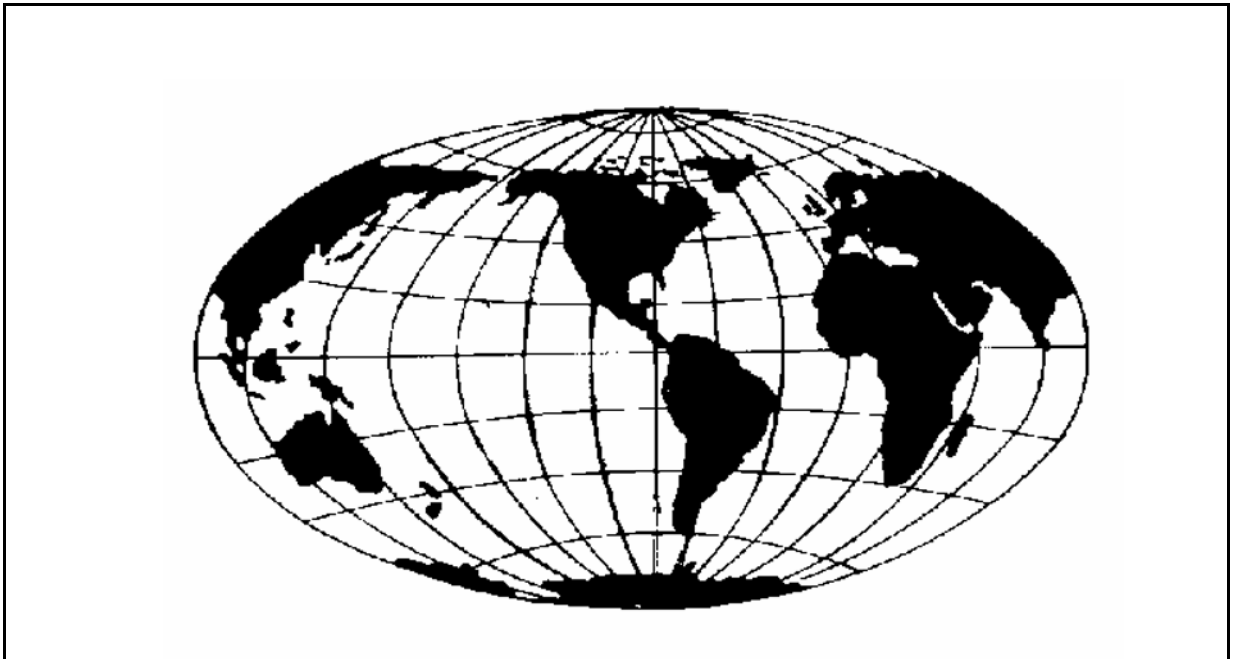


**FM 4-20.147 (FM 10-547)
AIR FORCE TO 13C7-37-31**

**AIRDROP OF SUPPLIES AND EQUIPMENT:
Humanitarian Airdrop**



NOVEMBER 2003

DISTRIBUTION RESTRICTION: Approved for public release; distribution is unlimited.

**HEADQUARTERS
DEPARTMENT OF THE ARMY
DEPARTMENT OF THE AIR FORCE**

This page intentionally left blank.

HEADQUARTERS
DEPARTMENT OF THE ARMY
DEPARTMENT OF THE AIR FORCE
Washington, DC, 4 January 2005

**AIRDROP OF SUPPLIES AND EQUIPMENT:
HUMANITARIAN AIRDROP**

This change adds the rigging procedures for low-velocity Low Cost Aerial Delivery System.

FM 4-20.147/TO 13C7-37-31, 28 November 2003, is changed as follows:

1. New or changed material is identified by a vertical bar () in the margin opposite the changed material.
2. File the transmittal sheet in front of the publication for reference purpose.
3. Remove old pages and insert new pages as indicated below:

Remove old pages

i through v
3-3 and 3-4

Insert new pages

i through v
3-3 and 3-4
3-11 through 3-17

DISTRIBUTION RESTRICTION: Approved for public release; distribution is unlimited.

**C1, FM 4-20.147
TO 13C7-37-31
4 JANUARY 2005**

By Order of the Secretary of the Army and the Air Force:

PETER SCHOOMAKER
General, United States Army
Chief of Staff

Official:



SANDRA R. RILEY
Administrative Assistant to the
Secretary of the Army
0433803

GREGORY S. MARTIN
General, USAF
Commander, AFMC

JOHN P. JUMPER
General, USAF
Chief of Staff

DISTRIBUTION:

Active Army, Army National Guard, and U.S. Army Reserve: To be distributed in accordance with the initial distribution number 110929, requirements for FM 4-20.147.

Field Manual
NO 4-20.147
Technical Order
NO 13C7-37-31

HEADQUARTERS
DEPARTMENTS OF THE ARMY
AND THE AIR FORCE
Washington, DC, 4 January 2005

Airdrop of Supplies and Equipment: Humanitarian Airdrop

Contents

	Page
Preface	v
Chapter 1	General Rigging Information Humanitarian Airdrop Loads
Section I	Description of Humanitarian Loads
	Humanitarian Airdrop Methods 1-1
Section II	Parachute Requirements and Packing Procedures
	Parachute Requirements 1-2
	Packing the Reefed G-12 and 68-inch Diameter Pilot Parachutes 1-3

Distribution Restrictions: Approved for public release; distribution is unlimited.

* This publication supersedes FM 10-547/TO 13C7-37-31, dated 29 September 1980

Chapter 2	Rigging Extended Tri-Wall Airdrop System (TRIADS)	
Section I	General Rigging Information for Extended TRIADS	
	TRIADS System Components	2-1
	TRIADS Skid Board	2-1
	TRIADS Container Limitations	2-2
	Assembly Line Rigging	2-2
	Inspection of Load	2-2
	Parachute Used	2-2
	AFT Restraint	2-2
Section II	Rigging Extended TRIADS Containers	
	System Description	2-3
	Preparing Items and Skid Board	2-3
	Preparing Honeycomb Base	2-3
	Preparing Straps and Static Line	2-4
	Preparing End Caps	2-4
	Installing Skid Board	2-5
	Assembling the Box	2-6
	AFT Restraint TRIADS and Honeycomb Kit	2-6
	Filling the TRIADS Container	2-6
	Installing Vertical Strap and Static Line	2-8
	Marking Rigged Load	2-9
Chapter 3	Rigging Low Cost High Velocity Container Delivery System (LCADS)	
Section I	General Information for LCADS	
	LCADS System Components	3-1
	LCADS Skid Board	3-1
	LCADS Container Limitations	3-2
	Inspection of Load	3-2
	Parachute used	3-2
Section II	Rigging High-Velocity LCADS	
	System Description	3-3
	Preparing Items and Skid Board	3-3
	Preparing and Placing Honeycomb	3-4
	Positioning Sling Assembly	3-5
	Positioning Load and Securing Sling Assembly	3-6
	Securing Sling Assembly to Skid Board	3-7
	Installing Parachute	3-8
	Marking Rigged Load	3-9
	Equipment Required	3-9

	Page
Section III	Rigging Low Velocity LCADS
	System Description 3-11
	Preparing Items and Skid Board 3-11
	Preparing and Placing Honeycomb 3-11
	Positioning Sling Assembly 3-12
	Positioning Load and Securing Sling Assembly 3-13
	Securing Sling Assembly to Skid Board 3-15
	Installing Parachute 3-15
	Marking Rigged Load 3-16
	Equipment Required 3-16
Chapter 4	Rigging Double A-22 Cargo Bag for High Velocity Airdrop
Section I	General Information for Double A-22 Cargo Bag
	Double A-22 Cargo Bag Components 4-1
	Double A-22 Cargo Bag Skid Board 4-1
	Double A-22 Cargo Bag Limitations 4-2
	Assembly Line Rigging 4-2
	Inspection of Load 4-2
	Parachute Used 4-2
Section II	Rigging Double A-22 Cargo Bag
	System Description 4-3
	Preparing Items and Skid Board 4-3
	Preparing Skid Board Ties and Placing Honeycomb 4-4
	Positioning A-22 Sling Assembly 4-5
	Positioning Covers and Honeycomb 4-7
	Positioning Load and Closing Bag Covers 4-8
	Securing Tie-Down Straps 4-9
	Securing Lateral Straps 4-10
	Securing Skid Board Ties 4-11
	Installing Suspension Slings 4-12
	Installing Parachute 4-13
	Marking Rigged Load 4-14
	Equipment Required 4-14
Section III	Alternate Rigging Method for Double A-22 Cargo Bag
	Building and Positioning A-22 Containers 4-16
	Joining A-22 Containers 4-17
	Attaching Suspension Webs 4-18
	Tying Off Unused Suspension Webs 4-19
	Installing Suspension Slings 4-19

	Page
Chapter 5	Rigging Quadruple A-22 Cargo Bag Loads for High Velocity Airdrop
Section I	General Information for Quadruple A-22 Cargo Bag
	Quadruple A-22 Cargo Bag Components 5-1
	Quadruple A-22 Cargo Bag Skid Board 5-1
	Quadruple A-22 Cargo Bag Limitations 5-2
	Assembly Line Rigging 5-2
	Inspection of Load 5-2
	Parachute Used 5-2
Section II	Rigging Oversized Items in Quadruple A-22 Cargo Bags
	System Description 5-3
	Preparing Items and Skid Board 5-3
	Preparing Skid Board Ties and Placing Honeycomb 5-5
	Positioning A-22 Sling Assemblies 5-7
	Positioning A-22 Covers 5-10
	Constructing Storage Box and Preparing Oversized Item Load 5-12
	Positioning Load and Closing Bag Covers 5-15
	Securing Tie-Down Straps 5-16
	Securing Lateral Straps 5-17
	Securing Skid Board Ties 5-18
	Installing Suspension Slings 5-19
	Installing Parachute 5-20
	Marking Rigged Load 5-21
	Equipment Required 5-21
Section III	Rigging Food and Medical Items in Quadruple A-22 Cargo Bags for High Velocity Airdrop
	Preparing and Positioning Food and Medical Loads 5-23
	Glossary Glossary-1
	References References-1

Preface

This manual tells and shows how to prepare and rig the following configurations of Humanitarian loads, Extended Tri-Wall Airdrop System (TRIADS), Low Cost High Velocity Container Delivery System (LCADS), Double A-22 Cargo Bag for High Velocity Airdrop and Quadruple A-22 Cargo Bag for High Velocity Airdrop from a C-17 and C-130 aircraft.

User Information

The proponent of this publication is HQ 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
1010 Shop Road
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

Air Force personnel in Special Operations Command, send your reports on AFTO Form 22 HQ AMC/A39T will consolidate and forward changes to:

Director
Aerial Delivery and Field Services Department
USA Quartermaster Center and School
1010 Shop Road
Fort Lee, Virginia 23801-1502

Also send an information copy of AFTO Form 22 to:

WR-ALC/LKCB
460 Richard Ray Blvd.
Robins AFB, Georgia 31098-1640

Chapter 1

General Rigging Information Humanitarian Airdrop Loads

SECTION I - DESCRIPTION OF HUMANITARIAN LOADS

HUMANITARIAN AIRDROP METHODS

1-1. Humanitarian airdrop utilizes the Container Delivery System (CDS), some variation of that system, or TRIADS, a special method of free drop. Many factors can influence the delivery method used.

a. EXTENDED TRI-WALL AERIAL DELIVERY SYSTEM (TRIADS). The TRIADS system is a corrugated tri-wall box rigged for static line deployment off the ramp of an aircraft using CDS procedures. Typical loads include loose Meals Ready-to-Eat (MREs) or Humanitarian Daily Rations (HDRs). Following deployment the caps of the box separate from the sleeve allowing the container's content to scatter and freefall to the ground. TRIADS has a 1,375 pound load capacity. Chapter Two of this manual covers rigging TRIADS for airdrop.

b. LOW-COST AERIAL DELIVERY SYSTEM (LCADS). LCADS is a modified, lightweight A-22 system with no scuff pad, cover, or friction adapters on the lateral bands. It is rigged like a high-velocity A-22 load, but uses one of several special parachutes. LCADS is used for high-volume delivery of nonfragile items where airdrop equipment is not recoverable. LCADS has a 2,200 pound load capacity. Chapter Three of this manual covers rigging LCADS for airdrop.

c. DOUBLE A-22 CONTAINER. The double A-22 container consists of two A-22 sling assemblies. The covers may or may not be used. Only six of the suspension webs are used. The double A-22 cargo bag has a 3,375 pound load capacity. Chapter Four of this manual covers rigging the double A-22 cargo bag.

d. QUADRUPLE A-22 CONTAINER. The quadruple A-22 container consists of four standard A-22 sling assemblies which can be laced together to form one large container, or can be individually rigged and then configured side-by-side for unitized delivery of four loads. The quadruple A-22 cargo bag has a 4,375 pound load capacity. Chapter Five of this manual covers rigging the quadruple A-22 container.