

GTA 09-14-003



U.S. ARMY

# RIGGER SMART BOOK



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## RESOURCES

- **ELECTRONIC TECHNICAL MANUALS:**
  - <https://liw.logsa.army.mil/etmapp/#/etm/home>
- **ARMY PUBS: (AR, DA PAMS, DA FORMS)**
  - <https://armypubs.army.mil/>
- **AERIAL DELIVERY & FIELD SERVICES DEPARTMENT (ADFS)**
  - <https://quartermaster.army.mil/adfsd>
- **SHARE POINT- ADMMO DASHBOARD**
  - [https://army.deps.mil/Army/CMDS/CASCOM\\_QM/ADFS/ADMMO/](https://army.deps.mil/Army/CMDS/CASCOM_QM/ADFS/ADMMO/)
- **INSTRUCTIONAL VIDEOS:**
  - <https://www.youtube.com/c/SkyShark92r>
- **SL JUMPMASER:**
  - <https://www.benning.army.mil/infantry/artb/1-507th/Jumpmaster/>
- **MFF JUMPMASER:**
  - <https://www.soc.mil/SWCS/MFFJMC.html>

## JOINT AIRDROP INSPECTION RECORDS, MALFUNCTION/ INCIDENT INVESTIGATIONS, AND ACTIVITY REPORTING

### AR 59-4

This regulation prescribes policy and identifies procedures and forms used in preparing Joint airdrop inspection records, airdrop malfunction investigations, and airdrop activity reports.

## AIRDROP, PARACHUTE RECOVERY, AND AIRCRAFT PERSONNEL ESCAPE SYSTEMS

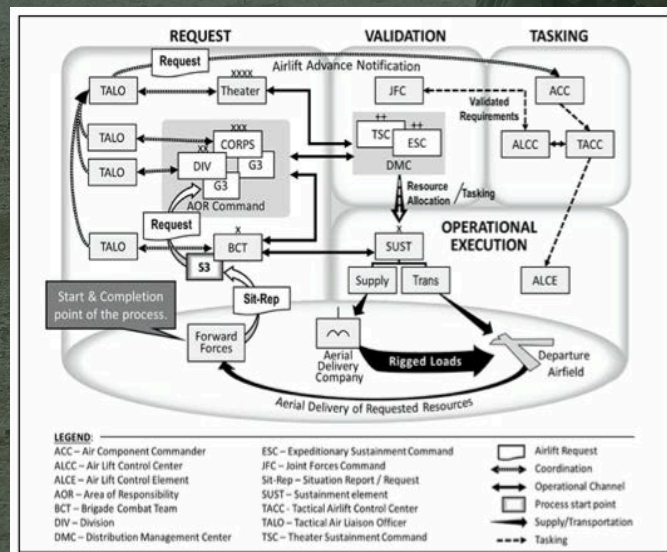
### AR 750-32

This regulation establishes and clarifies qualification requirements and designates responsibilities for personnel maintaining and packing parachutes.

## AERIAL DELIVERY

### ATP 4-48

ATP 4-48, Aerial Delivery, is the United States Army reference for aerial delivery operations. Its purpose is to provide guidance on all aspects of aerial delivery operations. ATP 4-48 expands the discussion of basic aerial delivery introduced in FM 4-40, Quartermaster Operations. This publication defines aerial delivery; discusses aerial delivery methods and options; describes the planning, preparation, execution process; and identifies roles and responsibilities in the conduct of aerial delivery. The intent is to provide the reader with an understanding of the abilities, limitations and techniques of aerial delivery.



## STATIC LINE PARACHUTING TECHNIQUES & TRAINING

### TC 3-21.220

Provides all Department of Defense Airborne personnel with techniques and training guidelines to maintain an Airborne Force. This Training Circular contains the basic and advanced training and techniques for static line parachuting. It is designed to standardize procedures for initial qualification and training of personnel in their duties and responsibilities in Airborne Operations.

### MINIMUM JUMP ALTITUDES

TACTICAL STATUS	AIRCRAFT TYPE	APPLICATION	FEET AGL	
			T-11	MC-6
Peacetime	Fixed wing	Basic Airborne training	1250	N/A
	Fixed wing <sup>1</sup>	Tactical training	800 <sup>1</sup>	800 <sup>1</sup>
	Rotary wing	Aircraft with a drop speed less than 90 knots	1500 <sup>3</sup>	1500
Combat (Wartime)	Rotary wing	Aircraft with a drop speed more than 90 knots	1250 <sup>3</sup>	1250
	Rotary wing	Aircraft with a drop speed more than 90 knots	600 <sup>3</sup>	600
	Fixed wing <sup>2</sup>	Aircraft with a drop speed more than 125 knots	550 C-130 525 C-17	475

#### LEGEND

<sup>1</sup> 800 feet AGL drop altitude may raise the risk level based on jumper's proficiency and command experience.

<sup>2</sup> Reserve parachute optional.

<sup>3</sup> T-11 may be used for rotary-wing operations if justified by a command deliberate risk assessment worksheet. Due to the drift characteristics of the parachute, the jumper may drift off of the surveyed drop zone.

AGL – above ground level; N/A – not applicable

## COMMON ARMY AIRBORNE STANDARD OPERATING PROCEDURE (CAASOP)

The Common Army Airborne Standard Operating Procedure (CAASOP) is the Army Airborne Board's (AAB) vehicle to provide the Army's Conventional Airborne Force (CAF) with common procedures for training, qualifying, preparing, planning and executing airborne operations. This document is intended to provide the CAF with a baseline for best practices, while allowing commanders latitude to accomplish their missions.

### # JUMPERS PER AIRCRAFT

Type of aircraft and TAP configuration	Maximum ACL per TC or USAF Addenda A	Number of T-11 CE Jumpers (Planning/Includes Safeties)
C-130: TAP 1	66	54
C-130: TAP 2 (in-flight rigging)	56	46
C-130: *A TAP 2 (in-flight rigging)	42	42
C-130J-30: TAP 1	92	76
C-130J-30: TAP 1 MOD	79	66
C-130J-30: TAP 2 (in-flight rigging)	82	72
C-17	102	102
C-27J	28	28 (paratroop door only)
UH-60	Eight + JM	Eight + JM
CH-47	24	24

## GENERAL MAINTENANCE OF PARACHUTES AND OTHER AIRDROP EQUIPMENT

### TM 10-1670-201-23

This technical manual provides guidance on general maintenance requirements to include facility operating procedures, shop layout details, inspection procedures, repair instructions, shipping requirements, and administrative storage.

- **TEMPERATURE IS BETWEEN 50°F AND 95°F WITH OCCASIONAL EXTREMES FROM 40°F TO 120°F.**
- **RELATIVE HUMIDITY IS BETWEEN 25 TO 80%**
- **THERE ARE NO RAPID CHANGES OF TEMPERATURE WHICH WOULD CAUSE MOISTURE CONDENSATION.**
- **EQUIPMENT IS STORED AT LEAST 6" OFF THE FLOOR, 1' AWAY FROM EXTERNAL WALLS AND 4' BELOW THE ROOF OR CEILING. WITH VENTILATION ALLEYS BETWEEN STACKS ON ALL SIDES.**
- **STOCK IS PROTECTED BY COVERS FROM EXPOSURE TO BRIGHT SUNLIGHT AND FROM FLUORESCENT LIGHTING WITHIN 6' DISTANCE.**

## SECURITY OF UNCLASSIFIED ARMY RESOURCES

### AR 190-51

Provides security standards for air items and airdrop systems, and personnel and cargo parachute systems including associated ancillary items

Personnel items and systems: Provide **double barrier protection** for the items and systems at the custodial rigger facility when not in use and while in training in non-tactical environments as follows:

- **Locked** in a secure storage structure per appendix B.
- **Lock items** and systems in a steel cage, approved container, room, bin, drawers, or cabinets as the required **second barrier** while in a secure storage structure. Extend steel caging, if used, to the ceiling or enclose with a top of like material per appendix B.
- **Signs** will be posted at the activity entrances stating **"Off Limits To Unauthorized Personnel."**
- **Illuminate** the exterior of secure storage structure buildings during the **hours of darkness.**

## GENERAL REFERENCES

- AR 190-51: SECURITY OF UNCLASSIFIED ARMY RESOURCES
- AR 59-4: JOINT AIRDROP INSPECTION RECORDS, MALFUNCTION/INCIDENT INVESTIGATIONS, AND ACTIVITY REPORTING
- AR 750-1: ARMY MATERIEL MAINTENANCE POLICY
- AR 750-32: AIRDROP, PARACHUTE RECOVERY, AND AIRCRAFT PERSONNEL ESCAPE SYSTEMS
- ATP 4-48: AERIAL DELIVERY
- ATP 3-18.11 SPECIAL FORCES MILITARY FREE-FALL OPERATIONS
- CAASOP ED. II
- CODE OF FEDERAL REGULATION (CFR) TITLE 14: AERONAUTICS AND SPACE
  - PART 105: PARACHUTE OPERATIONS
  - PART 65: CERTIFICATION: AIRMEN OTHER THAN FLIGHT CREWMEMBERS.
- DA PAM 190-51: RISK ANALYSIS FOR UNCLASSIFIED ARMY RESOURCES
- DA PAM 738-751: FUNCTIONAL USERS MANUAL FOR THE ARMY MAINTENANCE MANAGEMENT SYSTEM-AVIATION (DA FORM 2408-27, 22, 28)
- DA PAM 750-1: COMMANDERS' MAINTENANCE HANDBOOK
- DA PAM 750-3: SOLDIERS' GUIDE FOR FIELD MAINTENANCE OPERATIONS
- FM 3-0: OPERATIONS
- FM 4-0: SUSTAINMENT OPERATIONS
- TB 43-0002-43: MAINTENANCE EXPENDITURE LIMITS FOR FSC GROUP 16, (FSC CLASS 1670)
- TB 43-0001-80: TECHNICAL BULLETIN ARMY EQUIPMENT DATA SHEETS PERSONNEL PARACHUTE AUTHORIZED FOR USE LIST (AAUL)
- TB 43-180: CALIBRATION AND REPAIR REQUIREMENTS FOR THE MAINTENANCE OF ARMY MATERIEL
- TC 3-21.220: STATIC LINE PARACHUTING TECHNIQUES AND TRAINING
- TC 18-11: SPECIAL FORCES MILITARY FREE-FALL AND DOUBLE-BAG STATIC LINE OPERATIONS
- TM 1670-1670-201-23: GENERAL MAINTENANCE OF PARACHUTES AND OTHER AIRDROP EQUIPMENT
- USASOC REG. 350-2: Airborne operations
- USSOCOM Manual 350-3: special operations forces baseline interoperable Airborne operations (parachuting) training standards

## AERIAL DELIVERY

- TB 9-1300-385: MUNITIONS RESTRICTED OR SUSPENDED (M-21 CUTTERS)
- TM 43-0001-39: ARMY AMMUNITION DATA SHEETS CARTRIDGES, CARTRIDGE ACTUATED DEVICES (CADS) AND PROPELLANT ACTUATED DEVICES (PADS)
- TM 10-1670-268-206P: TYPE V PLATFORM AND DRAS PLATFORMS
- TM 10-1670-276-236P: 26' HIGH VELOCITY CP
- TM 10-1670-277-236P: 28' EXTRACTION
- TM 10-1670-278-236P: 15' EXTRACTION
- TM 10-1670-279-236P: 22' EXTRACTION
- TM 10-1670-280-236P: G-11
- TM 10-1670-281-236P: G-12
- TM 10-1670-282-236P: G-14
- TM 10-1670-286-236P: EXTRACTION LINE PANEL
- TM 10-1670-296-206P: AIRDROP ANCILLARY EQUIPMENT (EFTC, M-1 ETC.)
- TM 10-1670-298-236P: CDS (A-7A, A-21, A-22)
- TM 10-1670-330-136P: JPADS 10K
- TM 10-1670-331-236P: LOW COST PARACHUTE ASSEMBLIES (LCLA, T-10C)
- TM 10-1670-334-236P: JPADS 2K
- TM 10-1670-336-236P: G-16
- TM 10-1670-339-236P: G-15
- TM 10-1670-340-236P: 110" CARGO EXTRACTION
- TM 10-1670-343-236P: JPAD MAGU

## AIRDROP RIGGING

- TM 4-48.01: RIGGING POTABLE WATER AND WATER PURIFICATION UNITS.
- TM 4-48.02: AIRDROP PLATFORMS; AIRDROP DERIGGING AND RECOVERY PROCEDURES REFERENCE DATA FOR AIRDROP PLATFORM LOADS
- TM 4-48.03: RIGGING CDS
- TM 4-48.04: RIGGING FOR SPECIAL OPERATIONS
- TM 4-48.05: DRAS
- TM 4-48.06: 5 TON TRUCKS
- TM 4-48.07: RAPID RUNWAY REPAIR KIT AND MILITARY BRIDGES
- TM 4-48.08: MILITARY UTILITY VEHICLES
- TM 4-48.12: TYPICAL SUPPLY LOADS (ROSES)
- TM 4-48.13: TRAILERS
- TM 4-48.14: HUMANITARIAN AIRDROPS
- TM 4-48.15: AMMUNITION SYSTEMS
- TM 4-48.16: AMMUNITION
- TM 4-48.17: HMMWV
- TM 4-48.18: FARE & AAFARS (FUEL)
- TM 4-48.19: HOWITZERS
- TM 4-48.21: ENGINEER EQUIPMENT (TRACTORS)
- TM 4-48.22: ENGINEER EQUIPMENT (WHEELED)
- TM 4-48.23: FMTVS
- TM 4-48.25: FORKLIFT TRUCKS; WHOLE BLOOD; COMMUNICATION SHELTERS; TRACKED VEHICLES

## Cargo Parachutes

SUSPENDED WEIGHT (LBS) (W/O PARACHUTE)			MINIMUM DROP ALTITUDE (FEET AGL)
PARACHUTE	MINIMUM WEIGHT	MAXIMUM M	
<b>HIGH VELOCITY</b>			
1 x 68" PILOT	75	150	100
3 x 68" PILOT	151	500	100
12-FT HV	151	500	400
15-FT EXT	151	500	400
26-FT HV	501	2,200	500
22-FT EXT	501	2,200	500
<b>MEDIUM VELOCITY</b>			
<b>G-15</b>			
GRAVITY	501	2,200	400
EXTRACTION	1,000	2,000	400
<b>LOW VELOCITY</b>			
1 x 68" PILOT	30	50	100
3 x 68" PILOT	51	200	100
T-10 MOD CARGO	90	500	300
<b>G-16</b>			
1 - 4	2,500	22,000	750
5 - 8	22,001	42,000	975
<b>G-14</b>			
1	200	500	300
2	501	1,000	300
3	1,001	1,500	400
<b>G-12E</b>			
1	501	2,200	475
2	2,270	4,000	550
<b>G-11B</b>			
1	2,270	5,000	700
2	5,001	10,000	750
3	10,001	15,000	750
4	15,001	20,000	750
<b>G-11C</b>			
5	20,001	25,000	1,150
6	25,001	30,000	1,200
7	30,001	35,000	1,200
8	35,001	40,000	1,300
<b>LCLA</b>			
LCLV	501	2,200	850
Cross	80	200	150
Double Cross	201	400	150
<b>JPADS (RAM AIR CARGO)</b>			
2K MAGU	700	2,150	3,500 TRN, 5,000 OPER. 3,500 TRN Extrac. Only
10K	4,500	9,500	5,000 OPR. Extrac or Grav.

## Platforms

LENGTH (feet)	WIDTH (inches)	WEIGHT (pounds)	PLATFORM SURFACE (square feet)	MINIMUM RIGGED WEIGHT (pounds)	C-130 H/J MAXIMUM RIGGED WEIGHT (pounds)	C-17 MAXIMUM RIGGED WEIGHT (pounds)
8	108	820	72	2,520	15,000	10,000
12	108	1,220	108	3,780	21,000	18,500
16	108	1,590	144	5,040	28,000	28,000
20	108	1,950	180	6,300	39,000	39,000
24	108	2,280	216	7,560	42,000	42,000
28	108	2,820	252	8,820	42,000	42,000
32	108	3,056	288	10,080	42,000	42,000
<b>DUAL ROW AIRDROP SYSTEM PLATFORMS</b>						
18	88	1,590 w/o DOR	132	7,500	N/A	14,500
18	88	1,942 w/ DOR	132	7,500	N/A	14,500

## STATIC LINE

- TM 10-1670-299-206P: PERSONNEL ANCILLARY EQUIPMENT (MAWC, HSPR, ETC.)
- TM 10-1670-326-236P: T-11/ T-11R
- TM 10-1670-327-236P: MC-6/ T-11R
- TM 10-1670-332-236P: (AEBP)
- TM 5-4220-201-12: B-7 LIFE PRESERVE UNIT
- TM 1-4220-252: USAF FLOTATION EQUIPMENT (LPU-10/P)

	WEIGHT	MAX SUPPORTED WEIGHT	RATE OF DESCENT	REPACK CYCLE
MC-6	29 lbs	400 lbs	16 FPS	182 Days
T-11M	38 LBS	400 lbs	18.5 FPS	182 Days
T-11R	14.8 lbs	400 lbs	26 FPS	365 Days

## MILITARY FREE-FALL

- TM 10-1670-300-206P: ANCILLARY EQUIPMENT FOR MFF (ALTIMETERS ETC.)
- TM 10-1670-305-236P: TEST CHAMBERS
- TM 10-1670-329-136P: PARACHUTIST OXYGEN MASK (POM)
- TM 10-1670-335-236P: RA-1
- TM 10-1670-342-10: PARA.NAV.SYS
- TO 15X-1-1: Maintenance instruction - oxygen equipment

	GLIDE RATIO	MAX SUPPORTED WEIGHT	RATE OF DESCENT	REPACK CYCLE
RA-1M	4:1	450 lbs	9-13 FPS	180 Days
RA-1R	4:1	450 lbs	9-13 FPS	180 Days

## SLING LOAD

- TM 10-1670-295-136P: SLING SETS AND CARGO NETS
- TM 4-48.09: SLING LOAD BASIC OPERATIONS AND EQUIPMENT
- TM 4-48.10: SINGLE POINT SLING LOAD
- TM 4-48.11: DUAL POINT SLING LOAD

## LOAD CONFIGURATIONS

- Single-Point Loads:** Single-point loads are one load rigged and one aircraft cargo hook used during flight.
- Dual-Point Loads:** Dual-point loads are one load rigged and two aircraft cargo hooks used during flight.
- Tandem Loads:** Tandem loads are two loads rigged, one in front of the other, and two aircraft cargo hooks used during flight.
- Side-by-Side (Shotgun) Loads:** Side-by-side (shotgun) loads are two loads rigged, one beside the other, and one or two aircraft cargo hooks used during flight.