes name, rank, SSN, security clearance, job title, and duty phone number. Upon arrival or departure of the shipment, the MASO or the appointed alternate meets with the couriers to verify each other's identity and authorization. This is done with military ID cards and courier/receiver lists. Once the identification and authorization process is completed, the weapons, components, or test items can be convoyed to or from the aircraft. Transferring custody of nuclear materiel (i.e., weapons, component, or test items) is complete when the courier or receiver signs the DD Form 1911.

Units responsibilities for transporting, shipping, and receiving nuclear cargo

Units must make sure all personnel involved with logistics movement know their specific responsibilities for transporting, shipping, and receiving nuclear cargo. This includes any related safety and security issues of nuclear cargo and actions to take in case of an en route emergency such as accidents, incidents, or attempted hijacking. Drivers and escorts must have all available information on road conditions, weather, and emergency procedures.

SAAM and DOE movement coordination

Units must coordinate all forecasted logistics movement (i.e., SAAM, SGT, DOE aviation, etc.) with wing or host nation agencies to ensure senior leadership has full visibility and support for the movement. At a minimum, the units must include the airfield management, wing safety, fire department, office of special investigations, LRS, and security forces. This action is necessary to prevent last minute cancellations and avoid conflict with the wing's calendar of events. Everyone involved in the movement is briefed in advanced on all phases of the movement. When planning a nuclear weapons movement, consider the following basics:

- Known and possible hazards.
- Current intelligence estimates of general and local threats associated with the point of origin, routes, en route stops, and destination.
- The type of weapons, maneuverability, and method of shipment, as we mentioned earlier.
- The availability of security forces, resources, and equipment.

Bombs

There are additional responsibilities if you are shipping nuclear weapons equipped with command disable systems (CDS). TO 11N-45-51 provides guidelines and procedures applicable to shipments involving these type weapons. We covered CDS earlier and will cover it in depth later.

The following are some basic shipper responsibilities for shipping CDS-equipped weapons:

1. Ensure that a classified CDS code is recoded into the weapons for shipment and marked and controlled as "Confidential FRD."
2. Select the numbers to be used as the code and insert the same code in all weapons for shipment.
3. Ensure knowledge of the CDS code is restricted to the minimum number of people required to have the code.
4. The shipper must brief the courier and at least one other aircrew person on CDS insertion and activation procedures.
5. Preparing the CDS code per TO 11N-45-51 and any other applicable directives.

Containers

Three DOE facility ship LLC containers to MFDs:

- Savannah River Site office ships reservoirs in H1616-1 and -2 containers.
- Pantex Plant in Amarillo, Texas ships gas generators packaged in wooden boxes.
- Sandia National Laboratories ships neutron generators packaged in 9-gallon drums.

LLC containers to support AF OCONUS requirements are shipped to arrive by the 25th of the month at the designated MFD for OCONUS delivery by SAAM the following month. If during transit, a container seal is broken or there's minor damage to the container (i.e., scratches, scraped paint, small dents, etc.), the courier must document the DD Form 1911 in the remarks section to reflect the circumstances of the incident to the satisfaction of the recipient, only if the container integrity has not been invalidated. If container seals are broken to the extent the container's integrity is invalidated or if the container shows evidence of major damage, the courier must be retained pending the verification of the container's contents by the ultimate consignee or as directed by the service controlling organization.

Emergency evacuations

An emergency evacuation is the movement of nuclear weapon cargo for military contingency or logistic supply during periods of increased tensions or national disaster. The JCS or commanders of unified or specified commands, or their specifically designated representatives are authorized to implement an emergency movement. These movements can take place only when it's the only alternative to destruction or loss of the weapons or cargo.

If an emergency logistics movement is directed, the commander who ordered the movement may waive the following two restrictions: maximum permissible plutonium weight limitation in TO 11N-20-7, *Nuclear Safety Criteria*, and mixing of hazardous materials. Also in the event of certain emergency operations, commanders may authorize the use of non-nuclear certified equipment or procedures. Safety and reliability must be considered when using this equipment or improvised procedures.

028. Department of Energy Transportation Safeguards System

In 1975, the DOE established a nationwide transportation safeguards system designed to transport nuclear weapons and nuclear materiel. The DOE Transportation Safeguards System consists of specially trained, equipped, and supervised special agents; specialized transport equipment; and a nationwide communications system. The OST of the DOE, which is located in Albuquerque, New Mexico, is responsible for the coordination and planning for all shipments between the DOE and DOD. It is also responsible for any access lists for DOE couriers and equipment serial numbers. The

OST also sends out any classified message traffic with all important shipping or receiving information.

TO 11N-45-51B is the primary manual for the preparation and shipment of nuclear materiel by SGT. Normally, the primary way DOE ships weapons within the CONUS is by SGT.

After the manufacture of a nuclear weapon, DOE is responsible for the weapon while it is in transit to a DOD facility. Once the weapon reaches the last transfer point, the receiving installation is responsible for its security.

Custody transfer of nuclear weapons, components, and test items to/from SGT

Before each shipment, a list of the couriers is sent to your base and the MASO uses a DD Form 1911 to transfer custody to or from OST personnel. When the shipment arrives, the MASO or the appointed alternate meets with the shipment convoy commander to verify each other's identity and authorization. Once the identification and authorization process is completed, the trucks along with the chase vehicles enter the WSA. After the vehicles are positioned, custody transfer begins. For inbound shipments, the MASO enters the SGT to perform a visual verification of the asset serial numbers against the information contained in the DD Form 1911. For outbound shipments, the MASO enters the structure or maintenance facility to perform a visual verification of the asset serial numbers against the DD Form 1911 of the items being shipped.

General SGT shipments

The SGT (fig. 3-19) is a modified standard 40-foot, dry-freight, cargo-type semitrailer. It includes an inner armored container (cargo space), cargo tie-down tracks, access-denial walls, and items necessary for the immobilizing system. The SGT includes heating and cooling units that maintain the cargo space temperature. These units ensure the access-denial system operates properly and fulfill certain shipment temperature requirements. The trailer also includes a temperature monitoring system and a fire alarm system.

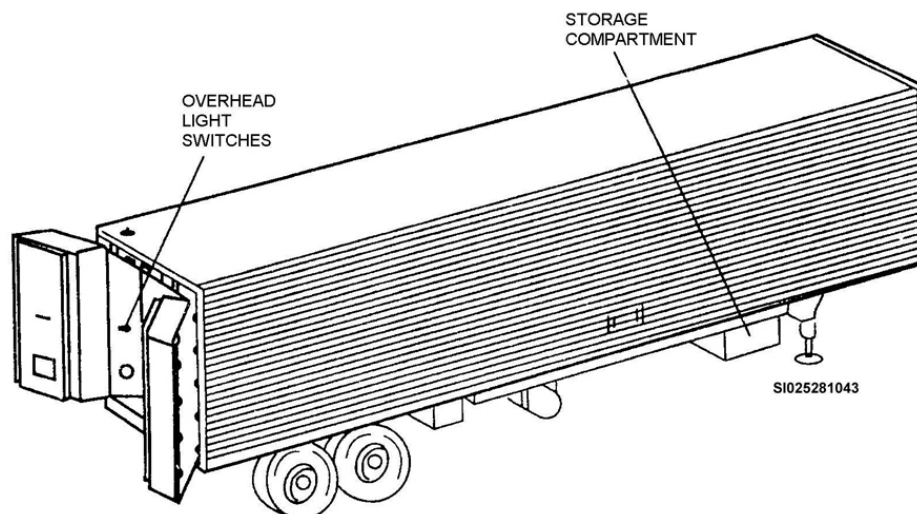


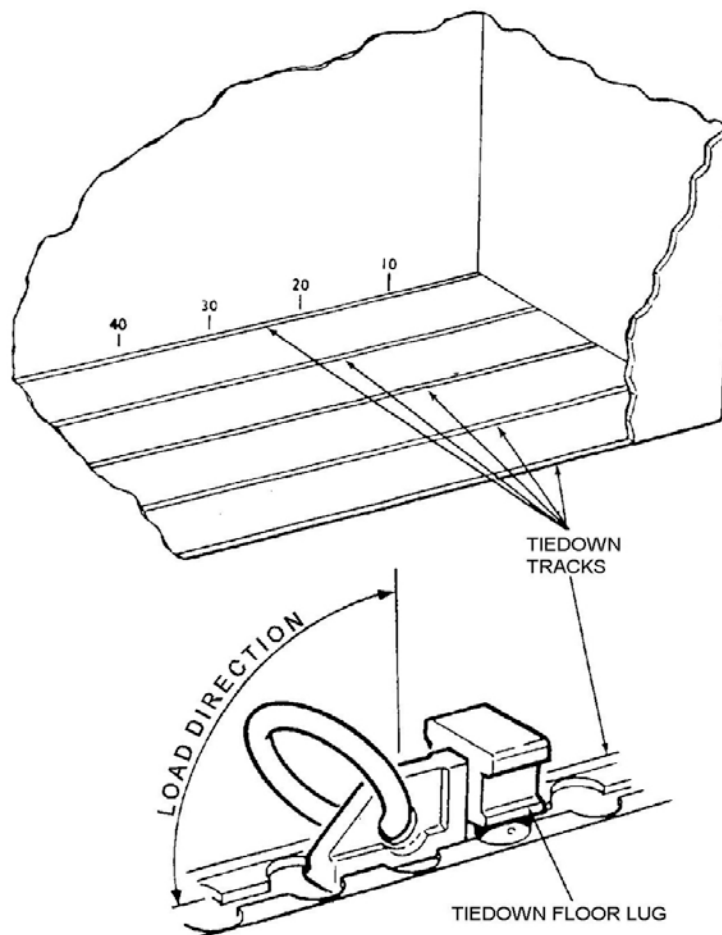
Figure 3-19. SGT.

The SGT must be handled under TPC procedures whenever the loading doors are open. This is to preclude any unauthorized tampering or access to internal controls. The SGT is visually unclassified, both internally and externally. However, the operational systems are classified Secret and must be afforded that level of protection.

SGT loading/unloading

The SGT has five aircraft-type, tie-down tracks built into the SGT floor (fig. 3-20) with each track having one tie-down station every inch for a total of 455 stations. Tie-down stations are numbered in

10-in. increments and marked on the SGT sidewalls starting at the forward end. You can find tie-down stations/patterns for shipping containers in TO 11N-45-51B.



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Figure 3-20. Tie-down tracks and floor lug.

Here are some things to remember once you are inside the SGT. Allow enough clearance between the first item and the equipment compartment so the door can open. You can load containers into the SGT from a loading dock or loading platform, such as a flatbed trailer. Make sure the ramp between the SGT and the dock is secure so it will not separate. You *cannot* perform forklift operations within the SGT, but you can use the forklift to position the container or weapon on a trailer or loading dock. Finally, do *not* skid non-wheeled containers across the SGT floor. You can seriously damage the floor covering if you don't use proper handling equipment to maneuver the container. Use a wheeled pry bar.

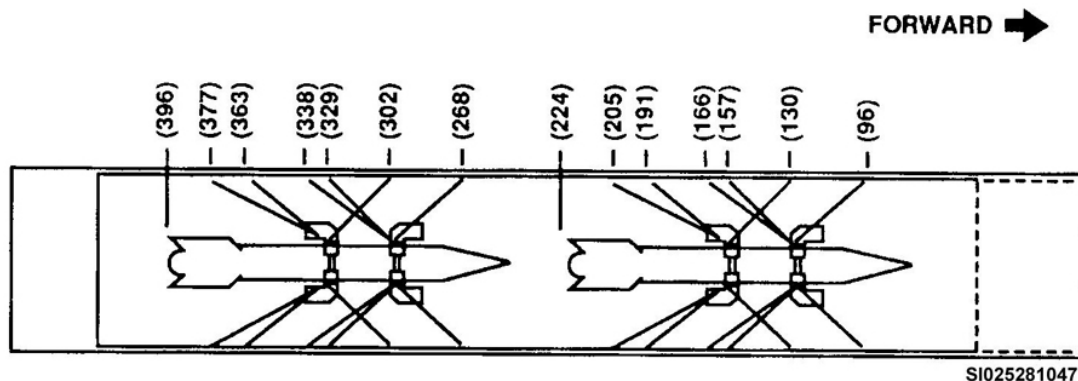


Figure 3-21. Typical bomb tie-down pattern.

Position the container or hand truck as shown in TO 11N-45-51B for the type of weapons you are loading. Figures 3-21 show a typical SGT weapon tie-down pattern. Once the weapon is oriented, position and lock the casters as specified. If required, use a jack to position shoring (fig. 3-22) under the bolster. This is required for all gravity bombs. Shoring is nothing more than stacked wood that relieves weight from the casters. Shoring dimensions are dictated by the applicable tie-down figure in TO 11N-45-51B.

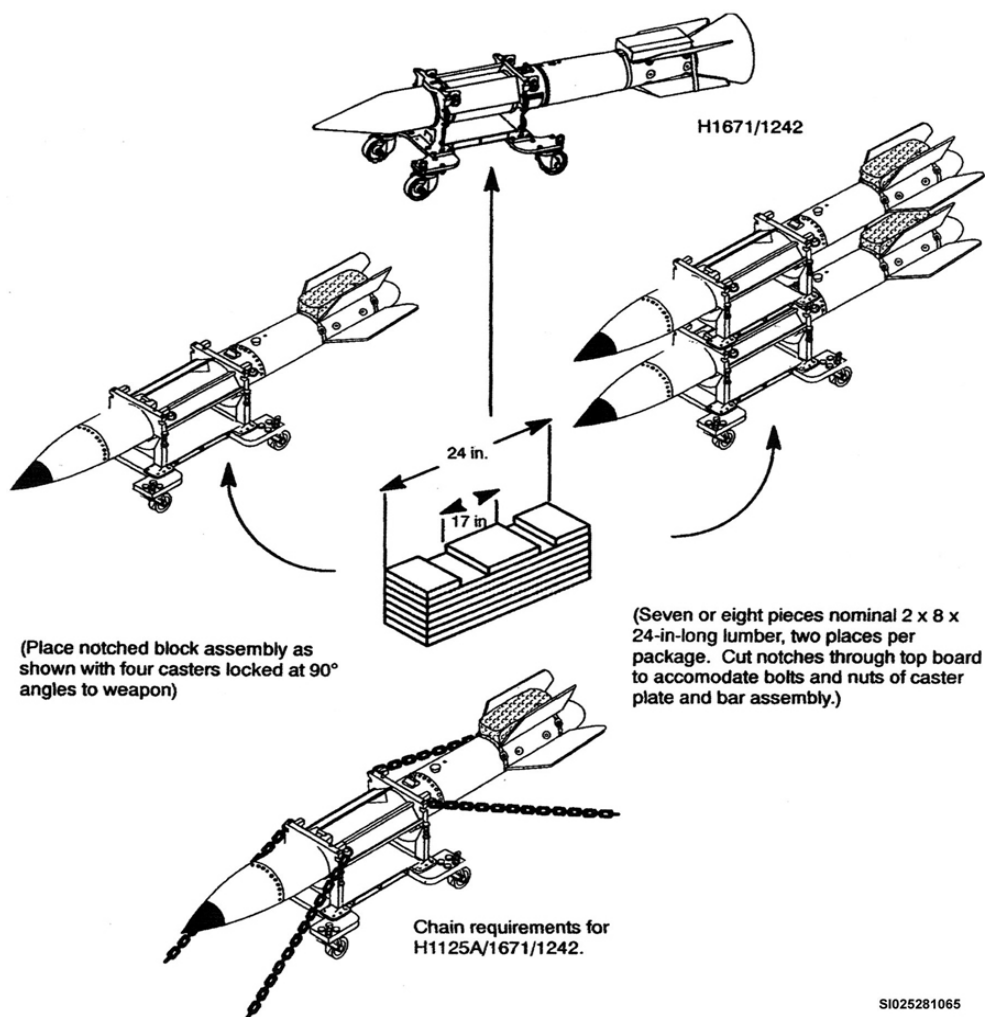


Figure 3-22. Bomb on shoring.

For Official Use Only

Install the floor lugs in the specified tracks and locations. When positioning floor lugs, make sure the attachment ring is positioned over the station indicated. Tie-down floor lugs must have a minimum spacing of 3 in. (center-to-center).

Installing pear-shaped ring

After the lugs or adapters are installed, the next step is to attach the MB-1. MB-1s are provided and stored in the trailer. When attaching a chain hook to a pear-shaped ring on a weapon bolster, ensure that ring is oriented in the direction of pull, and then tighten the chain assemblies by using the procedures in TO 11N-45-51B.

Drum tie-down adapters

Drum tie-down adapters (fig. 3-23) supplied within SGTs are designed for metal drums standing on end with a ridge around the top. Place the drum on end and lay two drum tie-down adapters on the drum top, one with the keyhole up and the other with the keyhole down. Make sure the adapters are directly opposite of each other. Insert the chain between the adapters making sure of the proper length. Orient adapters to the fore and aft positions on the drum. Insert the tie-down floor lugs into the tracks and secure to the floor.

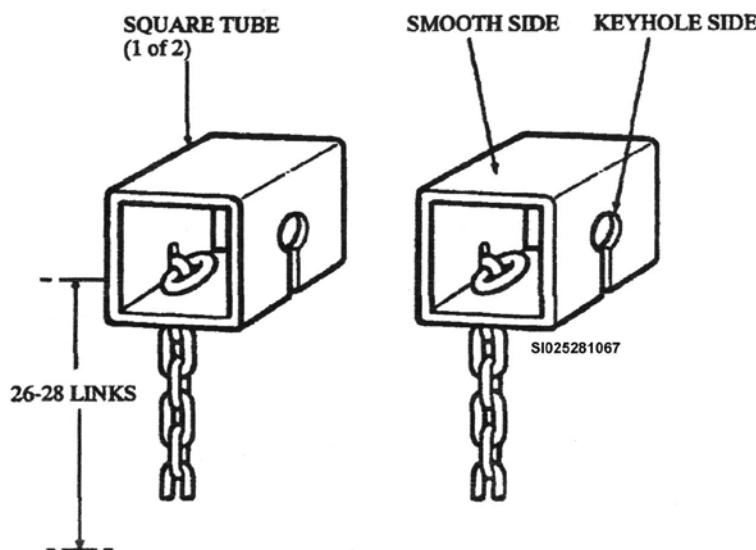


Figure 3-23. Drum tie-down adapters.

Overland palletized unit shipper

The overland palletized unit shipper (OPUS) (fig. 3-24) is the system used to ship all vertical and horizontal warhead shipping containers containing WR weapons that are H1224A, H1388, H1408/A, and H1473 shipping and storage containers. Containerized joint test assembly's (JTA), TYPE weapons and test units are also shipped using OPUS unless alternate shipping methods are approved. The shipping container is loaded into the OPUS container or "overpack," and the overpack is loaded into rollerized track SGTs and locked into place for shipment. The following items are associated with the OPUS system:

- Overpack.
- H1703 loading platform.
- H1704 overpack transition ramp.
- H1705 overpack bridge plate.
- H1706 caster tool.
- H1707 transition platform.

The overpack may be moved manually on its four caster assemblies or by forklift. The weapon containers are loaded into the overpack using a forklift or pallet jack and the transition platform. Once positioned, they are secured in place with nylon tie-down straps.

After the overpack is loaded, it is transferred by forklift to the loading platform, then manually rolled onto the alignment track of the SGT, positioned and locked into place.

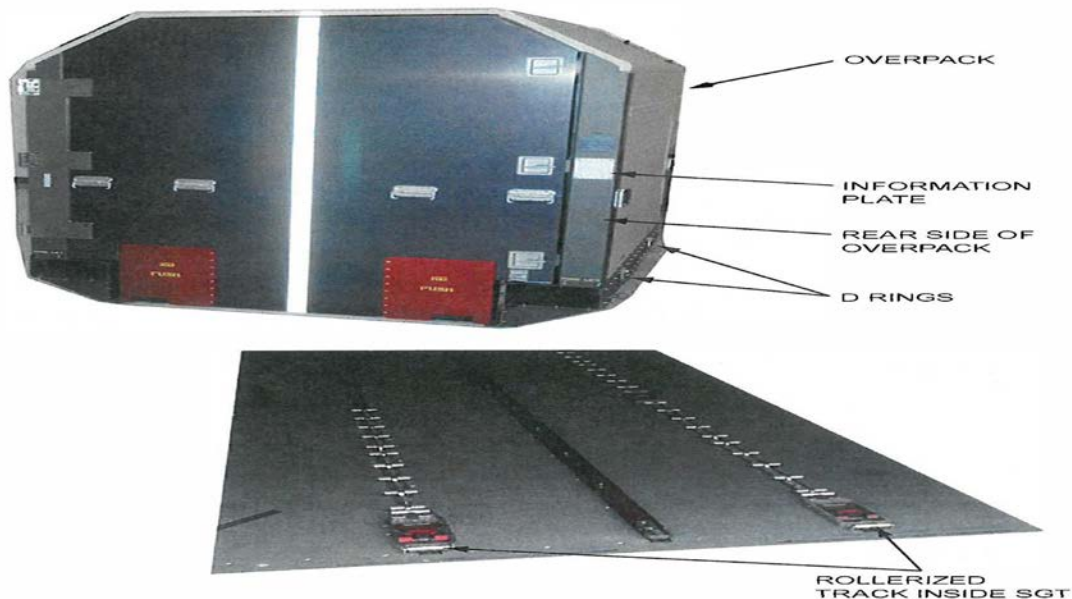


Figure 3-24. Overpack and SGT with rollerized tracks.

Self-Test Questions

After you complete these questions, you may check your answers at the end of the unit.

027. Military air logistic shipments

1. How does the PNAF differ from the SAAM?
2. Who must approve the use of civilian aircraft during logistics movement of nuclear weapons?
3. What is the military certification program directory?
4. At least, how often is the courier list updated?
5. What form is used to show custody transfer of nuclear weapons?

6. In addition to knowing their specific responsibilities, what are the other responsibilities units make sure all personnel responsible for transporting, shipping, and receiving nuclear cargo?
7. At a minimum, whom should the unit coordinate all forecasted logistics movements?
8. What is the classification of the CDS code?
9. What does the shipper brief the courier and aircrew member on during a logistics movement?
10. What three facilities ship LLCs containers to MFDs?
11. For LLCs scheduled to support AF OCONUS requirements, when are shipments expected to arrive at the designated MFDs?
12. Who is authorized to implement emergency movements?
13. What two items are waived during a declaration of emergency movement?

028. Department of Energy Transportation Safeguards System

1. The DOE Transportation Safeguards System consists of what?
2. What is the primary method for transporting nuclear weapons within the CONUS?
3. Who meets with the shipment convoy commander to verify each other's identity and authorization?
4. What part of the SGT is classified Secret?
5. How many tie-down tracks and tie-down stations are in the SGT?

6. Can a forklift be used during a SGT loading?
7. How should the pear-shaped ring be oriented during the tie-down operations?

Answers to Self-Test Questions

020

1. Cracks or bent/worn parts on the tie-down device; deformed, cracked, or damaged links on the chain.
2. Fully extend the hook and open the chain recess.
3. The locking mechanism can be broken or the take-up assembly can be pulled apart.
4. You don't want one chain's tension to move the container before you tighten the remaining assemblies.
5. When you can't tighten the take-up wheel any further by hand, or until the chain deflection is less than $\frac{3}{4}$ in. using only nominal hand pressure sideways on the chain.
6. Wear a glove to protect your hand and manually restrain the chain as you activate the quick-release lever.
7. First, close the load binder and run in the turnbuckle to its shortest length. Make your measurement from the inside curves of the clevises.
8. Between 85.75 in. minimum to 87.0 in. maximum.
9. Rotate the turnbuckle to remove slack; verify threads (more than one) are exposed inside the turnbuckle; and tighten the wing nut securely against the turnbuckle.
10. 5,000 lb.
11. Two.
12. Thoroughly examine the webbing for tears, punctures, frayed edges, or excessive wear; inspect the adjusting mechanism, tensioning mechanism, and the adjusting mechanism release for defects; make sure the strap assembly opens and closes without binding.
13. At least one-half wrap of strap.
14. Returning the tensioning mechanism to the closed position and securing the loose end of the strap.
15. Pull the adjusting mechanism release and pull on the tight part of the strap. Loosen the strap enough to unhook the strap hooks.

021

1. Overhead hoist, overhead crane, and a lift vehicle.
2. Align the beam portion of the sling so it is perpendicular to the bomb's longitudinal axis and over the bomb's CG.
3. No.
4. Tire chains create vibrations that can put excessive stress on equipment (such as the lifting beam) and possibly cause the bomb to fall.
5. The weight restrictions of the forklift, the working environment, and proper ventilation.
6. Some H1125As have recessed vertical braces in the forklift slots. Make sure you don't hit the braces with the forklift or you could damage the bomb and H1125A.
7. Because the combined weight would exceed the weight capacity of the H1004.
8. Install two gravity weapons load adapters using four quick-release pins.
9. Forklifts or wire rope slings and a hoist.
10. At least a pair.

022

1. As long as the trailer remains in the same area (e.g., quick-reaction area).
2. TO 11N-B1004-1.
3. Pull the ring all the way up and rotate the ring so it is in line with the pull of the cable.
4. (1) Do *not* use tire chains on lift vehicles and (2) secure the H1004 to the lift vehicle with a strap.
5. The inner and outer holes of the MHU-28/E.
6. The clearances between the bomb, bomb fins, and trailer chocks.
7. Place a pad of rubberized hair or other suitable padding between the tie-down device and the bomb.

023

1. In the + position, the fins will be damaged because there is not enough clearance.
2. That the alignment pins on the bottom bolster engage the holes on the upper bolster.
3. In their storage location on the upper bolster or canvas bag.
4. None; it does not affect the tie-down pattern.
5. For single loads, lock two diagonally opposite casters 90° *outboard* to the bomb's longitudinal axis; for a dual load (side by side), lock two diagonally opposite casters 90° *inboard* to the bomb's longitudinal axis.
6. Four.

024

1. The MHU-71/E guided missile handling rail set.
2. Four.
3. An overhead hoist or lift truck with fork adapters installed.
4. All rail stops to make sure they are extended.
5. Two.
6. On the solid portion of the rail sets.

025

1. To provide information, instructions, and procedures for transportation and courier responsibilities for logistics movement of nuclear weapons materiel within DOD and DOE.
2. Joint Chiefs of Staff.
3. DOD MFDs.
4. Receiving courier.
5. All necessary safety-certified MHE including any tow bars, castering tools, and qualified equipment operators.

026

1. Lock the front casters in the trailing position and unlock the rear casters.
2. Lock the rear casters in the trailing position and unlock the forward casters.
3. Design characteristics of bolsters.
4. Manually pushing or pulling the container over any hard surface that will support the casters and is leveled enough to allow appropriate movement.
5. Can be towed on hard surfaces up to 2 miles at 5 mph or less.
6. H1347/1347A can be towed over smooth hard surfaces for a distance up to 1 mile at speeds not to exceed 5 mph or up to 1,000 feet at slow walking speed for two-high stack. Otherwise, the H1347/1347A is considered limited maneuverability category.
7. MHU-141/M.

027

1. Usually considered classified.
2. SecDef.

3. It's an approved list for direct delivery of DOE-classified matter to a DOD destination. The list includes shipping addresses, appropriate receiving personnel, and certification expiration dates issued by the OST.
4. As changes occur or annually.
5. DD Form 1911.
6. Any related safety and security issues of nuclear cargo and actions to take in case of an en route emergency such as accidents, incidents, or attempted hijacking.
7. The airfield management, wing safety, fire department, office of special investigations, LRS, and security forces.
8. Classified.
9. CDS insertion and activation procedures.
10. (1) Savannah River Site.
(2) Pantex Plant.
(3) Sandia National Laboratories.
11. By the 25th of the month.
12. The JCS, the commander of a unified or specified command, or their specifically designated representatives.
13. The maximum permissible plutonium weight limitation and mixing of hazardous materials.

028

1. Specially trained, equipped, and supervised special agents; specialized transport equipment; and a nationwide communications system.
2. SGT.
3. The MASO or appointed alternate.
4. The operational systems.
5. Five aircraft-type, tie-down tracks with each track having one tie-down station every inch for a total of 455 tie-down stations.
6. Yes, only to position containers or weapons on a trailer or loading dock.
7. Ring is oriented in the direction of pull.

Unit Review Exercises

Note to Student: Consider all choices carefully, select the *best* answer to each question, and *circle* the corresponding letter. When you have completed all unit review exercises, transfer your answers to the Field-Scoring Answer Sheet.

Do not return your answer sheet to the Air Force Career Development Academy (AFCDA).

71. (020) During a pre-use inspection, if you find an MB-1 tie-down device/chain assembly that is cracked what do you do, if anything?
 - a. Nothing.
 - b. Replace the device.
 - c. Report it to major command (MAJCOM).
 - d. Repair it if the crack is smaller than ½ inch.
72. (020) When you install the chain link into the chain recess, what precaution *must* you observe when using the MB-1 tie-down device/chain assembly?
 - a. Be sure to place the free end of the chain in the bottom of the chain recess slot.
 - b. Make sure the loaded end of the chain rests in the bottom of the chain recess slot.
 - c. Do *not* use the first few chain links in the chain recess slot.
 - d. Do *not* use the last few chain links in the chain recess slot.
73. (020) What is *not* an authorized method for securing loose MB-1 tie-down/chain assembly ends to prevent damage during shipment?
 - a. Wrap the loose ends around the tie-down device and tape to the device.
 - b. Loop the excess chain around the chain assembly and secure with duct tape.
 - c. Coil the excess chain around itself and secure with pressure sensitive adhesive tape.
 - d. Wrap the loose ends around the container tie-down point and secure with a cable tie.
74. (020) You use the load binder on the MHU-141/M munitions handling trailers to secure
 - a. bolstered weapons on 25- or 40-foot trailers.
 - b. unbolstered weapons on 25- or 40-foot trailers.
 - c. bolstered weapons on the MHU-141/M trailer.
 - d. unbolstered weapons on the MHU-141/M trailer.
75. (020) How do you extend the strap on the CGU-1/B nylon webbing and tie-down strap?
 - a. Close the tensioning mechanism and pull the strap.
 - b. Release the adjusting mechanism and pull the strap.
 - c. Engage the release mechanism, and the strap automatically releases.
 - d. Disengage the spindle mechanism, and the strap automatically releases.
76. (021) When moving a bomb on a forklift, what factor determines whether forklift spacers are required on the tines?
 - a. Personal preference.
 - b. Weather conditions.
 - c. Working environment.
 - d. Forklift make and model.
77. (021) When you use the H1004 bomb-hoisting adapter to lift a bomb, how do you align the lifting eye?
 - a. With the hoist's center of gravity (CG).
 - b. By the weight capacity of the hoist.
 - c. With the weapon's CG.
 - d. By the average weight of all weapons lifted.

78. (021) What is the *minimum* number, if any, for wheeled pry bars to move warhead containers?
- Wheeled pry bars are *not* authorized.
 - Two.
 - Three.
 - Four.
79. (022) What loading procedure is *not* authorized on the MHU-141/M munitions handling trailer?
- Single bombs in any location.
 - Center position for a two-bomb load of B83s.
 - Center position for a two-bomb load of B61s.
 - Bomb nose orientation to meet operational needs.
80. (022) The terms “in” and “out” referenced in the figures and tables of TO 11N-B1004-1, *Weapons Loading and Tie-down Procedures*, refer to the
- tie-down cable routing through or around bomb lugs.
 - inner and outer holes of the MHU-28/E adapter.
 - position of the chocks on the trailer deck rails.
 - position of the load binder handle.
81. (023) When can you load *two* single-bolstered B83s on the MHU-141/M munitions handling trailer?
- For storage only.
 - With major command (MAJCOM) approval.
 - When performing maintenance on the bolster.
 - For transportation within the weapon storage area (WSA).
82. (023) How do you position the hand truck casters for a single-bomb load on the MHU-141/M munitions handling trailer?
- Lock one diagonally opposite caster 90 degrees (°) *outboard* to the bomb’s longitudinal axis.
 - Lock two diagonally opposite casters 90° *outboard* to the bomb’s longitudinal axis.
 - Lock one diagonally opposite caster 90° *inboard* from the bomb’s longitudinal axis.
 - Lock two diagonally opposite caster 90° *inboard* from the bomb’s longitudinal axis.
83. (023) During the bomb transfer operation, when do you attach the tie-down devices?
- Before positioning the caster assemblies.
 - After removing the lifting device.
 - During the pre-use inspection.
 - Before bomb loading.
84. (024) How do you transport the W80 warhead on a MHU-141/M munitions handling trailer?
- By installing the MHU-71/E guided missile handling rail set.
 - By opening the trailer deck and setting the W80 on the chocks.
 - Tying down the MHU-69A/E handling cradles with CGU-1/B nylon webbing and tie-down strap.
 - The W80 warhead *cannot* be transported on the MHU-141/M munitions handling trailer.
85. (024) When payloads are on the MHU-71/E guided missile handling rail sets, for safety you check to make sure
- the lifting device is installed.
 - all rail stops are extended.
 - the quick-release pins are retracted.
 - the cradle adapters are facing forward.

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-
86. (024) During transportation on the MHU-141/M munitions handling trailer with rail sets installed, where *must* the payload(s) be located?
- On the solid portions of the rail sections.
 - So the cradles overlap the rail joints.
 - In the center section of the rail set.
 - Over the tires for added support.
87. (025) The military first destination (MFD) is the first military base that
- builds nuclear materiel.
 - stores training material.
 - accounts for or stores nuclear or limited life component (LLC) material.
 - accounts for or stores LLC material only.
88. (025) Who is responsible for accepting custody of nuclear cargo that has been positioned for loading?
- Shipping courier.
 - Receiving courier.
 - Aircraft loadmaster.
 - Security forces entry controller.
89. (026) A weapon container *not* intended for towing is rated as
- roadable.
 - maneuverable.
 - limited roadability.
 - limited maneuverability.
90. (027) How is the receipt or shipment of classified nuclear materiel done and verified for an airborne logistic movement, and by whom is it done?
- The applicable work order; the team chief.
 - Special assignment airlift mission (SAAM) listing; the maintenance supervisor.
 - SAAM listing; the munitions accountable systems officer (MASO) or the appointed alternate and couriers.
 - Military identification (ID) cards and courier/receiver lists; the MASO or the appointed alternate and couriers.
91. (027) Units do *not* coordinate forecasted logistics movement with which agency?
- Airfield management office.
 - Inspector general's office.
 - Logistics readiness squadron.
 - Office of special investigations.
92. (027) Who is responsible for preparing command disable system (CDS) codes when shipping CDS equipped weapons and what is the classification of these codes?
- Receiver; Secret.
 - Shipper; Unclassified.
 - Shipper; Classified.
 - Receiver; For Official Use Only.
93. (027) Which agency is responsible for shipping limited life components (LLC) in H1616 containers?
- Pantex Plant.
 - Savannah River Site.
 - Sandia National Laboratory.
 - Los Alamos National Laboratory.

94. (028) Once a nuclear weapon reaches the last transfer point, who is responsible for its security?
- a. Department of Defense (DOD) weapons courier.
 - b. Department of Energy (DOE) weapons courier.
 - c. Receiving installation.
 - d. Major command (MAJCOM).
95. (028) Which items require shoring when being tied down in a safeguards transporter (SGT)?
- a. H1616 containers.
 - b. Gravity bombs.
 - c. Warhead containers.
 - d. Group-X kit pallets.
96. (028) What is the *minimum* spacing (center-to-center) for tie-down lugs in the safeguards transporter (SGT)?
- a. 2 inches (in.).
 - b. 3 in.
 - c. 4 in.
 - d. 5 in.

Glossary of Abbreviations and Acronyms

°	degree (angle)
°F	degree Fahrenheit
AAAL	access, approval, and authority list
AC/DC	alternating current/direct current
AF	Air Force
AFI	Air Force instruction
AFMAN	Air Force manual
AFSC	Air Force specialty code
AFTO	Air Force technical order
ALC	air logistics complex
ALCM	air-launched cruise missile
ALT	alteration
AMC	Air Mobility Command
APU	auxiliary power unit
B	user
BMSS	base military supply system
BS	base spares
CAS-B	Combat Ammunition System-Base
CCW	counterclockwise
CDS	command disable system
CG	center of gravity
CJCSI	Chairman of the Joint Chiefs of Staff instruction
CM	nuclear ordnance materiel
CONUS	continental United States
CSRL	common strategic rotary launcher
CT	cable test
CW	clockwise
D	depot
DC	direct current
DD	Department of Defense
DE	disablement equipment
DIAMONDS	Defense Integration and Management of Nuclear Data Services
DMCCC	deputy missile combat crew commander

DOD	Department of Defense
DOE	Department of Energy
DSRL	Department of Energy spares repair list
DTRA	Defense Threat Reduction Agency
EAL	entry authorization list
eIRC	electronic inspection record card
ERRC	expendability, recoverability, reparability category
F	field
FAX	facsimile
FB	base
FE	equipment
FK	manual supply account
FOB	found-on-base
FRD	formerly restricted data
FSG	federal stock group
FV	conventional munitions account
H	handling
Hp	horsepower
Hz	Hertz
ICBM	intercontinental ballistic missile
ICC	Interstate Commerce Commission
ID	identification
IMF	integrated maintenance facility
in.	inch
JCS	Joint Chiefs of Staff
JNWPS	Joint Nuclear Weapons Publication System
JTA	joint test assembly
K	thousand
KUMMSC	Kirtland Underground Munitions and Maintenance Storage Complex
lb.	pound
LIL	location inventory listing
LLC	limited life component
LLCE	limited life component exchange
LRS	logistics readiness squadron

MAJCOM	major command
MAR	maintenance activity report
MASO	munitions accountable systems officer
MCC	missile combat crew
MCCC	missile combat crew commander
MFD	military first destination
MHE	materiel handling equipment
MHT	munitions handling trailer
MMOC	missile maintenance operations center
MNCL	master nuclear certification list
mph	miles per hour
MS	military spares
MV	manual valve
N	nonexpendable
NARS	nuclear accountability and reporting section
NCP	Nuclear Control Point
NMCC	National Military Command Center
NOCM	nuclear ordnance commodity management
NOSS	nuclear ordnance shipping schedule
NSC	Nuclear Security Campus
NSN	national stock number
NWRM	nuclear weapons related materiel
OCONUS	outside the continental United States
OPLAN	operation plan
OPUS	overland palletized unit shipper
OST	Office of Secure Transportation
OUIC	operational unit identification code
PAL	permissive action link
PCU	portable control unit
PNAF	prime nuclear airlift force
POC	point of contact
psi	pounds per square inch
QC	quality control
RCU	remote control unit
RD	restricted data

RLA	rotary launcher assembly
Rpm	revolutions per minute
RS	reentry system
SAAM	special assignment airlift mission
SecDef	secretary of defense
SEV	stockpile emergency verification
SGT	safeguards transporter
SIPRNET	Secret Internet Protocol Router Network (SIPRNET)
SIR	semiannual inventory report
SRAN	stock record account number
SS	source and special
SSN	social security number
SVA	sole vouching authority
T	test
TC	team chief
TCTO	time compliance technical order
TMO	traffic management office
TO	technical order
TPC	two-person concept
UR	unsatisfactory report
USAF	United States Air Force
USAFE	United States Air Forces in Europe
USAL	unit spares authorization list
V	volt
VAC	volts alternating current
VDC	volts direct current
VPN	virtual private network
WCL	weapons custody list
WIR	weapon information report
WR	war reserve
WS3	weapons storage and security system
WSA	weapon storage area
WSR	weapon status report
X	lateral; expendable

Y	longitudinal
YAW	vertical axis

Student Notes

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