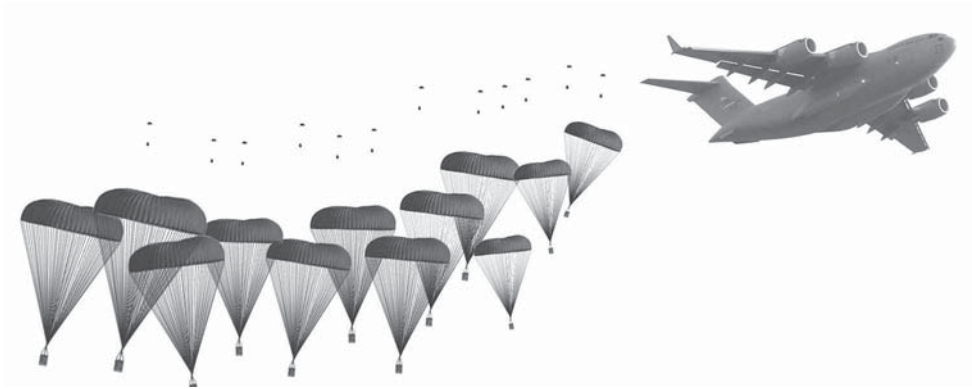


**FM 4-20.103 (FM 10-500-3)
MCRP 4-11.3C
TO 13C7-1-11**



AIRDROP OF SUPPLIES AND EQUIPMENT: RIGGING CONTAINERS



September 2005

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UNITED STATES MARINE CORPS
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DEPARTMENT OF THE ARMY
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DEPARTMENT OF THE AIR FORCE
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Airdrop of Supplies and Equipment: Rigging Containers

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Preface

SCOPE

This manual provides the latest approved doctrine for rigging airdrop containers. It is written for use by a parachute rigger or jumpmaster. It consists of six parts.

- a. Part one contains general information for container loads and aircraft.
- b. Part two contains procedures for rigging A-7A container loads.
- c. Part three contains procedures for rigging A-21 container loads.
- d. Part four contains procedures for rigging A-22 container loads.
- e. Part five contains procedures for rigging low-cost aerial delivery systems.
- f. Part six contains procedures for rigging specialized loads and equipment.

NOTICE OF EXCEPTION

When an item of airdrop equipment is replaced or a rigging procedure is changed, it will be impossible to change all manuals in the field at one time. Therefore, Field Manual (FM) 4-20.103/Marine Corps Reference Publication (MCRP) 4-11.3C/Technical Order (TO) 13C7-1-11 will be changed, when necessary and will take precedence over the procedures in an individual rigging manual. There may be times, however, when the procedures in an individual rigging manual must be followed even though they are different from those in this manual. When this occurs, a notice of exception will be printed at the beginning of each paragraph where the exception is authorized. The notice of exception will look like the following:

NOTICE OF EXCEPTION

The procedures in this paragraph are different from those in FM 4-20.103/MCRP 4-11.3C/TO 13C7-1-11. An exception to FM 4-20.103/MCRP 4-11.3C/TO 13C7-1-11 is granted. The procedures in this paragraph must be followed.

REFERENCE INFORMATION

To avoid repeating certain information and procedures, it is often necessary to reference other FMs and technical manuals (TM). For example, this manual often references FM 4-20.102/Naval Sea Command (NAVSEA) SS400-AB-MMO-010/TO 13C7-1-5. This may seem to be contradictory in that this manual, FM 4-20.103/MCRP 4-11.3C/TO 13C7-1-11, deals with rigging container loads and FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 deals with rigging platform loads. However, FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5 also provides general information and general procedures. Where information is the same or only minor differences exist, it is permissible to state that the information is provided in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Where procedures are the same or only minor differences exist it is permissible to state that the procedure is done according to or by adapting the procedures in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5.

USER INFORMATION

This publication applies to the Active Army, the Army National Guard (ARNG)/Army National Guard of the United States (ARNGUS), and the United States Army Reserve (USAR).

The proponent of this publication is the United States Army Training and Doctrine Command (TRADOC). You are encouraged to report any errors or omissions and to suggest ways of making this a better manual.

Army personnel, send your comments on DA Form 2028 directly to:

Director
Aerial Delivery and Field Services Department
USA Quartermaster Center and School
710 Adams Avenue
Fort Lee, Virginia 23801-1502

Air Force personnel, send your reports on AFTO Form 22 through your respective command Weapons and Tactics to:

Headquarters
Air Mobility Command (AMC/A39T)
402 Scott Drive, Unit 3AI
Scott AFB, Illinois 62225-5302

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Aerial Delivery and Field Services Department
USA Quartermaster Center and School
710 Adams Avenue
Fort Lee, Virginia 23801-1502

Also send an information copy of AFTO Form 22 to:

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Robins AFB, Georgia 31098-1611

Marine Corps personnel, send your comments to:

Marine Corps Combat Development Command
Doctrine Division (C398)
3300 Russell Road, Suite 318A
Quantico, Virginia 22134-5010

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PART ONE

GENERAL INFORMATION

Chapter 1

General Rigging Information For Container Loads

DESCRIPTION OF CONTAINER LOADS

1-1. Container loads are loads that are rigged for airdrop in airdrop containers such as the A-7A airdrop cargo sling assembly, the A-21 cargo bag assembly, and the A-22 cargo bag assembly. These containers are packed with supplies, disassembled equipment, or small items of ready-to-use equipment prepared for airdrop. Loads may be required to be cushioned with energy dissipating material (honeycomb), felt, or cellulose wadding depending on the load requirements and the method of airdrop. The number and types of parachutes required to stabilize the load and slow its descent depend on the type of container used, the weight of the load, and the type of airdrop.

a. **A-7A Airdrop Cargo Sling Assembly.** The A-7A airdrop cargo sling assembly consists of four identical sling straps. The length of each strap is 188 inches. Each sling strap is fitted with a friction adapter and a floating D-ring. Loads weighing up to 500 pounds may be airdropped with an A-7A airdrop cargo sling assembly. Each A-7A cargo sling strap weighs 1 1/2 pounds. Part Two of this manual covers rigging the A-7A container for airdrop.

b. **A-21 Cargo Bag Assembly.** The A-21 cargo bag assembly is an adjustable container. It consists of a sling assembly with scuff pad, fixed quick-release strap and assembly, two O-ring straps, three quick-release straps, and a 97- by 115-inch canvas cover. The A-21 cargo assembly has a 500-pound load capacity. Part Three of this manual covers rigging an A-21 container for airdrop.

c. **A-22 Cargo Bag Assembly.** The A-22 cargo bag assembly is an adjustable cotton duck cloth/nylon and nylon webbing container. It consists of a sling assembly, a cover, and four suspension webs. The container weight is about 41 pounds. The load may be rigged with or without a cover. The weight capacity for the container is 501 to 2,200 pounds without the weight of the parachute. The height will vary, but will not exceed 83 inches with parachute unless specific rigging procedure authorizes it. Containers rigged for C-17 airdrop are restricted to 101 inches. Part Four of this manual covers rigging the A-22 container for airdrop.

d. **Stretch A-22 Cargo Bag.** The stretch A-22 cargo bag consists of two A-22 cargo bag assemblies. The covers may or may not be used. Only six of the suspension webs are used. Nylon and cotton sling assemblies must not be mixed. The weight capacity of the load is 675 to 2,200 pounds without the weight of the parachute. Part Four of this manual covers rigging the stretch A-22 container for airdrop.

e. **Double A-22 Cargo Bag.** The double A-22 cargo bag consists of two A-22 cargo bag assemblies. The covers may or may not be used. Only six of the suspension webs are used. Nylon and cotton sling assemblies must not be mixed. The weight capacity of the load is 900 to 2,200 pounds without the weight of the parachute. Part Four of this manual covers rigging the double A-22 container for airdrop.

f. **Low-Cost Aerial Delivery System (LCADS).** LCADS is a modified, lightweight A-22 container with no scuff pad, cover, or friction adapters on the lateral bands. It is rigged like the A-22 container, but is used for high-volume delivery of items where airdrop equipment is not recoverable. The weight capacity of the load is 501 to 2,200 pounds without the weight of the parachute. Part Five of this manual covers rigging the LCADS for airdrop.

TYPES OF AIRDROP

1-2. The three types of airdrop by which container loads can be delivered are low-velocity airdrop, high-velocity airdrop, and free drop. These are described below.

a. **Low-Velocity Airdrop.** Low-velocity airdrop is the delivery of supplies and equipment from an aircraft in flight using cargo parachutes. The items are usually rigged with honeycomb under them. The cargo parachutes are attached to the top of the load. The parachutes slow the descent of the load and ensure minimum shock when the load hits the ground.

b. **High-Velocity Airdrop.** High-velocity airdrop is the delivery of supplies and equipment from an aircraft in flight using a stabilizing parachute. The items are rigged with honeycomb under them. The stabilizing parachute is attached to the top of the load to maintain it in an upright position.

c. **Free Drop.** Free drop is the delivery of certain nonfragile items of supply from an aircraft in flight without the use of a parachute. No specific instructions are given in this manual for this type of airdrop.

COMMONLY USED ITEMS

1-3. Items commonly used for rigging container loads are described below. An equipment required table is included for each load in this manual as a part of the section describing that load. This table lists the items and quantity of each item needed to prepare and rig the load covered in that section. Standard airdrop hardware straps, and canvas items are described in FM 4-20.102/NAVSEA SS400-AB-MMO-010/TO 13C7-1-5. Canvas, metal, webbing and wood items are inspected according to TM 10-1670-298-20&P. Strength rating for the items in this section and for other airdrop items are listed in FM 4-20.116/TO 13C7-1-13. Some textile, wood, and miscellaneous items are described below. The proper use of these items will be covered in this manual or in other manuals of the FM 4-20/TO 13C7 (FM 10-500) series.

a. **Textile Items.** Textile items which may be used when a container load is being rigged are described below.

NOTE: Lengths will vary. Lengths specified are only typical and may be changed.

(1) Type III nylon cord is used to make safety ties and to hold items in place. It has a tensile strength of 550 pounds.

NOTE: When 1/2-inch (or 5/8-inch) tubular nylon webbing is not available for the skid board tie, type IV (coreless) braided nylon cord can be used. When the type IV (coreless) braided nylon cord is not available, double length of type III nylon cord can be used.

(2) One-half-inch (or 5/8-inch) tubular nylon webbing is used as a primary skid board tie. It is also used to secure items during a drop. It has a tensile strength of 1,000 pounds.

(3) Type I, 1/4-inch cotton webbing is used to make many of the needed safety ties. It has a tensile strength of 80 pounds.

(4) Ticket numbers 8/4 and 8/7 cotton thread are used to make various ties.

b. **Wood Items.** Wood items used on container loads, with the exception of the A-22 skid board, are made locally using details found in the rigging manual for the particular load. The 48- by 48-inch skid board for the A-22 cargo bag may be ordered precut or prepared locally. When the skid board is prepared locally, AC grade plywood must be used.

c. **Miscellaneous Items.** Miscellaneous items which may be used when a container load is being rigged are described below.

(1) Two-inch masking tape is used to prevent honeycomb from being cut by the type III nylon cord and to hold padding in place.

(2) Cellulose wadding and felt sheets may be used to pad fragile items to prevent sharp edges from cutting and to protect slings during deployment.