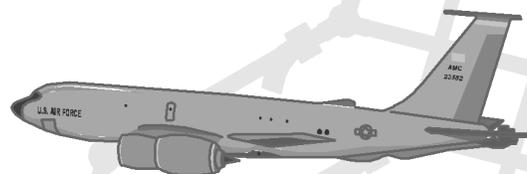
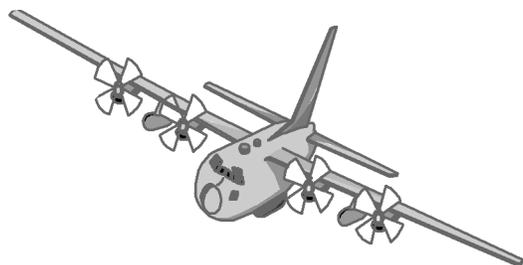
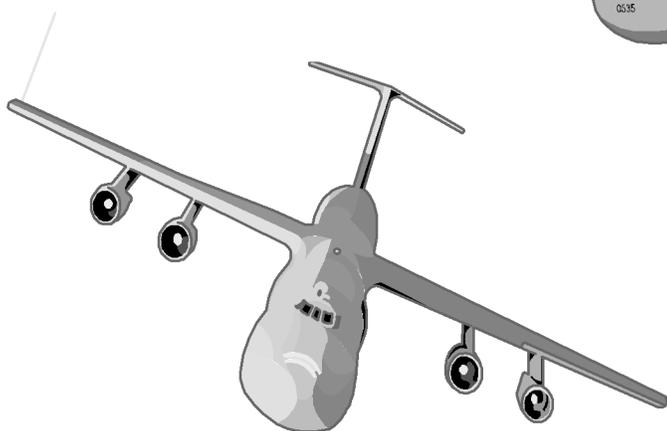
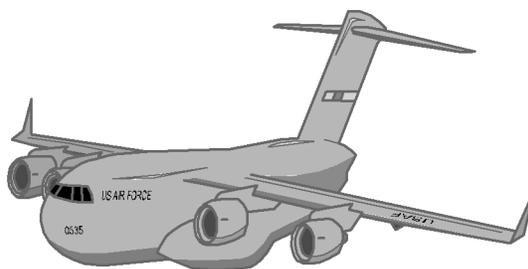




AMC AFFILIATED CONTINGENCY LOAD PLANNING WORKBOOK 36-101 VOLUME 1 EQUIPMENT PREPARATION COURSE



OPR: USAFMOS/MOOO (TSgt Wise)
Certified by: AMC/A3CM (MSgt Langley)
CAO: 1 Jan 2015 (SMSgt Wesley)

THIS PAGE INTENTIONALLY LEFT BLANK

Table of Contents

Table of Contents	i
Introduction	ii
<hr/>	
<h3>Phase I</h3>	
Deploying Unit Responsibilities	1-1
Palletization	2-1
Materials Handling Equipment	3-1
Shoring	4-1
Cargo Preparation and Joint Inspection	5-1
Departure Airfield Operations	6-1
Safety	7-1
Weighing and Marking	8-1
Reference	A-1
<hr/>	
Abbreviations and Acronyms	A-2
Glossary	A-3
AMCU Addresses	A-4
Student Request for Assistance	A-5

Introduction:

AMC Affiliated Contingency Load Planning (ACLP) PROGRAM EQUIPMENT PREPARATION COURSE PHASE I

Overview: The Equipment Preparation Course is designed to educate personnel on how to properly prepare cargo, equipment, and personnel for airlift on AMC aircraft.

NOTE: *To attend Phase II training, students must have successfully completed Phase I training. (Exception: Air Combat Command affiliated units are exempt from Phase I training provided students attend a host-base equipment preparation course and material covered meets affiliation training Phase I requirements).*

Phase I - AMC ACLP Workbook 36-101 Volume 1 - (Equipment Preparation)

This training is designed to educate personnel (E-4 and below) in the mechanics of preparing cargo, equipment, and personnel for cargo aircraft loading. The course consists of 16 hours (2 days) of academic instruction if taught in residence, or 8 hours (1 day) of academic instruction if completed in conjunction with the Equipment Preparation Introductory Course (EPIC) web based training. Although this course is designed for individuals (E-4 and below) who will actually prepare, load, and tie down unit equipment, any unit individual may attend. All class members will be expected to participate in the total preparation and loading exercise.

Equipment preparation: includes general and specific supported force responsibilities, marshalling, joint inspection, palletization, material handling equipment (MHE), shoring requirements, and weighing and marking cargo.

Safety: emphasizes the aspects of airlift mobility that are essential to efficient mission accomplishment.

Phase II - AMC ACLP Workbook 36-101 Volume II - (Airlift Planner's Course)

This training is designed to educate unit movement officers and supervisory personnel (E-5 or above) in airlift planning and execution of joint combat airlift operations. Individuals not fitting within the rank structure may be admitted by submitting written verification from their commander indicating they are active participants in the load planning phase of airlift operations. Personnel attending this course must have a minimum retainability in the logistics duty position of one year.

Principles of load planning: (Phase II) consists of aircraft weight and balance, load planning principles, aircraft characteristics, and manifesting. The course consists of 48 hours (6 days) of training. Upon successful course completion, personnel will receive certification via AMC Form 9, Airlift Load Plan Certification with either PDS Code 9N1 (USAF) and M9T (USMC). Graduates of Phase II will be certified as an aircraft load planner with certification valid for 24 months. The AF Form 1256 and the AMC Form 9 will serve as source document.

DEPLOYING UNIT RESPONSIBILITIES



Lesson Objective: The objective of this lesson is for each student to know the roles and responsibilities of unit members and mobility forces for deployment.

References: DOD 4500.9-R Part III, Mobility, Defense Transportation Regulation (DTR)

Web Pages: <http://www.transcom.mil/dtr/part-iii/>

Learning Activities:

1. Mobility Forces
2. Deploying Unit Responsibilities
3. Planning and Preparation
4. Prohibited item briefing

Test Objectives:

1. Identify the responsibilities of Mobility Forces and Deploying Forces.
2. State the benefits of reduced reliance on AMC assets.
3. Select tasks accomplished during planning and preparation.
4. List items from the Prohibited Items Briefing.

DEPLOYING UNIT RESPONSIBILITIES

1.1. Mobility Forces. A deploying force will normally receive support from some type of Mobility Force. Mobility Forces is a term used extensively in the Department of Defense airlift community referring to those forces that provide airlift support to deploying forces. They are normally provided by the Air Mobility Command (AMC), but may be provided by non-Air Mobility Command host or support installations. Examples of AMC mobility forces are Contingency Response Elements, Contingency Response Teams, aerial ports, and air terminals. Non-Air Mobility Command mobility forces include Arrival/Departure Airfield Control Groups, and installation deployment forces. Figure 1.1. depicts some of the responsibilities that Mobility Forces and deploying forces will perform. Further guidance is provided in DOD 4500.9-R Part III, Defense Transportation Regulation (DTR), Chapter 303, Mobility.

The Air Force's AMC and Services will perform the following responsibilities as indicated:

UNIT MOVE FUNCTIONS	RESPONSIBLE UNIT	
	AMC Mobility Force	Services
1. Prepare cargo (weigh, mark, measure, load, secure, manifest, and compute Center Of Gravity (CG))		X
2. Prepare and transmit electronic passenger and cargo manifest		X
3. Prepare and certify hazardous cargo		X
4. Prepare and certify load plans		X
5. Provide load teams		X
6. Load, secure, and off-load cargo		X
7. Provide shoring, dunnage, and vehicle operators		X
8. Establish and operate A/DACG		X
9. Validate load plans	X	
10. Validate passenger manifests	X	
11. Supervise load teams	X	
12. Provide technical assistance	X	
13. Provide aircraft control	X	
14. Provide control of load teams	X	
15. Coordinate airflow information	X	
16. Provide MHE and/or CHE (see Note)	X	X
17. Provide MHE and/or CHE operators (see Note)	X	X
18. Perform MHE and/or CHE maintenance (see Note)	X	X
19. Perform joint inspection	X	X
20. Apply automatic identification technology to unit equipment		X

Note: AMC will provide and operate Air Force-unique Container Handling Equipment (CHE)/MHE that is required but beyond the capability of user to provide, e.g., K-loaders, wide-body loaders.

Figure 1.1. Unit Movement Responsibilities

DEPLOYING UNIT RESPONSIBILITIES

1.2. Deploying Unit Responsibilities. A Mobility Force may be available to support most airlift contingencies. However, circumstances could dictate that units accomplish all cargo preparation, documentation and aircraft loading. A self-supporting unit moves quickly and incurs fewer problems than the unit that relies heavily on AMC support. The finest combat units are of little value if they can't get to the area where their talents and capabilities are needed. To help with this, we will discuss some deploying unit responsibilities. Further guidance is provided in DOD 4500.9-R Part III, Defense Transportation Regulation (DTR), Chapter 303, Mobility - Appendix N.

1.2.1. Deploying units perform the following tasks:

1.2.1.1. Submit movement requests through unit transportation channels.

1.2.1.2. Document and electronically manifest all loads of deploying personnel, equipment, and supplies; develop and input data into service deployment systems.

1.2.1.3. Provide liaison personnel as required.

1.2.1.4. Coordinate the movement of units from origin to Port of Embarkation (POE); and in-theater, coordinate movement of units from Port of Debarkation (POD) to unit assembly areas.

1.2.1.5. Provide security for deployment staging areas and coordinate security for routes of movement.

1.2.1.6. Appoint and train Unit Movement Officers (UMOs) and/or Embarkation Officers; and certified unit hazardous materials officers/Non-Commissioned Officers.

1.2.1.7. Prepare load plans, and mark all vehicles IAW Service directives.

1.3. Planning and Preparation. Deploying units plan, organize, and execute the deployment of their organic/attached forces. A primary objective must be to minimize the time a unit being moved is non-operational. The Supported Commander (CDR) establishes the priority and sequence for the deployment of personnel, equipment, and supplies, and coordinates the development of the deployment plan with all organizations. The deploying units direct, review, and coordinate the preparation of aircraft load plans In Accordance With (IAW) the priorities established for the deployment of the personnel, equipment, and cargo that make up the deploying force. The deploying units also ensure they are ready to deploy, containers are loaded and pallets are built properly, and equipment is marked and ready for embarkation. Refer to DOD 4500.9-R Part III, Defense Transportation Regulation (DTR), Chapter 303, Mobility for detailed planning and preparation guidance.

DEPLOYING UNIT RESPONSIBILITIES

1.3.1. As a minimum, the deploying unit must plan to accomplish the following prior to cargo being accepted aboard AMC aircraft:

1.3.1.1. Clean and inspect all cargo and equipment.

1.3.1.2. Weigh and Mark all cargo and equipment.

1.3.1.3. Prepare and finalize specific aircraft load plans.

1.3.1.4. Prepare packing list for secondary loads in vehicles and trailers.

1.3.1.5. Document and manifest all troops and cargo intended for air shipment IAW DOD 4500.9-R Part II, Defense Transportation Regulation (DTR), Cargo Movement.

1.3.1.6. Prepare and certify hazardous materials IAW AFMAN 24-204 or equivalent service manual.

1.3.1.7. Provide resources to facilitate upload of aircraft at APOE (Aerial Port of Embarkation), download of aircraft at APOD (Aerial Port of Debarkation), and movement of cargo to and from the Unit Area.

1.3.1.7.1. Personnel for load teams to load, off-load, and tiedown of cargo and vehicles under the supervision of the CRE personnel or Aircraft Loadmaster/Boom Operator.

1.3.1.7.2. Shoring and Dunnage.

1.3.1.7.3. 463L Materials Handling Equipment (MHE).

1.3.1.7.4. Pusher vehicles with front mounted pintle hooks.

1.3.1.7.5. Escorts and vehicles to accompany cargo loads to and from the aircraft for onload and offload.

1.3.2. Troop Commander (CDR). The Troop CDR is usually the senior military member of the deploying chalk and will be assigned by the service deployment authority at the point of origin or at the APOE to perform those duties. Further guidance on Troop Commander duties is provided in DOD 4500.9-R Part III, Defense Transportation Regulation (DTR), Chapter 303, Mobility - Appendix T.

DEPLOYING UNIT RESPONSIBILITIES

PROHIBITED ITEMS

(Applies only to personal, non-government property)

1. You may not take any of the following items under any circumstances:
 - a. Shotguns with barrels under 18 inches long
 - b. Rifles with barrels under 16 inches long
 - c. Automatic weapons
 - d. Switchblade knives
 - e. Brass knuckles
 - f. Incendiary devices (e.g., flares)
 - g. Tear gas or mace
 - h. Gunpowder, cartridges, or primers
 - i. All torch lighters
 - j. Other hazardous materials
2. If directed by the Operations Plan (OPLAN) or Operations Order (OPORD) (unless otherwise restricted by foreign government regulations), you may ship unloaded, government weapons in checked baggage. It is a federal crime to carry any unauthorized weapon, explosive device, or hazardous materials on board the plane. Knives, knife-like items and devices, which include a knife, will be placed in checked baggage. If you have an authorized weapon in your baggage, identify it to the troop commander and aircraft loadmaster to make sure it is guarded while loaded on the aircraft. Weapons count against your authorized weight allowance.
3. All government issued hazardous materials to include explosives and ammunition, must be declared. Hazardous materials may not be taken into the passenger compartment of a commercial aircraft (e.g., all torch lighters). The troop commander and/or aircraft loadmaster will direct loading of hazardous materials on military aircraft.
4. Ration heaters may never be opened or used to heat MRE's during flight.
5. You cannot ship alcoholic beverages in checked baggage, but may hand carry up to one U.S. gallon of these beverages, unless the Department of Defense Foreign Clearance Guide states otherwise. It does not matter if the container has been opened, but you cannot drink these beverages on the airplane. Individuals who are obviously intoxicated will not be allowed on board. If you intend to carry alcoholic beverages, you must comply with all foreign, federal, state, and local laws, regulations, and status-of-forces agreements.
6. You may not ship or carry illegal drugs, hallucinogens, or other items prohibited by U.S. Customs regulations.

Note: See DOD 4500.9-R Part III, Defense Transportation Regulation (DTR), Chapter 303, Mobility - Appendix T for further guidance.

DEPLOYING UNIT RESPONSIBILITIES

Chapter 1—Homework Assignment

1. Examples of AMC mobility forces are Contingency Response _____, Contingency Response _____, _____, and _____. Non- Air Mobility Command mobility forces include _____/_____, _____, and installation deployment forces.
2. A _____-supporting unit moves quickly and incurs _____ than the unit that relies heavily on AMC support. The finest _____ units are of little _____ if they can't get to the area where their talents and capabilities are needed.

Deploying units perform the following tasks:

3. _____ and _____ Unit Movement Officers (UMOs) and/or Embarkation Officers; and _____ unit _____ officers/Non-Commissioned Officers.
4. Prepare _____, _____, and _____ all vehicles IAW Service directives.
5. Deploying units _____, _____, and _____ the deployment of their organic/ attached forces. A primary objective must be to minimize the time a unit being moved is _____.
6. Unless otherwise restricted by foreign government regulations, you may ship unloaded, _____ weapons in checked baggage. It is a _____ to carry any unauthorized weapon or explosive device on board the plane.

PALLETIZATION



Lesson Objective: The objective of this lesson is for students to comprehend how to properly prepare cargo for movement in the 463L system.

References: AMCI 24-101 Vol. 11, Cargo and Mail Policy
DOD 4500.9-R Part III, Mobility, Defense Transportation Regulation (DTR)

Web Pages: <http://www.transcom.mil/j5/pt/dtr.cfm>

Learning Activities:

1. 463L System
2. Pallets
3. Pallet build-up
4. Married pallets
5. Tiedown Procedures

Test Objectives:

1. Describe the various systems used to facilitate the movement of cargo.
2. Explain the characteristics that make up the 463L pallet and nets.
3. Describe the proper procedures for storing and handling 463L pallets and nets.
4. Give examples on proper pallet build up procedures.

PALLETIZATION

2.1. 463L System. In 1957, the USAF adopted a standardized system to facilitate the rapid movement of general cargo aboard airlift aircraft. This 463L system encompasses all aspects of cargo loading. This includes materials handling equipment, cargo loading platforms, restraint equipment, and in-aircraft systems. The 463L system is the Air Force standard for movement of cargo. The system is extremely efficient and can reduce ground times by as much as 75 percent. Your first encounter with the 463L system will probably be the 463L cargo pallet. This chapter explains how to build, use, transport, and care for these pallets.

2.2. Dual-Rail System. The dual rail system is permanently installed in all airlift/463L capable military aircraft with the exception of the KC-135. The KC-135 can be fitted with the dual rail system but the roller system must be requested prior to the aircraft leaving home station. This dual rail system consists of rows of rollers that allow easy movement of the palletized cargo into the aircraft. Many of these rollers are stowable to convert the cargo deck to a flat, clear loading surface for wheeled cargo. The side rails guide the pallets into the aircraft and provide lateral and vertical restraint. These rails have detent locks that prevent forward and aft movement of pallets during flight.

2.3. Pallets. The 463L cargo pallet is made of corrosion resistant aluminum with a soft wood core framed on all sides by aluminum rails (figure 2.1). The rails have 22 steel tie down rings attached in such a manner that six rings are on each long side and five rings are on each short side. The rails also have indents (notches) which are designed to accept the detent locks. These locks are located on numerous types of materials handling equipment and are found on board all airlift capable aircraft. The overall dimensions of the 463L pallet are 88 inches by 108 inches by 2 ¼-inch thick. However, the usable dimensions of the upper surface are 84 inches by 104 inches. This allows for 2 inches around the periphery of the pallet to attach straps, nets, or other restraint devices. An empty 463L pallet weighs 290 pounds (355 pounds with nets) and has a maximum cargo carrying capacity of 10,000 pounds when using nets. The desired load capacity is 7,500 pounds to prolong pallet life. Numerous pallets weighing less than 7,500 pounds may be wasting valuable aircraft ACL (Allowable Cabin Load) and limited space. Pallet is restricted to 250 P.S.I. limitation.

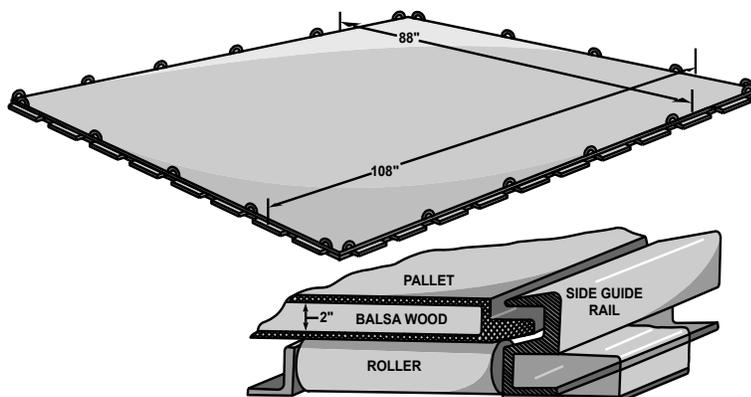


Figure 2.1. 463L Pallet Construction

PALLETIZATION

2.4. Pallet Nets.

2.4.1. There are three nets to a set; two side nets and one top net (figures 2.2 and 2.3). The side nets are green (normally) in color and the top net is yellow (normally). The side nets attach to the rings of the 463L pallet and the top net attaches by hooks to the side nets. These nets have multiple adjustment points and may be tightened to conform snugly to most loads. A complete set of 463L nets will provide adequate restraint for 10,000 pounds of cargo when properly attached to a 463L pallet, with height not exceeding 96 inches above the surface of the pallet. The 463L nets will also provide adequate restraint for 8,000 pounds of cargo with heights above 96 inches (not to exceed 100 inches) above the surface of the pallet. A complete set of 463L nets (2 side nets and 1 top net) weighs 65 pounds.

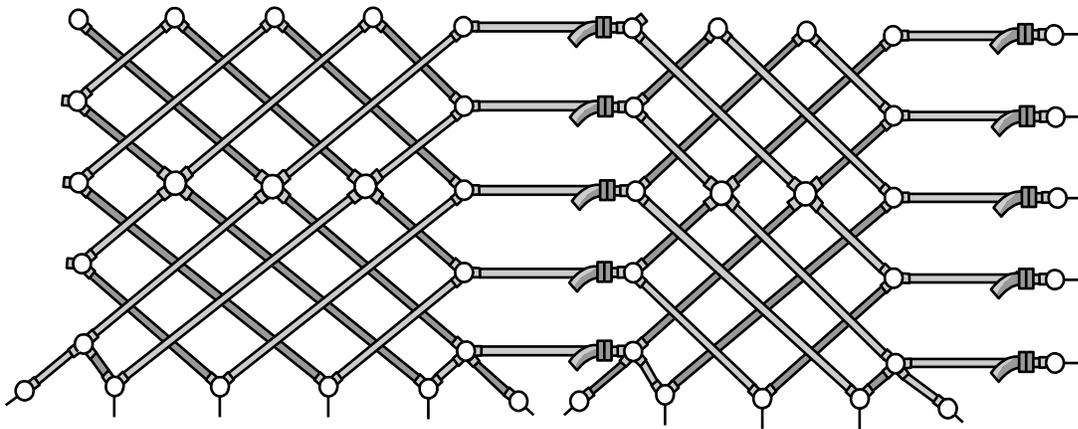


Figure 2.2. 463L Side Net (normally green in color)

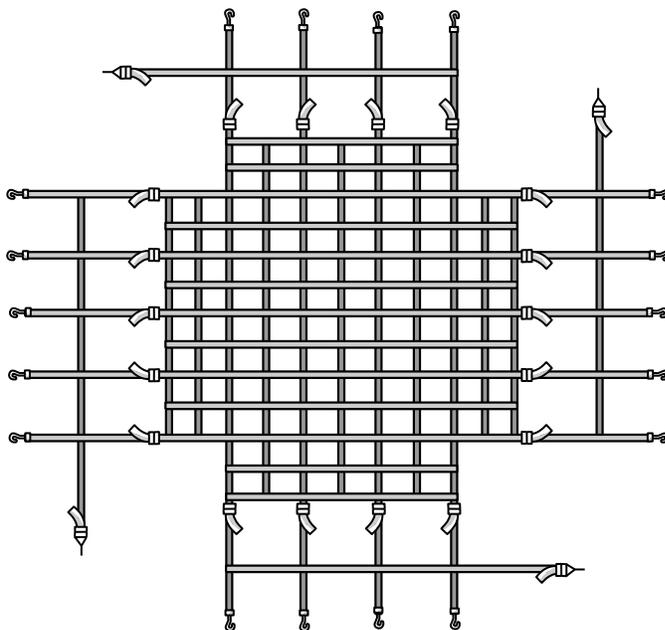


Figure 2.3. 463L Top Net (normally yellow in color)

PALLETIZATION

2.4.2. If items of cargo are not tall enough for the installation of the complete net set, two other options are available:

2.4.2.1. Side nets and seven straps. The side nets can be used with seven straps instead of the top net if the cargo isn't tall enough to properly secure the top net to the side nets. Four on the long side (108") and three on the short side (88"), hooked to the highest side net ring possible. This configuration of straps cinches the side nets up and provides vertical restraint for the cargo. The seven-strap option can restrain 10,000 lbs. of cargo to a 463L pallet.

2.4.2.2. Top net only. The top net can provide adequate restraint for low profile items of cargo (up to 45" tall) weighing up to 2,500 lbs. Items taller than 45" or weighing more than 2,500 lbs. require supplemental lateral, forward and aft restraint.

2.5. Storage and Handling. The 463L pallets and nets are expensive to purchase and refurbish. With reasonable care and protection, they should last almost indefinitely. The procedures to care for these pallets and nets are simple. Always follow these guidelines:

2.5.1. Dunnage. Always put adequate dunnage under 463L pallets. (Fig. 2.4.) This will aid in the movement of the pallets and protect the lower surface from damage. Dunnage is normally lumber or timbers placed under 463L pallets to prevent damage to the lower pallet surface and to aid in transportation with a forklift. The minimum dimensions of each piece of dunnage are 4" X 4" X 88" long. Use three pieces to support each loaded 463L pallet while on the ground. Use three pieces to support each loaded 463L pallet while on the ground. If you use wood, it must meet requirements IAW DTR Part II, chapter 208.

NOTE: All pallets are required to be shipped with dunnage. This is required for both deployment and redeployment and must be provided by the user.

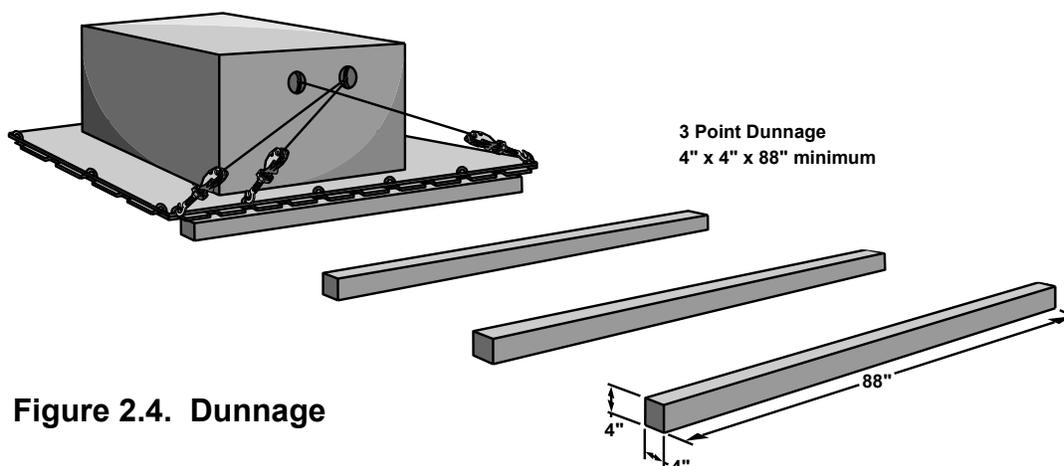


Figure 2.4. Dunnage

PALLETIZATION

2.5.2. Empty pallets may be stacked 20 high (above a base pallet) for air shipment (except the KC-10, which may be limited by concentrated cargo limitations). Only a single stack of 20 pallets or less, properly restrained by 463L nets, may be transported by air. Place three pieces of dunnage between the base pallet and the first pallet of the stack. The minimum thickness of the dunnage must be 4-inches to afford access for forklift tines. This also provides clearance for the aircraft dual-rail system. Stacks of empty pallets up to 50 high are authorized for unit, APOE, and APOD storage areas, provided they are properly supported (3 pieces of dunnage, normally between stacks of 10). Never stack empty pallets upside down. This could damage the rings or the aluminum skinned surface.

2.5.3. Always protect the upper surface of the pallet from sharp edged cargo. If the cargo has any sharp edges or protrusions, place adequate shoring or cushioning materials between the cargo and the pallet.

2.5.4. Be careful when transporting 463L pallets with a forklift. The tine tips can easily damage the pallet surface making it unusable.

2.5.5. Never push or slide 463L pallets across any solid surface. To do so will cause damage to the skin.

2.5.6. Protect nets from adverse weather conditions. The netting materials will mildew and deteriorate. The metal hooks will also rust if not properly cared for. Hang and dry all nets after use. Never pile wet nets together for storage.

2.6. Inspection. Inspect pallets and nets to ensure serviceability. Do not use pallets if the aluminum skin is separating or punctured. The skin-to-rail bond is an important portion of the pallet's strength. Pallets shall be level and not warped. You may use pallets with minor dents, gouges, and scratches that do not fracture the skin. For more extensive damage (such as bent rails or damaged/missing tiedown rings), the pallet will not be accepted for air shipment. It must be sent to depot for repairs. Keep pallets as clean as possible to protect the cargo and prevent the spread of insects, dirt born infestations, etc.

2.7. Pallet Build-up. Palletize cargo from the heaviest to the lightest items. Distribute large and heavy objects evenly from the center of the pallet outward. This will prevent the pallet from becoming heavy on one end (figure 2.5). This also helps to maintain the center of balance at or near the center. Place lighter and/or smaller items on top or along the side of the heavier cargo (figure 2.6). Containers marked —this side upll must be placed upright and cargo with special labels, should have the labels facing outward. Construct the load in a square or pyramid shape when possible (figures 2.7 and 2.8). Do not allow cargo to extend beyond the vertical stacking line (84 x 104 inches) of single netted pallets. This makes the load stable, easy to handle, easy to secure to the pallet, and prevents binding in the aircraft 463L dual rail system. Hazardous materials must be placed on the pallet with the label clearly visible and never buried or hidden. Hazardous items must be accessible in flight in case of leakage.

PALLETIZATION

NOTE: Each aircraft has size and shape restrictions that must be considered. For example, aisleways are required on pallets destined for pallet positions three and four in a C-130 aircraft. Check the particular requirements of the aircraft for which the load is prepared.

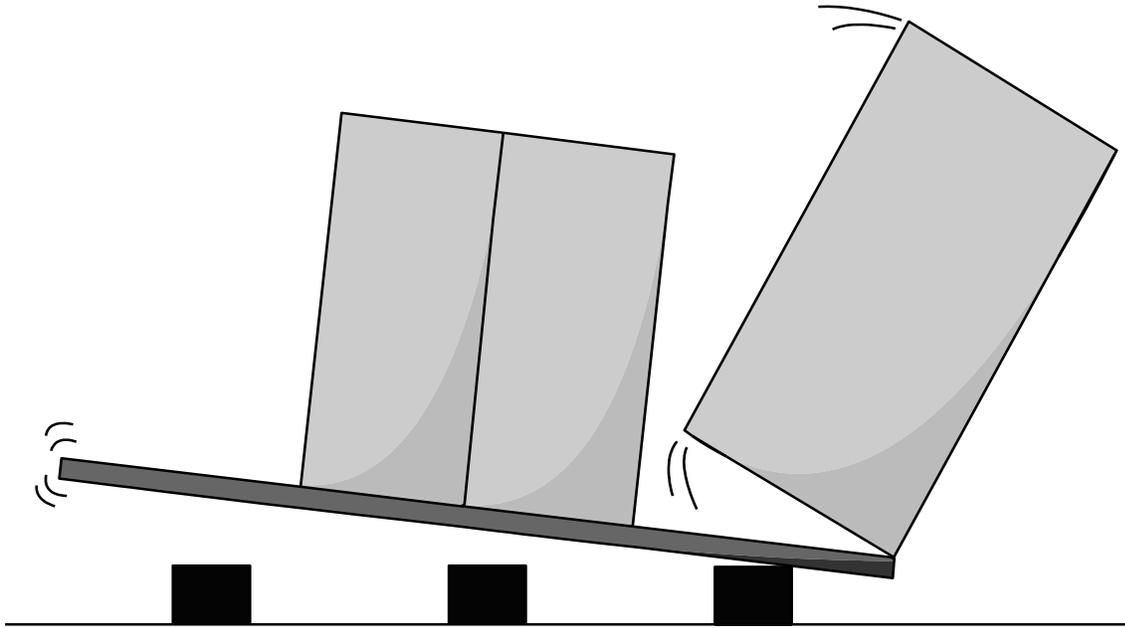


Figure 2.5. Heavy Ended Pallet

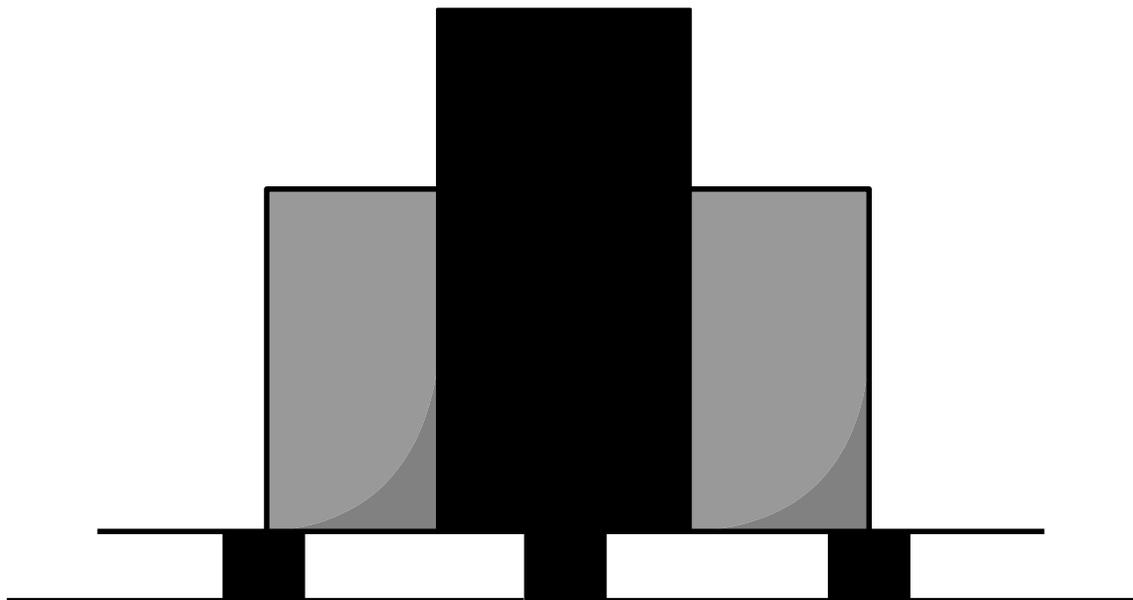


Figure 2.6. 463L Pallet Cargo Placement

PALLETIZATION

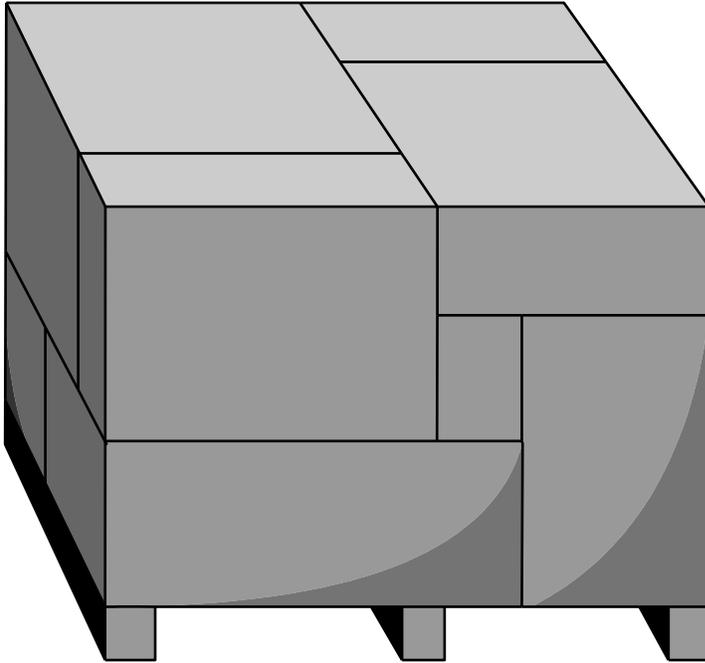


Figure 2.7. 463L Pallet Cargo Placement (square)

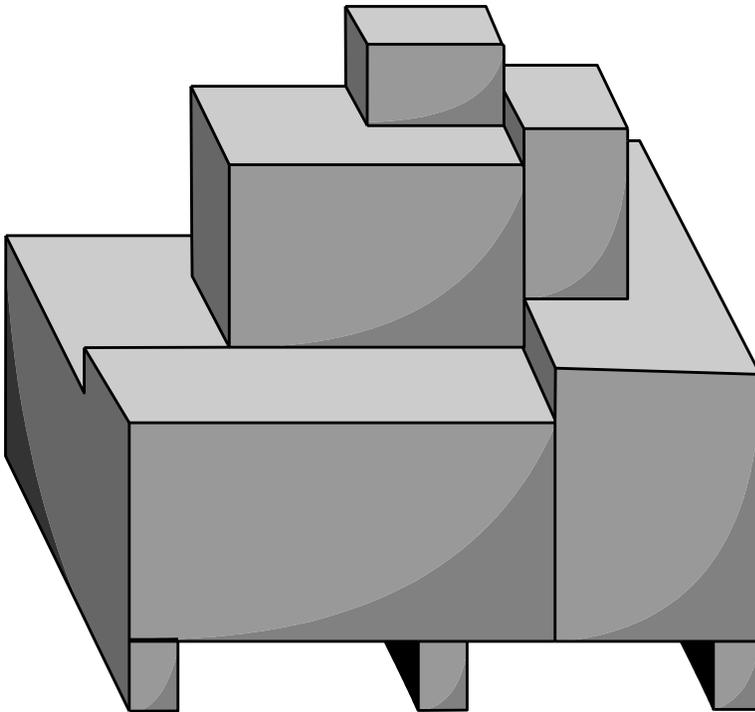


Figure 2.8. 463L Pallet Cargo Placement (pyramid)

PALLETIZATION

Pallet Build-up Procedures Checklist

- a. Are you prepared to follow good safety practices?
 - (1) Do personnel have steel toed safety shoes and work gloves?
 - (2) Have personnel been briefed on proper lifting techniques?
- b. Is the pallet skin free of damage, top and bottom, and any bent lips on the pallet perimeter?
- c. Are tie down rings serviceable?
- d. Is the pallet level and not warped?
- e. Is the pallet free of corrosion?
- f. Is the pallet clean and free of dirt?
- g. Is the pallet right-side up?
- h. Is the pallet placed on three-point dunnage?
- i. Is cargo to be placed on the pallet securely packaged?
- j. Does cargo have required markings?
- k. Is the DD Form 1387-2 properly prepared for any classified item and sensitive cargo requiring protective service or other special services?
- l. Are HAZMAT labels prepared and attached to hazardous cargo or their containers IAW AFMAN 24-204(I), TM 38-250, MCO P4030.19I, NAVSUP Pub 505, DLAI 4145.3, and DCMAD 1, CH 3.4 (HM24)?
- m. Is cargo marked with arrows, (e.g., —This Side Up,” placed with arrows pointing up)?
- n. Are hazardous items on pallet or within an ISU/freight container compatible IAW AFMAN 24-204(I), TM 38-250, MCO P4030.19I, NAVSUP Pub 505, DLAI 4145.3, and DCMAD 1, CH 3.4 (HM24)? Are hazardous items —Chapter 3” approved?
- o. Is all hazardous cargo positioned for easy access during flight IAW AFMAN 24-204 (I), TM 38-250, MCO P4030.19I, NAVSUP Pub 505, DLAI 4145.3, and DCMAD 1, CH 3.4 (HM24)? Are hazardous cargo labels visible from an 88-inch side of the pallet? Do the doors of mobility bins containing hazardous items open to an 88-inch side of the pallet? NOTE: Consult aircraft Dash 9 for requirements. Pallets on the C-17, when utilizing the Logistics Rail System, are loaded 88 inch side first, (long ways), which can effect access to HAZMAT during flight.

PALLETIZATION

- p. Is the scale weight attached to one 88-inch side and one 108-inch side of the pallet (reflected on the DD Form 2775 and/or Military Shipping Label)? Ensure that scale weights are accurately recorded on all associated forms (e.g. Load Plans, Manifests, etc.)
- q. Is cargo arranged on the pallet to meet the following criteria:
- (1) Are the heavier boxes and crates placed on the bottom of the pallet load?
 - (2) Is lighter, more fragile cargo placed on the top of the pallet load?
 - (3) Is the cargo arranged and properly stacked so that it is stable?
- r. Is the height of the built-up pallet 96-inches or less from the top skin of the pallet? If it is not and the height cannot be reduced to under 96-inches, consult your affiliated Air Movement Control Unit for guidance to determine if the pallet will fit inside the aircraft. Is the cargo loaded so it is no more than 104-inches wide with no overhang over either of the 108-inch sides?
- s. Is the pallet loaded with no more than 10,000 lbs of cargo? Is pallet loading limited to less than 250 lbs per square inch on the pallet's surface? Is plywood or cardboard used on pallet surface when cargo has sharp edges?
- t. Is cargo susceptible to weather damage? If so, is a plastic pallet cover used before installing cargo nets?
- u. Is cargo secured to the pallet using two side nets and a top net? If low profile cargo does not permit the use of side nets (and weight does not exceed 2,500 lbs and cargo height does not exceed 45 inches from the surface of the pallet) is restraint provided by a minimum of seven straps (four longitudinal and three lateral)?
- v. Does the top net have five serviceable clips? Does each side net have five serviceable hooks along each side of its length, four along each side of its width, and one at each corner? Are nets free of tears, rips, and broken rings?
- w. Is dunnage (three pieces) provided for each pallet?
- x. Are keys or combinations provided to any locked containers?
- y. a copy of the ATTLA air transportability certification for vehicles and equipment, if required, available? Is shoring required by certification available?

PALLETIZATION

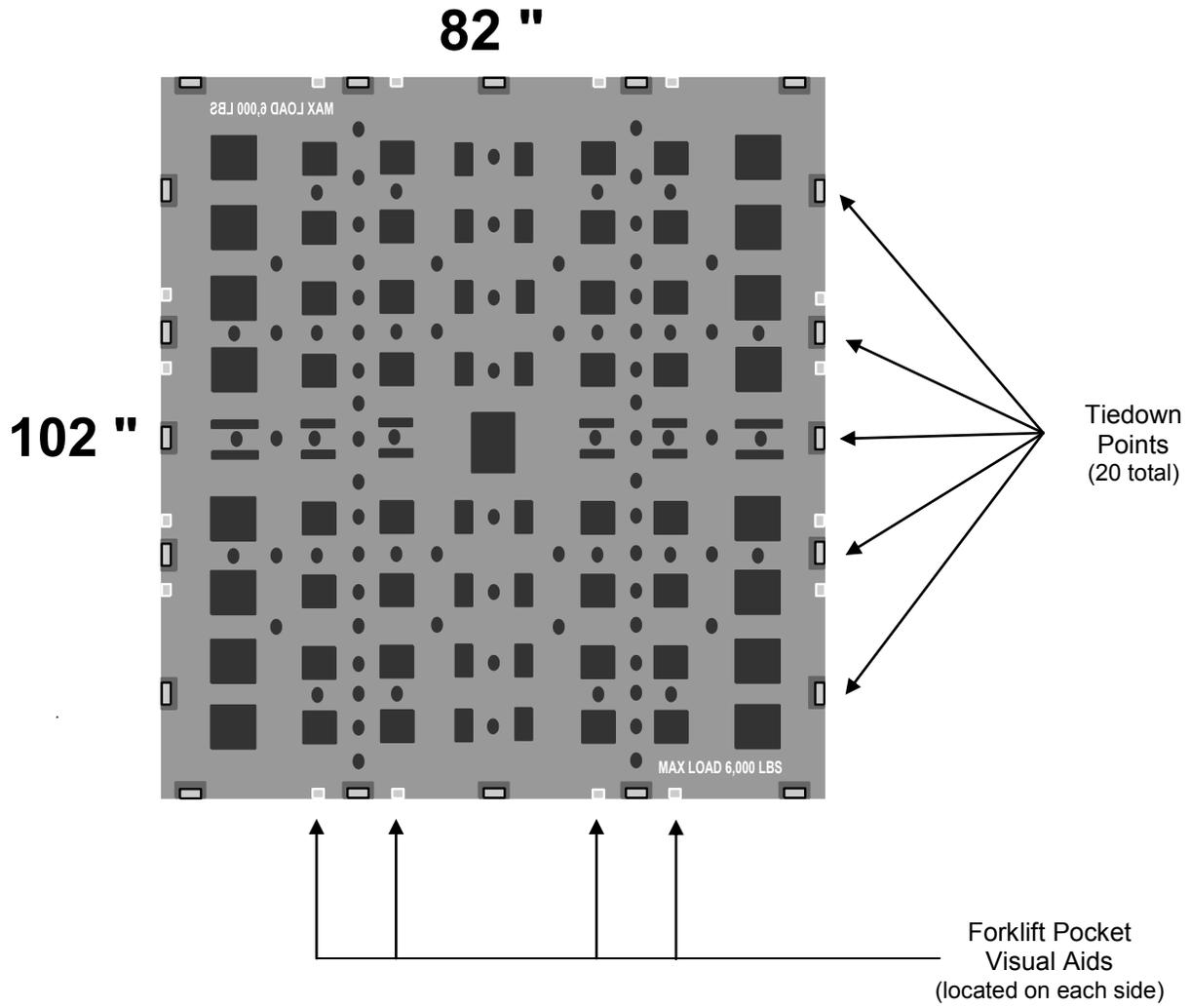


Figure 2.9. Associate Intermodal Platform (top view)

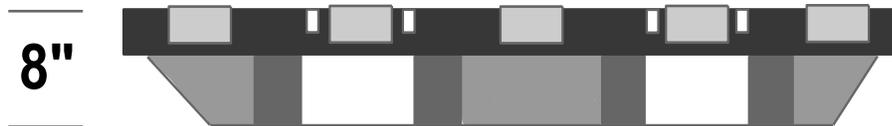


Figure 2.10. Associate Intermodal Platform (side view)

PALLETIZATION

2.8. Associate Intermodal Platform. In an attempt to limit the cost of replacing damaged 463L pallets the United States Air Force has come up with an innovative new cargo loading system; the Associate Intermodal Platform (AIP). The AIP is a loading surface made of a plastic polymer that is 102" wide by 82" long by 8" thick. The AIP is designed to carry 6,000 pounds of material restrained with nets or straps utilizing its 20 tiedown points. The AIP can be moved by forklift utilizing Forklift Pockets located on each of its sides (see Figures 2.9. and 2.10.). Tiedown materials used on the AIP are not certified to aircraft standards. Once the AIP has been configured it will be placed on top of an empty 463L pallet and restrained with a 463L net set (side and top nets). When an aircraft arrives at a deployed location the AIP is removed from the 463L pallet and placed directly onto any available ground transporting equipment (trailer, truck bed, etc.) and the empty 463L pallets and nets are stacked and placed back on board the aircraft.

PALLETIZATION

2.9. Married Pallets. In the movement of cargo, we often find odd shapes and sizes of cargo that require movement by air. The usable dimension of the 463L pallet is 104 inches by 84 inches. When there is a requirement to ship cargo that exceeds these dimensions, you must join two or more pallets together. We refer to this as the marrying of pallets (we also refer to married pallets as double or two pallet trains) (figure 2.11). The same applies to three, four, five, or six pallets when joined. Before marrying pallets, inspect them to be sure they are clean and in good repair. Ensure the rails are not bowed and the tiedown rings are securely mounted. After checking the pallets, place them on a highline/cargo dock, rollerized flatbed truck, or K-loader. Align the indentations along the 108" side of each pallet.

NOTE: Exceptions: *KC-10/C-17 can be married on 88" and 108" side (KC-10 normally 88"). Install couplers between the pallets (figure 2.12). The couplers are used to keep the pallets aligned and properly spaced so they will lock into the rail systems of the aircraft. The KC-10 uses a unique 1" spacer and can only be utilized on 2 pallet trains (88" or 108" bias). Your affiliated AMCU may be able to help you get any required couplers.*

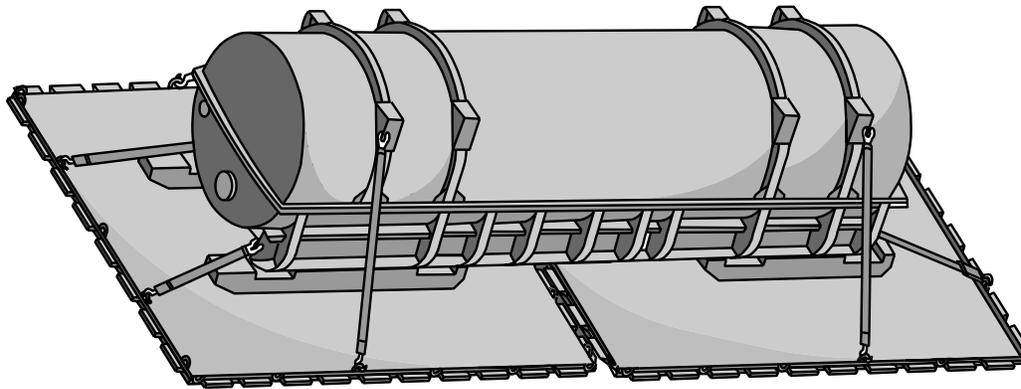


Figure 2.11. Two Pallet Train (coupled on 88" bias)

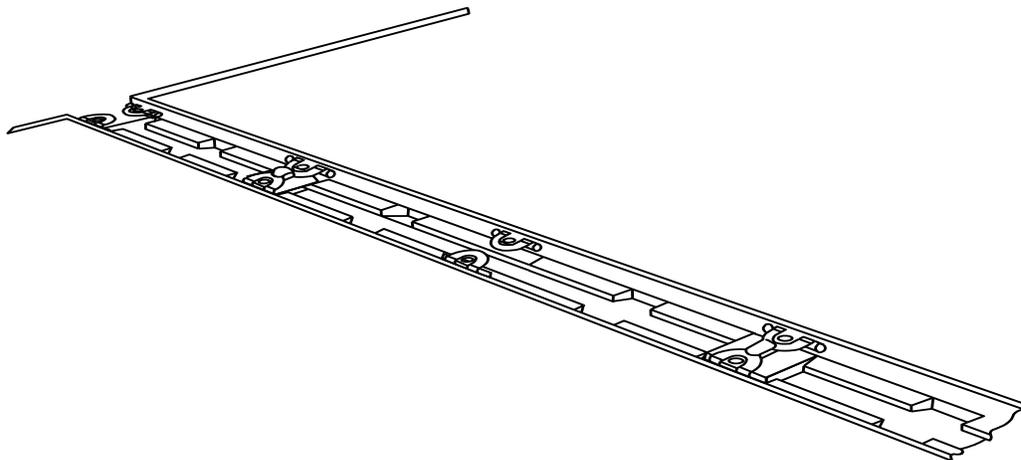


Figure 2.12. Pallet Spacers

PALLETIZATION

2.10. Tiedown Procedures. There are many procedures for tying down and lashing cargo. Some of the key points to remember are:

2.10.1. All equipment must be secured/restrained/tied-down for the rigors of flight (e.g. turbulence, tactical landings, short-field takeoffs, etc.). The following restraint criteria applies to both the primary equipment (vehicles and trailers secured to the floor of the aircraft) along with secondary cargo (secured to the bed of vehicles and trailers):

Forward Restraint - 3Gs
Aft Restraint - 1.5Gs
Lateral Restraint - 1.5Gs
Vertical - 2Gs

2.10.2. Use barrier and chain bridle (figure 2.13) for loose heavy items such as lumber and pipe. The minimum thickness for the barrier is $\frac{3}{4}$ inches (usually plywood). If cargo height exceeds 30", apply two chain bridles on each end.

1. GENERAL CARGO LOAD
2. CHAIN BRIDLE
3. TYPE MB-1 OR MB-2 TIEDOWN DEVICE
4. PALLET/PLATFORM TIEDOWN RING
5. PALLET

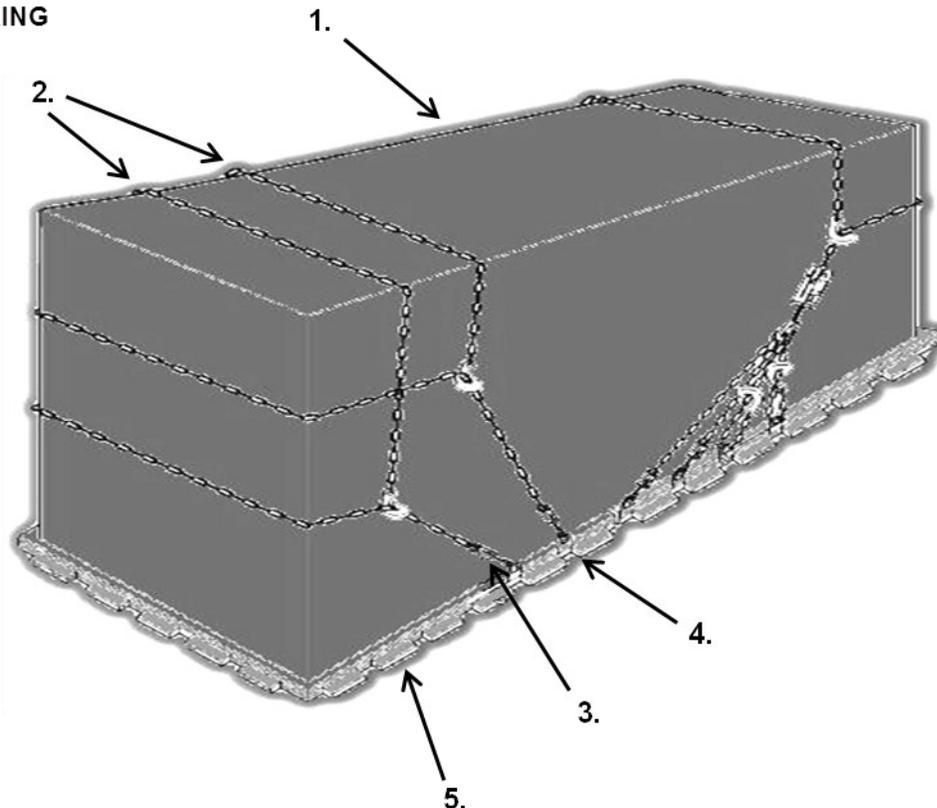


Figure 2.13. Chain Bridle

PALLETIZATION

2.10.3. Use chains and tiedown devices for large items such as canned engines or palletized wheeled items. (figure 2.14).

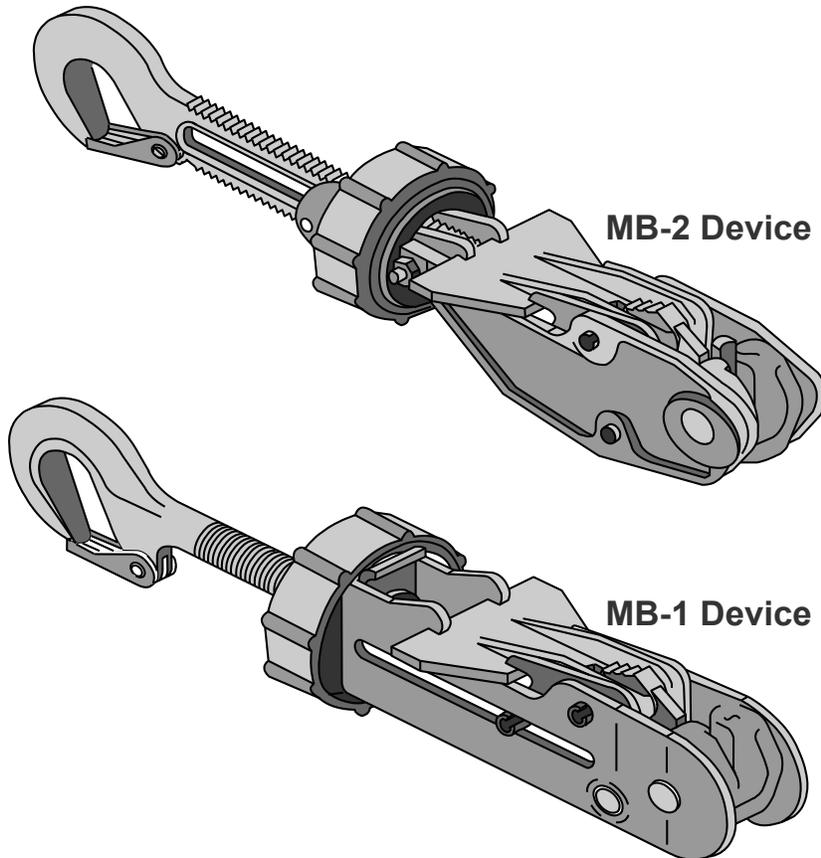


Figure 2.14. MB-2: 25,000 pound capacity and MB-1: 10,000 pound capacity tiedown devices

NOTE: *The MB-2 – 25,000 pound capacity tiedown device is not carried aboard the KC-135 and KC-10 aircraft.*

2.10.4. Do not attach more than half of the required restraint in a given direction to the axles of wheeled equipment. More than $\frac{1}{2}$ of the required restraint applied to the axles will require the vehicle's suspension to assume the majority of restraint and could result in suspension failure and loose equipment in-flight.

2.10.5. Use 463L nets for multiple loose items that fit within the usable dimensions of a single 463L pallet.

PALLETIZATION

2.10.6. Use chains for heavy items such as large boxes and vehicles.

2.10.7. Finally, use 5,000-pound tiedown straps, as required, to provide supplemental restraint, individual item restraint, or supplemental restraint in conjunction with 463L pallet nets. Do not use a mixture of nylon straps and metal chains to provide restraint in the same direction for the same piece of cargo. The nylon can stretch forcing the metal chain to assume the entire applied load and could result in chain failure. (See figures 2.15 and 2.16)

NOTE: Lateral restraint must be symmetrical.

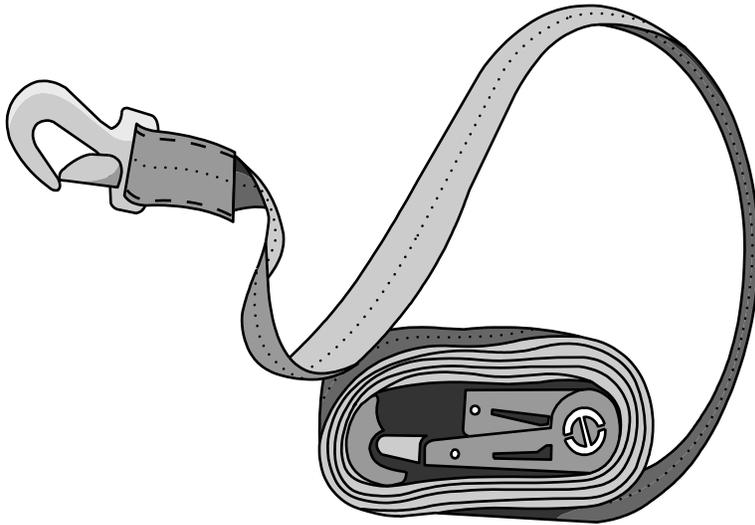


Figure 2.15. 5,000 Pound Tiedown Strap

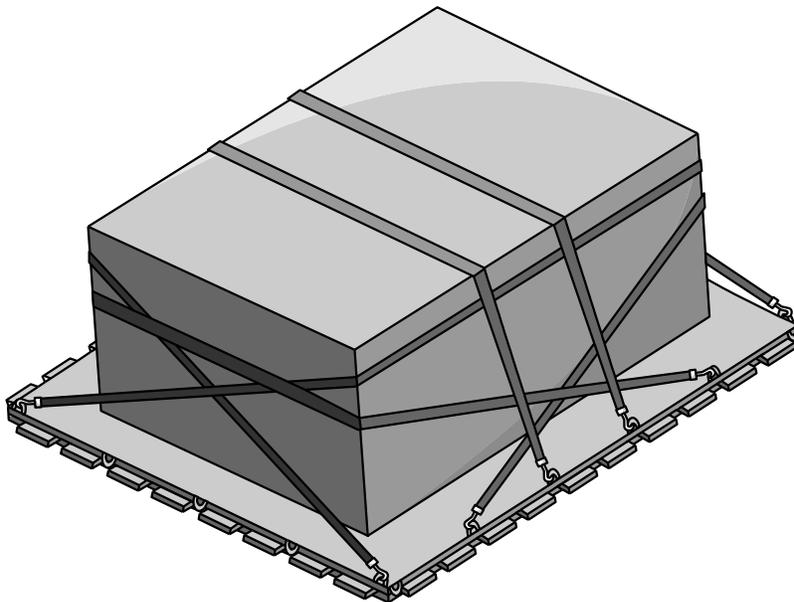


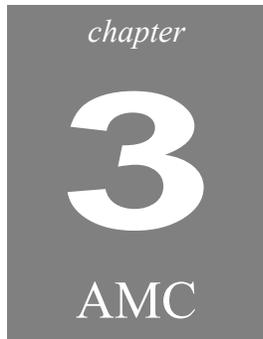
Figure 2.16. Cargo Restraint for all load directions

PALLETIZATION

Chapter 2—Homework Assignment

1. The overall dimensions of the 463L pallet are _____ inches by _____ inches by 2 ¼ inch-es thick. However, the usable dimensions of the upper surface are _____ inches by _____ inches.
2. A complete set of 463L nets will provide adequate restraint for _____ pounds of cargo when properly attached to a 463L pallet, with height not exceeding _____ inches above the surface of the pallet.
3. All pallets are required to be shipped with _____. This is required for both deployment and redeployment and must be provided by the _____.
4. Is the scale weight attached to one _____-inch side and one _____-inch side of the pallet (reflected on the DD Form 2775 and/or Military Shipping Label)?
(Pallet Build-up Procedures Checklist)
5. Do not attach more than _____ of the required restraint in a given direction to the _____ of wheeled equipment.
6. Do not use a mixture of _____ and _____ to provide restraint in the same direction for the same piece of cargo. The nylon can _____ forcing the metal chain to assume the entire applied load and could result in chain _____.

MATERIALS HANDLING EQUIPMENT



Lesson Objective: The objective of this lesson is for each student to know the correct type of material handling equipment to use during aircraft loading procedures.

References: DOD 4500.9-R Part III, Mobility, Defense Transportation Regulation (DTR)

Web Pages: http://www.transcom.mil/j5/pt/dtr_part_iii.cfm

Learning Activities:

1. Availability
2. Forklifts
3. K-loaders
4. Additional loading aids

Test Objectives:

1. Identify the various types of material handling equipment available for loading.
2. Match the loaders most appropriate for loading aircraft presented.
3. Identify the different characteristics of each piece of material handling equipment in the AMC inventory.
4. State who is responsible for providing material handling equipment

MATERIALS HANDLING EQUIPMENT

3.1. Materials Handling Equipment (MHE). Materials Handling Equipment describes equipment used in the packaging, handling, or transporting cargo in preparation for air shipment. Although there is an almost endless list of this type of equipment, this chapter describes the most common types used.

3.2. Availability. Because AMC is a full time transportation agency, the command's inventory of MHE is quite large. Even with such a large inventory, most MHE is dedicated to AMC aerial ports for day to day operations. Repositioning MHE from AMC and other Air Force bases to on-load locations is expensive, time consuming, and occupies a tremendous amount of available airlift cargo space. For these reasons, you have a responsibility (as the user of airlift) to provide as much MHE from local sources as possible. Many pieces of MHE that will adequately serve your needs may be found within your unit or on your installation. By the same token, you must remember to plan and coordinate for the use of MHE at deployed locations. Cargo that cannot be removed and transported from the airplane after it arrives is of little value to you. However, if you do require MHE support, contact your affiliated AMCU as early as possible to arrange for assistance.

3.3. Forklifts. Forklifts are used to lift, transport, and stack cargo or equipment. Their use saves time and money in handling of cargo. Forklifts are located at almost every military installation. These pieces of equipment are extremely valuable in all phases of cargo movement. They aid in cargo build-up at the unit area, transporting cargo to the airfield, and aircraft loading. Listed below are descriptions of several common types of forklifts, their respective capabilities, and a few of the advantages and disadvantages of each.

NOTE: *The only forklifts authorized to operate inside the aircraft cargo compartment is the 4,000 pound capacity, USMC MHE-237, rough terrain forklift and the 10,000/13,000 pound capacity, adverse terrain forklift. Cargo floor ground loading axle limitations must not be exceeded while operating within the aircraft. Prior coordination is required.*

3.3.1. USMC MHE-237 Rough Terrain 4K Forklift (figure 3.1.). The USMC MHE-237 rough terrain 4K forklift is designed for use in close quarters for storage and shipping operations. In the air terminal area, it is used primarily for loading and unloading pallets and secondary cargo on vehicles. With the tines (forks) removed and the addition of a front-mounted pintle hook, the 4K forklift makes an excellent pusher vehicle (paragraph 3.6.). The 4K is designed for high maneuverability and ease of operation in confined areas. It is capable of lifting and transporting loads up to 4,000 pounds. The tines will raise or lower and tilt forward or aft. Some models can even shift the load right or left. The only disadvantages of the 4K forklift are the limited weight lifting capability and the short tines. Because of the short tines the 4K cannot handle 463L pallets. This forklift makes a good prime mover.

MATERIALS HANDLING EQUIPMENT

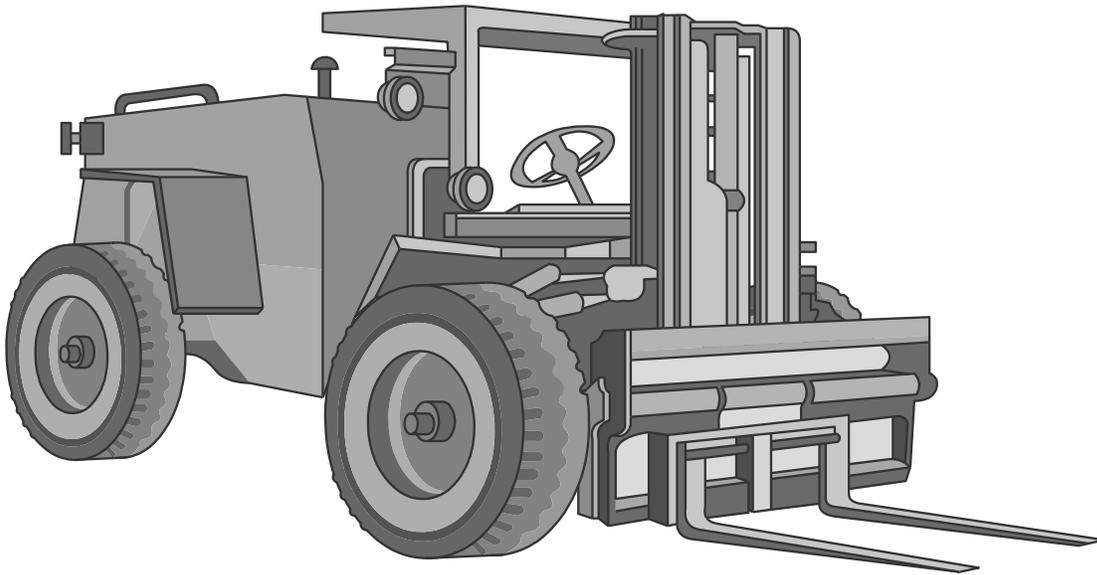


Figure 3.1. 4K Forklift

NOTE: United States Army and United States Air Force 4K forklifts are not approved for use with locally manufactured pintle hooks. Engineering analysis and approval for use of such a plate on Army or Air Force forklifts must first be obtained from either:

United States Army:
Commander
United States Army TACOM
Attn: AMSTA-MVM
Warren MI 48397-5000

United States Air Force:
WR-ALC/LVRE
Robins AFB GA 31098-5345

3.3.2. 6K Rough Terrain (RT) Forklift (Figure 3.2.). The 6K RT forklift is considerably larger than the 4K. These vehicles are normally only found in US Army and Marine Corps inventories. It is designed to rapidly build up and move air transportable cargo. When equipped with a set of tine extenders (paragraph 3.3.4.), the 6K can lift 6,000 pounds and, unlike the 4K, may be used to load airlift aircraft with 463L pallets.

MATERIALS HANDLING EQUIPMENT



Figure 3.2. 6K Forklift

3.3.3. 10K Standard Forklift: The 10K forklift is the most common forklift in the airlift inventory. As its name implies, the 10K can lift and transport 10,000 pounds of cargo. Like the 6K, the 10K can load 463L pallets onto airlift aircraft. Using rollerized tines on the forks makes it easier to load 463L pallets.

3.3.3.1. The 10K standard forklift is similar to the 4K in appearance only much larger. The 10K-standard forklift is capable of loading the C-130, KC-135, C-17, and C-5 aircraft.

3.3.3.2. The 10/13K adverse terrain (AT) forklift (Figures 3.3. and 3.4.) is similar in appearance to a front scoop loader with forklift tines substituted for the earth moving bucket. The 10/13K AT-forklift is capable of loading the C-130, C-17, and C-5 aircraft.

NOTES:

- 1. If rollerized tines are not available, pallets can be loaded onto the aircraft with bare tines. The 10K can be loaded on the C-5, C-17, and C-130. The 10K must be placed within specified locations on C-130 aircraft. It also requires the use of sleeper shoring and removal of the cab for shipment.*
- 2. On some 10K AT forklifts, the counterweights must also be removed prior to air shipment.*

3.3.3.3. The 10/13K-pound capacity A/T forklift may be used as a prime mover to load and offload rolling stock within the aircraft, with the following restrictions:

3.3.3.3.1. Forklift limitations and aircraft limitations must not be exceeded.

3.3.3.3.2. Maximum speed on aircraft ramp and cargo floor is 3 MPH.

3.3.3.3.3. 10K Standard forklifts will not be used as prime movers.

MATERIALS HANDLING EQUIPMENT



Figure 3.3. 10/13 K Adverse Terrain Forklift

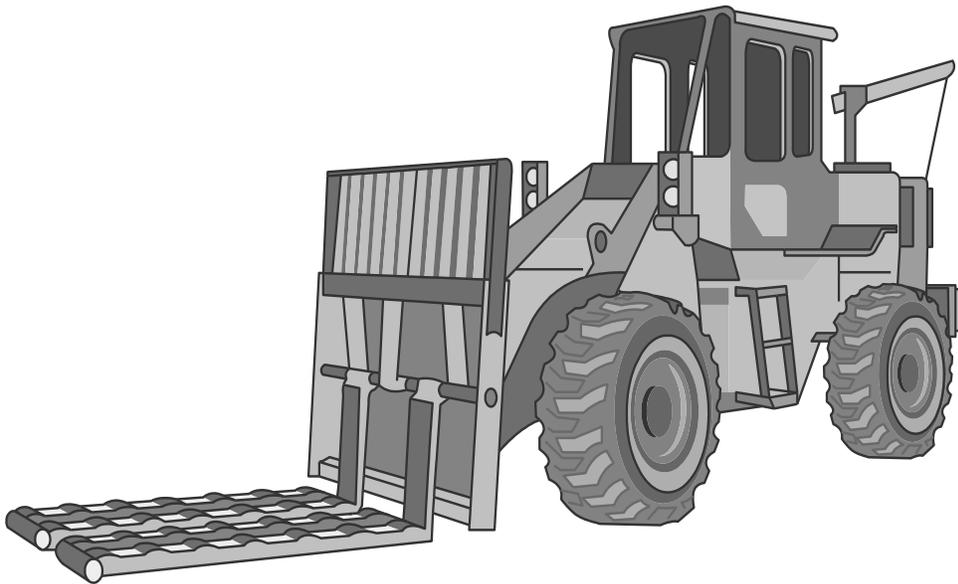


Figure 3.4. 10 K Adverse Terrain Forklift (John Deere)

MATERIALS HANDLING EQUIPMENT

3.3.4. Tine (Fork) Extenders. Tine extenders are designed in two configurations; bare tine extenders and rollerized tine extenders. They are used to lengthen the forklift tines. Forklift tines must be at least 72 inches long for use with 463L pallets. Tine extenders provide this additional length. Either type of extender is acceptable. (See Figures 3.5. and 3.6.)

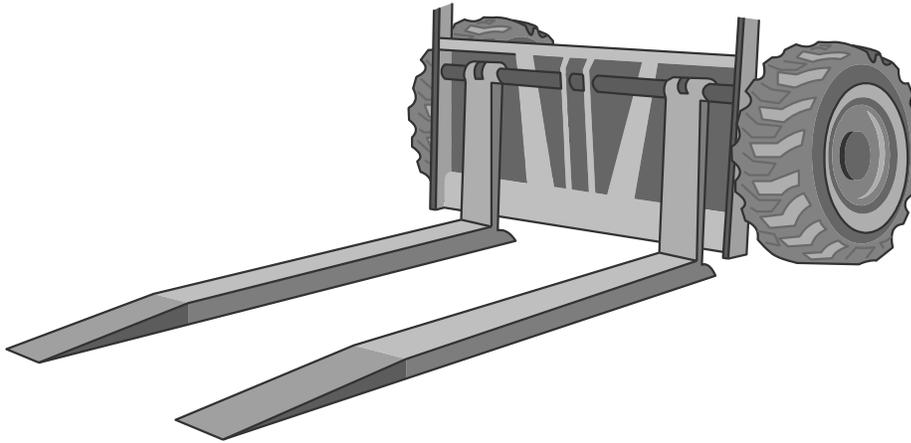


Figure 3.5. Bare Tine Extenders

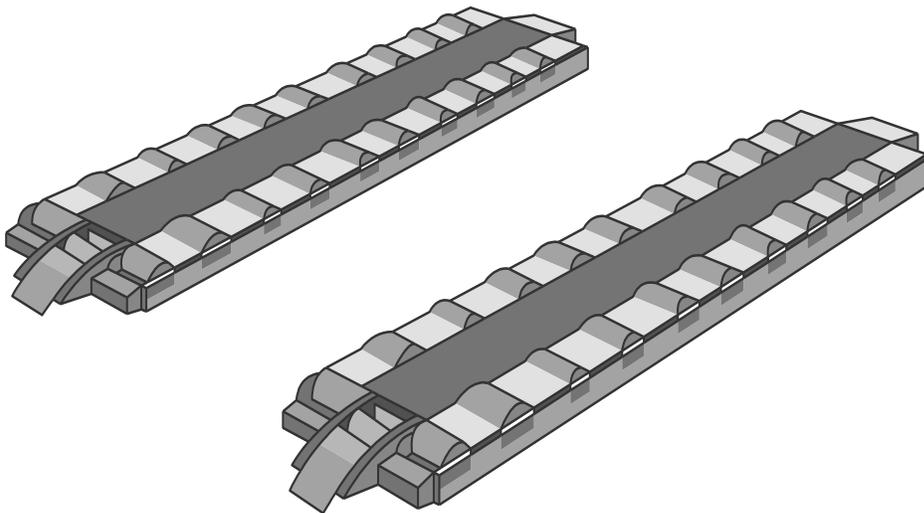


Figure 3.6. Rollerized Tine Extenders

3.4. K-loaders. K-loaders provide the capability to rapidly onload and offload 463L pallets from airlift aircraft. There are three types of K-loaders with their own capabilities, limitations, and common features. Their quantity and availability is limited. All are large and heavy, and many are extremely difficult to transport. All K-loaders are part of the 463L system. They are particularly useful for handling married pallets and airdrop platforms. When you anticipate the need for a K-loader, early and continuous coordination with your affiliated AMCU is essential.

MATERIALS HANDLING EQUIPMENT

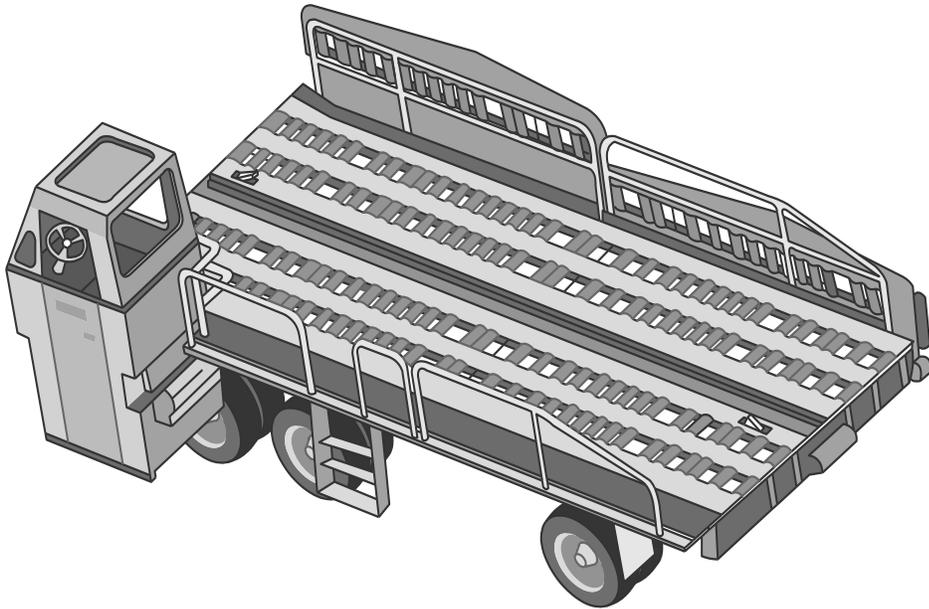


Figure 3.7. 25K Loader

3.4.1. 25K-loader (Figure 3.7.). The 25K-loader is a self-propelled cargo transportation platform. It can lift and transport three 463L pallets up to a maximum cargo weight of 25,000 pounds. Its deck may be raised, lowered, tilted forward or aft permitting alignment with aircraft floors. The deck also can roll from side to side. The deck has rows of recessed rollers installed the entire length of the vehicle. These rollers are used as conveyers for palletized loads. Guide rails run the entire length of the deck to align the pallets with the aircraft rail system. Locks are installed in the rails to prevent the pallets from moving. The loader has removable safety rails and a side catwalk. Access to the deck in either the up or down position is by a telescoping ladder. The 25K-loader may be transported on the C-130, C-17 or C-5 aircraft. The 25K-loader is capable of loading the C-130, KC-135, C-17, and C-5 aircraft.

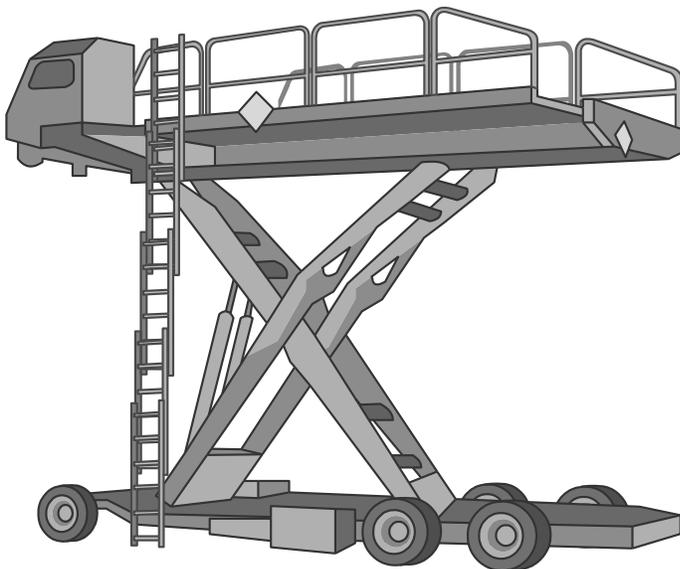


Figure 3.8. Halverson, Next Generation Small Loader

MATERIALS HANDLING EQUIPMENT

3.4.2. Halverson, Next Generation Small Loader (NGSL) (Figure 3.8.). The Next Generation Small Loader is a self-propelled air cargo transport/loader that supports all military cargo, and CRAF aircraft. It is also air transportable on Air Force C-130, C-5, and C-17 military aircraft. The loaders will be used to move cargo from loading areas to the aircraft as well as loading and unloading the aircraft themselves. The Halverson loader has the ability to lift and transport up to three pallets and up to 25,000 pounds. The deck can service floor heights from as low as 39 inches to 225 inches. It also has a power convey feature and will hold three 463L pallets in either a 108 or 88 bias.

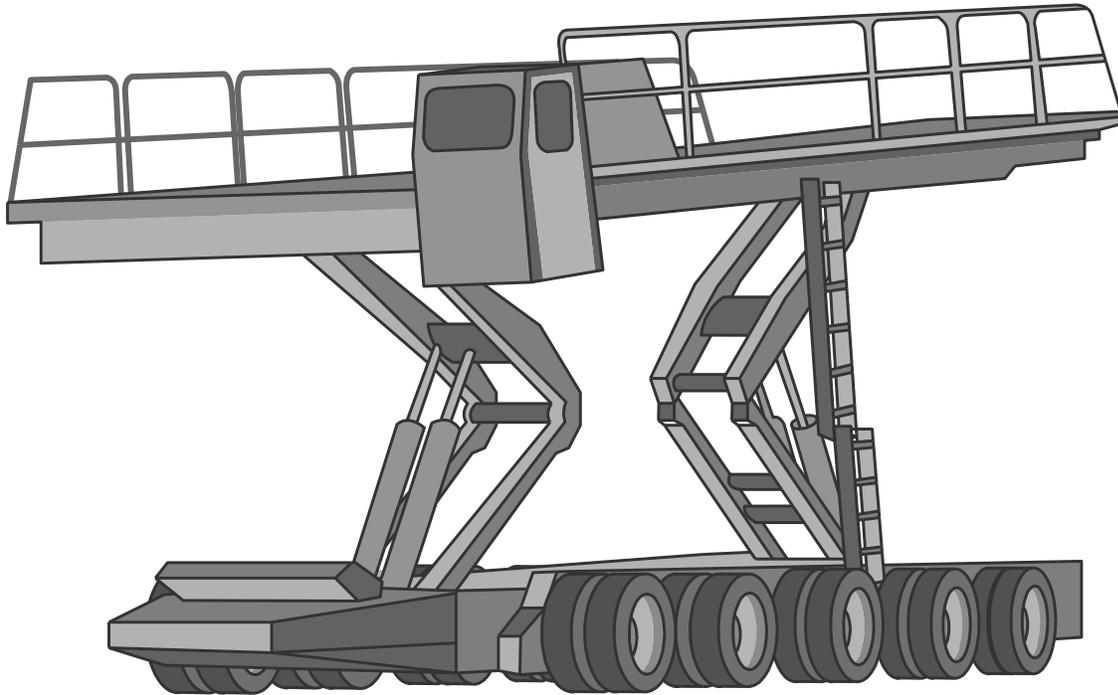


Figure 3.10. 60K (Tunner) Loader

3.4.3. 60K (Tunner)-loader (Figure 3.10.). The 60K loaders have increased capacity over the 25K and the Halverson, Next Generation Small Loader (NGSL). It can be used to service all military and civilian aircraft. It is air transportable on C-5, and C-17 aircraft. When airlifted it does not require the use of any shoring. The 60K loader has the ability to lift and transport up to six pallets and up to 60,000 pounds.

MATERIALS HANDLING EQUIPMENT

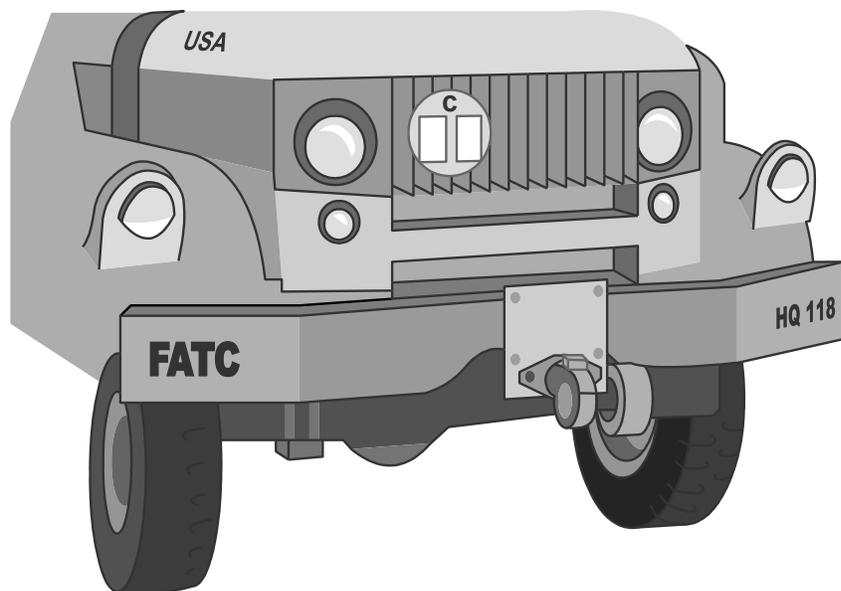


Figure 3.11. Front Mounted Pintle Hook

3.5. Pusher Vehicles. (Figure 3.11.) A pusher vehicle is any vehicle modified with a front mounted pintle hook. These vehicles aid dramatically in loading trailers on military cargo aircraft. Pusher vehicles allow the driver a direct view of the trailer as it moves into the aircraft. This is quicker and safer than having the driver back the trailer onto the aircraft. The best vehicles to use as pusher vehicles are M-Series vehicles or the MHE 237, US Marine Corps 4K RT forklift. There is one primary restriction. **Do not exceed the pusher vehicle's cargo capacity.** This ensures that the trailer is always under control.

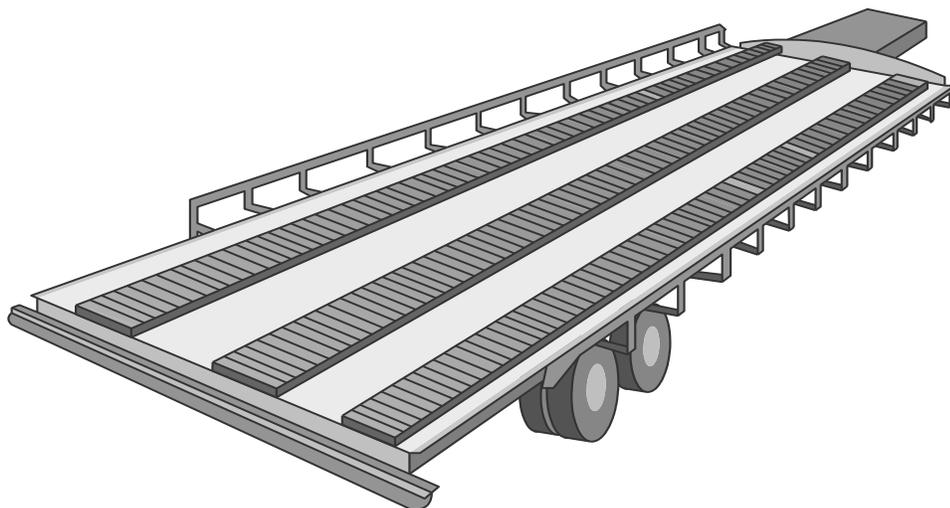


Figure 3.12. Rollerized Flatbed Truck/Trailer (typical)

3.6. Rollerized Flatbed Trucks/Trailers. (Figure 3.12.) Rollerized flatbed trucks/trailers come in a variety of sizes, lengths, and capacities. Roller conveyors can be attached to the bed to accommodate cargo build-up, transportation, and loading of 463L pallets. These flatbeds help with the speedy handling of palletized cargo, especially when K-loaders are not available.

MATERIALS HANDLING EQUIPMENT

3.7. Pallet Dollies. (Figure 3.13.) Pallet dollies aid in the building, transporting, storing, and loading of cargo on 463L pallets. The dollies are equipped with swivel casters or rollers to aid in pallet movement. They are used in conjunction with forklifts as a loading device. When forklifts are used with pallet dollies, rollerized tines are not required. The dollies have a tow bar and pintle hook for attaching to a towing vehicle or coupling the dollies into a train.

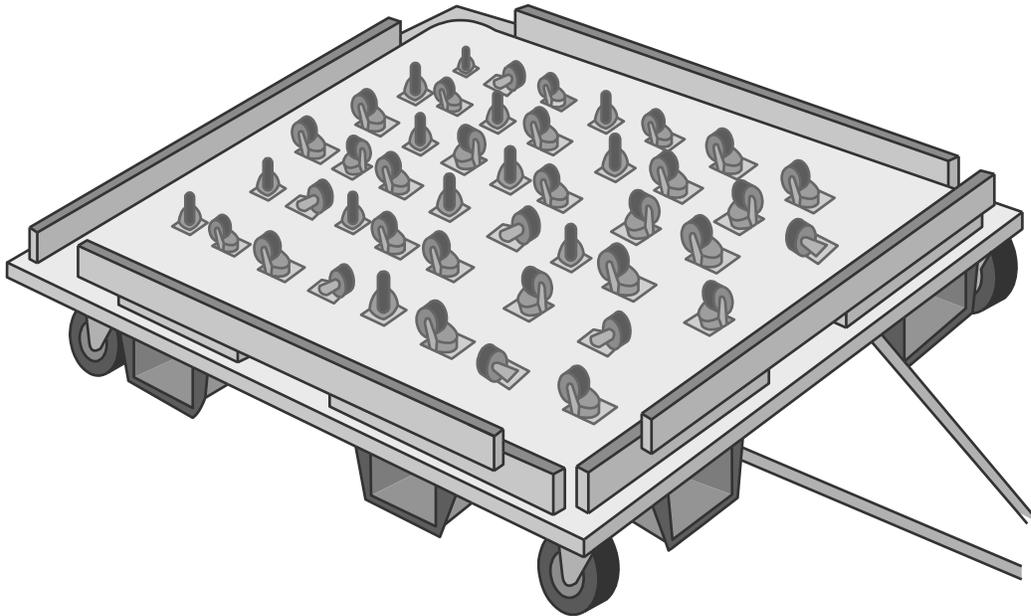


Figure 3.13. Pallet Dollies

3.8. Portable Stairs. Portable stairs are used to load passengers and crew aboard civilian or military passenger carrying aircraft. There are several types and models of stairs and extenders. As with many of the items discussed in this chapter, close coordination with your affiliated AMCU is required to obtain their use.

3.8.1. 12-Foot Passenger Steps (Figure 3.14.). These are the most common type of passenger stairs and are located throughout the world. They are mechanically or manually positioned and will reach a maximum height of 12 feet. This type of stair is adequate to reach the doors of the C-5, KC-135, DC-8, A-310, and B-707 aircraft. If you are working with any wide body aircraft other than a C-5, you must use a stair extender (paragraph 3.8.2.) to reach the passenger door.

MATERIALS HANDLING EQUIPMENT



Figure 3.14. 12-Foot Passenger Stairs

3.8.2. Stair Extenders. (Figures 3.15. and 3.16.) When the 12-foot steps are used with wide body aircraft the stair extenders are used to get the additional height needed to reach the passenger doors. The stair extenders are locally manufactured. They are four feet in height and are attached to the top of the 12-foot stairs.

3.8.3. KC-10 Stair Extender. The stair extender assembly is used at airfields where available boarding stairs do not reach the threshold of the aircraft cabin doors. This extender is 4 feet high. When installed, the ladder assembly fills the void from the door-sill of the middle doors to the top of the stairs. The KC-10 stair extender must be requested in advance. Contact your affiliated AMCU for assistance.

MATERIALS HANDLING EQUIPMENT

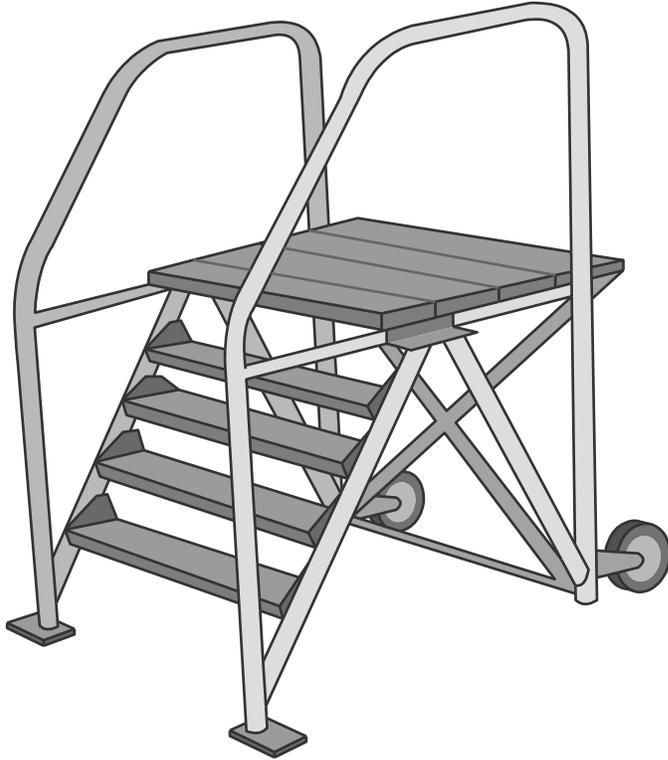


Figure 3.15. Stair Step Extenders

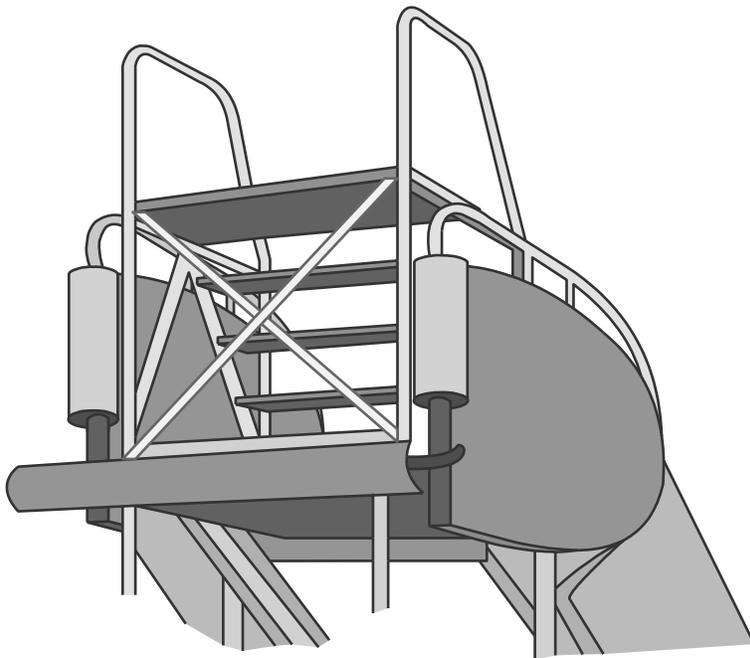


Figure 3.16. Stair Extenders (matched to 12-Foot Passenger Stairs)

MATERIALS HANDLING EQUIPMENT

3.8.4. 17-Foot Passenger Stairs (Figure 3.17.). This type of stair is self-propelled and compatible with every type of aircraft that requires passenger stairs. The stairs will extend to 17 feet. These stairs are the most mobile and are well suited for handling passengers. However, they are transportable only by surface means or on the C-17 or C-5 aircraft.

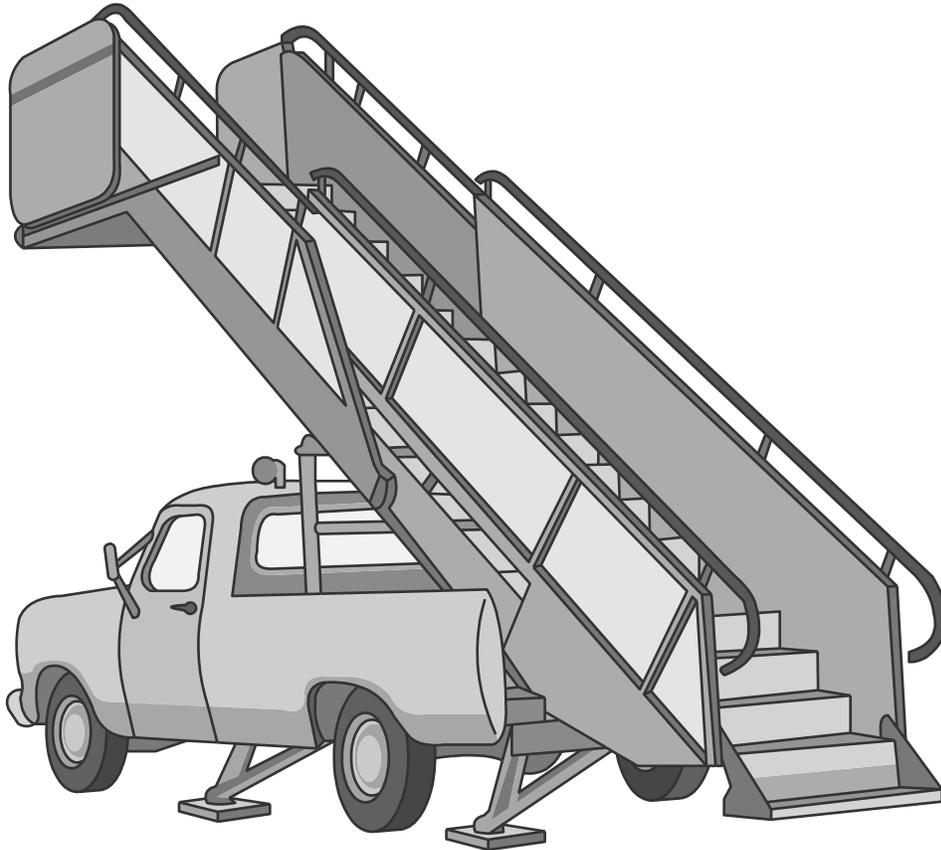


Figure 3.17. 17 Foot Passenger Stairs

MATERIALS HANDLING EQUIPMENT

Nomenclature	Maximum Lifting Capability	# Pallets Able to Carry	Capable Of Loading	Can Be Airlifted On	Additional Information
FORKLIFTS					
4K	4,000 lbs.	None			With tines removed, excellent pusher vehicle. Can be used inside military aircraft. Must not exceed particular aircraft limitations.
6K	6,000 lbs.	*1			* With tine extenders, can load one 463L pallet.
10K Standard	10,000 lbs.	1	C-130, KC-135, C-17, & C-5	C-5, C-17, & C-130. Note: For C-130, 10K Standard must be placed within specified locations.	Not to be used as a prime mover.
10/13K AT	10,000 lbs. *13,000 lbs. using counter-weights	1	C-130, C-17, & C-5	C-5, C-17, & C-130. Note: For C-130, 10K	Can be used as prime mover to load & unload rolling stock within an aircraft. *Must not exceed forklift limitations.
K-LOADERS					
25K	25,000 lbs.	3	C-130, KC-135, C-17, & C-5	C-130, C-17, & C-5	
Halverson (NGSL)	25,000 lbs.	3	All military & civilian aircraft.	C-130, C-17, & C-5	
60K	60,000 lbs.	6	All military & civilian aircraft.	C-5 & C-17	
PORTABLE STAIRS					
12 Foot			C-5, KC-135, DC-8, & B-707		Maximum height 12'
17 Foot			Compatible with every type of aircraft requiring stairs.	C-5 & C-17	Maximum height 17'

Figure 3.18. (General MHE Information)

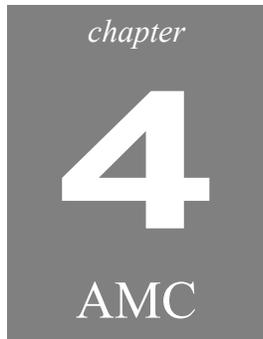
MATERIALS HANDLING EQUIPMENT

Chapter 3—Homework Assignment

1. Repositioning MHE from AMC and other Air Force bases to on-load locations is expensive, time consuming, and occupies a tremendous amount of available airlift cargo space. For these reasons, _____ have a responsibility (as the _____ of airlift) to provide as much MHE from local sources as possible.
2. With the tines (forks) removed and the addition of a front-mounted pintle hook, the 4K forklift makes an excellent _____.
3. The 10K-standard forklift is capable of loading the _____, _____, _____, and _____ aircraft.
4. The 25K-loader is a _____-_____ cargo transportation platform. It can lift and transport _____ 463L pallets up to a maximum cargo weight of 25,000 pounds.
5. A _____ is any vehicle modified with a front mounted pintle hook.
6. 17-Foot Passenger Stairs: These stairs are the most mobile and are well suited for handling passengers. However, they are transportable only by _____ or on the _____ or _____ aircraft.

THIS PAGE INTENTIONALLY LEFT BLANK

SHORING



Lesson Objective: The objective of this lesson is for each student to comprehend how to use shoring to prevent exceeding any aircraft limitations.

References: DOD 4500.9-R Part III, Mobility, Defense Transportation Regulation (DTR)

Web Pages: http://www.transcom.mil/j5/pt/dtr_part_iii.cfm

Learning Activities:

1. General
2. Load spreading
3. Shoring Categories

Test Objectives:

1. Distinguish between the different types of shoring
2. Describe each of the four categories of shoring
3. Explain the reason for selecting the appropriate type of shoring for any cargo offered for shipment

SHORING

4.1. General. Your unit is responsible for providing shoring. The shoring serves many purposes. It protects the aircraft cargo floor and 463L pallet surfaces. It decreases the approach angle of the aircraft cargo ramps, protects aircraft parking ramps, and increases cargo contact areas. This chapter explains the different types, usage, and applications of shoring. Comply with ATTLA Certification guidelines and/or contact your affiliated AMCU if you are unsure about shoring requirements.

4.2. Load Spreading. Load spreading (Figure 4.1.) is a physical process that distributes a concentrated weight over a larger area. This weight exerts a certain amount of pressure determined by its supporting contact area. By using shoring, the contact area can be increased at a 45-degree angle from the upper surface of the shoring to the cargo floor. This increased contact area decreases the pressure on the floor allowing us to carry an otherwise prohibited piece of cargo. It is important to note that shoring will only increase the area of contact by an amount approximately equal to the shoring thickness on all sides of the object it supports. It will not increase the pounds per square inch (PSI) limitations.

EXAMPLE: A piece of two-inch thick shoring increases the area of contact by two inches on all sides of the item resting on it, not to exceed the dimension of the shoring. The spreading effect of shoring remains the same regardless of the shape of the supported item.

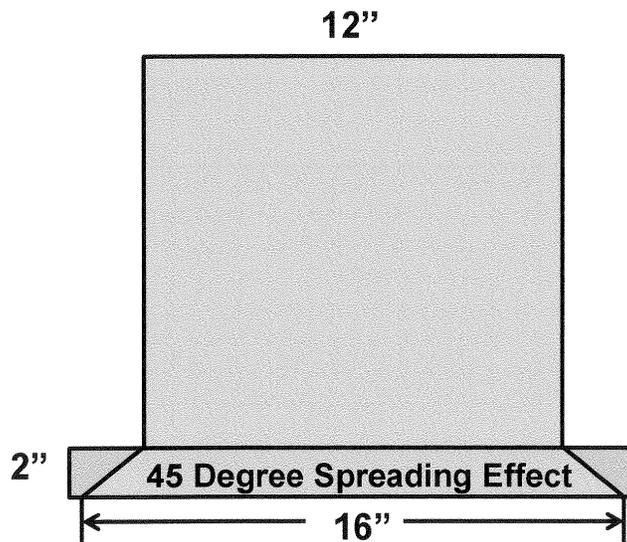


Figure 4.1. Load Spreading Effect of Shoring

4.3. Shoring Categories. There are four categories of shoring. Each category has its own specifications, requirements, and applications, and will be discussed separately.

SHORING

4.3.1. Rolling Shoring (Figure 4.2.). Use rolling shoring to protect the aircraft parking ramp, and the cargo floor and loading ramps of cargo airplanes from damage when transporting a vehicle across it. Most vehicles shipped by air do not exceed weight limitations, and consequently, do not require rolling shoring. Vehicles with cleats, studs, or other gripping devices and treads that allow concentrated contact require rolling shoring. Cleated or lugged wheels can easily cause damage to the aircraft floor or soft surfaces. The total weight of the vehicle is transferred to the small, concentrated, contact area of the cleats or lugs. Vehicles that have concentrated contacts require rolling shoring thick enough to prevent damage to the cargo floor, with a minimum thickness is $\frac{3}{4}$ inch.

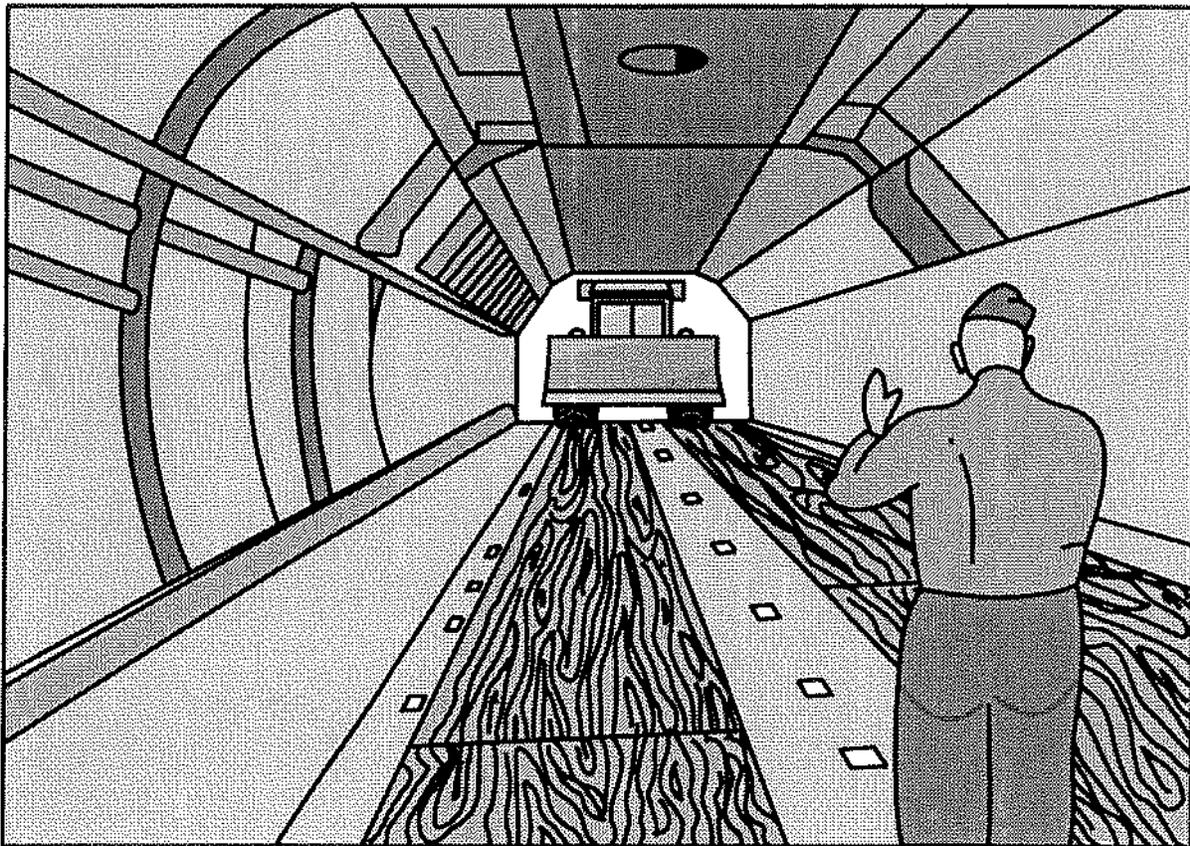


Figure 4.2. Rolling Shoring

SHORING

4.3.2. Parking Shoring (figures 4.2. through 4.6.). Use parking shoring to protect the aircraft floor from damage during flight. Any vehicle requiring rolling shoring also requires parking shoring. Each aircraft has specific floor weight limitations that apply to wheeled and non-wheeled items of cargo. If the vehicle exceeds these weight limitations, you must provide parking shoring before the item can be transported by air. There is no need for you to learn the mathematical processes required to calculate shoring requirements. But, here are some general considerations regarding parking shoring you may want to remember when planning an airlift movement:

4.3.2.1. The minimum thickness of parking shoring is $\frac{3}{4}$ inch.

4.3.2.2. Use parking shoring to protect the aircraft floor or ramps from contact such as blades, buckets, fork-lift tines, steel wheels, trailer tongue supports, etc. All trailers with a tongue that could rest on the aircraft floor must be shipped with parking shoring, whether connected to or disconnected from its prime mover.

4.3.2.3. Most pneumatic tires do not normally require parking shoring. The ones that do are usually narrow and/or very heavy.

4.3.2.4. Always use parking shoring when rolling shoring is used.

4.3.2.5. Always use parking shoring on 463L pallets when you load items that have sharp edges or protrusions that could damage the pallet's aluminum surface.

Note: *Contact your affiliated AMCU for guidance about specific vehicle or aircraft limitations.*

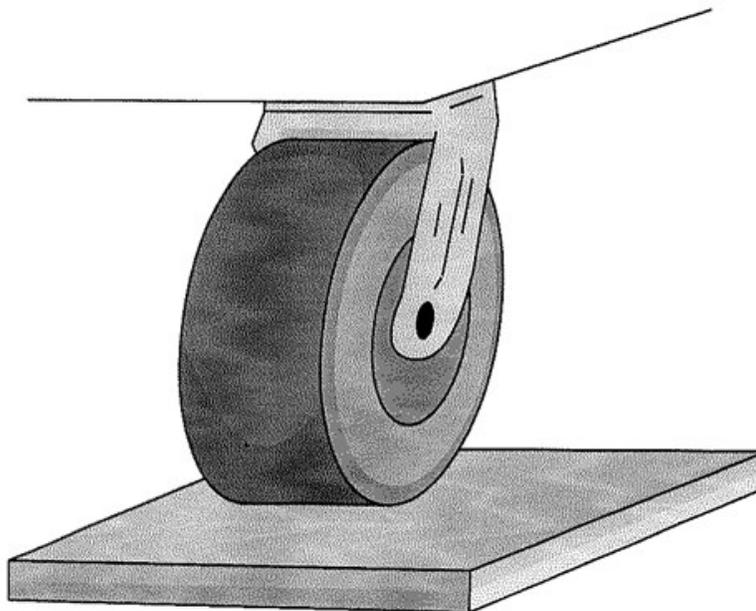


Figure 4.3. Parking Shoring for Hard/Caster Wheel (plastic, rubber, or steel)

SHORING

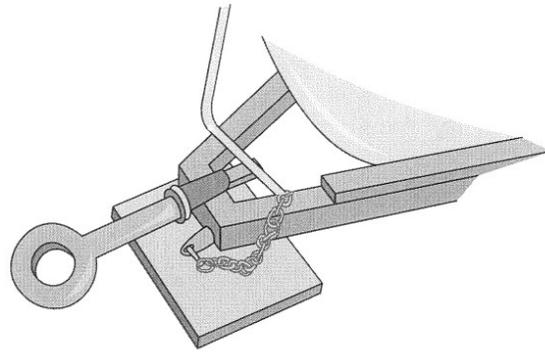


Figure 4.4. Parking Shoring for Trailer Tongue

4.3.3. Sleeper shoring (figure 4.5.). Use sleeper shoring to prevent vertical movement of a vehicle when it's tires or suspension system cannot withstand G-loads without failure, or when depression would produce slack in the tiedown devices. Use under the frame or axles of vehicles that weigh over 20,000 pounds and are equipped with soft, low pressure, balloon-type, off road tires. Use sleeper shoring to prevent the vehicle from bouncing up and down and possibly pulling the tiedown rings out of the aircraft floor. The ATTLA Certification may require sleeper shoring when 80% of the axle rating is exceeded. The base of the sleeper shoring (area contacting the aircraft floor) must be large enough to support the entire weight of the vehicle it's beneath without exceeding the P.S.I. limitation of the aircraft floor.

Note: *P.S.I limitations are variable depending on the type aircraft and location within that aircraft. Contact your affiliated AMCU for specific guidance if constructing prefabri-*

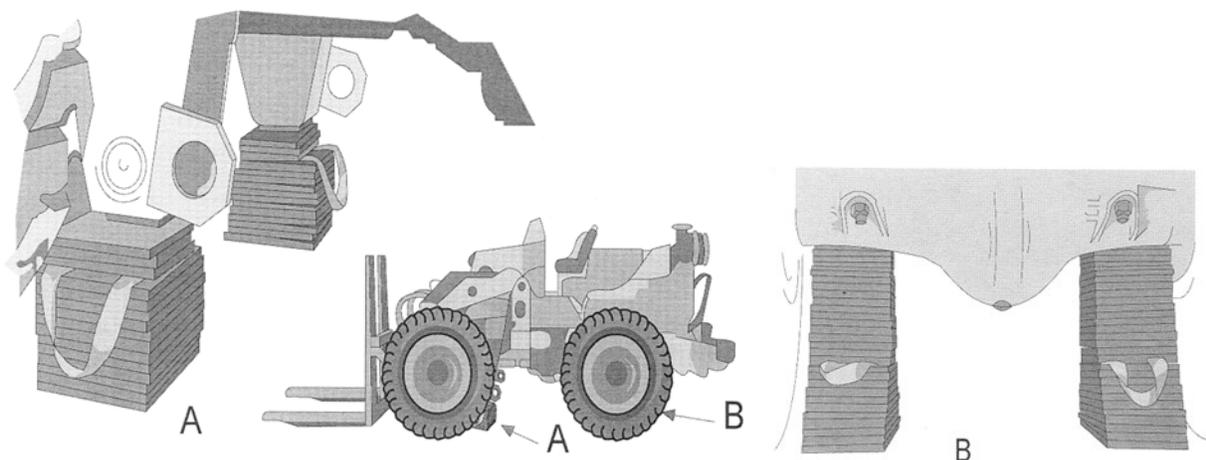


Figure 4.5. Sleeper Shoring

SHORING

4.3.4. Approach Shoring (figure 4.6.). Approach shoring has a specific application. Use approach shoring to decrease the approach angle of aircraft loading ramps. This is because some items of cargo will strike the aircraft or ground during loading/offloading operations. Extremely tall and long items may also contact the top of the aircraft cargo compartment without a reduced approach angle provided by approach shoring. Although there is no standard method for the user to calculate when and how much approach shoring to use, most helicopters and many long vehicles with limited ground clearance will require approach shoring.

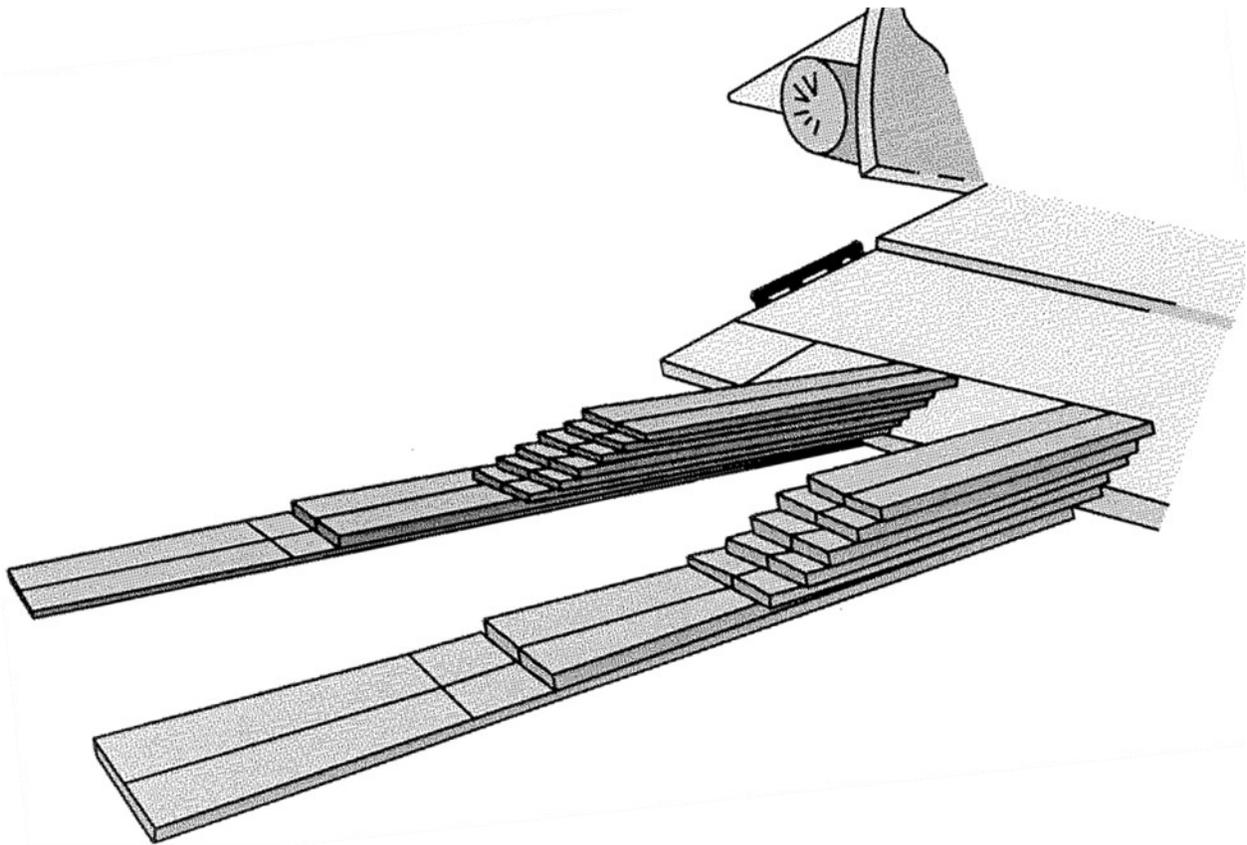


Figure 4.6. Approach Shoring

SHORING

Chapter 4—Homework Assignment

1. _____ is responsible for providing shoring.
2. Use rolling shoring to protect the aircraft _____, and the _____ and loading ramps of cargo airplanes from damage when transporting a vehicle across it.
3. Use _____ shoring to protect the aircraft floor from damage during flight.
4. Use sleeper shoring under the frame or axles of vehicles that weigh over _____ pounds and are equipped with _____, _____, balloon-type, off road tires.
5. Use _____ shoring to decrease the approach angle of aircraft _____. This is because some items of cargo will _____ the aircraft or ground during loading/offloading operations.

SHORING

THIS PAGE INTENTIONALLY LEFT BLANK

CARGO PREPARATION AND PRE-JOINT INSPECTION



Lesson Objective: The objective of this lesson is for each student to comprehend how to properly prepare and inspect cargo for shipment on AMC aircraft.

References: DOD 4500.9-R Part III, Mobility, Defense Transportation Regulation (DTR)

Web Pages: http://www.transcom.mil/j5/pt/dtr_part_iii.cfm
<http://www.dtic.mil/whs/directives/infomgt/forms/eforms/dd2133.pdf>

Learning Activities:

1. Responsibilities
2. Inspection Procedures
3. DD Form 2133

Test Objectives:

1. Explain how to properly prepare equipment for air movement
2. Summarize the roles and responsibilities of the AMCU's
3. Give examples on how to properly use the DD Form 2133 when inspecting cargo

CARGO PREPARATION AND PRE-JOINT INSPECTION

NOTE: This course does not certify you to be a Joint Inspector.

5.1. This chapter outlines the responsibilities, procedures, and requirements for preparation and inspection of cargo offered for air shipment.

5.2. **Cargo Preparation.** The deploying unit is responsible for the preparation of cargo, including weighing, marking, palletization, and the preparation of all documentation (to include HAZMAT certification) prior to inspection and aircraft loading.

5.2.1. Containers. Internal airlift and helicopter Slingable Unit (ISU) containers are certified for movement. They are 463L compatible and have a 10,000-lb capacity. The base measures 88 inches by 108 inches and allows forklift entry. ISUs are available in heights of 60 inches and 90 inches. Serviceable freight containers and International Organization for Standardization shipping containers are also air transportable when palletized. Keys to containers must be available during all phases of marshalling, inspection, loading, and transportation. Cargo within ISUs and freight containers must be secured/restrained to prevent movement and damage during flight. Ensure containers comply with preparation requirements of the DD Form 2133, Joint Airlift Inspection Record, Section C: Pallets/Pallet Trains (see Para. 5.6.4.).

5.2.2. Vehicles. Follow Weighing and Marking procedures in Chapter 8 of this workbook. Ensure vehicles comply with preparation requirements of the DD Form 2133, Joint Airlift Inspection Record, Section B: Vehicles/Non-Powered Equipment (see Para. 5.6.3.).

5.2.3. Helicopters. Follow Weighing and Marking procedures in Chapter 8 of this workbook. Ensure helicopters comply with preparation requirements of the DD Form 2133, Joint Airlift Inspection Record, Section D: Helicopters (see Para. 5.6.5.).

5.2.4 Palletized Cargo. Follow Pallet Build-up Procedures Checklist in Chapter 2 and Weighing and Marking procedures in Chapter 8 of this workbook. Ensure pallets comply with preparation requirements of the DD Form 2133, Joint Airlift Inspection Record, Section C: Pallets/Pallet Trains (see Para. 5.6.4.)

5.2.5. Hazardous Materials (HAZMAT). The Shipper's Declaration for Dangerous Goods (Figure 5.5.), is used to certify shipments. AFMAN 24-204(I), TM 38-250, MCO P4030.19I, NAVSUP Pub 505, DLAI 4145.3, and DCMAD 1, CH 3.4 (HM24) provides instructions for preparation, packaging, and handling of HAZMAT for shipment aboard military aircraft. These instructions are intended to ensure such materials are properly prepared for airlift. See DTR Part III Appendix J for further guidance.

CARGO PREPARATION AND PRE-JOINT INSPECTION

5.2.6. Cargo, Container, and Pallet Marking for Movement. Unit move cargo, containers, and built-up 463L pallets will be marked with a Military Shipping Label (MSL) (Figure 5.2. and 5.3.). A properly completed DD Form 1387-2 (Figure 5.4.) must be attached to any classified item and sensitive cargo requiring protective service or other special handling. All built-up 463L pallets and containers will also be marked with two properly completed DD Form 2775 (Figure 5.6.).

5.3. United States Air Force Internal Air Transport Certification. By Department of Defense Instruction (DoDI 4540.07), any item of cargo that exceeds any one of the criteria below will require certification that the item is approved for airlift. This certification is issued by the Air Force Aeronautical Systems Center Engineering Directorate, Flight Systems Division, Crew Systems Branch, Air Transportability Test Loading Activity (ASC/ENFC (ATTLA)). A copy of the certification memorandum shall accompany the item when it is presented for load processing. Some common vehicles have the certification memorandums on file within the joint commands (Figure 5.7.).

5.3.1. Criteria – Characteristics Requiring Analysis

- Greater than Length: 240 inches (20 feet)
- Greater than Width: 96 inches (8 feet)
- Greater than Height: 96 inches (8 feet)
- Greater than Weight: 10,000 lbs
- Greater than 1600 lbs per linear foot
- Greater than 5,000 lbs per axle
- Greater than 2,500 lbs per tire
- Exceed floor contact pressure of 50 psi
- Requires the use of special loading procedures
- Require usage of aircraft electrical power or has to be electronically active inside the aircraft (portable command center, radios, transmitters, refrigerator etc...)
- Cargo is active or is used while in the aircraft
- Cargo occupied by personnel (need Aircraft Systems Group) concurrence if occupied by people during takeoff and landing)
- Susceptible to aircraft electromagnetic environment

5.3.2. Commercial Off-the-Shelf (COTS) vehicles are seldom equipped by the manufacturer to withstand the rigors of airlift, so some additions or changes are almost always necessary to airlift COTS equipment. Most commercial vehicles need ATTLA review to be airlifted due to their soft suspensions and the lack of sufficient restraint capability. The addition of tiedown rings and the use of sleeper shoring are often required to airlift commercial vehicles.

5.3.3. For questions regarding the airlift certification process or information on non-standard cargo/equipment contact the Air Transportability Test Loading Agency (ATTLA) via e-mail at attla@wpafb.af.mil or by phone at DSN 785-2330/2547.

CARGO PREPARATION AND PRE-JOINT INSPECTION

5.4. DD Form 2133, Joint Airlift Inspection Record. The DD Form 2133 will be used to document that all cargo, vehicles and equipment has been properly prepared for airlift. The completed form will indicate to the aircraft loadmaster that the required inspection has been accomplished. An example of this form is depicted in figure 6.1.

5.4.1. Prior to aircraft loading, a Joint Inspection will be performed by a qualified mobility force inspector (e.g., Contingency Response Element (CRE)/Cargo Deployment Function (CDF), aerial port, Arrival/Departure Airfield Control Group) along with a representative from the deploying force. The mobility force inspector must have, as a minimum, completed HAZMAT Inspector training required in AFMAN 24-204(I), TM 38- 250, MCO P4030.19I, NAVSUP Pub 505, DLAI 4145.3, and DCMAD 1, CH 3.4 (HM24). Also, the mobility force inspector must be knowledgeable of cargo, vehicle, and equipment preparation requirements specified in DTR - Part III – Mobility - Appendix O- Preparation of Equipment and Supplies and Joint Inspection (JI) Procedures for Military Aircraft. In addition to HAZMAT training, qualification standards for mobility force inspectors will be identified in Service/Major Command directives.

NOTE: All cargo is subject to inspection by the mobility force inspector and by the aircrew. If the cargo is determined by the deploying force to be "sight-sensitive" and will be exempt from inspection, prior approval must be obtained from the Air Mobility Command (AMC) Director of Operations (AMC/A3) or Director of Logistics (AMC/A4) or the Service/Major Command having operational control of the aircraft.

5.5. DD Form 2133 Completion and Distribution. (Figure 6.1.) Three copies of the DD Form 2133 will be completed for each aircraft load and signed by the appropriate personnel. Minimum distributions for the completed copies are as follows:

5.5.1. One signed copy will be attached to the aircraft cargo manifest.

5.5.2. One signed copy for the station file.

5.5.3. One signed copy for the deployed force.

5.6. DD Form 2133 Preparation Instructions.

5.6.1. HEADING

5.6.1.1. Item 1: DEPLOYING FORCE: Enter the numerical designation and geographic location of the military unit responsible for the equipment being airlifted (e.g., 1st Fighter Wing, Langley AFB VA).

5.6.1.2. Item 2: DEPARTURE AIRFIELD: Enter the name of the facility the airlifted unit is departing (e.g., Langley AFB VA).

5.6.1.3. Item 3: DATE: Enter year, month, and day that the JI is accomplished.

CARGO PREPARATION AND PRE-JOINT INSPECTION

5.6.1.4. Item 4: AIRCRAFT TYPE AND MISSION NUMBER: Enter the type and mission number of the aircraft on which the equipment is to be loaded.

5.6.1.5. Item 5: LOAD/CHALK NUMBER. Enter the transported force assigned aircraft load number that establishes the desired load movement sequence.

5.6.1.6. Item 6: START TIME: Enter the local time the JI actually started.

5.6.1.7. Item 7: COMPLETE TIME: Enter the local time load was checked and is ready for movement.

5.6.1.8. Item 8: MOBILITY FORCE: Enter the numerical designation of the unit having mobility force inspection responsible for the operating location.

5.6.1.9. Item 9: CHAPTER 3 MOVEMENT. "X" Yes or No IAW AFMAN 24-204, chapter 3.

5.6.1.9. LEGEND: Place a check mark in appropriate block if satisfactory. Use an "X" if unsatisfactory. The "X" may be circled when corrected. If a block is not applicable, Enter "-" (Dash).

5.6.2. Item 11. DOCUMENTATION

5.6.2.1. Item a: Pre-Load Plan. Check the load plan scale weights match the manifest weights. Ensure the load is correctly sequenced IAW the load plan and complies with all aircraft loading and safety of flight limitations.

5.6.2.2. Item b: Manifest/Load List/Packing List. Check for proper manifesting of the entire chalk. Ensure the preparation of all required load list and/or packing lists.

5.6.2.3. Item c: Shippers Declaration for Dangerous Goods (SDDG). Check for the proper preparation of all required HAZMAT documentation and certification. (see DTR Part III Appendix J and AFMAN 24-204.)

5.6.2.4. Item d: DD Form 1387-2 (if required)

5.6.2.5. Item e: Military Shipping Label (2D Bar Code)

5.6.2.6. Item f: ATTILA Certification. If re-quired, a copy of the airlift transportability certification must also be provided. (see DTR Part III Appendix O)

5.6.3. Item 12. GENERAL REQUIREMENTS

5.6.3.1. Item a: Clean. (No dirt, trash, or pests). Clean each item of all grime, oil, dirt. Steam clean if necessary. Ensure all vehicle tires are free of debris (rocks, pebbles, sand.) embedded in the treads.

CARGO PREPARATION AND PRE-JOINT INSPECTION

5.6.3.2. Item b: Fluid Leaks. A loss of fluid at a rate that is readily detected or seen is a leak. Five drops or more per minute from a cooling system, crank case, or gear case is a leak. Fuel or brake system leaks, no matter how minor, will prevent air shipment. Do not consider a damp or discolored seal a leak unless any of the above conditions exist.

5.6.3.3. Item c: Scale Weight (GW, Axle Weight, Marked on Both Sides). Show the gross vehicle weight to the nearest whole pound on both sides of the vehicle. Mark axle weights above each axle.

5.6.3.4. Item d: Dimensions. (Fits A/C Profile or Contour). Ensure equipment will negotiate the aircraft ramps and interior dimensions and will not come in contact with aircraft sidewalls or ceiling at any time. Check that each pallet/ISU does not exceed the dimensions of the planned aircraft position. Refer to aircraft loading manual for aircraft pallet/ISU limitations.

5.6.3.5. Item e: Center of Balance (Marked on Both Sides). Indicate the center of balance to the nearest whole inch.

NOTE: The only vehicles that require a combined CB are coupled; tractor-trailer units that will remain coupled during flight.

5.6.3.6. Item f: Keys/Combinations (All Locks)

5.6.3.7. Item g: Shoring (Rolling, Parking, Sleeper, Approach). Check that all shoring is serviceable and immediately available. Consult aircraft loading manual and/or ATTLA Certification for shoring requirements.

5.6.3.8. Item h: Hazardous Materials Preparation/Packaging. Check that all HAZMAT in the load are properly prepared, positioned, and compatible with other HAZMAT in this chalk. (see DTR Part III Appendix J.)

5.6.4. Item 13. VEHICLES/NON-POWERED EQUIPMENT

5.6.4.1. Item a: Mechanical Condition (Engine Runs). Unless a vehicle is shipped as retrograde cargo, it must be in good mechanical condition. Ensure self-propelled vehicles are operational.

5.6.4.2. Item b: Brakes Operational (Service/Emergency). Check brakes by having driver demonstrate braking capability while vehicle is moving. Check the emergency brake for operation.

CARGO PREPARATION AND PRE-JOINT INSPECTION

5.6.4.3 Item c: Battery (Secured, Terminals Protected, No Leaks). Ensure battery is correctly installed; i.e., holding clamp secure, filler caps tightly installed, battery connectors are tight, and all cables/clamps are not in contact with any grounding point during loading or flight. Ensure battery terminals are protected (e.g., rubber covers, tape, battery box) to prevent damage or short circuits.

5.6.4.4. Item d: Fuel Tank(s), Level, Caps. Vehicles and self-propelled units will not exceed one-half (1/2) a tank of fuel unless Chapter 3 has been approved (see DTR Part III Appendix J.). If Chapter 3 is approved, tank fuels levels will not exceed three-quarters (3/4). In no case will a vehicle with more than one-half (1/2) tank of fuel be loaded on the aircraft cargo ramp. Wheeled engine-powered Support Equipment (SE) will be drained to the greatest extent unless Chapter 3 has been approved. If Chapter 3 is approved, fuel levels will not exceed one-half (1/2) regardless of the unit's position in the aircraft. SE mounted on a single axle disconnected from its prime mover and loaded with its tongue resting on the aircraft floor must be drained, but need not be purged. Vehicles and SE loaded on the aircraft cargo ramp must be positioned with fuel tank filler openings on the high side of the ramp. Do not exceed one-half (1/2) tank of fuel for units loaded aboard aircraft with a steep angle of ascent (i.e., KC-10, KC-135). Ensure fuel caps are properly installed. On closed fuel system equipment, loosen caps to allow pressure equalization.

5.6.4.5. Item e: Jerricans (Secure, Fuel Level, Seal).

(1) DOT 5L Jerricans (metal) must be completely drained.

(2) United Nations (UN) performance specification jerricans (plastic) are authorized for transporting flammable liquid fuel stocks. Ensure that all racks are designed to accommodate and secure jerricans to prevent movement or leakage during airlift. Jerricans must have a serviceable gasket in place on the screw cap closure.

NOTE: Allow sufficient ullage (outage) and tightly secure jerrican caps to prevent leakage. UN specification jerricans (not in an approved holder) may be shipped palletized, loaded and secured on a vehicle, or floor loaded. If jerricans are not shipped as a secondary load, prepare a separate Shipper's Declaration of Dangerous Goods (see DTR Part III Appendix J).

5.6.4.6. Item f: Tiedown Points/Clevises (Serviceable). Ensure all clevises and tiedown points are serviceable. Include interior and exterior cargo restraint tiedowns in the inspection.

5.6.4.7. Item g: Pintle Hooks (If Used). Ensure all devices required for loading and offloading trailers and cargo is serviceable. Ensure all required pins or cotter keys used to lock clasp are properly installed and serviceable.

CARGO PREPARATION AND PRE-JOINT INSPECTION

5.6.4.8. Item h: Vehicle Equipment Secured (Tools, Tires.). Ensure all vehicle accessory items are secure. This includes fire extinguishers, seat brackets, and any other loose equipment that may become a projectile during flight.

5.6.4.9. Item i: Tire Pressure. Check to ensure that tire pressure is within the vehicle manufacturer's specifications. Tires must be sufficiently inflated to prevent wheel-rim contact with aircraft floor. Tire pressure over 100 PSI may require rolling/parking shoring.

5.6.4.10. Item j: Accompanying Load (w/in Rated Capacity and Secured). Do not exceed the rated capacity of the vehicle. Normally, this information is located on the vehicle data plate or manufacturer's technical publication. Do not exceed sidewall height unless cargo can be properly restrained. Equipment permanently installed in a vehicle will be transported as a vehicle load regardless of height. This provision does not include signal shelters or other easily removed equipment. Check that all secondary cargo (consider all locally manufactured modifications as secondary cargo) is properly secured to the vehicle and/or accompanying trailers. Cargo must meet the same restraint criteria required for the vehicle. Use a minimum of one-half (1/2) inch diameter rope (not nylon) or approved cargo restraint systems to secure cargo. Ensure rope actually touches the cargo, not just hold the side racks down. See DTR Part III Appendix H, Para D.3 restriction if HAZMAT is not secured in approved holders or as authorized in technical directives (i.e., Technical Order, Field Manual, and Training Manual).

5.6.4.10. Item k: LOX/Nitrogen Cart (Vent Kit). Ensure vent kit materials are with the cargo. Technicians will be required at load time to install vent kit.

5.6.5. Item 14: PALLETS/PALLET TRAINS/ISU's

5.6.5.1. Item a: Servicable (Pallet and Tiedown Rings). Ensure that pallet surface, rails/detents, and rings have not been damaged or corroded.

5.6.5.2. Item b: Correctly Built/Items Secured.

Netted - Check that all cargo nets are serviceable and properly installed. Chained/strapped - When nets are not used or additional restraint is required, check that chains or straps are properly installed. Be sure they provide adequate restraint. Cargo within ISUs and other freight containers, particularly HAZMAT, must be secured/restrained to prevent movement and damage during flight.

5.6.5.3. Item c: Dunnage (3 Pieces per Pallet or ISU). Ensure proper dunnage, three pieces, 4" x 4" x 88", accompanies the pallet during shipment.

CARGO PREPARATION AND PRE-JOINT INSPECTION

5.6.6. Item 15: HELICOPTERS (flyaway).

5.6.6.1. Item a: Fuel Quantity (As Required). Fuel quantities cannot exceed three-fourths (3/4) full or 150-gallons per tank, whichever is less.

5.6.6.2. Item b: Configuration (T.O/Cert Letter). Ensure helicopter is configured IAW either the -9 (Aircraft Loading Manual) or the ATTLA Certification.

5.6.6.3. Item c: Battery (Disconnected, Covered/Taped). Ensure user disconnects and tapes battery terminals and secures the battery to prevent accidental leaks and short circuits.

5.6.6.4. Item d: Special Loading Equipment (Towbars, etc.). Ensure special equipment necessary to load this cargo is available. (Tools, jacks, pintle hooks, pumps, ramps.)

5.6.6.5. Item e: Accompanying Load (w/in Rated Capacity and Secured). Reduce helicopter/axle weights to limits prescribed by -9 (Aircraft Loading Manual) or ATTLA Certifications.

5.6.7. SIGNATURES

5.6.7.1. Item 16: DEPLOYING FORCE REPRESENTATIVE (Print Name/Rank/Signature). To be signed by the deploying unit representative accompanying the mobility force inspector.

5.6.7.2. Item 17: MOBILITY FORCE INSPECTOR (Print Name/Rank/Signature). To be signed by qualified inspector personnel.

5.6.8. REMARKS

5.6.8.1. Item 18: ADDITIONAL INFORMATION. List and explain, in detail, any discrepancies found during the inspection and actions taken to correct the problem. Pertinent information regarding the load/chalk will also be listed in this block.

CARGO PREPARATION AND PRE-JOINT INSPECTION

JOINT AIRLIFT INSPECTION RECORD/CHECKLIST										Page	of	Pages								
(Reference DTR Part III Appendix O For Form Completion)																				
1. DEPLOYING FORCE:					2. DEPARTURE AIRFIELD:					3. DATE:										
4. AIRCRAFT TYPE AND MISSION NUMBER:				5. LOAD/CHALK NO.		6. START TIME:		7. COMPLETE TIME:		8. MOBILITY FORCE:										
9. CHAPTER 3 MOVEMENT			Yes	No	10. INCREMENT/SERIAL/BUMPER NUMBER AND TYPE/TCN															
LEGEND (Mark blocks after each item as follows) ✓ = Satisfactory X = Unsatisfactory Circle the " X " for items that have been corrected If not applicable, Enter " - " (Dash)																				
11. DOCUMENTATION																				
a. Pre-Load Plan																				
b. Manifest/ Load List/Packing List																				
c. Shippers Declaration for Dangerous Goods (SDDG)																				
d. DD Form 1387-2																				
e. Military Shipping Label (2D Bar Code)																				
f. ATTLA Certification (Reference DTR Part III, App O)																				
12. GENERAL REQUIREMENTS (Applicable to Blocks 13, 14, 15)																				
a. Clean																				
b. Fluid Leaks (Reference DTR Part III, App O)																				
c. Scale Weight (GW, Axle Weight, Marked on Both Sides)																				
d. Dimensions (Fits Aircraft Contour)																				
e. Center of Balance (Marked on Both Sides)																				
f. Keys/Combinations (All Locks)																				
g. Shoring (Floor/Roller Limitations)																				
h. Hazardous Materials Preparation/Packaging																				
13. VEHICLES/NON-POWERED EQUIPMENT																				
a. Mechanical Condition (Engine Runs)																				
b. Brakes Operational (Service/Emergency)																				
c. Battery (Secured, Terminals Protected, No Leaks)																				
d. Fuel Tank(s), Level, Caps																				
e. Jerricans (Secure, Fuel Level, Seal)																				
(1) DOT 5L (Metal) MUST BE EMPTY																				
(2) UN Specification (Plastic)																				
f. Tiedown Points/Clevises (Serviceable)																				
g. Pintle Hooks (If Used)																				
h. Vehicle Equipment Secured																				
i. Tire Pressure																				
j. Accompanying Load (w/in Rated Capacity and Secured)																				
k. Lox/Nitrogen Cart (Vent Kit)																				
14. PALLETS/PALLET TRAINS/ISU'S																				
a. Serviceable (Pallet and Tiedown Rings)																				
b. Correctly Built/Items Secured																				
c. Dunnage (3 Pieces Per Pallet or ISU)																				
15. HELICOPTERS (Flyaway)																				
a. Fuel Quantity (As Required)																				
b. Configuration (T.O./Cert Letter)																				
c. Battery (Disconnected, Covered/Taped)																				
d. Special Loading Equipment (Tow bars, etc.)																				
e. Accompanying Load (w/in Rated Capacity and Secured)																				
I certify that all items, including hazards, have been declared, properly prepared, and presented for airlift in accordance with all applicable directives.										I certify the above declared items have been inspected and properly prepared for airlift in accordance with all applicable directives.										
16. DEPLOYING FORCE REPRESENTATIVE (Print Name/Rank/Signature)										17. MOBILITY FORCE INSPECTOR (Print Name/Rank/Signature)										

DD FORM 2133, JUN 2013

PREVIOUS EDITION IS OBSOLETE.

Adobe Professional X

Figure 5.1. DD Form 2133 (front side)

CARGO PREPARATION AND PRE-JOINT INSPECTION

TCN	AWS1EAA\$0D00340XX		
			
Equipment Description HELICPR CARGO MH-60K		Serial Number / Package ID 1234567890123	
Model 12345ASDFG	Bumper Nm HQ-123	ULN 1234567	UIC WS1EAA
From AWA2UC In-the-clear Address 3 Lines Max, 35 Characters Per Line XXXXXXXXXX1XXXXXXXXXX2XXXXXXXXXX3XXXXX		NSN 1234567890123	
Piece 1 Of 1 		Length (in.) 1239	TAC YZZZ
		Weight (lb.) 14000	Width (in.) 123
		Height (in.) 135	Project 9BU
		Cube (ft.) 1200	RDD 123
Ship To / POE 		In-the-clear Address 5 Lines Max, 35 Characters Per Line Abcdefg Higijklmno Pqrstuv Wxyz Abcdefg Higijklmno Pqrstuv Wxyz XXXXXXXXXX1XXXXXXXXXX2XXXXXXXXXX3XXXXX	
POD 	MSL / TCMD / Unit Move Information 		
Commodity/SH VD			
W44TYH		Ultimate Consignee / Mark For Consignee Ultimate / Mark For Consignee Address 5 Lines Max, 35 Characters Per Line Abcdefg Higijklmno Pqrstuv Wxyz Abcdefg Higijklmno Pqrstuv Wxyz XXXXXXXXXX1XXXXXXXXXX2XXXXXXXXXX3XXXXX	
			

Figure 5.2. Military Shipping Label (Automated)

Note: A MSL with linear or 2-dimensional bar codes and in-the-clear ULN will be uniformly applied to all unit move equipment/cargo. These bar coded labels allow automatic identification technology to process unit move shipments through the terminals expeditiously. See DTR Part III Appendix H for further guidance.

CARGO PREPARATION AND PRE-JOINT INSPECTION

MILITARY SHIPMENT LABEL		<i>Form Approved. OMB No. 0704-0188</i>
1. TRANSPORTATION CONTROL NUMBER		2. POSTAGE DATA
3. FROM		4. TYPE SERVICE
5. SHIP TO/POE		6. TRANS PRIORITY
7. POD		8. PROJECT
9. ULTIMATE CONSIGNEE OR MARK FOR	10. WT. <i>(This piece)</i>	11. RDD
	12. CUBE <i>(This piece)</i>	13. CHARGES
	14. DATE SHIPPED	15. FMS CASE NUMBER
	16. PIECE NUMBER	
	17. TOTAL PIECES	

DD FORM 1387, JUL 1999

PREVIOUS EDITION IS OBSOLETE.

Figure 5.3. DD Form 1387, Military Shipping Label (Manual)

Note: DD Form 1387, Military Shipment Label, will be used only for Department of Defense (DOD) contingency operations where manual entry is the only means available to document DTS shipments. See DTR Part III Appendix H for further guidance.

CARGO PREPARATION AND PRE-JOINT INSPECTION

SPECIAL HANDLING DATA/CERTIFICATION		
1. ITEM NOMENCLATURE	2. NET QUANTITY PER PACKAGE	3. TRANSPORTATION CONTROL NO.
	4. CONSIGNMENT GROSS WEIGHT	5. DESTINATION
6. SUPPLEMENTAL INFORMATION		
This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and in proper condition for transportation according to the applicable regulations of the Dept of Transportation. THIS IS A U.S. DEPARTMENT OF DEFENSE SHIPMENT! (Complete applicable blocks below)		
7. DTR REFERENCE		
8. HANDLING INSTRUCTIONS		
9. ADDRESS OF SHIPPER	10. TYPED NAME, SIGNATURE AND DATE	

DD FORM 1387-2, NOV 2004
PREVIOUS EDITION IS OBSOLETE.
Form Approved/OMB No. 0704-0188

Figure 5.4. DD Form 1387-2, Special Handling Data/Certification

Note: A DD Form 1387-2, Special Handling/Certification, is required for any shipment moving via military airlift which is classified or requires additional special handling (e.g., Protect from Freezing). Refer to DTR Part III, Appendix V, Figures V-22 through V-30, for the DD Form 1387-2 and guidance on its completion.

CARGO PREPARATION AND PRE-JOINT INSPECTION

SHIPPER'S DECLARATION FOR DANGEROUS GOODS						
SHIPPER				AIR WAYBILL NO.		
PHONE NUMBER:				PAGE OF PAGES		
DSN:				SHIPPER'S REFERENCE NUMBER		
CONSIGNEE				TCN:		
COMPLETED AND SIGNED COPIES OF THIS DECLARATION MUST BE HANDED TO THE OPERATOR				WARNING		
TRANSPORTATION DETAILS				Failure to comply in all respects with applicable Hazardous Materials/Dangerous Goods Regulations may be in breach of the applicable law, subject to legal penalties		
THIS SHIPMENT IS WITHIN THE LIMITATIONS PRESCRIBED FOR:				AIRPORT OF DEPARTURE:		
(DELETE NON-APPLICABLE)						
<input type="checkbox"/> PASSENGER AND CARGO AIRCRAFT		<input type="checkbox"/> CARGO AIRCRAFT ONLY				
AIRPORT OF DESTINATION:				SHIPMENT TYPE: (DELETE NON-APPLICABLE)		
				<input type="checkbox"/> NON-RADIOACTIVE <input type="checkbox"/> RADIOACTIVE		
NATURE AND QUALITY OF DANGEROUS GOODS						
DANGEROUS GOODS IDENTIFICATION				QUANTITY AND TYPE OF PACKING	PACKING INST	AUTHORIZATION
UN or ID NO.	PROPER SHIPPING NAME	CLASS or DIVISION (SUBSIDIARY RISK)	PACKING GROUP			
ADDITIONAL HANDLING INFORMATION						
EMERGENCY TELEPHONE NUMBER:						
I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked, and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national government regulations. I declare that all of the applicable air transport requirements have been met.				NAME/TITLE OF SIGNATORY		
				PLACE AND DATE		
				SIGNATURE (see warning above)		

AMC IMT 1033, 20050204, V1

Figure 5.5. AMC IMT 1033 Shipper's Declaration for Dangerous Goods

Note: A Shipper's Declaration for Dangerous Goods must be prepared for all HAZMAT moving by air. See DTR Part III Appendix J for detailed documentation requirements for transporting HAZMAT.

CARGO PREPARATION AND PRE-JOINT INSPECTION

SHIPPER'S CHECKLIST (TO BE USED IN CONJUNCTION WITH AFMAN24-204(I), ATTACHMENT 2)	
1. - SHIPPER'S DECLARATION <input type="checkbox"/> THREE ORIGINAL DOCUMENTS (TWO FOR MOBILITY) <input type="checkbox"/> SHIPPERS ADDRESS AND PHONE NUMBER <input type="checkbox"/> TCN <input type="checkbox"/> AIRCRAFT LIMITATIONS IDENTIFIED <input type="checkbox"/> AIRPORT DEPARTURE <input type="checkbox"/> AIRPORT DESTINATION <input type="checkbox"/> SHIPMENT TYPE <input type="checkbox"/> CORRECT ERN FOR COMMODITY <input type="checkbox"/> NAME AND TITLE OF PREPARER <input type="checkbox"/> PLACE AND DATE CERTIFIED <input type="checkbox"/> SIGNATURE <input type="checkbox"/> PEN/INK CHANGES SIGNED 2. - CARGO IDENTIFICATION <input type="checkbox"/> UN/ID NUMBER <input type="checkbox"/> PSN <input type="checkbox"/> CLASS/DIVISION (SUBSIDIARY RISK, IF APPLICABLE) <input type="checkbox"/> PACKING GROUP, IF APPLICABLE <input type="checkbox"/> NUMBER AND TYPE OF PACKAGES <input type="checkbox"/> NET QUANTITY PER PACKAGE IN METRIC (UNLESS OTHER MEASUREMENTS AUTHORIZED) <input type="checkbox"/> NET QUANTITY OF EXPLOSIVES (CLASS 1) IDENTIFIES N.E.W. OF PACKAGE OR PALLET IN METRIC <input type="checkbox"/> RADIOACTIVE ONLY <input type="checkbox"/> ACTIVITY PER PACKAGE GIVEN IN BECQUERELS <input type="checkbox"/> NAME AND SYMBOL OF MATERIAL <input type="checkbox"/> MATERIAL PHYSICAL AND CHEMICAL FORM <input type="checkbox"/> CATEGORY OF PACKAGE <input type="checkbox"/> TRANSPORT INDEX <input type="checkbox"/> PACKAGING PARAGRAPH FROM ATTACHMENT 5-13 OR 27 <input type="checkbox"/> OTHER PACKAGING REFERENCE USED <input type="checkbox"/> COE (COPY PROVIDED) <input type="checkbox"/> CAA (COPY PROVIDED) <input type="checkbox"/> WAIVER (COPY PROVIDED) <input type="checkbox"/> 49CFR <input type="checkbox"/> IATA/ACAC <input type="checkbox"/> EXEMPTION (COPY PROVIDED) <u>IF APPLICABLE</u> <input type="checkbox"/> PSN (ADDITIONAL INFORMATION, AS REQUIRED) <input type="checkbox"/> TECHNICAL NAME <input type="checkbox"/> "RQ" USED TO IDENTIFY A HAZARDOUS SUBSTANCE <input type="checkbox"/> "WASTE" IF MEETING A DEFINITION <input type="checkbox"/> "INHALATION HAZARD - (AND ZONE)" <input type="checkbox"/> USE OF OVERPACKS IDENTIFIED ("OVERPACK USED") <input type="checkbox"/> PACKAGES MEETING LIMITED QUANTITY <input type="checkbox"/> CRYOGENIC VENTING REQUIREMENTS <input type="checkbox"/> SECONDARY HAZARDS IDENTIFIED BY PSN, CLASS/DIVISION, NET QUANTITY <input type="checkbox"/> HANDLING INSTRUCTIONS	3. - PACKAGING-INNER (COMBINATION PACKAGES) <input type="checkbox"/> ABSORBENT MATERIAL USED IAW ATTACHMENT 20 OR WHEN DIRECTED BY PACKAGING DIRECTIVE <input type="checkbox"/> RECEPTACLES/PACKAGES, CONTAINING LIQUIDS, ORIENTATED IN UPRIGHT POSITION <input type="checkbox"/> INSIDE RECEPTACLES/PACKAGES, CONTAINING LIQUIDS, VERIFIED AS MEETING "AIR ELIGIBLE" TEST PRESSURE REQUIREMENTS <input type="checkbox"/> SECONDARY CLOSURES USED <input type="checkbox"/> LEAK PROOF LINERS USED <input type="checkbox"/> ACID PROOF LINERS USED FOR WELL-CELL BATTERIES 4. - PACKAGING- OUTER <input type="checkbox"/> SERVICEABLE (NO DAMAGE THAT WOULD ALLOW LOSS OF CONTENTS) <input type="checkbox"/> UN SPECIFICATION OUTER CONTAINER PACKAGING USED AND CLOSED IAW <input type="checkbox"/> DoD POP PROGRAM <input type="checkbox"/> MANUFACTURER'S SUPPLIED METHOD OR REPORT <input type="checkbox"/> SPI <input type="checkbox"/> STRONG OUTSIDE CONTAINER USED (WHEN AUTHORIZED) <input type="checkbox"/> PACKAGING WAIVER <input type="checkbox"/> SINGLE PACKAGING (FOR LIQUIDS) MEETS PRESSURE REQUIREMENTS <input type="checkbox"/> ULLAGE (FOR LIQUIDS) 5. - MARKING <input type="checkbox"/> PSN AND UN/ID NUMBER <u>IF APPLICABLE</u> <input type="checkbox"/> UN SPECIFICATION <input type="checkbox"/> "AIR ELIGIBLE" OR SYMBOL FOR COMBINATION PACKAGES CONTAINING LIQUIDS <input type="checkbox"/> "RQ" OR "WASTE" IN ASSOCIATION WITH PSN <input type="checkbox"/> "INHALATION HAZARD" (IF NOT PART LABEL) <input type="checkbox"/> "ORIENTATION" ARROWS <input type="checkbox"/> "LIMITED QUANTITY" <input type="checkbox"/> OVERPACKS IDENTIFIED <input type="checkbox"/> DOT-E, COE, AND CAA (IF REQUIRED) NUMBER <input type="checkbox"/> FLASHPOINT 6. - LABELING <input type="checkbox"/> PRIMARY RISK <input type="checkbox"/> SUBSIDIARY RISK (IF APPLICABLE) <input type="checkbox"/> "CARGO AIRCRAFT ONLY" (IF APPLICABLE)

AMC IMT 1033, 20050204, V1

Figure 5.5a. AMC IMT 1033 Shipper's Declaration for Dangerous Goods (back side)

Note: A Shipper's Declaration for Dangerous Goods must be prepared for all HAZMAT moving by air. See DTR Part III Appendix J for detailed documentation requirements for transporting HAZMAT.

CARGO PREPARATION AND PRE-JOINT INSPECTION

	<h2>Internal Air Transport Certification</h2> <p>ASC/ENFC 2530 Loop Road West WPAFB, OH 45433-7101 https://afkm.wpafb.af.mil/ATTLA (direct) https://wwwd.my.af.mil/afknprod/ATTLA (AF Portal)</p>	
---	---	---

Date: 21 October 2008

Item Nomenclature: LSA™ (Land, Sea, Air) Adapter, part number LSA108TQC with Tricon or Quadcon Containers

File Number: 2002.06.03

Requestor: USATACOM

Superseded Certification Date:

1. 2002.06.03 letter Dated 20 May, 2005 subject: Improved LSA™ (Land, Sea, Air) Adapter, part number LSA108TQA.
2. 2003.01.03 Dated 10 December, 2004, subject: Transportability Certification for Tricon Dry Freight ISO Cargo Container.

New Information Summary: This certification replaces all previous certification letters on the same subject and provides approval for the loading and air transport of Quadcon and Tricon containers when the LSA adapter, part number LSA108TQC, is installed on the containers.

Item Description: The subject LSA is identified to be an improved version of a pallet alternative for Tricon and Quadcon ISO type containers. One LSA is designed for use on either a Tricon or a Quadcon container in any 108" rail system. The LSA is a pair of metal skids and a pair of end-stops (four pieces) that interface with these containers and the aircraft cargo rails and stops. The LSA's approximate dimensions when closed are 63.4" L x 26.65" W x 3" H. LSA weight is 310 pounds per set of four pieces. There are 5 types of Tricons, all are 96" L x 77.5" W x 96" H. The Tricons have a maximum gross weight of 14,900 lbs. There are 2 types of Quadcons. Type I is 57 3/8" L x 96" W x 82" H with a maximum gross weight of 11,200 lbs. Type II is 57 3/8" L x 96" W x 96" H with a maximum gross weight of 13,320 lbs.

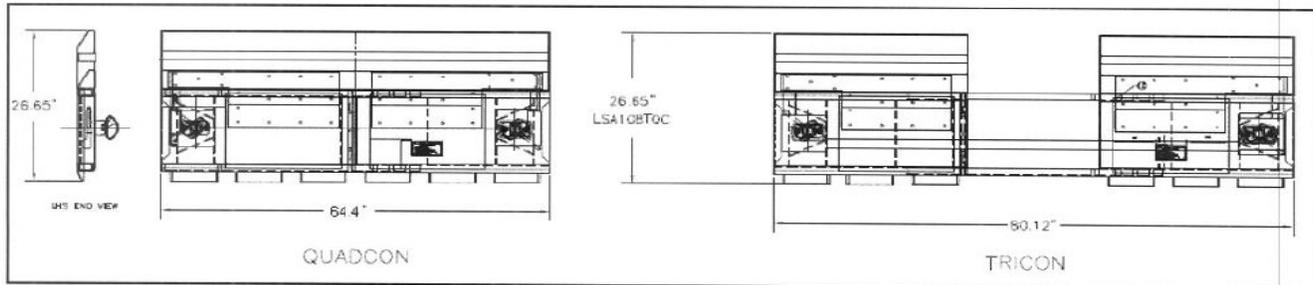


Figure 1: LSA108TQC dimensions

Figure 5.7. Internal Air Transport Certification (2002.06.03)

CARGO PREPARATION AND PRE-JOINT INSPECTION

File Number 2002.06.03

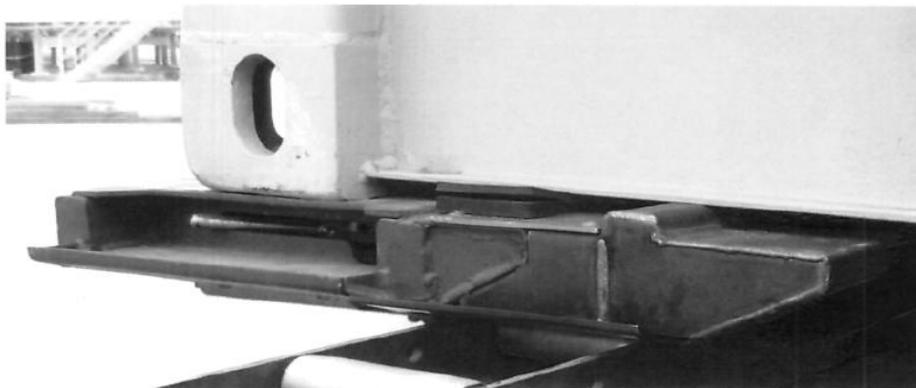


Figure 2: LSA108TQC attached to container

Certified Aircraft: AMC gained or operated USAF C-130 E/H/J, C-130J-30, C-17, and C-5

Conditions of Certification:

1. Maximum Weight for Air Transport:

- a. C-5: Tricon containers in the logistics system shall be limited to a maximum gross weight of 10,355 lbs with LSA attached if only one pair of locks can be engaged. If two pairs of locks can be engaged then the Tricon with LSA attached may weigh up to 12,000 lbs. Quadcons may carry a maximum load of 9,460 lbs. Ramp limits apply if LSA-equipped containers are carried on the aircraft ramp.
- b. C-17: Quadcon and Tricon containers with LSA attached can only be loaded in the Aerial Delivery System (ADS) rails.
 - (1) When placed forward of FS 1090 (end of main floor ADS rail vertical restraint lip), Tricons shall not exceed 12,000 lbs. Forward of FS 1090, Quadcons shall not exceed 8,170 lbs without supplemental restraint. Quadcons may carry maximum load of 9,460 lbs by restraining the container for all directions directly to the cargo floor.
 - (2) Aft of FS 1090 and fwd of FS 1165, only the Tricon may be carried with Retractable Vertical Restraint Lip (RVRL) engaged, not to exceed 10,900 lbs.
 - (3) On the ramp, two RVRL's per side shall be engaged with the LSA. The aft RVRL shall engage the LSA's aft most lip; the Tricon is limited to 9,800 lbs and the Quadcon to 6,700 lbs. Restraint of the container for all directions directly to the cargo ramp floor allows 12,000 lbs and 9,460 lbs respectively.
- c. On the C-130: Both the Tricon and Quadcon containers shall be limited to a maximum gross weight of 9,300 lbs with LSA attached.
 - (1) If carried between FS 337-682 (LS 537-882 for C-130J Stretch) the Tricon may weigh up to 10,000 lbs with LSA attached, and Quadcons may carry a maximum load of 9,460 lbs.
 - (2) Tricon and Quadcon containers on the LSA shall not be carried between FS 477-617 (LS 677-817 for C-130J Stretch) due to insufficient safety aisle clearances.

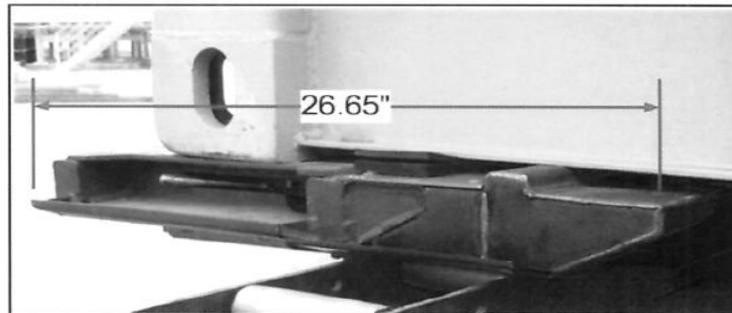
Figure 5.7a. Internal Air Transport Certification (2002.06.03)

CARGO PREPARATION AND PRE-JOINT INSPECTION

File Number 2002.06.03

2. Item Preparation:

- a. The LSA adapter has a variable length to accommodate either Tricons or Quadcons. Ensure that the proper length is selected and that all four corner fittings are locked.
- b. All hazardous materials (to include fuel level, batteries, etc.) must be prepared and certified for airlift in accordance with TM 38-250/AFMAN 24-204(I). Do not consider this air transport certification as approval for hazardous materials. Authorization for airlifting hazardous material is the responsibility of 401 SCMS/GUMAA (DSN 787-4503 or COM (937) 257-4503).
- c. Older versions of the LSA adapter may still be in circulation even though they are no longer certified. To ensure that the proper LSA is in use, verify the width of 26.65".



Required Distribution:

1. Shipper shall give a copy of this certification to the ATOC representative when the item is presented for airlift. This memo shall be part of the official cargo manifest documentation package and shall be briefed to the aircraft loadmaster prior to loading this/these item/s.

2. AMC/A3V.

Point of Contact: Eric Treadwell@wpafb.af.mil, DSN 785-9639 or Commercial (937) 255-9639. Refer to file number 2002.06.03 to reference this item.

Melvin C. J. Santiago
Reviewed by: MELVIN C.J. SANTIAGO
Aerial Delivery Technical Expert
Crew Systems Branch

John C. Hill
Approved by: JOHN C. HILL
Technical Advisor
Crew Systems Branch

Figure 5.7b. Internal Air Transport Certification (2002.06.03)

CARGO PREPARATION AND PRE-JOINT INSPECTION

	<h3>Internal Air Transport Certification</h3> <p>ASC/ENFC (ATTLA) 2145 Monahan Way WPAFB, OH 45433-7017 https://afkm.wpafb.af.mil/AirTransport</p>	
---	---	---

Date: 13 March 2012
Item Nomenclature: M997A3 HMMWV Ambulance
File Number: 2011.12.14
Requestor: PM Light Tactical Vehicles (Brennan MacFarland)

Reference Documents:

1. Interim Transportability Report, contract W56HZV-07-C-0016 WD 373.

Item Description: The subject item is identified to be a M997A3 HMMWV Ambulance. The approximate dimensions are 207" L x 85" W x 103" H. The reported gross weight is 9,090 lbs with a gross vehicle weight rating (GVWR) of 12,100 lbs. The front axle is reported to weigh 4,300 lbs with a rating of 5,300 lbs and the rear axle is reported to weigh 4,790 lbs with a rating of 7,000 lbs.



Figure 1: M997A3 HMMWV Ambulance

Certified Aircraft: USAF C-130, C-130J-30, C-17 and C-5

Conditions of Certification:

1. Maximum Weight for Air Transport:

- a. Gross Vehicle Weight: 12,100 lbs
- b. Axle Limits: Front – 5,300 lbs; Rear – 7,000 lbs

2. Item Preparation:

- a. Shipper is responsible for approach shoring, see paragraph 5 for dimensions.
- b. All hazardous materials (to include fuel level, batteries, etc.) must be prepared and certified for airlift in accordance with TM 38-250/AFMAN 24-204(I). Do not consider this air transport certification as approval for hazardous materials. Authorization for airlifting hazardous material is the responsibility of 401 SCMS/GUMAA (DSN 787-4503 or COM (937) 257-4503).

Figure 5.8. Internal Air Transport Certification (2011.12.14)

CARGO PREPARATION AND PRE-JOINT INSPECTION

File Number 2011.12.14

3. Loading Instructions:

a. This vehicle can be loaded using general loading procedures as listed in the respective aircraft loading manual. Approach shoring is calculated for backing the vehicle into the C-130 aircraft.

4. **Restraint Requirements:** The M997A3 HMMWV Ambulance and all accompanying cargo must be restrained to meet MIL-HDBK-1791 requirements of 3G forward, 1.5G aft and lateral, and 2G up. In addition, stored or installed equipment must meet these requirements and be capable of withstanding a 4.5G down load.

Table 1: Provision Location & Rated Capacities

Provision Location	Longitudinal	Lateral	Vertical
Front	28,004 lbs	10,908 lbs	6,720 lbs
Rear	28,923 lbs	11,817 lbs	7,515 lbs
Pintle	30,000 lbs	N/A	N/A



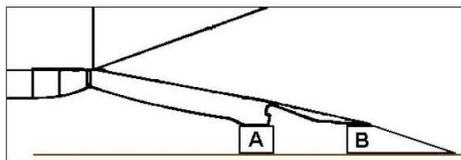
Figure 2: Front Provisions



Figure 3: Rear Provisions

5. Shoring Dimensions & Diagrams:

a. Approach shoring: minimum recommended dimensions for 10° approach angle, requirements for other configurations are in the applicable aircraft loading manual.



C-130 Shoring

Pedestal Shoring

"A" 18" L x 18" W x 4" H

Approach Shoring

"B" 57" L x 18" W x 8" H (2 required)

(Ramp toe end shall be supported by the approach shoring – min 11" L)

Required Distribution:

1. Shipper shall give a copy of this certification to the ATOC representative when the item is presented for airlift. This memo shall be part of the official cargo manifest documentation package and shall be briefed to the aircraft loadmaster prior to loading this item.
2. AMC/A3V.
3. SDDC TEA.

Figure 5.8a. Internal Air Transport Certification (2011.12.14)

CARGO PREPARATION AND PRE-JOINT INSPECTION

File Number 2011.12.14

Point of Contact: MSgt Thomas McPeak, at thomas.mcpeak@wpafb.af.mil or ATTLA@wpafb.af.mil, DSN 986-9903, Commercial (937) 656-9903. Refer to file number 2011.12.14 to reference this item.

Caroline J. Buckey

Reviewed by: CAROLINE J. BUCKEY
Aerial Delivery Technical Expert
Crew Systems Branch

Page 3 of 3

Figure 5.8b. Internal Air Transport Certification (2011.12.14)

CARGO PREPARATION AND PRE-JOINT INSPECTION

Chapter 5—Homework Assignment

1. The deploying unit is responsible for the preparation of cargo, including _____, _____, _____ and the preparation of all _____ (to include HAZMAT certification) prior to inspection and aircraft loading.
2. For questions regarding the airlift _____ process or information on non-standard cargo/equipment contact the _____ (ATTLA) via e-mail at attla@wpafb.af.mil or by phone at DSN 785- 2330/2547.
3. Prior to aircraft loading, a _____ will be performed by a qualified _____ inspector (e.g., Contingency Response Element (CRE)/Cargo Deployment Function (CDF), aerial port, Arrival/Departure Airfield Control Group) along with a representative from the _____ force.
4. Check that all _____ cargo (consider all locally manufactured modifications as secondary cargo) is properly secured to the vehicle and/or accompanying trailers. Cargo must meet the same restraint criteria required for the vehicle. Use a minimum of _____ (not nylon) or approved cargo restraint systems to secure cargo.
5. _____ drops or more per minute from a cooling system, crank case, or gear case is a leak. _____ or _____ system leaks, no matter how minor, will prevent air shipment.

DEPARTURE AIRFIELD OPERATIONS



Lesson Objective: The objective of this lesson is for each student to know the roles and responsibilities of the different areas involved in the departure airfield operations process.

References: DOD 4500.9-R Part III, Mobility, Defense Transportation Regulation (DTR)

Web Pages: http://www.transcom.mil/j5/pt/dtr_part_iii.cfm

Learning Activities:

1. Departure Airfield Operations Model
2. Marshaling Area
3. Alert Holding Area
4. Call Forward Area
5. Ready Line/Loading Ramp Area

Test Objectives:

1. Define the marshaling process
2. Outline the different stages of the departure airfield operations process
3. Match the various areas at a departure airfield with their activities

DEPARTURE AIRFIELD OPERATIONS

6.1. General. This section discusses the functional areas of the execution phase of an air movement from the Aerial Port of Embarkation (APOE) to the Aerial Port of Debarkation (APOD). Movement to the APOE will be accomplished in accordance with DOD 4500.9-R Part III, Mobility, Defense Transportation Regulation (DTR).

6.2. Departure Airfield Operations. There are four separate areas of activity in Departure Airfield Operations: Marshalling Area, Alert Holding Area, Call Forward Area, and the Ready Line/Loading Ramp Area (Figure 6.1.).

Departure Airfield Operations

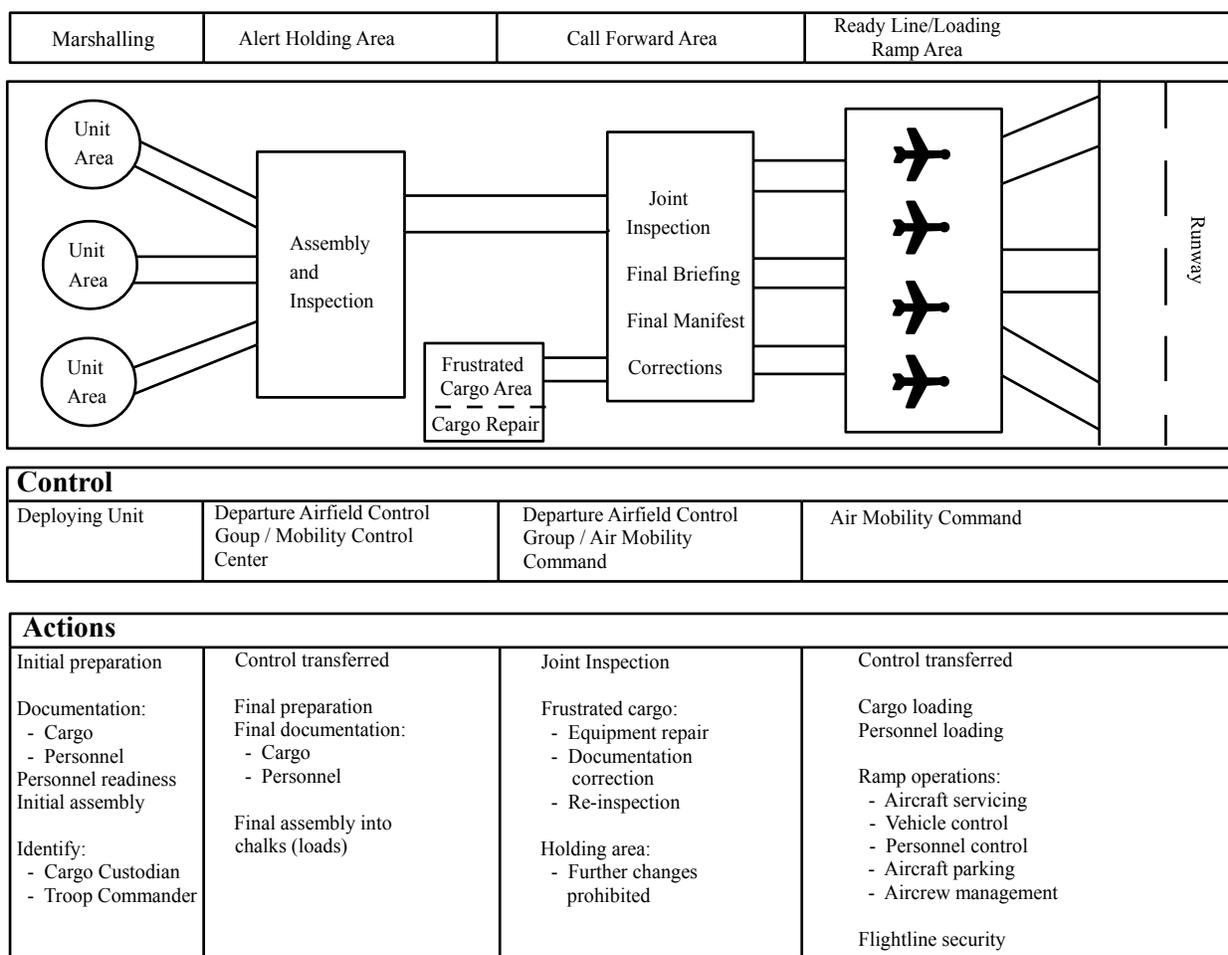


Figure 6.1. Departure Airfield Operations Model

DEPARTURE AIRFIELD OPERATIONS

6.3. Marshaling. Marshaling is defined as the orderly assembly, organization, and movement of personnel and equipment, from the unit to the aircraft. The deploying unit is responsible for activities conducted within the marshaling area. In this area, the unit prepares for air movement by assembling vehicles, equipment, supplies, and personnel into mission loads (chalks). These loads will be manifested IAW the DTR Part III, Appendix V, and are sent to the Alert Holding Area (AHA) upon notification from the Arrival/Departure Airfield Control Group (A/DACG) or mobility forces. Units will maximize preparation before arriving at the marshaling area, which will be used for final preparations. Using a marshaling area allows rapid clearing of the POE and makes aircraft/vessel loading space available for its primary purpose.

6.3.1. Unit Areas Activities. The following items are specific deploying unit responsibilities, but there are additional responsibilities not discussed here. (See Appendix Q of DTR Part III, for more detailed information on the Marshaling Area.)

6.3.1.1. Conduct final preparations for loading.

6.3.1.2. Assemble vehicles, equipment, supplies, and personnel into mission loads/chalks or in convoy order, for movement to the POE.

6.3.1.3. Prepare personnel and cargo manifests.

6.3.1.4. Prepare any additional required paperwork (e.g., hazardous certification, agricultural certification).

6.3.1.5. Appoint and brief planeload or troop commanders for departure from the POE.

6.3.1.6. Ensure adequate shoring and dunnage material for aircraft loading is readily available.

6.3.1.7. Provide personal safety equipment to loading team members.

6.3.1.8. Brief personnel on the situation and mission, movement plan, assembly plan, operational plan, convoy discipline, loading procedures, safety, and assembly procedures.

6.3.1.9. Provide liaison with activities agreed to during the joint planning conference.

6.4. Alert Holding Area. The AHA is the vehicle, equipment, supply, and personnel control area. The AHA is under the control of the A/DACG. It should be located near the departure airfield. It is used to assemble, inspect, hold, and service aircraft loads. The A/DACG and/or host installation is responsible for activities conducted within the AHA. The deploying units will check-in with the AHA team chief. Deploying units will complete final preparation and assembly of personnel, cargo, and equipment into individual mission loads (chalks). Control of chalks is transferred to the A/DACG upon completion and acceptance of personnel, cargo, and equipment. Normally, personnel assigned to the AHA do not deploy. The A/DACG will call for movement of personnel, cargo, and equipment from the AHA to the call forward area.

6.4.1. Specific deploying unit responsibilities within the AHA are as follows. (See Appendix R of DTR Part III, for more detailed information on the Alert Holding Area.)

6.4.1.1. Move aircraft loads from the marshaling area upon notification from the A/DACG.

DEPARTURE AIRFIELD OPERATIONS

- 6.4.1.2. Ensure aircraft mission loads arrive at the prescribed times.
- 6.4.1.3. Provide the A/DACG with load plans, passenger manifest, cargo manifest, and other required documentation.
- 6.4.1.4. Correct load discrepancies identified during pre-inspection.

6.5. Call Forward Area. The activities conducted within the Call Forward Area are the responsibility of the DACG, host installation, and the mobility force. In this area the joint inspection (JI) is conducted and discrepancies corrected. Members of the deploying unit and the mobility force accomplish this inspection jointly. This is the final check to ensure all cargo and equipment is properly prepared and documented for safe and efficient air shipment. Improperly prepared equipment will be sent to the Frustrated Cargo Area and will not be released for airlift until all discrepancies are corrected. Any cargo that has been sent to the Frustrated Cargo Area will have to be re-inspected before being accepted for further movement. Incomplete chawks will not be accepted for joint inspection. **No changes in the cargo configuration are allowed after passing joint inspection.** (See Appendix S of DTR Part III, for more detailed information on the Call Forward Area).

6.5.1. Specific deploying unit responsibilities in the call forward area are as follows. The deploying unit (through the planeload or troop commander) will:

- 6.5.1.1. Correct all discrepancies found by the A/DACG or mobility force.
- 6.5.1.2. Adhere to the established movement timetables.
- 6.5.1.3. Ensure the complete chalk is available.
- 6.5.1.4. Participate in the JI.
- 6.5.1.5. Provide the final manifest to A/DACG/mobility group and electronically transmit to the IGC and downline stations IAW this Regulation, Chapter 302, Table 302-2, Timeliness Evaluation Criteria.

NOTE: *Cargo and equipment loads **must** be available for JI **six (6) hours prior** to aircraft departure. Personnel **must** be available for passenger briefings and manifest checks **three (3) hours prior** to departure (reference DTR Part III, page 303-12). Chapter 6 of this publication outlines specific joint inspection criteria and procedures.*

6.6. Ready Line and Loading Ramp Area. The mobility force (usually the CRE) is responsible for and controls activities conducted within the ready line and loading ramp area. This area must be treated as a sterile area and any changes to cargo made at this point will require a new Joint Inspection be accomplished. This area receives personnel, cargo, and equipment from the call forward area; directs aircraft loading in conjunction with aircraft loadmasters; supervises the supported Service while loading and restraining cargo aboard aircraft; conducts additional briefings; and inspections to facilitate loading of the aircraft. (See Appendix U of DTR Part III, for more detailed information on the Ready Line and Loading Ramp Area).

6.6.1. Specific deploying unit responsibilities in the ready line/loading ramp area are

DEPARTURE AIRFIELD OPERATIONS

as follows. The deploying unit (through the planeload or troop commander) will:

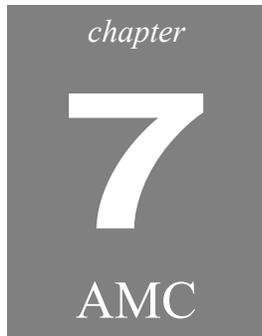
- 6.6.1.1. Follow the directions of the loading team chief or passenger escort.
- 6.6.1.2. Monitor control of the aircraft mission load or passengers.
- 6.6.1.3. Retain one copy of the final cargo and passenger manifests.
- 6.6.1.4. Provide assistance in loading and securing the aircraft load.
- 6.6.1.5. Ensure vehicle drivers and equipment operators follow the instructions of the loading team chief or primary loadmaster, while loading and restraining equipment on the aircraft.

DEPARTURE AIRFIELD OPERATIONS

Chapter 6—Homework Assignment

1. Marshaling is defined as the orderly _____, _____, and _____ of personnel and equipment, from the unit to the aircraft.
2. Units will maximize preparation before arriving at the _____, _____, which will be used for final preparations.
4. Improperly prepared equipment will be sent to the _____ _____ and will not be released for _____ until all discrepancies are corrected.
3. No _____ in the cargo configuration are _____ after passing joint inspection.
5. Cargo and equipment loads must be available for JI _____ hours prior to aircraft departure. Personnel should be available for passenger briefings and manifest checks _____ hours prior to _____.

SAFETY



Lesson Objective: The objective of this lesson is for each student to comprehend all safety methods and procedures when operating around AMC aircraft.

References: DOD 4500.9-R Defense Transportation Regulation Part III, Mobility (DTR)
AFI 11-2C-17V3, C-17 Operational Procedures
AFI 11-2C-130V3, C-130 Operational Procedures
AFOSHSTD 91-100 Aircraft Flight Line - Ground Operations and Activities
T.O. 1C-130A-9 Cargo Loading Manual
T.O. 1C-5A-9 Loading Instructions
T.O. 1C-17A-9 Loading Instructions
T.O. 1C-10(K)A-9 Cargo Loading Manual
T.O. 1C-135(K)A-9 Cargo Loading Instructions

Web Pages: http://www.transcom.mil/j5/pt/dtr_part_iii.cfm

Learning Activities:

1. Flightline safety
2. Vehicle operating rules
3. Loading safety
4. Emergency Vehicles

Test Objectives:

1. Explain the safety aspects associated with loading aircraft and operating Vehicles on the flightline
2. Explain all applicable rules/procedures for parking vehicles on the flightline
3. Describe the different types of hazards associated with working on the flightline
4. Summarize the equipment and requirements of the load team members

SAFETY

7.1. Safety is a very important consideration in any airlift movement. Injury to personnel, damage to equipment or aircraft will impact the overall missions effectiveness. Brief all personnel on the importance of safe practices on the flightline and around aircraft. Always remember the basic doctrine on safety: Expose only the minimum number of personnel to the minimum number of hazards for the minimum amount of time.

7.2. Flightline Safety. The aircraft flightline is a potentially dangerous area of operation. This is particularly true when personnel are not familiar with routine activities and the rules that govern these activities. Listed here are a few of the rules and hazards to be aware of on flightlines.

7.2.1. Aircraft have the right-of-way over motor vehicles; always yield or move out of the way.

7.2.2.2. Smoking. Smoking is not permitted on the flightline.

7.2.3. Doors and Ramps. Aircraft petal doors/pressure doors can cause personal injury or equipment damage. Beware of aircraft ramps during opening to prevent injury or damage to equipment.

7.2.4. Noise Hazards. Always wear ear protection. Aircraft engines and power units may very rapidly ruin hearing.

7.2.5. Exhaust Hazards. Engines and power units create a tremendous amount of heat in the normal course of their operation. Be extremely careful when around them.

7.2.6. Propellers and Engine Ingestion Hazards. Propellers pose an obvious hazard. Jet aircraft engines create a vacuum near the intake and can pick up and ingest nearby objects. Restrict your activities when near the front of an operating engine.

7.2.6.1. The propeller intake danger area for a C-130 is within 10 feet. The exhaust danger area for the APU (auxiliary power unit) and engine exhaust is within 50 feet.

7.2.6.2. The engine intake danger area for a C-5 is within 35 feet. The engine exhaust danger area is within 50 feet.

7.2.6.3. The engine intake danger area for a KC-10 is within 20 feet. The engine exhaust danger area is within 150 feet.

7.2.6.4. The engine intake danger area for C-17 is within 20 feet. The engine exhaust danger area is within 100 feet.

7.2.6.5. The engine intake danger area for a KC-135 is within 25 feet. The engine exhaust danger area is within 180 feet.

SAFETY

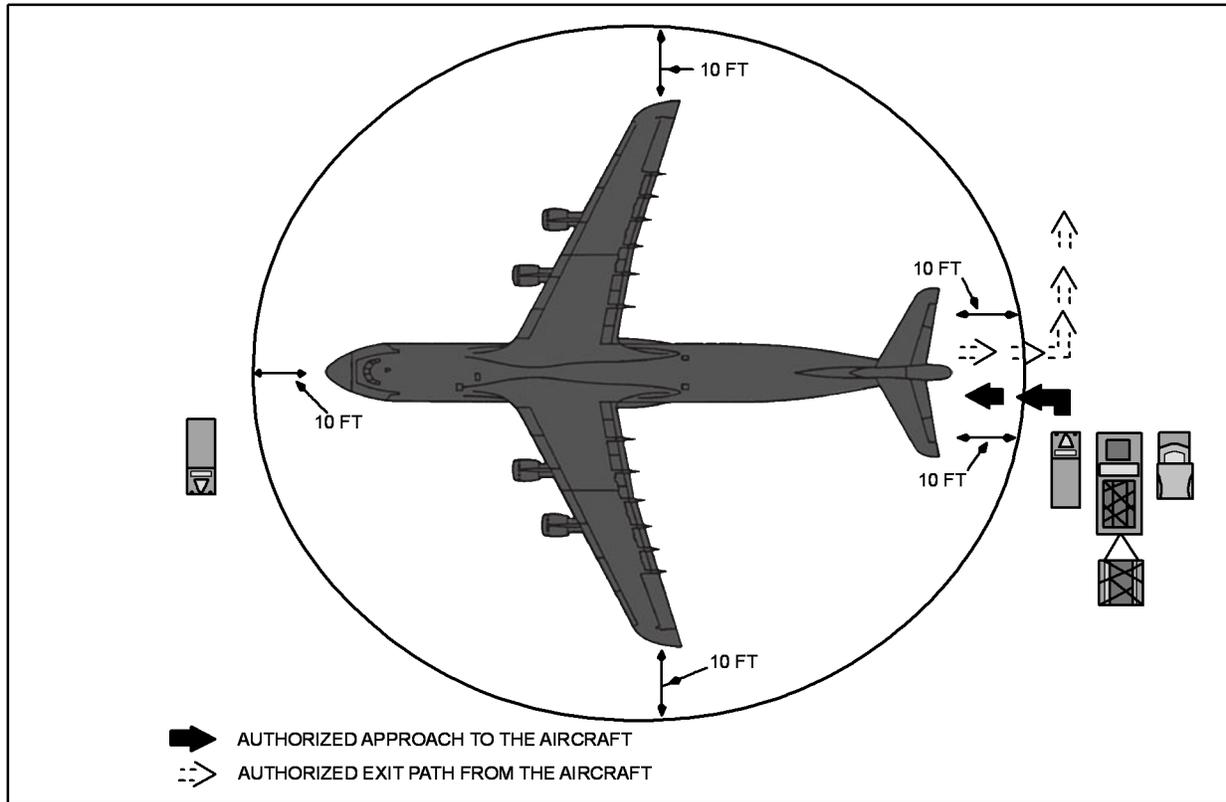


Figure 7.1. Circle of Safety

7.2.7. User personnel need to be escorted to and from the aircraft due to the large number of hazards. Escorts are usually Air Force personnel or representatives from mobility forces.

7.2.8. Never sit or lie down in the parking ramp or under parked vehicles.

7.2.9. Avoid directing headlights at taxiing aircraft at night.

7.3. Vehicle Operating Rules

NOTE: *Aircraft, aircraft parking ramps, taxiways, hangars, and runways are controlled areas with restricted access. Unless possessing a valid flight line driving certificate from the installation airfield manager, do not operate motorized vehicles in these areas unless under escort from mobility forces.*

7.3.1. Circle of Safety (figure 7.1). Vehicles are not allowed within the circle of safety unless they are to be loaded aboard or used to service the aircraft. All vehicles must approach the aircraft so the driver's side is toward the aircraft. Never drive a vehicle under any part of the aircraft or between the wing tips of parked aircraft.

SAFETY

7.3.1.1. Ensure drivers are qualified to operate vehicles prior to entering the circle of safety.

7.3.1.2. Ensure all hand signals are understood between driver and guide.

7.3.1.3. Use wheel chocks on all vehicles.

7.3.2. Speed Limits. Observe maximum speed limits. Speeding on the flightline will not be tolerated.

7.3.2.1. Aircraft parking ramp—15 miles per hour

7.3.2.2. Within 25 feet of the aircraft—5 miles per hour

7.3.2.3. Inside the circle of safety/aircraft—Maximum of 3 miles per hour

7.3.3. Parking. Follow these rules when parking a vehicle on the parking ramp.

7.3.3.1. Park perpendicular to the fuselage outside the circle of safety.

7.3.3.2. If the vehicle is left unattended:

7.3.3.2.1. Turn off ignition and leave key in ignition.

7.3.3.2.2. Place automatic transmission vehicles in park.

7.3.3.2.3. Place manual transmission vehicles in lowest gear (neutral for diesel engines).

7.3.3.2.4. Set emergency (parking) brake.

7.3.3.2.5. Use parking lights or emergency flashers during the hours of darkness or during inclement weather.

7.4. Loading Safety. Special hazards are present when you are loading or offloading an aircraft. Listed here are some of the rules that apply to loading operations.

7.4.1. Members of load team will not wear rings or other jewelry that could create a safety hazard.

7.4.2. Load team members will wear gloves.

7.4.3. No equipment (such as tie-down chains, chocks, etc.) will be thrown about the aircraft.

SAFETY

7.4.4. Only minimum essential personnel will be in the cargo compartment during winching operations.

7.4.5. Do not step on winch cables.

7.4.6. Do not walk across winch cables while winching.

7.4.7. If cargo permits it, passengers should enter the aircraft after any main floor loaded vehicles are unloaded.

7.4.8. Vehicle drivers will not back a vehicle toward or into an aircraft until spotters are in place and directed by a guide. A wheel chock will be pre-positioned on the tarmac to prevent the vehicle from striking the aircraft.

7.4.9. Do not stand or walk in front of or behind vehicles that are being loaded or unloaded.

7.4.10. Only one person will provide directions to the vehicle operator while the vehicle is unloaded or unloaded from the aircraft.

7.4.11. All safety chains, pintle hook pins, electric cables, and brake lines will be installed before towing trailers. Secure the trailer third wheels before on or unloading.

7.4.12. Do not leave vehicles on the cargo floor unattended until a minimum of one forward and one aft restraint device is installed. Only then may the brakes be released or the winch cable removed.

7.5. Offload Safety. The following special rules apply to offload operations.

7.5.1. If cargo permits, passengers should exit the aircraft before any main floor loaded vehicles are unloaded.

7.5.2. Do not remove restraint devices or start any vehicle until told to do so by a loadmaster or boom operator.

7.6. Engine Running Onload / Offload (ERO). Safety Considerations:

1. During adverse weather, the vision of all participants may be obscured by the elements. Additional safety measures may be required.
2. Self-propelled vehicles may require winching assistance if positive traction of vehicle wheels cannot be maintained throughout the on or offload operation. Non-skid (Arctic) shoring may be used in lieu of winching.
3. Onload and Offload personnel will be equipped with gloves, steel-toed boots, hearing protection, and goggles.
4. During hours of darkness or reduced visibility, reflection vests/belts will be worn.

SAFETY

7.6.1. During ERO's, following distances must be adhered to for safety considerations.

7.6.1.1. **C-130:** Vehicles and all personnel will proceed directly aft of the aircraft at least **50 feet before turning** or **300 feet before stopping**.

7.6.1.2. **C-17:** Vehicles and all personnel exiting via the ramp will proceed directly aft of the aircraft at least **25 feet before turning** or at least **200 feet before stopping**.

7.6.1.3. **C-5:** Vehicles and all personnel exiting via the forward or aft ramp will proceed on a direct line with the fuselage at least **150 feet before turning** or at least **300 feet before stopping**.

7.7. Emergency vehicles.

1. Beware of surroundings
2. Watch for rescue vehicles responding to calls
3. Emergency vehicles always have the right of way when responding to calls
4. Listen for sirens
5. Notify police or aircrew if you notice any unauthorized individuals on flightline

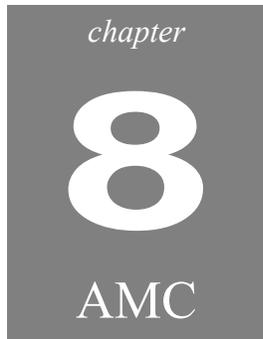
SAFETY

Chapter 7—Homework Assignment

1. _____ is a very important consideration in any airlift movement.
2. _____ is not permitted on the flightline.
3. _____ personnel need to be escorted to and from the aircraft because of the large number of _____.
4. Observe maximum speed limits. Speeding on the flightline will not be tolerated.
Aircraft parking ramp: _____ miles per hour
Within 25 feet of the aircraft: _____ miles per hour
Inside the circle of safety/aircraft: _____ miles per hour.
5. Vehicles are not allowed within the _____ of _____ unless they are to be loaded aboard or used to service the aircraft.
6. During ERO's, following distances must be adhered to for safety considerations.
C-5: Vehicles and all personnel exiting via the _____ or _____ ramp will proceed on a direct line with the fuselage at least _____ feet before turning or at least _____ feet before stopping.

THIS PAGE INTENTIONALLY LEFT BLANK

WEIGHING AND MARKING



Lesson Objectives: The objective of this lesson is for each student to apply proper weighing and marking of cargo for airlift operations.

References: DOD 4500.9-R Part III, Mobility, Defense Transportation Regulation (DTR)
1C-130A-9, Cargo Loading Manual
1C-5A-9, Loading Instructions
1C-17A-9, Technical Manual Cargo Loading Instructions
1C-135(K)A-9, Technical Manual Cargo Loading Instructions
1C-10(K)A-9, Cargo Loading Manual
AMCI 24-101 V11, Cargo and Mail Policy

Web Pages: http://www.transcom.mil/j5/pt/dtr_part_iii.cfm
<http://www.dtic.mil/whs/directives/infomgt/forms/eforms/dd2775.pdf>

Learning Activities:

1. Weighing
2. Pallet identifier
3. Center of balance

Test Objectives:

1. Compute center of balance formulas
2. Explain how to measure distances to determine center of balance
3. Describe how to weigh and mark cargo for air movement
4. Give examples on how to properly fill out placards and labels
5. Describe the consequences of improperly weighed and marked cargo

WEIGHING AND MARKING

8.1. General. Airlift aircraft will only accept items of cargo with the proper weight and center of balance marked. Cargo improperly weighed or marked could cause an unsafe flight condition putting the mission in jeopardy. The proper weighing and marking of cargo is one of the most important tasks you will accomplish while preparing for airlift.

8.2. Weighing. All cargo offered for air shipment must be weighed. Either portable or fixed scales are acceptable. Indicate actual weight on each side of a vehicle, pallet, or single item planned for air shipment. Do not weigh the cargo until all secondary loads are secured for flight. Once weighed and marked, do not add or remove any items of cargo. Any additions or deletions will require the cargo to be weighed again.

8.3. Fixed Scales (figure 8.1.). Fixed scales are permanently installed weighing devices, located at most major military installations. They are similar to the truck scales seen along the side of major American highways. This type of scale is capable of weighing most items of cargo.

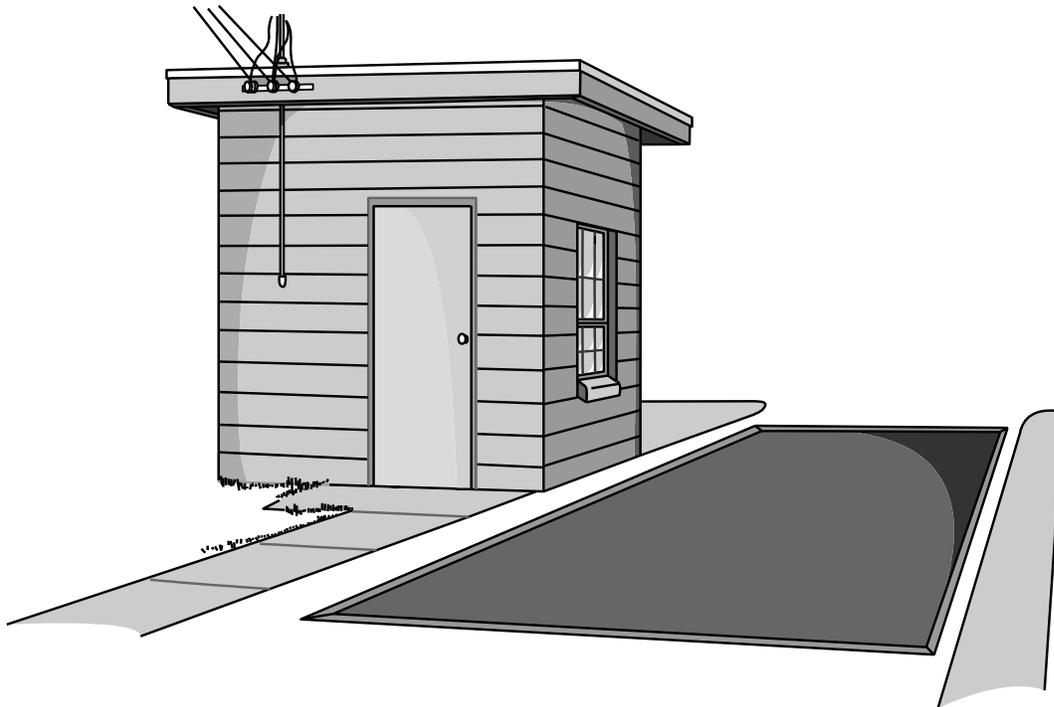


Figure 8.1. Fixed Scales

8.4. Portable Scales (figure 8.2.). The most commonly used portable scales are capable of weighing cargo up to 20,000 pounds per scale. These scales are used extensively at airfields, unit areas, marshalling areas, inspection areas, and forward operating locations. Portable scales are normally used in multiples of four. However, a minimum of two scales will be used. It is advisable for all units to have their own scales to help ensure a smooth deployment.

WEIGHING AND MARKING

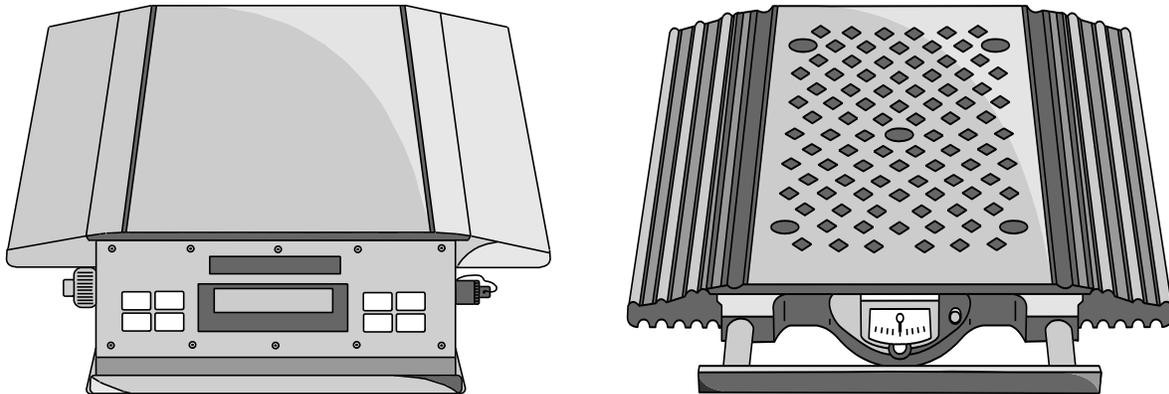


Figure 8.2. Portable Scales

8.4.1. Weighing Vehicles. If only two portable scales are available, use the following procedures for weighing of vehicles. Place the scales in front of the tires of the first axle, drive the vehicle onto the scales (with the vehicle tires centered evenly on scales) and record the weight over the appropriate axle. To determine the axle weight, each scale weight (right and left side) must be combined to obtain the axle weight. Continue this process until all axles are weighed.

8.4.1.1 Weighing vehicles with bogie axles. The **preferred** method of weighing bogie axles is using four portable scales, one under each wheel. If four scales are not available, two scales may be used in the following methods:

8.4.1.1.1. Shoring available. Place the scales in front of the tires of the first axle, place shoring of equal thickness in front of the tires of the second axle. Drive the vehicle onto the scales (with the vehicle tires centered evenly on scales) and record the weight of the appropriate axle. Reverse placements of scales and shoring and weigh the second axle.

8.4.1.1.2. No shoring available. Place the scales in front of both tires on the left side. Drive the vehicle onto the scales (with the vehicle tires centered evenly on scales) and record the appropriate wheel weights. Move scales to right side and repeat procedure. To determine the axle weight, each scale weight (right and left side) must be combined to obtain the axle weight.

NOTE: *The driver and/or passengers must be out of the vehicle prior to weighing the axle / axles.*

8.4.2. Weighing Pallets. Each 463L pallet built must be weighed and the scale weight must be recorded on all copies of the manifest. Place a loaded pallet evenly on two portable scales (three pieces of dunnage must be weighed with the pallet). Add the two scale weights together to get the pallet gross weight. Ensure the scale weight is clearly marked on one 88-inch side and one 108-inch side of the pallet. Use DD Form 2775, Pallet Identifier (see Figure 6.6.) to annotate the required information for cargo documentation.

WEIGHING AND MARKING

8.4.2.1. Container and 463L Pallet Weight Markings. Prepare two copies of DD Form 2775, Pallet Identifier (see Figure 6.6.) to identify all completed 463L pallet/trains loaded with cargo/mail. Attach the copies to the upper left hand corner at eye level (when pallet height permits) on one 88-inch side and on one 108-inch side. Place the form inside interlocking closure plastic bags (NSN 8105-00-837-7757, or suitable substitute). Entries on the form are self-explanatory. In addition, comply with the following:

8.4.2.2. Enter port of embarkation (POE) and port of debarkation (POD) codes in letters as large as possible. The intent is to make the entries visible from a distance when pulling pallets for a load.

NOTE: *This form must never reflect the words “classified,” “small arms/weapons,” “munitions,” or other highly sensitive items by name.*

8.4.2.3. Annotate the amount of straps, chains, devices, and net sets used on a particular pallet or pallet train in the appropriate blocks of the form.

8.4.2.4. The scale weight certification block will be completed by legibly printing the name and grade of the individual who performed the weighing of the pallet and the date.

8.4.2.5. All containers and built-up 463L pallet weights will also be marked with a bar coded Military Shipping Label (MSL) (see Figure 5.2.). The bar coded MSL allows automatic identification technology to process unit move shipments expeditiously through aerial port terminals. A DD Form 1387, Military Shipment Label (see Figure 5.3.) will only be used for Department of Defense (DOD) contingency operations where manual entry is the only means available to document DTS shipments. Two properly completed copies are required for each container/pallet. Attach a label to two adjacent sides of the container/pallet where it can be readily seen. See DTR Part III Appendix H for further guidance.

WEIGHING AND MARKING

8.5. Center of Balance Calculation Terms. An understanding of the following terms and abbreviations is necessary for calculating the center of balance:

8.5.1. RDL = reference datum line (see figures 9.3. and 9.4.). A line from which all measurements are taken. Normally, the RDL is established at the forward front edge of a vehicle. Once the reference datum line is established, don't change it.

REFERENCE DATUM LINE

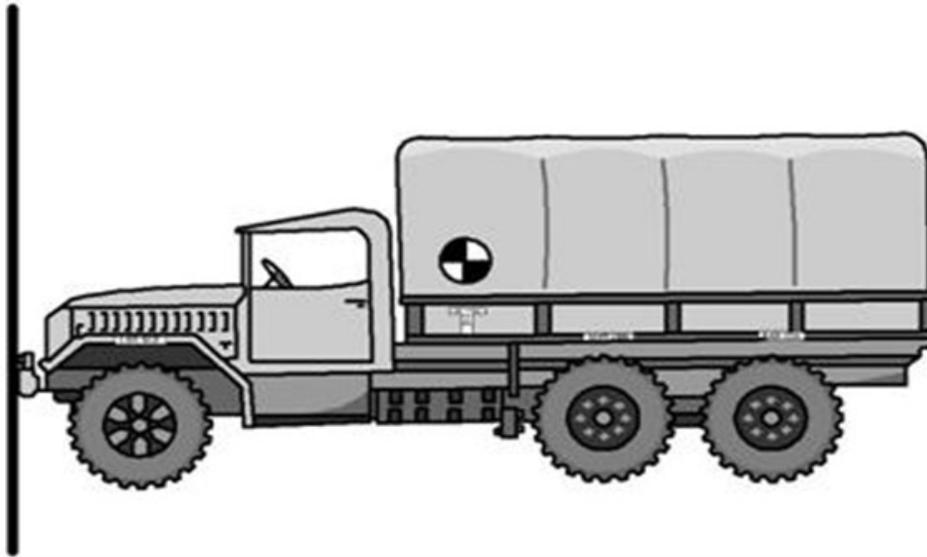


Figure 8.3. Reference Datum Line (Vehicle)

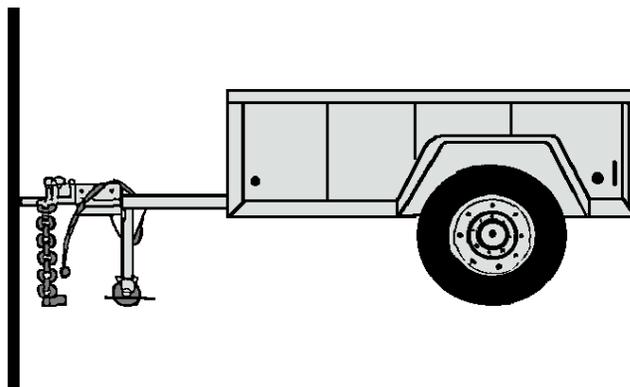


Figure 8.4. Reference Datum Line (Trailer)

WEIGHING AND MARKING

8.5.2. CB = Center of Balance. The point of balance of a piece of cargo (figure 9.5.).

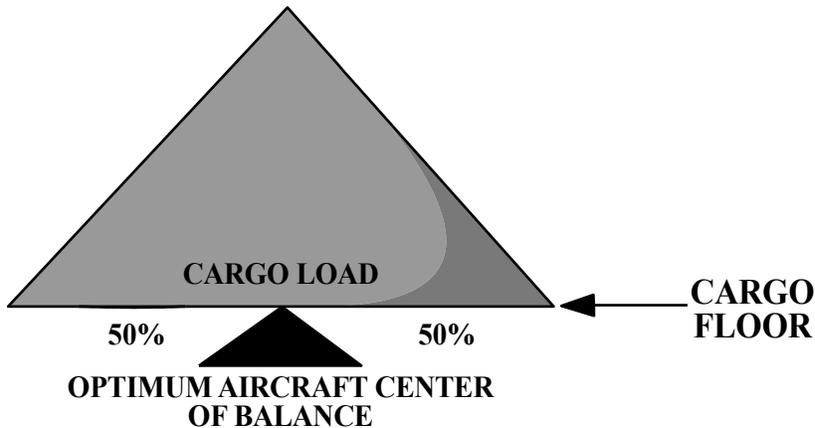


Figure 8.5. Center of Balance Model

8.5.3. GW = Gross Weight. The total weight of an item of cargo, including all secondary cargo.

8.5.4. W1 = Weight One. Used in computing the CB. W1 defines the first weight contacting the floor from the RDL (figure 9.6).

8.5.5. W2 = Weight Two. Used in computing the CB. W2 defines the second weight contacting the floor from the RDL (figure 9.6).

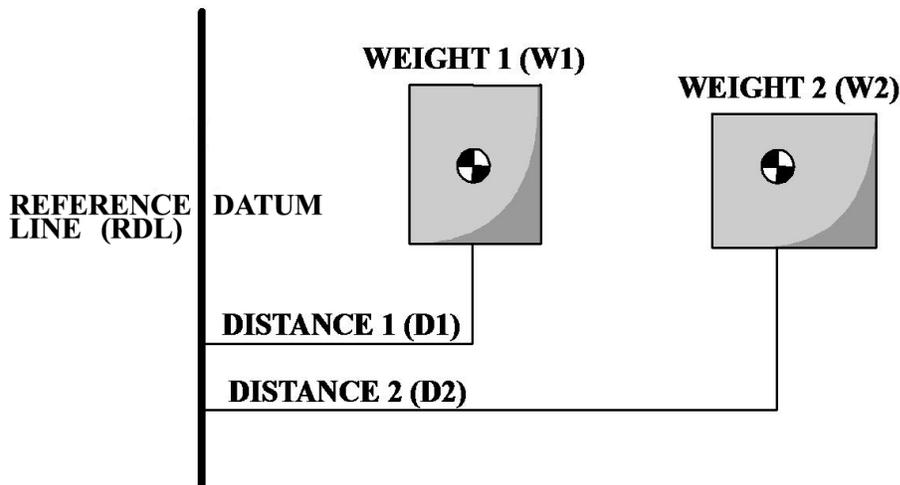


Figure 8.6. Center of Balance Model

WEIGHING AND MARKING

8.5.6. W3, W4 and W5 = weight three, weight four and weight five. Terms used to define subsequent weights after W1 and W2 (figure 9.7.).

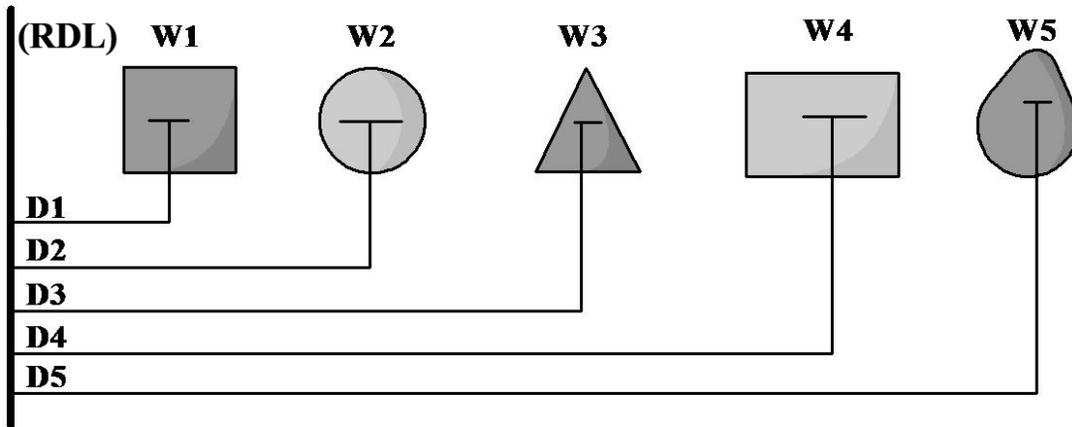


Figure 8.7. Center of Balance Model (W1 through W5)

$$\{(D1 \times W1) + (D2 \times W2) + (D3 \times W3) \dots\} \mid \text{Total Weight} = \text{CB from RDL}$$

8.5.7. D1 = distance one. The distance from the RDL to W1, measured in inches (figure 4.8.).

8.5.8. D2 = distance two. The distance from the RDL to W2, measured in inches (figure 4.8.).

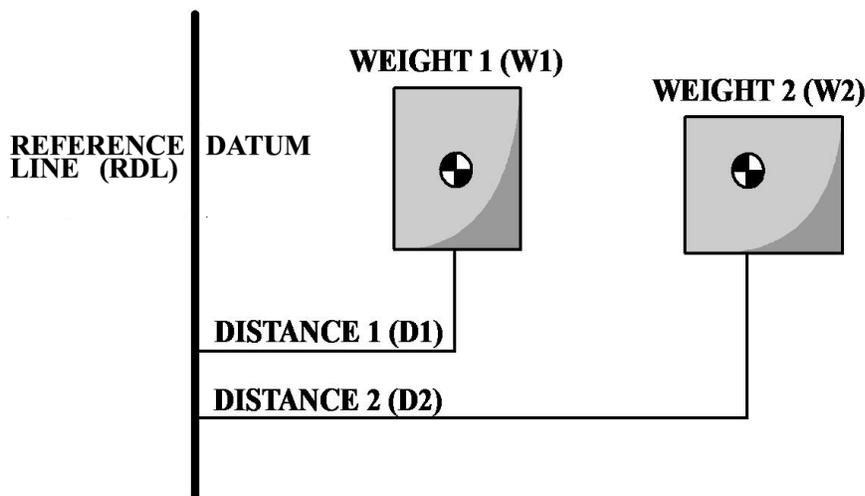


Figure 8.8. Center of Balance Model (W1, W2)

8.5.9. D3, D4, and D5 = distance three, distance four, and distance five. Subsequent distances (always measured in inches) from the RDL to the appropriate weights (figure 8.7.).

8.5.10. M = moment (inch-pound). The product obtained by multiplying weight (in pounds) by distance (in inches) from the RDL.

WEIGHING AND MARKING

8.5.11. FAW = front/forward axle weight. The front axle of a vehicle. The first axle from the RDL (figure 9.11)

8.5.12. MAW = middle axle weight. The axle(s) between the front and rear axle. The MAW is measured from the RDL (figure 9.11).

8.5.13. RAW = rear axle weight. The rear axle of a vehicle. The last axle of the vehicle from the RDL (figure 9.11).

8.5.14. FFE = forward front edge. Distance measured from the most forward edge of a vehicle to the CB of a vehicle.

8.5.15. FOH = front overhang. Distance in inches from front bumper to center of front axle.

8.5.16. ROH = rear overhang. Distance from rear or center of tandem axles to rear bumper.

8.6. Center of Balance Criteria. Marking the center of balance is not necessary on individual 463L pallets. If 463L pallets are built correctly, the center of balance will be at or near the center. However, you must place center of balance (CB) markings on married pallets or pallet trains (figure 8.9.).

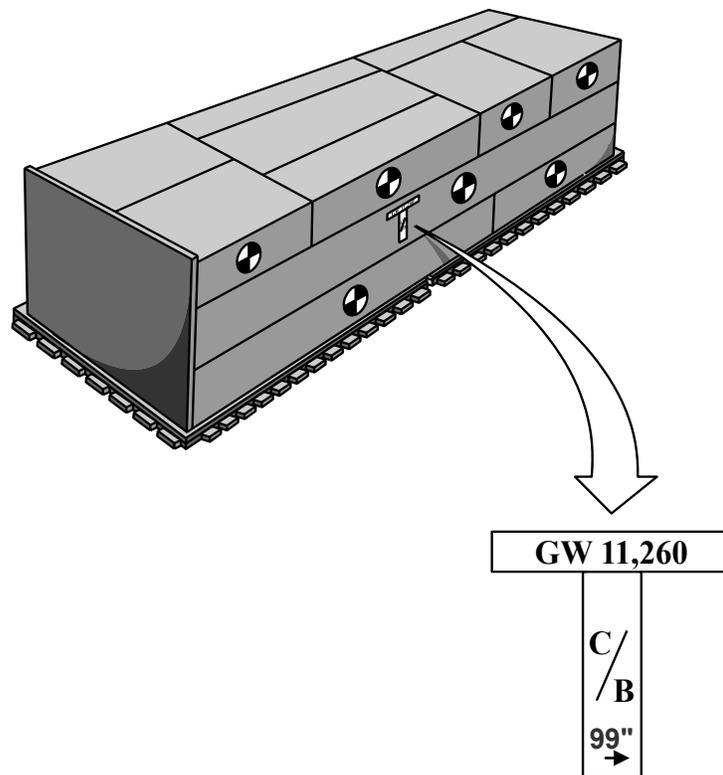


Figure 9.8. CB Markings Married Pallets

WEIGHING AND MARKING

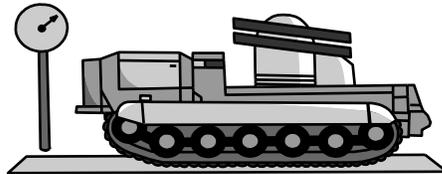
8.6.1. Mark the center of balance (CB) on all items of cargo that meet the following criteria:

- All vehicles.
- Any item of cargo 10 feet or longer.
- Any item with a CB at a point other than its center.

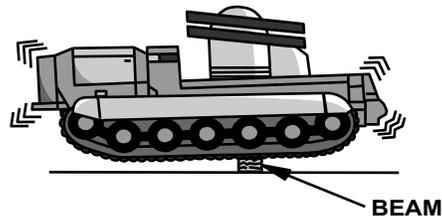
8.6.2. Determine the CB of tracked vehicles and other long non-wheeled items by weighing them on a platform scale and placing them on a log or pole as described in figure 8.10.

Tracked Vehicle Example

Step 1. To determine weight, drive the vehicle onto a platform scale (truck scale or coal yard scale), large enough to accommodate the entire vehicle. Record weight.



Step 2. To determine CB, drive the vehicle onto a wooden beam or pole until it tilts forward. Mark the side of the vehicle at the point of tilt.



Step 3. With appropriate materials, mark the CB and gross weight of the vehicle.

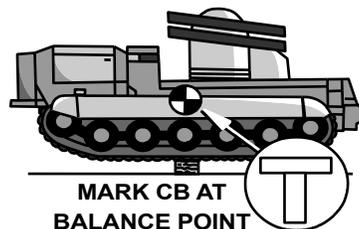


Figure 8.10. Weight and Balance Example—Tracked Vehicle
(Item teeters over the fulcrum at its balance point or Center of Balance)

WEIGHING AND MARKING

8.7. Marking Procedures. After computing the CB of the vehicle, mark its location and gross weight on both sides of the vehicle using weather resistant masking tape and grease pencil/magic marker, forming the letter —T. The horizontal portion of the —T” will contain the gross weight information, and the vertical portion of the —T” will contain the letters —B,” to indicate the exact position of the vehicle’s CB. Also indicate number of inches from the RDL of the CB location and mark axle weights above each axle on both sides of the vehicle (figure 8.11).

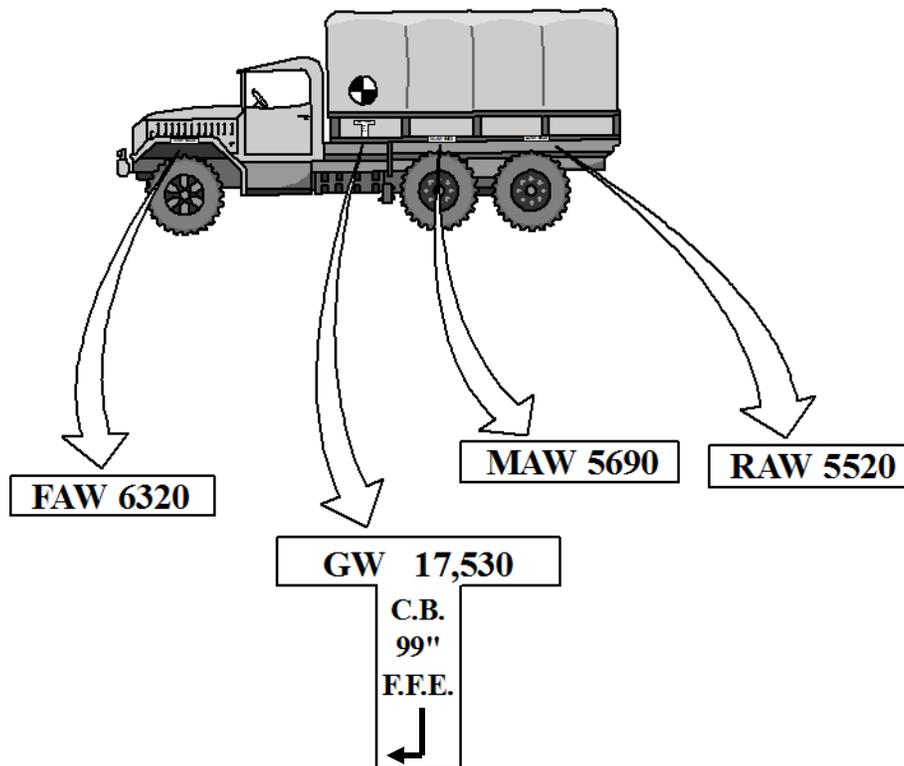


Figure 8.11. Marking Procedures

WEIGHING AND MARKING

8.8. CB Computations. Use the basic weight and balance formula shown below to compute the center of balance of wheeled items. Figures 9.13 through 9.23 are sample problems to familiarize you with CB calculations. **Round decimals to the nearest whole number.**

WEIGHT X DISTANCE = MOMENT

TOTAL MOMENT | TOTAL WEIGHT = CB (DISTANCE)

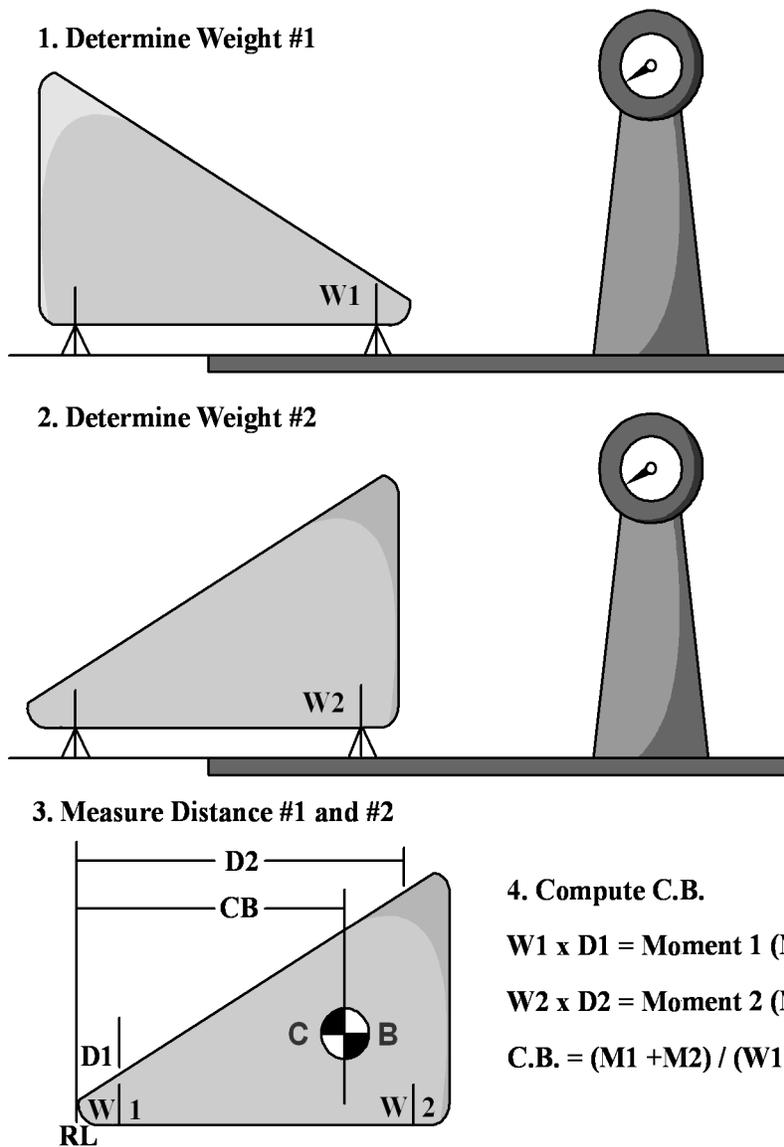
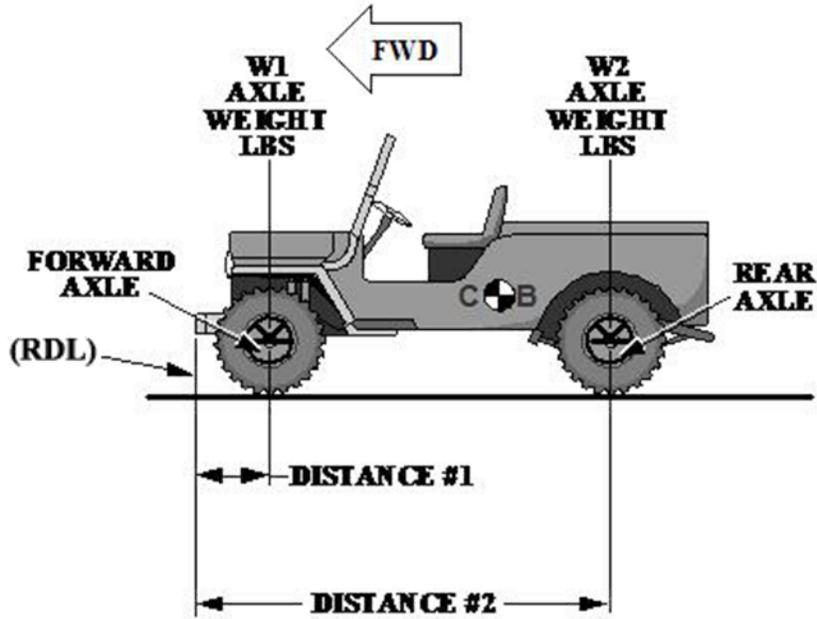


Figure 8.12. Sample Problem - Cargo Center of Balance Computations

WEIGHING AND MARKING



PROBLEM: Jeep

Distance #1 - 25" Front Axle Weight - 1,400 lbs.

Distance #2 - 97" Rear Axle Weight - 1,050 lbs.

SOLUTION: Jeep

	<u>WT</u>	x	<u>DISTANCE</u>	=	<u>MOMENT</u>
1.	1,400	x	25"	=	35,000
2.	1,050	x	97"	=	101,850
TOTAL	2,450				136,850
	$136850 \div 2450 = \underline{\hspace{2cm}}$ INCHES ?				

Figure 8.13. Sample Problem - Cargo Center of Balance Computations

WEIGHING AND MARKING

SAMPLE PROBLEM

PROBLEM: M1008

Distance #1 - 30"

Front Axle Weight = 3,300 lbs.

Distance #2 - 198"

Rear Axle Weight = 3,600 lbs.

SOLUTION: M1008

	<u>WT</u>	x	<u>DISTANCE</u>	=	<u>MOMENT</u>
1.		x	"	=	
2.	_____	x	"	=	_____
TOTAL	_____				_____
		÷	_____	=	_____ INCHES ?

Figure 8.14. Sample Problem - Cargo Center of Balance Computations

WEIGHING AND MARKING

SAMPLE PROBLEM

PROBLEM: M1026

Distance #1 - 35" Front Axle Weight = 3,000 lbs.

Distance #2 - 155" Rear Axle Weight = 3,200 lbs.

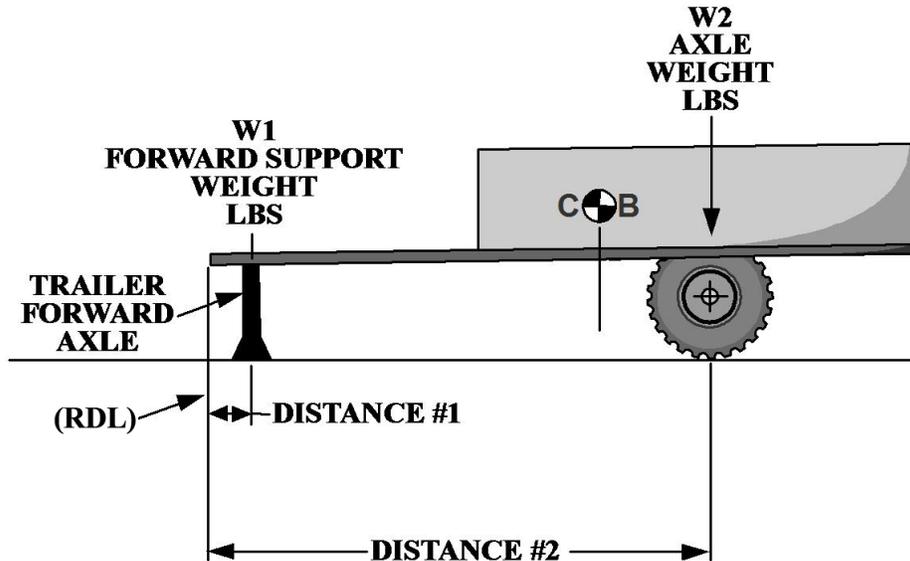
SOLUTION: M1026

	<u>WT</u>	x	<u>DISTANCE</u>	=	<u>MOMENT</u>
1.		x	"	=	
2.	_____	x	"	=	_____
TOTAL	_____				_____
	_____	÷	_____	=	_____ INCHES ?

Figure 8.15. Sample Problem - Cargo Center of Balance Computations

WEIGHING AND MARKING

SAMPLE PROBLEM



PROBLEM: Trailer

Distance #1 - 14" Support Weight - 50 lbs.

Distance #2 - 60" Axle Weight - 490 lbs.

SOLUTION: Trailer

	<u>WT</u>		<u>DISTANCE</u>		<u>MOMENT</u>
1.	50	x	14"	=	700
2.	<u>490</u>	x	60"	=	<u>29,400</u>
TOTAL:	540				30,100

$$30,100 \div 540 = \underline{\hspace{2cm}} \text{ inches}$$

Figure 8.16. Sample Problem - Cargo Center of Balance Computations

WEIGHING AND MARKING

SAMPLE PROBLEM

PROBLEM: Trailer

Distance #1 - 14" Support Weight = 80 lbs.

Distance #2 - 60" Axle Weight = 1,250 lbs.

SOLUTION: Trailer

	<u>WT</u>	x	<u>DISTANCE</u>	=	<u>MOMENT</u>
1.		x	"	=	
2.	_____	x	"	=	_____
TOTAL	_____				_____
	_____	÷	_____	=	_____ INCHES ?

Figure 8.17. Sample Problem - Cargo Center of Balance Computations

WEIGHING AND MARKING

SAMPLE PROBLEM

PROBLEM: Trailer

Distance #1 - 14" Support Weight = 110 lbs.

Distance #2 - 60" Axle Weight = 1,000 lbs.

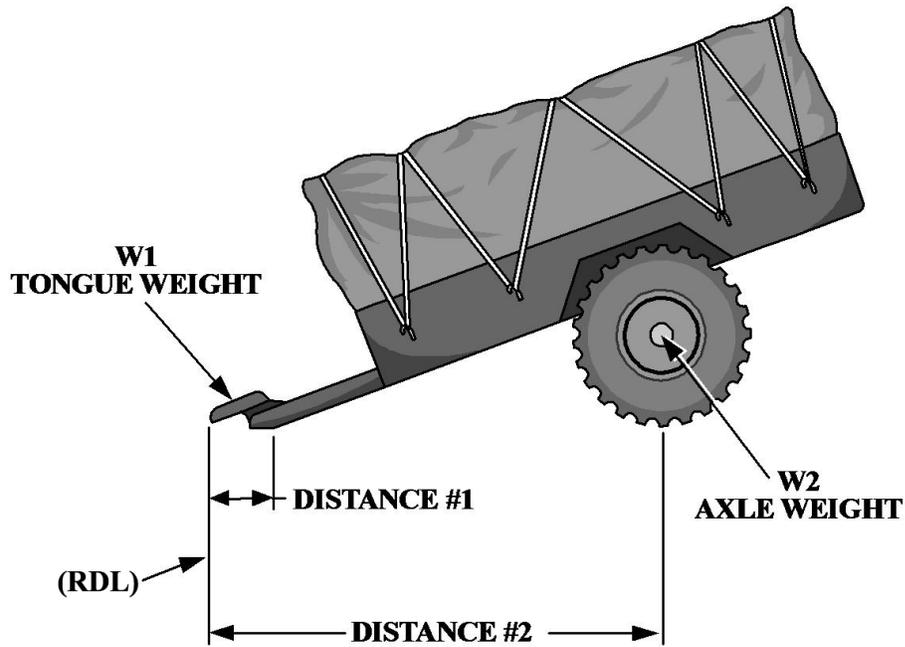
SOLUTION: Trailer

	<u>WT</u>	x	<u>DISTANCE</u>	=	<u>MOMENT</u>
1.		x	"	=	
2.	_____	x	"	=	_____
TOTAL	_____				_____
			_____ ÷ _____	=	_____ INCHES ?

Figure 8.18. Sample Problem - Cargo Center of Balance Computations

WEIGHING AND MARKING

SAMPLE PROBLEM



PROBLEM: Trailer

Distance #1	-	13"	Tongue Weight	-	75 lbs.
Distance #2	-	94"	Axle Weight	-	850 lbs.

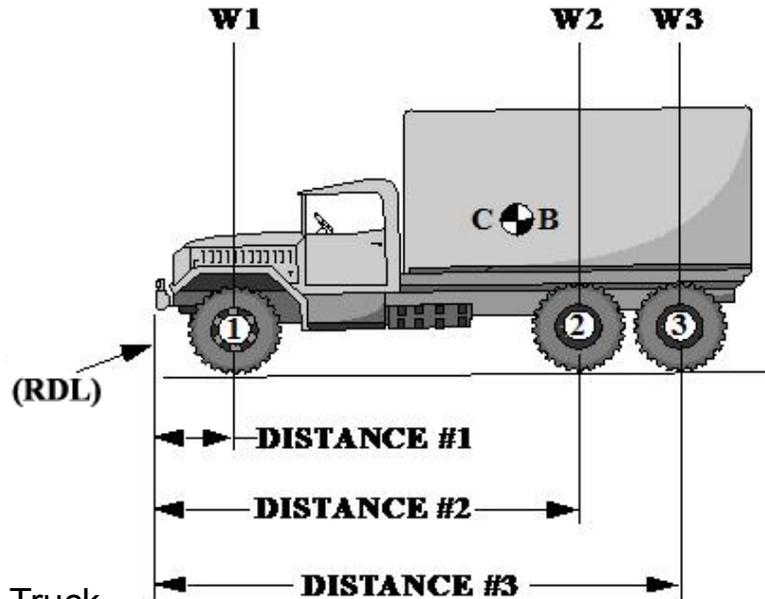
SOLUTION: Trailer

	<u>WT</u>	x	<u>DISTANCE</u>	=	<u>MOMENT</u>
1.		x	"	=	_____
2.	_____	x	"	=	_____
TOTAL	_____				_____
	_____	÷	_____	=	_____ INCHES ?

Figure 8.19. Sample Problem - Cargo Center of Balance Computations

WEIGHING AND MARKING

SAMPLE PROBLEM



PROBLEM: Cargo Truck

Distance #1	-	30"	Front Axle Weight	-	5,100 lbs.
Distance #2	-	130"	Middle Axle Weight	-	3,200 lbs.
Distance #3	-	178"	Rear Axle Weight	-	3,200 lbs.

SOLUTION: Cargo Truck

	<u>WT</u>	x	<u>DISTANCE</u>	=	<u>MOMENT</u>
1.		x	"	=	
2.		x	"	=	
3.	_____	x	"	=	_____
TOTAL	_____				_____
	_____	÷	_____	=	_____ INCHES ?

Figure 8.20. Sample Problem - Cargo Center of Balance Computations

WEIGHING AND MARKING

SAMPLE PROBLEM

PROBLEM: Truck

Distance #1	-	30"	Front Axle Weight	=	4,900 lbs.
Distance #2	-	130"	Middle Axle Weight	=	4,000 lbs.
Distance #3	-	178"	Rear Axle Weight	=	4,000 lbs.

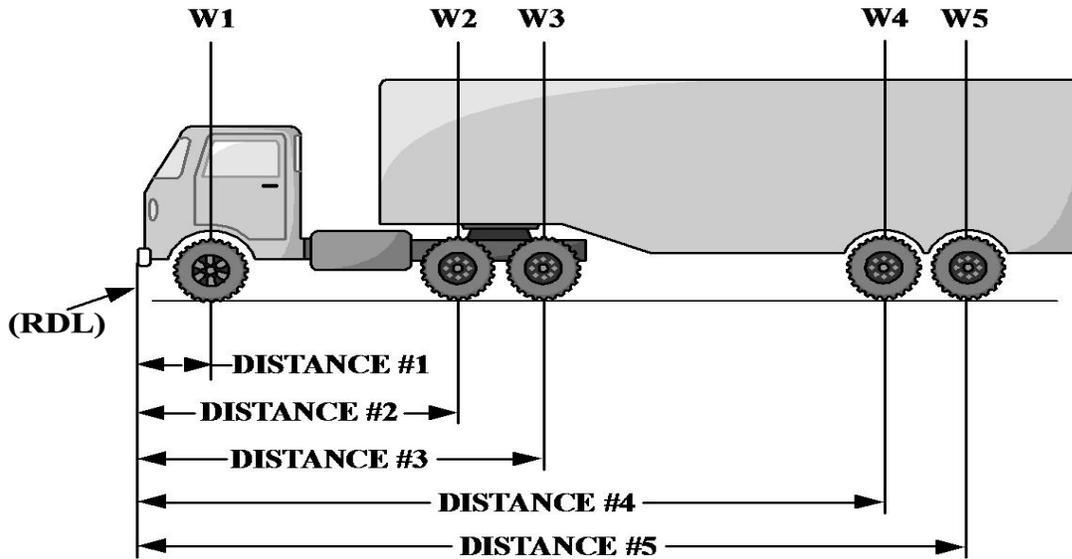
SOLUTION: Truck

	<u>WT</u>	x	<u>DISTANCE</u>	=	<u>MOMENT</u>
1.		x	"	=	
2.		x	"	=	
3.	_____	x	"	=	_____
TOTAL	_____				_____
		_____ ÷ _____		=	_____ INCHES ?

Figure 8.21. Sample Problem - Cargo Center of Balance Computations

WEIGHING AND MARKING

SAMPLE PROBLEM



PROBLEM: Tractor Trailer

Distance #1	-	50"	Front Axle Weight	-	9,000 lbs.
Distance #2	-	110"	Axle #2 Weight	-	5,050 lbs.
Distance #3	-	155"	Axle #3 Weight	-	5,050 lbs.
Distance #4	-	570"	Axle #4 Weight	-	7,700 lbs.
Distance #5	-	615"	Rear Axle Weight	-	7,700 lbs.

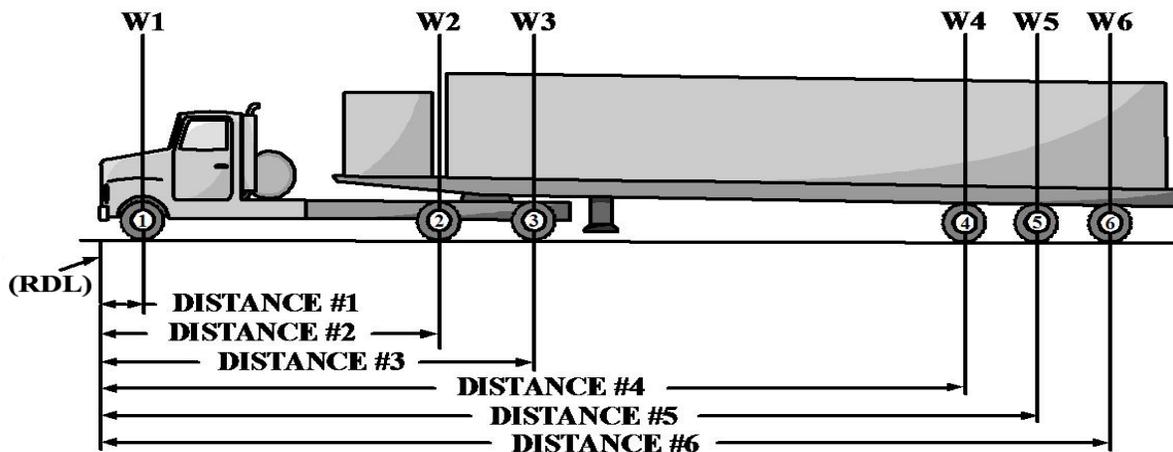
SOLUTION: Tractor Trailer

	<u>WT</u>	x	<u>DISTANCE</u>	=	<u>MOMENT</u>
1.		x	"	=	
2.		x	"	=	
3.		x	"	=	
4.		x	"	=	
5.	_____	x	"	=	_____
TOTAL	_____				_____
	_____	÷	_____	=	_____ INCHES ?

Figure 8.22. Sample Problem - Cargo Center of Balance Computations

WEIGHING AND MARKING

SAMPLE PROBLEM



PROBLEM: Tractor Trailer

Distance #1	-	50"	Front Axle Weight	-	10,300 lbs.
Distance #2	-	167"	Axle #2 Weight	-	13,450 lbs.
Distance #3	-	257"	Axle #3 Weight	-	13,450 lbs.
Distance #4	-	656"	Axle #4 Weight	-	23,800 lbs.
Distance #5	-	702"	Axle #5 Weight	-	23,800 lbs.
Distance #6	-	748"	Rear Axle Weight	-	23,800 lbs.

SOLUTION: Tractor Trailer

	WT	X	DISTANCE	=	MOMENT
1.		X	"	=	
2.		X	"	=	
3.		X	"	=	
4.		X	"	=	
5.		X	"	=	
6.		X	"	=	
TOTAL					
		÷		=	INCHES ?

Figure 8.23. Sample Problem - Cargo Center of Balance Computations

WEIGHING AND MARKING

Chapter 8—Homework Assignment

1. Airlift aircraft will only accept items of cargo with the proper _____ and _____ of _____ marked.
2. All _____ offered for air shipment must be _____.
3. Do not weigh the cargo until all _____ are secured for _____.
4. The _____ and/or _____ must be out of the vehicle prior to weighing the axle/axles.
5. $M = \frac{\text{_____ (inch-pound)}}{\text{_____ weight (in pounds) by distance (in inches) from the RDL}}$.
6. The horizontal portion of the "T" will contain the _____ information, and the vertical portion of the "T" will contain the letters _____ to indicate the exact position of the vehicle's CB.

WEIGHING AND MARKING

THIS PAGE INTENTIONALLY LEFT BLANK

REFERENCES

A1.1. General. The following references provide guidance for personnel involved in movement of forces in airlift aircraft. It is not necessary to possess all the publications listed in this appendix. These references will provide further guidance for use in planning airlift movement. These references may not be current.

A1.2. Department of Defense (DOD) Publications.

DOD 4500.9-R Part III, Mobility, Defense Transportation Regulation (DTR)

DOD 4500.9-R Part II, Cargo Movement, Defense Transportation Regulation (DTR)

A1.3. Joint Service Publications:

AFMAN 24-204, TM 38-250, NAVSUPPUB 505, MCO P4030.19F, DLAM 4145.3
(Preparing Hazardous Materials for Military Air Shipments)

A1.4. Air Force Publications:

AFI 10-402 V1, Mobilization Planning and Personnel Readiness

AFI 10-403, Deployment Planning and Execution

AFI 11-2C-130 V3 Addenda A, C-130 Operations Configurations/Mission Planning

AFI 11-2KC-10 V3 Addenda A, KC-10 Aircraft Configuration

AFI 11-2C-17 V3 Addenda A, C-17 Configuration and Mission Planning

AFI 11-2C-5 V3 Addenda A, C-5 Operations Configuration and Mission Planning

AFI 11-2KC-135 V3 Addenda A, C/KC-135 Aircraft Configuration

AMCP 24-2, Civil Reserve Air Fleet Load Planning Guide

T.O. 1C-130A-9, Cargo Loading Manual

T.O. 1C-5A-9, Loading Instructions

T.O. 1C-17A-9, Loading Instructions

T.O. 1C-10(K)A-9, Cargo Loading Manual

T.O. 1C-135(K)A-9, Cargo Loading Manual

T.O. 1C-130J-9, Cargo Loading Manual

T.O. 1C-5A-9-2, Supplemental Loading Instructions

REFERENCES

THIS PAGE INTENTIONALLY LEFT BLANK

ABBREVIATIONS AND ACRONYMS

Abbreviation or Acronym	Definition
AACG	Arrival Airfield Control Group
ACC	Air Combat Command
ACL	Allowable Cabin Load
AF	Air Force
AFB	Air Force Base
AFI	Air Force Instruction
AFM	Air Force Manual
AFR	Air Force Regulation
AMC CC	Commander, Air Mobility Command
AMC	Air Mobility Command
AMCU	Air Mobility Control Unit
AMLO	Air Mobility Liaison Officer
APOD	Aerial Port of Debarkation
APOE	Aerial Port of Embarkation
AR	Army Regulation
ATOC	Air Terminal Operations Center
CB	Center of Balance
C/B	Center of Balance
CONUS	Continental United States
CRAF	Civil Reserve Air Fleet
CRE	Contingency Response Element
CRG	Contingency Response Group
CRT	Contingency Response Team
CRW	Contingency Response Wing
CSE	Contingency Support Element
DACG	Departure Airfield Control Group
DOD	Department of Defense
D1	Distance One
D2	Distance Two
D3, D4, D5 (etc.)	Distance Three, Distance Four, Distance Five (etc.)
FM	Field Manual
FMFM	Fleet Marine Force Manual
FS	Fuselage Station
GSS	Global Support Squadron
GW	Gross Weight
JA/ATT	Joint Airborne/Air Transportability Training
JCS	Joint Chiefs of Staff
K	1000 Pounds
DCC	Deployment Control Center
MCO	Marine Corps Order
MHE	Materials Handling Equipment
MOM	Moment
MTMC	Military Traffic Management Command

ABBREVIATIONS AND ACRONYMS

Abbreviation or Acronym	Definition
NAVSUP PUB	Naval Supplement Publication
NCO	Noncommissioned Officer
OPNAV INST	Operational Naval Instruction
OPNAV SUP	Operational Naval Supplement
OPORD	Operations Order
PLF	Pounds per Linear Foot
POP	Performance Oriented Packaging
PSI	Pounds Per Square Inch
RDL	Reference Datum Line
REV	Revised
RDL	Reference Datum Line
SAAM	Special Assignment Airlift Mission
TCN	Transportation Control Number
TCU	Transportation Control Unit
TM	Technical Manual
TMO	Traffic Management Office
UMO	Unit Movement Officer
USTRANSCOM CC	Commander, United States Transportation Command
W1	Weight One
W2	Weight Two
W3, W4, W5	Weight Three, Weight Four, Weight Five

GLOSSARY

463L Pallet—An 88” x 108” aluminum flat base used to facilitate the upload and download of aircraft.

463L System—Aircraft pallets, nets, tie down and coupling devices, facilities, handling equipment, procedures, and other components designed to interface with military and civilian aircraft cargo restraint systems which accepts pallets 88” x 108”. Though designed for airlift, system components may have to move intermodally via surface modes to support geographic Combatant Commander objectives.

Accompanied Baggage—Baggage that accompanies the member/employee while traveling.

Aerial Port—An airfield that has been designated for the sustained air movement of personnel and materiel as well as an authorized port of entrance into or departure from the country where located.

Aerial Port of Debarkation (APOD)—A station that serves as an authorized port to process and clear aircraft and traffic for entrance to the country where located.

Aerial Port of Embarkation (APOE)—A station that serves as an authorized port to process and clear aircraft and traffic for departure from the country where located.

Air Mobility Control Unit (AMCU)—Generic term referring to ALCF, ALCS, AMCF, CRG, CRW, GMRS, GMS, GSS, USAFE/PACAF AMS, and USAFE/PACAF CRG.

Air Mobility Liaison Officer (AMLO)—An Air Force Officer primarily assigned to Army/Marine units with high priority, short notice airborne and air mobility missions. They work with the supported commander's G-3/G-4 staff to provide advice and assistance on air mobility matters. They provide key recommendations to both the Army commander and AMC command and control agencies. They also assist in requesting tactical airlift, survey and tactical drop zones, and control certain airdrop operations.

Aircraft Commander—A qualified pilot graduate of an aircraft commander upgrade course or aircraft commander initial qualification training, certified by the squadron commander to act as pilot in command of an aircraft.

Airlift Operations—Airlift operations involves the air transport and delivery of personnel, equipment, and supplies into an objective area. Airdrop or aircraft landing(s) may accomplish the delivery.

Alert Holding Area (AHA)—The vehicle, equipment, supply, and personnel control area. The AHA is under the control of the Arrival/Departure Airfield Control Group (A/DACG). It should be located near the departure airfield. It is used to assemble, inspect, hold, and service aircraft loads.

Allowable Cabin Load (ACL)—The maximum payload which can be carried on an in-

GLOSSARY

dividual sortie.

Block Time—Time determined by the scheduling agency responsible for mission accomplishment for the aircraft to arrive at (block in) or depart from (block out) a given airfield.

Bogie Axle – Two or more wheel sets that share a single suspension and/or pivot point.

Boom Operator—An aircrew member responsible for overall supervision of the on-load/offload operation of their assigned aircraft.

Border Clearance—Those clearances and inspections required to comply with federal, state, and local agricultural, customs, immigration, and immunizations requirements.

Call Forward Area—Area where the Joint Inspection (JI) is conducted, a final briefing is provided to the deploying troops, and manifests are reviewed for accuracy.

Cargo—Supplies, materials, stores, baggage, or equipment transported by land, water, or air.

Center of Balance (CB)—The center of mass, or balance point, of an object. Also known as center of gravity (CG).

Chalk—Designated troops, equipment, or cargo which constitute a complete aircraft load.

Chalk Number—Number given to a complete load and to the transporting carrier.

Channel Airlift—Common-user airlift service provided on a scheduled basis between two points. There are two types of channel airlift. A requirements channel serves two or more points on a scheduled basis depending upon the volume of traffic; a frequency channel is time-based and serves two or more points at regular intervals.

Civil Reserve Air Fleet (CRAF)—A program in which the Department of Defense contracts for the services of specific aircraft, owned by a United States entity or citizen, during national emergencies and defense-oriented situations when expanded civil augmentation of military airlift activity is required. These aircraft are allocated, in accordance with Department of Defense requirements, to segments, according to their capabilities, such as international long-range and short-range cargo and passenger sections, national (domestic and Alaskan sections) and aeromedical evacuation and other segments as may be mutually agreed upon by the Department of Defense and the Department of Transportation.

Contingency Response Group (CRG)—Contingency Response Groups (CRGs) are designed to be first responders for opening airbases. These units will bridge the gap

GLOSSARY

between the seizure forces and the follow-on combat/expeditionary combat support forces. CRGs are critical to the AF's ability to rapidly deploy U.S. military forces and initiate air operations of any type in minimal time at any base or location around the globe. CRGs may also provide C2, aerial port services, quick turn maintenance, force protection and various airbase support capabilities for AMC's Global Mobility mission.

Contingency Response Element (CRE)—A provisional, deployed AMC organization established at fixed, en route, and deployed locations where AMC operational support is non-existent or insufficient. A CRE provides continuing on-site management of AMC airfield operations including C2, communications, aerial port, maintenance, security, services, weather, finance, contracting and intelligence--the critical elements needed to ensure a safe and highly efficient air base for all tanker and airlift operations.

Contingency Response Team (CRT)—Performs the same functions as a CRE, but on a smaller scale. CRTs are normally led by an enlisted 7-level member certified as a CRT chief.

Contingency Response Wing (CRW)—The Air Forces global reach crisis response force. Rapidly deploy tailor able, multi-role, multi-skilled, expeditionary mobility teams, organized to quickly assess and effectively open forward contingency airbases and conduct air mobility support operations anywhere in the world. Exercise command authority over the respective Contingency Response Groups (CRGs), Global Support Squadrons (GSSs) and Air Mobility Liaison Officers (AMLOs) at their Operating Locations (OLs) for organization, control of resources and equipment, personnel management, logistics, training, readiness, mobilization, demobilization, discipline, and any other appropriate matters. Ensures mission-ready airfield assessment teams, airfield operations, command and control (C2), aerial port, quick-turn aircraft maintenance, weather, intelligence, air traffic control, security forces, finance, fuels, supply, and contracting personnel are available to project and sustain combat forces worldwide.

Contingency Support Element (CSE)—CSEs provide a specific mission support capability other than the core command and control, logistics, or aerial port services. They may be deployed as an element of a CRE or CRT, or as a small scale stand alone entity.

Escort(s) or Courier(s), Transportation— United States Government military members or civilian employees, or Department of Defense contractor employees responsible for continuous surveillance and control of classified material during movements. Individuals designated as escorts or couriers must possess a Department of Defense - issued security clearance at least equal to the level of classification of the material being transported.

Dunnage—A piece of wood or plastic that is approximately 4 X 4 inches. Used to separate cargo from the base pallet.

Frustrated Cargo—cargo that failed the inspection at the in-check area, joint inspec-

GLOSSARY

tion, or any place after arriving at the cargo deployment function prior to loading the aircraft and was set aside until it could be fixed by the unit.

Global Support Squadron (GSS)—An active duty unit composed of a cadre of AMC airlift command and control experts. They provide the core experience and leadership for a CRE. This designation applies to the 573 GSS – Travis AFB, CA. and the 819 GSS – Joint Base McGuire-Dix-Lakehurst, NJ. When deployed, they perform the functions of a CRE.

Gross Weight—The combined weight of a container and its contents including packing material.

Ground Time—The combined weight of a container and its contents including packing material.

Hazardous Materials—A substance or material that has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce and that has been so designated. The term includes hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous under the provisions of 49 Code of Federal Regulations (CFR), Parts 172.101 and 172.102, and materials that meet the defining criteria for hazard class and divisions in 49 CFR, Part 173.

Inter-Theater Airlift—The common-user airlift linking theaters to the continental United States and to other theaters as well as the airlift within the continental United States. The majority of these air mobility assets are assigned to the Commander, United States Transportation Command.

Intra-Theater Airlift—Airlift conducted within a theater with assets normally assigned to a geographic combatant commander or attached to a subordinate joint force component commander.

Joint Airborne/Air Transportability Training (JA/ATT)—Airlift conducted within a theater with assets normally assigned to a geographic combatant commander or attached to a subordinate joint force component commander.

Load Plan—A document specifying in detail the payload expressed in terms of passenger and freight carried on one aircraft for a specific destination.

Loading Time—A specified time, established jointly by the airlift and deploying commanders concerned, when aircraft are available for loading and loading is to begin.

Loadmaster—An aircrew member responsible for overall supervision of the onload/offload operation of their assigned aircraft.

Load Team—A team of individuals selected from members of the deploying unit, DAC-

GLOSSARY

G/AACG and CRE to provide aircraft loading/offloading support.

Load Team Chief—The senior Air Force individual (usually a CRE representative) assigned to the load team.

Manifest—A document specifying in detail the payload expressed in terms of passengers or freight carried in one aircraft for a specific destination.

Married 463L Pallets—The joining of 2, 3, 4, or 5 463L pallets by mechanical locks or other devices so that all pallets move as one unit. Pallets are joined in order to transport oversize items of equipment. May also be referred to as pallet trains.

Marshaling—The process of assembling, holding, and organizing supplies and/or equipment, especially vehicles of transportation, for onward movement.

Marshaling Area—The general area in which units are located and from which an air movement is initiated. For Air Force units this is normally known as the unit assembly area.

Materials Handling Equipment (MHE)—Mechanical devices for handling of supplies with greater ease and economy. Examples: forklift, roller conveyor, 60K, 40K, 25K, and 10K 463L loaders.

Military Traffic Management Command (MTMC)—The single manager operating agency for military traffic land transportation and common use ocean terminals. Serves as clearance authority for traffic entering the defense transportation system.

Mobility Control Center (MCC)—An agency responsible for designating mode and/or providing transportation routing instructions. The Air Force unit equivalent of a DACG.

Outsize Cargo—All cargo which due to its physical characteristics exceeds the capabilities (too large or too heavy) of the KC-135, C-130, or KC-10 aircraft and requires a C-5 or C-17 aircraft for air movement.

Oversize Cargo—Any cargo that is larger than the working surface of the 463L pallet.

Payload—That combined weight of passengers, baggage, mail, and cargo carried on an airlift mission.

Pusher Vehicle—Any self-propelled vehicle, such as a 1 1/4-ton or 2 1/2-ton truck, with a front mounted pintle hook. This vehicle is used primarily to push disabled vehicles, trailers, howitzers, etc., aboard aircraft. This vehicle may also provide load team transportation and is normally assigned one per load team.

Ready Line—The final point in the marshaling area where the load is positioned prior to loading. The point where AMC accepts the load from the user. For Air Force units this is a function of the air cargo terminal marshaling area and the air passenger

GLOSSARY

terminal holding station.

Seats Available—The total passenger seats available for each manifest destination.

Shoring—Plywood, board, or planking on the cargo floor to spread the load over a larger area, or to prevent damage.

Single Manager for Airlift Service—The Secretary of the Air Force is designated as the single manager for airlift services with authorities and responsibilities in DOD Directive 5160.2, Single Manager Assignment for Airlift Service. The Commander, Air Mobility Command, is designated as the Executive Director of the Single Manager Operating Agency for Airlift Service with authorities and responsibilities for managing the agency.

Special Assignment Airlift Mission (SAAM)—A mission operated by AMC at the request of the Departments of the Army, Navy, and Air Force, Marine Corps, and/or other DOD agencies.

Strategic Airlift—The continuous or sustained movement of units, personnel, and material in support of all Department of Defense agencies between area commands; between the continental United States (CONUS) and overseas within an area of command, when directed. Strategic airlift resources possess the capability to airland or airdrop troops, supplies, and equipment for augmentation of tactical forces when required.

Tactical Airlift—Airlift which provides the immediate and responsive air movement and delivery of combat troops and supplies directly into objective areas through airland, extraction, airdrop, and other air delivery techniques; and the air logistics support of all theater forces, including those engaged in combat operations, to meet specific theater objectives and requirements.

Transportation Movement Office (TMO)—The base level office responsible for surface transportation of people, household goods, baggage, cargo, and mail.

Troop Commander—Designated officer or noncommissioned officer responsible for maintaining control and discipline of all passengers/troops assigned to a specific aircraft mission.

Unauthorized Baggage—Baggage weight above the authorized baggage weight allowance on the travel orders, further, those items specifically prohibited by law.

Unit Loading—The loading of troop units with their equipment and supplies in the same ship, aircraft, or land vehicles.

Zero Fuel Weight—The actual weight of an aircraft including aircraft operational equipment, passengers, baggage, mail, and cargo, but not including fuel.

GLOSSARY

GLOSSARY

AMCU ADDRESS / TELEPHONE LISTING

HQ AMC/A3CM
DSN 779-2164
Comm. 618-256-2164
402 Scott Dr. Unit A3CM
Scott AFB, IL 62225-5302

USAFMOS/MOOO
DSN 650-7026
Comm. 609-754-7026
5656 Texas Ave.
Joint Base McGuire-Dix-Lakehurst, NJ 08640

ACTIVE DUTY UNITS

573 GSS
DSN 837-4500/1017
Comm. 707-424-4500/1017
561 Waldron Street/Bldg. 241
Travis AFB, CA 94535-2763

819 GSS
DSN 754-3982
Comm. 609-754-3982
3422 Broidy Ave.
Joint Base McGuire-Dix-Lakehurst,
NJ 08640

1. NAME AND RANK:

UNIT OF ASSIGNMENT:

POST OR BASE:

TELEPHONE NUMBER, DSN:

2. CONTROL NUMBER AND PLACE OF ACLP TRAINING CLASS:

3. EXPLAIN IN AS MUCH DETAIL AS POSSIBLE THE TYPE OF ASSISTANCE YOU ARE REQUESTING. USE ADDITIONAL SHEETS AS NECESSARY.

4. MAIL TO YOUR AFFILIATED AMCU.

STUDENT REQUEST FOR ASSISTANCE

THIS PAGE INTENTIONALLY LEFT BLANK