

***TC 3-21.220 (TC 3-21.220/MCWP 3-15.7/
AFMAN 11-420/NAVSEA SS400-AF-MMO-010)**

Static Line Parachuting Techniques and Training

OCTOBER 2018

DISTRIBUTION RESTRICTION. This publication is approved for public release. Distribution is unlimited.

This publication supersedes TC 3-21.220/MCWP 3-15.7/AFMAN 11-420/NAVSEA SS400-AF-MMO-010, Static Line Parachuting Techniques and Tactics, 18 September 2018.

Headquarters, Department of the Army

Foreword

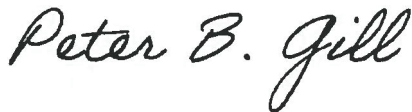
This publication has been prepared under the direction of the United States (U.S.) Army Infantry School (USAIS) for use by these commands and other commands as appropriate.



DAVID M. HODNE
Brigadier General, U.S. Army
Commandant
U.S. Army Infantry School



STEPHEN PRITCHARD
Colonel, USMC
Training and Education Command
AC/S G-3/5/7



PETER B. GILL
Principal Assistant Program Manager
PMS 340 (Naval Special Warfare)
Naval Sea Systems Command



HARRY C. DISBROW, JR.
Senior Executive Service, USAF
Associate Deputy Chief of Staff
Operations, Plans and Requirements

This publication is available at the Army Publishing Directorate site (<https://armypubs.army.mil>), and the Central Army Registry site (<https://atiam.train.army.mil/catalog/dashboard>).

Change 1
No. 3-21.220

Headquarters
Department of the Army
Washington, DC, 5 March 2020

Static Line Parachuting Techniques and Training

1. Change TC 3-21.220, 24 October 2018, as follows:

Remove old pages:

i through xi
1-1 through 1-2
2-19 through 2-24
3-11 through 3-12
3-23 through 3-24
5-1 through 5-2
5-7 through 5-8
7-1 through 7-5
8-13 through 8-14
8-19
9-9 through 9-10
9-15 through 9-20
9-23 through 9-38
10-13 through 10-14
10-41 through 10-42
12-15 through 12-16
12-27 through 12-28
12-39 through 12-48
15-1 through 15-2
16-23
18-9 through 18-10
19-3 through 19-4
22-7 through 22-8
25-7 through 25-10
E-3 through E-12
F-1 through F-3

Insert new pages:

i through xi
1-1 through 1-2
2-19 through 2-24
3-11 through 3-12
3-23 through 3-24
5-1 through 5-2
5-7 through 5-8
7-1 through 7-5
8-13 through 8-14
8-19
9-9 through 9-10
9-15 through 9-20
9-23 through 9-38
10-13 through 10-14
10-41 through 10-42
12-15 through 12-16
12-27 through 12-28
12-39 through 12-48
15-1 through 15-2
16-23 through 16-26
18-9 through 18-10
19-3 through 19-4
22-7 through 22-8
25-7 through 25-10
E-3 through E-12
F-1 through F-3

2. A bar (|) marks new or changed material.
3. File this transmittal sheet in front of the publication.

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

This page intentionally left blank.

By Order of the Secretary of the Army:

JAMES C. MCCONVILLE
General, United States Army
Chief of Staff

Official:


KATHLEEN S. MILLER
Administrative Assistant
to the Secretary of the Army
2005607

DISTRIBUTION:

Active Army, Army National Guard, and United States Army Reserve: To be distributed in accordance with the initial distribution number (IDN) 116055, requirements for TC 3-21.220.

This page intentionally left blank.

***TC 3-21.220 (TC 3-21.220/MCWP 3-15.7/
AFMAN 11-420/NAVSEA SS400-AF-MMO-010**

Training Circular
No. 3-21.220

Headquarters
Department of the Army
Washington, DC, 24 October 2018

Static Line Parachuting Techniques and Training

Contents

	Page
PREFACE.....	xiii
PART ONE BASIC TECHNIQUES	
Chapter 1 OVERVIEW	1-1
Standards and Phases	1-1
Physical Readiness Training	1-1
Jump Phase.....	1-2
Chapter 2 PERSONAL EQUIPMENT	2-1
T-11 and MC-6 Personnel Parachute Systems.....	2-1
Ground and Tower Phase	2-1
T-11 Reserve Parachute	2-11
Care of the Parachute Before and After Jumping	2-18
Donning Parachutes	2-20
Chapter 3 FIVE POINTS OF PERFORMANCE.....	3-1
T-11 Point 1. Proper Exit, Check Body Position, and Count	3-1
Point 2. Check Canopy and Gain Canopy Controls	3-1
Point 3. Sharp Lookout at all Times, Constantly Compare Rate of Descent	3-2
Point 4. Prepare to land.....	3-6
Point 5. Land	3-13
MC-6 Point 1. Proper Exit, Body Check Position, and Count.....	3-15
Point 2. Check Canopy and Gain Canopy Control.....	3-15
Point 3. Sharp Lookout at all Times, Constantly Compare Rate of Descent	3-16
Point 4. Prepare to land.....	3-20
MC-6 Parachute Key Points	3-21
Point 5. Land	3-27
Chapter 4 TRAINING APPARATUSES	4-1
Parachute Landing Fall Devices.....	4-1
Mock Door Training	4-7
Suspended Harness Training.....	4-12
Thirty-Four Foot Mock Tower	4-14
Methods of Recovery.....	4-17

DISTRIBUTION RESTRICTION: This publication is approved for public release. Distribution is unlimited.

*This publication supersedes TC 3-21.220/MCWP 3-15.7/AFMAN 11-420/NAVSEA SS400-AF-MMO-010, Static Line Parachuting Techniques and Tactics, 18 September 2018.

Contents

Chapter 5	C-130/C-17/C-27J EXITING PROCEDURES.....	5-1
	Alternate Door Exiting Procedures for Training	5-1
	C-130/C-17 Adept Option 1 Exiting Procedures	5-2
	C-27J Adept Option 1 Exiting Procedures	5-4
	C-130/ C-17 Adept Option 2 Exiting Procedures	5-6
	C-27J Adept Option 2 Exiting Procedures	5-7
	Mass Exit Procedures	5-10
Chapter 6	T-11R ACTIVATION AND PARACHUTE MALFUNCTIONS.....	6-1
	T-11R Activation (Pull Drop Method)	6-1
	Parachute Malfunctions and Incidents	6-1
	Total Malfunctions	6-2
	Partial Malfunctions.....	6-3
PART TWO ADVANCED TECHNIQUES		
Chapter 7	KEY PERSONNEL	7-1
	Commander's Responsibilities.....	7-1
	Key Personnel Prerequisites.....	7-2
	Rotary-Wing Aircraft/Nonstandard Aircraft Personnel	7-3
Chapter 8	JUMPMaster AND SAFETY DUTIES.....	8-1
	Essential Information.....	8-1
	Sustained Airborne Training	8-4
	T-11 ATPS Sustained Airborne Training Requirements	8-7
Chapter 9	JUMPMaster AND SAFETY DUTIES AT DEPARTURE AIRFIELD	9-1
	Departure Airfield	9-1
	Advanced Emergency Bailout Parachute	9-4
	Jumpmaster Personnel Inspection, T-11 and MC-6	9-9
	Technical Inspection and Hang of Combat Equipment.....	9-27
Chapter 10	JUMPMaster AND SAFETY DUTIES IN FLIGHT	10-1
	Primary and Assistant Jumpmaster and Safety Duties.....	10-1
	C-130, Practical Work Inside the Aircraft	10-2
	C-17A Globemaster III (PWAC)	10-19
	C-27J Spartan (PWAC).....	10-28
	Army Emergency Bailout Parachute	10-35
	BA-18 Back Automatic Parachute.....	10-41
Chapter 11	DEPARTURE AIRFIELD CONTROL OFFICER	11-1
	DACO Initial Coordination	11-1
	DZSO and DZSTL Coordination	11-2
Chapter 12	INDIVIDUAL COMBAT EQUIPMENT JUMP LOADS	12-1
	Jumpers' Load.....	12-1
	Protective Gear	12-2
	Jumpable Packs.....	12-20
	Individual Weapon's and Weapon Cases	12-35
	Weapons and Equipment Container System.....	12-42
	Life Preservers	12-44
Chapter 13	ARTIC RIGGING.....	13-1
	Arctic Space Considerations	13-1
	Mountain Safety Research Snowshoes	13-2
	Skis and MOLLE/ALICE Pack with AIRPAC Side-Mount Container	13-5
	AIRPAC Side-Mount Container Technical Inspection Procedures	13-12
Chapter 14	A-SERIES CONTAINERS	14-1

Rigging Procedures	14-1
A-7A Airdrop Cargo Sling Assembly	14-2
A-21 Cargo Bag Assembly	14-8

PART THREE AIRCRAFT

Chapter 15	AIRCRAFT TYPES AND JUMP ALTITUDES	15-1
	Aircraft Types	15-1
	Jump Altitudes	15-1
	High Elevation Jumping.....	15-3
Chapter 16	HIGH PERFORMANCE AIRCRAFT	16-1
	C-130E/H/J Configurations.....	16-2
	C-130J-30 Configurations.....	16-3
	MC-130J/H/P	16-13
	C-17A Globemaster III.....	16-14
	C-27J Spartan	16-19
	C-27J Static Line Over-the-Ramp Operations.....	16-23
Chapter 17	ROTARY-WING AIRCRAFT	17-1
	Requirements and Safety Considerations.....	17-1
	UH-60-Series Blackhawk.....	17-2
	CH-47 Chinook	17-12
	UH-1 Iroquois	17-17
	UH-72A Lakota Light Utility Helicopter	17-22
Chapter 18	SISTER SERVICE AIRCRAFT	18-1
	CH 53 Sea Stallion	18-1
	CH/HH-3 Jolly Green Giant	18-5
	V-22 Osprey Aircraft.....	18-7
	UH-1N/Y Iroquois	18-14
Chapter 19	NONSTANDARD AIRCRAFT	19-1
	Procedure Modifications In Nonstandard Aircraft.....	19-1
	C-7A CARIBOU	19-2
	C-23B/B+ Sherpa	19-5
	C-212 (CASA 212).....	19-10
Chapter 20	AIRDROP PROCEDURES.....	20-1
	Drop Altitudes and Airdrop Procedures.....	20-1
	Types and Methods of Airdrops	20-4
	Drop Zones	20-5
	Airdrop Release Methods and Personnel.....	20-9
Chapter 21	FORMULAS AND COMPUTATIONS	21-1
	Ground Marking and Verbally Initiated Release Systems.....	21-1
	Wind Drift.....	21-2
	Wind Velocity	21-4
	Forward Throw	21-6
	Drop Headings, Point Of Impact, Wind Drift Compensation, and Forward Throw Compensation	21-7
Chapter 22	DROP ZONE ESTABLISHMENT AND OPERATION	22-1
	Computed Air Release Point	22-1
	Markings	22-2
	Ground Marking Release System	22-3
	Guidance Procedures.....	22-6
	Postmission Requirements.....	22-10
	Surveys.....	22-12

Contents

Chapter 23	MALFUNCTION OFFICER	23-1
	Multiservice MO Qualifications and Duties	23-1
	Investigating Malfunctions.....	23-3
	Reporting Malfunctions and Incidents.....	23-6
	Investigations by the Malfunction Officer	23-6
	General Reporting Requirements	23-7
Chapter 24	ADVERSE WEATHER AERIAL DELIVERY SYSTEM AND INSTRUMENT	
METEROROLOGICAL CONDITIONS		24-1
	Multiple Mission Support	24-1
	T-11 Series Points of Performance.....	24-2
	MC-6 Series Points of Performance	24-2
Chapter 25	DELIBERATE WATER DROP ZONE OPERATIONS	25-1
	Jump (Safe) Conditions	25-1
	Personnel and Equipment.....	25-2
	Jumper Requirements.....	25-3
	Organization and Equipment of Drop Zone Detail	25-4
	Jump Recovery Procedures.....	25-5
	Water Drop Zone Prejump Training	25-6
	Procedures for Water Landings With a Life Preserver	25-7
Appendix A	BASIC AIRBORNE REFRESHER TRAINING	A-1
Appendix B	JUMPMaster TRAINING COURSE	B-1
Appendix C	JUMPMaster REFRESHER COURSE	C-1
Appendix D	DROP ZONE RISK ASSESSMENT ANALYSIS	D-1
Appendix E	SUSTAINED AIRBORNE TRAINING	E-1
Appendix F	COLLISIONS, ENTANGLEMENT, AND CENTER PANEL STRIKE	F-1
	GLOSSARY	Glossary-1
	REFERENCES	References-1
	INDEX	Index-1

Figures

Figure 2-1. T-11 harness assembly	2-3
Figure 2-2. T-11 riser assembly.....	2-4
Figure 2-3. MC-6 riser assembly	2-5
Figure 2-4. T-11/MC-6 universal static line modified and universal static line snap hook.....	2-6
Figure 2-5. MC-6 main canopy pack tray and nomenclature.....	2-7
Figure 2-6. T-11 main canopy diagram.....	2-9
Figure 2-7. MC-6 main canopy diagram	2-11
Figure 2-8. Extractor parachute	2-12
Figure 2-9. T-11 ejector spring and related components.....	2-12
Figure 2-10. T-11 reserve canopy	2-13
Figure 2-11. Reserve riser assembly.....	2-15
Figure 2-12. T-11 reserve pack tray	2-16
Figure 2-13. T-11R rip cord handle assembly	2-17

Figure 2-14. T-11R inserts	2-18
Figure 2-15. Executing figure-eight folds with arms	2-19
Figure 3-1. Landing attitude	3-6
Figure 3-2. Tree landing attitude	3-8
Figure 3-3. Landing without a life preserver	3-10
Figure 3-4. Landing with a life preserver	3-11
Figure 3-5. Wire landing attitude	3-12
Figure 3-6. Landing attitude	3-21
Figure 3-7. Water landing without a life preserver	3-24
Figure 3-8. Water landing with a life preserver	3-25
Figure 3-9. Wire landing attitude	3-26
Figure 4-1. Parachute landing fall sequence.....	4-2
Figure 4-2. Lateral drift apparatus	4-4
Figure 4-3. Mock door apparatus	4-7
Figure 4-4. Controlled movement technique	4-9
Figure 4-5. Static line bight.....	4-10
Figure 4-6. Suspended harness apparatus.....	4-12
Figure 4-7. Thirty-four foot mock tower	4-14
Figure 4-8. Thirty-four foot mock tower personnel positions.....	4-16
Figure 4-9. Hand-towed drag pad	4-18
Figure 4-10. Canopy release assembly	4-19
Figure 8-1. Wire landing attitude	8-12
Figure 8-2. Wire landing attitude	8-18
Figure 9-1. AEBP parts identification	9-5
Figure 9-2. Inspect the tuck flaps	9-5
Figure 9-3. Inspect the rip cord pin.....	9-6
Figure 9-4. Inspect the right links	9-6
Figure 9-5. Inspect front rip cord housing tacking	9-7
Figure 9-6. Inspect left links	9-8
Figure 9-7. Quarter-inch yellow pressure-sensitive tape	9-19
Figure 9-8. T-11R insert is flush with the binding tape.....	9-20
Figure 9-9. T-11R bottom insert is flush with the binding tape.....	9-20
Figure 10-1. GET READY	10-4
Figure 10-2. OUTBOARD PERSONNEL, STAND UP	10-5
Figure 10-3. INBOARD PERSONNEL, STAND UP	10-6
Figure 10-4. HOOK UP	10-7
Figure 10-5. CHECK STATIC LINES	10-8
Figure 10-6. CHECK EQUIPMENT	10-9
Figure 10-7. SOUND OFF FOR EQUIPMENT CHECK	10-9
Figure 10-8. Jumpmaster safety check, right door position	10-11
Figure 10-9. Jumpmaster safety check, left door position	10-12

Contents

Figure 10-10. STAND BY.....	10-15
Figure 10-11. AEPB components	10-36
Figure 10-12. Cover flaps	10-36
Figure 10-13. Rip cord pin	10-37
Figure 10-14. Right link.....	10-37
Figure 10-15. Rip cord housing tacking	10-38
Figure 10-16. Left link	10-39
Figure 12-1. Advanced combat helmet.....	12-2
Figure 12-2. ACH pads	12-3
Figure 12-3. ACH rear trapezoidal pad.....	12-3
Figure 12-4. ACH adjustable straps.....	12-4
Figure 12-5. ACH held in place for initial adjustments.....	12-5
Figure 12-6. Back strap adjustment.....	12-5
Figure 12-7. Adjust two front straps.....	12-6
Figure 12-8. Front and back adjustable straps	12-6
Figure 12-9. Position nape pad.....	12-7
Figure 12-10. Replacement hardware and taping the mounting bracket	12-8
Figure 12-11. Universal shroud	12-9
Figure 12-12. High cut ballistic helmet.....	12-9
Figure 12-13. Impact pads and liner	12-10
Figure 12-14 Universal parachutist recovery bag.....	12-11
Figure 12-15. Universal parachutist recovery bag handles	12-12
Figure 12-16. UPRB folds.....	12-12
Figure 12-17. Proper wear of the UPRB.....	12-13
Figure 12-18. Folded aviator kit bag	12-13
Figure 12-19. Properly routed and secured leg strap	12-14
Figure 12-20. Placement of the M50 inside the MAWC	12-14
Figure 12-21. IOTV worn under T-11 parachute harness.....	12-15
Figure 12-22. Waistband extension	12-16
Figure 12-23. Harness, single-point release.....	12-17
Figure 12-24. Hook-pile tape lowering line instructions.....	12-19
Figure 12-25. Hook-pile tape lowering line	12-19
Figure 12-26. Modified hook-pile tape lowering line	12-20
Figure 12-27. Routing equipment retainer straps	12-21
Figure 12-28. Friction adapter routing using GEN III MOLLE.....	12-21
Figure 12-29. Attachment of HPTLL to the GEN III MOLLE.....	12-21
Figure 12-30. Position of outer accessory pouch on the GEN III MOLLE	12-22
Figure 12-31. HSPR under envelope cushion portion	12-23
Figure 12-32. Routed over shoulder carrying straps	12-24
Figure 12-33. Placement of retainer band	12-24
Figure 12-34. ALICE pack with HSPR.....	12-25

Figure 12-35. Sternum strap secured on MAP	12-27
Figure 12-36. Routing of compression straps over release handle cross strap	12-27
Figure 12-37. Securing HSPR with quarter-inch cotton webbing to MAP	12-27
Figure 12-38. Routing of equipment retainer straps using M-MOLLE	12-28
Figure 12-39. Routing of friction adapters using M-MOLLE	12-28
Figure 12-40. Sternum strap secured on M7	12-29
Figure 12-41. Routing of compression straps over release handle cross strap	12-29
Figure 12-42. Securing HSPR with quarter-inch cotton webbing to M7	12-30
Figure 12-43. Surgeon's pack	12-30
Figure 12-44. Mystery Ranch RATS CAB medical aid bag	12-31
Figure 12-45. Securing the waistband/external sustainment pouch	12-31
Figure 12-46. Assembled integrated-harness, single point release using the adjustable D-ring attaching straps	12-31
Figure 12-47. Assembled integrated-harness, single point release	12-32
Figure 12-48. Utilize quarter-inch cotton webbing as the point of attachment	12-32
Figure 12-49. J51 Warhammer backpack	12-33
Figure 12-50. Shoulder carrying strap routing on hydration pack	12-33
Figure 12-51. Attachment of D-ring attaching straps to hydration pack	12-34
Figure 12-52. Attachment of HPTLL to hydration pack	12-34
Figure 12-53. Padding, taping the M16 rifle or M4 carbine configured for jumping exposed	12-35
Figure 12-54. M16 rifle or M4 carbine rigged to be jumped exposed	12-36
Figure 12-55. Routing the upper tie-down tape	12-39
Figure 12-56. Attachment of HPTLL to the MAWC	12-40
Figure 12-60. Place M122 tripod under closing flap of MOLLE pack	12-40
Figure 12-61. Place M192 LWGM in main compartment of MOLLE	12-41
Figure 12-62. M170A1 components and M170A1 and M4 inside the large MAWC	12-42
Figure 12-63. TFSS 5326 fastened to a Soldier's waist belt	12-45
Figure 12-64. Left and right TFSS 5326 pouches	12-46
Figure 12-65. Inflated chamber to support the person under the arms	12-47
Figure 13-1. Types of authorized gloves	13-2
Figure 13-2. Rigged snowshoes	13-3
Figure 13-3. Snowshoes under the closing flap or placed on the inside of the MOLLE I	13-3
Figure 13-4. Snowshoes under the closing flap or placed on the inside of the ALICE	13-4
Figure 13-5. MOLLE I rigged with snowshoes	13-5
Figure 13-6. Placement of friction adaptors	13-6
Figure 13-7. Ski placement when jumping	13-7
Figure 13-8. Placement of internal securing strap	13-8
Figure 13-9. Folding excess weapons container material	13-9
Figure 13-10. Placement of weapon in container	13-10
Figure 13-11. Container with a quick-release knot	13-11
Figure 13-12. Jumper with side-mount container and tandem load	13-12

Contents

Figure 14-1. A-7A straps.....	14-3
Figure 14-2. Two-strap load positioned and secured	14-4
Figure 14-3. Three-strap load positioned and secured.....	14-5
Figure 14-4. Four-strap load positioned and secured.....	14-6
Figure 14-5. Typical four-strap load rigged for low velocity paratroop door airdrop	14-7
Figure 14-6. Container and load positioned.....	14-8
Figure 14-7. Container rigged.....	14-9
Figure 14-8. Container rigged (continued).....	14-10
Figure 14-9. Container load rigged for low-velocity paratroop door airdrop	14-11
Figure 16-1. C-130E/H/J TAP-1/A*TAP-1.....	16-2
Figure 16-2. C-130J-30 configurations	16-3
Figure 16-3. C-130E/H/J TAP-2/A*TAP-2 configuration.....	16-4
Figure 16-4. C-130 J-130 TAP-2/A*TAP-2 configuration.....	16-5
Figure 16-5. C-130E/H/J TAP-3/A*TAP-3 configuration.....	16-7
Figure 16-6. C-130 /J-30 TAP-3/A*TAP-3 configuration.....	16-8
Figure 16-7. Personnel locations	16-9
Figure 16-8. Static line grasped with reverse bight	16-10
Figure 16-9. Crash worthiness seat with Type III nylon cord.....	16-11
Figure 16-10. C-17A ADP-1 seating configuration, sidewall seats only	16-15
Figure 16-11. C-17A ADP-2 seating configuration, sidewall and center seats.....	16-15
Figure 16-12. C-17A ADP-3 seating configuration, sidewall and center seats.....	16-16
Figure 16-13. C-27J sidewall seats (only) configuration.....	16-20
Figure 16-14. C-27J sidewall and center seats configuration.....	16-20
Figure 16-15. C-27J in-flight rigging seating configuration	16-21
Figure 17-1. UH-60 series Blackhawk	17-3
Figure 17-2. UH-60 RF antenna padded and taped	17-3
Figure 17-3. UH-60 series door edge padded and taped.....	17-4
Figure 17-4. UH-60 series anchor line.....	17-5
Figure 17-5. UH-60 series anchor line secured to the floor.....	17-5
Figure 17-6. UH-60 series jumpmaster's intercom stowed overhead.....	17-7
Figure 17-7. UH-60 series loading.....	17-8
Figure 17-8. UH-60 series hook up of USL snap hook and excess USLM routed	17-9
Figure 17-9. UH-60 series seating and static line routing.....	17-9
Figure 17-10. Sound off for equipment check.....	17-10
Figure 17-11. Modified C-3A troop safety belts	17-12
Figure 17-12. CH-47 Chinook.....	17-13
Figure 17-13. CH-47 anchor line cable attachment.....	17-13
Figure 17-14. CH-47 seating configuration.....	17-14
Figure 17-15. CH-47 USLM routing	17-14
Figure 17-16. CH-47 exiting and position of static JM or safety	17-16
Figure 17-17. UH-1 series Iroquois.....	17-17

Figure 17-18. UH-1 exposed fixtures padded	17-18
Figure 17-19. UH-1 series floor mounted anchor line systems.....	17-18
Figure 17-20. UH-1 seating configuration, overhead expedient ALS.....	17-20
Figure 17-21. UH-1 seating configuration, ALS	17-20
Figure 17-22. UH-72A Lakota	17-22
Figure 17-23. Right side of UH-72A Lakota shown with tape	17-23
Figure 17-24. Left UH-72A Lakota exterior shown with tape	17-24
Figure 17-25. Left UH-72A Lakota exterior shown with tape and skid pad cover.....	17-24
Figure 17-26. Location of aft static line anchor device.....	17-25
Figure 17-27. Location of forward static line anchor device.....	17-25
Figure 17-28. O-rings of each anchor device facing each other	17-26
Figure 17-29. Installation of safety roll pins on each anchor device	17-26
Figure 17-30. Aft and forward anchor devices with tape after installation of safety roll pin	17-27
Figure 17-31. Anchor line system shown with running end of strap oriented toward front of aircraft and D-rings toward skin of aircraft.....	17-27
Figure 17-32. Safety wire installed through snap hook of anchor line system.....	17-28
Figure 17-33. End of safety wire around snap hook of anchor line system	17-28
Figure 17-34. Safety wire and snap hook taped	17-29
Figure 17-35. Excess webbing taped in place	17-29
Figure 17-36. Static line personnel safety straps	17-30
Figure 17-37. Seating configuration for static line personnel without combat equipment and crew chief17-30	
Figure 17-38. Seating configuration for static line personnel without combat equipment and crew chief17-31	
Figure 17-39. Seating configuration for static line personnel with combat equipment and crew chief17-31	
Figure 17-40. USL snap hook faced toward aircraft skin	17-32
Figure 17-41. Slack retainer stowed properly	17-32
Figure 17-42. Safety strap shown across jumper No. 1	17-33
Figure 18-1. CH-53 Sea Stallion	18-1
Figure 18-2. CH-53 anchor line installation.....	18-2
Figure 18-3. CH-53 seating configuration	18-3
Figure 18-4. CH/HH Jolly Green Giant.....	18-5
Figure 18-5. CH/HH anchor line cable	18-6
Figure 18-6. V-22 Osprey.....	18-7
Figure 18-7. V-22 Osprey helicopter mode.....	18-8
Figure 18-8. V-22 Osprey conversion mode	18-8
Figure 18-9. V-22 Osprey aircraft mode.....	18-9
Figure 18-10. Troop seat with seating back webbing.....	18-10
Figure 18-11. Seating configuration (noncombat-equipped jumpers).....	18-11
Figure 18-12. UH-1N/Y.....	18-14
Figure 18-13. UH-1 exposed fixtures padded	18-15

Contents

Figure 18-14. UH-1 series anchor line systems.....	18-16
Figure 18-15. UH-1 modified anchor line	18-16
Figure 18-16. UH-1 series modified anchor line	18-17
Figure 18-17. UH-1 seating configuration expedient anchor line system	18-18
Figure 18-18. UH-1 seating configuration, overhead anchor line system	18-19
Figure 19-1. C-7A Caribou	19-2
Figure 19-2. C-7A configuration for jumping from the ramp	19-3
Figure 19-3. C-7A configuration for jumping from the doors	19-4
Figure 19-4. C-23B/B+ Sherpa	19-5
Figure 19-5. Seating configuration.....	19-6
Figure 19-6. C-212 (Casa 212)	19-10
Figure 19-7. C-212 seating configuration	19-11
Figure 21-1. Determination of the release point by WSVC.....	21-3
Figure 21-2. Release point location for VIRS and GMRS	21-8
Figure 22-1. Day CARP DZ markings (left) and night CARP DZ markings (right)	22-2
Figure 22-2. Marking placement for inverted L and 15:1 mask clearance ratio	22-4
Figure 22-3. GMRS panel emplacement for T pattern	22-5
Figure 22-4. GMRS panel emplacement for H pattern	22-5
Figure 22-5. Army VIRS offset.....	22-6
Figure 22-6. Release point location for JSJR	22-9
Figure 22-7. AF IMT Form 4304, Drop Zone/Landing Zone Control Log	22-11
Figure 22-8. Sample of a suggested format for incident reporting	22-12
Figure 22-9. Sample of a completed AF-IMT Form 3823 (front)	22-14
Figure 22-10. Sample of a completed AF-IMT Form 3823 (back).....	22-15
Figure 25-1. Landing with the B-7 life preserver.....	25-8

Tables

Table 1-1. APFT standards for the 17- to 21-year-old level	1-2
Table 1-2. Typical jump week schedule.....	1-3
Table 4-1. Common parachute landing fall errors	4-3
Table 12-1. Weapon orientation and packing material required for side mount container.....	12-43
Table 14-1. Example for how to determine minimum allowable weight	14-2
Table 14-2. Equipment required for rigging four-strap A-7A load for low velocity paratroop door airdrop	14-7
Table 14-3. Equipment required for rigging the A-21 container load for low velocity paratroop door airdrop	14-11
Table 15-1. Minimum jump altitudes for all aircraft.....	15-2
Table 15-2. Time available to activate reserve parachute.....	15-3
Table 16-1. C-130 E/H/J	16-1
Table 16-2. C-130-J-30 (stretch)	16-1

Table 16-3. MC-130H configurations	16-13
Table 16-4. MC-130J configurations	16-13
Table 16-5. MC-130P configurations	16-14
Table 16-6. C-17A airdrop passenger configuration	16-14
Table 16-7. C-27J configuration	16-19
Table 20-1. Example calculation of drop altitude in feet	20-1
Table 20-2. Airdrop altitude for rotary-wing and fixed-wing aircraft	20-2
Table 20-3. Minimum aerial delivery altitudes (in feet)	20-2
Table 20-4. Computed air release point chart.....	20-5
Table 21-1. Conversion chart for 10 gram helium (pilot) balloons	21-5
Table 21-2. Conversion chart for 30 gram helium (pilot) balloons	21-6
Table 21-3. Fixed-wing forward throw data.....	21-7
Table A-1. Minimum requirements for basic Airborne refresher training	A-2
Table B-1. Course training events.....	B-1
Table C-1. Training events	C-1
Table D-1. Drop zone risk assessment decision matrix.....	D-7
Table D-2. Leader's checklist for possible water landings	D-7
Table D-3 Leader's checklist for possible wire landings	D-8
Table D-4. Leader's checklist for possible tree landings.....	D-9

This page intentionally left blank.

Preface

Training Circular (TC) 3-21.220 provides all Department of Defense (DOD) Airborne personnel with techniques and training guidelines to maintain an Airborne force. This training circular contains 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.

The principal audience for TC 3-21.220 is the jumpmaster, assistant jumpmaster, safety, departure airfield control officer, drop zone support team leader, drop zone safety officer, and all members of the Airborne community. This manual contains the initial training and qualifications of the personnel designated to occupy these critical positions. Commanders and staffs of Army headquarters serving as joint task force or multinational headquarters should also refer to applicable joint or multinational doctrine concerning the range of military operations and joint or multinational forces. Trainers and educators throughout the Army will also use this publication.

Commanders, staffs, and subordinates ensure that their decisions and actions comply with applicable United States, international, and in some cases host-nation laws and regulations. Commanders at all levels ensure that their Soldiers operate in accordance with the law of war and the rules of engagement. (Refer to FM 27-10 for more information.)

TC 3-21.220 uses joint terms where applicable. Selected joint and Army terms and definitions appear in both the glossary and the text. Terms for which TC 3-21.220 is the proponent publication (the authority) are italicized in the text and are marked with an asterisk (*) in the glossary. Terms and definitions for which TC 3-21.220 is the proponent publication are boldfaced in the text. For other definitions shown in the text, the term is italicized and the number of the proponent publication follows the definition.

This publication applies to the Active Army, Army National Guard/Army National Guard of the United States, U.S. Army Reserve, Department of the Navy, Department of the Air Force, and the United States Marine Corps.

The proponent for this publication is the U.S. Army Training and Doctrine Command. The preparing agency is the U.S. Army Maneuver Center of Excellence. The U.S. Army Infantry School is the proponent for technical and training information and procedures. Individual service components that deviate from this manual will use approved procedures, techniques, equipment, and equipment-attaching methods specified by their respective service. All deviations must be approved in writing according to service regulations. Submit comments and recommendations for improvement of this training circular by e-mail, fax, or telephone following the format on DA Form 2028, *Recommended Changes to Publications and Blank Forms*. Contact information is:

E-mail: usarmy.benning.tradoc.mbx.1-507th@mail.mil
Phone: (706) 545-3458, (DSN 835-3458)
Fax: (706) 545-6489, (DSN 835-6489)

U.S. Mail: Commander, U.S. Army Airborne School
ATTN: ATSH-TPP-A/Bldg. 2747
Fort Benning, GA 31905-5593

This page intentionally left blank.

PART ONE

Basic Techniques

This part provides all the information the instructor needs to prepare students to participate safely in static line Airborne operations.

Chapter 1

Overview

The purpose of Airborne training is to qualify personnel in the use of the parachute as a means of combat deployment. This training also develops leadership, self-confidence, and an aggressive spirit through tough mental and physical conditioning. This chapter discusses the purpose, standards, and phases of static line parachute training. It also provides the instructor with a list of prejump orientation topics.

STANDARDS AND PHASES

1-1. Airborne training initiates and sustains a high standard of proficiency through repetition and time-proven techniques. Valid results are obtained when the following training standards are employed:

- Strict discipline.
- High standards of proficiency on each training apparatus and during each phase of training.
- Vigorous physical conditioning programs to ensure paratroopers are capable of jumping with a minimum risk of injury.
- A strong sense of esprit de corps and camaraderie among paratroopers.
- Emphasis on developing mental alertness, instantaneous execution of commands, self-confidence, and confidence in the equipment.

1-2. The three-week Airborne course is divided into two training phases. Weeks one and two form the ground and tower training phase. Week three is the jump training phase.

PHYSICAL READINESS TRAINING

1-3. Volunteers must achieve Army Physical Fitness Test (APFT) standards for the 17- to 21-year-old level prior to reporting for Airborne training and must weigh 110 pounds in duty uniform. Volunteers must have the ability to reach (vertically) 80 inches with combat equipment rigged and both feet remaining in contact with aircraft deck. (See table 1-1 on page 1-2.) Students who cannot progress in daily physical readiness training are referred to a board that decides to recycle them or return them to their unit.

1-4. Daily exercises condition the muscle groups that play a significant part in jumping. Volunteers must execute a flexed arm hang for twenty seconds. The APFT and flexed arm hang are two separate events executed consecutively, with the APFT being administered first and then the flexed arm hang on day one of Airborne School.

1-5. Students who pass the APFT and fail the flexed arm hang are evaluated using the Slip Pull Simulator. Failure to successfully meet the standard of the APFT and or the flexed arm hang will result in the student being dropped from the Basic Airborne Course.

1-6. The Slip Pull Simulator is a mechanical device used to determine if an incoming Airborne School student has sufficient upper body strength to pull a riser slip on a simulated T-11 parachute system. The apparatus matches the actual effort (within a very close tolerance) required of a paratrooper pulling a slip while under a T-11 canopy with combat equipment, during the last 200 feet above ground level (AGL).

Table 1-1. APFT standards for the 17- to 21-year-old level

<i>EVENT</i>	<i>REPETITIONS</i>		<i>TIME LIMIT</i>
	<i>MALE</i>	<i>FEMALE</i>	
Push-ups	42	19	2 minutes
Sit-ups	53	53	2 minutes
Two-mile run	Male Female		15:54 minutes 18:54 minutes
*Flexed Arm Hang	Male Female		20 seconds
*Soldier who fails the Flexed Arm Hang on the Slip Pull Simulator	Male Female		20 seconds

JUMP PHASE

1-7. Students who meet training proficiency in the basic jump techniques and the physical fitness requirements during ground and tower week training, advance to the jump training phase. During jump training phase, the student makes five qualifying jumps from aircraft at an altitude of 1250 feet AGL. (See table 1-2.)

- 1-8. Students are thoroughly briefed before performing their qualification jumps. The topics include—
- A review of the five points of performance, collisions and entanglements, center panel strike emergency procedures, towed jumper procedures, malfunctions, activation of the reserve, and emergency landings.
 - A summary on the maintenance of the T-11 Advanced Tactical Parachute System (ATPS) or the MC-6 series Personnel Parachute System, including shakeout and storage after landing. (Refer to TM 10-1670-327-23&P for more information.)
 - How to don the parachute “by the numbers” on the first jump. Additional instructors are available for close supervision and jumpmaster personnel inspection (JMPI).
 - Aircraft orientation, including enplaning and jump procedures.
 - Drop zone and approximate point of impact (PI) information.
 - The rigging, donning, and proper lowering procedures of individual combat equipment.

Table 1-2. Typical jump week schedule

<i>JUMP NUMBER</i>	<i>EQUIPMENT</i>	<i>TYPE EXIT</i>
1	Helmet	ADEPT option 2
2	Helmet	Mass exit Hollywood
3 (night)	Helmet, combat equipment (medium MOLLE and MAWC)	Combat equipment Mass exit
4	Helmet	Mass exit Hollywood
5 (night)	Helmet, combat equipment (medium MOLLE and MAWC)	Combat equipment Mass exit
LEGEND ADEPT - alternate door exit procedures for training; MAWC – modular Airborne weapon’s case; MOLLE - modular lightweight load-carrying equipment		

This page intentionally left blank.

Chapter 2

Personal Equipment

This chapter discusses parachute types, parachute donning, and headgear used in Airborne training.

T-11 AND MC-6 PERSONNEL PARACHUTE SYSTEMS

2-1. The T-11 Personnel Parachute System, national stock number (NSN) 1670-01-539-4525, and MC-6 Personnel Parachute System, NSN 1670-01-527-7537, are used during static line Airborne operations. The T-11 Advanced Tactical Parachute System and MC-6 Personnel Parachute System are highly portable systems that include the main canopy assembly, the reserve canopy assembly deployment bag, pack tray, harness assembly, risers, and universal static line modified. They are capable of supporting 400 pounds. The T-11 complete system weight is 53 pounds and the MC-6 complete system weight is 42 pounds. The T-11 and MC-6 is limited to operation in winds of 13 knots at the surface. The T-11 main canopy is a nonsteerable canopy. The MC-6 main canopy is a steerable canopy.

Note. Combat equipment is a tandem load that consists of an individual jumper-assigned weapon and any air-jumpable pack. Soldiers that do not have assigned weapons organic to their units may jump simulated weapons.

GROUND AND TOWER PHASE

2-2. Each of the five basic jump techniques pertains to a particular area of military parachuting and provides a sequence for dividing the ground phase into six instructional segments. These are the actions inside the aircraft, body control until opening shock, parachute control during descent, parachute landing fall execution, parachute control on landing, and physical readiness training.

2-3. To ensure that the maximum number of jumpers can safely exit an aircraft, a means of controlling their actions inside the aircraft just before exiting is necessary. The jumpmaster (JM) maintains control by issuing jump commands. Each command calls for a specific action on the part of each jumper.

2-4. Due to aircraft speed and air turbulence around the rear of the aircraft, the jumper must exit properly and maintain the correct body position during and after exiting the aircraft. This action reduces spinning and tumbling in the air and allows for proper parachute deployment.

2-5. Parachute control is essential to avoid other jumpers in the air and to avoid hitting obstacles on the ground. The parachute landing fall (PLF) is a landing technique that enables the jumper to distribute the landing shock over their entire body to reduce impact and the possibility of injury. The jumper releases both canopy release assemblies after landing. Winds on the drop zone (DZ) may cause a jumper to be injured from being dragged along the ground.

T-11 HARNESS ASSEMBLY

2-6. The T-11 series harness assembly, NSN 1670-01-535-2233 (see figure 2-1 on page 2-3) is used with the T-11 main canopy and the MC-6 main canopy.

2-7. The harness assembly is made of Type VII nylon webbing. It consists of right and left upper main lift web assemblies and the lower saddle assembly. The harness design allows for multidirectional adjustment. The components attached to it include the following:

- Canopy release assembly female fittings are permanently mounted to the harness assembly. They consist of a hinged latch and safety latch with a wire lanyard that closes over and secures the male fitting canopy release assembly.
- Four comfort pads, two shoulder pads, and two L-shaped leg ejector snap pads under the leg strap ejector snaps that are permanently attached to the right and left upper main lift web assemblies beneath the diagonal back straps.
- Two main lift web tuck tab assemblies are sewn into the harness assembly directly below the D-rings. The adjustment assemblies consist of Type VII (reinforced with Type VIII) webbing and a 1 3/4-inch main lift web adjuster rated at 2500 pounds.
- Main lift web is constructed of Type VII nylon webbing with a rated capacity of 6000 pounds.
- Chest straps are made of Type VII nylon webbing and have a two-inch friction adapter rated at 500 pounds, and two elastic webbing retainers used for stowing excess webbing.
- D-rings used for attaching the T-11 reserve are located directly below the canopy release assembly and have a rated capacity of 5000 pounds.
- Equipment rings used for attaching combat equipment, with a rated capacity of 2500 pounds.
- Triangle links are sewn into the main lift web of the harness assembly (about eight inches below the equipment rings). They are rated at 500 pounds and are used for attaching equipment and lowering lines.
- Leg straps have ejector snaps with activating lever, ball detent, and opening gate with a rated capacity of 2500 pounds.
- An L-shaped ejector snap pad is attached behind the ejector snap. The pad also attaches behind the main lift web locking adapter.
- Quick-fit V-ring that has a rated capacity of 2500 pounds.
- Six elastic webbing retainers that are used for stowing excess webbing.
- Lower saddle assembly (constructed of Type VII nylon) with two attached leg straps.
- Back strap adjusters and elastic webbing retainer that are used for adjusting the horizontal back straps and stowing excess webbing.

2-8. The harness assembly has nine points of adjustment: the chest strap, two diagonal back straps sizing channels, two main lift web tuck tab assemblies, two leg straps, and two free running ends of the horizontal back strap. (See figure 2-1.)

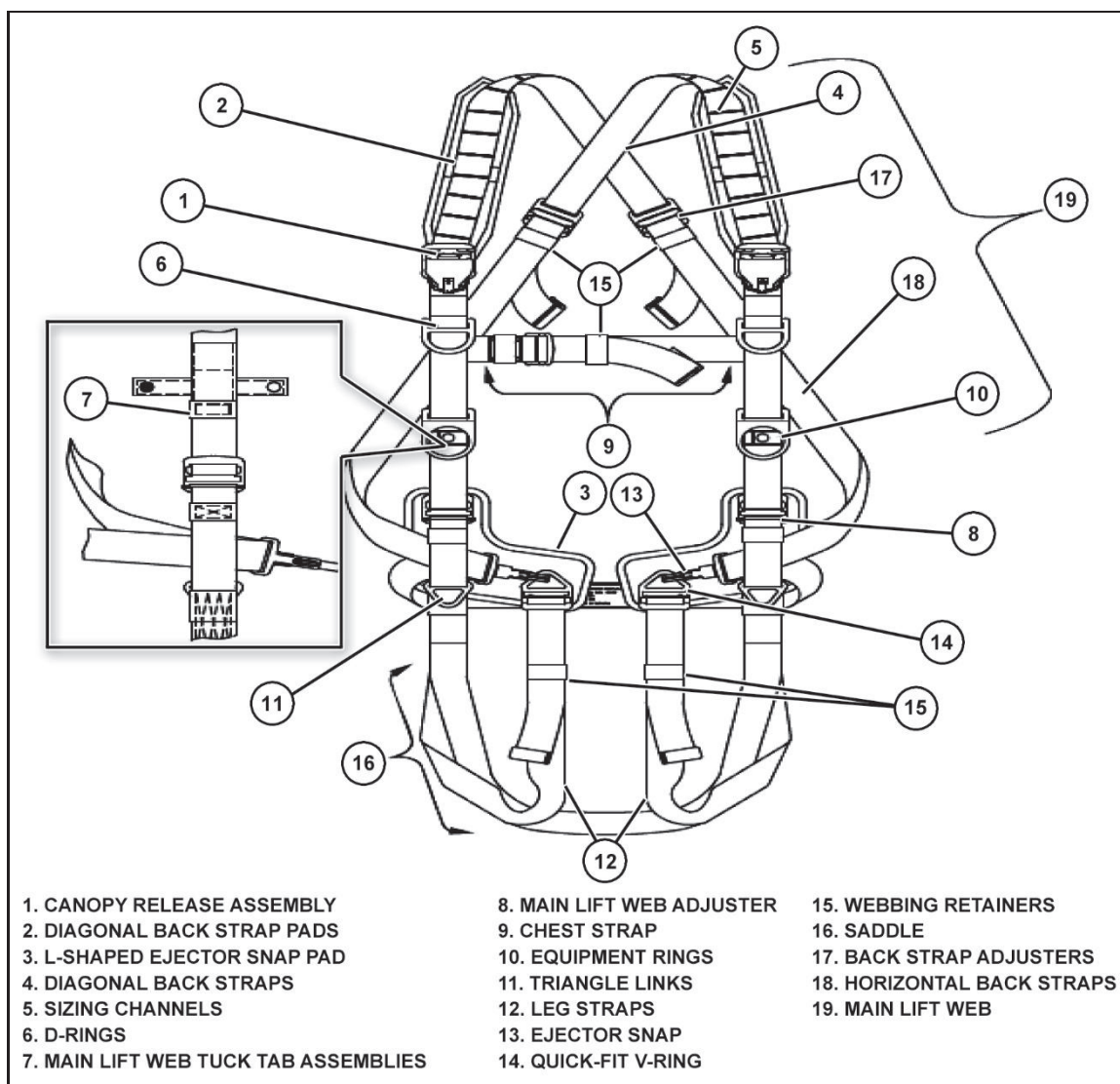


Figure 2-1. T-11 harness assembly

T-11 AND MC-6 RISER ASSEMBLIES

2-9. The T-11 riser assembly (riser set), NSN 1670-01-567-7296 (see figure 2-2 on page 2-4) on the T-11 consists of the following:

- Two riser assemblies with a finished length of 28 inches (Type VII nylon) and a tensile strength of 5500 pounds.
- Slip assist loops.
- Slip assist tabs.
- Army Parachute Log record stow pocket.
- Army Parachute Log record.
- Male fitting canopy release assembly.

Note. Opening the log record book by non-parachute rigger personnel is prohibited.

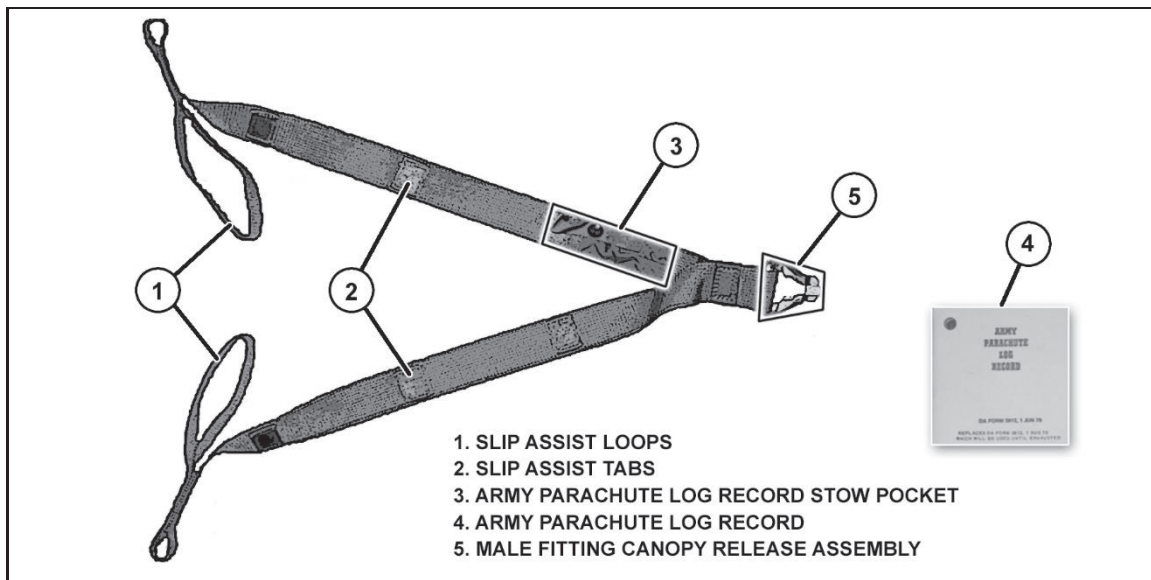


Figure 2-2. T-11 riser assembly

2-10. The MC-6 riser assembly, NSN 1670-01-535-2231 (see figure 2-3) on the MC-6 consists of the following:

- Two riser assemblies with a finished length of 30 inches (Type VII nylon) and a tensile strength of 5500 pounds.
- Male fitting is permanently attached to the riser assembly. When attached to the canopy, the riser assemblies provide four individual risers.
- Control line guide ring.
- Control line channel.
- Blue confluence wrap.
- Data label.
- Army Parachute Log record pocket.

Note. Opening the log record book by non-parachute rigger personnel is prohibited.

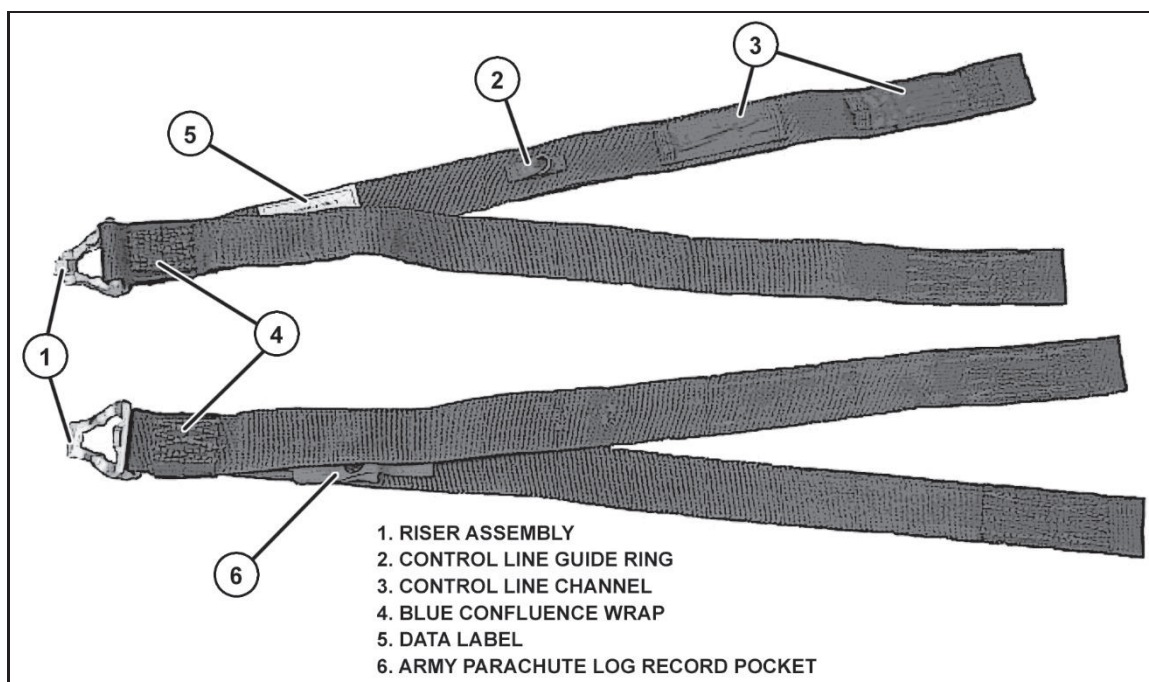


Figure 2-3. MC-6 riser assembly

UNIVERSAL STATIC LINE MODIFIED WITH CURVE PIN

2-11. A 15-foot universal static line modified (USLM), NSN 1670-01-535-2252, is secured to the deployment bag by a girth hitch. (See figure 2-4 on page 2-6.) The T-11 USLM is the same as the standard universal static line (USL) with the exception that the pack opening loop has been replaced by a curved pin with cotton protective cover. The opposite end of the USLM has a snap hook, which is also secured by a girth hitch. To configure the USLM to the 20-foot length, the snap hook is removed and the extension is secured to the USLM with a girth hitch. The snap hook is then secured to the opposite end of the extension.

2-12. The length of the 15-foot static line, once secured to the deployment bag and snap hook, is 14 feet, 10 inches (plus or minus one inch). The 20-foot configuration measures 20 feet, 1 inch. There are four separate components to the USLM that can be purchased separately: deployment bag, static line, static line extension, and universal static line snap hook.

2-13. The USLM consists of the following:

- Main curved pin cover.
- Main curved pin.
- Cotton buffer.
- Static line sleeve.
- Rivet pin.
- Spring opening gate.
- Universal static line snap hook.

UNIVERSAL STATIC LINE SNAP HOOK

2-14. The snap hook, NSN 1670-01-476-3142, is 5.5 inches long, approximately one-quarter inch thick, and weighs 0.67 pounds. (See figure 2-4 on page 2-6.) It is made from corrosive resistant alloy steel, Grade A plus L finish for abrasion, humidity, salt, and fog protection. The finish is environmentally compliant and a standard in the automotive industry.

2-15. The spring opening gate and rivet pin are made from the same alloy steel, whereas the pullback spring is made from steel spring wire. The snap hook is rated to withstand a 1750-pound load and has an ultimate failure rate of no less than 8000 pounds.

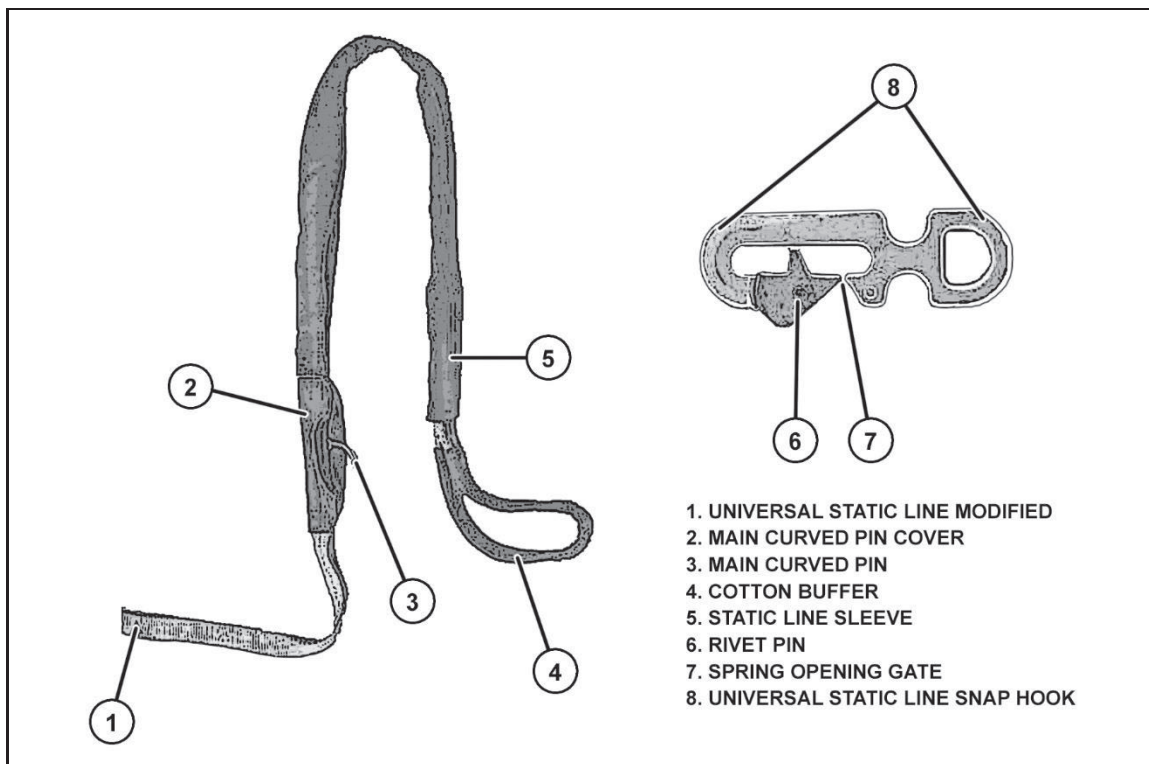


Figure 2-4. T-11/MC-6 universal static line modified and universal static line snap hook

T-11 MAIN PACK TRAY AND MC-6 PACK TRAY ASSEMBLY

2-16. The T-11 main pack tray, NSN 1670-01-567-4709, (20 by 16 by 14 inches) and the MC-6 pack tray assembly, NSN 1670-01-535-2228, (20 by 14 by 14 inches) (see figure 2-5) are both constructed of duck textured nylon fabric, and consist of the following:

- Pack closing flaps (four): right and left side flaps, upper and lower end flaps with reinforcement material sewn into pack closing flaps. Each flap contains one grommet.
- Static line stow bars (inner and outer).
- Static line slack retainer loop with static line slack retainer bands.
- Waistband adjuster panel.
- Metal adjuster.
- Waistband (43 inches).
- Main closing loop assembly (ultra-high molecular-weight polyethylene loop with nylon retaining tab used to align grommets in pack closing flaps held in place by main curved pin for T-11 and MC-6 parachutes).
- Two diagonal back strap retainers sewn into upper center of pack tray for use with sizing channels on T-11 harness assembly.
- Two diagonal back strap keepers sewn into upper edge of pack tray, used to guide and retain the diagonal back strap retainers.
- Two horizontal back strap retainers with directional snap fasteners.
- Horizontal back strap keeper.

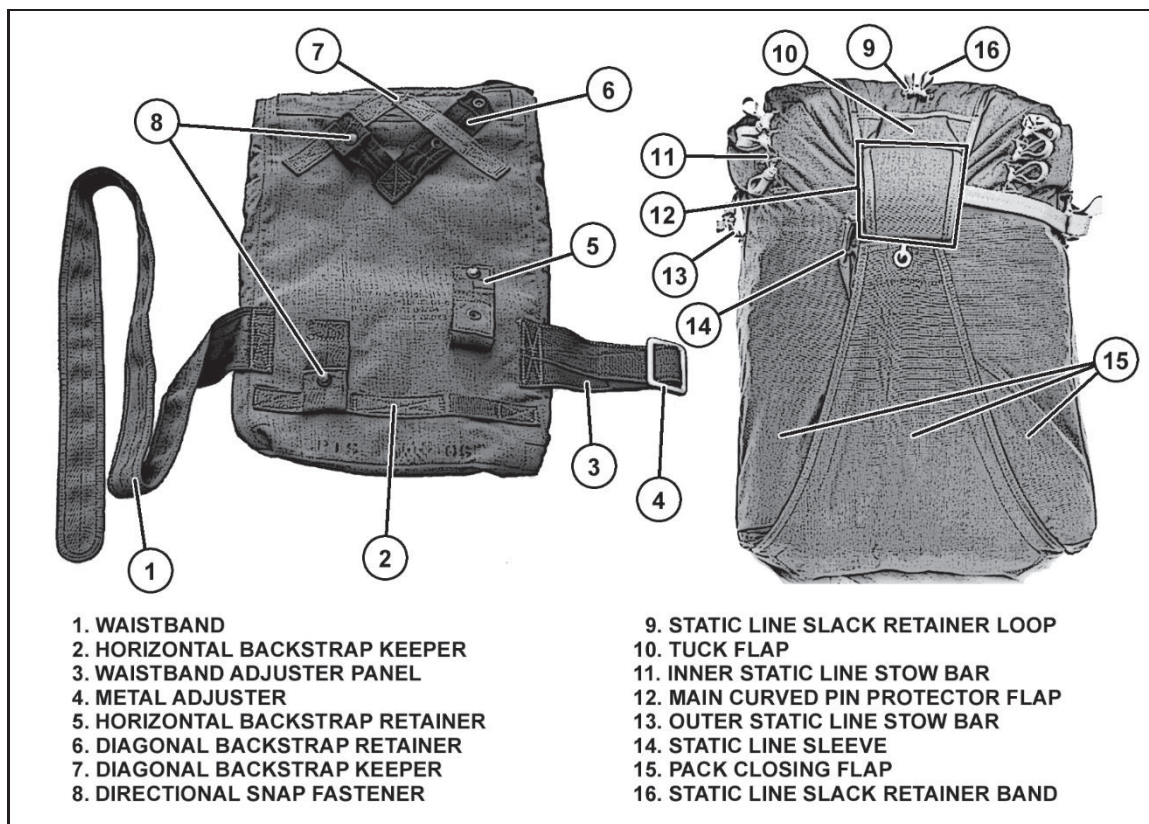


Figure 2-5. MC-6 main canopy pack tray and nomenclature

T-11 MAIN CANOPY

2-17. The T-11 main canopy has a 28.6-foot nominal diameter and is a highly modified and refined version of the cross/cruciform platform with a continuous lower lateral band. Opening characteristics are controlled through the variation of the unique geometry and deployment organizer (sleeve and slider), while utilizing low permeability (zero to three cubic feet per minute), uncoated material, resulting in a high-drag coefficient parachute with tolerable opening shock characteristics.

2-18. Depending on the jumper's total weight and drop altitude, its rate of descent is between 14.5 to 18.5 feet per second. The canopy does not have any forward drive and will have a neutral ballistic descent once it is stable in a no-wind direction. The T-11 Personnel Parachute System is static line deployed. The parachute deployment sequence is as follows:

- Activation begins with the static line connected to the aircraft anchor line cable and the jumper exiting.
- The universal static line modified tightens as the jumper falls away from the aircraft, pulling the main curved pin from the main closing loop.
- The universal static line modified is connected to the deployment bag as the jumper continues to fall away from the aircraft.
- Two quarter-inch cotton webbing ties, one on each riser group holding the risers and lines in place, break.
- After the suspension lines pull out of the suspension line stow loops, the suspension lines pull out of the locking stow loops, opening the bag mouth.
- The drogue and deployment sleeve with the enclosed canopy emerges from the deployment bag.
- The drogue and deployment sleeve catch air causing the sleeve to pull off the main canopy exposing the lower lateral band with slider at the mouth of the canopy.

- As the jumper transitions from a horizontal to vertical orientation, the deployment sleeve completely comes off the canopy, but remains at the apex of the canopy along with the drogue due to the 10-foot bridle line attached at the apex of the canopy, routed through the deployment sleeve, and connected to the drogue.
- The slider controls the lower lateral band opening of the canopy and descends from the lower lateral band along the suspension lines to above the connector links as the canopy becomes stable. Additionally, the slider eliminates line-over malfunctions and enhances opening characteristics.

2-19. Following are characteristics of the T-11 main canopy (see figure 2-6):

- **Shape and weight.** Shape is modified cross/cruciform platform; weight is 38 pounds.
- **Rate of descent.** Depending on the jumper's total weight and relative air density, the average rate of descent is between 14.5 and 18.5 feet per second.
- **Diameter.** Nominal diameter is 28.6 feet up to 30.6 feet when inflated and 28 feet at the lower hem.
- **Shelf and service life.** Combined shelf and service life is 16.5 years (4.5 years of shelf life plus 12 years of service life).
- **Repacking.** The T-11 main canopy is repacked every 120 days.
- **Use.** The T-11 main canopy is suitable for airdropping personnel from as high as 10,000 feet mean sea level (MSL).

2-20. The T-11 has no forward drive. Its design characteristics (see figure 2-6) include the following:

- The canopy consists of 49 center section assemblies made of Type IV low permeability ripstop, nylon parachute cloth, forest green 504 material.
- There are four arm assemblies. Each arm assembly consists of seven sections and 23 arm panels, which are made of Type IV low permeability ripstop, nylon parachute cloth, forest green 504 material.
- There are two types of mesh panels—three large mesh panels and two small mesh panels—that are made of nylon (2.4 ounces per yard) and natural material. The mesh panels have one-quarter-inch hex openings.
- There are 28 main seams made of main tape (9/16 inch), Type I nylon webbing material.
- There are 28 suspension lines made of polyester cord that can support 600 pounds. The suspension lines measure 21 feet and 4 inches in length.
- Four connector links made of No. 6 stainless steel connect the suspension lines to the four risers.
- The slider is composed of two principal elements with 28 grommets: a mesh center section and a peripheral section constructed of eight identical panels joined together. The panels are made of low porosity, Type IV nylon parachute cloth. Three #0L grommets are set on the outer edge of each panel. Additionally, four smaller panels are positioned on the slider to align with each of the four corner lines. Each of the four smaller panels has a #0L grommet on the outer edge of the panel. All suspension lines are routed from the lower lateral band through individual #0L stainless steel grommets and connected to the appropriate connector link on the riser. Airflow passes through the mesh and up into the canopy. The slider opens, separating the suspension lines. When the canopy fully inflates, the slider rides down to rest just above the risers.
- The drogue parachute is a 48-inch-diameter, flat, circular parachute made from 1.5-ounce ripstop nylon cloth. The drogue is attached to the top of the deployment sleeve and provides additional drag to pull the sleeve off during the initial elongation phase.
- The 19-foot cotton deployment sleeve protects the entire canopy during the initial phase of the opening sequence and aligns it in the airflow before inflation starts.
- There is a bridle line made of nylon webbing that is 5/8-inch-wide, tubular, Class 1A, cotton airplane cloth natural material. The 10-foot bridle line assembly connected to the bridle ring retains the deployment sleeve and drogue after canopy extraction. The bridle line allows fast retraction of the deployment sleeve but prevents the drogue from entangling with the corner vents of the main canopy after canopy inflation.

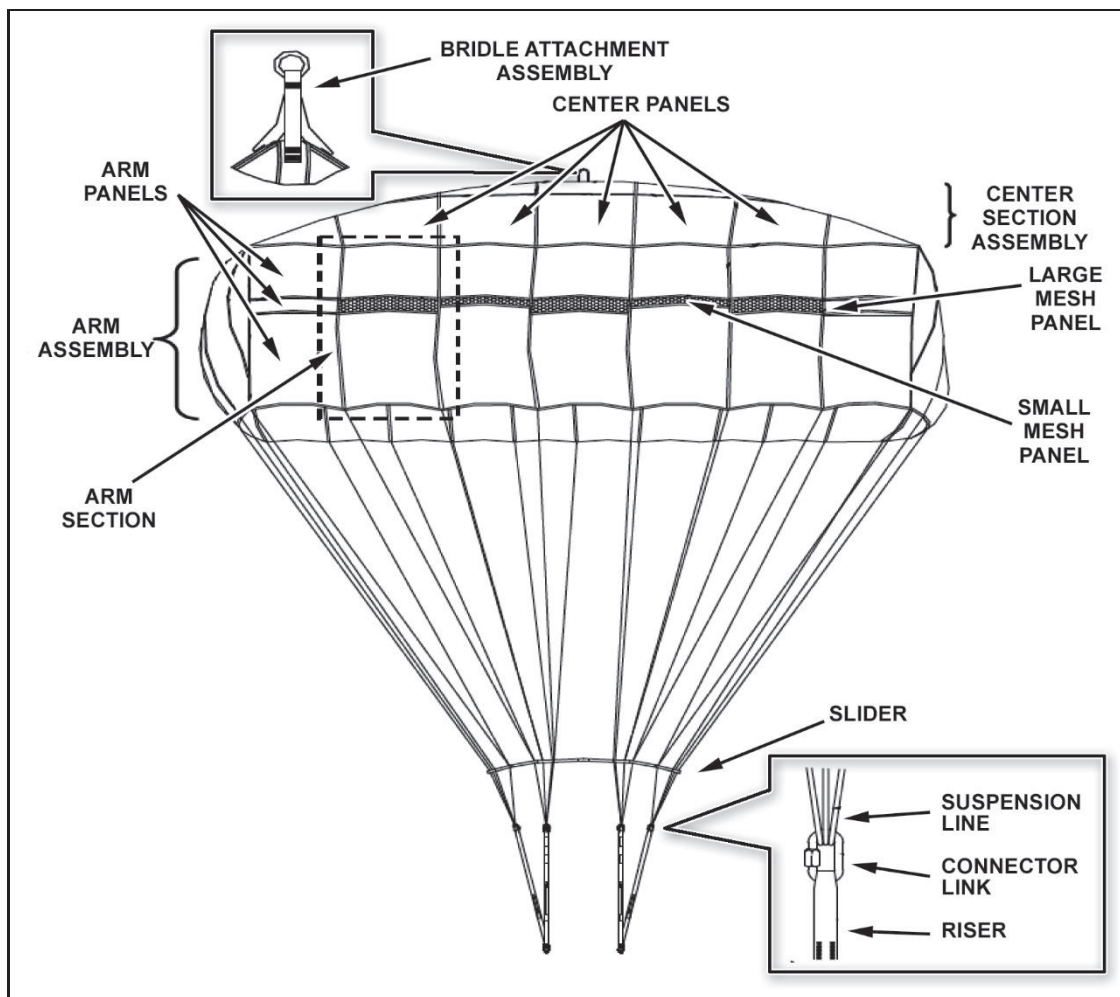


Figure 2-6. T-11 main canopy diagram

MC-6 MAIN CANOPY

2-21. The MC-6 main canopy has a 32-foot nominal diameter, is poly-conical-shaped, and block constructed of Type IV, low permeability nylon parachute cloth. Depending on the jumper's total weight and drop altitude, its rate of descent is between 14.5 to 18.5 feet per second. The canopy has a forward speed of 10 knots, and can complete a 360-degree turn in five seconds. The MC-6 Personnel Parachute System is static line deployed. The parachute deployment sequence is as follows:

- The jumper falls to the end of the universal static line modified. The jumper's body weight snatches the curved pin from the pack-closing loop, and the deployment bag is pulled from the pack tray.
- Two connector link ties break, and the suspension lines are pulled from the deployment bag.
- Two locking stows disengage, and the canopy is pulled from the deployment bag to its full length.
- The break cord tie securing the apex of the canopy to the universal static line modified ending loop breaks, and the parachute begins to inflate, retarding the jumper's rate of descent.

2-22. Following are characteristics of the MC-6 main canopy:

- **Shape and weight.** Shape is poly-conical; weight is 29 pounds.
- **Rate of descent.** Depending on the jumper's total weight and relative air density, the average rate of descent is between 14.5 and 18.5 feet per second.

- **Diameter.** Nominal diameter is 32 feet at the skirt.
- **Anti-inversion net.** The anti-inversion net is made of 3.75-inch square mesh, knotless, braided nylon, and is sewn to the skirt band of the canopy between rows of stitching with a zigzag pattern. Suspension line attachment loops are sewn to the anti-inversion netting. These loops are made of the same tape material as the radial tapes of the canopy. The suspension lines are attached to the suspension line attachment loops with a girth hitch.
- **Shelf and service life.** Combined shelf and service life is 16.5 years (4.5 years of shelf life plus 12 years of service life).
- **Repacking.** The MC-6 main canopy is repacked every 120 days.
- **Use.** The MC-6 main canopy is suitable for airdropping personnel from as high as 11,000 feet MSL.

2-23. The MC-6 will make a 360-degree turn in an estimated five seconds and has a forward drive of 10 knots. The canopy consists of 28 standard gores and four extended gores that are made with Type IV, low permeability, nylon parachute cloth, forest green 504 material. (See figure 2-7.) It has the following design characteristics:

- The canopy is made of nonporous material (zero to three cubic feet per minute).
- There are four sections per standard gore.
- There are nine sections per extended gore (consisting of seven horizontal and two vertical sections).
- Four extended gores are located on gores 4-5, 6-7, 21-22, and 23-24. When the jumper pulls either the left or right control line toggle, it closes the extended gores, which redirects the airflow through the opposite extended gores, providing an increased turning capability. A brake slot reduces forward speed. In full brakes, the canopy can go backwards. The extended gores also facilitate the canopy's ability to perform flat turns by venting air in the opposite direction.
- Six opening vents located on the front canopy gores 9, 11, 13, 15, 17, and 19 prevent the front of the canopy from collapsing, improving the forward drive and stability of the canopy.
- Three drive vents located on the rear of the canopy with mesh netting sewn into gores 2, 26, and 28, allow for positive airflow through the canopy, providing the canopy with its forward drive.
- The main seam runs from the lower lateral band to the upper lateral band and is made using a half-inch wide Type III, nylon tape.
- The lower lateral band hem is the folded-over lower edge of the canopy, encompassing the lower lateral band.
- There are 28 suspension lines that are 21 feet in length and made with Type II nylon cord. These suspension lines are connected from the suspension line attaching loops on the anti-inversion netting to the connector links
- Two lower control lines run from the risers to the attachment point on the middle control lines. The middle control lines attach to the upper control lines, lower control lines, and lower lateral band. Upper control lines attach to the extended gores and middle control lines, providing the canopy with increased response from jumper actions.
- Fourteen vent lines run continuous from one end of the upper lateral band to the opposite side of the upper lateral band and are constructed of Type II nylon cord.

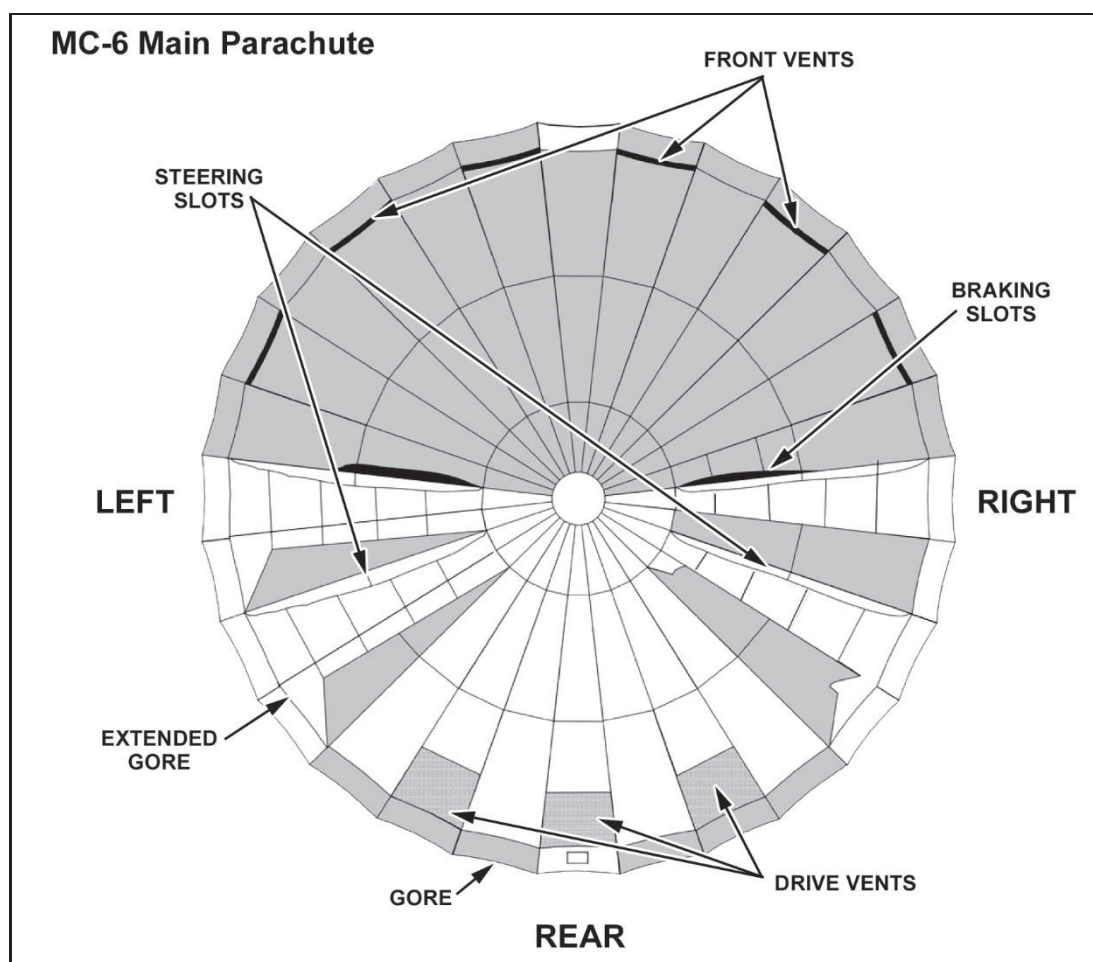


Figure 2-7. MC-6 main canopy diagram

T-11 RESERVE PARACHUTE

2-24. The T-11 reserve parachute is an aero-conical-design reserve parachute used with the T-11 and MC-6 Parachute System, NSN 1670-01-535-2248. The T-11 reserve parachute is an emergency-type parachute designed to be activated by the jumper if the main parachute malfunctions. Weighing approximately 14.8 pounds, the T-11 reserve is 29 feet in diameter and has a combined shelf and service life of 15 years. It is repacked every 365 days.

2-25. The Reserve Parachute System consists of six major components: extractor parachute, ejector spring with protection cap, canopy assembly, reserve riser assembly, reserve pack tray, and rip cord assembly. The T-11 reserve parachute that is utilized by the primary and alternate jumpmaster is marked with yellow pressure-sensitive tape on the top carrying handle and have T-11R inserts in both the top and bottom pockets of the T-11R. If the number one jumper is assisting with pushing a door bundle, he or she will also have a T-11R with inserts.

EXTRACTOR PARACHUTE

2-26. The reserve extractor, NSN 1670-535-2251, assists in the deployment of the parachute canopy by serving as an air anchor. (See figure 2-8.) It is a six-foot diameter, circular parachute with 12 polyethylene fiber suspension lines that attach to a nylon vent bridle assembly.

2-27. The extractor is constructed from 1.5-ounce ripstop nylon parachute fabric, and has a polyethylene fiber centerline, that is hitched to a reinforced nylon tab at its crown. The vent bridles are attached at four points on the reserve canopy apex with polyethylene fiber cord. The extractor is a spring free, large, soft extractor parachute that is too large to fit in the gap between the suspension lines of the T-11 reserve after it inflates. This design reduces the risk of entanglement with the main parachute.

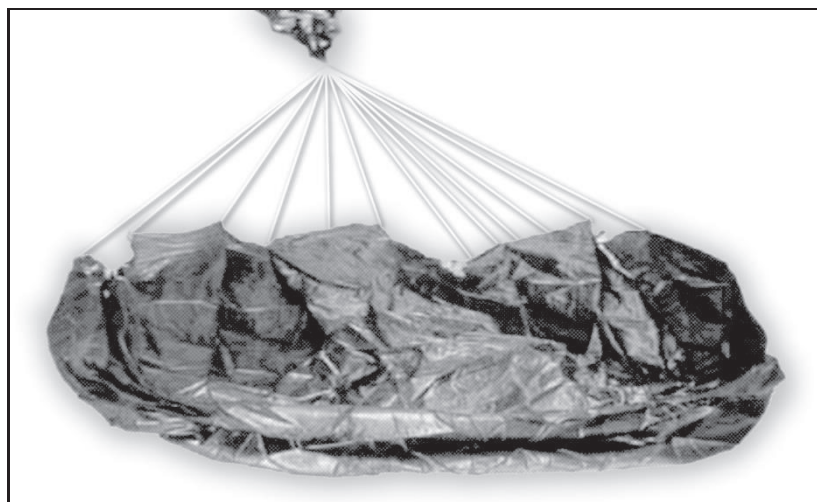


Figure 2-8. Extractor parachute

EJECTOR SPRING

2-28. The ejector spring, NSN 1670-01-535-2246, is a 19-inch “boxed” and vented helical spring with end caps and grommet tabs on one end through which the pack closing loops are routed. This prevents lateral movement of the spring when compressed, decreasing the risk of spring lock.

2-29. The kicker ejector spring is packed one-third the distance from the apex to the skirt within the canopy folds. This ensures that when the pack opens, the primary extractor parachute and the apex of the canopy (with the apex assistor pockets) are ejected positively and laterally into the airflow. Not only are the most important low speed deployment elements ejected far enough into the air stream this way, this critical stage is accomplished without using any additional mass components that could interfere with the deployment. (See figure 2-9.)



Figure 2-9. T-11 ejector spring and related components

CANOPY ASSEMBLY

2-30. The T-11 reserve canopy is an aero-conical design. The canopy is designed to open rapidly with a minimum post-inflation collapse. The T-11 reserve features minimum altitude loss. The designed shape resists malfunctions, such as a line over, and if this event happens, tends to release the line.

2-31. The risk of air stealing by a malfunctioned main parachute is reduced as the T-11 reserve, with its short-system length, flies with its lower lateral band even with the hem of the main parachute. The scoops are formed by four downward pockets constructed around the upper lateral band of the parachute. The apex vent of the reserve parachute is closed during packing using a break tie. (See figure 2-10.)

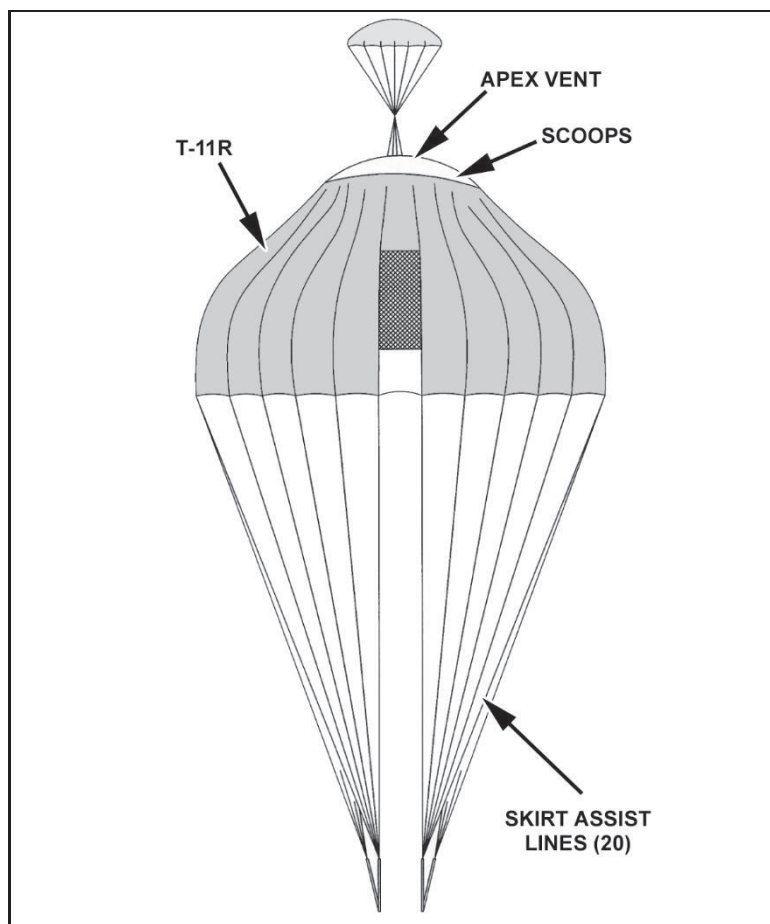


Figure 2-10. T-11 reserve canopy

T-11 RESERVE CHARACTERISTICS

2-32. The T-11 reserve parachute is a 20.2-foot (skirt diameter), conical-shaped, circular parachute constructed of 1.1-ounce and 1.5-ounce ripstop nylon parachute cloth. The upper crown portion of the canopy is constructed of 1.5 ounce ripstop as it is a high stress area. The upper crown has four, equip-spaced, apex-assist pockets that aid in the crown inflation process.

2-33. Depending on the jumper's total weight, the parachute's rate of descent is 27 feet per second. The canopy is described as follows:

- An apex vent, approximately 25 inches in diameter.
- Sixteen vent tabs and four apex bridle tabs constructed of Type I, 9/16-inch nylon tape that is sewn into the upper lateral band.

- An upper lateral band constructed of Type I, 2-inch para-aramid synthetic fiber tape (folded) with a tensile strength of 2000 pounds.
- A lower lateral band constructed of Type VI, 1-inch para-aramid synthetic fiber tape (rolled) with a tensile strength of 1500 pounds. Four apex assist pockets constructed of 1.1-ounce ripstop nylon.
- Twenty gores with five sections in each gore (sections 1-3 are constructed of 1.1-ounce ripstop nylon; sections 4 and 5 are constructed of 1.5-ounce ripstop nylon). A horizontal seam reinforced with Type I, 9/16-inch nylon tape joins sections 3 and 4.
- Four canopy sections, equally spaced around the canopy circumference, are constructed of Type II nylon mesh.
- Twenty main seams constructed of Type I, 9/16-inch nylon tape with a tensile strength of 500 pounds.
- Twenty prefabricated suspension lines constructed of Type II nylon cord (nonstick coating) with a tensile strength of 550 pounds. Twenty suspension line attaching loops constructed of Type I, 9/16-inch nylon tape sewn to the lower lateral band.
- Twenty skirt assist lines (Type II nylon cord) approximately 34 inches in length spliced into each suspension line at approximately 20 inches below the skirt.
- Twenty skirt assist line tabs constructed of Type I, 9/16-inch nylon tape sewn to the underside of each main seam approximately 20 inches above the skirt.
- Two 48-inch riser assemblies constructed of Type VIII nylon webbing with a tensile strength of 3600 pounds. This riser assembly includes the following:
 - Two butterfly snaps (designated left and right) rated at 4200 pounds.
 - Four No. 6 rapid links rated at 1430 pounds.

RESERVE RISER ASSEMBLY

2-34. The T-11 reserve riser assembly, NSN 1670-01-535-2255, is 48 inches long. The riser assembly is constructed of Type VIII nylon webbing. The risers have a 15-inch length of hook-pile fastener tape positioned between the front and rear to prevent riser offset during high speed deployments.

2-35. Each reserve riser has a connector snap attached. The connector snaps are constructed of cadmium-plated forged alloy steel with a rated capacity of 4200 pounds. Each connector snap is secured to the reserve pack tray by a 24-inch length of one turn, single lacing and tying tape, "super-tack," which has a tensile strength of 50 pounds. A spreader bar is positioned between the connector snaps to ensure proper separation is maintained between the risers. The risers are left and right handed because of the left/right reserve connector snaps positioned on the lower end of each riser. (See figure 2-11.)

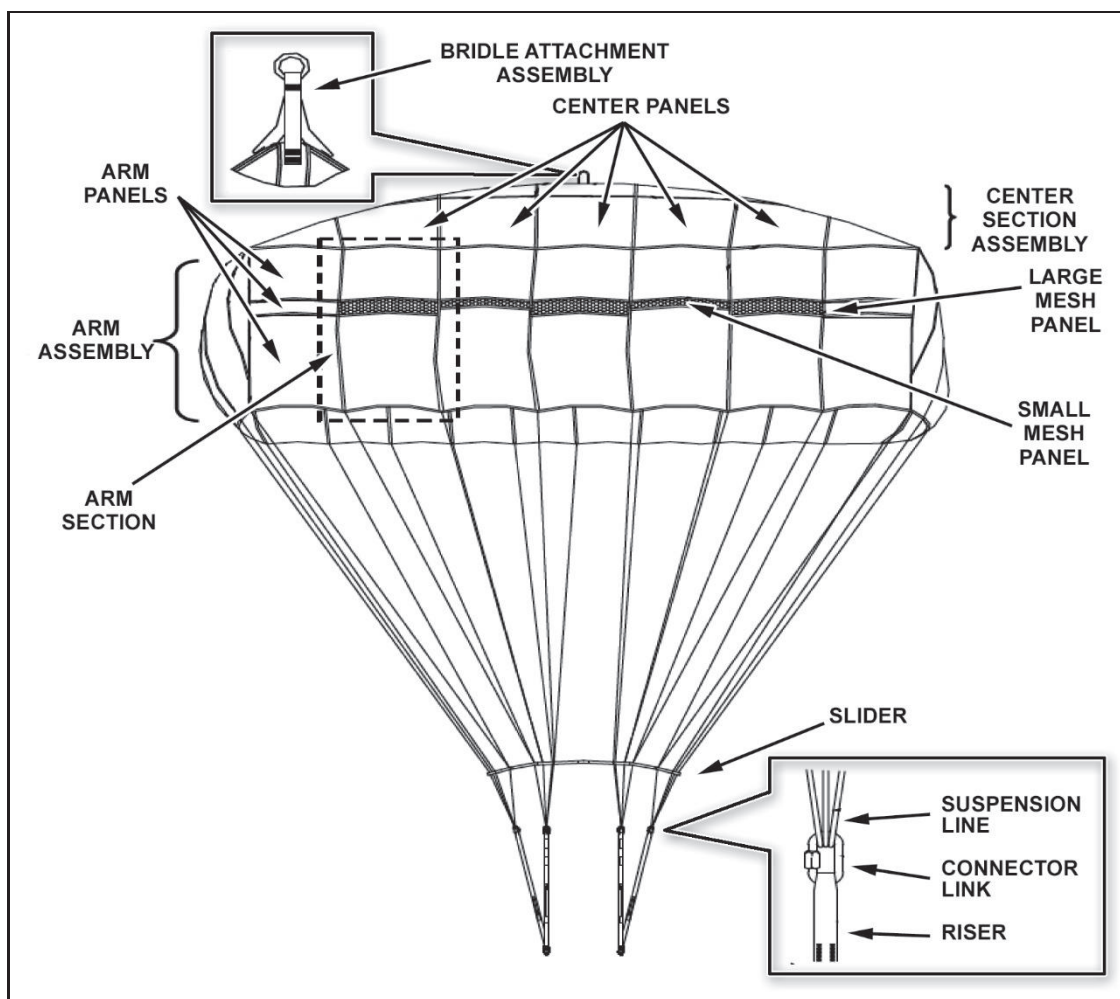


Figure 2-11. Reserve riser assembly

RESERVE PACK TRAY

2-36. The T-11 reserve pack tray, NSN 1670-01-535-2254, is constructed of woven nylon material and has four pack closing flaps, with six No. 0 grommets (two per side flap and one each on the upper and lower closing flaps). These grommets facilitate the reserve closing loops. A rectangular metal pack frame is encased between the outer and inner plies of the pack tray back panel.

2-37. Two lengths of one-inch elastic tape are sewn to the inner back panel (adjacent upper and lower edges) with loops to facilitate riser stowage. Two riser stowage bars constructed of 9/16-inch nylon tape serve as retainer band attaching points for suspension line stowage. Two five-inch lengths of hook tape are sewn to the inner back panel for retention of the T-11R risers. Two waistband loops constructed of Type XVII webbing are sewn to the outer back panel to accommodate the T-11 waistband. (See figure 2-12.)

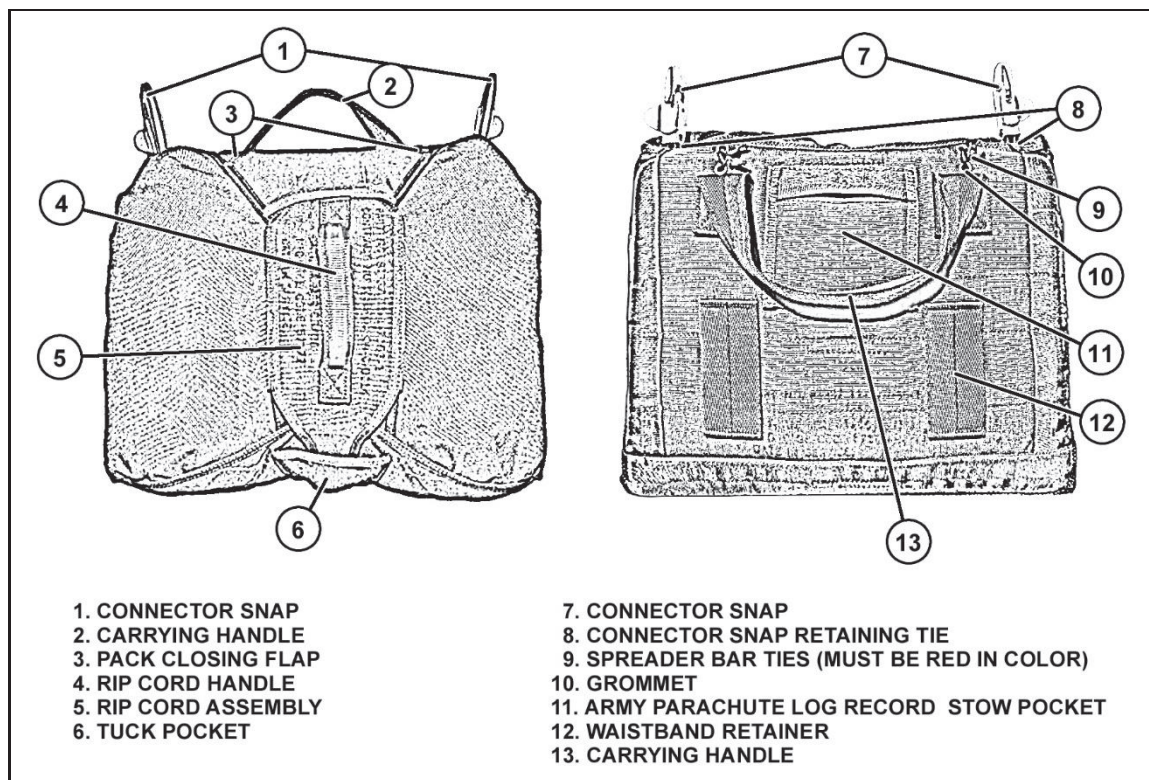


Figure 2-12. T-11 reserve pack tray

RIP CORD ASSEMBLY

2-38. Rip cord handle, NSN 1670-01-535-2250, is used to activate the reserve parachute and requires approximately 14 to 22 pounds of pull pressure. The rip cord assembly has a top, bottom, and two side tuck tabs. They are specified by name. The top tuck tab is identified by a directional arrow. It must be pointing skyward when the reserve parachute is worn properly. The rip cord handle is red in color and secured with two box X stitches.

2-39. Sewn by re-enforced stitching to the back of the rip cord assembly is the curved pin lanyard. The curved pin lanyard is constructed of white polyethylene fiber cord with a tensile strength of 700 pounds. Attached to each end of the curved pin lanyard is a curved pin. These are sewn in opposite directions. The curved pins are constructed of stainless steel and cannot be bent, cracked, or corroded to be serviceable. (See figure 2-13.)

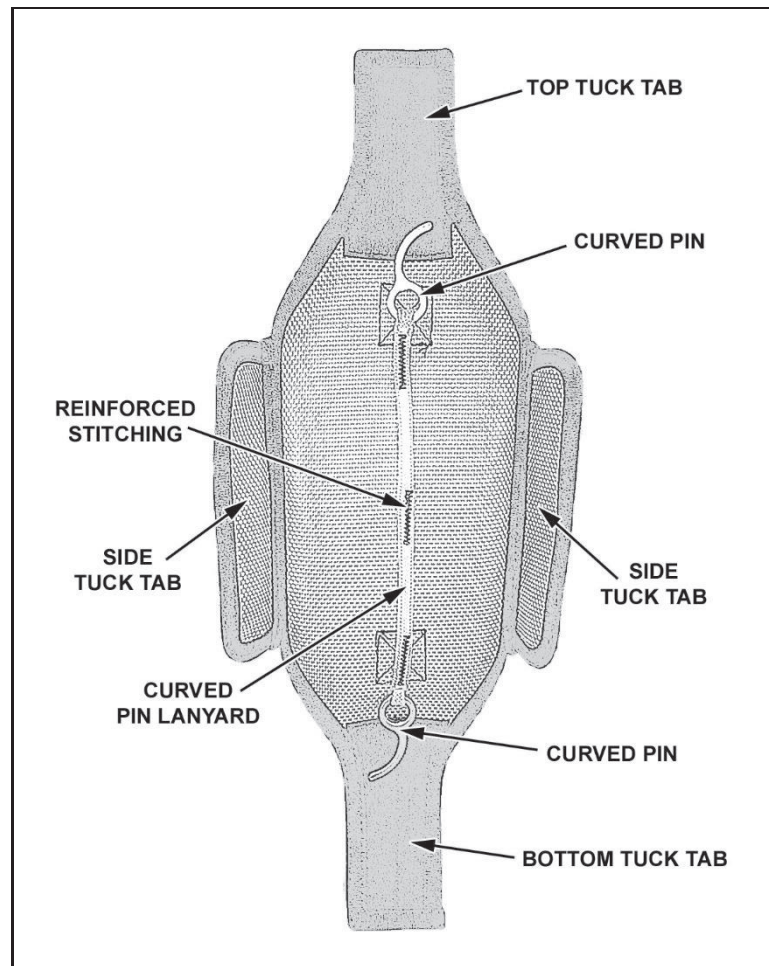


Figure 2-13. T-11R rip cord handle assembly

T-11 RESERVE PARACHUTE INSERTS

2-40. The use of T-11R inserts (see figure 2-14 on page 2-18) with the T-11 reserve parachute are mandatory for all primary jumpmasters (PJM), assistant jumpmasters (AJMs), and No.1 jumper assisting in pushing a door bundle. JMs conducting over the ramp operations will have the T-11 reserve parachute inserts. While conducting rotary-wing operations (UH-60 and UH-1), it is recommended that jumpers exposed to winds that cross the front of the reserve parachute have the T-11 reserve parachute inserts emplaced.

2-41. All jumpers that have the T-11 reserve parachute inserts will receive a final visual inspection of their reserve prior to assuming duties at the door or ramp. This visual inspection is performed by a member of the jumpmaster team. This inspection shall be given just prior opening the door or ramp. The T-11R inserts will not be removed during this inspection. Adjustments to the T-11R rip cord or inserts will NOT be made near an open troop door or ramp.



Figure 2-14. T-11R inserts

CARE OF THE PARACHUTE BEFORE AND AFTER JUMPING

2-42. Troop parachute assemblies and reserves may be issued in kit bags (recovery bags) to aid handling and prevent damage or unintentional opening. Until removed for fitting by jumpers, parachutes and reserves should remain in the kit bags (recovery bags) and protected from moisture during storage to prevent mildew. Kit bags are not waterproof and do not provide adequate protection from wet weather or damp ground. Parachutes must be stored in weatherproof areas such as adequate storage buildings, trucks, tents, or transport aircraft. (For parachute shakeout procedures, refer to TM 10-1670-326-23&P for the T-11 series parachute, and TM 10-1670-327-23&P for the MC-6 series parachute.)

2-43. The parachute is recovered and properly cared for to minimize damage. Upon landing, jumpers activate both canopy release assemblies for the T-11 ATPS or one canopy release assembly for an MC-6 series parachute. Take off the harness and place the parachute in the kit bag (recovery bag) using the tactical recovery method or by executing a series of figure-eight folds with the arms. (See figure 2-15.) The specific actions are as follows:

- Remove all air items. Place harness in the aviator kit bag (recovery bag) with the smooth side up, leaving the waistband out. Place the released riser underneath the harness.
- Move to the apex of the canopy, grasp the drogue parachute, deployment sleeve, elongate the parachute into the wind to straighten the canopy and suspension lines, and remove all foreign objects and debris from the suspension lines and canopy.
- Using both arms, fold the canopy and suspension lines into a series of figure eights. Do not twist the canopy unnecessarily because friction can cause the nylon to fuse.
- Lay the canopy on the top of the harness, ensuring all the parachute and suspension lines are inside the kit bag (recovery bag). Place the drogue parachute and deployment sleeve on top of the main parachute. Close bag fasteners; do not zip the bag because the canopy may become entangled in the zipper and damaged. Attach a reserve connector snap to each kit bag handle when using the aviator's kit bag. Carry the equipment so the reserve parachute is to the jumper's front and the kit bag to the rear. (Reverse the carry when jumping with combat equipment.)
- When using the universal parachutist recovery bag the T-11 reserve is placed in the front storage pocket.

Note. For the T-11 ATPS it is necessary to activate both canopy release assemblies upon landing. Fold the canopy in figure eights by itself and place it in the kit bag (recovery bag) on top of the harness.

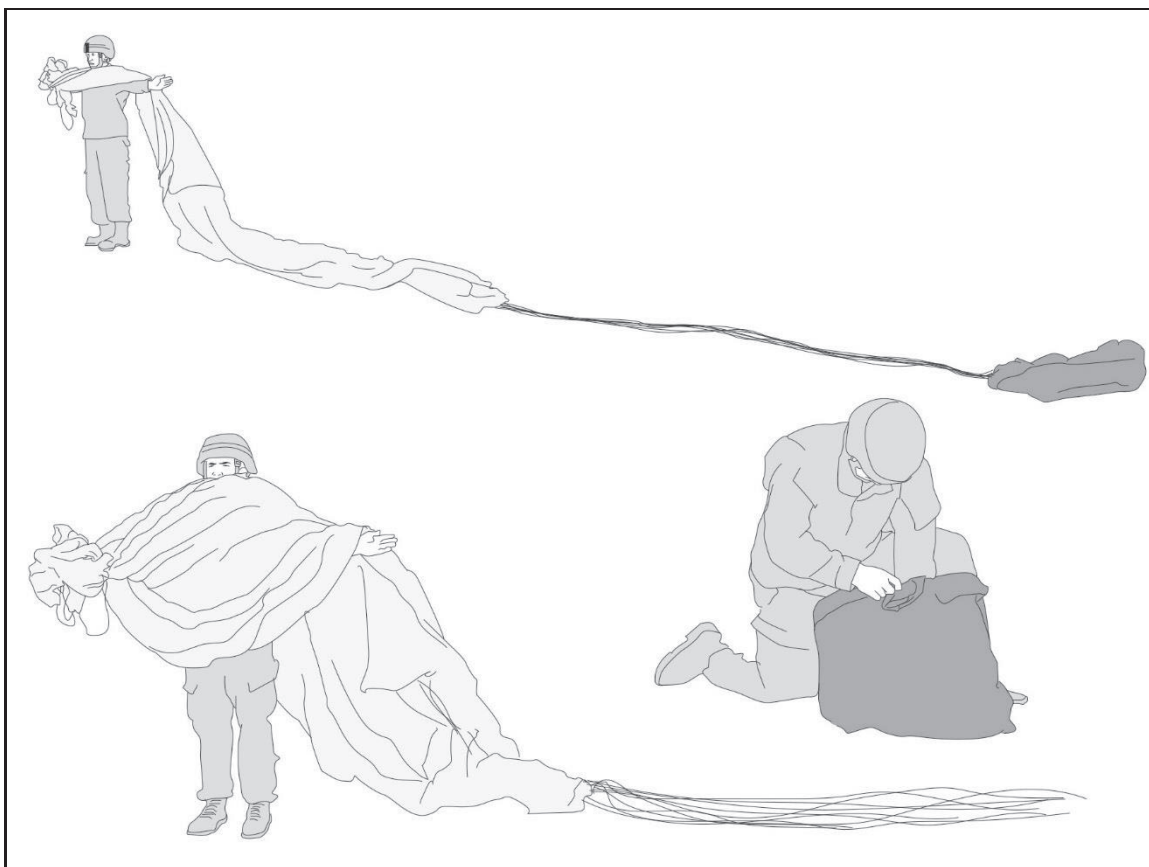


Figure 2-15. Executing figure-eight folds with arms

SHAKEOUT PROCEDURES

2-44. The parachute must be prepared for repacking once the Airborne mission has been accomplished. The procedure is known as “chute shakeout.” This is done by suspending the parachute from a rope passed over a ceiling pulley (or from pole’s field expedient) high enough to allow the canopy to clear the surface area. (For parachute shakeout procedures, refer to TM 10-1670-326-23&P for the T-11 series parachute, and TM 10-1670-327-23&P for the MC-6 series parachute.)

Main Canopy

2-45. A two-man shakeout team is recommended. The No. 1 jumper holds the bridle attachment assembly, while the No. 2 jumper fastens the rope to the bridle attachment assembly. The No. 2 jumper pulls the rope until the skirt is about one foot above the No. 1 jumper’s head. They accomplish the rest of the shakeout by taking the following steps:

- **Step 1.** The team leaves the bulk of the suspension lines and the parachute harness in the kit bag (recovery bag). The No. 2 jumper grasps the rope attached to the suspended canopy while No. 1 shakes the parachute.

- **Step 2.** The No. 1 jumper grasps two adjacent suspension lines at the lower lateral band, one in each hand, and vigorously shakes the gore, making certain no grass, twigs, insects, or other foreign matter are left on the fabric.
- **Step 3.** The No. 1 jumper then transfers both suspension lines to their left hand, grasps the suspension lines of the next gore with the right hand, and continues as in step 2, working counterclockwise until each gore has been shaken and all suspension lines are in the left hand. Pay close attention to ensure no foreign material remains in the canopy.
- **Step 4.** The No. 2 jumper begins to slowly pull the canopy up, elongating the suspension lines (group separation must be accomplished). The No. 1 jumper shakes the suspension lines and dusts them by hand. The No. 1 jumper then turns the kit bag (recovery bag) inside out and cleans it thoroughly to ensure no debris is in the kit bag.
- **Step 5.** The No. 1 jumper puts the harness in the kit bag (recovery bag).
- **Step 6.** The No. 2 jumper then slowly lowers the parachute while the No. 1 jumper folds the suspension lines on top of the harness and places the canopy inside the kit bag (recovery bag).

Reserve Parachute and Wet Parachute Procedures

2-46. The shakeout procedure for the reserve parachute (if used) is the same as that for the main canopy. Do the shakeout as soon after jumping as practicable.

2-47. Parachutes used in wet weather or exposed to moisture will be hung to dry within 24 hours of the jump. Once dry, shakeout procedures will then occur.

DONNING PARACHUTES

2-48. Two personnel are required when donning parachutes. Using the buddy system to properly don and adjust the troop parachute harness provides an additional safety check, prevents delays during JM personnel inspection, and provides minimum discomfort to the jumper while aboard the aircraft and when receiving the opening shock of the parachute.

2-49. The buddy-system method provides the best combination of speed and accuracy for jumpers to adjust and check each other's parachutes. One jumper assumes the role as No. 1 jumper and the other jumper assumes the role as No. 2 jumper.

Note. During the initial periods of Airborne training, students will receive thorough training in the nomenclature, fitting, and wearing of the parachute assemblies. Demonstration, followed by student participation, is the key to the success of this instruction. Instructors constantly check to ensure students know the proper nomenclature as well as the proper methods of wearing and fitting the parachutes.

T-11 AND MC-6 HARNESS

2-50. When donning the T-11 or MC-6 parachutes, jumpers must complete the following steps:

- **Step 1.** Inspect the parachute assembly for visible defects. The main parachute harness requires pre-adjustment prior to fitting.
- **Step 2.** Place the parachute on the ground. Ensure the harness assembly is up and the risers are facing away. This includes—
 - Activating the quick release in the waistband and pulling up each of the activating levers on the leg strap ejector snaps, which releases the leg straps. The jumper then activates the quick release in the chest strap.

- Sizing the parachute harness must be done prior to donning to ensure proper fit. There are two sizing locations: the diagonal back straps, and the left and right main lift webs.
- Adjusting the harness. The diagonal back straps provide two of the nine points of adjustment on the parachute harness. There are five sizing channels numbered 1 through 5 to adjust for the placement of the canopy release assemblies and position of the pack tray.
- Unsnapping the directional snap fastener on the diagonal back strap retainer and pulling it free from the sizing channel.
- Selecting the appropriate size and routing the diagonal back strap retainer through the appropriate sizing channel, then through the appropriate diagonal back strap keep. The jumper secures the directional snap fasteners.

Notes. The helmet must be inspected prior to Airborne operations to ensure that all seven suspension pads are present, that the crown pad has not been replaced by two oval pads, that the front trapezoidal pad is even with the rim of the helmet, and that the rear trapezoidal pad is flush with the outer rim or protruding slightly beyond the rim of the helmet.

The optimum position for the harness is with the canopy release assemblies resting at approximately name tape level, with the top edge of the pack tray in alignment with the jumper's shoulder's (not below) and the saddle routed around the meaty portion of the jumper's thighs (not the buttocks).

Proper sizing of the T-11 ATPS to the individual jumper is key to reducing injury during an Airborne operation.

Jumpers who are within the lower percentile may require an unorthodox adjustment. For example, a 4-foot, 10-inch jumper's diagonal back strap may require a larger sizing channel adjustment of three (3) to achieve the proper placement of the canopy release assemblies. Ensure that the waistband is snug and is secured.

-
- **Step 3.** Complete donning preparation. To do this, jumpers arrange the T-11 main, T-11 reserve, and aviator's kit bag (universal parachutist recovery bag) by—
 - Letting out the excess webbing from all points of adjustment (leg straps, horizontal back straps, and chest strap).
 - Positioning the aviator's kit bag (recovery bag) and reserve parachute where it is easily accessible to the jumper while donning the parachute harness.

Notes. Two personnel are required when donning the parachute. One assumes the role as the jumper, the other as the buddy to assist in rigging. This also reduces the possibility of rigging deficiencies and ensures proper fit of the parachute.

Properly sizing the T-11 ATPS to the individual jumper is key to reducing injury during an Airborne operation.

WARNING

When the T-11 harness is donned improperly, the results can contribute to static line injuries, weak exits, towed jumpers, riser burns, poorly executed slips, and difficulty or an inability to recover from a drag during wind gusts after landing.

Notes. The main lift webs provide two of the nine points of adjustment. There are three size settings: small, medium, and large.

To make main lift web size changes, unsnap the snap fastener and expose the tuck tab. Select the appropriate size setting. If selecting small or medium, insert the tuck tab into the appropriate tuck pocket and remove any slack from the main lift web adjustment strap. If selecting the large setting, the main lift web adjustment strap will be fully extended with the tuck tab folded in towards the main lift web. Secure the snap fastener again. Conduct the same size change on the opposite main lift web.

The tuck pocket for the small setting is located above the chest strap on each main lift web. The tuck pocket for the medium setting is located below the chest strap on each main lift web. For the large setting, there is no tuck pocket; the main lift web adjustment strap will be fully extended with slack removed.

Although the main lift webs provide the capability to increase their length to accommodate jumpers at the higher percentiles and permit essential items to be worn under the parachute harness.

Jumpers should only adjust the main lift webs after all attempts to size using the maximum adjustments on the diagonal back straps have been exhausted

-
- **Step 4.** Don the main parachute harness. Both jumpers perform the following steps:
 - The No. 1 jumper dons the helmet and assumes a modified “high jumper” position.
 - The No. 2 jumper places the parachute harness over the jumper’s arms with the diagonal back straps resting on the jumper’s shoulders and hold the pack tray high on the jumper’s back.
 - **Step 5.** Secure the chest strap. The No. 1 jumper performs step 5, which includes the following actions:
 - Ensuring that the quick-release webbing retainer is the width of two to three fingers.
 - Completing an “S” fold or accordion fold and securing the excess webbing in its webbing retainer. This ensures that the tabbed ending points towards the chest strap friction adapter.
 - Pulling the ejector snaps and L-shaped ejector snap pads as far forward as possible towards the center of the groin while ensuring that the saddle is routed underneath the hamstrings (not the buttocks).
-

Note. Maintain a modified “high jumper position.”

- Secure the aviator kit bag (AKB) or universal parachutist recovery bag (UPRB).
 - Secure the leg straps with the AKB or UPRB.
 - **Aviator’s kit bag:** ensures that the left leg strap is properly routed through the exposed carrying handle, over the bottom and under the top. Then, complete an “S” fold, accordion fold, or roll the free running ends of the leg straps into the webbing retainers.
 - **Universal parachutist recovery bag:** ensure the left leg strap is properly routed through the left leg strap retainer and the right leg strap is properly routed through the right leg strap retainer. Then, complete an “S” fold, accordion fold, or roll the free running ends of the leg straps into the webbing retainers.
- **Step 6.** Adjust the parachute to the individual jumper. Both jumpers perform step 6, which includes the following actions:
 - The No. 1 jumper secures the D-rings with the thumbs of each hand, then pulls downward, pressing against the body, and stands erect.
 - After the No. 2 jumper is standing erect, remove all slack from the horizontal back strap by simultaneously pulling up on both sides of the horizontal back straps where they emerge from the main lift web.

- **Step 7.** Continue adjusting parachute to the individual jumper. Both jumpers perform step 7, which includes the following actions:
 - The No. 1 jumper remains standing erect, releases the D-rings and applies pressure to the horizontal back strap just above the leg strap ejector snaps until a tight but not uncomfortable adjustment has been made.
 - The No. 2 jumper removes all slack on each side by placing the palm of one hand on top of a diagonal back strap and pressing while tightening down the free running end with the other. The jumper “S” folds, accordion folds, or rolls the free running ends and secures them into the webbing retainers.
- **Step 8.** Next jumper dons a parachute. The No. 1 and 2 jumpers then change positions and repeat steps 1 through 6. When both jumpers have donned their parachute harnesses, they face each other and make a visual inspection. They correct any discrepancies before securing the reserve parachute. All excess webbing is stowed in webbing retainers.

Note. After donning the T-11 harness, the pack tray’s top edge should be in alignment with the jumper’s shoulder blades for optimum position of the harness. The center point of the leg strap ejector snaps and quick-fit V-ring should rest in the jumper’s hip socket.

T-11 RESERVE DONNING

2-51. The jumper attaches the reserve parachute by cradling the parachute in his or her left arm with the connector snaps up and the rip cord handle in the palm of the left hand. If the jumper is part of the jumpmaster team or pushing a door bundle the jumper must have the T-11R marked with yellow pressure sensitive tape on the top carrying handle. If any other jumper has a T-11R marked for jumpmaster, that reserve must not be used and another must be obtained from Control and Issue.

2-52. The jumpers performs the following steps when donning the T-11 reserve parachute:

- **Step 1:** No. 1 and No. 2 jumpers take the following actions:
 - The No. 1 jumper cradles the reserve parachute in the crook of their left arm with the rip cord handle in the palm of the left hand.
 - The No. 2 jumper removes all twists from the waistband and hands the free running end to the No. 1 jumper, being careful not to reintroduce a twist in the waistband.
- **Step 2:** Jumpers No. 1 and 2 perform step 2 by taking the following actions:
 - The No. 1 jumper passes the waistband through the waistband retainers on the rear of the reserve parachute from right to left. Then attaches the right connector snap to the right D-ring on the harness, the left connector snap to the left D-ring, and ensures that the waistband is below the D-rings.
 - The No. 2 jumper attaches the waistband to the waistband-adjuster panel and grasps the running end of the jumper’s waistband in his or her right hand, placing the left hand on the end of the reserve for leverage. The jumper pulls the slack from the waistband and secures it to the waistband adjuster panel, forming a quick release.
- **Step 3:** The No. 1 and 2 jumpers change positions and repeat steps 1 through 3. When both jumpers have donned their parachute harnesses and reserve, they face each other and make a visual inspection. They correct any discrepancies. After doing so, they are now ready to jump; however, before jumping from an aircraft, they will receive a detailed safety inspection from a JM.

Note. When moving with the parachute harness on, the jumper will keep their hand on the rip cord handle at all times to prevent accidental activation of the reserve parachute.

- The No. 2 jumper removes all twists from the waistband and hands the free running end to the No. 1 jumper, being careful not to reintroduce a twist in the waistband.
- **Step 2:** Jumpers No. 1 and 2 perform step 2 by taking the following actions:
 - The No. 1 jumper passes the waistband through the waistband retainers on the rear of the reserve parachute from right to left. Then attaches the right connector snap to the right D-ring on the harness, the left connector snap to the left D-ring, and ensures that the waistband is below the D-rings.
 - The No. 2 jumper attaches the waistband to the waistband-adjuster panel and grasps the running end of the jumper's waistband in his or her right hand, placing the left hand on the end of the reserve for leverage. The jumper pulls the slack from the waistband and secures it to the waistband adjuster panel, forming a quick release.
- **Step 3:** The No. 1 and 2 jumpers change positions and repeat steps 1 through 3. When both jumpers have donned their parachute harnesses and reserve, they face each other and make a visual inspection. They correct any discrepancies. After doing so, they are now ready to jump; however, before jumping from an aircraft, they will receive a detailed safety inspection from a JM.

Note. When moving with the parachute harness on, the jumper will keep their hand on the rip cord handle at all times to prevent accidental activation of the reserve parachute.

Chapter 3

Five Points of Performance

The five points of performance are specific actions the jumper performs between the time of exit from the aircraft and recovery after landing. Each of the points are stressed during jumper training and are taught using one or more of the training apparatuses.

The five points of performance are individual actions that are essential on every parachute jump. Failure to perform any one point correctly could result in an injury to the jumper. A proper exit, body position, and count are essential to lessen the possibility of a parachute malfunction or bodily injury during the deployment and inflation of the parachute.

T-11 POINT 1. PROPER EXIT, CHECK BODY POSITION, AND COUNT

- 3-1. The first point of performance for the T-11 is to properly exit, check the body position, and count. The duration of the 6000 count corresponds to the approximate time it takes the main parachute to fully deploy when used by a jumper exiting an aircraft flying 125 knots per hour.
- 3-2. The following must be trained automatic action as the jumper exits the aircraft:
 - The jumper starts the 6000 count at ONE THOUSAND, snaps their feet and knees together, then locks knees to the rear. The jumper also lowers their head and places their chin firmly against the chest.
 - At the same time, the jumper rotates his or her elbows firmly into their sides, both hands over the end of the reserve parachute with fingers naturally spread. The jumper then bends their body forward at the waist to look over the reserve to see the toes of their boots while continuing to count, TWO THOUSAND, THREE THOUSAND, FOUR THOUSAND, FIVE THOUSAND, SIX THOUSAND, at normal cadence. (The jumper keeps their eyes open and chin on chest to react to situations around them.)

WARNINGS

Hands must remain over the ends of the reserve parachute with fingers naturally spread. Failure to do so may cause unintentional activation of the reserve parachute while standing in the door or during exit from the aircraft.

If no opening shock is felt by the jumper at the end of the 6000 count, he or she must activate the reserve parachute for a total malfunction.

POINT 2. CHECK CANOPY AND GAIN CANOPY CONTROLS

- 3-3. The second point of performance is to check the canopy and gain canopy control. When the jumper finishes the 6000 count, the jumper feels the parachute open, checks the canopy for malfunctions or damage, and controls the parachute.

3-4. The jumper throws their head back to inspect the entire canopy and the slider to ensure it slides all the way down to the riser assemblies. At the same time, the jumper reaches up to the elbow locked position and secures the front set of risers in each hand, simultaneously conducting a 360-degree check of the canopy.

TWISTS

3-5. The main parachute may have twisted suspension lines, risers, or both. This condition may be caused by a single action or combination of actions. The most common causes of twisting include the following:

- The deployment bag spinning before the canopy deploys.
- The canopy spinning when it comes out of the deployment bag, before it inflates.
- The jumper tumbling or spinning (caused by improper exit and body position) during the descent.

3-6. If the suspension lines are twisted and the jumper cannot raise their head enough to check the canopy properly, the jumper compares the rate of descent with that of nearby jumpers.

Rate of Descent

3-7. If the jumper's suspension lines are twisted and the **descent is the same as other jumpers**, he or she untwists the suspension lines by reaching up and grasping a set of risers with each hand, thumbs down, knuckles to the rear. The jumper pulls the risers apart and begins a vigorous bicycling motion. When the last twist comes out, the jumper checks the canopy and gains control.

3-8. If the jumper's main canopy **rate of descent is too fast** (when compared to nearby jumpers), the jumper activates the reserve parachute. (Refer to chapter 6 of this publication for more information on activation of the T-11 reserve parachute.)

3-9. When other jumpers are **not close enough to compare rates of descent**, the jumper activates the reserve parachute.

POINT 3. SHARP LOOKOUT AT ALL TIMES, CONSTANTLY COMPARE RATE OF DESCENT

3-10. The third point of performance is for the jumper to keep a sharp lookout at all times and constantly compare their rate of descent. Avoiding other jumpers during descent is essential to successful Airborne operations. A successful jump consists of many of the following actions:

- Remembering the three rules of the air, which include the following:
 - **Always look before making a slip.**
 - **Always slip in the opposite direction to avoid collisions.**
 - **The lower jumper always has the right of way.**
- Avoiding fellow jumpers all the way to the ground and maintaining a 25-foot separation when jumping the T-11 parachute.
- At the end of the third point of performance, releasing all appropriate equipment tie-downs.

WARNING

During descent, the jumper must watch to avoid collisions and entanglements with other jumpers and to avoid obstacles on the DZ. Jumpers must stay 25 feet away from other jumpers.

3-11. The degree of maneuverability with a T-11 parachute is limited compared to the MC-6. The jumper maneuvers the T-11 parachute using slips, which are described and used as follows:

- **Use of slips.** The jumper performs slips to avoid other jumpers, to avoid obstacles on the ground, and to prepare to land.

- **Types of slips.** The two types of slips are the two riser and the one riser. For an effective slip of either type, the jumper must ensure their hands are not placed through or behind the riser(s). Slips are completed with the following actions:
 - **Slip execution.** When slipping, the jumper looks in the direction that the slip is being made, makes a sharp initial pull using the slip assist loops or slip assist tabs to effectively spill air from the canopy, and let up slowly to prevent spinning or oscillations.
 - **Two riser slip.** A two riser slip is made by reaching up to the elbow locked position, grasping a pair of slip assist loops or slip assist tabs on the risers in the desired direction of movement, and pulling them down to the chest.
 - **One riser slip.** A one riser slip is made by pulling down three full-arm lengths of the one riser nearest the desired direction of movement with a hand-over-hand motion.

COLLISIONS, ENTANGLEMENTS, AND CENTER PANEL STRIKES

3-12. A collision is the physical impact or contact, however slight, of one jumper or jumper's equipment with that of another jumper where both jumpers separate prior to making contact with the ground. An entanglement is the entwining or attachment of a jumper or jumper's equipment with that of another jumper during descent, whether or not the entanglement lasts until the jumpers contact the ground.

3-13. Jumpers must be alert in the air and warn each other of impending **collisions**. If a collision cannot be avoided by slipping or turning, the jumper attempts to bounce off the other jumper's suspension lines or canopy by spreading their arms and legs just before making contact.

3-14. If a jumper becomes **entangled** with one or more suspension lines of another parachute, the jumper does one of the following, depending on the type of parachute being used and the incident altitudes:

- High altitude occurs from aircraft exit throughout full canopy deployment (first point of performance.)
- Mid altitude occurs after full canopy deployment throughout descent to the preparation for landing altitude designated for the jumped parachute (second, third, and fourth point of performance).
- Low altitude occurs from the preparation for landing altitude throughout descent to landing (fourth point of performance).

Center Panel Strike Emergency Procedures

3-15. **Actions of the higher jumper:** If the higher jumper is drifting toward a fellow jumper:

- The higher jumper looks and immediately slips away in the opposite direction of the lower jumper using a one riser diagonal slip.
- If the higher jumper is drifting over a jumper's canopy and believes they will land on top of the lower jumper's canopy; prior to making contact with the canopy, the higher jumper begins a vigorous running motion in the direction of the slip, attempting to stay on their feet, until they are off of the lower jumper's canopy.
- Continues to slip away until a minimum of 25 feet separation has been achieved.
- If the higher jumper lands on the lower jumper's canopy and cannot run off, it is vital the higher jumper maintains momentum. This should allow the higher jumper to remain on their feet, and attempt to get off of the closest edge of the canopy that their momentum will allow.
- If the higher jumper cannot stay on their feet, they should employ a crawling technique by reaching as far as possible in the direction of the closest edge of the canopy. Grasp the canopy and continue to pull towards them self, using the hand-over-hand method until they are free from the lower jumper's canopy.
- Once the higher jumper is falling free, the jumper creates a clear and unobstructed path, then activates their reserve parachute using the pull drop method.
- The higher jumper keeps their feet and knees together and is prepared to execute a parachute landing fall.

WARNING

Attempting to roll off the canopy could wrap the suspension line around the higher jumper's body, preventing the main canopy from re-inflating and preventing them from deploying the reserve.

Actions of the Lower Jumper

3-16. If the lower jumper finds another jumper on top of their canopy:

- If there is damage to the canopy or a jumper on top, compare the rate of descent with fellow jumpers.
- If the lower jumper is falling faster than their fellow jumpers, they immediately activate the reserve parachute using the pull drop method.
- If there is a jumper on top of the lower jumper's canopy and they are not falling faster than fellow jumpers, continue to observe the canopy.
- If at any time the main parachute begins to deflate, immediately activate the reserve parachute using the pull drop method.
- If the higher jumper slides off of the canopy, the lower jumper uses a one riser diagonal slip in the opposite direction to avoid fellow jumpers.

WARNING

When slipping away from fellow jumpers, always use a diagonal slip. If the higher jumper should fall through a corner vent, they should remain where they are and be prepared to conduct a parachute landing fall.

3-17. In the event of an entanglement, the following actions should be taken:

- If a jumper is jumping with the T-11 parachute and becomes entangled, the higher jumper climbs down to the lower jumper using the hand-under-hand method. Be sure to stay away from the corner vents located on all four corners of the canopy and the bridle line on top of the canopy. Should the jumper fall through a vent or become entangled in the bridle line, the jumper should stay where he or she is and be prepared to execute a proper PLF.
- Once both jumpers are even, they will face each other and grasp each other's left main lift web. Both jumpers will continue to observe both canopies and take one of the following actions:
 - If one canopy collapses, neither jumper will activate their reserve parachute as one T-11 parachute can safely deliver two combat equipped jumpers to the ground.
 - If both canopies should collapse, both jumpers will immediately turn away from each other in order to create a clear path, and activate their reserve parachute using the pull drop method.
 - Both jumpers will discuss which PLF to execute.
 - Both jumpers will conduct the same PLF.
 - Neither jumper will execute a front PLF.
- A jumper who finds them self on another jumper's canopy should double-time off and slip away. A jumper who finds them self on another jumper's canopy, without rolling, use whatever means necessary to get off of the canopy and immediately activate the reserve parachute using the pull drop method. If there is another jumper on top of the canopy, continually compare the rate of descent. If the jumper is falling faster than fellow jumpers, the jumper immediately activates the reserve parachute using the pull drop method.
- Remember to stay away from the four corner vents located at the corners of the canopy.

- A jumper who falls through the vent should stay where he or she is and be prepared to execute a proper PLF.

STEALING AIR

3-18. A descending parachute causes an area of partial air compression immediately below the canopy, and an area of partial vacuum and descending turbulent air above the canopy. This turbulent air extends about 100 feet above the T-11 canopy.

3-19. A parachute falling into an area of partial vacuum (from a parachute below) does not capture enough air to stay fully inflated. The top parachute may partially collapse and drop below the other jumper's canopy until the force of unaffected air reinflates it. Then this canopy (being lower) "steals" the air from the canopy above, causing the canopy above to partially collapse and the jumper to drop past the lower canopy. This "leap-frogging" action will continue unless corrective action is taken by the jumper.

3-20. To move away from the area, the jumper slips away using a one riser slip in the opposite direction, providing at least a 25-foot distance between the parachutes. (Both jumpers will execute a slip away from each other when facing another jumper.) When there is enough distance, the jumper takes one of the actions below:

- The jumper slips vigorously using a one riser slip to maintain a lateral distance of at least 25 feet between the parachutes.
- When 250 feet or less above the ground, jumpers must exercise care to avoid stealing air from another parachute, because a deflated canopy will not be high enough above the ground to reinflate completely. The jumper immediately prepares to land and executes a PLF if this situation occurs.

POINT 4. PREPARE TO LAND

3-21. The fourth point of performance is preparing to land. A proper landing attitude is necessary to lessen the risk of injury to the jumper when hitting the ground. (See figure 3-1.) Preparation includes the following:

- When a jumper commits to the final approach, he or she should plan on doing all of their slipping approximately 200 feet AGL.
- At 200 feet AGL, the jumper slips with the T-11 directly into the wind.

WARNING

DO NOT change slips or make any more turns with the parachute unless it is to avoid other jumpers in the air or obstacles on the ground.



Figure 3-1. Landing attitude

3-22. After slipping into the wind on final approach, the jumper takes the following actions:

- Keeps a sharp lookout during descent for other jumpers.
- All equipment is lowered at 200 feet AGL while facing directly into the wind.
- Regains canopy control with both hands once the equipment is released.

3-23. The jumper takes the following actions:

- At approximately 200 feet AGL, the jumper looks below to ensure there are no fellow jumpers before lowering their equipment.
- Slips into the wind at approximately 200 feet AGL.
- If the wind is blowing from the left, the jumper must reach up with both hands and grasp the left set of slip assist loops or slip assist tabs and pulls them deep into their chest.
- If the wind is blowing from the front, the jumper must reach up with both hands and grasp the front set of slip assist loops or slip assist tabs and pulls them deep into their chest.
- If the wind is blowing from the right, the jumper must reach up with both hands and grasp the right set of slip assist loops or slip assist tabs and pulls them deep into their chest.
- If the wind is blowing from the rear, the jumper must reach up with both hands and grasp the rear set of slip assist loops or slip assist tabs and pulls them deep into their chest.
- After the jumper has slipped into the wind, he or she assumes a landing attitude by keeping feet and knees together, knees slightly bent, elbows tight into their sides, head and eyes on the horizon, and eyes open.

3-24. The jumper slips to avoid obstacles. The jumper takes the following emergency procedures if obstacles (trees, water, or high-tension wires) cannot be avoided.

TREE LANDING

3-25. When using the T-11, (see figure 3-2) the jumper takes the following actions:

- Immediately slips away utilizing a one riser slip when beginning to drift towards a tree.
- If the jumper cannot slip away and has lowered the equipment, the jumper looks below to ensure there are no fellow jumpers below and jettisons the equipment, making a mental note of where it lands.
- If the jumper has not lowered the equipment, the jumper keeps the equipment on him or her for extra protection while passing through the trees.
- Assumes a good landing attitude at approximately 200 feet AGL.
- Keeps feet and knees together, knees slightly bent, head and eyes on the horizon, eyes open, and hands in front of their face with elbows high.
- Is prepared to execute a PLF if passing through the trees.
- If a jumper gets hung up in the trees and does not feel they can safely lower them self to the ground, the jumper is to stay where he or she is and wait for assistance.



Figure 3-2. Tree landing attitude

WARNING

Make sure the reserve reaches the ground or is close to it before continuing with the following actions.

3-26. A jumper takes the following action if becoming hung up in a tree and decides to climb down:

- Jettisons all unneeded equipment.
- Ensures that the helmet is maintained.
- Activates the quick release in the waistband.
- Applies inward pressure to the rip cord assembly with either hand.
- Removes the top tuck tab with the opposite hand.
- Maintains steady inward pressure, and with the opposite hand inserts it behind the rip cord assembly and applies inward pressure.
- Grasps the rip cord handle with the opposite hand and pulls and drops it.
- With both hands, the jumper controls the activation of the reserve parachute toward the ground ensuring that all suspension lines are completely deployed.
- Disconnects the left connector snap and rotates the reserve parachute down and to the right.
- Attaches the left connector snap to the triangle link on their right side.
- Activates the quick release in the chest strap and completely removes the chest strap from the chest strap friction adapter.
- Grasps the main lift web with either hand below the canopy release assembly and with the other hand activates the leg strap ejector snaps and climbs down the outside of the reserve parachute.

WARNING

Extreme care must be taken when climbing down the T-11 reserve parachute suspension lines because of the slippery coating applied to the suspension lines. Remember, when in doubt, stay where you are and wait for assistance.

WATER LANDING

3-27. As soon as the jumper realizes he or she is going to land in water, they take the following actions:

- Immediately tries to slip away if drifting towards a body of water.
- If the jumper cannot slip away, he or she looks below to ensure there are no fellow jumpers below, and lowers their equipment.
- Jettisons the helmet, making a mental note of where it lands.
- Activates the quick release in the waistband, disconnects the left connector snap, and rotates the reserve parachute to the right.
- Seats them self well into the saddle and activates the quick release in the chest strap, completely removing the chest strap from the chest strap friction adapter.
- Regains canopy control.
- Prior to entering the water, the jumper assumes a landing attitude by keeping feet and knees together, knees slightly bent, and places hands on the leg strap ejector snaps.
- When the balls of the jumper's feet make contact with the water, the jumper activates both ejector snaps for the leg straps, arches their back, throws their arms above their head, and slides out of the parachute harness.
- Swims upwind or upstream away from the canopy.

- If the canopy comes down on top of you, locate a seam, and follow it to the skirt of the canopy.
- Is prepared to execute a PLF if the water is shallow (two feet or less in depth).

Water Landing Without a Life Preserver

3-28. The jumper does the following (in addition to the actions under water landing) when wearing the T-11 parachute harness and a water landing without a life preserver is imminent (see figure 3-3):

- Looks below himself to ensure there are no follow jumpers and lowers their equipment.
- Jettisons their helmet making a mental note of where it lands.
- Activates the quick release in their waistband, disconnects the left connector snap and rotates the reserve parachute to the right.
- Seats himself well into the saddle and activates the quick release in the chest strap, completely removing the chest strap from the chest strap friction adapter.
- Regains canopy control.
- Prior to entering the water the jumper assumes a landing attitude by keeping their feet and knees together, knees slightly bent and places their hands on the ejector snaps for the leg straps.
- When the balls of their feet make contact with the water, the jumper activates both ejector snaps for the leg straps, arches their back, and throws their arms above their head and slides out of the parachute harness.
- Swims upwind or upstream away from the canopy.
- If the canopy comes down on top of you, locate a seam, and follow it to the skirt of the canopy.
- Is prepared to execute a PLF if the water is shallow (two feet or less in depth).

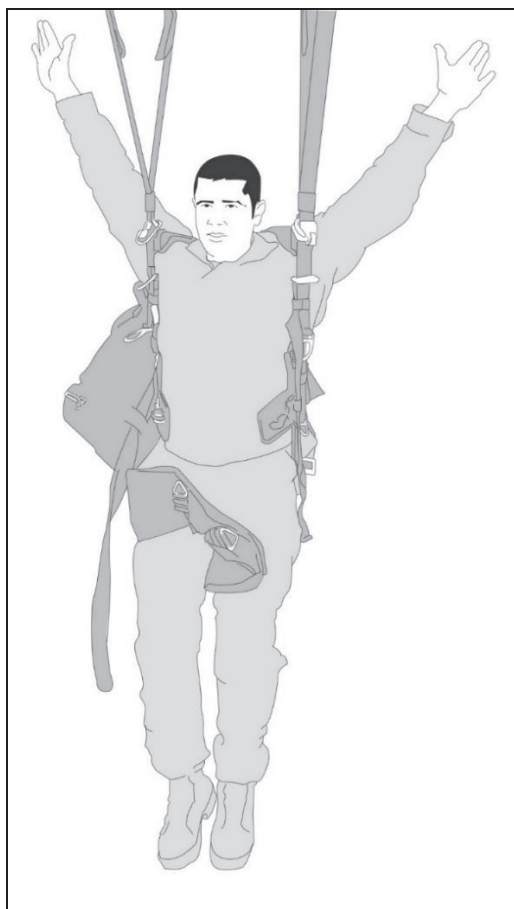


Figure 3-3. Landing without a life preserver

Water Landing with a Life Preserver

3-29. When wearing a T-11 parachute harness and jumping with a life preserver (see figure 3-4), the jumper does the following in addition to the actions mentioned under water landing:

- While still in the air, the jumper activates the life preserver prior to assuming a landing attitude.
- If the life preserver fails to inflate, the jumper inflates the life preserver manually by blowing air into the inflation valve hose.
- The jumper will jettison any combat equipment.
- Looks below to ensure there are no fellow jumpers below, lowers their equipment, and jettisons their equipment.
- Assumes a landing attitude and prepares to do a PLF in the event the water is shallow.
- Once in the water, the jumper activates both canopy release assemblies by using the hand-to-shoulder method or the hand-to-assist method as described previously in the procedures for recovering from the drag.
- The jumper does not remove the harness since the life preserver will support the jumper.

Note. For more information on life preservers, refer to chapter 12 of this publication.



Figure 3-4. Landing with a life preserver

HIGH-TENSION WIRE LANDING

3-30. The jumper does the following if unable to avoid high tension lines when landing (see figure 3-5):

- If the jumper is drifting towards wires, he or she immediately tries to slip away.
- If the jumper cannot slip away, he or she looks below to ensure there are no fellow jumpers below and jettisons their equipment, making a mental note of where it lands.
- Ensures that the jumper maintains their helmet.
- Assumes a landing attitude by keeping feet and knees together and exaggerating the bend in his or her knees. The jumper keeps eyes open, chin on chest, and their back arched.
- Places the palms of their hands high on the inside of the front set of risers.
- When the jumper makes contact with the wires, he or she begins a hard rocking motion and attempts to pass through the wires.
- Prepares to do a PLF in the event the jumper passes through the wires.
- If the jumper gets hung up in the wires, he or she does not attempt to lower them self to the ground. The jumper stays where they are and waits for assistance.

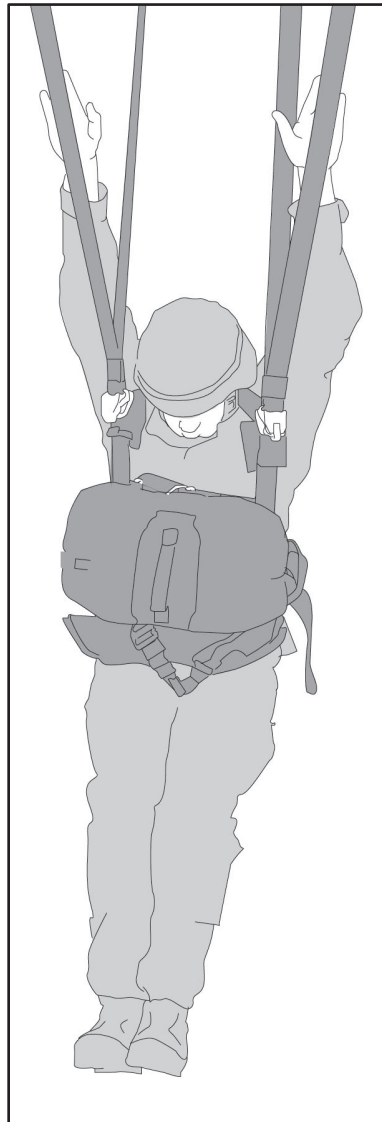


Figure 3-5. Wire landing attitude

Note. If the jumper becomes entangled in the wires, they make no attempt to climb down, but wait to be rescued by a recovery team.

POINT 5. LAND

3-31. The fifth point of performance is land. To lessen the possibility of injuries, the jumper is trained to absorb the impact of landing by executing a proper PLF. To do this, the following five fleshy portions of the body must contact the ground in sequence:

- Balls of feet.
- Calf.
- Thigh.
- Buttock.
- Pull-up muscle.

3-32. The three basic PLFs are:

- Side (right or left).
- Front (right or left).
- Rear (right or left).

3-33. The direction of the wind drift dictates the type of fall the jumper will make. The jumper judges the direction of drift by looking at the ground before assuming the landing attitude. The jumper prepares to make the appropriate PLF after determining the direction of the wind and the type of fall.

SIDE PLF

3-34. As the balls of the feet make contact with the ground, the jumper begins several actions at the same time. As the fall continues, they do the following to complete a left side PLF:

Note. The right side PLF is similar to the left side PLF, except the points of contact on the right side of the body are used.

- The jumper places their chin on chest, and tenses the neck muscles.
- The jumper holds the risers in front of their face and presses their elbows against the chest.
- The jumper will push their right knee into the left knee, exposing their second and third points of contact (calf, thigh) in the direction of drift. The jumper will rotate from the waist up, to their right, looking down at the right boot heel exposing the fourth and fifth points of contact (buttocks, pull-up muscle) to the ground in the direction of drift. The jumper will continue to bend at the knees, maintaining pressure with the right knee into the left knee and lay the four remaining points of contact on the ground in sequence.
- As the PLF is completed in the direction of drift, the jumper maintains tension in the neck to prevent their head from striking the ground.
- The momentum caused by the drift brings the feet around to the right and into the direction of drift.
- The jumper activates both canopy release assemblies to keep from being dragged after completing the parachute landing fall.

FRONT PLF

3-35. The two types of front PLFs are right front PLF and left front PLF. They are used as described below:

- The right front PLF is used if the direction of (wind) drift is to the front and slightly to the right.
- The left front fall is used if the direction of drift is to the front and slightly to the left.
- If the direction of drift is directly to the front, the jumper selects either PLF.

- For a left front PLF, when the balls of the feet make contact with the ground, the jumper will place their chin on their chest and tense the neck muscles, and press their elbows against the chest. The jumper will push the right knee into the left knee, exposing the second and third points of contact (calf, thigh) in the direction of drift. The jumper will rotate from the waist up, further exposing the four remaining points of contact. The jumper will continue to bend at the knees, maintaining pressure with the right knee into the left knee and lay the four remaining points of contact on the ground in sequence.
- As the PLF is completed in the direction of drift, the jumper maintains tension in the neck to prevent their head from striking the ground.
- The momentum caused by the drift brings the feet around to the right and into the direction of the drift.
- The jumper activates both canopy release assemblies to keep from being dragged after completing the parachute landing fall.
- The jumper rotates to the left when executing the right front PLF.

REAR PLF

3-36. The two variations of the rear PLF are right rear PLF and left rear PLF. The jumper determines which PLF to make by checking the direction of drift. If the drift is directly to the rear, they select the appropriate PLF and take the following actions:

- The left rear PLF is used if the direction of (wind) drift is to the rear and slightly to the left.
- For a left rear PLF, when the balls of the feet make contact with the ground, the jumper will place their chin on their chest and tenses their neck muscles, and press their elbows against the chest. The jumper will push their right knee into their left knee exposing the second, third, and a portion the fourth point of contact (calf, thigh) to the ground. The jumper will bend forward at the waist looking between their elbows, down toward the right boot heel, fully exposing the second, third, fourth, and fifth points of contact to the ground. The jumper will continue to bend at the knees, maintaining pressure with the right knee into the left knee and lay the four remaining points of contact on the ground in sequence.
- As the PLF is completed in the direction of drift, the jumper maintains tension in their neck to prevent the head from striking the ground.
- The momentum caused by the drift brings their feet around to the right and into the direction of the drift.
- The jumper activates both canopy release assemblies to keep from being dragged after completing the parachute landing fall.
- The right rear PLF is used if the direction of (wind) drift is to the rear and slightly to the right.
- When executing the right rear PLF, the jumper rotates to the right.

LAND

3-37. Never attempt to make a stand-up landing. Remain on the ground and activate both canopy release assemblies using either the hand-to-shoulder method or the hand assist method. The hand assist method is the most preferred, and consists of the jumper taking the following actions:

- With the thumb and index finger of one hand, pulls out and down on the safety clip.
- Forms a fist with the thumb exposed and then insert your thumb into the cable loop.
- Turns the head in the opposite direction.
- Then assisting with the other hand, pulls out and down on the cable loop.
- Repeats this process with the opposite canopy release assembly.
- Activates both canopy release assemblies on the T-11 parachute.

3-38. Once both canopy release assemblies have been activated, the jumper places their weapon into operation and removes the parachute harness.

MC-6 POINT 1. PROPER EXIT, BODY CHECK POSITION, AND COUNT

3-39. The first point of performance for the MC-6 is to properly exit, check the body position, and count. A proper exit, body position, and count are essential to lessen the possibility of a parachute malfunction or bodily injury during the deployment and inflation of the parachute. The duration of the 4000 count for MC-6 corresponds to the approximate time it takes the main parachute to fully deploy when used by a jumper exiting an aircraft flying 125 knots per hour. The following must be trained reflex actions as the jumper exits the aircraft:

- The jumper starts the 4000 count for the MC-6 at ONE THOUSAND, snaps feet and knees together, then locks their knees to the rear. The jumper also lowers their head and places their chin firmly against the chest.
- At the same time, the jumper rotates their elbows firmly into their sides, both hands over the end of the reserve parachute with fingers naturally spread. The jumper then bends their body forward at the waist to look over the reserve to see the toes of their boots while continuing to count, TWO THOUSAND, THREE THOUSAND, FOUR THOUSAND, at normal cadence. (The jumper keeps their eyes open, and chin on chest to react to situations around them.)

WARNINGS

Hand must remain over the ends of the reserve parachute with fingers naturally spread. Failure to do so may cause unintentional activation of the reserve parachute while standing in the door or during exit from the aircraft.

If no opening shock is felt by the jumper at the end of the 4000 count, the jumper must activate the reserve parachute for a total malfunction.

POINT 2. CHECK CANOPY AND GAIN CANOPY CONTROL

3-40. The second point of performance is to check the canopy and gain canopy control. When the jumper finishes the 4000 count, the jumper feels the parachute open, checks the canopy for malfunctions or damage, and controls the parachute.

3-41. The jumper throws their head back to inspect the entire canopy and at the same time reaches up and secures a toggle in each hand bringing the toggles to eye level, simultaneously conducting a 360-degree check of the canopy.

TWISTS

3-42. The main parachute may have twisted suspension lines, risers, or both. This condition may be caused by a single action or combination of actions. The most common causes of twisting include the following:

- The deployment bag spinning before the canopy deploys.
- The canopy spinning when it comes out of the deployment bag, before it inflates.
- The jumper tumbling or spinning (caused by improper exit and body position) during the descent.

3-43. If the suspension lines are twisted and the jumper cannot raise their head enough to check the canopy properly, the jumper compares their rate of descent with that of nearby jumpers.

Rate of Descent

3-44. If the jumper's suspension lines are twisted and their **descent is the same as the other jumpers**, the jumper untwists their suspension lines by reaching up and grasping a set of risers with each hand, thumbs

down, knuckles to the rear. The jumper pulls the risers apart and begins a vigorous bicycling motion. When the last twist comes out, the jumper checks the canopy and gains control.

3-45. If the jumper's main canopy rate of **descent is too fast** (when compared to nearby jumpers), they activate the reserve parachute. (Refer to Chapter 6 for more information on activation of the T-11 reserve parachute.)

3-46. When other jumpers are **not close enough to compare** rates of descent, the jumper activates the reserve parachute.

POINT 3. SHARP LOOKOUT AT ALL TIMES, CONSTANTLY COMPARE RATE OF DESCENT

3-47. The third point of performance is for the jumper to keep a sharp lookout at all times and constantly compare the rate of descent. Avoiding other jumpers during descent is essential for successful Airborne operations. A successful jump consists of many of the following actions:

- Remembering the three rules of the air, which include the following:
 - Always look before turning.
 - Always turn in the opposite direction to avoid collisions.
 - The lower jumper always has the right of way.
- Avoiding fellow jumpers all the way to the ground and maintaining a 50-foot separation.
- At the end of the third point of performance, releasing all appropriate equipment tie-downs.

WARNINGS

During descent, the jumper must watch to avoid collisions and entanglements with other jumpers and to avoid obstacles on the DZ. Jumpers stay 50 feet away from other jumpers.

Due to the canopy's steerability and maneuverability, jumpers should stay at least 50 feet apart in the air to prevent collisions and entanglements.

3-48. Depending on the wind conditions and their skill, the jumper can steer the parachute to a selected point of impact on the DZ to avoid other jumpers in the air, avoid obstacles on the ground, or to use a preferred PLF. To control movement and direction of the MC-6, the jumper must know the principles by which the canopy operates and the factors that govern its control. The movement of the canopy is controlled by the action of the wind and the position of the canopy's three drive vents relative to wind direction, and the way in which the control lines are manipulated.

HOLDING: OPENING AWAY FROM THE WIND AND RUNNING: OPENING WITH THE WIND

3-49. When the three drive vents are located directly opposite the wind, the thrust of the drive vents will be acting against the wind. This reduces the effect of wind velocity on the canopy and retards the lateral movement of the canopy in the direction of the wind. This technique is called "holding."

3-50. When the three drive vents are located directly with the wind, the thrust of the drive vents combines with the thrust of the wind to speed the movement of the canopy in the direction of the wind. This technique is called "running."

CRABBING OR QUARTERING: OPENING AT AN ANGLE

3-51. When the three drive vents are at an angle to the wind direction, the force of the wind from one direction and the thrust of the orifice at the angle move the canopy in a near right angle direction toward the direction

of orifice thrust. The direction of movement varies with wind velocity and the angle at which the drive vents are pointed. This technique is called “crabbing” or “quartering.”

3-52. Maneuvering while running with, at an angle to, or holding into to the wind, is performed by rotating the canopy to the left or right. As the canopy begins to move in the desired direction, the jumper manipulates the control line toggles to maintain this direction.

WARNING

Before attempting any maneuvers, the jumper must check around them self to prevent collisions with other jumpers.

CANOPY MANIPULATION

3-53. Properly executed maneuvers require correct canopy manipulation to combine the force of the wind and the thrust of the canopy drive vents to move the parachute in a given direction. To maneuver the parachute to a certain point on the ground or to avoid ground obstacles, the jumper may have to turn and hold into the wind, run with the wind, or crab to the left or right while running or holding with the wind. These manipulations are described as follows:

- **Turning.** This is accomplished by pulling down on one control line toggle. The farther down the toggle is pulled, the faster the turn. Pulling the right toggle causes a right turn. Pulling the left toggle causes a left turn.
- **Braking.** Pulling both toggles at the same time reduces forward speed. This is called braking. There are six control input positions that will affect the performance of the canopy. Proper application of the braking techniques will reduce landing impact.
- **Holding into the wind.** Holding into the wind is done by rotating the MC-6 canopy until the drive vents are on the downwind side. Thereafter, the jumper manipulates the control line toggles to retain this position.
- **Running with the wind.** This is accomplished when the jumper rotates the canopy until the drive vents are on the upwind side. Thereafter, control line toggles are manipulated as needed to retain the position.

BRAKING

3-54. The six control input positions that affect canopy braking performance are: no brake, quarter brake, half brake, three-quarter brake, full brake, and reverse flight. They are described in detail below.

3-55. The no brake position is attained when the jumper has the toggles in line with the top of the advanced combat helmet (ACH) or higher. The no brake position allows the canopy to achieve a maximum forward speed of 10 knots.

3-56. The quarter brake position is attained when the jumper has the toggles between eye level and shoulder level. The quarter brake position reduces the forward drive of the canopy. It is used by the jumper to maneuver the canopy while in flight and when preparing to land, given prevailing wind conditions on the drop zone. The quarter brake position should be utilized during high wind conditions.

3-57. The half brake position is attained when the jumper has the toggles at chest level. The half brake position also reduces the forward drive of the canopy. It is used by the jumper to maneuver the canopy while in flight and when preparing to land, given prevailing wind conditions at the drop zone. When executing this position, the jumper should have their elbows held tightly into their sides, and hands facing forward in line with the top of the reserve parachute. Maintaining this body position will minimize the possibility of injury to the jumper’s hands, wrists, and arms when executing a PLF. The jumper will execute a PLF from this body position and must keep their hands and arms inside the area of their body frame.

3-58. The three-quarter brake position is attained when the jumper has the toggles between chest level and above their waistline. The three-quarter brake position reduces the forward drive of the canopy and is used

by the jumper to maneuver the canopy while in flight and when preparing to land, given prevailing wind conditions on the drop zone. The jumper should have their elbows tightly into their sides, and hands facing forward. The inside of the jumper's wrists should rest along the outside edge of the reserve parachute, hands, wrists, and arms when executing a PLF. The jumper will execute a PLF from this body position and must keep their hands and arms inside the area of their body frame. The three-quarter brake position is utilized during low to no wind conditions.

3-59. The full brake position is attained when the jumper has the toggles at waist level. The full brake position reduces the forward drive of the canopy to its slowest and is used by the jumper to maneuver the canopy while in flight and when preparing to land, given prevailing wind conditions on the drop zone. The jumper should hold their elbows tightly into their side, with the hands facing forward and thumbs touching each other. Maintaining this body position minimizes the possibility of injury to the jumper's hands, wrists, and arms when executing a PLF. The jumper will execute a PLF from this body position and must keep his hands and arms inside the area of his body frame.

3-60. The reverse flight position is attained when the jumper pulls the toggles below their waistline, and take the following actions:

- Holds their elbows tightly into their sides with the heel of their wrists resting along the front of their thighs.
- Maintaining this body position minimizes possibility of injury to the jumper's hands, wrists, and arms when executing a PLF.
- While executing a PLF from this body position, the jumper must keep their hands and arms inside the area of their body frame.

3-61. When the toggles are pulled below waist level, the canopy briefly becomes unstable. The jumper will feel the sensation of rocking back and forth as though balancing on a ball. This is a specific design and performance characteristic of this canopy that allows an experienced jumper to land on a desired point in a rough, unimproved drop zone.

3-62. If the toggles are pulled below waist level and the canopy moves into reverse flight, the jumper must not let the toggles go to the no brake position. This will cause a surge in forward speed and descent rate causing the jumper to impact on the ground with increased force.

3-63. Always remember to avoid holding the toggles below waist level. Doing so can cause the canopy to become somewhat unstable and increase landing impact energy by about 20 percent.

Notes. If the toggles are pulled below waist level below 200 feet AGL and the canopy moves into reverse flight, do not let the toggles go to the full-flight position. This will cause a surge in forward speed and descent rate causing the jumper to impact on the ground with increased force.

All toggle manipulation below 200 feet should be soft and slow adjustments on final approach. Radical adjustments in forward speed or direction can cause the parachute to oscillate and increase the rate of descent resulting in injury to the jumper.

WARNING

Running with the wind just prior to landing can cause injury and must be avoided below 100 feet above the ground.

MANEUVERING WITH AN INVERSION OR BROKEN CONTROL LINE

3-64. The jumper reverses the maneuvering technique if the canopy has inverted while opening. The jumper pulls down on the right control line to turn left and pulls down on the left control line to turn right.

3-65. During routine parachute jumps, when a jumper experiences one or more broken control lines during the parachute's inflation phase, the canopy can no longer be controlled by the opening and closing the extended gore(s) and the jumper must use alternate means to control the canopy. If a right or left control line is broken, the canopy can still be maneuvered, though more slowly. The jumper reaches high on the right or left rear riser and pulls down on the opposite side of the broken control line.

CANOPY MANIPULATION

3-66. Guiding or turning the MC-6 parachute using riser slips is accomplished by manipulation of the risers by the jumper. The MC-6 utilizes the standard four-riser system; two risers each from both shoulders of the jumper. A turn or slip in a desired direction is accomplished by pulling in an appropriate riser. Reaching high and pulling in on either rear riser distorts the lower lateral band, pulling it out of alignment in such a manner that it forces the air to escape which forces the parachute to rotate or turn.

3-67. A turn to the right is accomplished by pulling in the right rear riser, and a turn to the left is accomplished by pulling in the left rear riser. Slips are also possible by pulling two risers. However, such slips are not executed as rapidly as the turning action of the parachute's one riser slip. Results in this case cause the parachute to glide in the direction of the two riser slip instead of changing the direction of airflow through the orifice. All manipulations need to consider the following:

- The remaining steering line can also be used to turn (control) the canopy, however, the canopy will turn left or right depending on the distance the steering line is pulled down. At approximately 100 feet above ground level, the jumper must determine the direction of the surface winds prior to the fourth point of performance "PREPARE TO LAND" and turn the canopy into the wind to slow the canopy's ground speed (lateral velocity).
- To land safely, the jumper releases the toggle and utilizes a two-riser slip less than 12 inches into the wind to slow the canopy. Prior to landing, be prepared to execute the appropriate PLF.

WARNINGS

Continuing to utilize one steering line during the fifth point of performance "LAND" will cause the canopy to remain in a turn and NOT slow the jumper's lateral ground speed.

All riser slips during the last 200 feet should be gentle and smooth enough to adjust direction only as needed. Pulling down 12 inches or more on both rear risers smoothly and quickly will reduce forward speed, then increase the jumper's rate of descent in less than two seconds.

MANEUVERING WITH A TANGLED CONTROL LINE

3-68. The jumper uses the same procedure as with a broken control line if the control line becomes tangled in a suspension line.

3-69. If the control line becomes tangled with the L-bar connector link, the jumper reaches up under the affected riser and attempts to untangle the control line from the L-bar connector link. If the jumper is unsuccessful in their attempt, the canopy can still be controlled with the unaffected control line.

COLLISIONS AND ENTANGLEMENTS

3-70. Collision is the physical impact or contact, however slight, of one jumper or jumper's equipment with that of another jumper where both jumpers separate prior to making contact with the ground. An entanglement is the entwining or attachment of a jumper or jumper's equipment with that of another jumper during descent, whether or not the entanglement lasts until the jumpers contact the ground.

3-71. Jumpers must be alert in the air and warn each other of impending collisions. If a collision cannot be avoided by turning away, they should take the following actions:

- Assume a spread eagle position.
- Attempt to bounce off the jumper's canopy and suspension lines and immediately turn away.

3-72. If a jumper becomes entangled with one or more suspension lines of another parachute, the jumper does the following:

- Remains where they are.
- Obtains a clear path.
- Immediately activates their reserve using the pull drop method.

STEALING AIR

3-73. A descending parachute causes an area of partial air compression immediately below the canopy, and an area of partial vacuum and descending turbulent air above the canopy. This turbulent air extends about 50 feet above the canopy.

3-74. A parachute falling into an area of partial vacuum (from a parachute below) does not capture enough air to stay fully inflated. The top parachute may partially collapse and drop below the other jumper's canopy until the force of unaffected air reinflates it. Then this canopy (being lower) "steals" the air from the canopy above, causing the canopy above to partially collapse and the jumper to drop past the lower canopy. This "leap-frogging" action will continue unless corrective action is taken by the jumper.

3-75. To move away from the area, the jumper turns in the opposite direction, providing at least a 50-foot distance between the parachutes. (Both jumpers will turn away from each other when facing another jumper.) When there is enough distance, the jumper takes one of the actions below:

- Turns in the opposite direction to provide at least a 50-foot distance between the parachutes.
- When facing another jumper, both jumpers must turn away from each other.

3-76. When 250 feet or less above the ground, jumpers must exercise care to avoid stealing air from another parachute, because a deflated canopy will not be high enough above the ground to reinflate completely. The jumper immediately prepares to land and executes a PLF if this situation occurs.

POINT 4. PREPARE TO LAND

3-77. The fourth point of performance is preparing to land. A proper landing attitude is necessary to lessen the risk of injury to the jumper when they hit the ground. (See figure 3-6.) Preparation includes the following:

- When a jumper commits to the final approach, they should plan on doing all of the turning approximately 250 feet AGL, so the final approach will be smooth and the landing soft.
- At 250 feet AGL, the jumper turns with the MC-6 directly into the wind. Exactly where he or she turns over the landing area is based on the wind speed above the landing area.
- After turning into the wind on final approach, the jumper takes the following actions:

CAUTION

DO NOT make any more turns with the parachute unless it is to avoid other jumpers in the air or obstacles on the ground.

- Keeps a sharp lookout during descent for other jumpers.
- Turns into the wind PRIOR to lowering equipment.
- The jumper will then bring both toggles in front of their face and transfer control of one toggle to the opposite hand so that both toggles are being controlled by one hand.
- While maintaining both toggles in front of the face, the jumper will use the free hand to lower their combat equipment.

- Once the jumper has lowered their combat equipment, they immediately regain canopy control with both hands and continue to keep a sharp lookout for other jumpers.

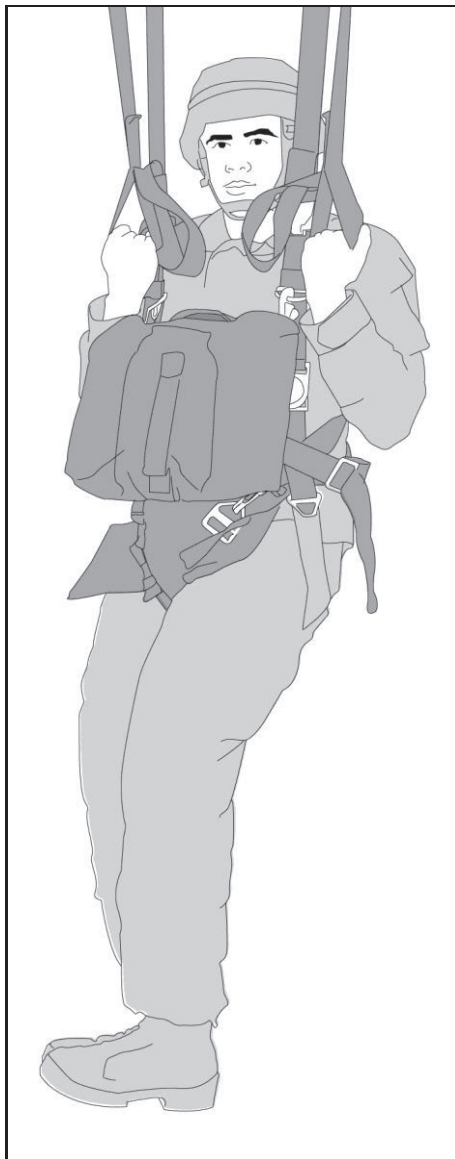


Figure 3-6. Landing attitude

MC-6 PARACHUTE KEY POINTS

3-78. When jumping with an MC-6 parachute, the jumper takes the following actions:

- Determines the direction of drift at approximately 250 feet AGL.
- Pulls the left toggle down when jumping the MC-6 parachute and the wind is blowing from the left and lets up slowly to prevent oscillation when facing into the wind.
- Pulls the right toggle down if the wind is blowing from the right and lets up slowly to prevent oscillation when facing into the wind.
- Pulls either toggle down if the wind is blowing from the rear and lets up slowly to prevent oscillation when facing into the wind.
- Makes minor corrections to remain facing into the wind, if the wind is blowing from the front.

- Looks below to ensure there are no fellow jumpers.
- At approximately 200 feet AGL, transfers control of one toggle to the opposite hand so that one hand is controlling both toggles.
- Lowers combat equipment with a free hand.
- Immediately regains canopy control with both hands.
- Assumes a proper prepare-to-land attitude by pulling the toggles to the appropriate break position.
- Keeps feet and knees together, knees slightly bent, elbows rotated in toward the sides, and head and eyes on the horizon.

OBSTACLES AND TREE LANDING

3-79. The jumper turns to avoid obstacles. When using the MC-6, the jumper takes the following precautions if obstacles (trees, water, or high-tension wires) cannot be avoided:

- If a jumper is drifting toward trees, they immediately turn away.
- If the jumper cannot avoid the trees and has lowered the equipment, the jumper looks below to ensure there are no fellow jumpers and jettisons the equipment, making a mental note of where it lands.
- If the jumper has not lowered the equipment, the jumper keeps it on to provide extra protection while passing through the trees.
- At approximately 250 feet AGL, the jumper assumes a landing attitude by keeping feet and knees together, knees slightly bent, with head and eyes on the horizon.
- Rotates their hands in front of their face with elbows high when the balls of their feet make contact with the trees.
- Is prepared to execute a PLF if the jumper passes through the trees.

WARNING

Make sure the reserve reaches the ground or is close to it before continuing with the following actions.

3-80. A jumper takes the following actions if becoming hung up in a tree and decides to climb down:

- Jettisons all unneeded equipment.
- Ensures that the helmet is maintained.
- Activates the quick release in the waistband.
- Applies inward pressure to the rip cord assembly with either hand.
- Removes the top tuck tab with the opposite hand.
- Maintains steady inward pressure and with the opposite hand, inserts it behind the rip cord assembly and applies inward pressure.
- Grasps the rip cord handle with the opposite hand, pulls, and drops the handle.
- With both hands, the jumper controls the activation of the reserve parachute toward the ground, ensuring that all suspension lines are completely deployed.
- Disconnects the left connector snap and rotates the reserve parachute down and to the right.
- Attaches the left connector snap to the triangle link on their right side.
- Activates the quick release in the chest strap and completely removes the chest strap from the chest strap friction adapter.
- Grasps the main lift web with either hand below the canopy release assembly and with the other hand activates the leg strap ejector snaps and climbs down the outside of the reserve parachute.

CAUTION

Extreme care must be taken when climbing down the T-11 reserve parachute suspension lines because of the slippery coating applied to the suspension lines. Remember, when in doubt, stay where you are and wait for assistance.

WATER LANDING

3-81. As soon as the jumper realizes he or she is going to land in water, they take the following actions:

- Immediately tries to turn away if the jumper is drifting towards a body of water.
- If the jumper cannot turn away, looks below to ensure there are no fellow jumpers underneath, and lowers the equipment.
- Jettisons the helmet, making a mental note of where it lands.
- Activates the quick release in the waistband, disconnects the left connector snap, and rotates the reserve parachute to the right.
- Seats them self well into the saddle and activates the quick release in the chest strap, completely removing the chest strap from the chest strap friction adapter.
- Regains canopy control.
- Prior to entering the water, the jumper assumes a landing attitude by keeping feet and knees together, knees slightly bent, and places hands on the leg strap ejector snaps.
- When the balls of the feet make contact with the water, the jumper activates both ejector snaps for the leg straps, arches back, throws arms above the head, and slides out of the parachute harness.
- Swims upwind or upstream away from the canopy.
- Is prepared to execute a PLF if the water is shallow (two feet or less in depth).

Without a Life Preserver

3-82. The jumper does the following (in addition to the actions under water landing) when wearing the MC-6 parachute harness and executing a water landing without a life preserver is imminent (see figure 3-7 on page 3-24):

- Looks below to ensure there are no fellow jumpers and lowers the equipment.
- Jettisons his or her helmet, making a mental note of where it lands.
- Activates the quick release in the waistband, disconnects the left connector snap, and rotates the reserve parachute to the right.
- Seats them self well into the saddle and activates the quick release in the chest strap, completely removing the chest strap from the chest strap friction adapter.
- Regains canopy control.
- Prior to entering the water, the jumper assumes a landing attitude by keeping feet and knees together, knees slightly bent and places hands on the ejector snaps for the leg straps.
- When the balls of the feet make contact with the water, the jumper activates both ejector snaps for the leg straps, arches the back, throws arms above the head, and slides out of the parachute harness.
- Swims upwind or upstream away from the canopy.
- If the canopy comes down on top of you, locate a seam, and follow it to the skirt of the canopy.
- Is prepared to execute a PLF if the water is shallow (two feet or less in depth).

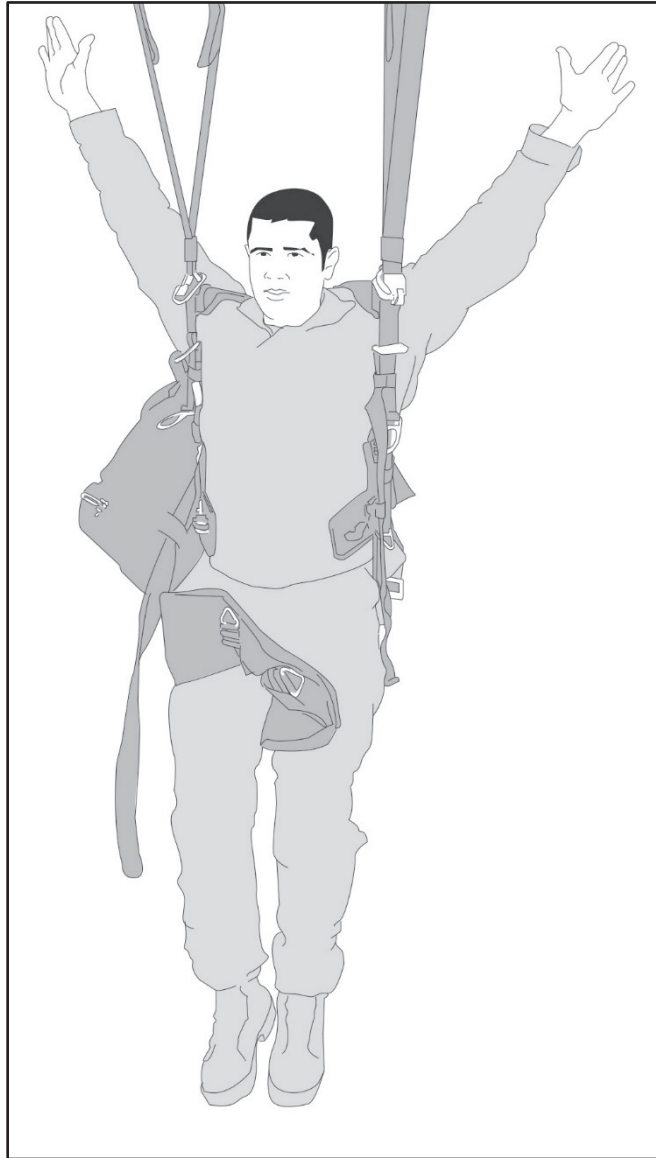


Figure 3-7. Water landing without a life preserver

With a Life Preserver

3-83. When wearing an MC-6 parachute harness and jumping with a life preserver (see figure 3-8), the jumper does the following in addition to the actions mentioned for a water landing:

- While still in the air, he or she activates the life preserver prior to assuming a landing attitude.
- If the life preserver fails to inflate, the jumper inflates the life preserver manually by blowing air into the inflation valve hose.
- The jumper will jettison any combat equipment.
- Looks below to ensure there are no fellow jumpers, lowers their equipment, and jettisons their equipment.
- Assumes a landing attitude and prepares to do a PLF in the event the water is shallow.
- Once in the water, the jumper activates both canopy release assemblies by using the hand-to-shoulder method or the hand-to-assist method, as described previously in the procedures for recovering from the drag.

- The jumper does not remove the harness and equipment, since the life preserver will support a fully combat-equipped jumper.

Note. For more information on life preservers, refer to chapter 12 of this publication.



Figure 3-8. Water landing with a life preserver

HIGH-TENSION WIRE LANDING

3-84. The jumper does the following if unable to avoid high tension lines when landing (see figure 3-9 on page 3-26):

- If the jumper is drifting towards wires, he or she immediately tries to turn away.
- If the jumper cannot turn away, they look below to ensure there are no fellow jumpers and jettisons the equipment, making a mental note of where it lands.
- Ensures that he or she maintains their helmet.

- Assumes a landing attitude by keeping feet and knees together and exaggerating the bend in the knees. The jumper keeps eyes open, chin on chest, and their back arched.
- Places the palms of hands high on the inside of the front set of risers.
- When the jumper makes contact with the wires, they begin a hard rocking motion and attempt to pass through the wires.
- Prepares to do a PLF in the event the jumper passes through the wires.
- If the jumper gets hung up in the wires, they do not attempt to lower them self to the ground. The jumper stays where they are and waits for assistance.

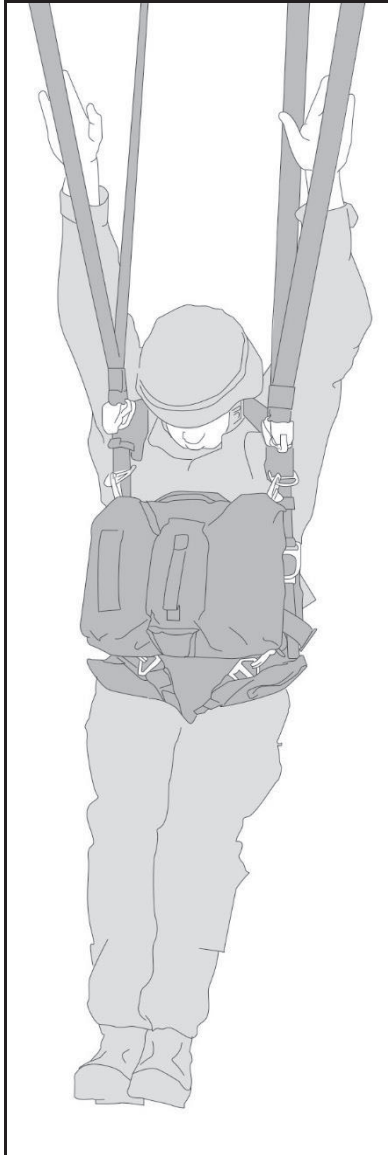


Figure 3-9. Wire landing attitude

Note. If the jumper becomes entangled in the wires, the jumper makes no attempt to climb down, but waits to be rescued by a recovery team.

POINT 5. LAND

3-85. The fifth point of performance is land. To lessen the possibility of injuries, the jumper is trained to absorb the impact of landing by executing a proper PLF. To do this, the following five fleshy portions of the body must contact the ground in sequence:

- Balls of feet.
- Calf.
- Thigh.
- Buttocks.
- Pull-up muscle.

3-86. The three basic PLFs are:

- Side (right or left).
- Front (right or left).
- Rear (right or left).

3-87. The direction of the wind drift dictates the type of fall the jumper will make. The jumper judges the direction of drift by looking at the ground before assuming the landing attitude. The jumper prepares to make the appropriate PLF after determining the direction of the wind and the type of fall.

SIDE PLF

3-88. As the balls of the jumper's feet make contact with the ground, the jumper begins several actions at the same time. As the fall continues, they do the following to complete a left side PLF:

Note. The right side PLF is similar to the left side PLF, except the points of contact on the right side of the body are used.

- The jumper lowers their chin firmly to the chest and tenses their neck muscles:
 - If the jumper is in the no brake, one-fourth brake, or half brake position, the jumper brings hands up in front of their head and elbows in front of their chest, and continues to grasp the toggles.
 - If the jumper is in the three-fourth brake, full brake, or reverse flight position, they cross their wrists by rotating the forearms into the center of their body and hold their elbows into their sides while continuing to grasp the toggles.
 - The jumper will push their right knee into the left knee, exposing the second and third points of contact (calf, thigh) in the direction of drift. The jumper will rotate from the waist up, to the right, looking down at the right boot heel exposing the fourth and fifth points of contact (buttocks, pull-up muscle) to the ground in the direction of drift. The jumper will continue to bend at the knees, maintaining pressure with the right knee into the left knee and lay the four remaining points of contact on the ground in sequence.
- As the PLF is completed in the direction of drift, the jumper maintains tension in their neck to prevent their head from striking the ground:
 - The momentum caused by drift brings the jumper's feet around to the right and into the direction of drift.
 - The jumper activates ONE canopy release assembly to keep being dragged after completing the PLF and only activates the second canopy release assembly if needed.

FRONT PLF

3-89. The two types of front PLFs are right front PLF and left front PLF. They are used as described below:

- The right front PLF is used if the direction of (wind) drift is to the front and slightly to the right.
- The left front fall is used if the direction of drift is to the front and slightly to the left.
- If the direction of drift is directly to the front, the jumper selects either PLF.

- For a left front PLF, when the balls of the feet make contact with the ground, the jumper places their chin on their chest and tenses the neck muscles, then presses their elbows against the chest. The jumper will push the right knee into the left knee, exposing the second and third points of contact (calf, thigh) in the direction of drift. The jumper rotates from the waist up, further exposing the four remaining points of contact. The jumper continues to bend at the knees, maintaining pressure with the right knee into the left knee, and lay the four remaining points of contact on the ground in sequence.
- As the PLF is completed in the direction of drift, the jumper maintains tension in the neck to prevent their head from striking the ground:
 - The momentum caused by the drift brings the feet around to the right and into the direction of drift.
 - The jumper activates ONE canopy release assembly to keep being dragged after completing the PLF and only activates the second canopy release assembly if needed.
 - The jumper rotates to the left when executing the right front PLF.

REAR PLF

3-90. The two variations of the rear PLF are right rear PLF and left rear PLF. The jumper determines which PLF to make by checking the direction of drift. If the drift is directly to the rear, the jumper selects the appropriate PLF. The jumper determines which rear PLF to make by checking the direction of drift, and takes the following actions:

- For a left rear PLF, when the balls of the feet make contact with the ground, the jumper places their chin on their chest and tenses the neck muscles, then press their elbows against their chest. The jumper pushes their right knee into the left knee, exposing the second, third, and a portion the fourth point of contact (calf, thigh) to the ground. The jumper bends forward at the waist looking between theirs elbows, down toward the right boot heel, fully exposing the second, third, fourth, and fifth points of contact to the ground. The jumper continues to bend at the knees, maintaining pressure with the right knee into the left knee, and lays the four remaining points of contact on the ground in sequence.
- As the PLF is completed in the direction of drift, the jumper maintains tension in the neck to prevent their head from striking the ground.
- The momentum caused by the drift brings their feet around to the right and into the direction of drift.
- The jumper activates ONE canopy release assembly to keep being dragged after completing the PLF, and only activates the second canopy release assembly if needed.
- When executing the right rear PLF, the jumper rotates to the right.

LAND

3-91. Never attempt to make a stand-up landing. Remain on the ground and activate one canopy release assembly using either the hand-to-shoulder method or the hand assist method. The hand assist method is the most preferred, and consists of the jumper taking the following actions:

- With the thumb and index finger of one hand, pulls out and down on the safety clip.
- Forms a fist with the thumb exposed and then inserts their thumb into the cable loop.
- Turns the head in the opposite direction.
- Then assisting with the other hand, pulls out and down on the cable loop
- Repeats this process with the opposite canopy release assembly.
- Activates one canopy release assembly.

3-92. Once both canopy release assemblies have been activated, the jumper places their weapon into operation and removes the parachute harness.

Chapter 4

Training Apparatuses

The techniques and apparatuses described in this chapter are used in basic Airborne training. They allow the student to demonstrate proficiency in the tasks necessary to complete the course.

PARACHUTE LANDING FALL DEVICES

4-1. This section provides instructor critiques for PLFs and discusses three types of PLF training devices: the two-foot high platform, the lateral drift apparatus, and the improved swing landing trainer (ISLT). The two-foot high platform may be portable or permanently fixed. A soft landing area of pea gravel or like material is used with all of the training apparatuses. These devices are used to teach front, side (right and left), and rear PLFs. They are high enough to simulate the shock the student feels when contacting the ground during a parachute jump. Initial instruction for each PLF is given without the apparatus.

4-2. Once students know the techniques, they progress to the two-foot high platform, the lateral drift apparatus, and the improved swing landing trainer. The improved swing landing trainer provides a means for gaining forward momentum and simulating the lateral movement experienced during a parachute landing.

INSTRUCTOR CRITIQUES

4-3. Instructor PLF critiques should be brief and clear, and should emphasize the following points to students. (See figure 4-1.) Table 4-1 lists common PLF errors, their causes, and ways to correct them.

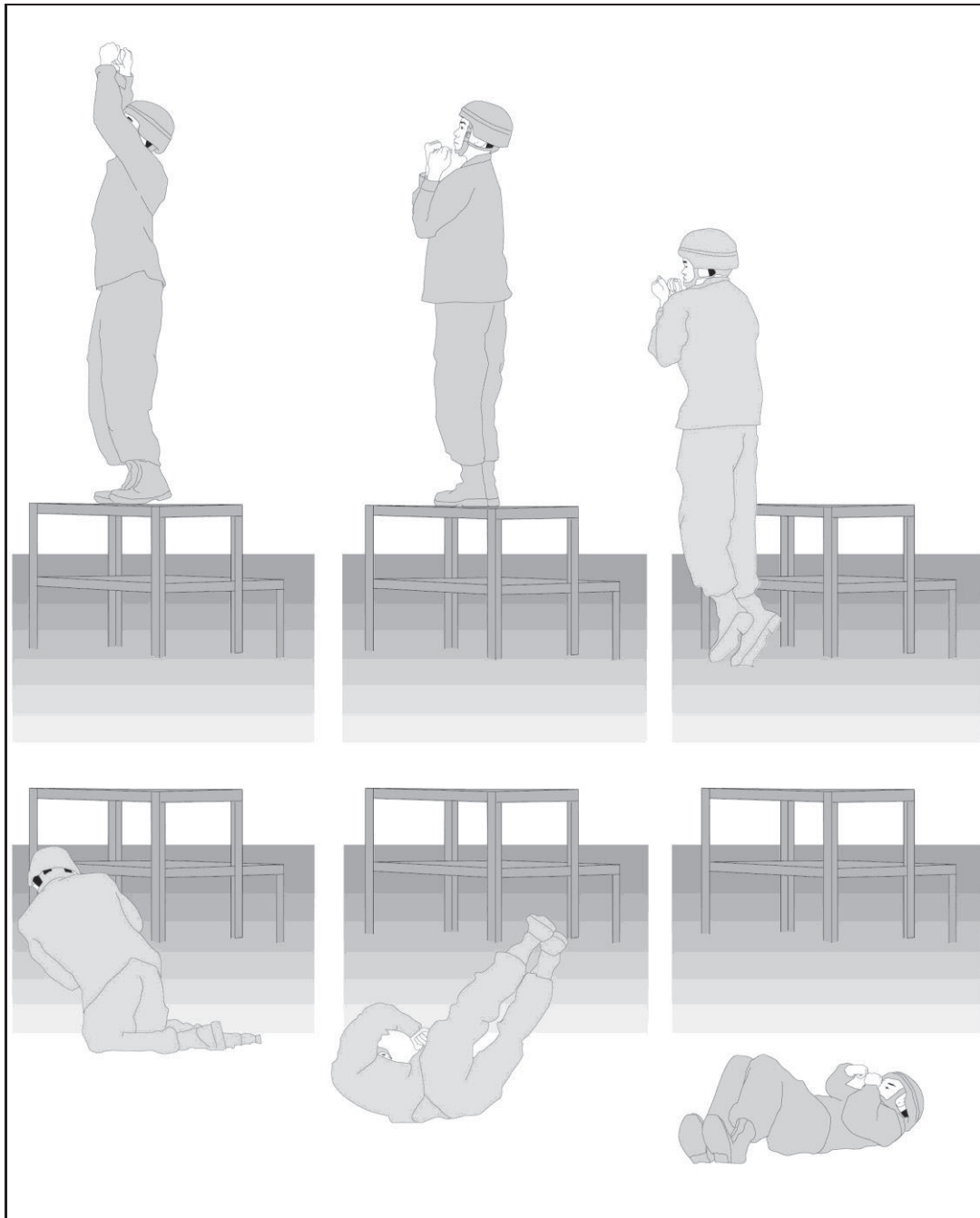


Figure 4-1. Parachute landing fall sequence

Table 4-1. Common parachute landing fall errors

<i>ERROR</i>	<i>CAUSE</i>	<i>CORRECTION</i>
Feet apart.	Anticipation of landing.	Keep moderate muscle tension in the legs. Keep feet and knees together.
Drawing the legs up under the buttocks.	Anticipation of landing. Relaxing the knees. Exaggeration of the bend in the knees. Pulling feet up upon landing.	Keep moderate muscle tension in legs. Maintain a proper prepare-to-land attitude, naturally exposing the balls of the feet to the ground.
Missing the second (calf) and third (thigh) points of contact.	Feet and knees apart. Straightening the legs. Failure to shift the knees.	Bend the knees slightly. Keep feet and knees together. Shift and bend the knees throughout the fall.
Knees into the ground.	Hesitation upon landing. Pushing knees forward toward ground. Excessive bend in knees. Turning the feet toward the direction of drift.	Do not hesitate upon landing. Shift knees to the side. Keep moderate muscle tension in legs. Maintain the proper prepare-to-land attitude.
Elbows hit the ground.	Leaning forward toward ground. Failure to rotate upper body away from ground. Breaking fall with elbows.	Rotate upper body away from the ground with elbows up and in front of face.
Head strikes the ground.	Relaxing the neck. Arching the back during the prepare-to-land attitude. Rotating the upper body into the ground. Missing the points of contact.	Keep chin on chest. Tense neck muscles throughout the PLF. Assume proper prepare-to-land attitude. Rotate upper body away from the ground.

TWO-FOOT HIGH PLATFORM

4-4. Each platform is divided into dismount points. One instructor controls each point where the following occurs:

- On the command, “GET READY,” the student rocks up on the balls of their feet, keeping the feet and knees together and knees slightly bent, naturally exposing the balls of the feet to the ground. Arms are skyward, simulating the grasping and spreading of the risers for the T-11 parachute. For the MC-6 parachute, the palms are facing forward at eye level with elbows out to the side and back.
- On the command, “PREPARE TO LAND,” the student assumes a landing attitude by simulating the grasping of a set of risers opposite the direction of drift and pulling down into their chest with head and eyes on the horizon, back straight, elbows tight into their sides, and feet and knees together. If executing front or rear parachute landing falls, the student rotates their lower body (from the waist down) 45 degrees to expose the second and third points of contact.
- On the command, “LAND,” the student jumps straight off the platform, executes the PLF, and makes a quick recovery.
- The instructor critiques each PLF immediately, emphasizing the significance of the five points of contact.

LATERAL DRIFT APPARATUS

4-5. A platoon is distributed among several apparatuses. Each apparatus requires a jumper, a ropeman, and a safety officer. The safety officer is positioned on the top step of the platform to catch the trolley when it is returned by the ropeman who is located to the left side at the base of the platform. (See figure 4-2.)

4-6. The jumper mounts the platform, grasps the bar with palms facing toward their face, and assumes a good landing attitude. On the command, **CLEAR THE PLATFORM**, the jumper maintains a grasp on the trolley with both hands, picks up their feet, and drifts off the platform. On the command, **LAND**, the jumper releases the bar and executes the PLF.

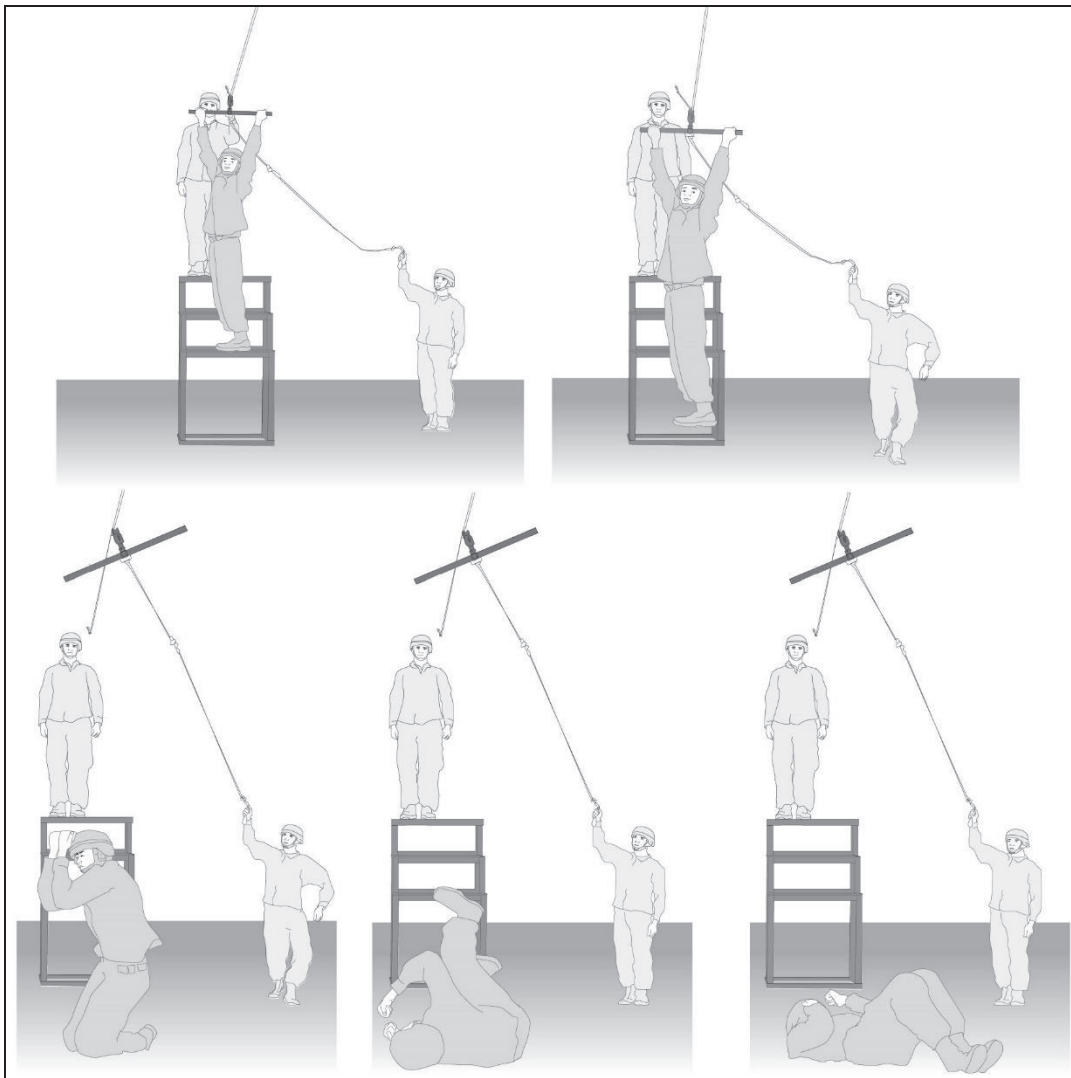


Figure 4-2. Lateral drift apparatus

IMPROVED SWING LANDING TRAINER

4-7. The ISLT is a mechanical device consisting of a latching mechanism with activating arm, a flexible rope, cable, and chain section with colored shackles for jumper height adjustment, and a counterweight shock absorber to reduce jolt and provide for a realistic rate of descent. The ISLT is mechanical apparatus easily operated by an instructor with a simple pull of a control lanyard. This device can be used to replace the rope and pulley-type swing landing trainer system.

4-8. The ISLT apparatus is suspended above a 12-foot high platform from which students, wearing parachute harnesses, descend to practice PLFs. The apparatus provides a downward motion and oscillation similar to that experienced during a parachute jump. The suspension is placed so that the student swings when stepping off the platform. Personnel required to train on the ISLT apparatus include one instructor for every two dismount points in use and four detail personnel for each unit.

4-9. The improved swing landing trainer provides practical exercise in the various PLFs and may be used to practice the last two points of performance. Students must—

- Secure a harness and reserve parachute and put on both using the buddy system.

Note. The instructor inspects students before they mount the steps.

- Move to and mount the stairs at an assigned point. One student covers each open point. If a point is not open, the students wait on the stairs. Students stand on alternate stair steps while waiting.
- Jump from two even or odd points in a section. They do not change sections or switch sides of the apparatus unless directed to by an instructor.

DETAIL PERSONNEL DUTIES

4-10. The following detail personnel are needed for training with the ISLT:

- **Stationary ropeman.** The stationary ropeman stands by the stationary rope and—
 - Pulls up the stationary rope with risers hooked to it.
 - Unhooks the risers from the rope and places the rope on the platform.
 - Passes one set of risers to the holdman.
 - Removes any twists in the risers and attaches the butterfly snaps of the risers to one of the jumper's D-rings.
 - Calls down the correct height adjustment color to the hookup man.
 - Grasps the horizontal back strap of the jumper to prevent the jumper from clearing the platform before being told to do so.
 - Grasps the platform handhold with their free hand.
 - Releases the jumper on the command, "CLEAR THE PLATFORM" (from the instructor).
- **Holdman.** The holdman on the platform stands beside the rail padding, allowing space for the jumper between them self and the stationary ropeman. The holdman—
 - Receives one set of risers from the stationary ropeman and removes any twists.
 - Attaches the butterfly snaps of the risers to one of the jumper's D-rings.
 - Grasps the horizontal back strap of the jumper to prevent the jumper from clearing the platform before being told to do so. The holdman grasps the platform handhold with their free hand.
 - Releases the jumper on the command, "CLEAR THE PLATFORM" (from the instructor).
- **Unhookman.** The unhookman stands in the pit at parade rest near the outside pole at each point. The unhookman—
 - Unhooks the jumper's risers after each PLF once the jumper is standing.
 - Hooks the risers to the stationary rope and returns to their assigned position.

Note. The ISLT has colored height adjustment shackles: red shackle is for all jumpers taller than 6 feet; the white shackle is for all jumpers 5 feet, 6 inches to 6 feet tall; and the blue shackle is for all jumpers under 5 feet, 6 inches tall.

- **Hookup man.** The hookup man stands beneath the platform and—
 - Once the jumper is hooked up to the risers, receives height adjustment color from the stationary ropeman, grasps the correct colored shackle and hooks it into the latch opening gate.
 - Holds the chain in his or her hand and tugs up to ensure the shackle is secure in the latch, at the same time pushing down on the activating lever to ensure it is locked in the down position. Then secures the rope just below the chain, leans back, and sounds off with, “SAFE SERGEANT,” the hookup man continues to this position until told to “RELEASE” by the instructor.
 - Returns to their assigned position.

INSTRUCTOR DUTIES AND SAFETY CONSIDERATIONS

4-11. When ready to drop a student, the instructor ensures the jumper is hooked up properly, informs the hookup man to “RELEASE,” and takes the control lanyard from the ground. The instructor tells the jumper the direction of drift and type of parachute, and ensures that the stationary rope is on the platform before commanding, “CLEAR THE PLATFORM.” Then, the following occurs:

- The platform detail personnel release the jumper.
- The jumper executes a half chin up on the risers, clears the platform, and assumes the correct landing attitude.
- The instructor releases the jumper to the ground.
- At the completion of the PLF, the jumper activates one or both canopy release assemblies for the T-11 ATPS, makes a quick recovery, and reports to the instructor for a critique and grade.
- The jumper sounds off “CLEAR” or “NOT CLEAR” at the completion of the critique and moves directly out of the pit.
- The detail personnel perform their duties in sequence to prepare another jumper for the exercise.

4-12. The following precautions are taken to ensure student safety:

- Landing area must be constructed of at least 12 inches of pea gravel or like material.
- Pea gravel must be loosened by raking before each period of instruction.
- Ropes on the apparatus must be checked daily for wear.
- Spreader bars and risers must be checked daily for wear.
- Harnesses and canopy release assemblies must be checked for completeness and serviceability.
- ISLT apparatus must be thoroughly inspected prior to use.
- Student must not be dropped from more than 4-1/2 feet above the ground.
- Student must not be dropped on the initial oscillation or when unprepared for the PLF.
- Student must be dropped at a point in oscillation that aids in executing the desired PLF.
- Student will not conduct more than 20 falls from the ISLT on any one day.

MOCK DOOR TRAINING

4-13. The mock door replicates the cargo-troop compartment of a troop carrier aircraft. This apparatus includes openings about the size of the aircraft door and anchor line cables for each door. (See figure 4-3.)

4-14. For training purposes, the instruction is divided into a basic phase and an advanced phase. The basic phase teaches basic jump techniques and familiarizes students with equipment, aircraft terms, and safety procedures. The advanced phase provides instruction in the sequence of jump commands and the mass exit technique.

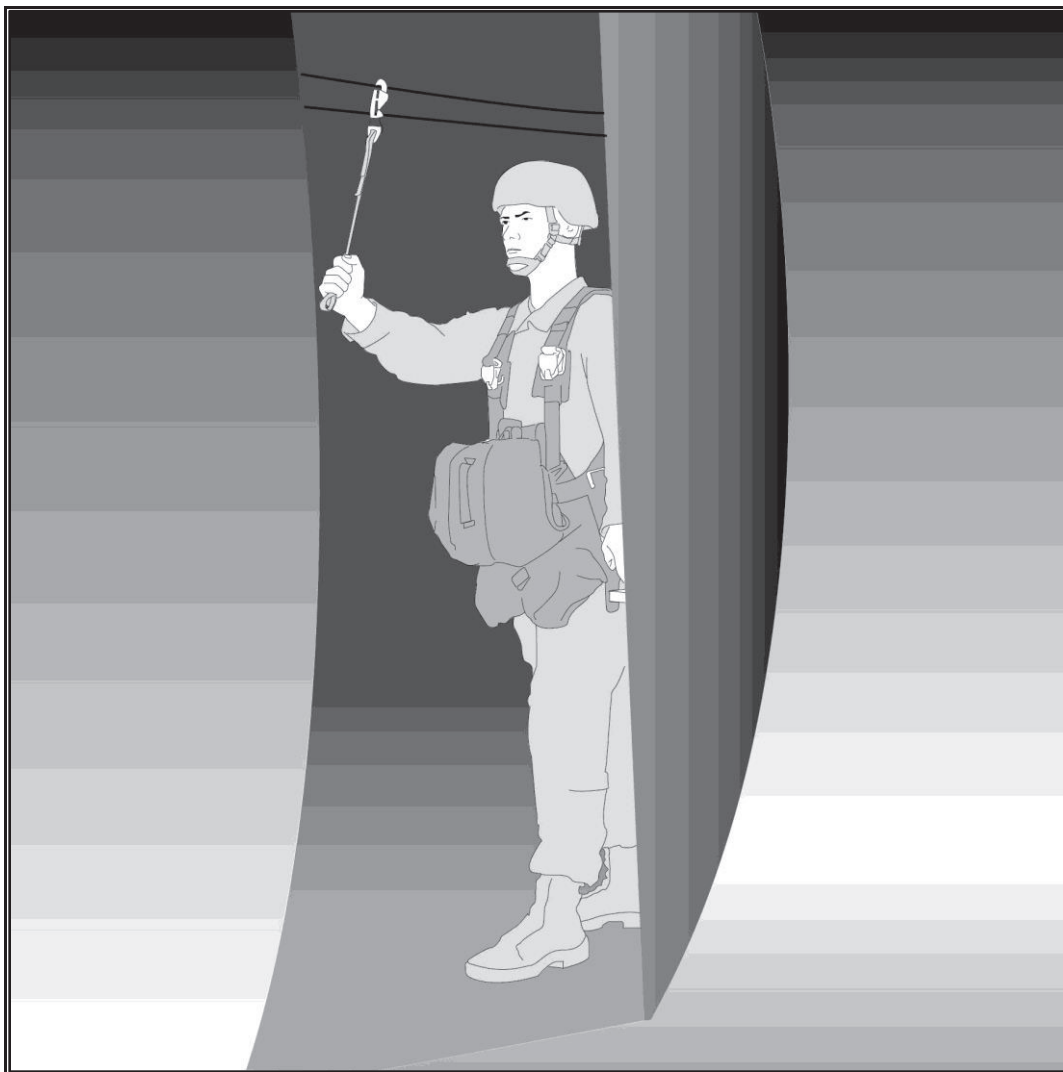


Figure 4-3. Mock door apparatus

BASIC PHASE

4-15. 4-16. Students are taught the terms and nomenclature of military parachuting and the use of aircraft equipment during the basic phase. Teaching objectives include a controlled movement technique, static line control, the STAND BY position, the exit and body positions, the 6000 count with T-11 ATPS or the 4000 count with a MC-6 series parachute.

4-16. One instructor is required for each mock door in use. One section of static line (about four feet long and not attached to the parachute assembly) is required for each student. Loudspeakers will be needed if the class or facilities are large.

4-17. The initial instruction in the mock door apparatus includes a lecture and demonstration followed by practical exercises. Each student is given the commands STAND BY and GO. The student is graded and corrected by the instructor on the movement to the door, his exit, his body position, and the 6000 count with the T-11 ATPS.

4-18. Repetition is the key to mock door training; however, proper training in the mock door is vital to obtaining proper exits with the T-11 ATPS during Airborne operations.

HIT IT Exercise

4-19. The HIT IT exercise is given as a test of mental alertness and for practical work in assuming the proper body position. On the command, "HIT IT," the student—

- Snaps into the proper body position, and at the same time, commences the 6000 count with the T-11 ATPS.
- Remains in the body position until commanded to "RECOVER," or until he is told to "CHECK CANOPY" and "GAIN CANOPY CONTROL." The student simulates checking the canopy. Then is told to "RECOVER" or that there is a "MALFUNCTION." In the latter case, the student returns to a modified body position and simulates activation of the reserve. The command, "RECOVER" is given.
- Students will receive instruction on the right and left paratroop doors of the mockup.

Terms

4-20. The following terms are important in mock door training. Each term is explained during the initial phase of instruction:

- **Left and right paratroop door.** When the jumper is facing the pilot's compartment, the paratroop door on the student's right is the right door; the door to the student's left is the left door.
- **Inboard and outboard anchor line cable.** An anchor line cable is normally extended along the long axis of the cargo/troop compartment and secured at both ends. The cable is designed to accommodate the universal static line snap hook and to initiate parachute deployment.
- **Stick of jumpers.** This is a group of jumpers exiting from the same paratroop door (or from one side of a ramp) during one pass over the DZ.
- **Drop zone.** This is a designated area where personnel or equipment are delivered by means of parachute.

CONTROLLED MOVEMENT TECHNIQUE

4-21. This is a method of moving toward the paratroop door. (See figure 4-4.) The controlled movement technique consists of the following:

- The nonstatic line hand covers the rip cord handle; the other hand grasps the USLM.
- When jumping the left door, the jumper has the USLM over the left shoulder; when jumping the right door, the USLM is over the right shoulder.
- Facing the rear of the aircraft, the jumper keeps both feet directly beneath the body and staggered with the outboard foot forward; the inboard foot is the trail foot.
- The jumper conducts a slow deliberate walk forward ensuring both feet are staggered to maintain balance, with the nonstatic line hand protecting the rip cord handle and the other hand controlling the USLM.

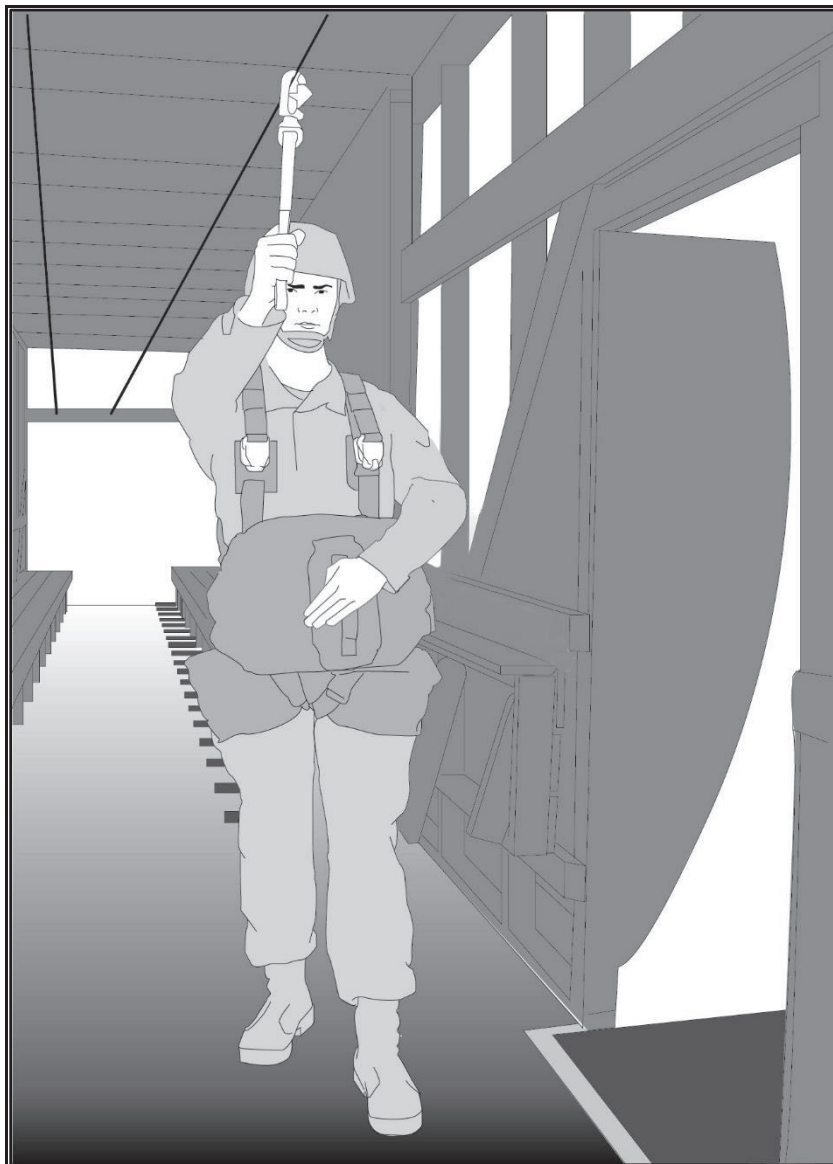


Figure 4-4. Controlled movement technique

BIGHT, JUMP COMMANDS, AND BODY POSITION

4-22. The jumper will grasp their USLMs approximately six inches from the point of attachment; generally below the double sewn portion, with their corresponding static line elbow perpendicular to shoulder level in order to reduce misrouted static lines with four inches inside the hand and two inches below the hand. (See figure 4-5.) The remainder of the universal static line modified is routed over the shoulder. The free hand is used to protect the rip cord handle while moving toward the paratroop door.



Figure 4-5. Static line bight

4-23. The last two jump commands, “STAND BY” and “GO,” are used for each student when practicing exits as follows:

- On the command, “STAND BY,” the jumper uses a controlled movement technique towards the paratroop door.
- The jumper makes eye-to-eye contact with the safety and the safety will take the universal static line modified from the jumper.
- When the first jumper is perpendicular to the jump door, he or she takes one more step and halts their movement about two feet from the center of the jump platform. They keep their feet spread and legs slightly flexed so that their weight is equally distributed over both feet to maintain balance.
- The jumper will not turn into the door until the jumper sees the safety has positive control of the USLM. The jumper then executes a left or right face toward the open paratroop door and ensures their arm is not entangled with the USLM. Holding their elbows firmly into their sides, the jumper places the palms of their hands (fingers naturally spread) on the ends of the reserve parachute.
- At the command, “STAND BY,” the No. 2 jumper positions them self about even with the leading edge of the paratroop door, two feet from the skin of the aircraft and facing to the rear, with

feet spread and legs slightly flexed so that their weight is equally distributed over both feet to maintain balance.

- Follow-on jumpers close up behind the preceding jumper and keep a position with the feet spread and legs slightly flexed so that their weight is equally distributed over both feet to maintain balance.
- At the command, GO, the No. 1 jumper moves toward the door and onto the jump platform, focusing on the horizon. He pushes off with either foot and vigorously jumps up 6 inches and out 36 inches away from the jump platform, immediately snapping into a good tight body position.

4-24. After the No. 1 jumper has exited the aircraft, the No. 2 jumper (and all following jumpers) performs the following actions:

- As each jumper begins to move, they assume an elbow locked position with the arm that is controlling the USLM. They place the static line control hand so that it is nearly touching the back of the pack tray of the jumper in front of them, which establishes the proper interval between jumpers. They do not place the static line control hand in a position so that it extends past the pack tray of the jumper in front of them.
- When they are about perpendicular to the paratroop door, each jumper takes one more step, makes eye-to-eye contact with the safety, and the safety takes control of the universal static line modified.
- Ensures the arm is not entangled with the USLM, and holds their elbows firmly into their sides.
- Places the palms of their hands (fingers naturally spread) on the ends of the reserve parachute.
- The jumper will execute a left or right face to face the open paratroop door only when the safety has positive control of the universal static line modified.
- Moves toward the paratroop door and onto the jump platform, focusing on the horizon. The jumper pushes off with either foot and **vigorously jumps up (6 inches) and out (36 inches) away from the aircraft**, immediately snapping into a good tight body position.

4-25. The student remains in the body position, is critiqued by the instructor, and is told to “**RECOVER**” and waits for further instruction.

ADVANCED PHASE, PERSONNEL, AND EXECUTION

4-26. The training provided during the advanced phase is presented in the same manner as the basic phase, except that the entire sequence of time warnings and jump commands is given, and mass exits are substituted for individual exits. Extra instructors may be needed to ensure that all students in the mock door apparatus react properly to each of the jump commands.

4-27. When the mass exit technique is taught, each stick receives the commands, “STAND BY” and “GO.” Each succeeding student uses a controlled movement technique to the paratroop door and exits the aircraft. A one-second interval must be maintained between students and a half second between paratroop doors.

SUSPENDED HARNESS TRAINING

4-28. The suspended harness apparatus is a modified troop parachute harness suspended from a spreader bar assembly by four webbed risers. (See figure 4-6.)

4-29. The spreader bars react to riser (T-11) manipulation much the same as the canopy. The suspended harness simulates the third basic jump technique and the fourth point of performance: control of the parachute during descent and prepare to land.

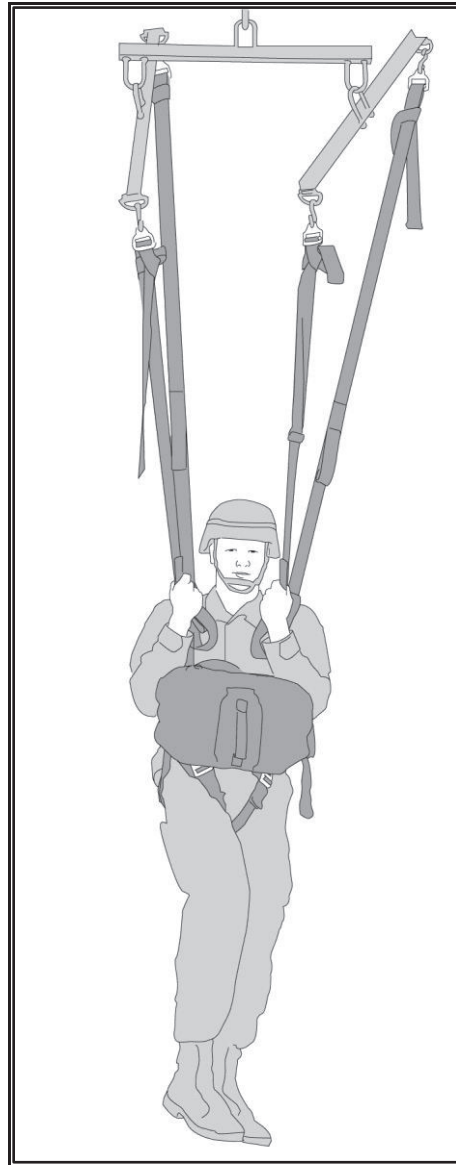


Figure 4-6. Suspended harness apparatus

4-30. The suspended harness apparatus is designed to teach the student to execute the following maneuvers:

- T-11 slips (two riser and one riser).
- T-11 series landing attitude.
- T-11 series emergency landings (tree, water, and wire).
- React to twists, collisions, and entanglements.

PERSONNEL AND EQUIPMENT REQUIREMENTS

4-31. The following personnel and equipment are needed to conduct training on the suspended harness:

- One instructor is needed to give commands, and at least one assistant instructor is needed at each platform to control and supervise student performance. One troop harness and reserve is required for every two students.
- A platoon is divided into teams of two students each. The No. 1 jumper is the jumper and No. 2 jumper is the coach. They take the following actions:
 - The jumper obtains a troop parachute harness and reserve, and moves to a specific point at the suspended harness apparatus.
 - The coach mounts the platform and adjusts the risers so that the male fitting of the canopy release assembly is level with the jumper's shoulders below. The coach dismounts the platform and helps the jumper don the harness and attach it to the risers. The coach remounts the platform and takes up all the slack in the jumper's risers.
 - All jumpers face the instructor and await commands from the instructor.

SEQUENCE OF COMMANDS

4-32. The instructor uses the following sequence of commands. (The let up position is the starting position for all training on the suspended harness.)

- **LET UP.** On this command, each jumper—
 - Has their head and their eyes on the horizon.
 - Grasps the front set of risers (T-11) with their hands and locks their elbows
 - Has their back straight.
 - Has their feet and knees together. (The jumper is standing flat-footed on the ground.)
- **AT EASE IN THE HARNESS.** On this command, each jumper comes to a modified position of parade rest in the harness with their right hand covering the rip cord handle. From the let up position, the instructor directs the jumper to practice appropriate parachute maneuvers.
- **CHANGE OVER.** The No. 2 jumper switches places with No. 1 jumper and becomes the jumper and No. 1 becomes the coach. Instructors may give additional commands and instruction to ensure proper fitting, wearing, or removal of equipment, and proper student performance on the apparatus.

THIRTY-FOUR FOOT MOCK TOWER

4-33. The 34-foot mock tower supports a replica of a section of a troop carrier aircraft. (See figure 4-7.) A paratroop door is on each side of the replica. Four steel cables are suspended parallel to the ground and slightly above each door. A trolley, which supports a set of trolley risers, is attached to each cable. Each trolley riser has a D-ring attached to its free end. These D-rings are connected to a modified harness worn by students during training on the mock tower.

4-34. The mock tower is a primary training apparatus to help teach the jump technique (control of the jumpers' body position from the moment they exit the door of the aircraft until they receive the opening shock of the main parachute canopy) and points the first point of performance (proper exit, check body position and count) and second point of performance (check canopy and immediately gain canopy). For ease in training, the instruction is divided into two phases: the basic phase continues instruction presented on the mock door apparatus. The advanced phase continues instruction on the mass exit technique, simulates parachute malfunctions, and familiarizes the students on jumping with combat equipment.

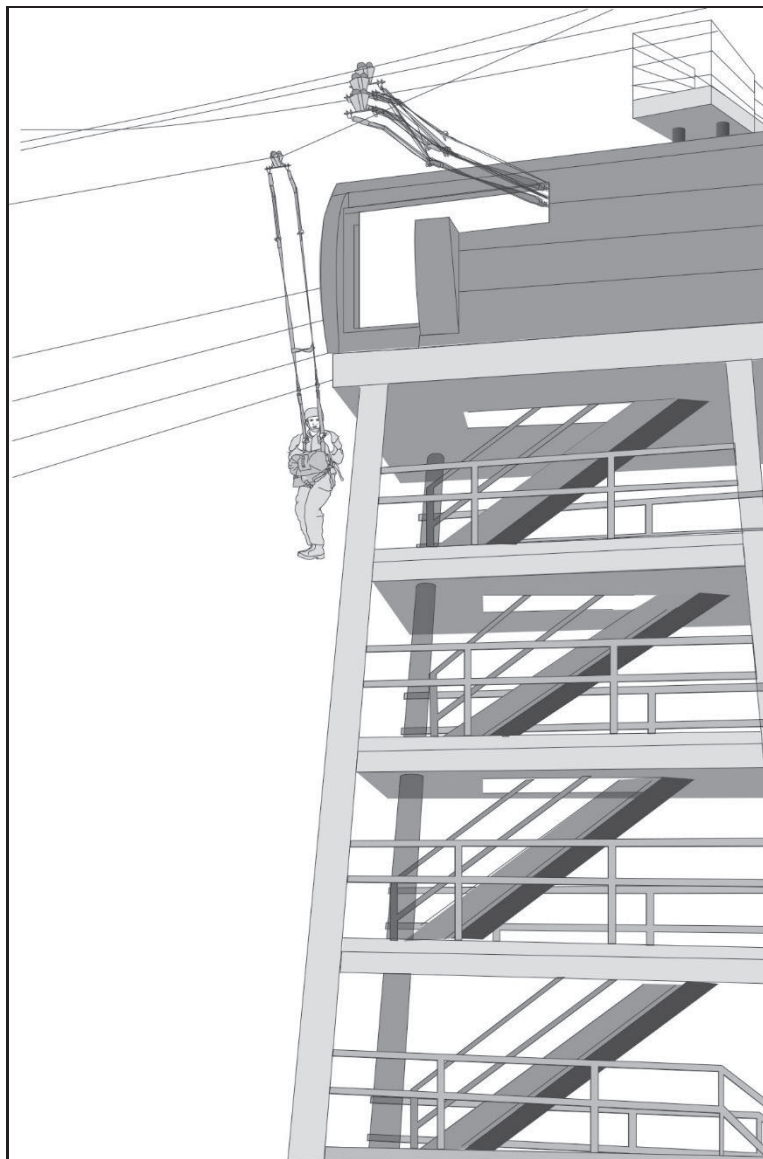


Figure 4-7. Thirty-four foot mock tower

BASIC PHASE

4-35. Students practice the exit technique, the proper body position, and the 6000 count with the T-11 ATPS. The mock tower also gives each student experience in overcoming their fear of heights and simulates the opening shock during the deployment sequence.

4-36. The initial period of instruction on the mock tower includes an orientation and demonstration of the apparatus, duties of instructor personnel (graders, JMs, harness checker), and duties of all detail personnel. Each student is given the commands, “STAND BY” and “GO,” by the JM in the tower. The student’s exit, body position, 6000 count with the T-11 ATPS, and simulated canopy checks are critiqued and graded by the grader on the ground.

SAFETY

4-37. To prevent safety issues, all personnel must be safety conscious. The following measures are taken to prevent unsafe conditions:

- Tower JMs must wear safety belts.
- Students must have equipment adjusted properly, and instructors must check them to ensure a snug fit, the absence of frays or tears, the serviceability of snaps, and a properly fitted helmet.
- Qualified maintenance personnel must perform and record thorough inspections of the mock tower weekly.
- Inspections must include trolley risers, cables, anchor points, trolleys, and JM safety belts.
- Risers will be removed and stored when not in use.
- Parachute harnesses and risers will be locally manufactured by a qualified parachute rigger according to the technical manual specifications for that item of equipment. Risers will be replaced every 180 days from being placed in service or when they become unserviceable. This happens when—
 - Any portion of the riser becomes cut, frayed, or burnt
 - Any D-ring or butterfly snap that becomes bent, or any butterfly snap that loses spring tension.
- Students must lift their legs as they approach the mound at the end of the cable run to prevent injury.

PERSONNEL AND EQUIPMENT REQUIREMENTS

4-38. A minimum of seven instructors are required to manage, operate, and carry out the 34-foot mock tower training for at least 34 students. These positions include instructors, mound safety officers, moundmen, ropemen, rope line safties and relays, and base safety officers or noncommissioned officers (NCOs).

4-39. Figure 4-8 (on page 4-16) indicate the positions for these instructors. At a minimum:

- Two JMs hook up students in the tower and issue the last two jump commands.
- One harness checker inspects all harnesses before students exit the tower.
- Two graders on the ground critique and grade the students’ performance on the apparatus.
- Two mock door instructors correct students on problem areas and give them additional practice.

4-40. A student stands at parade rest on top of the mound between and slightly to the rear of the moundmen assigned to their side of the mock tower. The student is responsible for the safety and conduct of the moundmen and is also responsible for attaching the butterfly snaps on the risers to the D-rings of the harness. The student should be the most senior officer or noncommissioned officer (NCO) on the mound on each side (two total).

4-41. Two students are assigned to each cable on the tower (16 total). They stand at parade rest on top of the mound, facing the mock tower. After the jumpers reach the mound and come into contact with the stop cable, the moundmen unhook the jumper and then hook the rope to the trolley risers.

4-42. One student at each point along the beaded path returns the trolley risers (with rope attached) to the mock tower after the jumper is detached. The ropemen take commands from the ropeman safety and rope

line safety/relay. The ropemen for each two points rotate, and there are always two additional ropemen standing at the base of the pole supporting the tower (12 total).

4-43. One student (officer or NCO) for each side of the tower (two total) stands at parade rest near the base of the pole supporting the cables, facing the rope line. The student relays the commands of the JM to the ropemen and ensures students do not pass under the safety ropes and anchor cables.

4-44. One student (officer or NCO) for each side of the mock tower (two total) stands inside the base of the tower next to the stairs. The student places the risers over the proper shoulder for the door (right or left) from which each jumper will jump.

4-45. The equipment includes one troop parachute harness assembly (with four risers) and a training reserve parachute for each student.

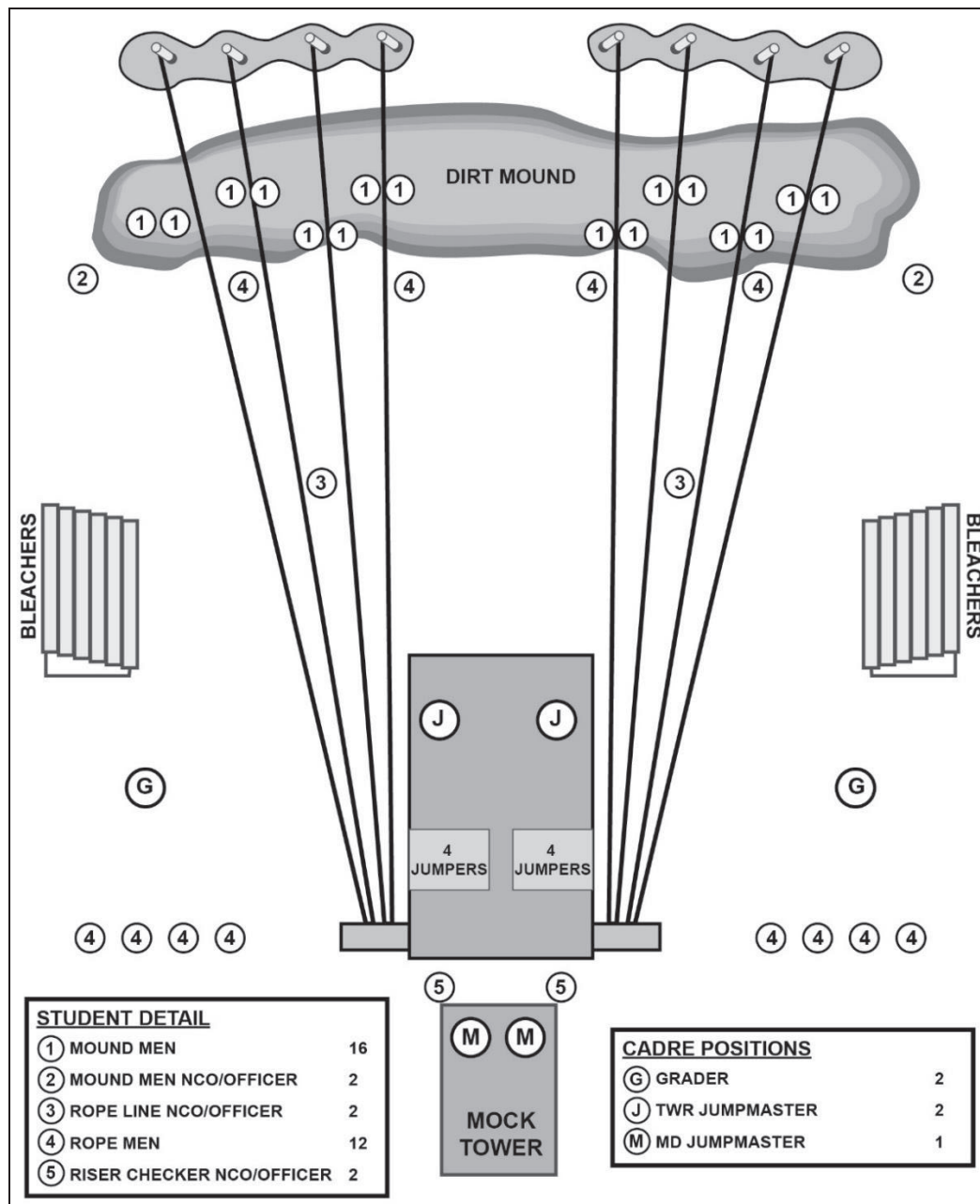


Figure 4-8. Thirty-four foot mock tower personnel positions

ADVANCED PHASE

4-46. The advanced phase objectives have the student practice exits using the mass exit technique with and without combat equipment. If exiting with combat equipment, the student must also practice lowering the equipment. The student must practice simulating activation of the reserve parachute. The student must do this instantly when told a malfunction has occurred.

4-47. The initial period of instruction during this phase includes a lecture and demonstration on the mass exit technique. The following errors are often made by students:

- Failing to maintain a one-second interval between jumpers.
- Performing an improper body position (caused by rushing).
- Performing an improper exit.
- Failing to count, late count, or rushed count.
- Falling out of the door, such as a weak exit.
- Failing to count or improper count.
- Turning in the door.
- Grabbing the canopy release assemblies.
- Hugging the T-11 reserve parachute.
- Failing to check canopy.
- Failing to activate the reserve parachute or failing to activate the reserve properly.
- Failing to lower combat equipment.

SAFETY, PERSONNEL, AND EQUIPMENT

4-48. Safety considerations for the advanced phase are the same as in the basic phase. Personnel requirements are reduced slightly from the basic phase to a minimum of 29: 16 moundmen, eight ropemen, two mound safety officers, and one harness checker.

4-49. Combat equipment is required for the students. Actual packed combat equipment containers, or combat equipment containers which approximate packed loads, can be used to train students in the techniques of exiting with this type of load.

METHODS OF RECOVERY

4-50. During methods of recovery training, the jumper learns the steps they must take to recover from the drag, collect assigned equipment, and consolidate with the unit as a member of the fighting force. Once the jumper lands on the drop zone, he or she must quickly recover, correctly stow their air items, and quickly proceed to the unit assembly area.

4-51. This phase of training teaches the student to properly activate the canopy release assemblies on the parachute harness. The student learns to perform the buddy assist method of recovery and to react properly when using the various recovery training apparatuses. The jumper is also taught the following:

- Properly activate the canopy release assemblies using:
 - Hand-to-shoulder method.
 - Hand-assist method.
- Tactical and nontactical recovery of equipment.
- Recovery of individual equipment.

4-52. The personnel required is one instructor, one assistant for every two dismount points, and four detail personnel for each dismount point. Sufficient harnesses and combat gear properly rigged to accommodate each student are also needed.

T-11 AND MC-6 PARACHUTES

4-53. The hand-towed drag pad training apparatus is used to teach students how to activate the canopy release assemblies. The hand-towed drag pad is made of three pieces of webbing with a loop on each end. Attached to the webbing are two risers with the male fitting of the canopy release assemblies attached to the opposite ends. (See figure 4-9.) Students train in three-man teams as follows:

- The No. 1 jumper is the jumper and wears the drag pad.
- The No. 2 and 3 jumpers pull the drag pad.

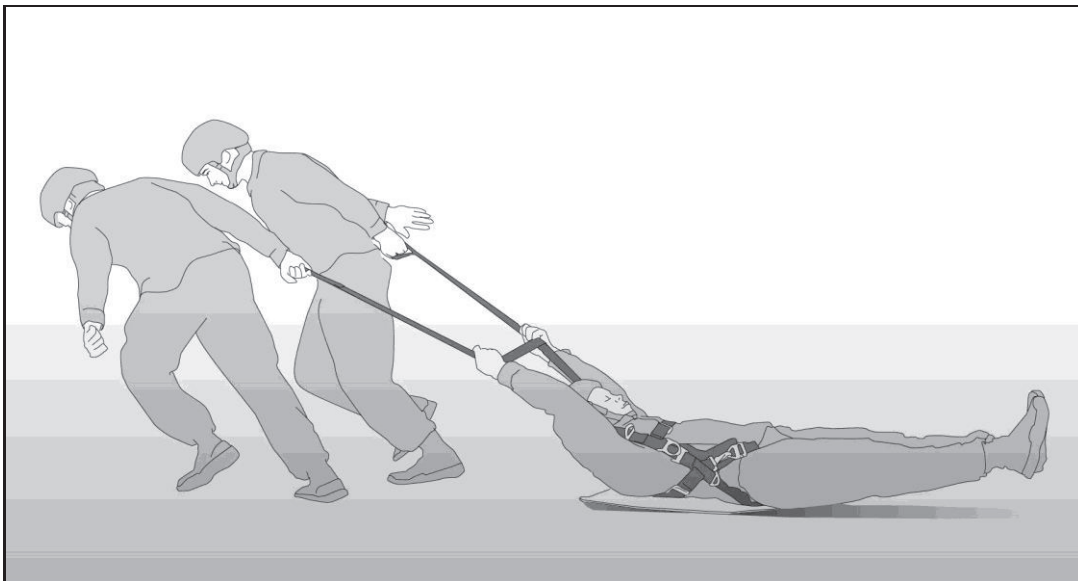


Figure 4-9. Hand-towed drag pad

- The No. 1 jumper puts on the harness and passes the risers to No. 2 and 3 jumpers, who attach the risers to the canopy release assemblies, and No. 1 lies on their back.
- On the command, "PREPARE TO DRAG," No. 1 jumper places their chin on their chest, raises their feet six inches off the ground, and places their hands on the canopy release assemblies.
- On the command, "DRAG," No. 2 and 3 jumpers drag No. 1 across the ground.
- On the command, "RELEASE," No. 1 reaches down and activates the canopy release assemblies using the prescribed method.
- The three students immediately return to the starting line.
- Then Nos. 2 and 3 hook up the jumper to the drag pad again.
- At the command, "CHANGE OVER," the No. 2 jumper becomes the jumper (No. 1), the No. 3 jumper becomes No. 2, and the No. 1 jumper becomes No. 3. Students rotate numbered positions until each student becomes proficient in the procedures.

CANOPY RELEASE ASSEMBLY ACTIVATION AND METHODS

4-54. The instructor tells the student to pull the safety clip out and away from the body. The cable loop does not require a great deal of strength to activate, and if the jumper is injured, the cable loop can be easily activated by the thumb or fingers of either hand. (See figure 4-10.)

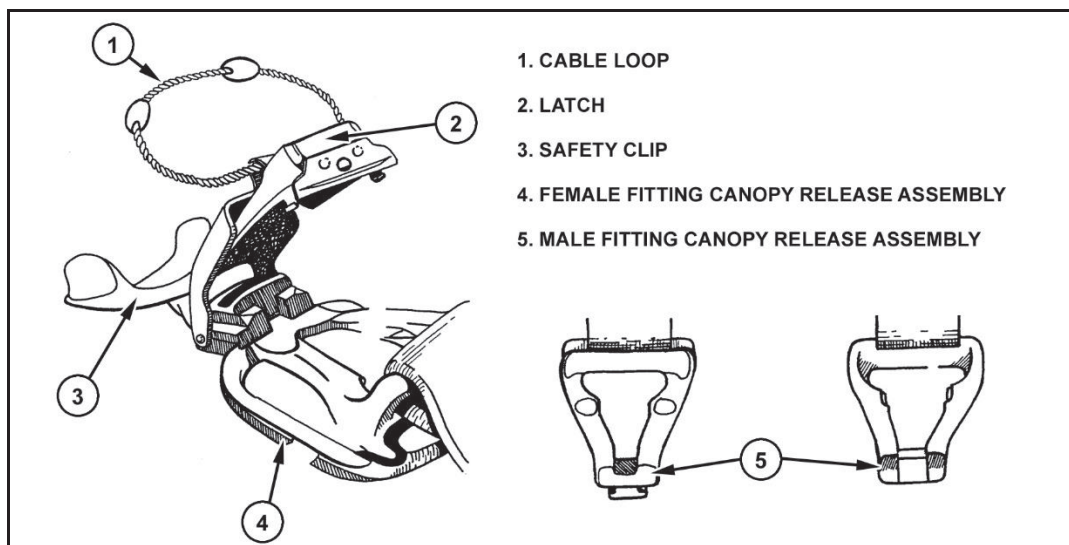


Figure 4-10. Canopy release assembly

4-55. Before the canopy release assemblies can be activated, the safety clip must be pulled down to expose the cable loop. There are two ways to activate the canopy release assembly. One is the hand-to-shoulder method and the other is the hand-assist method.

- **Hand-to-shoulder method:** reach up with either hand and grasp the corresponding safety clip. Pull out and down on the safety clip, exposing the cable loop. Insert a thumb, from bottom to top, through the cable loop. The head is turned in the opposite direction, and the cable loop is pulled out and down.
- **Hand-assist method:** reach up and grasp the corresponding safety clip. Pull out and down on the safety clip, exposing the cable loop. Insert a thumb, from bottom to top, through the cable loop. Reinforce that hand with the other. The head is turned in the opposite direction, and the cable loop is pulled out and down.

RECOVERY OF EQUIPMENT

4-56. Once the student removes the parachute harness, they will remove all air items from the equipment rings. Unsnap and unzip the AKB and roll it two-thirds of the way down, or unzip and turn right side out the UPRB.

4-57. Place the parachute harness inside the AKB or UPRB with the smooth side facing up. Secure the risers, and place them under the parachute harness.

- Nontactical method of recovery:
 - Elongate the suspension lines and canopy removing all debris.
 - Once the student reaches the bridle line, they secure the drogue parachute and deployment sleeve in one hand and begin to figure-eight roll the canopy and suspension lines all the way to the AKB or UPRB, leaving the drogue parachute, deployment sleeve, and bridle assembly on top of the main canopy.
 - Secure all of the equipment, conduct a 360-degree check of the area, and move out to the assembly area.

- Tactical method of recovery:
 - The student will remain on a knee at the AKB or UPRB.
 - Begin pulling the suspension lines and canopy towards the AKB or UPRB, stuffing them in as they go.
 - Place drogue parachute, deployment sleeve, and bridle assembly on top of the main canopy.
 - Snap (do not zip) the AKB or UPRB.
 - Secure the reserve parachute to the handles of the AKB or place the reserve parachute in the reserve parachute stowage pocket.
 - Secure all of the equipment, conduct a 360-degree check of the area, and move out to the assembly area.

Chapter 5

C-130/C-17/C-27J Exiting Procedures

This chapter discusses the three exiting procedures, alternate door exit procedures (ADEPT) option 1, ADEPT option 2, mass exit, and the proper method for jumpers to exit the C-130, C-17, and the C-27J aircraft safely. All units must strictly enforce proper exiting procedures from fixed-wing aircraft. Exiting procedures are perishable skills, therefore, be well briefed and rehearsed prior to any Airborne operation. (See chapter 10 for jumpmaster practical work inside the aircraft [PWAC].)

ALTERNATE DOOR EXITING PROCEDURES FOR TRAINING

WARNINGS

Only one series of parachute will be suspended in the air at any one given time and on one given pass over the drop zone. Mixing parachutes that have different opening performance characteristics may lead to hazardous conditions incidents.

Do not sacrifice safety for time, complete the full inspection of each jumper's USLM down to the main curved pin protector flap. If the inspection cannot be completed in time, the pass will be aborted. An improperly routed USLM can cause death or serious injury.

CAUTION

Any member of the JM team can call a NO DROP anytime it is determined something is wrong or unsafe.

5-1. The alternate door exit procedures for training options are used when jumping the T-11 ATPS and MC-6 series parachutes. This training safety measure allows the maximum number of jumpers to exit the aircraft with a minimum risk of high altitude entanglements. ADEPT options are as follows:

- ADEPT option 1: during a single pass, only one stick of jumpers on one side of the aircraft exit their paratroop door prior to any jumpers exiting from the opposite paratroop door.
- ADEPT option 2: during a single pass, one stick of jumpers exit from the PJMs door, followed by a stick of jumpers from the AJMs door.
- Mass exit: this exit procedure is used only when jumping the T-11 ATPS. During this type of exit, jumpers will exit from both doors at the same time with one second intervals between jumpers and a half second between paratroop doors.

CAUTION

No more than 20 jumpers per anchor line cable for a C-130H, no more than 31 per anchor line cable on a C-130-J30(C-130J), and no more than 27 per anchor line cable (outboard) and 24 per anchor line cable (inboard) for a C-17 Globemaster III. No more than 13 jumpers per anchor line cable for a C-27J.

C-130/C-17 ADEPT OPTION 1 EXCITING PROCEDURES

5-2. During a single pass over the drop zone, only one stick of jumpers on one side of the aircraft jumps. After issuing the jump command of “STAND UP” (see chapter 10 for JM PWAC) the following jumper actions will occur:

- Only the jumpers for that pass will stand up; on a C-130 series aircraft, the jumpers sitting in the forward outboard portion may stand up on their seats if required, in order to allow the inboard personnel to stand up, raise seats, and secure them. (In the C-17, standing on seats is not required.)
- Once the inboard seating is raised and secured, the outboard personnel in the forward portion of the aircraft will raise and secure their seats.
- Immediately after putting the seats up, the jumper must tighten down their appropriate adjustable leg straps and secure the excess webbing in the webbing retainer when jumping with combat equipment.
- The first three jumpers should be positioned one behind the other, with the rest of the stick staggered inboard and outboard.
- When the command of HOOK UP is given, the jumpers will detach USL snap hook from the top carrying handle of the reserve parachute. Hook up to the appropriate anchor line cable with the opening gate towards the skin of the aircraft. Jumpers will form a bight (four in the hand, two below); jumpers will not touch the double sewn portion of the USLM. The first three jumpers will extend their static line arms to obtain the proper distance between jumpers, all others will hold their (static line) elbow high.
- The nonstatic line hand will protect the rip cord handle and the jumper’s feet will be staggered with the outboard foot forward.
- When the command of “CHECK STATIC LINES” is given, jumpers will check the USLM from the point of attachment to where it disappears over the top of the shoulder. The jumper behind will trace the USLM past the static line slack retainer band and down to the first stow. If the static line slack retainer band that is holding the USLM breaks, the jumper will then stow any excess static line in the other static line slack retainer band. The last two jumpers turn towards the skin of the aircraft and the second to last jumper will check the last jumper’s USLM.
- On the command of “CHECK EQUIPMENT,” each jumper will:
 - Trace the rim of the helmet.
 - Trace the chinstrap.
 - Touch and visually inspect the chest strap, both left and right leg straps.
 - Touch and visually inspect to ensure the hook-pile tape lowering line is secured to the left triangle link and all excess webbing is properly secured in its appropriate webbing retainers when jumping combat equipment.
- After the JM completes the door checks, 1-minute, 30-second time warnings (jumpers will relay announcements), and gives the command of “STAND BY,” the JM will escort the No. 1 jumper into door position and the JM will be positioned close enough to the lead edge of the paratroop door to control the flow of jumpers, but far enough back as to not impede the jumpers’ movement to the paratroop door.

Note. On a C-17, the JM will not issue the command of “STAND BY” until the amber light is on

- The No. 1 jumper will hand their USLM to the safety and should be positioned about two feet from the center of the jump platform. He or she keeps their feet spread and legs slightly flexed so that their weight is equally distributed over both feet to maintain balance.
- Follow-on jumpers close up behind the preceding jumper and keep a position where feet are spread and legs slightly flexed so their weight is equally distributed over both feet to maintain balance.
- The JM can control the No. 1 jumper by grasping one of the jumper's diagonal back straps or according to unit standard operating procedure (SOP).
- At the command, "GO," the No. 1 jumper moves toward the door and onto the jump platform, focusing on the horizon. The jumper pushes off with either foot and vigorously jumps up 6 inches and out 36 inches away from the jump platform, immediately snapping into a good, tight body position.

Note. On a C-17, the jumper will take one or two additional steps on the jump platform before pushing off with either foot.

- As each jumper begins to move, they will utilize a controlled movement technique (a slow deliberate walk), and assume an elbow locked position with the arm that is controlling the USLM. They place the static line control hand so that it is nearly touching the back of the pack tray of the jumper in front of them, which establishes the proper interval between jumpers. They do not place the static line control hand in a position so that it extends past the pack tray of the jumper in front of them.
- When they are about perpendicular to the paratroop door, each jumper takes one more step, makes eye-to-eye contact with the safety, and the safety takes control of the USLM.
- The jumper will immediately return the static line hand to the end of the reserve parachute, without swimming the USLM.
- Places the palms of their hands (fingers naturally spread) on the ends of the reserve parachute with the elbows tight into the sides.
- The jumper will execute a left or right face to the open paratroop door only when the safety has positive control of the USLM.
- The jumper utilizes the controlled movement technique towards the paratroop door and onto the jump platform, focusing on the horizon. The jumper pushes off with either foot, vigorously jumps up 6 inches and out 36 inches away from the aircraft, immediately snapping into a good, tight body position.

5-3. Once the last jumper exits the active door, the safety immediately conducts a clear to the rear for towed jumpers, gives a thumbs up to the loadmaster(s), and helps recover deployment bags. During the pass, the JM in the inactive door performs outside air safety checks and then observes the actions in the active door, since (under this option) they will not have any jumpers exiting that door.

Note. U.S. Marine Corps and U.S. Navy utilize one door; the other door remains closed and unmanned. Therefore, only ONE JM and ONE safety are needed.

5-4. Subsequent passes alternate from door to door until all jumpers have exited. The AJM is the last jumper on his or her side of the aircraft, and the primary jumpmaster (PJM) is the last jumper to exit the aircraft.

WARNING

In order to maximize dispersion and minimize simultaneous exits, JMs must control the flow of jumpers ensuring a one-second interval between jumpers at his or her paratrooper door.

CAUTIONS

Jumpmasters must be prepared to initiate red light procedures at any time after the green light has been illuminated.

Jumpers will grasp their universal static lines approximately six inches from the point of attachment; generally below the double-sewn portion, with their corresponding static line elbow perpendicular to shoulder level in order to reduce misrouted static lines.

C-27J ADEPT OPTION 1 EXITING PROCEDURES

CAUTION

Mass exit is not authorized for the C-27J. It is recommended that all first-time jumpers be briefed planeside regarding the narrow size of the paratroop door and the undisturbed high-velocity airflow immediately outside of the paratroop door prior to their first jump on this aircraft.

5-5. During a single pass over the drop zone, only one stick of jumpers on one side of the aircraft jumps. After issuing the jump command of “PORT SIDE PERSONNEL STAND UP” or “STARBOARD SIDE PERSONNEL STAND UP” (see chapter 10 for JM PWAC) the following jumper actions will occur:

- Only the jumpers for that pass will stand up. Securing seats is optional based upon the unit SOP and the mission:
 - Raise seats and secure them.
 - Seats can be left secured emplace (down). This causes all jumpers to execute a 90 degree turn around the last cargo seat at the paratroop door. (This method of exiting must be rehearsed.)
A 90 degree exit is vital due to the absence of an air deflector.
- Immediately after putting the seats up (if applicable), the jumpers must tighten down their appropriate adjustable leg straps and secure the excess webbing in the webbing retainer when jumping combat equipment.
- When the command of “HOOK UP” is given, the jumpers will detach USL snap hook from the top carrying handle of the reserve parachute. Hook up to the appropriate anchor line cable with the opening gate towards the skin of the aircraft. Jumpers will form a bight (four in the hand, two below); jumpers will not touch the double-sewn portion of the USLM. The first three jumpers will extend their static line arms to obtain the proper distance between jumpers, all others will hold their static line elbow high.
- The nonstatic line hand will protect the rip cord handle, and the jumper’s feet will be staggered with the outboard foot forward.
- When the command of “CHECK STATIC LINES” is given, jumpers check the USLM from the point of attachment to where it disappears over the top of the shoulder. The jumper behind them stows any excess static line in the static line slack retainer band. The last two jumpers turn towards the skin of the aircraft and the second to last jumper checks the last jumper’s USLM.
- On the command of “CHECK EQUIPMENT,” each jumper will:
 - Trace the rim of the helmet.
 - Trace the chinstrap.
 - Touch and visually inspect the chest strap, and both left and right leg straps.

- Touch and visually inspect to ensure the hook-pile tape (HPT) lowering is secured to the left triangle link and all excess webbing is properly secured in its appropriate webbing retainers when jumping combat equipment.
- After the JM completes the door checks, 1-minute, 30-second time warnings (jumpers will relay announcements), and gives the command of “STAND BY,” the JM will escort the No. 1 jumper into door position and the JM will be positioned close enough to the lead edge of the paratroop door to control the flow of jumpers, but far enough back as to not impede the jumpers’ movement to the paratroop door.
- The No. 1 jumper will hand his USLM to the safety and should be positioned about two feet from the center of the jump platform. He or she keeps their feet spread and legs slightly flexed so that their weight is equally distributed over both feet to maintain balance.
- Follow-on jumpers close up behind the preceding jumper and keep a position where feet are spread and legs slightly flexed so that weight is equally distributed over both feet to maintain balance.
- The JM can control the No. 1 jumper by grasping one of the jumper’s diagonal back straps or according to unit SOP.
- At the command, “GO,” the No. 1 jumper moves toward the door and onto the jump platform, focusing on the horizon. The jumper pushes off with either foot and vigorously jumps up 6 inches and out 36 inches away from the jump platform, immediately snapping into a good, tight body position.
- As each jumper begins to move, they will utilize a controlled movement technique (slow deliberate walk), they assume an elbow locked position with the arm that is controlling the USLM. They place the static line control hand so that it is nearly touching the back of the pack tray of the jumper in front of them, which establishes the proper interval between jumpers. They do not place the static line control hand in a position so that it extends past the pack tray of the jumper in front of them.
- When they are about perpendicular to the paratroop door, each jumper takes one more step, makes eye-to-eye contact with the safety, and the safety takes control of the USLM.
- The jumper will immediately return the static line hand to the end of the reserve parachute, without swimming the USLM.
- Places the palms of their hands (fingers naturally spread) on the ends of the reserve parachute with the elbows tight into the sides.
- The jumper will execute a left or right face (90 degree turn) to the open paratroop door only when the safety has positive control of the USLM.
- The jumper utilizes the controlled movement technique onto the jump platform, focusing on the horizon. The jumper pushes off with either foot, vigorously jumps up 6 inches and out 36 inches away from the aircraft, immediately snapping into a good, tight body position.

5-6. Once the last jumper exits the active door, the safety immediately conducts a clear to the rear for towed jumpers, gives a thumbs up to the loadmaster(s), and helps recover deployment bags. During the pass, the JM in the inactive door performs outside air safety checks and then observes the actions in the active door, since (under this option) there will not be any jumpers exiting this door.

5-7. Subsequent passes alternate from door to door until all jumpers have exited. The AJM is the last jumper on his or her side of the aircraft and the PJM is the last jumper to exit the aircraft.

WARNING

In order to maximize dispersion and minimize simultaneous exits, JMs must control the flow of jumpers ensuring a one-second interval between jumpers at the paratrooper door.

CAUTIONS

Jumpmasters must be prepared to initiate red light procedures at any time after the green light has been illuminated.

Jumpers will grasp their universal static lines approximately six inches from the point of attachment; generally below the double sewn portion, with their corresponding static line elbow perpendicular to shoulder level in order to reduce misrouted static lines.

C-130/ C-17 ADEPT OPTION 2 EXITING PROCEDURES

5-8. During a single pass over the drop zone, one stick of jumpers exit from the PJMs paratroop door, followed by a stick of jumpers from the AJMs paratroop door. After issuing the jump command of “STAND UP” (see chapter 10 for JM PWAC) the following jumper actions will occur:

- Only the jumpers for that pass will stand up. On a C-130 series aircraft, the jumpers sitting in the forward outboard portion may stand up on their seats if required in order to allow the inboard personnel to stand up, raise seats, and secure them. (On the C-17, standing on seats is not required.)
- Once the inboard seating is raised and secured, the outboard personnel in the forward portion of the aircraft will raise and secure seats.
- Immediately after putting the seats up, the jumper must tighten down their appropriate adjustable leg straps and secure the excess webbing in the webbing retainer when jumping combat equipment.
- The first three jumpers should be positioned one behind the other, with the rest of the stick staggered inboard and outboard.
- When the command of “HOOK UP” is given, the jumpers will detach USL snap hook from the top carrying handle of the reserve parachute, and hook up to the appropriate anchor line cable with the opening gate towards the skin of the aircraft. Jumpers will form a bight (four in the hand, two below); jumpers will not touch the double-sewn portion of the USLM. The first three jumpers will extend their static line arms to obtain the proper distance between jumpers, all others will hold their static line elbow high.
- The nonstatic line hand will protect the rip cord handle and the jumper’s feet will be staggered with the outboard foot forward.
- When the command of “CHECK STATIC LINES” is given, jumpers will check the USLM from the point of attachment to where it disappears over the top of the shoulder. The jumper behind them will stow any excess static line in the static line slack retainer band. The last two jumpers will turn towards the skin of the aircraft and the second to last jumper will check the last jumper’s USLM.
- On the command of “CHECK EQUIPMENT,” each jumper will:
 - Trace the rim of the helmet.
 - Trace the chinstrap.
 - Touch and visually inspect the chest strap, and both left and right leg straps.
 - Touch and visually inspect to ensure the HPT lowering is secured to the left triangle link and all excess webbing is properly secured in its appropriate webbing retainers when jumping combat equipment.
- After the JM completes the door checks, 1-minute, 30-second time warnings (jumpers will relay announcements), and gives the command of “STAND BY,” the JM will escort the No. 1 jumper into door position and the JM will be positioned close enough to the lead edge of the paratroop door to control the flow of jumpers, but far enough back as to not impede the jumpers’ movement to the paratroop door.

Note. On a C-17, the JM will not issue the command of STAND BY until the amber light is on.

- The No. 1 jumper will hand the USLM to the safety and should be positioned about two feet from the center of the jump platform. The jumper keeps their feet spread and legs slightly flexed so that their weight is equally distributed over both feet to maintain balance.
- Follow-on jumpers close up behind the preceding jumper and keep a position with feet spread and legs slightly flexed so that their weight is equally distributed over both feet to maintain balance.
- The JM can control the No. 1 jumper by grasping one of the jumper's diagonal back straps or according to the unit SOP.
- At the command, "GO," the No. 1 jumper moves toward the door and onto the jump platform, focusing on the horizon. The jumper pushes off with either foot and vigorously jumps up 6 inches and out 36 inches away from the jump platform, immediately snapping into a good, tight body position.

Note. On a C-17, the jumper will take one or two additional steps on the jump platform before pushing off with either foot.

- As each jumper begins to move, they will utilize a controlled movement technique (slow deliberate walk) and assume an elbow locked position with the arm that is controlling the USLM. They place the static line control hand so that it is nearly touching the back of the pack tray of the jumper in front of him, which establishes the proper interval between jumpers. They do not place the static line control hand in a position so that it extends past the pack tray of the jumper in front of them.
- When the jumper is perpendicular to the paratroop door, each jumper takes one more step, makes eye-to-eye contact with the safety, and the safety takes control of the USLM.
- The jumper will immediately return the static line hand to the end of the reserve parachute, without swimming the USLM.
- Places the palms of their hands (fingers naturally spread) on the ends of the reserve parachute with the elbows tight into the sides.
- The jumper will execute a left or right face to the open paratroop door only when the safety has positive control of the USLM.
- The jumper utilizes the controlled movement technique towards the paratroop door and onto the jump platform, focusing on the horizon. The jumper pushes off with either foot, vigorously jumps up 6 inches and out 36 inches away from the aircraft, immediately snapping into a good, tight body position.

5-9. The AJM observes the actions in the PJMs door. When the AJM spots the last three jumpers in the vicinity of the paratroop door of the PJMs stick, he or she faces the jumpers and issues the jump command of "STAND BY." When the AJM sees the last jumper clear the jump platform in the PJMs door, they turn and recheck the jump caution lights. (The PJM is now observing the actions in the AJMs paratroop door.)

5-10. If the jump caution lights are still green, the AJM orally and physically issues the command, "GO," to the No. 1 jumper. All jumpers will follow the exiting procedures as explained earlier in this chapter.

5-11. When the last jumper exits from the AJMs side of the aircraft (last pass), the AJM gives his or her USLM to the safety, checks the jump caution lights, and if they are green, exits. The PJM, seeing the AJM exit, passes his or her USLM to the safety, checks the jump caution lights, and if they are green, exits.

5-12. Safety personnel visually clear to the rear of the aircraft and give each other a thumbs up signal. They help the loadmaster recover deployment bags.

C-27J ADEPT OPTION 2 EXITING PROCEDURES

WARNING

Mass exit is not authorized for this aircraft.

5-13. During a single pass over the drop zone, one stick of jumpers exit from the PJMs paratroop door, followed by a stick of jumpers from the AJMs paratroop door. After issuing the jump command of “PORT SIDE AND STARBOARD SIDE PERSONNEL STAND UP” (see chapter 10 for JM PWAC) the following jumper actions will occur:

- Only the jumpers for that pass will stand up. Securing seats is optional based upon the unit SOP and mission:
 - Raise seats and secure them.
 - Seats can be left secured emplace (down), this causes all jumpers to execute a 90 degree turn around the last cargo seat at the paratroop door. (This method of exiting must be rehearsed.) A 90-degree exit is vital due to the absence of an air deflector.
- Immediately after putting the seats up (if applicable), the jumpers must tighten down their appropriate adjustable leg straps and secure the excess webbing in the webbing retainer when jumping combat equipment.
- When the command of “HOOK UP” is given, the jumpers will detach USL snap hook from the top carrying handle of the reserve parachute. Hook up to the anchor line cable with the opening gate towards the skin of the aircraft. Jumpers will form a bight (four in the hand, two below). Jumpers will not touch the double-sewn portion of the USLM. The first three jumpers will extend their static line arms to obtain the proper distance between jumpers. All others will hold their static line elbow high.

CAUTION

No more than 13 jumpers per anchor line cable on a C-27J.

- The nonstatic line hand will protect the rip cord handle and the jumper’s feet will be staggered with the outboard foot forward.
- When the command of “CHECK STATIC LINES” is given, jumpers will check the USLM from the point of attachment to where it disappears over the top of the shoulder. The jumper behind will trace the USLM past the static line slack retainer band and down to the first stow. If the static line slack retainer band that is holding the USLM breaks, the jumper will then stow any excess static line in the other static line slack retainer band. The last two jumpers will turn towards the skin of the aircraft and the second to last jumper will check the last jumper’s USLM.
- On the command of “CHECK EQUIPMENT,” each jumper will:
 - Trace the rim of the helmet.
 - Trace the chinstrap.
 - Touch and visually inspect the chest strap, both left and right leg straps.
 - Touch and visually inspect to ensure the HPT lowering is secured to the left triangle link and all excess webbing is properly secured in its appropriate webbing retainers when jumping combat equipment.
- After the JM completes the door checks, 1-minute, 30-second time warnings (jumpers will relay announcements), and gives the command of “STAND BY,” the JM will escort the No. 1 jumper into door position and the JM will be positioned close enough to the lead edge of the paratroop door to control the flow of jumpers, but far enough back as to not impede the jumpers’ movement to the paratroop door.
- The No. 1 jumper will hand the USLM to the safety and should be positioned about two feet from the center of the jump platform. The jumper keeps his or her feet spread and legs slightly flexed so that their weight is equally distributed over both feet to maintain balance.
- Follow-on jumpers close up behind the preceding jumper and keep a position with feet spread and legs slightly flexed so that their weight is equally distributed over both feet to maintain balance.
- The JM can control the No. 1 jumper by grasping one of the jumper’s diagonal back straps or according to the unit SOP.

- At the command, “GO,” the No. 1 jumper moves toward the door and onto the jump platform, focusing on the horizon. The jumper pushes off with either foot and vigorously jumps up 6 inches and out 36 inches away from the jump platform, immediately snapping into a good, tight body position.
- As each jumper begins to move, they will utilize a controlled movement technique (slow deliberate walk), they assume an elbow locked position with the arm that is controlling the USLM. They place the static line control hand so that it is nearly touching the back of the pack tray of the jumper in front of them, which establishes the proper interval between jumpers. They do not place the static line control hand in a position so that it extends past the pack tray of the jumper in front of them.
- When they are about perpendicular to the paratroop door, each jumper takes one more step, makes eye-to-eye contact with the safety, and the safety takes control of the USLM.

WARNING

The aircraft does not have an air deflector to disrupt the high-velocity airflow immediately outside the paratroop door. Therefore, jumpers must make a vigorous exit and have a tight body position to avoid making contact with the aircraft. Additionally, jumpmasters and safeties may experience turbulent air in the immediate workspace around the paratroop door.

- The jumper will immediately return the static line hand to the end of the reserve parachute, without swimming the USLM.
- Places the palms of their hands (fingers naturally spread) on the ends of the reserve parachute with the elbows tight into the sides.
- The jumper will execute a left or right face (90 degree turn) to the open paratroop door only when the safety has positive control of the USLM.
- The jumper utilizes the controlled movement technique onto the jump platform, focusing on the horizon. He or she pushes off with either foot, vigorously jumps up 6 inches and out 36 inches away from the aircraft, immediately snapping into a good, tight body position.

5-14. The AJM observes the actions in the PJMs door. When the AJM spots the last three jumpers in the vicinity of the paratroop door of the PJMs stick, the AJM faces his or her jumpers and issues the jump command of “STAND BY.” When the AJM sees the last jumper clear the jump platform in the PJMs door, the AJM turns and rechecks the jump caution lights. (The PJM is now observing the actions in the AJMs paratroop door.)

5-15. If the jump caution lights are still green, the AJM orally and physically issues the command, “GO,” to the No. 1 jumper. All jumpers exiting will follow the exiting procedures as outlined above.

5-16. When the last jumper exits from the AJMs side of the aircraft (last pass), the AJM gives the USLM to the safety, checks the jump caution lights, and if they are green, exits. The PJM, seeing the AJM exit, passes his or her USLM to the safety, checks the jump caution lights, and if they are green, exits.

5-17. Safety personnel visually clear to the rear of the aircraft and give each other a thumbs up signal. They help the loadmaster recover deployment bags.

MASS EXIT PROCEDURES

WARNING

In order to maximize dispersion and minimize simultaneous exits, JMs must control the flow of jumpers ensuring a one-second interval between jumpers at the paratrooper door.

CAUTIONS

Jumpmasters must be prepared to initiate red light procedures at any time after the green light has been illuminated.

Jumpers will grasp their universal static lines approximately six inches from the point of attachment; generally below the double-sewn portion, with their corresponding static line elbow perpendicular to shoulder level in order to reduce misrouted static lines.

5-18. The mass exit procedure is used only when jumping the T-11 ATPS. During this type of exit, jumpers will exit from both doors at the same time. The PJM issues the command of “GO,” and then the AJM turns and commands their jumper “GO” to create a staggered effect. On the command of “GO:”

- Both JMs will give a physical and oral command of, “GO.” The AJM will observe the PJMs No. 1 jumper exit the paratroop door, wait one half second, then issue the physical and oral command of “GO” to the AJMs No. 1 jumper.
- Each paratroop door will have a one second interval between jumpers and a half second interval between paratroop doors.

5-19. Only the jumpers for that pass (if applicable) will stand up. On a C-130 series aircraft, the jumpers sitting in the forward outboard portion may stand up on their seats if required, in order to allow the inboard personnel to stand up, raise seats, and secure them. (On the C-17, standing on seats is not required.) Then:

- Once the inboard seating is raised and secured, the outboard personnel in the forward portion of the aircraft will raise and secure seats.
- Immediately after putting the seats up, the jumper must tighten down their appropriate adjustable leg straps and secure the excess webbing in the webbing retainer when jumping combat equipment.
- The first three jumpers should be positioned one behind the other, with the rest of the stick staggered inboard and outboard.
- When the command of “HOOK UP” is given, the jumpers will detach USL snap hook from the top carrying handle of the reserve parachute and hook up to the appropriate anchor line cable with the opening gate towards the skin of the aircraft. Jumpers will form a bight (four in the hand, two below). Jumpers will not touch the double-sewn portion of the USLM. The first three jumpers will extend their static line arms to obtain the proper distance between jumpers, all others will hold their static line elbow high.
- The nonstatic line hand will protect the rip cord handle and the jumper’s feet will be staggered with the outboard foot forward.
- When the command of “CHECK STATIC LINES” is given, jumpers will check the USLM from the point of attachment to where it disappears over the top of the shoulder. The jumper behind them will stow any excess static line in the static line slack retainer band. The last two jumpers will turn towards the skin of the aircraft and the second to last jumper will check the last jumper’s USLM.
- On the command of “CHECK EQUIPMENT,” each jumper will:
 - Trace the rim of the helmet.

- Trace the chinstrap.
- Touch and visually inspect the chest strap, both left and right leg straps.
- Touch and visually inspect to ensure the HPT lowering is secured to the left triangle link and all excess webbing is properly secured in its appropriate webbing retainers when jumping combat equipment.
- After the JM completes the door checks, 1-minute, 30-second time warnings (jumpers will relay announcements), and gives the command of “STAND BY,” the JM will escort the No. 1 jumper into door position and the JM will be positioned close enough to the lead edge of the paratroop door to control the flow of jumpers, but far enough back as to not impede the jumpers’ movement to the paratroop door

Note. On a C-17, the JM will not issue the command of “STAND BY” until the amber light is on.

- The No. 1 jumper will hand his or her USLM to the safety and should be positioned about two feet from the center of the jump platform. The jumper keeps their feet spread and legs slightly flexed so that their weight is equally distributed over both feet to maintain balance.
- Follow-on jumpers close up behind the preceding jumper and keep a position with feet spread and legs slightly flexed so that their weight is equally distributed over both feet to maintain balance.
- The JM can control the No. 1 jumper by grasping one of the jumper’s diagonal back straps or according to the unit SOP.
- At the command, “GO,” the No. 1 jumper moves toward the door and onto the jump platform, focusing on the horizon. The jumper pushes off with either foot and vigorously jumps up 6 inches and out 36 inches away from the jump platform, immediately snapping into a good, tight body position.

Note. On a C-17, the jumper will take one or two additional steps on the jump platform before pushing off with either foot.

- As each jumper begins to move, they will utilize a controlled movement technique (slow deliberate walk) and assume an elbow locked position with the arm that is controlling the USLM. They place the static line control hand so that it is nearly touching the back of the pack tray of the jumper in front of them, which establishes the proper interval between jumpers. They do not place the static line control hand in a position so that it extends past the pack tray of the jumper in front of them.
- When they are about perpendicular to the paratroop door, each jumper takes one more step, makes eye-to-eye contact with the safety, and the safety takes control of the USLM.
- The jumper will immediately return the static line hand to the end of the reserve parachute, without swimming the USLM.
- Places the palms of their hands (fingers naturally spread) on the ends of the reserve parachute with the elbows tight into the sides.
- The jumper will execute a left or right face to the open paratroop door only when the safety has positive control of the USLM.
- The jumper utilizes the controlled movement technique towards the paratroop door and onto the jump platform, focusing on the horizon. The jumper pushes off with either foot, vigorously jumps up 6 inches and out 36 inches away from the aircraft, immediately snapping into a good, tight body position.
- Both JMs will ensure they are in a position to best control the flow of jumpers without impeding the paratroop door or the safeties controlling USLMs.
- When the last jumper exits from his or her side of the aircraft (last pass), the AJM will check the jump caution light to ensure it is green, hand off their USLM to the safety, and exit the aircraft. The PJM will look over their lead shoulder (toward the pilot compartment) ensuring the aircraft is clear of jumpers and to observe the AJMs paratroop door and wait until the AJM exits the aircraft.

Once the AJM has exited, the PJM will check the jump caution light to ensure it is green, hand off their USLM to the safety, and exit the aircraft.

5-20. Safety personnel immediately conduct a clear to the rear for towed jumpers and will give each other a thumbs up. They will give a thumbs up to the loadmaster(s) and help recover deployment bags.

Note. On a C-17, the jumper will take one or two additional steps on the jump platform before pushing off with either foot.

WARNINGS

Only one series of parachute will be suspended in the air at any one given time and on one given pass over the drop zone. Mixing parachutes that have different opening performance characteristics can cause high altitude incidents during ADEPT option 2 or mass exit operations.

Do not sacrifice safety for time, complete the full inspection of each jumper's USLM down to the main curved pin protector flap. If the inspection cannot be completed in time, the pass will be aborted. An improperly routed USLM can cause death or serious injury.

CAUTION

Any member of the JM team can call a "NO DROP" anytime they determine something is wrong or unsafe.

Chapter 6

T-11R Activation and Parachute Malfunctions

The techniques and procedures described in this chapter are used throughout jumpers' Airborne careers. They allow the jumper to demonstrate proficiency in the tasks necessary to react appropriately and without hesitation to a parachute malfunction.

T-11R ACTIVATION (PULL DROP METHOD)

- 6-1. When conducting an Airborne operation, a jumper must:
 - Count to 6000 with a T-11 ATPS or 4000 with a MC-6 series parachute and immediately activate the T-11 reserve parachute if no opening shock is felt using the pull drop method.
 - Conduct a good check of the main parachute canopy during the second point of performance, checking the canopy for any damage or irregularities.
 - Constantly compare the rate of descent throughout the entire jump. If at any time the jumper cannot compare the rate of descent, or feels they are falling faster than fellow jumpers, the jumper immediately activates the reserve parachute using the pull drop method.
 - During instrument meteorological conditions (IMC), if the jumper has any malfunction, or any reason to believe they are falling faster than fellow jumpers, they immediately activate the reserve parachute using the pull drop method because they cannot compare the rate of descent with fellow jumpers.
- 6-2. To activate the T-11 reserve parachute using the pull drop method, the jumper will:
 - Maintain a good, tight body position.
 - Keep their feet and knees together.
 - Grasp the rip cord handle with either hand.
 - Throw their head back and to the rear.
 - Pull the rip cord handle and drop it to the ground; the reserve parachute will activate.
 - Ensures neither hand is in front of the reserve parachute as it deploys.
- 6-3. When descending with only the T-11 reserve parachute inflated, the jumper controls directional movement by slipping. When utilizing the T-11 reserve, the proper landing attitude is obtained by reaching up and grasping a set of risers in the opposite direction of drift; at approximately 200 feet AGL, slip into the wind, and prepare to land. Upon landing, the jumper makes a quick recovery and collapses the canopy. In strong winds, if a quick recovery is impossible, the jumper grasps one suspension line from either suspension line group and pulls the suspension line toward himself until the canopy collapses.

PARACHUTE MALFUNCTIONS AND INCIDENTS

- 6-4. A malfunction is defined in AR 59-4/OPNAVINST 4630.24D/AFJ 13-210(I)/MCO 13480.1D as "the failure of an airdrop item to function as it was intended or designed." Some examples of malfunctions include, but are not limited to:
 - Failure of a main canopy to properly deploy.
 - Universal static line modified breaking.
 - Parachute panel or gore blowout.
 - Cargo parachute release failure.
 - A Joint Precision Airdrop System (JPADS) that lands off the drop zone for reasons other than improperly loaded data.

6-5. An incident is defined in AR 59-4 as “any action or event that prevented the successful completion of a planned airdrop operation.” Some examples of incidents include, but are not limited to:

- Entanglements resulting in reserve parachute deployment.
- Failure to hook up static line to anchor line cable for container delivery system (CDS).
- Improper rigging procedures before, during, or after the airdrop equipment was loaded in the aircraft.
- JPADS with improperly loaded data.
- Misrouted static line that resulted in a towed jumper (cutaway or retrieved).

6-6. Main parachute malfunctions demand the jumper’s immediate attention. Jumpers must be trained to identify parachute malfunctions and to respond instantaneously. Practical exercises involving activation of the reserve parachute are incorporated into all phases of the basic Airborne course. Each type of malfunction is demonstrated in the course so jumpers can see exactly how each type of malfunction looks. There are two types of parachute malfunctions:

- Total.
- Partial.

TOTAL MALFUNCTIONS

6-7. A total malfunction is the failure of the parachute to open or deploy. The failure of the parachute to deploy can be caused by a severed static line, a broken snap hook, or a broken anchor line cable. The jumper’s failure to hook up also results in the failure of the parachute to deploy. However, these types of malfunctions are extremely rare.

6-8. Although not defined as a total malfunction, a deployed parachute with a “cigarette roll” or “streamer” provides little or no lift for the jumper. This malfunction must be treated as a total malfunction. The jumper immediately activates the reserve using the pull drop method.

WARNING

The towed jumper must remain in a good, tight body position and protect the rip cord handle with both hands. Accidental activation of the reserve while being towed could be fatal.

6-9. Although not classified as a parachute malfunction, a jumper can be towed behind the aircraft by a misrouted USLM or by a piece of equipment that has snagged the aircraft during the jumper’s exit. During the 6000 count with T-11 ATPS or the 4000 count with MC-6 series parachute, the jumper feels an excessive opening shock, the jumper may be towed. If the jumper is being towed by his USLM and is unconscious; the jumper will be retrieved back inside the aircraft. If the jumper is conscious, the following actions by the jumper will occur:

- Maintain a good, tight body position with both hands covering the rip cord handle.
- An attempt will be made to retrieve the jumper inside the aircraft.
- As the jumper nears the paratroop door, do not reach for retrieval personnel, continue to protect the rip cord handle.
- If the jumper cannot be retrieved, the USLM will be cut.
- Once the jumper is falling free from the aircraft, he or she immediately activates the reserve parachute using the pull drop method.

6-10. If the jumper is being towed by an item of equipment, regardless of whether the jumper is conscious or unconscious, that item of equipment will be cut or jogged free, and the main canopy will deploy.

CAUTION

The most important action of a towed jumper is to protect the rip cord handle.

PARTIAL MALFUNCTIONS

6-11. The seven types of partial malfunctions are:

- Corner crossover inversion.
- Hung slider.
- Sleeve corner vent entanglement.
- Blown section or holes in the canopy.
- Broken suspension lines.
- Delayed opening.
- Broken control line (MC-6).

6-12. A corner crossover inversion may occur when a portion of the parachute canopy is blown inward and through one of the four corner vents, creating a bubble-like appearance. This type of partial malfunction can reduce lifting surface and increase the rate of descent. If a jumper experiences a corner crossover inversion, immediately activate the reserve parachute utilizing the pull drop method.

6-13. A hung slider may be caused by tension knots in the suspension lines, or excessive twists in the risers or suspension lines, due to a loose body position or a weak exit. During this malfunction, the slider will become stuck or hung, prior to reaching its full terminal position. If the main canopy has a hung slider, the canopy will not fully inflate, and the jumper's rate of descent will increase. If a hung slider occurs, immediately activate the reserve parachute using the pull drop method.

6-14. The sleeve corner vent entanglement malfunction may occur with the T-11 ATPS when a delayed or slow opening of the parachute canopy allows the 10-foot bridle line assembly and deployment sleeve to pass through one of the parachute's corner vents. In a sleeve corner vent entanglement, the bridle line and sleeve become twisted through the corner vent and may become entangled around several suspension lines just below the slider, preventing the slider from reaching its full terminal position. In a sleeve corner vent entanglement, the canopy is partially inverted or folded under. This will reduce the lifting surface and increase the rate of descent. If a sleeve corner vent entanglement occurs, the jumper should immediately activate the reserve parachute utilizing the pull drop method.

6-15. A blown section or holes in the canopy malfunction occurs when excessive strain is placed on the canopy during inflation is too great and a panel or gore rips or tears, resulting in a hole(s) in the canopy. Regardless of the size of the rip or hole, the jumper compares the rate of descent with fellow jumpers. If the jumper is falling faster than other jumpers, they immediately activate the reserve parachute using the pull drop method. If the jumper is not falling faster, they will continue with the five points of performance while constantly comparing the rate of descent with other jumpers.

6-16. The broken suspension lines malfunction occurs when enough suspension lines break, causing the jumper's rate of descent to be greater than fellow jumpers. When this occurs, the jumper immediately activates the reserve parachute using the pull drop method.

6-17. A delayed opening malfunction occurs when the canopy fails to deploy or fully inflates by the end of the jumper's first point of performance. This type of malfunction is caused when the parachute elongates and an obstruction prevents air from entering the parachute's air channel during the inflation phase of deployment. Possible causes of this malfunction include air starvation, hung slider, and debris restricting full canopy opening. This type of malfunction provides limited or no lift capability to the jumper and fails to sufficiently slow the jumper to a normal rate of descent. The jumper must immediately activate the reserve parachute using the pull drop method.

6-18. The broken control lines (MC-6) malfunction occurs when one or both control lines break or become stuck above the jumper's reach during the parachute's deployment sequence. The canopy can no longer be controlled by manipulating the extended gore(s) and the jumper must use the rear set of risers to control the canopy.

PART TWO

Advanced Techniques

This part discusses key personnel, jumpmaster, safety actions, and the departure airfield control officer

Chapter 7

Key Personnel

This chapter discusses responsibilities of key personnel, prerequisites, and currency. The initial training and follow-on refresher training of key personnel are of major concern to commanders. Proper training and supervision ensures that these key personnel follow the correct procedures and operational safety measures during Airborne operations.

A jumpmaster may remain current after a permanent change of station if they performed JM or AJM duty on a high-performance aircraft within the preceding 180 days of signing into a gaining unit. A jumpmaster should ensure that upon arrival to their gaining unit and completing reception and integration training, that their next duty is still within 180 days of the last duty they performed prior to permanently changing their station. A Memorandum for Record signed by the first colonel (O-6) in the Soldier's chain of command stating that the JM performed above stated duty within 90 days is required. This Memorandum of Record and DA Form 1307, *Individual Jump Record*, reflecting the same information must go forward with the JM to their next duty station.

Basic Airborne refresher training is conducted to validate that newly assigned jumpers can properly rig their individual equipment, properly fit their parachute harness, safely perform their individual tasks inside the aircraft, and conduct a proper parachute landing fall. Jumpmaster Refresher training is conducted to validate newly assigned JM-qualified personnel on new equipment training for all unit-specific equipment and newly fielded equipment, jumpmaster personnel inspection, prejump training, drop zone control and support criteria, mock door training, and PWAC. This training also ensures that unit-specific items of equipment and unit SOPs are covered and the Soldier is familiar with the equipment and SOPs.

COMMANDER'S RESPONSIBILITIES

7-1. The Airborne commander designates the key personnel for each Airborne operation. These key personnel are the primary and assistant jumpmasters, safety personnel, departure airfield control officer (DACO), drop zone support team leader (DZSTL), drop zone safety officer (DZSO), and malfunction officer

(MO). The JM, DACO, DZSTL, or DZSO can delegate their authority to subordinates, but they cannot delegate their responsibilities.

- **Airborne commander.** The Airborne commander should be a jumper, but will not be a member of any jumpmaster team, or serve as DACO, DZSO, or DZSTL. The Airborne commander must be assigned to the command that approved the DD Form 2977, *Deliberate Risk Assessment Worksheet*, for the Airborne operation being conducted.
- **PJM, AJM, and safety personnel.** Each aircraft has a designated PJM, AJM, and safety personnel. The Airborne commander gives the designated PJM responsibility for and command authority over all personnel onboard a jump aircraft. PJM, AJM, and safety personnel duties are described in chapters 8, 9, and 10 of this publication.
- **DACO.** The DACO is located at the departure airfield and has coordination responsibility with the ground liaison officer and airlift control element (ALCE) or aircrew for the loading of personnel, equipment, and supplies into the aircraft. Also, the DACO provides the JM with changes to station time and the overall operational plan, current DZ weather, airfield crossing procedures, and the aircraft parking plan. Complete DACO duties are discussed in chapter 11 of this publication.
- **DZSO or DZSTL.** Each DZ has a DZSO or DZSTL. The DZSO or DZSTL has command authority over the actions and safety of all personnel on the drop zone. The DZSO and DZSTL procedures for DZ operations are described in chapters 20, 21, and 22 of this publication.
- **Malfunction officer.** As a member of the drop zone support team (DZST), the MO is located on the DZ where they can best view the airdrop. It is the responsibility of the MO to promptly and accurately investigate malfunctions and may enlist as many personnel as needed to watch for malfunctions and assist during the investigation process. AR 59-4 will be in possession of the malfunction officer during jump operations. It describes in detail the duties and responsibilities of the MO during any investigation resulting in the partial or total malfunction of personnel airdrops.

KEY PERSONNEL PREREQUISITES

7-2. The following minimum standards must be met before personnel will be allowed to perform PJM, AJM, safety, DACO, DZSO, DZSTL, or MO duties for personnel and heavy equipment airdrop operations. Individuals who are appointed as PJMs, AJMs, or safety personnel, must have the prerequisites described below. The following qualifications apply to JMs who are commissioned officers, warrant officers, or NCOs:

- U.S. Army and U.S. Navy: E-5 or above.
- U.S. Marine Corps and U.S. Air Force: E-4 or above.

7-3. To be JM qualified, the JM must be a graduate from an authorized and accredited JM course and have been issued the additional skill identifier of 5W. (Refer to appendix B for plan of instruction requirements.) Authorized JM courses can be found at Fort Benning, Georgia; with a mobile training team at Fort Bragg, North Carolina; or at a special operations forces' JM course. Jumpmaster qualified must go through jumpmaster refresher training prior to conducting any jumpmaster duties. (Refer to appendix C for reception and integration requirements.) This training must be if the jumpmaster is outside of the reception and integration requirements.

7-4. To be JM current, the JM must have either performed JM or AJM duties within the preceding 180 days; or if a senior-rated or master-rated parachutist, performed duty as a safety on military, high-performance fixed-wing aircraft utilizing a door or ramp exit within the preceding 180 days; or completed a JM refresher course (refer to appendix C) in the preceding 180 days and be a current jumper. A jumpmaster must be a current and qualified T-11, or MC-6 (or both) jumper in order to perform jumpmaster duties.

Notes. JMs must perform duties every 180 days to maintain currency on T-11 or MC-6 parachutes.

For U.S. Navy and U.S. Marine Corps only: if fixed-wing high-performance aircraft are not available, the JM, AJM, and safety may meet currency requirements using organic rotary-wing or nonstandard aircraft.

7-5. A new graduate of a recognized JM course must perform safety duties twice before performing AJM duties and perform AJM duties twice before performing PJM duties. This is referred to as “jumpmaster baseline currency.” Once a jumpmaster has performed baseline requirements after graduating a recognized course, no further baseline requirements are needed after jumpmaster refresher training.

ROTARY-WING AIRCRAFT/NONSTANDARD AIRCRAFT PERSONNEL

7-6. To perform the duties of the PJM on a rotary-wing aircraft or nonstandard aircraft, the JM must first meet the performance duty requirements of the PJM on a fixed-wing. A jumpmaster may conduct JM duties and maintain currency from a rotary-winged or nonstandard aircraft with the exception of aircraft that utilize exits from a seated position during a 180-day period. However, the next JM duty counted towards currency must be from a fixed-wing, high-performance craft within the next 180 days. A jumpmaster cannot maintain currency with two consecutive JM duties from a rotary-winged nonstandard aircraft, as stated in this paragraph.

Note. This allows all jumpmasters one year to execute JM duties from a fixed-wing, high-performance aircraft.

7-7. JM must observe a current JM in the performance of their duties for a rotary-wing or nonstandard aircraft operation (prejump training, mock door training, aircraft inspection, rigging procedures, and the actual airdrop operation). The qualifying JM must then be observed during the performance of their duties by a current rotary-wing, aircraft-qualified PJM before being allowed to perform the above listed duties unsupervised.

7-8. In addition to meeting the qualifications listed previously in this chapter, the assistant jumpmaster must have performed the duties a safety officer at least twice. Safety personnel must also meet the listed previously in this chapter, and also be a current and qualified JM to be appointed as a safety.

7-9. To be appointed a departure airfield control officer, individuals must meet the prerequisites listed previously in this chapter, be a current and qualified JM and have performed the duties as an assistant DACO at least once.

7-10. Drop zone safety officers must meet the qualifications listed previously in this chapter, are a current and qualified JM or a combat crew trainer or special tactics squadron (STS) certified. For Ground Marking Release System (GMRS) or Verbally Initiated Release System (VIRS) drops, the DZSO must be a qualified JM in the type of jump being conducted, and have assisted a current and qualified DZSO performing their duties during an airdrop operation involving personnel or heavy equipment.

7-11. For U.S. Navy and U.S. Marine Corps operations, the DZSO is an E-4 or above, or DOD civilian equivalent. U.S. Navy and U.S. Marine Corps DZSOs are also:

- Parachutist qualified and current in the operation being conducted (static line or free fall).
- Have completed a DZSO course of instruction using Naval Special Warfare/Explosive Ordnance Disposal (EOD) Lesson Training Guide DZSO administered by a current JM.
- Designated in writing by the commander as a DZSO. To be DZSO current, the DZSO must have performed the duties of a DZSO within the preceding 180 days. If noncurrent, received refresher training from a current JM or DZSO and run a drop zone while under instruction.

Note. For combination airdrop operations, the DZSO and DZSTL must follow the procedures for heavy drop operations, but observe the jumpers as they exit the aircraft.

7-12. A DZSO refresher course can be conducted by an individual that is a current and qualified JM and DZSO. Noncurrent DZSOs need only complete the DZSO requirements of the Jumpmaster Refresher training curriculum found in appendix C. In addition:

- The individual being refreshed on the duties of the DZSO must be a current JM.

- At the completion of DZSO Refresher the JM must perform duties of the DZSO within 180 days in order to be a current DZSO, and perform one DZSO duty every 180 days from the initial duty to remain current.
- If the individual has never performed the duties of DZSO they must assist once before performing the duties of the DZSO.

7-13. Individuals must meet the following prerequisites to be appointed as an assistant drop zone safety officer (ADZSO):

- Be a commissioned officer, warrant officer, or NCO (U.S. Army and U.S. Navy: E-5s or above; U.S. Marine Corps and U.S. Air Force: E-4s or above).
- Be a current and qualified JM for personnel or heavy equipment drop.
- Be certified as an ADZSO by having attended one of the following:
 - U.S. Army Infantry School (USAIS) Jumpmaster Course (for computed air release point [CARP] DZs only).
 - The U.S. Army Advanced Airborne School JM Course (for CARP DZs only).
 - U.S. Army Special Operations Command (USASOC) Jumpmaster Course.
 - Must have the ASI 5W.
- To be ADZSO current, the ADZSO must have performed the duties of a DZSO or assistant DZSO within the preceding 180 days, graduated jumpmaster school within the last 180 days, or completed a jumpmaster refresher course within the preceding 180 days.

Note. For combination airdrop operations, the DZSO and ADZSO must follow the procedures for heavy drop operations, but observe the jumpers as they exit the aircraft.

7-14. Individuals must meet the following prerequisites to be appointed as a DZSTL:

- Be a commissioned officer, warrant officer, or NCO (U.S. Army and U.S. Navy: E-5s or above; U.S. Marine Corps and U.S. Air Force: E-4s or above).
- Be a current and qualified JM for personnel or heavy equipment.
- Be certified as a DZSTL by having attended one of the following:
 - USAIS Pathfinder Course.
 - USAIS Jumpmaster Course (for CARP DZs only).
 - The U.S. Army Advanced Airborne School JM Course (for CARP DZs only).
 - USASOC Jumpmaster Course.
 - Must have the ASI 5W.
- Have observed and assisted a current and qualified DZSTL performing their duties during an airdrop operation involving personnel or heavy equipment.
- To be DZSTL current, the DZSTL must have performed the duties of a DZSTL or assistant DZSTL within the preceding 180 days or completed a DZSTL refresher course taught by current DZSTL personnel within the preceding 180 days.

Note. DZSTLs and ADZSOs in support of CDS airdrops are not required to be Airborne qualified, on jump status, or JM qualified and current, but they must have attended an authorized pathfinder course. For combination airdrop operations the DZSO and DZSTL must follow the procedures for heavy drop operations, but observe the jumpers as they exit the aircraft.

7-15. Individuals must meet the following prerequisites to be appointed as a MO:

- Be a commissioned officer, warrant officer, or NCO (U.S. Army and U.S. Navy: E-5 or above; U.S. Marine Corps and U.S. Air Force: E-4 or above).
- The individual must be a qualified parachute rigger from the unit providing the air items used during the operation according to AR 59-4.

- For the U.S. Marine Corps only: a U.S. Marine Corps MO will be a parachute rigger NCO, E-4 or above, or JM qualified, E-5 or above, and must be appointed in writing by the commanding officer and must receive unit-level refresher training annually. The MO will be from the organization that provides the air items.
- For the U.S. Navy only: malfunctions officers will meet qualification, training, currency, and equipment familiarity requirements according to AR 59-4. The malfunction officer does not have to be from the organization providing the air items but must be maintenance or operationally qualified on all equipment used during the operation.
- For the U.S. Air Force only: DZC and DCSO will fill the duties as the MO and be designated in writing as an MO. They will have a thorough understanding of the parachute equipment used for the operation. U.S. Air Force combat control personnel are authorized to perform the duties of an MO during unilateral operations.

This page intentionally left blank.

Chapter 8

Jumpmaster and Safety Duties

This chapter covers jumpmaster and safety duties performed in the unit area or at the departure airfield. Appendix E (JM verbiage) covers mock door training and prejump for both the T-11 ATPS and the MC-6 series parachute.

A key factor in the JM duties is the mission briefing. H hour (time on target [TOT]) is established at this time and the backward planning process begins.

Note. Jumpmaster duties begin immediately upon notification.

ESSENTIAL INFORMATION

8-1. Upon notification that he or she has been designated as a pararescue jumper (PJ), the individual obtains or is provided the information that is described below.

8-2. Specific plan information is needed by the PJ. This information includes the following:

- Mission and ground tactical plan.
- Air movement plan to include time of flight, formations, route, direction of flight over drop zone, drop altitude, location and design of code letters, racetracks, and emergency call signs/frequencies.
- Names of AJM(s) and safety personnel, and time and place to brief them.
- Transportation (movement to marshaling area, and departure airfield plan and times).
- Tactical cross load plan.
- Weather decision time(s).
- Type of aircraft for the operation and special items of equipment being worn by jumpers, Airborne pack (AIRPAC), anti-tank 84-millimeter unguided, anti-armor jump pack (AT4JP), Stinger missile jump pack (SMJP), or A-series containers aboard aircraft (door bundles).
- Aircraft tail numbers, chalk numbers, and parking spots.
- Landing plan to include drop zones, drop times, delivery sequence, number/type of loads (personal parachute, CDS, and free drop), and types of drops (CARP, GMRS, wind streamer vector count [WSVC], VIRS, or jumpmaster spotted and jumpmaster released [JSJR]).
- Air item turn in plan.
- Medical support plan.

8-3. Times and places concerning various aspects of the operation are important. These include the following:

- Time and place of initial manifest call.
- Time and place of final manifest call.
- Time and place to conduct operations briefing.
- Time and place to conduct sustained Airborne training (SAT).
- Time and place to check and inspect jumpers' uniforms and equipment.
- Time and place of parachute issue, including types of parachutes.
- Time and place of troop safety briefing.
- Load time. (Time agreed upon by jumping unit and air wing commanders.)
- Time and place of aircrew and JM briefing.

- Station time. (Critical time: all jumpers must be seated onboard the aircraft.)
- Takeoff time.
- Time on target.

Note. If it is decided during joint planning and preparation for Airborne operations that host nation aircraft are to be used without navigational equipment, a detailed brief for the pilot, loadmaster, and JM must take place.

ASSISTANT'S BRIEFING (UNIT AREA)

8-4. After receiving the initial operation briefing, the PJ returns to the unit and briefs the AJM and safety personnel. The PJ assigns duties to them for the remainder of the operation. At this time, the PJ determines who assumes responsibility for jumpers remaining onboard. The manifest of personnel (DA Form 1306, *Statement of Jump and Loading Manifest*) scheduled to jump is prepared. The PJ schedules a full rehearsal with the JM team before the PJ team assembles the chalk (planeload). The rehearsal includes the following:

- After the briefing, the PJ organizes the chalk according to the tactical cross-load plan, and then conducts the initial manifest call. AJM(s) and safety personnel check the identification card and tags of each jumper.
- Once the DA Form 1306 is completed, verified, and signed by the PJM, the safety makes seven copies of the manifest to be distributed.
- Items of equipment and personnel are cross loaded based on the ground tactical plan and the planned dispersion of personnel across a drop zone. The PJ will ensure the chalk is manifested according to the tactical cross load and unit SOP
- The PJ, aided by the AJM(s) and safety personnel, inspect each jumper's equipment for serviceability and to ensure proper rigging. Jumpers should have their equipment and containers packed and properly rigged prior to initial manifest call.

Note. The PJ can delegate authority, but not responsibility. The PJM is solely responsible for the signed DA Form 1306 for the aircraft.

JUMPMaster/SAFETY KIT BAG

8-5. The PJ ensures AKBs and UPRBs for use onboard the aircraft have been prepared to contain extra items that may be needed during any phase of the Airborne operation. These bags are commonly referred to as the safety kit and are used by the PJ, AJM, and safety personnel. Items to consider for use onboard the aircraft (depending on the type of Airborne operation and according to unit SOP) include the following:

- Flashlight (night operations).
- Masking tape.
- 100-mile-per-hour tape.
- Roll of one-quarter inch cotton webbing.
- Type-3 retainer bands (T-11 stow bars).
- Type-64 retainer bands (rigging combat equipment).
- 1.25 inch x 3/8 inch heavy duty retainer bands (static line slack retainer bands).
- Harness single-point release (HSPR) complete.
- Hook-pile tape lowering lines.
- Modified HPT lowering line for special items.
- Helmet components, such as suspension pads, chinstraps (including hardware).
- Trash bags.
- Earplugs and airsickness bags.

- Two extra reserve parachutes, and extra AKBs or UPRBs (for universal static lines modified and deployment bags).
 - AKB: one bag for every 15 deployment bags
 - UPRB: one bag for every 30 deployment bags.
- Knife, which will be carried by the PJ, AJM, and safety personnel. (A knife should not be carried on a point of contact.)
- Four sets of extra T-11R inserts.

MARSHALLING AREA CONTROL OFFICER BRIEF

8-6. As soon as practical after the initial manifest call the Airborne commander should ensure a marshalling area control officer briefing is conducted. The briefing should include the following:

- Introduce key leaders (Airborne commander, JM teams, and others).
- Drop zone.
 - Name.
 - Drop heading.
 - Obstacles on or near DZ.
- Type of aircraft and number.
- Chalk number(s).
- Type of parachute(s).
- Briefing on serial numbers, container delivery system, heavy drop, if a part of a larger Airborne operation.
- Weather decision time (for GO, NO GO decision).
- Type of individual equipment and separate equipment that troops will be jumping, such as AIRPAC; parachute drop bag (PDB); parachutist jump pack; all-purpose, lightweight, individual, carrying equipment (ALICE) pack; SMJP; AT4JP; modular Airborne weapon case (MAWC).
- Type of jump (proficiency, tailgate, tactical).
- Time and place of final manifest call.
- Time and place of parachute issue.
- Load time.
- Station time.
- Takeoff time.
- Length of flight.
- Time on target.
- Drop altitude.
- Predicted winds on the DZ and direction.
- Route checkpoints.
- Drop zone assembly aids and area.
- Parachute turn in point(s).
- Medical support plan.

8-7. If the unit jumps nonstandard equipment or equipment containers, the rigging on these equipment and containers must be approved according to individual service regulations. New equipment testing and recommended rigging procedures must be forwarded for testing to U.S. Army Airborne Special Operations Test Directorate (USAABNSOTD), Fort Bragg, NC. JMPI and rigging procedures can be developed at the 82nd Advanced Airborne School (AAS), Fort Bragg, NC then for validation and approval to Commander, 1st Battalion, 507th PIR, ATTN: Jumpmaster School, Fort Benning, GA 31905.

SUSTAINED AIRBORNE TRAINING

Note. JM version of mock door training and prejump for both the T-11 ATPS and MC-6 series parachute can be found in appendix E.

8-8. Sustained Airborne training is conducted in the unit area or at the departure airfield. SAT is scheduled and conducted within 24 hours before takeoff. If over 24 hours, an O-6 must give approval. All personnel (JM teams/jumpers require sustained Airborne training. The PJ usually does not know the proficiency of all jumpers for which they are responsible; therefore, basic Airborne jump techniques are rehearsed so each jumper can demonstrate their ability to perform them. JMs, safeties, and key leaders will make on-the-spot corrections of any jumper not properly performing the required training. (Refer to appendix E for a sample SAT narrative.)

8-9. At a minimum, SAT consists of PLFs and mock door training, a review of the five points of performance, towed jumpers, collisions and entanglements, center panel strike, malfunctions, activation of the reserve, and emergency landings (MC-6 video for new MC-6 jumpers). Mock door training will include rehearsal of every detail involved with the Airborne operation to include static line control, accidental activation of the reserve on board the aircraft, red light procedures, jump refusals, exiting procedures, towed jumper procedures, and emergencies onboard the aircraft. The JM team must run all jumpers through both paratroop doors, in case a paratroop door becomes inoperable during the Airborne operation. Jumpers must make a minimum of two exits, with the last exit as planned for the Airborne operation, at the Airborne commander's discretion. All topics must be covered and tailored to the aircraft used for the operation.

8-10. Sustained Airborne training is performance-oriented training. The PJ should introduce the JM team to all jumpers on their aircraft. During SAT, the JM performing the training needs to be heard by all jumpers (a bullhorn should be used, if necessary). All JMs and leaders must make aggressive and positive on-the-spot corrections.

Note. The JM team performing duties on the Airborne operation will conduct mock door training with their jumpers.

8-11. Airborne personnel will use aircraft fuselage or mock ups to rehearse preflight and in-flight actions. Aircraft fuselage mock ups can be complete airframes or may be field expedient training devices, as simple as rope strung to simulate an anchor line cable and helmets on the ground to mark the jump door. The use of field expedient training devices is not the preferred method for conducting SAT.

8-12. Actions in the aircraft training reminds jumpers of what occurs in-flight before jumping. The PJ can use the mock door apparatus to show jumpers where their relative positions will be in the aircraft. If in-flight rigging is to be performed, the rigging station locations can be indicated also. The PJ reviews and leads a rehearsal of all actions related to in-flight procedures so the jump mission will be smooth and safe.

8-13. If time and facilities are available it is recommended to conduct SAT in the following order:

- Mock door training.
- Prejump.
- PLF.

Note. The following will be conducted by the JM team inside the mock door with the jumpers observing from outside the mock door.

STATIC LINE CONTROL

8-14. After the jumpmaster issues the jumper the command "HOOK UP," they will remove the universal static line snap hook from the carrying handle of the reserve parachute. They will hook up to the appropriate anchor line cable with the spring opening gate facing toward the skin of the aircraft. The jumper will then

form a bite in the universal static line modified, making sure they have a good four in the hand and two below bite. Do not touch the double sewn portion (the double sewn portion is for the safety).

8-15. Trace the universal static line modified over the appropriate shoulder. The jumper will then trace the jumper to their front's USLM from the shoulder to the first stow. They will ensure that the USLM has not been misrouted through the riser assembly and is properly routed to the first stow. The jumper will then cover their rip cord handle with the nonstatic line hand. The first three jumpers will have their arm in the elbow lock position. This creates a proper one-second interval. The remaining jumpers will have their arm up high with the elbow bent, and stagger inboard and outboard.

EXITING PROCEDURES

8-16. As the jumpers move to the paratroop door, they will lock their arm out to the elbow lock position. As they near the paratroop door they will make eye to eye contact with the safety.

8-17. The safety will take control of the universal static line modified, the jumper will then place both hands on the ends of the reserve (ensuring that they DO NOT swim the static line), turn at a 90-degree angle into the paratroop door, and make a vigorous exit (up 6 inches and out 36 inches) and count to 6000.

RED LIGHT PROCEDURES

8-18. There are multiple reasons a red light could come on during flight. Out of drop zone, obstacles on the drop zone, low flying aircraft, rotary-wing aircraft, or other reasons. If a red light comes on during exit, the jumpmaster will place their hand in the jumpers face and give the command "RED LIGHT, RED LIGHT, RED LIGHT," and push the stick away from the paratroop door. If the jumper has already handed off their USLM, and committed to the paratroop door, no one will stop them. The jumper should go ahead and get a good vigorous exit out of the aircraft and be prepared to avoid any obstacle that caused the red light to come on.

JUMP REFUSALS

8-19. If there is a jump refusal inside of the aircraft, the jumpmaster will give the command of "GREEN LIGHT GO" (three times physical and verbal). If the jumper fails to exit after the third command, the safety secures the jumper by the pack tray, and tells them: "YOU ARE A JUMP REFUSAL, I AM REMOVING YOU FROM THE PARATROOP DOOR," and removes the jump refusal from the paratroop door. The safety will seat the jump refusal out of the way (on the ramp) and give the jump refusal a lawful order to not touch their equipment. The jumpmaster team will then continue to exit jumpers if green light permits.

8-20. Once the paratroop doors are closed, the safety will unhook the jump refusal's USL snap hook and move the jump refusal towards the forward portion of the aircraft. The safety will then seat the jump refusal and secure the jumpers seat belt. The safety will again issue the jump refusal a lawful order of: "DO NOT TOUCH YOUR EQUIPMENT." Upon landing, the safety will take positive control of the jump refusal, and turn them over to the DACO. The DACO will then conduct a JMPI on the jump refusal, and a parachute rigger will conduct a technical inspection of the jump refusal's equipment. If something is found wrong with the jump refusal's equipment, no action against the jump refusal will be taken. If no deficiencies are found, the jump refusal is turned over to the chain of command for appropriate actions according to the unit SOP.

TOWED JUMPER PROCEDURES

8-21. If there is a towed jumper, and they are being towed by their USLM, and they are unconscious; the jumper will be retrieved back inside the aircraft. If they are conscious, the jumper should make every effort to maintain a good tight body position with both hands covering the rip cord handle. An attempt will be made to retrieve the towed jumper inside the aircraft. As the towed jumper nears the paratroop door, DO NOT REACH FOR THE JM TEAM, they will continue to protect their rip cord handle.

8-22. If the jumper cannot be retrieved inside the aircraft, their USLM will be cut. Once the jumper feels themselves falling free from the aircraft, they will immediately activate their reserve parachute using the pull drop method. If a jumper is being towed by an item of equipment, regardless of whether they are conscious or unconscious, that item of equipment will be cut or jogged free, and the jumper's main canopy will deploy.

Note. The following will be conducted by the JM team WITH the jumpers inside the mock door.

EMERGENCY PROCEDURES

8-23. **Ground evacuation/continuous ringing of the alarm bell:** While inside the aircraft, the jumper hears **one continuous ring of the alarm bell**. That indicates a crash landing during takeoff. The jumpers will remain seated and extend their legs out to a 45-degree angle. The jumpers will wrap their arms around their legs, and place their head on their knees until the aircraft stops moving. The jumpers will then exit the aircraft under the direction of the jumpmasters or loadmaster.

8-24. **Crash landing/ditching/six short rings of the alarm bell or oral warning:** While inside the aircraft, the jumper hears **six short rings of the alarm bell, or an oral warning**. That indicates a crash landing during flight without enough time or altitude to bail out. The jumpers will remain seated, and extend their legs out to a 45-degree angle. The jumpers will wrap their arms around their legs, and place their head on their knees. One long continuous ring will sound just prior to impact. Once the aircraft stops moving, the jumpers will then exit under the direction of the jumpmasters or loadmaster.

8-25. **Accidental activation of reserve inside the aircraft with doors closed.** While inside the aircraft with the doors closed, a reserve parachute is activated; the jumpers will sound off with “RESERVE, RESERVE, RESERVE.” Once the parachute is contained, one of the jumpers will get the jumpmasters’ attention by placing their hand or arm over an anchor line cable. The jumpmaster will then replace that reserve with a new one, and the Airborne operation will continue as planned.

8-26. **Accidental activation of the reserve inside aircraft with doors open.** There are two scenarios that should be discussed. They are as follows:

- **Forward of the wheel well (toward the pilot’s compartment).** All jumpers will sound off with “RESERVE, RESERVE, RESERVE.” All jumpers in the vicinity of the activated reserve will attempt to smother and contain the parachute. Once the parachute is contained one of the jumpers will get the jumpmasters attention by placing their hand or arm over the anchor line cable. The jumpmasters will close the jump doors, then replace that reserve with a new one, and the jumper will exit the aircraft on the next pass.
- **Aft of the wheel well (C-130), center mass aft (C-17), or center mass (C-27J) (toward the open paratroop jump door).** Every attempt will be made to smother, and contain the parachute. If the reserve starts to make its way toward the open jump door, the jumper with the activated reserve must exit the aircraft immediately. The jumper must make every attempt to beat the reserve parachute out of the jump door. The jumpers in front of the activated reserve parachute must clear a path for the jumper with the activated reserve by either exiting the aircraft, standing on their seat, or moving up onto the ramp.

8-27. **Fire during flight.** If there is a fire while in flight, an oral warning will be issued to the jumpers. The jumpers will move away from the affected area, and the loadmasters will attempt to extinguish the fire. Be prepared to execute bailout procedures, if instructed to do so.

8-28. **Bailout, three short rings of alarm bell or an oral warning:** While inside the aircraft, the jumper hears three short rings of the alarm bell or an oral warning. That indicates an emergency bailout is imminent. The jumpmasters will issue the jumpers an abbreviated set of jump commands: “STAND UP, HOOK UP.” When the jumpers hear the long continuous ring of the alarm bell, they will follow the commands of the JM team, and exit the aircraft as quickly and safely as possible.

EXECUTE MOCK DOOR TRAINING

8-29. Jumpers must make a minimum of two exits, with the last exit as planned for the Airborne operation. All topics must be covered and tailored to the aircraft used for the operation this includes door bundle procedures if included in the mission.

T-11 ATPS SUSTAINED AIRBORNE TRAINING REQUIREMENTS

8-30. Sustained Airborne training must be conducted and performance oriented. All personnel must attend SAT. Jumpers must be positioned so their actions can be viewed by the JM team, and so they can hear them. Sustained Airborne training is performance oriented and should be tailored to fit the mission. All JMs and leaders must make aggressive and positive on-the-spot corrections.

Note. The JM version of mock door training and prejump for both the T-11 ATPS and MC-6 series parachute given to jumpers can be found in Appendix E.

8-31. Training on the five points of performance must be attended by all jumpers and JMs. The following are the five points of performance:

- Proper exit, check body position, and count.
- Check canopy and gain canopy control.
- Keep a sharp look out at all times and constantly compare your rate of descent.
- Prepare to land.
- Land.

8-32. The first point of performance is proper exit, check body position, and count. Jumpers must perform the following actions:

- Keep chin on chest.
- Keep eyes open.
- Keep elbows into sides.
- Keep hands over the ends of the reserve parachute and fingers naturally spread.
- Bend body forward at the waist.
- Keep feet and knees together.
- Lock knees to the rear.
- Count to 6000 with the T-11 ATPS (fixed-wing aircraft).
- Count to 8000 with the T-11 ATPS (rotary-wing aircraft).
- Immediately activate the reserve parachute using the pull drop method, if opening shock is not felt.

8-33. The second point of performance is check canopy and gain canopy control. Jumpers must perform the following actions:

- Reaches up to the elbow locked position and secures the front set of risers in each hand.
- Make a 360-degree check of the canopy.
- If the jumper has twists, they will compare the rate of descent with fellow jumpers; if falling faster than fellow jumpers, or cannot compare the rate of descent, the jumper will activate the reserve parachute using the pull drop method. If the jumper is not falling faster than fellow jumpers, then he or she will remove the twists.
- To remove twists, reach up and grasp a set of risers with each hand, thumbs down, knuckles to the rear. Pull the risers apart and begin a vigorous bicycling motion.
- When the last twist comes out, immediately check canopy and gain canopy control.

8-34. The third point of performance is keep a sharp lookout at all times and constantly compare the rate of descent. Remember the three rules of the air:

- Always look before a slip.
- Always slip in the opposite direction to avoid collisions using a one riser or diagonal slip.
- The lower jumper always has the right of way.
- Avoid other jumpers all the way to the ground; maintain 25 feet of separation between jumpers in the air.

- The jumper must continue to compare their rate of descent throughout the third point of performance.
- At the end of the third point of performance, release all appropriate equipment tie-downs.

8-35. The fourth point of performance is prepare to land. When approximately 200 feet above the ground, the jumper will prepare to land by taking the following actions:

- Looking below and around to ensure there are no fellow jumpers. At no higher than 200 feet with the T-11 ATPS, lower combat equipment and immediately slip into the wind, keeping the feet and knees together.
- Keep knees slightly bent.
- Balls of the feet hanging naturally towards the ground.
- Keeping head and eyes on the horizon.
- Before making contact with the ground, turn the lower portion of the body (below the waist) to a 45-degree angle (front or rear PLF), exposing the second, third, and fourth points of contact.

8-36. The fifth point of performance is land. When the balls of the feet make contact with the ground, the following actions will take place:

- Execute a proper PLF using the five points of contact:
 - Balls of the feet.
 - Calf muscle.
 - Thigh muscle.
 - Buttocks.
 - Pull-up muscle.
- Do not make a standing landing.

RECOVERY OF EQUIPMENT

8-37. Once the jumper is out of the parachute harness, he will remove all air items from the equipment rings. Unsnap and unzip the AKB and roll it two-thirds of the way down, or unzip and turn right side out the UPRB. Place the parachute harness inside the AKB or UPRB with the smooth side facing up. Secure the risers, and place them under the parachute harness. There are two methods of recovery of equipment, nontactical and tactical.

8-38. To recover equipment using the nontactical method:

- Elongate the suspension lines and canopy, removing all debris.
- Once the jumper reaches the bridle line, they secure the drogue parachute and deployment sleeve in one hand, and figure-eight roll the canopy and suspension lines all the way to the AKB or UPRB.
- Place the canopy and suspension lines inside the AKB or UPRB, leaving the drogue parachute, deployment sleeve, and bridle assembly on top of the main canopy.
- Snap, do not zip, the AKB or UPRB.
- Secure the reserve parachute to the handles of the AKB or place the reserve parachute in the reserve parachute stowage pocket.
- Secure all equipment, conduct a 360-degree check of the area, and move out to the assembly area.

8-39. To recover equipment using a tactical method:

- Remain on a knee at the AKB or UPRB.
- Begin pulling the suspension lines and canopy towards the AKB or UPRB, stuffing them in as the jumper goes.
- Place the drogue parachute, deployment sleeve, and bridle assembly on top of the main canopy.
- Snap, do not zip, the AKB or UPRB.
- Secure the reserve parachute to the handles of the AKB, or place the reserve parachute in the reserve parachute stowage pocket.

- Maintain noise and light discipline.
- Secure all equipment, conduct a 360-degree check of the area, and move out to the assembly area.

PARACHUTE LANDING FALLS AND MALFUNCTIONS

8-40. Parachute landing falls must be performed by all manifested jumpers. Each jumper must perform one satisfactory PLF in each of the four directions:

- Left side.
- Right side.
- Front (left or right).
- Rear (left or right).

Note. In order to prevent jumpers from colliding or landing on each other, JMs will dictate which front and rear PLF jumpers will execute during PLF training in order to maintain control, and ensure all jumpers on the platform are falling in the same direction.

8-41. Parachute malfunctions during an Airborne operation can be catastrophic, therefore unit leaders at every level must reinforce to all subordinates to activate the reserve parachute if a problem occurs. Jumpers must remember to continue to check their canopy for any damage or irregularities, and compare their rate of descent throughout their entire jump. If at any time the jumper cannot compare their rate of descent or the jumper is falling faster than their fellow jumpers, immediately activate the reserve parachute using the pull drop method. Jumpers must receive training on malfunctions and control of the reserve parachute (refer to chapter 6 for malfunction definitions).

ACTIVATION OF RESERVE AND RESERVE PARACHUTE CONTROL

8-42. The jumper will utilize the pull drop method when activating the T-11 reserve parachute. To activate the T-11 reserve parachute utilizing the pull drop method the jumper will:

- Maintain a good tight body position.
- Keep feet and knees together.
- Grasp the rip cord handle with either hand.
- Throw their head back and to the rear.
- Pull the rip cord handle and drop it to the ground; the reserve parachute will activate.
- Ensure neither hand is in front of the reserve parachute as it deploys.

8-43. While descending under the T-11 reserve parachute, control the reserve canopy by using a one or two riser slip. At approximately 200 feet AGL, the jumper will assume the 'prepare to land' attitude by pulling a two riser slip in the opposite direction of drift.

8-44. Jumpers must receive training on partial malfunctions (refer to chapter 6 of this publication for definitions), which can be distinguished by certain characteristics. The following are partial malfunctions:

- Corner crossover inversion.
- Hung slider.
- Blown section or gore
- Broken suspension lines.
- Delayed opening.

8-45. Should any of these partial malfunctions occur and cause the jumper's rate of descent to increase in comparison to other jumpers, the jumper activates the reserve parachute using the pull drop method, as stated earlier in this chapter.

8-46. When the reserve parachute inflates, and there are two inflated canopies, the jumper has no directional control over the parachute. All other jumpers need to slip away. To assume the proper landing attitude, the jumper reaches high on the front set of risers of the main parachute and maintains this attitude until making ground contact. Immediately after conducting a PLF, the jumper releases the main parachute (using the

canopy release assemblies) and collapses the reserve by detaching the connector snaps from the D-rings of the main lift web or by using either the quick recovery method as follows:

- Immediately after releasing the T-11 main canopy by activating both canopy release assemblies, the jumper will get up and run to the apex of the T-11 reserve parachute.
- The jumper will secure the pilot chute of the T-11 reserve parachute and run the canopy into the wind, collapsing the parachute.
- Once the canopy is collapsed, the jumper can then detach the connector snaps from the D-rings of the main lift web.

COLLISIONS AND ENTANGLEMENTS

8-47. The jumper must always attempt to slip away using a one riser or diagonal slip to avoid other jumpers in the air. If unable to avoid a collision, they use the spread-eagle position to bounce off another jumper's canopy or suspension lines. If a jumper enters another jumper's suspension lines, the entering jumper assumes the modified position of attention with either hand protecting (but not grasping) the rip cord handle. The entering jumper may use the opposite hand to assist in exiting the other jumper's canopy and suspension lines the same way they entered, attempting to exit the same location.

8-48. If jumpers become entangled, their reaction techniques are as follows:

- The higher jumper attempts to move hand-under-hand down to the lower jumper.
- They attempt to establish eye-to-eye contact and hold onto each other by the left main lift web(s).
- They must not touch the other jumper's canopy release assemblies.
- Both jumpers will discuss which parachute landing fall to execute upon contact with the ground, both jumpers will execute the same PLF away from each other.
- Neither jumper will execute a front parachute landing fall.
- Both jumpers will observe both canopies all the way to the ground. If one canopy collapses both jumpers will ride the one good canopy all the way to the ground.
- If both canopies should collapse, both jumpers will immediately turn away, in order to create a clear path and activate their reserve parachute using the pull drop method.
- Should a jumper find them self on another jumper's canopy without rolling, use whatever means necessary to get off of the canopy and immediately activate the reserve parachute.
- Attempt to avoid the bridle line, deployment sleeve, and the four corner vents on the canopy.
- If the jumper falls through the corner vent and becomes entangled, the jumper should stay where they are and be prepared to execute a proper PLF.

CENTER PANEL STRIKE

8-49. **Actions of the higher jumper:** If the higher jumper is drifting toward a fellow jumper, they should look and immediately slip away in the opposite direction of the lower jumper, using a one riser diagonal slip.

8-50. If the higher jumper finds they are drifting over a jumper's canopy and believes they will land on top of the lower jumper's canopy; prior to making contact with the canopy, the higher jumper begins a vigorous running motion in the direction of their slip, attempting to stay on their feet, until they are off of the lower jumper's canopy. Continue to slip away until a minimum of 25 feet separation has been achieved.

8-51. If the higher jumper lands on the lower jumper's canopy and cannot run off, it is vital to maintain momentum. This should allow the higher jumper to remain on their feet, and attempt to get off of the closest edge of the canopy that their momentum will allow. If the higher jumper cannot stay on their feet, they should employ a crawling technique by reaching as far as possible in the direction of the closest edge of the canopy. They grasp the canopy and continue to pull towards them using the hand-over-hand method until they are free from the lower jumper's canopy. Once the higher jumpers feel themselves falling free, they create a clear and unobstructed path, then activates their reserve parachute using the pull drop method. The higher jumper keeps feet and knees together and is prepared to execute a parachute landing fall.

WARNING

The higher jumper does not attempt to roll off the canopy as this could wrap the canopy or suspension lines around their body, preventing the main canopy from reinflating or preventing the higher jumper from deploying the reserve parachute.

8-52. **Actions of the lower jumper:** At the end of the 6000 count, the lower jumper immediately begins their second point of performance, "check canopy and gain canopy control." The lower jumper conducts a 360-degree check of their canopy to ensure the canopy is free of any damage or fellow jumpers and the slider is descending.

8-53. If there is damage to the canopy or a jumper on top, the lower jumper compares their rate of descent with the fellow jumpers. If the lower jumper is falling faster than their fellow jumpers, immediately activate the reserve parachute using the pull drop method. If there is a jumper on top of the canopy and the lower jumper is not falling faster than fellow jumpers, continue to observe the canopy. If at any time the main parachute begins to deflate, the lower jumper immediately activates their reserve parachute using the pull drop method. If the higher jumper slides off of the lower jumper's canopy, use a one riser diagonal slip in the opposite direction to avoid fellow jumpers.

CAUTION

When slipping away from fellow jumpers, always use a diagonal slip. If the higher jumper should fall through a corner vent, they should remain where they are and be prepared to conduct a parachute landing fall.

EMERGENCY LANDINGS

8-54. **Tree landings** can be dangerous and should be avoided. If a tree landing is imminent, the jumper should perform the following:

- Immediately look and slip away utilizing a one riser or diagonal slip when beginning to drift towards a tree.
- If combat equipment is lowered, the jumper looks below to ensure there are no fellow jumpers, then jettisons the combat equipment, making a mental note where it lands. (Jumper maintains helmet.)
- If combat equipment is not lowered, the jumper will keep it on to provide added protection while passing through the trees.
- Maintain canopy control and a good landing attitude by keeping the feet and knees together, knees slightly bent, and eyes open until contact is made with the trees.
- Once making contact with the trees, place chin on chest, rotate hands in front of the face, keeping the elbows high.
- Be prepared to execute a PLF if passing all the way through the trees.
- Consider activating the reserve parachute and climbing down if hung up in trees.
- If the jumper is hung up in the trees and cannot safely climb to the ground, they should stay there and wait for assistance.

8-55. Wires are extremely dangerous and should be avoided. If a **wire landing** is imminent, the jumper should perform the following (see figure 8-1 on page 8-12):

- If drifting towards wires, the jumper immediately tries to slip or turn away using a one riser or diagonal slip.

- If they cannot slip or turn away, the jumper looks below to ensure there are no fellow jumpers below them and jettisons their equipment, making a mental note of where it lands.
- Ensures that the helmet is maintained.
- Assumes a landing attitude by keeping feet and knees together, exaggerating the bend in the knees, eyes open, chin on chest, and back arched.
- Places the palms of their hands high on the inside of the front set of risers with the elbows locked.
- When making contact with the wires, the jumper begins a hard rocking motion and attempts to pass through the wires.
- The jumper prepares to do a PLF in the event of passing through the wires.
- If the jumper gets hung up in the wires, they do not attempt to lower them self to the ground.
- The jumper stays where he or she is and waits for assistance.

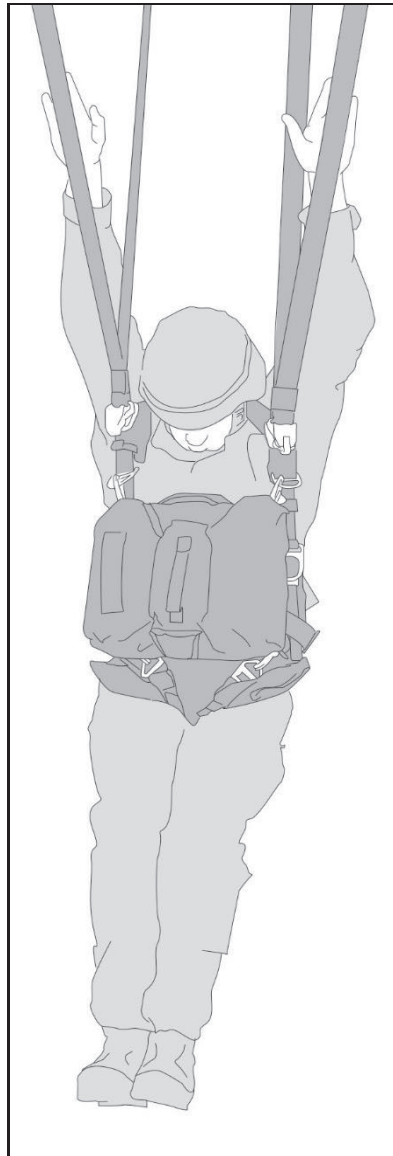


Figure 8-1. Wire landing attitude

WARNING

Tree and wire landings only: do not remove the outer tactical vest, if worn.

Note. If the jumper becomes entangled in the wires, they make no attempt to climb down, but waits to be rescued by a recovery team.

WATER LANDING

8-56. Water landings can be dangerous and should be avoided. Immediately look and slip away utilizing a one riser or diagonal slip when beginning to drift towards a water obstacle. If a water landing is imminent, and the jumper does not have a life preserver, they should perform the following:

- Looks below to ensure there are no fellow jumpers and lowers their equipment.
- Jettisons his or her helmet, making a mental note of where it lands.
- Activates the quick release in the waistband, disconnects the left connector snap and rotates the reserve parachute to the right.
- Seats them self well into the saddle and activates the quick release in the chest strap, completely removing the chest strap from the chest strap friction adapter.
- Regains canopy control.
- Prior to entering the water the jumper assumes a landing attitude by keeping feet and knees together, knees slightly bent and places their hands on the ejector snaps for the leg straps.
- When the balls of their feet make contact with the water, the jumper activates both ejector snaps for the leg straps, arches his or her back, throws their arms above their head and slides out of the parachute harness.
- Is prepared to execute a PLF if the water is shallow.
- Swims upwind or upstream away from the canopy.
- If the canopy comes down on top of the jumper, they locate a seam, and follow it to the skirt of the canopy.

8-57. Sometimes, life preservers are provided for specific missions or training events. The following are instances when life preservers may be provided and the actions that should be taken:

- Emergency water landings could occur on a tactical training mission where the route to the DZ is over a large body of water. On such flights, life preservers are issued to jumpers. If the aircraft malfunctions, the jumpers may need to jump over the water.
- Emergency water landings require jumpers to leave any combat equipment onboard the aircraft so they do not become entangled with the equipment in the water.
- A jumper may find themself over water with attached combat equipment due to drifting off a DZ bordered by water, or during emergency bailout after being hooked up onboard the aircraft. If this occurs, the jumper must lower their combat equipment and jettison their equipment.
- Deliberate water landings are executed for training in selected water drop zones (WDZs). Jumpers may wear combat equipment only after it has been waterproofed and float checked.
- The jumper wears the inflatable life preserver under their harness with the inflatable portions under the armpits. Jumpers wearing an underwater demolition team (UDT) vest will route the chest strap under the UDT vest to prevent crushing the chest if inflated.
- While still in the air, the jumper activates the life preserver prior to assuming a landing attitude.
- If the life preserver fails to inflate, the jumper inflates the life preserver manually by blowing air into the inflation valve hose.
- The jumper will jettison any or all of their equipment including their helmet.

- Looks below to ensure there are no fellow jumpers below and lowers the equipment.
- Assumes a landing attitude and prepares to do a PLF in the event the water is shallow.
- Once in the water, the jumper activates both canopy release assemblies by using the hand-to-shoulder method or the hand-to-assist method, as described previously in the procedures for recovering from the drag.
- The jumper does not remove the harness and equipment, since the life preserver will support a fully combat-equipped jumper.

Note. For more information on life preservers, refer to chapter 12 of this publication.

8-58. All first time MC-6 jumpers must watch the MC-6 instructional video and when mandated by the Airborne commander or unit SOP. All personnel must attend SAT. Jumpers must be positioned so their actions can be viewed by the JM team and so they can hear them. Sustained Airborne training is performance-oriented training and should be tailored to fit the mission. All JMs and leaders must make aggressive and positive on-the-spot corrections. SAT must be taught proficiently.

Note. JM version of mock door training and prejump for the T-11 ATPS and MC-6 series parachute can be found in appendix E of this publication.

8-59. Training on the five points of performance must be attended by all jumpers and JMs. The following are the five points of performance:

- Proper exit, check body position, and count.
- Check canopy and gain canopy control.
- Keep a sharp look out at all times and constantly compare the rate of descent.
- Prepare to land.
- Land.

8-60. The first point of performance is proper exit, check body position, and count. Jumpers must perform the following actions:

- Keep chin on chest.
- Keep eyes open.
- Keep elbows into sides.
- Keep hands over the ends of the reserve parachute and fingers naturally spread.
- Bend body forward at the waist.
- Keep feet and knees together.
- Lock knees to the rear.
- Count to 4000 with the MC-6 parachute (fixed-wing aircraft).
- Count to 6000 with the MC-6 parachute (rotary-winged aircraft).
- Immediately activate the reserve parachute using the pull drop method, if opening shock is not felt.

8-61. Immediately after the 4000 or 6000 count, the jumper will conduct the second point of performance of check canopy and gain canopy control. Jumpers must perform the following actions:

- Reaches up to the elbow locked position and secures one toggle in each hand located on the inside of the rear set of risers and pulls the toggles down to approximately eye level.
- Make a 360-degree check of the canopy.
- If the jumper has twists, they will compare the rate of descent with fellow jumpers; if they are falling faster than fellow jumpers or cannot compare the rate of descent, they activate the reserve parachute using the pull drop method. If they are not falling faster than fellow jumpers, then they will remove the twists.

- To remove twists, the jumper reaches up and grasps a set of risers with each hand, thumbs down, knuckles to the rear. The jumper pulls the risers apart and begins a vigorous bicycling motion.
- When the last twist comes out, immediately check canopy and gain canopy control.

8-62. The third point of performance is keep a sharp lookout at all times and constantly compare the rate of descent. Remember the three rules of the air:

- Always look before a turn.
- Always turn in the opposite direction to avoid collisions.
- The lower jumper always has the right of way.

8-63. Avoid other jumpers all the way to the ground; maintain at least 50 feet of separation between canopies in the air.

- The jumper must continue to compare their rate of descent throughout the third point of performance.
- At the end of the third point of performance, release all appropriate equipment tie-downs.

8-64. The fourth point of performance is prepare to land. When approximately 250 feet above the ground the jumper will prepare to land by taking the following actions:

- Turn into the wind PRIOR to lowering equipment.
- The jumper will then bring both toggles in front of their face and transfer control of one toggle to the opposite hand so that both toggles are being controlled by one hand.
- While maintaining both toggles in front of the face, the jumper will use the free hand to lower their combat equipment.
- Once the jumper has lowered their combat equipment, immediately regain canopy control with both hands and continue to keep a sharp lookout for other jumpers.
- The jumper will use the appropriate brake position according to chapter 3 of this publication.
- The jumper will keep knees slightly bent.
- Balls of the feet hanging naturally towards the ground.
- Keeping head and eyes toward the horizon.
- Before making contact with the ground, turn the lower portion of the body (below the waist) to a 45-degree angle (front or rear PLF), exposing the portion of the body that will make contact with the ground first.

8-65. The fifth point of performance is land. When the balls of the feet make contact with the ground, the following actions will take place:

- Execute a proper PLF using the five points of contact:
 - Balls of the feet.
 - Calf muscle.
 - Thigh muscle.
 - Buttocks.
 - Pull-up muscle.
- Do not make a standing landing.
- Remain on back and activate one canopy release assembly using either the hand assist method, or hand to shoulder method. If the canopy fails to deflate, the jumper will activate the second canopy release assembly.
- The jumper remains on their back, places the weapon into operation, and removes the parachute harness.

RECOVERY OF EQUIPMENT

8-66. Once the jumper is out of the parachute harness, they will remove all air items from the equipment rings. Unsnap and unzip the AKB and roll it two-thirds of the way down, or unzip and turn right side out the UPRB. Place the parachute harness inside the AKB or UPRB with the smooth side facing up, leaving the

waistband exposed. Secure the risers, and place them under the parachute harness. There are two methods of recovery of equipment, nontactical and tactical.

8-67. To recover equipment using the nontactical method:

- Elongate the suspension lines and canopy removing all debris.
- Once the jumper reaches the apex of the canopy, the jumper will insert their thumb into the bridle loop and figure-eight roll the canopy and suspension lines all the way to the AKB or UPRB.
- Place the canopy and suspension lines inside the AKB or UPRB and route the waistband through the bridle loop.
- Secure the waistband to one of the carrying handles of the AKB or UPRB with a half hitch.
- Snap, do not zip, the AKB or UPRB.
- Secure the reserve parachute to the handles of the AKB or place the reserve parachute in the reserve parachute stowage pocket.
- Secure all of equipment, conduct a 360-degree check of the area, and move out to the assembly area.

8-68. To recover equipment using a tactical method:

- Remain on a knee at the AKB or UPRB.
- Begin pulling the suspension lines and canopy towards the AKB or UPRB, stuffing them in as the jumper goes.
- Once the jumper reaches the bridle loop, route the waistband through the bridle loop and secure the waistband to one of the carrying handles of the AKB or UPRB with a half hitch. .
- Snap, do not zip, the AKB or UPRB.
- Secure the reserve parachute to the handles of the AKB or place the reserve parachute in the reserve parachute stowage pocket.
- Maintain noise and light discipline.
- Secure all of equipment, conduct a 360-degree check of the area, and move out to the assembly area.

PARACHUTE MALFUNCTIONS AND CONTROL OF THE RESERVE PARACHUTE

8-69. Jumpers must receive training on total malfunctions and control of the reserve parachute (refer to chapter 6). While descending under the T-11 reserve parachute, control the reserve canopy by using a one or two riser slip. At approximately 200 feet AGL, the jumper will assume a prepare to land attitude by pulling a two riser slip opposite the direction of drift.

8-70. Jumpers must receive training on partial malfunctions, which can be distinguished by certain characteristics (refer to chapter 6). The following are indicators of a partial malfunction:

- Inversion.
- Blown section or gore.
- Four consecutive broken suspension lines, or a total of six altogether.
- Holes.
- Delayed opening.
- Streamer.
- Broken or stuck control line(s).

ACTIVATION OF RESERVE PARACHUTE

8-71. Should any of these malfunctions occur and cause the jumper's rate of descent to increase in comparison to other jumpers, activate the T-11 reserve parachute utilizing the pull drop method. This is done by:

- Snapping back into a tight body position.
- Grasping the rip cord handle with either hand.
- Throwing head back to the rear.

- Pulling out on the rip cord handle and dropping it.
- Ensuring neither hand is in front of the reserve parachute as it deploys.

8-72. When the reserve parachute inflates, and there are two inflated canopies, the jumper has no directional control over the parachute. All other jumpers need to turn away. To assume the proper landing attitude, the jumper reaches high on the front set of risers of the main parachute and maintains this attitude until making ground contact. Immediately after conducting a PLF, the jumper releases the main parachute (using the canopy release assemblies) and collapses the reserve by detaching the connector snaps from the D-rings of the main lift web, or by using the quick recovery method as follows:

- Immediately after releasing the MC-6 main canopy by activating BOTH canopy release assemblies, the jumper will get up and run to the apex of the T-11 reserve parachute.
- The jumper will secure the pilot chute of the T-11 reserve parachute and run the canopy into the wind, collapsing the parachute.
- Once the canopy is collapsed, the jumper can then detach the connector snaps from the D-rings of the main lift web.

COLLISIONS AND ENTANGLEMENTS

8-73. The jumper must always attempt to turn away. If unable to avoid a collision, they use the spread-eagle position to bounce off another jumper's canopy or suspension lines. If a jumper enters another jumper's suspension lines, the entering jumper assumes the modified position of attention with either hand protecting (but not grasping) the rip cord handle. The entering jumper may use the opposite hand to assist in exiting the other jumper's canopy and suspension lines the same way they entered, attempting to exit the same location.

8-74. If jumpers become entangled, both jumpers immediately clear a path and activate their reserve parachutes using the pull drop method. Neither jumper attempts to climb to the other jumper. The higher jumper should make every attempt to avoid the lower jumper when landing.

EMERGENCY LANDINGS

8-75. **Tree landings** can be dangerous and should be avoided. If landing in trees seems imminent, the jumper should perform the following:

- Immediately turn away when beginning to drift toward the trees.
- If combat equipment is not lowered, the jumper will keep it on to provide added protection while passing through the trees.
- Maintain canopy control and a good landing attitude by keeping the feet and knees together, knees slightly bent, and eyes open until contact is made with the trees.
- Once making contact with the trees, place chin on chest, rotate hands in front of the face keeping the elbows high.
- Be prepared to execute a PLF, if passing all the way through the trees.
- If the jumper is hung up in the trees and cannot safely climb to the ground, they should stay there and wait for assistance.
- Consider activating the reserve parachute and climbing down, if hung up in trees.

8-76. **Wire landings** are extremely dangerous and should be avoided. The jumper does the following if unable to avoid wires when landing (See figure 8-2 on page 8-18):

- If drifting towards wires, the jumper immediately tries to turn away.
- If they cannot turn away, they look below to ensure there are no fellow jumpers below them and jettisons their equipment, making a mental note of where it lands.
- Ensures that the helmet is maintained.
- Assumes a landing attitude by keeping feet and knees together, exaggerating the bend in their knees, eyes open, chin on chest, and back arched.
- Places the palms of their hands high on the inside of the front set of risers with the elbows locked.
- When making contact with the wires, they begin a hard rocking motion and attempts to pass through the wires.

- The jumper prepares to do a PLF in the event they pass through the wires.
- If the jumper gets hung up in the wires, they do not attempt to lower them self to the ground.
- The jumper stays where he or she is and waits for assistance.

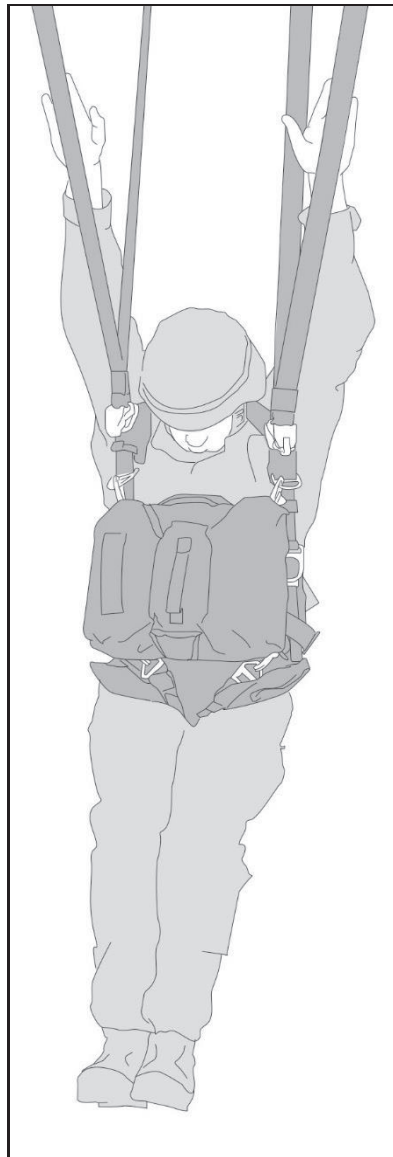


Figure 8-2. Wire landing attitude

WARNING

Tree and wire landings only: do not remove the outer tactical vest, if worn.

Note. If the jumper becomes entangled in the wires, they make no attempt to climb down, but wait to be rescued by a recovery team.

WATER LANDING

8-77. Water landings can be dangerous and should be avoided. If drifting towards water, they immediately try to turn away. If a water landing is imminent, the jumper should perform the following:

- Look below them self to ensure there are no follow jumpers and lowers their equipment.
- Jettisons their helmet, making a mental note of where it lands.
- Activates the quick release in the waistband, disconnects the left connector snap and rotates the reserve parachute to the right.
- Seats them self well into the saddle and activates the quick release in the chest strap, completely removing the chest strap from the chest strap friction adapter.
- Regains canopy control.
- Prior to entering the water they assume a landing attitude by keeping feet and knees together, knees slightly bent, and places their hands on the ejector snaps for the leg straps.
- When the balls of their feet make contact with the water, they activate both ejector snaps for the leg straps, arch their backs, throw arms above their head and slide out of the parachute harness.
- Is prepared to execute a PLF, if the water is shallow.
- Swims upwind or upstream, away from the canopy.
- If the canopy comes down on top of the jumper, locate a seam and follow it to the skirt of the canopy.

8-78. Sometimes, life preservers are provided for specific missions or training events. The following are instances when life preservers may be provided and the actions that should be taken:

- Emergency water landings could occur on a tactical training mission where the route to the DZ is over a large body of water. On such flights, life preservers are issued to jumpers. If the aircraft malfunctions, the jumpers may need to jump over the water.
- Emergency water landings require jumpers to leave any combat equipment onboard the aircraft so they do not become entangled with the equipment in the water.
- A jumper may find themself over water with attached combat equipment due to their drifting off a DZ bordered by water, or during an emergency bailout after being hooked up onboard the aircraft. If this occurs, the jumper must lower and jettison their combat equipment.
- Deliberate water landings are executed for training in selected WDZs. Jumpers may wear combat equipment only after it has been waterproofed and float checked.
- The jumper wears the inflatable life preserver under the harness with the inflatable portions under their armpits. Jumpers wearing a UDT vest will route the chest strap under the UDT vest to prevent crushing the chest if inflated.
- While still in the air, the jumper activates the life preserver prior to assuming a landing attitude.
- If the life preserver fails to inflate, the jumper inflates the life preserver manually by blowing air into the inflation valve hose.
- The jumper will jettison any or all of their equipment including their helmet.
- The jumper looks below to ensure there are no fellow jumpers below, lowers and jettisons their equipment.
- Assumes a landing attitude and prepares to do a PLF in the event the water is shallow.
- Once in the water, the jumper activates both canopy release assemblies by using the hand-to-shoulder method or the hand-to-assist method as described previously in the procedures for recovering from the drag.
- Jumpers do not remove their harness since the life preserver will support the jumper.

Note. Refer to chapter 12 for more information about life preservers.

This page intentionally left blank.

Chapter 9

Jumpmaster and Safety Duties at Departure Airfield

Time is a critical factor at the departure airfield. The primary jumpmaster is overall responsible for all personnel and equipment on their aircraft. The PJM can delegate authority and duties within the jumpmaster team, but not responsibility. All JM team personnel must draw their own parachutes for wear during airdrop operations. The aircrew cannot provide parachutes for the JM team. The following five events occur at the same time to allow the unit to meet station time:

- DACO or JM update briefing.
- Manifest distribution.
- JM or aircrew initial coordination.
- Aircraft inspection.
- Control of parachute issue by JM team.
- Rigging or inspection of jumpers.
- Loading of aircraft.

DEPARTURE AIRFIELD

9-1. The Airborne commander selects the appropriate key personnel to perform the PJM, AJM, safety, departure airfield control officer (DACO), and DZSO/DZSTL duties for a unit airdrop operation. Those selected key personnel must correctly perform their assigned duties to ensure mission success and jumper safety.

9-2. The Airborne commander may delegate authority, but not responsibility, and may be delegated to qualified personnel according to individual service component regulations. The Airborne commander may delegate authority to qualified personnel according to chapter 7 of this publication, but is overall responsible for the safe execution of an Airborne operation.

9-3. Upon arrival at the airfield, a member of the JM team reports to the DACO for an update briefing to include:

- Change in the station time.
- Changes in the overall operation plan.
- Current weather forecast and winds on the DZ drop zone.
- Receive serious incident briefing and sign serious incident roster.
- Parking plan of aircraft (location and tail number of the assigned aircraft).
- Coordination with the U.S. Air Force guide if wheeled vehicles are used for transport to aircraft.
- Any changes caused by aircraft maintenance problems, crew rest, weather delays, or other reasons.

9-4. Normally the manifest (DA Form 1306) is distributed as follows:

- Departure airfield control officer—two copies (original plus one copy).
- Primary jumpmaster—one copy.
- Pilot or their representative—one copy.
- Officer in charge (OIC) or noncommissioned officer in charge (NCOIC) of the parachute issue facility—one copy.
- Unit suspense file—one copy.

9-5. After DACO coordination, a member of the JM team should proceed to the aircraft for initial coordination. Normally, the aircraft is open with a crewmember onboard one hour before station time. The first item to discuss is aircraft configuration, according to the unit mission. If the aircraft is incorrectly configured, the requesting unit has the option to accept or reject it. If the mission request asks for both doors to be open for a mass exit operation, but one door is inoperative (in flight or on the ground), the requesting unit has the option to continue the mission using one door or to abort the mission. For single-door operations, one door may be used for personnel airdrop. However, if the other paratroop door is open, it must be manned by a current JM. If only one door is being used, it must be manned by a current JM and safety. A single-door aircraft operation must be conducted in a military-controlled air space environment. Other items to discuss include the following:

- Control of the jump paratroop doors.
- Drop altitude, speed, and heading.
- Racetracks.
- Towed jumper procedures (in detail).
- Emergency actions onboard.
- Time warnings and checkpoints.
- Type of drop (CARP, GMRS, and VIRS).
- Load time.
- Station time.
- Takeoff time.
- Number of jumpers exiting per pass.
- Initial contact time with combat control team or DZST for update on DZ conditions (if communications are being used).
- Drop time.
- Additional details:
 - If a ground abort occurs, designate which key personnel onboard must be advised.
 - If the PJM is not the last jumper, designate who is in command of the troops on board in an emergency.
 - Emphasize to the aircrew the importance of accurate direction and velocity of DZ winds (before the one-minute time warning) and accurate time warnings.
 - The JM team need to establish through the loadmaster a predetermined signal that the aircraft has slowed to drop speed before assuming control of the paratroop door. As long as it is agreed upon by all parties involved, this signal can be “Army Your Door.” JMs should always confirm the aircraft has slowed to drop speed before assuming control of the paratroop door.

Note. Jumpmasters will not assume control of the aircraft paratroop door until the loadmaster has confirmed the aircraft has slowed to 130 knots indicated airspeed.

AIRCRAFT INSPECTION

9-6. The PJM is responsible for this inspection, but may delegate the authority to a member of the JM team. The aircraft should be available for inspection one hour prior to station time. A member of the JM team accompanied by a crew member (usually the loadmaster), inspects the aircraft and coordinates any activities related to the Airborne operation. Coordinate with the DACO for which individual(s) will be sent. Only one jumpmaster or safety is required to complete this inspection.

9-7. If required, U. S. Air Force guides will escort the individual past the red line to the aircraft. During engine running on-load operations, this inspection will be conducted on the first lift only. Each subsequent JM team utilizing the aircraft must ensure that it has been reconfigured for the following lift. A member of the JM team will inspect the aircraft according to chapter 16 of this publication. However, the minimum requirements for interior fixed-winged aircraft inspections are as follows:

- Sufficient number of seats for all jumpers, safeties, and air lands, complete with seat belts.

- Ensure seat securing straps or suitable expedient straps are present.
- Floors are clean and not slippery (nonskid material present).
- All excess U. S. Air Force equipment is lashed down properly and will not block the jumper's path to the door.
- Emergency exits clearly outlined (yellow boundaries).
- Protruding sockets by the paratroop door (C-130 series aircraft) are taped.
- Emergency floor lighting system operational (C-17 Globemaster III).
- U-bolts: must be silver or green. (Not cracked, broken, corroded, insure locking pin is present.)
- Anchor line cables: utilize a length of quarter-inch cotton webbing and inspect (trace) the entire length of the anchor line cables. (Must not have any kinks, rust, or corrosion.)
- Inspect each anchor line cable individually from the forward portion of the aircraft to the aft end (the direction a jumper's USL snap hook will travel).
- Towed Parachutist Retrieval System (TPRS) and static line retrieval system:
 - Operational (loadmaster operates during inspection).
 - TPRS must have both components (sling assembly and securing strap) secured behind intermediate anchor line support bracket or in red pockets along the bulkhead wall.
 - Must not be routed under anchor line cables.
 - Must have at least a four-inch clearance above anchor line cables.
- Jump platform:
 - No cracks or bends.
 - Nonskid material present.
 - Down locks seat properly (C-130 series aircraft).
 - Secured to floor by screws and washers (at two points) or four turns of steel wire (1/32 inch diameter) (C-130 series aircraft).
 - Lower troop door clearance fairing (skin of door frame) is serviceable (C-17 Globemaster III).
- Paratroop doors:
 - No sharp or protruding edges.
 - Push in place pin is present and secured (C-130 series aircraft).
 - Platform lights are operational.
 - Manual lever for ramp is secured by a safety strap, if applicable.
 - Troop door up-lock and paratroop door lifting bar are functional (C-17 Globemaster III).
- Air deflector:
 - C-130 series aircraft: extends 15.5 inches.
 - C-17 Globemaster III: extends 30 (plus or minus seven degrees).
- Jump caution lights:
 - Operational green and red. If jumping from the C-17 Globemaster III, include amber light).
 - Highly visible during darkness and daylight
 - Seven sets (C-130 series aircraft): one at pilot's compartment, three along the skin of the aircraft, two at the jump doors, one on the ramp.
 - Twelve sets (C-17 Globemaster III): four along the skin of the aircraft, four at the jump doors, and two on the ramp.
- Emergency alarm bell: operational.
- Emergency equipment:
 - First aid kits (four each).
 - Fire extinguisher (three each).
 - Emergency Passenger Oxygen System, or oxygen, or oxygen masks for each passenger.
- Public Address System: operational.
- Air sick bags and ear plugs.

- Water.
- Secure the safety kits to where they will be readily available, if needed.
- Action or sport cameras (if used), mounted to appropriate locations.

Note. For the C-27J inspection see chapter 16 of this publication.

9-8. While a member of the JM team is inspecting the aircraft, safety personnel control the chalk, making sure personnel remain in their assigned sticks at all times. Personnel must also be accounted for at all times.

PARACHUTE ISSUE

9-9. It is the responsibility of the PJM to supervise the chalk during parachute and air item issue. Since parachutes are configured differently for C-130 and C-17 aircraft, jumpers may potentially draw the incorrect type if not constantly supervised during this process.

9-10. Safeties will draw extra aviator kit bags (one for every 15 jumpers) or universal parachutist recovery bags (one for every 30 jumpers) and at least two extra T-11 reserve parachutes, and four sets of T-11R inserts for JM, AJM, and door bundle pusher(s), if needed. The extra aviator kit bags or universal parachutist recovery bags are used to store the static lines and deployment bags after the jump. (The extra aviator kit bags or universal parachutist recovery bags are placed in or with the JM or safety kit bag.) JM team tasks during parachute issue include the following:

- **Departure airfield layout inspection.** All air items and combat equipment should be displayed for inspection by JM personnel before donning or loading on the aircraft, if not conducted at unit area.
- **Parachutes and equipment.** The JM team ensures that all jumpers use the buddy system when donning parachutes and equipment. (Personnel should not start donning parachutes and equipment earlier than one hour before load time to avoid unnecessary time in the harness.)
- **Final DACO coordination.** A member of the JM team reports to the DACO for any special or last minute instructions.
- **Jumpmaster personnel inspection.** All current and qualified JM personnel will assist in rigging, inspecting, and correcting deficiencies, as directed by the PJM. Their role during JMPI is to observe and supervise. The PJM should only perform JMPI to facilitate meeting station time.

ADVANCED EMERGENCY BAILOUT PARACHUTE

9-11. The advanced emergency bailout parachute (AEBP) is a lightweight emergency parachute with a 26-foot extended skirt canopy. The canopy is made from low-porosity material that is vacuum sealed to protect the main canopy from physical and environmental hazards.

9-12. The canopy assembly consists of a main canopy, cross connector straps, a slider, diaper, steering handles, upper risers, and suspension lines made of ultra-high molecular weight polyethylene material. The container is made up of durable canvas weave material and is used to store the sealed canopy assembly and pilot chute. The harness is used for securing and supporting the Airborne Soldier.

9-13. The parachute should always be inspected prior to being donned. If there are any discrepancies with the parachute, remove the system from service. (See figure 9-1 for parts identification.) The following procedures are the inspection criteria for the Army emergency bailout parachute:

- Lift outer top cover flap. Check that the top closing flap tackings are present. Tuck flaps are not exposed and the color of the tape, lacing, and tying is white. (See figure 9-2.)

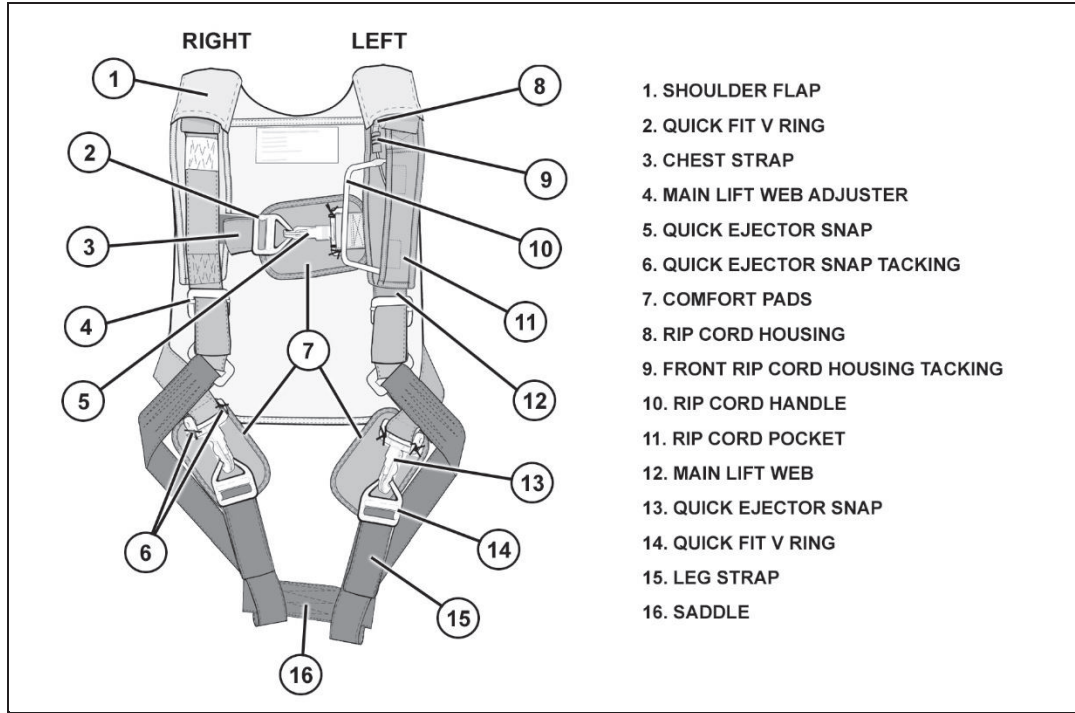


Figure 9-1. AEBP parts identification

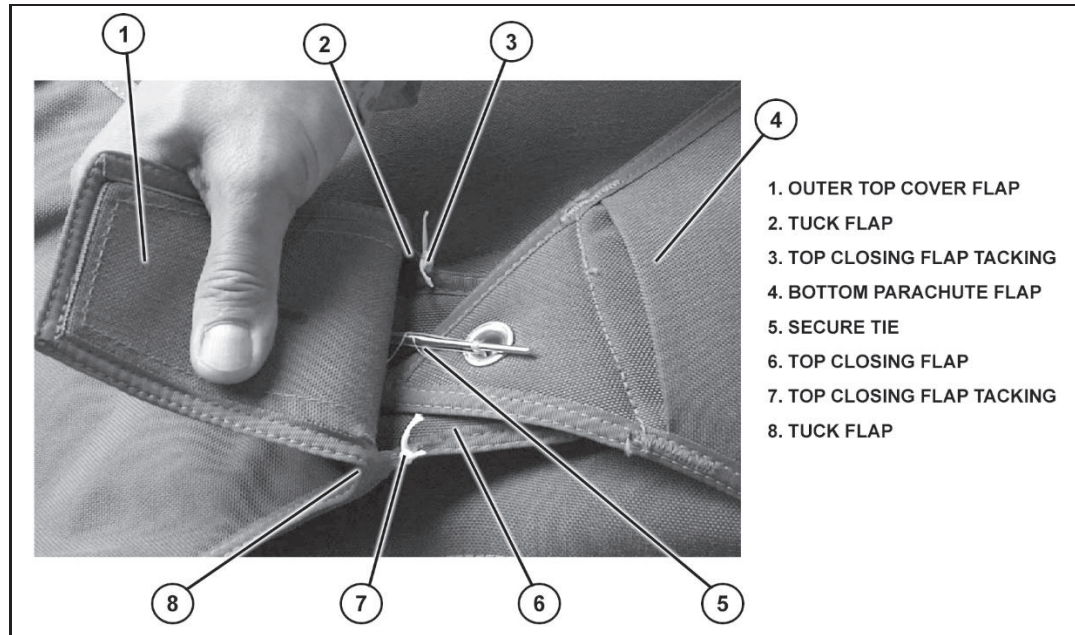


Figure 9-2. Inspect the tuck flaps

- Check the rip cord pin. Ensure the pin is straight and fully seated but not shouldered. Confirm the secure tie is present. If the secure tie is not present or is broken, remove system from service for inspection. Reseat outer top cover flap. (See figure 9-3.)

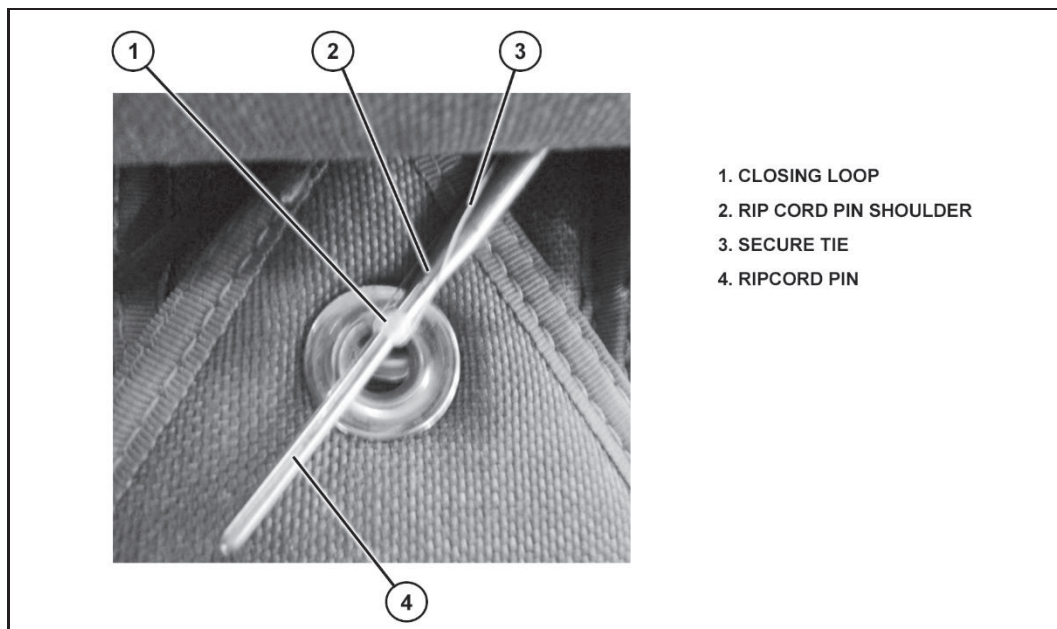


Figure 9-3. Inspect the rip cord pin

- Inspect the right links by opening the right shoulder flap and right link protector flap. Visually inspect soft links for holes, cuts, fraying, loose or broken stitching, and burns. Inspect the No. 4 connector link for burrs, cracks, sharp edges, corrosion, broken sealant, and exposed threads. Ensure torque sealant is on the nut and no threads are exposed. Close right link protector flap and right shoulder flap, ensuring the hook-pile tape is secure. (See figure 9-4.)

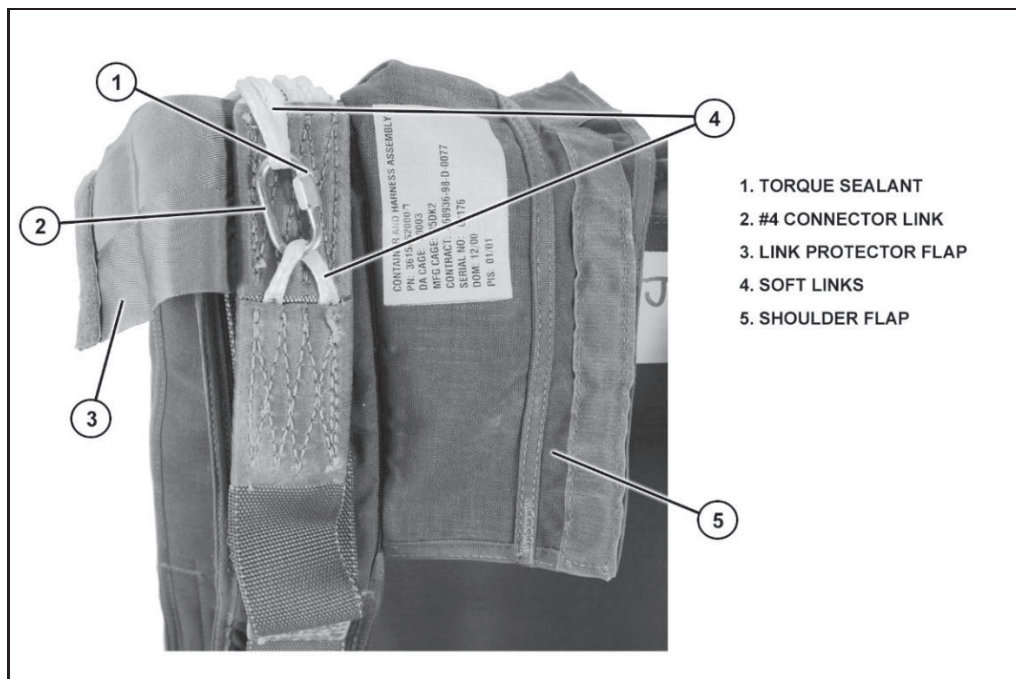


Figure 9-4. Inspect the right links

- Check that the front rip cord housing tacking is in place and the color of the tape, lacing, and tying is white. Check that the rip cord handle and rip cord cable are stowed in the pocket and not routed through the chest strap. Ensure large portion of rip cord handle is seated in the pocket. Ensure the swage ball is located at the end of the rip cord cable and is free from burrs, sharp edges, and cracks. After inspection, ensure that swage ball is stowed in rip cord pocket. (See figure 9-5.)

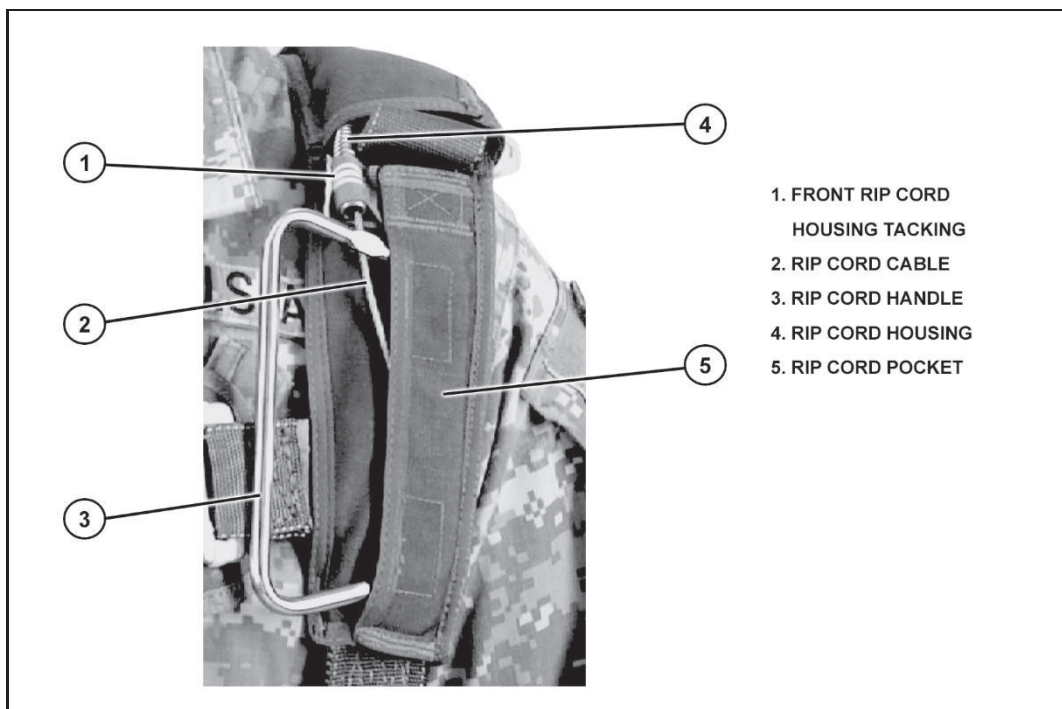


Figure 9-5. Inspect front rip cord housing tacking

- Inspect the left links by opening the left shoulder flap and left link protector flap. Visually inspect soft links for holes, cuts, fraying, loose or broken stitching, and burns. Inspect the No. 4 connector link for burrs, cracks, sharp edges, corrosion, broken sealant, and exposed threads. Ensure torque sealant is on the nut and no threads are exposed. Visually inspect rip cord housing for burrs, cracks, corrosion, and sharp edges. Check for the presence of the rear rip cord housing tacking. Close left link protector flap and left shoulder flap, ensuring hook-pile secure flap tape is secure. (See figure 9-6.)

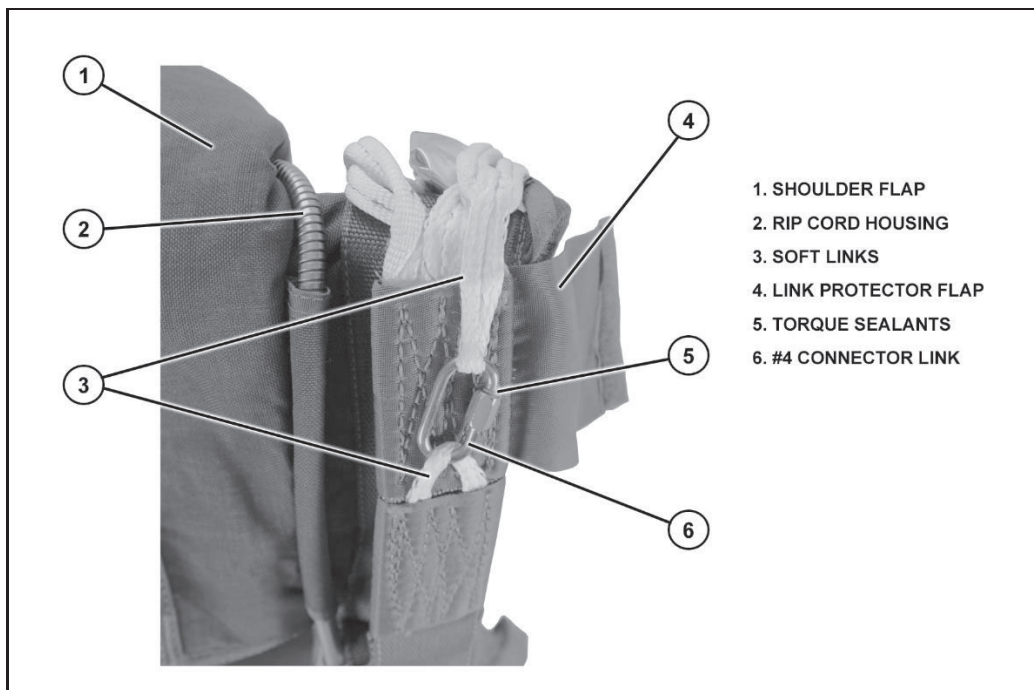


Figure 9-6. Inspect left links

- Check for the presence of the four quick-ejector snap tackings, securing the comfort pad to the chest strap quick-ejector snap. Inspect the chest strap for loose or broken stitching, holes, burns, contamination, cuts, tears, and fraying. Inspect the quick-ejector snap and quick-fit V-ring on the chest strap for proper operation, rust, corrosion, burrs, sharp edges, and cracks. Check if retainer webbing is present at the chest strap. Inspect retainer webbing for loose or broken stitching, loss of elasticity, cuts, and fraying. If retainer webbing is not present or is not serviceable, replace with heavy-duty retainer bands.
- Inspect the main lift webs for loose or broken stitching, holes, burns, contamination, cuts, tears, and fraying. Check the main lift web adjusters for burrs, cracks, sharp edges, and corrosion. Check if retainer webbings are present at the main lift webs. Inspect retainer webbings for loose or broken stitching, loss of elasticity, cuts, and fraying. If retainer webbing is not present or is not serviceable, replace with heavy-duty retainer bands.
- Check for the presence of the two quick-ejector snap tackings, securing the comfort pads to each leg strap quick-ejector snaps. Inspect the leg straps and saddle for loose or broken stitching, holes, burns, contamination, cuts, tears, and fraying. Inspect the quick-ejector snaps and quick-fit V-rings on both leg straps for proper operation, rust, corrosion, burrs, sharp edges, and cracks. Check if retainer webbings are present at the leg straps. Inspect retainer webbings for loose or broken stitching, loss of elasticity, cuts, and fraying. If retainer webbing is not present or is not serviceable, replace with heavy-duty retainer bands.
- Check the sealed canopy assembly for firmness. A soft (pillowed) AEBP indicates the sealed canopy assembly has lost its vacuum.

Note. If vacuum loss occurs, the AEBP is still serviceable for the mission. After the completion of the mission, the AEBP must be repacked.

- Conduct an overall visual inspection of the container for seam separation, holes, cuts, tears, frays, burns, and the presence of the Army Parachute Log Record.

JUMPMaster PERSONNEL INSPECTION, T-11 AND MC-6

9-14. The PJM is responsible for the inspection of the jumpers on the aircraft before an Airborne operation. Only by a complete and systematic equipment inspection of each jumper can the PJM ensure that personnel aboard their aircraft are safe to jump. Jumpmasters must observe all jumpers don the equipment, and make corrections as needed to prevent deficiencies. Buddy rigging is used:

- The buddy system is a systematic method of donning and adjusting the main and reserve parachutes. It provides an additional safety check, prevents unnecessary delays during JMPI, and provides the jumper with the maximum amount of comfort while wearing the parachute harness.
- To increase efficiency and reduce risks, jumpmasters are encouraged to gather the chalk and provide a demonstration of the buddy system prior to donning parachutes. This is especially beneficial during reintegration jumps.
- If a jumpmaster rigs a jumper, it is acceptable for the jumpmaster to JMPI that jumper. The rigging procedures and the JMPI sequence are two different systematic checks. However, if another JM is available, then that JM should not inspect the jumper that they rigged.

Note. ALL PERSONNEL must utilize the buddy system to don the main and reserve parachute, INCLUDING THE JUMPMasters upon their completion of JMPI.

9-15. Prior to inspecting the jumper, the JM will conduct an overall inspection of the jumper prior to placing the jumper into JMPI configuration. The JM will conduct an overall inspection of the jumper to ensure the following:

- Boots: inspect the jumper's boots for open lacing hooks. If the jumper is wearing open lacing hooks, they must be taped prior to the JM placing the jumper into JMPI configuration.
- Combat equipment: inspect the MAWC to ensure the bottom of the adjustable nose cone is at least six inches above the ground and the top of the MAWC rests between the top of the D-ring and the base of the left canopy release assembly.
- The JM will look at the canopy release assemblies to ensure they are seated in the hollows of the jumper's shoulders, below the collar bone at approximately the name tape level. They look at the riser assemblies to ensure that the type of parachute being inspected either has or does not have blue confluence wrap.

9-16. The only person authorized to place the jumper into JMPI configuration is the jumpmaster who will inspect that jumper. In order to place the jumper into JMPI configuration, the following will occur:

- Move behind the jumper and open the main, curved, pin protector flap from the tuck flap.
- Disconnect the universal static line snap hook from the right outer static line stow bar and ensure the spring opening gate has spring tension. Remove all excess universal static line modified from the static line slack retainer band on the static line slack retainer loop, remove all twists, route the universal static line snap hook through the static line slack retainer band and over the jumper's shoulder corresponding with the paratroop door the jumper is to exit.
- The JM will secure the universal static line snap hook to the carrying handle of the T-11 reserve parachute, with the spring opening gate facing the jumper. Remove the top and bottom tuck tabs, taking care to ensure that both side tuck tabs remain secure. If the side tuck tabs become unsecured the jumpmaster will notify a rigger.

WARNING

Boots fitted with lacing hooks must have the hooks taped prior to placing the jumper into JMPI configuration. Taping hooked eyelets is an individual responsibility that must be verified and checked by the jumpmaster.

- The JM may now begin their inspection. The general principle during JMPI is that the JMs head and eyes will always be looking where their hands are working. After the JM has completed the JMPI, the JM will place the jumper into jump configuration.

Note. If jumping the MC-6 parachute or any other steerable, military, static line parachute, the JM will identify blue confluence wrap on both riser assemblies. Steerable and nonsteerable canopies cannot be dropped onto the same drop zone during the same pass.

FIVE-FOOT UNIVERSAL STATIC LINE EXTENSION

9-17. For jumps from C-17 aircraft, the universal static line modified will be configured with the five-foot universal static line extension. JMs must supervise during parachute issue to ensure their jumpers do not draw incorrectly configured parachutes for the aircraft that they will be jumping.

9-18. The T-11 series parachutes are easily identifiable when configured with five-foot universal static line extensions by one additional stow on the left and right inner static line stow bars, and the girth hitch formed by the upper looped portion of the universal static line modified and the cotton buffer of the five-foot universal static line extension, which will be centered between the top two stows.

9-19. JMs must inspect this prior to detaching the universal static line snap hook from the right outer static line stow bar. Push in on the girth hitch at the upper looped portion of the universal static line modified and the cotton buffer of the five-foot universal static line extension and visually inspect both of them for any burns, cuts, or frays. Ensure that the girth hitch is centered between the first stow on the left and right inner static line stow bars or the ninth and 10th stows. Once complete, redress the girth hitch. Then, remove the universal static line snap hook from the right outer static line stow bar and remove all twists in the universal static line modified, but do not break the first stow (top left inner) when using the five-foot universal static line extension. Then, route the universal static line snap hook over the jumper's appropriate shoulder and connect it to the carrying handle of the reserve parachute with the spring opening gate facing towards the jumper.

9-20. During JMPI, the jumpmaster will trace between the top two stows as normal, bypassing the girth hitch of the upper looped portion of the universal static line modified and the cotton buffer of the five-foot universal static line extension that has already been inspected, while still keeping constant contact with the thumb or index finger of their working hand.

ADVANCED COMBAT HELMET (FRONT)

9-21. To inspect the front of the advanced combat helmet, the JM will place both hands, fingers and thumbs extended and joined, fingertips pointing skyward, palms facing the jumper, on the right side of the advanced combat helmet. The right hand is the working hand; the left hand is the control hand. With the working hand, trace across the rim of the advanced combat helmet feeling for any sharp or protruding edges that may cut or damage the jumper's universal static line modified upon exiting the aircraft. Once both hands are parallel, place the thumbs on the rim of the advanced combat helmet and tilt the jumpers head to the rear. Conduct a visual inspection to ensure the three suspension pads are present, are flush with the outer rim, and the oval pads are covering the bolt ends.

9-22. The JM will place the right index finger on the front left adjustable buckle, to ensure it is free of all cracked components, is serviceable, the front left adjustable strap is properly routed through it, and the free

running end is secured in the webbing retainer. Trace the front left adjustable strap down. Ensure it is not twisted, cut, or frayed to the chinstrap fastener. Ensure the chinstrap fastener is free of all cracked components and properly secured. Trace the long portion chinstrap under the jumper's chin to ensure it is not twisted, cut, or frayed to the place where it is sewn into the front right adjustable strap. Trace the front right adjustable strap up, ensure it is not twisted, cut, or frayed to the front right adjustable buckle. Ensure it is free of all cracked components, is serviceable, the front right adjustable strap is properly routed through it, and the free running end is secured in the webbing retainer. Place the right index finger on the right side of the short portion chinstrap, trace it across the front of the jumper's chin, ensure it is not twisted, cut, or frayed, and drop both hands.

CANOPY RELEASE ASSEMBLIES

9-23. The next items of equipment for inspection are the canopy release assemblies. The inspection begins with the canopy release assembly opposite the jumper's USLM. For the purpose of this example, the jumper will be exiting the right paratroop door. Since the universal static line modified is routed over the jumper's right shoulder, begin the inspection with the jumper's left canopy release assembly:

- Look at the left canopy release assembly and tap it with the knuckles of the right hand one time to ensure that it sounds solid.

Note. This is the cue for jumpers to place both hands on top of their helmet.

- With the right hand, form a knife-cutting edge, fingers extended and joined, palm facing towards the jumpmaster, and insert it from outside to inside behind the main lift web just below the canopy release assembly. Place the right thumb on the outside corner of the canopy release assembly, and rotate it a quarter turn to the outside.
- With head and eyes approximately six to eight inches away, conduct a visual inspection to ensure the male fitting canopy release assembly is properly secured by the female fitting canopy release assembly, and is properly secured by the latch.
- Ensure the cable loop is properly secured by the safety clip and the canopy release assembly is free of all dirt or foreign material that will keep it from seating completely. Let the canopy release assembly return back to its normal position. Keep the right hand in place.
- The universal static line modified is routed over the jumper's right shoulder. With the left hand, secure the universal static line modified and rotate it over to the right thumb and secure it in place. Look at the right canopy release assembly; tap it with the knuckles of the left hand one time to ensure that it sounds solid.
- With the left hand, form a knife-cutting edge, fingers extended and joined palm facing towards the jumpmaster, and insert it from outside to inside behind the main lift web just below the canopy release assemblies. Place left thumb on the outside corner of the canopy release assembly and rotate it a quarter turn to the outside and conduct the same inspection. Now, let the canopy release assembly return to its normal position.

MAIN LIFT WEB, CHEST STRAP, AND WAISTBAND

9-24. The JM inspects the **main lift web** next by taking the following actions:

- Leave the right hand in place. Look at the left hand and the right main lift web. First make note of which of the three sizes the main lift web is configured. Keep this in mind and ensure the main lift web tuck tab assembly is properly assembled and the snap fastener is secure.
- With the left hand, trace down the main lift web, ensure it is not twisted, cut, or frayed, until making contact with the main lift web adjuster.
- Leave the left hand in place. Look at the right hand and conduct the same inspection. Ensure the left main lift web tuck tab assembly is in the same location as the right main lift web tuck tab assembly. Leave the right hand in place.

9-25. The JM inspects the **chest strap** by taking the following actions:

- Look at the chest strap to ensure that it is not misrouted around the left main lift web. With the left hand palm facing the reserve parachute, grasp the carrying handle and lift up and out.
- Insert the right hand, fingers and thumb extended and joined, fingertips pointing down, palm facing towards the jumpmaster, from top to bottom behind the chest strap, next to where it is sewn into the left main lift web. Trace the chest strap, ensuring it is not twisted, cut, or frayed, until contact is made with the chest strap friction adapter.
- Visually inspect to ensure it has a two to three finger quick release that is secured in its webbing retainer, the free running end has been “S” folded or accordion folded, not rolled, and is secured in its webbing retainer with the tab portion on top and facing towards the chest strap friction adapter.
- Continue to trace the chest strap, ensure it is not twisted, cut or frayed, until contact is made with the right main lift web. Leave the right hand in place.

9-26. The JM begins inspecting the **waistband** by leaning to the right side of the jumper and taking the following actions:

- Remove the left hand and insert it, fingers and thumb extended and joined, fingertips pointing skyward, palm facing the jumpmaster, from bottom to the top behind the waistband next to where it is sewn to the pack tray.
- Look at the waistband where it is sewn to the pack tray to ensure it is secured to the pack tray by a box “X” stitch, with at least 50 percent of the stitching present.
- Trace the waistband forward, ensure it is not twisted, cut, frayed, or misrouted behind the horizontal back strap or the right main lift web. Continue tracing the waistband forward until the right waistband retainer rests in the palm of the left hand. Leave the left hand in place.
- Remove the right hand from behind the chest strap and insert it, fingers and thumb extended and joined, fingertips pointing skyward, palm facing the jumpmaster, from bottom to top behind the reserve parachute so the left waistband retainer rests in the palm of the right hand. Make fingertip to fingertip contact, and conduct a physical inspection to ensure the waistband is not twisted and has been routed through both waistband retainers. Leave the left hand in place.
- With the right hand continue to trace the waistband back. Ensure it is not twisted, cut, frayed and has not been misrouted behind the left main lift web, until the metal adjuster rests in the palm of the right hand.
- Remove the left hand from behind the reserve parachute and insert the index and middle fingers from top to bottom into the quick release formed by the waistband. Ensure it is no more than three fingers, no less than two, and it is not a false quick release.
- Remove the index and middle fingers from the quick release and with the index finger and thumb of the left hand, pinch off the free running end of the waistband where it re-emerges from the metal adjuster. Trace the free running end of the waistband to ensure it is not cut, torn, or frayed and is easily accessible to the jumper, until the fingertips fall off the end. (For JMPI sequence for the waistband extension refer to chapter 12 of this publication.)
- With the left hand palm facing the reserve parachute, grasp the carrying handle, and look at the right hand and the waistband adjuster panel.
- With the right hand, trace the waistband adjuster panel back, ensure it is not twisted, cut, or frayed, and has not been misrouted behind the horizontal back strap to where it is sewn to the pack tray. Ensure it is properly secured to the pack tray by a box “X” stitch, with at least 50 percent of the stitching present.
- Remove right hand and move back to the front of the jumper.

T-11 RESERVE PARACHUTE

9-27. The next item that the jumpmaster inspects is the reserve parachute in its entirety. To do so, take the following actions:

- Look at the left connector snap. With the index finger of the right hand, finger the opening gate one time to ensure it is properly secured to the left D-ring, has spring tension, has not been safetied, and the opening gate is facing towards the jumper with the butterfly portion to the outside.

Note. Jumpers can now place their hands back down to their sides.

- With the left hand, lift up and out on the carrying handle. Conduct a visual inspection of the left connector snap retaining tie to ensure it is serviceable and secured, then visually inspect the left spreader bar tie to ensure it is properly routed through both grommets and is secured with a surgeon's knot, locking knot with overhand knots.
- Insert the right index finger from top to bottom into the Army Parachute Log Record stow pocket and conduct a physical and visual inspection to ensure an Army Parachute Log Record is present. Transfer control of the carrying handle from the left hand to the right hand, palm facing the reserve parachute and continue to lift up and out.
- Conduct the same inspection of the right spreader bar tie and the right connector snap retaining tie. Let the reserve parachute return to its natural position. While leaving right hand in place, inspect the right connector snap with the left index finger in the same manner. Now remove right hand.
- With the left hand, form a knife-cutting edge, palm facing towards the jumpmaster, and sweep the carrying handle and universal static line snap hook towards the jumper. Place the left thumb on the top right corner of the rip cord assembly and apply inward pressure. Conduct a visual inspection of the top tuck tab to ensure a directional arrow is present and pointing skyward. With the thumb and index finger of the right hand, pinch off the top tuck tab and gently pull it down. Take care to ensure the side tuck tabs remain secure. Expose the curved pin and reserve closing loop.
- Place the left thumb on top of the top tuck tab and apply inward pressure. Place the right index finger on the upper portion of the curved pin and trace it down, ensuring it is not bent, cracked, or corroded, and is properly routed through the reserve closing loop to its point of attachment, the curved pin lanyard. Leave the right index finger in place. Conduct a visual inspection of the reserve closing loop to ensure it is not cut, frayed, or burned, and the curved pin is not puncturing it in any manner. Conduct a visual inspection of the grommet to ensure it is not bent, cracked, or corroded.
- Insert the index finger of the right hand from top to bottom behind the rip cord assembly and with the meaty portion of the index finger, trace down the curved pin lanyard to ensure is not twisted, cut, or frayed, and it is properly attached to the rip cord assembly by reinforced stitching. Withdraw the right index finger.
- With the thumb and index finger of the right hand, pinch off the bottom tuck tab and gently lift it up. Take care to ensure the side tuck tabs remain secure. Expose the curved pin and reserve closing loop. Place the left thumb on top of the bottom tuck tab and apply inward pressure. Place the right index finger on the lower portion of the curved pin and trace it up, ensure it is not bent, cracked, or corroded, and is properly routed through the reserve closing loop to its point of attachment, the curved pin lanyard. Leave the right index finger in place.
- Conduct a visual inspection of the reserve closing loop to ensure it is not cut, frayed, or burned, and the curved pin is not puncturing it in any manner. Conduct a visual inspection of the grommet to ensure it is not bent, cracked, or corroded. Insert the index finger of the right hand from bottom to top behind the rip cord assembly and with the meaty portion of the index finger, trace up the curved pin lanyard to ensure it is not twisted, cut, or frayed, and it is properly attached to the rip cord assembly by reinforced stitching. Withdraw the right index finger.

- An overall inspection of the reserve parachute must be conducted to ensure it is free of grease, oil, dirt, mud, tears, and exposed canopy. Place both hands, fingers and thumbs extended and joined palms facing the reserve parachute on the top right corner. Take care not to cover up the seams. The left hand is the control hand and the right hand is the working hand. With the head and eyes approximately six to eight inches from the working hand, trace across the top pack closing flap, down the left pack closing flap. Bend over so to see where you are working, and trace across the bottom pack closing flap. Turn the working hand over so the pinky finger leads the way and trace up the right pack closing flap until skin-to-skin contact is made with the control hand. Raise the control hand up out of the way and trace where the control hand had been.
- Raise the reserve parachute to the jumper and issue the command, “HOLD SQUAT.”

LEG STRAPS, AVIATOR’S KIT BAG AND UNIVERSAL PARACHUTIST RECOVERY BAG

9-28. The inspection of the **leg straps rigged with an aviator’s kit bag**, is conducted by taking the following actions:

- Insert the index and middle finger of each hand from outside to inside, behind the leg straps, below the aviator’s kit bag where the natural pocket is formed. Simultaneously slide both hands back towards the saddle, to ensure the leg straps are not crossed. Leave the right hand in place.
- With the left hand, trace the right leg strap up, ensuring it is not twisted, cut, or frayed, and the free running end is secured in the webbing retainer, until contact is made with the quick-fit V-ring. With the left thumb, press in on the activating lever of the ejector snap to ensure it is properly seated over the ball detent and is free of foreign matter.
- Leave the left hand and thumb in place and look at the left leg strap. With the right hand, trace the left leg strap up, ensuring it is not twisted, cut, or frayed, the free running end is secured in the webbing retainer, and it is properly routed through the exposed carrying handle of the aviator’s kit bag; over the bottom and under the top, until contact is made with the quick-fit V-ring. With the right thumb, press in on the activating lever of the ejector snap to ensure it is properly seated over the ball detent and is free of foreign matter. Leave both hands and thumbs in place.
- Conduct a visual inspection to ensure the aviator’s kit bag is present, has not been reversed, and the reinforced sewn portion is facing away from the jumper.
- Once satisfied with the inspection, stand up in front of the jumper and issue the command of “RECOVER.”

9-29. The inspection of the **leg straps rigged with a universal parachutist recovery bag**, is conducted by taking the following actions:

- Insert the index and middle finger of each hand from outside to inside, behind the leg straps, below the universal parachutist recovery bag where the natural pocket is formed. Simultaneously slide both hands back towards the saddle, to ensure the leg straps are not crossed. Leave the right hand in place.
- With the left hand, trace the right leg strap up, ensuring it is not twisted, cut, or frayed until contact is made with the right leg strap retainer. Now remove the index finger and middle finger of the left hand, and reinsert them just above the right leg strap retainer and trace up the right leg strap to ensure that it is not twisted, cut, or frayed. The free running end is properly routed behind the leg strap retainer and is secured in the webbing retainer until contact is made with the quick fit V-ring. With the left thumb, press in on the activating lever of the ejector snap to ensure it is properly seated over the ball detent and is free of foreign matter.
- Leave the left hand and thumb in place and look at the left leg strap. With the right hand, conduct the same inspection of the left leg strap. Leave both hands and thumbs in place.

- Conduct a visual inspection to ensure the universal parachutist recovery bag is present, neither leg strap retainer is cut or frayed more than 50 percent, and the folded portions are facing skyward. The direction of the trapezoid sewn portion has no bearing on how the UPRB is worn on the jumper.
- Once satisfied with the inspection, stand up in front of the jumper, and issue the command of “RECOVER.”

UNIVERSAL STATIC LINE MODIFIED

9-30. Inspect the universal static line modified by taking the following actions:

- With the right hand grasp the universal static line snap hook, ensuring the spring opening gate is facing towards the jumper. Open the right hand and let the universal static line snap hook rest in the palm.
- Place the index finger of the left hand on the girth hitch of the universal static line modified. Ensure the green identification marking thread is present and the girth hitch has not been reversed. Place the index finger of the left hand in the vicinity of the rivet pin (do not cover the rivet pin), to ensure it is present and free of rust and corrosion.
- With the right hand, regasp the universal static line snap hook and hold it perpendicular to the reserve parachute with the spring opening gate facing towards the jumper.
- With the index finger and thumb of the left hand, index finger on top, thumb on bottom, palm facing the jumper, grasp the universal static line modified at the end of the double sewn portion. Rotate the universal static line modified down and to the jumper’s right, and push it toward the universal static line snap hook. Visually inspect inside the girth hitch to ensure it is free of all cuts, frays, and burns.
- With the index finger or thumb of the right hand, push the girth hitch back towards the universal static line snap hook and again visually inspect inside the girth hitch for any cuts, frays, or burns.
- Redress the girth hitch down around the narrow portion of the universal static line snap hook and release the universal static line modified with the left hand.
- Since the universal static line modified is routed over the right shoulder; with the index finger and thumb of the right hand, form an “O” around the universal static line modified just above the universal static line snap hook. The jumpmaster should see metal through the “O”.
- Raise the right hand up, simultaneously inspecting the universal static line modified as it passes through the “O” to ensure it is free of all cuts, frays, or burns.
- Raise the right hand as high as it can go or until resistance is felt, and issue the jumper the command, “TURN.” Once the jumper has completed the turn, the right hand should be raised high enough to keep the universal static line modified tight between the control hand and the first stow.
- Place the index finger or index and middle finger of the left hand behind the universal static line modified below the right hand, making skin-to-skin contact. Trace the universal static line modified down, ensuring it is free of all cuts, frays, and burns, and it has not been misrouted under or through either riser assembly to the static line slack retainer band. Withdraw the index finger or index and middle finger and place below the static line slack retainer band and continue to trace the universal static line modified to the first stow.
- With either hand, form a bite in the universal static line modified and look at the static line slack retainer loop. Ensure it is present, serviceable, and two serviceable static line slack retainer bands are attached.
- Place the bite on top of the pack tray and control it with either hand. This hand becomes the control hand. The opposite hand becomes the working hand.
- With the index finger and thumb of the working hand, pinch off the first stow and pull it one to two inches towards the center of the pack tray. Look behind the first stow, and ensure the universal static line modified is free of cuts, frays, or burns, and has not been misrouted around the static line stow bar. Release the first stow and let it pop back into place.

Note. When the jumpmaster traces the universal static line modified towards them self, only the index finger will be used. When tracing away, only the thumb may be used.

- Insert the index finger or thumb of the working hand from bottom to top behind the first strand of universal static line modified, as close as possible to the first stow. Trace the first strand of universal static line modified, ensure that it is free of all cuts, frays, or burns to the second stow.
- With the index finger and thumb of the working hand, pinch it off and pull one to two inches towards the center of the pack tray, and conduct the same inspection. Place the index finger or thumb of the working hand from bottom to top behind the second strand of universal static line modified and trace it to ensure it is not cut, frayed, or burned.
- Continue to inspect the universal static line modified in the same manner to the main curved pin cover. Ensure the last strand of universal static line modified is routed from the right outer static line stow bar.
- With the index finger of the working hand, gently lift up on the main curved pin cover. Inspect the main curved pin attaching loop to ensure that it is properly attached to both the universal static line modified and the main curved pin.
- Visually inspect the main curved pin from its point of attachment to ensure it is not bent, cracked, or corroded, and is properly routed from left to right through the main closing loop. Visually inspect to ensure the main curved pin securing tie is present and made of only one turn of “Orange ticket 3” thread, and that it is secured by a surgeons knot locking knot with the ends trimmed to approximately one inch..
- Visually inspect the main closing loop to ensure it is not cut, frayed, or burned, and the main curved pin is not puncturing it in any manner. Conduct a visual inspection of the grommet to ensure it is not bent, cracked, or corroded.
- With the index finger and thumb of the working hand, gently lift up on the main curved pin protector flap and conduct a visual inspection of the main closing loop, ensuring it is not cut, frayed, or burned, and the grommet is not bent, cracked, or corroded. Stand up behind the jumper.
- With the index finger and thumb of the working hand, gently lift up on the main curved pin protector flap and conduct a visual inspection of the main closing loop, ensuring it is not twisted, cut, frayed, or burned, and the grommet is not bent, cracked, or corroded.
- Stand behind the jumper.

Notes. Broken securing ties: if a tie breaks any time after the original packer makes the tie, prior to getting on the aircraft, it can be replaced by another qualified parachute rigger skill level 1 or higher, after a routine inspection is conducted on the parachute. If the parachute passes the routine inspection, the tie can be replaced and the parachute returned to service without being repacked. Once the tie is made, a qualified parachute rigger inspector skill level 2 or higher must inspect the tie. Both the individual replacing the tie and the inspector must sign the DA Form 3912, Army Parachute Log Record. If the parachute does not pass the routine inspection, it must be returned to the parachute pack facility for repack.

If a securing tie breaks on the aircraft and the main curved pin is still seated in the closing loop, the parachute is still serviceable and can be jumped.

ADVANCED COMBAT HELMET (BACK)

9-31. The jumpmaster inspects the rear of the advanced combat helmet by taking the following actions:

- Places both hands, fingers and thumbs extended and joined, fingertips pointing skyward, palms facing towards the jumper, on the left side of the advanced combat helmet. The left hand is the control hand and the right hand is the working hand. With the working hand, traces across the rim of the advanced combat helmet feeling for any sharp or protruding edges that may cut or damage the jumper’s universal static line modified upon exiting the aircraft.

- Once both hands are parallel, places the thumbs on the rim of the advanced combat helmet and gently tilts the jumper's head forward. Conducts a visual inspection to ensure the oval pads are covering the bolt ends, they are flush with the rim of the advanced combat helmet, and the rear trapezoid pad is flush or protruding slightly past the rim of the advanced combat helmet, no more than one-half inch.
- Places the right index finger on the rear right adjustable buckle. Ensures it is free of all cracked components and is serviceable, the rear right adjustable strap is properly routed through it, and the free running end is secured in the webbing retainer.
- Traces the rear right adjustable strap down, ensuring it is not twisted, cut, or frayed until contact is made with the long portion chin strap. Leaves the right index finger in place.
- Places the left index finger on the rear left adjustable buckle and conducts the same inspection all the way down to the chinstrap fastener. Leaves the left index finger in place.
- Conducts a visual inspection of the nape pad to ensure it is present, secure, serviceable, and has not been reversed.

Notes. Ensure there is a minimum of seven suspension pads inside the advanced combat helmet, one crown pad, two trapezoid pads and four oval pads that are covering the bolt ends.

All four oval pads and the front trapezoid pad must be flush with the rim of the advanced combat helmet. The rear trapezoid pad must be flush with the rim of the advanced combat helmet or may extend past the rim of the advanced combat helmet, no more than half an inch.

INSPECTING RISER ASSEMBLIES AND PACK TRAYS

9-32. The jumpmaster performs the **inspection of the riser assemblies** by taking the following actions:

- Reaches over the jumper's shoulders and grasps a riser assembly in each hand, thumbs down, knuckles pointing skyward, just above the canopy release assemblies. Since these are like items of equipment, either riser assembly can be inspected first. For this example, begin the inspection with the left riser assembly.
- Gives the left riser assembly a sharp tug to the rear. Opens the left hand to form a distinguishable "L." Applies upward pressure with the left thumb and traces the riser assembly rearward, conducting a physical and visual inspection to ensure that an Army Parachute Log Record is present, and that the riser assembly is not twisted, cut, or frayed to where it disappears into the main pack tray. Leave the left hand in place.
- With the right hand, conducts the same inspection on the right riser assembly. The jumpmaster must ensure that only one riser assembly contains an Army Parachute Log Record.

9-33. An overall inspection of the pack tray is conducted to ensure the pack tray is free of grease, oil, dirt, mud, or tears. The jumpmaster performs the **inspection of the pack tray** by taking the following actions:

- Places both hands, fingers and thumbs extended and joined palms facing towards the pack tray, on the top left corner of the pack tray. The left hand is the control hand and the right hand is the working hand.
- With the head and eyes six to eight inches away from the working hand, traces across the top pack closing flap, down the right pack closing flap. The jumpmaster bends over to see what they are doing and traces across the bottom pack closing flap.
- Turns the working hand over so the pinkie finger leads the way and traces up the left pack closing flap until skin-to-skin contact is made with the control hand. Raises the control hand up out of the way and traces where the control hand had been.
- The JM forms knife-edges with both hands, palms facing towards them self, and issues the command, "ARCH YOUR BACK."

DIAGONAL AND HORIZONTAL BACK STRAPS

9-34. The jumpmaster inspects the diagonal or horizontal back straps by taking the following actions:

- Inserts both hands behind the diagonal back straps where the natural pocket is formed. Ensures that thumbs rest just below the “X” formed by the diagonal back strap retainers. Looks at the diagonal back straps to ensure they are properly routed over the appropriate shoulder, and the top diagonal back strap has one more row of exposed stitching than the bottom. Looks at the diagonal back strap retainers to ensure they are routed through the sizing channels on the diagonal back straps, the diagonal back strap retainers are routed around the diagonal back strap keepers, and the directional snap fasteners are secure.
- To further ensure the directional snap fasteners are secure, with both thumbs, The JM plucks the tab portion of the diagonal back strap retainers upward from bottom to top. The JM looks at the left hand and with that hand, traces down the diagonal back strap to ensure it is not twisted, cut, or frayed to the back strap adjuster.
- Grasps the back strap adjuster with the left hand and looks at the right hand and the right diagonal back strap. With the right hand traces down the diagonal back strap, ensuring it is not twisted, cut, or frayed.
- Bypasses the back strap adjuster and picks up the inspection of the horizontal back strap. Traces down, ensuring it is not twisted, cut, or frayed, and the free running end is secured in the webbing retainer until it disappears into the right main lift web.
- Withdraws the right hand from under the horizontal back strap, and reinserts it, fingers and thumb extended and joined, fingertips pointing skyward, palm facing towards them self. Then traces from bottom to top behind the horizontal back strap where it reemerges from the right main lift web. Issues the jumper the command, “BEND”.
- Places the left shoulder on the bottom pack closing flap and pushes up on the bottom of the pack tray. Simultaneously, with the left hand, pulls down on the back strap adjuster. With head and eyes approximately six to eight inches away, traces the horizontal back strap across the small of the jumper’s back until the right pinkie finger makes contact with the main lift web on the jumper’s left side.
- Inspects the horizontal back strap to ensure it is not twisted, cut, or frayed, that the horizontal back strap retainers are properly routed over the horizontal back strap, then under and back over the horizontal back strap keepers, and secured with directional snap fasteners. Nothing is misrouted behind the horizontal back strap.
- Withdraws the right hand from behind the horizontal back strap, and reinserts it from top to bottom behind the horizontal back strap and behind the waistband adjuster panel, where it re-emerges from the left main lift web. Traces up until making skin-to-skin contact with the left hand, ensuring that it is not twisted, cut, frayed, the free running end is secured in the webbing retainer, and nothing has been misrouted behind it. Removes the right hand and gets left hip to head with the jumper.

SADDLE

9-35. The jumpmaster inspects the saddle by taking the following actions:

- Places the fingertips of the right hand, fingers and thumb extended and joined, palm facing towards the jumper, on the lower portion of the left main lift web adjuster. Traces down the lower portion of the main lift web, transitioning to the saddle to ensure it is not twisted, cut, frayed, or been inverted, and neither leg strap has been misrouted around the saddle. Continues to trace until making contact with the lower portion of the right main lift web adjuster.
- Reaches back and gets a handful of air and issue the jumper the good seal of approval by tapping the jumper on the buttocks while issuing the command, “RECOVER”.

Note. Once the jumpmaster has completed the inspection, they will place the jumper into jump configuration.

9-36. After the JM has completed their JMPI, they will place the jumper into jump configuration and take the following actions:

- The JM traces the universal static line modified from the universal static line snap hook to ensure that the universal static line modified is routed over the shoulder corresponding with the door the jumper is to exit.
- Once behind the jumper, the JM removes all slack from the universal static line modified and stows it in the static line slack retainer band.
- The JM reinserts the main curved pin protector flap into the tuck flap, ensuring that the main curved pin cover is the only item of equipment behind it.
- The JM places either hand on the rip cord assembly, applies steady inward pressure, and reinserts the top and bottom tuck tabs, taking care to ensure that both side tuck tabs remain secure.
- If the side tuck tabs become unsecure the JM notifies a rigger.

9-37. If the jumper requires the T-11R inserts, ensure that the T-11 reserve parachute is marked on the carrying handle with quarter-inch yellow pressure-sensitive tape. (See figure 9-7.) The jumpmaster:

- Places a T-11R insert in the top tuck pocket.
- Ensures that the top edge of the T-11R insert is flush with the binding tape on the tuck pocket and the yellow tab is visible. (See figure 9-8 on page 9-20.)
- Places a T-11R insert in the bottom tuck pocket.
- Ensures that the bottom of the T-11R insert is flush with the binding tape on the tuck pocket and the yellow tab is visible. (See figure 9-9 on page 9-20.)
- Verifies that the side tuck tabs have not been removed from their tuck pockets. If the side tuck tabs become unsecure, immediately notify a rigger.

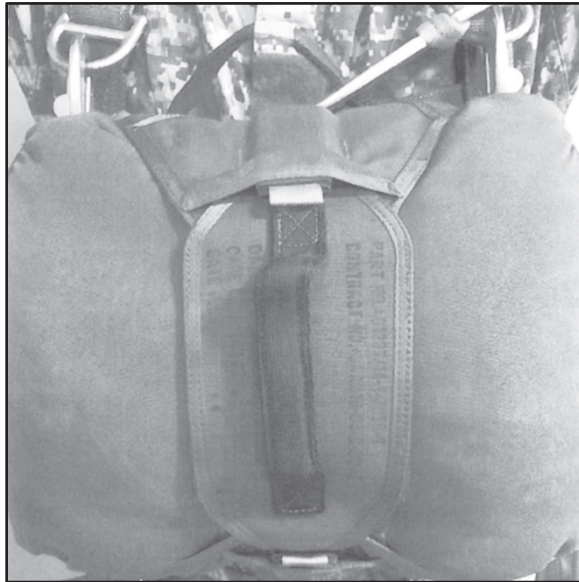


Figure 9-7. Quarter-inch yellow pressure-sensitive tape

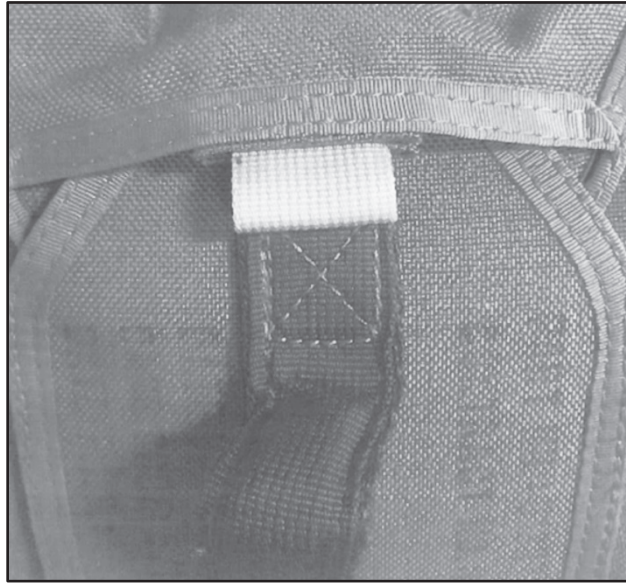


Figure 9-8. T-11R insert is flush with the binding tape

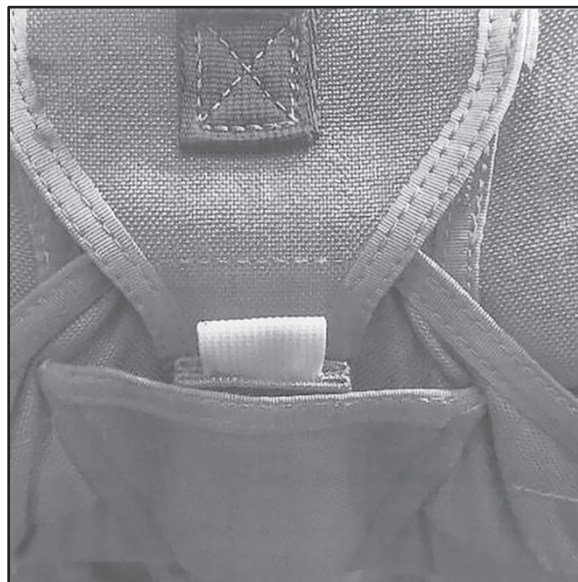


Figure 9-9. T-11R bottom insert is flush with the binding tape

Notes. At a minimum, the PJM and AJM will have the T-11R inserts. If the NUMBER ONE JUMPER is assisting in pushing a door bundle, that jumper is required to have the T-11R inserts.

While conducting rotary-winged operations it is recommended that jumpers exposed to winds that cross the front of the reserve parachute have the T-11R inserts emplaced. (UH-60 and UH-1.)

INSPECTION OF COMBAT EQUIPMENT (MAWC)

9-38. When jumping a modular Airborne weapon's case, the inspection sequence for a combat equipped jumper is the same as a noncombat equipped rigged jumper all the way down to the waistband. So inspect advanced combat helmet, canopy release assemblies, main lift webs, and the chest strap, as prescribed previously, then take the following actions:

- Insert the right hand behind the chest strap as close as possible to where it is sewn into the right main lift web. Lean to the right side of the jumper. Insert the left hand, fingers and thumb extended and joined, fingertips pointing skyward, palm facing towards the jumpmaster, from bottom to the top behind the waistband next to where it is sewn to the pack tray.
- Look at the waistband where it is sewn to the pack tray to ensure it is secured to the pack tray by a box "X" stitch, with at least 50 percent of the stitching present.
- Trace the waistband forward. Ensure it is not twisted, cut, frayed, or been misrouted behind the horizontal back strap, and is routed over the right main lift web and under the right equipment ring. Continue tracing the waistband forward until the right waistband retainer rests in the palm of the left hand. Leave the left hand in place.
- Remove the right hand from behind the chest strap and insert it, fingers and thumb extended and joined, fingertips pointing skyward, palm facing towards the jumpmaster, from bottom to top behind the reserve parachute outside of the left adjustable D-ring attaching strap, so that the left waistband retainer rests in the palm of the right hand. Make fingertip to fingertip contact and conduct a physical inspection to ensure the waistband is not twisted and has been routed through both waistband retainers.
- Leave the right hand in place and rotate the left hand over the right forearm, and grasp the left pack closing flap of the reserve parachute, palm facing the reserve parachute. Remove the right hand from behind the waistband retainer and with the right forearm push out on the lead edge of the MAWC for the first time. Look at the waistband to ensure it is not twisted, cut, or frayed, has been properly routed over the left main lift web and under the left equipment ring.
- With the right hand, grasp the trail edge of the MAWC and pull it forward. With the right hand, fingers and thumb extended and joined, fingertips pointing skyward, palm facing the jumpmaster, insert it from bottom to top behind the metal adjuster.
- Remove the left hand from the left pack closing flap of the reserve parachute and insert the index finger and middle finger of the left hand from top to bottom into the quick release formed by the waistband. Ensure that it is no more than three fingers, no less than two and it is not a false quick release.
- Remove the index finger and middle finger from the quick release and with the index finger and thumb of the left hand, pinch off the free running end of the waistband where it re-emerges from the metal adjuster. Trace the free running end of the waistband, ensure it is not cut, torn, or frayed and is easily accessible to the jumper, until the fingers fall off the end.
- Place the left hand on the left pack closing flap of the reserve parachute, palm facing the reserve parachute and look at the right hand and the waistband adjuster panel. With the right hand, trace the waistband adjuster panel back. Ensure it is not twisted, cut, or frayed, and has not been misrouted behind the horizontal back strap to where it is sewn to the pack tray. Ensure it is properly secured to the pack tray by a box "X" stitch, with at least 50 percent of the stitching present.
- Remove the right hand and move in front of the jumper. With the right forearm, push out on the lead edge of the MAWC for the second time.

9-39. The modular Airborne weapon's case will be inspected in its entirety prior to inspecting the reserve parachute. The inspection of the MAWC begins with its point of attachment, the snap shackle:

- Look at the snap shackle to ensure it is the outermost item of equipment on the left equipment ring, and the opening gate is facing the jumper. With the right thumb and index finger, rotate the snap shackle one quarter of a turn so the opening gate is facing towards the jumper, and conduct a visual inspection of the locking pin to ensure it is seated. Conduct a visual inspection to ensure the yellow safety lanyard is present and is secured to the appropriate snap fastener.

- With the right hand form a fist, leaving the index finger exposed and trace down the adjusting strap, ensuring that it is properly routed through all of the pouch attachment ladder system webbing until coming into contact with the friction adapter.
- Leave the right index finger in place and visually inspect for proper routing, ensuring the adjusting strap is routed through the friction adapter from top to bottom, then routed up over the bottom bar and under the top bar to keep the adjusting strap from slipping. Visually inspect to ensure as much of the excess webbing of the adjusting strap is stowed under the pouch attachment ladder system webbing as possible.

Note. The jumpmaster must ensure the excess webbing of the adjusting strap is not routed over the snap shackle.

- Once satisfied with the inspection, the JM continues tracing down the inside of the modular Airborne weapon's case until the right index finger naturally falls off the end.
- With the right hand, form a knife-cutting edge with the fingers extended and joined, palm facing skyward, and trace from front to rear along the bottom of the MAWC until the hand falls off of the rear, to ensure the muzzle of the weapon is not protruding. With the palm of the right hand, gently lift up on the base of the adjustable nose cone to ensure that the nose cone securing straps are tightened, and the hook-pile tape is properly secured.
- Place the index finger of the right hand on the quick release buckle at the bottom of the closing flap. Visually inspect to ensure it is free of all cracked components and is properly secured. Then, visually inspect to ensure the free running end of the compression strap has been secured in the webbing retainer. Continue to trace up the slide fastener to ensure it is secured with all teeth engaged until making contact with the second quick release buckle, and visually inspect to ensure it is free of all cracked components and is properly secured. Then, visually inspect to ensure the free running end of the compression strap has been secured in the webbing retainer. Continue tracing the slide fastener until making contact with the slide fastener and tabbed thong.
- Leave the right index finger in place and conduct a visual inspection of the upper spring stop to ensure the spring portion is present and serviceable. With the index finger of the right hand, form a hook and insert it from back to front into the window created in the tabbed thong portion of the slide fastener and tabbed thong. Gently pull up on the slide fastener and tabbed thong to ensure it is secured by the snap fastener, and the upper tie down tape is properly routed through it.
- With the right hand, form a knife-cutting edge, fingers and thumb extended and joined, palm facing the MAWC, and trace down approximately 10 to 12 inches from the top of the modular Airborne weapon's case. Give it a sharp slap, feeling for the forward assist of the M4/M16 series rifle or the charging handle of the M249 squad automatic weapon (SAW).
- With the index finger and thumb of the right hand, pinch off the bowknot of the upper tie down tape on the lead edge of the MAWC. Visually inspect the upper tie down tape to ensure it is properly routed behind the modular Airborne weapon's case, through the small cut-away portion of the equipment ring from back to front, and is secured by a single or double-loop bowknot on the lead edge of the MAWC.
- With the left hand, secure the carrying handle of the reserve parachute, palm facing the reserve with the knuckles skyward. This concludes the inspection of the MAWC. Inspect the reserve parachute in the same manner as if it were on a noncombat equipped rigged jumper, all the way down to the command, "HOLD."

MODULAR LIGHTWEIGHT LOAD-CARRYING EQUIPMENT II RUCKSACK

9-40. After completing the overall inspection of the reserve parachute, the JM then inspects the modular lightweight load-carrying equipment (MOLLE) II rucksack.

- The inspection of the harness single point release begins with the adjustable D-ring attaching straps. These are like items of equipment so either one can be inspected first. However, for the purpose of this talk through, begin with the right adjustable D-ring attaching strap.

- Simultaneously, with both hands form fists with index fingers exposed. Place index fingers on the snap hooks of the adjustable D-ring attaching straps. Focus attention to the left hand. Conduct a visual inspection to ensure that the snap hook is not bent, cracked, corroded, or distorted out of shape, and that the opening gate is facing towards the jumper.
- With the index finger of the left hand, finger the opening gate one time to ensure that it is properly secured to the right equipment ring, and it has spring tension and has not been reversed. With the left thumb, flip the free running end of the right adjustable D-ring attaching strap out of the way. Place the left index finger on the black intermittent stitching on the front of the right adjustable D-ring attaching strap just below the snap hook. Trace down the right adjustable D-ring attaching strap ensuring that it is not twisted, cut, or frayed until contact is made with the triangle link.
- Bypass the triangle link and pick up the inspection of the attaching loops, ensuring that the white attaching loop is routed from bottom to top through the triangle link, the green attaching loop is routed from bottom to top through the white attaching loop, the red attaching loop is routed from bottom to top through the green attaching loop, and also routed from bottom to top through the grommet in the female portion leg strap release assembly. Place the index finger of the left hand on the single box “X” stitch on the release handle cross strap.
- Look at the release handle cable where it emerges from the release handle cross strap. Ensure the release handle cable is properly routed through the red attaching loop and secured by the cable loop retainer. Leave the left index finger in place and with the right hand, conduct the same inspection on the left adjustable D-ring attaching strap until the right index finger rests on the single box “X” stitch.
- Focus attention on the release handle. With the right index finger and thumb, index finger on top, thumb on the bottom, lift up gently on the release handle. Ensure the release handle and release handle cable is properly routed between the two plies of the release handle cross strap, and the release handle is secured by the hook-pile tabs.
- Now form a hook with the right index finger and insert it from outside to inside and lift up on the release handle lanyard to ensure it is not twisted, cut, frayed, or misrouted around the equipment retainer strap or the release handle cross strap. Place the right index finger back on the single box “X” stitch.
- Trace the equipment retainer straps down the outside of the pouch on the MOLLE rucksack until making contact with the box “X” stitches on either side of the adjustable cross strap.
- Leave the left index finger in place and with the index finger and thumb of the right hand, grasp the free running end of the adjustable cross strap and give it a tug to the jumper’s left, ensuring that all the slack has been removed from the adjustable cross strap. Place the right index finger back on the single box “X” stitch and continue to trace the equipment retainer straps down until fingers fall off.
- Secure the sides of the MOLLE rucksack and raise it to eye level. Look at the equipment retainer straps to ensure they are routed through the slots at the top corners of the MOLLE rucksack frame and have not been twisted, cut, or frayed. Raise the MOLLE rucksack to the jumper and issue the command, “HOLD.”

Note. Jumpers will secure the top of the MOLLE rucksack and hold it up high.

- Continue the inspection of the equipment retainer straps as they route through the adjustable shoulder carrying straps from outside to inside. Ensure the equipment retainer straps are routed over the comfort pad and form an “X” configuration on the rear of the MOLLE rucksack and are not twisted, cut or frayed. Bypass the girth hitch of the hook-pile tape lowering line and continue the inspection until fingers rest on the friction adaptors and behind the two to three finger quick releases in the equipment retainer straps.
- Simultaneously, inspect the two to three finger quick releases by placing the index and middle finger of each hand, palms toward the face, on the outside of the quick releases. Visually inspect the free running ends of the equipment retainer straps to ensure they are S-folded or accordion folded, never rolled, and secured with either one turn of masking tape or two turns of retainer bands (one or the other, never both) and not secured to the quick releases. Conduct

a visual inspection of the friction adapters to ensure they are routed through the oval cutouts at the base of the MOLLE rucksack frame. With the index finger of each hand, lightly tap them to ensure they are secure.

- With the thumb and index fingers of each hand, form an “O” around the base of the adjustable shoulder carrying straps. Whenever possible, the free running ends should be on top of both hands. Simultaneously, pull out to ensure they are properly secured to the MOLLE rucksack frame. Visually inspect the free running ends of the adjustable shoulder carrying straps to ensure they are S-folded or accordion folded, never rolled, and secured with either one turn of masking tape or two turns of retainer bands (one or the other, never both). With the index fingers of each hand, lightly tap the free running ends of the adjustable shoulder carrying straps to ensure they are secure.

ALICE PACK

9-41. After completing the overall inspection of the reserve parachute, the JM then inspects the all-purpose, lightweight, individual, carrying equipment (ALICE) pack. To inspect this pack:

- The inspection of the harness single point release begins with the adjustable D-ring attaching straps. These are like items of equipment, so either one can be inspected first. However, for the purpose of this talk through, begin with the right adjustable D-ring attaching strap.
- Simultaneously, with both hands form fists with your index fingers exposed. Place index fingers on the snap hooks of the adjustable D-ring attaching straps. Now, focus attention to the left hand. Conduct a visual inspection to ensure that the snap hook is not bent, cracked, corroded, distorted, or out of shape, and that the opening gate is facing towards the jumper.
- With the index finger of the left hand, finger the opening gate one time to ensure that it is properly secured to the right equipment ring, that it has spring tension, and has not been reversed. With the left thumb, flip the free running end of the right adjustable D-ring attaching strap out of the way. Place the index finger of the left hand on the black intermittent stitching on the front of the right adjustable D-ring attaching strap just below the snap hook. Trace down the right adjustable D-ring attaching strap, ensuring that it is not twisted, cut, or frayed until contact is made with the triangle link.
- Bypass the triangle link and pick up the inspection of the attaching loops and ensure that the white attaching loop is routed from bottom to top through the triangle link, the green attaching loop is routed from bottom to top through the white attaching loop, the red attaching loop is routed from bottom to top through the green attaching loop, and routed from bottom to top through the grommet in the female portion leg strap release assembly. Place the index finger of the left hand on the single box “X” stitch on the release handle cross strap.
- Look at the release handle cable where it emerges from the release handle cross strap. Ensure the release handle cable is properly routed through the red attaching loop and secured by the cable loop retainer. Leave the left index finger in place and with the right hand, conduct the same inspection on the left adjustable D-ring attaching strap until the right index finger rests on the single box “X” stitch.
- Focus attention on the release handle. With the right index finger and thumb, index finger on top, thumb on the bottom lift up gently on the release handle. Ensure the release handle and release handle cable is properly routed between the two plies of the release handle cross strap and the release handle is secured by the hook-pile tabs.
- Now form a hook with the right index finger and insert it from outside to inside and lift up on the release handle lanyard to ensure it is not twisted, cut, frayed, or misrouted around the equipment retainer strap or the release handle cross strap. Place the right index finger back on the single box “X” stitch.
- Trace the equipment retainer straps down between the external cargo compartments of the ALICE pack until making contact with the adjustable cross strap. Leave the left index finger in place and with the index finger and thumb of the right hand, grasp the free running end of the adjustable cross strap and give it a tug to the jumper’s left, insuring that all the slack has been removed fro

- the adjustable cross strap. Now, place the right index finger back on the single box “X” stitch and continue to trace the equipment retainer straps down until all fingers fall off.
- Secure the sides of the ALICE pack and raise it to eye level and look at the equipment retainer straps to ensure they are routed behind the envelope cushion and have not been twisted. Raise the ALICE pack to the jumper and issue the command, “HOLD.”

Note. Jumpers will secure the top of the ALICE pack and hold it up high.

- Continue the inspection of the equipment retainer straps as they route through the envelope cushion. Ensure the equipment retainer straps form an “X” configuration on the rear of the ALICE pack and are not twisted, cut, or frayed. Continue inspection until all fingers rest on the friction adapters and behind the two-to-three finger quick releases in the equipment retainer straps.
- Simultaneously, inspect the two-to-three finger quick release by placing the index and middle finger of each hand, palm facing toward the body, on the outside of the quick release. Now, visually inspect the free running ends of the equipment retainer straps to ensure they are S-folded or accordion folded, never rolled, and secured with either one turn of masking tape or two turns of retainer bands (one or the other, never both) and not secured to the quick releases. With the index finger of each hand, lightly tap them to ensure they are secure.
- With the thumb and index fingers of each hand, form an “O” around the lower portion of the adjustable shoulder carrying straps. Simultaneously, pull out to ensure they are properly secured to the ALICE pack frame. Visually inspect the free running ends of the adjustable shoulder carrying straps to ensure they are S-folded or accordion folded, never rolled, and secured with either one turn of masking tape or two turns of retainer bands (one or the other, never both). With the index fingers of each hand, lightly tap the free running ends of the adjustable shoulder carrying straps to ensure the S-folds are secure.

HOOK-PILE TAPE LOWERING LINE (MAWC)

9-42. Inspect the hook-pile tape lowering line, when rigged with a MAWC, by taking the following actions:

- With the index finger of the right hand, place it on the hook-pile tape lowering line (HPTLL) just to the left of the girth hitch. Visually inspect to ensure the girth hitch is properly routed north to south, south to north, but never east to west.
- With the right index finger, trace the HPTLL, ensuring that the HPTLL is properly routed over the left adjustable shoulder carrying strap until making contact with the first set of hook-pile tabs. Visually inspect to ensure the hook-pile tabs are present, secured, and there are no S-folds protruding from the end of the retainer flap.
- Continue to inspect down the retainer flap ensuring that it is secured to the MOLLE rucksack frame by two sets of girth hitched retainer bands on either end of the retainer flap.
- Continue to trace down until making contact with the second set of hook-pile tabs. Once again ensure they are present, secured, and there are no S-folds protruding from the end of the retainer flap.
- Continue to trace the HPTLL until the index finger disappears behind the modular Airborne weapon’s case. Visually inspect to ensure the HPTLL is properly routed between the main body of the modular Airborne weapon’s case and the attachment strap. Leave the right index finger in place.
- Route the left hand over the right forearm and secure the trail edge of the MAWC and pull it forward. Make a mental note of where the right index finger is, remove the right index finger and place it back on the HPTLL where it just was. Continue to trace up until making contact with the ejector snap, ensuring the HPTLL is not routed through the carrying handle.
- With the right thumb press in on the activating lever to ensure that it is properly seated over the ball detent, free of all foreign matter that will keep it from seating completely, the opening gate is facing the jumper, and is secured to the triangle link. Turn the ejector snap one-quarter turn away from the jumper to ensure the small tooth is present.

- Visually inspect the yellow safety lanyard to ensure that it is serviceable and it has not been wired, tied, or taped down. Drop both hands and move back to the front of the jumper and issue the command, “SQUAT.”

UNIVERSAL PARACHUTIST RECOVERY BAG AND AVIATOR’S KIT BAG

9-43. Inspect the UPRB by taking the following actions:

- Insert the index and middle finger of each hand, from outside to inside, behind the leg straps, below the universal parachutist recovery bag where the natural pocket is formed. Simultaneously, slide both hands back towards the saddle to ensure the leg straps are not crossed. Leave the right hand in place.
- With the left hand trace the right leg strap up, ensure it is not twisted, cut, or frayed, until contact is made with the right leg strap retainer. Now remove the index finger and middle finger of the left hand and reinsert them just above the right leg strap retainer and trace up the right leg strap to ensure it is not twisted, cut, or frayed, the excess webbing is properly routed behind the leg strap retainer, and is secured in the webbing retainer until contact is made with the quick-fit V-ring. With the thumb, press in on the activating lever of the ejector snap to ensure it is properly seated over the ball detent and is free of foreign matter that would keep it from seating completely. Leave the left hand and thumb in place and look at the left leg strap.
- With the right hand conduct the same inspection of the left leg strap. Once skin to metal contact is made, remove the right hand and use the right forearm to lift up and out on the modular Airborne weapon’s case. With the right thumb, press down on the activating lever to ensure it is properly seated over the ball detent and that it is free of any foreign material that will keep it from seating completely. Now leave both hands and thumbs in place.
- Rock back on heels and conduct a visual inspection to ensure the universal parachutist recovery bag is present, neither leg strap retainer is cut or frayed more than 50 percent, and the folded portions are facing skyward. Once satisfied with the inspection, stand up in front of the jumper. Secure the sides of the MOLLE rucksack and issue the command of “RECOVER.”

Note. Jumpers pick up on the reserve parachute and jumpmasters simply allow the MOLLE rucksack or ALICE pack to rotate between the jumpmaster’s body and the jumper’s body.

9-44. Inspect the AKB, by taking the following actions:

- Insert the index and middle fingers of both hands, from outside to inside, behind the leg straps below the aviator’s kit bag where the natural pocket is formed. Simultaneously, slide both hands back towards the saddle, to ensure the legs straps are not crossed. Leave the right hand in place.
- With the left hand trace the right leg strap up, ensure that it is not twisted, cut, or frayed, the excess webbing is secured in its webbing retainer until there is skin-to-metal contact with the quick-fit V-ring. Rotate the left thumb up and press down on activating lever to ensure it is properly seated over the ball detent, and that it is free of any foreign material that will keep it from seating completely. Leave the left hand and thumb in place and look at the left leg strap.
- With the right hand, trace the left leg strap up to ensure it is not twisted, cut, or frayed, it is properly routed through the exposed carrying handle of the aviator’s kit bag, over the bottom and under the top, and the free running end is secured in the webbing retainer, until contact is made with the quick-fit V-ring. Once skin to metal contact is made, remove the right hand, and use the right forearm to lift up and out on the MAWC. With the right thumb, press down on activating lever to ensure it is properly seated over the ball detent and that it is free of any foreign material that will keep it from seating completely. Leave both hands and thumbs in place.
- Rock back on heels and conduct a visual inspection to ensure the aviator’s kit bag is present, has not been reversed, and the re-enforced sewn portion is facing away from the jumper. Secure the sides of the MOLLE rucksack and issue the command of “RECOVER.”

Note. Jumpers pick up on the reserve parachute and jumpmasters simply allow the MOLLE rucksack or ALICE pack to rotate between the jumpmaster's body and the jumper's body.

TECHNICAL INSPECTION AND HANG OF COMBAT EQUIPMENT

9-45. The JM is responsible for inspecting each jumper and item of equipment. Long flights, heavy loads, extreme heat, tactical updates, and special items of equipment (AT4JP, SMJP, and other items) may warrant delaying the attachment of equipment until a predesignated time later in the mission timeline. Under such conditions, the Airborne commander may decide to conduct the JMPI without equipment. The commander must consider individual and unit proficiency when conducting the command risk assessment.

9-46. There are two methods to attach equipment after JMPI is complete: technical inspection (T.I.) and hang of combat equipment, and late hang and JMPI of combat equipment. When the commander has decided to "T.I. AND HANG" after JMPI has been conducted, the T.I. is conducted on the MOLLE rucksack, ALICE pack, MAWC (rigged for a tandem load), the hook-pile tape lowering line (MAWC), and leg strap assemblies.

MOLLE RUCKSACK

9-47. First, conduct an overall inspection of the equipment to ensure it is free of loose or excess webbing, and the adjustable D-ring attaching straps and HPTLL is hanging free. Stand in front of the MOLLE with the adjustable shoulder straps facing away and the base of the MOLLE skyward.

9-48. Begin the inspection of the MOLLE with its point of attachment, the adjustable D-ring attaching straps. These are like items of equipment so either can be inspected first. However, for the purpose of this talk though, begin with the right adjustable D-ring attaching strap. With both hands secure the snap hooks of the adjustable D-ring attaching straps in each hand, the right snap hook in the left hand, and the left snap hook in the right hand. Place the index fingers on the opening gate of the snap hooks. Focus attention to the left hand and the right adjustable D-ring attaching strap. Conduct a visual inspection to ensure that the snap hook is not bent, cracked, or corroded and that the opening gate is facing away. With the left index finger, function the opening gate one time, ensuring it has spring tension and has not been reversed. With the left thumb, flip the excess webbing of the adjustable D-ring attaching strap out of the way and place the left index finger on the black intermittent stitching just below the snap hook. Trace the adjustable D-ring attaching strap, ensuring that it is not cut or frayed until making contact with the triangle link. Bypass the triangle link and pick up the inspection of the attaching loops, and ensure that the white attaching loop is routed from bottom to top through the triangle link, the green attaching loop is routed from bottom to top through the white attaching loop, the red attaching loop is routed from bottom to top through the green attaching loop, and routed from bottom to top through the grommet in the female portion leg strap release assembly.

9-49. Continue tracing until the index finger of the left hand rests on the single box "X" stitch on the release handle cross strap. Look at the release handle cable where it emerges from the release handle cross strap. Ensure the release handle cable is properly routed through the red attaching loop and secured by the cable loop retainer. Leave the left index finger in place and with the right hand; conduct the same inspection on the left adjustable D-ring attaching strap until the right index finger rests on the single box "X" stitch on the release handle cross strap.

9-50. With the right index finger and thumb (index finger on top, thumb on the bottom) lift up gently on the release handle. Ensure the release handle and release handle cable is properly routed between the two plies of the release handle cross strap, and the release handle is secured by the hook-pile tabs. Now form a hook with the right index finger, insert it from outside to inside and gently lift up on the release handle lanyard to ensure it is not twisted, cut, frayed, or misrouted around the equipment retainer strap or the release handle cross strap. Place the right index finger back on the single box "X" stitch on the release handle cross strap. Now grasp the sides of the MOLLE and lay it down flat on the frame.

9-51. Place both index fingers back on the corresponding box "X" stitch on either side of the release handle cross strap. Simultaneously, with both index fingers trace the equipment retainer straps down the outside of the pouch of the MOLLE. Continue to trace until making contact with the box "X" stitches on either side of the adjustable cross strap. Leave the left index finger in place and with the index finger and thumb of the

right hand grasp the free running end of the adjustable cross strap and give it a tug to the right, ensuring that all the slack has been removed from the adjustable cross strap. Place the right index finger back on the single box "X" stitch and continue to trace the equipment retainer straps down until all fingers fall off.

9-52. Now grasp the sides of the MOLLE and rotate it up so that the top of the MOLLE is facing skyward. Look at the equipment retainer straps to ensure they are routed through the slots at the top corners of the MOLLE frame and have not been twisted, cut, or frayed. Continue to rotate the MOLLE until the pack body is facing down and the frame is facing skyward.

9-53. Now place the index fingers of both hands inside the adjustable shoulder carrying straps on top of the equipment retainer straps where they reemerge from slots of the MOLLE frame. Ensure they are routed from outside to inside, under the adjustable shoulder carrying straps. Begin tracing down the equipment retainer straps to ensure the equipment retainer straps are routed over the comfort pad and form an "X" configuration on the rear of the MOLLE, and the straps are not twisted, cut, or frayed. Bypass the girth hitch of the HPTLL and continue your inspection until all fingers rest on the friction adaptors and behind the two-to-three finger quick releases of the equipment retainer straps. Simultaneously, inspect the two-to-three finger quick release by placing the index and middle finger of each hand, palm on the outside of the quick releases.

9-54. Conduct a visual inspection of the friction adaptors to ensure they are routed through the oval cutouts at the base of the MOLLE frame. Visually inspect the free running ends of the equipment retainer straps to ensure they are S-folded or accordion folded, never rolled, and secured with either one turn of masking tape or two turns of retainer bands (one or the other, never both) and not secured to the quick releases. With the index finger of each hand, lightly tap the free running ends of the equipment retainer straps to ensure they are secure.

9-55. With the thumb and index fingers of each hand, form an "O" around the base of the adjustable shoulder carrying straps. Whenever possible, the free running ends should be on top of both hands. Simultaneously, pull out to ensure they are properly secured to the MOLLE frame. Visually inspect the free running ends of the adjustable shoulder carrying straps to ensure they are S-folded or accordion folded, never rolled, and secured with either one turn of masking tape or two turns of retainer bands (one or the other, never both). With the index fingers of each hand, lightly tap the free running ends of the adjustable shoulder carrying straps to ensure they are secure.

9-56. Place the index finger of the right hand on the HPTLL just to the right of the girth hitch as the jumpmaster sees it. Visually inspect to ensure the girth hitch is properly routed north to south, south to north, but never east to west. With the right index finger, trace the HPTLL ensuring that the HPTLL is properly routed over the left adjustable shoulder carrying strap until making contact with the first set of hook-pile tabs. Visually inspect to ensure the hook-pile tabs are present and secured, and there are no S-folds protruding from the end of the retainer flap.

9-57. Continue to inspect down the retainer flap, ensuring that it is secured to the MOLLE frame by two sets of girth hitched retainer bands on either end of the retainer flap. Continue to trace down until making contact with the second set of hook-pile tabs and ensure they are present and secured, and there are no S-folds protruding from the end of the retainer flap. With the right hand, palm facing up, fingers pointing away, continue to trace the HPTLL with the palm to the ejector snap.

9-58. Press down with the right thumb on the activating lever, ensuring it is properly seated over the ball detent and is free of all matter which could prevent it from seating completely. Rotate the ejector snap so the ball detent is visible from the side and ensure it is seated properly in the activating lever. Visually inspect the opening gate in order to ensure it is closed properly and the small tooth is present and serviceable. Visually inspect the yellow safety lanyard to ensure that it is serviceable and it has not been wired, tied, or taped down. This concludes the T.I. of the MOLLE.

9-59. HANG: First ensure that the equipment rings on the jumper's harness are properly routed over the waistband for easy accessibility. Next, grasp the snap hooks of the adjustable D-ring attaching straps, ensuring that they are not twisted and the opening gates are facing away from the jumpmaster. The jumper will lift up their reserve parachute as the jumpmaster attaches each snap hook to the corresponding equipment ring. Next, assist the jumper in taking out any additional excess in the adjustable D-ring attaching straps to get the MOLLE high enough so it touches the bottom of the reserve parachute.

ALICE PACK

9-60. First, conduct an overall inspection of the equipment to ensure it is free of loose or excess webbing, and the adjustable D-ring attaching straps and HPTLL is hanging free. Stand in front of the ALICE pack with the adjustable shoulder straps facing away and the base of the ALICE pack skyward.

9-61. Begin the inspection of the ALICE pack with its point of attachment, the adjustable D-ring attaching straps. These are like items of equipment so either can be inspected first. However, for the purpose of this talk though begin with the right adjustable D-ring attaching strap. With both hands secure the snap hooks of the adjustable D-ring attaching straps in each hand, the right snap hook in the left hand, and the left snap hook in the right hand. Place index fingers on the opening gate of the snap hooks. Focus attention to the left hand and the right adjustable D-ring attaching strap. Conduct a visual inspection to ensure that the snap hook is not bent, cracked, or corroded, and that the opening gate is facing away. With the left index finger, function the opening gate one time, ensuring it has spring tension and has not been reversed. With the left thumb flip the excess webbing of the adjustable D-ring attaching strap out of the way and place the left index finger on the black intermittent stitching just below the snap hook. Trace the adjustable D-ring attaching strap ensuring that it is not cut or frayed until making contact with the triangle link. Bypass the triangle link and pick up the inspection of the attaching loops, ensuring that the white attaching loop is routed from bottom to top through the triangle link, the green attaching loop is routed from bottom to top through the white attaching loop, the red attaching loop is routed from bottom to top through the green attaching loop and routed from bottom to top through the grommet in the female portion leg strap release assembly.

9-62. Continue tracing until the index finger of the left hand rests on the single box "X" stitch on the release handle cross strap. Look at the release handle cable where it emerges from the release handle cross strap. Ensure the release handle cable is properly routed through the red attaching loop and secured by the cable loop retainer. Leave the left index finger in place and with the right hand; conduct the same inspection on the left adjustable D-ring attaching strap until the right index finger rests on the single box "X" stitch on the release handle cross strap.

9-63. With the right index finger and thumb (index finger on top, thumb on the bottom) lift up gently on the release handle. Ensure the release handle and release handle cable is properly routed between the two plies of the release handle cross strap, and the release handle is secured by the hook-pile tabs. Now form a hook with the right index finger and insert it from outside to inside and gently lift up on the release handle lanyard to ensure it is not twisted, cut, frayed, or misrouted around the equipment retainer strap or the release handle cross strap. Place the right index finger back on the single box "X" stitch on the release handle cross strap. Now grasp the sides of the ALICE pack and lay it down flat on the frame.

9-64. Place both index fingers back on the corresponding box "X" stitch on either side of the release handle cross strap. Simultaneously, with both index fingers, trace the equipment retainer straps down between the external cargo compartments of the ALICE pack. Continue to trace until making contact with the box "X" stitches on either side of the adjustable cross strap. Leave the left index finger in place and with the index finger and thumb of the right hand, grasp the free running end of the adjustable cross strap and give it a tug to the right, ensuring that all the slack has been removed from the adjustable cross strap. Place the right index finger back on the single box "X" stitch and continue to trace the equipment retainer straps down until the fingers fall off.

9-65. Now grasp the sides of the ALICE pack and rotate it up so that the top of the ALICE pack is facing skyward. Look at the equipment retainer straps to ensure they are routed through the envelope cushion and have not been twisted, cut, or frayed. Continue to rotate the ALICE pack until the pack body is facing down and the frame is facing skyward.

9-66. Now place the index fingers of both hands inside the adjustable shoulder carrying straps on top of the equipment retainer straps where they reemerge from the envelope cushion. Begin tracing down the equipment retainer straps to ensure the equipment retainer straps form an "X" configuration on the rear of the ALICE pack and are not twisted, cut, or frayed. Bypass the girth hitch of the HPTLL and continue the inspection until the fingers rest on the friction adaptors and behind the two-to-three finger quick releases of the equipment retainer straps. Simultaneously, inspect the two-to-three finger quick release by placing the index and middle finger of each hand, palm on the outside, of the quick releases.

9-67. Visually inspect the free running ends of the equipment retainer straps to ensure they are S-folded or accordion folded, never rolled, and secured with either one turn of masking tape or two turns of retainer bands (one or the other, never both) and not secured to the quick releases. With the index finger of each hand, lightly tap the free running ends of the equipment retainer straps to ensure they are secure.

9-68. With the thumb and index fingers of each hand, form an “O” around the base of the adjustable shoulder carrying straps, whenever possible the free running ends should be on top of both hands. Simultaneously, pull out to ensure they are properly secured to the ALICE pack frame. Visually inspect the free running ends of the adjustable shoulder carrying straps to ensure they are S-folded or accordion folded, never rolled, and secured with either one turn of masking tape or two turns of retainer bands (one or the other never both). With the index fingers of each hand, lightly tap the free running ends of the adjustable shoulder carrying straps to ensure they are secure.

9-69. Place the index finger of the right hand on the HPTLL just to the right of the girth hitch as the jumpmaster sees it. Visually inspect to ensure the girth hitch is properly routed north to south, south to north, but never east to west. With the right index finger, trace the hook-pile tape lowering line ensuring that the HPTLL is properly routed over the left adjustable shoulder carrying strap until making contact with the first set of hook-pile tabs. Visually inspect to ensure the hook-pile tabs are present and secured and there are no S-folds protruding from the end of the retainer flap.

9-70. Continue to inspect down the retainer flap, ensuring that it is secured to the ALICE pack frame by two girth hitched retainer bands on either end of the retainer flap; one above and one below the horizontal frame support.

9-71. Continue to trace down until making contact with the second set of hook-pile tabs, once again ensure they are present and secured and there are no S-folds protruding from the end of the retainer flap. With the right hand, palm facing up, fingers pointing away, continue to trace the HPTLL with the palm to the ejector snap.

9-72. Press down with the right thumb on the activating lever, ensuring it is properly seated over the ball detent, and is free of all matter which could prevent it from seating completely. Rotate the ejector snap so the ball detent is visible from the side and ensure it is seated properly in the activating lever. Visually inspect the opening gate in order to ensure it is closed properly, and the small tooth is present and serviceable. Visually inspect the yellow safety lanyard to ensure that it is serviceable and it has not been wired, tied, or taped down. This concludes the T.I. of the ALICE pack.

9-73. HANG: First ensure that the equipment rings on the jumper’s harness are properly routed over the waistband for easy accessibility. Next, grasp the snap hooks of the adjustable D-ring attaching straps, ensuring that they are not twisted and the opening gates are facing away from the jumpmaster. The jumper will lift up their reserve parachute as each snap hook is attached to the corresponding equipment ring. Next, assist the jumper in taking out any additional excess in the adjustable D-ring attaching straps to get the ALICE pack high enough so it touches the bottom of the reserve parachute.

MODULAR AIRBORNE WEAPON’S CASE RIGGED FOR A TANDEM LOAD

9-74. Before beginning the inspection of the MAWC, ensure it is organized in transport configuration. This means the upper tie down tape is properly routed through the tabbed thong portion of the slide fastener and tabbed thong, and secured to the lead edge with a bow knot. The snap shackle has been adjusted to fit the height of the jumper, and the opening gate is closed with the yellow safety lanyard secured to the appropriate snap fastener.

9-75. With the left hand grasp the top of the modular Airborne weapon’s case with the backside of the MAWC facing towards the jumpmaster and the closing flap facing away. The left hand is the control hand and the right hand is the working hand.

9-76. The inspection of the modular Airborne weapon’s case begins with its point of attachment; the snap shackle. With the thumb and index finger of the working hand, rotate the snap shackle one quarter of a turn so the opening gate is facing towards the jumpmaster, and conduct a visual inspection of the locking pin to ensure it is fully seated. Conduct a visual inspection to ensure the yellow safety lanyard is present and is secured to the appropriate snap fastener. Now, with the right hand form a fist leaving the index finger exposed

and trace down the adjusting strap ensuring that it is properly routed through all of the pouch attachment ladder system webbing until coming into contact with the friction adapter. Leave the right index finger in place and visually inspect for proper routing, ensuring the adjusting strap is routed through the friction adapter from top to bottom, then routed up over the bottom and under the top to keep the adjusting strap from slipping. Visually inspect to ensure as much of the excess webbing of the adjusting strap is stowed under the pouch attachment ladder system webbing as possible. If the free running end of the adjusting strap reaches the snap shackle, it must be S-folded or rolled and secured in a retainer band that is girth hitched to the first rung of the pouch attachment ladder system webbing above the friction adapter.

9-77. Once satisfied with the inspection, flip the MAWC 180 degrees so the adjustable nose cone is facing up. Conduct a visual inspection to ensure the muzzle of the weapon is not protruding. Grab the adjustable nose cone with your working hand and attempt to push in and pull out, ensuring the adjustable nose cone is properly sized to the weapon and the hook-pile tabs are secure.

9-78. Next, flip the modular Airborne weapon's case back over 180 degrees, with the back of the MAWC still facing the jumpmaster. With the left hand, grasp the top left side of the MAWC below the upper tie down tape and rotate the modular Airborne weapon's case so the backside rests on the left forearm. With the right hand, form a fist with the index finger exposed and place the index finger on the quick release buckle at the bottom of the closing flap, and visually inspect to ensure it is free of all cracked components and properly secured. Then, visually inspect to ensure the free running end of the compression strap has been secured in the webbing retainer. Trace up the slide fastener to ensure it is secured with all teeth engaged until making contact with the second set of quick release buckles. Conduct the same visual inspection. Then, visually inspect to ensure the free running end of the compression strap has been secured in the webbing retainer. Continue tracing the slide fastener until making contact with the slide fastener and tabbed thong.

9-79. Leave the index finger in place and conduct a visual inspection of the upper spring stop to ensure the spring portion is present and serviceable.

9-80. With the index finger of the right hand, form a hook and insert it from back to front into the window created in the tabbed thong portion of the slide fastener and tabbed thong, and gently pull up on the slide fastener and tabbed thong to ensure it is secured by the snap fastener and the upper tie down tape is properly routed through it. Now, with the right hand form a knife-cutting edge, fingers and thumb extended and joined, palm facing the modular Airborne weapon's case, and trace down approximately 10 to 12 inches from the top of the modular Airborne weapon's case, and give it a sharp slap, feeling for the forward assist of the M4/M16 series rifle or the charging handle of the M249 SAW.

9-81. With the index finger and thumb of the right hand, pinch off the bowknot of the upper tie down tape on the lead edge of the MAWC. Visually inspect the upper tie down tape to ensure it is properly routed behind the modular Airborne weapon's case and is secured by a single or double loop bowknot. This concludes the T.I. for the modular Airborne weapon's case.

9-82. Hang: Secure the modular Airborne weapon's case and open the snap shackle. Secure the snap shackle to the left equipment ring, ensure it is the outer most item on the equipment ring and the opening gate is facing the jumper. Conduct a visual inspection to ensure the locking pin is fully seated and the yellow safety lanyard is still secured in the appropriate snap fastener.

9-83. Next, untie the upper tie down tape and route the long end from back to front through the small rectangular cut-out portion of the left equipment ring. Retie the double or single loop bow knot to the lead edge of the MAWC.

9-84. Finally, route the hook-pile tape lowering line from front to back, between the attachment strap and the main body of the modular airborne weapons case, ensure it is not misrouted through the carrying handle of the modular airborne weapons case. Secure the ejector snap to the triangle link on the jumpers left side. Ensure the opening gate is facing the jumper and the activating lever is fully seated over the ball detent. (This is the tandem load configuration.)

- If the MAWC has been rigged to be jumped as one of two single items of equipment, attach the ejector snap of the hook-pile tape lowering line as the outermost item of equipment on the left equipment ring, with the opening gate facing towards the jumper.

- If the MAWC has been rigged to be jumped as the only item of equipment, attach the ejector snap of the hook-pile tape lowering line to the left triangle link, with the opening gate facing towards the jumper.

HOOK-PILE TAPE LOWERING LINE (MWAC)

9-85. The JM will then grasp the ejector snap of the hook-pile tape lowering line and route it from front to back through the attachment strap (and attachment strap only) on the modular airborne weapons case. The JM will then attach the ejector snap to the triangle link on the jumpers left side with the opening gate facing toward the jumper's body. (This is the tandem load configuration.)

POST-HANG INSPECTION

9-86. Once the JM has completed hanging the equipment on the jumper, they complete a post-hang inspection to verify all of the attachments are properly attached and secured. At a minimum, the following is conducted:

- The snap hooks of the adjustable D-ring attaching straps are properly attached to the equipment rings with the opening gates facing towards the jumper, and the adjustable D-ring attaching strap is not twisted.
- (MAWC) The snap shackle is the outermost item of equipment on the left equipment ring, if rigged as part of a tandem load. Ensure that the locking pin is fully seated and the yellow safety lanyard is secured to the appropriate snap fastener (whichever creates the least amount of tension).
- (MAWC) Ensure that the upper tie-down tape is properly routed through the window on the slide fastener and tab thong, around the body of the MAWC, from back to front through the small cutaway portion of the equipment ring, is secured with a single or double loop bowknot on the lead edge of the MAWC, and is easily accessible to the jumper.
- (MAWC) Ensure that the HPTLL is properly routed through the attachment strap, its ejector snap is attached to the left triangle link with the opening gate facing towards the jumper, and the activating lever is fully seated.
- Ensure that the leg strap release assemblies are routed appropriately.
- If the jumper is exiting from the left paratroop door, the right adjustable leg strap will be routed around the right leg, and the left adjustable leg strap is placed around the modular Airborne weapon's case on the jumper's left side.
- If the jumper is exiting from the right paratroop door, the left adjustable leg strap will be routed around the jumper's left leg and modular Airborne weapon's case, and the right adjustable leg strap will not be used.

LATE HANG AND JMPI OF COMBAT EQUIPMENT

9-87. When the Airborne commander has decided to conduct late hang and JMPI, jumpers will attach equipment using the buddy system. After the equipment is properly attached, it must be inspected using the late hang JMPI sequence.

9-88. The only items to be inspected are the MAWC and the jumpable pack. The late hang JMPI sequence begins with the snap shackle of the modular Airborne weapon's case and ends with the ejector snap of the HPTLL.

MODULAR AIRBORNE WEAPON'S CASE RIGGED AS A TANDEM LOAD

9-89. The JM will first grasp the left pack closing flap of the reserve parachute with their left hand, palm facing the reserve parachute, with the thumb pointed down. The JM pushes out on the lead edge of the MAWC with their right forearm.

9-90. The inspection of the modular Airborne weapon's case begins with its point of attachment; the snap shackle. With the right thumb and index finger, rotate the snap shackle one quarter of a turn to the inside and conduct a visual inspection of the locking pin to ensure it is seated. Conduct a visual inspection to ensure the yellow safety lanyard is present and secured to the appropriate snap fastener. Now with the right hand, form

a fist leaving the index finger exposed and trace down the adjusting strap, ensuring that it is properly routed through all of the pouch attachment ladder system webbing until coming into contact with the friction adapter. Keep the right index finger in place and visually inspect for proper routing, ensuring the adjusting strap is routed through the buckle from top to bottom, then routed up over the bottom bar and under the top bar to keep the adjusting strap from slipping. Visually inspect to ensure all excess webbing is stowed under the pouch attachment ladder system webbing, with the tabbed portion of the adjusting strap secured above one of the pouch attachment ladder system webbing. If the free running end of the adjusting strap reaches the snap shackle, it must be S-folded or rolled, and secured in a retainer band that is girth hitched to the first rung of the pouch attachment ladder system webbing above the friction adapter.

9-91. With the right hand, form a knife-cutting edge, fingers and thumb extended and joined, palm facing skyward, and trace from front to rear along the bottom of the modular Airborne weapon's case to ensure the muzzle of the weapon is not protruding. The JM then lifts on the adjustable nose cone approximately three-to-four inches to ensure the pile tape of the adjustable nose cone is properly secured to the hook tape on the inside of the MAWC main pack body, and the nose cone securing straps are tightened.

9-92. Place the index finger of the right hand on the quick release buckle at the bottom of the closing flap. Trace up the slide fastener, when bypassing the compression straps and quick release buckles, visually inspect to ensure the free running ends have been S-folded, accordion folded, or rolled, and secured in their webbing retainers. The quick release buckles should be free of all cracked components. Secure. Continue to trace up the slide fastener ensuring it is secured with all teeth engaged, until making contact with the slide fastener and tabbed thong.

9-93. Leave the index finger in place and conduct a visual inspection of the upper spring stop to ensure the spring portion is present and serviceable.

9-94. With the index finger of the right hand, form a hook and insert it from back to front into the window created in the tabbed thong portion of the slide fastener and tabbed thong, and gently pull up on the slide fastener and tabbed thong to ensure it is secured by the snap fastener and the upper tie down tape is properly routed through it. Now, with the right hand form a knife-cutting edge, fingers and thumb extended and joined, palm facing the MAWC, trace down approximately 10-to-12 inches from the top of the modular Airborne weapon's case and give it a sharp slap, feeling for the forward assist of the M4/M16 series rifle or the charging handle of the M249 SAW.

9-95. With the index finger and thumb, pinch the upper tie down tape on the lead edge of the MAWC. Conduct a visual inspection to ensure the upper tie down tape is routed around the main body of the MAWC, through the small cutaway portion of the left equipment ring from rear to front, and secured on the lead edge of the MAWC with a single loop or double loop bow knot.

9-96. Lift up on the bottom of the reserve parachute and issue the jumper the command of "HOLD."

MOLLE

9-97. The JM will form fists with index fingers exposed and place both index fingers on the snap hooks of the adjustable D-ring attaching straps.

9-98. Since these are like items of equipment, either one can be inspected first. For the purpose of this talk-through, begin with the right adjustable D-ring attaching strap. Focus attention to the left hand. Conduct a visual inspection to ensure that the snap hook is not bent, cracked, corroded, or distorted out of shape, and the opening gate is facing away. With the index finger of the left hand, finger the opening gate one time to ensure that it has spring tension. With the left thumb, flip the free running end of the right adjustable D-ring attaching strap out of the way. Trace down the right adjustable D-ring attaching strap, ensuring that it is not cut, frayed, or burned until making contact with the triangle link. Bypass the triangle link and pick up the inspection of the attaching loops, ensuring that the white attaching loop is routed from bottom to top through the triangle link, the green attaching loop is routed from bottom to top through the white attaching loop, the red attaching loop is routed from bottom to top through the green attaching loop, and routed from bottom to top through the grommet in the female portion leg strap release assembly.

9-99. Place the index finger of the left hand on the single box "X" stitch on the release handle cross strap. Look at the release handle cable where it emerges from the release handle cross strap. Ensure the release

handle cable is properly routed through the red attaching loop and secured by the cable loop retainer. Leave the left index finger in place and with the right hand, conduct the same inspection on the left adjustable D-ring attaching strap until the right index finger rests on the single box “X” stitch.

9-100. Focus attention on the release handle. With the right index finger and thumb (index finger on top, thumb on the bottom) lift up gently on the release handle. Ensure the release handle and release handle cable is properly routed between the two plies of the release handle cross strap and the release handle is secured by the hook-pile tabs. Now form a hook with the right index finger and lift up on the release handle lanyard to ensure it is not twisted, cut, frayed, or misrouted around the equipment retainer strap or the release handle cross strap. Place the right index finger back on the single box “X” stitch. Now grasp the sides of the MOLLE and lay it down flat on the frame.

9-101. Place both index fingers back on the corresponding box “X” stitch on either side of the release handle cross strap. With both index fingers, simultaneously trace the equipment retainer straps down the outside of the pouch on the MOLLE until making contact with the box “X” stitches on either side of the adjustable cross strap. Leave the left index finger in place and with the index finger and thumb of the right hand, grasp the free running end of the adjustable cross strap and give it a tug to the right of the jumpmaster, ensuring that all the slack has been removed from the adjustable cross strap. Place the right index finger back on the single box “X” stitch and continue to trace the equipment retainer straps down until all fingers fall off.

9-102. Now grasp the sides of the MOLLE and rotate it up to approximately eye level. Inspect the equipment retainer straps to ensure they are routed through the slots at the top corners of the MOLLE frame and have not been twisted. Continue to rotate the MOLLE skyward and issue the jumper the command of “HOLD.

9-103. With both hands form fists, leaving the index finger exposed and route them from inside to outside under the adjustable shoulder carrying straps. Place the index fingers on the equipment retainer straps where they re-emerge from the slots at the top corners of the MOLLE. Continue the inspection of the equipment retainer straps as they route through the adjustable shoulder carrying straps from outside to inside. Ensure the equipment retainer straps are routed over the comfort pad and form an “X” configuration on the rear of the MOLLE and are not twisted, cut, or frayed. Bypass the girth hitch of the HPTLL and continue the inspection until all fingers rest on the friction adaptors and behind the two-to-three finger quick releases in the equipment retainer straps. Simultaneously, inspect the two-to-three finger quick releases by placing the index and middle finger of each hand, palms on the outside of the quick releases.

9-104. Visually inspect the free running ends of the equipment retainer straps to ensure they are S-folded or accordion folded, never rolled, and secured with either one turn of masking tape or two turns of retainer bands (one or the other, never both) and not secured to the quick releases. Conduct a visual inspection of the friction adaptors to ensure they are routed through the oval cutouts at the base of the MOLLE frame. With the index finger of each hand, lightly tap them to ensure they are secure.

9-105. With the thumb and index fingers of each hand, form an “O” around the base of the adjustable shoulder carrying straps. Simultaneously pull out to ensure they are properly secured to the MOLLE frame. Visually inspect the free running ends of the adjustable shoulder carrying straps to ensure they are S-folded or accordion folded, never rolled, and secured with either one turn of masking tape or two turns of retainer bands (one or the other never both). With the index fingers of each hand, lightly tap the free running ends of the adjustable shoulder carrying straps to ensure they are secure.

9-106. With the index finger of the right hand, place it just to the right of the girth hitch (as displayed to the jumpmaster) of the hook-pile tape lowering line. Visually inspect to ensure the girth hitch is properly routed north to south, south to north, but never east to west. With the right index finger trace the HPTLL, ensuring that the hook-pile tape lowering line is properly routed over the left adjustable shoulder carrying strap until making contact with the first set of hook-pile tabs. Visually inspect to ensure the hook-pile tabs are present and secured, and there are no S-folds protruding from the end of the retainer flap.

9-107. Continue to inspect down the retainer flap, ensuring that it is secured to the MOLLE frame by two sets of girth hitched retainer bands on either end of the retainer flap.

9-108. Continue to trace down until making contact with the second set of hook-pile tabs, once again ensure they are present and secured, and there are no S-folds protruding from the end of the retainer flap.

Continue to trace the HPTLL until the index finger protrudes between the attachment strap and the main body of the MAWC.

9-109. With the left hand, reach over the right forearm and grasp the trail edge of the MAWC and pull it forward. Inspect to ensure the HPTLL has been routed from front to rear through the attachment strap, and the attachment strap only. Remove the right index finger and place it on the hook-pile tape lowering line where it reemerges on the back of the MAWC. Trace the HPTLL until reaching the ejector snap. With the right hand, form a fist around the ejector snap.

9-110. With the right thumb, press in on the activating lever to ensure that it is properly seated over the ball detent, free of all foreign matter that will keep it from seating completely. Tug on the ejector snap to ensure it is properly secured. Turn the ejector snap one-quarter turn out to ensure the small tooth is present. Visually inspect the yellow safety lanyard to ensure that it is serviceable and it has not been wired, tied, or taped down.

9-111. Move back to the front of the jumper and issue the command of "RECOVER."

ALICE PACK

9-112. The JM will form fists with index fingers exposed and place both index fingers on the snap hooks of the adjustable D-ring attaching straps.

9-113. Since these are like items of equipment, either one can be inspected first. For the purpose of this talk-through, begin with the right adjustable D-ring attaching strap. Focus attention to the left hand. Conduct a visual inspection to ensure that the snap hook is not bent, cracked, corroded, or distorted out of shape, and the opening gate is facing away. With the index finger of the left hand, finger the opening gate one time to ensure that it has spring tension. With the left thumb, flip the free running end of the right adjustable D-ring attaching strap out of the way. Trace down the right adjustable D-ring attaching strap, ensuring that it is not cut, frayed, or burned, until making contact with the triangle link. Bypass the triangle link and pick up the inspection of the attaching loops and ensure that the white attaching loop is routed from bottom to top through the triangle link, the green attaching loop is routed from bottom to top through the white attaching loop, the red attaching loop is routed from bottom to top through the green attaching loop, and routed from bottom to top through the grommet in the female portion leg strap release assembly. Place the index finger of the left hand on the single box "X" stitch on the release handle cross strap. Look at the release handle cable where it emerges from the release handle cross strap. Ensure the release handle cable is properly routed through the red attaching loop and secured by the cable loop retainer. Leave the left index finger in place and with the right hand, conduct the same inspection on the left adjustable D-ring attaching strap until the right index finger rests on the single box "X" stitch.

9-114. Focus attention on the release handle. With the right index finger and thumb (index finger on top, thumb on the bottom) lift up gently on the release handle. Ensure the release handle and release handle cable is properly routed between the two plies of the release handle cross strap, and the release handle is secured by the hook-pile tabs. Now form a hook with the right index finger and lift up on the release handle lanyard to ensure it is not twisted, cut, frayed, or misrouted around the equipment retainer strap or the release handle cross strap. Place the right index finger back on the single box "X" stitch. Grasp the sides of the ALICE pack and lay it down flat on the frame.

9-115. Place both index fingers back on the corresponding box "X" stitch on either side of the release handle cross strap. With both index fingers, simultaneously trace the equipment retainer straps down the outside of the external cargo compartment on the ALICE pack until making contact with the box "X" stitches on either side of the adjustable cross strap. Leave the left index finger in place and with the index finger and thumb of the right hand, grasp the free running end of the adjustable cross strap and give it a tug to the right of the jumpmaster, ensuring that all the slack has been removed from the adjustable cross strap. Place the right index finger back on the single box "X" stitch and continue to trace the equipment retainer straps down until all fingers fall off.

9-116. Now, grasp the sides of the ALICE pack and rotate it up to about eye level. Look at the equipment retainer straps to ensure they are routed under the cushion portion and have not been twisted. Continue to rotate the ALICE pack skyward and issue the jumper the command of "HOLD."

9-117. Continue the inspection of the equipment retainer straps as they route through the envelope cushion. Ensure the equipment retainer straps form an “X” configuration on the rear of the ALICE pack and are not twisted, cut, or frayed. Bypass the girth hitch of the HPTLL and continue the inspection until all fingers rest on the friction adaptors and behind the two-to three-finger quick releases in the equipment retainer straps. Simultaneously, inspect the two-to-three finger quick releases by placing the index and middle finger of each hand, palms on the outside of the quick releases. Visually inspect the free running ends of the equipment retainer straps to ensure they are S-folded or accordion folded, never rolled, and secured with either one turn of masking tape or two turns of retainer bands (one or the other, never both) and not secured to the quick releases. With the index finger of each hand, lightly tap them to ensure they are secure.

9-118. With the thumb and index fingers of each hand form an “O” around the base of the adjustable shoulder carrying straps, ensure the free running ends are on top of both hands. Simultaneously pull out to ensure they are properly secured to the ALICE pack frame. Visually inspect the free running ends of the adjustable shoulder carrying straps to ensure they are S-folded or accordion folded, never rolled, and secured with either one turn of masking tape or two turns of retainer bands (one or the other, never both). With the index fingers of each hand, lightly tap the free running ends of the adjustable shoulder carrying straps to ensure they are secure.

9-119. With the index finger of the right hand, place it just to the right of the girth hitch (as displayed to the jumpmaster) of the hook-pile tape lowering line. Visually inspect to ensure the girth hitch is properly routed north to south, south to north, but never east to west. With the right index finger, trace the HPTLL, ensuring that the hook-pile tape lowering line is properly routed over the left adjustable shoulder carrying strap until making contact with the first set of hook-pile tabs. Visually inspect to ensure the hook-pile tabs are present and secured, and there are no S-folds protruding from the end of the retainer flap.

9-120. Continue to inspect down the retainer flap, ensuring that it is secured to the ALICE pack frame by two girth hitched retainer bands on either end of the retainer flap; one above and one below the horizontal frame support.

9-121. Continue to trace down until making contact with the second set of hook-pile tabs. Once again ensure they are present and secured, and there are no S-folds protruding from the end of the retainer flap. Continue to trace the HPTLL until the index finger protrudes between the attachment strap and the main body of the MAWC.

9-122. With the left hand, reach over the right forearm and grasp the trail edge of the MAWC and pull it forward. Inspect to ensure the HPTLL has been routed from front to rear through the attachment strap, and the attachment strap only. Remove the right index finger and place it on the HPTLL where it reemerges on the back of the MAWC. Trace the hook-pile tape lowering line until reaching the ejector snap. With the right hand, form a fist around the ejector snap.

9-123. With the right thumb, press in on the activating lever to ensure that it is properly seated over the ball detent, free of all foreign matter that will keep it from seating completely. Tug on the ejector snap to ensure it is properly secured. Turn the ejector snap one-quarter turn out to ensure the small tooth is present. Visually inspect the yellow safety lanyard to ensure that it is serviceable and it has not been wired, tied, or taped down.

9-124. Move back to the front of the jumper and issue the command of “RECOVER.”

ADJUSTABLE LEG STRAPS

9-125. After the jumper is fully rigged, the JM routes the male portion leg strap release assemblies around the jumper’s appropriate leg and attaches it to the female portion leg strap release assembly.

9-126. If the jumper is exiting from the left paratroop door, the right adjustable leg strap will be routed around the right leg, and the left adjustable leg strap is placed around the MAWC on the jumper’s left side.

9-127. If the jumper is exiting from the right paratroop door, the left adjustable leg strap will be routed around the jumper’s left leg and MAWC, and the right adjustable leg strap will not be used.

JMPI SEQUENCE FOR AIRPAC

Note. This JMPI sequence is for the front-mounted AIRPAC when jumped with a MAWC.

9-128. The JM inspects the AIRPAC as follows:

- Place the left hand on the snap hook for the right D-ring attaching strap and the right hand on the snap hook for the left D-ring attaching strap. Leave the right hand in place and focus attention on the left hand and the right D-ring attaching strap.
- With the index finger of the left hand, finger the opening gate to ensure it has spring tension and is properly attached to the right D-ring to the outside of the connector snap. Place the index and middle finger of the left hand from outside to inside behind the nylon portion of the D-ring attaching strap and trace down until the middle finger makes contact with the circular ring, ensuring the strap is not twisted, cut, or frayed.
- Bypass the circular ring and place the index finger on the red attaching loop. Visually inspect the circular release ring to ensure it has been routed through the circular ring and folded back against the nylon portion of the D-ring attaching strap. Ensure the red attaching loop has been routed bottom to top through the circular release ring and then through the grommet on the female portion of the leg strap release assembly. With the thumb and index finger, peel back on either the top or bottom corner of the female portion of the leg strap release assembly to further ensure the red attaching loop has been properly routed.
- Place the left index finger on the single “X” boxed stitch just below the circular ring. Conduct a visual inspection of the release handle cable to ensure it is properly routed under both plies of the release handle cross strap and through the red attaching loop. Conduct the same inspection on the left D-ring attaching strap.
- Leave the left index finger in place, and with the right hand gently lift up on the release handle to ensure it has been properly routed under both plies of the release handle cross strap and has been secured by the hook-pile tabs.
- Form a knife-edge with both hands, palms facing each other, and place them on the outer edge of the equipment retainer straps. Simultaneously trace down the equipment retainer straps until contact is made with the friction adapters. Leaving both hands in place, look at the friction adapters, ensuring the equipment retainer straps have been properly routed through them and the free running ends are secured by means of the webbing retainers.
- With either hand, carefully open the circular closing flap and hold it up and out of the way. This hand is now the control hand. Place the index finger of the working hand on the single “X” boxed stitch on the 6 o’clock set of equipment retainer straps. Visually inspect both friction adapters to ensure the free running ends of the equipment retainer straps are properly routed through them and are secured by means of the webbing retainers.
- Conduct the same inspection for the 9 o’clock and 3 o’clock set of friction adapters. Place the index finger of the working hand on the eyelet of the cotter pin.
- Ensure the white grommet securing loop has been routed through all three grommets, is not cut or frayed, and has been secured by the cotter pin.
- Close the circular closing flap, lift the AIRPAC to the jumper and issue the command, HOLD.
- With the left hand, grasp the hook-pile tape lowering line, palm facing the JM. Pull up if the short bridal is attached horizontally, or to the jumper’s left if it is attached vertically.
- Insert the index finger and middle finger of the right hand, from the jumper’s left to right, behind the locking D-ring. Ensure that it is properly attached to the triangle link and is locked into place.
- Trace up the short bridal, ensuring it is not twisted, cut, or frayed, until contact is made with the girth hitch of the hook-pile-tape lowering line.
- Place the right index finger on the girth hitch, ensuring the cotton buffer is present.
- Place the index finger and middle finger of the right hand from the jumper’s left, to just behind the short bridal on the opposite side of the girth hitch. Trace the short bridal until contact is made

with the triangle link, ensuring it is not twisted, cut, or frayed, paying special attention to the point of attachment at the triangle link.

- Leave the left hand in place and put the index finger of the right hand on the hook-pile tape lowering line where it emerges from the lowering line stow pocket. Ensure no excess of the hook-pile tape lowering line is protruding from the retainer flap. Trace the hook-pile tape lowering line until the index finger disappears behind the nylon chaff portion of the MAWC, ensuring it is not cut, frayed, or burned.
- Leave the right index finger in place and with the left hand grasp the trail edge of the MAWC and pull it toward the JM. Remove the right index finger and rotate it around to the backside of the MAWC and continue the inspection of the hook-pile tape lowering line where it emerges from the nylon chaffing.
- Trace the hook-pile tape lowering line to its point of attachment.
- With the thumb of the right hand, push in on the activating lever of the ejector snap to ensure it is properly seated over the ball detent. Ensure it is free of any foreign matter, and the opening gate is facing the jumper's body.
- With the thumb and index finger of the right hand, pinch off the yellow safety lanyard and trace it until fingers fall off the end, ensuring it is not wired, tied, or taped.
- Move to the front of the jumper and issue the command, SQUAT.

TECHNICAL INSPECTION FOR SIDE-MOUNT AIRPAC

9-129. The side-mount container is technically inspected and attached at the 20-minute time warning, and includes the following tasks:

Note. Five to six finger quick releases will depend on the item of equipment inside the side-mount AIRPAC.

- Ensure all visible container retaining straps are properly secured to their appropriate friction adapter. (All visible container retaining straps have a five-to-six finger quick release.)
- Ensure the free running ends of the container retaining straps are S-folded and secured to the quick-release loop by two turns of a retainer band.
- Ensure the slide fastener is secure.
- Ensure there is no excess in the fabric flap.
- Ensure packing material is present, if required, for the particular weapon system.

ADJUSTABLE LEG STRAPS

9-143. After the jumper is fully rigged, the JM routes the male portion leg strap release assemblies around the jumper's appropriate leg and attaches it to the female portion leg strap release assembly.

9-144. If the jumper is exiting from the left paratroop door, the right adjustable leg strap will be routed around the right leg, and the left adjustable leg strap is placed around the MAWC on the jumper's left side.

9-145. If the jumper is exiting from the right paratroop door, the left adjustable leg strap will be routed around the jumper's left leg and MAWC, and the right adjustable leg strap will not be used.

JMPI SEQUENCE FOR AIRPAC

Note. This JMPI sequence is for the front-mounted AIRPAC when jumped with a MAWC.

9-146. The JM inspects the AIRPAC as follows:

- Place the left hand on the snap hook for the right D-ring attaching strap and the right hand on the snap hook for the left D-ring attaching strap. Leave the right hand in place and focus attention on the left hand and the right D-ring attaching strap.
- With the index finger of the left hand, finger the opening gate to ensure it has spring tension and is properly attached to the right D-ring to the outside of the connector snap. Place the index and middle finger of the left hand from outside to inside behind the nylon portion of the D-ring attaching strap and trace down until the middle finger makes contact with the circular ring, ensuring the strap is not twisted, cut, or frayed.
- Bypass the circular ring and place the index finger on the red attaching loop. Visually inspect the circular release ring to ensure it has been routed through the circular ring and folded back against the nylon portion of the D-ring attaching strap. Ensure the red attaching loop has been routed bottom to top through the circular release ring and then through the grommet on the female portion of the leg strap release assembly. With the thumb and index finger, peel back on either the top or bottom corner of the female portion of the leg strap release assembly to further ensure the red attaching loop has been properly routed.
- Place the left index finger on the single "X" boxed stitch just below the circular ring. Conduct a visual inspection of the release handle cable to ensure it is properly routed under both plies of the release handle cross strap and through the red attaching loop. Conduct the same inspection on the left D-ring attaching strap.
- Leave the left index finger in place, and with the right hand gently lift up on the release handle to ensure it has been properly routed under both plies of the release handle cross strap and has been secured by the hook-pile tabs.
- Form a knife-edge with both hands, palms facing each other, and place them on the outer edge of the equipment retainer straps. Simultaneously trace down the equipment retainer straps until contact is made with the friction adapters. Leaving both hands in place, look at the friction adapters, ensuring the equipment retainer straps have been properly routed through them and the free running ends are secured by means of the webbing retainers.
- With either hand, carefully open the circular closing flap and hold it up and out of the way. This hand is now the control hand. Place the index finger of the working hand on the single "X" boxed stitch on the 6 o'clock set of equipment retainer straps. Visually inspect both friction adapters to ensure the free running ends of the equipment retainer straps are properly routed through them and are secured by means of the webbing retainers.
- Conduct the same inspection for the 9 o'clock and 3 o'clock set of friction adapters. Place the index finger of the working hand on the eyelet of the cotter pin.
- Ensure the white grommet securing loop has been routed through all three grommets, is not cut or frayed, and has been secured by the cotter pin.
- Close the circular closing flap, lift the AIRPAC to the jumper and issue the command, HOLD.

- With the left hand, grasp the hook-pile tape lowering line, palm facing the JM. Pull up if the short bridal is attached horizontally, or to the jumper's left if it is attached vertically.
- Insert the index finger and middle finger of the right hand, from the jumper's left to right, behind the locking D-ring. Ensure that it is properly attached to the triangle link and is locked into place.
- Trace up the short bridal, ensuring it is not twisted, cut, or frayed, until contact is made with the girth hitch of the hook-pile-tape lowering line.
- Place the right index finger on the girth hitch, ensuring the cotton buffer is present.
- Place the index finger and middle finger of the right hand from the jumper's left, to just behind the short bridal on the opposite side of the girth hitch. Trace the short bridal until contact is made with the triangle link, ensuring it is not twisted, cut, or frayed, paying special attention to the point of attachment at the triangle link.
- Leave the left hand in place and put the index finger of the right hand on the hook-pile tape lowering line where it emerges from the lowering line stow pocket. Ensure no excess of the hook-pile tape lowering line is protruding from the retainer flap. Trace the hook-pile tape lowering line until the index finger disappears behind the nylon chaff portion of the MAWC, ensuring it is not cut, frayed, or burned.
- Leave the right index finger in place and with the left hand grasp the trail edge of the MAWC and pull it toward the JM. Remove the right index finger and rotate it around to the backside of the MAWC and continue the inspection of the hook-pile tape lowering line where it emerges from the nylon chaffing.
- Trace the hook-pile tape lowering line to its point of attachment.
- With the thumb of the right hand, push in on the activating lever of the ejector snap to ensure it is properly seated over the ball detent. Ensure it is free of any foreign matter, and the opening gate is facing the jumper's body.
- With the thumb and index finger of the right hand, pinch off the yellow safety lanyard and trace it until fingers fall off the end, ensuring it is not wired, tied, or taped.
- Move to the front of the jumper and issue the command, SQUAT.

TECHNICAL INSPECTION FOR SIDE-MOUNT AIRPAC

9-147. The side-mount container is technically inspected and attached at the 20-minute time warning, and includes the following tasks:

Note. Five to six finger quick releases will depend on the item of equipment inside the side-mount AIRPAC.

- Ensure all visible container retaining straps are properly secured to their appropriate friction adapter. (All visible container retaining straps have a five-to-six finger quick release.)
- Ensure the free running ends of the container retaining straps are S-folded and secured to the quick-release loop by two turns of a retainer band.
- Ensure the slide fastener is secure.
- Ensure there is no excess in the fabric flap.
- Ensure packing material is present, if required, for the particular weapon system.

JUMPMaster PERSONNEL INSPECTION, MC-7

9-148. Prior to inspecting the jumper, the jumpmaster moves behind the jumper and opens the main curved pin protector flap. The JM next disconnects the universal static line snap hook from the outer static line stow bar, insuring that the spring opening gate has spring tension. The jumpmaster removes all excess static line from the static line slack retainer band, and routes the universal static line modified over the shoulder corresponding with the door that the jumper is to exit.

9-149. The jumpmaster secures the universal static line snap hook to the carrying handle of the MC-7 reserve parachute, with the spring opening gate facing towards the jumper. Finally, the JM removes the top

and bottom tuck tabs on the reserve, taking care to ensure that both side tuck tabs remain secure. If the canopy release assembly cover plate is activated or the side tuck tabs become unsecured, the jumpmaster notifies a rigger. The jumpmaster may now begin the inspection. After the jumpmaster has completed the JMPI, these components will be placed back into jump configuration.

ADVANCED COMBAT HELMET (FRONT)

9-150. Place both hands, fingers and thumbs extended and joined, fingers pointing skyward, palms facing the jumper on the right side of the advanced combat helmet. The left hand is the control hand; the right hand is the working hand. With the working hand, trace across the rim of the advanced combat helmet, feeling for any sharp or protruding edges that may cut or damage the jumper's universal static line modified upon exiting the aircraft. Once the hands are parallel, place the thumbs on the rim of the advanced combat helmet and tilt the jumper's head to the rear. Conduct a visual inspection to ensure the three suspension pads are present, flush with the rim, and the two oval pads are covering the bolt ends.

9-151. Place the right index finger on the front left adjustable buckle to ensure it is free of all cracked components, is serviceable, the front left adjustable strap is properly routed through it, and the free running end is secured in the webbing retainer. Trace the front left adjustable strap down. Ensure it is not twisted, cut, or frayed to the chinstrap fastener, ensure it is free of all cracked components and properly secured. Trace the long portion chinstrap, under the jumper's chin to ensure it is not twisted, cut, or frayed, to where it is sewn into the front right adjustable strap. Trace the front right adjustable strap up, ensure it is not twisted, cut, or frayed, to the front right adjustable buckle. Ensure it is free of all cracked components, is serviceable, the front right adjustable strap is properly routed through it, and the free running end is secured in the webbing retainer. Remove the right index finger and place it on the right side of the short portion chinstrap. Trace the short portion chinstrap across the front of the jumper's chin, ensure it is not twisted, cut, or frayed, and drop both hands.

CANOPY RELEASE ASSEMBLY

9-152. Lean to the right side of the jumper and with the left hand grasp the right riser assembly just above the No. 1 (large) riser release ring, thumb down and knuckles skyward. Rotate the riser assembly to the outside and count the rows of exposed stitching on the jumper's right diagonal back strap. Keeping this number in mind, ensure that the diagonal back strap keeper is properly routed through the sizing channel and the snap fastener is secure by inserting the right index finger, from back to front, between the sizing channel and diagonal back strap keeper, simultaneously pressing on the snap fastener with the right thumb. Now remove the right hand and rotate the riser assembly back towards the jumper. With the index finger and thumb of the right hand, grasp the No. 1 riser release ring. Look at the point of attachment to ensure it is not cut, frayed, or burned, and that the No. 1 (large) riser release ring is not bent, cracked, or corroded, and not oval. With the index finger and thumb of the right hand, rotate the No. 1 riser release ring one-quarter turn to ensure that it has freedom of movement.

9-153. Now conduct the same inspection of the No. 2 (medium) and No. 3 (small) release assembly rings. Remove the index finger and thumb of the right hand and conduct a visual inspection of the canopy release assembly to ensure that the No. 2 release assembly ring is properly routed from bottom to top through the No. 1 riser release ring, the No. 3 release assembly ring is properly routed from bottom to top through the #2 release assembly ring, and the white soft loop is properly routed from bottom to top through the No. 3 release assembly ring. Look at the white soft loop to ensure it is not cut, frayed, or burned, and that the locking bar of the girth hitch is visible and facing up. Now conduct a visual inspection of the pull-tab to ensure that it is present. Look at the canopy release assembly cover plate to ensure that it is flush, properly assembled, and free of any foreign material.

9-154. Now rotate the canopy release assembly to the outside. With the index finger and thumb of the right hand, pinch off the webbing tab, giving it a gentle tug to ensure that it is properly attached. Drop both hands and lean to the left side of the jumper. Now with the right hand, grasp the left riser assembly just above the No. 1 riser release ring, thumb down and knuckles skyward. Rotate the riser assembly to the outside and count the rows of exposed stitching on the jumper's left diagonal back strap, ensuring they are the same as the right diagonal back strap. Ensure the diagonal back strap keeper is properly routed through the sizing channel and the snap fastener is secure by inserting the left index finger between the sizing channel and

diagonal back strap keeper, simultaneously pressing on the snap fastener with the left thumb. Now remove the left hand and rotate the riser assembly back towards the jumper. Focus attention on the No. 1 riser release ring and conduct the same inspection of the canopy release assembly in its entirety. Drop both hands and move to the front of the jumper.

MAIN LIFT WEB AND CHEST STRAP

9-155. Now place both hands, fingers and thumb extended and joined, palm facing the jumpmaster behind the jumper's main lift web, from outside to inside just below the canopy release assembly. Leave the right hand in place. Look at the left hand and the right main lift web. First, make note of which of the three sizes the main lift web is configured. Keep this in mind and ensure the main lift web tuck tab assembly is properly assembled and the snap fastener is secure. With the left hand, trace down the main lift web, ensure it is not twisted, cut, or frayed, until making contact with the main lift web adjuster. Leave the left hand in place. Look at the right hand and conduct the same inspection. Ensure the left main lift web tuck tab assembly is in the same location as the right main lift web tuck tab assembly. Leave the right hand in place.

9-156. Look at the chest strap to ensure that it is not misrouted around the left main lift web. With the left hand palm facing the reserve parachute, grasp the carrying handle. Insert the right hand, fingers and thumb extended and joined, fingers pointing down, palm facing the jumpmaster, from top to bottom behind the chest strap next to where it is sewn into the left main lift web. Trace the chest strap, ensure that it is not twisted, cut, or frayed, until making contact with the chest strap friction adapter. Visually inspect to ensure it has a two-to-three finger quick release, is secured in its webbing retainer, the free running end has been S-folded or accordion folded, not rolled, and secured in its webbing retainer with the tab portion towards the chest strap friction adapter. Continue to trace the chest strap, ensure it is not twisted, cut, or frayed, to where it is sewn into the right main lift web. Leave the right hand in place

WAISTBAND

9-157. Remove the left hand, move to the right side of the jumper. Insert the left hand, fingers and thumb extended and joined, fingers pointing skyward, palm facing the jumpmaster, from bottom to the top behind the waistband next to where it is sewn to the pack tray. Look at the waistband where it is sewn to the pack tray to ensure it is secured to the pack tray by a box "X" stitch with at least 50 percent of the stitching present. Trace the waistband forward, ensure it is not twisted, cut, frayed, or misrouted behind the horizontal back strap or right main lift web.

9-158. Continue tracing the waistband forward until the right waistband retainer rests in the palm of the left hand. Leave the left hand in place. Remove the right hand from behind the chest strap and insert it fingers and thumb extended and joined, fingers pointing skyward, palm facing the jumpmaster, from bottom to top behind the reserve parachute so the left waistband retainer rests in the palm of the right hand. Make fingertip to fingertip contact, and conduct a physical inspection to ensure the waistband is not twisted, cut, or frayed, and has been routed through both waistband retainers. Leave the left hand in place. With the right hand continue to trace the waistband back. Ensure it is not twisted, cut, frayed, and has not been misrouted behind the left main lift web, until the metal adjuster rests in the palm of the right hand. Remove the left hand from behind the reserve parachute and insert the index and middle fingers from top to bottom into the quick release formed by the waistband. Ensure it is no more than three fingers, no less than two, and it is not a false quick release. Remove the index and middle fingers from the quick release and with the index finger and thumb of the left hand, pinch off the free running end of the waistband where it emerges from the metal adjuster. Trace the free running end of the waistband to ensure it is not cut, torn, or frayed, and is easily accessible to the jumper, until the fingers fall off the end.

9-159. With the left hand, palm facing the reserve parachute, grasp the carrying handle and look at the right hand and the waistband adjuster panel. With the right hand, trace the waistband adjuster panel back, ensure it is not twisted, cut, or frayed, and has not been misrouted behind the horizontal back strap to where it is sewn to the pack tray. Ensure it is properly secured to the pack tray by a box "X" stitch with at least 50 percent of the stitching present.

MC-7 RESERVE

9-160. Remove the right hand and move in front of the jumper. Look at the left connector snap. With the index finger of the right hand, finger the opening gate one time to ensure it is properly secured to the left D-ring, has spring tension, has not been safetied, and the opening gate is facing the jumper with the butterfly portion to the outside. With the index finger of the right hand, sweep down the backside of the reserve riser, feeling for the pile tape to ensure the riser is not being pulled out of the pack tray.

9-161. Simultaneously, conduct a visual inspection of the box stitch below the connector snap on the reserve riser to ensure it is present and not torn, cut, or frayed. With the left hand, pull up and out on the carrying handle of the reserve parachute. Insert the right index finger into the Army Parachute Log Record stow pocket and conduct a physical and visual inspection to ensure an Army Parachute Log Record is present. Remove the right index finger and allow the reserve to return to its natural down position. Transfer control of the carrying handle to the right hand, palm facing the reserve. With the left hand, conduct the same inspection of the right connector snap and reserve riser. Remove the right hand and with the left hand, form a knife-cutting edge, palm facing the jumpmaster, and sweep the carrying handle and universal static line snap hook towards the jumper. Rotate the left hand down next to the rip cord handle, place the left thumb on the top right corner of the rip cord assembly, and apply inward pressure.

9-162. Conduct a visual inspection of the top tuck tab to ensure a directional arrow is present and pointing skyward. With the thumb and index finger of the right hand, pinch off the top tuck tab and gently pull it down. Take care to ensure the side tuck tabs remains secured. Expose the curved pin and reserve closing loop. Place the left thumb on top of the top tuck tab and apply inward pressure. Place the right index finger on the upper portion of the curved pin and trace it down, ensuring it is not bent, cracked, or corroded, and is properly routed through the reserve closing loop to its point of attachment; the curved pin lanyard. Leave the right index finger in place. Conduct a visual inspection of the reserve closing loop to ensure it is not cut, frayed, or burned, and the curved pin is not puncturing it in any manner. Conduct a visual inspection of the grommet to ensure it is not bent, cracked, or corroded. Insert the index finger of the right hand from top to bottom behind the rip cord assembly and trace down the curved pin lanyard with the meaty portion of the finger to ensure it is not twisted, cut, or frayed, and it is properly attached to the rip cord assembly by reinforced stitching. Withdraw the right index finger.

9-163. With the thumb and index finger of the right hand, pinch off the bottom tuck tab and gently lift it up. Take care to ensure the side tuck tabs remains secure. Expose the curved pin and reserve closing loop. Place the left thumb on top of the bottom tuck tab and apply inward pressure. Place the right index finger on the tip of the curved pin and conduct the same inspection to the reinforced stitching. Withdraw the right index finger. An overall inspection of the reserve parachute must be conducted to ensure it is free of grease, oil, dirt, mud, tears, and exposed canopy. Place both hands, fingers and thumbs extended and joined, palms facing the reserve parachute, on the top right corner. Don't cover up the seam. The left hand is the control hand, the right hand is the working hand. With head and eyes six-to-eight inches from the working hand, trace across the top pack closing flap and down the left pack closing flap. Trace across the bottom pack closing flap, turn the working hand over so the pinky finger leads the way and trace up the right pack closing flap until skin-to-skin contact is made with the control hand. Raise the control hand up out of the way and trace where the control hand had been. Raise the reserve parachute to the jumper and issue the command of "HOLD SQUAT."

LEG STRAPS

9-164. Form fists with both hands, leaving the index and middle fingers extended and joined. Insert the index and middle finger of each hand from outside to inside behind the leg straps, below the aviator's kit bag where the natural pocket is formed. Simultaneously slide both hands back towards the saddle to ensure the leg straps are not crossed. Leave the right hand in place.

9-165. With the left hand trace the right leg strap up, ensure it is not twisted, cut, or frayed, and the excess webbing is secured in the webbing retainer, until contact is made with the quick-fit V-ring. With the thumb of the left hand, press in on the activating lever of the ejector snap to ensure it is properly seated over the ball detent and is free of foreign matter which could prevent it from seating completely. Leave the left hand and left thumb in place and look at the left leg strap.

9-166. With the right hand trace the left leg strap up, ensure it is not twisted, cut, or frayed, the excess webbing is secured in the webbing retainer, is properly routed through the exposed carrying handle of the aviator's kit bag, over the bottom and under the top until contact is made with the quick-fit V-ring. With the thumb of the right hand, press in on the activating lever of the ejector snap to ensure it is properly seated over the ball detent and is free of foreign matter which could prevent it from seating completely. Leave both hands and thumbs in place and rock back onto the heels. Conduct a visual inspection to ensure the aviator's kit bag is present, has not been reversed, and the re-enforced sewn portion is facing away from the jumper. Once satisfied with the inspection, stand up in front of the jumper and issue the command, "RECOVER."

UNIVERSAL STATIC LINE MODIFIED

9-167. With the right hand grasp the universal static line snap hook. Open the right hand and let the universal static line snap hook rest in the palm. Place the index finger of the left hand on the girth hitch of the universal static line modified. Ensure the girth hitch has not been reversed and the green identification marking thread is present. Remove the index finger and place the index finger of the left hand in the vicinity of the rivet pin. Don't cover it up, but ensure it is present and free of rust and corrosion. Remove the index finger. With the right hand, regrasp the universal static line snap hook and hold it perpendicular to the reserve parachute with the spring opening gate facing towards the jumper.

9-168. With the left hand, palm facing the jumper, thumb pointing downward, grasp the universal static line modified above the universal static line snap hook at the end of the double sewn portion. Rotate the universal static line modified down and to the jumper's right, and push it toward the universal static line snap hook. Visually inspect inside the girth hitch to ensure it is free of all cuts, frays, and burns. With the index finger or thumb of the right hand, push the girth hitch back towards the universal static line snap hook and again visually inspect inside the girth hitch for any cuts, frays, or burns. Redress the girth hitch down around the narrow portion of the universal static line snap hook and release the universal static line modified with the left hand. Since the universal static line modified is routed over the right shoulder; with the index finger and thumb of the right hand, form an "O" around the universal static line modified just above the universal static line snap hook. (If the universal static line modified is routed over the jumpers left shoulder, form the "O" with the left hand.) Raise the right hand (left hand) up, simultaneously inspecting the universal static line modified as it passes through the "O" to ensure it is free of all cuts, frays, or burns.

9-169. Raise the right hand (left hand) as high as it can go, or until resistance is felt and issue the jumper the command, "TURN." Once the jumper has completed the turn, the right hand (left hand) should have been raised high enough to keep the universal static line modified tight between the hand and the first stow. Place the index finger, or index and middle finger of the left hand (right hand) behind the universal static line modified below the "O" making skin-to-skin contact. Trace the universal static line modified down, ensure it is free of all cuts, frays, burns, and it has not been misrouted under or through either riser assembly, to the first stow. With either hand, form a bite in the universal static line modified and look at the static line slack retainer loop. Ensure it is serviceable and a static line slack retainer band is attached. Place the bite on top of the pack tray and control it with either hand, preferably the nondominant hand. This hand becomes the control hand. The opposite hand becomes the working hand. With the index finger and thumb of the working hand, pinch off the first stow and pull it one-to-two inches toward the center of the pack tray. Look behind the first stow and ensure the universal static line modified is free of cuts, frays, or burns, and has not been misrouted around the static line stow bar. Release the first stow and let it pop back into place.

Note. When tracing away from the body, either the index finger or thumb may be used. However only the index finger can be used when tracing towards the body.

9-170. Insert the index finger or thumb of the working hand from bottom to top behind the first strand of the universal static line modified, as close as possible to the first stow. Trace the first strand of universal static line modified, ensure that it is free of all cuts, frays, or burns, to the second stow. With the index finger and thumb of the working hand, pinch it off, pull one-to-two inches towards the center of the pack tray, and conduct the same inspection. Place the index finger or thumb of the working hand from bottom to top behind the second strand of universal static line modified, and trace it to ensure it is not cut, frayed, or burned.

9-171. Continue to inspect the universal static line modified in the same manner to the main curved pin cover. Ensure the last strand of universal static line modified is routed from the right outer static line stow bar. With the index finger of the working hand, gently lift up on the main curved pin cover. Inspect the main curved pin attaching loop to ensure that it is properly attached to both the universal static line modified and the main curved pin, and is free of all cuts, frays, or burns. With the index finger of the working hand, trace the main curved pin from its point of attachment to ensure it is not bent, cracked, or corroded, is properly routed from left to right through the main closing loop, and is fully seated pointing generally in the 3 o'clock position, to the end of the main curved pin. Leave the index finger in place. Visually inspect the main closing loop to ensure it is not, cut, frayed, or burned, and the main curved pin is not puncturing it in any manner. Conduct a visual inspection of the grommet to ensure it is not bent, cracked, or corroded. With the index finger and thumb of the working hand, gently lift up on the main curved pin protector flap and conduct a visual inspection of the main closing loop, ensure it is not cut, frayed or burned, and the grommet is not bent, cracked, or corroded. Stand up behind the jumper.

ADVANCED COMBAT HELMET (REAR)

9-172. Place both hands, fingers and thumbs extended and joined, pointing skyward, palms facing the jumper, on the left side of the advanced combat helmet. The left hand is the control hand and the right hand is the working hand. With the working hand, trace across the rim of the advanced combat helmet, feeling for any sharp or protruding edges that may cut or damage the jumper's universal static line modified upon exiting the aircraft. Once the hands are parallel, place the thumbs on the rim of the advanced combat helmet and tilt the jumper's head forward. Conduct a visual inspection to ensure the oval pads are covering the bolt ends and the rear trapezoid pad is flush with or protruding slightly past the rim of the advanced combat helmet no more than half an inch.

9-173. Place the right index finger on the right rear adjustable buckle. Ensure it is free of all cracked components and is serviceable, the right rear adjustable strap is properly routed through it, and the free running end is secured in the webbing retainer. Trace the right rear adjustable strap down, ensure it is not twisted, cut, or frayed, until contact is made with the long portion chin strap. Leave the right index finger in place. Place the left index finger on the left rear adjustable buckle and conduct the same inspection. Leave the left index finger in place. Conduct a visual inspection of the nape pad to ensure it is present, secure, serviceable, and has not been reversed.

RISER ASSEMBLIES AND PACK TRAYS

9-174. Reach forward over the jumper's shoulders and grasp a riser assembly in each hand just above the No. 1 (large) riser release rings. Since these are like items of equipment, either riser assembly can be inspected first. However, for this talk through begin the inspection with the left riser assembly. Give the left riser assembly a sharp tug to the rear. Open the left hand to form an "L." Apply upward pressure with the left thumb and trace the riser assembly rearward to where it disappears into the main pack tray, insuring it is not twisted, cut, or frayed. Leave the left hand in place and with the right hand, conduct the same inspection on the right riser assembly. Ensure an Army Parachute Log Record is present in either riser assembly.

9-175. An overall inspection of the pack tray must be conducted to ensure the pack tray is free of grease, oil, dirt, mud, or tears. Place both hands, fingers and thumbs extended and joined, palms facing the pack tray, on the top left corner of the pack tray. The left hand is the control hand and the right hand is the working hand. With the head and eyes six-to-eight inches away from the working hand, trace across the top pack closing flap, down the right pack closing flap, and across the bottom pack closing flap. Turn the working hand over so the pinky finger leads the way and trace up the left pack closing flap until skin-to-skin contact is made with the control hand. Raise the control hand up out of the way and trace where the control hand had been. With both hands, fingers and thumbs extended and joined, palms facing the jumpmaster, issue the command, "ARCH YOUR BACK."

DIAGONAL OR HORIZONTAL BACK STRAPS

9-176. Insert both hands behind the diagonal back strap just below the diagonal back strap guide. Look at the diagonal back strap retainers, making sure they are properly sewn to the pack tray by the box "X" stitch. Now pull out on the diagonal back straps to expose the diagonal back strap guide to ensure that it is present

and serviceable. With the left hand, trace down the diagonal back strap to ensure it is not twisted, cut, or frayed to the back strap adjuster. Grasp the back strap adjuster with the left hand. This hand becomes the control hand and the left hand will remain here until the inspection is complete. Now look at the right hand and the right side of the jumper. With the right hand trace down the diagonal back strap, ensure it is not twisted, cut, or frayed. Bypass the back strap adjuster and pick up the inspection of the horizontal back strap.

9-177. Trace down, ensure it is not twisted, cut, or frayed, and nothing is misrouted behind it, until it disappears into the right main lift web. Withdraw the right hand from under the horizontal back strap and reinsert it, fingers and thumb extended and joined, fingers pointing skyward, palm facing the jumpmaster, from bottom to top behind the horizontal back strap where it reemerges from the right main lift web. Issue the jumper the command of “BEND.” Place the left shoulder on the bottom pack closing flap and push up on the bottom of the pack tray. Simultaneously, with the left hand pull down on the back strap adjuster. With head and eyes about six-to-eight inches away, trace the horizontal back strap across the small of the jumper’s back until the right pinkie finger makes contact with the left main lift web.

9-178. The horizontal back strap is inspected to ensure that it is not twisted, cut, or frayed, that the horizontal back strap retainers are routed over the horizontal back strap, under and over the horizontal back strap keeper, secured to themselves with directional snap fasteners, and that nothing is misrouted behind the horizontal back strap. Withdraw the right hand from behind the horizontal back strap and reinsert it from top to bottom, behind the horizontal back strap above the waist band adjuster panel. Trace down the horizontal back strap to where it reemerges from behind the left main lift web. Trace back up the horizontal back strap, ensuring it is not twisted, cut, or frayed, and nothing is misrouted behind it until making skin-to-skin contact with the left hand. Remove the right hand and get the left hip to the jumper’s head.

SADDLE

9-179. Now place the fingertips of the right hand, fingers and thumb extended and joined, palm facing the jumper, in the vicinity of the lower portion of the jumper’s left main lift web adjuster. Trace down the lower portion of the left main lift web transitioning to the jumper’s saddle, ensuring it is not twisted, cut, or frayed, been inverted, and that neither leg strap has been misrouted around the saddle. Continue to trace until making contact with the main lift web adjuster on the jumper’s right side. Reach back, get a hand full of air, and issue the jumper that good seal of approval by tapping the jumper on the buttocks and issuing the command, “RECOVER.”

Note. Place the jumper into jump configuration.

9-180. After the jumpmaster has completed their JMPI, the JM will place the jumper into jump configuration. The jumpmaster will insert the top and bottom tuck tabs, taking care to ensure the side tuck tabs remain secure. If the side tuck tabs become unsecure, the jumpmaster will notify a rigger. The jumpmaster will trace the universal static line modified from the universal static line snap hook to ensure that the universal static line modified is routed over the shoulder corresponding with the door the jumper is to exit. Once behind the jumper, the jumpmaster will remove all slack from the universal static line modified and stow it in the static line slack retainer band. The jumpmaster will ensure the main curved pin is pointed generally in the 3 o’clock position and is fully seated. Lastly, the jumpmaster will reinsert the main curved pin protector flap into the tuck flap.

INSPECTION OF COMBAT EQUIPMENT

9-181. Ensure the PDB is symmetrical and the weight is balanced as best as possible; the compression straps and zippers are secured properly, the top section is filled out, and the attaching loops are centered on the container. The inspection of the following areas of the PDB must be completed before attaching.

9-182. Stand in front of the parachute drop bag with the shoulder straps facing away from the jumpmaster. Begin the inspection of the PDB with its point of attachment, the adjustable D-ring attaching straps. These are like items of equipment, so either can be inspected first. However, for the purpose of this talk though, begin with the right adjustable D-ring attaching strap.

9-183. With both hands, form fists with both index fingers exposed. Place both index fingers on the snap hooks of the adjustable D-ring attaching straps. Focus attention to the left hand and the right adjustable D-ring attaching strap. Conduct a visual inspection to ensure that the snap hook is not bent, cracked, or corroded, and that the opening gate is facing away from the jumpmaster.

9-184. With the left index finger, function the opening gate one time, ensuring it has spring tension. Sweep the friction adapter one time with the left thumb to ensure the nylon portion of the adjustable D-ring attaching strap is properly routed through it. With the left thumb, flip the excess webbing of the adjustable D-ring attaching strap out of the way and place the left index finger on the black intermittent stitching just below the snap hook. Trace the adjustable D-ring attaching strap, ensuring that it is not cut or frayed, until making contact with the triangle link. Conduct a visual inspection to ensure it is not bent, cracked, or corroded.

9-185. Bypass the triangle link and pick up the inspection of the black attaching loop. With the left index finger, trace down the attaching loops to ensure that the black attaching loop is properly routed from bottom to top through the triangle link, and the white attaching loop is properly routed from bottom to top through the black attaching loop. With the left thumb and index finger, rotate the female portion leg strap release assembly away from the jumpmaster, ensuring the red attaching loop is properly routed from bottom to top through the white attaching loop, and the red attaching loop is properly routed from bottom to top through the grommet of the female portion leg strap release assembly. Now release it and let it return to its natural position.

9-186. Place the left index finger on the box “X” stitch on the right side of the release handle cross strap. Leave the left index finger in place and with the right hand conduct the same inspection on the left adjustable D-ring attaching strap until the right index finger rests on the box “X” stitch.

9-187. Now, focus attention on the release handle. With the thumb and index finger of the right hand (index finger on top thumb on bottom) pinch off the release handle one-to-two inches from the release handle cross strap and gently lift up. Ensure the release handle is properly routed between the two plies of the release handle cross strap and secured by the hook-pile tabs. Simultaneously inspect the center securing strap to ensure it is not misrouted through the release handle cross strap. Next, conduct a visual inspection to ensure that the center securing strap is connected and that it is not twisted, cut, torn, or frayed, and the free running ends are secured in their webbing retainers. Now release the release handle and let it return to its natural position. Form a hook with your right index finger and insert it into the release handle lanyard from back to front. Lift up on the release handle lanyard to ensure it is not twisted, cut, frayed, or misrouted around the release handle cross strap. Remove the index finger and allow the release handle lanyard to return to its natural position. Place the right index finger back on the box “X” stitch.

9-188. With the left index finger, follow the right release handle cable from where it emerges from the release handle cross strap, ensure it passes through the red attaching loop and the free running end enters the stowage flute. Ensure the female portion of right leg strap release assembly is not upside down and continue inspecting the strap until encountering the fastex buckle; ensure it is free of all cracked components, properly assembled, and is serviceable.

9-189. Insert the left hand, palm facing up, behind the right female portion leg strap release assembly just above the fastex buckle friction adapter. With the left thumb, sweep the friction adapter to ensure the strap is properly routed through it. Now continue tracing the right leg strap release assembly to ensure it has no twists and the excess webbing is stowed properly in the webbing retainer. Continue inspecting the leg strap release assembly until it terminates at its attaching point, ensuring it is not cut or torn at the reinforced box stitching.

9-190. Now place the left index finger back on the right box “X” stitch of the release handle cross strap and focus attention on the right hand. With the right hand, conduct the same inspection of the left release handle cable and left leg strap release assembly. After reaching the point of attachment of the left leg strap release assembly, Grasp the left leg strap release assembly with the right hand and flip the PDB onto its front. The right hand now becomes the control hand.

9-191. Pick up the inspection where the hook-pile tape lowering line attaches to the PDB. Visually inspect that the lowering line is girth hitched around the “V-ring. With the left hand give the HPTLL a tug, ensuring it is secured to the attaching point. With the left index finger trace the hook-pile tape lowering line, ensuring it enters the retainer flap on the jumper’s right side. Inspect the hook-pile tabs, ensuring that they are secure and serviceable, and there is no accordion-folded lowering line protruding from the retainer flap.

9-192. Now with the index finger and thumb of the left hand, pinch off the retainer flap just after the hook-pile tabs and trace along the retainer flap to ensure a doubled-over retainer band is present. Continue to trace to the opposite side of the retainer flap and inspect the second set of hook-pile tabs in the same manner. Ensure the HPTLL exits the retainer flap on the jumper's left side.

9-193. Now leave the left hand in place and with the right hand, palm facing up, continue to inspect the HPTLL to the one-inch paper tape securing the yellow safety lanyard. Ensure the one-inch paper tape is present and not excessive by sweeping it one time with the right thumb. Continue tracing to the ejector snap and ensure there is a doubled-over heavyweight retainer band on the activating lever. Next, press down with the right thumb on the activating lever, ensuring it is properly seated over the ball detent, and is free of all matter which could prevent it from seating completely. Rotate the ejector snap so the ball detent is visible from the side and ensure it is seated properly in the activating lever. Visually inspect the opening gate in order to ensure it is closed properly, and the small tooth is present and serviceable.

9-194. Transition to the jumper: Inspection of the jumper is the same as a noncombat equipped jumper all the way though the inspection of the main lift webs.

EXPOSED WEAPON

9-195. Start the inspection as normal and continue until reaching the main lift web adjusters. Visually check the jumper's left side for a weapon. Visually inspect the chest strap to ensure it has not been misrouted around the left main lift web and is properly routed underneath the weapon sling. Now with the left hand, palm facing the reserve, grasp the reserve carrying handle. Keep the left hand in place as the control hand. Place the right index and middle finger on the weapon sling and trace the sling over the top of the chest strap until it disappears underneath the left main lift web. Pick up the inspection of the weapon sling as it reemerges over the jumper's shoulder. Continue to trace the weapon's sling to its attachment point on the butt stock. Give the sling a tug up to ensure it is properly attached to the weapon. Now, with the index finger of the right hand, form a hook and give the quarter-inch cotton webbing a tug to make sure it is properly secured. Inspect the quarter-inch cotton webbing, ensuring it is routed through a sizing channel and secured with a bowknot. Ensure the quarter-inch cotton webbing is not routed around the diagonal back strap or riser assembly, and is located between the diagonal back strap retainer and the pack tray

9-196. With the right hand, palm open, trace down to the pistol grip and slap the pistol grip, ensuring it is pointing toward the rear of the jumper. Slide the right hand down behind the jumper's arm and slap the end of the magazine to ensure it is fully seated in the magazine well. Drop down to the weapon's lower sling attaching point. Give the sling a tug up and ensure it is properly secured to the weapon. Now with the index finger and middle finger of the right hand, trace up the sling and ensure it runs up and over the hand guards, under the waistband, and behind the left main lift web. Pick up the inspection of the sling where it protrudes from under the left main lift web and trace up and over the chest strap, completing the inspection of the weapon. Continue the inspection as normal.

PLACE THE JUMPER INTO JUMP CONFIGURATION

9-197. After the jumpmaster has completed their jumpmaster personnel inspection, the JM places the jumper into jump configuration. The jumpmaster inserts the top and bottom tuck tabs, taking care to ensure the side tuck tabs remain secure. If the side tuck tabs become unsecure, the JM notifies a rigger. The jumpmaster traces the universal static line modified from the universal static line snap hook to ensure that the universal static line modified is routed over the shoulder corresponding with the door the jumper is to exit. Once behind the jumper, the JM removes all slack from the universal static line modified and stows it in the static line slack retainer band. The jumpmaster ensures the main curved pin is pointed generally in the 3 o'clock position and is fully seated. Lastly, the jumpmaster reinserts the main curved pin protector flap into the tuck flap. Next, the jumpmaster secures the adjustable D-ring attaching straps of the PDB and hooks them to the equipment rings. Ensure the equipment rings are routed over the waistband. The jumpmaster then assists the jumper in removing the slack from the adjustable D-ring attaching straps and ensures the PDB is sitting against the bottom of the reserve. Finally, the jumpmaster attaches the HPTLL to the triangle link on the jumpers left side.

9-198. Depending on the size of the jumper, weapon, weapon sling, and butt stock configuration; the quarter-inch cotton webbing will be girth hitched on the sling within the slings' loop, or girth hitched to the butt stock. Jumpmaster discretion should be used in order to determine the best possible attachment configuration. The JM ensures the weapon does not move out from behind the waistband adjuster panel, is not protruding high on the jumper's shoulder, or inhibiting the jumper's movement. If the weapon has a carrying handle, the jumpmaster may choose to route the waistband through the carrying handle. Once the weapon is rigged, the JM ensures it will not come loose while moving inside the aircraft or under canopy. If an optic is being used, ensures the waistband is below the optic in order to prevent damage. Furthermore, the JM ensures the waistband adjuster panel is routed over the weapon between the pistol grip and the magazine well.

This page intentionally left blank.

Chapter 10

Jumpmaster and Safety Duties in Flight

This chapter provides an overview of the duties of the JM team during flight. For aircraft specific personnel duties, refer to part four (chapter 15), Aircraft Used in Airborne Operations in this publication.

PRIMARY AND ASSISTANT JUMPMaster AND SAFETY DUTIES

10-1. After the aircraft takes off, the JM team must remain oriented to the aircraft's location at all times, and keep the jumpers informed of any deviations from the flight plan. The jumpmaster may coordinate with the navigator or use a Global Positioning System (GPS). The jumpmaster also remains in communication with the pilot. To do this, the JM relays messages through the loadmaster.

10-2. On Army aircraft, the JM or safety personnel should wear a flight helmet or headset for direct communication with the pilot and to monitor the ground control element. If the JM or safety cannot wear a flight helmet or headset, communication can be made through the crew chief.

10-3. In general, the JM team:

- Never sacrifices safety, for any reason.
- Rehearses JM procedures on the ground with the complete JM team for that aircraft.
- Hooks up before opening the paratroop door(s) or ramp.
- Does not allow anyone in or near the open paratroop door without a helmet, safety harness, AEBP, or static line parachute that is hooked up to an anchor line cable.
- T-11R inserts must be in place and checked by the safety prior to taking the paratroop door.

JUMPMaster DUTIES

10-4. The JM gives a sequence of jump commands to ensure positive control of jumpers inside the aircraft and immediately before exiting. Every command requires specific actions by each jumper. When commands are executed properly, they ensure a safe and systematic exit from the aircraft. The commands are given orally, but to compensate for engine noise, the JM also uses hand and arm signals. The signals must be smooth, coordinated, and precise. The commands listed, with variations explained in chapters 15, 16, 17, 18, and 19, are employed on a multitude of aircraft. (JMs ensure that the correct sequence is used for each particular aircraft.) The correct commands are explained and demonstrated to jumpers during SAT.

10-5. The primary and assistant jumpmaster must:

- Enforce flight rules and regulations.
- Perform in-flight rigging mission.
- Issue time warning.
- Issue proper jump commands.
- Perform proper door safety checks.
- Perform proper outside air safety checks.
- Perform door bundle exiting procedures.
- Control the flow and spacing of all jumpers.

SAFETY PERSONNEL

10-6. Safety personnel have one of the most important duties during an Airborne operation, properly and safely handling USLMs during exit. Properly handling USLMs can prevent serious injury or death and is vital to mission accomplishment. During in-flight rigging missions, safety personnel assist in parachute issue, monitor buddy rigging, JMPI, and operate correction stations as directed by the PJM.

10-7. The safety must:

- Enforce flight rules and regulations.
- Check on the condition of all jumpers and relocate personnel who are too sick to jump.
- Can assist door bundle exiting procedures.
- Watch for any unsafe acts.
- Conduct safety checks of the USLM and combat equipment.
 - Reinforce the proper static line control and rip cord handle awareness.
 - Ensure jumpers extend their arm once moving towards the paratroop door.
 - Safely control each jumper's USLM upon exit.
- Conduct jump refusal procedures.
- Conduct a proper towed jumper check.
- Assist in the retrieval of a towed jumper.
- Assist in the retrieval and proper storage of deployment bags.
- Report to the DACO after landing.

C-130, PRACTICAL WORK INSIDE THE AIRCRAFT

10-8. Time warnings, paratroop door safety checks, and door bundle ejection are events that commonly occur during each airdrop operation. Time warnings and door procedures are completed during each airdrop operation, but door bundles are not always ejected.

10-9. The time warnings and door procedures are considered critical aspects of JM operations during all airdrop procedures. When the **twenty-minute warning** is given, JMs unbuckle their seat belts and stand up. They move to the rear of the aircraft, turn, and face the jumpers. (All time warnings begin and end at the shoulders with closed fists.) They extend both arms straight forward, extending and spreading the fingers and thumb of each hand. This is repeated twice while the oral command is given.

10-10. All special items of equipment are attached to designated jumpers and are inspected at this time. Safety personnel assist the JMs with attaching equipment and ensuring the tie-downs are secure and the lowering lines are attached and secured. If door bundles are used for the Airborne operation; at the 20-minute time warning the door bundle is moved in front of the paratroop door and attached to the outboard anchor line cable. From this position it is then inspected.

10-11. Conduct the following inspection for G-14 door bundles:

- Static line cargo only and clevis with cotter pin (bent at a 45-degree angle) or safety wire and lanyard (bent 180 degrees until metal-to-metal contact is made).
- Pack closing tie.
- Drogue device (one for C-130; two for C-17).
- Point of attachment to the bundles (risers).
- Tie-down tapes (one on each corner).
- Pack tray and bundle (for any loose or excess webbing).
- When the inspection is completed, and the JM slaps the smooth side of the bundle and ensures it is facing the trail edge of the door.

10-12. Conduct the following inspection for T-10 cargo parachute door bundles. Prior to hooking up the cargo parachute's static line to the out board anchor line cable, the jumpmaster will inspect the cargo parachute and door bundle in its entirety beginning at the point of attachment, making sure that:

- Risers are properly attached and the safety wires are bent around so that they have metal-to-metal contact or the cotter pins are bent to a 45-degree angle.
- Ensure the connector link tie is constructed of one turn of quarter-inch cotton webbing and routed through the suspension line protective flap tie loops, through the first set of connector link tie loops, through the L-bar connector links, then through the second set of connector link tie loops, secured with a surgeon's knot, locking knot.
- Ensure the securing tie is constructed of quarter-inch cotton webbing is securing the parachute tight to the load, and is routed underneath the universal static line.
- Finally, the jumpmaster performs an overall inspection of the cargo parachute and door bundle, checking for any loose or excess webbing. When satisfied with their inspection, the jumpmaster will slap the smooth side of the door bundle, ensuring it faces the trail edge of the door, completing their inspection.

10-13. Once the container has been inspected, hook up the cargo parachute's static line to the outboard anchor line cable and place the container on its end with the parachute towards the inside of the aircraft as close to the paratroop door as possible without interfering with the JM paratroop door check.

10-14. When using the 68-inch pilot parachute, the safety will:

- Attach the G-13 clevis by unsecuring the clevis locking pin and the clevis pin.
- Place the clevis over the outboard anchor line cable, and route the clevis pin from inboard to outboard through the looped end of the static line and clevis.
- Route the clevis locking pin through the clevis pin (ensure the clevis locking pin is always towards the skin of the aircraft), and bend down the ends.

Note. If the first suspended object is an A-series container or door bundle, see the door bundle exiting procedures in this chapter.

10-15. When the loadmaster informs the JMs the aircraft has a **10 minute warning** to the DZ, the JMs unbuckle their seat belts and stand up. They hook up to the inboard anchor line cable and move to the rear of the aircraft.

10-16. JMs should be positioned forward of the paratroop door when conducting jump commands. The JMs begin jump commands after the 10-minute time warning. During this process, they look for excess static line and stow any excess in the static line slack retainer band.

FIRST SEVEN COMMANDS

10-17. The JM is now ready to issue the first seven jump commands:

- GET READY. (See figure 10-1.)
 - This jump command alerts the jumpers seated in the aircraft and directs their complete attention to the JM. The JM starts the command with their hands centered on the chest the fingers and thumbs extended and joined, and the palms facing the jumpers.
 - The JM then extends both arms forward until the elbows lock with the palms facing the jumpers. The JM gives the command of “GET READY,” then returns to the start position.

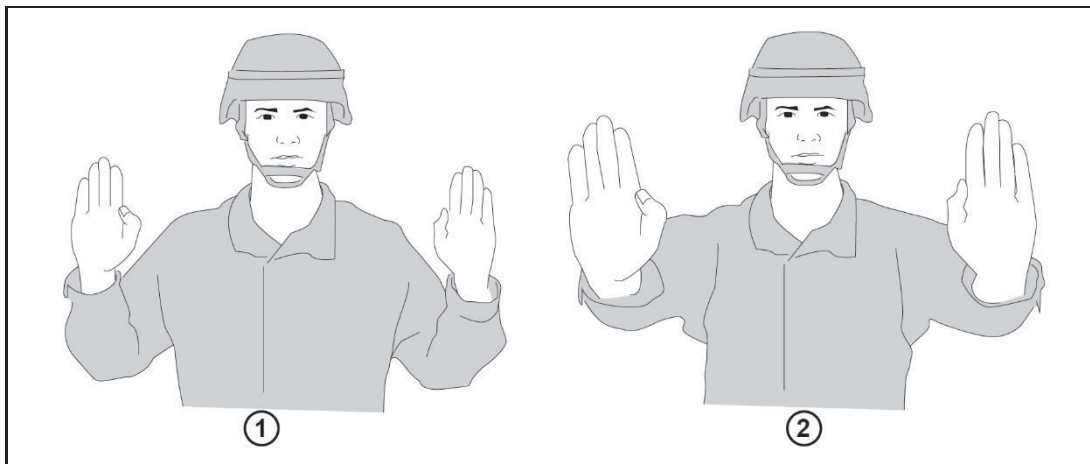


Figure 10-1. GET READY

- OUTBOARD PERSONNEL, STAND UP. (See figure 10-2.)
 - The JM begins with the index and middle fingers of both hands extended and joined, centered on the chest at shoulder level. All the remaining fingers and thumbs are curled to the palms as they issue the command, “OUTBOARD PERSONNEL.” Keeping the hands in the same position, the JM then lowers their arms to their sides at a 45-degree angle and locks their elbows.
 - The JM extends and joins the fingers and thumb of each hand and rotates the hands so their palms face upward. Next, they issue the command, “STAND UP,” and raise their arms straight overhead, keeping the elbows locked.

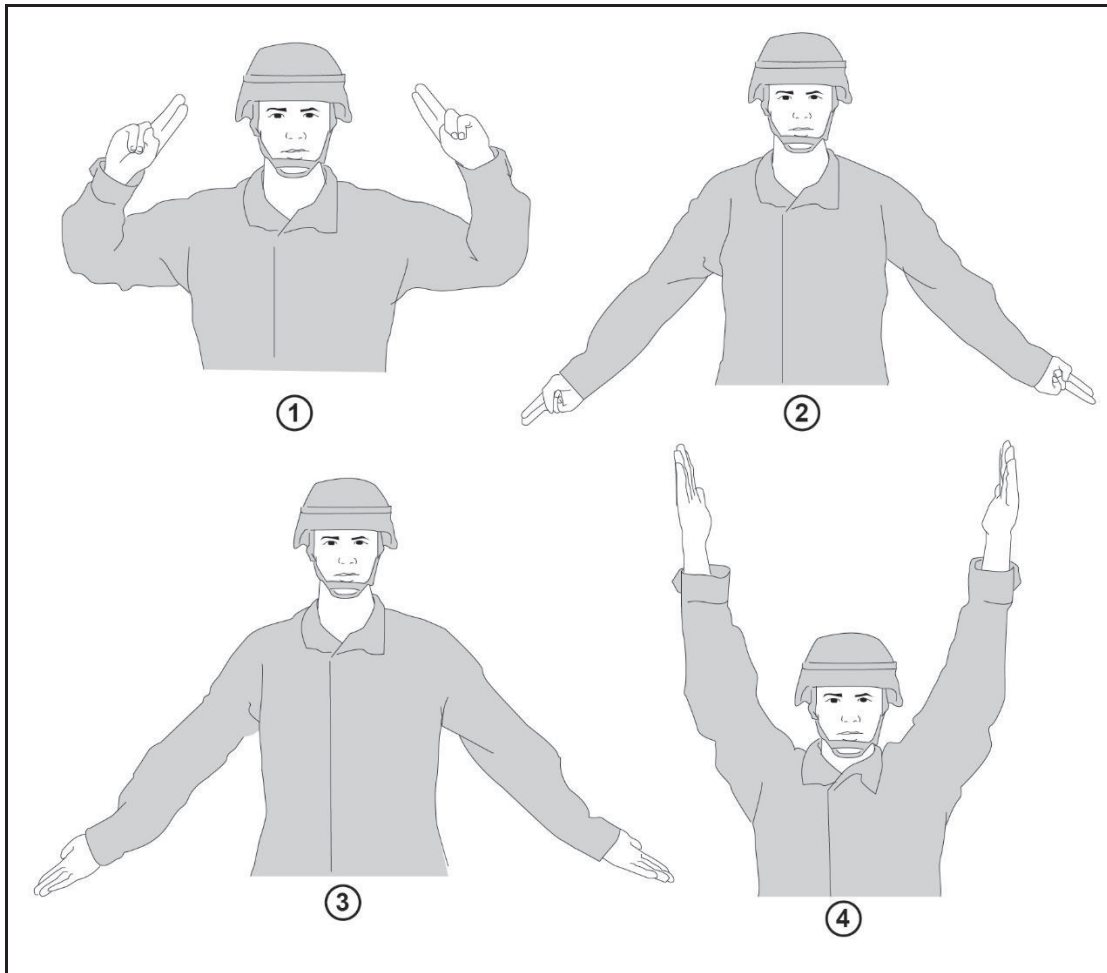


Figure 10-2. OUTBOARD PERSONNEL, STAND UP

- INBOARD PERSONNEL, STAND UP. (See figure 10-3.)
 - The JM begins with the hands centered on their chest at shoulder level, index and middle fingers extended and joined, remaining fingers and thumbs curled into the palms. As they issue the command, “INBOARD PERSONNEL,” they extend their arms toward the inboard seats with the elbows locked.
 - The JM rotates their arms to their sides then down. Next, they extend and join the fingers and thumb of each hand and rotate their hands so the palms face upward. The JM gives the command, “STAND UP,” and raise their arms straight overhead, keeping the elbows locked.

10-18. After the jumpers are standing, safety personnel assist jumpers with the following items while moving toward the paratroop door:

- Stow the troop cargo seating, if necessary.
- Assist jumpers in tightening down the appropriate adjustable leg straps and securing them in the appropriate webbing retainer.
- Waistband for proper quick release.
- Ejector snap on the HPT lowering line for proper attachment.
- Snap shackle on weapon’s case for proper attachment.

WARNING

If jumping combat equipment, at this time the jumper must tighten down all appropriate adjustable leg straps and secure any excess webbing in the appropriate webbing retainer.

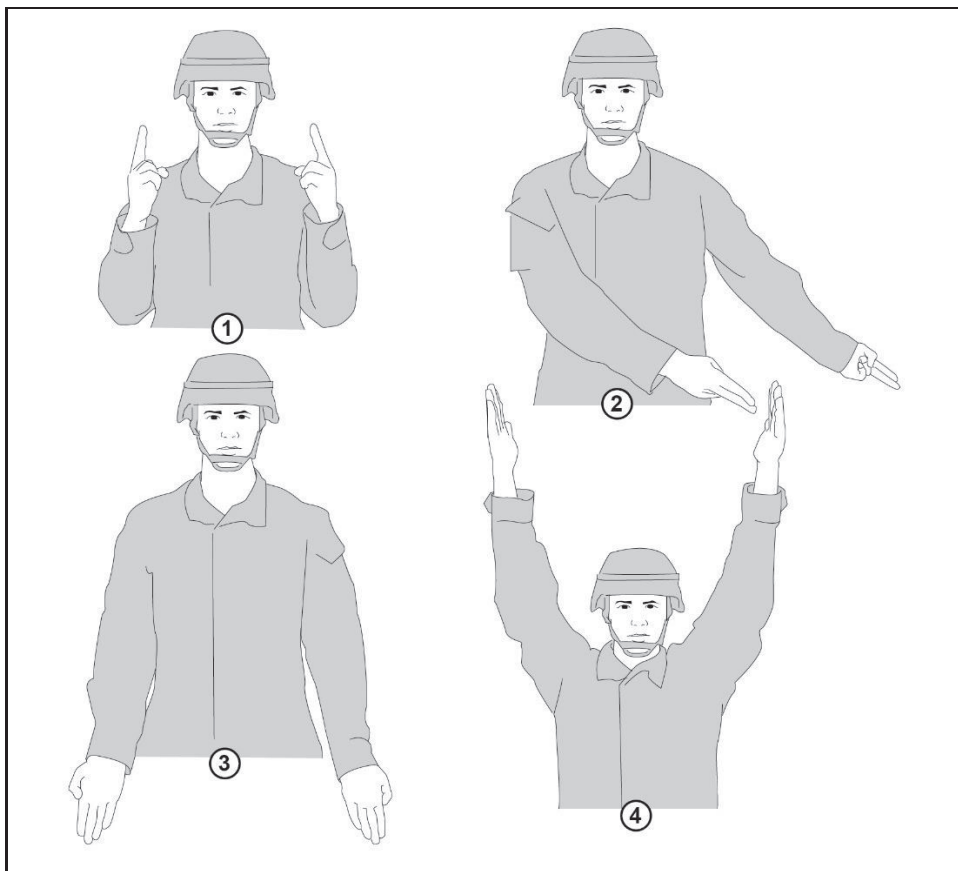


Figure 10-3. INBOARD PERSONNEL, STAND UP

- **HOOK UP.** (See figure 10-4.)
 - The JM begins with their arms either extended directly overhead with elbows locked or with their arms bent and the hands at shoulder level. They form a hook with the index finger of each hand. They form fists with the remaining fingers and thumb of each hand. As they issue the command of “HOOK UP,” they move their arms down and up or up and down in a pumping motion. They must repeat this motion at least three times.
 - C-130H- no more than 20 jumpers per anchor line cable.
 - C-130J- no more than 31 jumpers per anchor line cable.

CAUTION

All jumpers on the aircraft must enforce rip cord handle awareness at all times. Once the USLM is hooked up to the anchor line cable, the nonstatic line hand will protect or cover the rip cord handle.

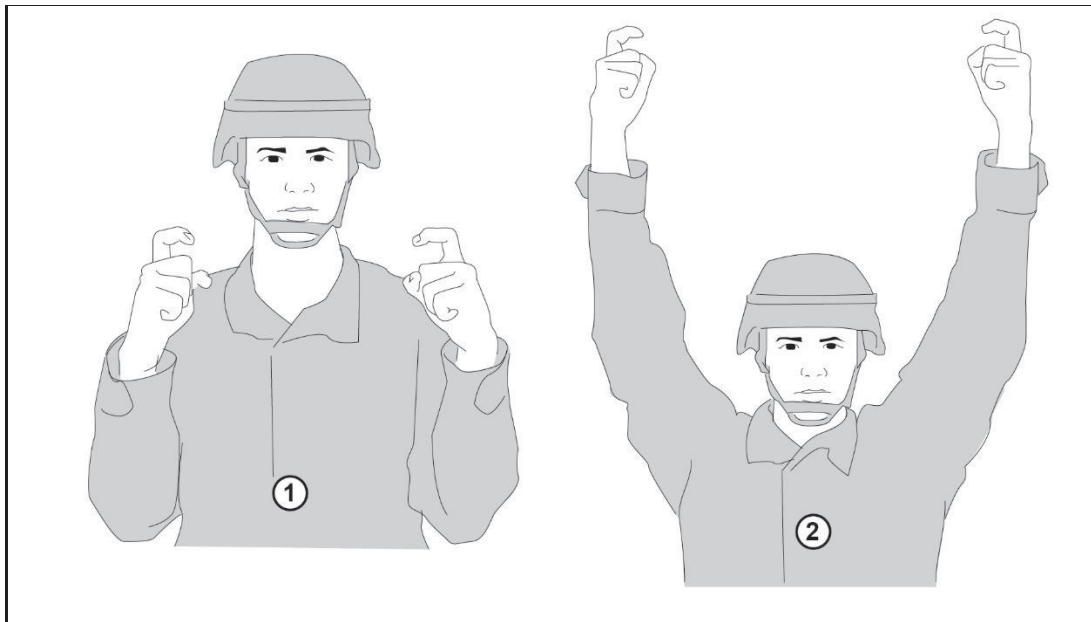


Figure 10-4. HOOK UP

- **CHECK STATIC LINES.** (See figure 10-5 on page 10-8.)
 - This is a plural command since there are several USLMs attached to the anchor line cable. It begins at eye level, with the elbows bent and thumb and index finger of each hand forming an “O.” The JM extends and joins the remaining fingers with the palms facing in. As they issue the command “CHECK STATIC LINES,” they extend their arms to the front until the elbows are nearly locked, ensuring the knife edge of the hand remains facing the jumper, then returns to the starting position.
 - They must repeat this motion at least three times and give the supplemental jump command of “LAST TWO JUMPERS TURN TOWARDS THE SKIN OF THE AIRCRAFT, SECOND TO LAST JUMPER CHECK THE LAST JUMPER’S STATIC LINE.”

10-19. **SAFETY INSPECTIONS:** Once the safety has reached the last jumper, and after the command, “CHECK STATIC LINES,” they will begin their return to the aft end of the aircraft. While moving towards the paratroop door the safety will inspect with both hands and eyes:

- Safeties will check each jumper’s USLM. Ensure the universal static line snap hook is properly secured to the proper anchor line cable with the opening gate facing towards the skin of the aircraft.

- Trace down the USLM to the jumper's four in the hand two below bite, ensuring it is held at eye level and they are not covering the double sewn portion.
- Trace the USLM over the jumper's shoulder, ensuring it is not misrouted. Continue to trace the USLM to the first stow.
- Visually inspect the remainder of the USLM to ensure it is properly stowed to the pack tray and the main curved pin protector flap is properly stowed in the tuck flap and not routed over any portion of the USLM.
- Stow any excess static line in the static line slack retainer band so that each static line is taut from the jumper's bite to the pack tray but not to the point where the excess static line loop hangs below the main curved pin protector flap.
- If a member of the JM team determines that a jumper's USLM is not stowed in the proper manner, that jumper will not exit the aircraft.
- Remind all jumpers to make eye-to-eye contact and hand their static line to the safety.

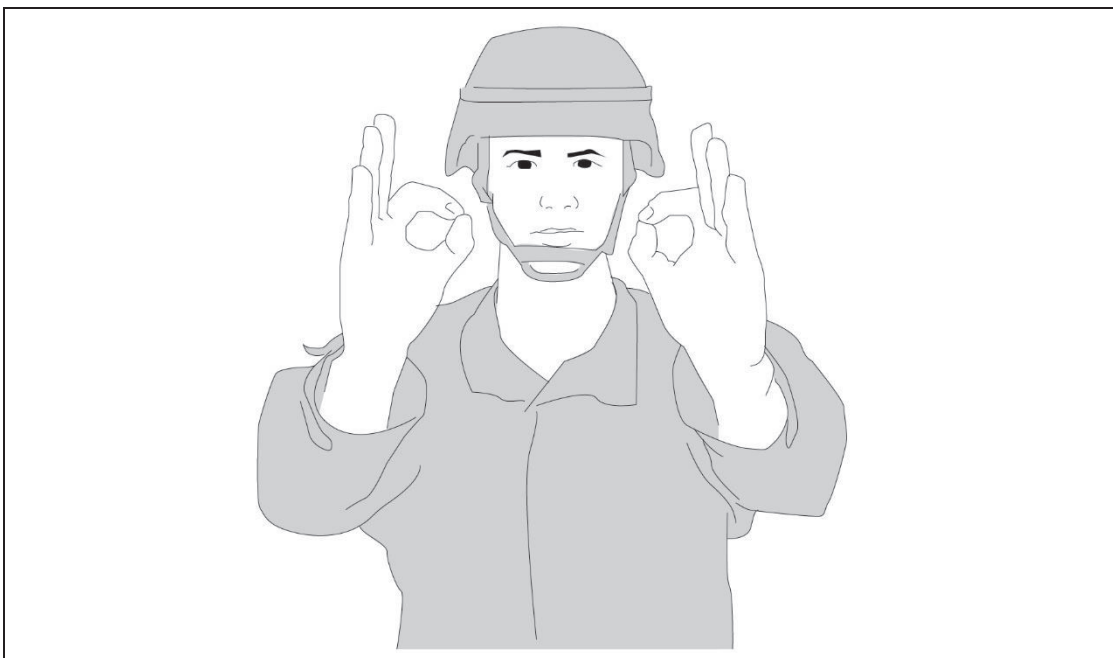


Figure 10-5. CHECK STATIC LINES

- CHECK EQUIPMENT. (See figure 10-6.)
 - The JM begins this hand and arm signal with their fingertips centered on their chest, palms facing the chest, and the fingers and thumb of each hand extended and joined; or with their arms extended to the sides at shoulder level, fingers and thumbs extended and joined, and the palms facing toward the jumper.
 - They issue the command “CHECK EQUIPMENT,” extend their arms out to their sides at shoulder level, and then return them to their chest; or bend their arms at the elbows, bringing their fingertips to the center of their chest, and then return to the extended position. They must repeat this motion at least three times.
 - JMs will lean left then lean right and observe the stick of jumpers as they check their equipment. Once all movement has ceased both JMs will give each other a thumbs up. This tells the other JM that their jumper's equipment is good and they are ready to proceed. After the thumbs up has been issued, both JMs will check their own equipment.

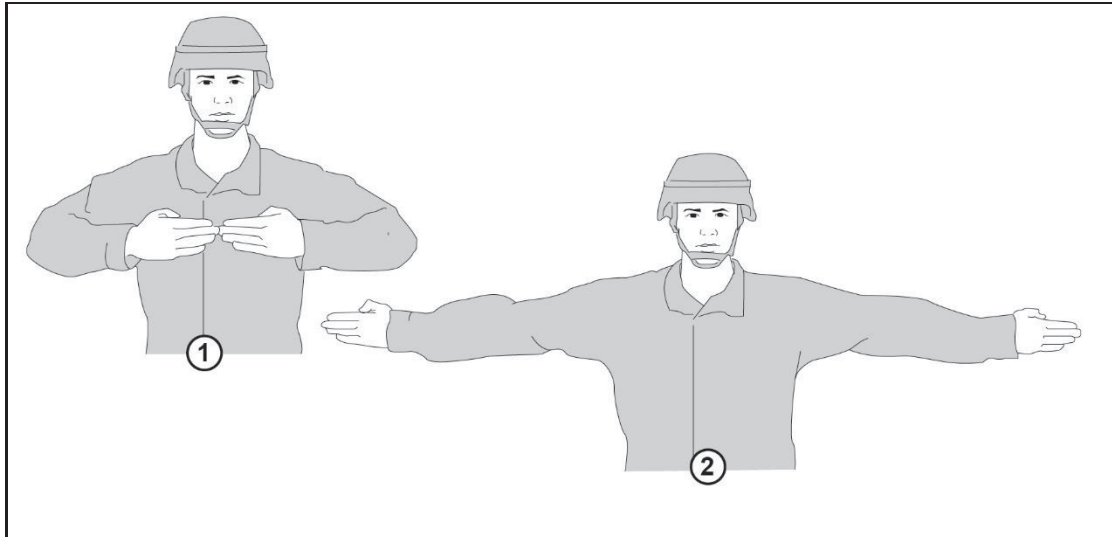


Figure 10-6. CHECK EQUIPMENT

- SOUND OFF FOR EQUIPMENT CHECK. (See figure 10-7.)
 - The JM will extend fingers and joined, hands cupped around the ears of the helmet.
 - JM issues the command, “SOUND OFF FOR EQUIPMENT CHECK.”

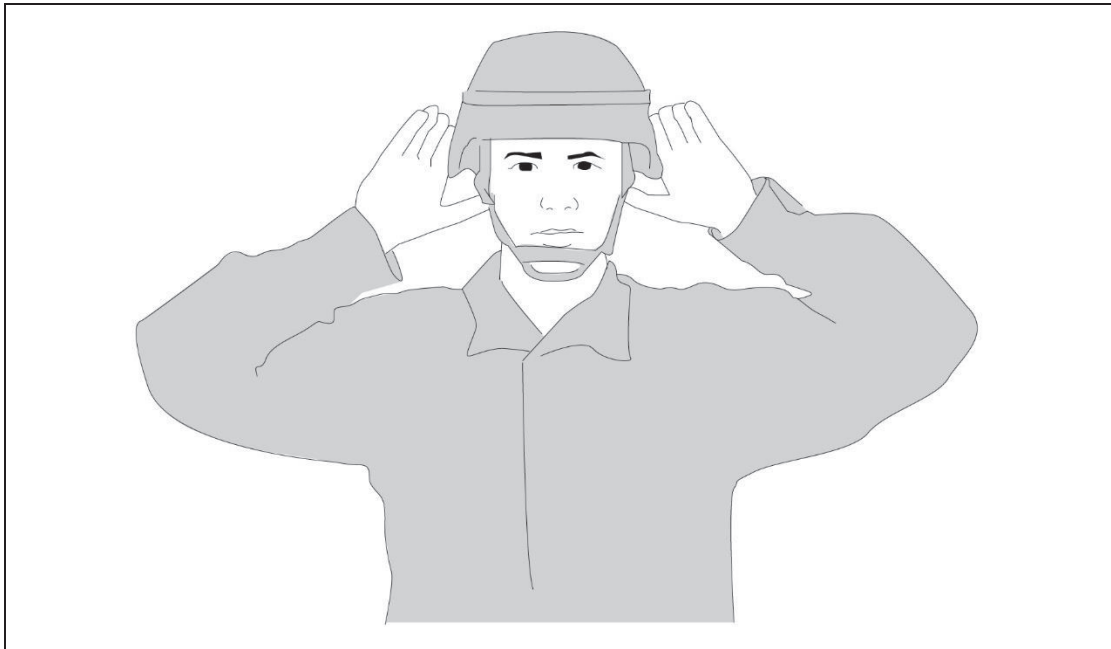


Figure 10-7. SOUND OFF FOR EQUIPMENT CHECK

Note. Safeties must be alert for any excess webbing and stow webbing that is loose or misrouted.

WARNING

Do not sacrifice safety for time. Complete the full inspection of each jumper's USLM. If the inspection cannot be completed in time, the pass will be aborted. An improperly routed USLM can cause death or serious injury.

CAUTION

All jumpers on the aircraft must enforce rip cord handle awareness at all times. Once the USLM is hooked up to the anchor line cable the nonstatic line hand will protect or cover the rip cord handle.

10-20. After both JMs receive "ALL OKAY, JUMPMaster," from the No. 1 jumper, the AJM will give the PJM a thumbs up or verbally inform the PJM, "ALL OKAY, JUMPMaster." Both JMs will back up and regain control of their USLM using the hand respective to the door they are jumping from, (right door, right hand, left door, left hand) ensuring that the USLM is not misrouted under their shoulder. The safety can assist the JM in securing their USLM.

10-21. The JMs will then turn towards the skin of the aircraft, remove the incorporated twist, and reestablish a proper bight. The JM will assume the No. 1 position and inspect their USLM from the USL snap hook until it disappears over their shoulder and will then sound off with, "NUMBER ONE JUMPER CHECK MY STATIC LINE." After completing the No. 1 jumper's USLM check, the safety will then inspect the JMs USLM.

10-22. Once the aircrew has completed their three minute slow down checklist, the loadmaster (slow aircraft to drop speed, open jump doors, deploy air deflectors, and position jump platforms) should make a safety and technical inspection of the paratroop door.

PARATROOP DOOR SAFETY CHECK

10-23. Once the safety and technical inspection of the paratroop door is complete, the loadmaster informs the JMs, "ARMY YOUR DOOR."

- The JM will confirm through the loadmaster, the aircraft has slowed to drop speed before assuming control of the paratroop door. This signal can be predetermined during the air mission brief (AMB) or aircrew/JM briefing before flight.

Note. Jumpmasters will not assume control of the aircraft paratroop door until the loadmaster has confirmed the aircraft has slowed to 130 knots indicated airspeed.

- The safety will inspect the JMs rip cord assembly to ensure the tuck tabs are in place and the T-11R inserts are installed properly, before the JM assumes control of the paratroop door. The safety will then take control of the JMs USLM.
- Safety personnel will position themselves near the trail edge of the paratroop door, the JM will secure the lead edge of the paratroop door with the nonstatic line hand.
- The JM will hand the safety their USLM and sound off with "SAFETY CONTROL MY STATIC LINE." The safety will control the USLM for the JM as they perform the door safety check in the following manner:
 - The safety grasps the USLM with one hand above and one hand below their bight, keeping the USLM taut between their hands, ensuring no excessive slack is impeding the JM or causing a safety hazard. The trail hand should be held high near the USL snap hook and the lead hand held low in the vicinity of the JMs pack tray. Both hands should be formed in knife-

cutting edges, palms facing outward, fingertips pointed skyward, with the USLM secured between their palm and thumb.

- Securing the USLM in this manner will allow the safety to easily release the JM's USLM in the event the JM prematurely exits the paratroop door.

10-24. The JM will conduct a proper door safety check in the following manner:

- They grasp the lead edge of the door with their lead hand and transfers control of their USLM to the safety. (See figure 10-8, and figure 10-9 on page 10-12.) They then grasp the trail edge of the door with their trail hand centering their body in the door without having any part of their feet on the jump platform.
- Using only the lead hand, they ensure the push in place pin is in place, securing the jump door in the open position on the C-130.

Note. The JM must ensure the safety has positive control of the USLM before moving toward the paratroop door.

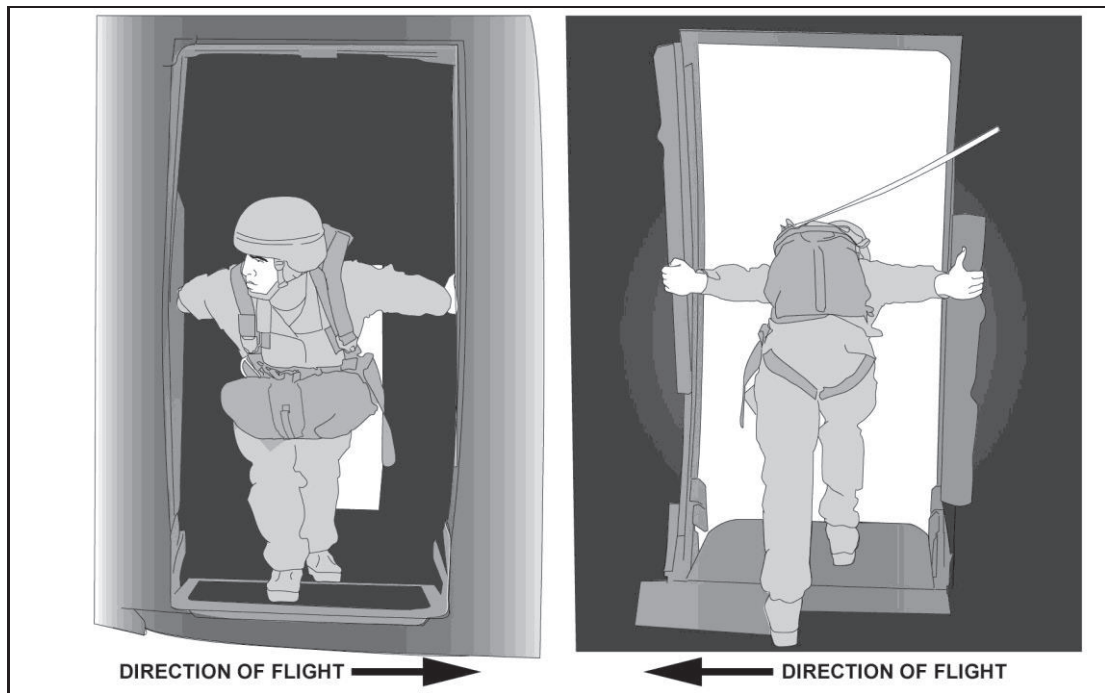


Figure 10-8. Jumpmaster safety check, right door position

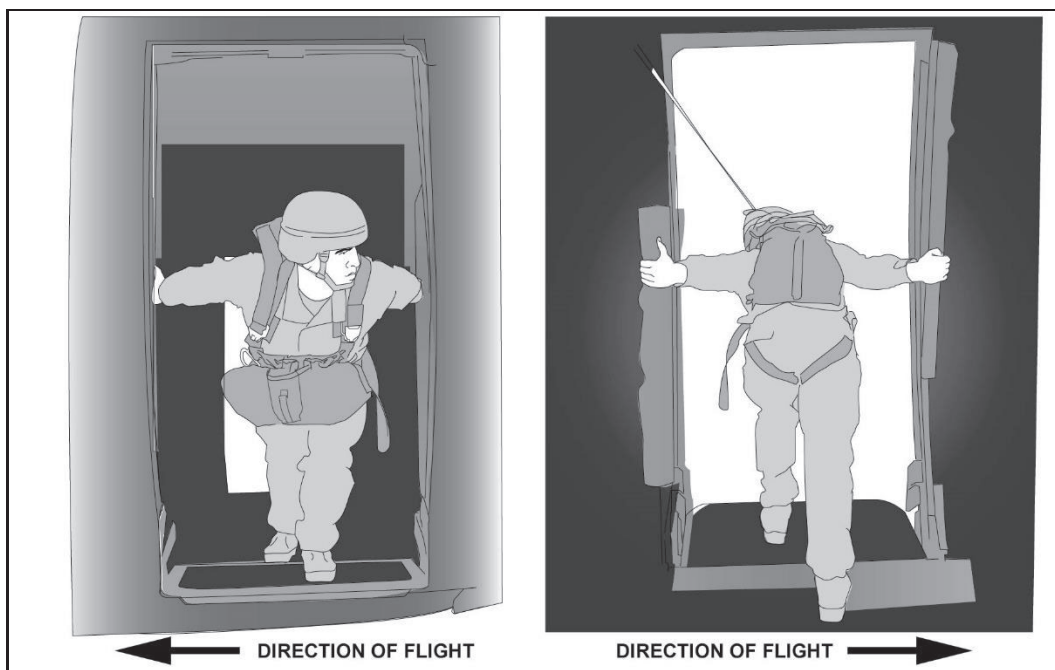


Figure 10-9. Jumpmaster safety check, left door position

JUMP PLATFORM AND TRAIL EDGE OF THE DOOR

10-25. The JM checks the jump platform by:

- First kicking the lead down lock one time with the lead foot while visually inspecting to ensure the down lock is engaged, then bringing the lead foot back behind the yellow caution line and firmly planting that foot. The JM will then use the trail foot to kick the trail down lock one time and visually inspect to ensure the down lock is engaged. Then, without bringing the trail foot back inside the aircraft, the JM places the trail foot in the center of the jump platform and transfers their weight to the platform. This ensures that the platform can support the weight of a jumper. The trail foot remains in place.
- The trail foot remains in place. (If the JM removes their foot from the platform, they must again check the down locks and ensure the platform can support their body weight.)
- Once the trail foot has been planted on the jump platform and the JM's weight has been shifted, this is the door relaxed position.

10-26. With the trail hand, the JM starts at the top of the trail edge of the paratroop door, tracing all the way down to the trail down lock, then tracing back to the top to ensure no sharp or protruding edges exist. If for ANY reason the JM's hand breaks contact with the trail edge of the door, the JM must begin the trace of the door over at the top of the door.

CAUTION

All jumpmasters performing duties on a C-130 aircraft must be able to conduct a paratroop door check while maintaining three points of contact with the airframe. This check requires the jumpmaster to attain an 80-inch reach. Jumpmasters must be evaluated by their unit prior to performing any duties on this airframe.

10-27. The JM will lean towards the trail edge of the door, while looking in the direction of flight they ensure the air deflector is properly deployed.

INITIAL OUTSIDE SAFETY CHECK

10-28. The JM must make outside air safety checks to ensure there are no unsafe conditions outside the aircraft, including trail aircraft in the formation that are below drop altitude or other low-flying aircraft. From the same stable door position, the JM leans forward to the elbow locked position while keeping both heels flat on the floor of the cargo compartment and visually conducts a down and behind air-safety check.

Note. JMs are encouraged to conduct checks in all cardinal directions to maintain the best situational awareness, but at a minimum will check below and behind the aircraft.

10-29. The JM then comes to the door in a relaxed position, continues observing outside the aircraft spotting for reference points en route to the DZ. In the absence of reference points and checkpoints, they use additional time advisories from the air crew, which was identified during the air mission briefing. The JM relays time warnings to the jumpers by leaning back inside the aircraft, keeping his or her foot centered on the platform, facing the jumpers, and calls off the one-minute and 30-second time warning, As well as giving the proper arm-and-hand signal for each time warning.

10-30. Once the doors are open and the JMs are conducting their door checks, safeties will have all the jumpers close in tight, reducing the interval between the No. 1 jumper and the paratroop door. Jumpers will maintain the proper interval.

10-31. The JM will lock out their elbows to properly conduct outside air safety checks. The safety will also lock their elbows while checking for towed jumpers after each pass.

10-32. The loadmaster should relay time warnings to the JM or safety by using hand signals. The exact hand signals must be coordinated between the JM and loadmaster during the aircrew brief.

- One-minute time warning—with the elbow locked out, the index finger extended vertically.
- 30-second time warning—with the elbow locked out, the index finger and thumb held closely together.

ONE-MINUTE WARNING

10-33. Once the JM spots their one-minute reference point and is about one minute from the green light or the safety passes along the loadmaster time warning to the JM:

- The JM relays the one-minute warning to the jumpers by leaning back, keeping their foot centered on the platform, facing the jumpers, and extending the index finger of their lead hand, and announces, “ONE MINUTE.”
- The jumpers relay the time warning by looking over their shoulder closest to the skin of the aircraft and shouting, “ONE MINUTE.”
- The JM continues observing outside for the 30-second reference point, or until the 30-second time warning is relayed from the loadmaster.

THIRTY-SECOND TIME WARNING AND FINAL CLEAR TO THE REAR

10-34. Once the JM spots the 30-second reference point and is about 30 seconds from the green light, or the safety passes along the loadmaster time warning to the JM:

- The JM relays the “THIRTY SECONDS” warning to the jumpers by leaning back, keeping their foot centered on the platform, facing the jumpers, and extending the index finger of their lead hand and announces, “THIRTY SECONDS.”
- The jumpers relay the time warning by looking over their shoulder closest to the skin of the aircraft and shouting, “THIRTY SECONDS.”

10-35. After the JM has called off the 30-second reference point, they immediately conduct their final clear to the rear outside safety check. The JM leans forward to the elbow locked position while keeping both heels flat on the floor of the cargo compartment and visually conducts a down and behind air-safety check.

Note. For a CARP VIRS DZ, the JM is not responsible for positively identifying the DZ, code letter, or color of smoke. The U.S. Air Force and other service aircraft personnel are responsible for positively identifying the DZ, code letter, or color of smoke.

10-36. If the JM observes any unsafe conditions outside the aircraft, they notify the loadmaster by a preplanned arm-and-hand signal (for example, a cutting motion across the throat) that a NO DROP situation exists for this pass.

CAUTION

The JM or safety can call a NO DROP anytime he or she determines something is wrong or unsafe.

10-37. Once the JM makes their final clear to the rear air safety check:

- The JM removes the trail foot from the jump platform and plants the foot inside the cargo compartment. The JM will then release the paratroop door with the lead hand.
- Rotates into the aircraft facing the jumpers.
- The PJM and AJM will make eye-to-eye contact and give each other a thumbs up signal indicating there are no unsafe conditions outside the aircraft and they are ready to exit personnel. The JM will stay in place and issue the eighth jump command of “STAND BY.”

Note. If the first suspended object is an A-series container or door bundle, see door bundle procedures in this chapter.

EIGHTH JUMP COMMAND

10-38. Once the JMs give the thumbs up signal to each other, they will immediately issue the eighth jump command of “STAND BY.” (See figure 10-10.) Starting at the shoulders with the elbows bent, the JM extends and joins their index and middle fingers, curling the remaining fingers and thumb of each hand toward the palm. As they give the command “STAND BY,” they extend their arms up and out to their sides, ending at a 45-degree angle.

10-39. The JM then takes a step forward with the inboard foot and rotates their body so that both JMs are facing the skin of the aircraft, with the body bisecting the lead edge of the paratroop door. JMs must ensure they are not impeding either anchor line cable. Each JM will then reach out with the trail hand and secure a proper bight in their USLM. The safety will return control of the JMs USLM to the JM by forming it into a small bight, then assume a position bisecting the trail edge of the paratroop door ensuring the flow of jumpers are not impeded.

10-40. Whenever possible the JM should protect their rip cord handle with the nonstatic line hand. The AJM must ensure they have eyes on the PJM and No. 1 jumper by looking over or under either shoulder. The safety receives the first jumper’s USLM with their lead hand and secures it with their trail hand by pinning it against the intermediate anchor line support bracket and prepares to control the next jumper’s USLM with the lead hand.

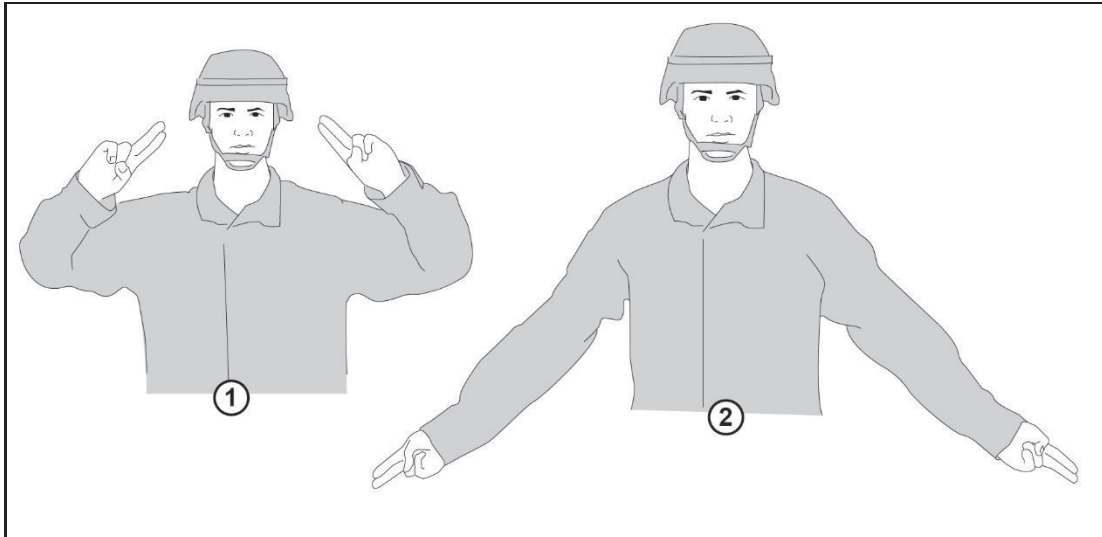


Figure 10-10. STAND BY

NINTH JUMP COMMAND

10-41. Once the green light comes on, the PJM issues the ninth jump command, “GO.” Both JMs give the physical and oral command of “GO.” This is executed by bending forward at the waist and giving a sharp tap on the thigh or buttocks of the No. 1 jumper.

10-42. The AJM observes the PJM and the No. 1 jumper. When the PJM issues the ninth jump command to their No. 1 jumper and the jumper begins to exit, the AJM immediately turns, acknowledges the green light is on, and then issues the physical and oral command of “GO” to the jumper. This action needs to occur in half a second in order to establish the proper interval between paratroop doors.

10-43. Both JMs ensure they are in a position to best control the flow of jumpers without impeding the paratroop door or the safeties controlling USLMs. The safety grasps each USLM with their lead hand, and passes it back to their trail hand, ensuring the USLM is firmly seated against the intermediate anchor line cable support.

10-44. The JM team must have situational awareness of their jumpers once the green light comes on. JMs:

- Control the flow and spacing and intervals between jumpers without impeding the flow of jumpers.
- Ensure jumpers' static line arms are extended once they begin moving.
- Remind jumpers to make eye-to-eye contact with the safety.
- Pause or stop the stick for any unsafe act or condition, fix the issue, and continue to exit jumpers if the green light is on.
- Monitor the jump caution lights for the red light.

10-45. Safeties control the flow of jumpers and USLMs without impeding the flow of jumpers. They also:

- Ensure that there is a positive transfer of the static line between them self and the jumpers as they exit.
- Pause or stop the stick for any unsafe act or condition, fix the issue, and continue to exit jumpers.
- Watch for towed jumpers.

CAUTION

Both the jumpmaster and the safety must be prepared to initiate red light procedures at any time after the green light has been illuminated.

10-46. After the last jumper exits, the AJM transfers control of the USLM to the safety. The AJM takes up a good door position, reconfirms that the jump caution light is still green, and exits on green.

10-47. The PJM transfers control of the USLM to the safety and takes up a good door position. Upon seeing the AJM exit, the PJM reconfirms that the jump caution light is still green and exits on green.

10-48. Both safeties immediately conduct a clear to the rear for towed jumpers and give each other a thumbs up. They also give a thumbs up to the loadmaster(s) and help retrieve deployment bags.

Note. If the first suspended object is an A-series container or door bundle, see door bundle procedures in this chapter.

GROUND MARKING RELEASE SYSTEM

10-49. After issuing the eighth jump command, the safety receives the first jumpers USLM with the lead hand and passes it to the trail hand, securing the line by pinning it against the intermediate anchor line support bracket while preparing to receive the next jumpers USLM. The JM continues to spot for the DZ and DZ markings over the No. 1 jumper's shoulder. When the panels come into view, the JM issues the ninth jump command, ensuring the jumper is clear of the aircraft when the panels bisect the jump door.

10-50. For U.S. Air Force operations, a safety is not used and either the JM or loadmaster fulfills the duties. Coordination is made during the AMB.

Note. For GMRS operations, JMs are not certified to throw GMRS unless they are a USASOC JM graduate, are assigned to a USASOC unit, and have been certified by a USASOC JM.

RED LIGHT PROCEDURES AND JUMP REFUSALS

10-51. If a JM sees the jump caution light turn red, they raise their hand towards the jumpers and sound off with, "RED LIGHT, RED LIGHT, RED LIGHT." No one touches or physically tries to stop a jumper who has transferred the USLM and is committed to the paratroop door. Jumpers will be stopped only by oral command; this reduces the risk of an incident. If any jumper tries to exit on the red light, they will be allowed to exit, except in the case of an unsafe jumper.

10-52. The procedure for handling a jump refusal are as follows:

- When removing a jump refusal from the door, the JM tells the refusal, "GREEN LIGHT, GO; GREEN LIGHT, GO; GREEN LIGHT, GO." If the jumper does not exit after the third command, the safety grasps the sides of their pack tray and tells the refusal, "YOU ARE A JUMP REFUSAL, I AM REMOVING YOU FROM THE PARATROOP DOOR."
- Under no condition should the safety reach around in front of the refusal to pull them back into the aircraft; the safety could accidentally hit or grab the T-11R rip cord handle.
- After the jump refusal is removed from the paratroop door, they are guided and seated on the ramp of the aircraft away from the paratroop door and directed to not touch their equipment. The JM team will then continue to exit jumpers if any green light remains. The safety will assist the U.S. Air Force personnel in retrieving all deployment bags and once the door is closed, they will move the jump refusal as far forward as possible inside the aircraft, buckle them in, unhook their USLM from the anchor line cable, and once again direct them not to touch any of their equipment.

TOWED JUMPER PROCEDURES

10-53. In the event of a suspected towed jumper, the priority should always be to retrieve the jumper if possible and only cut a jumper free as the last resort. The JM or safety will prevent any other jumpers from exiting the paratroop door and will notify the remainder of the JM team and the loadmaster. The loadmaster will inform the aircraft commander of the situation.

10-54. The **safety** will conduct a clear to the rear to confirm:

- If a jumper is being towed or not.
- How the jumper is being towed, such as by the USLM or equipment.
- If the jumper appears to be conscious or unconscious.

10-55. The JM team will move all remaining jumpers on that door towards the forward portion of the aircraft. Only the loadmaster and the JM team will perform towed jumper retrieval procedures. The JM team on the opposite door will assist in moving all jumpers away from the TPRS, creating a clear space to work.

10-56. If being towed by the USLM, the JM or safety may make a recommendation to the aircraft commander through the loadmaster, whether to retrieve or cut free the jumper. If the jumper is to be retrieved, the JM team will assist the loadmaster in the retrieval process. Once the jumper nears the paratroop door, the JM and safety will gain physical control of the jumper without grasping the reserve parachute.

10-57. If the jumper cannot be retrieved, they are cut free over the drop zone. The loadmaster will cut the USLM on the command of the aircraft commander if directed to do so, this will only be considered if the jumper is conscious. If the jumper is being towed by anything other than the USLM, the JM or safety tries to jog them free from the aircraft.

10-58. Once free from the aircraft, they do not need to activate their reserve since their main parachute will deploy as normal. If the jumper cannot be freed, they are retrieved using the TPRS. Once inside, the jumper will be brought to the forward portion of the aircraft and medical assessment and aid will be administered. If the retrieval is unsuccessful and the jumper must be cut free, the jumpmaster or loadmaster will cut the item of equipment free that is towing the jumper.

10-59. The **jumper** will stay in a tight body position and protect the rip cord handle with both hands in preparation of being cut free, in order to activate the reserve parachute. Once they feel themselves fall free from the aircraft, they immediately activate their reserve parachute using the pull drop method. If the jumper is being towed by anything other than the USLM, once cut or jogged free, they do not need to activate the reserve parachute since the main parachute will deploy as normal.

10-60. The **loadmaster** will attach and operate the TPRS with the assistance of the JM and safety. They will retract the jump platform and draw in the TPRS while it is securing all USLMs, including the towed jumper's USLM. Once near the paratroop door, the JM and safety will gain physical control of the jumper without grasping the reserve parachute. The loadmaster will then relieve slight tension on the TPRS so that the jumper can be brought inside the aircraft. The loadmaster will cut the USLM on the command of the aircraft commander, if directed to do so.

10-61. Once informed of a towed jumper, the **aircraft commander** maintains the same drop airspeed and at least maintains the same drop attitude. The pilot flying will lower the landing gear and set flaps to 100 percent to reduce parachute buffeting. If possible, avoid turning the airplane in the direction of the towed jumper as this could cause the jumper to swing violently and increases the possibility of injury. The aircraft commander will make the final decision whether or not to cut the towed jumper free. If the decision is to cut the jumper free, the loadmaster cuts the USLM on the command of the aircraft commander.

Note. It is a general rule that the JM or safety will cut away anything green (indicating equipment) and the loadmaster will cut away anything yellow (indicating static line). A towed jumper may not always be identified by a USLM positioned low on the trail edge of the paratroop door; therefore it is key that a proper clear to the rear check is conducted

OVER THE RAMP OPERATIONS

10-62. Tailgate drops are those drops where parachutists exit from the aircraft ramp. The maximum rigged weight of the parachutist is 325 pounds. Tailgate drops are approved for special tactics teams, pararescue jumpers (PJs), U.S. Air Force survival evasion resistance escape specialists, U.S. Army Special Forces, U.S. Navy sea, air, and land (SEAL) forces, paratroopers equipped for arctic airdrop, other U.S. and allied special operations personnel, U.S. Army Quartermaster School (USAQMS), U.S. Army Airborne School, Yuma Proving Ground Airborne Test Force, and units for which a combination drop is their normal method of deployment.

10-63. If a jumper is towed following a ramp exit and is to be cut free, the loadmaster partly retrieves the static lines to reach the towed jumper's static line in order to cut it. If the jumper is to be retrieved, the loadmaster uses the TPRS or installs a CGU1 B cargo strap (C-130) (NSN 1670-00-725-1437) about five and a half feet above the ramp. The static lines are retrieved over the CGU1 B strap. As the jumper is retrieved to the ramp area, the JM and safety personnel gain physical control of the jumper. The jumper is pulled into the aircraft (under the strap) as the loadmaster relieves tension from the static line retriever cable. The jumper is moved all the way forward and is seated; they do not jump again.

WARNING

The TPRS shall not be used during parachutist retrieval through the ramp and door.

10-64. Thread the hook end of the 5000-pound tie down strap, front to rear, around the right/left vertical support member at FS 840 approximately five and a half feet above the ramp in the Air Drop System position. Attach the hook end into the strap and draw taut. Run the ratchet end of the strap across the ramp and thread it, front to rear, around the opposite vertical support member at FS 840. Remove all slack from the strap and attach the ratchet end to any convenient tie down ring forward of FS 840. Ratchet the strap until taut.

Note. For aircraft with tie down rings installed at FS 847 (waterline 208), the 5000-pound tie down strap may be installed by attaching the hook end of the strap to the sidewall ring at FS 847 on the same side as the towed parachutist with the hook facing forward.

10-65. Hook the ratchet end of the strap to the opposite sidewall ring at FS 847, remove all the slack from the strap, and ratchet the strap until taut. The strap will be premeasured prior to pre-slowdown and excess strap taped. Using the static-line retriever, retrieve the static lines over the strap and as the parachutist is pulled up to the ramp, bring the parachutist into the aircraft by hand underneath the strap.

WARNING

The last five feet are the most crucial for the towed parachutist. An oscillating parachutist usually strikes the aircraft head first. If the parachutist is oscillating violently, stop the retrieval momentarily to allow stabilization, and then continue with retrieval. Repeat these steps as required.

Note. After the parachutist is pulled up to the ramp and is being controlled by the jumpmaster, the safety observer or loadmaster slightly unwinds the static-line retriever to relieve tension on the line so the parachutist can be brought into the aircraft.

WARNING

The towed jumper must remain in a tight body position and protect the rip cord handle with both hands. Inadvertent activation of the reserve while being towed may be fatal or cause serious injury to the jumper.

MODIFICATIONS TO TOWED JUMPER PROCEDURES

10-66. If the above towed jumper procedures must be modified, JMs are responsible for the safety and deployment of all jumpers as long as they are onboard the aircraft. No additional JMs or safeties are required to remain onboard the aircraft unless specified in the jumping unit's Airborne standard operating procedures.

10-67. If all jumpers have exited, those actions described as JM responsibilities are accomplished by the loadmaster(s). The aircrew is responsible for all equipment left onboard the aircraft by the jump unit until it can be retrieved or turned over to the unit concerned.

C-17A GLOBEMASTER III (PWAC)

10-68. The universal static line five-foot extension is required when jumping the C-17A. (Refer to TM 10-1670-272-23&P for more information.) **Time warnings** include the following:

- TWO-HOUR, 20-MINUTE TIME WARNING. This is used only on in-flight rigging missions.
- TWENTY-MINUTE TIME WARNING. At the 20-minute time warning, all in-flight rigging is complete. All jumpers are alert with helmets fastened. Door bundles are positioned in front of the paratroop doors, inspected, and hooked up to the outboard anchor line cable. Special items of equipment are attached to their respective jumpers and inspected.

Note. The 20-minute time warning may be increased to 30 minutes aboard the C-17A if the JMs need more time to accomplish their duties.

- TEN-MINUTE TIME WARNING. The aircrew turns on the jump caution lights, and then notifies the JM that the inspections are complete. The JMs hook up to their respective inboard anchor line cable and position themselves in front of the wind deflector control panel before beginning to issue jump commands. If both doors are used on one pass, then both JMs issue the commands at the same time.

Note. The 10-minute time warning may be increased to 15 minutes aboard the C-17A if the JMs need more time to accomplish their duties.

JUMP COMMANDS

10-69. Jump commands are given in the following sequence:

- "GET READY." Jumpers undo their seatbelts.
- "OUTBOARD PERSONNEL, STAND UP." All outboard jumpers stand, place their seatbelts in their seats, and push in the seats to retract them to the raised position. (This allows the jumpers to use the handhold straps on the cargo wall, if needed and assists in keeping the seatbelts off the floor, reducing tripping hazards.)
- "INBOARD PERSONNEL, STAND UP." All inboard jumpers stand, place their seatbelts in their seats. (The inboard seats do not fold.)

10-70. If time permits, it is recommended after the jumpers are standing that safety personnel inspect the following items on each jumper while moving forward (toward the cockpit) in the aircraft:

- Stow the troop cargo seating, if necessary.
- Assist jumpers in tightening down the appropriate adjustable leg straps and securing them in the appropriate webbing retainer.

Note. Safeties must be alert for any excess webbing that is loose or misrouted and correct the situation.

- HOOK UP.
 - C-17: 27 jumpers per outboard anchor line cable.
 - C-17: 24 jumpers per inboard anchor line cable.

Note. The outboard anchor cable can be utilized for 27 jumpers on each side. Once the centerline seats are added, the inboard cable is also installed (which accommodates 24 jumpers, then up to 51 jumpers and two bundles can be dropped from each paratroop door).

CAUTION

All jumpers on the aircraft must enforce rip cord handle awareness at all times. Once the USLM is hooked up to the anchor line cable, the nonstatic line hand will protect or cover the rip cord handle.

- “CHECK STATIC LINES.” The last two jumpers turn toward the skin of the aircraft. The second to last jumper checks the last jumper’s USLM. Each jumper checks the universal static line modified of the jumper to their front.

10-71. Once the safety has reached the last jumper and after the command, “CHECK STATIC LINES,” they will begin their return to the aft end of the aircraft. While moving towards the paratroop door, the safety will check and inspect with both hands and eyes:

- Safeties will check each jumper’s USLM. Ensure the universal static line snap hook is properly secured to the proper anchor line cable with the opening gate facing towards the skin of the aircraft.
- Trace down the USLM to the jumper’s four in the hand two below bight, ensuring it is held at eye level and they are not covering the double sewn portion.
- Trace the USLM over the jumpers shoulder, ensuring it is not misrouted. Continue to trace the USLM to the first stow.
- Visually inspect the remainder of the USLM to ensure it is properly stowed to the pack tray and the main curved pin protector flap is properly stowed in the tuck flap and not routed over any portion of the USLM.
- Stow any excess static line in the static line slack retainer band so that each static line is taut from the jumper’s bight to the pack tray, but not to the point where the excess static line loop hangs below the main curved pin protector flap.
- If a member of the JM team determines that a jumper’s USLM is not stowed in the proper manner, that jumper will not exit the aircraft.
- Reminds all jumpers to make eye-to-eye contact and hand their static line to the safety.

CAUTION

All jumpers on the aircraft must enforce rip cord handle awareness at all times. Once the USLM is hooked up to the anchor line cable, the nonstatic line hand will protect or cover the rip cord handle.

- “CHECK EQUIPMENT.” JMs will lean left then lean right and observe the stick of jumpers as they check their equipment. Once all movement has ceased, both JMs will give each other a thumbs up. This tells the other JM that their jumper’s equipment is good and they are ready to proceed. After the thumbs up has been issued, both JMs will check their own equipment.
- “SOUND OFF FOR EQUIPMENT CHECK.” This command is passed from the forward to the aft portion of the aircraft by each jumper.

10-72. The aircrew completes their six-minute slowdown checklist:

- Aircraft deck is set between six and seven degrees.
- Aircraft slows to a drop speed of 130 knots (plus or minus three knots indicated airspeed).
- Air deflectors are deployed, and troop doors opened.
- The loadmasters give control of the doors to the JMs and takes a position between both jump doors.
- Once the safety and technical inspection of the paratroop door is complete, the loadmaster informs the JMs, “ARMY YOUR DOOR.”
- The JM needs to confirm through the loadmaster, the aircraft has slowed to drop speed before assuming control of the paratroop door. This signal can be predetermined during the AMB or aircrew and JM briefing before flight.

Note. Jumpmasters will not assume control of the aircraft paratroop door until the loadmaster has confirmed the aircraft has slowed to 130 knots indicated airspeed.

DOOR SAFETY CHECK

10-73. After both JMs receive, “ALL OKAY, JUMPMaster,” from the No. 1 jumper, the AJM will give the PJM a thumbs up or verbally inform (or both) the PJM “ALL OKAY, JUMPMaster.” Both JMs will back up and regain control of their USLM using the hand respective to the door they are jumping from, (right door, right hand, left door, left hand) ensuring that the USLM is not misrouted under their shoulder. The safety can assist the JM in securing their USLM. The JMs will then turn towards the skin of the aircraft, remove the incorporated twist, and reestablish a proper bight. The JM will assume the No. 1 position and inspect their USLM from the USL snap hook until it disappears over their shoulder and will then sound off with “NUMBER ONE JUMPER CHECK MY STATIC LINE.” After completing the No. 1 jumper’s USLM check, the safety will then inspect the JMs USLM. Once the safety or technical inspection of the paratroop door is complete, the loadmaster informs the JMs “ARMY YOUR DOOR,” and the following occurs:

- The safety will inspect the JMs rip cord assembly to ensure the tuck tabs are in place and the T-11R inserts are installed properly, before the JM assumes control of the jump door. The safety will then prepare to take control of the JMs USLM.
- Safety personnel will position themselves near the trail edge of the paratroop door, the JM will secure the lead edge of the paratroop door with the nonstatic line hand.

- The JM will hand the safety their USLM and sound off with “SAFETY CONTROL MY STATIC LINE.” The safety will control the USLM for the JM as they perform the door safety check in the following manner:
 - The safety will control the JM’s USLM by grasping it with one hand above and one hand below their bight, keeping the USLM taut between their hands, ensuring no excessive slack is impeding the JM or causing a safety hazard.
 - The trail hand should be held high near the USL snap hook and the lead hand held low in the vicinity of the JM’s pack tray. Both hands should be formed in knife-cutting edges, palms facing outward, fingertips pointed skyward, with the USLM secured between their palm and thumb. Securing the USLM in this manner will allow the safety to easily release the JM’s USLM in the event the JM prematurely exits the paratroop door.

Note. The JM must ensure the safety has positive control of the USLM before moving toward the paratroop door.

TROOP DOOR UP LOCK, TRAIL EDGE OF THE TROOP DOOR, AND AIR DEFLECTOR

10-74. With the trail hand, the JM grasps the troop door lifting bar, raises the door up, and then pulls it back down to the door up lock. A visual inspection of the door up lock verifies that it is in the locked position. Then place the trail hand on the trail edge of the paratroop door.

CAUTIONS

All jumpmasters performing duties on a C-17A Globemaster III aircraft must be able to conduct a paratroop door check while maintaining three points of contact with the airframe. This check requires the jumpmaster to attain an 84-inch reach. Jumpmasters must be evaluated by their unit prior to performing any duties on this airframe.

All jumpers on the aircraft must enforce rip cord handle awareness at all times. Once the USLM is hooked up to the anchor line cable, the nonstatic line hand will protect or cover the rip cord handle.

10-75. With the lead hand, the JM starts at the 12 o’clock position and traces across the top down the trail edge of the paratroop door and across to the 6 o’clock position (middle of the jump platform), then back up to the 12 o’clock of the door to ensure no sharp or protruding edges exist. Then they secure a handhold with their lead hand by grasping the troop door guide or the handhold provided on the lead edge of the door. If for ANY reason the JM’s hand breaks contact with the trail edge of the door, the JM must begin the trace of the door over at the top of the door.

10-76. The JM will lean towards the trail edge of the door while looking in the direction of flight and will ensure the air deflector is properly deployed.

Note. To check the air deflector, the JM can visually inspect the interior angle gauge and verify the wind deflector is at 35 degrees (plus or minus five degrees), then rotate into the paratroop door.

INITIAL OUTSIDE AIR SAFETY CHECK

10-77. The JM places their lead hand inside the handle and secures the trail edge of the paratroop door with their trail hand. They walk out onto the jump platform, with both feet on the jump platform, and stand outside the aircraft locking both elbows out. From this stable position the JM visually conducts a down-and-behind air-safety check. Once the initial clear to the rear is complete, the JM returns to the relaxed door position and looks at the jumpers, then the safety, comes to a rest position, and waits for the one-minute reference point.

Note. JMs are encouraged to conduct checks in all cardinal directions to maintain the best situational awareness.

10-78. Once the doors are open and the jumpmasters are conducting their door checks, safeties will have all the jumpers close in tight, reducing all the jumper interval between the No. 1 jumper and the paratroop door. Once room permits, all jumpers will extend their arms before moving. Jumpers will maintain the proper interval.

10-79. The JM will lock out their elbows to properly conduct outside air safety checks, the safety will also lock out their elbows while checking for towed jumpers after each pass.

10-80. The loadmaster should relay time warnings to the JM or safety by using hand signals. The exact hand signals must be coordinated between the JM and loadmaster during the aircrew brief.

- One-minute time warning—with the elbow locked out, the index finger extended vertically;
- 30-second time warning—with the elbow locked out, the index finger and thumb held closely together.

WARNING

Do not sacrifice safety for time. Complete the full inspection of each jumper's USLM. If the inspection cannot be completed in time, the pass will be aborted. An improperly routed USLM can cause death or serious injury.

- ONE-MINUTE TIME WARNING. The JM issues the time warning to the jumpers with their lead hand and then resecures a handhold with their lead hand by grasping the troop door guide or the handhold provided on the lead edge of the door. The JM continues to watch for any unsafe conditions and spots for the 30-second reference point.
- THIRTY-SECOND TIME WARNING. Once the 30-second reference point is identified, issue the 30-second time warning with the lead hand and then immediately make the final clear to the rear. The JM will then rotate into the aircraft, let go of the paratroop door, and with their body facing towards the jumpers, issue a thumb up to the JM on the opposite paratroop door indicating that all conditions outside the aircraft are safe.

CAUTION

The JM or the safety can call a NO DROP anytime they determine something is wrong or unsafe.

Note. JMs will not issue the command of “STAND BY” until the amber light is on.

- STAND BY. Once the JMs rotate back into the aircraft and cover their rip cord handles with their trail hand and give the thumbs up signal to each other. The JMs will look at the jump caution lights to ensure the amber light is on. The amber light illuminates at 30 seconds prior to the green light, based off the CARP. Once the amber light is on, the JM then issues the command of, “STAND BY.” Starting at the shoulders with the elbows bent, the JM extends and joins their index and middle fingers, curling the remaining fingers and thumb of each hand toward the palm. As they give the command, “STAND BY,” they extend their arms up and out to their sides, ending at a 45-degree angle. The JM will then take a step forward with the inboard foot and rotate his or her body so that both JMs are facing the skin of the aircraft, with the body bisecting the lead edge of the paratroop door. JMs must ensure they are not impeding either anchor line cable. Each JM will

then reach out with the trail hand and secure a proper bight in their USLM. The safety will return control of the JM's USLM to the JM by forming it into a small bight, then assume a position bisecting the trail edge of the paratroop door, ensuring they do not impede the flow of jumpers. Whenever possible, the JM should protect their rip cord handle with the nonstatic line hand. The AJM must ensure they have eyes on the PJM and No. 1 jumper by looking over or under either shoulder. The safety receives the first jumper's USLM with their lead hand and secures it with their trail hand by pinning it against the intermediate anchor line support bracket and prepares to control the next jumper's USLM with the lead hand.

Note. If the first suspended object is an A-series container or door bundle, see door bundle procedures in this chapter.

10-81. Once the green light comes on, the PJM will issue the ninth jump command of, "GO." Both JMs will give the physical and oral command of, "GO," This is executed by bending forward at the waist giving a sharp tap on the thigh or buttocks of the No. 1 jumper.

10-82. The AJM will observe the PJM and the No. 1 jumper. When the PJM issues the ninth jump command to their No. 1 jumper and the jumper begins to exit, the AJM will immediately turn, acknowledge the green light is on, and then issue the physical and oral command of "GO" to their No. 1 jumper. This action needs to occur in half a second in order to establish the proper interval between paratroop doors. Both JMs will ensure they are in a position to best control the flow of jumpers without impeding the paratroop door or the safeties controlling USLMs. The safety will grasp each USLM with their lead hand, and pass it back to their trail hand, ensuring the USLM is firmly seated against the intermediate anchor line cable support.

10-83. The JM team must have situational awareness of their jumpers once the green light comes on. JMs:

- Controls the flow, spacing, and interval between jumpers without impeding the flow of jumpers.
- Ensures jumpers' static line arms are extended once they begin moving.
- Remind jumpers to make eye-to-eye contact with the safety.
- Pause or stops the stick for any unsafe act or condition, fix the issue and continue to exit jumpers, if the green light is on.
- Monitors the jump caution lights for the red light.

10-84. Safeties are responsible for:

- Controlling the flow of jumpers and USLMs without impeding the flow of jumpers.
- Ensuring that there is a positive transfer of the static line between themselves and the jumpers as they exit.
- Pauses or stops the stick for any unsafe act or condition, fixing the issue and continuing to exit jumpers.
- Watches for towed jumpers.

10-85. After the last jumper exits the aircraft, the AJM transfers control of the USLM to the safety. The AJM takes up a good door position, reconfirms that the jump caution light is still green, and exits if the light is still green.

10-86. The PJM transfers control of the USLM to the safety and takes up a good door position. Upon seeing the AJM exit, reconfirms that the jump caution light is still green, and exits if the light is still green.

10-87. Both safeties immediately conduct a clear to the rear for towed jumpers and will give each other a thumbs up. They will give a thumbs up to the loadmaster(s) and help retrieve deployment bags. After all jumpers have exited the aircraft:

- AJM transfers control of USLM to the safety.
- AJM takes up a good door position.
- Reconfirms that the jump caution light is still green.
- Exits if the light is still green.
- Upon seeing the AJM exit, the PJM transfers control of the USLM to the safety.

- PJM takes up a good door position.
- Reconfirms that the jump caution light is still green.
- Exits if the light is still green.

10-88. Both safeties immediately conduct a clear to the rear for towed jumpers and will give each other a thumbs up. They will give a thumbs up to the loadmaster(s) and help retrieve deployment bags.

WARNING

At no time during Airborne operations should the cargo ramp door be open when the troop doors are open. If this situation exists, all jumpers, including JMs and safety personnel must be seated and strapped in, guarding the rip cord handle of their reserve parachutes. If Army personnel must work around the open troop doors, caution must be taken to prevent personnel from being swept out of the aircraft. Inadvertent reserve activation with troop doors and the cargo door open can cause serious injury or death.

CAUTION

Jumpmasters must be prepared to initiate red light procedures at any time after the green light has been illuminated.

DOOR BUNDLE PROCEDURES

10-89. Below are two different and viable door bundle procedures. The Airborne commander will decide on which procedure they want to use and best support their ground tactical plan.

10-90. The commander will ensure that the JM team has rehearsed the door bundle procedure that he or she has directed to be used.

Note. If the No. 1 jumper pushes a door bundle, the No. 1 jumper must be a JM (does not have to be current) and must have T-11R inserts.

Method 1: Jumpmaster and No. 1 Jumper Pushing Door Bundle

10-91. After the final clear to the rear, the jumpmaster's exchange "thumbs up" and issue the command "STAND BY." The jumpmaster then secures their own USLM and the No.1 jumper's USLM. The safety and the No.1 jumper position the bundle in the paratroop door so that it is on its balance point with its longest dimension vertically in the door as far out on the jump platform as possible without losing control of the bundle.

- The safety maintains a firm grasp on the bundle with the lead hand and a firm grasp on the trail edge of the jump door with the trail hand. The safety ensures that the cargo parachute static line is routed above the trail arm. The No. 1 jumper maintains a firm grasp on the bundle with the trail hand and a firm grasp on the lead edge of the jump door with the lead hand.
- The jumpmaster keeps their eyes on the jumpers and the jump caution light. When the light turns green, they give the command, "GO," and the safety and No. 1 jumper eject the door bundle, ensuring that it goes straight out and does not tumble through the risers. They will only remove their hands from the jump door if required to eject the door bundle.

- Remember to push straight out on the lower portion of the bundle. Do not push the bundle at an angle as it may lodge in the paratroop door.
 - The safety will conduct a towed door bundle check. If the door bundle is being towed, it may cause serious harm to anyone leaning outside of the aircraft.
 - A towed door bundle can be identified from within the aircraft by sight (universal static line not rising to the top of the paratroop door after exit) or sound (from contact with the tail of the aircraft).
- If the bundle becomes lodged, the safety and the No. 1 jumper will attempt to dislodge the bundle and push it out.
- The jumpmaster will ensure that the USL is riding high in the door. Then they make eye contact with the opposite jumpmaster and exchange a thumbs up, signaling the door bundles have been ejected, that neither JM knows of any unsafe condition, and that each paratroop door is ready to exit personnel. The jumpmaster gives the No.1 jumper their static line and tells them to standby. The jumpmaster centers their body on the lead edge of the jump door, ensures the caution light is still green, and issues the ninth jump command of “GO,” and exits jumpers normally.

Method 2: Safety and No. 1 Jumper Pushing Door Bundle

10-92. At the 20-minute time warning:

- Jumpmasters and safeties unlash door bundles and move them near the jump door(s). Once positioned, the jumpmaster attaches the static line of each cargo parachute to the outboard anchor line cable.
- Once the safeties have checked the last parachutist, they return to the aft end of the aircraft and control the jumpmaster's static line during their door safety check.
- After the final outside air safety check, the jumpmaster moves back inside the aircraft and regains control of their static line. They also control the No. 1 jumper's static line with the opposite hand.
- The safety, positioned at the aft end of the door, with the assistance of the No. 1 jumper, positions the door bundle on the jump platform so that it is on its balance point with its longest dimension vertically in the door and the parachute on the top or inboard side of the bundle.
- The safety maintains a firm grasp on the bundle with the lead hand and a firm grasp on the trail edge of the jump door with the trail hand. The safety ensures that the cargo parachute static line is routed above the trail arm. The No. 1 jumper maintains a firm grasp on the bundle with the trail hand and a firm grasp on the lead edge of the jump door with the lead hand.
- The jumpmaster keeps their eyes on the jumpers and the jump caution light. When the light turns green, they give the command “GO” and the safety and No. 1 jumper eject the door bundle, ensuring that it goes straight out and does not tumble through the risers. They will only remove their hands from the jump door if required to eject the door bundle.
- Remember to push straight out on the lower portion of the bundle. Do not push the bundle at an angle as it may lodge in the paratroop door.
 - The safety will conduct a towed door bundle check. If the door bundle is being towed, it may cause serious harm to anyone leaning outside of the aircraft.
 - A towed door bundle can be identified from within the aircraft by sight (USL not rising to the top of the paratroop door after exit) or sound (from contact with the tail of the aircraft).
- The jumpmaster will ensure that the static line is riding high in the door. Then they make eye contact with the opposite jumpmaster and exchange a thumbs up signal, meaning the door bundles have been ejected, that neither person knows of any unsafe condition, and that each is ready to exit personnel. The jumpmaster gives the No. 1 jumper their static line and tells them to standby.
- Once the bundles have been exited, the jumpmaster will pass the No. 1 jumper's universal static line to the safety. The jumpmaster will look over their trail shoulder and give and receive thumbs up for the assistant jumpmaster. The No. 1 jumper will assume the No. 1 jumpers position and await the command of “GO!”
- The jumpmaster centers their body on the lead edge of the jump door and issues the ninth jump command.

- If the bundle becomes lodged, the safety and the No. 1 jumper will attempt to dislodge the bundle and push it out.
- The jumpmaster will ensure that the USL is riding high in the door. Then they make eye contact with the opposite jumpmaster and exchange a thumbs up signal, meaning the door bundles have been ejected, that neither JM knows of any unsafe condition, and that each paratroop door is ready to exit personnel. The jumpmaster gives the No.1 jumper their static line and tells them to standby. The jumpmaster centers their body on the lead edge of the jump door, rechecks to ensure the light is still green, and issues the ninth jump command of “GO,” and exits jumpers normally.

Note. Do not exit jumpers until all door bundles have cleared the aircraft.

NIGHT OPERATIONS

10-93. The PJM must remember that jumper’s eyes require 20 minutes to adjust to lower light levels before night operations. Therefore, only red compartment lights or night vision imaging systems lighting will be used 20 minutes before drop time.

10-94. This allows for physical adjustment and minimizes the impairment of a jumper’s night vision during the critical first seconds of a night drop. If the white light is substituted for the red light before drop time, the jumper’s eyes must readjust by turning on the red compartment lights for 20 minutes.

INCIDENT ON AIRCRAFT OR DROP ZONE

10-95. Any incident involving life-threatening injuries or death, or incidents based on severity by the Airborne commander, the drop will cease. Any medical treatment of injured personnel will take priority over preserving the jumper’s equipment or the aircraft. The JM team will:

- Cease exiting jumpers.
- Retrieve all deployment bags but DO NOT unhook them from the anchor line cable.
- Treat any injured personnel.
- Not tamper with any equipment or allow any jumper to de-rig, make every effort to preserve the aircraft.
- Ensure everyone is belted into their seat and the aircraft will immediately return to the departure airfield.
- Not allow anyone to get off the aircraft until released by investigative authorities.

Note. Refer to chapter 23 of this publication for investigation procedures.

ACTIONS DURING RETURN TO DEPARTURE AIRFIELD

10-96. Safety personnel will assist the loadmaster in retrieving the USLMs and deployment bags. Once the USLMs and deployment bags are inside the aircraft, safety personnel detach the USLMs and store them with the deployment bags in extra AKBs/UPRBs, 15 deployment bags per aviator’s kit bag and 30 deployment bags per UPRB.

10-97. While en route to the departure airfield, safety personnel will get the name, rank, service number, unit and reason for any alibi jumpers left onboard the aircraft. They also check the aircraft for any jumping unit equipment that was left onboard for turn-in to the DACO, collect trash and airsick bags.

10-98. 10-99. Before leaving, assist the aircrew in reconfiguring the aircraft by reinstalling all necessary seats and seat belts if subsequent lifts are planned. This assists the U.S. Air Force to be ready for any additional training or follow on missions they may have to support.

10-99. At the departure airfield, safety personnel will escort all personnel left aboard the aircraft, including jump refusals, to the DACO according to the unit SOP. Safety personnel will also turn over any unit or

personal equipment left aboard the aircraft and complete any necessary paperwork to the DACO according to unit SOP.

C-27J SPARTAN (PWAC)

10-100. **Time warnings** include the following:

- TWO-HOUR 20-MINUTE TIME WARNING. This is used only on in-flight rigging missions.
- TWENTY-MINUTE TIME WARNING. At the 20-minute time warning, all in-flight rigging is complete. All jumpers are alert with helmets fastened. Special items of equipment are attached to their respective jumpers and inspected.

Note. The 20-minute time warning may be increased to 30 minutes aboard the C-27J if the JMs need more time to accomplish their duties.

- TEN-MINUTE TIME WARNING. The aircrew turns on the jump caution lights and then notifies the JM that the inspections are complete. The JMs hook up to their respective anchor line cable and position themselves in the vicinity of the paratroop door before beginning to issue jump commands. If both doors are used on one pass, then both JMs issue the commands at the same time.

Notes. All jump commands, arm-and-hand signals conducted by the JM Team are the same as outlined earlier in this chapter.

The 10-minute time warning may be increased to 15 minutes aboard the C-27J if the JMs need more time to accomplish their duties.

JUMP COMMANDS

10-101. Jump commands are given in the following sequence:

- GET READY. Jumpers undo their seatbelts.
- PORTSIDE PERSONNEL, STAND UP. Only the jumpers for that pass will stand up, securing seats is optional based upon the unit SOP and mission:
 - Raise seats and secure them.
 - Seats can be left secured emplace (down), this causes all jumpers to execute a 90-degree turn around the last cargo seat at the paratroop door (this method of exiting must be rehearsed). A 90-degree exit is vital due to the absence of an air deflector.
 - Immediately after putting the seats up (if applicable), the jumpers must tighten down their appropriate adjustable leg straps and secure the excess webbing in the webbing retainer when jumping with combat equipment.
- STARBOARD SIDE PERSONNEL, STAND UP. Only the jumpers for that pass will stand up, securing seats (in the up position) is optional based upon the unit SOP and mission:
 - Raise seats and secure them.
 - Seats can be left secured emplace (down), this causes all jumpers to execute a 90-degree turn around the last cargo seat at the paratroop door (this method of exiting must be rehearsed). A 90-degree exit is vital due to the absence of an air deflector.
 - Immediately after putting the seats up (if applicable), the jumpers must tighten down their appropriate adjustable leg straps and secure the excess webbing in the webbing retainer when jumping with combat equipment.

Note. When the jumpmaster and safety stand up, their seats will remain down and locked. This configuration helps ensure jumpers will exit at a 90 degree angle perpendicular to the paratroop door.

10-102. If time permits, it is recommended after the jumpers are standing, the safety personnel inspect the following items on each jumper while moving forward (toward the cockpit) in the aircraft:

- Waistband for proper quick release.
- Ejector snap on the HPT lowering line for proper attachment.
- Weapon's case is properly attached.
- Stow the troop cargo seating, if necessary.
- Assist jumpers in tightening down the appropriate adjustable leg straps and securing them in the appropriate webbing retainer.

Note. Safeties must be alert for and correct any excess webbing, and loose or misrouted equipment.

- **HOOK UP.** For the C-27J: 13 jumpers per outboard anchor line cable (JM included).

CAUTION

Mass exit is not authorized for this aircraft. It is recommended that all first time jumpers be briefed planeside regarding the narrow size of the paratroop door and the undisturbed high-velocity airflow immediately outside of the paratroop door prior to their first jump on the C-27J.

- **CHECK STATIC LINES.** The last two jumpers turn towards the skin of the aircraft. The second to the last jumper checks the last jumper's USLM. Each jumper checks the universal static line modified of the jumper to their front.

10-103. Safety inspections: Once the safeties have reached the last jumper, and after the command, "CHECK STATIC LINES," they begin their return to the aft end of the aircraft. While moving towards the paratroop door, the safety will check or inspect with both hands and eyes:

- Safeties check the entire length of each jumper's USLM from the universal static line snap hook to the main curved pin protector flap, and that it is attached to the anchor line cable with the opening gate facing towards the skin of the aircraft.
- Stow any excess static line in the static line slack retainer band so that each static line is taut from the anchor line cable to the pack tray, but not to the point where the excess static line loop hangs below the main curved pin protector flap.
- Ensure the USLM is properly stowed to the static line stow bars with no slack and that the USLM has not become lodged under the main curved pin protector flap.
- Ensures the jumper has the proper bight (four in the hand, two below) and that the USLM is routed over the proper shoulder, not under the arm, and elbow held high.
- If a member of the JM team determines that a jumper's USLM is not stowed in the proper manner, that jumper will not exit the aircraft.
- Reminds all jumpers to make eye-to-eye contact and hand their static line to the safety.

WARNING

Do not sacrifice safety for time, complete the full inspection of each jumper's USLM. If the inspection cannot be completed in time, the pass will be aborted. An improperly routed USLM can cause death or serious injury.

- **CHECK EQUIPMENT.** JMs lean left, then lean right and observe the stick of jumpers as they check their equipment. Once all movement has ceased, both JMs will give each other a thumbs

up. This tells the other JM that their jumper's equipment is good and they are ready to proceed. After the thumbs up has been issued, both JMs will check their own equipment.

- **SOUND OFF FOR EQUIPMENT CHECK.** This command is passed from the forward to the aft portion of the aircraft by each jumper.

10-104. The aircrew completes their three-minute slowdown checklist:

- Aircraft slows to a drop speed of 130 knots (plus or minus three knots indicated airspeed).
- Paratroop doors opened (if applicable).
- The loadmaster or flight engineer gives control of the doors to the JMs and takes a position between both jump doors.
- Once the safety or technical inspection of the paratroop door is complete, the loadmaster informs the JMs, "ARMY YOUR DOOR," and takes a position in between both paratroop doors.
- The JM needs to confirm through the loadmaster that the aircraft has slowed to drop speed before assuming control of the paratroop door. This signal can be predetermined during the AMB, aircrew, or JM briefing before flight.

Note. Jumpmasters will not assume control of the aircraft paratroop door until the loadmaster has confirmed the aircraft has slowed to 130 knots indicated airspeed.

CAUTION

The anchor line cable stop is in line with the trail edge of the jump door. This is different from the C-130, in which the anchor line cable runs further to the aft of the aircraft. The placement of the anchor line cable stop decreases the amount of workspace for the jumpmaster, safety, and jumper.

DOOR SAFETY CHECK

10-105. After both JMs receive, "ALL OKAY, JUMPMaster," from the No. 1 jumper, the AJM will give the PJM a thumbs up or verbally inform the PJM, "ALL OKAY, JUMPMaster." Both JMs will back up and regain control of their USLMs using the hand respective to the door they are jumping from, (right door, right hand, left door, left hand) ensuring that the USLM is not misrouted under their shoulder. The safety can assist the JM in securing their USLM.

10-106. The JMs then turn towards the skin of the aircraft, remove the incorporated twist, and reestablish a proper bight. The JM assumes the No. 1 position and inspects their USLM from the USL snap hook until it disappears over their shoulder, and will then sound off with "NUMBER ONE JUMPER CHECK MY STATIC LINE." After completing the No. 1 jumper's USLM check, the safety then inspects the JMs USLM. Once the safety or technical inspection of the paratroop door is complete, the loadmaster informs the JMs "ARMY YOUR DOOR," and the following occurs:

- The safety inspects the JMs rip cord assembly to ensure the tuck tabs are in place, and the T-11 reserve parachute inserts are installed properly before the JM assumes control of the jump door. The safety will then prepare to take control of the JMs USLM.
- Safety personnel position themselves near the trail edge of the paratroop door, the JM secures the lead edge of the paratroop door by only grasping the metal upper or lower MEDEVAC litter support bracket. The JM hands the safety his or her USLM and sounds off with "SAFETY CONTROL MY STATIC LINE." Then the JM grasps the trail seat back support rail on the trail edge of the paratroop door. (See figures 10-11 and 10-12 on page 10-36.)

- The safety controls the USLM for the JM as they perform the door safety check in the following manner:
 - The safety grasps the JM's USLM with one hand above and one hand below their bight, keeping the USLM taut between their hands and ensuring no excessive slack is impeding the JM or causing a safety hazard.
 - The trail hand should be held high near the USL snap hook and the lead hand held low in the vicinity of the JM's pack tray. Both hands should be formed in knife-cutting edges, palms facing outward, fingertips pointed skyward, with the USLM secured between the thumb and palm. Securing the USLM in this manner allows the safety to easily release the JM's USLM, in the event the JM prematurely exits the paratroop door.

CAUTION

All jumpers on the aircraft must enforce rip cord handle awareness at all times. Once the USLM is hooked up to the anchor line cable, the nonstatic line hand will protect or cover the rip cord handle.

Notes. The JM ensures the safety has positive control of the USLM before moving toward the paratroop door.

Prior to the Airborne operation, the platform locking handle should be secured with hook-pile tape or 100-mile per hour (mph) tape to prevent a potential snagging hazard for the jumpers as they approach the paratroop door.

TRAIL EDGE OF THE TROOP DOOR

10-107. The JM will not stomp on the platform at any time when conducting door safety checks, and will apply firm downward pressure to the middle of the platform with the trail foot to ensure proper seating of the platform. Place the trail foot on the center of the platform with the lead foot a comfortable distance behind the trail foot.

CAUTION

All jumpmasters performing duties on a C-27J Spartan aircraft must be able to conduct a paratroop door check while maintaining three points of contact with the airframe. This check requires the jumpmaster to attain an 80-inch reach. Jumpmasters must be evaluated by their unit prior to performing any duties on this airframe.

10-108. With the lead hand, trace the paratroop door starting at the middle portion of the top edge of the paratroop door and trace to the top of the trail edge, down to the jump platform, then back up to the middle of the top edge of the door. Once completed, secure a handhold with the lead hand by grasping the upper and lower litter support block.

CAUTION

The jumpmaster must be aware that without a wind deflector, the T-11R rip cord handle will be exposed to higher winds than with other fixed-wing aircraft and could cause inadvertent reserve parachute deployment. Minimize unnecessarily exposure of the reserve parachute to relative wind for extended lengths of time.

INITIAL OUTSIDE AIR SAFETY CHECK

10-109. The JM leans out by bending forward at the waist 90 degrees, keeping both heels flat, elbow bent, and maintaining a firm grasp on the seat back support rail and upper and lower litter support bracket with both hands, and performs an initial outside air safety check down and to the rear of the aircraft for any unsafe conditions. JMs are encouraged to conduct checks in all cardinal directions to maintain the best situational awareness.

10-110. Once the initial clear to the rear is complete, the JM returns to a relaxed door position and looks at their jumpers, then the safety, comes to a rest position, and waits for the one-minute reference point. In the absence of reference points or checkpoints, the JM uses additional time advisories from the air crew, which must have been identified during the air mission briefing. The JM relays time warnings to the jumpers by leaning back inside the aircraft, keeping their foot centered on the platform, facing the jumpers, and calls off the one-minute and 30-second time warning while giving the proper arm-and-hand signal for each time warning.

WARNING

At no time will the jumpmaster lock their elbows out during the outside air safety check. Doing so could cause an inadvertent reserve parachute deployment.

ONE-MINUTE WARNING

10-111. Once the JM spots their one-minute reference point and is about one minute from the green light, or the safety passes along the loadmaster time warning to the JM:

- The JM relays the one-minute warning to the jumpers by leaning back, keeping their foot centered on the platform, facing the jumpers, and extends the index finger of their lead hand and announces, "ONE MINUTE."
- The jumpers relay the time warning by looking over their shoulder closest to the skin of the aircraft, shouting "ONE MINUTE."
- The JM continues observing outside for the 30-second reference point, or until the 30-second time warning is relayed from the loadmaster.

THIRTY-SECOND TIME WARNING AND FINAL CLEAR TO THE REAR

10-112. Once the JM spots the 30-second reference point and is about 30 seconds from the green light, or the safety passes along the loadmaster time warning to the JM:

- The JM relays the "THIRTY SECONDS," warning to the jumpers by leaning back, keeping their foot centered on the platform, facing the jumpers, extends the index finger of their lead hand, and announces, "ONE MINUTE."
- The jumpers relay the time warning by looking over their shoulder closest to the skin of the aircraft shouting, "THIRTY SECONDS."

- After the JM has called off the 30-second reference point, they immediately conduct their final clear to the rear outside safety check:
 - The JM leans forward at the waist 90 degrees, keeping both heels flat, elbows bent while keeping both heels flat on the floor of the cargo compartment.
 - The JM visually conducts a down and behind air-safety check.

WARNING

Door bundles are not authorized to exit the paratroop doors on a C-27J.

CAUTION

The JM or the safety can call a NO DROP anytime they determine something is wrong or unsafe.

UNSAFE CONDITIONS OUTSIDE THE AIRCRAFT

10-113. If the JM observes any unsafe conditions outside the aircraft, they notify the loadmaster by a preplanned hand-and-arm signal (for example, a cutting motion across the throat) that a NO DROP situation exists for this pass.

10-114. Once the JM makes their final clear to the rear outside safety check:

- The JM removes the trail foot from the jump platform and plants the foot inside the cargo compartment. The JM will then release the paratroop door with the lead hand.
- Rotates into the aircraft facing the jumpers and covers the rip cord handle with their trail hand.
- The PJM and AJM make eye-to-eye contact and give each other a thumbs up signal, indicating there are no unsafe conditions outside the aircraft, and they are ready to exit personnel. The JMs then release the trail edge of the door, take a step forward to the lead edge of the door, and the PJM issues the eighth jump command of “STAND BY” to their stick of jumpers.

Note. The AJM waits and observes the actions in the PJMs door. When they spot the last three jumpers in the vicinity of the paratroop door of the PJMs stick, they face their jumpers and issue the jump command of “STAND BY.”

- Each JM will then reach out with the trail hand and secure a proper bight in their USLM. The JM should then protect their rip cord handle with the nonstatic line hand. The AJM ensures their eyes are on the PJM before taking control of their USLM by looking over or under either shoulder. The safety returns control of the JMs USLM to the JM by forming it into a small bight. The safety then assumes a position bisecting the trail edge of the paratroop door, ensuring they do not impede the flow of jumpers. The safety receives the first jumper’s USLM with their lead hand and secures it with their trail hand by pinning it against the intermediate anchor line support bracket and prepares to control the next jumper’s USLM with the lead hand.

Note. The placement of the jump caution lights on the trail-edge or aft of the paratroop doors may be difficult to spot and can cause the jumpmaster to take their eyes off the jumpers exiting the aircraft.

10-115. The JMs and safety personnel take the following action:

- Once the green light comes on, the PJM issues the ninth jump command of “GO.”
 - Both JMs will give the physical and oral command of “GO.” This is executed by bending forward at the waist and giving a sharp tap on the thigh to the No. 1 jumper.
 - The AJM observes the actions in the PJMs door. When the AJM spots the last three jumpers in the vicinity of the paratroop door of the PJMs stick, they face their jumpers and issue the jump command of “STAND BY.” When the AJM sees the last jumper clear the jump platform in the PJMs door, they turn and rechecks their jump caution lights. (The PJM is now observing the actions in the AJMs paratroop door.)
- Both JMs will ensure they are in a position to best control the flow of jumpers without impeding the paratroop door or the safeties controlling USLMs.
- The safety grasps each USLM with their lead hand, and passes it back to their trail hand, ensuring the USLM is firmly seated against the intermediate anchor line cable support.

10-116. The JM team must have situational awareness of their jumpers once the green light comes on. JMs:

- Control the flow and spacing or interval between jumpers without impeding the flow of jumpers.
- Ensure jumper’s static line arms are extended once they begin moving.
- Remind jumpers to make eye-to-eye contact with the safety.
- Pause or stop the stick for any unsafe act or condition, fix the issue, and continue to exit jumpers, if the green light is on.
- Monitor the jump caution lights for the red light.

10-117. Safeties take the following actions:

- Control the flow and spacing or interval between jumpers without impeding the flow of jumpers.
- Ensure that there is a positive transfer of the static line between them self and the jumpers as they exit.
- Pauses or stops the stick for any unsafe act or condition, fix the issue, and continue to exit jumpers.
- Watches for towed jumpers.

CAUTIONS

Both the jumpmaster and the safety must be prepared to initiate red light procedures at any time after the green light has been illuminated.

Mass exit is not authorized for this aircraft. It is recommended that all first time jumpers be briefed planeside regarding the narrow size of the paratroop door and the undisturbed high-velocity airflow immediately outside of the paratroop door prior to their first jump on the C-27J.

10-118. After the last jumper exits the aircraft, the AJM transfers control of USLM to the safety. The AJM takes up a good door position, reconfirms that the jump caution light is still green, and exits if the light is still green.

10-119. Upon seeing the AJM exit, the PJM transfers control of the USLM to the safety. The PJM takes up a good door position, reconfirms that the jump caution light is still green, and exits if the light is still green.

10-120. Both safeties immediately conduct a clear to the rear for towed jumpers and will give each other a thumbs up. They will give a thumbs up to the loadmaster or flight engineer(s) and help retrieve deployment bags.

OTHER PROCEDURES

10-121. If a JM sees the **jump caution light turn red**, they raise their hand towards the jumpers and sound off with, “RED LIGHT, RED LIGHT, RED LIGHT.” No one touches or physically tries to stop a jumper

who has transferred the USLM and is committed to the paratroop door. Jumpers will be stopped only by oral command; this reduces the risk an incident. If any jumpers try to exit on the red light, they will be allowed to exit, except in the case of an unsafe jumper.

10-122. The procedure for handling a **jump refusal** are outlined in this chapter. The C-27J is equipped with a towed parachutist retrieval system (TPRS) and **towed jumper procedures** are also outlined in this chapter.

Note. It is a general rule that the JM or safety will cut away anything green (indicating equipment) and the flight engineer will cut away anything yellow (indicating static line). Towed jumpers indicate consciousness and that the reserve parachute is ready by maintaining a tight-body position with both hands on the reserve parachute. This indicates the jumper is prepared to be cut away.

ARMY EMERGENCY BAILOUT PARACHUTE

10-123. The advanced emergency bailout parachute is a lightweight emergency parachute with a 26-foot extended skirt canopy. The canopy is made from low-porosity material that is vacuum sealed to protect the main canopy from physical and environmental hazards. The canopy assembly consists of a main canopy, cross connector straps, a slider, diaper, steering handles, upper risers, and suspension lines made of ultra-high, molecular-weight polyethylene material. The container is made up of tear-resistant material and is used to store the sealed canopy assembly and pilot chute. The harness is used for securing the supporting the Airborne Soldier.

10-124. After an emergency bailout, the jumper manually pulls the rip cord handle, which removes the rip cord from the closing loop and initiates the parachute deployment process. This allows the spring-loaded pilot parachute to open the flaps and spring out into the air current.

10-125. As the jumper falls away from the inflated pilot chute, the pilot parachute bridle cord pulls on the sealed canopy bridle cords. This opens the vacuum-sealed bag, extracting the suspension lines from the deployment bag, followed by the main canopy. Upon deployment of the main canopy, a slider attached to the suspension lines will slide down towards the jumper, reducing canopy opening shock. The main canopy will inflate.

When force is applied to the soft links, the main canopy will inflate. During descent, the jumper can use the steering handles located on the back side of the rear risers to maneuver the parachute to a desired landing site. Upon landing, the jumper doffs the AEBP System by releasing the three quick-ejector snaps (chest and two leg straps) Information relating the AEBP can be found in TM 10-1670-332-23&P.

INSPECTION CRITERIA

10-126. Each jumpmaster performing safety duties using the AEBP System is required to watch the AEBP training video that was provided with the rigger new equipment training during fielding. The following procedures are the inspection criteria for the AEBP. The parachute should always be inspected prior to being donned. If there are ANY discrepancies with the parachute, remove the system from service. (See figure 10-11 on page 10-36.)

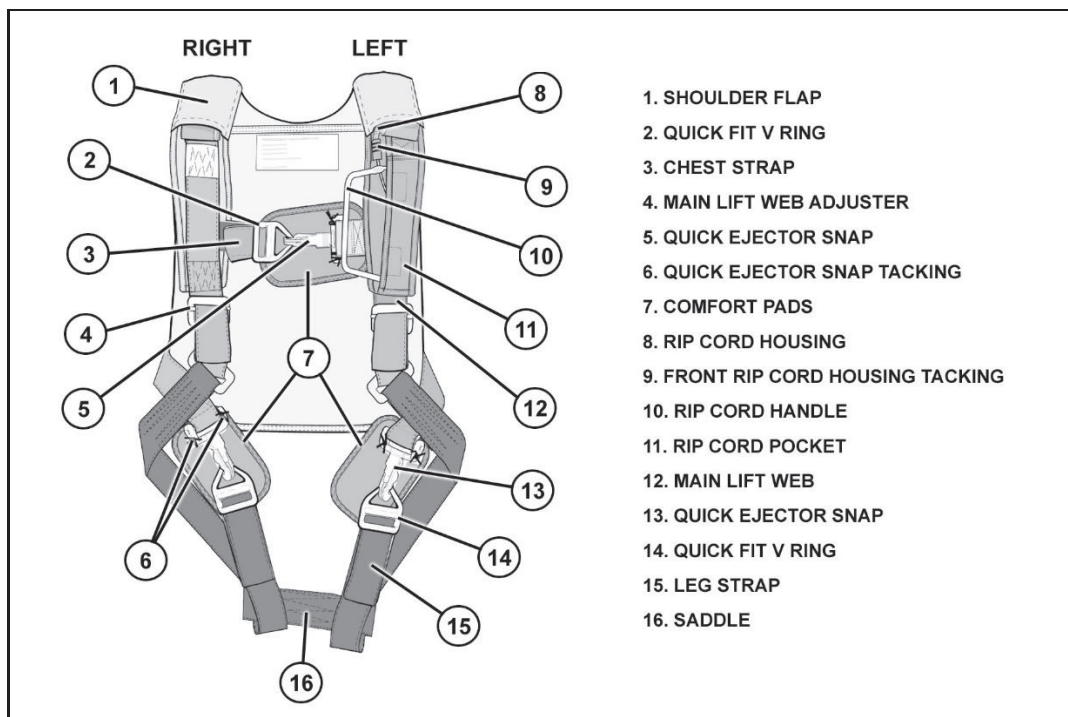


Figure 10-11. AEPB components

- Lift outer top cover flap. Check that the top closing flap tackings are present; tuck flaps are not exposed; and the color of the tape, lacing, and tying is white. (See figure 10-12.)

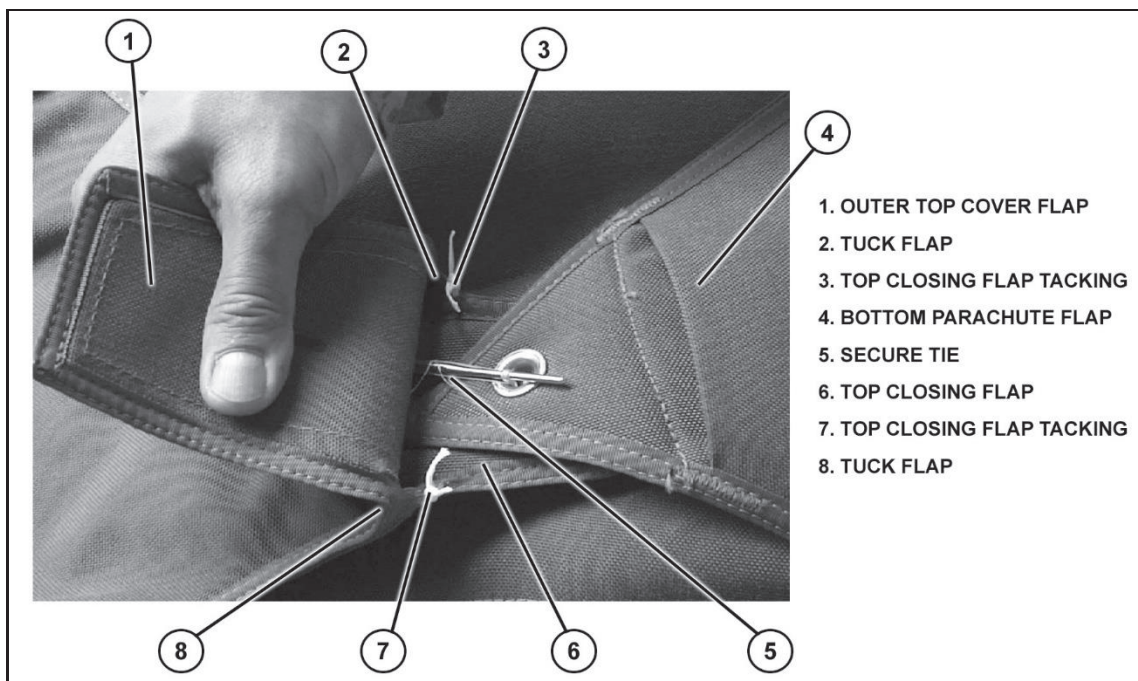


Figure 10-12. Cover flaps

- Check the rip cord pin. Ensure the pin is straight and fully seated but not shouldered. Confirm the secure tie is present. If the secure tie is not present or is broken, remove system from service for inspection. Reseat outer top cover flap. (See figure 10-13.)

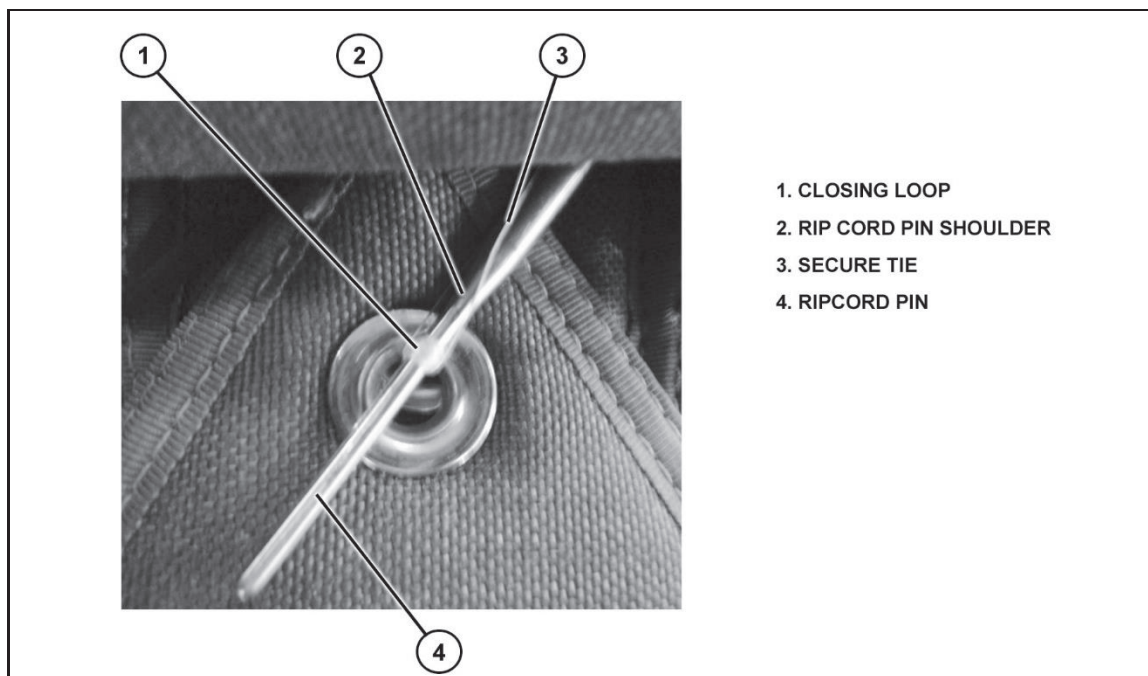


Figure 10-13. Rip cord pin

- Inspect the right links by opening the right shoulder flap and right link protector flap. Visually inspect soft links for holes, cuts, fraying, loose or broken stitching, and burns. Inspect the #4 connector link for burrs, cracks, sharp edges, corrosion, broken sealant, and exposed threads. Ensure torque sealant is on the nut and no threads are exposed. Close right link protector flap and right shoulder flap, ensuring the hook-pile tape is secure. (See figure 10-14.)



Figure 10-14. Right link

- Check the front rip cord housing tacking is in place and the color of the tape, lacing and tying is white. Check that the rip cord handle and rip cord cable is stowed in the pocket and is not routed through the chest strap. Ensure a large portion of rip cord handle is seated in the pocket. Ensure the swage ball is located at the end of the rip cord cable and is free from burrs, sharp edges, and cracks. After inspection, ensure that the swage ball is stowed in the rip cord pocket. (See figure 10-15.)

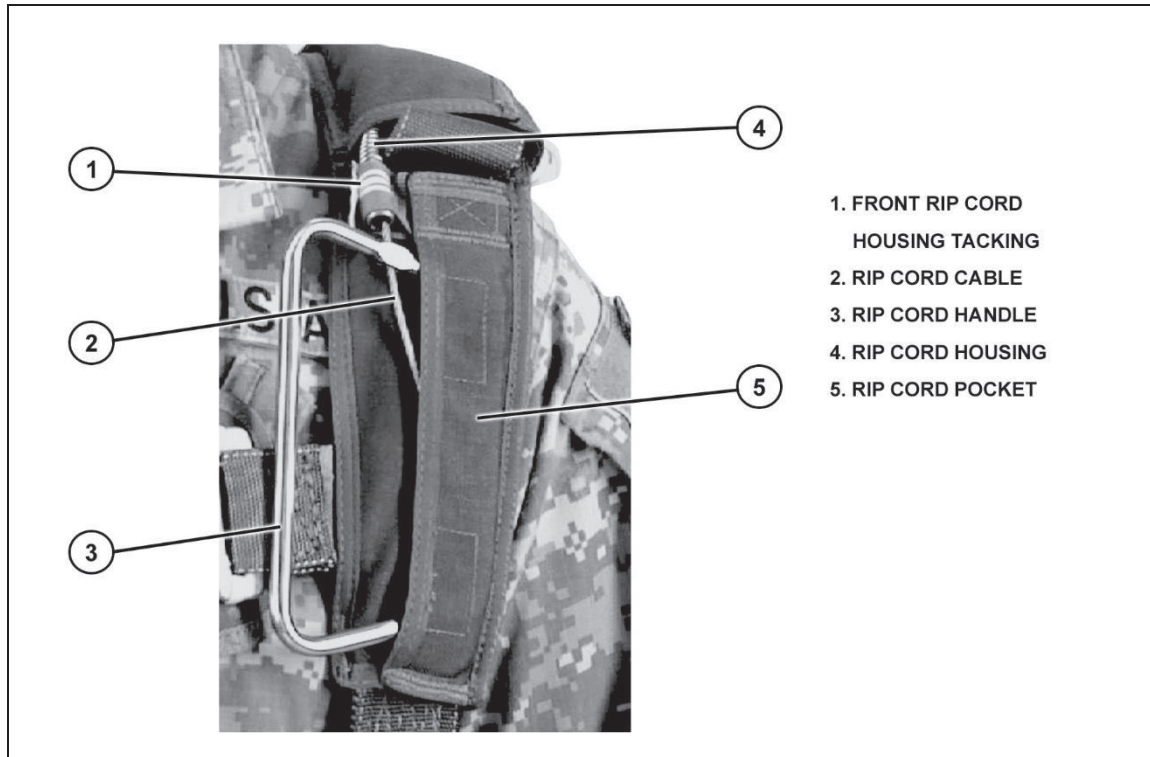


Figure 10-15. Rip cord housing tacking

- Inspect the left links by opening the left shoulder flap and left link protector flap. Visually inspect soft links for holes, cuts, fraying, loose or broken stitching, and burns. Inspect the No. 4 connector link for burrs, cracks, sharp edges, corrosion, broken sealant, and exposed threads. Ensure torque sealant is on nut and no threads are exposed. Visually inspect rip cord housing for burrs, cracks, corrosion, and sharp edges. Check for the presence of the rear rip cord housing tacking. Close left link protector flap and left shoulder flap, ensuring hook-pile tape is secure. (See figure 10-16.)

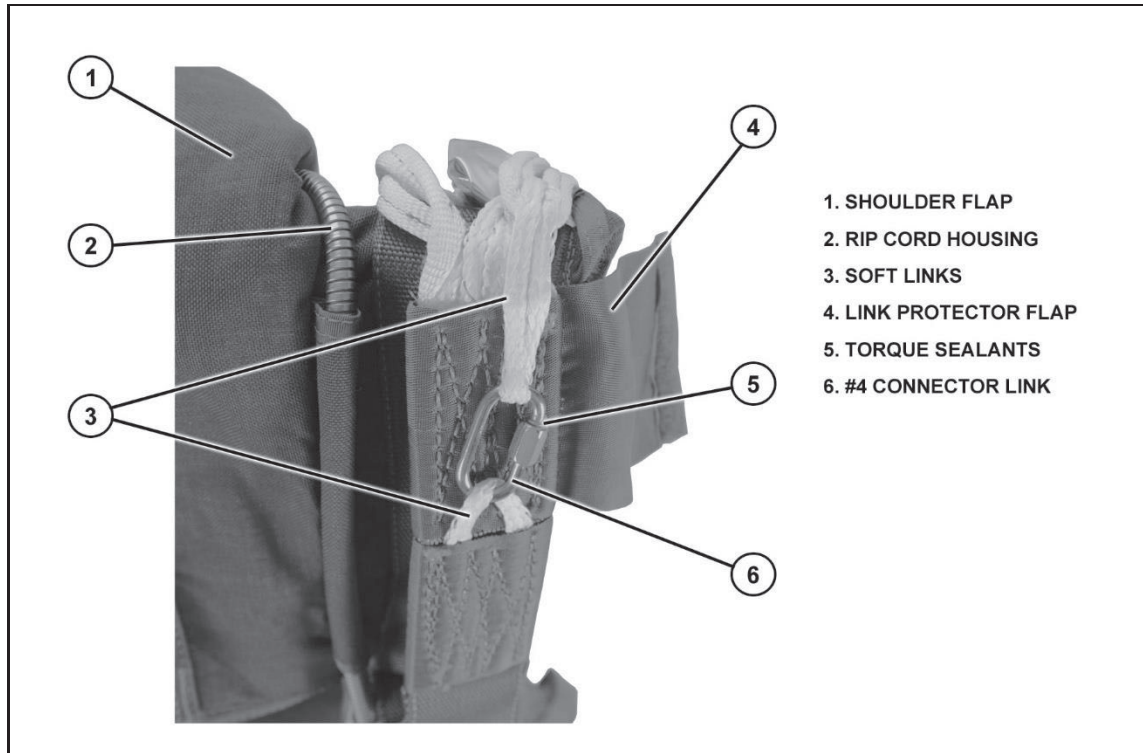


Figure 10-16. Left link

- Check for the presence of the four quick-ejector snap tackings securing the comfort pad to the chest strap quick-ejector snap. Inspect the chest strap for loose or broken stitching, holes, burns, contamination, cuts, tears, and fraying. Inspect the quick-ejector snap and quick-fit V-ring on the chest strap for proper operation, rust, corrosion, burrs, sharp edges, and cracks. Check if retainer webbing is present at the chest strap. Inspect retainer webbing for loose or broken stitching, loss of elasticity, cuts, and fraying. If retainer webbing is not present or is not serviceable, replace with heavy-duty retainer bands.
- Inspect the main lift webs for loose or broken stitching, holes, burns, contamination, cuts, tears, and fraying. Check the main lift web adjusters for burrs, cracks, sharp edges, and corrosion. Check if retainer webbings are present at the main lift webs. Inspect retainer webbings for loose or broken stitching, loss of elasticity, cuts, and fraying. If retainer webbing is not present or is not serviceable, replace with heavy-duty retainer bands.
- Check for the presence of the two quick-ejector snap tackings securing the comfort pads to each leg strap quick-ejector snaps. Inspect the leg straps and saddle for loose or broken stitching, holes, burns, contamination, cuts, tears, and fraying. Inspect the quick-ejector snaps and quick-fit V-rings on both leg straps for proper operation, rust, corrosion, burrs, sharp edges, and cracks. Check if retainer webbings are present at the leg straps. Inspect retainer webbings for loose or broken stitching, loss of elasticity, cuts, and fraying. If retainer webbing is not present or is not serviceable, replace with heavy-duty retainer bands.
- Check the sealed canopy assembly for firmness. A soft (pillowed) AEBP indicates the sealed canopy assembly has lost its vacuum.

Note. If vacuum loss occurs, the AEBP is still serviceable for the mission. After the completion of the mission, the AEBP must be repacked.

- Conduct an overall visual inspection of the container for seam separation, holes, cuts, tears, frays, burns, and the presence of the Army Parachute Log Record.

PLANNED AND UNPLANNED EXITS

10-127. There exists a likely probability of death or permanent total disability if the AEBP is used by an inadequately trained Soldier during an unplanned aircraft exit. As a minimum, AEBP instruction should include new equipment training before first use and a rehearsal of system use and emergency procedures as part of SAT prior to each operational airdrop mission.

10-128. AEBP training should focus on body position after an unplanned exit, rip cord activation, actions under the canopy, emergency procedures, and landing procedures. The following are also recommended procedures for AEBP training and rehearsal:

- Proper method to pull the rip cord.
- Deployment sequence.
- Body position.
- Actions under the canopy.
- Emergency procedures for collisions.
- Emergency procedures for entanglements.
- Emergency procedures for canopy activation inside the aircraft.

10-129. To properly pull the rip cord, personnel must take the following actions:

- The rip cord grip is located over the left breast pocket. To activate, the jumper should grasp the rip cord grip with one or both hands and then pull the rip cord downward (hard and fast) toward their feet and away from their body.
- The jumper should pull it to arm's length, ensuring the rip cord clears the housing. Then, immediately bring arms close to the body.
- Jumpers scheduled to wear the AEBP should rehearse rip cord activation in conjunction with proper body position during SAT mock aircraft rehearsal.
- Additionally, immediately after donning the system, jumpers should identify the rip cord grip location and simulate rip cord activation.

10-130. After an emergency bailout, the jumper manually pulls the rip cord handle, which removes the rip cord from the closing loop and initiates the parachute deployment process. Allowing the spring-loaded pilot parachute to open the flaps and spring out into the air current. As the jumper falls away from the inflated pilot chute, the pilot parachute bridle cord pulls on the sealed canopy bridle cords. This opens the vacuum-sealed bag, extracting the suspension lines from the bag, followed by the main canopy. Upon the deployment of the main canopy, a slider attached to the suspension lines will slide down the suspension lines towards the jumper, to reduce canopy opening shock. The main canopy will inflate.

10-131. To assume the correct body position during an unplanned exit, place chin on chest, elbows into sides, feet and knees together, visually locate and place hand(s) on the rip cord grip, and then pull the rip cord. However, when bailing out of an aircraft at extremely low altitude (below 1000 feet AGL), the most important factor is to pull the rip cord as soon as the jumper clears the aircraft, regardless of body position.

Note. When bailing out of an aircraft at extremely low levels, the most important factor is to pull the rip cord immediately upon clearing the aircraft, regardless of body position. The minimum recommended altitude use of the AEBP during combat operations is 565 feet AGL. For Airborne combat operations below 565 feet AGL, the jumpmaster and safety personnel should wear a safety harness anchored to the aircraft or a static line parachute attached to the anchor line cable in lieu of an AEBP.

10-132. During descent, the jumper can use the steering handles located on the back side of the rear risers to maneuver the parachute in the desired direction of travel to maneuver the canopy and avoid obstacles and other jumpers in the air. Jumpers scheduled to wear the AEBP should rehearse actions under canopy during SAT. After exiting the aircraft, complete the remaining four points of performance:

- Check canopy and gain canopy control.
- Keep a sharp lookout at all times and constantly compare rates of descent.
- Prepare to land.
- Land. Upon landing, the jumper doffs the AEBP system by releasing the three quick-ejector snaps (chest and two leg straps).

10-133. Jumpers must always attempt to avoid mid-air contact by slipping or turning away from fellow jumpers. If unable to avoid a collision, the higher jumper should use the spread-eagle method to bounce off the lower jumper's canopy or suspension lines. If an AEBP-equipped jumper enters another jumper's suspension lines, the AEBP-equipped jumper immediately assumes the position of attention in hope that their exit will be the same location without becoming entangled. If not, the AEBP-equipped jumper should follow the emergency procedures for entanglement.

10-134. The AEBP is a steerable canopy with a forward velocity. The AEBP has no reserve canopy. If jumpers become entangled, the actions required to correct the problem depend upon the condition of their main canopies. If one jumper has a completely inflated canopy, they will hold their positions until they reach the ground. If both parachutes lose lift capabilities, the jumper with a reserve will use the pull drop method to activate their reserve parachute. Neither jumper should attempt to climb to the other jumper. Additionally, the higher jumper should avoid the lower jumper when landing. Parachutists scheduled to wear the AEBP should rehearse collision and entanglement procedures during SAT prejump training.

10-135. If the pilot chute deploys from the pack tray, the JM or safety will immediately attempt to contain the pilot chute. If contained, the AEBP-equipped jumper should remove the parachute and place it inside its kitbag. Jump operations will be on hold until the affected nonjumping JM or safety don a replacement parachute or safety harness. If a replacement parachute or safety harness is not available, the affected personnel should take a seat near the front of the aircraft and the Airborne operation should only be conducted from the door with a fully equipped JM team. If the AEBP-equipped jumper is aft of the wheel well, and the jump doors (or ramp) are open and the pilot chute is in or going out the door (or ramp), the jumper should immediately exit the aircraft. Airborne operations will cease if the nonjumping JM or safety conducts an unplanned exit. Jumpers scheduled to wear the AEBP should rehearse canopy activation inside the aircraft during SAT or at mock door rehearsal.

BA-18 BACK AUTOMATIC PARACHUTE

10-136. The BA-18 U.S. Air Force emergency back automatic parachute is used by nonjumping jumpmasters and safety personnel onboard U.S. Air Force high performance aircraft only. This parachute has a repack cycle of 180 days and must pass a routine inspection at the home unit every 30 days. Once the parachute is activated, it must be destroyed.

10-137. The BA-18 is equipped with either an FXC Model 7000 or FXC Model 11000 automatic release system (ARS). The owning U.S. Air Force unit's life support department sets the time-delay release (from one to 13 seconds) and then attaches a small white tag on the back of the BA-18 to indicate what delay time has been set (three seconds, four seconds, five seconds, and so on). To employ the BA-18, the jumper either pulls the red arming cable knob to activate the time-delay feature, or overrides the ARS by pulling the T-shaped blast handle. Personnel scheduled to wear the BA-18 must inspect it before each use. If they note any discrepancies during the inspection, they must not use the parachute. FXC Models 7000 and 11000 cannot be set on a timer. The U.S. Air Force's automatic release is a time-delay release.

INSPECTION CRITERIA

10-138. The inspection procedures are simple, and their sequence is not important. However, the parachute must be inspected before each donning.

- Check the canopy release assemblies in the same manner as on the T-11 ATPS main parachutes.
- Ensure that no straps (chest, leg, and horizontal back strap) are cut or frayed.
- Ensure all three ejector snaps are serviceable.
- Between the parachute harness assembly and the pack tray, a pad is held with four pull-the-dot fasteners (one at each corner). Open the pull-the-dot fasteners, expose the long zipper that is behind the pad, and unzip the zipper. Ensure that the locking pins are not bent and are routed through the white nylon cord loops, and that the cable is free of rust or other corrosion. Resecure the zipper and the pad once the inspection has been completed.
- Inspect the risers and ensure they are not cut or frayed and are secured to the canopy release assemblies.
- Make an overall inspection on the outside of the pack tray to ensure that the pack tray is free of rips, tears, oil, grease, dirt, or water, and that no canopy or suspension lines protrude from the pack tray.
- Open the slide fastener on the back of the pack tray. Ensure that the spring has both hooks (one at each end) routed through the white nylon cord loops; then secure the slide fastener.
- Ensure the rip cord is properly stowed and free of rust or other corrosion.
- Ensure the red time delay arming cable knob is properly stowed.
- If the parachute is equipped with a personnel lowering device, inspect it to ensure that the associated hardware is secure inside the stow pocket. Inspect the lowering line from where it exits the stow pocket to the point where it disappears into the pack tray.

PLANNED AND UNPLANNED EXITS

10-139. Once the last jumper has exited the aircraft, pull the red automatic release arming knob to arm the ARS, and exit the aircraft. After reaching an altitude of 14,000 feet, the canopy will open. However, at any time during descent, the rip cord can be activated and override the ARS.

10-140. If the parachute is equipped with an ARS set for a delay of four seconds or more, pull the automatic release arming knob and exit the aircraft. If the parachute is equipped with an ARS set for less than four seconds, exit the aircraft, assume the correct body position, and pull the automatic release arming knob.

10-141. To assume the correct body position, place the chin on the chest, elbows into the sides, feet and knees together, and visually locate and place the hand(s) on the rip cord. Allow sufficient time (one second, minimum) to clear the aircraft, then pull the rip cord.

Note. When bailing out of an aircraft at extremely low levels, the most important factor is to pull the rip cord immediately upon clearing the aircraft, regardless of body position.

PROPER METHOD TO PULL THE RIP CORD

10-142. Personnel must do the following: the automatic release may be overridden by pulling the rip cord. Grasp the T-handle with the right hand and guide or assist it with the left hand. Pull the rip cord, hard and fast, down toward the feet and away from the body. Pull it to arm's length and then immediately bring the arms back close to the body. Ensure the rip cord clears the housing.

10-143. After exiting the aircraft, complete the normal remaining four points of performance—check canopy and gain canopy control, keep a sharp lookout during the entire descent, prepare to land, and land. (See chapter 3.) To avoid obstacles and other jumpers in the air, or maneuver the canopy, pull a vigorous two-riser slip in the desired direction of travel. To execute a two-riser slip with this canopy, reach up high onto the

risers to the elbow locked position, grasp a set of risers in the direction of the desired movement, and pull them down to the chest.

PERSONNEL LOWERING DEVICE

10-144. If the jumper becomes hung in trees or rough terrain and the parachute is equipped with a personnel lowering device, use it to climb down to safety. The jumper should—

- Visually check to see if they are securely hung in the obstacle.
- Take the hardware out of the stow pocket. Grasp the braking device and snap it into the top portion of the V-ring of the chest strap with the hook side facing the midsection.
- Pass the snap hook at the end of the tape through the “V” of both risers.
- Attach the snap hook to the O-ring (which should be in front of the face).
- Grasp the tape with the left hand and disconnect the right canopy release assembly with the right hand. Exchange hands on the tape, with the left hand disconnecting the left canopy release assembly.
- Lower themselves to the ground by feeding the tape through the braking device.
- Stop the descent by pulling the tape up vertically with the right hand.

This page intentionally left blank.

Chapter 11

Departure Airfield Control Officer

The departure airfield control officer is appointed by the Airborne commander and is responsible for coordination and control loading personnel, equipment, and supplies into aircraft. The DACO is located at the departure airfield.

Note. Personnel conducting DACO duties must be a current and qualified jumpmaster.

DACO INITIAL COORDINATION

11-1. When advised of appointment, the DACO is furnished the following information:

- The unit(s) jumping.
- Type of jump and number of personnel.
- Parking plan of aircraft (location and tail number of the assigned aircraft).
- Type and number of aircraft.
- Number of lifts.
- Load time.
- Station time.
- Weather decision time.
- Drop zone.
- Names of DZSO, assistant DZSO, DZSTL, JM, AJM, and safety personnel.
- Coordination with the U.S. Air Force guide if wheeled vehicles are used for transport to aircraft.
- Action for incident on aircraft or drop zone, such as jump refusal, towed jumper or any parachute malfunction according to this publication or the unit SOP.
- Bump plan.

11-2. At the departure airfield, the DACO makes contact with the ALCE or aircrew to discuss, coordinate, and confirm the following:

- Aircraft parking plan.
- Aircraft tail number(s).
- Time of pilot/JM briefing.
- Informs JM teams when aircraft may be inspected so they can plan accordingly.
- Weather data.
- Flight line safety measures.
- Appointment and identification of the ground liaison officer.
- Current safety regulations (ALCE or aircrew advises DACO).
- Aircraft loading procedure and time.
- Return of jump refusals (how they are to be managed).
- Parachute malfunction procedures.
- Manifest distribution to ALCE or aircrew.
- Inspection of aircraft for air items and Airborne unit equipment upon return to the airfield.

DZSO AND DZSTL COORDINATION

11-3. The DACO is also responsible for the following:

- Contacts the DZSO or DZSTL one hour before drop time and maintains communication throughout the entire operation.
- Relays the drop zone conditions from the DZSO to the Airborne commander and all JM teams.
- Confirms the type of parachutes being utilized.
- Informs the DZSO or DZSTL of aircraft aborts.
- Updates the DZSO or DZSTL on changes and aircraft departures.
- Reports to the tanker airlift control element in reference to any of the following: malfunctions, jumpers off the surveyed drop zone, early exit from an aircraft, or serious injury that requires treatment.
- Informs the DZSO or JM team(s) of any changes caused by aircraft maintenance problems, crew rest, weather delays, or other problems.
- Issues DACO brief to all JM teams. This includes:
 - Reporting procedures in the event of a serious incident, static line injury, jump refusal, or other problems.
 - Updating unit-specific procedures for JM and safety duties.
 - Reporting procedures upon completion of operation.
- Requests a jump closure/flash report from the DZSO or DZSTL.
- Requests timely wind readings from the DZSO or DZSTL.
- Immediately reports parachute malfunctions to the tanker airlift control element.

AIRFIELD AND RUNWAY SAFETY

11-4. The DACO is responsible for the following airfield and runway safety issues and actions:

- Movements in and around the aircraft, taxiways, and runways.
- Briefs JM or AJM on airfield procedures.
- Coordinates with U.S. Air Force guides for escort to aircraft (if applicable).

11-5. After mission completion, the DACO is responsible the following actions:

- Collects all Army equipment left on aircraft from safeties.
- Secures all alibi and personnel left on board the aircraft from the safeties.
- JMPI jump refusals and ensures a current and pack-qualified rigger conducts a technical inspection.
- Collects any statements in compliance with the unit SOP (malfunctions, red light exits, jump refusal, inaccurate time warnings, and other issues.).

Chapter 12

Individual Combat Equipment Jump Loads

Individual equipment and weapons are attached or worn by the jumper in several configurations. They can be placed inside containers, exposed, or a mix of the two. Unit SOPs will not deny the jumper the ability to conduct the five points of performance or perform emergency procedures. To ensure personnel safety, all small arms must be on “SAFE” when jumping.

JUMPER’S LOAD

12-1. It is a leader’s responsibility to ensure their personnel are highly proficient in the proper rigging of individual items of combat equipment and that they maintain the serviceability of their equipment. The Airborne commander is responsible to ensure that all unit and individual equipment involved are approved for Airborne operations in compliance with this TC.

12-2. Any test involving a new item of equipment or a procedure that causes a change to the normal use of an item of equipment will be examined by the Airborne and Special Operations Test Directorate. After the Airborne and Special Operations Test Directorate has determined that it is technically safe to use the equipment for Airborne operation, the United States Army Jumpmaster School and United States Army Advanced Airborne School will evaluate any changes to jumpmaster procedures based on the test equipment. However, the United States Army Infantry School is the final approval for all changes to equipment and procedures for static line operations. Equipment authorized for Airborne operations can be found in this publication, TB 43-0001-80, and safety confirmations or safety of use messages.

LOAD DISTRIBUTION AND CONSIDERATIONS

12-3. Unit commanders and jumpmasters must inspect jumpers to ensure weight and distribution of the load does not interfere with the jumper’s ability to perform a strong, safe exit from an aircraft, or hinder a jumper’s ability to perform emergency procedures.

12-4. During planning, leaders at all levels must take into consideration that the total jumper-rigged weight cannot exceed the maximum parachute load limit of 400 pounds (T-11 ATPS or the MC-6). Determining factors should include the following:

- Individual jumper’s body weight.
- Weight of the parachute system.
- Weight of any equipment attached to the jumper.
- Experience level of the individual jumper.
- Unit jumper progression program.

12-5. Commanders should use all the equipment methods of entry available to them (CDS, door bundles, and so on) to prevent overloading any individual jumper. During planning, leaders at all levels must take into consideration that the static line retrieval system has a maximum weight limit of 400 pounds. The maximum rigged weight of the parachutist cannot exceed 325 pounds for over the ramp operations.

Note. The maximum total jumper weight criteria does not preclude the primary jumpmaster of their responsibility to ensure that all jumpers can safely and effectively exit from an aircraft.

PROTECTIVE GEAR

12-6. Helmets must be fitted properly to ensure they stay on the jumper's head during deployment of their parachute and during parachute landing falls. U.S. Navy and U.S. Marine Corps personnel will use helmets approved according to sister service regulations and approved equipment lists.

12-7. The advanced combat helmet is a modular helmet system that provides ballistic, fragmentation, and impact protection. (See figure 12-1.) This system is compatible with the current night vision devices (NVDs), communications packages, and chemical defense equipment. The outer rim of the helmet shell of the ACH must be inspected for any sharp or protruding edges that may cut or fray a jumper's USLM upon exiting the aircraft. Sharp or protruding edges will be taped with pressure-sensitive adhesive cloth. The ACH has the following characteristics:

- The helmet system provides nine millimeter (mm) and fragmentation protection within a spectrum of environments (cold down to -40 degrees Fahrenheit; hot up to 140 degrees Fahrenheit; salt water; fresh water; petroleum, oils, and lubricants; and so on).
- The ACH allows maximum sensory awareness for the operator, which includes an unobstructed field of view and increased ambient hearing capabilities.
- The helmet's retention and suspension system provides unsurpassed balance, stability, and comfort. This unique system provides for proper size, fit, and ventilation.
- The pad suspension system provides superior impact protection throughout all operational requirements.



Figure 12-1. Advanced combat helmet

HELMET ASSEMBLY

12-8. The ACH has a unique, fully adjustable pad suspension system. The only authorized suspension pads are those issued or purchased through official U.S. Army supply systems. All suspension pads will be secured to the helmet shell by hook disks. There are two sizes of suspension pads, size 6 which are three-quarter inch and size 8 which are one-inch thick. All seven suspension pads will be the same size, do not mix and match suspension pad sizes or manufacturers. Serviceable suspension pads will be free of any rips or tears that expose the foam padding inside the shell. All seven pads are worn with the helmet. (See figure 12-2.)

12-9. The placement of the oval pads must cover the four bolt ends of the four adjustable buckles in the helmet shell. The oval pads must be placed vertically inside the helmet shell to maximize impact protection. The crown pad may not be replaced by two oval pads. One trapezoid pad will be positioned at the front of the helmet shell and one at the rear. The front trapezoid pad will be flush with the outer rim of the helmet shell. The rear trapezoid pad can be flush with the outer rim or extend up to a half inch past the outer rim for maximum protection. (See figure 12-3.)

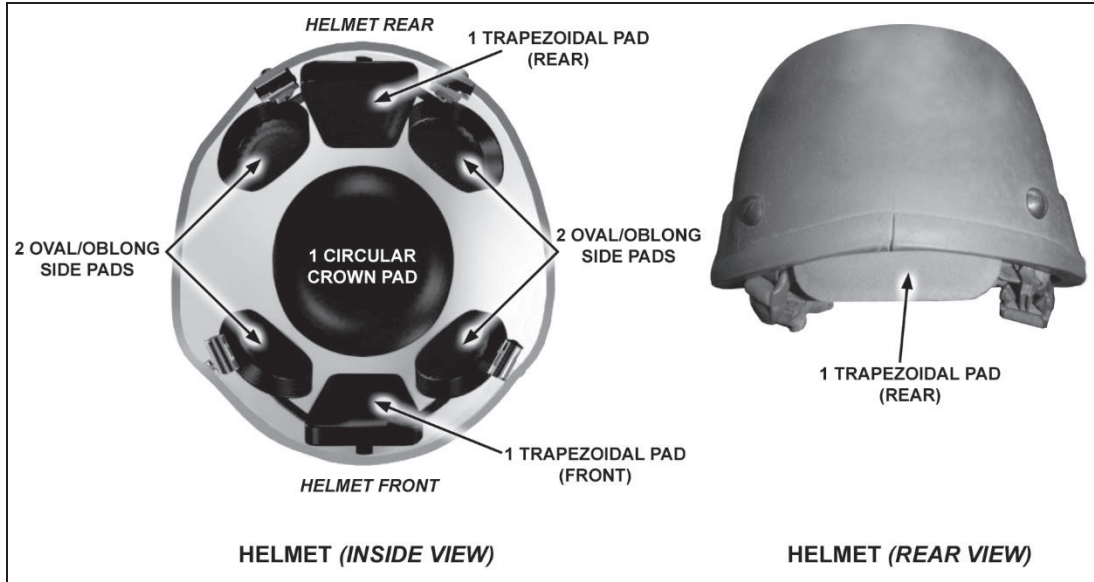


Figure 12-2. ACH pads



Figure 12-3. ACH rear trapezoidal pad

Notes. If hot spots or discomfort are experienced, try rearranging the pad system to accommodate a more comfortable fit. If discomfort persists, try resizing the shell.

See the sizing and fitting troubleshooting guidelines (chapter 2) for problems with fit, such as tightness or looseness, or if the helmet profile is too high or too low.

When trying on the helmet for the first time in a cold environment, wear the helmet for a few minutes to allow the pads to warm up and conform to the shape of the head.

WARNING

Seven suspension pads must be present for an Airborne operation. The helmet must be worn with a crown pad to meet the impact protection requirement.

- 12-10. Adjust the chinstrap to optimize fit and comfort by following the steps below:
- Step 1. Before donning the ACH, loosen all adjustable straps (two in front, two in back, one on the nape of neck). (See figure 12-4.)



Figure 12-4. ACH adjustable straps

- Step 2. Position the ACH on the head and hold in place with one hand on top of the helmet for initial adjustment. (See figure 12-5.)

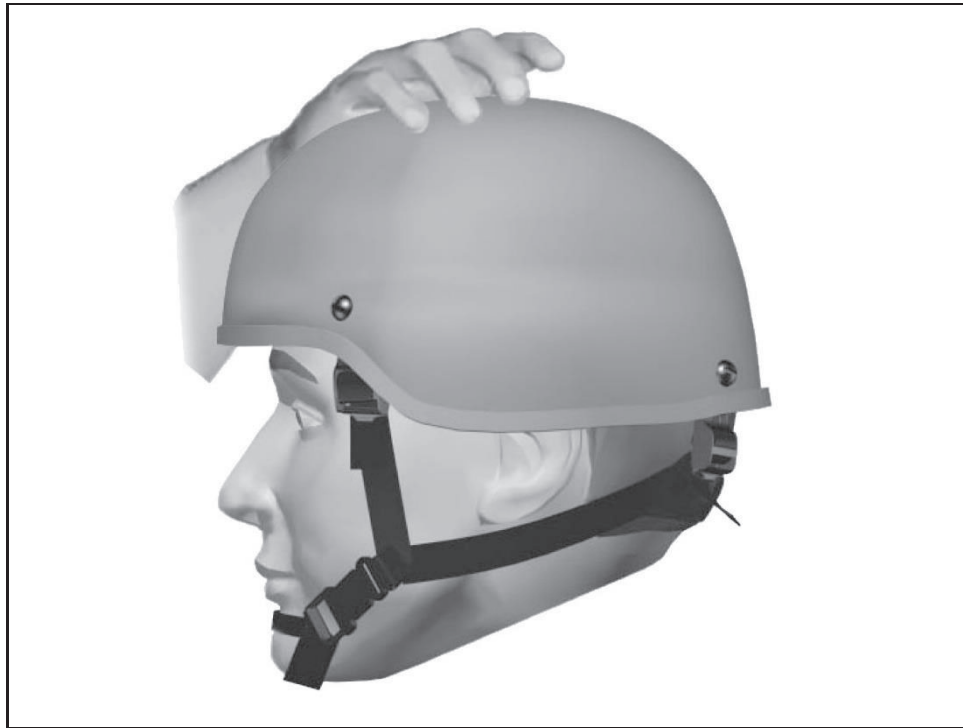


Figure 12-5. ACH held in place for initial adjustments

- Step 3. Partially tighten the two adjustable back straps (one side at a time). (See figure 12-6.)

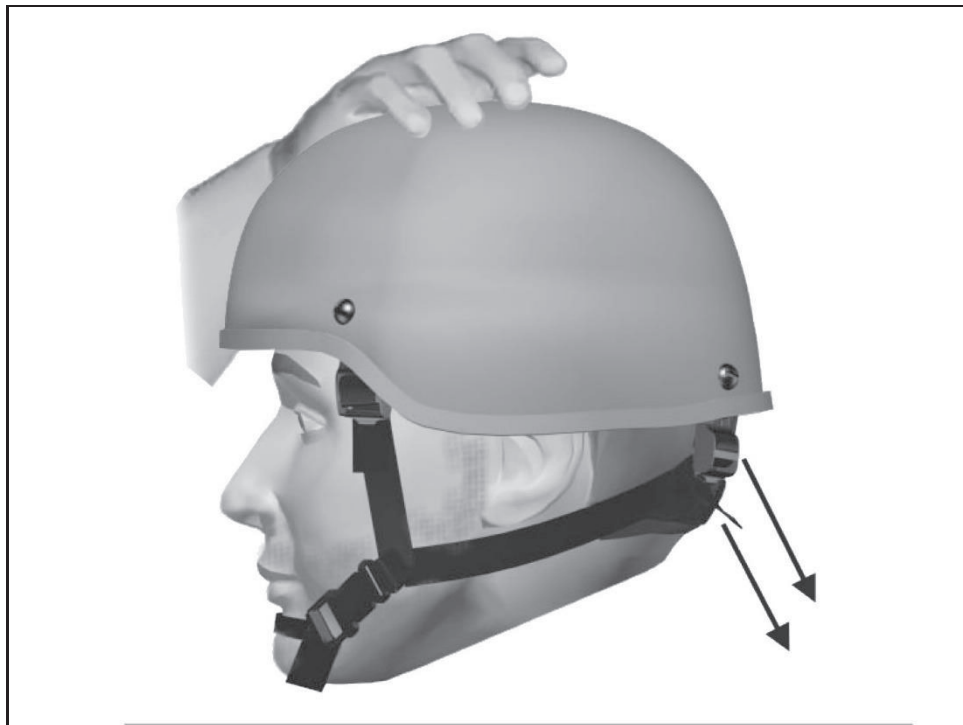


Figure 12-6. Back strap adjustment

- Step 4. Partially tighten the two front adjustable straps (one side at a time). (See figure 12-7.)



Figure 12-7. Adjust two front straps

Note. If any strap is pulled too tightly during steps 3 and 4, the ACH may become uncomfortable and tilted on the head.

- Step 5. With both hands, fully tighten the front and back adjustable straps. (See figure 12-8.)



Figure 12-8. Front and back adjustable straps

- Step 6. Position the nape pad up and down, according to personal comfort. (See figure 12-9.)



Figure 12-9. Position nape pad

MODIFIED CHINSTRAP ASSEMBLIES

12-11. **Mounting hardware.** Ballistic mounting screws, securing screws and nuts, and conical nuts must be inspected to ensure they are not rusted, cracked, or corroded. Mounting hardware will not protrude excessively into the helmet shell. They must be tightened down to ensure that neither piece can move freely from the other, and that they secure the chinstrap assembly in place. All screws must be routed from outside to inside and cannot damage the material of the helmet shell. Replacement parts must match the original hardware provided with the chinstrap assembly. Using replacement parts from the ballistic helmet or unauthorized systems may damage the ACH and cause a safety hazard to the jumper. Flush-mounted securing screws or nuts or conical nuts are preferred. When tightening, the screw will not protrude past the securing screw or nut or conical nut.

12-12. **Nape pad.** As worn, the padded portion of the nape pad must be facing toward the jumper's skin. The retention strap must be properly routed through it and secured by the hook-pile tape. Ballistic nape pads are not authorized for Airborne operations.

12-13. **Night vision goggles/enhanced night vision goggles base plate (head harness).** All mounting hardware utilized to secure a base plate or head harness to an advanced combat helmet must be flush mounted on the inside of the helmet shell. Replacement hardware for the night vision goggles/enhanced night vision goggles base plate (NSN 5340-01-509-1467) is available that will allow the traditional style base plate to be safe for operations. This hardware will only be used on this style base plate. Prior to any Airborne operation, the head harness must be thoroughly padded and taped to cover any sharp or protruding edges. (See figure 12-10 on page 12-8.) The mount and swing arm assembly for the night vision goggles/enhanced night vision goggles will not be jumped attached to the head harness.

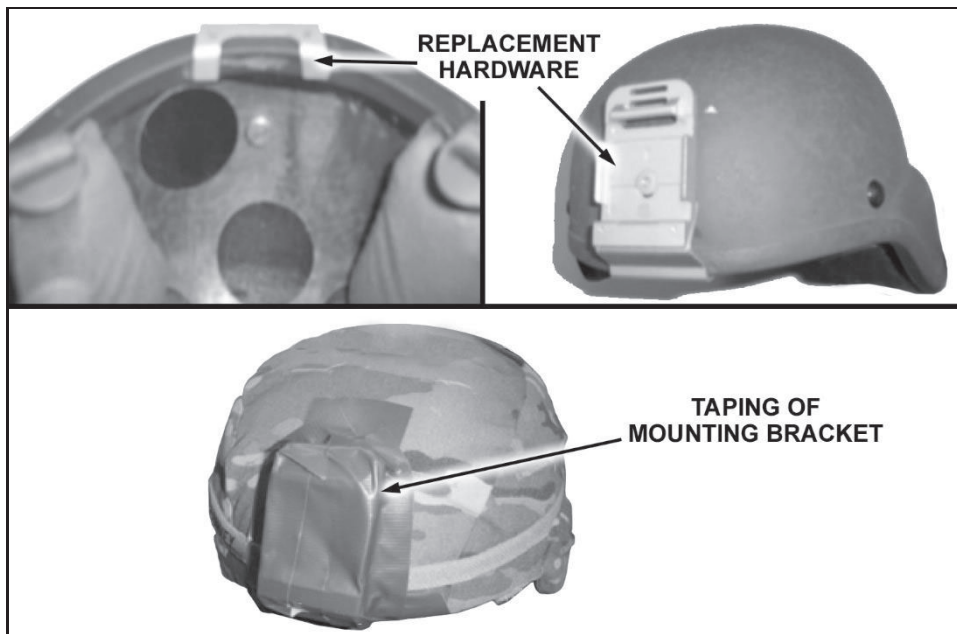


Figure 12-10. Replacement hardware and taping the mounting bracket

WARNING

Do not over-tighten the mounting screw on the front bracket. It may break.

UNIVERSAL SHROUD

12-14. To attach the universal shroud (tan) (NSN 5855-01-569-7751), ensure the hole in the plate and the hole in the helmet shell are in line. Insert the mounting screw (the mounting screw and tee nut are issued with the shroud) through the plate and into the helmet shell. (See figure 12-11.)

- Insert the tee nut from inside the helmet shell and tighten the mounting screw. Before completely tightening the mounting screws ensure the plate is properly aligned and snug against the helmet shell by pushing up on the plate.
- The universal shroud does not require any padding or taping unless it becomes jagged or sharp at any point as a result of wear and tear.
- When jumping, the tie down ring attached to the universal shroud is not be used for any item of equipment as it may break.
- The mount and swing arm assembly for the night vision goggles/enhanced night vision goggles will not be jumped attached to the head harness.

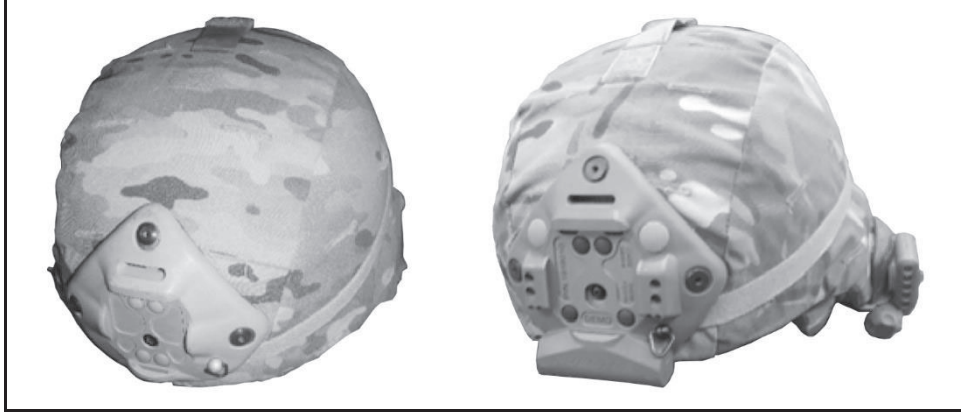


Figure 12-11. Universal shroud

WARNING

Individuals are not authorized to drill holes in their helmets.

HIGH CUT BALLISTIC HELMET

12-15. High cut ballistic helmets are authorized for use in military static line and military free fall operations. Ensure the helmet has the required one-hole option for NVD mounts and head harnesses, the liner, and the nape chinstrap assembly with integrated fit band. (See figure 12-12.)



Figure 12-12. High cut ballistic helmet

12-16. A minimum of three main impact pads will be utilized, not including the two used to support the integrated fit band with liner. (See figure 12-13 on page 12-10.) In order to properly fit and wear the helmet; the following steps must be done in order to achieve the best fit:

- Loosen the chinstrap so the suspension pad system rests against the jumper's head.
- Ensure the front outer rim of the helmet shell rests one-half inch to one inch from the jumper's eye brow line.
- Tighten the front adjustable straps to a comfortable fit.
- Tighten the fit band of the chinstrap to a comfortable fit.
- Tighten the rear adjustable straps to a comfortable fit.



Figure 12-13. Impact pads and liner

12-17. Serviceability and inspection criteria is as follows:

- Exterior of the helmet shell:
 - Outer rim free of sharp and protruding edges.
 - Helmet shell free of cracks and gouges.
 - All accessories properly secured to the helmet shell with the proper hardware.
 - NVD mount secured properly by the one-hole or three-hole option. Units are not be authorized to drill into the helmet shell.
- Interior of the helmet shell:
 - Suspension pad system.
 - Impact pad system. When utilizing the impact pads there will be a minimum of three main impact pads placed inside the helmet shell.
 - Liner system. When utilizing the liner system, the user is authorized to arrange the comfort pads in a manner that offers them the best fit and most comfort.
- Chinstrap assembly. Only authorized chinstrap assemblies are used. Ensure the proper ballistic mounting screws are present, free of rust and corrosion, and properly secured to the helmet shell. Ensure all plastic components are not cracked or broken and the adjustable straps are not cut or excessively frayed. In addition:
 - Ensure the dial is present and operational.
 - The 360-degree impact liner is secured to the helmet shell by hook-pile disks and is at the initial level of impact protection the helmet offers the jumper.
 - Ensure the hook disks for the suspension pad system are present and secured to the impact liner.

WARNING

Do not mix the liner comfort pads with the impact pad system.

UNIVERSAL PARACHUTIST RECOVERY BAG

12-18. The UPRB (NSN 1670-01-645-1731) is designed as a carriage and storage container for military free fall and static line parachute systems. It is intended as a replacement system for the aviator kit bags and MC-4 kit bags currently used to support parachute recovery operations. The UPRB has approximately 8000 cubic inches of storage space. The main storage compartment is capable of holding the T-11 main parachute canopy and an activated reserve canopy. A storage pocket on the outside of the bag is designed for storing a packed T-11 reserve parachute or a military free fall helmet. The design includes shoulder straps and top

carrying handles to facilitate load carriage and leg strap retainers to secure the UPRB under the parachute harness leg straps. Details are:

- Material: 7.25 nylon cloth (water and abrasion resistant).
- Color: F-504.
- Weight: three pounds.
- Size: 30 x 29.

12-19. The UPRB is not waterproof and is not designed to provide protection from wet weather or damp ground. Parachute assemblies and reserves may be issued in the UPRB to aid handling and to prevent damage or unintentional opening. Until removed for fitting by parachutists, parachutes and reserves should remain in the UPKB and be protected from moisture to prevent mildew during storage and transport. Storing UPRBs in weatherproof areas such as buildings, trucks, tents, or transport aircraft, reduces the risk of moisture-related damage.

12-20. The UPRB components consist of the following (see figure 12-14, and figure 12-15 on page 12-12):

- 1. Universal parachutist kit bag (UPKB).
- 2. Front pocket securing straps.
- 3. Front pocket.
- 4. Heavy duty zipper.
- 5. Snap fasteners.
- 6. Top compression strap.
- 7. Top carrying handles.
- 8. Side carrying handles.
- 9. Shoulder straps.

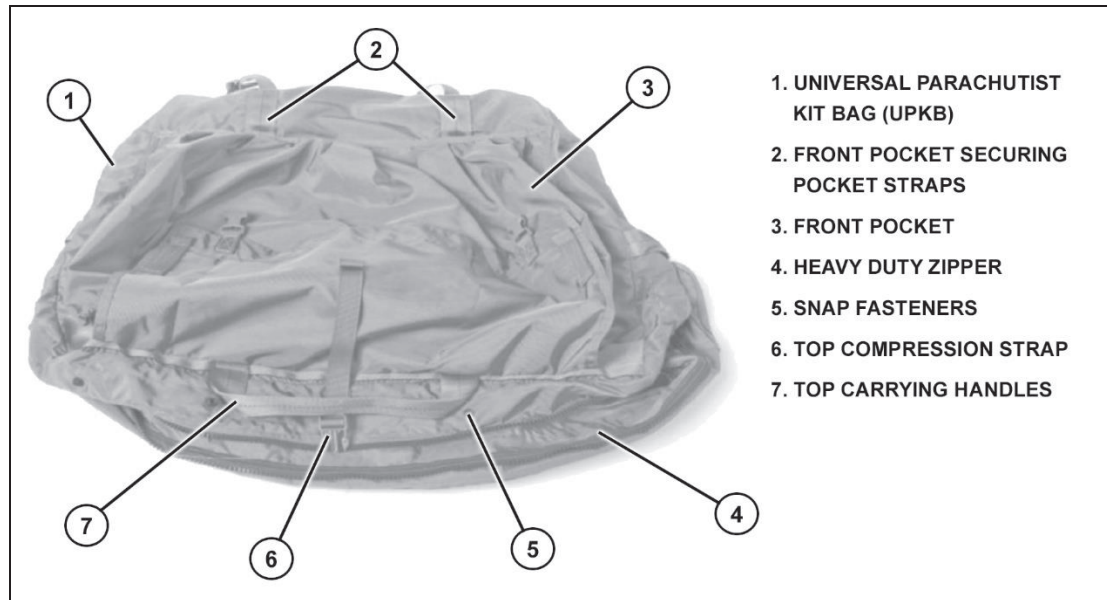


Figure 12-14 Universal parachutist recovery bag

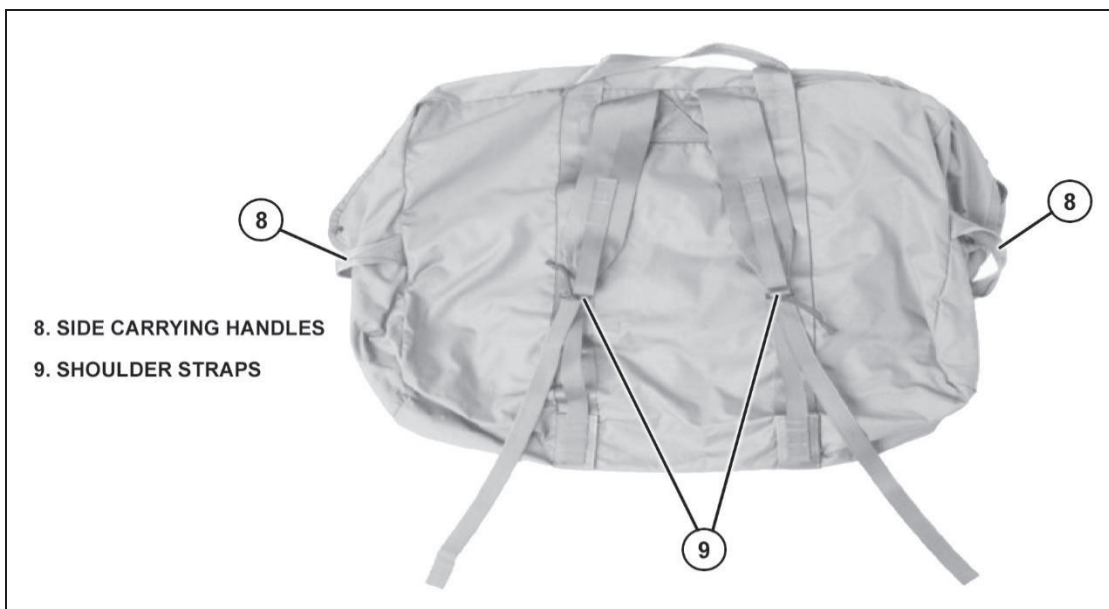


Figure 12-15. Universal parachutist recovery bag handles

12-21. To properly fold the universal parachutist recovery bag:

- Place it on a flat surface.
- Invert the UPRB so that the smooth side is out. Tuck all webbing and excess webbing that is on the inside and zip it closed.
- Fold one side of UPRB by aligning the binding tape and tucking all excess material to the inside. Fold the opposite side in the same manner.
- Fold the bottom by pulling the top layer up and tucking all excess material to the inside.
- Once excess material is tucked, align the top and bottom binding tape. Fold the top with zipper by lifting the top layer toward the center and tuck the zipper and snaps to the inside. (Do not zip the bag completely closed.)
- Pull the bottom corners; this allows the binding tape to lay flat. Fold the top layer back onto the bottom layer, aligning the binding tape.
- Flip the UPRB over so that the leg strap retainer is on the bottom.
- Ensuring the smooth side is up and starting from either side, fold one quarter approximately four to six inches towards the center. (See figure 12-16.)
- Repeat for the opposite side, fold one quarter (approximately four to six inches) towards the center.

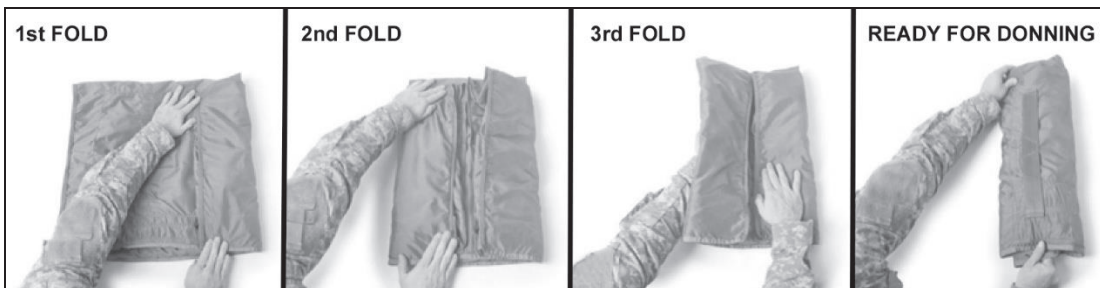


Figure 12-16. UPRB folds

- Fold the same section that was just created over to approximately the center of the UPRB, ensuring the sides of the UPRB remained dressed. (See figure 12-16.)
- Ensure the sides of the UPRB remain dressed as the UPRB continues to be folded. Once complete, turn the UPRB over. The UPRB is ready donning.

12-22. When donning the UPRB, ensure the open end of the UPRB is facing upward. The direction of the trapezoid-sewn portion has no bearing on how the UPRB is worn on the jumper. Ensure the leg strap retainer is facing out, and both left and right leg straps are routed from bottom to top behind the leg strap retainer. The quick-fit V-ring is securely fastened to the quick-ejector snaps, ensuring the ejector snap activating level is secured and seated properly. (See figure 12-17.)



Figure 12-17. Proper wear of the UPRB

AVIATOR KIT BAG

12-23. In order to properly fold the aviator kit bag (NSN 5245-01-456-3232):

- Place it on a flat surface with the carrying handles facing away from the body.
- Secure the four corners of the bottom portion of the AKB and fold them in half, creating an envelope fold. This same type of envelope fold will be incorporated into the left side, right side, and the top portion of the AKB.
- Now, fold the uppermost carrying handle back onto the main body.
- Then fold the AKB into thirds; left over right or right over left, either way is correct.

12-24. A properly folded AKB consists of a smooth side, a sewn reinforced side, and an exposed carrying handle. (See figure 12-18.)



Figure 12-18. Folded aviator kit bag

M50 JOINT SERVICE GENERAL PURPOSE MASK

12-25. The M50 joint service general purpose mask (JSGPM) (NSN 4240-01-512-4437) consists of a mask, carrier, and accessories. The mask components are designed to minimize impact on the wearer's performance and provides protection from battlefield concentrations of chemical and biological agents.

12-26. The M50 JSGPM has two methods of delivery: rigged exposed by the jumper or placed in the MAWC. Preparing the exposed M50 JSGPM to be rigged on the jumper involves routing the leg strap of the M50 JSGPM around the mask carrier and securing the leg strap to itself. (See figure 12-19.)



Figure 12-19. Properly routed and secured leg strap

12-27. Donning the M50 JSGPM to the jumper:

- Route the waist strap of the carrier around the waist of the jumper before donning the parachute harness.
- Place the carrier in the front groin area of the jumper, with the quick-opening flap to the right.
- Don the T-11 ATPS.
- The UPRB will be placed under the mask carrier. The L-shaped ejector snap pad of the parachute harness is routed over the waist strap of the carrier. Both leg straps are properly routed through the leg strap retainers of the UPRB.
- Attach the T-11 reserve parachute to the D-rings, ensuring the mask carrier rests below the reserve parachute.
- When the ALICE Pack or MOLLE is attached, ensure the kidney pad rests above the mask carrier, not on top of the mask carrier.

12-28. Rigging the M50 JSGPM inside the MAWC:

- Prepare the M50 JSGPM according to procedures outlined in this chapter.
- Properly size the MAWC to the individual weapon.
- Place the weapon inside the MAWC first, and the M50 JSGPM on top of the weapon so it lays close to the slide fastener. (See figure 12-20.)



Figure 12-20. Placement of the M50 inside the MAWC

- Continue to rig the MAWC according to procedures outlined in this chapter.

IMPROVED OUTER TACTICAL VEST

12-29. The improved outer tactical vest (IOTV) (NSN 8470-01-551-7648 Large) has a side opening that increases soft ballistic coverage and adjusts for better comfort. It also has a quick-release handle for Soldiers to instantly remove the vest in emergency situations.

12-30. Body armor is bulky, heavy, and can limit the jumper's flexibility and mobility. Jumpmasters must supervise their jumpers when donning parachutes to ensure that IOTV is worn properly, reducing further strain and fatigue. Jumpers may need to adjust their parachute harnesses to a size larger than they commonly wear to accommodate for the size of the body armor.

Note. All IOTV attachments must be removed prior to donning (throat and groin protector, deltoid protectors, upper arm protectors). These components must be placed inside of the ALICE pack or MOLLE. (See figure 12-21.)

CAUTION

Airborne commanders must assess risk due to a jumper's inability to have freedom of maneuver and increased risk of injury during PLF, or when conducting emergency procedures and landings.

12-31. The IOTV can be jumped under the parachute harness of the T-11 with the front and back armor plates installed in the vest. The plates must be properly secured in the carrier pockets to ensure they do not shift and injure the jumper at the chin or back of the head.



Figure 12-21. IOTV worn under T-11 parachute harness

12-32. Some jumpers may require a waistband extension when jumping with the IOTV. This should be considered when planning for required air items. To properly secure the waistband extension:

- Route the waistband through the metal adjuster on the waistband extension.
- Route the free running end of the waistband extension through the metal adjuster on the waistband adjuster panel.
- Incorporate a two or three finger quick release as normal only into the waistband, not the waistband extension.
- Take the free running end of the waistband extension, ensuring it is only routed once through both metal bars, and back through the first metal bar forming a non-slip hitch. Jumper will excess hand under hand back against the waistband adjuster panel.

- Finally, use a retainer band to secure the rolled excess along with the waistband adjuster panel. (See figure 12-22.)



Figure 12-22. Waistband extension

JMPI SEQUENCE FOR THE WAISTBAND EXTENSION

12-33. The jumper removes their left hand from behind the reserve and inserts their left index finger and middle finger from top to bottom into the quick release formed by the waistband, ensuring it is no more than three fingers and no less than two fingers tight, and it is not a false quick release. With their left index finger and thumb, pinch off the free running end of the waistband where it emerges from the metal adjuster. Trace the free running end of the waistband until the fingers fall off the end to ensure the waistband is not cut, torn, or frayed, and is easily accessible to the jumper. Continue to trace the waistband extension until making contact with the metal adjuster to make certain the waistband extension is not twisted, cut, or frayed, and is not misrouted.

12-34. The jumpmaster ensures the waistband extension is threaded back through both sides of the metal adjuster, ensuring a positive locking action. The JM also makes sure that any excess webbing is secured with a retainer band. The jumpmaster uses their left hand to grasp the carrying handle of the reserve with their palm facing the reserve, and focuses their attention on their right hand and the waistband adjuster panel. With their right hand, the jumpmaster traces the waistband adjuster panel back to where it is sewn into the pack tray to ensure that it is not twisted, cut, or frayed. While tracing the waistband adjuster panel, the JM makes certain that the waistband is not misrouted behind the horizontal back strap and that it is properly secured to the pack tray by a single X box stitch with at least 50 percent of the stitching present. The jumpmaster returns to the normal JMPi sequence.

TACTICAL ASSAULT PANEL

12-35. The tactical assault panel (TAP) (NSN 8465-01-580-0689) has been fielded to replace the current MOLLE fighting load carrier. Jumpmasters ensure the TAP system does not interfere with the jumper reacting to any type of emergency. There are two basic rules. First, the reserve parachute rests parallel with the jumper's torso. Second, when the TAP system is worn, the items of equipment on the side of the TAP system are not resting in front of the horizontal back strap. To properly wear the TAP for Airborne operations the jumper must:

- Attach the load carrying harness portion of the TAP to the ammunition pouch portion.
- Don the TAP system ensuring there are no twists in the harnesses webbing and the adjusting buckles are not cracked or broken, then secure them together.

Note. Any item of equipment or pouch attached to the front of the TAP system that will interfere with the reserve parachute lying parallel to the jumper's body must be removed.

- Remove enough slack from the horizontal back straps of the TAP system so the TAP rests either high on the jumper's chest or low enough so it does not interfere with the reserve parachute resting flat against the jumper's body.
- Secure the free running ends inside their appropriate webbing retainers.

12-36. Proper rigging of the TAP and parachute harness:

- Ensure the waistband is not routed through any item of equipment attached to the TAP system.
- Ensure the horizontal back strap is not routed in front of or over the top of any item attached to the TAP system. This will prevent the jumper from properly reacting to an emergency landing and will impede the jumper from getting out of the parachute harness once they have landed.
- Reduce all slack in the horizontal back strap following the rule stated above.
- Tighten the horizontal back strap so that it is snug against the jumper's body.

SOLDIER PLATE CARRIER SYSTEM

12-37. The Soldier Plate Carrier System (NSN 8470-01-592-9480 Large) is designed as a lightweight alternative (not a replacement) for the IOTV, the core of the Interceptor body armor system. It is intended to increase mobility and maneuverability by lightening the Soldier's load when operating on foot in mountainous terrain or at high altitude.

12-38. The Soldier Plate Carrier System is worn underneath the parachute harness. Accessory items should not be worn on the plate carrier during a static line operation.

HARNESS, SINGLE-POINT RELEASE

12-39. The HSPR (NSN 1670-01-227-7992) is an H-type design. It is made of nylon webbing with friction adapters to secure it around the load, and it has two adjustable D-ring attaching straps.

12-40. To stabilize the pack to the jumper during movement in the aircraft, upon exit, and during the deployment phase of the main parachute canopy, two adjustable leg straps are provided to secure the pack to the jumper's right and left legs. The leg straps are equipped with the male portion of the leg strap release assembly. The harness has a single-point release handle assembly that simultaneously releases the load and leg straps from the jumper and parachute harness. (See figure 12-23.)

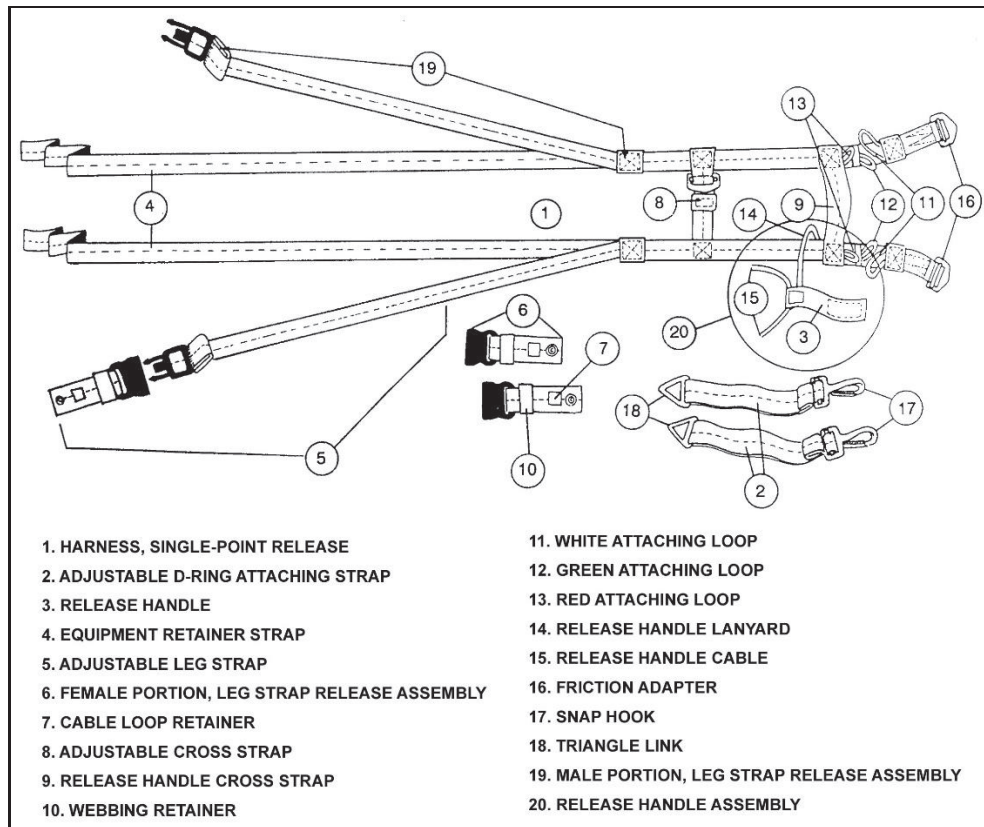


Figure 12-23. Harness, single-point release

Note. When any jumper is using the HSPR and the MAWC, it is recommended that a type-64 retainer band be secured to the MAWC on the nylon equipment hanger just below the lower tie-down strap stow pocket. The male portion leg strap release assembly will be routed through this retainer band when placing the jumper into jumper configuration. This will mitigate tripping or snag hazards that exist with the adjustable leg strap.

12-41. Inspection criteria:

- All components are present.
- Plastic components cannot be cracked or broken.
- All webbing, straps, and nylon tape are free of cuts, tears, excessive frays, and dry rot.
- All metallic items are free of rust and corrosion. They cannot be cracked or bent, and all opening gates must have proper spring tension and full range of motion.
- Release handle cable cannot be kinked, frayed, or corroded.
- All webbing retainers must be present and have sufficient elasticity. Replace with a retainer band, if necessary.
- Hook-pile tape must be present and have sufficient adhesion.

12-42. Assembly of the HSPR:

- Lay out the HSPR on a flat surface ensuring that the three color-coded attaching loops are facing skyward and all twists are removed from the equipment retainer straps.
- Place the adjustable D-ring attaching straps next to the HSPR, ensuring that the opening gates of the snap hooks are facing down. Place the female portion of the leg strap release assembly next to the adjustable D-ring attaching strap, ensuring the three component parts are facing skyward.
- Route the release handle assembly from bottom to top through both plies of the release handle cross strap, ensuring there are no twists in the release handle lanyard. Secure it in place utilizing the hook-pile tape.
- Route the white attaching loop from bottom to top through the triangle link; the green attaching loop from bottom to top through the white attaching loop; the red attaching loop from bottom to top through the green attaching loop and through the grommet in the female portion leg strap release assembly.
- Route the release handle cable through the red attaching loop and into the cable loop retainer. Once again route the white attaching loop from bottom to top through the triangle link; the green attaching loop from bottom to top through the white attaching loop; the red attaching loop from bottom to top through the green attaching loop and through the grommet in the female portion leg strap release assembly.
- Route the release handle cable through the red attaching loop and into the cable loop retainer. Rotate the HSPR over so that the opening gates of the snap hooks are facing skyward and remove all twists from the equipment retainer straps. The HSPR is now ready to accommodate a jumpable pack.

HOOK-PILE TAPE LOWERING LINES

12-43. The hook-pile tape lowering line (HPTLL) (see figure 12-24) and the modified HPTLL are the current devices for use during Airborne operations. The HPTLL is used to lower any individual equipment container, either singularly or in tandem. The standard 15-foot lowering line is made of tubular nylon (one-inch wide) with two retainer flaps sewn on. The retainer flaps have hook-pile tape sewn to the edges. The two-inch tabs are sewn on the lowering line, and when the line is stowed, the tabs are secured to prevent line spillage. The ejector snap has a yellow safety lanyard (one by eight inches) attached. The HPT lowering line must be stowed as follows:

- S-fold the lowering line neatly on top of the web inside the retainer, ensuring that the ends are stacked evenly with the retainer flap outer edges. Secure the pile tab on the web located at the ejector snap end to hook extension on retainer.

- Fold the hook side of the flap tightly over the S-folded lowering line. Holding it firmly, fold the pile side of flap over and secure hook-pile together.
- Secure the pile extension on the flap retainer to the hook tab at the loop end of the lowering line. (See figure 12-25.)

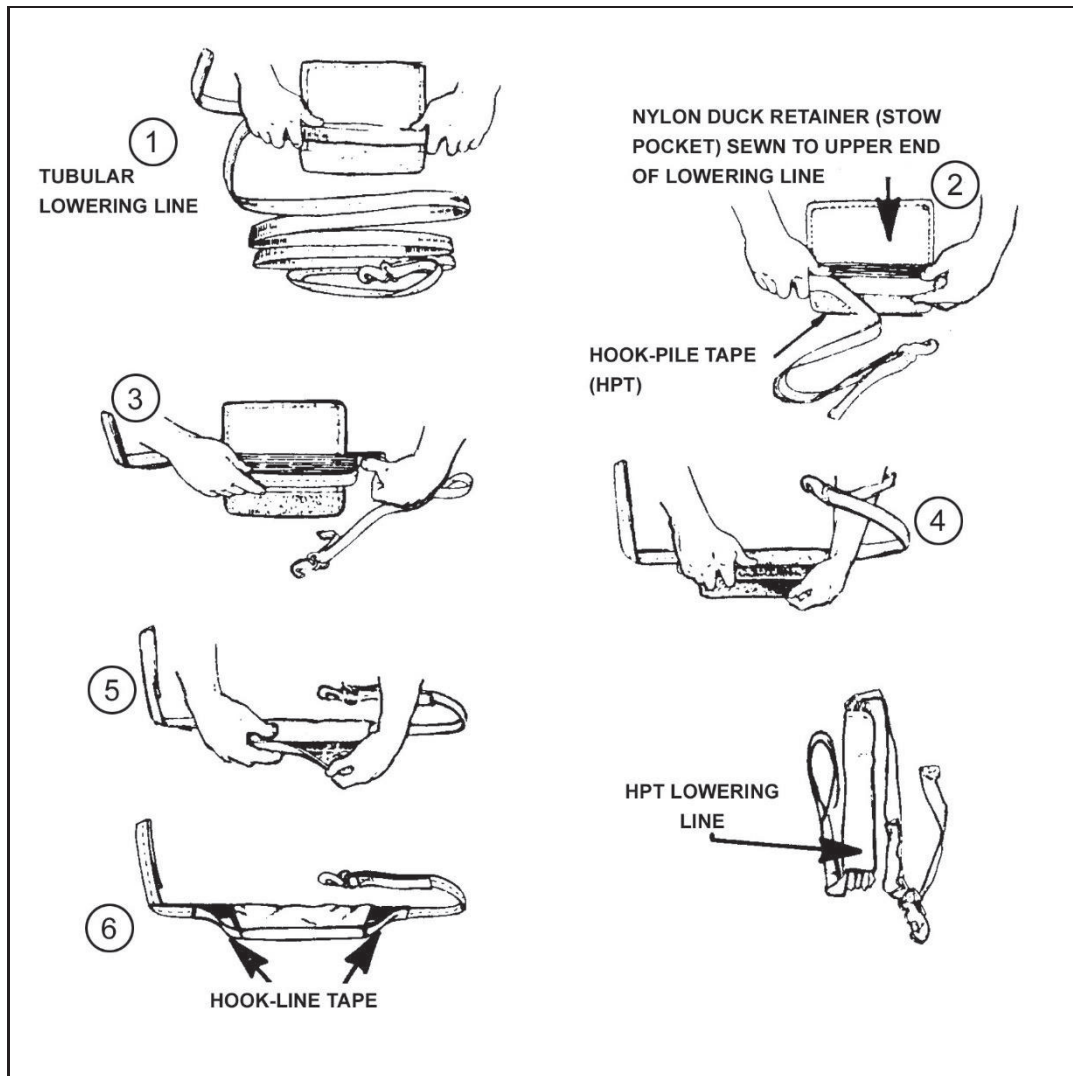


Figure 12-24. Hook-pile tape lowering line instructions



Figure 12-25. Hook-pile tape lowering line

12-44. The modified HPTLL (NSN 1670-01-067-6838) is used when the AT4JP or dragon missile jump pack is lowered as a tandem load. The hook tab closest to the ejector snap has been moved an additional 24 inches away from the ejector snap, for a total of 36 inches. The modification can be implemented by a local rigger unit. The following markings are required:

- Stencil the following with half-inch high characters on the outside of retainer fabric using a stencil brush and blue parachute marking ink: “AT4JP modified (MOD).”
- Stencil a one-eighth-inch line across the web width on each side of the lowering line, 16 to 18 inches from the folded web edge ejector snap end. (See figure 12-26.)

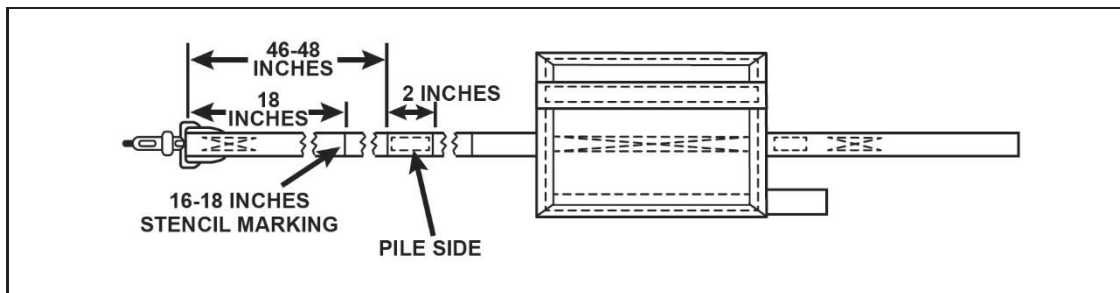


Figure 12-26. Modified hook-pile tape lowering line

12-45. HPT lowering line inspection criteria:

- All components are present
- All webbing is free of cuts, tears, excessive frays, and dry rot.
- All metallic items are free of rust and corrosion. They cannot be cracked or bent. All opening gates must have proper spring tension and full range of motion.
- Ejector snap:
 - Activating lever must have proper spring tension and fully seated.
 - The opening gate cannot be bent and the gap from the small tooth to the snap hook cannot exceed 8/100th's of an inch (the approximate thickness of a quarter).
- The yellow safety lanyard must be present and properly secured to the activating lever.
- Hook-pile tape must be present and have sufficient adhesion.
- The retainer flap must be free of any rips or tears. Ensure the hook-pile tabs are sewn down and the movable hook-pile tabs are secured to the retainer flap.
- The looped end of the HPTLL must be free of any cuts, burns, or frays.

JUMPABLE PACKS

12-46. There are three different versions of jumpable packs commonly found throughout the force, Generation (Gen) I, II, and III, and there are two different rigging procedures for them. The Gen III MOLLE (NSN 8465-01-523-6276) has a ruggedized frame and the main compartment is permanently attached to the lower sleeping bag compartment. Prior to rigging the MOLLE, all excess webbing will be secured with masking tape or retainer bands. The MOLLE will not be jumped with its outer accessory pouches.

12-47. Only a center outer accessory pouch or E-tool carrier will be used. The MOLLE can sustain loads ranging from 35 pounds to 110 pounds, and should maintain a square configuration as much as possible to ensure that the HSPR will remain tightly secured to it.

RIGGING PROCEDURES FOR THE MOLLE II LARGE RUCKSACK

12-48. The HSPR is configured in its normal manner and the MOLLE is positioned on top. Ensure an accessory pouch or E-tool carrier is placed in the front center of the MOLLE prior to routing the HSPR, but do not secure it completely as it may need to be repositioned. Rigging procedures are as follows:

- The equipment retainer straps are routed through the uppermost holes in the top of the frame. Route the equipment retainer straps from outside to inside under the shoulder carrying straps and then towards the center, crossing them in an “X” configuration. (See figure 12-27.)

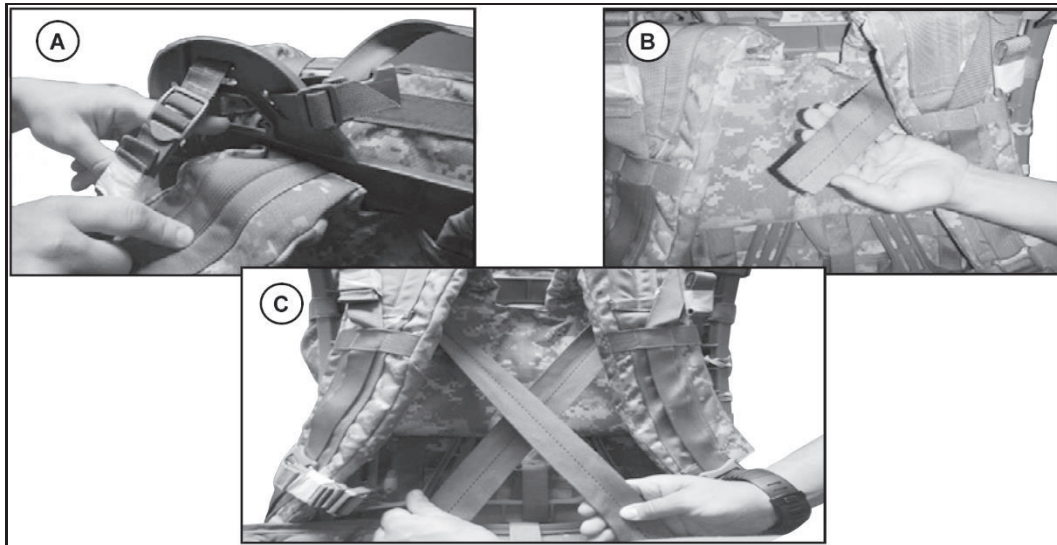


Figure 12-27. Routing equipment retainer straps

- Route the friction adapters through oval slots at the base of the MOLLE frame. (See figure 12-28.)

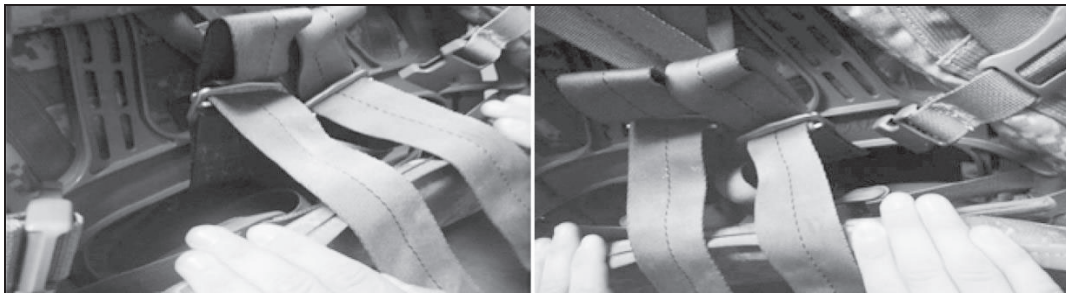


Figure 12-28. Friction adapter routing using GEN III MOLLE

- Continue rigging the harness, single-point release to the MOLLE as previously describe.
- Reduce and stow the excess webbing of the shoulder carrying straps.
- Attach the HPTLL as previously described. (See figure 12-29.)



Figure 12-29. Attachment of HPTLL to the GEN III MOLLE

- Once positioned correctly, properly secure the E-tool carrier or outer accessory pouch to the MOLLE exterior in the space between the release handle cross strap and the adjustable cross strap. This will ensure that the HSPR does not slide off of either side of the MOLLE. This pouch must be filled with non-fragile items. (See figure 12-30.)

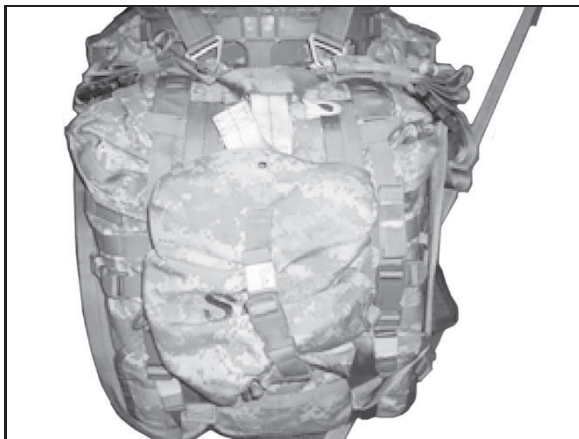


Figure 12-30. Position of outer accessory pouch on the GEN III MOLLE

- 12-49. Attach the MOLLE to the parachute harness:
- Attach the snap hooks of the adjustable D-ring attaching straps to the equipment rings on the T-11 parachute harness.
 - Adjust the length of the adjustable D-ring attaching straps by pulling on the free running ends. The base of the MOLLE frame should be snug against the bottom of the reserve parachute. Do not tighten the adjustable D-ring attaching straps so much that the reserve parachute is tilted upward.
 - If the MOLLE is rigged to be jumped and lowered as a single item of equipment, attach the ejector snap of the HPTLL to the triangle link with the opening gate facing towards the jumper.
 - If the MOLLE is rigged to be jumped and lowered as a tandem load, route the ejector snap of the HPTLL between the main body of the MAWC and the attachment loop of the of the MAWC, from front to rear, as worn by the jumper. Attach the ejector snap to the triangle link with the opening gate facing towards the jumper.
- 12-50. After JMPI has been conducted, the jumpmaster will route the adjustable leg straps as follows:
- Right paratroop door:
 - The left adjustable leg strap is secured around the jumper's leg and the MAWC. A retainer band can be used to help secure the adjustable leg strap if using the harness, single-point release.
 - The right adjustable leg strap will not be used and remains secured to the MOLLE.
 - Left paratroop door:
 - The right adjustable leg strap is secured around the jumper's leg.
 - The left adjustable leg strap is secured around the MAWC only. A retainer band can be used to help secure the adjustable leg strap, if using the harness, single-point release, not the integrated-harness, single-point release.
 - Ensure that enough slack is left in the adjustable leg straps to allow freedom of movement and ease of seating on board the aircraft. Once the jumpers have been given the command, "OUTBOARD/INBOARD PERSONNEL STAND UP," they remove the slack in the adjustable leg straps. They then S-fold or roll the excess webbing and secure it in the appropriate webbing retainer.
 - Units are authorized to utilize both adjustable leg straps if directed by the Airborne commander.

ALL-PURPOSE LIGHTWEIGHT INDIVIDUAL CARRYING EQUIPMENT (ALICE PACK)

12-51. The all-purpose lightweight individual carrying equipment (ALICE) pack (NSN 8465-001-6481) is available in sizes medium and large. The ALICE may be rigged with or without a frame; however, it must always be rigged to be lowered. The large ALICE pack can sustain loads ranging from a minimum of 35 pounds to a maximum of 95 pounds. The medium ALICE pack can sustain loads ranging from 35 pounds to 70 pounds. The ALICE pack should maintain a square configuration as much as possible to ensure the HSPR remains tightly secured to it.

12-52. Any items of equipment that may fall out or come free must be tie down with quarter-inch cotton webbing to the ALICE pack. All fragile or sharp items must be padded and placed inside the main compartment of the ALICE pack according to the unit SOP. The outer accessory pouches must be filled with non-fragile items of equipment. The lower securing straps will be secured by routing them through the V-notch, one complete turnaround the tubular portion of the ALICE pack frame (through the V-notch twice), to the adjusting buckle on the base of the ALICE pack. The only authorized items of equipment that can be rigged under the closing flap of the ALICE pack are as follows:

- A maximum of three light antitank weapons; however, they must be secured together with masking tape.
- M240B machine gun tripod (M-192 lightweight ground mount [LWGM]) separate from spare barrel bag.
- M240B machine gun spare barrel bag without tripod.
- A bed roll or half improvised litter.
- Two M3 Multirole Antiarmor/Antipersonnel Weapon System (MAAWS) rounds in the short twin tubes.
- Aiming stakes with case.

12-53. Rigging procedures for the ALICE pack with a frame:

- Lay out a properly assembled HSPR with the opening gates of the snap hooks facing skyward and remove all twists from the equipment retainer straps.
- Place the ALICE pack on the HSPR with the center outer accessory pouch centered between the release handle cross strap and the adjustable cross strap. Ensure the bottom of the ALICE pack faces towards the adjustable D-ring attaching straps.
- Route the equipment retainer straps over the closing flap, under the tubular portion of the ALICE pack frame and the envelope cushion portion of the ALICE pack, and over the horizontal and vertical frame supports of the ALICE pack frame. On the medium ALICE pack, ensure the equipment retainer straps are routed under the tubular portion of the ALICE pack frame and the envelope cushion portion of the ALICE pack, to the outside of the shoulder carrying strap loops. (See figure 12-31.)



Figure 12-31. HSPR under envelope cushion portion

- Cross the equipment retainer straps, forming an “X” on the back of the ALICE pack.

- Secure the equipment retainer straps to their appropriate friction adapters ensuring there are no twists. Do this by routing it under the floating metal bar, back over the floating metal bar, and then back onto itself, forming a quick release.
- Adjust the HSPR prior to tightening. Ensure the white attaching loops are centered on the bottom portion of the ALICE pack and the center outer accessory pouch is between the release handle cross strap and the adjustable cross strap. Tighten the equipment retainer straps by pulling the quick releases in a seesaw motion.
- Adjust the quick releases so they are two to three fingers in length.
- S-fold and secure the free running ends, equipment retainer straps with masking tape or retainer bands. Ensure the quick release is not secured in the S-folded portion.
- All slack in the shoulder carrying straps will be removed and the excess webbing will then be S-folded and S-folded only, and secured with masking tape or retainer bands (one of the two, never both). There is no preferred method.
- Secure the HPTLL in its normal configuration to the “X” configuration by routing the looped end HPTLL from top to bottom or bottom to top under the “X” configuration and then route the entire HPTLL through the looped end of the HPTLL, forming a girth hitch.
- Route the HPTLL over the left shoulder carrying strap and secure it to the tubular portion of the ALICE pack frame utilizing two retainer bands. One must be above the horizontal frame support and one below it, with the retainer flap centered between the two retainer bands. The HPTLL should be routed from bottom to top as the ALICE pack is worn by the jumper. (See figures 12-32 and 12-33.)



Figure 12-32. Routed over shoulder carrying straps



Figure 12-33. Placement of retainer band

12-54. Route the male portion, leg strap release assembly from the point where it is sewn to the equipment retainer straps, by the most direct route down the side of the ALICE pack. Secure it to the female portion, leg strap release assembly. Tighten the adjustable leg strap, then S-fold or roll the excess webbing and secure it in the webbing retainer. (See figure 12-34.)



Figure 12-34. ALICE pack with HSPR

12-55. Attaching the ALICE pack to the parachute harness:

- Attach the snap hooks of the adjustable D-ring attaching straps to the equipment rings on the T-11 parachute harness.
- Adjust the length of the adjustable D-ring attaching straps by pulling on the free running ends. The base of the ALICE pack frame should be snug against the bottom of the reserve parachute. Do not tighten the adjustable D-ring attaching straps so much that the reserve parachute is tilted upward.
- If the ALICE pack is rigged to be jumped and lowered as a single item of equipment, attach the ejector snap of the HPTLL to the triangle link with the opening gate facing towards the jumper.
- If the ALICE pack is rigged to be jumped and lowered as a tandem load, route the ejector snap of the HPTLL between the attachment loop and the main body of the MAWC, from front to rear, as worn by the jumper. Attach the ejector snap to the triangle link with the opening gate facing towards the jumper.

12-56. After JMPI has been conducted, the jumpmaster will route the adjustable leg straps as follows:

- Right paratroop door:
 - The left adjustable leg strap will be secured around the jumper's leg and the MAWC, then routed through the retainer band. A retainer band can be used to help secure the adjustable leg strap if using the harness, single-point release.
 - The right adjustable leg strap will not be used and remains secured to the ALICE pack.
- Left paratroop door:
 - The right adjustable leg strap is secured around the jumper's leg.
 - The left adjustable leg strap is only secured around the MAWC and routed through the retainer band. A retainer band can be used to help secure the adjustable leg strap if using the harness, single-point release.
- Ensure that enough slack is left in the adjustable leg straps to allow freedom of movement ease of seating on board the aircraft. Once the jumpers have been given the command, "OUTBOARD/INBOARD PERSONNEL STAND UP," they remove the slack in the adjustable leg straps. They then S-fold or roll the excess webbing and secure it in the appropriate webbing retainer.
- Units are authorized to utilize both adjustable leg straps if directed by the Airborne commander.

12-57. Rigging procedures for the ALICE pack without a frame:

- Lay out a properly assembled HSPR and place the ALICE pack on top of it with the center outer accessory pouch resting between the release handle cross strap and the adjustable cross strap. The bottom (as worn) of the ALICE pack should be facing towards the friction adapters.
- Route the equipment retainer straps under the envelope cushion portion and then cross them in an “X” configuration.
- Continue to route the equipment retainer straps around the remainder of the load. Then secure them in the friction adapters and rig the ALICE pack as described previously. Ensure that a quick release is placed in the equipment retainer straps.
- To attach the HPTLL, route the looped end HPTLL from bottom to top or top to bottom, under the “X” configuration formed by the equipment retainer straps. Route the entire HPTLL through the looped end of the HPTLL, forming a tight girth hitch.
- Girth hitch two retainer bands to the left side of the ALICE pack. One will be attached to the horizontal equipment hanger and one to the vertical equipment hanger. Ensure one is above and one is below the horizontal frame support, with the retainer flap centered between the two retainer bands. The HPTLL is routed from bottom to top as the ALICE pack is worn by the jumper.
- Route the male portion, leg strap release assembly from the point where it is sewn to the equipment retainer straps by the most direct route, down the side of the ALICE pack. Secure it to the female portion, leg strap release assembly. Tighten the adjustable leg strap, then S-fold or roll the excess webbing and secure it in the webbing retainer.

MOLLE ASSAULT PACK

12-58. The MOLLE assault pack (MAP) (NSN 8465-01-580-0981) is authorized to be jumped using an HSPR and an HPTLL. The 18-inch attaching straps located inside the MAP are not authorized for rigging. The MAP can sustain loads ranging from a minimum of 35 pounds to a maximum of 50 pounds. The MAP cannot be jumped in conjunction with the M50 JSGPM. If the M50 JSGPM must be jumped, it should be placed inside the MAP. The convenience pouch located on the front of the MAP must be filled with nonfragile items of equipment. Prior to rigging, all excess webbing must be secured with masking tape, retainer bands, or appropriate webbing retainers.

12-59. Rigging procedures for the MAP:

- Lay out a properly assembled HSPR with the opening gates of the snap hooks facing skyward and remove all twists from the equipment retainer straps.
- Place the MAP on top of the HSPR, convenience pouch facing down with the bottom of the MAP facing towards the friction adapters.
- Route the equipment retainer straps under the top carrying handle staying toward the inside of the shoulder carrying straps, and then cross them at the back of the MAP forming an “X” configuration.
- Route the friction adapters under the waist strap at the bottom of the MAP. The waist strap must be secured together and tightened with all excess webbing stowed.
- Secure the equipment retainer straps to their appropriate friction adapters and form quick releases.
- Before tightening the HSPR, adjust it so that the release handle cross strap is directly above the bottom of the convenience pouch. Doing this will make the following steps easier to accomplish.
- Tighten the HSPR and form two to three finger quick releases. S-fold the excess and secure it with masking tape or retainer bands (one of the two, never both) but there is no preferred method.
- Reduce the excess of both shoulder carrying straps. S-fold the excess and secure with masking tape or retainer bands.
- Then secure the HPTLL in its normal configuration to the “X” configuration by routing the looped end HPTLL from top to bottom or bottom to top under the “X” configuration and then route the entire HPTLL through the looped end HPTLL, forming a girth hitch.
- Route the HPTLL over the left shoulder carrying strap and secure it to the left side of the MAP by girth hitching two retainer bands to the nylon equipment hangers. The HPTLL should be routed from bottom to top as the ALICE pack is worn by the jumper.

- Secure the sternum strap in front of the quick releases to hold the shoulder carrying straps in place. (See Figure 12-35.)



Figure 12-35. Sternum strap secured on MAP

- Readjust the HSPR, if necessary, so the release handle cross strap is directly above the bottom of the convenience pouch. Route the compression straps of the convenience pouch over the release handle cross strap, but under the release handle cable and not through the release handle lanyard. (See figure 12-36.) Then secure the buckles of the compression straps. This ensures that the HSPR will not shift along the surface of the MAP.



Figure 12-36. Routing of compression straps over release handle cross strap

- Cut two pieces of quarter-inch cotton webbing that are approximately 12 inches long. Girth hitch the quarter-inch cotton webbing to the horizontal nylon equipment hangers on the bottom of the MAP. Use the ones that are closer to the waist strap, not the ones closer to the convenience pouch. Tie the lengths of quarter-inch cotton webbing in a single or double loop bow knot around the HSPR just below the single "X" box stitch. (See figure 12-37.)



Figure 12-37. Securing HSPR with quarter-inch cotton webbing to MAP

- Route the male portion leg strap release assemblies from the point where they are sewn to the equipment retainer straps by the most direct route along the side of the MAP and attach them to the female portion leg strap release assemblies. Remove the slack and S-fold or roll the excess webbing and secure it in the webbing retainer. The MAP is attached to the jumper in the same manner as the ALICE pack and the MOLLE.

MEDIUM MOLLE RUCKSACK (M-MOLLE)

12-60. The M-MOLLE (NSN 8465-01-585-1512) is authorized to be jumped using a HSPR and a HPTLL. Rigging procedures deviate only slightly from the procedures currently used for the MOLLE and HSPR. Anything not mentioned should be rigged according to established procedures for MOLLE. There is no requirement to add an outer accessory pouch, E-tool carrier, or any other similar item to the rear of the M-MOLLE. The rigging procedures for the M-MOLLE are as follows:

- Equipment retainer straps will be routed through the carrying handle located at the top of the M-MOLLE and then behind the shoulder carrying straps. (See figure 12-38.)

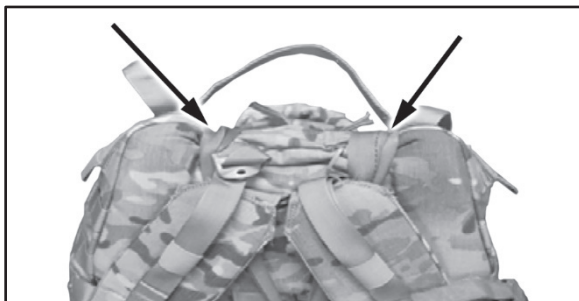


Figure 12-38. Routing of equipment retainer straps using M-MOLLE

- Route the friction adapters through oval slots at the base of the MOLLE frame. (See figure 12-39.)
- Continue rigging the harness, single-point release to the MOLLE as previously described.
- Reduce and stow the excess webbing of the shoulder carrying straps.
- Attach the HPTLL as previously described. (See figure 12-39.)

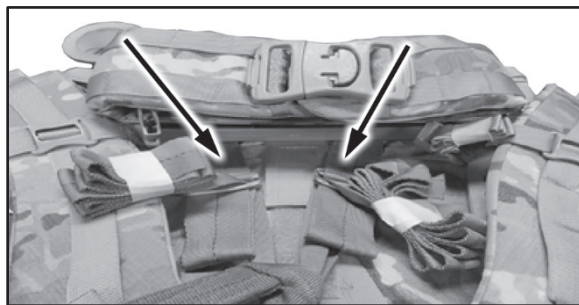


Figure 12-39. Routing of friction adapters using M-MOLLE

M7 AND M9 AID BAGS, AND SURGEONS PACK

12-61. The M7 and M9 aid bags are authorized to be jumped using a HSPR and a HPTLL. The M7 and M9 can sustain loads ranging from a minimum of 35 pounds to a maximum of 50 pounds. The M7 or the M9 cannot be jumped in conjunction with the M50 JSGPM. If the M50 JSGPM must be jumped, it should be placed inside of the M7. Prior to rigging, all excess webbing must be secured with masking tape, retainer bands, or appropriate webbing retainers. Rigging procedures for the M7 and M9 aid bag are as follows:

- Lay out a properly assembled HSPR with the opening gates of the snap hooks facing skyward and remove all twists from the equipment retainer straps.
- Place the M7 or M9 on top of the HSPR, with the bottom of the M7 or M9 facing towards the friction adapters.
- Route the equipment retainer straps under the top carrying handle and then cross them at the back of the M7 or M9 forming an "X" configuration.

- Route the friction adapters under the waist strap at the bottom of the M7 or M9. The waist strap must be secured together and tightened with all excess webbing stowed.
- Secure the equipment retainer straps to their appropriate friction adapters and form quick releases.
- Before tightening the HSPR, adjust it so that the release handle cross strap is centered. Doing this will make the following steps easier to accomplish.
- Tighten the HSPR and form a two or three finger quick releases. S-fold the excess and secure it with masking tape or retainer bands (one of the two, never both) but there is no preferred method.
- Reduce the excess of both shoulder carrying straps. S-fold the excess and secure with masking tape or retainer bands.
- Then secure the HPTLL in its normal configuration to the “X” configuration by routing the looped end HPTLL from top to bottom or bottom to top under the “X” configuration and then route the entire HPTLL through the looped end HPTLL, forming a girth hitch.
- Route the HPTLL over the left shoulder carrying strap and secure it to the left side of the M7 by girth hitching two retainer bands to the nylon equipment hangers. The HPTLL should be routed from bottom to top as the ALICE pack is worn by the jumper.
- Secure the sternum strap in front of the quick releases to hold the shoulder carrying straps in place. (See figure 12-40.)



Figure 12-40. Sternum strap secured on M7

- Readjust the HSPR, if necessary, so the release handle cross strap is directly above the bottom of the convenience pouch. Secure the HSPR to the M7 with quarter-inch cotton webbing through the nylon equipment hangers above the X-box stitching. Route the compression straps of the convenience pouch over the release handle cross strap, but under the release handle cable and not through the release handle lanyard. (See figure 12-41.) Then secure the buckles of the compression straps. This will ensure that the HSPR will not shift along the surface of the M7 or the M9.



Figure 12-41. Routing of compression straps over release handle cross strap

- Route the male portion leg strap release assemblies from the point where they are sewn to the equipment retainer straps by the most direct route along the side of the M7 or M9 and attach them to the female portion leg strap release assemblies. Remove the slack and S-fold or roll the excess webbing and secure it in the webbing retainer. The M7 or M9 will be attached to the jumper in the same manner as the ALICE pack and the MOLLE. (See figure 12-42.)



Figure 12-42. Securing HSPR with quarter-inch cotton webbing to M7

12-62. The surgeon's pack is rigged in the same manner as the ALICE pack; however, the HSPR is permanently attached to the pack body. All other rigging procedures and JMPI sequence remains the same. (See figure 12-43.)



Figure 12-43. Surgeon's pack

MYSTERY RANCH RAPID ACCESS TRAUMA SYSTEM CERTIFIED AID BAGS

12-63. The mystery ranch rapid access trauma system certified aid bag (RATS CAB) medical aid bag (NSN 8465-01-617-7237) is rigged and jumped using its integrated harness, single-point release and the HPTLL. The RATS CAB is designed to offer the medic or medical officer the capability to jump their medical aid bag in addition to sustainment items. (See figure 12-44.)



Figure 12-44. Mystery Ranch RATS CAB medical aid bag

12-64. Prior to assembling the RATS CAB, all excess webbing is secured by retainer band, masking tape, or a webbing retainer. The kidney pad and waistband is secured on the front of the pack body just below the air item stowage pocket and underneath the external sustainment pouch. (See figures 12-45 and 12-46.)



Figure 12-45. Securing the waistband/external sustainment pouch



Figure 12-46. Assembled integrated-harness, single point release using the adjustable D-ring attaching straps

12-65. Rigging procedures for the RATS CAB are as follows:

- When assembling the integrated- harness, single point release utilize the standard adjustable D-ring attaching straps from the HSPR. (See figure 12-47.)
- Remove all slack from the shoulder carrying straps, S-fold the free running ends and secure them with retainer band or masking tape.
- Girth hitch the looped end HPTLL to the carrying handle at the top of the pack body. Prior to girth hitching the retainer bands for the HPTLL, create a loop constructed of quarter-inch cotton webbing on the two nylon straps sewn to the left side of the pack body. The quarter-inch cotton webbing serves as a point of attachment for the retainer bands (type 1 general purpose) and reduces the likelihood of the retainer band breaking. (See figure 12-48.) Then route the HPTLL from top to bottom through the type 1 general purpose retainer bands.
- The jumpmaster is responsible for properly routing and securing the male portion leg strap assemblies to the female portion leg strap assemblies, removing all slack, and securing the excess in the webbing retainer. Unlike the HSPR, the jumpmaster is not required to route the left male portion leg strap release assembly through the retainer band located on the MAWC. The position of the adjustable leg straps on the RATS CAB is high enough on the jumper's leg to not be considered a snagging or tripping hazard.



Figure 12-47. Assembled integrated-harness, single point release



Figure 12-48. Utilize quarter-inch cotton webbing as the point of attachment

J51 WARHAMMER/G1 LITTLE BROTHER

12-66. The J51 Warhammer has a base configuration of 8 pounds, 8 ounces and has a volume of 2050 cubic inches. Incorporated into the J51 Warhammer's load bay is the G1 Little Brother with a base configuration of four pounds and has a volume of 1800 cubic inches. (See figure 12-49.) The jumpable pack is rigged with a standard HSPR and HPTLL.



Figure 12-49. J51 Warhammer backpack

LARGE AND MEDIUM HYDRATION JUMP PACKS

12-67. The hydration jump packs can be jumped using the incorporated single point release system, an HPTLL, two adjustable D-ring attaching straps, and the two provided female portion leg strap release assemblies. The hydration packs are jumped upside down with the bottom resting against the bottom panel of the reserve parachute.

12-68. The M50 JSGPM cannot be jumped in conjunction with the hydration packs but must be placed inside the main compartment. Prior to rigging the hydration packs, all excess webbing should be secured with masking tape, retainer bands, or in their respective hook-pile tape retainers. The hydration packs may be jumped with or without the kidney pad attached. The shoulder carrying straps can be routed as normal with excess webbing removed, or they may be placed completely under the comfort pads. (See figure 12-50.)

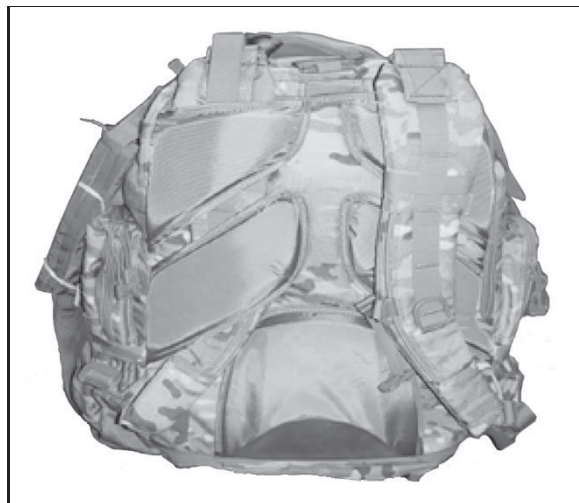


Figure 12-50. Shoulder carrying strap routing on hydration pack

12-69. Rigging procedures for hydration packs are as follows:

- Roll back the protective flap that covers the single point release system and secure it in place with the hook-pile tape.
- The incorporated single point release system is rigged in the same manner as the HSPR. Two adjustable D-ring attaching straps and the two provided female portion leg strap release assemblies must be used in this process. (See figure 12-51.)



Figure 12-51. Attachment of D-ring attaching straps to hydration pack

- The two permanently sewn equipment retainer straps will only be utilized if the entire load weighs 50 pounds or more or if jumping with any item of equipment that can be placed under the closing flap of the ALICE pack/MOLLE (M122 tripod, aiming stakes with case, or other equipment). If the hydration pack meets these criteria, route the permanently sewn equipment retainer straps directly to the friction adapters at the top of the hydration pack without crossing them in an “X” configuration. Remove all slack. The excess will then only be S-folded and secured with masking tape or retainer bands. If the hydration pack does not meet these criteria, then the equipment retainer straps will be placed inside the top convenience pouch.
- Remove all slack from both shoulder carrying straps. Roll the excess and secure with the incorporated hook-pile tape retainers.
- The looped end HPTLL is then girth hitched to the top carrying handle of the hydration pack from either direction.
- Route the HPTLL along the left side of the hydration pack. Secure it with two retainer bands girth hitched to two of the nylon equipment hangers along the left side. Secure the male and female portion leg strap release assemblies together. Roll or S-fold the excess webbing stow it into its appropriate webbing retainer. (See figure 12-52.)

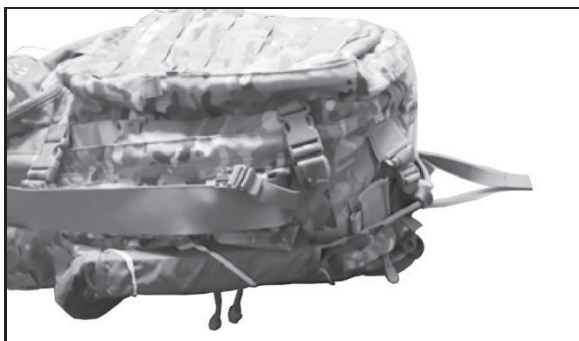


Figure 12-52. Attachment of HPTLL to hydration pack

Note. If the provided female portion leg strap release assemblies are missing or unserviceable, they can be replaced with HSPR female portion leg strap release assemblies. However, the male portion leg strap release assemblies must also be replaced to HSPR male portion leg strap release assemblies.

INDIVIDUAL WEAPON'S AND WEAPON CASES

12-70. Individual weapons can be jumped with loaded magazines in combat. Blank or live ammunition for individual weapons are secured in ammunition pouches and stowed or worn on the jumper. When utilizing the MAWC, a magazine can be inserted into the magazine well ensuring there is no round chambered. The M16 rifle or the M4 carbine may be rigged exposed when being jumped with certain items of equipment such as the COM-201B tactical communications antenna and SMJP. An exposed weapon must be protected to keep dirt and debris out during the PLF. It takes time to remove this protection. However, if it is jumped in a properly rigged MAWC, the jumper's weapon is fully protected and can be ready for action immediately after landing.

12-71. To rig the M16 series rifle or M-4 carbine exposed:

- Fully extend the sling and tape the keepers in place.
- Pad and tape the muzzle and front sight post of the weapon with one layer of cellulose wadding secured by masking tape.
- Insert a magazine into the weapon, taping it to the receiver and covering the ejection port cover.
- Pad and tape the forward assist and the charging handle.
- Tape the hand guards to prevent loss upon impact when landing.
- Secure a 12-to-18 inches strand of quarter-inch cotton webbing by girth, hitching it to the rear sling swivel. Route the strand of quarter-inch cotton webbing on the rear swing swivel under the left riser assembly and through the outermost diagonal back strap sizing channel above the one being utilized with the diagonal back strap retainer. Tie the quarter-inch cotton webbing with a single or double looped bowknot. (See figure 12-53.)

CAUTION

Ensure that a round is not chambered and the weapon remains on safe.



Figure 12-53. Padding, taping the M16 rifle or M4 carbine configured for jumping exposed

- Sling the weapon over the jumper's left shoulder, muzzle facing down, and rotate the pistol grip to face the rear of the jumper.
- Route the sling under the left main lift web forming a loop, then secure the chest strap through it.
- Thread the waistband through the carrying handle of the weapon and secure it to the metal adjuster on the waistband adjuster panel. Tighten the waistband securely so the weapon is snug against the jumper's side, ensuring that the weapon is high so the waistband rests below the magazine well. (See figure 12-54 on page 12-36.)



Figure 12-54. M16 rifle or M4 carbine rigged to be jumped exposed

12-72. Inherent hazards of the exposed weapon include:

- Weapon becoming entangled with another jumper's parachute if a midair collision occurs.
- Possible injury to the jumper during the PLF.
- Damage to the weapon during landing, which may cause a failure to fire.

OPTIC SIGHTS AND LASERS

12-73. The decision to jump with optic sights and lasers, either attached or unattached (in the ALICE/MOLLE Pack or the MAWC), is left up to the Airborne or tactical commander based upon assessment of the mission. If attached, only the blank firing adapter is padded with a minimum of one turn of bubble wrap and secured horizontally and vertically with masking tape.

12-74. If the optic or laser is removed from the weapon and placed in the ALICE/MOLLE pack or the MAWC, it can be padded and taped with one turn of bubble wrap and masking taped vertically and horizontally. Variable or thermal scopes must be padded and taped.

MODULAR AIRBORNE WEAPON'S CASE

12-75. The modular Airborne weapon's case is a modular, fully adjustable, padded, reinforced design, multi-purpose airdrop container that can be rigged to a variety of weapons and equipment in a single container, reducing the number of modified legacy containers currently fielded. There are two versions of the MAWC being fielded: a smaller version properly referred to as the MAWC and the second is properly referred to as the large MAWC.

- MAWC: 15 inches wide, 32.5 inches in length in its smallest configuration and extends to 42.5 inches of useable length.
- Large MAWC: 16 inches wide, 40.5 inches in length in its smallest configuration and extends to 54 inches of useable length.

12-76. There are MAWC rigging equipment and limitations:

- All individual items of combat equipment approved for airdrop can be placed inside the MAWC unless they violate the restrictions outlined in this chapter.
- Only one primary weapon should be rigged inside the MAWC.
- Maximum weight for loads:
 - MAWC: the maximum weight for the MAWC will not exceed 65 pounds in compliance with TM 10-8465-236-10.
 - Large MAWC: the maximum weight for the large MAWC will not exceed 85 pounds in compliance with TM 10-8465-236-10.

12-77. Padding and taping scopes inside the MAWC: variable or thermal scopes must be padded and taped, along with the blank firing adapter if present. However, all remaining metallic items do not need to be padded and taped if separated by the foam padded internal divider or inside their carrier.

12-78. Minimum and maximum length (nose cone adjustment): when adjusting the nose cone to the minimum length, the first piece of pile tape on the nose cone must be fully secured to the hook tape on the pack body. For the maximum allowed length, the last piece of pile tape on the nose cone must be fully secured to the hook tape on the pack body.

Note. Compression straps and their quick release buckles must be secured and all slack removed and secured inside their webbing retainers. If compression straps cannot be secured due to the bulkiness of the load, it cannot be rigged inside the MAWC or the large MAWC.

12-79. There are authorized expendables for rigging the MAWC. This includes:

- Paperboard honeycomb is used to fill the void from the base of the nose cone to the end of the item of equipment or weapon being placed in the nose cone.
- Paperboard honeycomb is also used to accommodate large weapons, such as the M3 MAAWS where the diameter of the tube is too large to reach the base of the nosecone.
- Quarter-inch cotton webbing is used to secure second items of equipment to the pouch attachment ladder system webbing so they do not shift inside the pack body.
- Type-1 (short and fat) and type-64 (long and skinny) retainer bands are used to secure the free running ends of webbing and tape. A type-64 retainer band will be girth hitched to the vertical nylon equipment hanger below the lower tie-down strap stow pocket to secure the adjustable leg strap.

12-80. Donning of the MAWC for a proper fit for the height of the jumper includes:

- When properly rigged and secured to the parachute harness, the bottom of the adjustable nose cone will not be less than six inches from the ground.
- The top of the MAWC will rest between the top of the D-ring and the base of the left canopy release assembly. Ensure the jumper has good range of motion with their left arm regardless of what paratroop door they are exiting.
- The yellow safety lanyard will be secured to the male portion snap fastener that provides it the most slack.

12-81. A thorough inspection is conducted of the MAWC prior to any Airborne operation. Inspect the following items:

- An upper tie-down tape is present, constructed of quarter-inch cotton webbing, and secured to one of the tie-down loops at the top of the closing flap.
- The quick release buckles are not cracked or broken.
- The compression straps are not cut or excessively frayed.
- The slide fastener and tab thong is present.
- The nose cone securing straps are not cut or excessively frayed and they are properly routed through the friction adapters.
- The pile tape on the nose cone is not excessively worn.

- The adjusting strap is properly adjusted and secured behind the nylon equipment hangers, properly routed through the friction adapter, and the free running end is secured.
- The bottom two male-portion snap fasteners are present on the pack body for the yellow safety lanyard to be secured to.
- When using the HSPR, girth hitch a retainer band at the lower horizontal nylon equipment hanger on the MAWCs front side for later use in securing the adjustable leg strap.

12-82. Sizing, rigging, and donning the MAWC to jump as a tandem load with an M4 carbine involves several steps. When sizing the MAWC:

- Lay the MAWC out flat with the closing flap facing up and opened.
- Loosen the securing straps located inside the pack body and release the hook-pile tape securing the nose cone in place.
- Then lay the foam padded internal divider down so the rifle butt pocket is facing skyward. Place the muzzle of the weapon inside the nose cone and the rifle butt into the rifle butt pocket (Ensure the rifle butt stock is extended to at least the three-quarter position). Ensure the forward assist is facing skyward.
- Adjust the nose cone so the muzzle of the weapon is firmly against the base of the nose cone. Remove the weapon and secure the hook tape on the pack body to the pile tape on the nose cone.
- Ensure the Type 8 nylon webbing located above the hook tape is folded back up inside the pack body so it does not interfere with properly securing the hook-pile tape.
- When extending the MAWC to its maximum length, the uppermost strip of pile tape must be fully secured to the hook tape.
- Remove all slack from the securing straps inside the pack body. Then place the weapon back inside muzzle first, rifle butt in the rifle butt pocket, and forward assist facing skyward.

Note. A 30-round magazine may be placed inside the magazine well, but no round will be chambered.

- Secure the closing flap.
- Utilize the hook-pile tape, two snap fasteners, and the slide fastener and tab thong. Route the slide fastener and tab thong up until it rests against the upper spring stop.
- Route the compression strap through the appropriate vertical nylon equipment hanger, secure the quick-release buckles of the compression straps, and remove all slack. Ensure the excess of the compression straps are rolled or S-folded and secured inside their webbing retainers. Use a retainer band or one-inch wide masking tape if the webbing retainers are not present.

Note. The quick-release buckles of both compression straps must be secured.

12-83. Donning the MAWC to the jumper. After the jumper has donned their main and reserve parachute and the ALICE pack or MOLLE is properly secured to the jumper's parachute harness, fit the MAWC to the jumper. To do this, take the following actions:

- When secured to the jumper, the base of adjustable nose cone will rest no less than six inches from the ground.
- The top of the MAWC will rest between the top of the D-ring and the base of the left canopy release assembly. Ensure the jumper has good range of motion with their left arm regardless of what paratroop door they are exiting.
- The yellow safety lanyard will be secured to the male portion snap fastener that provides it the most slack.
- Ensure the opening gate is facing toward the jumper.
- Then assess and make any adjustments necessary order to comply with the four rules stated above.
- If adjustments are needed, release the snap shackle, remove the MAWC, and make the appropriate adjustments.

12-84. Adjusting the MAWC to the height of the jumper involves utilizing the adjusting strap:

- Do not remove the free running end of the adjusting strap from the friction adapter to make any adjustments to its length.
- Ensure that after the adjustments are made, the adjusting strap is secured inside the horizontal nylon equipment hangers, leaving enough free for the snap shackle to reach the left equipment ring (approximately one-to-two inches).
- The free running end is secured in one of two ways: secured underneath the horizontal nylon equipment hangers (not preferred) or a retainer band can be girth hitched to the horizontal nylon equipment hanger located just above the friction adapter.
- The free running end can then be rolled or S-folded and secured with the retainer band. This is the preferred method for securing the excess.

Note. Prior to rigging the MAWC, a retainer band can be girth hitched to the horizontal nylon equipment hanger just above the friction adapter of the adjusting strap. A retainer band can also be girth hitched to the vertical nylon equipment hanger below the lower tie-down strap stow pocket to secure the adjustable leg strap.

12-85. After the MAWC has been properly adjusted to the height of the jumper resecure the snap shackle to the left equipment ring:

- Secure the yellow safety lanyard to one of the three male portion snap fasteners.
 - Using the top snap fastener is not recommended in order to ensure proper placement of the MAWC.
 - The top of the MAWC must rest between the chest strap and below the jumper's arm pit and the base of the nose cone will rest no less than six inches from the ground.
- Utilize the snap fastener that will provide the most slack in the yellow safety lanyard.
- Secure the tab thong by both the snap fastener and the upper tie-down tape. Route the upper tie-down tape through the tab thong, then around the pack body, and secure it to the lead edge with a single or double loop bow knot.
- When worn by the jumper, route the upper tie-down tape through the small cut away portion of the left equipment ring from rear to front or bottom to top, then secure it to the lead edge of the MAWC with a single or double loop bow knot. Regardless of how the tab thong is being secured, the upper tie-down tape is routed and secured in this manner. (See figure 12-55.)



Figure 12-55. Routing the upper tie-down tape

- The ejector snap of the HPTLL is routed from front to rear as worn by the jumper, through the attachment loop, and secured to the triangle link or the equipment ring as the outer-most item of equipment.

12-86. When the MAWC is rigged to be jumped as a single item of equipment, do the following:

- Secure an HPTLL in its normal configuration.
- Girth hitch the looped end HPTLL to the attachment loop.
- Girth hitch two retainer bands to the horizontal nylon equipment hangers located beside the carrying handle so they are evenly spaced along the retainer flap.
- Route the HPTLL from bottom to top through the retainer bands. (See figure 12-56.)



Figure 12-56. Attachment of HPTLL to the MAWC

CREW-SERVED WEAPONS/M3 MAAWS

12-87. The M240B or M240L, M192 LWGM, spare barrel bag, and M3 MAAWS fit into the large MAWC and the M240B can be rigged inside the large MAWC when assembled. Place the barrel underneath the foam padded internal divider, under the nose cone divider, and near the slider fastener. Secure the barrel by girth hitching quarter-inch cotton webbing to the PALs in two places and secure it using a bow knot. The M3 MAAWS can be rigged in large MAWC or AT-4JP. Also:

- M240L can be rigged in the MAWC with short barrel attached.
- Spare barrel bag and M4 should be rigged inside the MAWC together.
- Place the spare barrel bag under the foam padded internal divider and separate the M4 with the foam padded internal divider.

12-88. Rigging of machine gun tripods and spare barrel bag under the closing flap of a jumpable pack. Rigging the M122 tripod Includes:

- Detach the flex mount and traverse and elevation (T&E) mechanism.
- Pad and tape these items with bubble wrap and masking tape.
- The flex mount and T&E mechanism must be placed inside the main compartment of the jumpable pack.
- Fold the M122 tripod's short leg down and secure it with a sufficient length of quarter-inch cotton webbing in a single or double looped bow knot. If jumping the M122 tripod inside the spare barrel bag, the short leg does not need to be tied off. (See figure 12-60.)



Figure 12-60. Place M122 tripod under closing flap of MOLLE pack

12-89. To rig the M122 in a jumpable pack, place the M122 tripod directly beneath the closing flap with the short leg facing down into the main compartment of the jumpable pack.

12-90. The M192 LWGM can be jumped under the closing flap of a jumpable pack or the MAWC. To do this:

- Place the M192 LWGM into its collapsed carrying configuration and tie the legs together with a sufficient length of quarter-inch cotton webbing in a non-slip knot.
- Tape all retaining pin pull rings using one turn of masking tape.
- Pad the incorporated T&E mechanism with two turns of bubble wrap and secure with masking tape.
- Pad the entire hinge portion in the same manner as the T&E mechanism. By doing this, the leg-locking stud will be protected from impact, allowing the M192 LWGM to extend into its full firing position.
- Place the M192 LWGM directly under the closing flap of the jumpable pack with the bulk of the T&E facing down towards the main compartment.
- Secure the closing flap, removing all slack. (See figure 12-61.)
- Secure the exposed portion of the legs to the horizontal equipment hangars on the side of the jumpable pack with a sufficient length of quarter-inch cotton webbing using a single or double looped bow knot.



Figure 12-61. Place M192 LWGM in main compartment of MOLLE

12-91. To rig the spare barrel bag:

- Place the spare barrel bag directly under the closing flap of the jumpable pack.
- Then secure the closing flap, removing all slack.

12-92. The 60-mm mortar weapon system (M225 and the M225A1 cannon) are rigged inside the MAWC. The M4 and M225 cannon are also rigged inside the MAWC. The M170 bipod (older model) is rigged inside the MAWC with the M4 secured in the locking collar.

- Pad and tape the points where there is metal-to-metal contact.
- Ensure the muzzle of the weapon and the long legs of the bipod are inside the nose cone.
- The M170A1 bipod assembly must be rigged inside the large MAWC with the M4 following the same rigging procedures as the M170 bipod (See figure 12-62, page 12-42.)

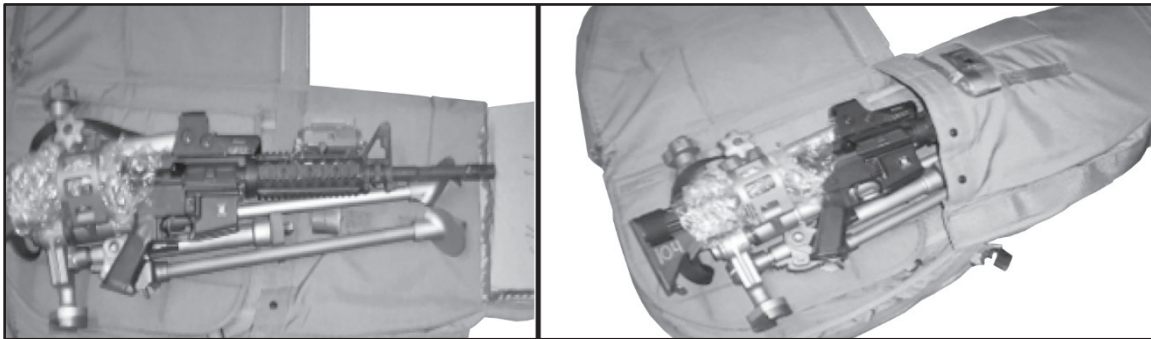


Figure 12-62. M170A1 components and M170A1 and M4 inside the large MAWC

WEAPONS AND EQUIPMENT CONTAINER SYSTEM

12-93. The AIRPAC (NSN 1670-01-414-2757) is a lightweight nylon equipment pack system used to enclose a jump load. The AIRPAC front-mount container can accommodate all size packs, radios, and 60-mm mortar with base plate or bipod. The side-mount container can hold one AT4, M4, M24, M249, M240B machine gun, and other ancillary equipment.

12-94. The AIRPAC consists of the front-mount container, the side-mount container, and the parachutist's individual equipment rapid release (PIE/R2) mechanism. Loads in the front-mount container are rigged according to the equipment used.

RIGGING JUMPABLE PACKS

12-95. Jumpable packs are rigged in the following manner:

- Extend all retaining straps outward to their limits. (The retainer strap with the circular closing flap is the top of the container.)
- Place the container so that the retaining straps face the ground and the parachute recovery bag faces up.
- Fold the parachute recovery bag so that no portions protrude outside the container limits.
- Place the pack on the parachute recovery bag and ensure the circular release rings on the bottom of the container are not constrained by the pack. The jumpable pack is jumped upside down, with the waist pad against the front of the thighs.
- Bring the right side of the container material up first, then the left side and the bottom flap, and then the top flap.
- Place the circular closing flap on top of the pack and open the circular closing flap by pulling the tab.
- Bring the left, right, and bottom retaining straps to the center of the circular closing flap and route the white grommet securing loop through each grommet of the retaining straps. No specific order is required. Bring the top flap material up last. Place the cotter pin through the white grommet securing loop.
- Tighten all retaining straps, ensuring that the circular closing flap remains centered on the jumpable pack. Adjust the protective flaps to stow excess fabric. Close the circular closing flap using three hook-pile tabs.
- Underhand fold the free running ends of the retaining straps toward the friction adapters and secure them under the webbing retainers.

Note. The circular release rings should be exposed on the top flap of the front-mount container. If the rigged pack is above the rings and restricts movement of the rings, the load must be adjusted.

RIGGING RELEASE MECHANISM OF FRONT-MOUNTED CONTAINER

12-96. To rig the front-mount container release mechanism, use these procedures:

- Stand the rigged pack in an upright position with the bottom of the AIRPAC facing the jumper.
- Route release handle cables through the cross strap on top of the container and secure the HPT.
- With the attaching strap snap hook facing down and towards the jumper, route the circular ring of the attaching strap from bottom to top through the circular release ring on top of the container. Fold the circular ring of the attaching strap back over and route the red attaching loop through the attaching ring on the attaching strap.
- With the cable loop retainer on the female portion of the leg strap release assembly facing up, route the red attaching loop from bottom to top through the grommet on the female portion of the leg strap release assembly. Route the release handle cable through the red attaching loop and then through the cable loop retainer. Repeat this sequence for the other strap.

RIGGING HOOK-PILE TAPE LOWERING LINE

12-97. The HPTLL is rigged by taking the following actions:

- Select the desired landing orientation of the front-mount container (horizontally or vertically) and attach the short bridle to the appropriate triangle link.
- Route the looped end of the HPTLL through the unsewn portion of the short bridle and form a girth hitch. Place a retainer band around the nylon tab located inside the closure flaps. Route the HPTLL through the retainer band and stow in the retention pocket. Secure the HPT.
- For transportation, attach the ejector snap to the primary short bridle triangle link.

RIGGING LOAD FOR SIDE-MOUNT CONTAINER

- Place the side-mount container on the ground with the friction adapters facing down and the free running ends of the internal securing strap to the right.
- Then position packing material flush with the bottom edge of the fabric flaps and place the weapon on the container in the following orientation. (See table 12-1.)

Table 12-1. Weapon orientation and packing material required for side mount container

WEAPON	PACKED ORIENTATION	PACKING MATERIAL
M240B MG/SAW	Muzzle up	None required
AT4	Muzzle up	One piece honeycomb on bottom
60-mm mortar	Muzzle down	One piece of six by six-inch honeycomb on bottom

LEGEND

MG – machine gun; mm – millimeter; SAW – squad automatic weapon

- Tape and pad exposed or protruding parts (such as sight posts, grip stocks, or bipods) with a soft material such as bubble wrap or an adequate substitute.
- Center load on the internal securing strap and pull the lower fabric flap over packing material. Route free running end of the internal securing strap through the friction adapter on the lower fabric cap. Place floating V-ring of internal securing strap on the top-center of the load. Form a five-to six-inch quick release in the strap and tighten. From the top, fold excess weapon's container material downward until flush with the top of the load.
- Wrap unpadded fabric flap over weapon. Bring padded fabric flap over load and loosely secure container retaining straps to friction adapters; form a five-to six-inch quick release in the strap. Do not tighten the strap.

Note. If jumping an individual weapon, place the weapon muzzle down in the container slide fastener compartment. Secure the slide fastener.

- Tighten the container retaining straps (with quick releases). S-fold excess webbing and secure to the quick-release loop with two turns of a retainer band, leaving a three-inch tail. Secure drawstring on top of the container with a quick-release knot, if necessary.

RIGGING AIRPAC AS TANDEM LOAD HOOK-PILE TAPE LOWERING LINE

12-98. The AIRPAC is rigged as a tandem load with HPTLL by taking the following actions:

- If the HPTLL is attached to the front-mount container, detach and place to the side. Using the extended bridle, place the looped end through unsewn portion of short bridle and secure with a girth hitch. Route looped end of HPTLL through the floating V-ring of the extended bridle and form a girth hitch.
- Stow the HPTLL in the retention pocket. Stow extended bridle excess in the retention pocket, allowing for a two-foot running end. Secure the retention pocket and attach the ejector snap of the HPTLL to the triangle link.
- After the side-mount container is attached to the jumper, the extended bridle snap hook is attached to the V-ring on the top of the side-mount container.

AIRPAC ATTACHED TO JUMPER

12-99. The AIRPAC is attached to jumper using the PIE/R2 mechanism as follows:

- Place the front-mount container attaching straps under the reserve parachute and attach the front-mount container snap hooks to the equipment-rings (same as a single-point release system).
- Attach the HPTLL ejector snap to the left triangle link on the jumper's harness.

Note. When using the PIE/R2 mechanism, ensure the harness has a lowering line adapter web or new harness triangle link.

- Attach the PIE/R2 mechanism to the side-mount container located on jumper's left side by placing the hook portion of the snap shackle with the hook through the quick-release link from top to bottom. The spring-loaded gate should face away from the container. Remember to hook the gate toward jumper's groin muscle.
- Open the snap shackle with hook, attach to the equipment ring on the outside of the attaching strap snap hook from back to front, and close the snap shackle.
- Take the extended bridle snap hook and attach to the floating V-ring on top of the side container. Secure extended bridle under the retention flap on container.
- On the PIE/R2 mechanism, route the upper tie-down tape around the side-mount container. Route the upper tie-down tape through the D-ring from bottom to top. Tie the upper tie-down tape utilizing a bow knot on the lead edge of the side-mount container. With the orange release handle facing forward on the side-mount container, route the grommet tab through the looped end of the upper attachment strap, over the red attaching loop, and secure with cable. Tighten the upper strap, ensuring that the orange release handle stays on the front portion of the side-mount container.
- Connect the white release lanyard snap hook to the short bridle, attaching the V-ring on the top of the front-mount container. Listen for a metallic click and pull to ensure the snap hook is secure.
- Attach the leg straps, ensuring the left leg strap is also routed around the side container. Tighten and secure. Stow excess webbing under webbing retainers.

LIFE PRESERVERS

12-100. Jumpers wear life preservers whenever a flight is conducted over water, a water obstacle is on the DZ, or the intended DZ is close to a water obstacle (refer to appendix D). A water obstacle is any body of

water (for example, a lake, pond, river, stream, or canal) that has a depth of four feet or more, is 40 feet wide or wider, and is located within 1000 meters of any edge of the surveyed or tactically assessed DZ. The tactical flotation support system (TFSS), B-7, B-5, life preserver unit (LPU) 10/P, and life preserver inflatable (NSN 4220 00 6892 9050) are currently certified for use by jumpers. Other life preservers may be used if approved by the individual service components. When jumping life preservers, all jumpers must review rigging and activating procedures prior to executing the Airborne operation.

12-101. The TFSS-5326 (NSN 4220-01-524-5318) is a life-saving product designed to be fastened to an individual's waist belt. This product uses two separate flotation bladders located in two separate pouches. Each pouch contains a manually-operated firing mechanism and a carbon dioxide (CO₂) gas cylinder that inflates the flotation bladders. (See figure 12-63.) The TFSS-5326 is intended for use with the T-11 and MC-6 personnel parachute systems.



Figure 12-63. TFSS 5326 fastened to a Soldier's waist belt

WARNING

The jumper must ensure they do not wear the TFSS-5326 flotation packets between the parachute harness and their body. Serious injury may result if inflated when worn incorrectly.

CAUTION

The CO2 cartridge cover does not extend the entire length of the CO2 cartridge cylinder, posing a potential for a cold burn to unprotected skin (frost bite burn) when the cartridge is activated. To mitigate this risk, jumpers must ensure the TFSS-5326 mounting belt is worn tightly around their waist to limit CO2 cartridge movement, and ensure there is a layer of clothing between the CO2 cartridge and the parachutist's skin.

12-102. A secondary method of inflation for the TFSS-5326 is provided by left and right oral inflation tubes. A “red” bead (see figure 12-64) identifies the right side pouch as worn by the jumper.

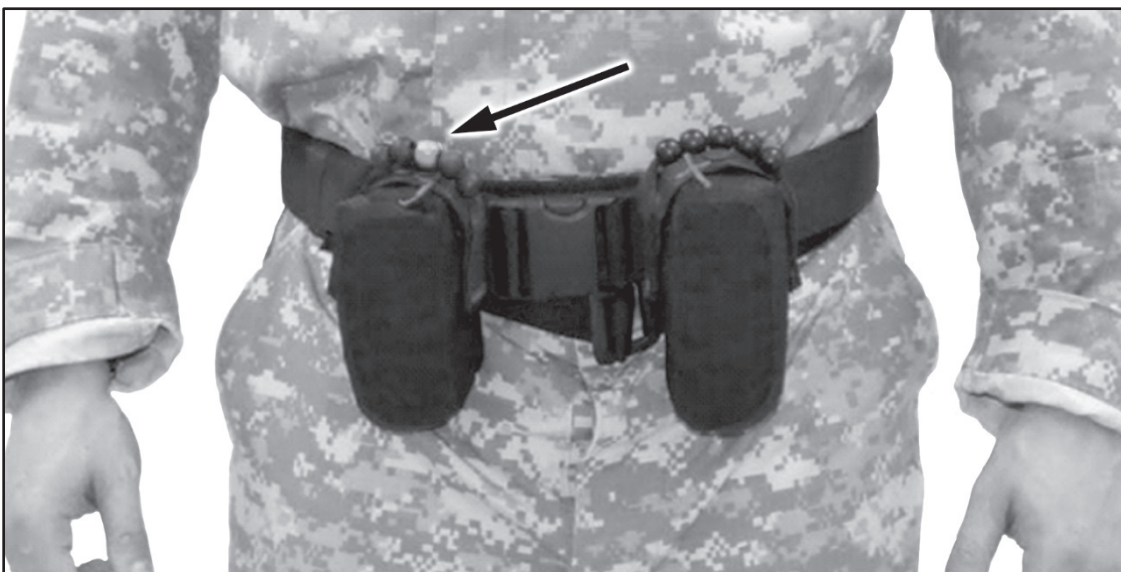


Figure 12-64. Left and right TFSS 5326 pouches

12-103. The flotation bladder's shape allows the inflated chamber to support the person under the arms. Both chambers are intended to inflate to provide buoyancy in the water. (See figure 12-65.) The pouches are made of durable canvas weave fabric with nylon tape and a grommet, loop, and pin closure system. The flotation bladders are welded black (covert) or yellow (overt) with 200 denier nylon-coated polyurethane reflective tape.

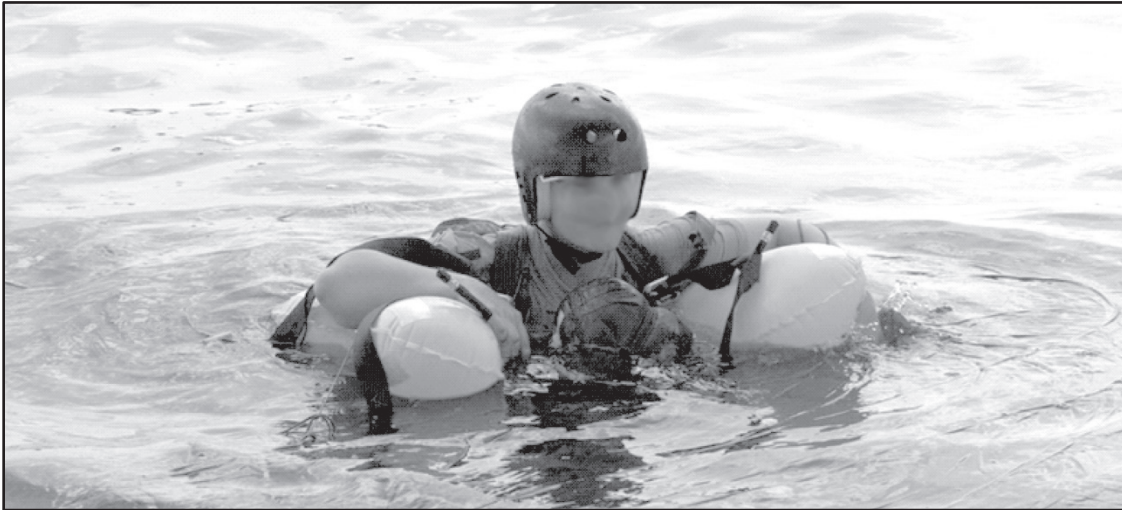


Figure 12-65. Inflated chamber to support the person under the arms

LIFE PRESERVER UNIT 10/P

12-104. The life preserver unit 10/P (NSN 4220-00-850-8655) is a standard U.S. Air Force CO₂ cartridge-activated life preserver assembly worn during flights over water, or during airdrops when water obstacles are near (or on) the intended DZ. The LPU 10/P has an adjustable harness and underarm inflation bladders. It is designed to keep the wearer's head above water at weights up to 250 pounds for up to 10 minutes. The LPU 10/P must be maintained in compliance with the U.S. Air Force.

12-105. The LPU 10/P is worn under the parachute harness. The harness is worn so that the inflatable pockets are under the jumper's arms. The manual inflating valves should be completely closed when donning the life vest. The shoulder and waist straps are then adjusted to ensure the inflation container is one hand width beneath the armpit and not constrained by the parachute harness.

WARNING

The inflation wings must be one hand width beneath the jumper's armpits and clear of the harness straps. If the inflation pockets are too snug under the armpit, or if they are between the harness and the jumper's body, the jumper can experience severe pain or crushed ribs during inflation.

12-106. The jumper inflates the LPU 10/P flotation bladders by pulling two toggle cords (at the bottom of the vest) which activate the CO₂ cartridges that fill the bladders with gas. An alternate provision for inflating the vest is by blowing into the manual inflation valve rubber hoses located on the bottom side of the wings. Manual inflation should be used only if the CO₂ inflation valves fail to operate.

B-7 LIFE PRESERVER

12-107. The B-7 LPU (NSN 4220-00-657-2197) is worn under the parachute harness. To fit the B-7 life preserver, the jumper places one flotation packet under each arm so the packet flaps face out, and the toggle cords hang down and to the front. The shoulder strap should run from front to rear over the left shoulder, under the back strap, then from rear to front over the right shoulder, and be attached to the ring on the right flotation packet. Then adjust the shoulder strap so the flotation packets fit snugly against the armpits. The jumper then attaches the chest strap to the attachment rings on the left flotation packet, forming a quick release.

WARNING

Ensure that the B-7 life preserver is worn so that the inflatable portion is not between the parachute harness and the body. Serious injury may result if it is in this position when inflated.



Figure 12-63. TFSS 5326 fastened to a Soldier's waist belt

WARNING

The jumper must ensure they do not wear the TFSS-5326 flotation packets between the parachute harness and their body. Serious injury may result if inflated when worn incorrectly.

CAUTION

The CO2 cartridge cover does not extend the entire length of the CO2 cartridge cylinder, posing a potential for a cold burn to unprotected skin (frost bite burn) when the cartridge is activated. To mitigate this risk, jumpers must ensure the TFSS-5326 mounting belt is worn tightly around their waist to limit CO2 cartridge movement, and ensure there is a layer of clothing between the CO2 cartridge and the parachutist's skin.

12-113. A secondary method of inflation for the TFSS-5326 is provided by left and right oral inflation tubes. A “red” bead (see figure 12-64) identifies the right side pouch as worn by the jumper.

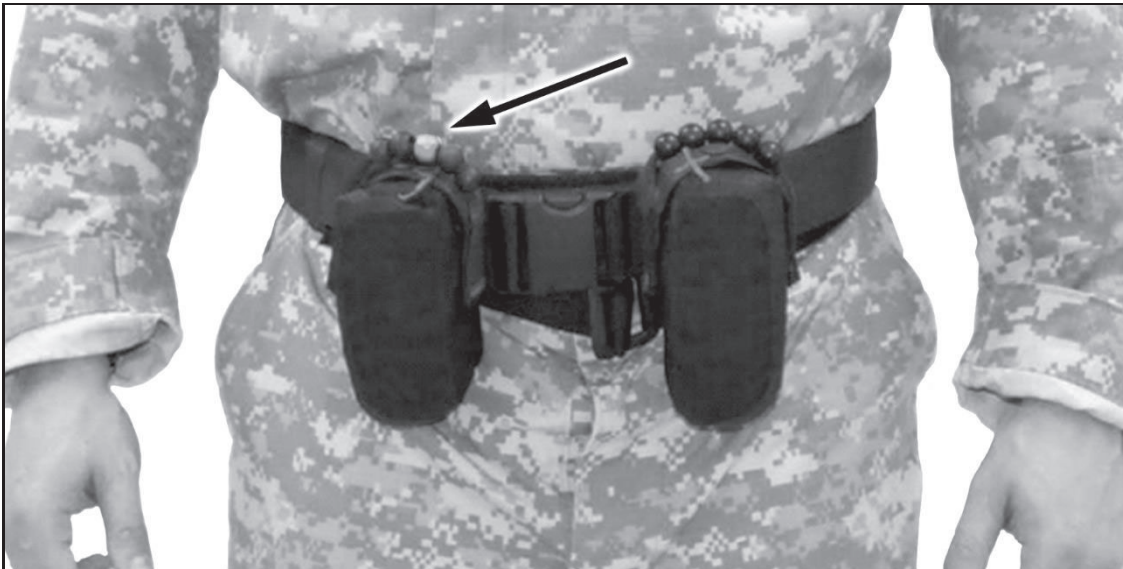


Figure 12-64. Left and right TFSS 5326 pouches

12-114. The flotation bladder’s shape allows the inflated chamber to support the person under the arms. Both chambers are intended to inflate to provide buoyancy in the water. (See figure 12-65.) The pouches are made of durable canvas weave fabric with nylon tape and a grommet, loop, and pin closure system. The flotation bladders are welded black (covert) or yellow (overt) with 200 denier nylon-coated polyurethane reflective tape.

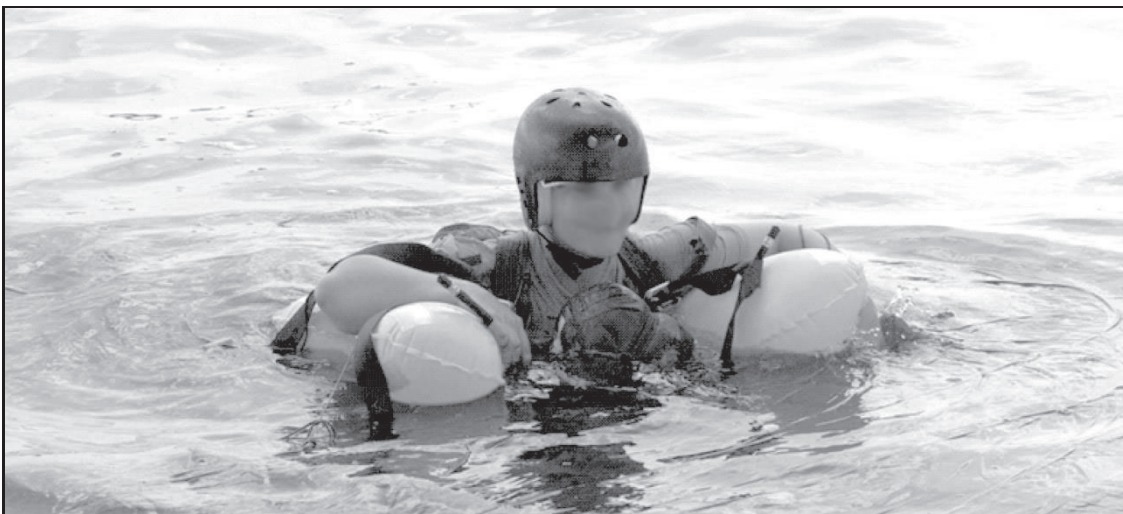


Figure 12-65. Inflated chamber to support the person under the arms

LIFE PRESERVER UNIT 10/P

12-115. The life preserver unit 10/P (NSN 4220-00-850-8655) is a standard U.S. Air Force CO2 cartridge-activated life preserver assembly worn during flights over water, or during airdrops when water obstacles are near (or on) the intended DZ. The LPU 10/P has an adjustable harness and underarm inflation bladders. It is designed to keep the wearer's head above water at weights up to 250 pounds for up to 10 minutes. The LPU 10/P must be maintained in compliance with the U.S. Air Force.

12-116. The LPU 10/P is worn under the parachute harness. The harness is worn so that the inflatable pockets are under the jumper's arms. The manual inflating valves should be completely closed when donning the life vest. The shoulder and waist straps are then adjusted to ensure the inflation container is one hand width beneath the armpit and not constrained by the parachute harness.

WARNING

The inflation wings must be one hand width beneath the jumper's armpits and clear of the harness straps. If the inflation pockets are too snug under the armpit, or if they are between the harness and the jumper's body, the jumper can experience severe pain or crushed ribs during inflation.

12-117. The jumper inflates the LPU 10/P flotation bladders by pulling two toggle cords (at the bottom of the vest) which activate the CO2 cartridges that fill the bladders with gas. An alternate provision for inflating the vest is by blowing into the manual inflation valve rubber hoses located on the bottom side of the wings. Manual inflation should be used only if the CO2 inflation valves fail to operate.

B-7 LIFE PRESERVER

12-118. The B-7 LPU (NSN 4220-00-657-2197) is worn under the parachute harness. To fit the B-7 life preserver, the jumper places one flotation packet under each arm so the packet flaps face out, and the toggle cords hang down and to the front. The shoulder strap should run from front to rear over the left shoulder, under the back strap, then from rear to front over the right shoulder, and be attached to the ring on the right flotation packet. Then adjust the shoulder strap so the flotation packets fit snugly against the armpits. The jumper then attaches the chest strap to the attachment rings on the left flotation packet, forming a quick release.

WARNING

Ensure that the B-7 life preserver is worn so that the inflatable portion is not between the parachute harness and the body. Serious injury may result if it is in this position when inflated.

This page intentionally left blank.

Chapter 13

Arctic Rigging

When using arctic rigging, the number of personnel who can be parachuted from a single aircraft is reduced by the bulk of equipment and cold weather clothing. When computing weight factors, the cold weather-equipped parachutist is estimated to weigh 350 pounds for paratroop door exits. Tailgate drops are those drops during which parachutists exit from the aircraft ramp. The maximum rigged weight of the parachutist conducting over the ramp operations is 325 pounds.

Tailgate drops are approved for special tactics teams, PJs, U.S. Air Force survival evasion resistance escape specialists, U.S. Army Special Forces, U.S. Navy SEALs, paratroopers equipped for arctic airdrop, other U.S. and allied special operations personnel, U.S. Army Quartermaster School, U.S. Army Airborne School, Yuma Proving Ground Airborne Test Force, and units for which a combination drop is their normal method of deployment.

ARCTIC SPACE CONSIDERATIONS

13-1. The exiting interval between each parachutist is increased to two seconds when using arctic rigging. Aircraft compartment space required for a parachutist is 1.5 times more in cold regions than in temperate climates. However, plane-side parachute issue and rigging are impossible during winter months due to harsh temperatures.

13-2. Aircraft must be within 200 meters of the parachute rigging facility to keep rigged jumpers from walking through deep snow or over ice during winter months when temperatures are low and the individual parachutist's equipment is the heaviest. The serviceability of the activating lever on the ejector snap of the HPTLL should be checked, since there is an increased risk of the lever malfunctioning due to the heavy loads. Modifications of standard equipment must be made for Airborne operations under cold weather conditions.

13-3. Arctic mittens or trigger finger mittens are not worn during the parachute jump; their bulkiness interferes with deployment of the reserve parachute and lowering the equipment. The mittens are tucked inside the front or back of the extended cold weather clothing system jacket. They are not attached or packed in a container separate from the jumper. Mittens are stowed inside the jacket for wear as soon as the jumper is on the ground. (See figure 13-1 on page 13-2.)

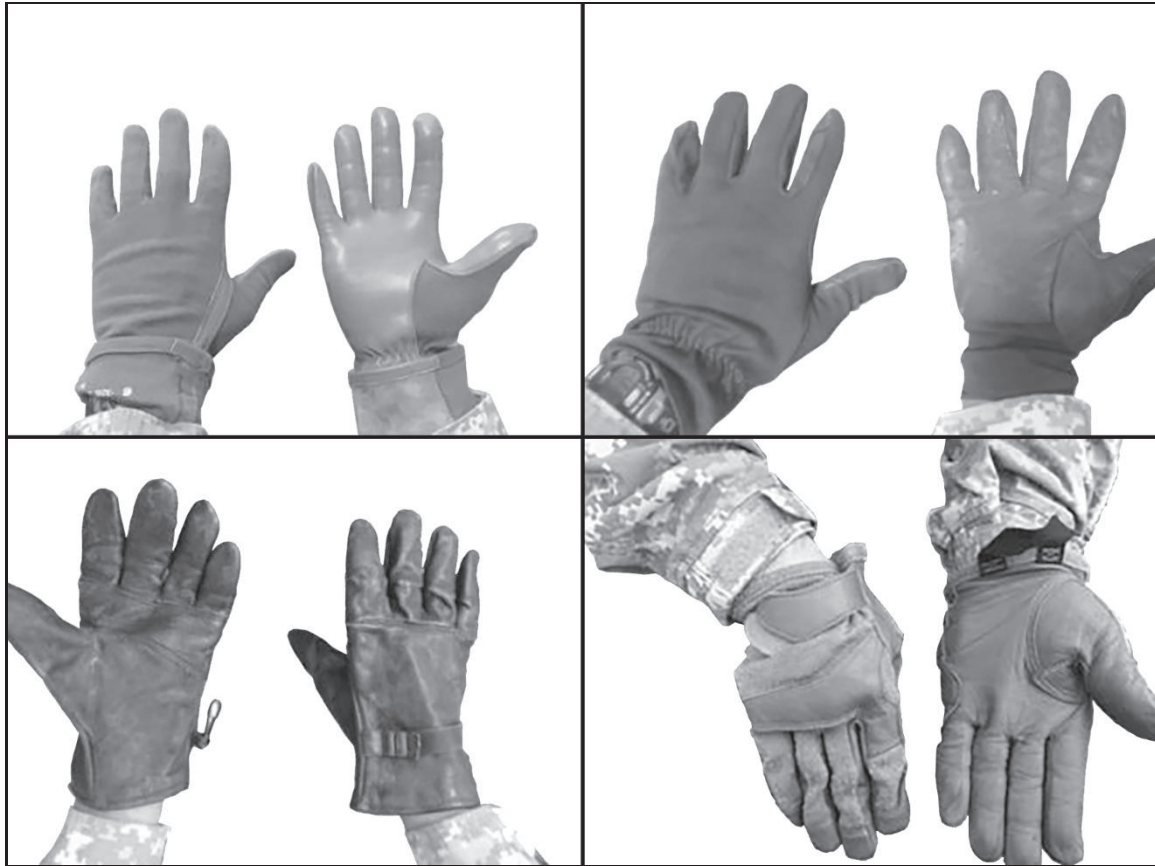


Figure 13-1. Types of authorized gloves

MOUNTAIN SAFETY RESEARCH SNOWSHOES

13-4. Snowshoes are usually rigged on the parachutist to allow for immediate access. Configurations for use of snowshoes is described below.

13-5. Snowshoes (see figure 13-2) are rigged under the closing flap of the MOLLE or ALICE pack with the tails removed. (See figure 13-3.) The tails can be rigged on top of the snowshoes under the closing flap or placed on the inside of the MOLLE/ALICE pack. (See figures 13-4 on page 13-4 and figure 13-5 on page 13-5.)

13-6. Place one snowshoe with the top facing down and the toe extending from one side of the MOLLE/ALICE pack. Place the other snowshoe on top of the previous positioned snowshoe with the toe facing down extending from the opposite end. Place both tails on top of the snowshoes, close, and tighten the top flap so the snowshoes are secure and will not fall out. The MOLLE pack is now ready to be rigged with the harness single-point release and lowering line. Figure 13-5 on page 13-5 shows the MOLLE I rigged with the snowshoes.

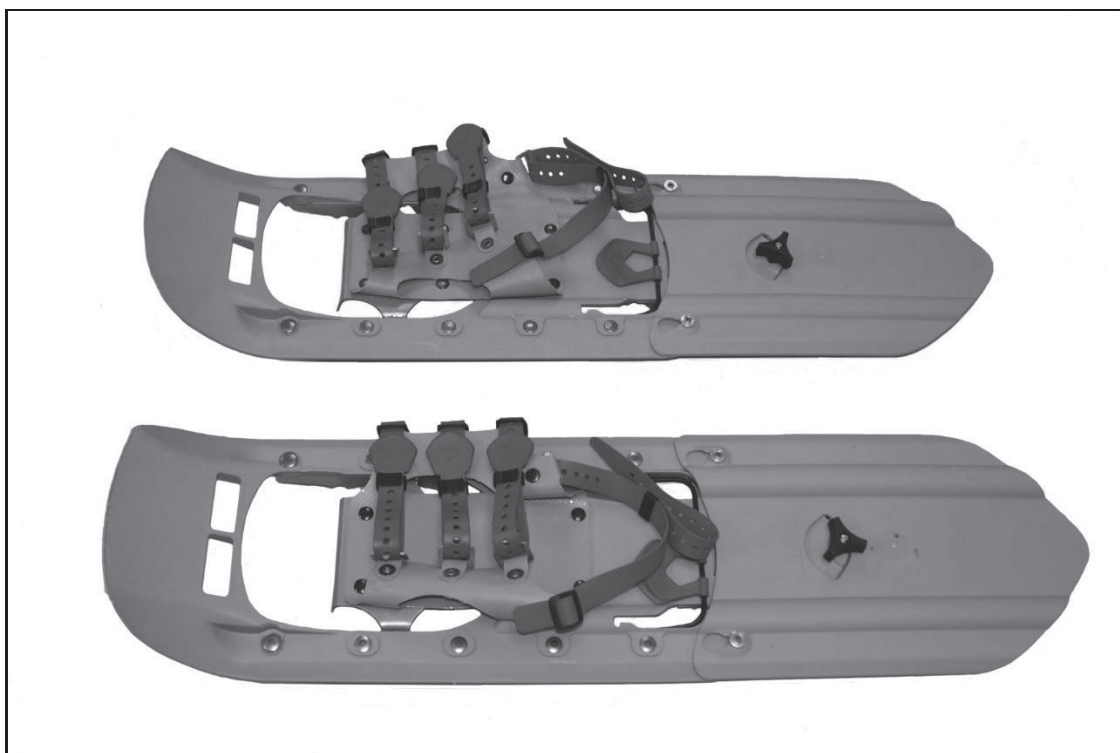


Figure 13-2. Rigged snowshoes



Figure 13-3. Snowshoes under the closing flap or placed on the inside of the MOLLE I



Figure 13-4. Snowshoes under the closing flap or placed on the inside of the ALICE

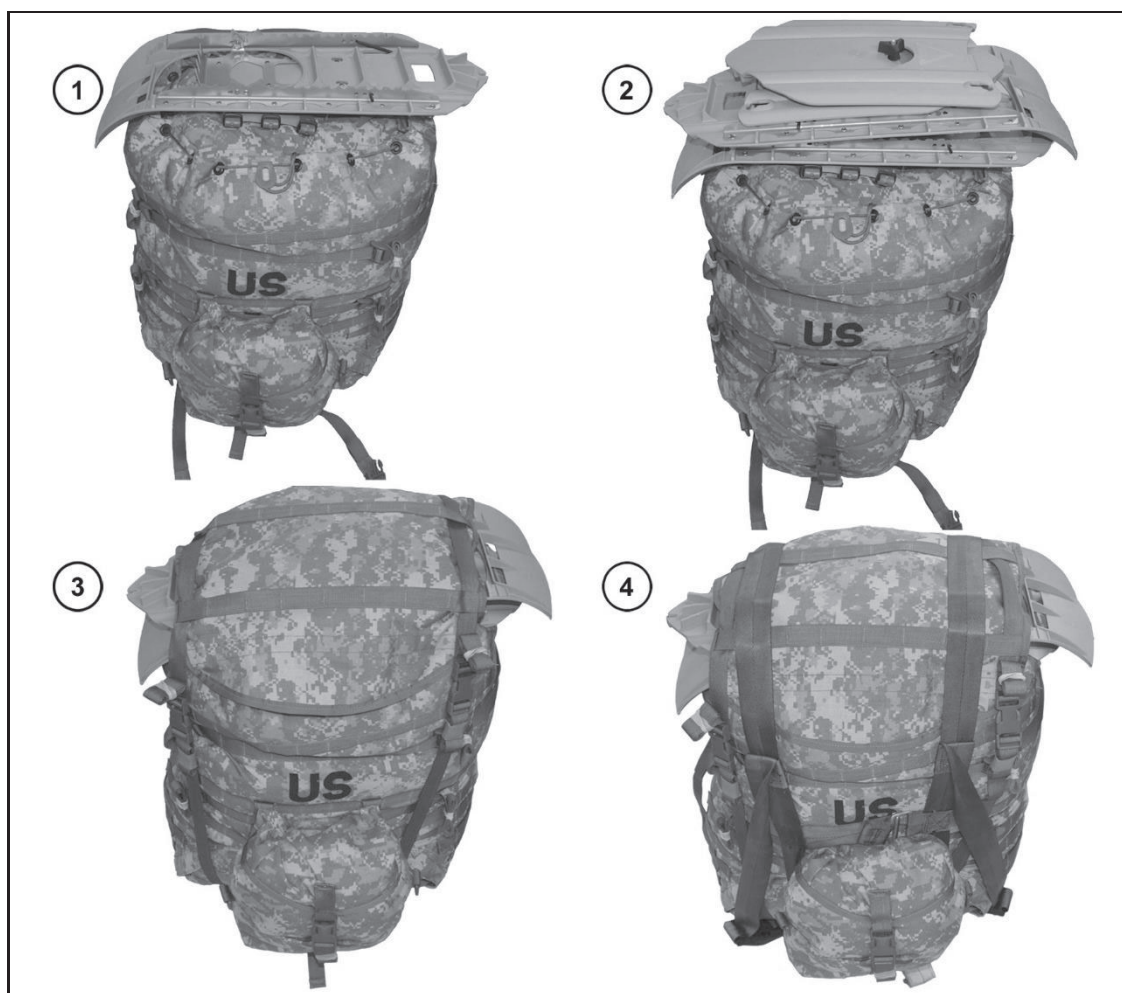


Figure 13-5. MOLLE I rigged with snowshoes

SKIS AND MOLLE/ALICE PACK WITH AIRPAC SIDE-MOUNT CONTAINER

13-7. Skis with the weapon can be jumped using the procedures described below. When the parachutist jumps with skis or with skis as part of the individual jump load, the jump must be from a rear platform or ramp.

13-8. The MOLLE/ALICE pack with AIRPAC side-mount container with skis is considered a special item of equipment due to the length of the skis and the difficulties in handling and moving the equipment around in the aircraft. The side-mount container is restricted to parachutists who are at least five feet, eight inches tall. The AIRPAC side-mount container must be jumped in tandem with the MOLLE or ALICE pack. The maximum weight for the AIRPAC side-mount container during Airborne operations will not exceed the maximum weight allowed for the parachute system being employed. The maximum load packed inside the side-mount container for Airborne operations is 40 pounds. When jumping the M4, M16, M203, or M302 series weapons, they are placed into the container slide-fastener compartment. When jumping the M240B, M249, spare barrel, or tripod, they are padded, taped, and placed into the AIRPAC side-mount container with the skis. The barrels and tripod legs are pointed down and the charging handle is facing away from the skis and the jumper.

13-9. The MOLLE or ALICE pack is rigged with the harness single-point release and the hook-pile tape lowering line. Place the side-mount container on the ground with the friction adaptors facing down and the free- running ends of the internal securing strap to the left. (See figure 13-6.)



Figure 13-6. Placement of friction adaptors

13-10. Prepare the skis by placing one ski on top of the other tip to tip and tail to tail with the ski poles between the skis. Tie the skis together with two pieces of quarter-inch cotton webbing. Tie one end at the shovel of the ski and the other tie at the waist of the ski. (See figure 13-7.) Tape and pad exposed or protruding parts (the tip and tail of the skis) with a soft material such as cellulose wadding or an adequate substitute.



Figure 13-7. Ski placement when jumping

13-11. Center the load on the internal securing strap (see figure 13-8 on page 13-8) and pull the lower fabric flap over packing material. Route the free-running end of the internal securing strap through the friction adapter on the lower fabric cap. Place the floating V-ring of the internal securing strap on the top center of the load. Form a 5-inch to 6-inch quick release in the strap and tighten. From the top, fold excess weapons container material downward until flush with the top of the load. (See figure 13-9 on page 13-9.)



Figure 13-8. Placement of internal securing strap



Figure 13-9. Folding excess weapons container material

13-12. Wrap unpadded fabric flap over the load. (See figure 13-9.) Bring the padded fabric flap over the load and loosely secure the container retaining straps to the friction adapters; form a five-inch to six-inch quick release in the strap. Do not tighten the strap.

13-13. If jumping an M4, M16, M203, or M302, place the weapon muzzle down in the container slide-fastener compartment. Secure the slide fastener. (See figure 13-10 on page 13-10.) Tighten the container retaining straps (with quick releases). S-fold excess webbing and secure to the quick-release loop with two turns of a retainer band, leaving a three-inch tail. Secure the drawstring on top of the container with a quick-release knot, if necessary. (See figure 13-11 on page 13-11.)



Figure 13-10. Placement of weapon in container



Figure 13-11. Container with a quick-release knot

13-14. Attach the quick-release snap to the side-mount container by placing the quick-release link through the V-ring and attach the quick-release snap to the quick-release link with the opening gate facing away from the side-mount container. Attach a piece of quarter-inch cotton webbing to the separate V-ring above the quick-release snap to form an upper tie-down tape. The maximum weight for the AIRPAC side-mount container during Airborne operations will not exceed the maximum weight allowed for the parachute system

being employed. The maximum load packed inside the side-mount container for Airborne operations is 40 pounds. (See figure 13-12.)

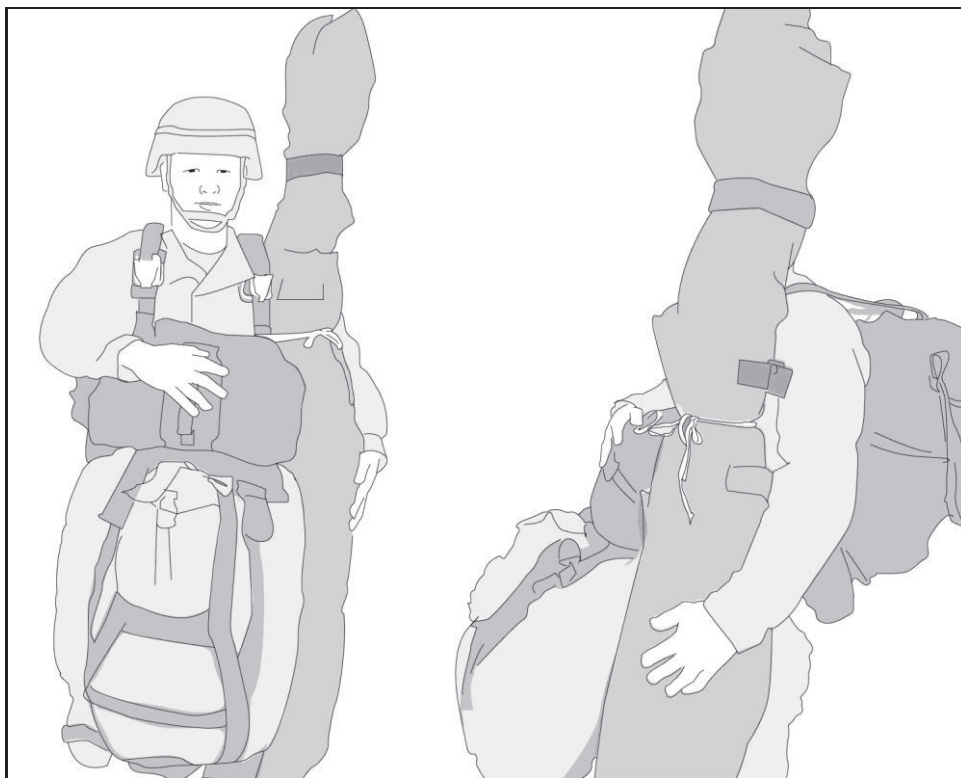


Figure 13-12. Jumper with side-mount container and tandem load

AIRPAC SIDE-MOUNT CONTAINER TECHNICAL INSPECTION PROCEDURES

13-15. The side-mount AIRPAC is a special item of equipment and is technically inspected and attached at the 20-minute time warning. The inspection should include the following actions:

- Ensure all visible container retaining straps are properly secured to their appropriate friction adapter. (All visible container retaining straps have a five finger to six finger quick release.)

Note. Five finger to six finger quick releases depend on the item of equipment inside the AIRPAC side mount.

- Ensure the free-running ends of the container retaining straps are S-folded and secured to the quick-release loop by two turns of a retainer band.
- Ensure the slide fastener is secure.
- Ensure there is no excess in the fabric flap.
- Ensure packing material is present, if required for particular items of equipment and weapon.
- Inspect the quick-release snap in the same manner as the M1950 weapon's case. Ensure a piece of quarter-inch cotton webbing is attached to the separate V-ring above the quick-release snap to be utilized as an upper tie-down tape.
- Attach the side-mount container to the jumper by attaching the opening gate of the quick-release snap to the parachutist's left D-ring as the outer most item of equipment.

- Route the HPTLL between the side-mount container and the nylon chafe material of the case and attach the ejector snap to the triangle link of the parachute harness. Route the leg strap of the harness, single-point release around the jumper's leg and the AIRPAC side mount.

Note. Leg straps of the HSPR are utilized to ensure the side-mount container remains secure against the jumper.

- Route the upper tie-down through the jumpers left D-ring as the outer most item of equipment. Tie the upper tie-down tape utilizing a bow knot on the lead edge of the side-mount container

This page intentionally left blank.

Chapter 14

A-Series Containers

Container loads are loads that are rigged for airdrop in authorized containers such as the A-7A airdrop cargo sling assembly and the A-21 cargo bag assembly. These are used for rigging door bundles and 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 type 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. The containers loaded to be airdropped from a shackle (sling load), helicopter door, or a utility aircraft rigged with a breakaway static line. For high-performance fixed-wing aircraft, loads are normally rigged with parachutes that have nonbreakaway static line. Paratroop door loads that are to be followed immediately by jumpers must have an attached drogue device when using a nonbreakaway static line. Each static line must have a drogue attached to it as outlined in appropriate technical manuals.

Loads are placed in the paratroop doors so the largest dimension is upright/vertical. The parachute is positioned on top of the load or toward the inside of the aircraft. A ramp load to be followed immediately by jumpers is rigged with a T-10 series main parachute (converted for cargo) or a parachute with a breakaway static line. All A-7A, A-21, and A-22 are rigged according to TM 4-48.03/MCRP 4-11.3C/TO 13C7-1-11. Combat rubber raiding craft are rigged according to TM 4-48.04 (FM 4-20.142)/MCRP 4-11.3P/NAVSEA SS400-AD-MMO-010/TO 13C7-51-21.

RIGGING PROCEDURES

14-1. Door bundles are rigged in such a manner that when placed on the balance point of the jump platform, the parachute is on top or facing the center of the aircraft based on the largest dimension, and not on the side. The maximum weight of the bundle is 500 pounds (not including parachute weight). Exceptions to this rigging technique are allowed for the Stinger missile. In both cases, the bundle is placed upright with the parachute facing the center of the aircraft. Both are rigged using the A-21 container. The skid board on the Stinger is placed inside the canvas cover.

14-2. When rigging an item, all components needed for its assembly are packed in the same airdrop bundle. (For example, a radio and battery are packed in the same bundle.) When items such as radio equipment are rigged, each item is individually wrapped. Padding or honeycomb is placed under the item being prepared and inserted between the items to prevent contact. Padding, honeycomb, felt, or other suitable material is used to avoid metal-to-metal or metal-to-wood contact. This includes latches and hinges on ammunition crates.

14-3. All excess lengths of webbing are rolled hand-over-hand for the A-7A and hand-under-hand for the A-21 cargo bag, and tied with quarter-inch cotton webbing in a surgeon's knot and locking knot. This reduces the danger of bundles becoming snagged when ejected or released from the aircraft.

14-4. If hazardous materials are placed inside bundles, they must have a shipper's declaration for dangerous goods completed in compliance with TM 38-250/AFJMAN 24-204/NAVSUP PUB 505/MCO P4030.29G/DLAI 4145.3.

Note. The shipper's declaration for dangerous goods is attached to the manifest, not the bundle.

A-7A AIRDROP CARGO SLING ASSEMBLY

14-5. The A-7A airdrop cargo sling assembly consists of four identical sling straps. Details are:

- The length of each strap is 188 inches
- Each sling strap is fitted with a friction adapter
- Loads weighing up to 500 pounds may be airdropped with an A-7A airdrop cargo sling assembly
- Each A-7A cargo sling strap weighs 1.5 pounds
- There are two D-rings

14-6. Typical loads are rigged for low-velocity airdrop from a paratroop door of an aircraft. Typical loads may include rations, small equipment, water cans, or other supplies. Items should be padded or placed in boxes to prevent damage during airdrop. This load must not exceed 500 pounds, excluding the weight of the parachute. The minimum weight varies according to the parachute. The maximum dimensions for this load is 48-by-30-by-66 inches, including parachute. When the load is dropped, the largest dimension is placed in an upright position in the door. The parachute is on top or on the side located inside the aircraft. When dropped from the paratroop doors, the load must weigh a minimum of 11 pounds per square foot. When dropped from the ramp, the load must weigh a minimum of 28 pounds per square foot.

14-7. To compute the minimum weight required for a container load, measure the length, width, and height (without parachute) of each container. Multiply the two largest dimensions (in inches). Divide the answer by 144. Multiply that answer by 28 for ramp loads or 11 for paratroop door loads. The answer is the minimum allowable weight for that load. (See the example in table 14-1.)

Table 14-1. Example for how to determine minimum allowable weight

EXAMPLE:	
Height (without parachute)	27 inches
Length	44 inches
Width	21 inches
44 inches X 27 inches = 1188 square inches	
1188 ÷ 144 = 8.25 square feet	
RAMP	
8.25 X 28 = 231 pounds	
231 pounds (without parachute) for ramp operations	
DOOR	
8.25 X 11 = 90.75 pounds	
The minimum allowable weight for this container is 90.75 pounds (without parachute) for door operations.	

14-8. Position straps as shown in figure 14-1, and figure 14-2 on page 14-4.

- When two straps are used, a piece of Type III nylon cord needs to be placed parallel to the bottom strap.
- When positioning straps, make sure the oversized portion of the metal frame on the friction adapter is up.

WARNING

The A-series container with a T-10 modified cargo parachute can support 500 pounds. It is recommended a thorough assessment is conducted before configuring the A-series container at maximum capacity.

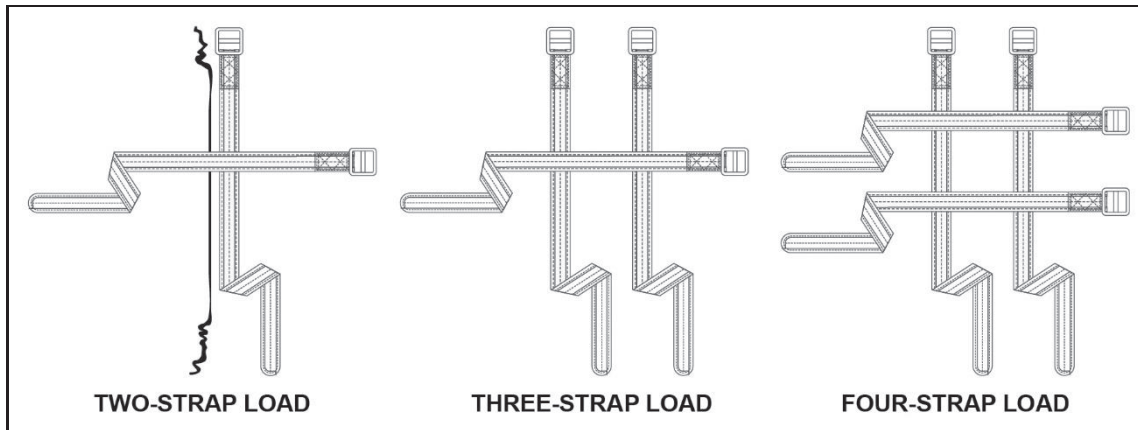


Figure 14-1. A-7A straps

POSITIONING LOAD AND SECURING STRAPS

14-9. . Center the equipment on the straps. If needed, honeycomb can be placed under the equipment. Secure the straps as shown in figure 14-2 on page 14-4 for a two-strap load, figure 14-3 on page 14-5 for a three-strap load, and figure 14-4 on page 14-6 for a four-strap load.

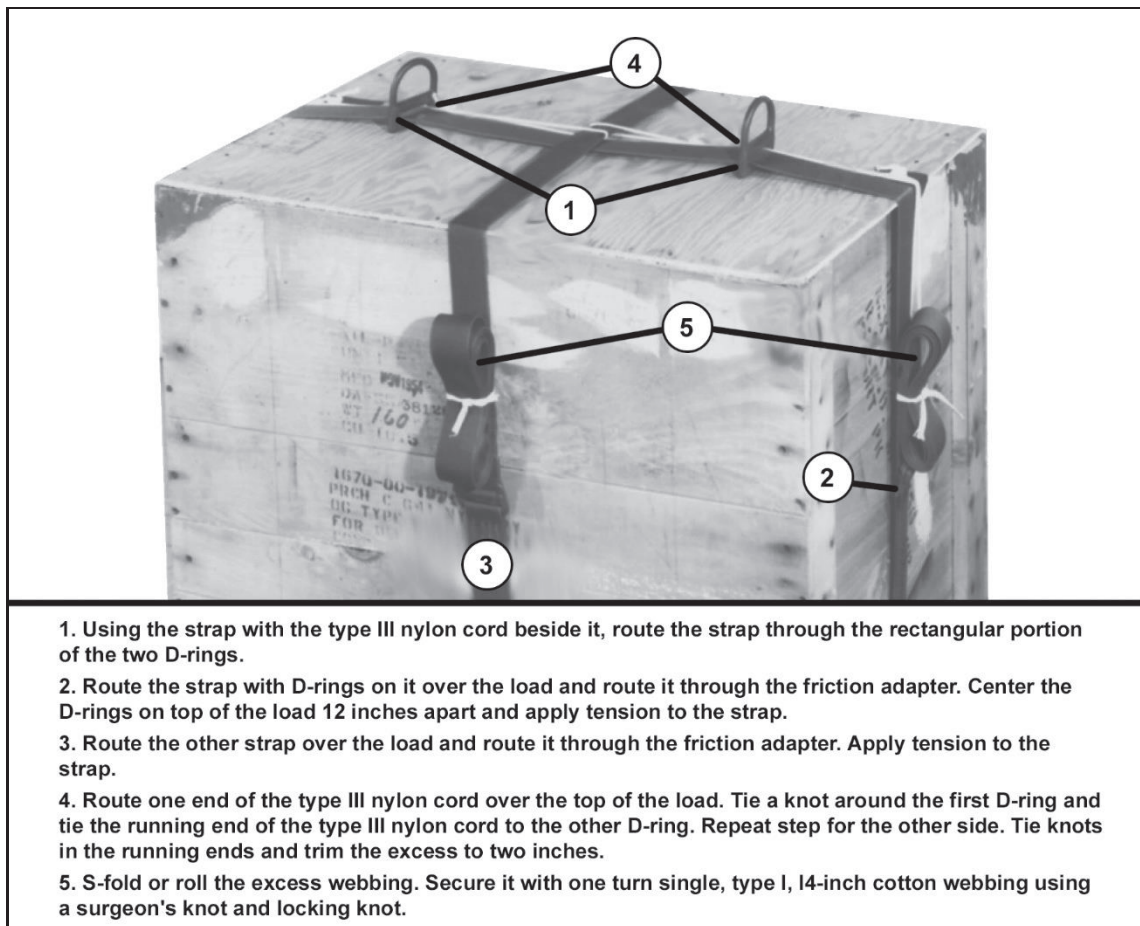


Figure 14-2. Two-strap load positioned and secured

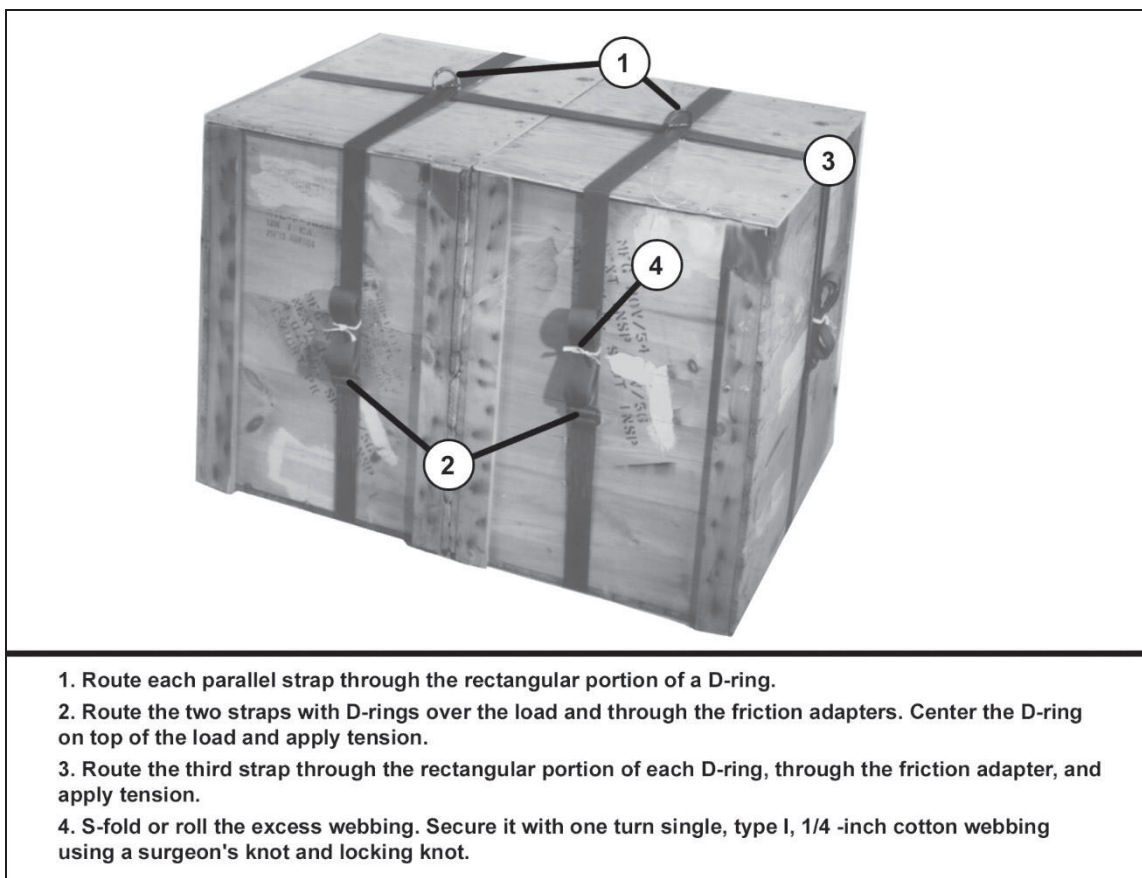


Figure 14-3. Three-strap load positioned and secured

Note. Loads may need to be supported with a piece of honeycomb or plywood to prevent boxes from collapsing.

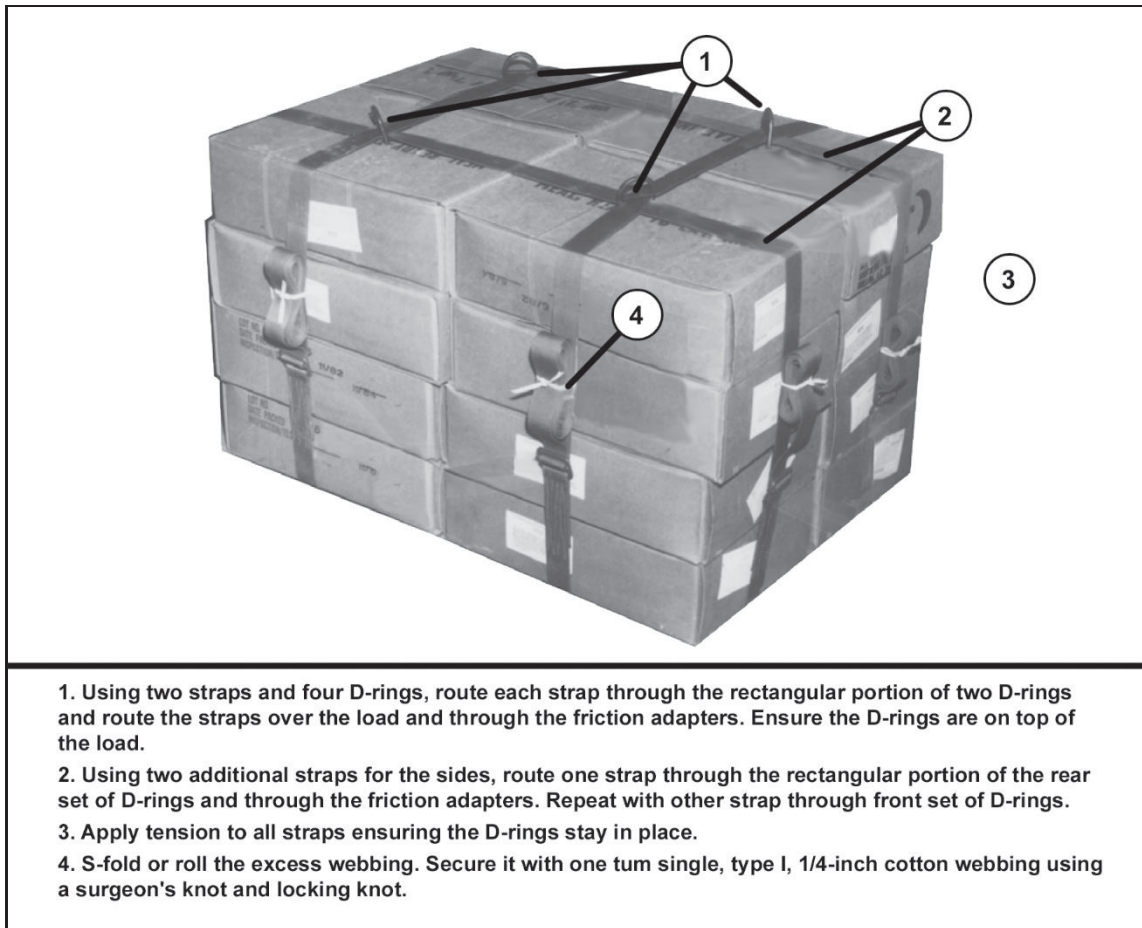


Figure 14-4. Four-strap load positioned and secured

14-10. Install a 68-inch parachute, T-10 modified cargo, or a G-14 cargo parachute on the load. Compute the rigged load data for the two-strap, three-strap, and four-strap loads. (See figure 14-5.) A Shipper's Declaration for Dangerous Goods may be required. Use the equipment listed in table 14-2 to rig a four-strap load for low velocity airdrops as shown in figure 14-5.

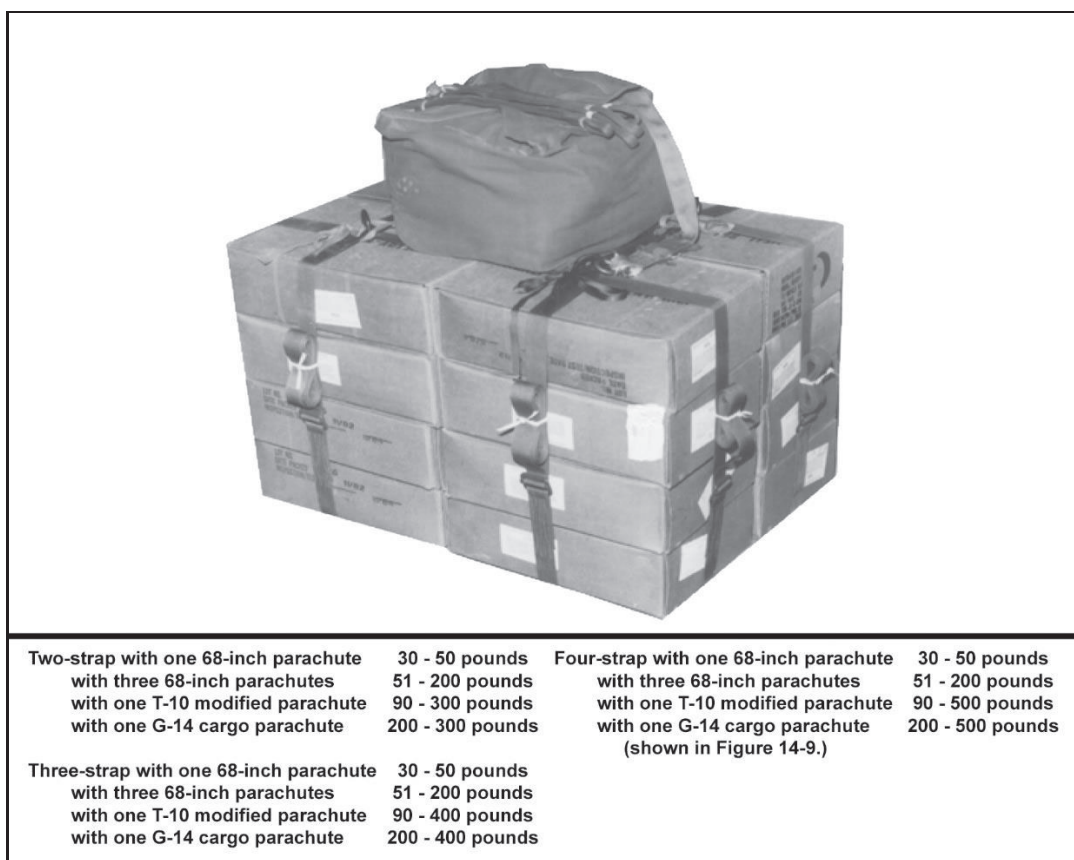


Figure 14-5. Typical four-strap load rigged for low velocity paratroop door airdrop

Table 14-2. Equipment required for rigging four-strap A-7A load for low velocity paratroop door airdrop

NATIONAL STOCK NUMBER	ITEM	QUANTITY
4020-00-240-2146	Cord, nylon, Type III	As required
1670-00-753-3928	Cushioning material, cellulose wadding	As required
1670-00-999-2658	Pad, energy dissipating, honeycomb	One
N/A	Parachute, cargo, G-14	One
1670-00-216-7297	OR Parachute, cargo, modified, T-10	One
	OR Pilot parachute, cargo, 68-inch	One
1670-00-251-1153	Pilot parachute, cargo, 68-inch	One or three
7510-00-266-6710	Sling assembly, cargo airdrop, A-7A	One
	Tape, masking, two-inch	As required
8305-00-268-2411	Webbing, cotton, quarter-inch, Type I	As required
8305-00-082-5752	Nylon, tubular, half-inch	As required

A-21 CARGO BAG ASSEMBLY

14-11. The A-21 cargo bag assembly is an adjustable container. It consists of the following items:

- Sling assembly with scuff pad.
- Fixed quick-release strap and assembly.
- Two O-ring straps.
- Three quick-release straps.
- A 97-inch by 115-inch canvas cover.

14-12. Typical A-21 loads are rigged for airdrop from a paratroop door of an aircraft. Typical loads include rations, repair parts, water cans, and other small nonfragile items. Items to be dropped may be rigged in their original container or may be repacked and padded further to prevent damage. When completely rigged, the load must not exceed 500 pounds, excluding the weight of the parachute. The maximum dimensions for this load are 48-inches by 30-inches by 66-inches.

Note. Containers dropped from paratroop doors require a minimum weight of 11 pounds per square foot.

14-13. Prepare the drop items according to the load's sensitivity. Some items require no padding, while others need padding with cellulose wadding, felt, and honeycomb. All items should be padded well to prevent damage during the airdrop. In addition, items must be in containers large enough so they do not fall out of the load during the airdrop. To position the container and load, see figure 14-6.

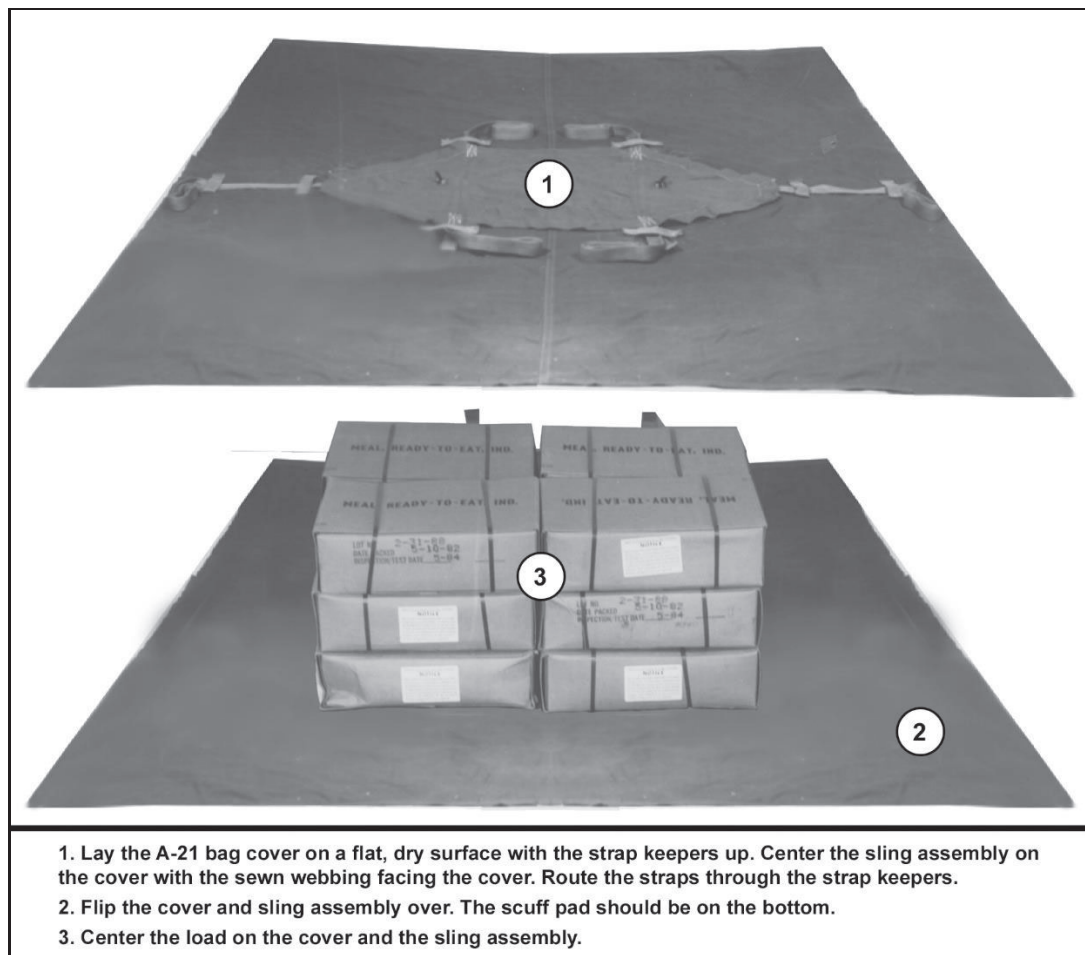


Figure 14-6. Container and load positioned

Note. One or two layers of honeycomb may be placed under the load, if needed.

14-14. The container is rigged as shown in figure 14-7, and figure 14-8 on page 14-10.

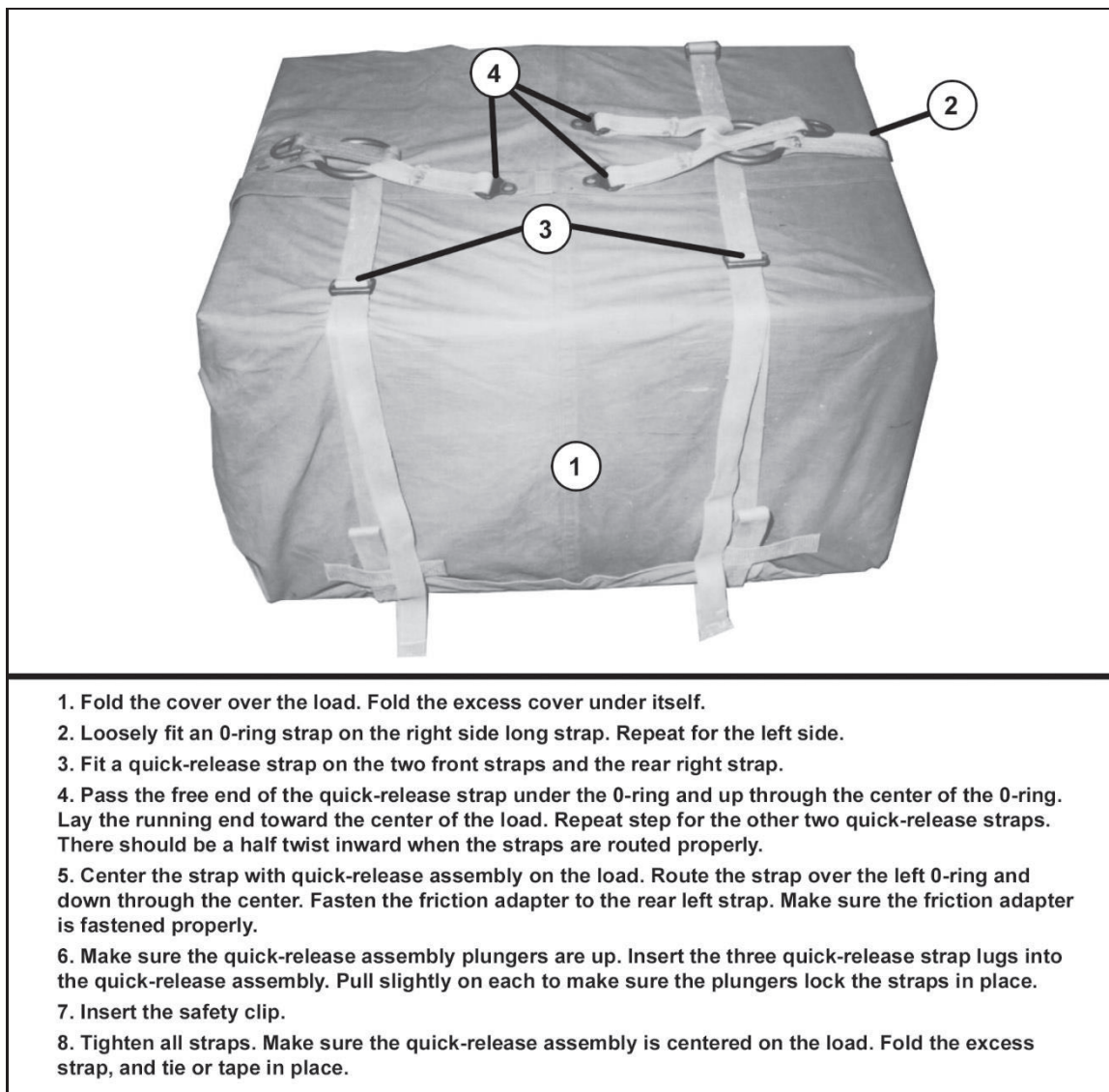


Figure 14-7. Container rigged

Note. Make sure friction adapters are fastened properly.



Figure 14-8. Container rigged (continued)

14-15. Install the T-10 modified cargo or the G-14 cargo parachute. Compute the rigged load data for the A-21 container loads. A Shipper's Declaration for Dangerous Goods may be required. (See figure 14-9.)



Figure 14-9. Container load rigged for low-velocity paratroop door airdrop

RIGGING LOAD DATA (WITHOUT PARACHUTE)

G-14 cargo parachute.....200 to 500 pounds

T-10 modified cargo parachute.....200 to 500 pounds

REQUIRED EQUIPMENT AND FINAL INSPECTION

14-16. Use the equipment listed in table 14-3 to rig an A-21 container load for a low-velocity paratroop door airdrop.

Table 14-3. Equipment required for rigging the A-21 container load for low velocity paratroop door airdrop

NATIONAL STOCK NUMBER	ITEM	QUANTITY
1670-00-242-9173	Bag, cargo, A-2	One
8135-00-664-6958	Cushioning material, packaging, cellulose wadding	As required
1670-00-753-3928	Pad, energy-dissipation material, honeycomb	As required
1670-00-999-2658	Parachute, cargo, high-velocity, G-14	One
N/A	OR Parachute, cargo, modified, T-10	One
8305-00-268-2411	Webbing, cotton, quarter-inch, Type I	As required

14-17. The rigged load is given a complete and final inspection by a qualified person. A-7A and A-21 loads **MUST** be inspected by either a parachute rigger or jumpmaster. At a minimum, the load inspection includes the following:

- Check for serviceability of webbing, straps, and covers.
- Make sure the load is rigged according to procedures outlined in TM 4-48.03.
- Make sure the loads containing hazardous materials comply with TM 38-250 and are labeled accordingly.
- Make sure the proper size parachute has been used and check its condition.
- Inspect the Log Record Book, if applicable.
- Make sure that the parachute is correctly connected and secured to the load.

CAUTION

During mock door training, if door bundles are to be exited, the No. 1 jumper must also be present along with a replica of the container to simulate the required procedures.

PART THREE

Aircraft

A proficient jumpmaster must first be familiar with the aircraft being utilized. Each aircraft has its own characteristics, and all JMs must become familiar with each of the characteristics of those aircraft.

Chapter 15

Aircraft Types and Jump Altitudes

This chapter contains general aircraft descriptions and aircraft drop altitudes. These are critical elements of Airborne. Aircraft are service-tested and approved for troop jumping. Minimum jump altitudes and considerations that apply to Basic Airborne School, tactical, and combat jumps are discussed in the material that follows.

AIRCRAFT TYPES

15-1. High-performance aircraft and utility rotary-wing aircraft are the most commonly-used types of aircraft for Airborne operations. Characteristics of these aircraft are:

- High-performance aircraft are defined as a fixed-wing aircraft with a drop speed of 125 knots or greater. They have the ability to determine the airdrop release point (CARP) by a member of the aircrew (navigator) and must be able to exit paratroopers out of a troop door using either ADEPT option two or Mass Exit procedures. (Refer to chapter 19 for nonstandard jump aircraft.)
- The UH-1 series, UH-60 series, CH-47, CH-53 (USMC) are the most commonly-used rotary-wing aircraft for troop airdrops.

JUMP ALTITUDES

15-2. The minimum criteria discussed below include a 125-foot aircraft altimeter error and a 100-foot canopy control requirement for the MC-6. The minimum jump altitudes for all aircraft are described below and in table 15-1 on page 15-2.

15-3. Refer to table 15-1 on page 15-2 for peacetime training. The jump altitudes for basic Airborne training are as follows:

- 1250 feet AGL (T-11).
- 1000 feet AGL with a waiver from the Airborne Ranger Training Brigade commander.

15-4. For tactical training, it is 800 feet AGL for the MC-6 and T-11. Aircraft with a drop speed of less than 90 knots it is 1500 feet AGL.

CAUTION

The T-11 parachute should not be jumped above 1250 feet AGL for high performance aircraft. Due to the drift characteristics of the parachute, the jumper may drift off of the surveyed drop zone.

15-5. Combat (wartime) drop speeds are restricted to rotary-winged aircraft with a minimum drop speed of 90 knots per hour. For drop speeds above 90 knots, the following applies:

- 600-feet AGL – T-11.
- 600-feet AGL – MC-6.

CAUTION

T-11 may be used for rotary-winged operations if justified by a command deliberate risk assessment worksheet.

15-6. . For fixed-wing aircraft with a drop speed greater than 125 knots per hour, the following applies for the T-11 and MC-6:

- 550 feet AGL (C-130) and 525 feet AGL (C-17) – T-11 (fixed-wing only).
- 475 feet AGL – MC-6.
- Minimum airspeed is 125 knots.
- Reserve parachute is optional (combat operations).

Table 15-1. Minimum jump altitudes for all aircraft

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

LEGEND

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

²- Reserve parachute optional.

³- 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

15-7. Sustained Airborne training can be modified for a combat operation, but it is recommend that the individual jumper accomplishes the following tasks:

- Upon receiving the opening shock of the main canopy, immediately lower individual equipment.
- Assume the landing attitude (T-11 series) or canopy control (MC-6 series) parachute.

RISK ASSESSMENT DECISION MAKING

15-8. When making a training parachute jump, altitude risk assessment decision, the Airborne commander should consider Soldier experience levels. This includes Soldiers' fatigue at jump time, whether the jump altitude is critical to mission success, and the data from table 15-2. Risk-reduction measures include alternate methods of entry for personal equipment (CDS, door bundle) and actions during aircraft rehearsals, with particular attention devoted to jumper exit procedures.

Table 15-2. Time available to activate reserve parachute

PLANNED ALTITUDE (FEET AGL)	POSSIBLE AIRCRAFT ALTIMETER ERROR (FEET)	ACTUAL JUMP ALTITUDE FEET (AGL)	TOTAL TIME AVAILABLE TO ACTIVATE RESERVE (SECONDS)	TIME AVAILABLE MINUS 6000- COUNT (SECONDS)
1250	+/- 125	1375	9.4	5.4
		1250	8.8	4.8
		1125	8.2	4.2
1000	+/- 125	1125	8.2	4.2
		1000	7.6	3.6
		875	6.9	2.9
800	+/- 125	925	7.1	3.1
		800	6.4	2.4
		675	5.6	1.6
LEGEND +/- - plus or minus; AGL - above ground level				

HIGH ELEVATION JUMPING

15-9. The term high-elevation jumping refers to airdrop operations that begin at normal altitude above ground level (that is, 1000 feet AGL), but where the DZ is 5000 to 10,000 feet above MSL, such as in mountainous terrain. Commanders must consider that lower air density or higher altitude will increase the canopies' rate of descent. Commanders should consider the following:

CAUTION

The T-11 ATPS meets the operational requirements for use at altitudes of 7500 feet MSL and below. The T-11 ATPS has not been tested above 7500 feet MSL, therefore a deliberate risk assessment must reflect using the T-11 ATPS at altitudes above 7500 feet MSL. Jumpers will experience increased opening shocks and faster rates of descent.

- Standard troop type parachutes are suitable for the airdrop of personnel onto DZs with ground elevations up to 10,000 feet. Current jump procedures are valid.
- Combat or training exercises onto DZ elevations of 5000 to 10,000 feet that place safety secondary to tactical considerations can produce injury rates of up to four times those expected for similar DZ operations near sea level. Injury rates can be reduced by intensive instruction, training, and practice to include the following:
 - Proper body position upon exit, PLF upon ground impact, and the recovery from the drag.
 - Jumper awareness of increased opening shocks and faster rates of descent.

The ability to control the parachute during sudden wind shifts and changes in wind velocity.

This page intentionally left blank.

Chapter 16

High-Performance Aircraft

High-performance aircraft are defined as fixed-wing aircraft with a drop speed of 125 knots or greater, and having the ability to determine the computed air release point (CARP) by a member of the aircrew (navigator). This aircraft must be able to have paratroopers exit out a troop door using ADEPT option two or mass exit procedures.

16-1. The C-130E/H/J/J-30 is a medium range, high-wing transport aircraft powered by four turboprop engines. The C-130J-30 is the stretched version of the C-130. Jumpers may be dropped using the two paratroop doors or the ramp. Aircraft configurations are listed in table 16-1 for the C-130E/H and table 16-2 for the C-130J-30.

Table 16-1. C-130 E/H/J

CONFIGURATION	JUMPER LOAD
TAP-1 mass drop	62 + two safeties
A*TAP-1 with aircraft armor	48 + two safeties
TAP-2 in-flight rigging	52 + two safeties
A*TAP-2 with aircraft armor	38 + two safeties
TAP-3 over the ramp operations	40 + two safeties
A*TAP-3 with aircraft armor	30 + two safeties
LEGEND A*TAP – tactical airdrop paratroop with armor; TAP – tactical airdrop paratroop	

Table 16-2. C-130-J-30 (stretch)

CONFIGURATION	JUMPER LOAD
TAP-1 mass drop	74 + two safeties
A*TAP-1 with aircraft armor	68 + two safeties
TAP-2 in-flight rigging	74 + two safeties
A*TAP-2 with aircraft armor	64 + two safeties
TAP-3 over the ramp operations	54 + two safeties
A*TAP-3 with aircraft armor	44 + two safeties
LEGEND A*TAP – tactical airdrop paratroop with armor; TAP – tactical airdrop paratroop	

Note. Tactical airdrop paratroop (TAP). A*TAP is the TAP configuration on an aircraft equipped with protective armor. Because of the weight and location of the armor, some forward-most seats are not available for both the C-130E/H/J and C-130-J-30 (stretch) configuration jumper loads.

CAUTION

When jumping the C-130J-30 (stretch), all jumpers must be forward of the paratroop door prior to the paratroop door being open.

C-130E/H/J CONFIGURATIONS

16-2. The seating configurations for C-130 mass drop operations (TAP-1/A*TAP-1) are described below:

- A total of 62 jumpers can be seated in two sticks of 31. (See figure 16-1.) Jumpers No. 1 and 2 are seated outboard aft of the wheel well; Nos. 3 through 22 are seated on the inboard seats; and Nos. 23 through 31 are seated outboard forward of the wheel well.
- When the aircraft is equipped with protective armor, the total number of jumpers is reduced to 48. Jumpers No. 1 and 2 are seated outboard aft of the wheel well; Nos. 3 through 18 are seated on the inboard seats; and Nos. 19 through 24 are seated forward of the wheel well. Jumpers are normally loaded over the aft end loading ramp.
- The maximum number of jumpers per anchor line cable is 20.

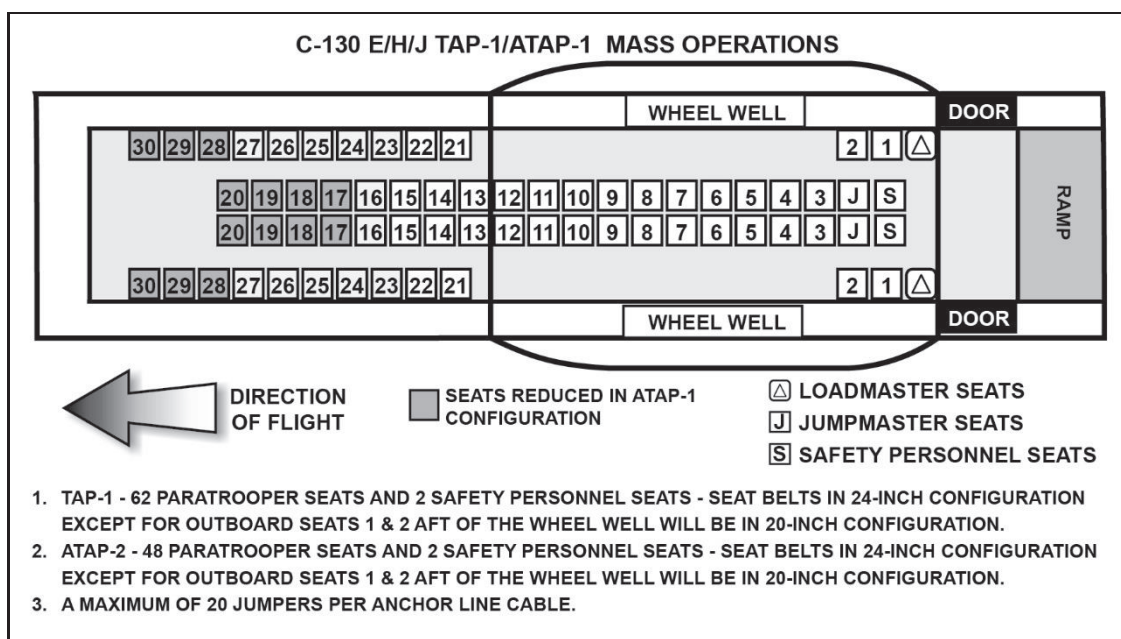


Figure 16-1. C-130E/H/J TAP-1/A*TAP-1

C-130J-30 CONFIGURATIONS

16-3. The seating configurations for C-130J mass drop operations (TAP-1/A*TAP-1) are described below:

- A total of 76 jumpers can be seated in two sticks of 38. (See figure 16-2.) Jumper No. 1 is seated outboard aft of the paratroop doors; Jumpers No. 2 and 3 are seated outboard aft of the wheel well; Nos. 4 through 26 are seated on the inboard seats; and Nos. 27 through 38 are seated outboard forward of the wheel well.
- When the aircraft is equipped with protective armor, the total number of jumpers is reduced to 68. Jumper No. 1 is seated outboard aft of the paratroop doors; Jumpers No. 2 and 3 are seated outboard aft of the wheel well; Nos. 4 through 24 are seated on the inboard seats; and Nos. 25 through 34 are seated forward of the wheel well. Jumpers are normally loaded over the aft end loading ramp.
- The maximum number of jumpers per anchor line cable is 31.

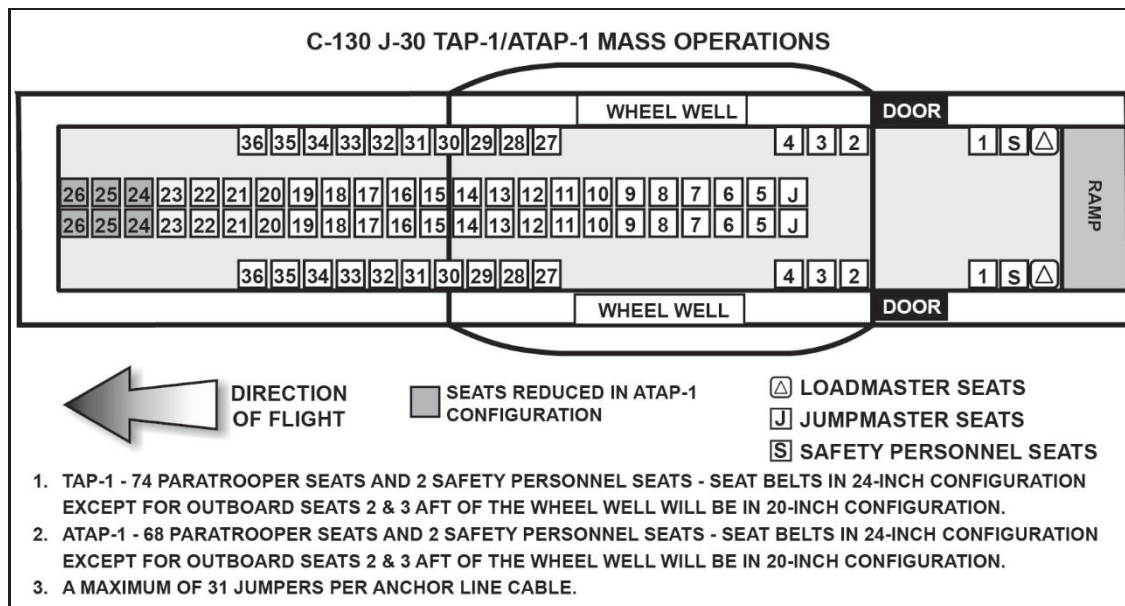


Figure 16-2. C-130J-30 configurations

REQUIRED SUPERVISORY PERSONNEL

16-4. Six personnel supervise jumpers and ensure safety measures are followed (ADEPT options 1 and 2, and mass exit). Navy operations may not have an AJM or safety on board the aircraft if the total number of jumpers participating on the aircraft (including the PJM) is 10 or less, a single door or ramp is used, and jumpers are not rigged with combat equipment. The supervisory personnel required include the following:

- Two jumpmasters.
- Two safety personnel.
- Two airdrop qualified loadmasters.

Note. U.S. Marine Corps and U.S. Navy utilize one door; the other door remains closed and unmanned. Therefore, only one JM and one safety are used.

C-130E/H/J IN-FLIGHT RIGGING OPERATIONS (TAP-2/A*TAP-2)

16-5. The seating configurations and personnel required for C-130E/H/J in-flight rigging operations are described below:

- A total of 52 jumpers (with equipment) including two non-jumping safeties. Jumpers are in two sticks of 26.
- Four jumpers within the stick should be current and qualified JMs to assist in rigging and JMPI and are seated where they can best support the mission.
- When the aircraft is equipped with protective armor, the total number of jumpers is reduced to 38 jumpers plus two non-jumping safeties. Jumpers are normally loaded over the aft end loading ramp. (See figure 16-3.)
- A maximum number of jumpers per anchor line cable is 20.
- One rigger for in-flight rigging is optional.

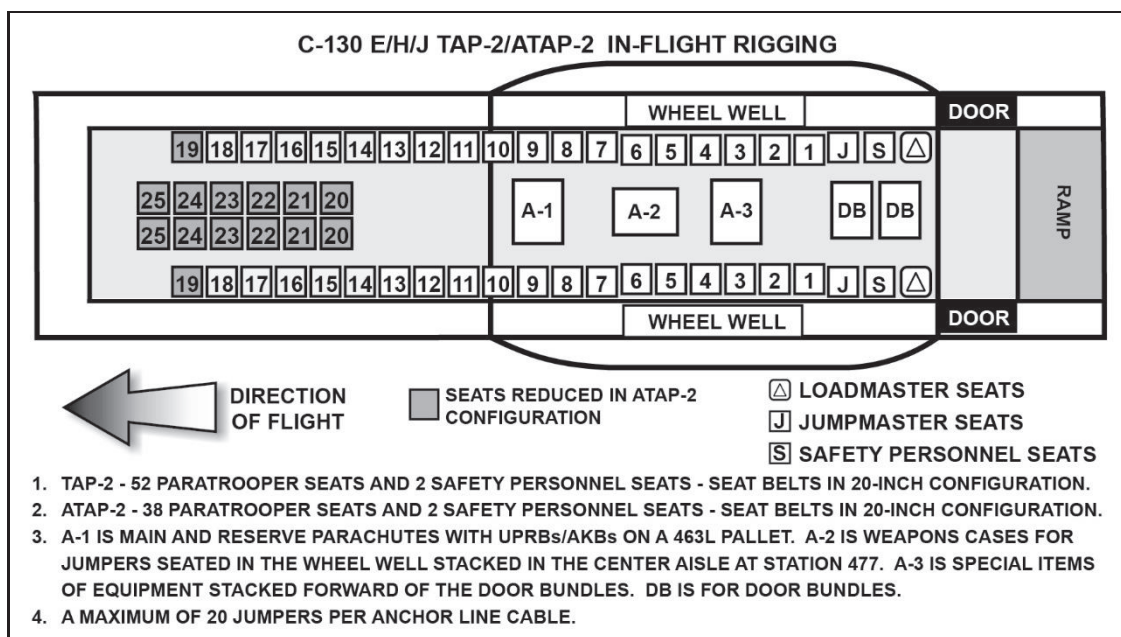


Figure 16-3. C-130E/H/J TAP-2/A*TAP-2 configuration

C-130 /J-30 IN-FLIGHT RIGGING OPERATIONS (TAP-2/A*TAP-2)

16-6. The seating configurations for C-130/J-30 in-flight rigging operations are described below:

- A total of 74 jumpers (with equipment) including two non-jumping safeties in two sticks of 37.
- Six jumpers within the stick should be current and qualified JMs to assist in rigging and JMPI. They are seated where they can best support the mission.
- When the aircraft is equipped with protective armor, the total number of jumpers is reduced to 64 plus two nonjumping safeties. Jumpers are normally loaded over the aft end loading ramp. (See figure 16-4.)
- The maximum number of jumpers per anchor line cable is 31.
- Once the command of the "OUTBOARD/INBOARD PERSONNEL STAND UP," the No. 1 jumper along with the JM team move forward of the paratroop door.
- One rigger for in-flight rigging is optional

Note. When jumping the C-130J-30 (stretch) all jumpers must be forward of the paratroop door prior to the paratroop door being open.

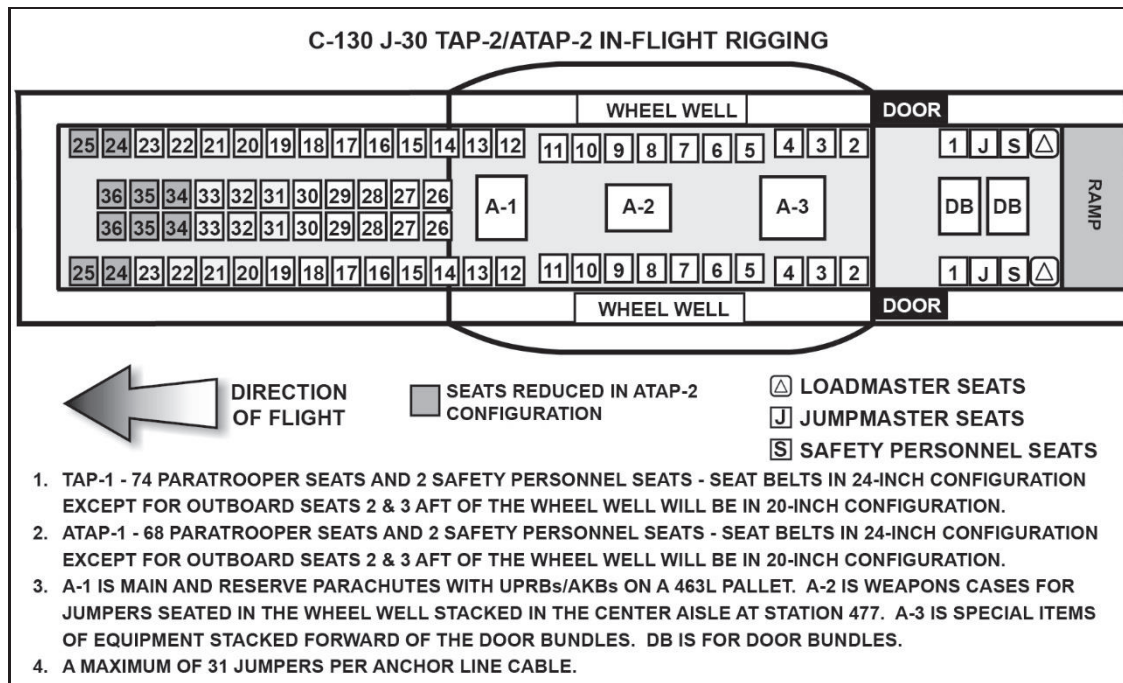


Figure 16-4. C-130 J-130 TAP-2/A*TAP-2 configuration

Briefing and Equipment Storage

16-7. All jumpers are briefed and rehearsed on their actions before executing this type of in-flight rigging mission. The method for in-flight rigging is buddy rigging. This allows faster rigging and reduces jumper's movement in the aircraft. The other method, station rigging, is seldom used.

16-8. Storing equipment involves the following:

- Parachutes and reserves are palletized (covered with a cargo net or tie-down devices) on the ramp and moved forward before rigging begins.
- Door bundles are placed in the center aisle just forward of the ramp.
- Special items of equipment are placed in the center aisle just forward of the door bundles.
- Weapon cases should be placed behind individual seats. Weapon cases for personnel occupying wheel well seats are placed on the floor at Station 477.
- Individual equipment should be placed under seats, or if too large, may be placed in the center aisle forward of the special items of equipment.
- All equipment placed in the center aisle must be secured.

Buddy Rigging, Station Rigging, and In-Flight Rigging (Time Warnings)

16-9. Buddy rigging begins two hours, 20 minutes before drop time. Rigging must be completed by the 20-minute warning, and consists of the following:

- The main and reserve parachutes, with UPRB and AKBs, are passed forward until each jumper has a parachute. Once everyone has a parachute, buddy rigging begins under the supervision of the JMs, designated JM qualified jumpers, and safety personnel. Each jumper must know who their rigging partner is.
- Once a jumper is rigged, they sit down and wait to be inspected by one of the JMs. The safety personnel serve as roving correction inspectors. The attachment of the USL snap hook to the top carrying handle of the reserve signifies an inspected jumper.
- The PJM supervises the entire rigging operation and assists, as needed.

- Once all the jumpers have been inspected, the JMs don equipment, and safety personnel inspect them. Other JM-qualified jumpers should be used to speed up the rigging process.

16-10. One rigging station is established forward of the jump doors and another station is established forward in the cargo compartment. The forward station is manned by a safety and the AJM. As the forward rigging station is established, half the main parachutes and reserves are passed forward to the safety personnel. One safety kit must be present at each station. Starting in the center of the stick, two jumpers (one on each side of the aircraft) pick up their combat equipment. Each jumper moves to the designated rigging station to don the parachute and equipment, assisted by a JM.

16-11. When completely rigged, the jumper moves to the AJM (stationed nearby) for inspection. The AJM attaches the USL snap hook to the top carrying handle of the reserve parachute when they reach that portion of the inspection sequence. After JMPI, the jumper returns to their seat (or stick position). To ensure minimum time loss, the next jumper is waiting to be rigged or inspected by a JM.

16-12. In-flight rigging time warnings include the following:

- TWO-HOUR, 20-MINUTE TIME WARNING: this is used only on in-flight rigging missions. At the 20-minute time warning, all in-flight rigging is complete. All jumpers are alert with helmets fastened. Door bundles are positioned in the vicinity of the jump doors, hooked up to the outboard anchor line cable, and inspected. Special items of equipment are attached to their respective jumpers and inspected.
- TWENTY-MINUTE TIME WARNING: special items of equipment should be attached to designated jumpers and a thorough technical inspection conducted. Door bundles should be positioned in vicinity of the paratroop door, technical inspection conducted, and the USL snap hook is hooked up to the outboard anchor line cable.
- TEN-MINUTE TIME WARNING: no change, refer to chapter 10 for jump commands.
- THREE/SIX-MINUTE TIME WARNING AND AIRCRAFT SLOWDOWN: no change, refer to chapter 10 for jump commands.
- ONE-MINUTE TIME WARNING: no change, refer to chapter 10 for jump commands.
- THIRTY-SECOND TIME WARNING: no change, refer to chapter 10 for jump commands.
- GREEN LIGHT: no change, refer to chapter 10 for jump commands.

Over the Ramp Operations (TAP-3/A*TAP-3)

16-13. The seating configurations for C-130 in-flight rigging operations are described below. Units authorized for over the ramp operations are as follows:

- 1. Tailgate drops are approved for special tactics teams, PJ, U.S. Air Force survival evasion resistance escape specialists, U.S. Army Special Forces, U.S. Navy SEALs, paratroopers equipped for arctic airdrop, other U.S. and allied special operations personnel, U.S. Army Quartermaster Center and School, Yuma Proving Ground Airborne Test Force, and units for which a combination drop is their normal method of deployment.
- 2. Authorization of Arctic-Equipped Jumpers to Tailgate; authorization was granted “to allow arctic-equipped jumpers with large field pack and skis, if included, to tailgate from C-130 aircraft.” (Large field pack mentioned in message DTG 111345Z JUL 1991 is the FPLIF.)
- 3. U.S. Marine Corps Force Reconnaissance and Air Naval Gunfire Liaison Company (ANGLICO) personnel are authorized to conduct C-130 over the ramp parachute operations if required by their mission. These units train for over the ramp parachute operations as a normal method of deployment.
- 4. Based on Airborne materiel and training proponentcy, the 1st Battalion, 507th Parachute Infantry Regiment, Airborne and Ranger Training Brigade, U.S. Army Infantry School, Fort Benning, Georgia, is authorized to plan and conduct over the ramp operations from the C-130 aircraft.
- 5. U.S. Navy EOD is authorized to plan and conduct over the ramp operations to include combination drops from the U.S. Navy or U.S. Marine Corps C-130 aircraft and U.S. Air Force C-130.

C-130E/H/J (TAP-3/A*TAP-3)

16-14. The seating configurations for C-130 E/H/J operations are described below:

- A total of 40 jumpers (with equipment) including two non-jumping safeties. Jumpers are in two sticks of 20.
- When the aircraft is equipped with protective armor, the total number of jumpers is reduced to 28 and two non-jumping safeties.
- Jumpers are normally loaded over the aft end loading ramp. (See figure 16-5.)

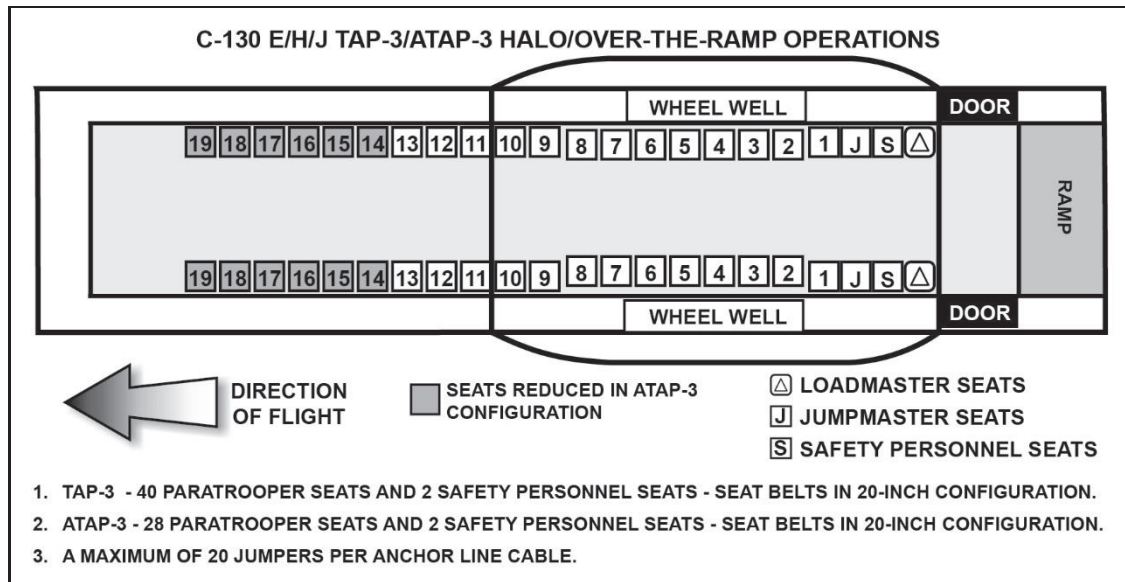


Figure 16-5. C-130E/H/J TAP-3/A*TAP-3 configuration

C-130J-30 (TAP-3/A*TAP-3)

16-15. The seating configurations for C-130J-30 operations are described below:

- A total of 54 jumpers (with equipment) including two non-jumping safeties. Jumpers can be seated in two sticks of 29.
- When the aircraft is equipped with protective armor, the total number of jumpers is reduced to 48. Jumpers are normally loaded over the aft end loading ramp. (See figure 16-6 on page 16-8.)
- Once the command of "FIRST PASS/OUTBOARD PERSONNEL STAND UP" is given, the No. 1 jumper along with the JM team move forward of the paratroop door.

CAUTION

When jumping the C-130J-30 (stretch) all jumpers must be forward of the paratroop door prior to the paratroop door being open.

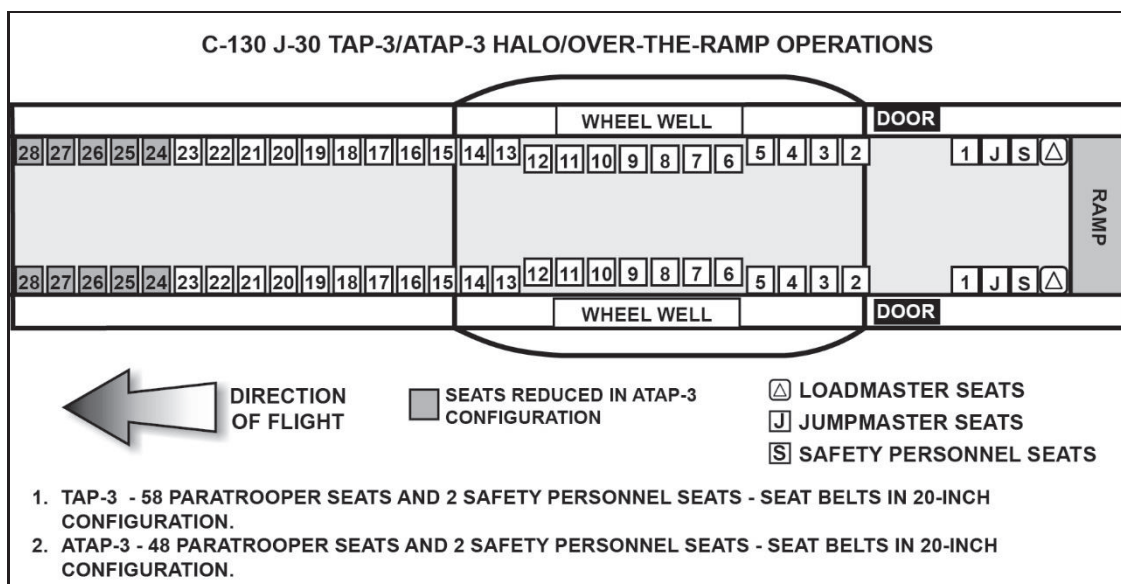


Figure 16-6. C-130 /J-30 TAP-3/A*TAP-3 configuration

Note. In compliance with Air Force Instruction (AFI) 11-2C-130, Volume 3, the maximum rigged weight of a jumper is 325 pounds when conducting over the ramp static line operations.

16-16. Over the ramp operations can include the combination of an equipment drop followed by jumpers. Equipment is defined as heavy drop loads rigged for airdrop or heavy equipment packaged in CDSs. Jumpers may be dropped over the ramp without an equipment drop (maximum of 20 jumpers for each pass when conducting over the ramp operations).

CAUTION

During over the ramp combination airdrops (CDS or heavy drop loads followed by personnel), there must be a three-second interval between the exit of equipment and the exit of jumpers in order to avoid possible jumper entanglement during over the ramp operations. The DZSO or DZSTL must follow the procedures for heavy drop operations, but observe the jumpers as they exit the aircraft.

Aircraft Operations, Jump Procedures, and Time Warnings

16-17. The anchor line cables (only two are used; one on each side) are rigged from the forward outboard anchor line cable attachments to the aft inboard anchor line cable attachments. The anchor line cable stop (a small clevis; padded and taped) must be installed on the anchor line cable 20 inches forward of the aft anchor line cable attachment bracket. The center anchor line cable support brackets at the door are disconnected and secured at the top of the fuselage. The static line retriever cables are tied or taped to the sides of the fuselage aft of the doors to ensure that they remain secured.

Note. If jumping with the AIRPAC side mount, the jumper must exit using the left anchor line cable.

16-18. If the PJM and AJM elect to jump, they will be the No. 1 jumper of each stick. Therefore, the safeties will control the flow of the jumpers with the following:

- **TWENTY-MINUTE TIME WARNING:** special items of equipment should be attached to designated jumpers and a thorough technical inspection conducted.
- **TEN-MINUTE TIME WARNING:** at the 10-minute warning, the JMs hook up to the anchor line cable. The JM gives the 10-minute time warning and then begins the standard jump commands beginning with “GET READY.”
- A door safety check is not required. The JM will normally spot their reference points from the left side of the ramp.
- **ONE-MINUTE TIME WARNING:** once the JM spots their one-minute reference point, is approximately one minute from the green light, or the safety passes along the loadmaster time warning to the JM; the JM relays the one-minute time warning to their jumpers.
- **30-SECOND TIME WARNING:** once the JM spots their 30-second reference point and is approximately 30 seconds from the green light (or the safety passes along the loadmaster time warning to the JM) the JM will relay the 30-second time warning to their jumpers.

Note. If using GMRS, the JM must spot the ground marking from the left side of the ramp.

- If the JM is jumping:
 - After giving the command STAND BY, the JM moves to the center edge of the ramp; once the green light illuminates, the JM gives the command “FOLLOW ME” and exits the aircraft.
 - The safety is positioned immediately behind the hinged portion of the ramp and controls the flow of the jumpers.
- If the JM is static:
 - After giving the command STAND BY, the JM is positioned immediately behind the hinged portion of the ramp.
 - The JM controls the flow of the jumpers.
- Each jumper walks toward the center of the ramp at an angle away from the anchor line cable. (See figure 16-7.)

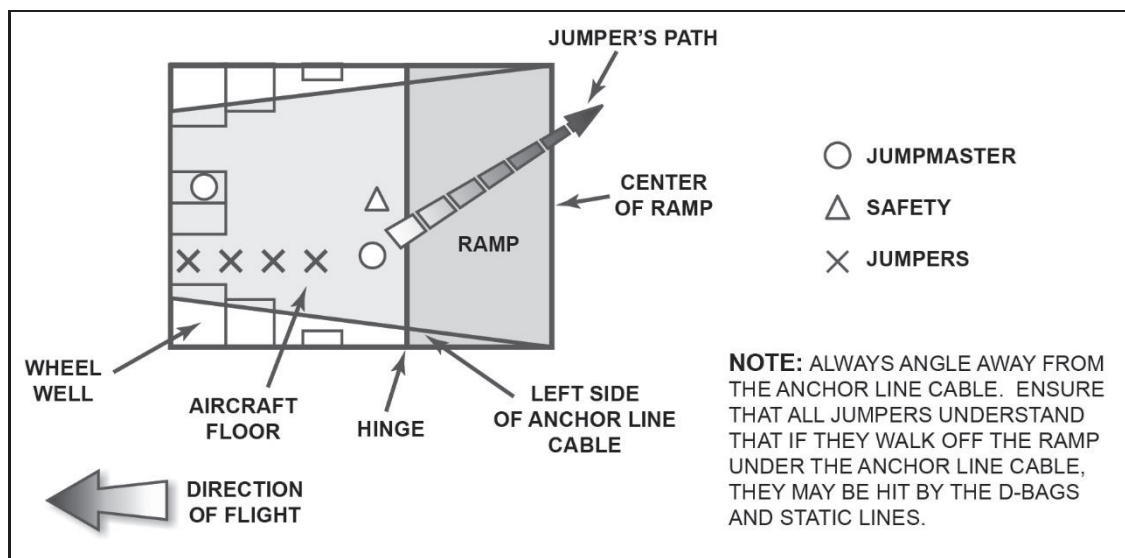


Figure 16-7. Personnel locations

Jump Commands and Time Warnings Over the Ramp

16-19. Jump commands are given in the following sequence:

- TWENTY-MINUTE TIME WARNING.
- TEN-MINUTE TIME WARNING.

- GET READY.
- STAND UP.
- HOOK UP.
 - Jumpers hook up to the appropriate anchor line cable with the open gate of the static line snap hook facing toward the skin of the aircraft.
 - Jumpers maintain a reverse bight in the USLM; ensure the thumb is routed over the front of the bite resting on the index finger. The thumb should not be routed behind the bite or pointed straight down at waist level and arm is at a 45 degree angle. (See figure 16-8.)



Figure 16-8. Static line grasped with reverse bight

- CHECK STATIC LINES.
- CHECK EQUIPMENT.
- SOUND OFF FOR EQUIPMENT CHECK.
- 1-MINUTE TIME WARNING.
- 30-SECOND TIME WARNING.
- STAND BY.
- GO.
 - On the command GO, movement onto the ramp is a control movement technique (normal walk).
 - Exit at an angle of about 30 degrees toward the side of the aircraft (away from the anchor line cable being used).
 - Jumpers allow the reverse bight of the USLM to be released from their hand once the jumper feels tension on the USLM.
 - Jumpers place their hands on the ends of their reserve parachute prior to stepping off the ramp.

Note. Refer to Chapter 10 for over the ramp towed jumper procedures.

C-130 JUMPMaster CHECKLIST

16-20. The primary jumpmaster is responsible for this inspection, but may delegate the authority down to the AJM or a safety. This includes seat inspection:

- Enough seats are available for all jumpers, including safeties, and all have safety belts.
- Ensure seat securing straps or suitable expedient straps are present.
- Seats are not torn, seat legs are locked into the floor, and no seat projections are present.
- Diagonal leg brace is attached in each set section (if required).
- Seats along the wheel well are removed (if required).
- Floor is clean and safe to move on and nonskid covering is in good condition.
- All cargo compartment roller conveyors and dual rail system floor sections are removed when jumping the door.
- Loose equipment is lashed and does not interfere with movement or comfort.
- All excess U.S. Air Force equipment is lashed down properly and will not impede jumper's path to the door.
- If a crash worthiness seat is present, it is stowed properly with Type III nylon cord. (See figure 16-9.)



Figure 16-9. Crash worthiness seat with Type III nylon cord

16-21. The jumpmaster (or delegate) inspects the jump platform:

- Nonskid surface is present.
- No cracks or bends are present.
- Hinge plate slots are engaged by tie-down studs and screw (with washer at two points) so that the hinge fittings do not slide off the tie-down studs. When the screw and washer are missing, the hinge plate must be safety wired with four turns of stainless steel wire (1/32-inch diameter) to the tie-down ring bracket.
- Down locks seat properly.
- Two spring-down lock catches engage the edge of the door.
- Clutch mechanism is present on the spring-down lock catches jump doors.

16-22. Inspection of the paratroop doors follows:

- No excessive grease is on the door tracks.
- No sharp edges or protrusions are on door frames.
- Pip pin in top, forward edge of door frame is present.
- Auxiliary hydraulic ramp pump handle is secured (after takeoff).
- Doors open and close easily. (Doors are operated in-flight by aircrew members.)

- 16-23. The JM (or delegate) inspect the air deflectors:
- No sharp edges are on trailing edge.
 - Deflectors operate electrically.
 - No items or trash are stored in wells.
- 16-24. The caution lights are inspected:
- Set 1. Crew entrance door.
 - Sets 2 and 3. Top leading edges of right and left doors.
 - Sets 4 and 5. Trailing edges of right and left doors, waist high.
 - Sets 6 and 7. Right and left anchor cable aft supports.
- 16-25. This is followed by inspection of the anchor cable system:
- Forward support beam.
 - Four U-bolts with self-locking nuts, or nuts with cotter pins are attached.
 - Anchor cables are attached to first and second U-bolts right and left of the center line for personnel jump.
 - Forward latch assembly is in the locked position and secured with locking pins.
- 16-26. The inspection of the anchor cable involves:
- Utilizing a length of quarter-inch cotton webbing and inspecting (tracing) the entire length of the anchor line cables.
 - Each anchor line cable is inspected individually from the forward portion of the aircraft to the aft end (the direction a jumper's USL snap hook will travel).
 - No breaks, frays, or kinks exist.
 - Cable is clean and free of rust.
- 16-27. Inspection of the anchor cable intermediate center support consists of:
- Cables run through slots after ramp is closed.
 - Quick-release retaining pins are present.
- 16-28. To inspect the anchor cable aft support, the JM (or delegate) makes sure:
- Aft latch assembly is closed.
 - U-bolts, nuts, and safety pins are present.
 - Support anchor bolts, nuts, and safety pins are present.
- 16-29. For the towed parachutist retrieval system, the JM (or delegate) makes sure:
- Motor is operational.
 - Retriever cables are not broken, frayed, kinked, dirty, or rusty.
 - Spool clamp and shackle are attached forward of intermediate cable support and are tied to support with two turns of quarter-inch cotton webbing.
 - Retriever cables are secured with two turns of quarter-inch cotton webbing to litter brackets at station 627. If cable clips are installed on the wheel well, the tie at station 627 is not used. (Retriever cable must be at least four inches above the anchor line cable.)
- 16-30. •When checking the emergency equipment, the JM (or delegate) ensures:
- First aid kits are present (four each).
 - Fire extinguishers are present (three each).
 - CGU1-B cargo tie-down straps (for retrieval of towed jumpers) are present.
 - Alarm system is operational.
 - Public address system operational.
 - Emergency Passenger Oxygen System and oxygen masks are available for each passenger.
 - Emergency exits are operational and accessible.
 - Sufficient emergency parachutes are available.

16-31. Other things the JM or delegate look for includes:

- Lighting system is operational.
- airsickness bags and ear plugs are available.
- Comfort facilities are available.
- Safety kit (extra equipment) is onboard.

MC-130J/H/P

16-32. The MC-130E/H/P/W is a special operations medium range, high-wing transport aircraft powered by four turboprop engines. Each version has different configurations. Jumpers may be dropped using either the two paratroop doors or the ramp. Aircraft configurations are listed in tables 16-3 and 16-4, and table 16-5 on page 16-14.

Table 16-3. MC-130H configurations

CONFIGURATION	JUMPER LOAD
TAP-1 mass drop over the ramp	48 + two safeties
TAP-1A mass drop paratroop door	48 + two safeties
TAP-2 in-flight rigging ramp	37 + two safeties
TAP-2A in-flight rigging troop door	37 + two safeties
TAP-3 in-flight rigging ramp	25 + two safeties
TAP-3A in-flight rigging troop door	25 + two safeties
LEGEND	
TAP – tactical airdrop paratroop	

Table 16-4. MC-130J configurations

CONFIGURATION	JUMPER LOAD
TAP-1 mass drop over the ramp	60 + two safeties
TAP-1A mass drop paratroop door	60 + two safeties
TAP-2 in-flight rigging ramp	52 + two safeties
TAP-2A in-flight rigging troop door	52 + two safeties
TAP-3 in-flight rigging ramp	40 + two safeties
TAP-3A in-flight rigging troop door	40 + two safeties
LEGEND	
TAP – tactical airdrop paratroop	

Table 16-5. MC-130P configurations

CONFIGURATION	JUMPER LOAD
TAP-1 mass drop over the ramp	28 + two safeties
TAP-1A mass drop paratroop door	28 + two safeties
TAP-2 in-flight rigging ramp	16 + two safeties
TAP-2A in-flight rigging troop door	16 + two safeties
LEGEND	
TAP – tactical airdrop paratroop	

FINAL PREPARATIONS

16-33. The seating configurations and mass operations for MC-130 series mass drop operations (TAP-1/TAP-1A) vary greatly and shall be coordinated with the airlift unit. General jumper procedures are the same for MC-130 series aircraft as for C-130 series aircraft.

16-34. The seating configurations for MC-130 series in-flight rigging operations vary greatly and shall be coordinated with the airlift unit. General jumper procedures are the same for MC-130 series aircraft as for C-130 series aircraft.

16-35. Time warnings are the same as the C-130 series aircraft. The JM inspection checklist is the same as the C-130 series aircraft.

C-17A GLOBEMASTER III

16-36. The C-17A Globemaster III is a swept wing, long-range transport aircraft powered by four turbofan engines capable of airlifting large payloads over intercontinental ranges without refueling. An in-flight refueling capability increases the deployment range.

16-37. The cargo compartment is designed to permit safe and efficient operation with one loadmaster for any mission. The aircraft accommodates outsize or oversize cargo, tactical vehicles, container loads (which can be configured to conduct a combination of air and land, personnel, and equipment airdrop), and medical evacuation (MEDEVAC) operations.

16-38. The C-17A can be configured with or without a comfort pallet. The jump platforms and air deflectors are an integral part of the aircraft fuselage. A dedicated antenna system enables use of organic Army tactical satellite (TACSAT) communication systems en route. Aircraft configurations are in compliance with Air Force Instruction 11-2C-17, Volume 3, Addenda A. C-17 configuration and mission planning are listed in table 16-6.

Table 16-6. C-17A airdrop passenger configuration

CONFIGURATION	JUMPER LOAD
ADP-1, sidewall seats only	52 + two safeties
ADP-2, sidewall and center seats	100 + two safeties
ADP-3, sidewall and center seats/ATGL	100 + two safeties
LEGEND	
ADP – airdrop passenger; ATGL – anti-tank guided launcher	

16-39. The seating configuration for the C-17A airdrop passenger (ADP)-1 configuration is as follows:

- 52 jumpers, including two non-jumping safeties.
- One loadmaster seated in forward loadmaster station.

- Two door bundles (one per door) placed on the aircraft floor aft of the inboard seats. (See figures 16-10, 16-11, and figure 16-12 on page 16-16.)
- The maximum number of jumpers per anchor line cable:
 - 27 outboard anchor line cable.
 - 24 inboard anchor line cable.

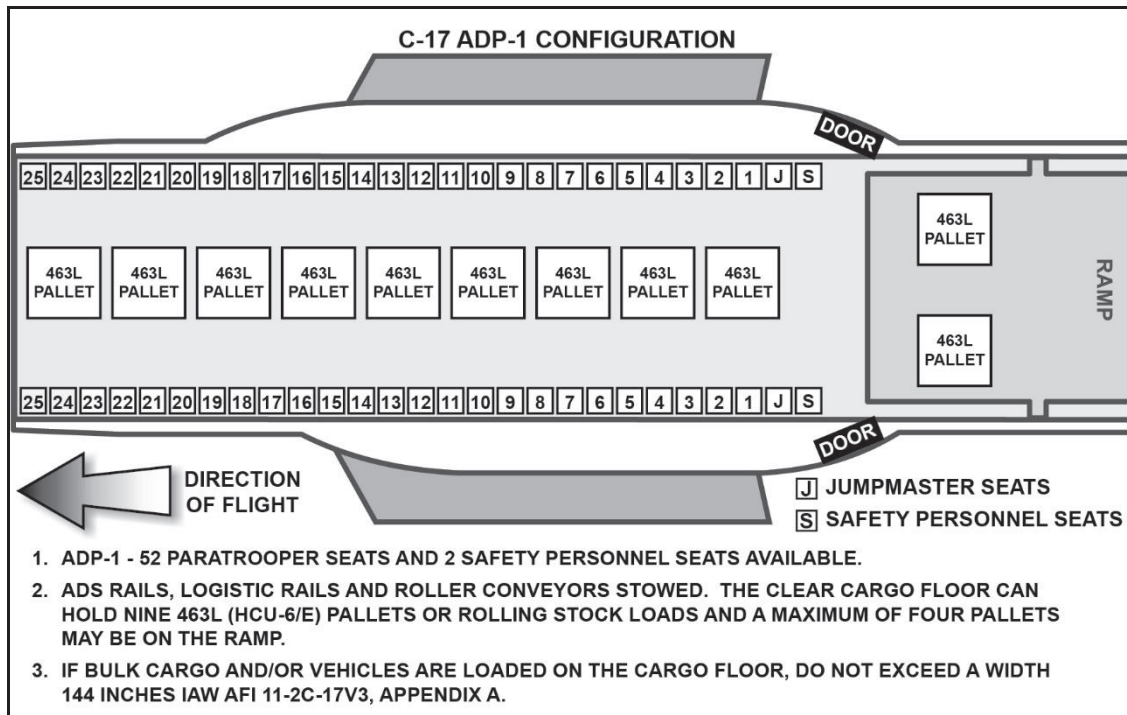


Figure 16-10. C-17A ADP-1 seating configuration, sidewall seats only

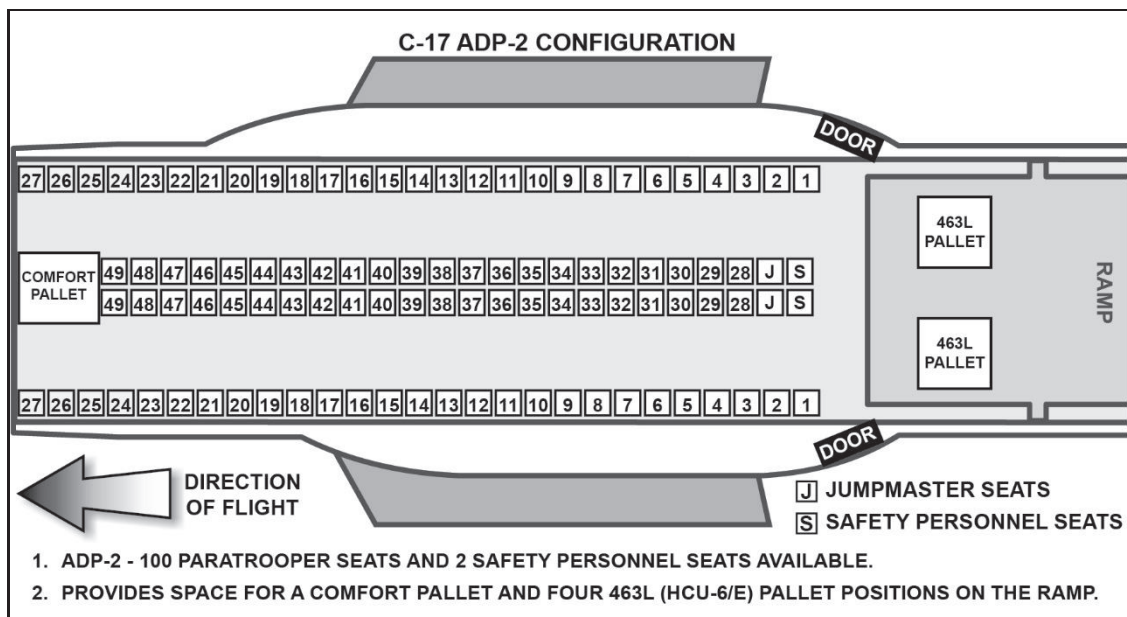


Figure 16-11. C-17A ADP-2 seating configuration, sidewall and center seats

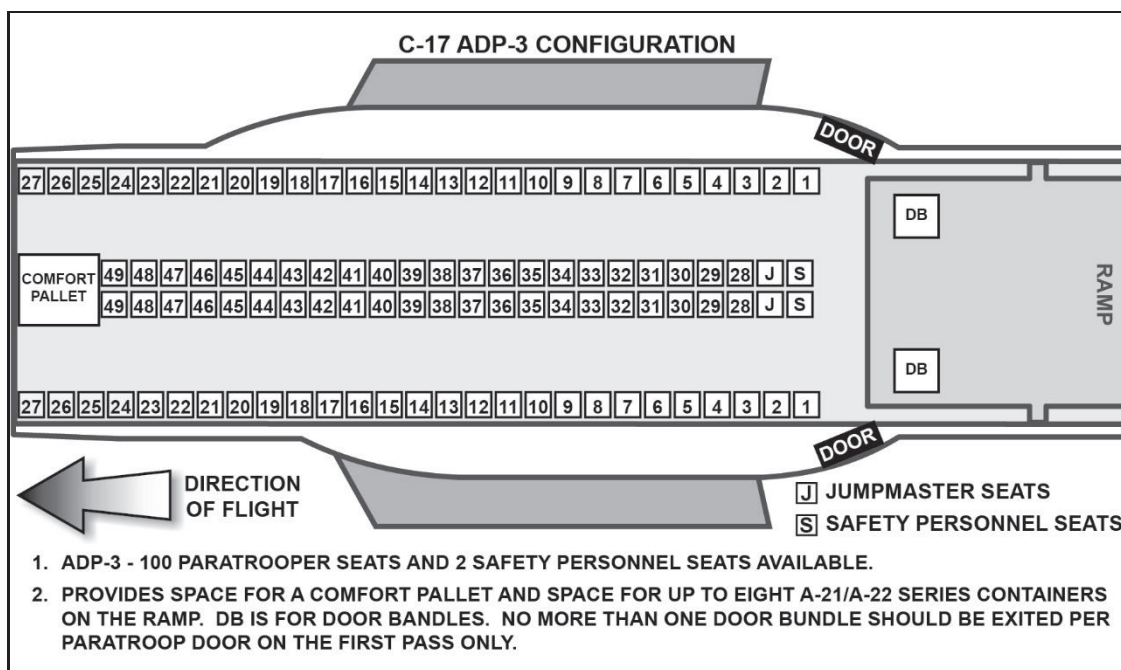


Figure 16-12. C-17A ADP-3 seating configuration, sidewall and center seats

REQUIRED SUPERVISORY PERSONNEL AND AIRCRAFT CONFIGURATION

16-40. The following personnel are required for all C-17A personnel airdrop operations:

- One PJM.
- One AJM.
- Two safety personnel.
- One loadmaster.
- For U.S. Navy and U.S. Marine Corps, only during single-door operations, safeties are not used.
- One rigger for in-flight rigging is optional

16-41. Static line personnel airdrops from the cargo ramp from the C-17 are prohibited. All door bundles must be equipped with a five-foot static line extension and two static line drogue devices. The configuration of the aircraft considers the following:

- The aircraft deck angle is set between six and seven degrees below horizontal during static line personnel airdrops with an air speed of 130 knots, plus or minus three knots indicated airspeed.
- The total aircraft gross weight should not exceed 360,000 pounds at the time static line personnel airdrops are initiated.
- Troop air deflector is deployed.

16-42. Before the flight, the JM or safety inspects the exterior aft of the troop doors for any protrusions, sharp edges, or snag hazards. They close the cargo ramp during this inspection to allow for examination of the actuator door bulb seal and jack pads.

16-43. Static line personnel airdrops are restricted to C-17A aircraft with an installed towed parachutist retrieval system (Canadian retrieval system). The JMs ensure that no more than 27 jumpers are hooked up to the outboard anchor line cables and no more than 24 jumpers are hooked up to the inboard anchor line cables during an Airborne operation.

16-44. For personnel airdrop operations for aircraft separation, the formation separation time between aircrafts is two and a half minutes to five minutes or 32,000 feet to avoid any aircraft wake vortex interference with jumpers. C-17 Globemaster III formations should fly in the lead when mixed aircraft types are used for

personnel drops due to greater maintenance reliability, visual flight rules, and instrument flight rules capabilities.

IN-FLIGHT RIGGING PROCEDURES AND EQUIPMENT STOWAGE

16-45. The C-17A seats 100 jumpers, two non-jumping safeties, and one loadmaster. Ramp space is provided for storage of parachute assemblies on pallets and door bundles. The following are required for in-flight rigging:

- One PJM
- One AJM.
- Six current and qualified within the stick should be current and qualified JMs to assist in rigging and JMPI. They are seated where they can best support the mission.
- Two non-jumping safety personnel.
- One loadmaster.
- One rigger for in-flight rigging is optional.

16-46. Main parachutes and reserves are stowed and secured in two pallets on the ramp. Jumpers sit in two sticks each on the left and right sides of the aircraft. All combat equipment and weapons containers are placed in the center aisles and are strapped down by the loadmaster. Special items of equipment and door bundles are strapped down to the cargo floor section aft of the inboard seats or on the ramp.

PARACHUTE ISSUE AND BUDDY RIGGING

16-47. All the combat equipment is retrieved from the center aisles and placed on the jumper's lap. Starting with the left outboard stick, each jumper stands up, places their combat equipment on the seat, walks to the pallets on the ramp, draws a main parachute, reserve, and an AKB or UPRB, continues in a counterclockwise motion between the two sticks of jumpers seated on the right side of the aircraft, and returns to their original seat. The left inboard stick repeats the same procedure following the outboard jumpers. After the left side is complete, the right outboard stick jumpers stand up, place the combat equipment on their seats, and draws the equipment in the same manner except that they return in a clockwise motion moving through the left door center aisles. Right inboard jumpers follow the outboard jumpers.

16-48. The JM initiates in-flight buddy rigging two hours before the 20-minute time warning, and it consists of the following actions:

- Once the parachutes are issued, buddy rigging begins. The JM, safety personnel, and designated JMs supervise. Once a jumper has been rigged, they sit down and wait to be inspected by one of the JMs.
- The JM personnel serve as roving inspectors.
- The PJM supervises the operation and ensures all personnel are inspected. If there are other current and qualified JMs onboard the aircraft, they may be used.
- Once all the jumpers have been inspected, the JMs don their equipment, and the safety personnel inspect them.

AIRCRAFT INSPECTION CHECKLIST

16-49. The primary jumpmaster is responsible for this inspection but may delegate the authority down to the AJM or a safety. A member of the JM team inspects the following:

- Exterior of aircraft fuselage:
 - Inspect aft of doors for any protrusions, sharp edges, or snag hazards.
 - Inspect ramp area with the ramp in the closed position.
 - Special attention must be made to the actuator door bulb seal on both sides of the exterior of the cargo ramp. Ensure that the rubber seal is in place and that there are no sharp edges or snag hazards.

- Seats:
 - There should be enough seats for troop load (102 is a normal load; 108 is a maximum load), and all seats should be serviceable.
 - All seats should have safety belts.
 - Seats are secured to the floor or sidewall of the aircraft.
- Floor:
 - Nonskid covering is in good condition, clean, and safe to walk on.
 - Roller conveyors are stowed.
 - Loose equipment is secured in the cargo area.
 - Deck tie-down ring covers are in place and secured just before each door.
- Jump platforms:
 - Nonskid surface present.
 - No cracks or bends.
 - Lower troop door clearance fairing (skin of the door frame) is serviceable.
 - Platform lights operate for night jumps.
- Jump doors:
 - No excessive grease on the door tracks.
 - No sharp or protruding edges on door frames.
 - Doors open and close without excessive force.
 - Troop door up-lock and paratroop door lifting bar are functional.
- Air deflector:
 - No sharp edges.
 - Deploys properly as indicated by steady illumination of the deployed annunciator on the loadmaster's aft control panel for the respective door.
- Jump caution lights:
 - The jumpmaster must inspect for proper operation of the jump caution lights: red, amber (10 seconds), to green.
 - Ten sets (C-17 III Globemaster).
- Anchor line cable system:
 - Properly installed with no breaks, kinks, or frays. Ensure the cables are clean and free of rust.
 - Utilize a length of quarter-inch cotton webbing and inspect (trace) the entire length of the anchor line cables.
 - Inspect each anchor line cable individually from the forward portion of the aircraft to the aft end (the direction a jumper's USL snap hook will travel).
 - Cables run through slots.
 - Quick-release retaining pip pins are present and installed.
 - Paratroop retrieval system (Canadian retrieval system) attachment point on aft anchor line.
 - Cable stanchion present.
- Towed parachutist's retrieval system:
 - Motor is operational.
 - TPRS must have both components (sling assembly and securing strap) secured behind intermediate anchor line support bracket or in red pockets along the bulkhead wall.
 - Must not be routed under anchor line cables.
 - Retriever cables are not broken, frayed, or kinked.
 - Retriever cables are secured in spring clips.

- Emergency equipment:
 - Public address system is operational.
 - First aid kits and fire extinguishers present.
 - Alarm system is operational.
 - Emergency exits are operational and accessible.
 - Emergency floor lighting system is operational.
 - Sufficient emergency parachutes are available.
- Miscellaneous:
 - Lighting system is operational, especially red lights for night operations.
 - Air sickness bags and hearing protection are available.
 - Comfort facilities, water, urinals, and so forth, are available for in-flight rigging.
 - Complete safety kit is on the aircraft.

C-27J SPARTAN

16-50. The C-27J fixed-wing aircraft is a high-wing, twin-engine, medium-range and short-range transport airplane designed for the transportation of cargo and troops during day and night under visual or instrument meteorological conditions. The C-27J can airdrop single door bundles in standard configurations up to 500 pounds and up to six CDS loads with a combined total weight of 12,000 pounds only from the ramp.

16-51. The C-27J Spartan can carry 26 static line parachutists, 38 military free fall parachutists, or 20 military free fall parachutists on oxygen. It can airdrop up to six CDS bundles. The maximum number of jumpers per anchor line cable is 13. Aircraft configurations are listed in table 16-7.

Table 16-7. C-27J configuration

CONFIGURATION	JUMPER LOAD
Sidewall seats only	26
Sidewall and center row seats	*36
Sidewall seats only in-flight rigging	22
* A/NT without combat equipment	
LEGEND	
A/NT – administrative/nontactical	

SEATING CONFIGURATIONS

16-52. The sidewall (only) seating configuration (see figure 16-13 on page 16-20) for the C-27J is as follows:

- 26 jumpers, includes seating for PJM, AJM.
- Two non-jumping safeties.
- Two airdrop-certified flight engineers.

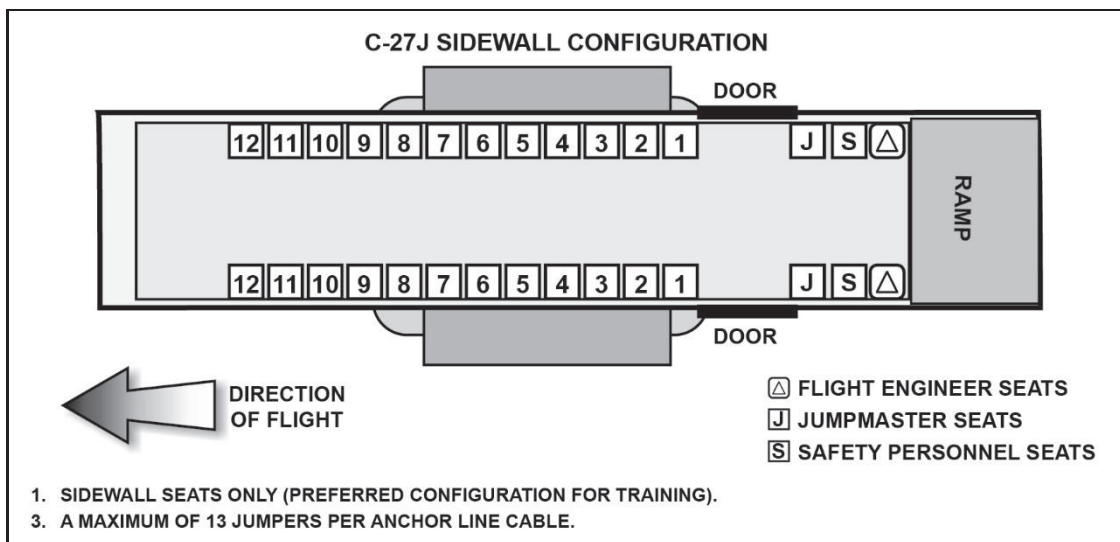


Figure 16-13. C-27J sidewall seats (only) configuration

16-53. The sidewall and center row seating configuration (see figure 16-14) for the C-27J is as follows:

- 36 jumpers, includes seating for PJM, AJM (administrative/nontactical only).
- Two non-jumping safeties
- One airdrop-certified flight engineer.

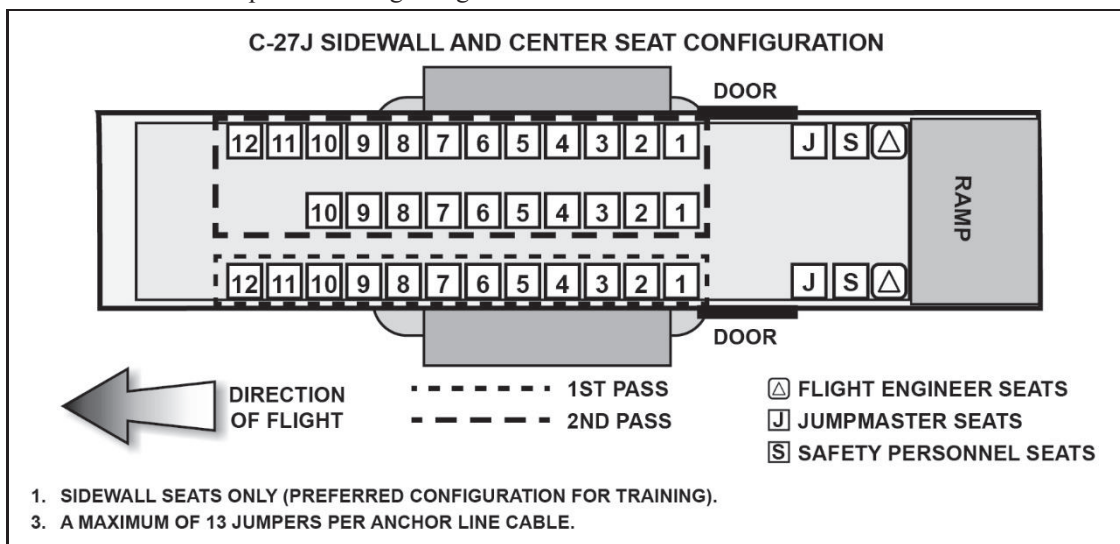


Figure 16-14. C-27J sidewall and center seats configuration

16-54. The in-flight rigging seating configuration (see figure 16-15) for the C-27J is as follows:

- 22 jumpers, includes seating for PJM, AJM.
- Two non-jumping safeties.
- Two airdrop-certified flight engineers.

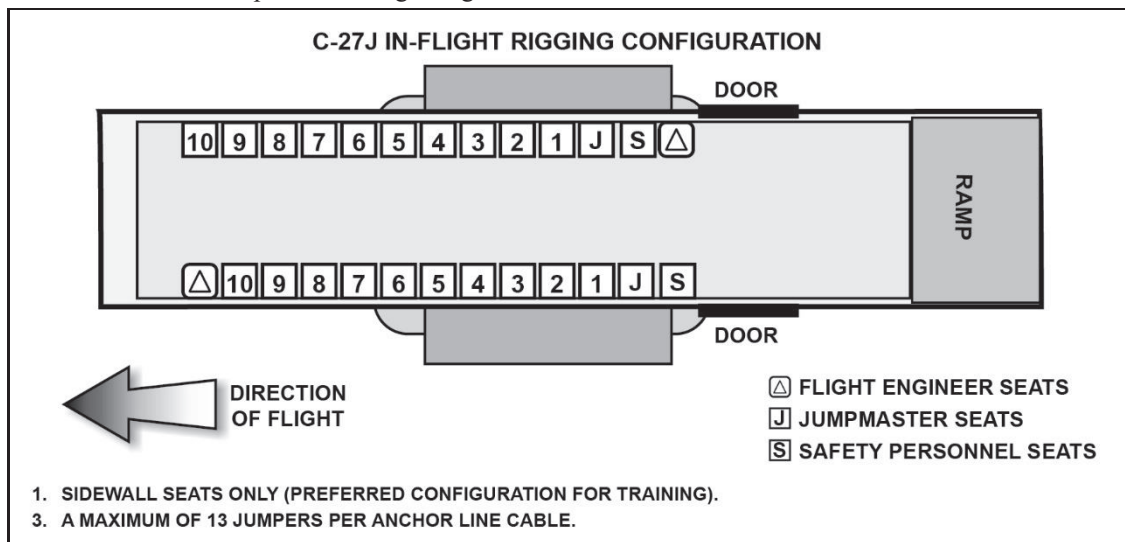


Figure 16-15. C-27J in-flight rigging seating configuration

AIRCRAFT INSPECTION

16-55. Static line personnel airdrops from the cargo ramp of the C-27J are prohibited. Before the flight, a member of the JM team inspects the following:

- Seats:
 - Adequate serviceable seats for troop load are onboard.
 - All seats have safety belts and seat backs are secure.
 - There are no projections through seats; pairs of seats forward of each troop door have a strap attached to secure them in the upright position.
- Floor:
 - Nonskid surface covering is in good condition.
 - Floor is clean and safe to walk on.
 - Roller conveyors are stored.
 - Loose equipment is secured in the cargo ramp area and does not interfere with troops.
 - Equipment tie-down rings are depressed into their recesses.
- Jump platforms:
 - Nonskid surface covering is present and in good condition.
 - There are no cracks or bends.
 - Studs are locked in seat track receptacles.

WARNING

Aerial delivery of A-7A or A-21 containers through the side exits (paratroop doors) is prohibited.

- Tie-down fitting is locked.

- All bolts and nuts are present.
- Platforms swing in and out easily.
- Paratroop doors:
 - There are no sharp or protruding edges on door frames.
 - Doors open and close easily.
 - Prior to exit: the platforms are locked into the two “keyholes” on the floor and slid to the rear of the aircraft. The large portion of the keyhole slot should be visible. The platform locking lever on the leading edge of the door should be in its locked position. The lug this lever controls should be engaged to the door frame.
 - Prior to exit: the platform locking lever should be taped in place to help prevent any jumpers from inadvertently unlocking it. The flange on the trailing side of the platform must overlap the inside of the door frame approximately half an inch.
- Jump lights (five total):
 - Rear at the forward left door (one).
 - Rear of both troop doors (two).
 - High above and to the rear of the ramp on both sides (two).
- Anchor line cable system:
 - Forward end of cable is firmly secured to bracket on bulkhead with three threads showing on turnbuckle.
 - Rear of cable has a pin in it with tape.
 - Cable has no breaks, frays, or kinks.
 - Utilize a length of quarter-inch cotton webbing and inspect (trace) the entire length of the anchor line cables.
 - Inspect each anchor line cable individually from the forward portion of the aircraft to the aft end (the direction a jumper’s USL snap hook will travel).
 - Cable is clean and free of rust.
 - Static-line stop is present.
 - Support bracket at the trailing edge of the door is locked in place to support the cables.
 - The anchor line cable bumper stop is located in the vicinity of station 480 for door operations and station 610 for over the ramp operations.
- Towed parachutist retrieval system:
 - Motor is operational.
 - Cable is secured to ceiling with one turn of double quarter-inch cotton webbing.
 - The Y attachment is in place so one retrieval cable can pull in two groups of deployment bags (Y cable is used if both jump doors are used).
 - Retriever cables are not broken, frayed, or kinked. They are clean and free of rust.
 - Phenolic block or anchor cable spool is installed on both anchor cables with the pull ring on the forward end. Retriever equipment is available.
- Emergency equipment:
 - First aid kit is onboard (one).
 - Fire extinguishers are onboard (two).
 - Alarm system is operational.
 - Emergency exits are operational and accessible.
 - Sufficient Army emergency bailout parachutes are available.
- Miscellaneous:
 - Day lighting system is operational.
 - Night lighting system is operational.
 - Safety kit (extra equipment) is onboard.

- airsickness bags and earplugs are available.
- 100-mph tape is available to secure the platform locking lever.
- If jump platforms are not installed in the doors, they must be secured to the upper ramp.
- All equipment and crew baggage is secured to the floor.
- During the jump briefing, the jumpers are warned to avoid striking or grabbing the door platform locking lever on the leading edge of the door.

C-27J STATIC LINE OVER-THE-RAMP OPERATIONS

16-56. In July 2015, the C-27J was approved for safe airdrop operations from both sides of the ramp to support static line airborne operations. During a static line over-the-ramp airborne operations test, operational paratroopers successfully conducted 229 static line airdrops from the ramp of the C-27J without combat equipment. This test demonstrated a 0.99 reliability rating at the 90 percent lower confidence level. The C-27J is fully capable of conducting static line over-the-ramp airborne operations without combat equipment. Jumpmasters must review the physical characteristics of the aircraft and establish safety parameters for movement of parachutists aboard the aircraft prior to any airdrop operations. All parachutists are required to conduct mock ramp rehearsals, actions inside the aircraft, and proper exit procedures when using over-the-ramp exit of the C-27J.

WARNING

Due to turbulent airflow outside of the aircraft ramp and the erratic behavior of the D-bags, the flight engineer must use the retrieval system when retrieving D-bags during all over-the-ramp static line airborne operations. If the retrieval system is not used, the turbulent winds are enough to pull the flight engineer and safety outside of the aircraft and may cause catastrophic safety hazards to personnel and equipment.

WARNING

When the C-27J is in flight, the ramp and paratroop (rear exit) doors are prohibited from being open at the same time.

CAUTION

Jumpers will not jump with combat equipment (rucksack and weapons case) for over-the-ramp operations. Ramp exits with combat equipment cause excessive twists and jumpers flipping through their risers due to the airflow aft of the aircraft and may cause catastrophic safety hazards to personnel and equipment.

Note. When conducting over-the-ramp operations, a five-foot extension must be added to the USL modified.

Note. Static line bumper stop must be positioned at Station 610 for over-the-ramp operations.

EQUIPMENT DROP

16-57. Container delivery system bundles can be pushed off the ramp. Cargo rollers can be installed on the ramp to aid in handling larger bundles.

JOINT PREFLIGHT INSPECTION

16-58. The JM coordinates the exact time sequence of pre-jump procedures with the pilot in command and the flight engineer. Following preliminary orientation, and before loading personnel onboard the aircraft, the JM and flight engineer should make a joint inspection of the aircraft. The purpose of the joint inspection is to verify the readiness of the aircraft for the conduct of the mission and to take actions necessary to achieve this readiness.

SUPERVISORY PERSONNEL REQUIRED

16-59. To ensure command and control when jumping over-the-ramp, one JM, two non-jumping safeties, and two flight engineers are required. If using a static JM, only one safety is required. When using two safeties, the aft safety will wear an approved safety harness and the forward safety may wear an approved bailout parachute.

CAUTION

Safety harness length must be checked prior to conducting flight and/or jump operations to ensure the length does not extend beyond the aircraft ramp in the level position.

JUMP COMMANDS

16-60. The following eight jump commands are used for over-the-ramp operations:

- GET READY: Jumpers respond in the same manner as for other fixed-wing aircraft.
- STAND UP: Jumpers stand up and face the ramp of the aircraft.
- HOOK UP: The jumpers detach the USL snap hook from the top carrying handle of the reserve parachute and hook up to the anchor line cable with the open portion of the snap hook facing outboard, ensuring that the snap hook seats properly. The jumpers will maintain a reverse bite on the static line.
- CHECK STATIC-LINES, CHECK EQUIPMENT, and SOUND OFF FOR EQUIPMENT CHECK. These commands are executed in the same manner as with other fixed-wing aircraft.
- STAND BY:
 - If the JM is jumping, he moves to the hinge of the ramp.
 - If a static-line JM, the Number 1 jumper moves to the hinge of the ramp.
- GO:
 - If the JM is jumping, at the command of GO, the JM looks at the Number 2 jumper and gives the command, FOLLOW ME, then exits the aircraft off the center of the ramp. The safety controls the flow of the jumpers.
 - If a static JM, at the command of GO, the Number 1 jumper walks off the center of the ramp.

CAUTION

Do not sacrifice the safety of the jumpers by rushing the inspection of the static lines. If the safety cannot finish the inspection of the static lines prior to the command stand-by, do not put any jumpers out and make another pass.

CAUTION

All jumpers exit the ramp by walking off the center of the ramp. Exits from the left or right side of the ramp result in a poor exit and may cause serious injury or death.

Note. The drop speed of the aircraft is approximately 130 knots and flaps 2 are used when conducting static line over-the-ramp operations.

OVER-THE-RAMP SPECIFIC CHECKLIST

16-61. Ensure that the flight engineer installs the stops on both sides of the ramp so that it is level with the aircraft floor when open. Disengage the support bracket near the door for bundle drops that use the retrieval system to pull in the static line. Secure the retrieval cable against the anchor line with breakaway ties starting at the rear of the cable and ending at the ramp hinge. This prevents the ramp from cutting the retrieval cable during operation.

16-62. Ensure a CGU1 B cargo strap is available and in the appropriate position in the event of a towed parachutist. The cargo strap is prepositioned at Station 700 just aft of the ramp storage bins and on the same side of the aircraft as the anchor line cable being used. The other end of the cargo strap is secured on the same side near the observation window where it does not interfere with jump procedures and be readily accessible for towed jumper retrieval.

TOWED JUMPER PROCEDURES FOR RAMP EXIT

16-63. Crews should suspect they have a towed jumper if the static line is not positioned high and to the left or right upper corner of the ramp. The JM or safety is responsible for identifying how the jumper is being towed. If being towed by anything other than the static line, the JM or safety shall attempt to free the jumper. If the JM or safety is unable to free the jumper, the jumper will be retrieved whether conscious or unconscious. However, if the jumper cannot be retrieved and indicates consciousness, cut the jumper free over the DZ or a safe area.

Note. Towed parachutists indicate consciousness and that the reserve parachute is ready by maintaining a tight-body position with both hands on the reserve parachute. This indicates the jumper is prepared to be cut away.

Note. If the parachutist is towed following a ramp exit, it will be necessary to partially rewind the static line retriever to reach the static line for cutting.

16-64. If a parachutist is to be cut free, the flight engineer retrieves the static line far enough inside the aircraft to allow the JM to reach the static line to cut the towed parachutist's static line.

16-65. If the parachutist is to be retrieved, the flight engineer secures the CGU1 B cargo strap (from where it is stowed by the observation window) under the static line and relocates it to the tie-down ring located on the opposite side of the cabin at Station 590. After securing the CGU1 B cargo strap, the flight engineer uses the static line retrieval winch to pull the towed parachutist in. The static line is retrieved over the CGU1 B strap. As the parachutist is retrieved to the ramp area, the flight engineer and safety personnel gain physical control of the jumper. The parachutist is pulled into the aircraft (under the strap) as the flight engineer relieves tension from the static line retrieval winch.

CAUTION

Non-jumping personnel do not proceed aft of the paratroop doors unless wearing approved safety harness and with approval from the flight engineer. Safety harness length must be checked prior to conducting flight and/or jump operations to ensure the length does not extend beyond the aircraft ramp in the level position.

Note. During ramp retrieval, the aircrew begins a gradual climb of 500 feet and should not make any unnecessary turns. This assists in keeping the towed jumper in the center of the cargo and/or ramp opening for better control, reducing the possibility of injury during retrieval.

Chapter 17

Rotary-Wing Aircraft

Rotary-wing aircraft can be used for airdrop operations when special missions are conducted to deploy small unit forces. The aviation unit supporting the airdrop is responsible for preparing the aircraft for equipment and personnel drops to include seat and door removal (if required) and installation or rearrangement of seat belts. The installation of the field expedient anchor line system is the JM's responsibility. Aircraft preparation is usually accomplished jointly by the crew chief and JM.

REQUIREMENTS AND SAFETY CONSIDERATIONS

17-1. All personnel are required to participate in ground training or SAT no later than 24 hours prior to executing the Airborne operation. If over 24 hours, an O-6 must give approval. Although safety considerations for each aircraft are discussed, the requirements below apply to all Army aircraft (unless otherwise indicated):

- Ground training and sustained Airborne training:
 - All personnel are required to participate in ground training or SAT no later than 24 hours prior to executing the Airborne operation. If over 24 hours, an O-6 must give approval.
 - Shown the correct movement procedures to the aircraft, inside the aircraft, and the exit procedures. A variation of techniques are involved in Airborne operations involving rotary-wing aircraft; failure to conduct ground training, including SAT may result in a serious parachute incident.
- Movement in aircraft: the pilot is briefed to expect rapid shifts in the aircraft's center of gravity during stand up, hook up, and exit of jumpers.
- Reserve parachute: crowded conditions inside the cargo compartment could cause accidental activation of a reserve parachute, creating an extremely hazardous situation. During movement, the rip cord handle of the reserve parachute is protected by placing the right hand and forearm over the front of the reserve. This method allows the jumper to control the reserve canopy in case of accidental activation.
- Space limitations: the total number of jumpers and air delivery containers must conform to the weight and space limitations of the specific aircraft involved.
- Extended count: due to the slower forward speed of rotary-wing aircraft (normally 90 knots), the downward rotor wash, and the (time) interval between exit and full deployment. The T-11 ATPS and MC-6 series parachute requires about an additional 100 feet of altitude. The jumper extends the normal 4000 count to a 6000 count with the MC-6 and 6000 count to an 8000 count with the T-11 ATPS.

STATIC LINES AND DEPLOYMENT BAGS

17-2. Universal static lines and deployment bags are retrieved by the JM or crew chief immediately after the last jumper is clear. The universal static lines and deployment bags are secured as soon as they are retrieved inside the aircraft.

17-3. If the door on the aircraft can be closed, the universal static lines can be removed from the anchor line cable or attaching point; otherwise, the universal static lines are not detached until the aircraft is on the ground.

CROWDED CONDITIONS

17-4. Crowded conditions inside these aircraft dictate that caution be used to prevent entanglement or misrouting of static lines during the jumper's exit. Each jumper is cautioned to watch the static line of the preceding jumper.

17-5. Jumpers also observe all static lines trailing from the lower aft corner of the cargo or personnel door. This precaution ensures that succeeding jumpers do not jump until the parachute of the preceding jumper has deployed, and that the deployment bag has trailed to the rear of the aircraft.

CONTAINER LOADS AND HOOK UP PROCEDURES

17-6. If container loads are to be airdropped from a helicopter door, bomb bay, or the doors of utility airplanes, they must be rigged using parachutes equipped with breakaway static lines. A-7A, A-21, and CDS container loads rigged with low cost, low altitude (airdrop system) cargo parachutes, G-12 with 68-inch pilot chute, or G-14 cargo parachutes, with breakaway or nonbreakaway static lines may be airdropped from the ramp of cargo helicopters with jumpers following after a three-second delay between the cargo and the first jumper. (Refer to the specific aircraft manual for any limitations on cargo container weight, dimensions, or static line configuration.) Combat rubber raiding craft loads may be dropped followed by jumpers with the 15-foot extraction parachute packed in a main parachute deployment bag in compliance with TM 4-48.04.

17-7. When using rotary-wing and small fixed-wing aircraft for Airborne operations, jumpers might use different hookup procedures from the standard hookup procedures used in high-performance aircraft. This difference is due to the location of the anchor line system and cables and the JM may hook up each jumper individually. Unless otherwise specified in the hookup procedures for specific aircraft, the rule is to hook the open portion of the USL snap hook to the front of the aircraft with all universal static line snap hooks facing the same direction. This permits rapid, visual inspection before the jump and easy removal of the static lines after the jump.

TOWED JUMPER PROCEDURES

17-8. In the event of a towed jumper on a rotary-wing aircraft, the following will occur:

- The JM prevents any other jumpers from exiting and notifies the pilot.
- The jumper stays in a tight body position and protects the rip cord handle with both hands.
- The JM ensures the jumper is securely attached to the aircraft and will not break free during descent.
- If the jumper is not securely attached, the JM will attempt to shake or cut them free.
- If the jumper is securely attached, the aircraft will come to a hover (preferable over the designated DZ).
- The jumpmaster or static safety will recover and store all other deployed static lines and deployment bags.
- The pilot will slowly descend to the DZ until the towed jumper's feet makes contact with the ground.
- Once the towed jumper is on the ground the aircraft will come to a hover to allow the jumper to move away just enough to allow the aircraft to land and will maintain rip cord handle awareness with both hands at all times.
- The jumpmaster or static safety detach the towed jumper's USL snap hook from the anchor line system being used, deplanes, and detaches or jogs free any item of equipment that the jumper was being towed by (if necessary).

UH-60-SERIES BLACKHAWK

17-9. The UH-60A is a four blade, twin turbine, medium lift, single main rotor helicopter. (See figure 17-1.) Its features are:

- Jumpers: eight noncombat equipped jumpers or six combat equipped.
- Airspeed: 65-75 knots

- Minimum drop altitude: 1500 feet AGL
- JM team: One nonjumping JM

Note. On missions requiring a window gunner, the maximum number of jumpers is reduced to six.

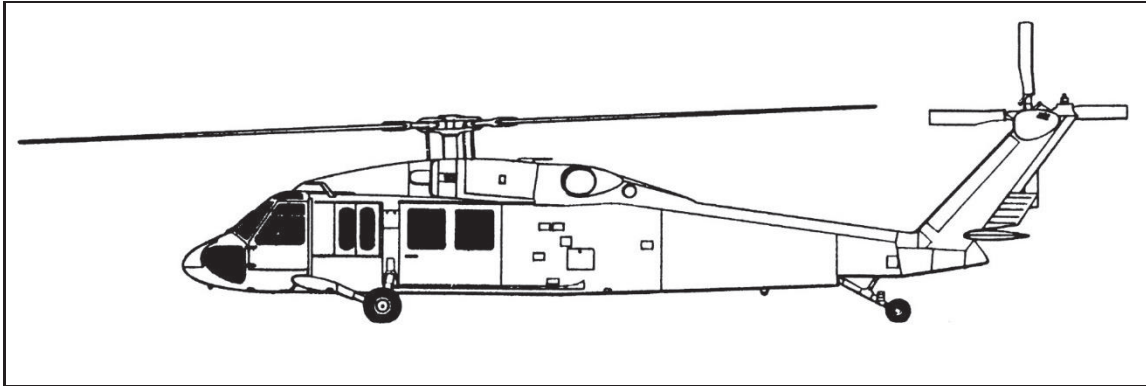


Figure 17-1. UH-60 series Blackhawk

PREPARATION AND INSPECTION

17-10. The JM prepares and inspects the UH-60 series by taking the actions described below:

- Remove seat belts in the cargo compartment (except as required by aircraft crew and jumpmaster).
- Tape the UH-60 aircraft RF antenna with 100-mph tape (forming a web), to reduce the chance of the static lines or deployment bags being wrapped around the RF antenna on the left side of the aircraft during parachute deployment. (See figure 17-2.)
- Tape cargo floor troop seat and tie-down fitting wells in front of the cargo doors.
- Tape sharp edges and tie-down fitting wells on the cargo floor and door jambs that could cut or fray static lines or snag jumpers' equipment.
- Tape the weather stripping on cargo doors below the door catch. (See figure 17-3 on page 17-4.)
- Tape up 18 to 24 inches from the cargo compartment.

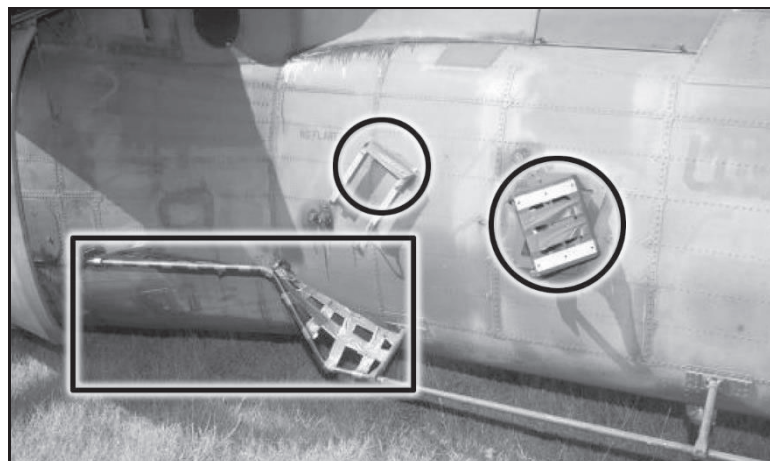


Figure 17-2. UH-60 RF antenna padded and taped

Notes. It is recommended that jumpers exposed to winds that cross the front of the reserve parachute have the T-11 reserve parachute inserts emplaced when jumping UH-60 aircraft.

It is recommended to use 100-mph tape for all applications.

For arctic or other cold weather operations, or during flights of long duration, the aircraft doors may be closed and locked. Doors cannot be opened during flight. The aircraft must either land or hover near the ground to open the doors. This procedure requires coordination between the supporting aviation and Airborne units for the jump.



Figure 17-3. UH-60 series door edge padded and taped

Note. Tape must not interfere with closing, locking, unlocking, or opening cargo doors in flight. If the weather stripping below the cargo door catch is missing, pad the door edge with felt and tape in place. Padding must not preclude closing the cargo doors.

ANCHOR LINE SYSTEM

17-11. The following anchor line system actions must be taken:

- Install a floor mounted anchor line system (see figure 17-4) using an anchoring strap assembly made from Type XXVII nylon webbing (NSN 1670-00-999-3544). Nylon buffers are a suitable replacement for cotton buffers and may be locally manufactured if replacement is needed.

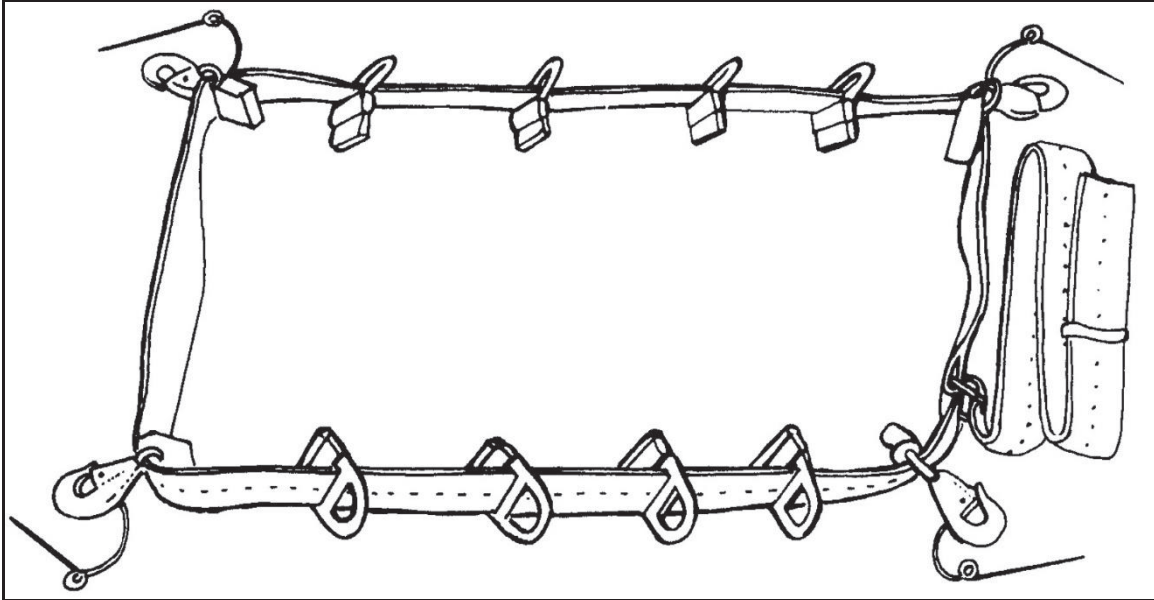


Figure 17-4. UH-60 series anchor line

- Install four connector snaps with safety wires and eight D-rings with buffers on the anchor line, with the connector snaps and D-rings facing out in the following order: one connector snap, four D-rings, two connector snaps, four D-rings, and one connector snap. (See figure 17-5.)

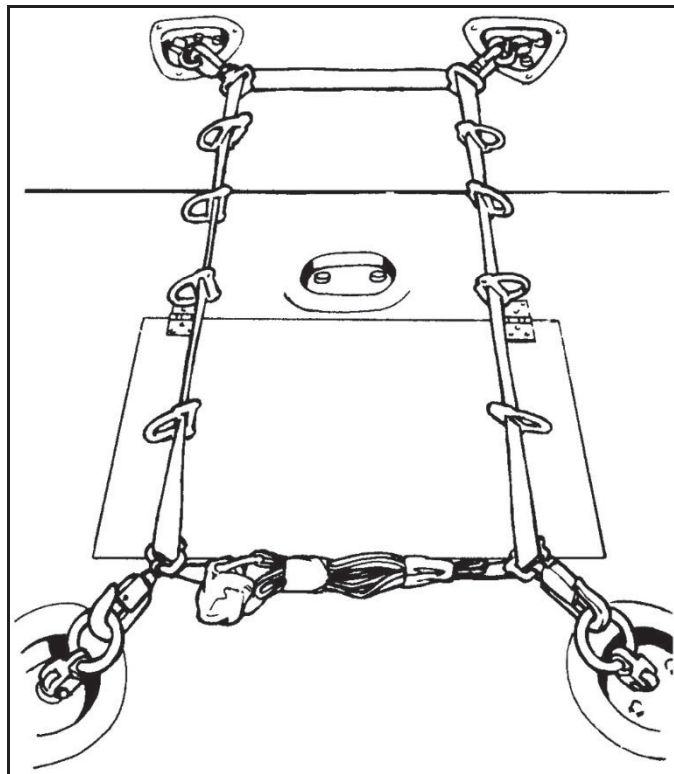


Figure 17-5. UH-60 series anchor line secured to the floor

- Insert about 30 inches of the anchor line running end into the quick-fit adapter to secure the loop.
- Center the anchor line system on the cargo floor with the quick-fit adapter to the rear and the connector snaps facing up. Attach the connector snaps, then insert the safety wires, and tape the connector snaps.
- Center the quick-fit adapter between the rear cargo tie-downs and tighten the anchor line by pulling on the free running end. Secure the free running end by folding and tape excess webbing to the rear of the anchor line between the connector snaps.

SAFETY BELT INSTALLATION

17-12. The following safety belt installation actions must be taken:

- Install three floor mounted safety belts.
- Attach a standard safety belt to tie-down fittings 5A and 5C for the JM. (This is necessary only if a seat has not been left for the JM.)

Note. The UH-60 series cargo compartment configuration and floor tie-down fitting pattern preclude use of standard (individual) safety belts. Therefore, jumpers are restrained in groups of two and three, using modified safety belts.

- Attach an 86-inch long (extended) safety belt to forward tie-down fittings 1A and 1D.
- Attach a 112-inch long (extended) safety belt to tie-down fittings 1A and 5A, left door.
- Attach a 112-inch long (extended) safety belt to tie-down fittings 1D and 5C, right door.
- Ensure that a serviceable safety harness is available for the JM (and the crew chief, when required).

17-13. The JM's safety line is attached to tie-down fitting 5B. The crew chief's safety line is attached to tie-down fitting 1A or 1D, as required. If safety harnesses are not available, an AEBP or service equivalent may be used.

WARNING

Movement in the cargo compartment must be minimized to preclude inadvertent parachute activation. Maintain rip cord handle awareness at all times.

INSPECTION

17-14. Before loading jumpers, the JM and pilot, or pilot's representative, jointly inspect the aircraft to ensure the following:

- All loose objects in the cargo compartment are removed or secured forward.
- Sharp edges and tie-down fitting wells on the cargo floor and doorjamb (or anything that could cut or fray USLMs or snag the jumpers' equipment) are padded and taped.

Note. Door catches and handles are not taped.

- Cargo doors are locked in the open position and cleared for closing, depending on the mission requirements.
- The anchor line system is complete, serviceable, and properly installed.
- Three serviceable safety belts (modified) are installed on the cargo floor.
- A headset and helmet with intercom jack for the JM is available and operational, and the intercom extension cord is secured overhead. (See figure 17-6.)
- Safety harnesses and backpack type emergency parachutes are available for the JM and the crew chief, as required.

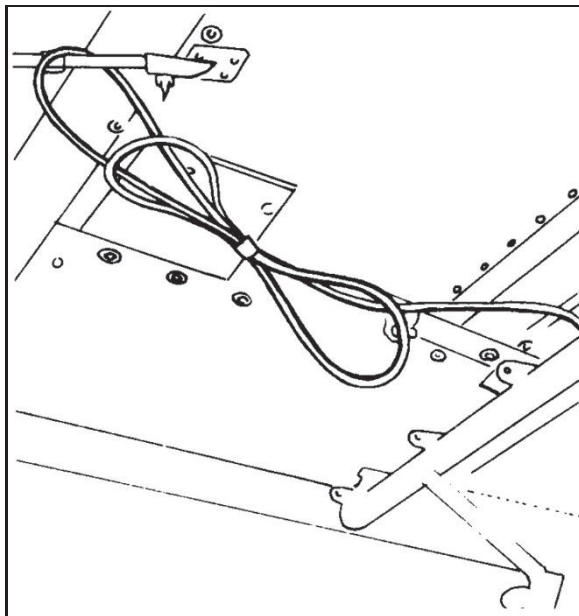


Figure 17-6. UH-60 series jumpmaster's intercom stowed overhead

LOADING TECHNIQUES

17-15. Personnel are organized into a stick of eight jumpers. They approach the aircraft from the left or right side at a 90-degree angle in reverse order: Jumpers No. 8, 7, 6, 5, 4, 3, 2, and 1, with their USL snap hook in their right hand and the USLM routed over their right shoulder. (See figure 17-7 on page 17-8.)

17-16. For example, Jumper No. 8, followed by Nos. 7, 6, and 5, enter the left door on command from the static JM. Jumpers Nos. 4, 3, 2, and 1 will move towards the crew chief positioned at the nose of the aircraft and will follow the crew chiefs guidance around the nose of the aircraft until they reach the right door and enter the right door on command from the static JM.

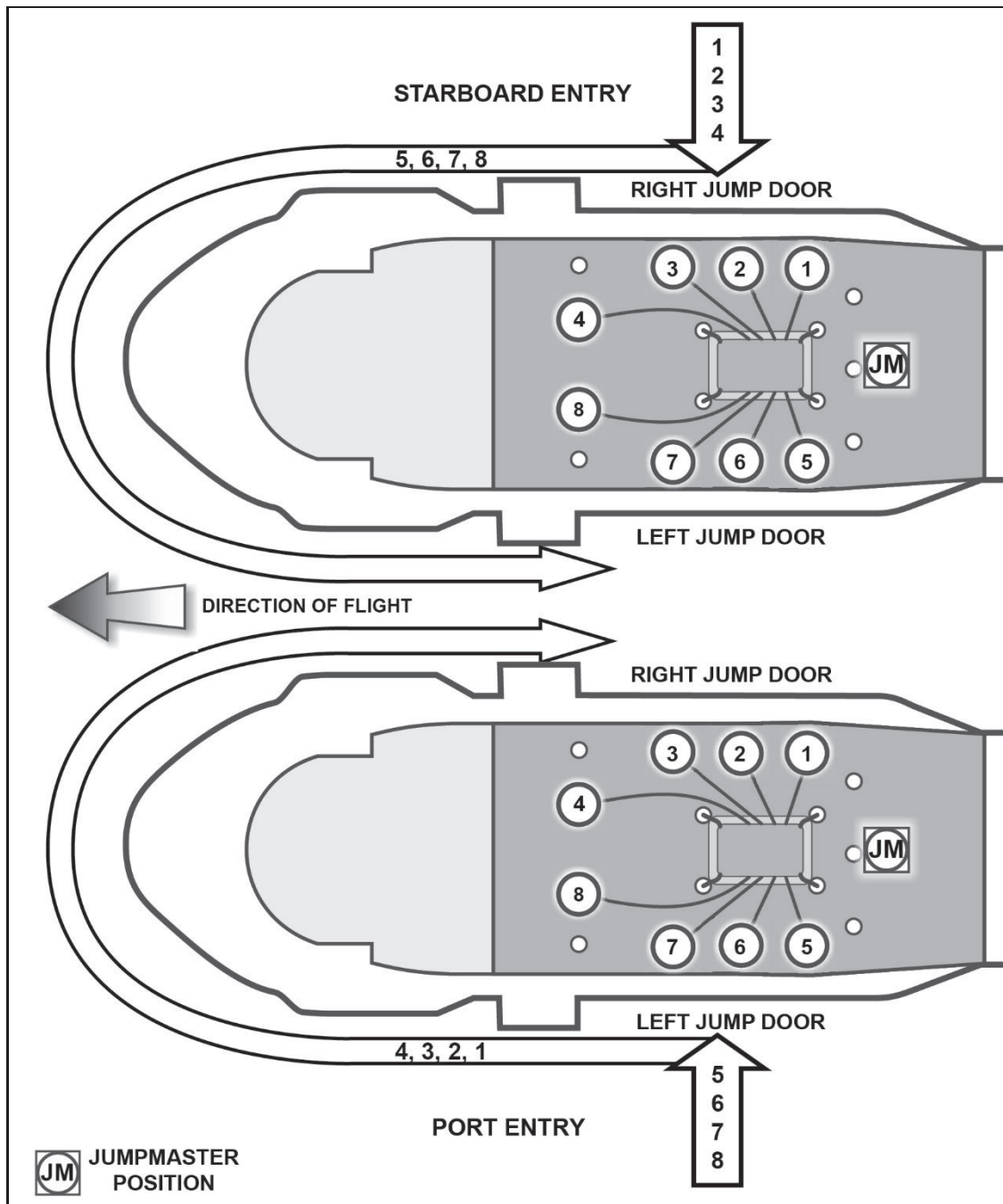


Figure 17-7. UH-60 series loading

WARNING

Do not approach the aircraft directly from the front because the lowest arc of the turning rotor blades occurs at that point.

SEATING CONFIGURATION

17-17. The jumpers are hooked up and seated individually by the JM in reverse numerical sequence, beginning with jumper No. 8. Each jumper will hand the JM their USL snap hook. The JM will hook the USL snap hook up to the appropriate D-ring with the spring opening gate facing towards the front of the aircraft (the direction of flight). The jumper then turns away from the USLM and has a seat.

17-18. The JM will then route the excess of the USLM from bottom to top in the static line slack retainer, (See figure 17-8 and figure 17-9.) Due to only three jumpers being allowed to sit in each door, Jumpers No. 4 and 8 hold their static lines with a reverse bight: No. 4 with the right hand and No. 8 with the left hand. The JM ensures that any excess static line is stowed in the static line slack retainer loop and that Nos. 4 and 8 have correctly routed their static lines with the proper reverse bight.

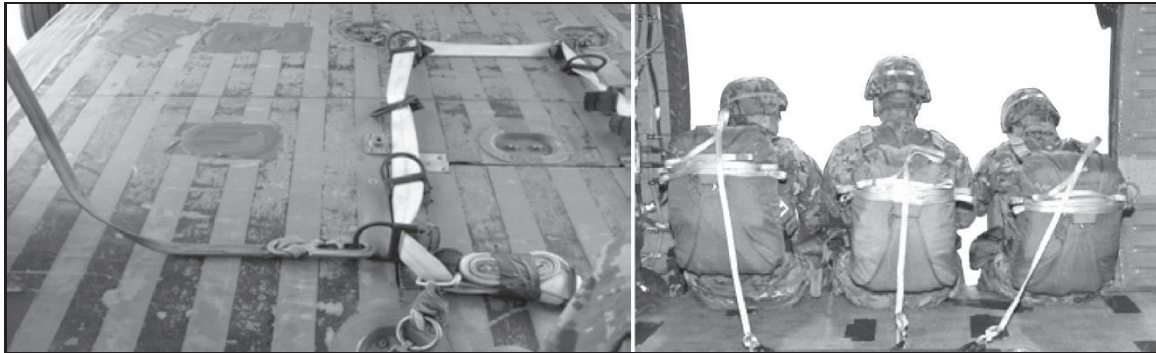


Figure 17-8. UH-60 series hook up of USL snap hook and excess USLM routed

Note. To preclude binding during exit, excess static lines of Nos. 1, 2, 3, 5, 6, and 7 are stowed from the bottom to the top through the static line slack retainer loop on the jumper's pack tray.

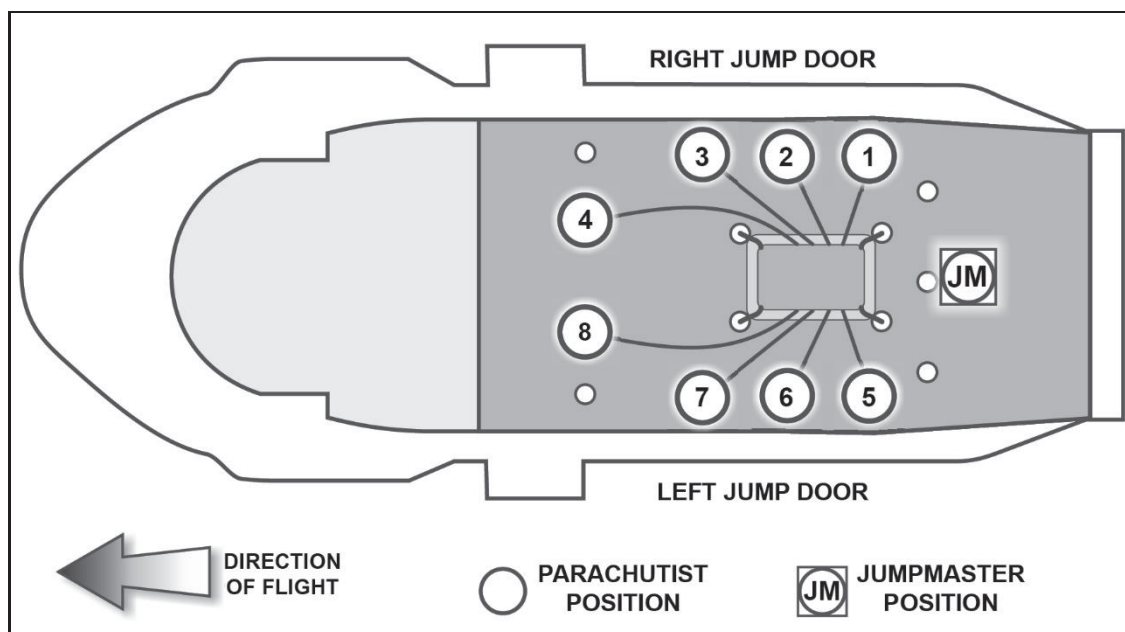


Figure 17-9. UH-60 series seating and static line routing

17-19. When the JM commands FASTEN SAFETY BELTS, jumpers take the following actions:

- Jumpers No. 4 and 8 pass the running ends of their safety belt to the center, fasten the belt, and remove excess slack.
- Jumpers No. 5 and 7 pass the running ends of their safety belt to No. 6, who fastens the belt and removes excess slack.
- Jumpers No. 1 and 3 pass the running ends of their safety belt to No. 2, who fastens the belt and removes excess slack.
- Static line bight and safety belt secured.

17-20. The JM inspects all safety belts to ensure that they are securely fastened and properly fitted. The JM is seated aft with the safety belt fastened for lift off and landing. (One seat should have been left in place for the JM.) For airdrop operations requiring the crew chief and window gunner (seat installed), the number of combat-equipped jumpers is reduced to six. The seating configuration is modified—positions 4 and 8 are deleted, and positions 5, 6, and 7 are renumbered 4, 5, and 6.

CARGO DOOR PROCEDURES AND JUMP COMMANDS (TIME WARNINGS)

17-21. The JM should receive a four-minute, a 30-second, and an 8-second to 10-second time warnings relayed by the pilot through the intercom system. The JM issues the following jump commands:

- GET READY: this command is given at the four-minute time warning to alert the jumpers. All safety belts are removed at 1000 feet AGL or when permission is given by the pilot.

Note. At 1000 feet safety belts are released by jumper's No. 2, 6, and 8 and the running ends are stowed forward and aft to clear the static lines and the exit path.

- CHECK STATIC LINES: the JM checks the routing of all USLMs (from the main curved pin protector flap down to the appropriate D-ring on the anchor line system) to ensure they are correctly routed and properly attached to the D-ring and that the USL snap hook is facing towards the pilot compartment. The JM ensures excess USLM is stowed through the static line slack retainer band on the pack trays of Nos. 1, 2, 3, 5, 6, and 7, and that Nos. 4 and 8 have the prescribed reverse bight in their USLMs and the excess USLM will not interfere with other jumpers.
- CHECK EQUIPMENT: all jumpers check their equipment; helmet, chin strap, chest strap, both leg straps, and HPTLL if jumping combat equipment.
- SOUND OFF FOR EQUIPMENT CHECK: on this command, all jumpers place one of their hands on top of their helmet and give a "thumbs up" if their equipment is fine. The jumpmaster moves down the line in numerical order placing their hand over each jumpers thumb confirming that all jumpers are OK. (See figure 17-10.)



Figure 17-10. Sound off for equipment check

- SIT IN THE DOOR: this command is given by the JM at the 30-second time warning. Jumpers Nos. 1, 2, 3, 5, 6, and 7 assume door positions with feet together outside the cargo compartment. Nos. 4 and 8 remain in place, ensuring that their feet are clear of their static lines.

Note. The command, “SIT IN THE DOOR,” is omitted if the jumpers are already sitting in the door.

- **STAND BY:** this command is given at the 8-second to 10-second time warning. The JM ensures that all jumpers hear and understand this command, jumpers’ No. 1, 2, 3, 5, 6, and 7 place both hands, palms down, on the cargo floor and await the next command. Nos. 4 and 8 remain in place.
-

Note. Once the “STAND BY,” command is given to ensure there is no confusion, the command of “GO” is given to each individual jumper.

- **GO:** the JM gives this command with an oral GO and a sharp tap on the rear of the jumper’s helmet. Each jumper is tapped out. The jump sequence is in numerical order, 1 through 8. As soon as No. 3 clears the door, No. 4 moves into the door and assumes the door position before being tapped out. The static JM assumes control of No. 4 jumper’s static line as the jumper begins moving to the door. Jumpers No. 5, 6, 7, and 8 repeat the sequence on the opposite door.

SAFETY PRECAUTIONS

17-22. During movement inside the aircraft, the jumper protects the rip cord handle at all times. Crowded conditions inside the cargo compartment and the open doors on both sides of the fuselage pose a possible hazardous situation regarding accidental activation of the reserve parachute. Jumpers are authorized to jump combat equipment from this aircraft.

17-23. The JM ensures all jumpers remain secured by their safety belts until directed by the JM. The JM prevents (or corrects) excessive static line from flopping about the aircraft. (The JM does not jump from this aircraft.) The JM wears a safety harness at all times inside the aircraft and attached to tie down ring 5B and should be equipped with a headset/helmet for direct communications with the aircraft crew. If communication is lost, operations should cease until communications is restored. After the last jumper has cleared the aircraft, the static lines are retrieved inside the aircraft and secured in an aviator kit bag/UPRB or secured by a safety belt to the aircraft floor. The universal static line snap hooks are not removed from the anchor line system until the aircraft lands. The UH-60 series is not used for static line parachute operations with the cargo doors removed. The modified anchor line system is never rigged to the cargo door or overhead tie-down rappelling rings, since trailing deployment bags might foul the main rotor system (due to the high position in which the bags would trail). Towed jumper procedures are described elsewhere in this chapter.

Note. The pilot must maintain level flight and airdrop speed during deployment bag retrieval to preclude deployment bag entanglement with the cargo doors.

SAFETY BELT MODIFICATION

17-24. The UH-60 series cargo compartment floor configuration does not provide a specific design of tie-down fittings for restraining personnel seated on the cargo floor. The safety belts used for restraining personnel are part of the troop seat assembly and are removed when conducting parachute operations.

17-25. The three modified C-3A troop-type safety belts, using the cargo floor tie-down fittings, restrain jumpers in groups of two and three by a single safety belt:

- Two safety belts, 112 inches long and adjustable to 86 inches, restrain jumpers 1 through 3 and 5 through 7, who sit in the left and right cargo doors.
- One safety belt, 86 inches long and adjustable to 60 inches, restrains Nos. 4 and 8 seated in the cargo compartment. (See figure 17-11 on page 17-12.)

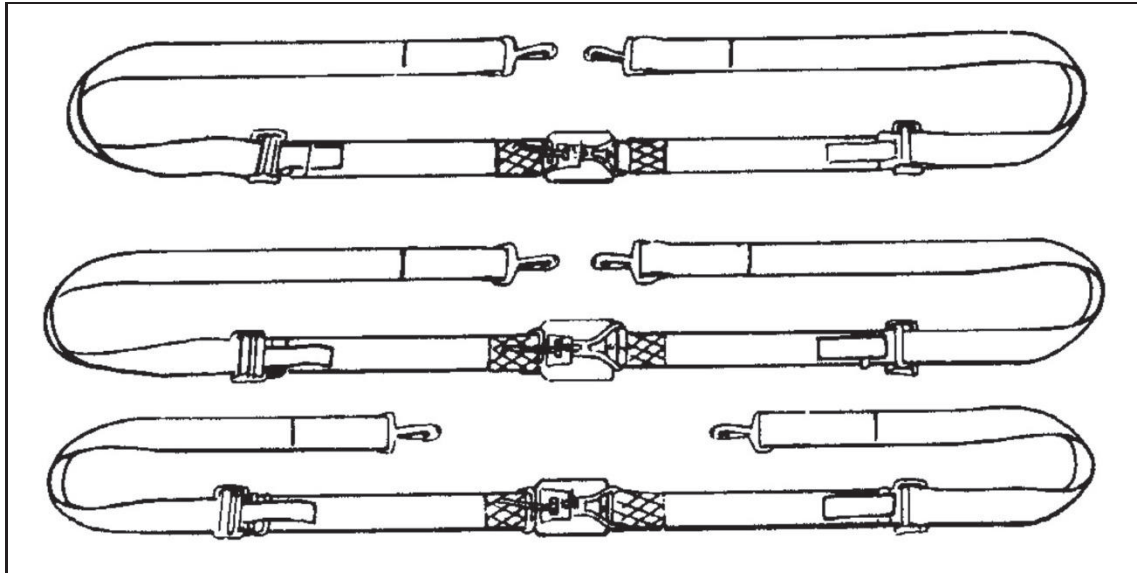


Figure 17-11. Modified C-3A troop safety belts

17-26. Belt modifications are as follows:

- Place three standard C-3A troop-type safety belts (NSN 1670-00-447-9504) on a flat surface with hardware facing up.
- Remove the eight-inch lengths of webbing located between the end snap hooks and the quick-fit adapters of each belt.
- Cut two 32-inch and four 46-inch lengths of No. 3 nylon webbing and heat-sear the ends.
- Reassemble one belt using the two 32-inch lengths of webbing.
- Thread the running ends of the webbing up through the bar of the snap hooks and quick-fit adapters. Make a five-inch fold back and tack in place.
- Sew a four-inch, four-point, WW stitch formation on each fold back using No. 3 nylon thread and a medium duty machine.
- Reassemble the other two belts as indicated, using the four-inch lengths of webbing.

CH-47 CHINOOK

17-27. The CH-47 Chinook is a tandem rotor, heavy lift transport helicopter. Twenty-eight combat-equipped jumpers can jump from this aircraft. (See figure 17-12.) The JM may be a jumping JM or a static JM.

- Jumpers: 28 combat equipped
- Airspeed: 80 to 110 knots
- Minimum drop altitude: 1250 to 1500 feet AGL
- JM team: one jumping JM or static (nonjumping), or one safety if JM is jumping

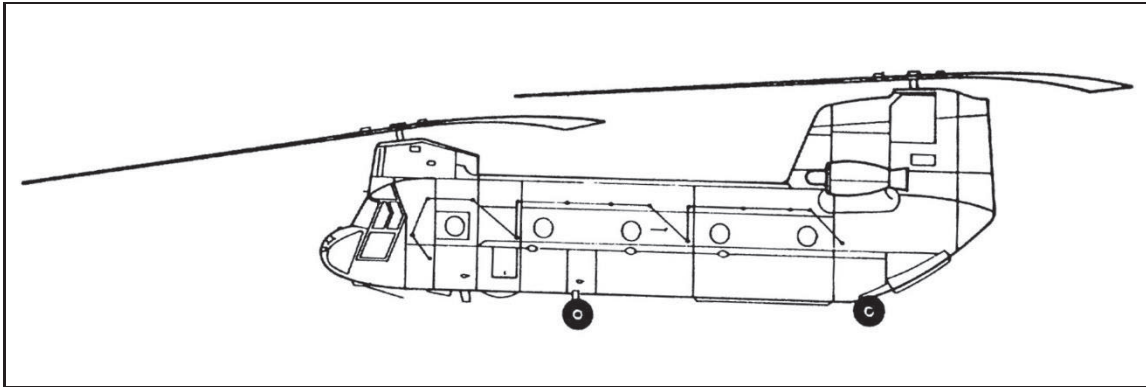


Figure 17-12. CH-47 Chinook

17-28. The JM must prepare the CH-47 as described below:

- Install safety belts for each jumper and extend all the way out to ensure positive hookup while seated.
- Secure the permanently installed anchor line cable to the attachment points on the starboard side of the aircraft. (See figure 17-13.)
- Incline the ramp for personnel parachute drops during flight.

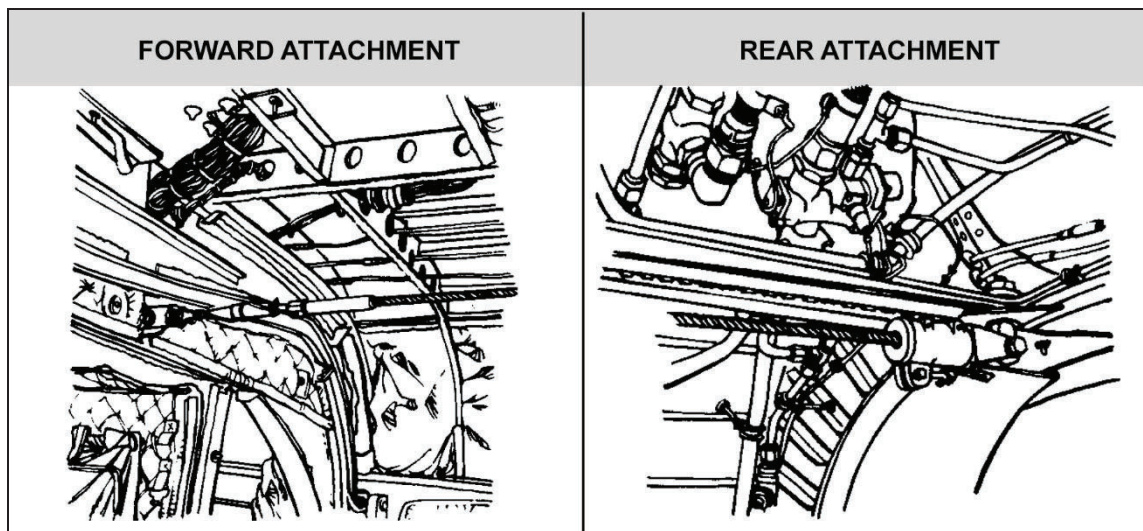


Figure 17-13. CH-47 anchor line cable attachment

Note. The best angle is three degrees below horizontal. Scribe marks may be placed on the ramp to show this degree of incline.

INSPECTION AND SEATING CONFIGURATION

17-29. Before loading jumpers, the JM and the pilot, or pilot's representative, jointly inspect the aircraft to determine the following:

- Troop seats can be easily lifted and secured before jumping.
- The ramp is clean and free of oil and water.
- Seats are securely fastened in the down position.
- Sufficient seat belts are available.

- The anchor line cable is not frayed or worn and is secured to the attachment points.
- There is a working headset located at the static JM or static safety position.

17-30. The jumpers are divided into two chalks with the odd numbered jumpers are seated on the starboard side, and the even numbered jumpers are seated on the port side. (See figure 17-14.)

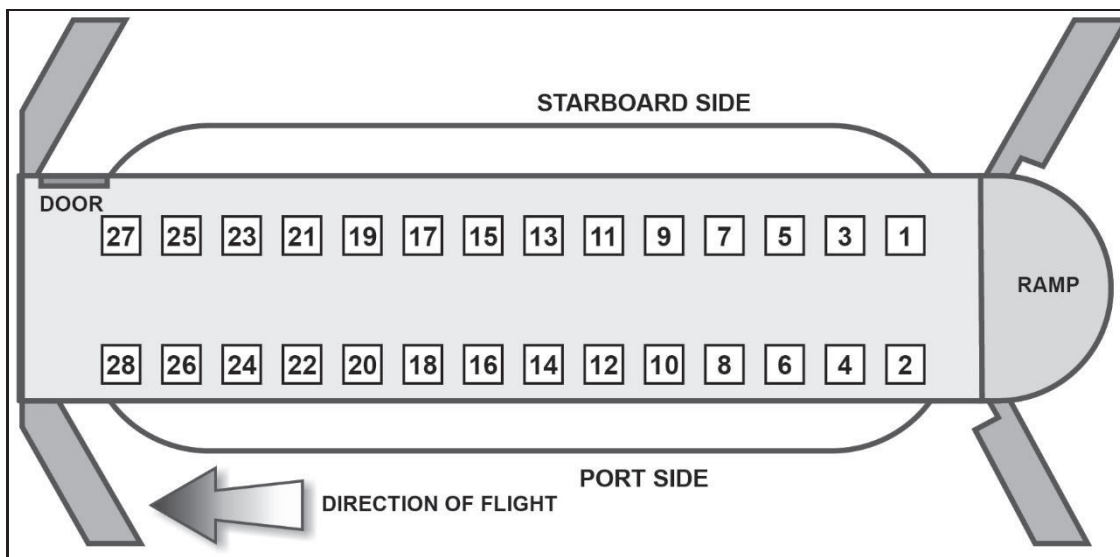


Figure 17-14. CH-47 seating configuration

JUMP PROCEDURES, COMMANDS, AND TIME WARNINGS

17-31. If the JM jumps, he or she is No. 1; this requires a nonjumping safety to control the flow of jumpers. Once the jumpers are stood up, they will intermingle remaining in numerical order if planning to exit jumpers from the starboard and port side. (See figure 17-15.)

17-32. Aircraft safety requires that the speed during jumps is not less than 80 knots or more than 110 knots, with 90 knots being optimum speed. No special preparation is required if the aircraft has skis. Minimum jump altitude is 1500 feet AGL when jumping below 90 knots. Minimum jump altitude 90 knots and above is 1250 feet AGL. After the last jumper has cleared the aircraft, the static lines are retrieved (using the static line retriever) inside the aircraft and secured in an aviator kit bag or UPRB. The ramp must not be lowered until all jumpers have hooked up to the anchor line cable.

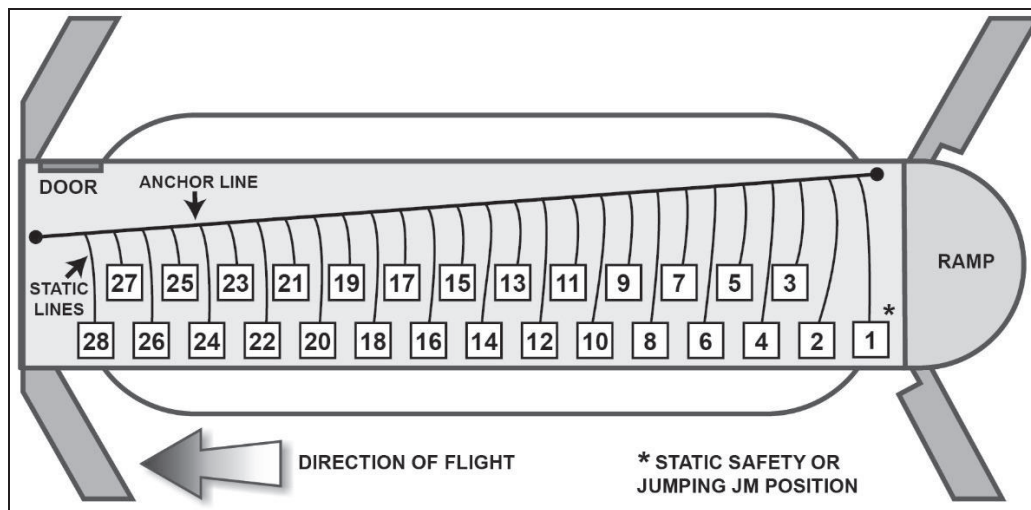


Figure 17-15. CH-47 USLM routing

17-33. The six-minute and one-minute warnings are given by the pilot to the crew chief, who then relays them orally and by hand signals to the JM. The JM issues the following commands:

- GET READY: this command is given at the six-minute warning to alert jumpers and to undo seat belts.
- PORT SIDE PERSONNEL, STAND UP: jumpers seated on the port side of the aircraft stand up and secure their seats in the up position.
- STARBOARD SIDE PERSONNEL, STAND UP: jumpers seated on the starboard side of the aircraft stand up and secure their seats in the up position.
- HOOK UP: on this command, odd numbered personnel hook up, followed by the even numbered personnel, who hook up between the odd numbered personnel to form one continuous stick of 28 jumpers. The open portion (spring opening gate) of the USL snap hook will face starboard; ensure the thumb is routed over the front of the bite resting on the index finger. The thumb should not be routed behind the bite or pointed straight down.

Note. After hooking up, each jumper controls the USLM in a reverse bight at waist level (left hand).

- CHECK STATIC LINES: the static JM or safety checks the routing of all USLMs from the USL snap hook down to the main curved pin protector flap. The JM or safety confirms each jumper has a proper reverse bite and that the USLM is routed over the left shoulder.
- CHECK EQUIPMENT: all jumpers check their equipment; helmet, chinstrap, chest strap, both leg straps, HPTLL if jumping combat equipment.
- SOUND OFF FOR EQUIPMENT CHECK: beginning with No. 28, the jumpers pass the status of their equipment toward the aft end of the aircraft. The No. 1 jumper orally (and with a hand signal) indicates to the JM the status of his or herself and all other jumpers' equipment by stating, "ALL OK, JUMPMaster."
- STAND BY: this command is given eight to 10 seconds before the command "GO." Jumper No. 1 assumes a standing position at the ramp hinge (near center) of the aircraft. The remaining personnel close up interval behind the first jumper.
- GO: on the command of "GO," if the JM is the No. 1 jumper, he or she gives the command of "FOLLOW ME" and exits walking off towards the port side rear corner of the ramp of the aircraft while the static safety controls the flow of jumpers. If the JM is static, the No. 1 jumper will follow the same procedures with the exception of saying the command of "FOLLOW ME." The remaining jumpers follow at one-second intervals. (See figure 17-16 on page 17-16.)

Note. The static JM or safety controls the flow from their position on the port side near the ramp hinge. Less than a one-second interval between jumpers may result in entanglement of jumpers and USLMs.

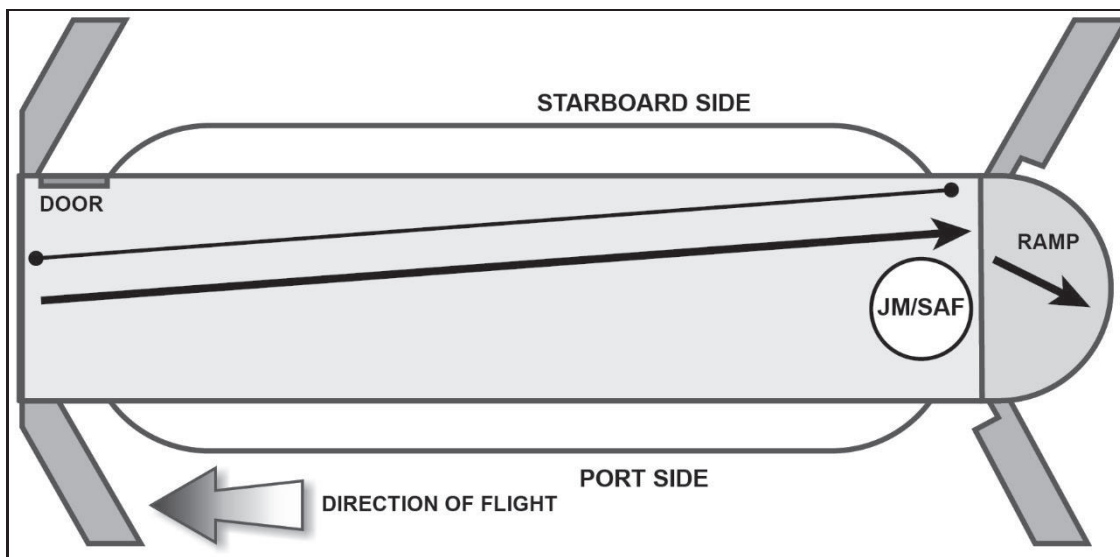


Figure 17-16. CH-47 exiting and position of static JM or safety

WARNING

The ramp must not be lowered unless all jumpers are either hooked up or seated in their seats with seat belts fastened.

CAUTION

When the ramp is lowered, it must be lowered to three degrees below horizontal prior to exiting jumpers.

SAFETY PRECAUTIONS

17-34. During movement inside the aircraft, the jumper protects the rip cord handle at all times. Crowded conditions inside the cargo compartment pose a possible hazardous situation regarding accidental activation of the reserve parachute. Jumpers are authorized to jump combat equipment from this aircraft. Jumpers ensure that seats are secured in the up position with seat legs rotated inside the seats. When following internal drop loads, jumpers exit between the ramp roller conveyor sections, staying as close to the port side section as possible. The jumpers jumping after external load drops, who are forward of the open floor hatch remain clear of the opening until the load leaves the aircraft and the hatch is closed by the crew chief.

17-35. The JM ensures all jumpers remain secured by their seat belts until the command GET READY is given. The JM or safety personnel ensure that jumpers are hooked up consecutively, 1 through 28. If the JM does not jump, he wears a safety harness or AEBP while the aircraft is in flight and either the static JM or safety should be equipped with a headset or helmet for direct communications with the aircraft crew. If communication is lost, operations should cease until communications is restored. They check each jumper after they hook up and controls the flow of jumpers. When an external load is delivered, the JM ensures the external load is clear and the aircraft has accelerated to a safe airdrop speed before dropping cargo bundles from inside the aircraft or before permitting jumpers to exit. If the JM jumps, one non-jumping safety is required; the safety wears a safety harness or an AEBP. The JM may spot from the crew chief door or the ramp as long as a safety is controlling the jumpers. If spotting from the ramp and jumping, the JM leads the stick and the AJM stays with the aircraft. Towed jumper procedures are described elsewhere in this chapter.

UH-1 IROQUOIS

17-36. The UH-1 series is powered by a single gas turbine engine. As many as eight combat-equipped jumpers can jump from the UH-1 series, consistent with weight limitations. (See figure 17-17.) The indicated airspeed of the aircraft during jumps is not less than 50 knots or more than 70 knots. The minimum drop altitude is 1500 feet AGL. The jumpmaster is a nonjumping JM.

- Jumpers: eight combat equipped.
- Airspeed: 50 to 70 knots.
- Minimum drop altitude: 1500 feet AGL.
- JM team: one nonjumping JM.

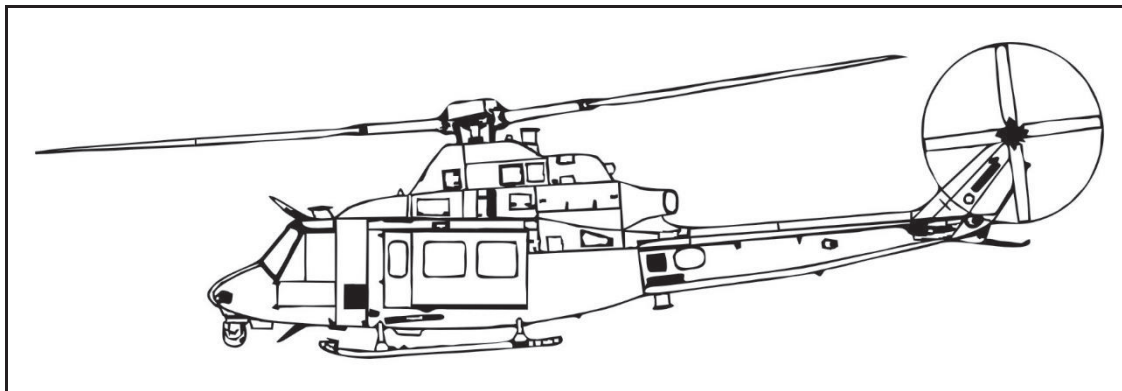


Figure 17-17. UH-1 series Iroquois

17-37. Preparing and inspecting the UH-1 series for jumping includes the actions described below:

- Both cargo compartment doors are locked in the open position. If the doors cannot be locked, they are removed.
- All troop seats are removed except one seat on each side (located to the rear of the pilot and copilot seats). These two seats are installed so they are facing to the rear of the aircraft. If the jumpers are equipped with combat equipment and eight jumpers are to jump, all seats in the cargo compartment are removed.
- The door and frame are inspected to ensure there are no sharp edges that could cut or fray static lines. If these are determined to be hazardous, corrective action is taken before the helicopter is used.
- During field conditions, the door and frame can be padded and taped to preclude a mission abort. Otherwise, the aircraft is returned to maintenance for correction of the deficiency.
- Safety belts are attached to the tie-down rings on each side of the compartment for floor-seated jumpers.
- The door gunner or crew chief foot operated radio switch may be unscrewed (by hand) before the flight. The exposed radio switch wires are taped to prevent an electrical short. If the switch is not removed, it is padded and taped. The ground handling wheel mount brackets on both landing skids are padded with cellulose wadding and taped. (See figure 17-18 on page 17-18.) Some aviation units have fabricated special covers that may be used to cover the wheel mount brackets.

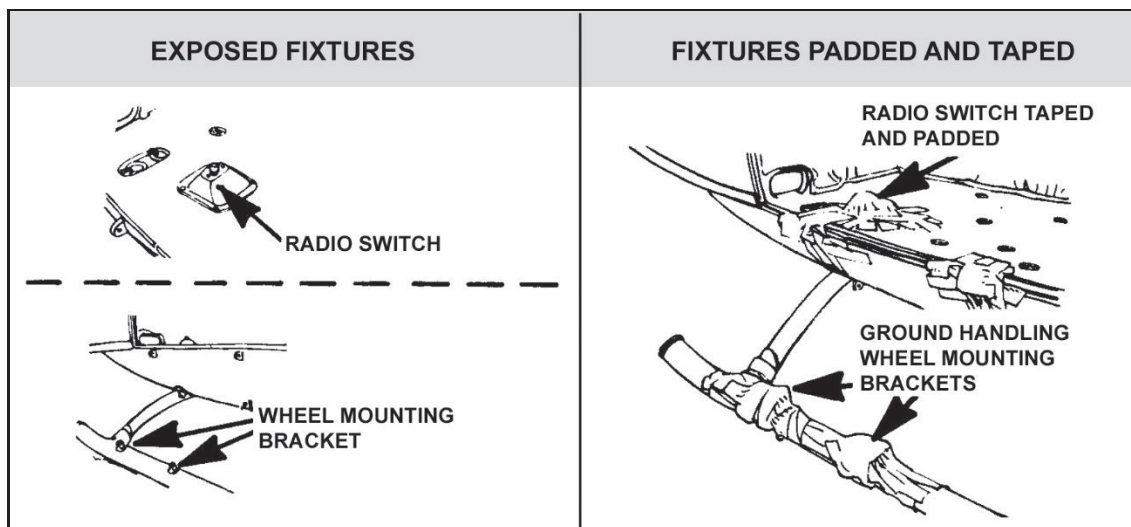


Figure 17-18. UH-1 exposed fixtures padded

ANCHOR LINE SYSTEMS

17-38. Two anchor line systems are available with the UH-1 series aircraft for airdrop of personnel. The standard overhead anchor line system is provided and installed by the supporting aircraft. The expedient floor mounted anchor line system (NSN 1670-00-999-3544) (see figure 17-19) consists of a modified stabilized body extraction system anchoring strap assembly and four D-rings. The D-rings must be installed with cotton buffers.

17-39. The field expedient anchor line system for the UH-1 series is: Type XXVI nylon webbing anchor line cable assembly consists of Type XXVI nylon webbing with four D-rings (TM 10-1670-262-12&P). Type XXVI nylon webbing must be used with Type X cotton or Type VIII Nylon buffers on the D-rings. (See figure 17-19.)

Note. Connector snaps will not be used on either the H or N models of the UH-1.

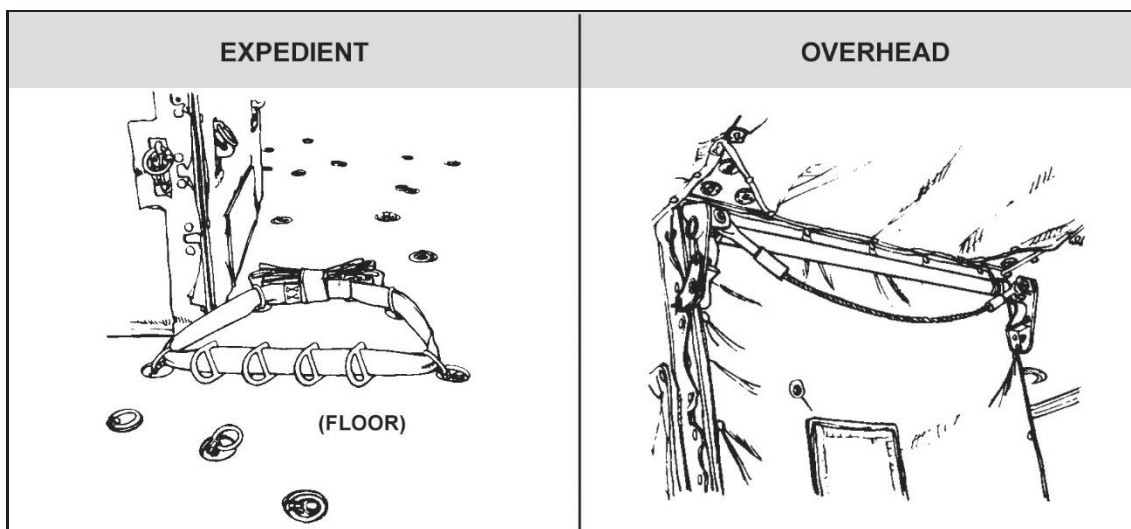


Figure 17-19. UH-1 series floor mounted anchor line systems

17-40. Rigging procedures for the UH-1 series are as follows (see figure 17-19):

- For the left door, route the free running end through inboard tie-down ring Nos. 19 and 21. The strap must be routed through outboard Nos. 47 and 61, so the friction adapter and free running end meet facing the center of the floor. The free running end is then secured to the friction adapter then rolled and secured to the strap utilizing pressure sensitive tape (100-mph tape).
- The same procedures apply to the right door as the left except that the strap is routed through inboard tie-down ring Nos. 20 and 22. Then it is routed through outboard tie-down ring Nos. 48 and 62.
- Before enplaning, the JM and pilot, or pilot's representative, jointly inspect the aircraft to determine the following:
 - All protruding objects near the cargo compartment doors are removed or taped.
 - The lower right and left aft edges of both the cargo compartment doors are padded and taped.
 - The anchor line or field expedient anchor line system is secure, serviceable, and properly installed.

Note. Check expedient anchor line system during Airborne operation, verifying it has not slipped.

- A safety belt is available for each jumper.
- A headset is available for the JM to effect coordination among the jumpers, the pilot, and the ground.

Note. At no time will any steel or wire cable be used as an expedient anchor line system mounted to the floor of the aircraft.

LOADING TECHNIQUES AND SEATING CONFIGURATION

17-41. During loading, jumpers should not approach directly from the front or sides but at a 45-degree angle to the nose of the aircraft. For example, jumpers one through four enter the cargo compartment through the right door, are hooked up by the JM in numerical order, and seat themselves. (See figures 17-20 and 17-21 on page 17-20.) Jumpers five through eight move towards the crew chief positioned at the nose of the aircraft, follow the crew chief's guidance around the nose of the aircraft until they reach the cargo compartment, and enter the cargo compartment through the left door. Jumpers are hooked up by the JM in numerical order, and seat themselves. The jumpmaster performs the following actions:

- Ensures excess static line is stowed in the static line slack retainer band while hooking up each jumper.
- Ensure the open portion of the static line snap hook faces the front of the aircraft.
- On flights less than 25 minutes long, jumpers may sit in the door with their feet outside the cargo compartment.

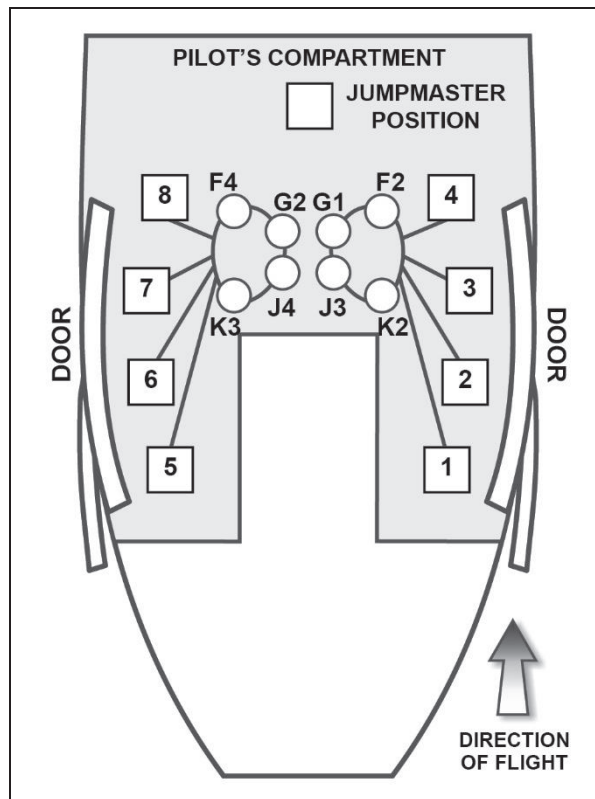


Figure 17-20. UH-1 seating configuration, overhead expedient ALS

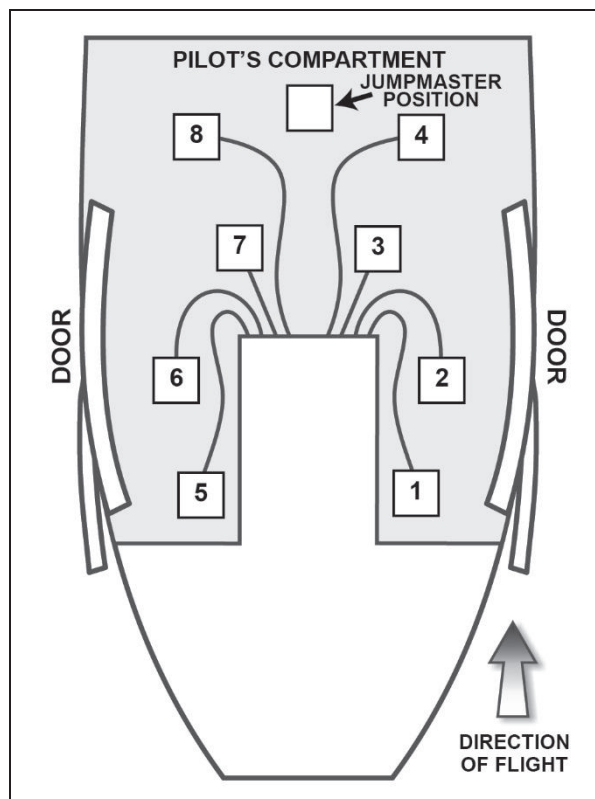


Figure 17-21. UH-1 seating configuration, ALS

JUMP COMMANDS

17-42. GET READY: this command is given four minutes or less from drop time, and the aircraft is level for final approach. All seat belts are unlatched and moved to the rear of the jumpers. The JM visually inspects each safety belt to ensure that it is clear of the jumper and the equipment.

17-43. CHECK STATIC LINES: the JM rises and checks the routing of static lines from the point of attachment to the pack tray to ensure they are properly routed and hooked up.

17-44. CHECK EQUIPMENT: all jumpers check their equipment; helmet, chin strap, chest strap, both leg straps, and the HTPLL if jumping combat equipment.

17-45. SOUND OFF FOR EQUIPMENT CHECK: on this command all jumpers place one of their hands on top of their helmet and give a “thumbs up” if their equipment is fine. The jumpmaster moves down the line in numerical order, placing their hand over each jumper’s thumb confirming that all jumpers are OK.

17-46. SIT IN THE DOOR: this command is given by the JM 30 seconds from drop time. No. 1 and No. 2 jumpers swing their legs to the right and take sitting positions in the door with feet together outside the cargo compartment. (No. 3 and No. 4 jumpers extend their legs outside and move to sitting positions.) They place both hands, palms down, on the floor alongside their thighs, turn their heads toward the JM, and wait. No. 5 and No. 6 jumpers swing their legs to the left, take sitting positions in the left door, and follow the same procedure as No. 1 and No. 2. (No. 7 and No. 8 extend their legs outside and move to sitting positions.)

17-47. STAND BY: this command is given 8-to-10 seconds before the command, GO.

17-48. GO: at this command, the following actions occur; The JM controls the jumper’s exit and ensures a one-second interval between jumpers by giving each jumper the oral command GO after the preceding jumper has exited and cleared the aircraft. The jumpers exit in numerical order.

AIR DELIVERY CONTAINERS AND EQUIPMENT

17-49. When an air delivery container is being released from the cargo hook, the pilot releases the container and informs the JM when the load has cleared the aircraft. The jumpers exit as explained above. Equipment prescribed in chapter 12 can be worn by jumpers when jumping this aircraft.

17-50. Standard air delivery containers rigged with G-14 cargo parachutes can be delivered from the cargo hook, using the breakaway static line. The snap hooks of the universal static lines are hooked to the anchor line system before liftoff. Door bundles reduce the number of jumpers that can be carried, depending on the size and number of bundles.

17-51. If the helicopter has skis, the ski attaching bolts and the sharp edges of the skis are padded and taped on the outboard side of the landing skids aft of the leading edge of the cargo door. Due to the bulk and weight of arctic clothing, individual combat equipment is not worn. The equipment is dropped either as an internal or external load.

SAFETY PRECAUTIONS

17-52. Safety precautions on the UH-1 series includes the actions described below:

- During movement inside the aircraft, the jumper protects the rip cord handle at all times. Crowded conditions inside the cargo compartment and the open doors on both sides of the fuselage pose a possible hazardous situation regarding accidental activation of the reserve parachute. Jumping combat equipment is authorized for this aircraft.
- The JM ensures all jumpers remain secured by their safety belts until the command GET READY is given. The JM prevents (or corrects) excessive static line from flopping about the aircraft. (The JM does not jump from this aircraft.) The JM wears a safety harness at all times inside the aircraft. After the last jumper has cleared the aircraft, the static lines are retrieved inside the aircraft and secured in an aviator kit bag or UPRB, or secured by a safety belt to the aircraft floor. The universal static line snap hooks are not removed from the anchor line cable until the aircraft lands.
- Towed jumper procedures are described in this chapter.

WARNING

The parachutist jump pack, AT4JP, or SMJP may not be jumped from aircraft that require jumpers to exit from a seated position. It is highly recommended that unit leadership take a deliberate approach to training individuals who have never executed a T-11 ATPS jump and develop a progression plan for individuals who have less than 10 jumps with the T-11 ATPS. These jumpers are statistically at the highest risk for a parachute incident.

UH-72A LAKOTA LIGHT UTILITY HELICOPTER

17-53. The UH-72A is a multipurpose, twin-engine, low-to-medium range light utility helicopter with skid landing gear. (See figure 17-22.) As many as four noncombat-equipped or combat-equipped jumpers can jump from the UH-72A light utility helicopter (LUH) consistent with weight limitations. The indicated airspeed of the aircraft during jumps is not less than 50 knots or more than 70 knots, and the minimum drop altitude is 1500 feet AGL. The jumpmaster is a nonjumping JM. Details of the UH-72A LUH are:

- Jumpers: four combat equipped.
- Airspeed: 50 to 70 knots.
- Minimum drop altitude: 1500 feet AGL.
- JM team: one nonjumping JM.

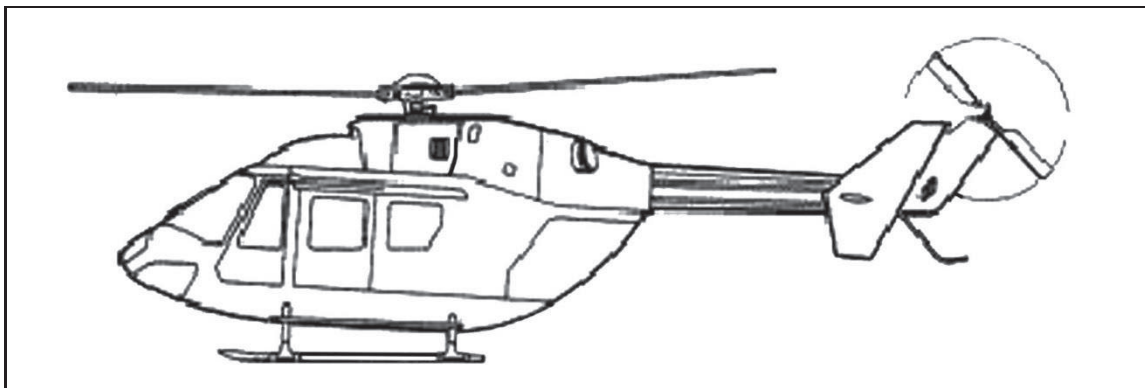


Figure 17-22. UH-72A Lakota

PREPARATION AND INSPECTION

17-54. Preparing and inspecting the UH-72A LUH for Airborne operations includes the following actions:

- Tape the base of the left wall of the aircraft.
- Tape over each panel on the left side.
- Tape over floor rails from front to rear.
- Repeat steps one through three for the right side. (See figure 17-23.)

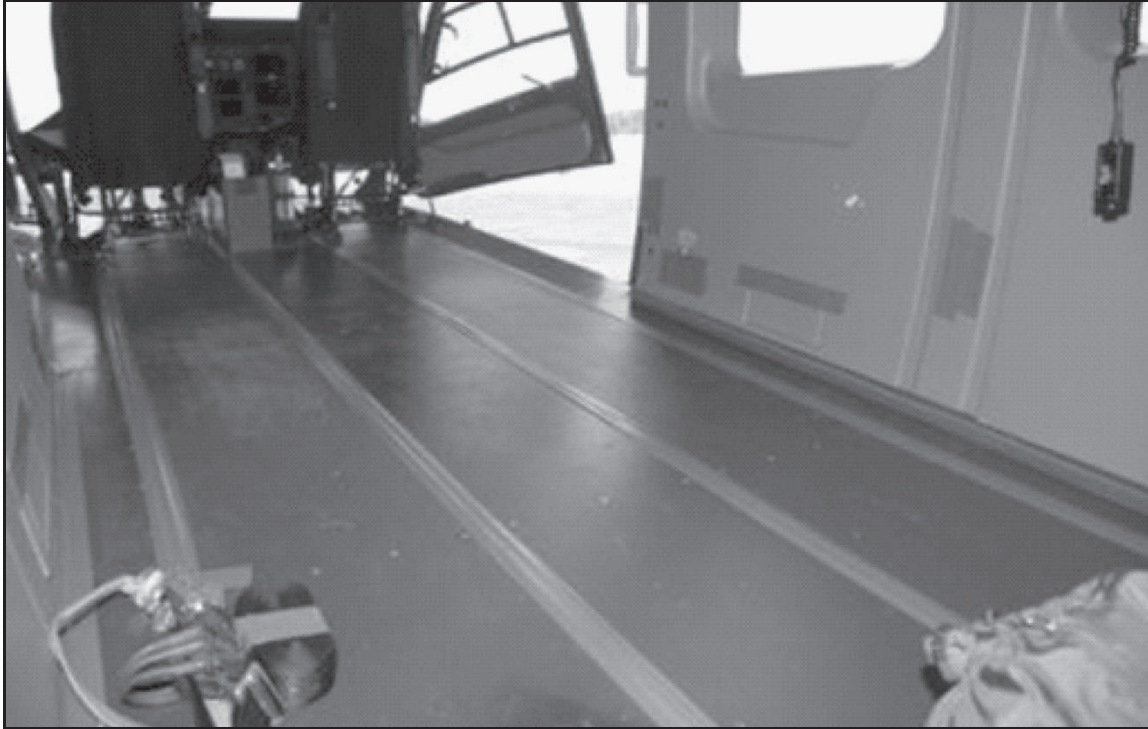


Figure 17-23. Right side of UH-72A Lakota shown with tape

17-55. The following outside preparation steps readies the UH-72A LUH for jumping. (See figure 17-24 on page 17-24.):

- Place a piece of felt or similar material over the trail edge of the left door and tape in place.
- Tape the bottom edge of the left door.
- Remove left door handle and tape the trail edge of the left door.
- Tape over the left door guide rail.
- Place cellulose wadding over the vent hose and tape in place.
- Remove left door handle.
- Install the skid pad cover on the top skid. (See figure 17-25 on page 17-24.)



Figure 17-24. Left UH-72A Lakota exterior shown with tape



Figure 17-25. Left UH-72A Lakota exterior shown with tape and skid pad cover

17-56. UH-72A LUH static line aircraft rigging and procedures include:

- Installation of static line anchor device. This step is the responsibility of the crew chief or aircraft maintenance crew.
- Install the aft anchor device on the 11th hole from the aft of the aircraft floor board leaving 10 open holes. (See figure 17-26.)

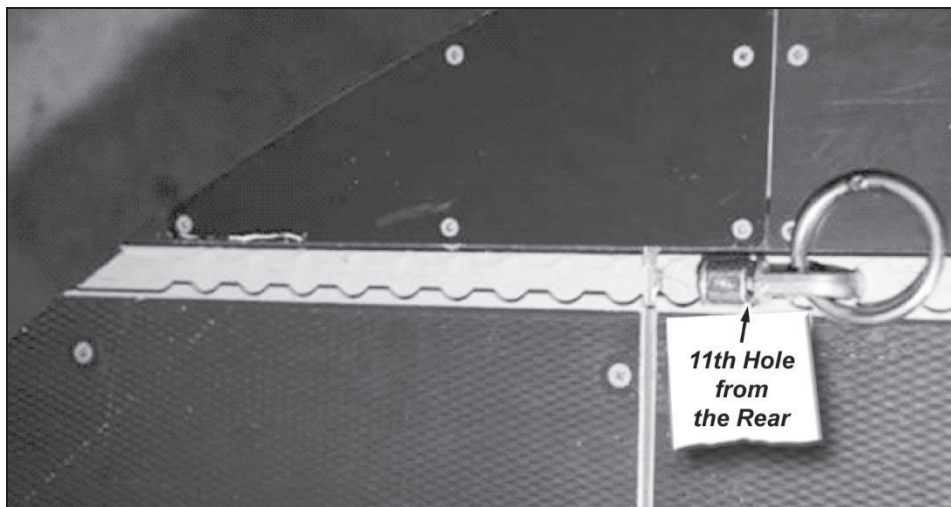


Figure 17-26. Location of aft static line anchor device

- Install the forward anchor device on the 36th hole from the aft of the aircraft floorboard, leaving 25 open holes. (See figure 17-27.)

Note. The left cargo/passenger door of the UH-72A LUH is the only door authorized for static line parachute operations due to a communications antenna affixed to the lower right mainframe of the aircraft.

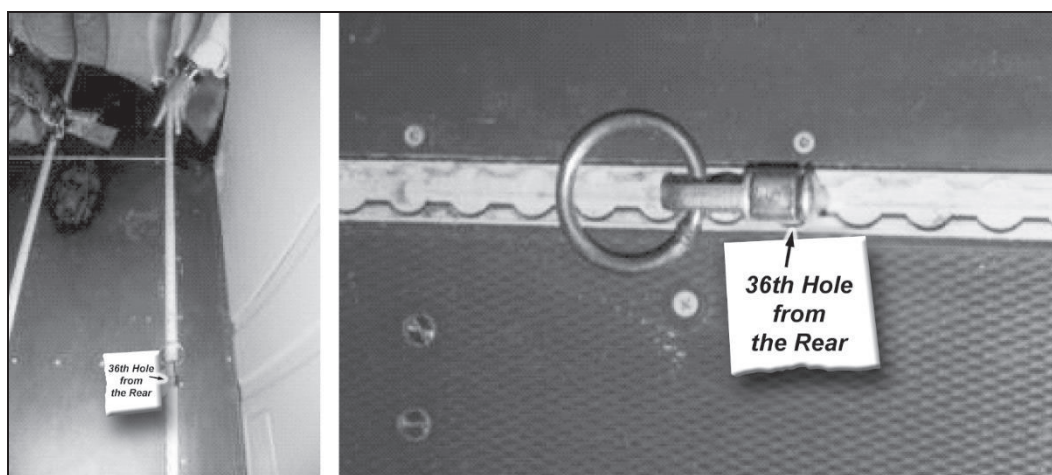


Figure 17-27. Location of forward static line anchor device

- Face the O-rings of each anchor device toward each other. (See figure 17-28.)

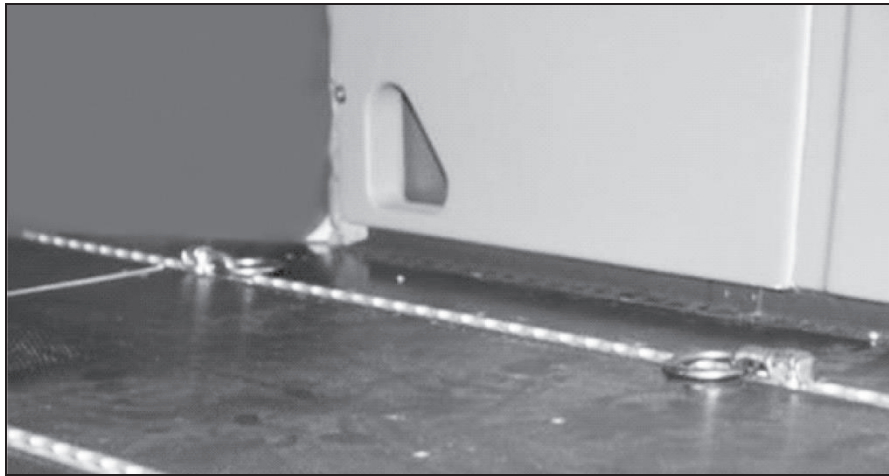


Figure 17-28. O-rings of each anchor device facing each other

- Install and secure a safety roll pin on each anchor device. (See figure 17-29.)

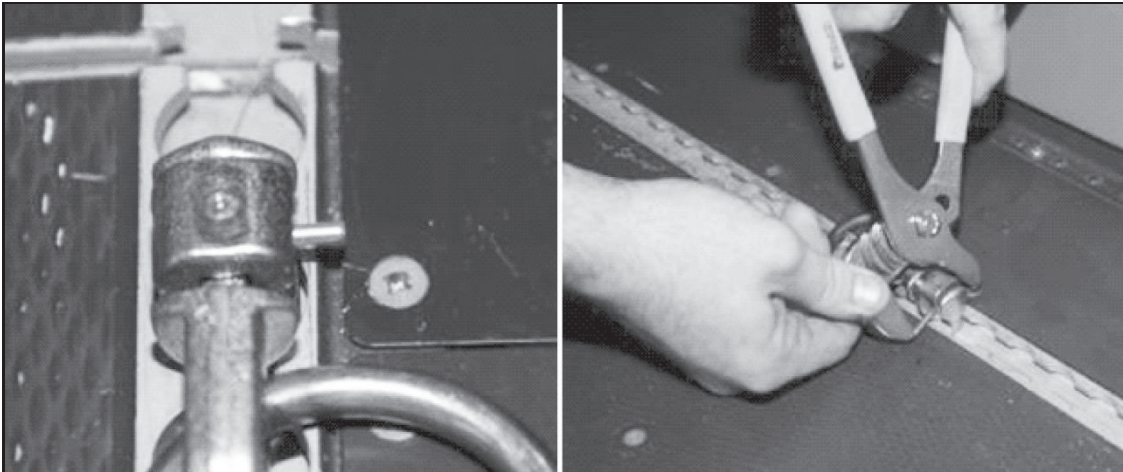


Figure 17-29. Installation of safety roll pins on each anchor device

- Cover each anchor device with tape. (See figure 17-30.)

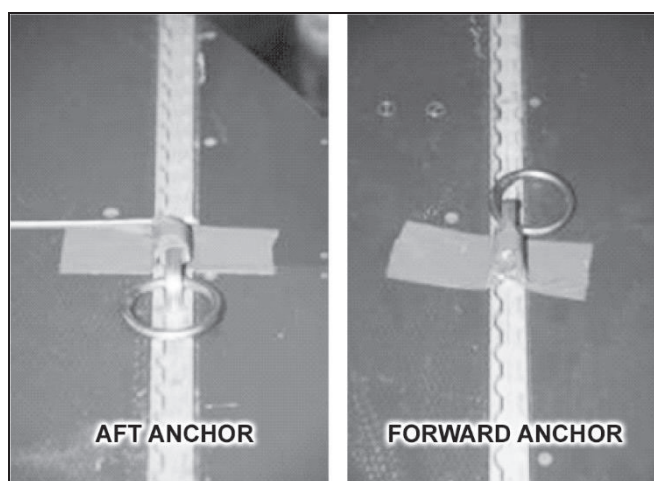


Figure 17-30. Aft and forward anchor devices with tape after installation of safety roll pin

- Installation of the anchor line system (see figure 17-31) includes:
 - Install the anchor line system with running end of strap oriented toward the front of the aircraft.
 - Install anchor line system with D-rings toward the skin of the aircraft.
 - Install safety wire through the snap hook of the anchor line system from inboard to outboard. (See figure 17-32 on page 17-28.)

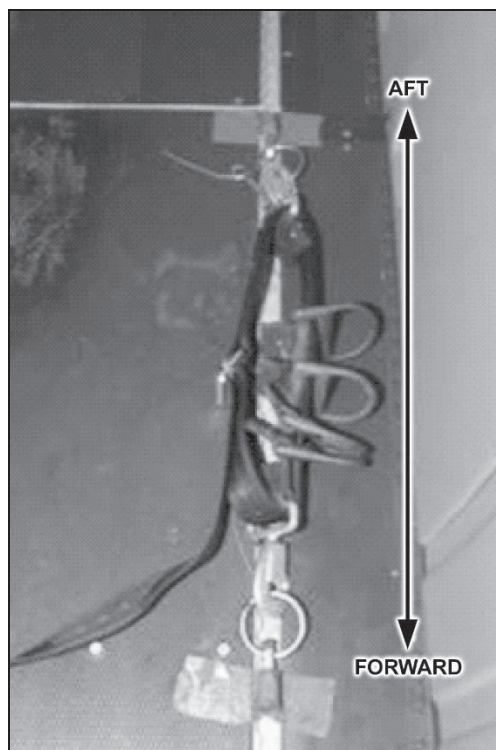


Figure 17-31. Anchor line system shown with running end of strap oriented toward front of aircraft and D-rings toward skin of aircraft



Figure 17-32. Safety wire installed through snap hook of anchor line system

- Wrap the end of the safety wire around the snap hook. (See figure 17-33.)



Figure 17-33. End of safety wire around snap hook of anchor line system

- Crew chief will not tape any item on the aircraft until after the jumpmaster has completed the aircraft inspection.
- Tape safety wire and snap hook. (See figure 17-34.)

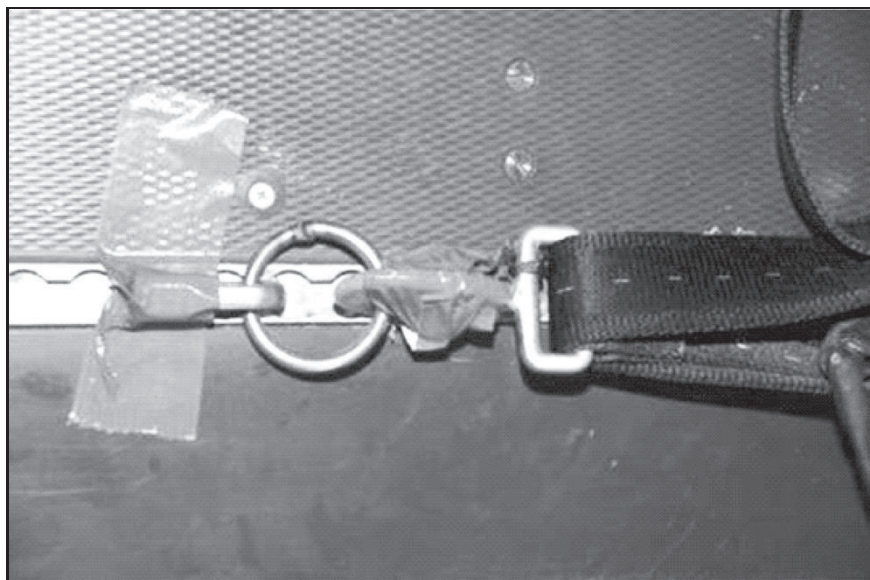


Figure 17-34. Safety wire and snap hook taped

- Roll excess webbing and tape in place. (See figure 17-35.)

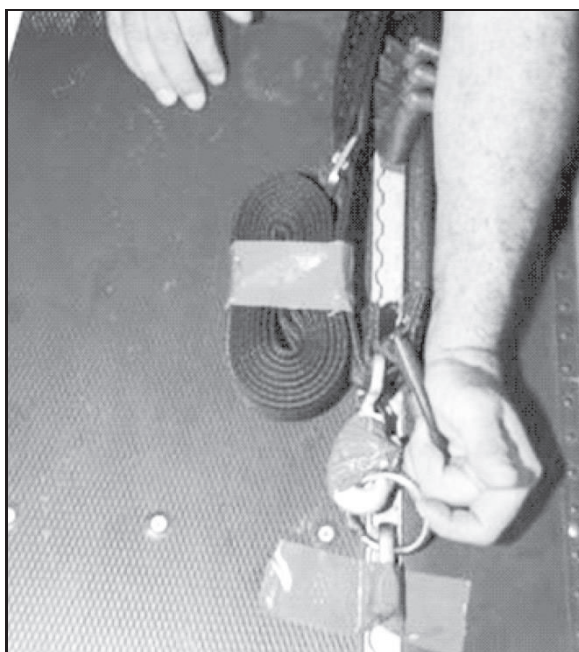


Figure 17-35. Excess webbing taped in place

17-57. Install anchor devices on the outer two floor rails with the O-rings toward the front of the aircraft. The anchor devices are parallel with the trail edge of the left and right doors. Do not install safety roll pins. Install safety strap with a center break (such as quick release) and tape excess webbing. (See figure 17-36.)

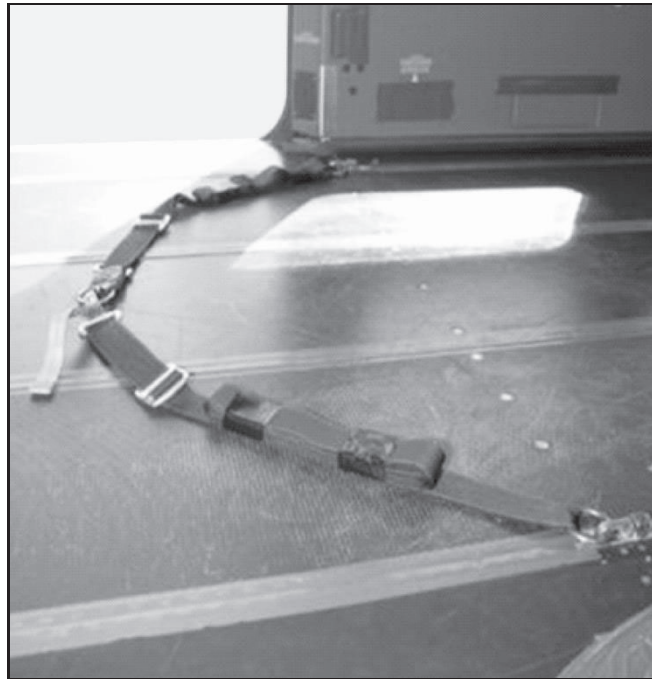


Figure 17-36. Static line personnel safety straps

LOADING TECHNIQUES AND SEATING CONFIGURATION

17-58. The seating configurations for static line personnel without combat equipment and crew chief are outlined below. (See figures 17-37 and 17-38.) These are:

- Jumper No. 1 is positioned on the left side of the aircraft parallel with the trail edge of the door.
- Jumper No. 2 is positioned on the right side of the aircraft parallel with the trail edge of the door.
- Jumper No. 3 is positioned behind jumper No. 2 on the right side of the aircraft.
- Jumper No. 4 is positioned behind jumper No. 3 on the right side of the aircraft.



Figure 17-37. Seating configuration for static line personnel without combat equipment and crew chief

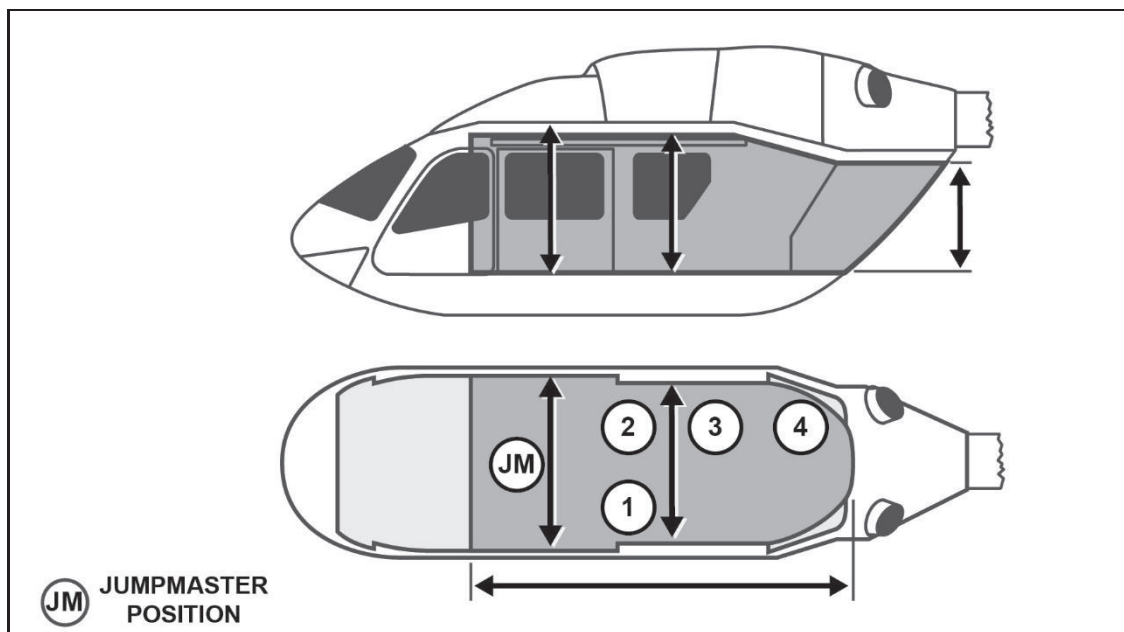


Figure 17-38. Seating configuration for static line personnel without combat equipment and crew chief

17-59. The seating configurations for static line personnel with combat equipment and crew chief, if on board are outlined below. (See figure 17-39.) They are:

- Jumper No. 1 is positioned on the left side of the aircraft parallel with the trail edge of the door.
- Jumper No. 2 is positioned on the right side of the aircraft parallel with the trail edge of the door.
- Jumper No. 3 is positioned behind jumper No. 2 on the right side of the aircraft.
- Crew chief, if on board, is positioned behind jumper No. 3.

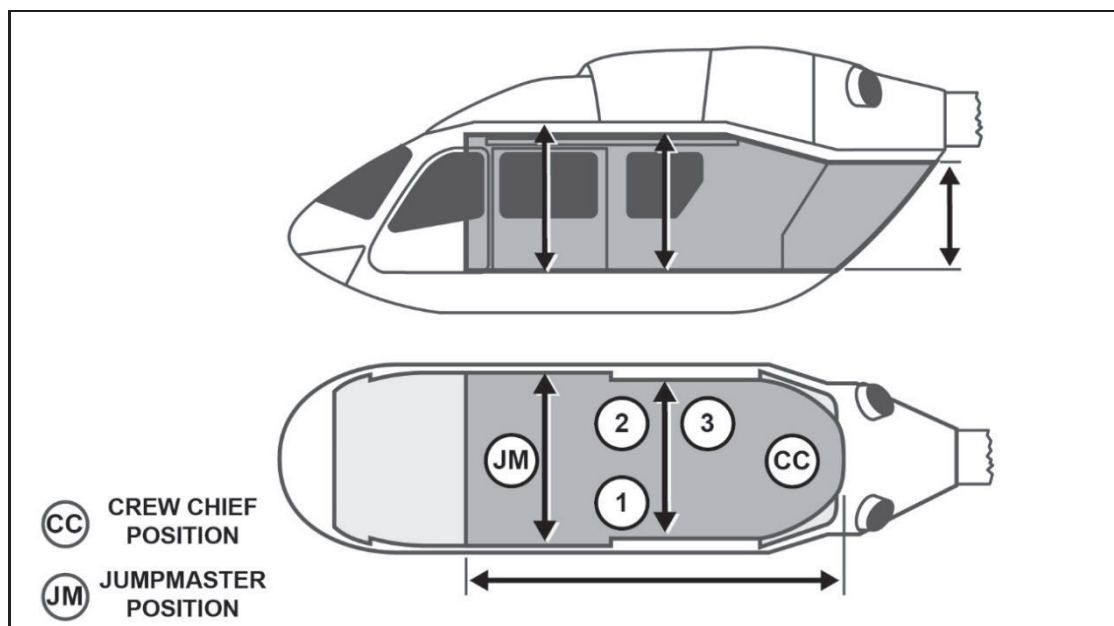


Figure 17-39. Seating configuration for static line personnel with combat equipment and crew chief

- Jumpers load the aircraft in reverse stick order.
- JM hooks the jumper's universal static line snap hook to the anchor line system with the opening gate of the universal static line snap hook faced toward the skin of the aircraft (as seen from point of view when the jumper exits the aircraft). (See figure 17-40.)

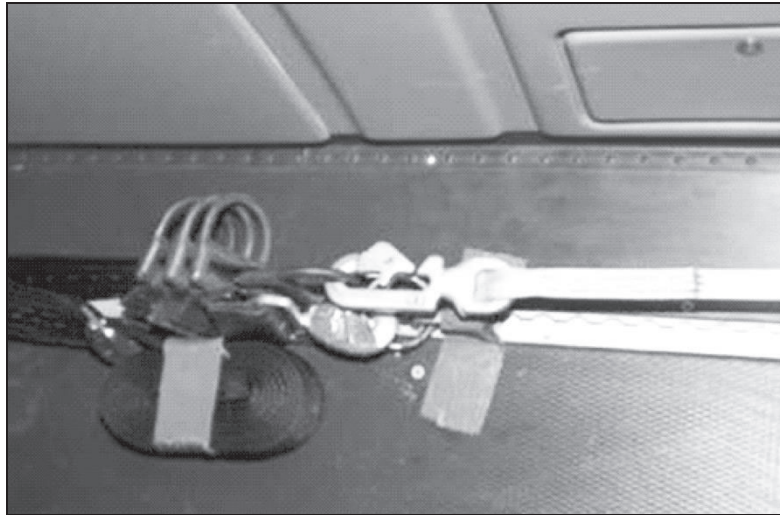


Figure 17-40. USL snap hook faced toward aircraft skin

- After jumpers are seated, each jumper will take up the slack of the USLM of the jumper in front of them and stow them in the static line slack retainer band. (See figure 17-41.)



Figure 17-41. Slack retainer stowed properly

- Secure the safety strap across jumper No. 1. (See figure 17-42.)



Figure 17-42. Safety strap shown across jumper No. 1

JUMP COMMANDS

17-60. The JM issues the following commands:

- **GET READY:** this command is given at the four-minute warning to alert the jumpers. The safety strap is removed at 1000 feet AGL. Jumpers No. 1 and 2 undo the anchor device with the safety strap and hand it over to the JM. The JM then secures the safety strap in an AKB or UPRB.
- **CHECK STATIC LINES:** the JM checks the routing of all USLMs from the first stow to the point of attachment to the USLM anchor device, ensuring they are correctly routed and hooked up. The JM ensures the excess static line is stowed through the static line slack retainer band on the parachutes of Nos. 1, 2, 3, and 4 jumpers. Each jumper will ensure that the jumper's USLM in front of them is not misrouted around their leg
- **EQUIPMENT:** all jumpers check their equipment.
- **SOUND OFF FOR EQUIPMENT CHECK:** The No. 1 jumper indicates orally (and with a hand signal) to the JM the status of their equipment, followed by the remaining jumpers in numerical order.
- **SIT IN THE DOOR:** this command is given by the JM at the 30-second warning. The No. 1 jumper assumes the door position with feet together outside the cargo compartment; jumper's No. 2, 3, and 4 remain in place, ensuring that their feet are clear of their USLMs.
- **STAND BY:** this command is given at the eight-second to 10-second warning. The JM ensures that all jumpers hear and understand this command, particularly the No. 1 jumper. The No. 2 jumper moves behind jumper No. 1, giving enough room for the JM. No. 3 and No. 4 jumpers remain in place.
- **GO:** the JM gives this command by an oral "GO" and a sharp tap on the rear of the jumper's helmet. Each jumper is tapped out. The jump sequence is in numerical order, one through four. As soon as jumper No. 1 clears the door, jumper No. 2 moves into the door and assumes the door position before being tapped out. Jumpers No. 3 and 4 follow the same as No. 2. Each jumper monitors the jumper's universal static line in front of them as the jumper in front of them begins moving towards the door.

17-61. The JM controls the jumper's exit and ensures a one-second interval between jumpers by giving each jumper the oral command "GO" after the preceding jumper has exited and cleared the aircraft. The jumpers exit in numerical sequence.

SAFETY PRECAUTIONS

17-62. Safety precautions on the UH-72A LUH include the actions described below:

- During movement inside the aircraft, the jumper protects the rip cord handle at all times. Crowded conditions inside the cargo compartment and the open doors on both sides of the fuselage can pose a hazardous situation regarding accidental activation of the reserve parachute. Jumping with combat equipment is authorized for this aircraft.
- The JM ensures all jumpers remain secured by their safety belts until the command GET READY is given. The JM prevents (or corrects) excessive static line from flopping about the aircraft. The JM:
 - Does not jump from this aircraft and wears a safety harness at all times inside the aircraft.
 - After the last jumper has cleared the aircraft, the static lines are retrieved inside the aircraft and secured in an aviator kit bag or UPRB, or secured by a safety belt to the aircraft floor.
 - The static line snap hooks are not removed from the anchor line cable until the aircraft lands
- As part of pre-jump training and rehearsals, all parachutists should rehearse exit procedures a minimum of two times while wearing static line equipment in a rigged UH-72A LUH.
- Equipment prescribed in chapter 12 can be worn by jumpers when jumping this aircraft. The USL snap hooks of the static lines are hooked to the anchor line system before liftoff.
- Towed jumper procedures are utilized and described earlier in this chapter.

WARNING

The parachutist jump pack, AT4JP, or SMJP may not be jumped from aircraft that require jumpers to exit from a seated position. It is highly recommended that unit leadership take a deliberate approach to training individuals who have never executed a T-11 ATPS jump and develop a progression plan for individuals who have less than 10 jumps with the T-11 ATPS. These jumpers are statistically at the highest risk for a parachute incident.

Chapter 18

Sister Service Aircraft

Other service rotary-wing aircraft can be used for Airborne operations. In addition to the procedures described here, the requirements and safety discussed in the previous chapter of this publication also applies. Aircraft in this chapter are normally utilized by sister service Airborne units; therefore, procedures used in this chapter may differ from common practices used in the U.S. Army.

According to the USAIS, the use of the T-11 reserve with the T-11 reserve parachute inserts are mandatory for the JM and all PJM, AJM, and the No. 1 jumper assisting in pushing a door bundle will have the inserts emplaced when conducting over the ramp operations. While conducting rotary-wing operations, it is recommended that jumpers exposed to winds that cross the front of the reserve parachute have the T-11 reserve parachute inserts emplaced (UH-60 and UH-1).

CH 53 SEA STALLION

18-1. The CH-53 Sea Stallion is a twin engine, single rotor, medium transport helicopter used by the U.S. Marine Corps. Using the ramp, twenty combat-equipped jumpers may exit from this aircraft. (See figure 18-1.)

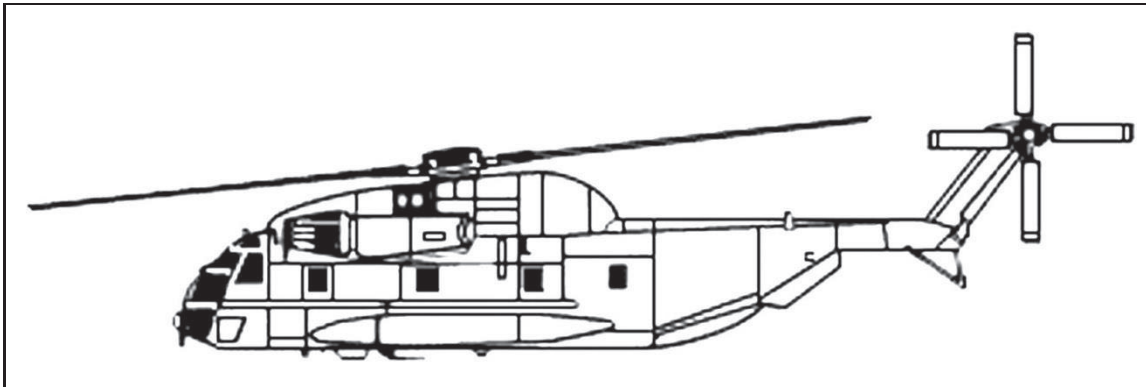


Figure 18-1. CH-53 Sea Stallion

18-2. The following procedures prepare the CH-53 for jumping:

- Install the anchor line cable on the port side of the floor (see figure 18-2 on page 18-2) using the appropriate 5000 pound tie-down fittings for the length of cable used (forward attachment point) and station No. 522 (rear attachment point).
- Use one quarter-inch or 3/8-inch steel cable (3/8 inch preferred), of an acceptable length, with four quarter-inch or 3/8-inch cable clamps, lock washers, nuts, and bolts. The minimum installed length of the anchor line cable is eight feet between forward and rear attaching points (four to five jumpers). Ensure the installed anchor line cable is long enough so that a jumper's USLM extends from the jumper to the anchor line cable without touching other jumpers ahead in the stick.
- Route the anchor line cable directly through the forward and rear attaching point deck rings or use a carabiner (steel, locking, 10,000 pound minimum breaking strength [NSN 8465-01-276-8198]) between the anchor line cable and the aircraft attaching points. Ensure the locking gates on the

snap links are facing up, locking to the aft of the aircraft, and taped. Ensure all tape is removed from the anchor line cable components, the entire anchor line cable must be inspected and the clamps are tight prior to every operation.

WARNING

The JM must ensure the tail skid is in the UP position prior to releasing parachutists. Failure to ensure tail skids in the UP position can cause a towed jumper or severe injury situation.

CAUTION

Do not use a clevis assembly (G-13) to attach the anchor line cable to the aircraft. If the cable is loose, the clevis may rotate sideways and drastically reduce the strength of the anchor line cable.

- Place a four-by-four-by-six-inch wooden block between the anchor line cable and floor and attach a clevis assembly (G-13) to the tie-down ring at station No. 502 for use as a USLM snap hook stop.
- Remove excess slack from the anchor line.
- Turn over and secure the conveyor rollers on the ramp in the down position with the smooth surface up or remove.
- Ensure drive-on aids are removed.
- Ensure the tail skid is in the “up” position before the jumpers exit the aircraft.

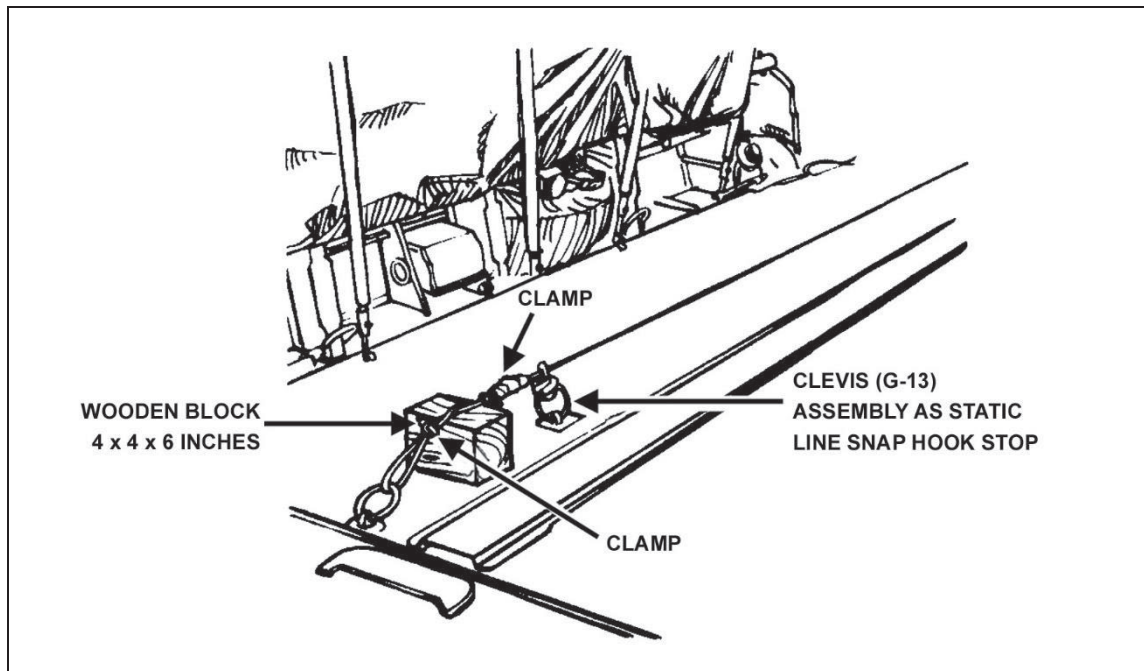


Figure 18-2. CH-53 anchor line installation

18-3. Before enplaning, the JM and pilot, or pilot's representative, jointly inspect the aircraft to determine the following:

- Safety belts are installed for all jumpers and extended all the way out to ensure positive hookup while seated.
- Seats are fastened securely in the down position.
- Seats are lifted and secured before jumping.
- The anchor line cable is not worn or frayed and is secured to the attachment points in the prescribed manner.
- The ramp and deck are clean and free of oil and water.
- All protruding objects near the ramp are removed or taped.
- The crew chief's headphones are available and function properly.

18-4. Jumpers enter the aircraft over the ramp with the static line over the right shoulder. Odd-numbered jumpers are seated on the port side, and even-numbered jumpers are seated on the starboard side. (See figure 18-3.) PJM ensures that all jumpers have T-11R inserts in place.

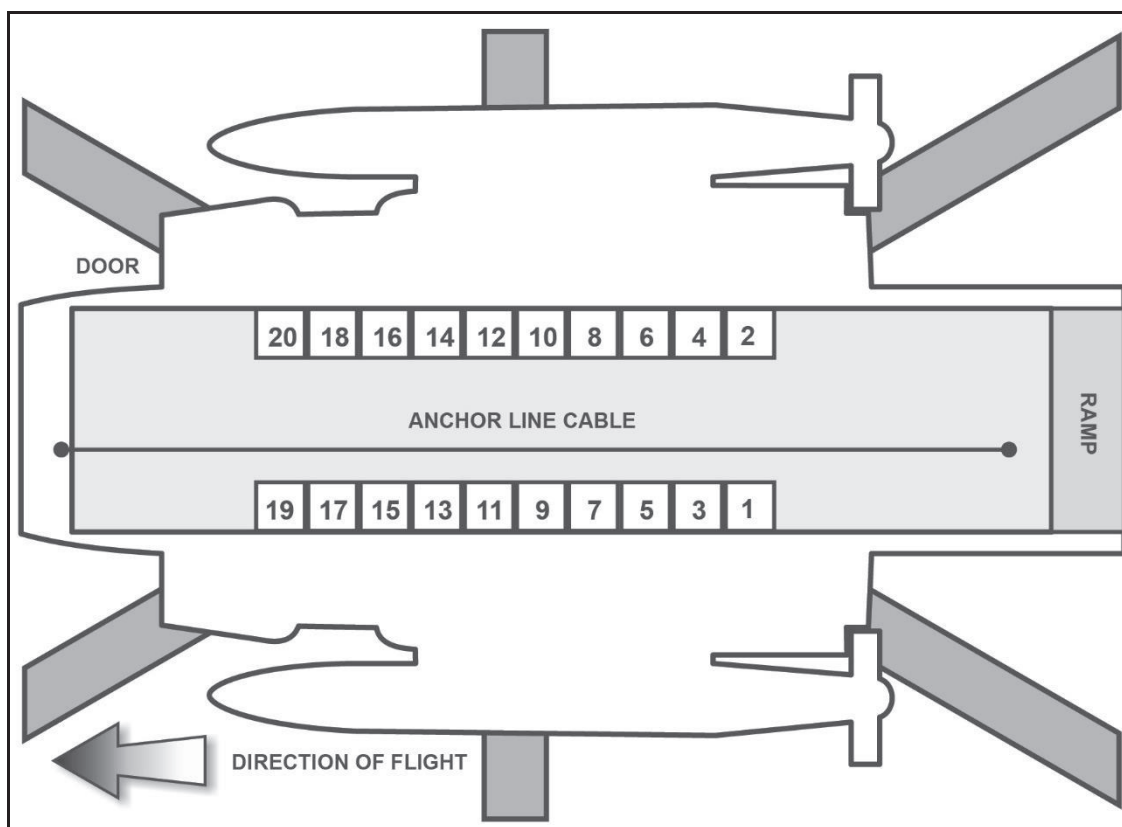


Figure 18-3. CH-53 seating configuration

TIME WARNINGS AND JUMP COMMANDS

18-5. The six-minute and one-minute warnings are given by the pilot to the crew chief, who in turn relays them orally and by hand signals to the PJM.

18-6. The PJM gives the following commands:

- GET READY. All jumpers remove seat belts.
- STAND UP. All jumpers stand up and secure their seats in the up position.
- HOOK UP. With assistance of AJM, the jumper connects the USLM snap hook to anchor line cable and takes a reverse bite.

WARNINGS

The JM must ensure the jumper has T-11R inserts in place and a five-foot universal static line extension attached to the USLM. Failure to use a universal static line extension may cause personal injury from deployment bag strikes.

The JM must ensure the jumper has a proper reverse bight. If an improper reverse bight is taken, the USLM could become misrouted under the arm and cause a towed jumper or severe injury.

- CHECK STATIC LINES. All jumpers check the routing of the USLM of the jumper to their front to ensure that it is not misrouted. Jumpers No. 19 and 20 turn so that the USLM of the last jumper can be checked by No. 19.
- CHECK EQUIPMENT. All jumpers check their equipment.
- SOUND OFF FOR EQUIPMENT CHECK.
- STAND BY. The No. 1 jumper assumes a standing position at the ramp hinge. The remaining personnel close up intervals behind the first jumper.
- GO. The No. 1 jumper walks off the center of the ramp. The remaining jumpers follow at one-second intervals.

18-7. Upon exit of all jumpers, the crew chief or static JM recovers all USLMs.

WARNING

Jumpers will deliberately walk off the ramp, which is lowered a minimum of 11 degrees below centerline gauge. Jumpers **WILL NOT** make a vigorous exit by jumping off the ramp.

Less than a one-second interval between jumpers may result in entanglement of jumpers and USLMs.

SAFETY PRECAUTIONS

18-8. The static JM or safety personnel ensure that jumpers are hooked up consecutively (one through 20), and that all seats are secured out of the way of the jumpers. The speed of the aircraft during jumps is 90 to 110 knots. The minimum drop altitude for aircraft with a 90 to 110 knot drop speed is 1250 feet AGL. Either the JM or AJM must remain with the aircraft to handle the deployment bags and towed jumpers.

18-9. The JM spots the aircraft using the WSVC; VIRS; GMRS; or JSJR methods. The JM may spot from the crew chief door or the ramp as long as a safety is controlling the jumpers. If spotting from the ramp and jumping, the JM leads the stick and the AJM stays with the aircraft.

CH/HH-3 JOLLY GREEN GIANT

18-10. The CH/HH-3 is a twin engine, single rotor, medium transport helicopter used by the U.S. Air Force. Fifteen combat equipped jumpers can jump from this aircraft. (See figure 18-4.)

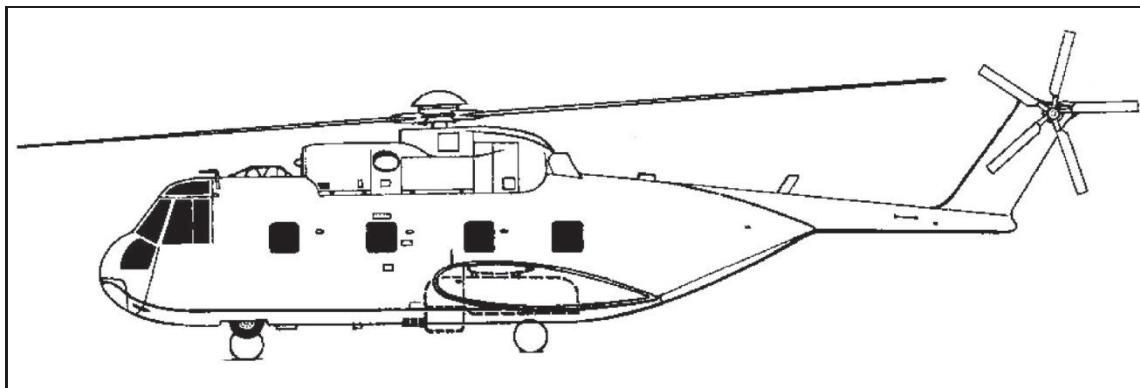


Figure 18-4. CH/HH Jolly Green Giant

18-11. Taking the following actions prepares the CH/HH-3 for jumping:

- Install the oval-shaped anchor line cable on the starboard side of the aircraft's floor using the tie-down fittings at station No. 193.5 (right of center) as the port side forward attachment point, station No. 212.5 as the starboard side forward attachment, station No. 256.5 as an intermediate starboard side attachment point, and station No. 276.5 as the starboard side rear and port side rear attachment points. (See figure 18-5 on page 18-6.)
- The anchor line cable is constructed of quarter-inch diameter, 6400-pound test steel cable. Thread the anchor line cable through four static line snap hooks, where the static line is normally attached. These static line snap hooks connect the anchor line cable to the tie-down fittings. Complete the oval by overlapping both ends of the steel cable, then by securing the overlap with four cable clamps spaced intermittently between the swaged cable ends.
- Manufactured cables have the date of initial manufacture and weight testing capacity (2500 pounds) permanently marked on the starboard side forward static line snap hook. Inspect cables each time the anchor line cable is installed for jumping. Remove from service cables showing excessive wear, corrosion, or more than three broken strands per inch. Weight test cables to a 2500 pound capacity within each 12 month calendar period. Document annual weight testing on a DD Form 1574, *Serviceable Tag – Materiel*, which is attached to the cable.

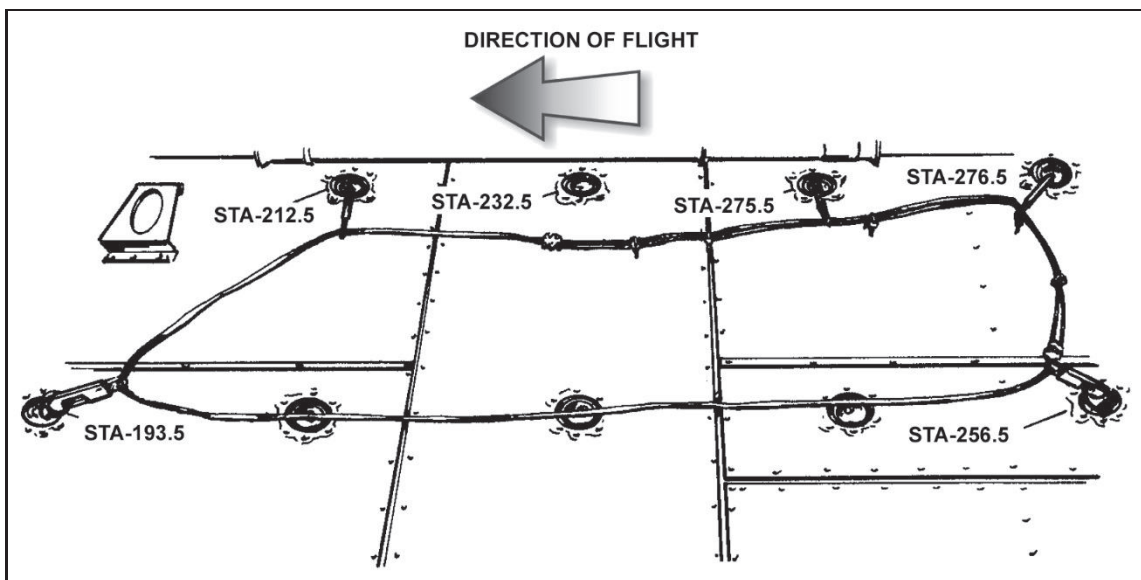


Figure 18-5. CH/HH anchor line cable

18-12. Before enplaning, the JM and pilot, or pilot's representative, jointly inspect the aircraft to determine the following:

- The main cabin door is secured to the rear and taped, including the door handle and latch.
- Any external cargo slings are removed before conducting jump operations.
- All protruding objects near the doors are removed or taped. The penetrator is removed before conducting jump operations.
- Safety belts are installed for all jumpers and are extended completely to ensure positive hookup while seated.
- Seats are fastened securely in the down position with backs loose (except the four seats raised for anchor line cable installation).
- The anchor line cable is tight and free of frays.
- The deck is clean and free of oil and water
- The flight engineer's headphones and the JM intercom cord are available and function properly.

18-13. PJM ensures that all jumpers have T-11R inserts in place. Jumpers enter the aircraft through the starboard side cabin door with their USLM over their right shoulder. They enter the aircraft in reverse stick order with Nos. 1 through 8 seated on the port side and Nos. 9 through 15 seated on the starboard side.

TIME WARNINGS AND JUMP COMMANDS

18-14. The six-minute and one-minute warnings are given by the pilot to the flight engineer, who in turn relays them orally and by hand signals to the JM. Due to the limited space available to hook up, only four jumpers are airdropped each pass.

18-15. The commands on the CH/HH-3 are as follows:

- GET READY. The first four jumpers remove seat belts.
- STAND UP. Jumpers stand up and move to the anchor line cable.
- HOOK UP. Jumpers connect their USLM snap hook to the anchor line cable with the opening toward the skin of the aircraft.
- CHECK STATIC LINES. Each jumper takes a reverse bight in the USLM, ensuring the USLM remains over their bent elbow.
- CHECK EQUIPMENT. All jumpers check their equipment. Jumpers jumping equipment must be at the front of their stick.

- SOUND OFF FOR EQUIPMENT CHECK.
- STAND IN THE DOOR. The first jumper moves to the main cabin door, stopping about one foot from the door, and awaits the JMs commands.
- STAND BY. The first jumper moves to the main cabin door and awaits the JMs commands.
- GO. The No. 1 jumper walks off the starboard rear corner of the ramp. The remaining jumpers follow at one-second intervals.

Note. Commands are repeated for the next group of four jumpers and are repeated until the aircraft is empty.

WARNING

Jumpers walk out the door 90 degrees to the aircraft in a crouched position to avoid hitting their heads on the upper door frame. Jumpers WILL NOT make a vigorous exit by jumping off the ramp.

EXITS AND SAFETY PRECAUTIONS

18-16. Jumpers step out the same as exiting the tailgate of a fixed-wing aircraft, maintaining about a one-second interval between jumpers. Less than a one-second interval may result in entanglement of jumpers and USLMs. Upon exit of all jumpers of each pass, the JM or flight engineer recovers all deployment bags and USLMs.

18-17. Approaching or loading the aircraft is performed only after visual clearance by the pilot or flight engineer. Before clearing any jumpers to jump, the JM confirms that the main gear is in the up position. The speed of the aircraft during all jump operations is between 70 knots and 90 knots indicated air speed.

V-22 OSPREY AIRCRAFT

18-18. The V-22 Osprey (see figure 18-6) is a tilt-rotor aircraft that consists of a twin-engine, twin-prop rotor, high wing, and twin-tail design with retractable landing gear. The airframe and prop rotor systems are primarily constructed of lightweight composite materials. The fuselage is designed to operationally seat two pilots, two crewmembers, and 24 non-Airborne troops.

18-19. The three-bladed prop rotors are mounted on gimbaled hubs on the ends of the wing. The counter-rotating prop rotors are 38 feet in diameter and powered by two AE-11007C turbo-shaft engines. The tilt-rotor design combines the vertical flight capabilities of a helicopter with the speed and range of a turboprop airplane, to allow aerial refueling and world-wide self-deployment.



Figure 18-6. V-22 Osprey

PROCEDURES

18-20. This section outlines the procedures regarding the conduct of Airborne operations by U.S. Marine Corps units from the V-22 Osprey. PJM ensures that all jumpers have T-11R inserts in place. The primary exit point for jump personnel and cargo is the rear cargo loading ramp.

Note. Only over the ramp procedures are authorized for static line personnel parachute operations.

18-21. The V-22 aircraft can fly in three modes: helicopter, conversion, and airplane modes. (See figures 18-7, 18-8, and 18-9.) Transition from helicopter to airplane mode takes about 12 seconds.



Figure 18-7. V-22 Osprey helicopter mode

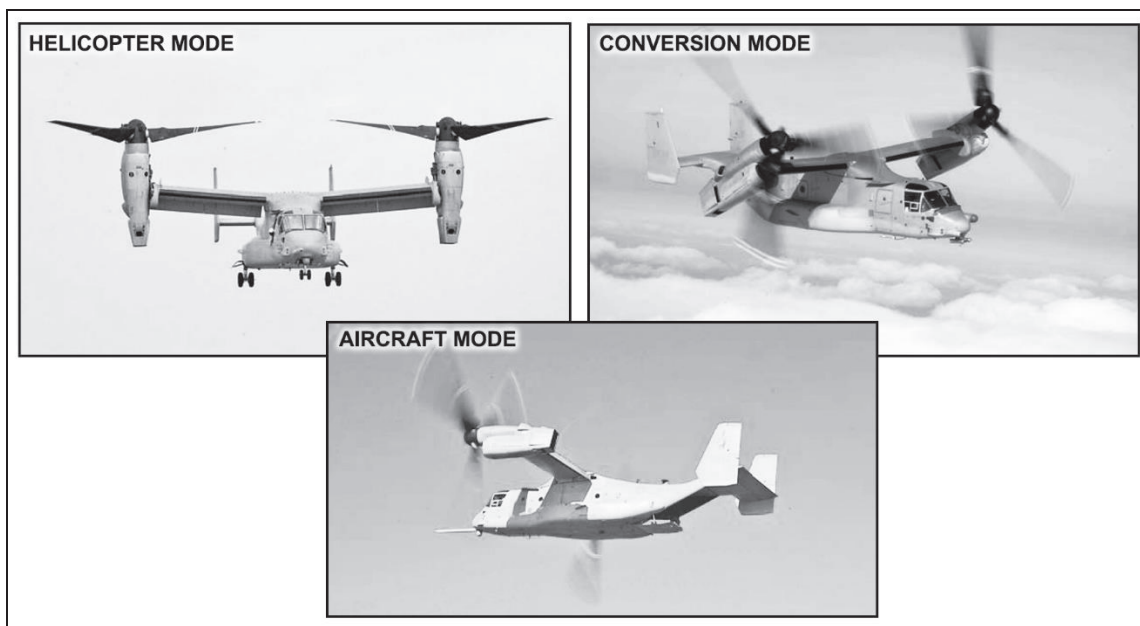


Figure 18-8. V-22 Osprey conversion mode



Figure 18-9. V-22 Osprey aircraft mode

18-22. For static line operations the V-22 is limited to airplane mode only, with a maximum drop speed of 125 knots (+/- 5 knots) with a minimum drop altitude of 1000 feet AGL. A total of 24 passengers can be transported to conduct parachute operations. All jump operations are over the ramp operations, which is the only egress point available to the jumper. A staggered offset file exit formation is used for static line operations with combat equipment.

18-23. Ensure that the pilot is briefed to expect rapid shifts in the aircraft's center of gravity during stand up, hook up, and exit of jumpers. PJM ensures that all jumpers have T-11R inserts in place. Crowded conditions inside the cargo compartment could allow for the accidental activation of a reserve parachute, creating an extremely hazardous situation. During movement within the aircraft, the rip cord grip of the reserve parachute is protected by placing the right hand and forearm over the front of the reserve. This method allows the jumper to control the pilot chute and canopy in case of accidental activation.

SPACE LIMITATIONS

18-24. The space limitations for the V-22 Osprey aircraft are described below. A total of 24 passengers can be transported to conduct parachute operations.

18-25. Multiple container delivery systems maximum gross weight is 4950 pounds. Individual CDS maximum rigged weight will not exceed 2328 pounds gross rigged weight. Container footprint is limited to double A-22 or smaller. A single A-22-sized container height is limited to 60 inches as measured from bottom of the platform to the highest point on the load, including the parachutes. Double A-22-sized container height is limited to 50 inches as measured from the bottom of the platform to the highest point on the load including the parachutes. Ensure ramp is level and upper ramp door is completely open to maintain adequate clearance between the load and aircraft when load exits.

18-26. When the MV-22 Cargo Release System releases the cargo load, the Cargo Release System falls to the deck of the aircraft, presenting a tripping hazard to follow on jumpers as they move towards the ramp to exit the aircraft. When conducting combination personnel and cargo airdrops in which the personnel follow the cargo out of the aircraft, unit commanders are required to implement controls designed specifically to mitigate the risks associated with this hazard.

18-27. USLMs and deployment bags are manually retrieved by the crew chief with assistance from the JM immediately after the last jumper is clear. The USLMs and deployment bags are secured as soon as they are retrieved inside the aircraft. If the ramp is up, the USLMs can be removed from the anchor cable; otherwise, the static lines are not detached until the aircraft is on the ground.

18-28. Crowded conditions inside the aircraft dictate that caution be used to prevent entanglement or misrouting of USLMs during the jumper's exit. Each jumper is cautioned to watch the USLM of the preceding jumper and to observe all the USLMs trailing from the upper corner of the ramp opening. This precaution ensures that succeeding jumpers do not jump until the parachute of the preceding jumper has been deployed, and that the deployment bag has trailed to the rear of the aircraft.

TOWED JUMPER PROCEDURES

18-29. In the event of a towed jumper, the JM prevents any other jumpers from exiting and notifies the pilot. The jumper stays in a tight body position and protects the rip cord handle. The JM will ensure the jumper is securely attached to the aircraft and will not break free during descent. If the jumper is not securely attached, the JM will attempt to shake or cut them free.

18-30. If the jumper cannot be safely freed from the aircraft, the aircraft will convert to helicopter mode and slowly descend to the DZ. A jumper can safely be lowered and landed on the ground while suspended from the MV-22. In the event the jumper cannot be lowered to the ground, once the hung jumper is at 10 feet or less above the ground, the JM will cut the jumper free.

STATIC LINE OPERATIONS AND SEATING CONFIGURATION

18-31. The aircraft speed is 125 +/- 5 knots for static line operations. The JM will control the ramp level, but it is recommended to be placed at the seventh light setting, which is controlled by the aircrew. When utilizing the MC-6, jumpers use a four-second count when conducting the first point of performance.

Note. Airplane and conversion modes can only be used for military free-fall operations.

18-32. Jumpers in troop seats should have the seat back webbing in the lower position (see figure 18-10) and use only the lap belt. Jumpers may also be floor loaded. (See figure 18-11.) Inflight rigging of paratroopers is authorized. Safety and mission-essential equipment will dictate the number of paratroopers to be airdropped in compliance with MV-22 and AFTTP 3-3.CV-22. Jumpers can be seated on the floor facing the rear of the aircraft at a 45-degree angle with the jumpers split between the port and starboard sides of the aircraft. The jumpers are restrained by individual safety belts routed around each jumper.



Figure 18-10. Troop seat with seating back webbing



Figure 18-11. Seating configuration (noncombat-equipped jumpers)

JUMPMaster AND SAFETY

18-33. The JM can be either a static JM or a jumping JM. If the JM is static, the JM will have communications with the pilot at all times. If the JM is jumping, the safety is required to have communications with the pilot at all times.

18-34. The safety will then relay all time warnings to the JM in addition to typical safety functions. All standard time warnings are observed. There are no jump lights located anywhere on this aircraft. All commands are the responsibility of the JM. The V-22 aircraft has unique connections for onboard communications. The JM or safety will have to wear one of the V-22 helmets or have a modified helmet connection.

JUMP COMMANDS AND PROCEDURES

18-35. Jump commands and procedures for the V-22 are as follows:

- **GET READY.** Jumpers respond in the same manner as for other fixed-wing aircraft. In addition, seat belts are removed, reconnected, and stowed.
- **PORT SIDE PERSONNEL, STAND UP.** The odd-numbered jumpers seated on the port (left) side of the aircraft stand up. Jumper No. 1 on the port side will be assisted to their feet by the AJM or safety; jumper No. 1 in turn assists the No.3 jumper port side and so on.
- **STARBOARD SIDE PERSONNEL, STAND UP.** The even-numbered jumpers seated on the right side of the aircraft stand up. Jumpers use the same method for assisting a jumper to their feet as conducted for port side.
- **HOOK UP.** The open portion of the universal static line snap hook is oriented towards the skin of the aircraft, regardless of which cable is used. All jumpers hook up to the same anchor line cable, regardless of which cable is used and regardless of the seating arrangement. The elbow of the arm holding the static line is kept close to the body. The USLM is controlled by each jumper in a reverse bight at waist level in the outboard hand. The odd-numbered jumpers hook up first, then the even-numbered jumpers hook up between the odd-numbered jumpers to form a staggered stick of jumpers.
- **CHECK STATIC LINES.** Each jumper checks their own USLM from the anchor line cable through their reverse bight and traces the USLM until it disappears behind their back. The jumper will then inspect the USLM of the jumper in front of them from the shoulder to the pack-closing tie.
- **CHECK EQUIPMENT.** At a minimum, each jumper checks their helmet, lowering line, chest strap, ejector snap, both leg strap ejector snaps, and reserve parachute. If the jumper is jumping any special items of equipment, they will inspect those items as well.

- SOUND OFF FOR EQUIPMENT CHECK. Jumpers respond in the same manner as with other fixed-wing aircraft.

WARNING

To ensure safety of jumpers, the aircraft ramp will remain closed until all jumpers have sounded off for equipment check.

- STAND BY. The static JM or safety gives this command and moves the No. 1 jumper to the centerline of the ramp.
- GO or FOLLOW ME. Personnel exit the aircraft at one-second intervals walking off the centerline of the ramp. Jumpers will not execute an “up and out” exit off the ramp. If the jumper executes an “up and out” exit, the jumpers head will strike the top of the clamshell door creating a safety hazard. Instead, jumpers will walk off the ramp without jumping up. Jumpers will bring their feet and knees together and place their chin on their chest to form a tight body position upon exit from the aircraft.

Note. Jumpers in troop seats should have the seat back webbing in the lower position (see figure 18-12 on page 18-14) and use only the lap belt. Jumpers may also be floor loaded using the multi-aircraft tether. Inflight rigging of paratroopers is authorized. Safety and mission-essential equipment will dictate the number of paratroopers to be airdropped.

18-36. Jumpers hook up using a reverse bight, with the elbow of the arm holding the USLM close to the body. They use caution when exiting the aircraft in relation to the aircraft’s upper ramp door, which could pose a hazard to taller jumpers upon exit and use hearing protection during V-22 operations. This is mandatory.

18-37. The safety must ensure the aircraft floor and ramp area is suitable for jumpers. Prior to takeoff, the safety ensures all jumpers are secured and prepared for takeoff. If the JM is jumping, the safety moves to the aft end of the aircraft and physically controls the JM’s static line. The assistant JM or safety maintains communications with the pilots through the intercom system located in the aft of the aircraft, and relays all information to the JM.

WARNING

The JM must ensure the jumper T-11R inserts are in place, and has a proper reverse bight. If an improper reverse bight is taken, the static line could become misrouted under the arm and cause a towed jumper or severe injury.

18-38. If jumping, the JM must exit first. When the JM gives the command, “STAND BY,” they move to the centerline of the ramp and assume a proper exit position. On the command “GO,” the JM looks at the No. 2 jumper and gives the command, “FOLLOW ME,” and then they exit the aircraft. Once the JM exits, the safety controls the flow of the exit.

18-39. For jumpmaster directed release, the JM may spot from either the ramp or from the front of the aircraft by positioning themselves between the pilots and looking through the windshield. The crew chief’s window cannot be used for spotting during static line parachute operations. Both of these techniques present challenges and advantages in their use; it will be at the JM’s discretion as to which technique they use.

Note. New JMs or those unfamiliar with the V-22 should be given a thorough briefing and in-flight training (if practical) by an experienced JM knowledgeable in V-22 operations prior to being assigned as the primary JM on any V-22 parachute operations.

18-40. The V-22 only supports over the ramp operations. The V-22 interior is manufactured with a nonskid coating which provides nonslip footing. The vehicle ramp extensions will be removed.

18-41. As soon as all jumpers are seated, the crew chief briefs them on aircraft safety, emergency procedures, and comfort facilities.

TIME WARNINGS

18-42. Time warnings include the following:

- **TWENTY-MINUTE TIME WARNING.** JMs check personnel and equipment. If combat equipment is not already attached to the jumper it will be attached to the jumper at this time. Final onboard JMPIs are initiated, HSPR and leg straps are secured, and door bundles are given a final inspection. Ramp remains closed.
- **TEN-MINUTE TIME WARNING.** Final onboard JMPI of all jumpers is complete. A verbal and visual 10-minute warning is given to the JMs by the crew chief, and the PJM begins jump commands. Ramp remains closed.
- **SIX-MINUTE TIME WARNING.** All JMPIs are to be completed by this time warning. Jump commands through “SOUND OFF FOR EQUIPMENT CHECK,” are completed with the ramp closed. Door bundles are moved to the hinge of the ramp. The ramp is then opened in order to allow the PJM to perform air safety checks and verify approach into the intended drop zone.
- **SLOWDOWN WARNING.** About three minutes from drop time, jumpers are moved to the hinge of the ramp. The AJM or safety will make final inspection of the routing and grip of the USLMs by the jumpers.
- **ONE-MINUTE TIME WARNING.** The crew chief gives the JMs a visual one-minute warning. PJM alerts the jumpers and performs safety checks from ramp.
- **THIRTY-SECOND TIME WARNING.** The crew chief gives the JMs a visual 30-second warning. PJM gives the command, “STAND ON THE RAMP.” Door bundle(s) and the No. 1 jumper assume the proper exit position, center of the ramp. The remainder of the stick shuffles aft to close up the stick. AJM or safety maintain control of the stick and verify the proper routing and grip of the USLM by the jumpers.
- **GO.** On the command “GO,” the PJM taps out the first jumper. After all personnel have cleared the aircraft the PJM signals, “CLEAR TO THE REAR,” of the aircraft and assists the crew chief with the recovery of the static lines. If the JMs are jumping the command will be “FOLLOW ME” from the PJM with the AJM as the last jumper in the stick. The onboard safety will perform and announce, “CLEAR TO THE REAR,” and assist the crew chief with the recovery of the static lines.

JUMPMaster AIRCRAFT INSPECTION

18-43. With the following exceptions, the same procedures for inspecting the C-130 for static line operations will be used for inspection of the V-22:

- **Seats and floor:**
 - Are there adequate seat belts available?
 - Are seat belts and floor loading hardware serviceable (to include aircraft attachment points)?
 - Are seats fastened securely in the up position?
- **Anchor line cable:**
 - The V-22 crew chief will install the anchor line cable according to the V-22 interactive electronic technical manual. The JM or safety must inspect both anchor lines for serviceability. The JM or safety will inspect that the anchor line cable is not worn or frayed

and is secured to the attachment points per the V-22 and there are two U-bolts (cable clamps) located at fuselage section 589 with the threaded ends facing the skin of the aircraft. The static line should have no more than three-to-five-inches of overall play when properly rigged. The aft attaching point is safety wired. The forward attaching point is secured with a cotter pin.

- After inspection, the anchor line stop(s) are padded and taped. This aircraft is restricted to the use of only one anchor line cable with a load of eight jumpers (with or without combat equipment) per pass.
- Are there any sharp protrusions or edges on the ramp area? Also:
 - Does the ramp fully open and completely close?
 - Is all equipment secured prior to take-off?
 - Prior to exit, has the ramp been opened to the prescribed position and is it locked in place?
- The floor and ramp must be inspected to ensure they have nonskid surfaces and are in good condition.
- Before flight, the internal communications system must be checked to ensure it's operable.
- The following emergency equipment must be considered and addressed:
 - Are first aid kits present (number and location)?
 - Are fire extinguishers present and charged (number and location)?
 - Are all emergency exits operational? Has the JM been briefed on ramp operation for all flights?
 - Has the JM been briefed on location of light switches?
 - Are emergency lights operational?
- Ensure the crew chief briefs all of the participating jumpers on emergencies within the aircraft along with emergency egress procedures.

UH-1N/Y IROQUOIS

18-44. The UH-1N/Y has two gas turbine engines. As many as eight combat-equipped jumpers can jump from the UH-1N/UH1Y, consistent with weight limitations. (See figure 18-12.) The JM is nonjumping.

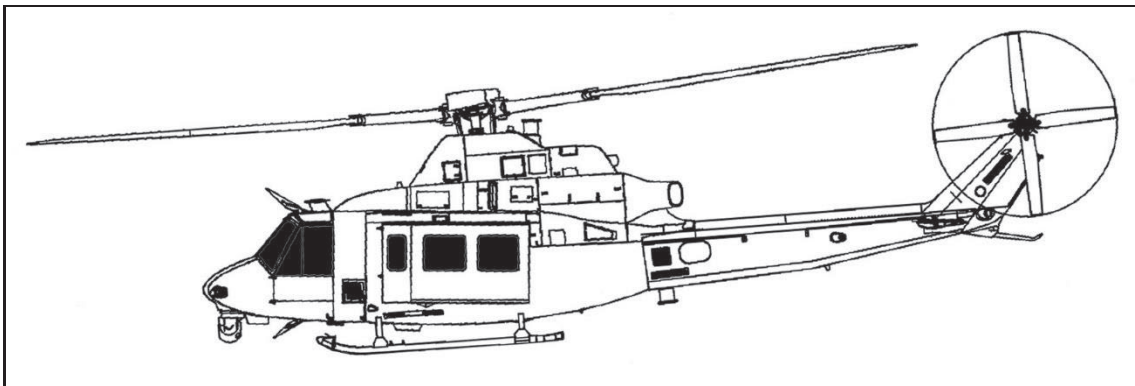


Figure 18-12. UH-1N/Y

18-45. The following steps prepare the UH-1N/Y for jumping:

- Both cargo compartment doors are locked in the open position. If the doors cannot be locked, they are removed.
- All troop seats are removed except one seat on each side (located to the rear of the pilot and copilot seats). These two seats are installed so they are facing to the rear of the aircraft. If the jumpers are equipped with combat equipment and eight jumpers are to jump, all seats in the cargo compartment are removed.

- The door and frame are inspected to ensure there are no sharp edges that could cut or fray static lines. If these are determined to be hazardous, corrective action is taken before the helicopter is jumped.
- Under field conditions, the door and frame can be padded and taped to preclude a mission abort. Otherwise, the aircraft is returned to maintenance for correction of the deficiency.
- Safety belts are attached to the tie-down rings on each side of the compartment for floor-seated jumpers.
- The door gunner or crew chief foot-operated radio switch may be unscrewed (by hand) before jumping. The exposed radio switch wires are taped to prevent an electrical short. If the switch is not removed, it is padded and taped. The ground handling wheel mount brackets on both landing skids are padded with cellulose wadding and taped. (See figure 18-13.) Some aviation units have fabricated special covers that may be used to cover the wheel mount brackets.

ANCHOR LINE SYSTEMS

18-46. Two anchor line systems are available with the UH-1H/Y aircraft for airdrop of personnel. The standard overhead anchor line system is provided and installed by the supporting aircraft. (See figure 18-14 on page 18-16.) The floor mounted anchor line system (NSN 1670-00-999-3544) consists of Type XXVI nylon webbing with four D-rings (TM 10-1670-262-12&P). Nylon modified stabilized body straps or Type XXVI nylon webbing must be used with Type X cotton buffer on the D-rings.

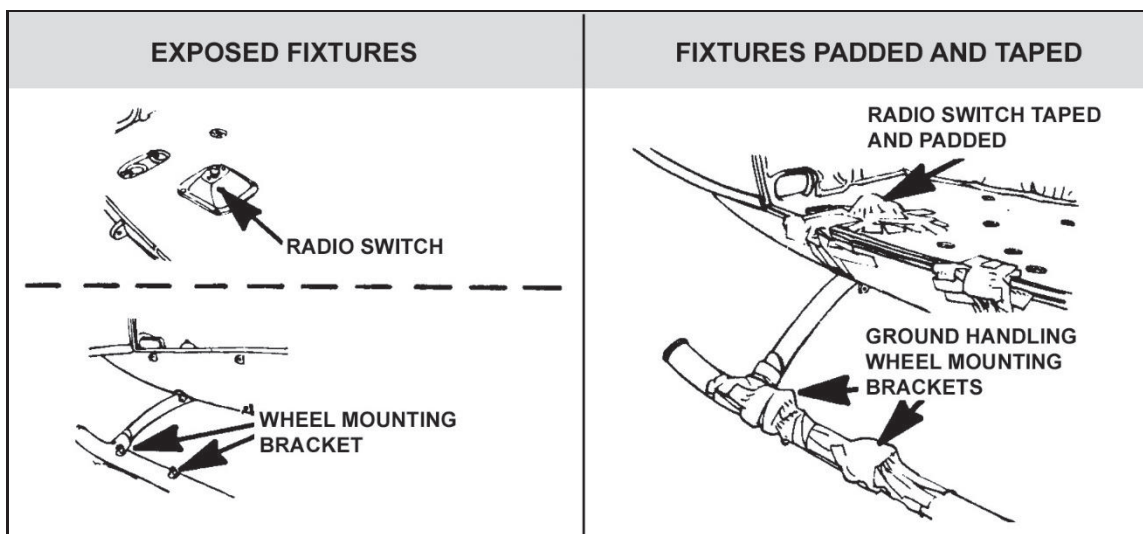


Figure 18-13. UH-1 exposed fixtures padded

Note. Connector snaps will not be used on either the N or Y models of the UH-1

1-1.

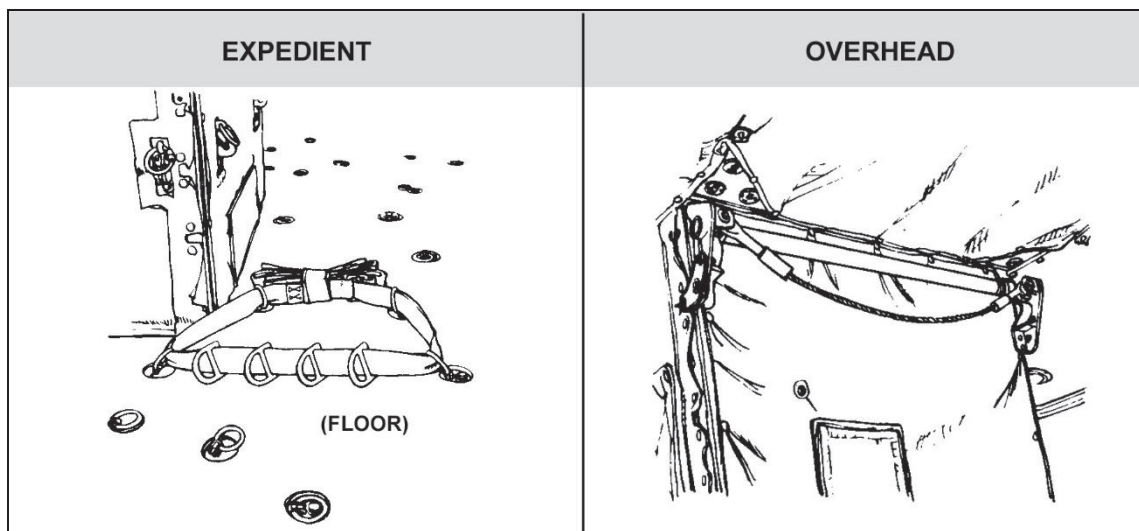


Figure 18-14. UH-1 series anchor line systems

18-47. Install a floor mounted anchor line system (see figure 18-15) using an anchoring strap assembly made from type XXVII nylon webbing (NSN 1670-00-999-3544), Nylon buffers are a suitable replacement for cotton buffers and may be locally manufactured if replacement is needed.

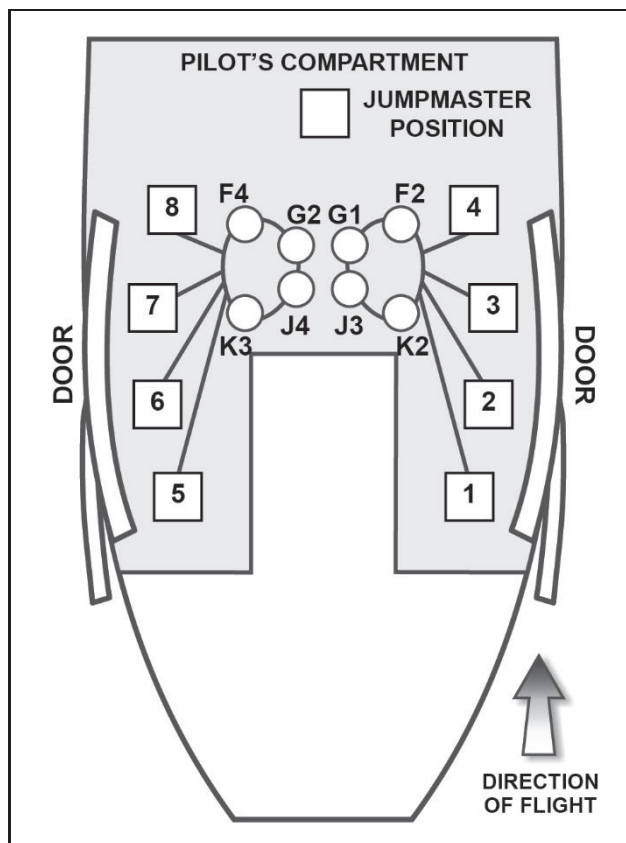


Figure 18-15. UH-1 modified anchor line

INSPECTION AND PREPARATION OF DOORS

18-48. For the right door, using the modified stabilized body extraction system anchoring strap assembly, inspect all components. Then install the four snap hooks with safety wires and four D-rings with cotton buffers on the anchor web loop, with the snap hooks and D-rings facing out in the following order: two snap hooks, four D-rings; two snap hooks. (See figure 18-16.)

18-49. Insert about 30 inches of the web loop running end into the quick-fit adapter to secure the loop. Center the anchor line system on the cargo floor with the quick-fit adapter to the center of the aircraft. (See figure 18-16.) Attach the snap hooks to tie-down fittings G1, F2, K2, and J3. Insert the safety wires and tape the snap hooks.

18-50. Center the quick-fit adapter between tie-down fittings G1 and J3, and tighten the web loop by pulling on the loop running end. Secure the web loop running end with an overhand knot. Fold and tape excess webbing to the web loop.

18-51. The same procedures apply to the left door as the right except that the modified stabilized body extraction system anchoring strap assembly is attached to tie-down ring Nos. G2, F4, K3, and J4. The quick-fit adapter is centered between tie-down fittings G2 and J4.

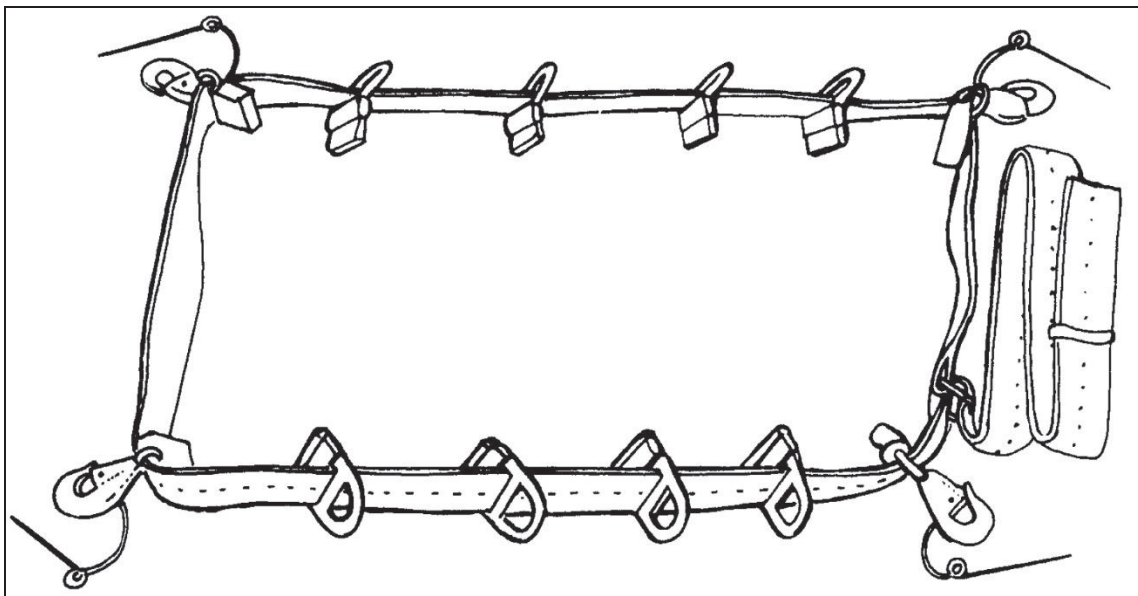


Figure 18-16. UH-1 series modified anchor line

Notes. Check expedient anchor line system during Airborne operation, verifying it has not slipped.

At no time will any steel or wire cable be used as an expedient anchor line system mounted to the floor of the aircraft.

18-52. Before enplaning, the JM and pilot (or pilot's representative) jointly inspect the aircraft to determine the following:

- All protruding objects near the cargo compartment doors are removed or taped.
- The lower right and left aft edges of both cargo compartment doors are padded and taped.
- The anchor line cable or field expedient anchor line system is secure, serviceable, and properly installed.
- A safety belt is available for each jumper.
- A headset is available for the jumpmaster to effect coordination among the jumpmaster, the pilot, and the ground.

LOADING TECHNIQUES AND SEATING CONFIGURATION

18-53. During loading, the PJM ensures that all jumpers have T-11R inserts in place. The jumpers should not approach directly from the front or sides, but at a 45-degree angle to the nose of the aircraft.

18-54. Jumpers one through four enter the cargo compartment through the right door, are hooked up by the JM in numerical order, and seat themselves. (See figures 18-17 and 18-18.) Jumpers five through eight enter the cargo compartment through the left door, are hooked up by the JM in numerical order, and seat themselves. The following should be considered:

- The JM ensures excess static line is stowed while hooking up each jumper.
- The open portion of the static line snap hook faces the front of the aircraft.
- For flights less than 25 minutes long, jumpers may sit in the door with their feet outside the cargo compartment.

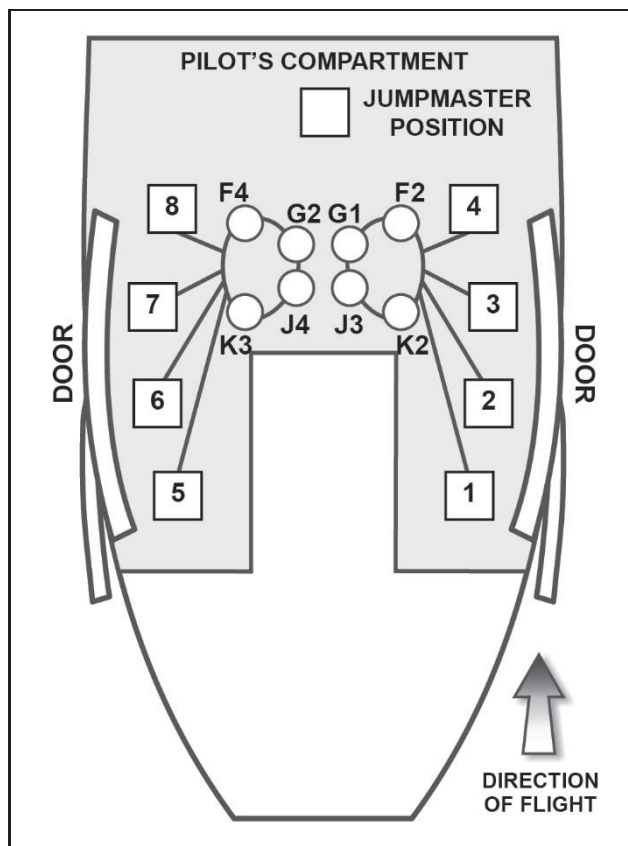


Figure 18-17. UH-1 seating configuration expedient anchor line system

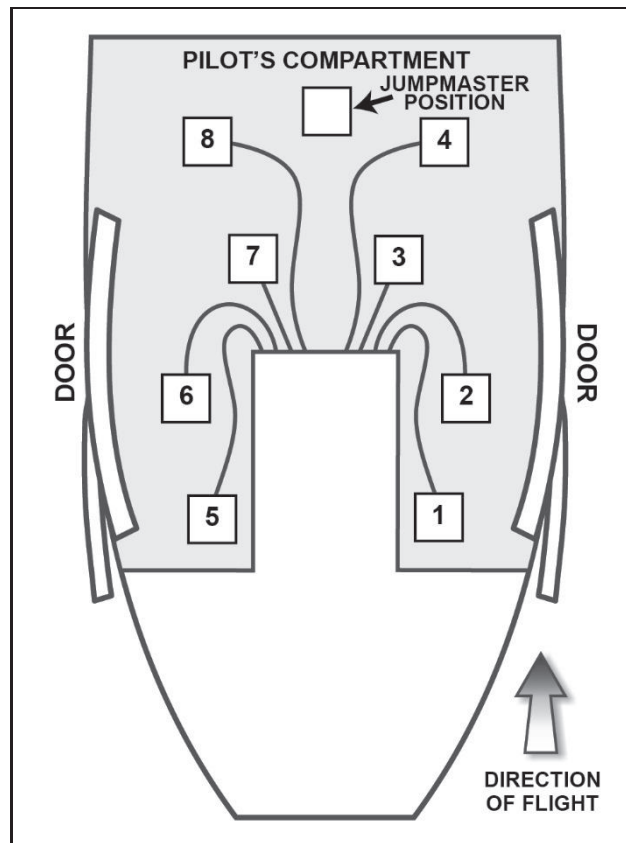


Figure 18-18. UH-1 seating configuration, overhead anchor line system

JUMP COMMANDS

18-55. The JM issues the following commands:

- GET READY. This command is given four minutes or less from drop time, and the aircraft is level for final approach. All seat belts are unlatched and moved to the rear of the jumpers. The JM visually inspects each safety belt to ensure that it is clear of the jumper and the equipment.
- CHECK STATIC LINES. The JM rises and checks the routing of USLMs from the point of attachment to the pack tray to ensure they are properly routed and hooked up.
- CHECK EQUIPMENT. All jumpers check their equipment.
- SOUND OFF FOR EQUIPMENT CHECK. On this command, starting with the No. 1 jumper making eye-to-eye contact the JM, the jumper gives an oral “OK” and a thumbs up to the JM. The remaining jumpers follow in order.
- SIT IN THE DOOR. This command is given by the JM 30 seconds from drop time. Jumpers one and two swing their legs to the right and take sitting positions in the door with feet together outside the cargo compartment. (Jumpers three and four extend their legs outside and move to sitting positions.) They place both hands, palms down, on the floor alongside their thighs, turn their heads toward the JM, and wait. Jumpers five and six swing their legs to the left, take sitting positions in the left door, and follow the same procedure as Nos. 1 and 2. (Jumpers seven and eight extend their legs outside and move to sitting positions.) This command is omitted if the jumpers are already sitting in the door on a short flight.
- STAND BY. This command is given eight to 10 seconds before the command, “GO.”
- GO. At this command, the actions described below occur.

18-56. The JM controls the jumper's exit and ensures a one-second interval between jumpers by giving each jumper the oral command "GO" after the preceding jumper has exited and cleared the aircraft. The jumpers exit in numerical sequence.

18-57. When an air delivery container is being released from the cargo hook, the pilot releases the container and informs the JM when the load has cleared the aircraft. The jumpers exit as explained above.

18-58. If the helicopter has skis, the ski attaching bolts and the sharp edges of the skis are padded and taped on the outboard side of the landing skids aft of the leading edge of the cargo door. Due to the bulk and weight of arctic clothing, individual equipment is not worn. The equipment is dropped as an internal or external load.

SAFETY PRECAUTIONS

18-59. During movement inside the aircraft, the jumper maintains rip cord handle awareness at all times. Crowded conditions inside the cargo compartment and the open doors on both sides of the fuselage pose a hazardous situation regarding accidental activation of the reserve parachute. In addition, T-11 reserve inserts **MUST** be worn by all jumpers.

CAUTION

The AT4JMP/SMJP may not be jumped from aircraft that require jumpers to sit on the floor.

18-60. The JM ensures all jumpers remain secured by their safety belts until the command, "GET READY," is given. The JM prevents (or corrects) excessive static line from flopping about the aircraft. (The JM does not jump from this aircraft.) The JM wears a safety harness.

18-61. Equipment prescribed in chapter 12 of this publication can be worn by jumpers when jumping this aircraft, minus AT4JMP/SMJP. Standard air delivery containers rigged with G-14 cargo parachutes can be delivered from the cargo hook, using the breakaway static line.

18-62. The USL snap hooks of the USLMs are hooked to the anchor line system before liftoff. Door bundles reduce the number of jumpers that can be carried, depending on the size and number of bundles.

18-63. The indicated airspeed of the aircraft during jumps is not less than 50 knots or more than 70 knots. The minimum drop altitude is 1500 feet AGL.

18-64. After the last jumper has cleared the aircraft, the USLMs are retrieved inside the aircraft and secured in an aviator kit bag or universal parachutist recovery bag, or secured by a safety belt to the aircraft floor. The USL snap hooks are not removed from the anchor line cable until the aircraft lands.

Chapter 19

Nonstandard Aircraft

This chapter contains aircraft descriptions, JM procedures, and aircraft preparation techniques for nonstandard rotary-wing and fixed-wing aircraft. The aviation supporting unit prepares the aircraft for equipment and personnel drops to include seat and door removal or installation and rearrangement of seat belts. The installation of a field expedient anchor line cable is the jumpmaster's responsibility. Aircraft preparation is usually accomplished jointly by the loadmaster or crew chief and JM. These aircraft are service tested and approved for personnel airdrop operations.

PROCEDURE MODIFICATIONS IN NONSTANDARD AIRCRAFT

19-1. On some nonstandard aircraft, jumpers are required to utilize a control movement technique in the aircraft and assume a "STAND IN THE DOOR" position. The standard jump commands are modified by substituting the command, "STAND IN THE DOOR" for "STAND BY".

19-2. The control movement technique is a method of moving to the paratroop door without losing balance or tripping. As each jumper begins to move, they utilize a controlled movement technique (slow deliberate walk) and assume an elbow locked position with the arm that is controlling the USLM. Jumpers place the static line control hand so that it is nearly touching the back of the pack tray of the jumper directly in front, which establishes the proper interval between jumpers. They do not place the static line control hand in a position so that it extends past the pack tray of the jumper in front of them.

19-3. At the command, STAND IN THE DOOR, the jumpers use the control movement technique towards the paratroop door, and the safety takes control of the No. 1 jumper's USLM. The No. 1 jumper ensures their arm is not entangled with the USLM and moves into the paratroop door so that the toe of their outboard foot is extended about two inches over the edge of the doorsill or jump platform and their trail foot is about six inches to the rear.

19-4. The No. 1 jumper keeps their feet shoulder-width apart. Their weight is equally distributed on both feet, knees are bent, upper body is straight, head and eyes are to the front, and hands are outside the aircraft, with fingers extended and joined. They are in a position of "coiled alertness" and are ready to exit the aircraft without further weight adjustment. Their hands are not grasping the aircraft but are used to maintain balance.

19-5. The No. 2 jumper is in the control movement technique position, roughly even with the leading edge of the jump door and facing the rear of the aircraft. Follow on jumpers close up behind the preceding jumper, using the control movement technique position to maintain balance.

19-6. At the command, GO, the No. 1 jumper makes a vigorous jump up six inches and out 36 inches to exit, depending on aircraft requirements. The exit action is gained from the legs alone, and the hands are used only to guide the jumper. On some aircraft, the vigorous exit is essential to avoid hitting the aircraft or coming in contact with another jumper.

19-7. The No. 2 jumper and all following jumpers use a control movement technique towards the paratroop door. The safety will take control the jumper's USLM and the jumper ensures their arm is not entangled with the USLM. The No. 2 jumper moves into the paratroop door, takes up a proper door position, and exits the aircraft without command, maintaining a one-second interval between jumpers.

C-7A CARIBOU

19-8. The C-7A is a high wing transport powered by two piston engines. (See figure 19-1.) A total of 24 jumpers may be dropped using the ramp or paratroop doors. The ramp is normally used for dropping jumpers.

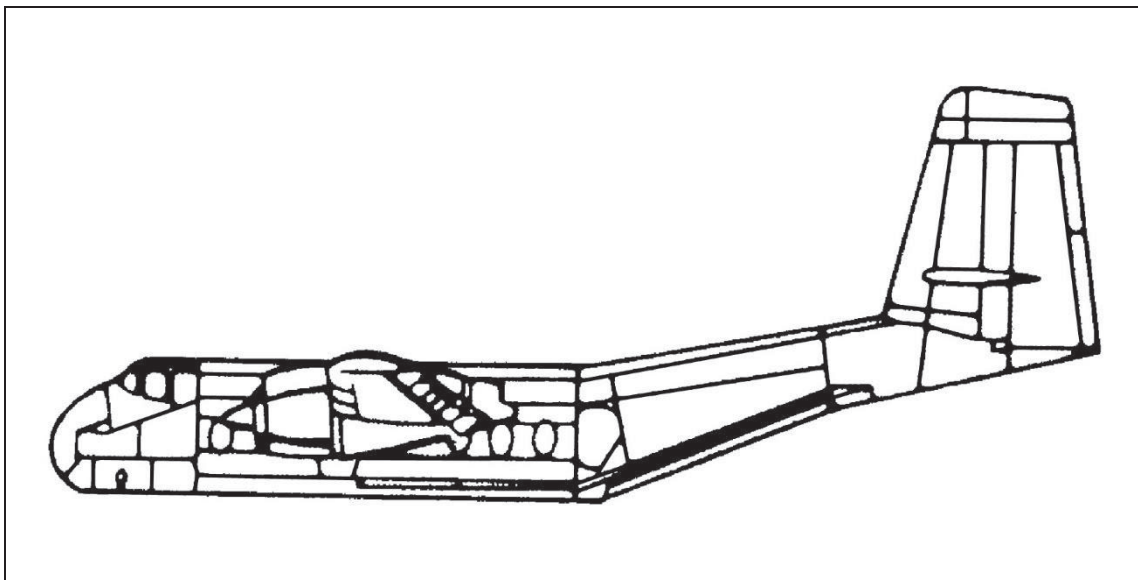


Figure 19-1. C-7A Caribou

19-9. Twenty four jumpers sit in two 12 jumping sticks. Jumpers are loaded over the loading ramp or through the doors. The odd-numbered personnel are seated on the starboard side, and even-numbered personnel are seated on the port side.

19-10. The supervisory personnel required for the C-7A Caribou are as follows:

- Jumpmaster:
 - The JM performs standard aircraft check procedures.
- Safety:
 - The safety will be nonjumping.
- Loadmaster:
 - The loadmaster is responsible for all operations in the cabin. (Aircrew members and nonjumpmaster qualified).

19-11. There are two anchor line cable assemblies in the C-7A:

- The anchor line cable for ramp jumps runs from the reinforced anchor line attachment plate on the forward bulkhead to the anchor line connector near the right side of the aft starboard door.
- The anchor line cable for door jumps runs from the reinforced anchor line attachment plate down the center of the cargo compartment. It is permanently installed.

JUMP COMMANDS

19-12. Jump commands for the C-7A are as follows:

- GET READY. Jumpers respond in the same manner as for other fixed-wing aircraft.
- PORT SIDE PERSONNEL, STAND UP. Jumpers on the left side of the aircraft stand up, raise and secure their seats, and face the ramp of the aircraft.
- STARBOARD SIDE PERSONNEL, STAND UP. Jumpers on the right side of the aircraft stand up, raise and secure their seats, and face the ramp of the aircraft.
- HOOK UP. Even-numbered jumpers hook up between the odd-numbered jumpers to form a continuous stick of jumpers. The jumpers detach the universal static line snap hook from the top

carrying handle of the reserve parachute and hook up to the anchor line cable with the open portion of the snap hook facing outboard, ensuring that the snap hook locks properly. The universal static line is controlled by each jumper in a reverse bight at waist level in the left hand.

- CHECK STATIC LINES, CHECK EQUIPMENT, and SOUND OFF FOR EQUIPMENT CHECK. (These are executed in the same manner as with other fixed-wing aircraft.)
- STAND BY/STAND IN THE DOOR.
 - STAND BY. The No. 1 jumper, upon receiving the command, STAND BY, assumes a standing position near the starboard side of the ramp hinge. The No. 2 jumper stands on the port side of the aircraft slightly to the right of jumper 1. The remaining personnel close up the interval behind the No. 1 jumper.
 - STAND IN THE DOOR. The proper door position is taken by the jumpers in both doors, with the appropriate foot resting on the elevated doorsill. There is no jump platform.
- GO. Personnel exit the aircraft at one-second intervals.

19-13. The No. 1 jumper, upon receiving the command of “GO,” walks off the port side rear corner of the ramp. The remaining jumpers follow at a one-second interval. After the command GO, each jumper will walk off the ramp and snap into a good, tight body position and began the 4000 count for the MC-6 or 6000 count for the T-11 ATPS. (See figure 19-2 for C-7A.)

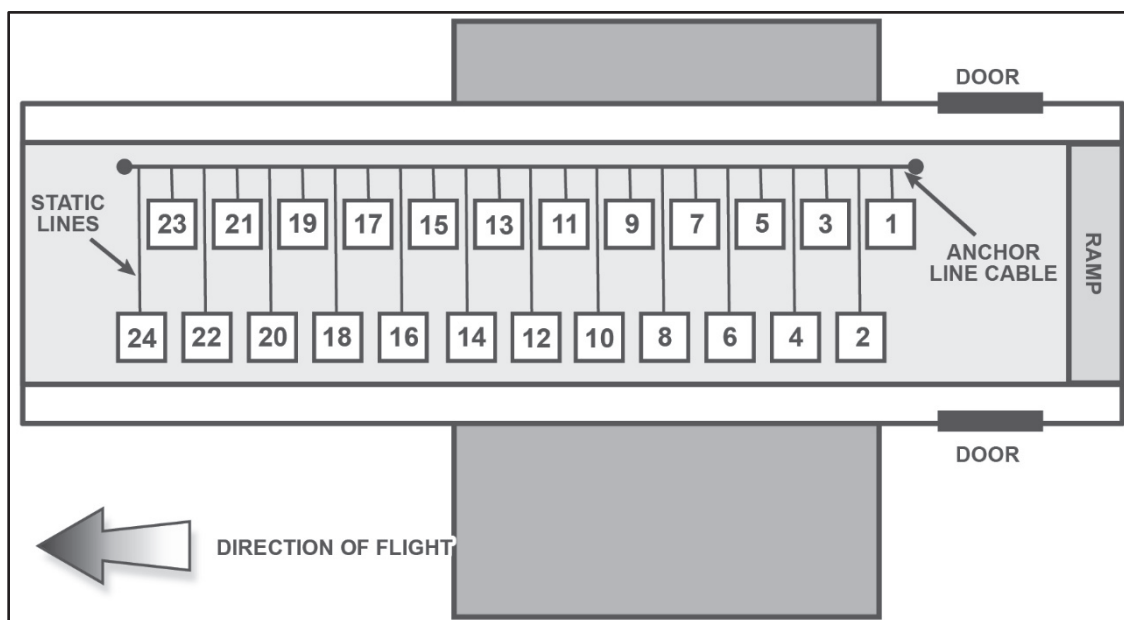


Figure 19-2. C-7A configuration for jumping from the ramp

19-14. When the troop doors are used, simultaneous exits must not be made. The No. 1 jumper exits the starboard door and No. 2 exits the port door one second after No. 1. The remaining jumpers alternate in numerical order at one-second intervals. (See figure 19-3 on page 19-4.)

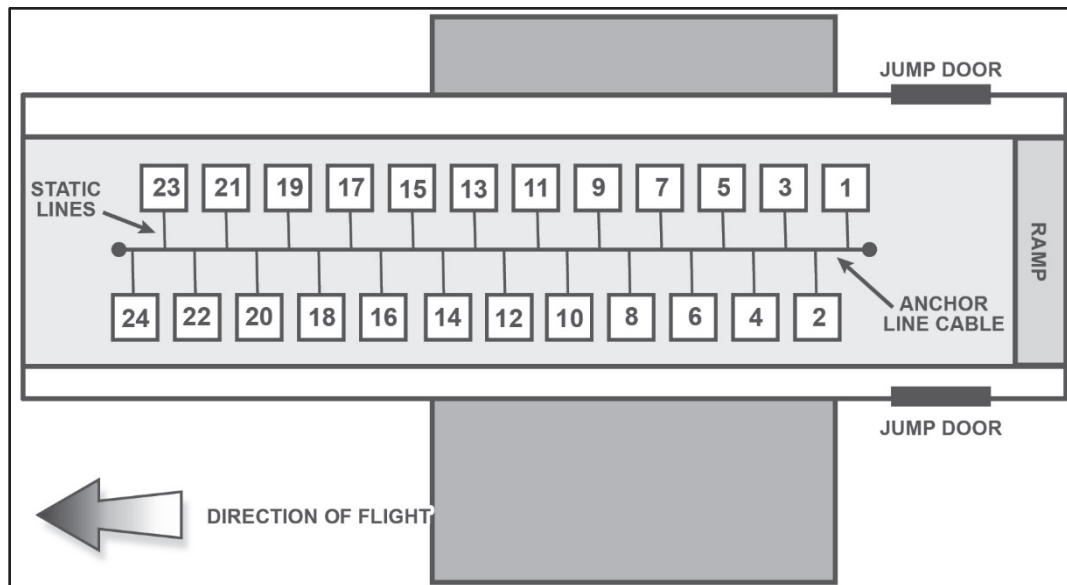


Figure 19-3. C-7A configuration for jumping from the doors

SAFETY PRECAUTIONS

19-15. Jumpers ensure that all seats are secured in the raised position when they stand to hook up. During extreme air turbulence, jumpers take a short bight on the static line and use the center anchor line to steady themselves.

19-16. All jumpers remain off the ramp while it is being lowered to the 15-degree incline for aft end jumping. Jumpers walk down the ramp with feet spread wide to prevent striking the side of the aircraft.

19-17. Upon exit from the aircraft, the jumper brings feet and knees together to form a tight body position. When following heavy equipment loads, jumpers exit between the roller conveyers of the aerial unloading kit.

19-18. The JM or safety ensures personnel are hooked up in an alternating manner to the same anchor line cable and form one continuous stick of jumpers. For door jumping, the JM or safety taps out the jumpers alternately to preclude a simultaneous exit from both sides of the aircraft. If the JM jumps last, they must hook up to the center anchor line cable and exercise caution to control their own USLM and ensure it does not become fouled.

Note. The left troop door may be removed before the operation to allow the JM to look for the DZ. If worn, the restraint harness is attached to the centerline anchor cable as a safety measure.

19-19. When the modular Airborne weapons' cases are jumped from the paratroop doors, they must be reduced to 36 inches in length. When accompanying supplies and equipment are dropped from the paratroop doors, the bundles must be standard air delivery containers no larger than 40-by-24-by-36 inches.

19-20. When ramp bundles are dropped, the 15-foot static line with drogue or the breakaway static line may be used. When door bundles are dropped, the 15-foot static lines with drogues are used with cargo parachutes. The ramp roller conveyor section for the air unloading kit is installed on the port side of the ramp and is used to assist in ejecting the bundles from the ramp. Jumpers Nos. 1 and 2 push the bundles and are current and qualified jumpmasters.

19-21. The speed of the aircraft during the jump is not less than 90 or more than 120 knots. When jumping from the paratroop doors, the crew chief removes the paratroop doors and tapes the rear portion of the door

frames prior to takeoff. The rear tie-down ring, located beneath the tail section, should be removed prior to jumping. The ring can be unscrewed with a breaker bar or similar device.

C-23B/B+ SHERPA

19-22. The C-23B/B+ Sherpa is a twin engine, nonpressurized, turboprop aircraft. (See figure 19-4.) It has a cruise speed of 180 knots and a range of 800 nautical miles. The aircraft can drop 12 combat-equipped jumpers or 16 noncombat-equipped jumpers in the airdrop configuration. This is the base planning figure; actual troop capacity may vary due to aircraft limitations based on weight, density, altitude, and fuel loads.

19-23. Troops may be loaded over the ramp or through the port side door. This section outlines the procedures regarding the conduct of Airborne operations from the C-23B/B+ Sherpa. The primary jump door for personnel and cargo is the rear ramp door. Use of the port side door is no longer authorized for static line personnel jump operations. Static line personnel drops using the port side jump door are authorized only for emergencies.

Note. Only over the ramp procedures are authorized for static line personnel parachute operations.

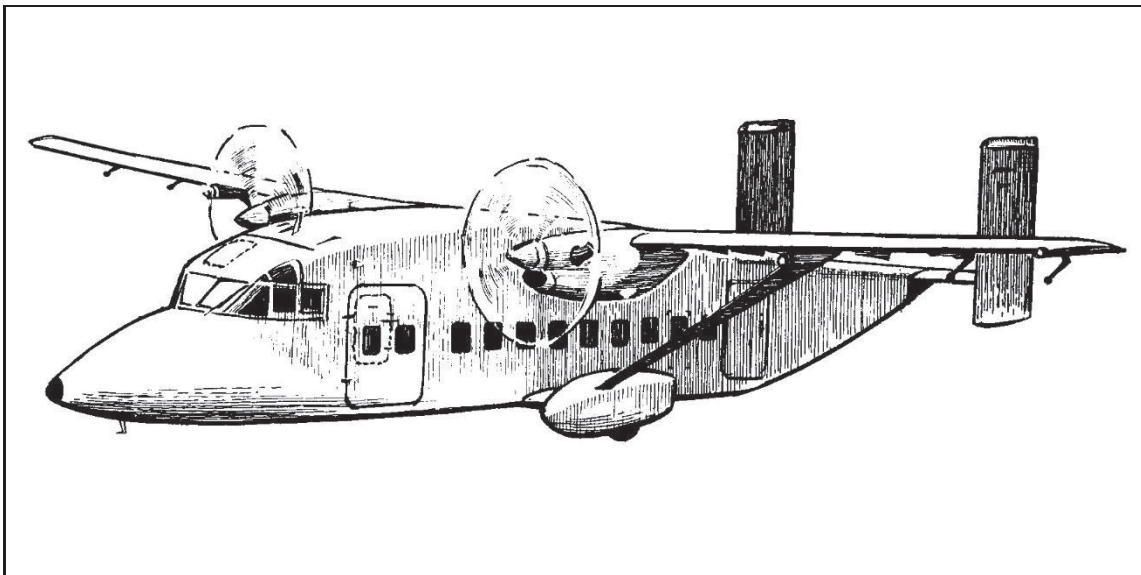


Figure 19-4. C-23B/B+ Sherpa

19-24. The primary method for determining the exit point for jumpers for static line operations is using wind drift indicators. GMRS and VIRS can also be used based on the situation and the mission. The aircraft is also capable of a GPS release if the pilot is given the release point coordinates. Standard drop altitude and speed is 1500 feet AGL at 105 knots.

Note. A thorough briefing between the aircrew and all key personnel is mandatory before any operations involving the C-23 B/B+ Sherpa.

19-25. Jumpers sit in two sticks along the port and starboard side of the aircraft. (See figure 19-5.) Jumpers Nos. 1 through 8 are seated on the port side and Nos. 9 through 16 are seated on the starboard side.

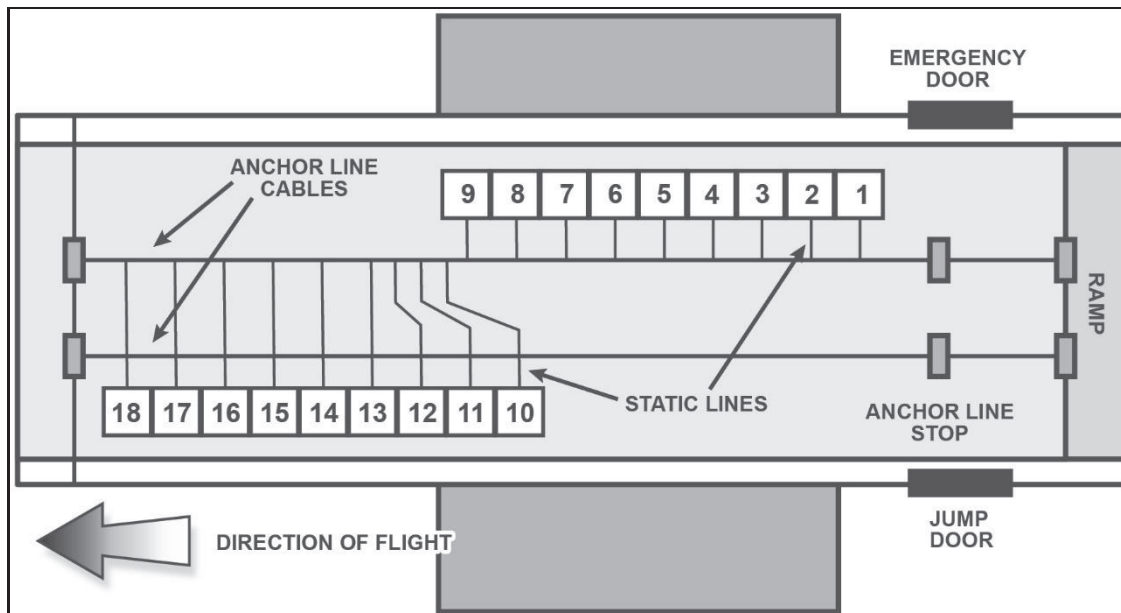


Figure 19-5. Seating configuration

19-26. There are two anchor line assemblies located overhead and running the length of the cabin down the center. The cables run from the reinforced anchor line attachment plate on the forward bulkhead to the anchor line connector at the center of the ramp hinge. Only the starboard side anchor line cable is used for personnel parachute drop operations. Either cable can be used for cargo parachute drop operations.

19-27. The static line retrieval system is a 5000-pound winch located forward in the cabin on the floor and against the bulkhead. The retrieval cable runs up from the winch and along the port side anchor line cable and is attached to the starboard side anchor line cable forward of the anchor line stop. The retrieval system is operated from the rear of the cabin by the flight engineer. It is only operated in case of a towed jumper.

19-28. The supervisory personnel required for the C 23B/B+ Sherpa are as follows:

- Jumpmaster. The jumpmaster will lead the stick out when jumping. The aircraft may be jumped using a nonjumping or static JM.
- Safety. The safety will be nonjumping. One or two safeties may be used when jumping this aircraft.
- Flight engineer. The flight engineer is responsible for all operations in the cabin.

19-29. The jumpmaster and the flight engineer jointly inspect the aircraft. The JM should follow basic aircraft inspection criteria as outlined in the JM handbook. At a minimum, inspection should include—

- Seat configuration and seatbelts (correct number and location).
- Static line retrieval cable and winch (attached correctly and secured).
- Jump lights (may have to wait until the aircraft is powered up).

LOADING JUMPERS, COLD LOAD, AND HOT LOAD

19-30. Jumpers are escorted to the aircraft by designated personnel, but are not loaded until directed to do so by the flight engineer. A step or ladder is required when loading through the port side door. Combat equipment can be worn while loading the aircraft through the port side door or the ramp door.

CAUTION

When loading, jumpers must immediately move forward in the aircraft cabin to prevent the aircraft's tail from striking the ground.

19-31. Cold loading occurs when the aircraft is shut down and the engines are not running. Jumpers may be loaded over the rear ramp or the port side door. The C 23B/B+ has a double-hinged ramp that operates differently from conventional ramps on other aircraft. During ground operations, the ramp door can be lowered to its lowest position (resting on the ground) and equipment and jumpers can easily be loaded. The ramp can also be opened to the half lowered position. The port side door with steps may also be used during cold loading.

19-32. Hot loading occurs when the engines are running. During a multi-lift operation, the aircraft may be hot loaded to expedite the Airborne operation. Jumpers may be loaded by the ramp door or through the port side door. The ramp cannot be lowered to the ground during hot load operations. After loading the aircraft, the jumpers must immediately take their seats and fasten their seatbelts. The safety ensures the jumpers are secured and signals the JM when completed. The JM then signals the flight engineer that they are ready for takeoff.

WARNING

Hot loading aircraft is dangerous. Special control measures should be implemented to ensure jumpers and ground personnel remain clear of the propellers.

JUMP COMMANDS AND TIME WARNINGS

19-33. The following jump commands are issued:

- GET READY.
- PORT SIDE PERSONNEL, STAND UP.
- STARBOARD SIDE PERSONNEL, STAND UP. (If required.)
- HOOK UP. (Spring opening gates toward starboard skin or the starboard anchor line cable.)
- CHECK STATIC LINES.
- CHECK EQUIPMENT.
- SOUND OFF FOR EQUIPMENT CHECK.
- STAND BY. (30 seconds)
- FOLLOW ME. (Jumping JM.)
- GO. (Static JM.)

19-34. The following personnel give these 20-minute time warnings:

- Flight engineer gives JM verbal and visual time warning.
- Jumpmaster gives time warning to jumpers.
- Safety: if jumping combat equipment, releases the cargo tie-down straps and facilitates the attachment of the jumpers' combat equipment.
- Jumpers: if jumping combat equipment, do the following—
 - Stand up.
 - Secure seatbelts and fold seats to the upright position and secure.
 - Attach combat equipment for jumping.

19-35. The following personnel give these 10-minute time warnings:

- Flight engineer gives the JM verbal and visual time warning.
 - Jumpmaster completes the following:
 - Hooks up their USLM to the starboard side anchor line cable.
 - Safety takes control of the JMs USLM.
 - Begins jump commands.
 - Safety takes USLM from JM.
 - Jumpers: all rigging completed.
- 19-36. The following personnel give these six-minute slow down warnings:
- Flight engineer completes the following:
 - Gives JM verbal and visual time warning.
 - After aircraft slows down, the port side door and the rear ramp door are opened. When the rear ramp door and port side door are open and secure, the JM is signaled that the door and ramp are ready. The red light comes on.
 - Jumpmaster continues giving jump commands. Upon completion of jump commands, moves to the port side door to begin spotting procedures, if required.
- 19-37. During the six-minute slow down warning, the following personnel perform these actions:
- If one safety is used: after the command of “CHECK EQUIPMENT,” hands the JMs USLM to the JM and begins inspecting the jumpers from forward to the rear. After completing the inspection, they again secure the JMs USLM. After the JM completes the jump commands, the safety moves to the port side door with the JM and controls the JMs USLM.
 - If two safeties are used: rear safety continues to maintain control of JMs USLM while forward safety conducts standard jumper safety checks.
- 19-38. Jumpers stand up and secure the seats. Upon the command of, “HOOK UP,” jumpers will hook up to the starboard side anchor line cable, opening gates facing starboard fuselage. Follow jump commands from the JM. Take standard bight on USLM.
- 19-39. Personnel will perform the following at the one-minute warning:
- Flight engineer gives verbal and visual time warning to the JM.
 - Jumpmaster continues to monitor the flight path from the port side door and identifies the DZ. JM announces, “ONE MINUTE,” to the jumpers.
 - Safety controls JMs USLM.
 - Jumpers maintain proper control of their USLM and rip cord handle awareness with the nonstatic line hand.
- 19-40. At the 30-second time warning, the JM starts release procedures using GMRS or wind drift indicators. Personnel perform the following:
- Flight engineer ensures green light comes on.
 - Jumpmaster checks green light, tracks panels or exit point, and gives the command of, “STAND BY.”
 - Safety controls JMs USLM.
 - Jumpers maintain proper control of their USLM and rip cord handle awareness with the nonstatic line hand.
- 19-41. At the 30-second time warning, the pilot starts release procedures using GPS/VIRS. Personnel perform the following:
- Flight engineer moves to the starboard side of aircraft and out of the way of jumpers and JM team.
 - Jumpmaster gives the command of, “STAND BY,” turns toward the open ramp, takes control of their USLM from the safety, and keeps an eye on jump caution lights.
 - Safety gives the JM their USLM and moves to the starboard side of aircraft next to the flight engineer.

19-42. At the 10-second time warning, the JM begins release procedures. Personnel perform the following:

- Flight engineer ensures they are clear of the ramp.
- Jumpmaster keeps the panels in sight, stands up, and turns to face the ramp. JM takes the USLM from the safety and waits until panels are 90 degrees from aircraft.
- Safety gives the USLM to the JM and moves to the starboard side of the aircraft.
- Jumpers maintain proper control of their USLM and rip cord handle awareness with the nonstatic line hand.

19-43. At the time of exit, the JM performs release procedures using GMRS or wind drift indicators. Personnel perform the following:

- Flight engineer ensures they are clear of the ramp.
- Jumpmaster identifies exit point, gives the command of, “FOLLOW ME,” and walks straight out the ramp.
- Safety controls the jumper interval (one second), and retrieves USLMs and deployment bags.
- Jumpers exit the ramp straight at one-second intervals.

19-44. At the time of exit, the pilot performs release procedures using GPS/VIRS. The flight engineer ensures they are clear of the ramp.

19-45. Jumpmaster gives the command of, “FOLLOW ME,” when the green light is illuminated, and walks out the ramp along the port side.

- Safety controls the jumper interval (one second), and retrieves USLMs and deployment bags.
- Jumpers exit the ramp straight along the port side at one-second intervals.

CAUTION

Low overhead clearance may require jumpers to duck their heads while exiting the ramp door.

Jumpers must walk STRAIGHT off the ramp and along the port side fuselage and NOT at a 45-degree angle towards the center of the ramp.

Safety must remain clear of the ramp door and against the starboard side fuselage while jumpers exit.

CARGO OPERATIONS

19-46. The C 23B/B+ Sherpa is capable of low level and high altitude cargo delivery operations. Bundle weight on the ramp should not exceed 500 pounds. The following are procedures for cargo airdrops without personnel:

- The pilot sets up the approach, airspeed, and altitude. They command the flight engineer to, “STAND BY.”
- The flight engineer ensures the bundle static line is hooked up and moves the cargo to the edge of the ramp.
- The pilot gives countdown to the flight engineer—“FIVE, FOUR, THREE, TWO, ONE, NOW!”
- The flight engineer releases the cargo over the ramp and retrieves the static line or clevis.

19-47. The following are procedures for cargo airdrops with personnel:

- The JM and safety coordinate and rehearse cargo release procedures with the flight engineer before the mission.
- Cargo may be released before or after jumpers exit.
- The safety retrieves static line or clevis after the drop.

Note. Based on the mission, the JM selects the breakaway or nonbreakaway 15-foot static line.

CAUTION

No more than four jumpers are authorized aft of the port side jump door prior to exit.

Excessive weight load and cargo shift in the ramp door area prior to exit should be avoided.

C-212 (CASA 212)

19-48. The C-212 is a twin engine, high wing, multipurpose light transport designed for operations involving short, rough airfields. (See figure 19-6.) The aircraft can transport 15 combat-equipped jumpers in the airdrop mode using the port door. Troops are loaded over the ramp.

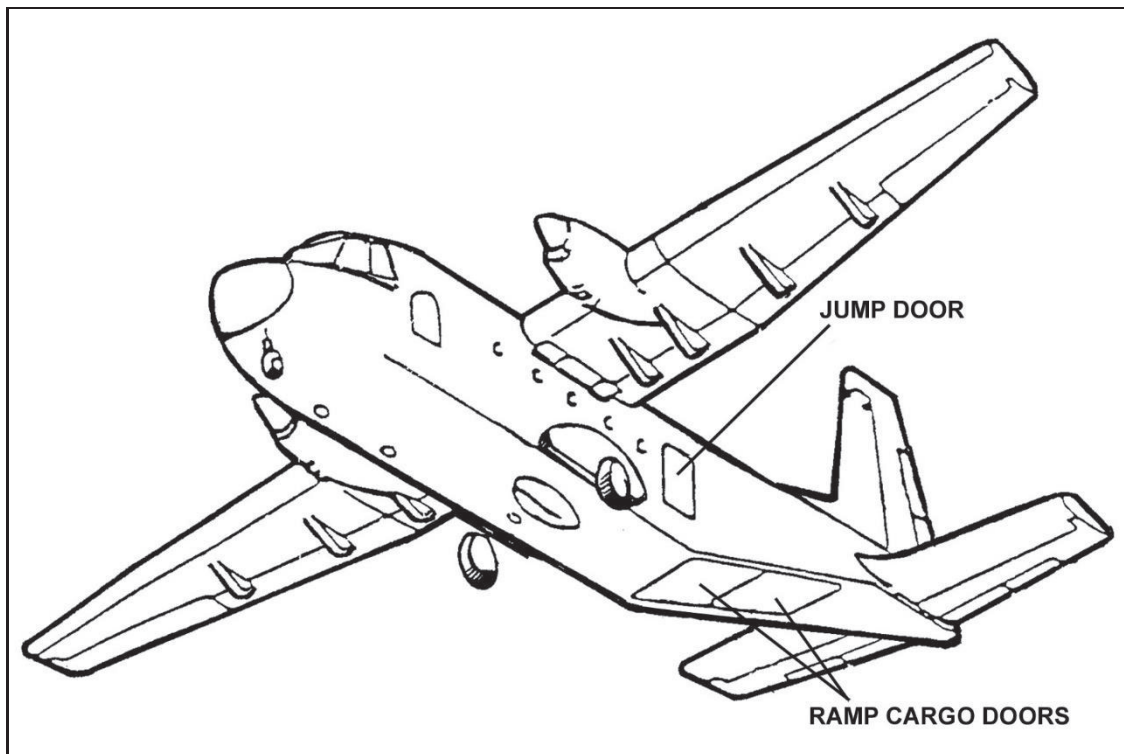


Figure 19-6. C-212 (Casa 212)

19-49. Fifteen jumpers sit in two sticks of jumpers. (See figure 19-7.) The odd numbered personnel (eight) are seated on the starboard side and the even numbered personnel (seven) are seated on the port side.

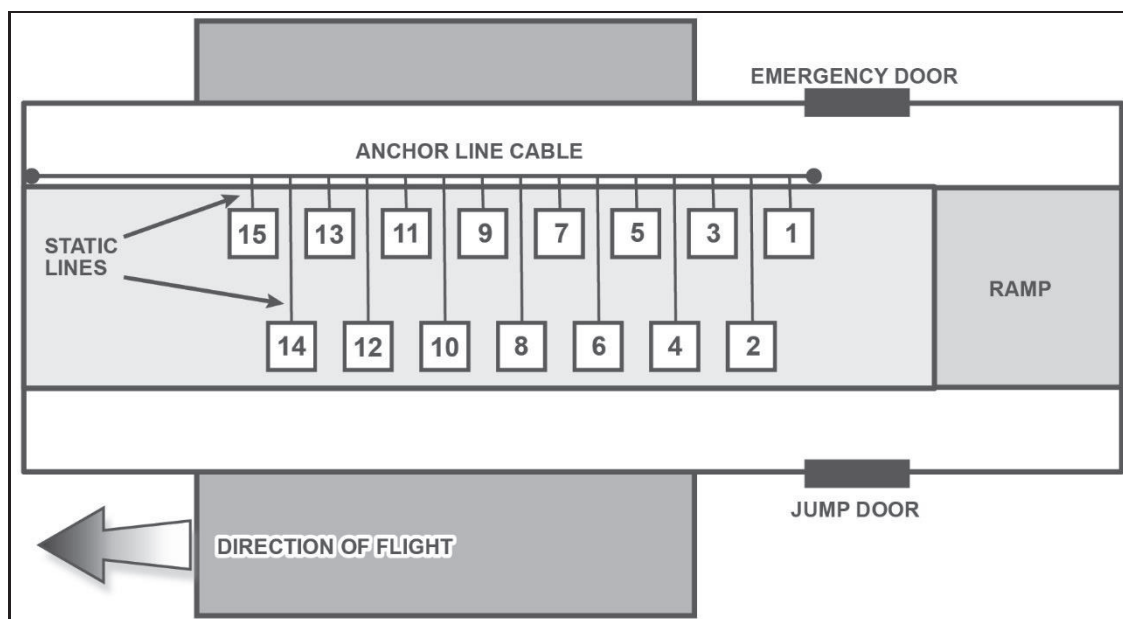


Figure 19-7. C-212 seating configuration

19-50. There is one anchor line cable assembly in the C-212. It runs from the reinforced anchor line attachment plate on the forward bulkhead to the anchor line connector near the right side of the aft starboard emergency door.

19-51. The supervisory personnel required for the C-212 Casa are as follows:

- Jumpmaster performs standard aircraft check procedures
- Safety will be nonjumping.
- Loadmaster or crew chief is responsible for all operations in the cabin. (Aircrew member and nonjumpmaster qualified).

JUMP COMMANDS AND SAFETY PRECAUTIONS

19-52. The following jump commands are used with the C-212 aircraft:

- GET READY.
- STARBOARD SIDE PERSONNEL, STAND UP.
- PORT SIDE PERSONNEL, STAND UP.
- HOOK UP. On this command, the odd numbered personnel hook up between the even numbered personnel to form a continuous stick of jumpers, hooking the open portion of the universal static line snap hook facing inboard over the left shoulder. All jumpers take up a reverse bight.
- CHECK STATIC LINES, CHECK EQUIPMENT, and SOUND OFF FOR EQUIPMENT CHECK. These commands are executed in same manner as other fixed-wing aircraft.
- STAND IN THE DOOR (if a paratroop door exit) or STAND BY (if an over the ramp exit). A proper exit position is taken by the jumper.
- GO. Personnel exit the aircraft at one-second intervals.

19-53. Safety precautions for the C-212 include the actions described below. Jumpers:

- Ensure that all seats are secured in the raised position when jumpers stand to hook up. During extreme air turbulence, jumpers take a short bight on the USLM to steady themselves.
- Remain off the ramp while it is being lowered for over the ramp operations.

Note. To assist the JM in looking for the DZ, the troop door may be removed before the Airborne operation begins. The safety restraint harness is attached to the 500-pound tie-down positions on the floor of the aircraft, out of the way of the jumpers.

19-54. The JM or safety ensures all personnel hook up properly. If the JM jumps last, they must hook up to the center anchor line cable and exercise caution to control their own USLM and ensure it does not become fouled.

Note. On aircraft that do not have a working communication system with the cargo area of the aircraft, the following safety measure is recommended: one ring on the alarm bell signals the JM to look at the jump light or communicate with the cockpit.

19-55. When weapons cases are jumped from the paratroop door, they must be reduced to 36 inches in length. When accompanying supplies and equipment are dropped from the paratroop door, the bundles must be standard air delivery containers no larger than 40-by-24-by-36-inches.

19-56. When ramp bundles are dropped, either the 15-foot static line with drogue or the breakaway static line may be used. When door bundles are dropped, the 15-foot static line with drogue is used with cargo parachutes. When ramp bundles are dropped, troops may follow out the paratroop door. The JM and safety or loadmaster push the bundles out.

19-57. Aircraft speed during the jump is 90 to 110 knots. When jumpers are jumping from the paratroop door, the paratroop door may be opened or removed and set into the door recess provided on the ramp.

19-58. When conducting bundle operations from the ramp, the JM must close the paratroop door. The paratroop door may be opened or removed before the ramp is lowered. The antenna, located beneath the tail section, must be removed prior to ramp bundle operations.

19-59. Towed jumper procedures outlined in chapter 10 of this publication will be followed for the C-212.

AIRCRAFT CONFIGURATION FOR OVER THE RAMP

CAUTION

Over the ramp Airborne operations are authorized only when the retrieval system is operational.

19-60. The aircraft is configured for a static line personnel airdrop. The flight engineer ensures one of each of the following items of equipment is needed:

- Hand winch.
- Static line deflector block.
- Retrieval bar.
- Retrieval strap.
- Extended interphone cord.
- A 2500 pound tie-down strap.
- A 5000-pound tie-down strap.
- One 3-foot length of one-inch tubular nylon.
- Cloth backed adhesive tape.
- Anchor cable.
- Two restraint harnesses.

- 19-61. The flight engineer will install and preflight inspect the following equipment:
- Attach hand winch to right tie-down row in zone 1 and check for security.
 - Inspect cable for broken wires or kinks and check for operation.
 - Ensure static line deflector block is attached to the right side of the ramp. Cover the bolt head with tape.
 - Inspect retrieval base on board and attaching brackets.
 - Install and check extended interphone cord for operation.
 - Fit and adjust restraint harnesses.
 - Ensure that the three-foot length of one-inch tubular nylon and the 5000-pound tie-down strap are secured and available for immediate use.
- 19-62. The jumpmaster or safety follows the checklist for the C-212 that is described below:
- Seats:
 - Adequate seats are available for troop load.
 - All seats have safety belts.
 - Seat backs are secure.
 - Seats are serviceable.
 - There are no projections through seats.
 - Floor:
 - Nonskid surface covering is in good condition.
 - Floor is clean and safe to walk on.
 - Loose equipment is secured and does not interfere with jumpers.
 - Paratroop door:
 - There are no sharp or protruding edges on door frame.
 - Door opens and closes easily.
 - Door sits in ramp recess properly.
 - Jump lights (two sets):
 - Set 1: above port aft jump door.
 - Set 2: above starboard aft emergency door.
 - Also check alarm bell; it is the signal for exiting.
 - Static line anchor cable system:
 - Forward support beam, which includes inspecting that bolts, nuts, and safety wire are present. The anchor cable is attached to the centerline anchor point. The cable bolt, locking bolt, nut, and safety wire are present. Check anchor line tension indicator; the red line indicator should not be seen.
 - Anchor line cable, which includes inspecting that the cable has no breaks, frays, or kinks. Also inspect each anchor line cable individually from the forward portion of the aircraft to the aft end (the direction a jumper's universal static line snap hook will travel).
 - Cable is clean and free of rust.
 - Swage is present.
 - Anchor line cable aft support, which includes ensuring the following are present:
 - Cable.
 - Locking bolt and nut.
 - Safety wire.
 - Emergency equipment:
 - First aid kits are onboard (two).
 - Fire extinguishers are onboard (two).

- Alarm system is operational.
- Sufficient emergency parachutes are available.
- Miscellaneous:
 - Lighting system is operational.
 - airsickness bags are available.
 - Jumpmaster or safety kit (extra equipment) is onboard.
 - Earplugs are available.

Note. Loose equipment and paratroop door (removed) are lashed to the cargo ramp or to the rear of the forward bulkhead.

Chapter 20

Airdrop Procedures

This chapter explains drop altitudes, airdrop methods, airdrop release methods, and personnel.

DROP ALTITUDES AND AIRDROP PROCEDURES

20-1. The DZSTL measures drop altitude in feet AGL from the highest point on the DZ (the highest field elevation) to the aircraft (See example table 20-1.) In the case of combat (wartime) operations, Airborne and airlift commanders jointly determine drop altitudes.

Table 20-1. Example calculation of drop altitude in feet

A.	Distance from highest field elevation in drop zone to desired altitude of aircraft, in feet.	800 feet AGL
B.	Highest field elevation in feet above sea level, rounded up to next 50 (for example, round 505 up to 550).	+550 feet field elevation
C.	Drop altitude in feet indicated.	1350 feet MSL
LEGEND AGL – above ground level; MSL – mean sea level		

Note. If the field elevation is in meters, it must be multiplied by 3.28 to convert to feet.

20-2. For airdrop altitudes by load and aircraft type for different types of training missions see table 20-2 on page 20-2. For minimum aerial delivery altitudes personnel, A-series containers, and heavy equipment drops see table 20-3 on page 20-2.

20-3. The aircraft altimeter displays altitude in feet MSL, not in AGL (feet above the highest point on the ground). The pilot might request the drop altitude in “feet MSL.” Calculate this by simply following this example:

- Obtain the drop altitude, which is the distance in feet from the highest point on the drop zone (field elevation) to the desired altitude of the aircraft. In this example, drop altitude equals 800 feet.

- Obtain the highest field elevation in feet above sea level. Round this number up to the nearest multiple of 50 (round 537 up to 550, for example). For purposes of obtaining the drop altitude in feet indicated, use this number for field elevation.
- Sum the two numbers obtained to yield drop altitude in feet indicated.

Table 20-2. Airdrop altitude for rotary-wing and fixed-wing aircraft

AIRCRAFT	DAY OR NIGHT AGL (IN FEET)
Rotary Wing (All Services, Rotary Wing)	
Personnel >90 KTs (N/A for UH aircraft)	1500 1250 minimum
Door bundles	300 (day) 500 (night)
Fixed Wing (Troop Carrier)	
Personnel	1250 maximum
Basic Airborne training	1250
Training	1000
Tactical	800
Door bundles	300 minimum
Heavy equipment	1100
IMC/SKE. Drop altitude is 500 feet above highest obstacle that falls within three miles either side of DZ run-in. CDS using G-13 or any other parachute, minimum drop altitude is 400 feet AGL. CDS using G-14 parachute can drop from 300 feet AGL.	
LEGEND AGL – above ground level; CDS – container delivery system; DZ – drop zone; IMC/SKE – instrument meteorological conditions/station keeping equipment; KTs - knots; N/A – not applicable; UH – utility helicopter	

Table 20-3. Minimum aerial delivery altitudes (in feet)

PERSONNEL	FEET
Tactical training	800
Basic Airborne trainees	1250
SATB	500
TTB (use standard drop altitude of simulated load)	500
Door bundles, G-14 or T-10 (C-17)	300
Door bundles, G-14 (C-130)	400
Door bundles, T-10 (C-17)	150
Door bundles, LCLA (C-130)	

Table 20-3. Minimum aerial delivery altitudes (in feet) (continued)

CONTAINER DELIVERY SYSTEM	FEET
G-12D: One to six bundles, single parachute	400
Seven or more bundles, single parachute	600
Cluster of two parachutes	400
G-12E: Single parachute	550
Cluster of two	400
G-13: Single parachute or cluster of two	500
Cluster of three	300
G-14: Single parachute or cluster of two	400
Cluster of three	400
12-foot high velocity	500
26-foot high velocity	150
LCLA single parachute	
SATB-C/TTB (see parachute load to be simulated)	
HEAVY EQUIPMENT	FEET
G-12E	550
G-11B: Single parachute	900
Cluster of two to seven	1100
Cluster of eight	1300
G-11C: Cluster of eight	1300
SATB-H/TTB (see parachute load to be simulated)	
ROTARY-WING AERIAL DELIVERY	FEET
Personnel: Day or night	
Below 90 KIAS	1500
90 KIAS or greater (CH aircraft)	1250
minimum	2999
Maximum altitude for static line jump	300
Bundles: Day	500
Night	
LEGEND CH – cargo helicopter; C/TTB – clustered/tactical training bundle; H/TTB – heavy/tactical training bundle; KIAS - knots indicated airspeed; LCLA – low cost low altitude; SATB – simulated airdrop training bundle; TTB – tactical training bundle	

TYPES AND METHODS OF AIRDROPS

20-4. The type of load determines the type of airdrop. The three types of airdrop are low velocity, high velocity, and free-drop. The type of airdrop normally determines the location of the control center. The airdrops are explained as follows:

- High velocity: a drogue chute stabilizes and keeps equipment upright but does not slow the descent (for example, a 12-foot, high velocity parachute on a door bundle).
- Low velocity: a parachute slows the rate of descent for a soft landing (for example, personnel and cargo parachutes).
- Free drop: is cargo that has no device to stabilize or slow the rate of descent (for example, durable items such as clothing bundles).

20-5. The three methods of airdrops are:

- Personnel and door bundles: personnel self-exit, door bundles are pushed from the paratroop door, or aircraft ramp and door.
- Gravity: the aircraft maintains a “nose-high” attitude (if required) and in-flight release of load restraints, which allows the load to roll out of the aircraft. A rigging system may be used to initiate and accelerate load movement.
- Extraction: an extraction parachute pulls the load from the cargo compartment.

CAUTION

During over the ramp combination airdrops (CDS and/or high explosive followed by personnel), there must be a three-second interval between the exit of equipment and the exit of jumpers in order to avoid possible jumper entanglement during over the ramp operations. The DZSO or DZSTL must follow the procedures for heavy drop operations, but observe the jumpers as they exit the aircraft.

20-6. To ensure that the airdrop is safe and that equipment and personnel can be recovered or employed to accomplish the mission, the drop zone and adjacent areas should be free of obstacles. Examples of obstacles are—

- Trees 35 feet or higher impeding recovery of personnel or equipment.
- Water four-feet deep and 40-feet wide within 1000 meters from any portion of the surveyed DZ.
- High-tension wire that is carrying active current of 50 volts or greater. (Should be turned off prior to drop.)
- Any other conditions that may injure jumpers or damage equipment, such as inactive electric wires, barbed wire fences, swamps, ditches, and gullies.

20-7. The DZ should be sited at least 1000 meters from a power line. If this is impractical and a power line is within 1000 meters of any boundary of the DZ, then the DZSO must coordinate with the local power company to shut off the power to that line not later than 15 minutes prior to time on target. If this is impossible, then the flying mission commander, aircrew, and JM must assess the risk and consider at least the following:

- Type of jump.
- Jumpers' experience.
- Aircrew's experience.
- Ceiling.
- Surface and altitude wind limits are required to approve, suspend, or cancel.

20-8. To further minimize risks, the DZSO and JM should consider how they might alter the mission profile to raise or lower drop altitudes, change the DZ run in or escape headings, or remove inexperienced jumpers

from the stick. Also, if they can, they should clearly mark power lines with lights, VS 17 panels, or any other conspicuous marking.

Note. Refer to appendix D for DZ risk assessment.

DROP ZONES

20-9. The unit must have access to and from the DZ to recover personnel, equipment, or both, or to conduct troop movement. Drop zones with no roads leading to them or those next to a river with no bridges are examples of impeded access to areas.

20-10. Air routes to and from the DZ should not conflict with other air operations or restrictive terrain, or with manmade objects such as television or radio towers. Other considerations are:

- No fly areas (restricted operations zones).
- Obstacles to the aircraft (man-made items).
- Terrain above the drop zone.
- Enemy situation.

20-11. The following information provides minimum peacetime sizes when using fixed-wing and rotary-wing aircraft and must be adhered to unless a waiver is issued in writing according to service regulations. During contingency or wartime missions, DZ sizes may also be waived. However, size requirements remain a joint responsibility of the airlift commander and the Airborne commander.

Note. To convert yards to meters, multiply yards times .9144 (yards x .9144). To convert meters to yards, divide meters by .9144 (meters ÷ .9144).

20-12. The distance required for personnel and door bundles for GMRS/VIRS drop zones is determined by the use of the formula $D=RT$. The minimum size is 275 meters by 275 meters for a single shipment for USASOC and other service missions. Refer to table 20-4 for the CARP to determine size requirements for all CARP drop zones and GMRS/VIRS equipment drops.

Table 20-4. Computed air release point chart

ALTITUDE (FEET AGL)	WIDTH (NOTES 1, 2, AND 4)	LENGTH (NOTES 3 AND 4)		
C-130 CDS/CRS/CRL/LCADS-LV				
		Single containers	Double containers	
To 600 feet	400 yards/366 meters	1	1-2	400 yards/355 meters
		2	3-4	450 yards/412 meters
		3	5-6	500 yards/457 meters
		4	7-8	550 yards/503 meters
		5-8	9-16	700 yards/640 meters
		9-12	17-24	850 yards/777 meters
Above 600 feet	Add 40 yards/36 meters to width and length for each 100 feet above 600 feet. Add 20 yards/18 meters to each side and end of the DZ.			

Table 20-4. Computed air release point chart (continued)

ALTITUDE (FEET AGL)	WIDTH (NOTES 1, 2, AND 4)	LENGTH (NOTES 3 AND 4)		
CDS/LCADS-LV (C-17)				
		Single containers	Double containers	
To 600 feet	450 yards/412 meters	1	1-2	590 yards/540 meters
		2	3-4	615 yards/562 meters
		3	5-6	665 yards/608 meters
		4-8	7-16	765 yards/700 meters
		9-14	17-28	915 yards/837 meters
		15-20	29-40	1065 yards/974 meters
Above 600 feet	Add 40 yards/23 meters to width and length for each 100 feet above 600 feet. Add 20 yards/18 meters to each side and end of the DZ.			
High Velocity CDS/HV-LCADS (using 12-foot, 22-foot, or 26-foot ring slot parachutes)				
To 3000 feet	580 yards/530 meters	660 yards/604 meters		
		Add 50 yards/46 meters to trailing edge for each additional row of containers.		
Above 3000 feet	Add 25 yards/23 meters to each side and 100 yards/91 meters to each end for every 1000-foot increase in drop altitude.			
High Altitude Airdrop Resupply System CDS				
To 3000 feet	500 yards/457 meters	1-8 containers	1200 yards/1098 meters	
		9 or more containers	1900 yards/1739 meters	
Above 3000 feet	Add 25 yards/23 meters to each side and 50 yards/46 meters to each end for every 1000-foot increase in drop altitude.			
High Speed Low Level Aerial Delivery System				
	300 yards/274 meters	600 yards/549 meters		
Personnel (Static Line)				
To 1000 feet	600 yards/549 meters	One jumper	600 yards/549 meters	
		Additional jumpers	Add 75 yards/69 meters to trailing edge for each additional jumper (PI for special tactics, para-rescue, and RQS assigned or supporting SERE personnel) Include safety zone, if required.	
Above 1000 feet	Add 30 yards/28 meters to width and length for each 100 feet above 1000 feet. Add 15 yards/14 meters to each side of the DZ, and 15 yards/14 meters to each end.			

Table 20-4. Computed air release point chart (continued)

ALTITUDE (FEET AGL)	WIDTH (NOTES 1, 2, AND 4)	LENGTH (NOTES 3 AND 4)	
Heavy Equipment			
To 1100 feet	600 yards/549 meters	One platform	1000 yards/915 meters
		Additional platforms	(C-130) add 400 yards/366 meters and (C-17) 500 yards/457 meters to the trailing edge for each additional platform.
Above 1100 feet	Add 30 yards/28 meters to width and length for each 100 feet above 1100 feet. Add 15 yards/14 meters to each side and end of the DZ.		
C-17 Dual Row Airdrop System			
To 1200 feet	600 yards/549 meters	One platform	1000 yards/915 meters
		Additional platforms	(C-130) add yards/ 366 meters and (C-17) 500 yards/457 meters to the trailing edge for each additional platform.
Above 1200 feet	Add 30 yards/28 meters to the width and length for each 100 feet above 1200 feet. Add 15 yards/14 meters to each side and end of the DZ.		
NOTE:	18-foot platforms: the number of platforms used to calculate the minimum size drop zone is determined by platform placement, and the number of platforms actually onboard the aircraft. The number of empty positions aft of an actual platform or pallet being dropped must be added to the overall number of pallets. For example, one platform in position 1L and one platform in position 4R would require calculations based on five platforms. 463L or eight-foot training platforms: minimum drop zone is 1600 yards long by 600 yards wide for the two or three pallet or platform training configuration.		
C-130E, H, J/C-17 JPADS Guided Systems (Note 5)			
		Minimum DZ Size (Radius)	
Airdrop Altitude (AGL)		Yards	Meters
Less than 9000 feet		328	300
9000 to 15,000 feet		546	500
15,000 to 25,000 feet		765	700
More than 25,000 feet		No data	No data

Table 20-4. Computed air release point chart (continued)

Note 1. C-130 DZ width adjustments (N/A for combat search and rescue assigned/gained aircraft, or Air Force Special Operations Command assigned/gained aircraft operational control to U.S. Special Operations Command or a theater special operations command):

- Day visual formations; increase width by 100 yards/92 meters (50 yards/46 meters on each side).
- Night visual single ship; increase width by 100 yards/92 meters (50 yards/46 meters on each side). (N/A for C-130J GPS drops.)
- Night visual formation; increase width by 200 yards/184 meters (100 yards/92 meters on each side).
- Station keeping equipment formation; increase width by 400 yards/366 meters (200 yards/184 meters on each side).

Note 2. C-17 DZ width adjustments (more than one may be required):

- Day/night visual formation; increase width by 100 yards/92 meters (50 yards/46 meters on each side).
- Night pilot directed airdrops; increase width by 100 yards/92 meters (50 yards/46 meters on each side). (N/A for C-17 GPS drops.)
- Station keeping equipment formation (heavy equipment or CDS); increase width by 400 yards/366 meters (200 yards/183 meters on each side).
- Personnel formation; minimum DZ basic width using center PIs is 1240 yards for two-ship elements and 1800 yards for three-ship elements. When using offset PIs, minimum basic width is 1050 yards for two-ship elements and 1300 yards for three-ship elements. Drop altitude adjustments from chart still apply.

Note 3. Length adjustments (N/A for AFSOC assigned or gained, aircraft OPCODE to USSOCOM, or a theater special operations command):

- Night visual airdrops; increase length by 100 yards/92 meters (50 yards/46 meters on each end).

Note 4. I-CDS DZ length and width requirements will be in compliance with AFI 13-217.

Note 5. Normal training minimum JPADS DZ size requirements:

- These minimum DZ size requirements are for normal JPADS training outside of Yuma Proving Grounds. The DZ size requirements at YPG are at the discretion AMC/A3D, Natick Soldier Systems Center and YPG as necessary for testing, development and evaluation of JPADS. JPADS upgrade training for aircrews may occur at YPG or DZ sizes smaller than stated above with the concurrence of AMC/A3 D.
- During contingency use, recommended minimum JPADS DZ size is 200-300 meters (218-328 yards) radius circular. Ultimately, minimum JPADS DZ size rests with the user and the joint force commander (or director of mobility forces is so delegated).

LEGEND

AFSOC – Air Force Special Operations Command; AGL – above ground level; AMC/A3 D – Air Mobility Command Director of Operations; CDS - container delivery system; CRL - container ramp load; CRS - Cargo Release System; DZ – drop zone; GPS – Global Positioning System; HV – high velocity; I-CDS – Improved Container Delivery System; JPADS - Joint Precision Airdrop System; LCADS-LV - low cost aerial delivery system-low velocity; N/A – not applicable; OPCODE – operational control; PI – point of impact; RQS – rescue squadron; SERE - survival evasion resistance escape (specialists); USSOCOM – U.S. Special Operations Command; YPG – Yuma Proving Grounds

AIRDROP RELEASE METHODS AND PERSONNEL

20-13. The number and type of aircraft that air delivers personnel and equipment usually dictates the type and composition of the drop zone support party, which can be tailored for a mission.

Note. The unit mission request for aircraft specifies the type of drop method to be used, such as CARP, GMRS, VIRS, or WSVC, and the composition of the ground support party (STS and DZSO, DZST and DZSO).

20-14. To ensure accurate delivery on the DZ, JMs use four different airdrop methods. Each method uses various input from the ground and air in the calculation formula.

20-15. The CARP is the most often used method in aerial delivery for conventional Airborne operations. The CARP is computed by the aircrew (navigator) and determines the release point from the air. The GMRS is computed by the DZSTL and determines the release point from the ground.

20-16. The VIRS is one of the two methods used by services (U.S. Army and U.S. Marine Corps) having rotary-wing and fixed-wing aircraft for small DZs, for dropping a specified number of personnel. VIRS is computed by the DZSTL; the release point is indicated by an oral command to the aircraft.

20-17. The WSVC is one of two methods used by services having rotary-wing and fixed-wing aircraft for DZs for dropping a specified number of personnel. The release point is JM-directed and is the only method not requiring markings on the DZ.

20-18. Jumpmaster spotted and jumpmaster release (JSJR) is used by U.S. Marine Corps, U.S. Navy, and U.S. Special Operations Command units. The JSJR release point computation or “spotting” may be used from all types of aircraft.

20-19. To become operational, drop zones require key personnel to be located on the DZ for controlling, marking, medical evacuating, wind readings, and malfunctions.

20-20. The STS and DZSO personnel are normally used in joint Airborne operations when more than four U.S. Air Force aircraft are used. (Refer to AFI 13-217.)

20-21. The DZST consists of trained military personnel. It is normally used in small joint Airborne operations involving four or fewer troop carrier aircraft. CARP, GMRS, JSJR, WSVC, or VIRS is used.

20-22. Acting alone, without STS support, the DZSTL will operate drop zones with a small number of aircraft and dropping a limited number of personnel. The airdrop release method used is CARP or GMRS, or, if rotary-wing and small fixed-wing aircraft are employed, VIRS or WSVC.

DROP ZONE SAFETY OFFICER AND SUPPORT PERSONNEL REQUIREMENTS

20-23. When the U.S. Air Force STS is supporting an Airborne operation, the DZSO is the Airborne commander’s direct representative on the drop zone and is responsible for the safe operation of the DZ. No personnel or equipment is dropped if the DZSO is not physically on the DZ. The U.S. Air Force STS and U.S. Army DZSO have specific duties, which are discussed below.

Note. The prerequisites to perform the duties of the DZSO are outlined in chapter 7 of this publication.

20-24. When advised of the appointment as DZSO by the Airborne commander or their representative, the DZSO should attend an air briefing for coordination and the DZSO should be furnished the following information:

- Type of jump.
- Number of lifts, including any heavy drop, CDS, or door bundles.
- Type of aircraft and sequence of aircraft if multiple aircraft are used.
- Drop zone requirements (personnel and equipment).

- Unit SOP.-
- Current AF IMT Form 3823, *Drop Zone Survey*, (for the DZ being used).
- Airborne timeline.
- Number of personnel, heavy drops, CDS, and door bundles for each pass.
- Establish time and place for DZSO party to linkup and convoy to DZ.

20-25. The duties of the DZSO are as follows:

- Coordinating with the U.S. Air Force STS.
- Ensure the appropriate personnel and equipment are in place to support the Airborne operation.
- Ensure the drop zone is fully operational one hour before drop time.
- Ensure the drop zone is opened through range control.
- Ensure the DZ is closed when accountability of personnel, air items, and equipment is completed.
- Before the drop, conduct ground or aerial reconnaissance of the DZ for obstacles or safety hazards.
- Collocate with U.S. Air Force STS and take initial wind readings one hour before the scheduled drop time.
- Establish communications with the DACO no later than (NLT) one hour before drop time.
- Conduct continuous surface wind readings NLT 12 minutes before the scheduled drop.
- Give the CLEAR TO DROP or NO DROP to the STS (if present to relay to aircraft) two minutes before the scheduled drop.
- Monitor surface winds from the jumpers' "point of impact" and at the highest point of elevation on the drop zone. A NO DROP situation exists when surface winds exceed the maximum allowable limits (13 knots) within 10 minutes of the actual drop.
- Control all ground and air medical evacuations. Priority for airspace MUST be given to medical evacuations. This is particularly important when rescue or medical aircraft are involved, since they may be delayed if follow-on Airborne operations continue.
- Ensure that any water obstacle is covered by a boat detail. A boat detail is required if the water obstacle is more than four-feet deep and 40-feet wide, and is within 1000 meters from any portion of the surveyed DZ.
- Submit post-mission reports (for example, DD Form 1748-2, *Airdrop Malfunction Report (Personnel-Cargo)*; or AF IMT Form 4304, *Drop Zone/Landing Zone Control Log*) to the appropriate agency.
- Notify the Airborne commander or DACO immediately upon notification of a parachute malfunction from the malfunction officer. The DACO will immediately notify the ALCE of a parachute malfunction.

CAUTION

Both the DZSO and the STS have the authority and responsibility to declare a no drop if they believe an unsafe condition exists. A no drop decision by either one will be acted upon by the other without fail. It cannot be overruled.

Note. The CLEAR TO DROP or NO DROP that is relayed at two minutes does not indicate the final wind reading. If surface winds increase beyond authorized limits, a NO DROP can be relayed at any time during the drop. If readings exceed the limits, the DZSO must reestablish a 10-minute window.

20-26. A complete control group is required for airdrop operations involving multiple fixed-wing aircraft, or for single aircraft operations on drop zones more than 2100 meters in length, or if there is at least 20-seconds of exit time (“green light”). If any three of these conditions apply:

- The DZSO ensures the ground support team is in place on the DZ one hour before the drop. The support team includes:
 - Assistant DZSO (not required for U.S. Navy or U.S. Air Force operations, however if present, must be a current and qualified DZSTL).
 - Two field litter ambulances or emergency medical service vehicles with appropriate supplies and medical support personnel; U.S. Marine Corps, U.S. Navy, and U.S. Air Force require one qualified support person.
 - The senior medic should be positioned on the DZ to best supervise medical operations. The senior medic must have communications with the DZSO at all times.
 - Malfunction officer with still and video cameras. (See chapter 23 for MO requirements.)
 - Parachute recovery detail with saw and tree climbing equipment.
 - Parachute turn-in detail with vehicles.

DZSO Equipment Requirements

20-27. The following equipment requirements may vary depending on the Airborne operation being conducted, including equipment for daytime and nighttime operations:

- Radios:
 - One for the DZSO and one for the assistant DZSO (minimum). The DZSO should have communications with the DACO, the aircraft, range control (if needed), and internally with the DZSO control group (party).
 - Senior medic.
 - Malfunctions officer.
- Compasses – two (one each for the DZSO and the assistant DZSO).
- Vehicles.
- Military map of the drop zone and protractor.
- Road guards, if required.
- Military police, if needed to control vehicles and spectators, or appropriate crowd control.
- Equipment for daytime airdrop operations:
 - Nine VS-17 panels (at a minimum).
 - One raised angle marker (RAM).
 - Red smoke grenades or identified means of nonverbal communication with the aircraft
 - Signal mirror or other acquisition aids (only if prebriefed during aircrew mission briefing).
- Equipment for nighttime airdrop operations:
 - Eleven white omnidirectional white lights (at a minimum).
 - One colored filter to fit one of the omnidirectional lights. Ensure the color and light position is briefed on the DZSO or aircrew mission briefing.
 - One amber rotating beacon. (If used, it must be briefed in the DZSO or AMB) This is placed along the surveyed DZ centerline 1000 meters from the PI or the trail edge of the DZ, whichever is closer to the PI. (Refer to AFI 13-217.)
 - White flanker lights. (If used must be briefed in the DZSO or AMB and placed 250 meters to the left and right abeam to the PI unless precluded by obstacles or obstructions. If 250 meters is not used, the aircrew will be briefed.
 - One red star cluster for every planned pass or other precoordinated no drop signal.
 - Night vision goggles. (DZSO, ADZSO, and malfunction officer)
 - Strobe light or other acquisition aid (only if prebriefed on the DZSO or aircrew mission briefing).

- Anemometers: services will only use approved anemometers to measure surface winds during all personnel and cargo parachute operations. The approved anemometers are the DIC-3 and the Turbometer. The DIC-3 and Turbometer cannot be calibrated; they must be given an expedient check before use.
 - Ensure fresh batteries are installed in the anemometer.
 - Check the anemometer in a no wind condition such as in a vehicle cab or a building. Turn on the anemometer and if any reading other than zero registers, the anemometer is not fit for use and must be discarded.
 - Use a three-anemometer check by comparing the reading on three anemometers in identical conditions. Discard the one anemometer that doesn't read the same as the other two.

Types of Anemometers

20-28. The DIC-3 anemometer (NSN 6660-00-X03-9572) is a handheld, compact, lightweight, factory-calibrated device approved for use during Airborne operations. The DIC-3 uses folding cups to catch the wind and electronically display wind speed, but not direction. During use, it is critical that the cups are fully extended to ensure an accurate reading. The device is omnidirectional and does not need to be oriented with wind direction to provide accurate readings. Post manufacture calibration methods are not available. The DIC-3 can depict wind data in knots, miles per hour, kilometers per hour, or meters per second. The additional features of the DIC-3 are the ability to display peak wind velocity over a given period, and average wind speed over two time periods. The DIC-3 utilizes a nine-volt battery.

20-29. The Turbometer anemometer (NSN 1670-00-T33-9004) is a small, lightweight, electronic wind speed indicator. It can also be commercially purchased. It does not display direction, but when turned into the wind, it depicts wind data in knots, miles per hour, meters per second, and feet per second. For the most accurate results, the Turbometer must be oriented within 20 degrees of the wind direction, with the wind entering the rear of the meter. Because the Turbometer cannot be calibrated, conduct the same pre-operation and three-anemometer check as when using the DIC-3 anemometer.

Note. The unidirectional anemometers must be held in the wind line with the wind entering the rear of the meter to ensure accurate readings.

20-30. Other anemometers not tested and recommended for use should be employed only after a deliberate risk assessment is completed. Regardless of the method or device used to measure DZ winds, the Airborne commander is responsible for ensuring winds on the DZ do not exceed 13 knots during static line personnel airdrops.

Boat Detail Equipment (If Required, Unintentional Water Landing)

20-31. A deliberate risk assessment conducted by the Airborne commander will dictate the required equipment needed for the Airborne operation. Equipment can be altered to best accomplish the mission. The following personnel and equipment should be considered for boat detail:

- One OIC or NCOIC and assistant boat operator.
- Two boat operators for each boat: one primary and one assistant.
- Recovery personnel for each boat: two (one can be a lifeguard and combat lifesaver certified). All boat detail personnel should be strong swimmers.
- Spotlight or NVDs for nighttime operations.
- Each recovery boat team may need the following equipment:
 - Boat (combat rubber raiding craft or solid-bodied boat of comparable size) with operable outboard motor.
 - Enough fuel or oil to complete the mission.
 - Life vest or floatation device for each boat detail member, and sufficient amount of floatation devices for jumpers (not to exceed the maximum capacity of the boat).
 - One life ring with attached rope.

- One radio with spare battery.
- One shepherd's crook.
- One grappling hook.
- One long backboard to facilitate CPR.
- One aid bag with resuscitation equipment.
- One rope, 120 feet long.

Tree Recovery Detail Equipment (If Required)

20-32. A deliberate risk assessment conducted by the Airborne commander will dictate the required equipment needed for the Airborne operation. Equipment can be altered to best accomplish the mission. The following personnel and equipment should be considered for the tree recovery detail:

- Ladder (12 feet minimum).
- One wood saw capable of cutting through at least a four-inch branch.
- Nylon rope, 120 feet.
- Two snap links.
- Pole climbing equipment.
- Safety belt and approved helmet.
- Chainsaw.

CAUTION

Any personnel climbing trees with pole climbing equipment should be familiar or trained with the equipment prior to execution of the tree recovery. Personnel operating with unfamiliar pole climbing equipment can seriously injure themselves from a fall, or unsecured equipment or tree limbs falling on personnel on the ground.

Note. These requirements may be supplemented based on the type of drop, size of operation, number of aircraft, number of jumpers, and obstacles on or within 1000 meters of the drop zone.

20-33. A partial control group can be used for airdrop operations involving single aircraft if less than a 20-second exit time exists or if there is less than 2100 meters of usable DZ. The composition of a partial control group is:

- Assistant DZSO (DZSTL qualification is not required).
- Wind reading from a single location on the DZ.
- One medic (with field litter ambulance or emergency medical service vehicle with appropriate supplies and medical support personnel); U.S. Marine Corps and U.S. Navy require one qualified Navy corpsman.
- Malfunction officer with still and video cameras, binoculars, and NVDs for night operations.
- Parachute recovery detail.

20-34. The DZSO has operational responsibility for the drop zone. In addition to the DZSOs duties for drop zones, the DZSO must also:

- Be positioned at the personnel point of impact 15 minutes before drop time. The assistant DZSO is at the highest point of the drop zone or at a location determined by the DZSO if the DZSO is at the highest point of the drop zone. For combination airdrop operations, the DZSO or DZSTL must follow the procedures for heavy drop operations, but relocate to the personnel point of impact to conduct personnel drops after the heavy equipment drops have landed.

Note. For heavy drop operations, the DZSO or DZSTL should be no closer than 300 meters from the heavy equipment point of impact and should not be positioned under the direction of flight.

- Relay a ground weather decision and CLEAR TO DROP or NO DROP signal to the lead aircraft two minutes before the drop for each pass.
- During night drops, ensure all lights that are on or next to the drop zone and are not a part of the drop zone marking system are turned off five minutes before drop time and remain off during the drop (except those lights that mark obstacles).
- Contact the pilot of the aircraft immediately after the drop and ask if any personnel or equipment did not drop. He relays this information to the Airborne commander or DACO for accountable purposes.

DROP ZONE SUPPORT TEAM LEADER DUTIES

20-35. In operations in which the STS is not present, the DZSTL has overall responsibility for the conduct of operations on the drop zone and represents the Airborne and airlift commanders. The DZSTL assumes all the responsibilities normally associated with the U.S. Air Force STS and DZSO. These are the DZST responsibilities:

- DZSTs have the primary mission of supporting wartime CDS airdrops for battalion-size units and below. The DZSTs mission during peacetime includes airdrops of personnel, CDS, and heavy equipment for one to four aircraft operations. With some exceptions, these primary mission airdrops are limited to day and night visual conditions.
- DZSTs also maintain the secondary mission of supporting other types of airdrops. The secondary missions may include wartime force projection and sustainment of personnel, equipment, and CDS; peacetime airdrops under IMC and visual meteorological conditions (VMC) formation drops with four or more aircraft.
- The DZST consists of one or more individuals. More members may be required, depending on the complexity of the mission. The senior member of the DZST functions as the DZSTL. For combination airdrop operations, the DZSO or DZSTL must follow the procedures for heavy drop operations, but observe the jumpers as they exit the aircraft.
- If an individual assumes the duties of both the DZSO and the DZSTL, they are also responsible for the following:
 - Conducting premission coordination.
 - Evaluating the DZ for suitability and safe operating conditions.
 - Ensuring all DZ markings are properly displayed for day or night operations.
 - Operating all visual acquisition aids.
 - Ensuring NO DROP signals are relayed directly to the aircraft.

20-36. Once the DZSTL has been notified and assigned a mission, they conduct accurate premission coordination. The recommended DZST crew mission briefing checklist reflects the minimum essential information that must be addressed and confirmed by the DZSTL. Normally, peacetime drops should employ every acquisition aid and safety device available, including air-to-ground radio communications, pilot balloon (PIBAL) mean effective wind (MEW) measurement, air traffic control light gun, and smoke or flares.

20-37. During contingency or wartime operations, limited airdrop support equipment is available and it is important for premission coordination and briefings to be comprehensive with respect to visual signals (drop cancellation, postponement, and authentication procedures). The coordination must be timely to ensure the DZST has enough time for planning and for moving to and establishing the drop zone.

20-38. Below shows a recommended DZST and aircrew mission briefing checklist. This includes:

- DZ name and location and Joint Airborne/air transportability training mission sequence number verified?
- TOT(s) block time (NO DROP procedures, for example, race track)?
- Valid DZ survey (date) verified?

- Type drop (HE, CDS, PE [as in personnel])?
- Type release (VIRS, CARP, GMRS, IMC, WSVC, and visual)?
- Type parachutes?
- Ground quick disconnects?
- Number of jumpers/bundles?
- Number and type of aircraft?
- DZ information?
- Markings and signals:
 - Panels/lights?
 - Block letter identification?
 - Smoke, flares?
 - Emergency NO DROP procedures?
 - Mission cancellation indication?
- DZ support capabilities:
 - Radios available/frequencies?
 - Visual acquisition aids available?
 - Navigational aids available?
 - MEW equipment?
 - Airspace coordination verified?
 - Aircraft (mission) commander's name, unit of assignment, telephone number?
 - DZSTL name, rank, unit of assignment, telephone number?
 - Drop score/incident/accident reporting procedure?

Equipment

20-39. The DZSTL should maintain an inventory of basic equipment (see previous in this chapter) to support an airdrop mission; however the DZSTL may need the following additional equipment:

- Smoke (red, yellow, and green).
- White omnidirectional or infrared lights.
- Air traffic control gun, SE-11 light gun, or four-cell extremely bright flashlight.

Note. Air traffic control gun requires a special power source and plug to function properly.

- Signal flares.
- PIBAL system with helium source.

Note. Other items of equipment or signals may be required by premission coordination and mission complexity.

This page intentionally left blank.

Chapter 21

Formulas and Computations

Once the composition of the ground party and the selection of a drop zone have been established, several technical aspects must be considered and planned for marking the DZ. These technical aspects are critical because of the data that must be used (ground, winds, drift distance formula, forward throw, and release point).

GROUND MARKING AND VERBALLY INITIATED RELEASE SYSTEMS

21-1. To apply the distance and time formulas to GMRS and VIRS, compute the DZ length for a specific mission by using the $D = RT$ formula. (D is the required length of the DZ in meters; R is the ground speed of the aircraft in meters per second; and T is the time required for the aircraft to release its cargo.) To use this formula, some conversions and mathematics are required.

21-2. To find the aircraft ground speed, convert aircraft airspeed (expressed in knots) to ground speed (meters per second). Do this by multiplying knots times .51 (knots by .51) (one knot equals .51 meter per second).

21-3. To determine the time over the DZ that is needed to release a jumper or equipment, use the following factors:

- Allow one second for each jumper to exit the aircraft; do not include the first jumper (10 jumpers require nine seconds). Mathematically, this is represented as 9×1 second.
- Allow three seconds per bundle to exit the aircraft; do not include the first bundle (three bundles would require six seconds). Mathematically, this is represented as 2×3 seconds.
- Personnel jumping T-11 ATPS parachutes may exit both doors simultaneously. The door with the most jumper is used to calculate the time required.

21-4. For example, what length DZ would eight jumpers require when jumping from an aircraft flying at a drop speed of 90 knots? To solve this question, apply the following steps:

- Step 1. Solve for R (answer is expressed in meters per second): airspeed by .51 (90 knots by .51) = 45.90 meters per second.
- Step 2. Solve for T (answer is expressed in seconds): number of jumpers by 1 the first jumper (8 by 1) = seven seconds.
- Step 3. Solve for D (answer is expressed in meters): 45.90 meters per second by seven seconds = 321.30 meters. Always round up to the nearest whole number. Therefore, $D = 322$ meters, which is the length.
- Step 4. Always add a 200-meter buffer (100 meters to lead ledge and 100 meters to trail edge) for any drop involving personnel. Therefore, $322 \text{ meters} + 200 \text{ meters} = 522 \text{ meters}$, the required DZ length.

21-5. Solving the time formula ($T = D/R$) provides the seconds available to exit the jumpers over the DZ (time = meters divided by meters per second rounded up). If a DZ less than the required length must be used, compute the flight time over the DZ to determine how much of the load can be released in one pass. Use the $T = D/R$ formula: T is the time the aircraft is over the DZ in seconds, D is the length of the DZ in meters, and R is the ground speed (rate) of the aircraft in meters per second.

21-6. Convert the aircraft's airspeed (expressed in knots) to its ground speed (expressed in meters per second) as in the $D = RT$ formula (knots by .51). Round up the answer to the next whole number.

21-7. Divide the ground speed conversion number into D (the DZ length minus the 200-meter buffer for all drops involving personnel); this determines T. Any fractional answer is rounded down to the next whole number.

21-8. For example, how many jumper from a CH-47 (drop speed of 90 knots) can land on a 750 meter DZ each pass? To figure it out, use the following:

- T = Number of jumper.
- D = DZ length is 750 meters (given).
- R = Airspeed is 46 meters per second (90 knots $.51 = 45.9$; round up to 46).
- Solution: $T = D/R$ (D divided by R).
- $D/R = 750 \text{ meters} - 200 \text{ meters} = 550$ divided by 46 meters per second = 11.9 seconds.
- T = 11 seconds (round down).
- Eleven seconds over DZ by one jumper per second + 1 jumper (the first jumper exiting the aircraft does not affect the number of seconds spent over the DZ) = 12 jumpers. Thus, 12 jumpers per pass can land on the 750 meter DZ.

WIND DRIFT

21-9. Two means of determining wind drift are the wind streamer vector count (WSVC) method and the distance \times constant \times velocity ($D = KAV$) formula. The WSVC method (see figure 21-1) is used when the release point is determined from the air. It is normally JM executed and does not require markings to be placed on the DZ. Below are the procedures for wind streamer vector count:

- Streamer drop: on the first aircraft pass over the desired point of impact, a streamer is dropped from the aircraft. The aircraft then turns to allow the JM to keep the streamer in sight. The pilot adjusts their route so that the flight path is over the streamer on the ground and the desired impact point (in a straight line).
- Count: as the aircraft passes over the streamer, the JM begins a count, stopping the count directly over the impact point. They immediately begin a new count. When that count equals the first count, the aircraft is over the release point for the first jumper.
- Aircraft flight adjustment: the pilot then maneuvers the aircraft to fly along the axis of the DZ and over the release point. Slight adjustments may be made by observing the jumpers as they land on the DZ. Table 21-1 on page 21-5 shows airdrop altitudes for different types of training missions.

Note. Avoid using this method for tactical employment, since the aircraft must make multiple passes over the DZ.

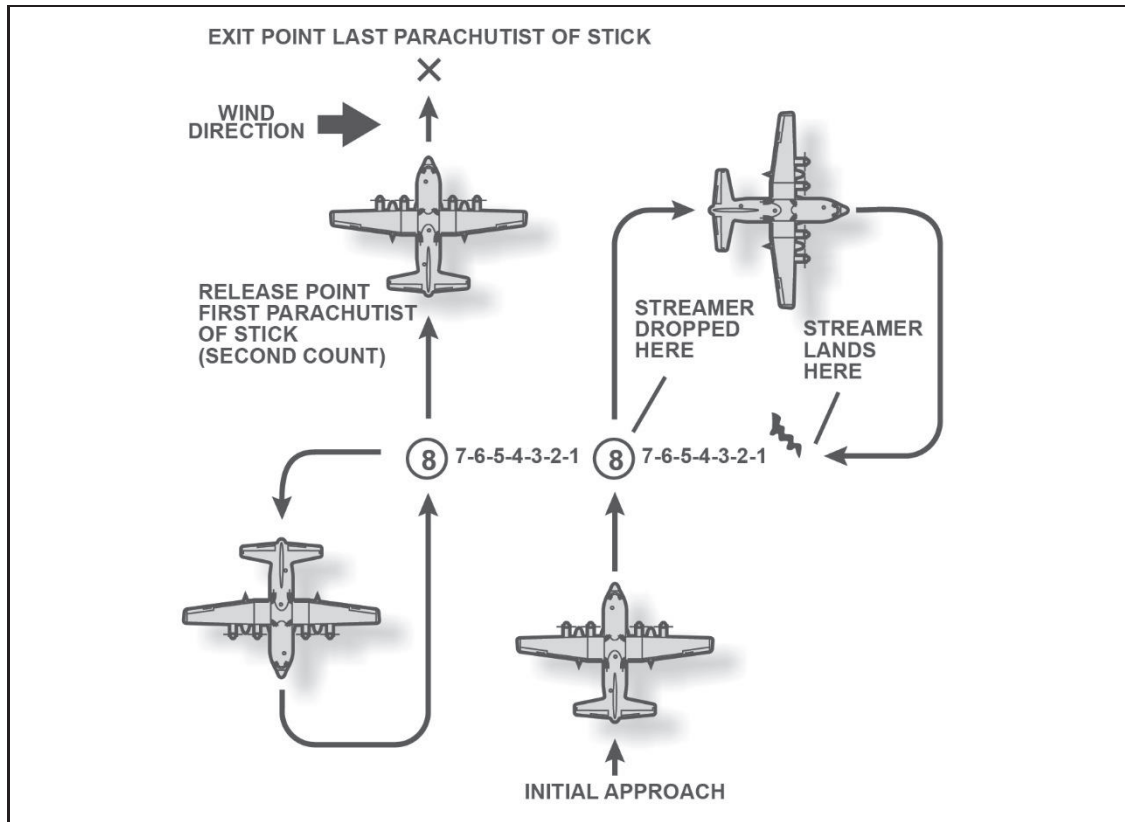


Figure 21-1. Determination of the release point by WSVC

21-10. The $D = KAV$ formula is another method for determining the effects of wind on a parachute: D = drift of parachute (in meters) from a given altitude; K = constant that represents the typical drift characteristic for a type of parachute. These constants are—

- 1.5 for cargo parachutes and heavy equipment.
- 3.0 for personnel parachutes.
- 2.4 for standardized Airborne training bundles.
- 0 for high velocity and free drop items

21-11. A = drop altitude (expressed in hundreds of feet AGL); and V = velocity of wind. The MEW must be used.

Note. If aircraft must be shut down for a long period, a wind drift indicator should be thrown at the last release point to ensure the release point is still valid.

21-12. For example, an aircraft is dropping cargo from 500 feet AGL with a surface wind of 10 knots. What is the calculated parachute drift? (The parachute drift is calculated using the $D = KAV$ formula.):

- D = Wind induced drift in meters.
- K = Wind drift constant for type of parachute.
- A = Drop altitude expressed in hundreds of feet (500 feet would be expressed as 5).
- V = Velocity of wind in knots (either MEW or surface wind measurement).
- Step 1: $K = 1.5$ (cargo parachute or HE constant).
- Step 2: $A = 5$ (500 feet).
- Step 3: $V = 10$ (10 knots).
- Step 4: $D = 1.5 \text{ by } 5 = 75.0$, or 75 meters of drift. (Any fractional answer is rounded up to the nearest whole number.)

WIND VELOCITY

21-13. There are two types of winds that must be accounted for MEW and surface winds. The MEW is a constant wind speed average from drop altitude to the ground. The PIBAL system determines the MEW. For surface wind measurements, see anemometer usage in chapter 20 of this publication.

21-14. The equipment needed to compute the MEW by the PIBAL method is as follows:

- Helium source.
- Pilot balloons (10 or 30 grams).
- Clinometers or other devices for measuring from zero to 90 degrees.
- Balloon measuring tape (to measure balloon circumference) (10 grams: 57 inches day, 74 inches night; 30 grams: 75 inches day, 94 inches night).
- PIBAL lighting units (type 5) for night use (liquid activated lights).
- Compass.
- Conversion charts (10 and 30 grams). (See table 21-1, and table 21-2 on page 21-6.)
- Watch with second hand.

21-15. The procedures for measuring MEW using the PIBAL are:

- Fill the 10-gram or 30-gram balloon with helium to the required size.
- Check the conversion chart for drift time to drop altitude. (See table 21-2 on page 21-6 and table 21-3 on page 21-7.)
- Release the balloon and begin timing.
- Keep the balloon in sight.
- Once the required time has elapsed, determine the azimuth to the balloon with the compass and read the degrees from the drift scale.
- Refer to the conversion chart and read down the angle column to the number closest to the angle on the scale.
- Read across the top of the chart (altitude in feet) to the drop altitude in use. Read down this column until the two lines (6 and 7) intersect.
- Where the two lines intersect is the MEW at drop altitude, in knots. The direction of the MEW is the back azimuth of the compass reading that was taken at the same time as the angle measurement.
- The MEW becomes the variable V in the $D = KAV$ formula to determine the amount of drift in meters.

Table 21-1. Conversion chart for 10 gram helium (pilot) balloons

WIND SPEED IN KNOTS, 10 GRAM HELIUM BALLOONS Inflate balloon to 57 inches for day and 74 inches for night DROP ALTITUDE IN FEET														
	500	750	1000	1250	1500	1750	2000	2500	3000	3500	4000	4500	ASCENSION TABLE	
	70	02	02	01	01	01	01	01	01	01	01	01	TIME	ALT (FT)
	60	03	02	02	02	02	02	02	02	02	02	02		
	55	03	03	03	03	03	03	03	03	03	03	03		
	50	04	04	03	03	03	03	03	03	03	03	03	0:10	80
	45	05	04	04	04	04	04	04	04	04	04	04	0:20	170
	40	06	05	05	05	05	05	04	04	04	04	04	0:30	250
	35	07	06	06	06	05	05	05	05	05	05	05	0:40	330
	30	08	07	07	07	07	07	07	06	06	06	06	0:50	400
	25	10	09	09	09	08	08	08	08	08	08	08	1:02	500
	24	11	10	09	09	09	09	08	08	08	08	08	1:10	540
	23	11	10	10	09	09	09	09	08	08	08	08	1:20	610
	22	12	11	10	10	10	10	09	09	09	09	09	1:23	670
	21	12	11	11	10	10	10	10	10	10	10	10	1:43	750
	20	13	12	11	11	11	11	10	10	10	10	10	1:50	790
	19	14	13	12	12	11	11	11	11	11	11	11	2:25	1000
	18	15	13	13	12	12	12	12	11	11	11	11	2:44	1100
	17	16	14	13	13	13	13	12	12	12	12	12	3:05	1250
	16	17	15	14	14	14	13	13	13	13	13	13	3:49	1500
	15	18	16	15	15	14	14	14	14	14	14	14	4:30	1750
	14	19	17	16	16	16	15	15	15	15	15	15	5:11	2000
	13	21	19	18	17	17	17	17	16	16	16	16	6:34	2500
	12	22	20	19	19	18	18	18	18	17	17	17	7:58	3000
	11	24	22	21	21	20	20	20	19	19	19	19	9:22	3500
	10	27	25	23	23	22	22	22	21	21	21	21	10:44	4000
	09	30	27	26	26	25	24	24	24	23	23	23	12:08	4500

LEGEND

ALT – altitude; FT - feet

Table 21-2. Conversion chart for 30 gram helium (pilot) balloons

WIND SPEED IN KNOTS, 30 GRAM HELIUM BALLOONS															
Inflate balloon to 75 inches for day and 94 inches for night															
DROP ALTITUDE IN FEET															
ELEVATION ANGLE		500	750	1000	1250	1500	1750	2000	2500	3000	3500	4000	4500	ASCENSION TABLE	
	80	01	01	01	01	01	01	01	01	01	01	01	01	TIME	ALT (FT)
	70	03	03	03	02	02	02	02	02	02	02	02	02		
	60	04	04	04	04	04	04	04	04	04	04	04	04		
	55	05	05	05	05	05	05	05	05	05	05	04	04	0:10	120
	50	06	06	06	06	06	06	06	06	05	05	05	05	0:20	240
	45	07	07	07	07	07	07	07	07	07	06	06	06	0:30	360
	40	09	08	08	08	08	08	08	08	08	08	08	08	0:42	500
	35	10	10	10	10	10	10	10	10	09	09	09	09	0:50	600
	30	12	12	12	12	12	12	12	11	11	11	11	11	1:02	750
	25	15	15	15	15	15	15	14	14	14	14	14	14	1:10	830
	24	16	16	15	15	15	15	15	15	15	15	15	15	1:17	1000
	23	17	17	16	16	15	15	15	15	15	15	15	15	1:46	1250
	22	18	18	17	17	17	17	17	16	16	16	16	16	2:10	1500
	21	19	19	18	18	18	17	17	17	17	17	17	17	2:34	1750
	20	20	20	19	19	19	19	18	18	18	18	18	17	2:56	2000
	19	21	20	20	20	20	20	19	19	19	19	19	18	3:43	2500
	18	22	22	21	21	21	21	20	20	20	20	20	20	4:31	3000
	17	23	23	23	22	22	22	22	22	21	21	21	21	5:21	3500
	16	25	25	24	24	24	24	23	23	23	23	22	22	6:09	4000
15	27	27	26	26	25	25	25	25	24	24	24	24	7:00	4500	
14	29	29	28	27	27	27	27	27	26	26	26	25			
13	31	30	30	30	30	29	29	29	28	28	28	27			
LEGEND															
ALT – altitude; FT - feet															

FORWARD THROW

21-16. Forward throw is the effect that inertia has on a falling object. When an object leaves an aircraft, it is traveling at a speed equal to the speed of the aircraft. The jumper (or bundle) continues to move in the direction of flight until the dynamics of drag and parachuting takes effect.

21-17. To determine the amount of forward throw for rotary-wing aircraft, divide the drop speed of the aircraft in half. This yields the forward throw in meters. (For example, an aircraft flying at 70 knots would have a forward throw of 35 meters.) To determine the forward throw for fixed-wing aircraft, the following distances apply. (See table 21-3.)

Table 21-3. Fixed-wing forward throw data

	C-130	C-17	C-5
Personnel/door bundles	229 meters/ 250 yards	229 meters/ 250 yards	N/A
Heavy equipment	458 meters/ 550 yards	640 meters/ 700 yards	668 meters/ 730 yards
Container delivery systems	503 meters/550 yards	663 meters/ 725 yards	N/A
Note: To convert yards to meters, multiply yards by .9144. To convert meters to yards, divide meters by .9144.			
LEGEND N/A – not applicable			

DROP HEADINGS, POINT OF IMPACT, WIND DRIFT COMPENSATION, AND FORWARD THROW COMPENSATION

21-18. For CARP operations, the navigator onboard the aircraft determines when the load is to be released from the aircraft (when the green light is turned on and off). For GMRS and VIRS operations, ground personnel determine the release point. (See figure 21-2 on page 21-8.)

21-19. Drop heading on all DZs depends on three factors—the long axis, prevailing winds, and obstacles on approach and departure ends. The DZSO or DZSTL uses all three when the situation permits; however, the long axis is the primary concern. With a GMRS, WSVC, or CARP DZ, drop heading can be obtained from AF IMT Form 3823. A circular or random approach DZ does not have a set drop heading. The mission commander notifies the aircrew and the DZ commander of the drop heading to be used NLT 24 hours in advance of the airdrop operation.

Note. On some DZs, predetermined drop headings must be used.

21-20. The location selected where the first bundle or parachutist should land is known as the PI. The PI should be located along the DZ centerline. However, due to the tactical situation, the PI may need to be located near a wood line. The DZSO or DZSTL uses a buffer zone of 100 meters on each side of the DZ during personnel drops for safety reasons. The PI location for GMRS, VIRS and WSVC is 100 meters in from the leading edge centerline for personnel. The CARP PI is designated on AF IMT Form 3823.

21-21. To compensate for wind drift, the DZSO or DZSTL moves from the desired PI into the wind the number of meters calculated using the $D = KAV$ formula. (For example, if drift equals 350 meters from the PI, the DZSO or DZSTL faces into the wind and walks 350 meters in a straight line.)

21-22. To compensate for aircraft forward throw, the DZSO or DZSTL faces the back azimuth of the drop heading and walks the appropriate forward throw distance to the release point.

Note. A parachute's K factor is based on the parachute's flight characteristics, not on its mode of use. According to TM 4-48.04, the K factor for the T-10 series parachute used in the cargo mode is the same (3.0) as for personnel drops using the T-11 ATPS parachute.

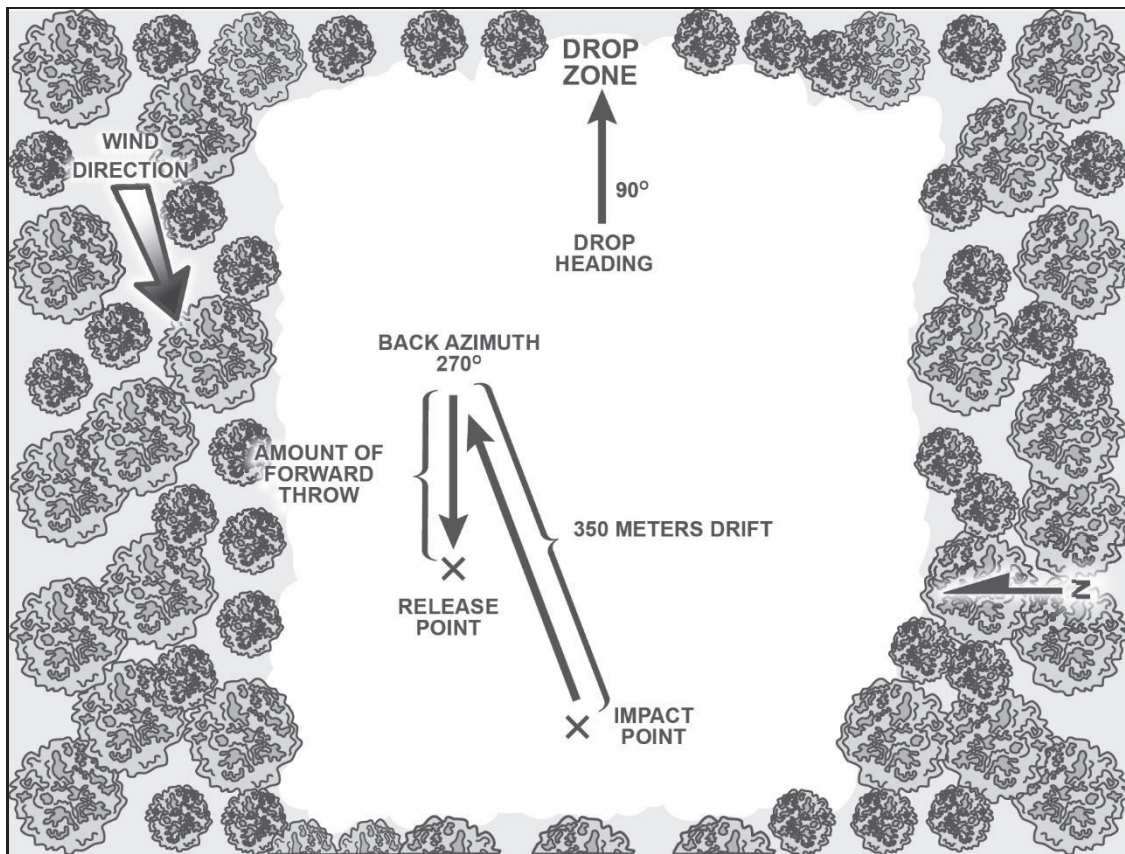


Figure 21-2. Release point location for VIRS and GMRS

Chapter 22

Drop Zone Establishment and Operation

Five methods may be used to establish or operate a drop zone. Three of these require markings to be placed on the drop zone through the employment of the computed air release point, ground marking release system, and verbally initiated release system. The wind streamer vector count and jumpmaster spotted jumpmaster directed methods do not require release point markings on the DZ.

COMPUTED AIR RELEASE POINT

22-1. The CARP is used only by fixed-wing aircraft in conjunction with a combat control team or qualified DZSTL. CARP minimum points of impact are shown in figures 22-1 on page 22-2 and 22-2 on page 22-4, and are as follows:

- Personnel: for personnel, drops at the PI are 300 yards (C-130 day or C-17 day or night, IMC) or 350 yards (C-130 night or C-17 night pilot directed airdrop) from the leading edge.
- CDS: for CDS bundles from a C-130, drops at the PI are 200 yards (day) or 250 yards (night) from the leading edge. For CDS drops from a C-17, the PI is 225 yards (day or night, IMC) and 275 yards (night PDA).
- Heavy equipment: for heavy equipment, drops at the PI are 500 yards (C-130 day, C-17 day or night, IMC) or 550 yards (C-130 night or C-17 night PDA) from the leading edge.

Note. On surveyed DZs, the PI for a particular type load is predetermined. Its surveyed location can be found on AF IMT Form 3823.

22-2. The conditions for NO DROP are relayed directly to the aircraft in the following ways: red smoke, red flares, scrambling the code letter, removing the RAM, the absence of a planned signal, or verbal radio communications.

Note. The type of marking used for NO DROP conditions is coordinated in the premission briefing.

22-3. Control center locations (location of DZSTL) are as follows:

- Personnel and door bundle drops are normally located at the PI.
- CDS drops are located 200 yards to the 6 o'clock position of the PI.
- Heavy equipment drops are located 300 yards to the 6 o'clock position of the PI.
- Free drops, high velocity. High-Altitude Airdrop Resupply System IMC, free drops, high velocity, IMC or a ceiling of 600 feet or less are all off the DZ. For any nonpersonnel operation, the DZSTL uses the best vantage point off the DZ to observe the airdrop if it cannot be accomplished from the 6 o'clock position.

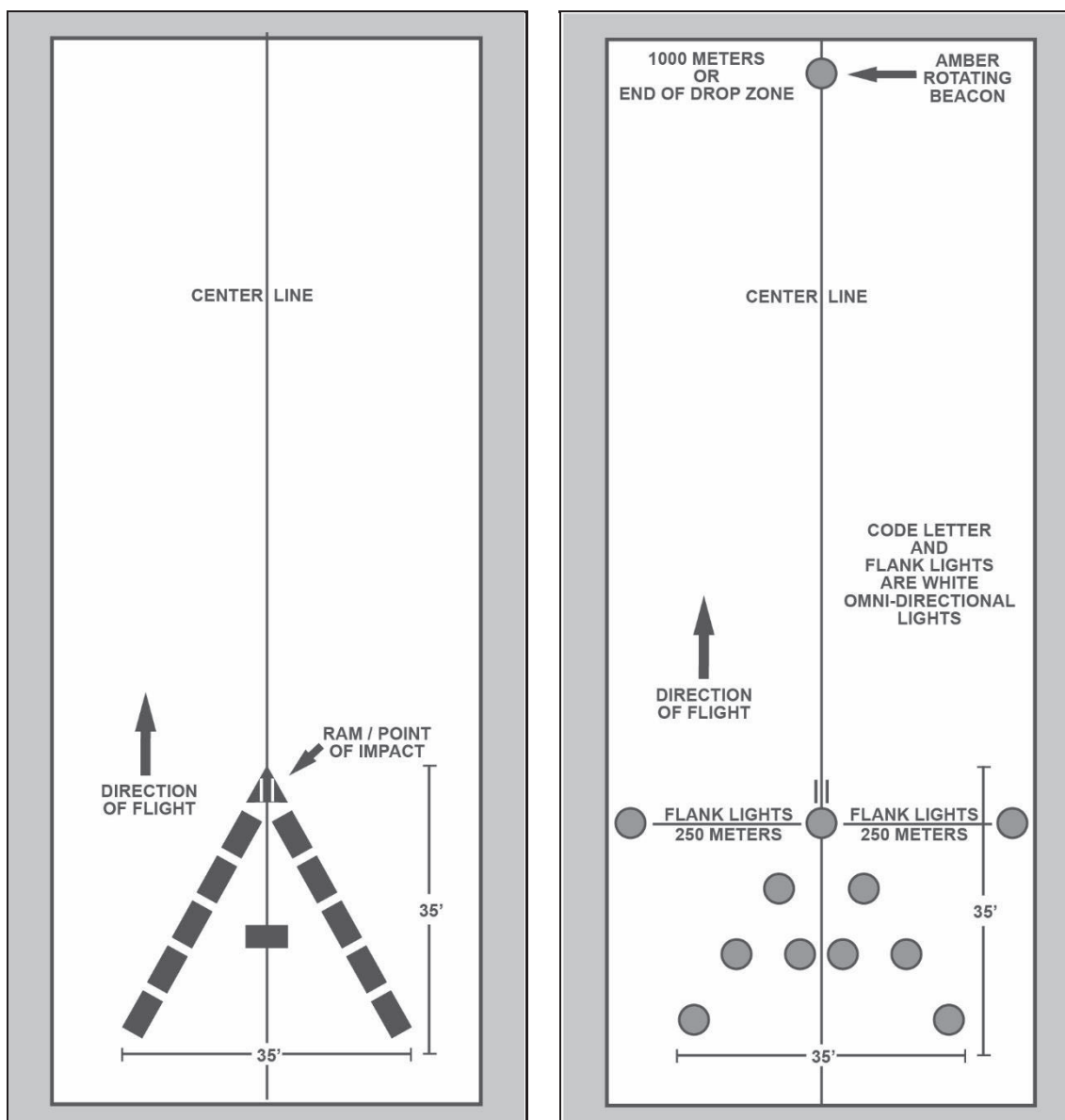


Figure 22-1. Day CARP DZ markings (left) and night CARP DZ markings (right)

MARKINGS

22-4. A marked DZ has a PI or release point marked with a precoordinated visual or electronic signal. Standard DZ markings consist of RAMs (the RAM is required for all Army conventional units and daytime CARP airdrops), VS-17 marker panels, visible lighting systems, and light beacons. Virtually any type of lighting or visual marking system is acceptable if all participating units are briefed and concur. Night markings or visual acquisition aids may include a light gun, flares, fire pots, railroad fuses, flashlights, chemical lights, and infrared lighting systems. Electronic navigation aids markings may be used for day or night operations and are placed as directed by mission requirements.

22-5. During daytime CARP operations, the PI will be marked with a RAM or block letter. All conventional Army units will use the RAM as the minimum and required markings according to FM 3-21.38. If authentication is required, a block letter will be used in conjunction with the RAM. Authorized letters for PI markings are A, C, J, R, and S. The block letters H and O are authorized for random or circular approach DZs. The block letters should be aligned with the surveyed DZ axis or with the aircraft line-of-flight, if

different from the survey. The minimum size for block letters is 35 feet by 35 feet and consists of at least nine marker panels.

22-6. During night operations, the PI is marked with a block letter. The minimum size is 35 feet by 35 feet and consists of at least nine omnidirectional white lights with a recommended minimum output rating of 15 candela. The apex of the block letter will be located on the PI. If used, flanker lights are omnidirectional white lights, located 250 meters left and right abeam the PI. When used, the amber trailing edge beacon is placed along the surveyed DZ centerline 1000 meters from the PI, or at the DZ trailing edge, whichever is closer to the PI. During premission coordination for personnel drops, aircrews identify their trailing edge beacon requirements to STS or DZSO. For all airdrops, the DZ identification is coordinated and briefed to the ground party and aircrews.

Note. Flanker lights and the amber rotating beacon are optional and can be used when coordinated with aircrews.

22-7. When mission requirements dictate and aircrews are qualified and equipped, infrared lights may be substituted for overt lights using the DZ marking patterns specified earlier in this chapter.

GROUND MARKING RELEASE SYSTEM

22-8. The GMRS uses markings known as the four panel inverted L, six panel T, or seven panel H. The T or H pattern is recommended for C-17 airdrops due to the aircraft's side angle vision limitations. When the drop aircraft is 100 meters directly to the right of the corner panel (inverted L marking), the drop is executed. Markings (four panels) for the inverted L are placed as follows (see figure 22-2 on page 22-4):

- From the release point (RP), move 100 meters to the left (90 degrees) of drop heading for the location of the corner panel. Emplace a VS-17G panel with the long axis of the panel parallel with the drop heading. Elevate the panel at a 45-degree angle toward the approaching aircraft. This aids the aircrew and the JM in visual identification of the DZ.
- From the corner panel, move in the same direction as above for 50 meters for the location of the alignment panel. Emplace a VS-17G panel with the long axis of the panel perpendicular to the drop heading. Elevate the panel at a 45-degree angle toward the approaching aircraft.
- From the alignment panel, move 150 meters (or edge of the drop zone) in the same direction as above for the location of the flanker panel. Emplace a VS-17G panel with the long axis of the panel perpendicular to the drop heading. Elevate the panel at a 45-degree angle toward the approaching aircraft.
- From the corner panel, move 50 meters on a back azimuth of the drop heading for the location of the approach panel. Emplace a VS-17G panel with the long axis of the panel parallel with the drop heading. Elevate the panel at a 45-degree angle toward the approaching aircraft.
- At night, replace all panels with a directional light. Lights will be shielded on three sides or placed in pits.
- The release point/control center must be distinguishably marked from all other markings on the DZ. NO DROP may be signaled to the aircraft by red smoke, red flares, scrambled panels, or the absence of a planned signal.

MASK CLEARANCE AND CODE LETTERS

22-9. Since the aircraft is required to fly along the markings on the DZ, these markings must be visible to the aircrew. The markings are placed where obstacles do not mask the pilot's line of sight. As a guide, a mask clearance ratio of 1 to 15 (1:15) is used, which is one unit of vertical clearance for every 15 units of horizontal clearance. For example, if a DZ marker must be positioned near a terrain mask, such as the edge of a forest that is on the DZ track, and the trees are 10 meters high (33 feet), the markings would require 150 meters (492 feet) of horizontal clearance from the trees. (See figure 22-2 on page 22-4.) If the panels are in the masking ratio due to usable DZ size restrictions, a far marker must be placed in line with the corner panel on drop heading where it can best be observed by aircraft. This only applies to static line jumps.

22-10. If any portion of the inverted L falls within a 15 to 1 (15:1) mask clearance ratio of obstacles on the approach end of the DZ, a far panel or a code letter (H, E, A, T) is required on the departure end of the DZ or where it can best be seen for a CDS or bundle drop, and should be coordinated during the DZST or aircrew mission briefing. This far marking is on line with the corner panel to allow the aircrew to begin alignment on the release point until the inverted L comes into view. If a code letter is used, it can be used to distinguish the DZ from other DZs in the area.

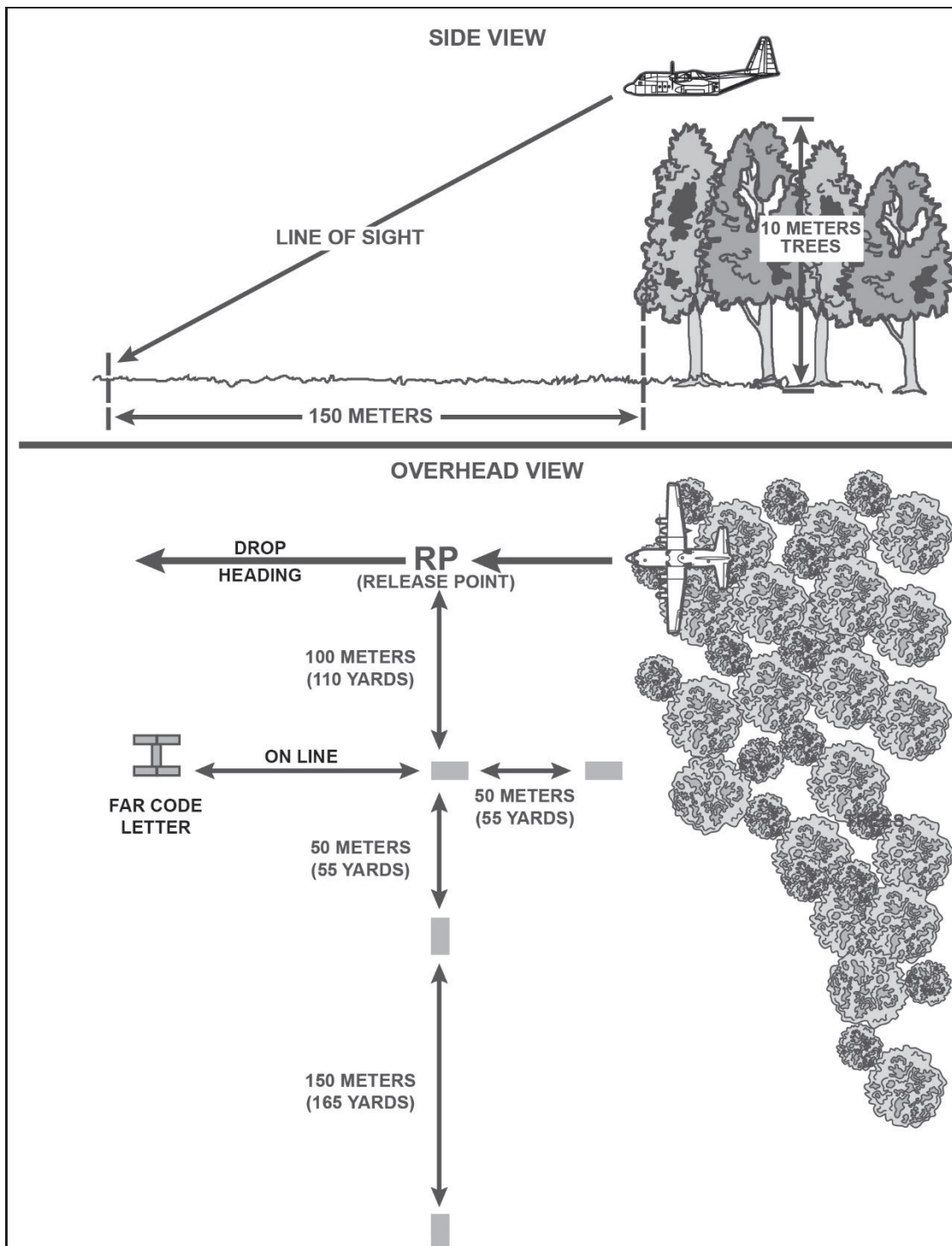


Figure 22-2. Marking placement for inverted L and 15:1 mask clearance ratio

22-11. Six-panel T and seven panel H markings are illustrated below. (See figures 22-3 and 22-4.)

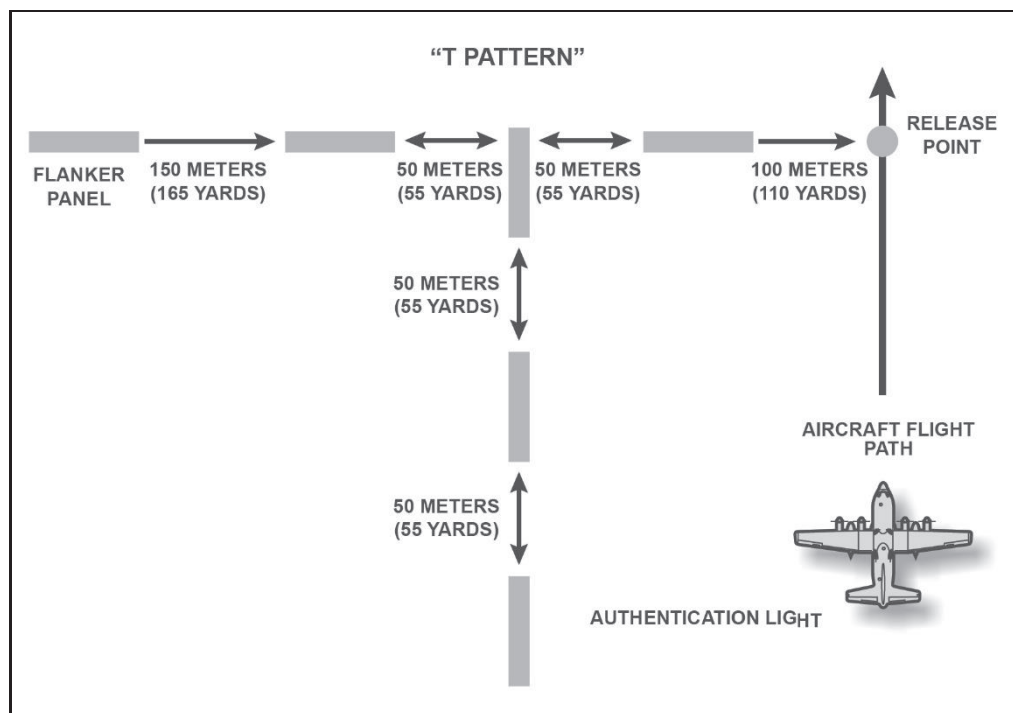


Figure 22-3. GMRS panel emplacement for T pattern

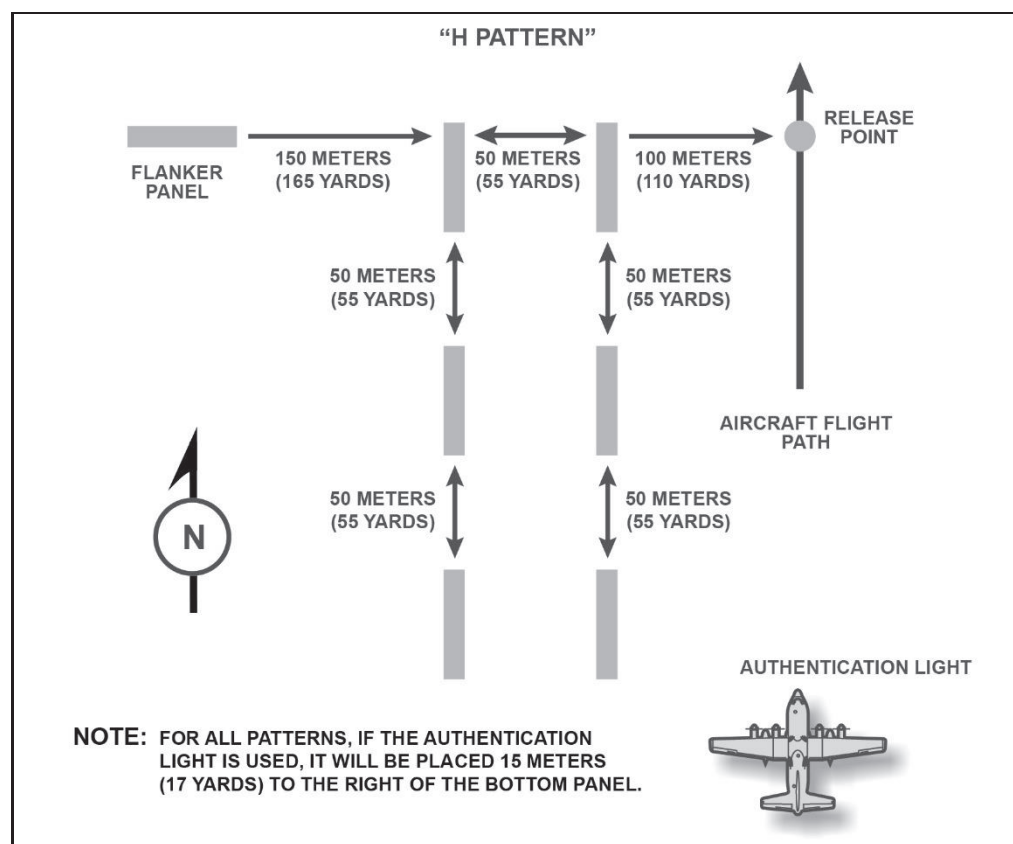


Figure 22-4. GMRS panel emplacement for H pattern

22-12. VIRS is used to execute a drop over the RP by ground-to-air verbal command. This method allows the conduct of the operation with a minimum amount of prior DZ information and coordination. The aircraft flies the given direction until the DZSTL sees the aircraft. A code letter (H, E, A, T) marks the RP. Once the crew identifies the DZ, the radio operator directs the aircraft over the drop heading RP. When the aircraft is directly over the RP, the command EXECUTE, EXECUTE, EXECUTE initiates the drop. (See figure 22-5.)

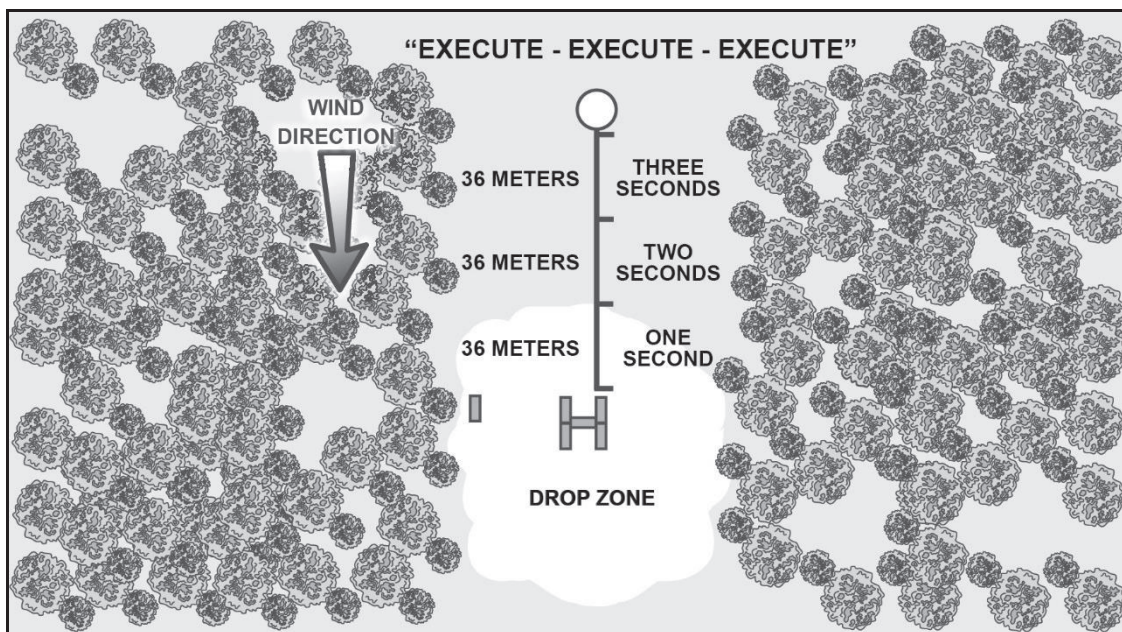


Figure 22-5. Army VIRS offset

DAY AND NIGHT DZ MARKINGS

22-13. The following actions are required for a day VIRS DZ. The DZSTL places the code letter on the drop heading, with the base panel of the letter at the release point. The code letter is formed by VS-17G panels placed together. Each letter is two panels high and one panel wide.

22-14. The flank panel is placed parallel to the code letter oriented lengthwise on drop heading and aligned with the base panel and elevated 45 degrees towards the release point. It is placed 200 meters to the left of the code letter (or at the edge of the DZ, whichever is closer). The far panel is placed 500 meters from the base panel (or at the edge of the DZ, whichever is closer) and on line with the drop heading oriented lengthwise on drop heading and elevated 45 degrees towards the release point. Both the far and flank panels consist of a single VS-17G panel. These panels must also be elevated at a 45-degree angle towards the release point to improve visibility.

22-15. The procedures for establishing the DZ are the same for night operations except that white lights are used for the code letter and far and flank markings. Each code letter is four lights high and three lights wide. There is a distance of five meters between each light in the code letter. The far and flank lights are signal lights. Also, a white-and-red lens air traffic control (SE 11) light should be located at the RP. Lights must be shielded on three sides or placed in pits to prevent enemy ground observation.

GUIDANCE PROCEDURES

22-16. During Army DZ operations, the ground-to-air (GTA) is responsible for guiding the jump aircraft to the DZ, over the DZ on the proper drop heading, and at the proper altitude and drop speed. They ensure the jumpers exit the aircraft at the proper release point.

22-17. Once the jumpers have exited the aircraft, the GTA then clears the aircraft from the control zone. The following is an example of how the aircraft is cleared:

- Pilot: "C3D36, this is A2A22, over."
- GTA: A2A22, this is C3D36, over.
- Pilot: "D36, this is A22, CCP inbound for a personnel parachute drop, over."
- GTA: "A22, this is D36, state type and number, over."
- Pilot: "D36, A22 is a single UH-1H, over."
- GTA: "A22, this is D36,
 - "Heading [180] distance (from communications check point).
 - "Drop heading [180].
 - "Drop altitude [1500] (feet indicated).
 - "Drop speed.
 - "Number jumpers/bundles that can be accepted."
- GTA controller reads entire ATC block to the pilot and ends the transmission with: "Continue approach for visual identification, over."
- Pilot: "Wilco."
- Upon sighting aircraft, the GTA tells the pilot: "A22, this is D36, I am at your 11 o'clock, 500 meters, signal out, can you identify, over?"
- Pilot: "D36, A22 identifies orange panel, over."
- GTA: "A22, D36 has visual contact, turn to drop heading, over."
- Pilot: "D36, A22 turning drop heading, over."
- GTA: "A22, this is D36, steer left/right, over."
- Pilot: "D36, A22 roger."
- GTA: "A22, this is D36, on course, over."
- Pilot: "D36, A22 roger."
- When aircraft is eight to 10 seconds out from release point: GTA: "A22, this is D36, with six jumpers, stand by, over."
- PILOT: "D36, this is A22, standing by, over."
- When aircraft is directly over the release point: GTA: "A22, this is D36, with six jumpers, EXECUTE, EXECUTE, EXECUTE." (GTA must say EXECUTE or NO DROP at least three times, or until the first load exits.)
- At completion of operation, the GTA tells the pilot: "A22, this is D36, I observe six jumpers away and clear, state intention and report when clear of my control zone," (include issuing any advisories), "over." (GTA must place aircraft into a closed traffic pattern with a reporting point if more than one pass is required.)

JUMPMASER SPOTTED AND JUMPMASER RELEASE

22-18. Jumpmaster spotted and jumpmaster release is used by U.S. Marine Corps, U.S. Navy, and U.S. Special Operations Command units. The JSJR release point computation or "spotting" may be used from all types of aircraft. It is the same concept as the calculations used for VIRS and GMRS however; it is used by the JM for spotting and determining the release point from the aircraft. A map of the drop zone 1:50,000 or 1:25,000, protractor, pencil, and calculator are required. Plot the impact point, canopy drift, forward throw, RP, terrain feature, and wind direction on the map using the procedures below.

- Step 1. Determine what effect the wind will have on the canopy using the wind drift formula $D = KAV$, as outlined in chapter 21.
- Step 2. Using a protractor, plot the impact point on the map. Starting from the impact point, plot the canopy drift into the direction of the wind on a map.
- Step 3. Determine the forward throw of the aircraft as outlined in chapter 21.
- Step 4. Starting at the canopy drift, plot the forward throw opposite the direction of flight and mark this on the map. This is called the release point.

Note. Continue with steps 5 and 6 if the RP is not identifiable from the aircraft.

- Step 5. Locate a terrain feature that is on the inbound aircraft track and is as close as possible to the RP. For example a road, hilltop, buildings, trees, river, bridge, or something identifiable from the air. Mark the terrain feature reference point on the map.
- Step 6. Determine the count (time in seconds), from the terrain feature reference point to the release point on the ground. The time/distance formula $T = D/R$ is used.
- Step 7. The JM starts “spotting” by guiding the aircraft to the intended release point by giving the pilot flight corrections. The JM gives the “GO” when the aircraft is over the RP. If a terrain feature reference point is used, the JM guides the aircraft to the terrain feature and starts their count. The aircraft maintains heading and the JM gives the “GO” at the end of the count RP. The jumpers exit the aircraft at the RP and forward throw to the canopy drift. The canopy drift will take effect, and the first jumper will land on the impact point.

22-19. For example, to determine the count in seconds and RP for a UH-60 flying at 270 degrees, dropping four jumpers equipped with MC-6 parachutes from an altitude of 1500 feet AGL in 10 knot winds from 060 degrees with a drop speed of 80 knots indicated airspeed and the nearest terrain feature on the aircraft track is 165 meters away, compute the following:

- Step 1. $D = KAV$.
 - $D = 3.0$ by 15 by 10.
 - $D = 450$ meters.
- Step 2. Plot on the map.
- Step 3 Forward throw, aircraft speed is 80 knots ($80 \text{ by } 0.51 = 40.8$ or 41 meters per second).
- Step 4. Plot on the map.
- Step 5. Locate a terrain feature reference point.
- Step 6. Determine the count from terrain feature to the RP use $T = D/R$.
 - The terrain feature is a road 165 meters from the RP.
 - $T = 165/41$.
 - $T =$ four seconds past the terrain feature.
- Step 7. Check to ensure everything is properly calculated and plotted on the map. Using all the information from the example, the jumpers will exit and land as shown in figure 22-6.

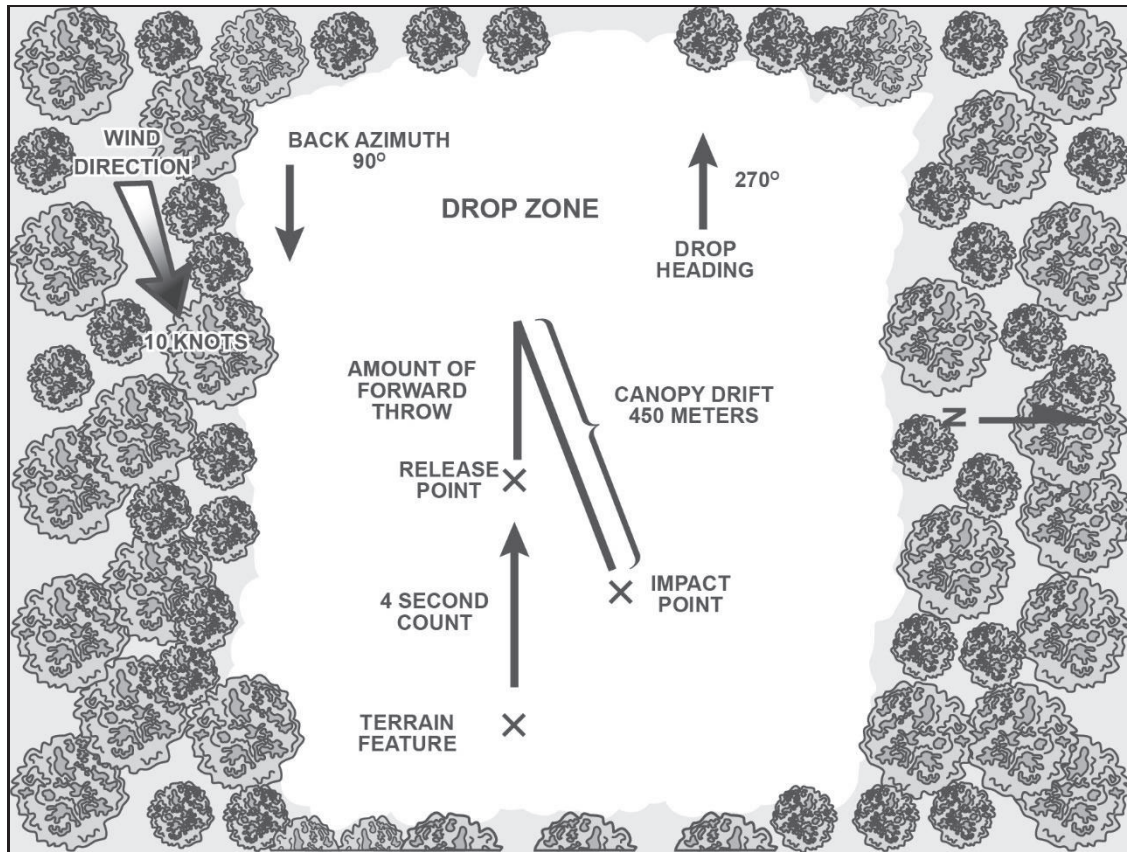


Figure 22-6. Release point location for JSJR

ACCEPTABLE WIND LIMITATIONS

22-20. Maximum allowable surface wind for static line parachute personnel airdrops is 13 knots (17 knots for WDZ). The maximum surface wind speed for heavy equipment airdrops is 17 knots with ground quick disconnects, 13 knots without ground quick disconnects, and 20 knots for CDS using G-14 parachutes. There is no wind speed restriction when high velocity parachutes are used with door bundles and CDS. The Airborne commander is responsible for ensuring winds on the DZ do not exceed 13 knots during static line personnel airdrops.

22-21. Services will only use approved anemometers to measure surface winds during all personnel and cargo parachute operations. The approved anemometers are the DIC, DIC3, Turbometer, and AN/PMQ-3A. The AN/ML433A/PM and the anemometers that use floating balls or small floating lightweight aluminum devices in a tube are not authorized for use during personnel or cargo airdrop operations. The DIC, DIC3, and Turbometer cannot be calibrated; they must be given an expedient check just before use. An expedient check includes:

- Ensuring fresh batteries are installed in the anemometer.
- Checking the anemometer in a no-wind condition such as in a vehicle cab or a building.
- Turning on the anemometer and if any reading other than zero registers, the anemometer is not fit for use and must be discarded.
- Using a three-anemometer check by comparing the reading on three anemometers in identical conditions. Discard the one anemometer that doesn't read the same as the other two.

22-22. The Turbometer must be held within 20 degrees of wind line with the wind entering the rear of the meter to ensure accurate readings. Calibration requirements for the AN/PMQ-3A will be conducted according to the TMs.

TEN MINUTE WINDOW

22-23. On multiple aircraft operations or single aircraft operations using more than 2100 meters of DZ, the surface wind is measured from the control center and the highest point of elevation on the DZ, or the trail edge of the DZ. For single operations using less than 2100 meters of DZ, the wind is measured from only one location, normally the control center. Beginning one minute before TOT, the DZSO begins a constant monitoring of the surface wind using an anemometer.

22-24. If the surface wind exceeds allowable wind limits, the aircraft is notified of a NO DROP, and a new 10-minute window is established. If the wind remains within limits during this new window, the drop takes place as planned. If the winds exceed allowable limits during the new window, NO DROP is relayed to the pilot and the entire procedure starts again. A NO DROP signal may be relayed to the aircraft by radio, red smoke, red flares, scrambled panels, removing the RAM, or any other planned signal.

POSTMISSION REQUIREMENTS

22-25. Immediately following the operation, several reports must be forwarded to higher headquarters. Most of these reports, such as the DZSO report, are self-explanatory and require little time to complete. AF IMT Form 4304 (see figure 22-7) is used to record strike report information. All services will complete DD Form 1748-2 (see figure 22-8 on page 22-12) and may also be required to report malfunctions and incidents on the loss of equipment or injury to personnel in compliance with service regulations in OPNAVINST 5102.1D/MCO P5102.1B.

22-26. Complete the AF IMT Form 4304 as follows:

- DATE: date of airdrop.
- LOCATION: name of DZ.
- STS AND UNIT: STS name and unit.
- DZ/LZ/EZ CONTROL OFFICER AND UNIT: DZSTL name and unit.
- DROP ZONE SAFETY OFFICER AND UNIT: enter names.
- LINE NO: mission sequence number of each aircraft.

Note. Every aircraft has a mission sequence number (entered under LINE NO column). Subsequent passes by that same aircraft will all be scored on separate lines in the order that they occur immediately below the line for the first pass.

- TYPE ACFT: type of aircraft.
- UNIT: unit of aircraft.
- CALL SIGN: call sign of pilot.
- TYPE MSN: type of mission; refer to LEGEND for abbreviations.
- ETA: estimated time of arrival, estimated TOT, battalion or brigade operations staff officer (S-3) air brief.
- ETA: actual arrival time of every pass.
- STRIKE REPORT.
- YDS: distance first jumper or container lands from PI in yards; if within 25 yards, it is scored a PI.
- CLOCK: using direction of flight as 12 o'clock and its back azimuth as 6 o'clock, estimated direction from PI to first jumper or bundle.
- SURF WIND: surface wind; direction in degrees and velocity in knots.
- SCORE METHOD: r – refer to LEGEND.
- MEAN EFFECTIVE WIND.
- TIME: time taken.
- ALT: what altitude taken to (should be drop altitude).
- DIR & VEL: wind direction in degrees and velocity in knots.

22-27. The DZSTL forwards the completed AF IMT Form 4304 to the air operations officer, who submits it through the chain of command to the U.S. Air Force representative.

DROP ZONE/LANDING ZONE CONTROL LOG																
LOCATION		GCT AND UNIT		DZ/LZ CONTROL OFFICER AND UNIT		DATE		DROP ZONE SAFETY OFFICER AND UNIT								
FALCON DROP ZONE		SSGT DOE / SRA PUBLIC 1721 CDS				20140823		MAJ SNUFY 2FSSD								
LEGEND																
AH-Airland (Heavy) AL-Airland CD-CDS/CRL/CRS GM-GMRS				HE - Heavy Equipment HO - HALO/HALO IL - Inverted "L"				LS-Instrument Landing System PE-Personnel RB-Radar Beacon Drop		SCORE METHOD M - Measured P - Paced E - Estimated						
LINE NO	TYPE ACFT	UNIT	CALL SIGN	TYPE MSN	ETA	ATA	STRIKE REPORT			LZ	SURF WIND	SCORE METHOD	MEAN EFFECTIVE WIND			REMARKS
							YDS	CLOCK					TIME	ALT	DIR & VEL	
1	C-130	377	2700	HE	1000	1000	250	S			E	0945	1100	15804		
2				PE		1012	DRY	PASS								
3				PE		1025	50	6								
4				PE		1029	600	5								
5																
6	C-77	437	548A	CD	1100	1100	250	6		0210	E	1045	600	15011		
7			54			1105	100	8								
8			55			1115	200	4								
9			59			1115	200	6								
10																
11																
12																
13																
14																
15																

REPLACES AMC 168, DEC 92

AF IMT 4304, 20020903, V1

Figure 22-7. AF IMT Form 4304, Drop Zone/Landing Zone Control Log

A. GENERAL	
(1) JA/ATT Sequence Number	AB102
(2) Date (of Operation)	06 OCT 2017
(3) TOT (Local Time)	0400
(4) Type Mission	PERSONNEL DROP
(a) Number of Aircraft	3
(b) Type Aircraft	C-130
(c) Type Assault Zone	N/A
(d) Type of Delivery (CARP, VIRS, GMRS)	CARP
B. PERSONNEL INVOLVED	
(1) Flying Unit	138TH AIR WING
(2) Unit Supported	1-50TH
(3) DZSTL (Name/Rank/Unit)	SOLDIER / SFC / 517TH
(4) Medics (In Place)	109TH MED CO
(5) POC for Further Information	SFC IVAN MEDIC
C. ASSAULT ZONE	
(1) Name/Type	GOOD DROP ZONE
(2) Location	AB1234 6789 FORT BENNING, GA
(3) Any Deviations from Survey	NONE
(4) Marked IAW the Survey	YES
D. COMMUNICATIONS WITH AIRCRAFT	
(1) Type Radios	SINCGARS
(2) Frequency Used	31.00
(3) Problems	N/A
E. WEATHER PASSED TO AIRCRAFT	
(1) Time of Observation	0300
(2) Time Weather was Passed to Aircraft	0330
(3) MEW	21 KNOTS
(4) Surface Wind	3-5 KNOTS
(5) Remarks	
F. POST-INCIDENT WEATHER OBSERVATION	
WINDS CALM	
G. NARRATIVE	

Figure 22-8. Sample of a suggested format for incident reporting

SURVEYS

22-28. U.S. Air Force DZs are surveyed by a qualified combat controller, DZSTL (for SOF only: JM qualified at a minimum). However, CTT are not required to be JM qualified. All DZs will be surveyed or tactically assessed by qualified CTT/DZSTL/Pathfinder personnel prior to use. Procedures can be found in FM 3-21.38 and AFI 13-217. All information concerning the DZ is placed on AF IMT Form 3823. (See figure 22-9 on page 22-14 and figure 22-10 on page 22-15.) The form mentioned in this paragraph provide the user with the essential information needed to operate the DZ. Section 4 of the forms states what type of missions may be conducted on the DZ. ALL drop zone surveys will be recorded on an AF Form 3823.

22-29. During contingency or wartime and major exercises, DZSTLs may be expected to tactically locate, inspect, and approve a potential DZ for follow-up airdrop of resupply or reinforcements.

22-30. All services will conduct airdrops on approved DZs. The tactical assessment is an approved means to certify a DZ for airdrop on fixed-wing and rotary-wing aircraft. All tactical DZ assessments that can be

used for future operations and that meet the standard for U.S. Air Force aircraft will be forwarded to the U.S. Air Force for inclusion in the zone availability report. This will be accomplished using the following checklist, AFI 13-217, and FM 3-21.38. The JM/DZSTL will ensure all DZ requirements are within standards for the type of personnel, parachutes, and equipment airdropped. Once a DZ has been tactically assessed, it must be approved using AF IMT Form 3823. To properly complete an AF IMT Form 3823, the information below must be completed:

- DZ name or intended call sign.
- Topographical map series and sheet number.
- Recommended approach axis magnetic course.
- Point of impact location (eight-digit grid).
- Leading edge centerline coordinates (eight-digit grid).
- DZ size in meters or yards.
- Air traffic restrictions or hazards.
- Name of surveyor and unit assigned.
- Recommended approval or disapproval (cite reason for disapproval).
- Remarks (include a recommendation for airdrop option, CARP, GMRS, VIRS, WSVC or blind drop).
- All other requirements must be met for a nontactical drop zone.

22-31. Airdrop operations on tactically assessed DZs are made only under the following conditions:

- During training events, using rotary-wing or fixed-wing aircraft.
- The airdrop is located within a military reservation, on U.S. government-owned or government-leased property or a memorandum of understanding has been established with the land owner.
- The supported service accepts the responsibility for any damage that occurs as a result of airdrop activity.
- There is adequate time for safe, effective planning.
- All hazards and obstacles are identified.
- A detailed risk assessment is completed.
- The tactical assessment is documented on AF IMT Form 3823 and is approved by the first colonel (O-6) in the chain of command.

AIRBORNE UNIT ASSUMES RESPONSIBILITY FOR PERSONNEL INJURY AND EQUIPMENT DAMAGE ON DZ									
DROP ZONE SURVEY	1A. DZ NAME FRYAR DZ			1B. ZAR INDEX NO. 88		2A. COUNTRY USA		2B. STATE ALABAMA	
	3. MAP SERIES/SHEET NUMBER/ EDITION/ DATE OF MAP V 745-S FORT BENNING MIM 2014								
4. SURVEY APPROVAL/DISAPPROVAL DATA									
4A1. DATE SURVEYED 20140801		4A2. TYPED NAME AND GRADE OF SURVEYOR JOHN Q. PUBLIC, TSGT, USAF			4A3. PHONE NUMBER (DSN) 999-9999		4A4. UNIT HHC 1/507TH PIR		
4B. DROP ZONE APPROVAL/DISAPPROVAL A = APPROVED D = DISAPPROVED	FOR	CDS/CRL/CRS	PER	HE	MFF	SATB	CRRC	HSLADS	HVCDS
	DAY	A	A	A	A	A	D	A	A
	NIGHT	A	A	A	A	A	D	A	A
4C. DATE APPROVED FOR GROUND OPERATIONS	NAME, GRADE AND SERVICE OF APPROVAL AUTHORITY JAMES DOE, CPT USAF				PHONE NUMBER (DSN) 888-8888		SIGNATURE <i>James Doe</i>		
	UNIT AND LOCATION 15 STS/DO POPE AFB, NC 12345								
4D. DATE SAFETY OF FLIGHT REVIEW APPROVED 20140131	NAME AND GRADE OF REVIEWING OFFICER HENRY SNUFFY, MAJ USAF				PHONE NUMBER (DSN) 777-7777		SIGNATURE <i>Henry Snuffy</i>		
	UNIT AND LOCATION 300 OSS /OSK CHARLESTON AFB, SC 54321								
4E. DATE OF MAJCOM APPROVAL	NAME AND GRADE OF APPROVING AUTHORITY LEE H. SMITH, COL USAF				PHONE NUMBER (DSN) 666-6666		SIGNATURE <i>Lee H. Smith</i>		
	UNIT AND LOCATION 666 OG/CC CHARLESTON AFB, SC 54321								
5. COORDINATING ACTIVITIES									
A. DZ CONTROLLING AGENCY OR UNIT LAWSON ARMY AIRFIELD, FT BENNING, GA			B. MEMORANDUM OF UNDERSTANDING/LAND USE YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> ATTACHED <input type="checkbox"/>				C. PHONE NUMBER (DSN) 555-5555		
D. RANGE CONTROL RANGE CONTROL FM 01.10 / UHF 111.5 (SKYWATCH)							E. PHONE NUMBER (DSN) 444-4444		
6. DZ DIMENSIONS (YDS/MTRS) (FOR CIRCULAR DZ, ENTER RADIUS ONLY)									
A. LENGTH 2500 YDS		B. WIDTH 1300 YDS				C. RADIUS N/A			
POINT OF IMPACT DISTANCES FROM DZ LEADING EDGE		D. CDS PI 275 YDS		E. PE PI 350 YDS		F. HE PI 550 YDS			
7. DZ AXIS DATA (OPTIONAL FOR CIRCULAR DZ)									
A. MAGNETIC 350.5		B. GRID (MGRS) 347.2		C. TRUE 348		D. SOURCE/DATE OF VARIATION DATA			
8. GROUND POINT ELEVATION		A. CDS PI 300'		B. HE PI 300'		C. PE PI 300'		D. HIGHEST 323'	
9. DZ COORDINATES									
A. SPHEROID 1866 CLARKE		B. DATUM 1927 NA		C. GRID ZONE 16 S		D. EASTING 6		E. NORTHING 35	
F. GPS DERIVED COORDINATES YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>			G. POINT OF ORIGIN FL 92963 72166 SW corner of bus parking pad. PPI 1069 yds at 221 degrees.						
H. POINT	MGRS COORDINATES			WGS84 LATITUDE (D-M.MM)			WGS84 LONGITUDE (D-M.MM)		
DZ CENTERPOINT	FL 92196 72200			32 16.317' N			084 57.561' W		
CDS PI	FL 92383 71383			32 15.844' N			084 57.452' W		
PE PI	FL 92368 71396			32 15.881' N			084 57.487' W		
HE PI	FL 92331 71574			32 15.977' N			084 57.482' W		
I. DZ CORNERS MGRS COORDINATES									
LEFT LEADING EDGE FL 91855 70958				RIGHT LEADING EDGE FL 93017 71207					
LEFT TRAILING EDGE FL 91240 73150				RIGHT TRAILING EDGE FL 92538 73442					

AF IMT 3823, 20021001, V2

PREVIOUS EDITIONS ARE OBSOLETE.

Figure 22-9. Sample of a completed AF-IMT Form 3823 (front)

DZ NAME FRYAR DZ	
10. DZ DIAGRAM	
11. REMARKS 1. User accepts responsibility for damage to equipment and injury to personnel resulting from the airdrops of AMC aircraft. 2. Prior coordination is required before entry to R-3002. 3. Drop Zone is within Lawson AAF control zone. Left traffic only. Aircraft must maintain contact with control tower during airdrop operations on 119.05 / 269.525 / 288.275. Drop Zone frequencies are UHF 234.5 / VHF 141.8 FM 52.90. 4. Lawson AAF located 3NM @ 340 degrees. Dekkar Airstrip is located 1.2nm @ 030 degrees. 5. Chattahoochee river is located 030-190 degrees between 2.0-3.2 NM. 6. Jump towers 250' AGL are located 4.8 NM @ 350 degrees. 7. ILS approach to Rwy 33 passes 600 meters of eastern border of the DZ. 8. Highest obstruction is the 2249' MSL tower located 9 MN ENE, an additional tower 840' MSL is on DZ centerline 4.5NM prior to DZ. 9. Pond located within the NW section of DZ approximately, 120x100 yds in size. Water depth is 9 ft. 10. Boat support required for all personnel mass tactical and formation airdrops to Fryer DZ. Boat support will include personnel for safety in accordance with local regulations. 11. 70' and 90' treeline encroaches the left side and trailing edge of DZ. 12. 250' High tension power lines are located within 200 yds of the left leading edge of the DZ. Powerlines run SE to NW. Additional power lines are located 500 yds from departure end of DZ centerline. 13. Offset Personnel PI coordinates are standard 250 yards adjacent to the PEPI abeam left and right. The following coordinates are recommended: Left offset N 32 degrees 15.846', W 084 degrees 57.068. Right offset N 32 degrees 15.894', W 084 degrees 57.321'.	
12. PHOTOGRAPH AVAILABLE YES <input type="checkbox"/> NO <input type="checkbox"/>	LOW LEVEL ROUTES <input type="checkbox"/> NONE AVAILABLE <input type="checkbox"/> ROUTE NAME/DESIGNATOR
AF IMT 3823, 20021001, V2 (REVERSE)	

Figure 22-10. Sample of a completed AF-IMT Form 3823 (back)

This page intentionally left blank.

Chapter 23

Malfunction Officer

The investigation of personnel, parachutes, and equipment malfunctions receives the highest priority and is secondary in priority only to medical aid for the injured. It supersedes all other aspects of the operation to include ground tactical play. Prompt and accurate investigations and reporting could save lives and equipment. The report provides data to determine if a system or procedural training change is necessary to prevent future occurrences. The malfunction officer (MO) is a member of the drop zone support team. Any assistance required by the MO must pass through the DZSO or DZSTL, who controls the DZ. The MO discusses as much data as allowable with the DZSO or DZSTL prior to transmitting it to the control group. The MO and the DZSO or DZSTL normally discuss this feeder information immediately after the jump is complete.

Note. AR 59-4 governs the duties and responsibilities of the malfunction officer. The following chapter provides only the minimum requirements for performing the duties of the MO. If there is a conflict between this TC and AR 59-4, follow the guidance in AR 59-4.

MULTISERVICE MO QUALIFICATIONS AND DUTIES

23-1. Malfunction officers are trained and certified according to the online training support package provided by the USAQMS. The training is located on the Lifelong Learning Portal blackboard. Individuals will complete the required and unit specific training conducted by the unit-designated MO trainer. Individuals are retrained and recertified annually. Training and certification records are maintained on file at the unit level.

23-2. A U.S. Army malfunction officer is required to be a commissioned officer, warrant officer, or noncommissioned officer at a minimum grade of E-5. The MO is a USAQMS-trained parachute rigger with military occupational specialty 92R, 921A, or 92AR9 who is occupying an authorized position, is current and technically proficient with airdrop, parachute recovery, and both personnel and cargo parachute systems. The organization that provides the parachutes will provide the MO.

23-3. Depending on the type of airdrop, the MO must be qualified at a minimum for the following operations:

- Static line personnel parachutes, not including Ram Air Parachute Systems (RAPS), which includes:
 - Pack-in-process inspector, certified current and qualified
 - Malfunction officer, certified and unit SOP trained, current and qualified.
- Ram Air Parachute Systems, to include static line deployed RAPS if applicable, which includes:
 - USAQMS ram air certified.
 - Pack-in-process inspector certified.
 - Malfunction officer certified and unit SOP trained, current and qualified.
 - W8/4X free fall qualified and current.
 - Refer to AR 59-4 and ATP 3-18.11/AFMAN 11-411(I)/NTTP 3-05.26M.
- Ram Air Parachute System JPADS airdrop (precision airdrop), which includes:
 - RAPS pack-in-process inspector certified.
 - JPADS trained and certified.

- Malfunction officer certified and unit SOP trained, current and qualified.
- Ram air cargo trained and certified, if applicable.

Note. Units may choose to place a second MO at the planned parachute opening point for ram air cargo operations.

- Cargo airdrop, which includes:
 - Joint airdrop inspector trained and certified according to unit SOPs
 - Malfunction officer trained and certified.

23-4. With one exception, the MO qualifications may be waived for a Soldier with military occupational specialty 92R1P (E-4 only) when recommended by the senior airdrop systems technician (military occupational specialty 921A) in charge of that organization or other authorized unit supervisors according to AR 750-32 and approved by the first lieutenant colonel (O-5) in the chain of command. Qualified and authorized E-4 MOs are limited to single ship missions only. Army National Guard and U.S. Army Reserve personnel meeting the above requirements are considered qualified MOs as civilian technicians.

Note. Recommend the parachute facility send more than one MO for more than two ship operations to ensure video/ recording of all jumpers.

23-5. Malfunction officers are trained and certified in compliance with the plan of instruction and lesson plans provided by the USAQMS. Individuals will be retrained and recertified annually. Training and certification records are maintained on file at the unit level.

23-6. The organization that provides the parachutes will provide the MO. The U.S. Air Force MOs are a minimum grade of E-4 and hold an Air Force specialty code of 1A2X1, 1A9X1, or 2T2X1. For Air National Guard units, Air Force specialty code 1C2X1 and 1T2X1 personnel may also perform MO duties. U.S. Air Force MOs are designated in writing by the applicable group commander or equivalent. Depending on the type of airdrop, the MO must be qualified at a minimum for the following operations:

- Static line personnel parachutes, not including Ram Air Personnel Parachute Systems (RAPPS)—
 - Pack-in-process inspector certified.
 - MO certified and unit SOP trained, current and qualified.
- Ram Air Personnel Parachute Systems (to include static line deployed RAPPS if applicable)—
 - Pack-in-process inspector certified.
 - MO certified and unit SOP trained, current and qualified.

Note. Units may choose to place a second MO at the planned parachute opening point for high altitude high opening operations.

- Ram Air Parachute System for airdrop or precision joint airdrop systems:
 - Joint airdrop inspector trained and certified (U.S. Air Force specialty codes 1A2X1 and 1A9X1).
 - MO certified and unit SOP trained, current and qualified.
 - JPADS trained and certified (U.S. Air Force specialty code 2T2X1).

Note. Units may choose to place a second MO at the planned parachute opening point for high altitude high opening operations.

23-7. A U.S. Navy MO is a commissioned officer, warrant officer, or petty officer with a minimum grade of E-5. The MO will be a USAQMS trained parachute rigger with Navy enlisted classification 7353 who is technically proficient with airdrop, parachute recovery, and personnel and cargo parachute systems.

Depending on the type of airdrop, the MO must be qualified at a minimum for the static line personnel parachutes (not including RAPS) and be:

- Quality assurance inspector certified.
- MO certified and unit SOP trained, current and qualified

23-8. A U.S. Marine Corps MO is a parachute rigger with a military occupational specialty of 0451, E-4 or above; or JM qualified, E-5 or above; and must be appointed in writing by the commanding officer and receive unit-level refresher training annually. The training includes the review of regulations MCO 3120.11A. The MO is from the organization that provides the air items. However, when an Airborne unit provides air items to another Airborne unit as defined in MCO 3120.11A, for a specified duration and where temporary custody of the air items is transferred via DD Form 1348, *DOD Single Line Item Requisition System Document (Manual)*, the supplying unit does not supply the MO.

23-9. The MO is present on the DZ during all personnel and equipment drops and is knowledgeable about the requirements contained in AR 59-4.

23-10. The MO possesses the following while performing MO duties:

- A communication capability with the DZ control party.
- Photographic equipment. Pictures of malfunctions are required to assist investigations and are essential for the proper performance of MO duties. At a minimum, a high-quality video camera is used during all daytime operations to record airdrop activity from the DZ perspective, including landings when possible. A video camera with night vision capability is highly recommended for recording nighttime operations. All other vantage points of video (such as aircraft and aerial) greatly enhance the training reinforcement value and aid with malfunction and mishap investigations. A high-quality digital still camera with zoom capability is required to take photographs of malfunctions or incidents. Photographs will be electronically transmitted to the USAQMS for the board to use in malfunction analysis. (See AR 59-4 for more information.)
- The DD Form 1748-2 in AR 59-4 and clerical supplies necessary to tag equipment and initiate reports.
- Binoculars (day) or night vision devices (night). Night-vision devices will be supplied by the DZ control party.
- An approved wind meter.
- A dedicated (four-wheel drive capable) vehicle to move around the DZ.
- A GPS capable of storing way points, if applicable.
- The applicable DZ survey.

INVESTIGATING MALFUNCTIONS

23-11. The onsite investigation of personnel parachutes and equipment malfunctions or incidents will receive the highest priority, second only to medical aid for the injured. In the event of a malfunction or incident, any exercise or field training mission stops until a determination is made whether there is a Class A or Class B accident.

23-12. If a Class A or Class B accident is determined, the exercise or field training mission may proceed; however, the accident investigation takes precedence over any exercise or field training mission activities. Prompt and accurate investigation and reporting assists in saving lives and equipment. Efficient and effective measures are taken without delay to document the malfunction or incident and complete the onsite investigation. At no time will the onsite investigation interfere with any medical support required. In all situations involving a malfunction or incident, the MO—

- Immediately places the impact area off limits, posts guards, and initiates an onsite investigation to determine the causes of the malfunction or incident using the checklists in AR 59-4.
- Immediately notifies the DZSTL or DZSO and the unit appointed subject matter expert (SME).
- Determines whether the preliminary investigation reveals suspected or intentional acts of tampering or sabotage by considering the following:

- If suspected or intentional acts of tampering or sabotage are present, terminates the investigation.
- Ensures all evidence—including reports, findings, statements, photographs, videos, and area sketches—is released (as annotated on the evidence log or chain of custody) to the criminal investigator(s).
- Ensures the military police are immediately notified by the DZSTL or DZSO:
 - Upon arrival of the responding criminal investigation organization (for example, Criminal Investigation Division), briefs the status of the investigation and actions taken, including whether or not a suspected or intentional act of tampering or sabotage exists.
 - If the criminal investigator accepts a recommendation of no tampering or sabotage, MO retains the evidence.
 - If the decision is made that the physical evidence will be retained, secures it according to AR 195-5 (or service-specific security regulations) and maintain a chain of custody, according to DA Form 4137, *Evidence/Property Custody Document* (or service-specific chain of custody regulatory guidance).
 - Secures all physical evidence and other items involved in the malfunction or incident. Some items are extremely perishable and must be protected from the environment and from tampering.

23-13. For partial or total malfunctions or incidents during personnel parachute jumps where there are no serious injuries, the MO:

- Immediately notifies the DZSTL or DZSO and the unit-appointed SME.
- Immediately places the impact area off limits, posts guards, and initiates an onsite investigation to determine if possible, the causes of the malfunction or incident using the checklists in AR 59-4.
- Ensures the scene is thoroughly documented using photographs, sketches, and video.
- Ensures items of physical evidence that are collected are released only to the appropriate SME appointed to assist in the investigation and members of an appointed safety investigation review board (SIRB), if applicable.
- Ensure the chain of custody (MO and SME) is established and the appropriate security measures for all equipment involved in the parachute malfunction is maintained in compliance with AR 195-5 (or service-specific security regulations).
- Carries out any subsequent investigations as required, and limits access to the evidence and equipment (MO and designated SME). Determines if the preliminary investigation reveals suspected or intentional acts of tampering or sabotage, and if it does, ensures the DZSTL or DZSO immediately notifies the military police and the criminal investigation organizations (Criminal Investigation Division, Naval Criminal Investigation Division, and Air Force Office of Special Investigations).
- Upon arrival of the responding criminal investigation organization, brief the status of the inspection and actions taken. In this instance, the evidence will be released to the investigating organization. The investigative activity will interfere as little as possible with the post jump; however, the criminal investigation will take priority.

23-14. For partial or total malfunctions or incidents during personnel parachute jumps where there are serious injuries or death resulting from a parachute jump, the MO:

- Immediately notifies the DZSTL or DZSO and the unit appointed SME. Ensure the DZSTL or DZSO notifies the military police and the criminal investigation organization (Criminal Investigation Division, Naval Criminal Investigation Division, and Air Force Office of Special Investigations) in the event of death.
- Immediately places the impact site off limits and post guards to secure the integrity of the accident scene. Limits access to the scene to the MO, unit SME assisting the MO, the responding criminal investigating organization, SIRB, and medical personnel. Ensures the security of the scene does not interfere with medical support or delays lifesaving measures.
- Immediately initiates an investigation using the checklists in AR 59-4. Prior to the investigating organization's arrival, ensures that the scene is not altered. If failure to immediately collect items

of evidence would result in degradation or destruction, properly document and secure that evidence. If possible, the evidence will not be disturbed until the appropriate SIRB is on the scene.

- Ensures the scene is thoroughly documented using photographs, sketches, and video.
- Upon arrival of the investigating organization, briefs the status of the investigation on actions taken and whether the MO believes that suspected or intentional acts of tampering or sabotage exists. If the criminal investigator accepts a recommendation of no tampering or sabotage, the MO retains the evidence for the SIRB.
- Terminates the examination and investigation if tampering or sabotage is suspected or determined. The evidence, along with all copies of reports, findings, and statements, including photographs, are then released to the criminal investigator. If the decision has been made that the physical evidence remains with the MO, physical evidence and security will be maintained by the personnel responsible for the chain of custody (MO and SME appointed by the investigating safety board).

23-15. Airdrop load malfunctions or incidents require the MO to:

- Immediately notify the DZSTL or DZSO and the unit-appointed SME.
- Immediately place the impact area off limits, post guards, and initiate an onsite investigation to determine if possible, the causes of the malfunction or incident using the checklists in AR 59-4.
- Ensure the scene is thoroughly documented using photographs, sketches, and video.
- Ensure items of physical evidence that are collected are released only to the appropriate SME appointed to assist in the investigation and members of an appointed SIRB, if applicable.
- Ensure the chain of custody (MO and SME) is established and the appropriate security measures for all equipment involved in the malfunction is maintained in compliance with AR 195-5 (or service-specific security regulations).
- Carry out any subsequent investigations as required and limit access to the evidence and equipment (MO and designated SME). Determine if the preliminary investigation reveals suspected or intentional acts of tampering or sabotage, and if it does, ensure the DZSTL or DZSO immediately notifies the military police and the criminal investigation organization (Criminal Investigation Division, Naval Criminal Investigation Division, and Air Force Office of Special Investigations I).
- Upon arrival of the responding criminal investigation organization, brief the status of the investigation and actions taken. In this instance, the evidence is released to the investigating organization. The investigative activity interferes as little as possible with the post jump; however, the criminal investigation takes priority.

Note. The MO and unit SME (if available), conducts and assists with any subsequent investigation, as required.

23-16. Safety investigations may be initiated according to the Joint safety memorandum of understanding among the U.S. Army, U.S. Air Force, U.S. Marine Corps, and U.S. Navy. All mishaps that meet the following criteria are reported and investigated in compliance with DODI 6055.07, AR 385-10, OPNAVINST 5102.1D/MCO P5102.1B, or AFI 91-204. The cost for each investigation is:

- Class A. Fatality, permanent total disability or mishap is \$2,000,000 or more.
- Class B. Permanent partial disability, accidents involving three or more personnel that are hospitalized with inpatient care or mishap is \$500,000 or more but less than \$2,000,000.
- Class C. A nonfatal injury that causes any loss of time from work beyond the day or shift on which it occurred or mishap is \$50,000 but less than \$500,000.
- Class D. No lost time injury but mishap is \$20,000 to \$50,000.

Note. See the above service regulations and unit safety office for reporting investigation requirements and instructions of all class mishaps.

REPORTING MALFUNCTIONS AND INCIDENTS

23-17. DD Form 1748-2 is used to report all airdrop malfunctions and incidents. The MO or aircrew initiates this report. A malfunction is defined as “the failure of an airdrop item or component of an airdrop system to function as it was intended or designed” (AR 59-4), whether the equipment failed because of human error or emergency procedures used.

23-18. An airdrop incident is defined as any “procedure that prevented the successful completion of any planned airdrop operation” (AR 59-4). Some examples of airdrop incidents include towed jumpers (cutaway or retrieved), dual deployments of parachutes, entanglements resulting in reserve parachute deployment, and inadvertent automatic activation device actuations. Any incident or malfunction that happens to a jumper, airdrop drop load, or container delivery system bundle must be reported. A completed DD Form 1748-2 is reviewed by a unit SME prior to submission to the USAQMS. U.S. Navy and U.S. Marine Corps malfunctions and incidents are reported through the Naval Safety Center via the Web Enabled Safety System. The Naval Safety Center submits a DD Form 1748-2 to the U.S. Army.

Note. Injuries related to parachute landing falls are not be reported via DD Form 1748-2 to the USAQMS. All services follow the procedures in their appropriate publications.

INVESTIGATIONS BY THE MALFUNCTION OFFICER

23-19. Malfunction investigations cover two areas: personnel parachute malfunctions or incidents, and airdrop load malfunctions or incidents. The depth of any investigation varies according to the severity of the malfunction or incident and the resulting injuries or loss.

23-20. In cases apparently not involving deliberate misconduct, or not meeting the safety review board definitions for class A or B mishaps, or incidents not involving serious injury, the MO conducts the on-site investigation solely to determine the cause of the malfunction or incident, and the actions required to prevent future occurrences. Findings are submitted through the Army commands, Army service component commands, direct reporting units, or parent unit to the USAQMS, Aerial Delivery and Field Services Department for further analysis or action.

23-21. In cases apparently involving deliberate misconduct, serious incident, injury, or death, or meets the requirements of a class A or B accident or mishap, an SME is appointed to assist in the conduct of the follow-on investigation, according to service directives and regulations until one is appointed by the investigative agency. The investigations may include but are not limited to AR 735-5, the Uniform Code of Military Justice (see MISC PUB 27-7), Judge Advocate General Instruction 5800.7F, Naval Criminal Investigative Services/Criminal Investigation Division/Office of Special Investigation, and the SIRB.

23-22. The MO makes investigative notes, insights, reports, and physical evidence available to these investigations. The MO exercises great care so the government avoids compromising the rights of personnel involved. During the investigation, the MO gathers items, information, and evidence that are sensitive in nature. In cases when the equipment cannot remain at the malfunction or incident site and the SIRB is not present, the MO conducts a component-by-component investigation on site. The MO ensures that after the component-by-component examination is completed, the equipment involved in the malfunction or incident is secured and accessible to only the investigating SME. The MO turns over all evidence to the SME and the SIRB. The MO exercises great care to release information to only authorized personnel on a need-to-know basis.

23-23. For the U.S. Navy and the U.S. Marine Corps, during malfunctions or incidents that meet the definition of an on-duty class A or B mishap, the MO preserves the mishap scene (medical treatment has priority) and ensures all evidence is secured until the appointed SIRB arrives. An SME is appointed from the Naval Safety Center. The MO photographs the mishap scene and all angles of components using a digital camera videotape, or both. The MO does not disturb the evidence by taking out inversions, turns, tangles, or twists, or taking any of the components apart. The SME assigned to the SIRB will conduct the component-by-component technical and rigger-type inspection and analysis.

23-24. The MO should enlist as many personnel as needed to investigate for possible causes of the malfunctions. These personnel can identify any unusual occurrences to the MO, who takes actions as directed in AR 59-4.

GENERAL REPORTING REQUIREMENTS

23-25. All malfunctions, incidents, or damage to airdropped equipment or aircraft is immediately reported through the command channels of the owning unit. U.S. Air Force units immediately report all airdrop malfunctions or incidents involving injury or death, damage to equipment, and off DZ drops to the command having operational control of the aircraft. Augmenting crews from a separate command notify their respective commands, in addition to the initial report that is submitted to the controlling command. U.S. Air Force aircraft participating in an operation without a chain of command notify their respective command headquarters of the incident, with follow-up reports, as required.

23-26. For the U.S. Army and U.S. Air Force, all parachute and aerial delivery operation malfunctions or incidents for all standard and nonstandard equipment is reported in compliance with this regulation. Web-based reporting is used to report all malfunctions and incidents at the U.S. Army Quartermaster site. In rare cases when the Web-based reporting system cannot be used, paper copies of DD Form 1748-2 may be faxed to Defense Switched Network 687-3084 or (804) 734-3084. All reports will be reported to the Airdrop Manual and Malfunction Office, USAQMS, ADFSD, 710 A Avenue, Fort Lee, Virginia 23801.

23-27. For the U.S. Navy and U.S. Marine Corps, all parachute and aerial delivery operation malfunctions or incidents for all standard and nonstandard equipment is reported to the Naval Safety Center. Reporting is conducted by downloading the malfunction or incident report format from the Naval Safety Center Website. Report format can be located with the Ashore, Parachuting Division section of the Web site. A copy of the completed form is then e-mailed or faxed to the parachute safety analyst (C44) at DSN 564-6044 or commercial (757) 444-6044. The parachute safety analyst completes the required final reporting to Fort Lee, Virginia. In addition, U.S. Navy commands immediately advise the following activities of any malfunction or incident: Chief of Naval Operations (N85/851/857), Program Executive Office Littoral and Mine Warfare (PMS NSW), and Commander, Naval Air Warfare Center Weapons Division, China Lake, California (Code 466200D).

23-28. The aircrew initiates the report for malfunctions or incidents occurring during the extraction or deployment phase of any airdrop, or during the exit phase for jumpers where aircrew procedures or aircraft aerial delivery equipment are contributing factors.

23-29. The MO or service DZSO initiates the report for malfunctions or incidents occurring during the deployment or recovery phase of any airdrop load or jumper. Malfunction or incidents believed to have been caused by aircrew procedures, that is, low altitudes or DZ offset; coordinate with the aircrew for the most accurate information.

Note. The MO uses DD Form 1748-2 to report all airdrop personnel malfunctions in compliance with AR 59-4.

This page intentionally left blank.

Chapter 24

Adverse Weather Aerial Delivery System and Instrument Meteorological Conditions

The Adverse Weather Aerial Delivery System (AWADS) is a navigational system installed in some U.S. Air Force C-130 aircraft. It enables the aircraft to fly to a DZ during reduced visibility, and provides flexibility to the Airborne commander in the accomplishment of all Airborne missions. It is effective to use AWADS in large Joint operations, tactical reinforcements, and specialized missions. Instrument meteorological conditions (IMC) is an aviation flight category that describes weather conditions requiring pilots to fly primarily by reference to instruments, and under instrument flight rules, rather than by outside visual references under visual flight rules.

MULTIPLE MISSION SUPPORT

24-1. C-130 aircraft operating with AWADS facilitates rapid and continuous aerial deployment or resupply in adverse weather or darkness. Units can execute a parachute assault without a prepositioned U.S. Air Force combat control team or a U.S. Army DZST. As a result, time (length) of the air formation is shortened, and the air corridor is cleared only once by tactical air to heighten the element of surprise. U.S. Air Force combat control teams are introduced with the assault elements and assist the ground unit commander with additional CDS, air-land, or heavy drop load missions. AWADS enables a commander to conduct a rapid vertical reinforcement during IMC or visual meteorological conditions for units threatened by enemy penetration.

24-2. C-17 aircraft operate the Formation Flight System combining automated station keeping equipment functions within the C-17 formation, and digital intra-formation messaging with traffic collision and avoidance system functions that provide separation from aircraft outside the formation. The C-17 can fly formations in visual and instrument meteorological conditions, day and night, at low-level and cruise altitudes in conjunction with airdrops of personnel, heavy equipment, and supplies for up to brigade-size units.

Notes. In compliance with AFI 13-217, airdrops of actual personnel or equipment for unilateral training are not made when weather conditions over the DZ have less than a 300-foot ceiling and one-half mile visibility. During operational missions, ceiling and visibility minimums are at the discretion of the supported forces commander. For Joint exercises, U.S. Air Force personnel are authorized to use U.S. Army minimums. When the ceiling is less than 600 feet AGL, clear all personnel from the DZ no later than five minutes prior to the scheduled airdrop TOT and ensure they remain clear until completion of the airdrop.

During the planning phase, commanders at all levels should take into consideration the experience level of all individuals within their unit when preparing for an AWADS and IMC operation. Planning considerations should include a minimum ceiling of at least 500 feet AGL for peacetime AWADS and IMC Airborne operations in order to allow additional reaction time for jumpers in emergency situations. This may be waived by the Airborne commander down to 300 feet AGL, but must be identified and approved before the mission is flown.

24-3. Operating under IMC demands detailed planning, rehearsal, training, and coordination between U.S. Air Force and U.S. Army units to be effective. Due to limited visibility in the air and during assembly on the ground, IMC requires both technical training and psychological preparation of the jumpers. Sustained prejump training while operating under IMC requires modification to normal jump conditions.

MODIFIED JUMPMaster DUTIES AND JUMPER ACTIONS

24-4. The JM relies on the loadmaster to obtain and relay en route information. Under IMC, the JM still attempts to perform all of the required checks. They may not be able to observe safety hazards beyond the immediate area of the door.

24-5. Jumper actions during descent under normal conditions are modified in IMC training. Modifications are made when using the T-11 and MC-6 series parachutes.

T-11 SERIES POINTS OF PERFORMANCE

24-6. Jumpers should take the following actions during IMC:

- Check body position and count.
- Check canopy and gain canopy control. If the jumper has any type of malfunction or any reason to believe they are falling faster than fellow jumpers, they immediately activate the reserve parachute using the pull drop method, since the jumper cannot effectively judge the rate of descent.
- Keep a sharp lookout during descent.
- Do not slip, except to avoid collisions, until after breaking through the clouds.
- Give lower canopies the right of way; higher canopies slip to avoid them.
- Recheck the canopy. Make this check after breaking through the clouds if the canopy could not be checked while in the clouds.
- Prepare to land. Do not release equipment until the ground can be seen and it is clear below. Immediately after lowering combat equipment, slip into the wind and prepare to land.
- Land. Execute a proper PLF.

MC-6 SERIES POINTS OF PERFORMANCE

24-7. Jumpers should take the following actions during IMC:

- Check body position and count.
- Check canopy and gain canopy control. If the T or U-shaped modification is to the front, there is a complete inversion. Do not activate the reserve since the canopy can still be controlled. If the jumper has any type of malfunction or any reason to believe they are falling faster than fellow jumpers, they immediately activate the reserve parachute using the pull drop method, since the jumper cannot effectively judge the rate of descent.
- Identify steering toggles. Grasp each one and bring them both to chest level to reduce lateral movement and perform braking. This helps to eliminate midair collisions and extreme dispersion due to excessive drift.
- If either or both toggles are broken, steer the canopy by pulling a slip with the rear riser on the side of the intended turn. In the clouds, anyone with a broken toggle and not applying “brakes” automatically has a greater lateral drift than anyone else and must keep alert during descent.
- Keep a sharp lookout during descent. During reduced visibility, prepare to take immediate evasive action.
- Give lower canopies the right of way. If jumpers see the possibility of converging at any altitude and from any direction, they immediately turn away from each other.
- Recheck canopy. Perform a thorough canopy inspection after breaking through the clouds. Do not release equipment until the ground can be seen and it is clear below, then transfer one toggle to the other hand, lower the combat equipment, and immediately regain toggle control.
- Prepare to land. Turn into the wind immediately after lowering combat equipment and prepare to land.
- Land. Execute a proper PLF.

Chapter 25

Deliberate Water Drop Zone Operations

Units conducting water drop zone (WDZ) operations should use the procedures in this chapter as a guide to ensure the mission is conducted safely.

JUMP (SAFE) CONDITIONS

25-1. Ensure all WDZ parachute jumps are conducted using the following items and within the following conditions for all services:

- Daylight: warm weather conditions. (The Navy conducts day and night water parachute operations.). Ensure:
 - Surface winds do not exceed 17 knots.
 - The WDZ is not in or near the surf zone.
 - Sea state is no more than 2. Sea state 2 indicates that wave height does not exceed 20 inches, as measured from a wave crest and the preceding trough. (Refer to MCRP 2-10A.6 or JP 4-01.6 for more information.)
 - Water should be more than 10-feet-deep with no underwater obstacles at that same depth.
- Nighttime:
 - All jumpers and equipment have chemical lights and strobes attached for night jumps.
 - Night vision devices are used on the WDZ for all night drops.

26-2. The drop zone safety officer guarantees:

- Drop control visual marking system consists of mirror, smoke, and VS-17 panels.
- Release method is CARP or VIRS.
- Helicopter or fixed-wing aircraft flying under visual flight conditions.
- Only one to three jumpers for each recovery boat for each pass. (U.S. Navy operations have one boat for five jumpers.) Boat-to-jumper ratio depends on unit and jumper experience with water jumps. One boat to one jumper is strongly recommended for units that rarely conduct WDZ operations.
- Sufficient boats are properly manned with the engines running during all live passes.
- “CLEAR TO DROP” is by radio or by all the boats driving in one big circle or boats arranged in another agreed upon configuration.
- “ABORT THE PASS” is by radio or by all the boats being scrambled or boats arranged in another agreed upon configuration.
- All combat equipment is waterproofed and float-checked.
- All floatation devices are approved, serviceable, and properly maintained.

27-3. The Airborne commander is responsible for:

- All personnel scheduled for a water jump are not less than a Class 3 basic water survival swimmer qualified in compliance with TC 21-21, (U.S. Marine Corps combat water survival-1, U.S. Navy second class swimmer, qualified SEAL, special warfare combatant-craft crewman [SWCC], EOD, or U.S. Navy diver).
- All jumpers and safety swimmers have completed wet silk training within the past six months (12 months for U.S. Navy personnel).
- All equipment has been waterproofed and float-checked.
- All jumpers are using approved serviceable floatation devices.

- All jumpers have completed the required prejump training.

25-4. Jumpers meet the following requirements:

- All jumpers are not less than Class 3 basic water survival swimmer qualified in accordance with TC 21-21 (U.S. Marine Corps combat water survival-1 or higher, U.S. Navy second class swimmer, qualified SEAL, SWCC, EOD, or U.S. Navy diver).
- All jumpers have completed drown-proofing training within the preceding 12 months.
- All jumpers have been trained on activation procedures for the life preserver in use, to include manual inflation procedures.
- All jumpers have attended prejump training on deliberate WDZ procedures according to the unit SOP.
- All combat equipment is float-checked.
- Jumpers jumping in cold water (60 degrees or lower) will wear wetsuits or dry suits.
- Drop control is visual marking system.
- Helicopter is flying under visual flight conditions.
- Briefing held for WDZ operations by DZSO or DZSTL, and WDZ control personnel.

WARNING

All jumpers conducting a deliberate water landing must be prepared to conduct a PLF in the event the jumper fails to land inside the surveyed DZ or during emergency bailout procedures.

25-5. Safety swimmers have the following obligations:

- TC 21-21 (U.S. Marine Corps combat water survival-1 or higher, U.S. Navy second class swimmer, qualified SEAL, SWCC, EOD, U.S. Navy diver, or lifeguard-certified).
- All safety swimmers have completed wet silk training in the past six months (12 months for U.S. Navy personnel).
- All safety swimmers have been trained on activation procedures for the life preserver in their use to include manual inflation procedures.

Note. The Airborne commander or air shop briefs jumpers, aircrew, JM, and WDZ control party regarding WDZ operations.

WARNING

The MC-6 should be used, if available. Care must be taken, when using the MC-6 as the porosity of the canopy is extremely limited and may create a suffocation hazard if the jumper is trapped under the canopy.

PERSONNEL AND EQUIPMENT

25-6. Each recovery boat must have at least one safety swimmer on board. The safety swimmers are used to recover personnel and equipment, and assist jumpers as needed. The safety swimmer cannot be additionally assigned as the boat coxswain or corpsman. The safety swimmer should be a qualified jumper and be qualified as a U.S. Army Class 1 advanced survival swimmer (in compliance with TC 21-21), U.S. Marine Corps combat water survival-1, U.S. Navy first class swimmer, qualified SEAL, SWCC, EOD, U.S. Navy diver, or lifeguard-certified. The safety swimmer has the following items:

- Fins.
- Face mask.
- Knife.
- Inflatable life preserver.

25-7. The following personnel are also required:

- JM, AJM, safety personnel as required for the type of aircraft used.
- Key personnel are qualified and current. (See chapter 7 of this publication.)
- Medic or corpsman with resuscitator.
- Safety vehicle driver.
- Boat commander or coxswain for each boat.
- Malfunction officer.

25-8. Refer to chapter 20 for use and calibration information of approved anemometers. The following equipment is also required:

- Serviceable boats, motors, and fuel (RB-15 boats, 14-foot engineer assault boats, combat rubber raiding craft, or civilian-equivalent boats with motors). If available, hard body boats should be used. Boats should have a low freeboard to allow for easy pickup of jumpers.
- Equipment for recovery and command boats.
- Required panels and smoke.
- Required FM radio (complete) communications equipment for each boat, including spare batteries and one complete spare radio set for the operation. Boat-to-boat and boat-to-air communication should be checked.
- Floatable, nonflammable container with suitable anchor for smoke grenades.
- First aid equipment, including resuscitator and backboard.
- Bailing cup per boat.
- Motor tie-down rope per boat.
- Sheath knife (boat commander and safety swimmer) per boat. Additionally, all jumpers must have a sheath knife.
- Pliers per boat.
- One extra life preserver for emergencies per boat.
- Life jackets or life preservers for all personnel onboard each boat.
- Oars or paddles per boat.
- Boat hook per boat.
- Wet suit is optional.

JUMPER REQUIREMENTS

25-9. Jumpers, at a minimum, must be classified as a U.S. Army Class 3 basic survival swimmer, U.S. Marine Corps combat water survival-1, U.S. Navy second class swimmer, qualified SEAL, SWCC, EOD, or U.S. Navy diver before making a water parachute drop. Jumpers will be current static line jumpers before making water jumps. Wet silk training for intentional water jumps are conducted at least once every six months by all jumpers and safety swimmers involved in water jumps.

- An individual's first water jump must be performed during the day and without combat equipment. To be classified as a Class 1 advanced water survival swimmer, personnel are tested and documented on an annual basis and must pass the requirements contained in TC 21-21.
- Wet silk training is conducted at the unit level by JM-certified personnel by putting an unserviceable parachute in a pool, in a controlled environment, with safety swimmers. The jumpers, one at a time, demonstrate the actions to take during a water landing:
 - Jump into the water and swim under the canopy to experience what it is like to be under a parachute in the water.

- The jumper demonstrates their ability to follow a radial seam to get safely out from under the canopy, make an air pocket under the canopy to breathe from, and breathe from the apex of the canopy.
- If a jumper is trapped under the canopy during wet silk training, the safety swimmers pull the jumper out of the water. A minimum of two safety swimmers with mask, fins, snorkel, and dive knife, and a medic or corpsman will be available during this training. A standby self-contained underwater breathing apparatus (scuba) diver is also recommended.

WARNING

When conducting a deliberate water drop zone operation, wet silk training is mandatory. The porosity of the T-11 and MC-6 is extremely limited and may create a suffocation hazard if the jumper is trapped under the canopy.

ORGANIZATION AND EQUIPMENT OF DROP ZONE DETAIL

25-10. The command boat (boat No. 1) is separate from the recovery boats. It is used by the DZSO and medic or corpsman, and is not used to recover jumpers or equipment except in the case of an emergency.

Note. All boats required for the operation will be on station with required personnel and the engines running before the release of jumpers.

25-11. A minimum of one power-driven boat is required for two equipment platforms dropped on the same pass. Equipment recovery boats are used in the recovery of equipment parachutes and platforms. Recovery boats assigned to recover jumpers do not meet this requirement when jumpers and equipment are on the same pass. Equipment recovery boats must be large enough to recover cargo parachutes and platforms. The boat coxswain's only duty is to navigate the boat. The boat coxswain may not act as the safety swimmer or corpsman. Recovery boats should take the following actions:

- Use extreme caution when recovering combat rubber raiding craft and other equipment in the water.
- The jumpers can be used as the recovery personnel. They assisted with rigging the combat rubber raiding craft and container equipment before the airdrop. This helps ensure they know what straps to cut without losing the equipment or injuring other personnel.
- Ensure a safety tie is rigged between the platform and boat and is cut last after the recovery boat has secured the platform.
- Tow the platform back to shore with the recovery boat. Place sandbags on the back of the platform to raise the front to ease towing.

WARNING

Ensure that all personnel are clear of the platform and equipment and not fouled in any lines before cutting the equipment loose from the platform. Failure to do so may cause serious injury or death if the platform sinks.

25-12. A minimum of one power-driven recovery boat is required for every three jumpers dropped on the same pass. Jumper recovery boats must have an inflatable boat or ladder rigged if they have a freeboard of more than three feet or the boats do not provide an easy platform for recovery of personnel. Boats assigned as personnel recovery platforms may only be used to assist in the recovery of airdropped equipment after all

jumpers have been recovered. The boat coxswain's only duty is to navigate the boat. The boat coxswain cannot act as the safety swimmer or corpsman.

25-13. These requirements are essential:

- Personnel (personnel and cargo recovery boats).
 - Boat commander or coxswain or both.
 - Safety swimmer with equipment.
- Equipment (personnel and cargo recovery boats), described earlier in this chapter.
- Safety vehicle operator.
 - Driver (on standby).
 - Radio (communicate with command boat).
- The DZSO also briefs boat crews, safety swimmers, medic, and safety vehicle driver on the following:
 - Overall organization of WDZ.
 - Number of lifts and personnel to be dropped.
 - Drop altitude and aircraft heading.
 - Surface winds.
 - Water depth.
 - Turnaround time between drops.
 - Recovery procedures.
 - Communications plan.
 - Emergency recovery and evacuation plan.
 - Drop and abort signals.
 - Applicable special instructions.
 - Maintaining visual observation of all jumpers until safely recovered.
- Jumpmaster keeps jumpers under observation and does not release the next pass until all jumpers have been recovered and the drop zone is ready to receive jumpers for the next pass.
- Boat commander or coxswain:
 - Ensures all personnel and equipment are on board.
 - Ensures that all equipment is operational.
 - Ensures that the safety swimmer is briefed and understands all instructions.
 - Maintains visual observation of jumpers from the time of exit to safe recovery.
 - Controls the actions of safety swimmer.
 - Ensures all personnel are trained and rehearsed in their duties.
- Safety swimmer:
 - Maintains visual observation of jumpers from the time of exit to safe recovery, is alert at all times for jumpers in trouble, and is prepared to enter to water to assist if needed.
 - Enters water (on order of boat commander) and assists jumper recovery.
- Medic or corpsman:
 - Ensures the resuscitator is complete and in operational condition.
 - Ensures the safety personnel understand lifesaving techniques.
 - Uses applicable medical equipment and provides required first aid and medical evacuation.

JUMP RECOVERY PROCEDURES

25-14. After jumpers enter the water, If the jumper experiences no difficulties after impact, the boat commander or coxswain signals "All OK" by raising one arm straight up (without waving). Recovery boats (boat Nos. 2 and 3 and any additional recovery boats) proceed to the location of designated jumpers and

begin recovery operations. The boat commander or coxswain of each recovery boat identifies their assigned jumpers as soon as possible.

25-15. The boat coxswain determines whether the jumper's life preserver has been inflated. If the life preserver has not inflated, the recovery boat coxswain immediately proceeds to the impact point, taking care to stay out of the way of the other jumpers. Upon reaching the assigned jumper, the boat coxswain treats the situation as a jumper in distress and takes appropriate action.

25-16. The DZSO command boat (boat No. 1) is located so the DZSO can observe the landing of jumpers and reinforces recovery boats with additional safety swimmers and a resuscitator, as required. The following procedure is used for recovery operations:

- When possible, recovery boats approach jumpers from downwind, pulls alongside, and then puts the engines in neutral. This helps avoid getting the parachute stuck in the engine propeller. Recover parachutes by the apex.

Note. Any other signal than the "ALL OK" or even if no signal is given by the jumper is considered as a distress situation and immediate action is taken.

- The boat coxswain directs the boat alongside the jumper, and the safety swimmer extends the boat hook so that the jumper can grasp it. If the jumper is unable to grasp the hook, the safety swimmer secures a portion of the jumper's equipment with the hook.

25-17. On instruction from the boat commander or coxswain, the safety swimmer enters the water alongside the jumper to assist the jumper and to recover the parachute canopy and other equipment. If a jumper has gone underwater, the following action is taken:

- Red smoke is displayed to indicate an emergency and a message is transmitted to the command boat by radio. All other activities cease. (A red smoke grenade may be activated and dropped in an ammunition can bolted to a wood plate, or a smoke machine may be used.)
- The safety swimmer dives to recover the jumper and cuts themselves free of equipment, as required.
- The DZSO moves his or her boat to the scene and the medic or corpsman prepares to use the resuscitator and backboard.

25-18. If using a rotary-winged aircraft, and the aircraft is alerted to assist in emergency recovery operations:

- When directed by the DZSO, the pilot stands by the location to provide medical evacuation by air, if necessary.
- After normal recovery operations, jumpers and equipment are unloaded at the assembly area.
- All boats are repositioned for the resumption of jump operations.

WATER DROP ZONE PREJUMP TRAINING

25-19. Prejump training for water jumps are conducted within 24 hours before the scheduled jump. If over 24 hours, an O-6 must give approval. This training includes demonstrations and practical exercises for all jumpers; use of the suspended harness is recommended.

25-20. Prejump training includes, but is not limited to, the situations described below. The following points of performance for water jumps must be accomplished:

- Check body position and count.
- Check canopy and gain canopy control.
- Keep a sharp lookout during descent and maneuver to the indicated impact area.
- Prepare to land by turning and facing into the wind, maintaining position until just before landing.
- Prepare to land with a life preserver.
- Prepare to make a PLF (if water is shallow or ground contact is made). PLFs MUST be conducted during sustained Airborne training.

- Emergencies in the air.
- Emergencies in the water include the following actions:
 - Ensure the life preserver is fully inflated.
 - If trapped under the canopy, the jumper finds a radial seam and follows it to the edge.
 - If trapped under the canopy, the jumper lifts their hand slowly and creates an air pocket to breath, then cuts a hole in the canopy material. (If the jumper lifts their hand too quickly, they will create a suction and the canopy will stick to their face and arm.)
 - Wet silk training is completed and documented within six months prior to the jump (12 months for U.S. Navy personnel).

25-21. The following recovery procedures must be performed:

- Recover parachutes by pulling them in the boat by the apex.
- Ensure the boat is kept free of gasoline and oil, which would ruin the parachutes.
- Orientation at the WDZ for the WDZ crew.
- Any special instructions.

PROCEDURES FOR WATER LANDINGS WITH A LIFE PRESERVER

WARNING

All jumpers conducting a deliberate water landing must be prepared to conduct a PLF in the event the jumper fails to land inside the surveyed DZ or during emergency bailout procedures.

25-22. Additional information on approved life preservers can be found in chapter 12. The procedures for deliberate water landings with a life preserver are:

- Jumpers may wear combat equipment only after it has been waterproofed and float-checked.
- To waterproof equipment, use bags and rigger tape inside equipment containers. Float check by submerging in a tank of water until saturated and ensure the equipment is neutral or positive buoyant (floats).
- Jumpers wear service approved life preservers.
- Jumpers wear the approved waterborne operations helmet or a service approved helmet during WDZ operations.
- Jumpers jumping in cold water (60 degrees or below) wear wetsuits or dry suits and may wear a wetsuit or dry suit hood under the ballistic helmet.
- Jumpers may wear wetsuit booties, coral booties, or tennis shoes, these shoes WILL BE closed toe shoes.
- Jumpers may follow equipment such as door bundles and combat rubber raiding craft on a single ship operation. There are three seconds between the cargo exit and the first jumper's exit to ensure the jumpers do not become entangled with the cargo.
- The cargo and jumpers are hooked to the same anchor line cable on the same side when jumping the ramp.

B-7 LIFE PRESERVER

25-23. The B-7 life preserver is worn under the parachute harness with the inflatable portions under the jumper's armpits. (See figure 25-1, page 25-8.) At 200 feet AGL, the jumper releases all equipment tie-downs and lowers and jettisons their equipment.

25-24. During the descent, the jumper inflates the life preserver by discharging the attached CO2 cartridges. If necessary, the life preserver can be inflated by blowing air into the inflation valve hose. As their feet touch the water, in case of drag, the jumper activates one canopy release assembly by pulling out on the safety clip

exposing the cable loops. ENSURE the jumper sounds off with “RISER” when activating the canopy release assembly using one of the two methods, hand-to-shoulder or hand assist. The jumper prepares to execute a PLF if the water is shallow.

25-25. Since the B-7 life preserver provides 500 pounds of positive buoyancy, the jumper does not remove the harness. The jumper swims upstream or upwind away from the parachute to avoid becoming entangled and signals “ALL OK” to the recovery boat.

DANGER

Jumpers do not release the canopy release assemblies unless they are being dragged under water. Altitude is hard to judge over the water. If the jumper activates their canopy releases at even moderately high altitude (for example, 50 feet), serious injury or death may result.

CAUTION

The jumper must stay clear of the suspension lines to avoid entanglement. If the parachute and equipment are too heavy and hard to hold on to, the jumper lets go of the equipment to avoid being pulled under.

If the jumper signals anything but the “ALL OK” or does not signal, the boat crew will proceed to assist the jumper from the water.

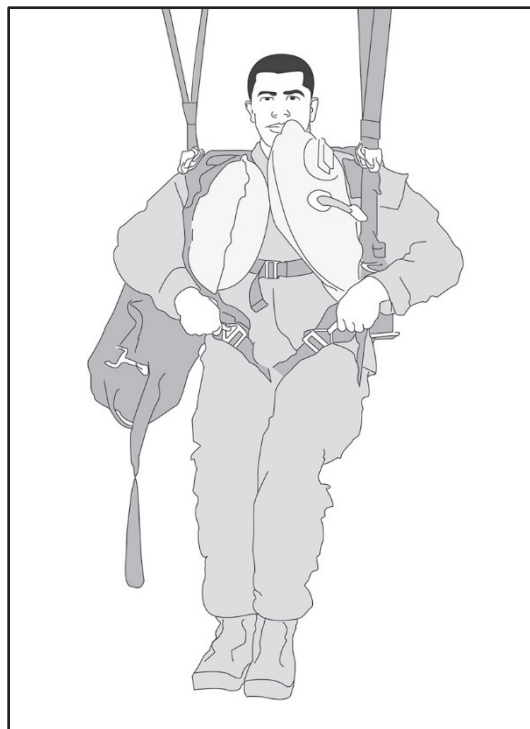


Figure 25-1. Landing with the B-7 life preserver

UDT LIFE PRESERVER

25-26. Jumpers wearing a UDT vest route the chest strap under the UDT vest so that the chest is not crushed if the UDT is inflated.

25-27. Upon exiting the aircraft, the jumper checks the canopy and steers away from other jumpers. At altitude, the jumper releases all equipment tie-downs and lowers and jettisons their equipment. The jumper activates the quick release on the waistband and unsnaps the left connector snap on the reserve parachute. The jumper rotates the reserve to the right side of the parachute harness and seat themselves well into the saddle.

25-28. The jumper activates the quick release on the chest strap and inflates their life preserver with air by blowing into the inflation tube or activating the CO2 cartridge. Sitting back in the harness and using the right hand to hold onto the left main lift web, the jumper steers with their left hand. Just before entering the water, they place their hands on the ejector snaps on the leg straps. The jumper activates the ejector snaps on the leg straps, throws their arms up, and arches out of the harness when entering the water. They prepare to execute a PLF if the water is shallow.

25-29. The jumper swims upstream or upwind away from the parachute to avoid becoming entangled, and signals "ALL OK" to the recovery boat.

CAUTION

The jumper must stay clear of the suspension lines to avoid entanglement. If the parachute and equipment are too heavy to hold on to, the jumper lets go of the equipment to avoid being pulled under.

LIFE PRESERVER UNIT 10/P

25-30. The LPU 10/P (NSN 4220-00-850-8655) is a standard U.S. Air Force CO2 cartridge-activated life preserver assembly worn during flights over water, or during airdrops when water obstacles are near or on the intended DZ. The LPU 10/P has an adjustable harness and underarm inflation bladders. It is designed to keep the wearer's head above water at weights up to 250 pounds for up to 10 minutes. The LPU 10/P must be maintained according to U.S. Air Force standards.

25-31. During the descent, the jumper inflates the life preserver by discharging the attached CO2 cartridges. If necessary, the life preserver can be inflated by blowing air into the inflation valve hose. As their feet touch the water, in case of drag, the jumper activates one canopy release assembly by pulling out on the safety clip exposing the cable loops. The jumper sounds off with "RISER" when activating the canopy release assembly using one of the two methods, hand to shoulder or hand assist. They prepare to execute a PLF if the water is shallow. The jumper swims upstream or upwind away from the parachute to avoid becoming entangled and signals "ALL OK" to the recovery boat.

CAUTION

If the jumper signals anything but the "ALL OK" or does not signal, the boat crew will proceed to assist the jumper from the water.

25-32. The LPU 10/P is worn under the parachute harness. The harness is worn so that the inflatable pockets are under the jumper's arms. The manual inflating valves should be completely closed when donning the life vest. The shoulder and waist straps are then adjusted to ensure the inflation container is one hand width beneath the armpit and not constrained by the parachute harness.

WARNING

The inflation wings must be one hand width beneath the jumper's armpits and clear of the harness scraps. If the inflation pockets are too snug under the armpit, or if they are between the harness and the jumper's body, the jumper can experience severe pain or crushed ribs during inflation.

TFSS-5326 LIFE PRESERVER

25-33. The TFSS-5326 is worn under the parachute harness with the inflatable portions fastened to an individual's waist belt. At 200 feet AGL, the jumper releases all equipment tie-downs and lowers and jettisons their equipment.

25-34. The jumper activates the quick release on the waistband and unsnaps the left connector snap on the reserve parachute. The jumper rotates the reserve to the right side of the parachute harness, seats them self well into the saddle, and inflates the life preservers by activating the CO2 cartridge. (In the event of CO2 cartridge failure, blow air into the inflation tubes.) The jumper activates the quick release on the chest strap.

25-35. After activating the quick release of the chest strap, the jumper immediately regains control of the canopy. Just before entering the water, they place their hands on the ejector snaps on the leg straps. The jumper activates the ejector snaps on the leg straps, throws their arms up, and arches out of the harness when entering the water. They prepare to execute a PLF if the water is shallow.

25-36. The jumper swims upstream or upwind away from the parachute to avoid becoming entangled and signals "All OK" to the recovery boat by extending one stationary arm overhead.

WARNING

The jumper must ensure he does not wear the TFSS-5326 flotation packets between the parachute harness and their body. Serious injury may result if inflated when worn incorrectly.

CAUTIONS

The jumper must stay clear of the suspension lines to avoid entanglement. If the parachute and equipment are too heavy and hard to hold on to, the jumper lets go of the equipment to avoid being pulled under.

If the jumper signals anything but the "ALL OK" or does not signal, the boat crew will proceed to assist the jumper from the water.

Appendix A

Basic Airborne Refresher Training

Basic Airborne Refresher Training is a requirement for all personnel who have not jumped the T-11 ATPS or MC-6 series parachute within a six-month period (180 days) or for personnel who have not conducted an Airborne operation with either parachute system. Any current and qualified jumpmaster can conduct Basic Airborne Refresher Training at the unit level with the lieutenant colonel (O-5) commander's approval.

Notes. T-11 and MC-6 transition training formally conducted for personnel who have not executed a jump with the T-11 ATPS or the MC-6 series parachute is no longer a separate requirement from Basic Airborne Refresher Training.

All jumpers who have not jumped the T-11 ATPS and MC-6 series parachutes within the last six months (180 days) will meet the minimum requirements located in table A-1 on page A-2.

A-1. The length of training should not be not dependent on the jumper's experience or proficiency but on the minimum requirements described in table A-1 on page A-2. The training is instructed and documented by a current and qualified JM.

WARNING

It is highly recommended that unit leadership take a deliberate approach to training individuals who have never executed a T-11 ATPS jump and develop a progression plan for individuals who have less than 10 jumps with the T-11 ATPS. These jumpers are statistically at the highest risk for a parachute incident.

A-2. Individual service components may modify these requirements depending on training aids and equipment availability. The MC-6 video or virtual trainer is mandatory only for the individuals who have not executed an MC-6 series parachute jump.

Table A-1. Minimum requirements for basic Airborne refresher training

<i>PERIOD</i>	<i>EVENT</i>	<i>LESSONS</i>	<i>TRAINING AIDS AND EQUIPMENT</i>
1	Ground training	<ul style="list-style-type: none"> •Identification card and tags, helmet check. •Sizing, donning, and fitting the T-11 and MC-6 parachutes. •RIGGEX: <ul style="list-style-type: none"> Demonstration of the correct rigging, attaching, and lowering procedures for combat equipment currently used by the unit. MAWC (sizing and rigging). Special items of equipment. UPRB folding and rigging. •Fitting and wearing life preservers, if required for unit mission. •Activation of the reserve parachute using the pull drop method, and methods of recovery. 	T-11 and MC-6 parachute with harness, approved combat equipment currently used by the unit, life preservers, and any other training aid equipment needed to conduct period 1.
2	Mock door training	<ul style="list-style-type: none"> •SERJ-TE briefing: <ul style="list-style-type: none"> Actions in the aircraft, including jump commands. Proper exiting procedures, control movement technique. •Execute the first two points of performance for high-performance aircraft and both doors. 	High performance aircraft mock door structure or expedient equivalent with USLs.
3	Suspended harness	<ul style="list-style-type: none"> •Let up position: <ul style="list-style-type: none"> Two riser slips, one riser slips. •Prepare to land attitude, entanglements, emergency landings, and center panel strike emergency procedure. •(MC-6) let up position and toggle control, turning, crabbing, braking, prepare to land attitude, entanglements, and emergency landings. 	Suspended harness apparatus (if personnel conducting training and apparatus are available) and improved swing landing trainer (if personnel conducting and apparatus are available).

Table A-1. Minimum requirements for Basic Airborne Refresher Training (continued)

<i>PERIOD</i>	<i>EVENT</i>	<i>LESSONS</i>	<i>TRAINING AIDS AND EQUIPMENT</i>
4	Prejump	•Prejump includes PLFs (front, sides, and rear).	Two-foot PLF platform and PLF pit.
		•Execute a parachute jump according to the unit's progression plan for individuals.	Aircraft, parachutes, DZ, unit equipment. (Must be executed within 60 days, or 90 days with waiver, reference note below.)
LEGEND DZ – drop zone; MAWC – modular Airborne weapons case; PLF – parachute landing fall; SERJ-TE – static line control, exiting procedures, red light procedures, jump refusals, towed jumper procedures, emergency procedures; UPRB - universal parachutist recovery bag; USL – universal static line			

Note. The first commander (0-5) in the chain of command can extend or waive the individual jumper's requirement for executing a parachute jump from 60 days up to 90 days after successful completion of Basic Airborne Refresher Training. Unit commanders take into consideration each individual's experience level with the T-11 and MC-6, and their ability to retain the crucial information they receive during Basic Airborne Refresher Training. The 90 day waiver is submitted on a memorandum for record and placed with the individual's jump log.

This page intentionally left blank.

Appendix B

Jumpmaster Training Course

The Jumpmaster Training Course is the standard U.S. Army course of instruction designed to qualify individuals as JMs for conventional static line parachuting. It is the standard for all Airborne unit activities. The course is approximately three weeks long and contains 97 hours of instruction. The subject and scope of instruction are discussed in table B-1.

Table B-1. Course training events

SUBJECT	SCOPE
In-Processing	Administrative in-processing of class. Ensure all JMs meet the prerequisite defined in the Army Training Requirements and Resources System.
Orientation and Administration	Orientation on the course requirements that the students must meet are provided. This includes student handouts, questionnaires, the entire training schedule, and the grading system used to evaluate students.
Duties and Responsibilities of the Jumpmaster and Safety	Discussion consists of the duties and responsibilities of the jumpmaster and safety personnel from the time of notification until completion of the Airborne operation.
Individual Equipment Containers	Discussion consists of the characteristics and nomenclature of individual equipment containers, and includes a demonstration on the correct rigging, attachment, and lowering procedures for the ALICE pack, MOLLE pack, and MAWC.
Army Aircraft Orientation	Students are familiarized with the preparation, inspection, and jump procedures for the UH-1 series, UH-60 series, and CH-47 series rotary-wing aircraft.
Jumpmaster Personnel Inspection	Students receive a demonstration on the correct method for inspecting a parachutist and the attached combat equipment. Remaining hours are spent on practical exercises using two-man buddy teams where the students conduct personnel inspections to find and report major and minor rigging deficiencies that have been placed in the parachute assembly and attached equipment. Students change duties and swap over often to ensure all receive the same amount of inspection time.
U.S. Air Force Aircraft	General aircraft descriptions, jumpmaster procedures, and aircraft preparations are discussed, such as critical elements of Airborne operations including the aircraft and drop altitudes. These aircraft are service-tested and approved for troop drops. Other topics covered include minimum jump altitude and considerations that apply to basic Airborne jumps, tactical training jumps, and combat jumps.
Prejump Training	Discussion consists of the five points of performance and methods of activating the reserve parachute, recovery of equipment, towed parachutist procedures, collisions, entanglements, and the three types of emergency landings.

Table B-1. Course training events (continued)

SUBJECT	SCOPE
A-Series Containers	Discussion includes the characteristics, capabilities, and methods of packing, rigging, and inspecting the A-7A cargo sling and A-21 cargo bag, and how to attach and inspect the cargo parachute.
Duties and Responsibilities of the DZSO and DZSTL	Discussion includes the prerequisites to perform duties as the DZSTL, DZSO, and ADZSO. Other topics include tactical DZ assessment and composition of the team for different airdrop scenarios, and scoring procedures using AF IMT Form 4304 are included.
Jump Commands, Door Procedures, and Door Bundle Ejection Procedures	Discussion includes a demonstration and practical exercise on the proper sequence of jump commands and time warnings with proper arm and hand signals; the door procedures used by a jumpmaster; and door bundle inspection and ejection procedures using aircraft mock-ups. Remaining time is used for practical exercises in the mock-ups (or actual aircraft).
CARP Drop Zones	Additional discussion includes drop zone surveys, methods of marking drop zones for CARP, and drop zone selection factors. Practical exercise on determining the mean effective wind and use of authorized anemometers. Students are familiarized with drop zone marking requirements for day and night Airborne operations. Discussion of ADEPT options (1, 2, and mass exits are also discussed).
Nomenclature Examination	Written nomenclature examination is conducted.
Review and Critique	Brief review is conducted of the previous week's instruction to ensure all questions and tasks are clear.
Nomenclature Examination Retest	Personnel who failed the initial test are retested.
Written Examination	Written comprehensive examination covering all instruction that has been presented is conducted.
Jumpmaster Personnel Inspection Pre-Examination	Each student inspects three parachutists: two with no combat equipment and one with combat-equipped parachutist (five-minute time limit).
Jumpmaster Personnel Inspection Examination	Each student inspects three parachutists: two with no combat equipment and one with combat-equipped parachutist (five-minute time limit).
Jumpmaster Personnel Inspection Retest	Personnel who failed the initial test are retested.
Prejump Training Examination	All students give oral presentations to determine their ability to effectively conduct prejump training.
Jumpmaster Briefing	A briefing on all Airborne operations and grading procedures is conducted.

Table B-1. Course training events (continued)

SUBJECT	SCOPE
Aircraft Inspection Class	Practical exercise on aircraft inspection procedures using the C-130 or C-17 is conducted.
Written Examination Retest	Personnel who failed the initial test are retested.
Day Practical Work in Aircraft Examination	Graded practical exercise jumpmaster-qualifying personnel with attached equipment on jump commands, time warnings, and hand-and-arm signals.
Out-Processing	Students are administratively out-processed in the class.
Graduation	Students receive their certifications during an official ceremony in front of their families, colleagues, and friends.
LEGEND ADEPT – alternate door exit procedures; ADSO - assistant drop zone safety officer; ALICE – all-purpose, lightweight individual carrying equipment; ATRRS - Army Training Requirements and Recourses System; CARP – computed air release point; DZ – drop zone; DZSO – drop zone safety officer; DZSTL – drop zone support team leader; MOLLE - modular lightweight load-carrying equipment	

This page intentionally left blank.

Appendix C

Jumpmaster Refresher Course

The Jumpmaster Refresher Course is designed to update qualified JMs who are not in a current status. (Refer to chapter 7 of this publication.) It ensures that standardization of course content is maintained. The unit designated to conduct this course ensures that equipment normally used is available for this training. The course will be instructed and documented by a current and qualified JM. Any unit having special requirements, such as nonstandard aircraft or special items of equipment, may add periods of instruction to the course as needed. Individual service components may modify these requirements depending on training aids and equipment availability.

JUMPMaster CURRENCY AND TRANSFERABILITY

C-1. Jumpmasters must conduct a jumpmaster duty within 180 days of their last JM duty to remain current. JM duties from rotary-wing aircraft that require the jumper to exit from a seated position (UH-60 Blackhawk) do not count toward a JMs currency. JMs that lose currency must complete jumpmaster refresher training prior to conducting their next JM duty.

C-2. Nonstandard aircraft such as the CASA 212 and rotary-wing aircraft such as the CH-47, will count towards a JMs currency as long as the previous JM duty was executed from a high-performance aircraft. If the previous duty performed for currency was from a nonstandard or rotary-wing aircraft, the following duty performed for currency must be from a high performance aircraft. (See table C-1.)

Table C-1. Training events

SUBJECT	SCOPE
Individual Equipment	Provide students are trained on new equipment for jumpmaster certification so they can execute their jumpmaster duties. Training for all unit specific equipment and newly fielded equipment, Jumpmasters must be certified on in order to execute Jumpmaster duties. This will includes but is not limited to weapon cases, jumpable packs, and helmets.
Jumpmaster Personnel Inspection	Each student is talked through the JMPI sequence for noncombat-equipped and combat-equipped jumpers. Adequate time must be provided for conducting a JMPI practical exercise for both noncombat-equipped and combat equipped jumpers. Ensure each student receives the same amount of practice. Each student will be evaluated on his or her ability to identify deficiencies rigged into the equipment as well as their sequence of inspection.
Prejump Training	In a classroom environment, the following will be discussed: the five points of performance and methods of activating the reserve parachute, recovery of equipment, towed jumper procedures, collisions, entanglements, and the three types of emergency landings.

Table C-1. Training events (continued)

SUBJECT	SCOPE
Drop Zone Control and Support Criteria	This will include discussion and familiarization of the duties as the DZSO, ADZSO; and composition of the team for different airdrop scenarios.
Duties of the JM, SERJET/E Briefing, Mock Door Training, and Practical Work Inside the Aircraft (PWAC)	<p>In a classroom environment, the execution of the duties of the JM and the safety throughout an airborne operation will be discussed.</p> <p>Students will receive a SERJET/E briefing as well as complete the remainder of mock door training; and they will receive a period of instruction about the time warnings, jump commands and actions in the aircraft of both the JM and the safety.</p> <p>Practical exercise will require each student to be evaluated conducting PWAC as a JM and as a safety</p>
LEGEND ADZSO – assistant drop zone safety officer; DZSO – drop zone safety officer; JM – jumpmaster; PWAC – practical work inside the aircraft; SARJETE - static line control, exiting procedures, red light procedures, jump refusals, towed jumper procedures, emergency procedures	

RECEPTION AND INTEGRATION

C-3. All Airborne units are required to institute a JM reception and integration program. The brigade commander assumes the risk and is responsible overall for their unit's program. The brigade commander can delegate authority, not responsibility, to battalion commanders for administration and execution of brigade JM reception and integration programs. This includes the appointment of JMs authorized to execute training.

C-4. Current and qualified JMs that are transferring from one hazardous duty position to another hazardous duty position after completing a permanent change of station or inter-post transfer will retain currency and incentive pay entitlement at their new duty station until they fail to meet currency requirements. The following actions are required by the losing and gaining units.

LOSING UNIT

C-5. The JM conducting the permanent change of station is provided a continuity memorandum signed by the unit commander (lieutenant colonel O-5 or above), their DA Form 1307 and their Modified 1307. The memorandum will contain the date and type of the last duties performed and provide a section for general comments regarding the individual's overall proficiency.

GAINING UNIT

C-6. The gaining unit is responsible for validating the incoming JMs proficiency. Assessment begins with the continuity memorandum and DA Form 1307, and then proceeds with implementing the appropriate level of training, such as jumpmaster refresher training or an established reception and integration program. Requirements include:

- The gaining unit must have the losing commander's continuity memorandum or the JM must attend jumpmaster refresher training prior to conducting duties.
- A designated current and qualified JM from the gaining unit must validate the JMPI sequence of the incoming JM.
- The incoming JM must receive training on all unit specific equipment and SOPs (such as arctic equipment if transferring to U.S. Ark Alaska).
- The JM will be evaluated on their understanding and the proper execution of the static line control, exiting procedures, red light procedures, jump refusals, towed jumper procedures, emergency procedures briefing.

- The JM will demonstrate proficiency in actions inside the aircraft for both JM and safety duties. Emphasis should be placed on safety duties. All environmental considerations specific to the unit must be discussed during this training.
- The first duty performed by the incoming JM must be from a high performance aircraft which includes the C-17, C-130 series, or C-27 Spartan aircraft.

This page intentionally left blank.

Appendix D

Drop Zone Risk Assessment Analysis

Conducting an Airborne operation is an inherently high risk mission. When water, wire, or tree hazards are on or in close proximity to the intended drop zone, the probability and severity of injuries is increased, the possibility of fatalities during airborne operations is also present.

This appendix provides planning considerations for water, wire, and tree emergency landings. It also aids the commander in conducting drop zone deliberate risk assessments and analysis, and provides the commander, DZSO or DZSTL, and JM personnel with operational and logistical planning control measures to assist in mitigating the inherent risks jumpers might encounter during Airborne operations.

Individual service components may modify these requirements based on the availability of training aids and equipment. They will also follow their service risk assessment procedures and regulations.

CONSIDERATIONS AND WATER OBSTACLES

D-1. Initial risk levels reflect a combination of the probability of occurrence and the severity of the adverse impact prior to any mitigation control measures being implemented. Probability and severity are independent measures of hazards. In other words, estimating probability has no direct relationship to estimating severity. All leaders should consult DA PAM 385-90 and ATP 5-19 when completing the DD Form 2977. When assessing hazards on a drop zone, commanders should—

- Estimate the probability of a harmful event or occurrence from a hazard.
- Estimate the expected severity of an event or occurrence.
- Determine the level of risk for the estimated probability and severity.
- Remember that all established risk criteria are initial risk and do not reflect mitigating factors and residual risk levels.

D-2. A water hazard is any body of water such as a lake, pond, river, stream, or canal that has a depth of four feet or more, is 40 feet wide or wider, and is located within 1000 meters of any edge of the surveyed or tactically assessed DZ.

D-3. When conducting an Airborne operation deliberate risk assessment, the commander should consider the proximity of the water hazard to the DZ, depth of the water hazard, and the width of the water hazard. Additionally, the following factors may enter into the water hazard risk assessment: the condition of the water hazard bottom, the current of a free flowing water hazard, water temperature, the number of water hazards present, recovery equipment available to retrieve a jumper, jumper experience levels, jump time (day or night and percent of illumination), and whether or not the selected DZ is critical to mission success. The following are the minimum initial risk categories assigned to DZs with water obstacles:

- High risk conditions exist if a water hazard is within 1000 meters of any edge of the DZ, water depth is four feet or more, and water is 40 feet wide or wider. If a high risk condition exists, it is necessary to use a boat detail and have jumpers use approved life preservers. If the water is four feet deep or more, but not over 40 feet wide, a boat detail is not required. However, approved life preservers are still required for the jumpers.

- Medium risk conditions exist if a water hazard is more than 1000 meters but less than 1500 meters from any edge of the DZ, water depth is four feet or more, and water is 40 feet wide or wider. Boat detail may be used, but not required.
- Low risk conditions exist if a water hazard is more than 1500 meters from any edge of the DZ, water depth is four feet or more, and water is 40 feet wide or wider.

D-4. The commander, DZSO or DZSTL, and JM personnel perform the actions described below to reduce the risks associated with water obstacles. The commanders must—

- Ensure a risk assessment analysis has been conducted to determine the unintentional water landing risk level for jumpers. If a high risk exists, select (if possible) an alternate DZ that allows mission conduct at a lower risk level.
- Ensure a deliberate risk assessment worksheet is completed to document the hazards, initial risk, control measures, and residual risk remaining in order to determine appropriate risk approval level.
- Ensure that key leaders, JM personnel, and jumpers have been informed of the water obstacle risks and the risk level (high, medium, or low).
- Ensure AF IMT Form 3823, is current and available. Ensure the DZSO or DZSTL and JM personnel have read it and completely understand the unintentional water landing risk level and the safety measures that are to be used.
- Ensure that if a boat detail is used, the DZSO or DZSTL and the unit providing the detail have properly conducted initial or refresher training. Ensure the OIC or NCOIC of the boat detail knows where and when the detail begins its duties and how to contact the DZSO or DZSTL.
- Ensure that approved life preservers are coordinated for, if needed.
- Ensure the DZSO or DZSTL, JM personnel, and jumpers are informed of all water obstacle risks and that the DZSO or DZSTL and JM complete their duties.

DI-5. The DZSO or DZSTL must—

- Determine if a follow on assessment of the DZ has been conducted to confirm the current status.
- Ensure the OIC or NCOIC is fully briefed on the plan if the deliberate risk assessment worksheet indicates high risk and a boat detail is necessary. Ensure all boat detail personnel have been trained and have all necessary equipment available to conduct the mission.
- Read all applicable regulations, field manuals, and SOPs. Ensure copies are present throughout the mission.

DII-6. The jumpmaster must—

- Ensure that if approved life preservers are to be used, they are serviceable and have been inspected within the last 180 days. Ensure that all jumpers have been trained on life preserver wear, fit, and use (to include manual inflation).
- Ensure all personnel have received prejump training no earlier than 24 hours prior to take-off, with special emphasis on unintentional water landings. If prejump is over 24 hours, an O-6 must give approval.

DIII-7. Each water hazard may require a different type of coverage. The following list is an example composition of a boat detail. Equipment should be altered to best accomplish the mission. Two qualified boat operators must be present on each boat recovery detail. (One primary and one assistant for each boat.) Each recovery boat team may need the following equipment:

- Boat (combat rubber raiding craft or solid bodied boat of comparable size) with operable outboard motor.
- Fuel and oil sufficient to complete the mission.
- Life vest or floatation device for each boat detail member and additional floatation devices for jumpers.
- One life ring with attached rope.
- One radio with spare battery.
- One shepherd's crook.
- One grappling hook.

- One long backboard to facilitate cardiopulmonary respiration.
- One aid bag with resuscitation equipment.
- One rope, 120 feet long.
- Optional training, as required.

D-8. For night recovery operations, each recovery boat must have operational night vision devices with spare batteries: two for each boat.

D-9. The following optional training is suggested:

- Suspended harness training on second through fifth points of performance may be given. Step-by-step training on the procedures jumpers will take for an unintentional water landing may be conducted.
- An optional dunk tank training device may be constructed to allow the lowering of jumpers (wearing parachute harness and B-7, LPU-10, and TFSS life preservers) into the water. This training familiarizes the jumpers with the proper emergency water landing procedures.

WIRE OBSTACLES

D-10. A wire obstacle is a wire or set of wires (regardless of height or type) located within 1000 meters of any edge of the surveyed or tactically assessed DZ. The types of wire obstacles that could pose a risk to jumpers are electric, telephone, or cable television wires. Wire fence can be regarded as an obstacle if it poses a hazard to jumpers. Power line capacity (voltage or amperage) is not a factor when determining the risk to jumpers who may come in contact with a wire obstacle on or near the DZ.

CAUTION

Regardless of voltage or current carrying capacity, if a power line is located within 1000 meters of any edge of the surveyed or tactically assessed DZ, the power should be cut off before using the DZ, if possible.

D-11. When conducting an Airborne operation risk assessment, the commander should consider the following:

- Proximity of the wire obstacle to the DZ.
- Ability to de-energize the wire hazard or not.
- Height of the wire hazard.
- Number of wire hazards present.
- Recovery equipment available to retrieve the jumper.
- Jumper experience levels.
- Drop time (day or night and percent of illumination).
- Whether or not the selected DZ is critical to mission success.

D-12. The following are the minimum initial risk categories that are assigned to DZs with wire obstacles:

- High risk: a high risk condition exists if a wire hazard is taller than 35 feet and within 1000 meters of any edge of the surveyed DZ. If a high risk condition exists, it may be necessary to have a recovery detail at the DZ. Regardless of height, any wire hazard remains high risk if it is still energized during the Airborne operation and is within 1000 meters of any edge of the surveyed drop zone.
- Medium risk: a medium risk condition exists if a wire hazard is taller than 35 feet and more than 1000 meters but less than 1500 meters from any edge of the surveyed DZ. Regardless of height, any wire hazard remains high risk if it is still energized during the Airborne operation and is within 1000 meters of any edge of the surveyed drop zone.

- Low risk: a low risk condition exists if a wire hazard is taller than 35 feet and more than 1500 meters from any edge of the surveyed DZ. Regardless of height, any wire hazard remains high risk if it is still energized during the Airborne operation and is within 1000 meters of any edge of the surveyed drop zone.

D-13. The commander, DZSO or DZSTL, and JM perform the actions described below to reduce the risks associated with wire obstacles. Commanders must—

- Ensure a risk assessment analysis has been conducted to determine the unintentional wire landing risk level for jumpers. If a high risk exists, select (if possible) an alternate DZ which allows the mission to be conducted at a lower risk level.
- Ensure a deliberate risk assessment worksheet is completed to document the hazards, initial risk, control measures, and residual risk remaining in order to determine appropriate risk approval level.
- Ensure that key leaders, JM personnel, and jumpers have been informed of the wire obstacle risks and the risk level (high, medium, or low).
- Ensure AF IMT Form 3823 is current and available.
- Ensure the DZSO or DZSTL and JM personnel have read the AF IMT Form 3823 and completely understand the wire landing risk level and the safety measures to be used.
- Ensure the DZSO or DZSTL and the unit providing the detail have properly conducted initial or refresher training if a recovery detail is used. Ensure the OIC or NCOIC of the recovery detail knows where and when the detail begins its duties and how to contact the DZSO or DZSTL.
- Ensure the DZSO or DZSTL, JM personnel, and jumpers have been informed of all wire obstacle risks. Ensure the DZSO or DZSTL and JM complete their duties.

DI-14. DZSO or DZSTL must—

- Determine if a follow on assessment of the DZ has been conducted to confirm the current status.
- Ensure that the OIC or NCOIC is fully briefed on the plan if the risk assessment indicates high risk and a recovery detail is utilized. Ensure all recovery personnel have been trained and have all necessary equipment available to them to conduct the mission.
- Ensure that coordination with the electric company has been made to cut off the power not later than one hour prior to drop time, if possible. DZSTL must have direct contact with whoever will turn off the power if a jumper is drifting towards the wires or becomes entangled. There must also be a plan to recover parachutists from wires. Ensure all recovery personnel have been trained and have all necessary equipment available to conduct the mission.
- Ensure all necessary personnel have read all applicable regulations, field manuals, and SOPs. Ensure copies are present throughout mission.

DII-15. Jumpmaster must—

- Ensure all personnel have been briefed on the wire obstacles.
- Ensure all personnel have received prejump training no earlier than 24 hours prior to take-off, with special emphasis on unintentional wire landings. If the prejump is over 24 hours, an O-6 must give approval.

DIII-16. Each wire obstacle may require different types of coverage. Equipment should be altered to best accomplish the mission. The following is an example composition of a recovery detail:

- OIC or NCOIC and assistant.
- Enough personnel to recover jumpers who may become entangled in the wire obstacles.
- A recovery team may need the following equipment:
 - Two radios with spare batteries—2 (one for OIC or NCOIC and one for the recovery team).
 - One grappling hook.
 - One tree climbing kit.
 - One long backboard to facilitate cardiopulmonary respiration.
 - One aid bag with resuscitation equipment.
 - Two ropes, 120 feet long.

- Two wood poles 15 feet long.
- One extension ladder, 20 feet long.
- Four snap links.
- For night recovery operations, the following equipment should be added:
 - Night vision devices (with spare batteries) for each team.
 - Operational flashlights (with spare batteries) for each team.
 - Optional training, as required.

D-17. Optional training includes suspended harness training on the second through fifth points of performance. Step-by-step training on the procedures jumpers take for unintentional wire landings may be conducted.

TREE OBSTACLES

D-18. A tree obstacle is any tree or group of trees that are on, around, or within 1000 meters of any edge of the drop zone. When conducting an Airborne operation risk assessment, the commander should consider the proximity of the tree hazard to the DZ, the number of hazards, recovery equipment available to safely retrieve a jumper from the hazard, jumper experience level, drop time (day or night and percent of illumination), and whether or not the selected DZ is critical to mission success. The following risk categories are the minimum initial risk categories assigned to DZs with tree obstacles:

- High risk: a high risk condition exists if a tree obstacle with a height of 35 feet or more are within 1000 meters of the DZ or are on any edge of the DZ. If a high risk condition exists, it may be necessary to have a recovery detail present at the DZ.
- Medium risk: a medium risk condition exists if a tree obstacle with a height of 20 to 35 feet is on or within 1000 meters of any edge of the DZ.
- Low risk: a low risk condition exists if a tree obstacle with a height of less than 20 feet is on or within 1000 meters of any edge of the drop zone.

DI-19. The commander, DZSO or DZSTL, and JM personnel perform the following actions to reduce the risks associated with tree obstacles. Commanders must—

- Ensure a risk assessment analysis has been established to determine the tree landing risk level for jumpers. If a high risk exists, select (if possible) an alternate DZ that allows the mission to be conducted at a lower risk level.
- Ensure a deliberate risk assessment worksheet is completed to document the hazards, initial risk, control measures, and residual risk remaining to determine appropriate risk approval level.
- Ensure that key leaders, JMs, and jumpers have been informed of the tree obstacle risks and the risk level (high, medium, or low).
- Ensure AF IMT Form 3823 is current and available. Ensure the DZSO or DZSTL and JM have read it and completely understand the tree landing risk level and the recovery measures to be used.
- Ensure DZSO or DZSTL and the unit providing the detail have properly conducted initial or refresher training if a recovery detail is used. Ensure the OIC and NCOIC of the recovery detail knows where and when the detail begins its duties and how to contact the DZSO or DZSTL.
- Ensure that the DZSO and DZSTL, JM and AJM, and jumpers have been informed of all tree obstacle risks and that the DZSO or DZSTL and JM complete their duties.

DII-20. DZSO and DZSTL must—

- Determine if a follow on assessment of the DZ has been conducted to confirm the current status.
- Ensure that the OIC or NCOIC is fully briefed on the plan if the risk assessment indicates high risk and a recovery detail is used. Ensure all recovery personnel have been trained and have all necessary equipment available to conduct the mission.
- Ensure all necessary personnel read all applicable regulations, field manuals, and SOPs. Ensure copies are present throughout mission.

D-21. Jumpmasters must—

- Ensure all personnel have been briefed on the tree obstacles.
- Ensure all personnel have received pre-jump training no earlier than 24 hours prior to take-off; with special emphasis on unintentional tree landings. If the prejump is over 24 hours, an O-6 must give approval.

D-22. Each tree obstacle may require a different type of coverage. Equipment should be altered to best accomplish the mission. The following is an example composition of a recovery detail:

- OIC, NCOIC, and assistant.
- Sufficient personnel sufficient to recover jumpers who may become entangled in the tree obstacles.
- A recovery team may need the following equipment:
 - Two radios with spare batteries—2 (one for OIC or NCOIC and one for recovery team).
 - One grappling hook.
 - One tree climbing kit.
 - One long backboard to facilitate cardiopulmonary respiration.
 - One aid bag with resuscitation equipment.
 - Two ropes, 120 feet long.
 - Two wood poles 15 feet long.
 - One extension ladder 20 feet long.
 - Four nap links.
- During night recovery operations, the following equipment should be added:
 - Night vision devices (with spare batteries) for each team.
 - Operational flashlights (with spare batteries) for each team.
 - Optional training as required.

D-23. Optional training includes suspended harness training on the second through fifth points of performance. Step by step training on the procedures jumpers will take for unintentional tree landings may be conducted.

DECISION MATRIX AND CHECKLISTS FOR LEADERS

D-24. This section provides four tables to aid the leader in assessing risk. Table D-1 shows the DZ risk assessment decision matrix.

Table D-1. Drop zone risk assessment decision matrix

	HIGH RISK	MEDIUM RISK	LOW RISK
Water	Within 1000 meters of any edge of a DZ, more than four feet deep, and more than 40 feet wide.	More than 1000 meters but less than 1500 meters from any edge of DZ, more than four feet deep, and more than 40 feet wide.	More than 1500 meters from any edge of DZ, more than four feet deep, and more than 40 feet wide.
Wire	Within 1000 meters of any edge of DZ.	More than 1000 meters but less than 1500 meters from any edge of DZ.	More than 1500 meters from any edge of DZ.
Tree(s)	Within 1000 meters of any edge of DZ and 35 feet tall or taller.	Within 1000 meters of any edge of DZ and 20 to 35 feet.	Within 1000 meters of any edge of DZ, but less than 20 feet tall.
Obstacle Training and Equipment	Required.	Within 1000 meters of any edge of DZ, but less than 20 feet tall.	Not required.
LEGEND DZ – drop zone			

D-25. Table D-2 outlines a checklist for water landings. Table D-3 on page D-8 is a checklist for wire landings, and table D-4 on page D-9 is a checklist for tree landings.

Table D-2. Leader's checklist for possible water landings

COMMANDER
Deliberate risk assessment and follow-on assessment have been conducted and approved at the appropriate level.
Key leaders, jumpmaster personnel, and jumpers have been informed of water obstacle risks and the risk level (high, medium, or low).
AF IMT Form 3823 is current and available. The DZSO or DZSTL and JM have read it and completely understand the unintentional water landing risk level and the safety measures that are to be used.
The DZSO or DZSTL and OIC and NCOIC of the boat detail have been briefed and understand their mission.
Life preservers are coordinated for if needed.
The DZSO or DZSTL, JM personnel, and jumpers have been informed of all water obstacle risks.
The DZSTL or DZSO and JM personnel have completed their duties.
DZSO or DZSTL
Risk assessment analysis has been conducted and approved at the appropriate level. .
If a boat detail is used, the OIC or NCOIC of the boat detail is fully briefed on the plan.
All boat detail personnel have been trained and have all necessary equipment available to conduct the mission.
All applicable regulations, field manuals, and SOPs have been read.
The boat detail maintains communications throughout the mission. Communications are established one hour prior to drop time and checked 15 minutes prior to drop time.

Table D-2. Leader's checklist for possible water landings (continued)

JUMPMASTER
All personnel have been briefed on the water hazards.
All jumpers have been trained on wear, fit, and use (to include manual inflation) of life preservers.
All personnel receive prejump training no earlier than 24 hours prior to take-off, with special emphasis on unintentional water landings. If the prejump is over 24 hours, an O-6 must give approval.
LEGEND O-6 – colonel or U.S. Navy captain; DZSO - drop zone safety officer; DZSTL - drop zone support team leader; FM – Field Manual; OIC – officer in charge; NCOIC - noncommissioned officer in charge; SOP - standard operating procedure

Table D-3 Leader's checklist for possible wire landings

COMMANDER
Deliberate risk assessment and follow-on assessment has been conducted and approved at the appropriate level.
Key leaders, jumpmaster personnel, and jumpers have been informed of wire obstacle risks and the risk level (high, medium, or low).
AF IMT Form 3823 is current and available. The DZSO or DZSTL and JM have read it and completely understand the unintentional wire landing risk level and the safety measures that are to be used.
The DZSO or DZSTL and the OIC and NCOIC of the recovery detail have been briefed and understand their mission.
The DZSO or DZSTL, JM personnel, and jumpers have been informed of all wire obstacle risks.
The DZSTL or DZSO and JM personnel have completed their duties.
DZSO or DZSTL
Risk assessment analysis has been conducted and approved at the appropriate level. .
If a recovery detail is used, the OIC and NCOIC of the recovery detail is fully briefed on the plan.
All detail personnel have been trained and have all necessary equipment available to conduct the mission.
All applicable regulations, field manuals, and SOPs have been read.
The recovery detail maintains communications throughout the mission. Communications are established one hour prior to drop time and checked 15 minutes prior to drop time.
The DZSO or DZSTL has direct contact with who will turn off the power in the event a jumper is drifting towards or becomes entangled in energized electrical lines
JUMPMASTER
All personnel have been briefed on the wire obstacles.
All personnel receive prejump training no earlier than 24 hours prior to take-off, with special emphasis on unintentional wire landings. If the prejump is over 24 hours, an O-6 must give approval.
LEGEND O-6 – colonel or U.S. Navy captain; DZSO - drop zone safety officer; DZSTL - drop zone support team leader; FM – Field Manual; OIC – officer in charge; NCOIC - noncommissioned officer in charge; SOP - standard operating procedure

Table D-4. Leader's checklist for possible tree landings

COMMANDER
Deliberate risk assessment and follow-on assessment have been conducted and approved at the appropriate level.
Key leaders, jumpmaster personnel, and jumpers have been informed of tree obstacle risks and the risk level (high, medium, or low).
AF IMT Form 3823 is current and available. The DZSO or DZSTL and JM have read it and completely understand the tree landing risk level and the safety measures that are to be used.
The DZSO or DZSTL and the OIC and NCOIC of the recovery detail have been briefed and understand their mission.
The DZSO or DZSTL, JM personnel, and jumpers have been informed of all tree obstacle risks.
The DZSTL or DZSO and JM personnel have completed their duties.
DZSO or DZSTL
Risk assessment analysis has been conducted and approved at the appropriate level.
If a recovery detail is used, the OIC and NCOIC of the recovery detail is fully briefed on the plan.
All recovery personnel have been trained and have all necessary equipment available to conduct the mission.
All applicable regulations, field manuals, and SOPs have been read.
The recovery detail maintains communications throughout the mission. Communications are established one hour prior to drop time and checked 15 minutes prior to drop time.
JUMPMASTER
All personnel have been briefed on the tree obstacles.
All personnel receive pre-jump training no earlier than 24 hours prior to take-off, with special emphasis on unintentional wire landings. If the prejump is over 24 hours, an O-6 must give approval.
LEGEND O-6 – colonel or U.S. Navy captain; DZSO - drop zone safety officer; DZSTL - drop zone support team leader; FM – Field Manual; OIC – officer in charge; NCOIC - noncommissioned officer in charge; SOP - standard operating procedure

This page intentionally left blank.

Appendix E

Sustained Airborne Training

The skills discussed during sustained Airborne training are perishable and Airborne operations are inherently high-risk training. Sustained Airborne training is performance-oriented training and must be performed by all personnel prior to conducting Airborne operations. The purpose of this appendix is to assist JM teams during the conduct of mock door training and the five points of performance for the T-11 and MC-6 parachute systems for a high performance aircraft Airborne operation.

Sustained Airborne training consists of three phases. The three phases are highly recommended to be conducted in the order listed below. Commanders should only authorize a deviation to the training plan if training requirements or apparatus restrictions do not allow. This order of events is the logical progression of training for the Airborne operation. Prior to conducting SAT, ensure the jumpmaster team inspects the helmets, identification tags and cards, and performs a technical inspection of the jumper's combat equipment when applicable. The three phases of SAT are:

- 1. Actions in the aircraft brief (static line control, exiting procedures, red light procedures, jump refusals, towed jumper procedures, emergency procedures) and mock door training.
- 2. Prejump training.
- 3. Parachute landing falls.

MOCK DOOR TRAINING

E-1. The bullets listed below serve as the standard guideline that will be followed. Information can always be added to the brief, but never take away from the standard outlined; so long as the fundamentals never change. This brief follows the logical progression of a jumper safely exiting an aircraft (static line control and exiting procedures) followed by all subsequent adverse actions (red light procedures, jump refusals, and towed jumper procedures).

E-2. During the first half of the brief, jumpers are oriented around the mock door, receiving the brief from a well-rehearsed jumpmaster team. Prior to beginning the second half of the brief (emergency procedures) jumpers are placed in reverse chalk order and loaded into the mock up for the brief, and performance oriented training. If using a nonstandard or foreign aircraft where the specific emergency procedures are not known, they may be briefed by the loadmaster, but all actions involving the jumpmaster team must be rehearsed. The standard guideline is:

- Static line control:
 - Hook up.
 - Bite.
 - Arm position.
 - Control of static line.
- Exiting procedures:
 - "STAND-BY" (actions of the number one jumper and safety).
 - Movement to door or ramp.
 - Proper hand off of static line to the safety.
 - Proper exit (first point of performance).

- Red light procedures:
 - Reasons for red light.
 - Actions of the JM team.
 - Actions of the jumpers.
- Jump refusals:
 - Jumpmaster actions (repeat three times, physically and verbally).
 - Safety removes jumper and gives lawful order.
 - Jumpmaster controls jump door.
 - Positive control and transfer of Jump refusal to DACO
- Towed jumper procedures:
 - Jumper actions (conscious and unconscious).
 - Jumpmaster actions and identification (green/ yellow).

Note. Jumpers seated in mock doors in chalk order for performance-oriented training.

- Emergency procedures:
 - Ground evacuation.
 - Crash landing or ditching.
 - Activation of reserve inside the aircraft: doors closed, doors open (fore), and doors open (aft).
 - Fire in flight.
 - Bailout.
- Execute mock door training:
 - The jumpmaster team may exit the jumpers from the mock doors as many times as they feel necessary.
 - Jumpers are required to perform at least two exits, with the last exit being conducted as planned for the Airborne operation.

Note. All topics must be covered. The training must be tailored to the aircraft that is being utilized.

STATIC LINE CONTROL AND EXITING PROCEDURES

E-3. The following is conducted by the JM team inside the mock door with the jumpers observing from outside the mock door. After the jumpmaster issues the command “HOOK UP,” jumpers remove the universal static line snap hook from the top carrying handle of their reserve parachutes. They hook up to the appropriate anchor line cable with the spring opening gate facing toward the skin of the aircraft.

E-4. They then form a bite in the universal static line modified making sure they have a good four in the hand and two below bite. They will not touch the double sewn portion (the double sewn portion is for the jumpmaster safety). Jumpers trace the universal static line modified over the appropriate shoulder then cover their rip cord handle with their nonstatic line hand. The first three jumpers have their arms in the elbow-lock position. This creates their one second interval. The remaining jumpers have their arms up high and stagger inboard and outboard.

E-5. As the jumpers move to the paratroop door, they lock their arms out to the elbow-lock position. As they near the jump door they make eye-to-eye contact with the safety, who takes control of their universal static lines modified, then jumpers place both hands on the ends of their reserve (ensuring that they DO NOT swim the static line). Jumpers then turn at a 90-degree angle into the paratroop door make a vigorous exit (up six inches and out 36 inches), and count to 6000.

RED LIGHT PROCEDURES AND JUMP REFUSALS

E-6. There are multiple reasons for a red light during flight. These reasons include out of drop zone, obstacles on the drop zone, low flying aircraft, rotary-wing aircraft, and other situations. If a red light occurs during exit, the jumpmaster places their hand in the jumpers face, gives the command, “RED LIGHT, RED LIGHT, RED LIGHT,” and informs the stick to move back away from the paratroop door. If jumpers have already bisected the paratroop door, they will proceed to exit out of the aircraft.

E-7. If jumpers refuse to jump, the jumpmaster will give the following command three times both physically and verbally: “GREEN LIGHT GO.” If the jumper fails to exit after the third command, the safety secures the jumper by the pack tray, and states, “YOU ARE A JUMP REFUSAL, I AM REMOVING YOU FROM THE PARATROOP DOOR.” The safety then removes the jumper from the paratroop door. The jumpmaster secures the open paratrooper door. The safety seats the jumper out of the way (ramp or inboard seat) and gives the jumper a lawful order to not touch any equipment.

E-8. The jumpmaster team then continues to exit jumpers if green light permits. Once the paratroop doors are closed, the safety unhooks the universal static line of any jump refusals and moves them toward the forward portion of the aircraft. The safety tells the jump refusals to sit down and again states, “DO NOT TOUCH YOUR EQUIPMENT.” Upon landing, the safety takes positive control of the jump refusals and transfers them to the DACO. The jump refusals receive a JMPI from the DACO and a technical inspection is conducted of their equipment by a parachute rigger. If something is found wrong with the jumper’s equipment, no action against the jumper is taken. If no deficiencies are found, the jumper is turned over to the chain of command for appropriate actions according to the unit SOP.

TOWED JUMPER

E-9. All towed jumpers who are unconscious and are being towed by their universal static line modified are retrieved and placed inside the aircraft. Towed jumpers who are conscious should maintain a good tight body position with both hands covering their rip cord handles and an attempt is made to retrieve them and place them inside the aircraft. As the conscious towed jumpers near the paratroop door, they do not reach for personnel, but should continue to protect their rip cord handles.

E-10. If the jumper cannot be retrieved, their universal static lines modified are cut. Once the jumper feels themselves falling free from the aircraft, they count to 6000 and activate their reserve parachute using the pull drop method. If the jumper is being towed by their equipment, regardless of whether they are conscious or unconscious, that item of equipment will be cut or jogged free, and the jumper’s main canopy will deploy.

EMERGENCY PROCEDURES

E-11. In emergencies, the following is conducted by the JM team with the jumpers inside the mock door. The JM team should explain the actions for each type of emergency and then have jumpers demonstrate the emergency actions. If there is:

- Ground evacuation or continuous ringing of the alarm bell: if jumpers inside the aircraft hear one continuous ring of the alarm bell, there is a crash landing during takeoff. Jumpers should remain seated, extend their legs to a 45-degree angle, wrap their arms around their legs, and place their heads on their knees until the aircraft stops. Jumpers then exit under the direction of the jumpmasters or loadmaster.
- Crash landing, ditching, six short rings of the alarm bell, or oral warning: if jumpers inside the aircraft hear six short rings of the alarm bell or an oral warning, there is a crash landing during flight. Jumpers should remain seated, rotate their legs to a 45 degree angle, wrap their arms around their legs, and place their heads on their knees until the aircraft stops. Jumpers then exit under the direction of the jumpmasters or loadmaster.
- Accidental activation of the reserve inside the aircraft with doors closed: if a reserve is activated when jumpers are inside the aircraft and the doors are closed, jumpers sound off with “RESERVE, RESERVE, RESERVE.” Once the parachute is contained, one of the jumpers alerts the jumpmasters’ by placing their hand or arm over an anchor line cable. The jumpmaster then replaces that reserve with a new one and the Airborne operation continues.

- Accidental activation of the reserve inside aircraft with doors open: if a reserve is activated when jumpers are inside the aircraft and the doors are open, jumpers who are forward of the wheel well (towards the pilots compartment) sound off, “RESERVE, RESERVE, RESERVE.” Once the parachute is contained, one of the jumpers alerts the jumpmasters by placing their hand or arm over the anchor line cable. The jumpmasters close the jump doors, then replace that reserve with a new one, and jumpers will exit the aircraft on the next pass. If jumpers are aft of the wheel well (toward jump doors) or center mass aft towards the paratroop door on a C-17, every attempt is made to contain the parachute. If the reserve starts to snake towards the jump door, the jumper exits the aircraft immediately. Jumpers in front of the activated reserve clear a path for the jumper by either exiting the aircraft, standing on their seat, or moving onto the ramp.
- Fire during flight: if jumpers are inside the aircraft and hear an oral warning of a fire while in flight, they move from the area, and the loadmasters attempt to extinguish the fire. Jumpers should be prepared to execute bailout procedures if instructed to do so.
- Bailout, or three short rings of alarm bell, or oral warning: if jumpers are inside the aircraft and they hear three short rings of the alarm bell or an oral warning, there is an emergency bailout. The jumpmasters issue shortened jump commands “STAND UP, HOOK UP” on the continuous ring; jumpers will exit the aircraft under the direction of the PJM.

E-12. Jumpers must make a minimum of two exits with the last exit as planned for the Airborne operation. All topics must be covered and tailored to the aircraft used for the operation.

PREJUMP TRAINING

E-13. Prior to prejump training, place the jumpers into a formation that allows the jumpmaster to easily control them and make on-the-spot corrections. The extended rectangular formation and the horseshoe formation are the two preferred configurations. It is recommended that the jumpers be placed at double-arm intervals to allow the jumpmasters to easily move through the formation.

E-14. Prior to placing the jumpers into formation, ensure the jumpmaster team inspects the helmets, identification cards, and tags. The jumpmasters or the safeties can accomplish this inspection.

E-15. Although prejump can be given by anyone on the jumpmaster team, the primary jumpmaster can delegate authority, but not responsibility. Holding, running, and other information can be inserted into prejump as the Airborne commander sees fit.

E-16. Although prejump training should be tailored to fit the mission, emergency landings are always covered due to the many variables involved in emergency situations, such as jumpers having to conduct an emergency bailout over unfamiliar terrain.

E-17. Prejump training is performance-oriented training, and the jumpmaster team ensures that the jumpers are performing the actions as they are being covered. During prejump training, use the “HIT IT” exercise as often as needed to keep the jumpers actively involved. Jumpmasters will refer to their unit SOPs for additional guidance.

T-11 PREJUMP

E-18. The five points of performance are performance-oriented training and individual actions that are essential on every parachute jump. Each of the points, specific to the T-11 ATPS, are described in this section. Failure to perform any one point correctly could result in a jump injury. The following instructions are issued from the jumpmaster’s point of view.

E-19. “The first point of performance is PROPER EXIT, CHECK BODY POSITION, and COUNT. JUMPERS HIT IT. Upon exiting the aircraft, snap into a good tight body position. Keep your eyes open, chin on your chest, elbows tight into your sides, hands on the end of the reserve, with your fingers spread. Bend forward at the waist, keeping your feet and knees together, knees locked to the rear, and count to 6000.”

E-20. “At the end of your 6000 count, immediately go into your second point of performance, CHECK CANOPY AND GAIN CANOPY CONTROL. Reach up to the elbow-locked position and secure the front set of risers in each hand, simultaneously conducting a 360-degree check of your canopy. Your slider will be

fully extended and begin to slide down the suspension lines. If, during your second point of performance, you find that you have twists, you must compare your rate of descent with your fellow jumpers. If you are falling faster than your fellow jumpers or you cannot compare your rate of descent with fellow jumpers, immediately activate your reserve parachutes using the pull drop method. If you are not falling faster than fellow jumpers, reach up and grasp a set of risers in each hand, thumbs down, knuckles to the rear. Pull the risers apart and begin a vigorous bicycling motion. When the last twist comes out, immediately check canopy and gain canopy control.”

E-21. “Your third point of performance is KEEP A SHARP LOOKOUT AT ALL TIMES and CONSTANTLY COMPARE YOUR RATE OF DESCENT. Remember the three rules of the air and repeat them after me. ALWAYS LOOK BEFORE YOU SLIP, ALWAYS SLIP IN THE OPPOSITE DIRECTION TO AVOID COLLISION, and THE LOWER JUMPER ALWAYS HAS THE RIGHT OF WAY. Avoid fellow jumpers all the way to the ground by maintaining a 25-foot separation and continue to compare your rate of descent with fellow jumpers. During your third point of performance, release all appropriate equipment tie-downs.”

E-22. “This brings you to your fourth point of performance, which is PREPARE TO LAND. At approximately 100 feet above ground level or treetop level, look below you to ensure there are no fellow jumpers and lower your equipment, then slip into the wind. Attempt to utilize the slip assist loops or slip assist tabs and execute a one-riser slip opposite your direction of drift. You will execute a one-riser slip by grabbing 1-3 arm lengths depending on the wind. If the wind is blowing from your left, reach up with your left hand and grab either riser on the left side and pull a 1-3, arm length slip deep into your chest. If the wind is blowing from your front, reach up with either hand and grab either riser on the front side and pull a 1-3, arm length slip deep into your chest. If the wind is blowing from your right, reach up with your right hand and grab either riser on the right side and pull a 1-3, arm length slip deep into your chest. If the wind is blowing from your rear, reach up with either hand and grab either riser on the rear side and pull a 1-3, arm length slip deep into your chest. If you decide to pull a two-riser slip, secure the risers opposite your direction of drift and hold them deep into your chest. After you have slipped into the wind, you will assume a landing attitude by keeping your feet and knees together, knees slightly bent, elbows tight into your sides, with your head and eyes on the horizon. When the balls of your feet make contact with the ground, put your chin down to your chest and execute a proper parachute landing fall.”

E-23. “The fifth point of performance is LAND. You will make a proper parachute landing fall by hitting all five points of contact. Touch them, and repeat them after me. One, BALLS OF YOUR FEET; two, CALF; three, THIGH; four, BUTTOCKS; and five, PULL UP MUSCLE. You will never attempt to make a standing landing.”

E-24. “Remain on the ground and activate both of your canopy release assemblies using either the “hand to shoulder” method or the “hand assist” method. To activate your canopy release assembly using the “hand to shoulder” method, reach up with either hand and grasp the corresponding safety clip. Pull out and down on the safety clip, exposing the cable loop. Insert the thumb, from bottom to top, through the cable loop. Turn your head in the opposite direction, and pull out and down on the cable loop. To activate your canopy release assembly using the “hand assist” method, reach up and grasp the corresponding safety clip. Pull out and down on the safety clip, exposing the cable loop. Insert the thumb, from bottom to top, through the cable loop. Reinforce that hand with the other. Turn your head in the opposite direction, and pull out and down on the cable loop. Place your weapon into operation and remove the parachute harness.”

E-25. “The next item I will cover is RECOVERY OF EQUIPMENT. Once you are out of the parachute harness, remove all air items from the equipment rings. Unzip and turn the universal parachutist recovery bag right side out. Place the parachute harness inside the universal parachutist recovery bag with the smooth side facing up. Secure the risers and place them under the parachute harness.”

E-26. Nontactical: “Elongate the suspension lines and canopy, removing all debris. Once you reach the bridle line, secure the drogue parachute and deployment sleeve in one hand and begin to figure-eight roll your canopy and suspension lines all the way to the UPRB, leaving the drogue parachute, deployment sleeve, and bridle assembly on top of the main canopy.”

E-27. Tactical: “Remain on a knee at the universal parachutist recovery bag. Begin pulling the suspension lines and canopy towards the universal parachutist recovery bag, stuffing them in as you go. Place the drogue

parachute, deployment sleeve, and bridle assembly on top of the main canopy. Snap, do not zip, the universal parachutist recovery bag. Place the reserve parachute in the reserve parachute stowage pocket. Secure all of your equipment, conduct a 360-degree check of your area, and move out to your assembly area.”

E-28. “The next item I will cover is the ACTIVATION OF THE T-11 RESERVE PARACHUTE. To activate the T-11 reserve parachute, you will use the pull drop method. JUMPERS HIT IT, maintain a good, tight body position. Grasp the rip cord handle with either hand. Throw your head back and to the rear, pull out on the rip cord handle, and drop it. Your reserve parachute will activate. Ensure neither hand is in front of the reserve parachute as it deploys. After you activate your T-11 reserve parachute, secure the reserve risers. At approximately 200 feet above ground level, slip into the wind, and prepare to land.”

E-29. “The next item I will cover is TOWED JUMPER PROCEDURES. JUMPERS HIT IT. If you become a towed jumper, and are being towed by your universal static line modified and are unconscious; you will be retrieved back inside the aircraft. If you are conscious, maintain a good tight body position with both hands covering your rip cord handle and an attempt will be made to retrieve you inside the aircraft. As you near the paratroop door, DO NOT REACH FOR US, continue to protect your rip cord handle. If you cannot be retrieved, your universal static line modified will be cut. Once you feel yourself falling free from the aircraft, count to 600 and activate your reserve parachute using the pull drop method. If you are being towed by your equipment, regardless of whether you are conscious or unconscious, that item of equipment will be cut or jogged free, and your main canopy will deploy.”

E-30. “The next item I will cover is MALFUNCTIONS. Remember to continue to check your canopy for any damage or irregularities and compare your rate of descent throughout your entire jump. If at any time you cannot compare your rate of descent or you are falling faster than your fellow jumpers, immediately activate your reserve parachute using the pull drop method.”

E-31. “The next item I will cover is COLLISIONS AND ENTANGLEMENTS. JUMPERS HIT IT. CHECK CANOPY AND GAIN CANOPY CONTROL. If you see another jumper approaching, immediately look, and then slip away. If you cannot avoid the collision, assume a spread eagle body position and attempt to bounce off the jumper’s canopy or suspension lines and immediately look, and then slip away. If you pass through the suspension lines, snap into a modified position of attention. With either hand protect your rip cord handle. With the opposite hand attempt to weave your way out of the suspension lines the same way you entered. Once clear, immediately look then slip away. If you become entangled, the higher jumper will climb down to the lower jumper using the hand under hand method. Once both jumpers are even, they will face each other and grasp each other’s left main lift web. Both jumpers will discuss which PLF they will execute. Both jumpers will conduct the same PLF. Neither jumper will execute a front PLF. Both jumpers will continue to observe their canopies all the way to the ground. If one canopy collapses both jumpers will ride the one good canopy all the way to the ground. If both canopies collapse, both jumpers will immediately turn away, in order to create a clear path, and activate their reserve parachute using the pull drop method. Should you find yourself on another jumper’s canopy, without rolling, use whatever means necessary to get off of the canopy and immediately activate your reserve parachute. Attempt to avoid the four corner vents on the canopy. Should you fall through a corner vent, stay where you are and be prepared to conduct a PLF. If you have another jumper on top of your canopy, continually compare your rate of descent. If you are falling faster than fellow jumpers, immediately activate your reserve parachute using the pull drop method.”

E-32. “The next item I will cover is EMERGENCY LANDINGS. The first emergency landing I will cover is the TREE LANDING. If you are drifting toward the trees, immediately look then slip away. If you cannot avoid the trees and have lowered your equipment, look below you to ensure there are no fellow jumpers, and jettison your equipment making a mental note of where it lands. If you have not lowered your equipment, keep it on you to provide extra protection while passing through the trees. At approximately 200 feet above ground level, assume a good landing attitude by keeping your feet and knees together, knees slightly bent, and chin on your chest. When you make contact with the trees, rotate your hands in front of your face with your elbows high. Be prepared to execute a proper PLF if you pass through the trees. If you get hung up in the trees and you do not feel you can safely lower yourself to the ground, stay where you are and wait for assistance.”

E-33. “If you decide to climb down, jettison all unneeded equipment. Ensure that you maintain your helmet. Activate the quick release in your waistband. With either hand, apply inward pressure on the rip cord assembly. With the opposite hand remove the top tuck tab. Maintain steady inward pressure and with the

opposite hand insert it behind the rip cord assembly and apply inward pressure. Grasp the rip cord handle with the opposite hand, pull it and drop it. With both hands, control the activation of the reserve parachute to the ground ensuring that all suspension lines and risers are completely deployed. Disconnect the left connector snap and rotate the reserve to the right. Attach the left connector snap to the triangle link on your right side. Seat yourself well into the saddle. Activate the quick release in the chest strap and completely remove the chest strap from the chest strap friction adapter. Grasp the right main lift web with either hand below the canopy release assembly and with the other hand activate the leg strap ejector snaps and climb down the outside of the reserve parachute. Caution must be taken when climbing down the T-11 reserve suspension lines because of the slippery coating applied to the suspension lines. Remember, when in doubt, stay where you are and wait for assistance.”

E-34. “The next emergency landing I will cover is the WIRE LANDING. If you are drifting towards wires, immediately look and try to slip away. If you cannot avoid the wires, look below you to ensure there are no fellow jumpers and jettison your equipment, making a mental note of where it lands. Ensure that you maintain your helmet. Assume a landing attitude by keeping your feet and knees together, exaggerating the bend in your knees, eyes open, chin on your chest with your back arched. Place the palms of your hands high on the inside of the front set of risers with the elbows locked. When you make contact with the wires, begin a vigorous rocking motion in an attempt to pass through the wires. Be prepared to execute a proper PLF in the event you pass through the wires. If you get hung up in the wires, do not attempt to lower yourself to the ground. Stay where you are and wait for assistance.”

E-35. “The next emergency landing I will cover is the WATER LANDING. If you are drifting towards a body of water, immediately look then slip away. If you cannot avoid the water, look below you to ensure there are no fellow jumpers and lower your equipment. Next, jettison your helmet, making a mental note of where it lands. Activate the quick release in the waistband. Disconnect the left connector snap and rotate the reserve parachute to the right. Seat yourself well into the saddle and activate the quick release in the chest strap, completely removing the chest strap from the chest strap friction adapter. Regain canopy control. Prior to entering the water, assume a landing attitude by keeping your feet and knees together, knees slightly bent, and place your hands on both leg strap ejector snaps. When the balls of your feet make contact with the water, activate both leg strap ejector snaps, arch your back, throw your arms above your head, and slide out of the parachute harness. Be prepared to execute a proper PLF if the water is shallow. Swim upwind, or upstream, away from the canopy. If the canopy comes down on top of you, locate a seam, and follow it to the skirt of the canopy.”

E-36. “The next item I will cover is LIFE PRESERVERS. When jumping a life preserver and you are unable to slip away from the water, lower your combat equipment, activate your life preserver, then jettison your combat equipment prior to making contact with the water. Be prepared to execute a proper PLF if the water is shallow. Once in the water, activate both canopy release assemblies.”

E-37. “The next item I will cover is NIGHT JUMPS. When conducting night jumps, be sure to give your canopy an extra look if you have any reason to believe you are falling faster than fellow jumpers immediately activate your reserve parachute. Maintain noise discipline and a good interval between fellow jumpers. Be prepared to conduct a PLF because you will hit the ground approximately five to 10 seconds before you think you will.”

E-38. “The next item I will cover is instrument meteorological conditions. When jumping under IMC, do not lower your equipment until you have passed through the clouds. Do not slip unless you have to avoid a collision. If you have any type of malfunction or any reason to believe you are falling faster than fellow jumpers, immediately activate your reserve parachute using the pull drop method because you cannot compare your rate of descent with fellow jumpers. Ensure you recheck your canopy once you pass through the clouds.”

E-39. “The final item I will cover is PARACHUTE LANDING FALLS. We will now move to the PLF platform and conduct one satisfactory PLF in each of the four directions.”

MC-6 PREJUMP

E-40. The five points of performance are performance oriented training and individual actions that are essential on every parachute jump. Each of the points specific to the MC-6 series parachute are described in this section. Failure to perform any one point correctly could result in a jump injury. The following instructions are issued from the jumpmaster's point of view.

E-41. "The first point of performance is PROPER EXIT, CHECK BODY POSITION, and COUNT. JUMPERS HIT IT. Upon exiting the aircraft, snap into a good tight body position. Keep your eyes open, chin on your chest, elbows tight into your sides, hands on the end of the reserve, with your fingers spread. Bend forward at the waist keeping your feet and knees together, knees locked to the rear, and count to 4000."

E-42. "At the end of your 4000 count, immediately go into your second point of performance, CHECK CANOPY and GAIN CANOPY CONTROL. When jumping the MC-6 series parachute, secure a toggle in each hand and pull them down to eye level, simultaneously conducting a 360-degree check of your canopy. If during your second point of performance you find that you have twists, you must compare your rate of descent with your fellow jumpers. If you are falling faster than your fellow jumpers or you cannot compare your rate of descent with fellow jumpers, immediately activate your reserve parachute using the pull drop method. If you are not falling faster than fellow jumpers, then reach up and grasp a set of risers in each hand, thumbs down, knuckles to the rear. Pull the risers apart and begin a vigorous bicycling motion. When the last twist comes out, immediately check canopy and gain canopy control."

E-43. "Your third point of performance is KEEP A SHARP LOOKOUT AT ALL TIMES and CONSTANTLY COMPARE YOUR RATE OF DESCENT. Remember the three rules of the air and repeat them after me. ALWAYS LOOK BEFORE YOU TURN, ALWAYS TURN IN THE OPPOSITE DIRECTION TO AVOID COLLISIONS, and THE LOWER JUMPER ALWAYS HAS THE RIGHT OF WAY. Avoid fellow jumpers all the way to the ground by maintaining a 50-foot separation and continue to compare your rate of descent with fellow jumpers."

E-44. "This brings you to your fourth point of performance which is PREPARE TO LAND. At approximately 250 feet above ground level, determine your direction of drift. If the wind is blowing from your left, pull your left toggle down to the elbow locked position. Once you are facing into the wind, let up slowly to prevent oscillation. If the wind is blowing from your right, pull your right toggle down to the elbow locked position. Once you are facing into the wind, let up slowly to prevent oscillation. If the wind is blowing from your rear, pull either toggle down to the elbow locked position. Once you are facing into the wind, let up slowly to prevent oscillation. If the wind is blowing from your front, make minor corrections to remain facing into the wind. Look below you to ensure there are no fellow jumpers. Transfer control of one toggle to the opposite hand, so that the other hand is controlling both toggles in front of your face. With the free hand, release all appropriate equipment tie-downs, and lower your combat equipment. Now regain canopy control with both hands. Assume a proper prepare to land attitude by pulling the toggles to the appropriate break position. After you have turned into the wind, you will assume a landing attitude by keeping your feet and knees together, knees slightly bent, elbows tight into your sides, with your head and eyes on the horizon. When the balls of your feet make contact with the ground, put your chin down to your chest and execute a proper parachute landing fall."

E-45. "The fifth point of performance is LAND. You will make a proper parachute landing fall by hitting all five points of contact. Touch them and repeat them after me. One, BALLS OF YOUR FEET; two, CALF; three, THIGH; four, BUTTOCKS; and five, PULL UP MUSCLE. You will never attempt to make a standing landing."

E-46. "Remain on the ground, and activate one of your canopy release assemblies using either the hand to shoulder method, or the hand assist method. To activate your canopy release assembly using the hand to shoulder method, reach up with either hand and grasp the corresponding safety clip. Pull out and down on the safety clip exposing the cable loop. Insert your thumb, from bottom to top, through the cable loop. Turn your head in the opposite direction and pull out and down on the cable loop. To activate your canopy release assembly using the hand assist method, reach up and grasp the corresponding safety clip. Pull out and down on the safety clip exposing the cable loop. Insert your thumb, from bottom to top, through the cable loop. Reinforce that hand with the other. Turn your head in the opposite direction and pull out and down on the

cable loop. If your canopy fails to deflate, activate the other canopy release assembly. Place your weapon into operation and remove the parachute harness.”

E-47. “The next item I will cover is RECOVERY OF EQUIPMENT. Once you are out of the parachute harness, remove all air items from the equipment rings. Unzip and turn the universal parachutist recovery bag right side out. Place the parachute harness inside the universal parachutist recovery bag with the smooth side facing up and leave the waistband exposed. Secure the risers and place them under the parachute harness.”

E-48. Nontactical: “Elongate the suspension lines and canopy removing all debris. Once you reach the bridle loop, insert your thumb in the bridle loop and begin to figure-eight roll your canopy and suspension lines all the way to the universal parachutist recovery bag. Route the waistband through the bridle loop, leaving six to eight inches of the waistband exposed.”

E-49. Tactical: “Remain on a knee at the universal parachutist recovery bag. Begin pulling the suspension lines and canopy towards the universal parachutist recovery bag, stuffing them in as you go. Route the waistband through the bridle loop leaving six to eight inches of the waistband exposed.”

E-50. “Snap, do not zip, the universal parachutist recovery bag. Place the reserve parachute in the reserve parachute stowage pocket. Secure all of your equipment, conduct a 360-degree check of your area, and move out to your assembly area.”

E-51. “The next item I will cover is the ACTIVATION OF THE T-11 RESERVE PARACHUTE.” To activate the T-11 reserve parachute, you will use the pull drop method. JUMPERS HIT IT. Maintain a good, tight body position. Grasp the rip cord handle with either hand. Throw your head back and to the rear, pull out on the rip cord handle, and drop it. Your reserve parachute will activate. Ensure neither hand is in front of the reserve parachute as it deploys. After you activate your T-11 reserve parachute, secure the reserve risers. At approximately 200 feet above ground level, slip into the wind, and prepare to land.”

E-52. “The next item I will cover is TOWED JUMPER PROCEDURES.” JUMPERS HIT IT. If you are being towed by your universal static line modified and are unconscious you will be retrieved back inside the aircraft. If you are conscious, maintain a good, tight body position with both hands covering your rip cord handle. An attempt will be made to retrieve you inside the aircraft. As you near the paratroop door, do not reach for us, but continue to protect your rip cord handle. If you cannot be retrieved, your universal static line modified will be cut. Once you feel yourself falling free from the aircraft, count to 4000 and activate your reserve parachute using the pull drop method. If you are being towed by your equipment, regardless of whether you are conscious or unconscious, that item of equipment will be cut or jogged free, and your main canopy will deploy.”

E-53. “The next item I will cover is MALFUNCTIONS. Remember to continue to check your canopy for any damage or irregularities and compare your rate of descent throughout your entire jump. If at any time you cannot compare your rate of descent or you are falling faster than your fellow jumpers, immediately activate your reserve parachute using the pull drop method. If the MC-6 canopy becomes inverted, pulling a toggle will turn you in the opposite direction. Do not activate your reserve parachute unless the canopy was damaged during inversion. If you have broken control lines, you must use your rear risers to turn.”

E-54. “The next item I will cover is COLLISIONS AND ENTANGLEMENTS. JUMPERS HIT IT. CHECK CANOPY and GAIN CANOPY CONTROL. If you see another jumper approaching, immediately look, and then turn away. If you cannot avoid the collision, assume a spread eagle body position and attempt to bounce off the jumper’s canopy or suspension lines, then immediately look, and then turn away. If you pass through the suspension lines and you do become entangled, snap into a modified position of attention. With either hand protect your rip cord handle. With the opposite hand, attempt to weave your way out of the suspension lines the same way you entered. Once clear, immediately look then turn away. If you become hopelessly entangled, both jumpers will remain where they are, obtain a clear path, and immediately activate their reserve parachutes using the pull drop method.”

E-55. “The next item I will cover is EMERGENCY LANDINGS. The first emergency landing I will cover is the TREE LANDING. If you are drifting towards the trees, immediately look, then turn away. If you cannot avoid the trees, and have lowered your equipment, look below you to ensure there are no fellow jumpers and jettison your equipment, making a mental note of where it lands. If you have not lowered your

equipment, keep it on you to provide extra protection while passing through the trees. At approximately 200 feet above ground level, assume a good landing attitude by keeping your feet and knees together, knees slightly bent, and chin on your chest. When you make contact with the trees, rotate your hands in front of your face with your elbows high. Be prepared to execute a proper PLF if you pass through the trees. If you get hung up in the trees and you do not feel you can safely lower yourself to the ground, stay where you are and wait for assistance.”

E-56. “If you decide to climb down, jettison all unneeded equipment. Ensure that you maintain your helmet. Activate the quick release in your waistband. With either hand, apply inward pressure on the rip cord assembly. With the opposite hand, remove the top tuck tab. Maintain steady inward pressure and with the opposite hand insert it behind the rip cord assembly and apply inward pressure. Grasp the rip cord handle with the opposite hand, pull it and drop it. With both hands, control the activation of the reserve parachute to the ground, ensuring that all suspension lines and risers are completely deployed. Disconnect the left connector snap and rotate the reserve to the right. Attach the left connector snap to the triangle link on your right side. Seat yourself well into the saddle. Activate the quick release in the chest strap and completely remove the chest strap from the chest strap friction adapter. Grasp the right main lift web with either hand below the canopy release assembly, and with the other hand activate the leg strap ejector snaps and climb down the outside of the reserve parachute. Caution must be taken when climbing down the T-11 reserve suspension lines because of the slippery coating applied to the suspension lines. Remember, when in doubt, stay where you are and wait for assistance.”

E-57. “The next emergency landing I will cover is the WIRE LANDING. If you are drifting towards wires, immediately look, then turn away. If you cannot avoid the wires, look below you to ensure there are no fellow jumpers and jettison your equipment, making a mental note of where it lands. Ensure that you maintain your helmet. Assume a landing attitude by keeping your feet and knees together, exaggerating the bend in your knees, eyes open, chin on your chest, with your back arched. Place the palms of your hands high on the inside of the front set of risers with the elbows locked. When you make contact with the wires, begin a vigorous rocking motion in an attempt to pass through the wires. Be prepared to execute a proper PLF in the event you pass through the wires. If you get hung up in the wires, do not attempt to lower yourself to the ground. Stay where you are, and wait for assistance.”

E-58. “The next emergency landing I will cover is the WATER LANDING. If you are drifting towards a body of water, immediately look, then turn away. If you cannot avoid the water, look below you to ensure there are no fellow jumpers and lower your equipment. Next, jettison your helmet, making a mental note of where it lands. Activate the quick release in the waistband. Disconnect the left connector snap and rotate the reserve parachute to the right. Seat yourself well into the saddle. Activate the quick release in the chest strap, completely removing the chest strap from the chest strap friction adapter. Regain canopy control. Prior to entering the water, assume a landing attitude by keeping your feet and knees together, knees slightly bent, and place your hands on both leg strap ejector snaps. When the balls of your feet make contact with the water, activate both leg strap ejector snaps, arch your back, throw your arms above your head, and slide out of the parachute harness. Be prepared to execute a proper PLF if the water is shallow. Swim upwind, or upstream, away from the canopy. If the canopy comes down on top of you, locate a seam, and follow it to the skirt of the canopy.”

E-59. “The next item I will cover is LIFE PRESERVERS. When jumping a life preserver and you are unable to slip away from the water, lower your combat equipment, activate your life preserver, then jettison your combat equipment prior to making contact with the water. Be prepared to execute a proper PLF if the water is shallow. Once in the water, activate both canopy release assemblies.”

E-60. “The next item I will cover is NIGHT JUMPS. When conducting night jumps, be sure to give your canopy an extra look. ”If you have any reason to believe you are falling faster than fellow jumpers, immediately activate your reserve parachute. Maintain noise discipline and a good interval between fellow jumpers. Be prepared to conduct a PLF because you will hit the ground approximately five to 10 seconds before you think you will.”

E-61. “The next item I will cover is INSTRUMENT METEOROLOGICAL CONDITIONS. When jumping under IMC, do not lower your equipment until you have passed through the clouds. Do not turn unless you have to avoid a collision. If you have any type of malfunction, or any reason to believe you are falling faster than fellow jumpers, you must immediately activate your reserve parachute using the pull drop method

because you cannot compare your rate of descent with fellow jumpers. Ensure you recheck your canopy once you pass through the clouds.”

E-62. “The final item I will cover is PARACHUTE LANDING FALLS. We will now move to the PLF platform and conduct one satisfactory PLF in each of the four directions.”

This page intentionally left blank.

Appendix F

Collisions, Entanglements, and Center Panel Strike

Leaders at all levels must stress the importance of prevention in regards to collisions, entanglements, and the center panel strike (T-11 ATPS only); this is key to avoiding situations where emergency procedures are executed. Leaders ensure that all jumpers know the proper emergency procedures discussed in this appendix before executing any static line personnel operations.

Jumpmaster teams control jumper spacing and the flow of jumpers during exiting procedures to avoid simultaneous exits. This leads to acceptable jumper dispersion in the air and aids jumpers in avoidance measures.

All jumpers must maintain a 25-foot separation between jumpers when jumping the T-11 ATPS and use a one riser or diagonal slip to avoid other jumpers in the air and obstacles on the ground. Jumpers maintain a 50-foot separation when jumping the MC-6 parachute and use good toggle control to avoid other jumpers in the air and obstacles on the ground. In some situations, collisions and entanglements and a center panel strike cannot be avoided. This appendix covers the following emergency procedures:

- Collisions and entanglements with the T-11 and MC-6 parachutes.
- Center panel strike with the T-11 parachute.

COLLISIONS AND ENTANGLEMENTS

F-1. A collision is the physical impact or contact, however slight, of one jumper or jumper's equipment with that of another jumper, but both jumpers separate prior to making contact with the ground. An entanglement is the entwining or attachment of a jumper or jumper's equipment with that of another jumper during descent, whether or not the entanglement lasts until the jumpers contact the ground.

F-2. Jumpers must be alert in the air and warn each other of impending collisions. If a collision cannot be avoided by slipping or turning, jumpers attempt to bounce off the other jumpers' suspension lines or canopies by spreading their arms and legs just before making contact.

F-3. If a jumper becomes entangled with one or more suspension lines of another parachute, the jumper does one of the following, depending on the type of parachute being used and the incident altitudes:

- High altitude occurs from aircraft exit throughout full canopy deployment (first point of performance).
- Mid altitude occurs after full canopy deployment throughout descent to the preparation for landing altitude designated for the type of parachute used (second and third points of performance).
- Low altitude occurs from the preparation for landing altitude throughout descent to landing (fourth point of performance).

T-11 PARACHUTE EMERGENCY PROCEDURES

F-4. In the event of an entanglement, the following actions should be taken:

- If a jumper is jumping with the T-11 parachute and becomes entangled, the higher jumper climbs down to the lower jumper using the hand-under-hand method. The jumper must stay away from the corner vents located on all four corners of the canopy, and the bridle line on top of the canopy.

Should the jumper fall through a vent or become entangled in the bridle line, the jumper should stay in place and be prepared to execute a proper PLF.

- Once both jumpers are even, they face each other and grasp each other's left main lift web. Both jumpers continue to observe both canopies and take one of the following actions:
 - If one canopy collapses, neither jumper will activate their reserve parachute because one T-11 series parachute can safely deliver two combat-equipped jumpers to the ground.
 - If both canopies should collapse, both jumpers immediately turn away from each other to create a clear path, and activate their reserve parachute using the pull drop method.
- Both jumpers discuss which PLF to execute.
- Both jumpers conduct the same PLF.
- Neither jumper executes a front PLF.
- A jumper who finds them self on another jumper's canopy, without rolling, uses whatever means necessary to get off of the canopy and immediately activate the reserve parachute using the pull drop method. If a lower jumper has another jumper on top of their canopy, continually compare the rate of descent of both jumpers. If the lower jumper is falling faster than fellow jumpers, the lower jumper immediately activates the reserve parachute using the pull drop method.
- Remember to stay away from the four corner vents located at the corners of the canopy.
- A jumpers who falls through the vent should stay in place and be prepared to execute a proper PLF.

CENTER PANEL STRIKE

F-5. A center panel strike occurs when a jumper finds them self on top of another jumper's canopy at any time during their second, third, and fourth point of performance. The two jumpers handle the situation by following these procedures:

- Actions of the higher jumper:
- If the higher jumper is drifting toward a fellow jumper, the higher jumper should look and immediately slip away in the opposite direction of the lower jumper using a one riser diagonal slip.
- If a higher jumper is drifting over a lower jumper's canopy and may land on top of it; prior to making contact with the canopy, the higher jumper begins a vigorous running motion in the direction of their slip, attempting to stay on their feet, until the higher jumper is off the lower jumper's canopy. The higher jumper continues to slip away until a minimum of 25 feet of separation has been achieved.
- If the higher jumper lands on the lower jumper's canopy and cannot run off, it is vital to maintain momentum. This should allow the higher jumper to remain on their feet and attempt to get off the closest edge of the canopy, as momentum allows. If the higher jumper cannot stay on their feet, the higher jumper should employ a crawling technique by reaching as far as possible in the direction of the closest edge of the canopy. The higher jumper should grasp the canopy and continue to pull using the hand-over-hand method until free from the lower jumper's canopy. Once the higher jumper is falling free, they create a clear and unobstructed path, then activate the reserve parachute using the pull drop method. Keep the feet and knees together and be prepared to execute a parachute landing fall.

WARNING

Jumpers should not attempt to roll off the canopy as this could wrap the suspension line around their bodies, preventing the main canopy from re-inflating and preventing the deployment of the reserve.

- Actions of the lower jumper:
 - At the end of the lower jumpers' 6000 count, they immediately begin the second point of performance, check canopy and gain canopy control.
 - They then conduct a 360-degree check of their canopy to ensure the canopy is free of any damage or fellow jumpers, and the slider is descending.
 - If there is damage to the canopy or a jumper on top, the lower jumpers compares their rate of descent with their fellow jumpers. If lower jumpers are falling faster than their fellow jumpers, they immediately activate the reserve parachute using the pull drop method.
 - If the lower jumper has a jumper on top of their canopy and the lower jumper is not falling faster than their fellow jumpers, they continue to observe their canopy. If at any time the lower jumpers' main parachutes begin to deflate, they immediately activate the reserve parachutes using the pull drop method.
 - If the higher jumper slides off of the lower jumper's canopy, the lower jumper uses a one riser diagonal slip in the opposite direction to avoid fellow jumpers.

WARNING

When slipping away from fellow jumpers, always use a diagonal slip. If the higher jumper should fall through a corner vent, they should remain where they are and be prepared to conduct a parachute landing fall.

MC-6 PARACHUTE EMERGENCY PROCEDURES

F-6. A collision is the physical impact or contact, however slight, of one jumper or jumpers' equipment with that of another jumper, but both jumpers separate prior to making contact with the ground. An entanglement is the entwining or attachment of a jumper or jumper's equipment with that of another jumper during descent, whether or not the entanglement lasts until the jumpers make contact with the ground.

F-7. Jumpers must be alert in the air and warn each other of impending collisions. If a collision cannot be avoided by turning away, the jumper should take the following actions:

- Assume a spread eagle position.
- Attempt to bounce off the other jumper's canopy and suspension lines and immediately turn away to regain the 50-foot separation.

F-8. If a jumper becomes entangled with one or more suspension lines of another parachute, BOTH jumpers take the following actions:

- Remain where they are.
- Obtain a clear path.
- Immediately activate their reserve parachute using the pull drop method

This page intentionally left blank.

Glossary

SECTION I – ACRONYMS AND ABBREVIATIONS

Acronym	Definition
ACH	advanced combat helmet
ADEPT	alternate door exit procedures
ADZSO	assistant drop zone safety officer
AEBP	advanced emergency bailout parachute
AFI	Air Force Instruction
AGL	above ground level
AIRPAC	Airborne pack
AJM	assistant jumpmaster
AKB	aviator kit bag
ALCE	airlift control element
ALICE	all-purpose lightweight individual carrying equipment
AMB	air mission brief
APFT	Army Physical Fitness Test
ARS	automatic release system
AT4JP	anti-tank 84-millimeter unguided, anti-armor jump pack
ATPS	Advanced Tactical Parachute System
AWADS	Adverse Weather Aerial Delivery System
CARP	computed air release point
CDS	container delivery system
CO2	carbon dioxide
DACO	departure airfield control officer
DZ	drop zone
DZSO	drop zone safety officer
DZST	drop zone support team
DZSTL	drop zone support team leader
EOD	explosive ordnance disposal
GMRS	Ground Marking Release System
GPS	Global Positioning System
GTA	ground-to-air
HPT	hook-pile tape
HPTLL	hook-pile tape lowering line
HSPR	harness, single-point release
IMC	instrument meteorological conditions
IOTV	improved outer tactical vest

ISLT	improved swing landing trainer
JM	jumpmaster
JMPI	jumpmaster personnel inspection
JPADS	Joint Precision Airdrop System
JSGPM	joint service general purpose mask
JSJR	jumpmaster spotted and jumpmaster released
LPU	life preserver unit
LUH	light utility helicopter
LWGM	lightweight ground mount
MAAWS	Multirole Antiarmor/Antioersonnel Weapon System
MAP	MOLLE assault pack
MAWC	modular Airborne weapons case
MEW	mean effective wind
mm	millimeter
MO	malfunction officer
MOLLE	modular lightweight load-carrying equipment
mph	mile per hour
MSL	mean sea level
NCO	noncommissioned officer
NCOIC	noncommissioned officer in charge
NSN	national stock numbe
NVD	night vision device
O-6	colonel or U.S. Navy captain
OIC	officer in charge
PDB	parachute drop bag
PI	point of impact
PIBAL	pilot balloon
PIE/R2	parachutist's individual equipment rapid release (mechanism)
PJ	pararescue jumper
PJM	primary jumpmaster
PLF	parachute landing fall
PWAC	practical work inside the aircraft
RAM	raised angle marker
RATS CAB	rapid access trauma system, certified aid bag (medical)
RP	release point
SAT	sustained Airborne training
SAW	squad automatic weapon
SEAL	sea, air, and land (U.S. Navy)
SIRB	safety investigation review board
SME	subject matter expert
SMJP	Stinger missile jump pack

SOP	standard operating procedure
STS	special tactics squadron
SWCC	special warfare combatant-craft crewman
T&E	traverse and elevation
TAP	tactical assault panel
TFSS	tactical flotation support system
T.I.	technical inspection
TOT	time on target
TPRS	Towed Parachutist Retrieval System
UDT	underwater demolition team
UPRB	universal parachutist recovery bag
U.S.	United States
USAIS	U.S. Army Infantry School
USAQMS	U.S. Army Quartermaster School
USASOC	United States Army Special Operations Command
USL	universal static line
USLM	universal static line modified
VIRS	Verbally Initiated Release System
WDZ	water drop zone
WSVC	wind streamer vector count

SECTION II – TERMS

100 mph tape

Scrim-backed, pressure sensitive tape.

***checkpoint**

A predetermined point on the ground used to control movement, tactical maneuver, and orientation. Also called a CP.

Type II nylon cord

Nylon rope with a tensile strength up to 400 pounds.

Type III nylon tape

Nylon reinforcement tape used for binding or ties.

Type IV ripstop

Woven fabric with a special reinforcing technique to resist tears and ripping.

Type VII nylon webbing

Nylon webbing that is 1-23/32 inches wide, .006 to .100 inches thick, has a breaking strength of 6000 pounds, and can be identified by the yellow color at the edges.

Type VIII nylon webbing

Nylon webbing that is 1-23/32 inches wide, .040 to .070 inches thick, has a breaking strength of 4000 pounds, and can be identified by the black color in the middle.

Type X cotton buffer

Woven webbing textile, cotton warp, used to reduce or eliminate nylon-on-nylon contact.

Type XXVI nylon webbing

Flat, woven nylon webbing, 1-23/32 inches wide with a tensile strength of 15,000 pounds.

References

Verified all references and websites on 9 August 24 October 2018.

REQUIRED PUBLICATIONS

ADP 1-02, *Terms and Military Symbols*, 14 August 2018. *DOD Dictionary of Military and Associated Terms*, September 2018.

RELATED PUBLICATIONS

AFI 11-2C-17, Volume 3, *C-17A Antarctic Operations*, 14 November 2013.
AFI 11-2C-130, Volume 3, *C-130 Operations Procedures*, 23 April 2012.
AFI 13-217, *Drop Zone and Landing Zone Operations*, 10 May 2007.
AFI 91-204, *Safety Investigations and Reporting*, 27 April 2018.
AR 59-4/OPNAVINST 4630.24D/AFJ 13-210(I)/MCO 13480.1D, *Joint Airdrop Inspection Records, Malfunction/Incident Investigations, and Activity Reporting {OPNAVINST 4630.24D; AFJ 13-210(I); MCO 13480.1C}*, 8 April 2008.
AR 195-5, *Evidence Procedures*, 22 February 2013.
AR 385-10, *The Army Safety Program*, 24 February 2017.
AR 735-5, *Property Accountability Policies*, 9 November 2016.
AR 750-32, *Airdrop, Parachute Recovery, and Aircraft Personnel Escape Systems*, 18 June 2008.
ATP 3-18.11/AFMAN 11-411(I)/NTTP 3-05.26M, *Special Forces Military Free-Fall Operations*, 24 October 2014.
ATP 5-19, *Risk Management*, 14 April 2014.
DA PAM 385-90, *Army Aviation Accident Prevention Program*, 28 August 2007.
DODI 6055.07, *Mishap Notification, Investigation, Reporting, and Record Keeping*, 06 June 2011.
<http://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/605507p.pdf>.
FM 3-21.38, *Pathfinder Operations*, 25 April 2006.
FM 27-10, *The Law of Land Warfare*, 18 July 1956.
JP 4-01.6, *Joint Logistics Over-the-Shore*, 03 February 2017.
Judge Advocate General Instruction 5800.7F, *Manual of the Judge Advocate General (JAGMAN)*, 26 June 2012. <http://www.marines.mil/Portals/59/Publications/JAGINST%205800.7F.pdf>.
MCO 3120.11A, *Marine Corps Parachuting Policy and Program Administration*, 17 December 2014.
<http://www.marines.mil/Portals/59/Publications/MCO%203120.11A.pdf>.
MCRP 2-10A.6, *Ground Reconnaissance Operations*, 02 May 2016.
MISC PUB 27-7, *Manual for Courts Martial, United States (2016 Edition)*, 8 December 2016.
OPNAVINST 5102.1D/MCO P5102.1B, *Navy & Marine Corps Mishap and Safety Investigation, Reporting, and Record Keeping Manual*, 7 January 2005, can be found at:
http://www.marines.mil/Portals/59/MCO_P5102.1B_CH_2.pdf.
TC 21-21, *Water Survival Training*, 25 June 1991.
TM 4-48.03/MCRP 4-11.3C/TO 13C7-1-11, *Airdrop of Supplies and Equipment: Rigging Containers*, 15 March 2016.
TM 4-48.04 (FM 4-20.142)/MCRP 4-11.3P/NAVSEA SS400-AD-MMO-010/TO 13C7-51-21, *Airdrop of Supplies and Equipment: Rigging Loads for Special Operations*, 6 August 2012.

TM 10-1670-262-12&P, *Operator and Unit Maintenance Manual Including Repair Parts and Special Tools List Personnel Insertion/Extraction Systems for STABO* (NSN 1670-00-168-5952) (1670-00-168-6064) (1670-00-168-6063) *Fast Rope Insertion/Extraction System* (4020-01-338-3307) (4020-01-338-3308) (4020-01-338-3309) and *Anchoring Device* (1670-00-999-3544), 25 September 1992.M

10-1670-272-23&P, *Field Maintenance Manual Including Repair Parts and Special Tools List for 35-Foot Diameter, MC1-1E Troop Back Parachute Assembly P/N 11-1-900-4* (NSN 1670-01-499-6573), 15 August 2015.

TM 10-1670-326-23&P, *Field Maintenance Manual Including Repair Parts and Special Tools List for T-11 Personnel Parachute System* (NSN 1670-01-539-4525), 8 March 2017.

TM 10-1670-327-23&P, *Field Maintenance Manual Including Repair Parts and Special Tools List for MC-6 Personnel Parachute System* (NSN 1670-01-527-7537), 15 January 2009.

TM 10-1670-332-23&P, *Field Maintenance Manual Including Repair Parts and Special Tools List for Advanced Emergency Bailout Parachute (AEBP) System* NSN 1670-01-598-1318, 1 October 2012.

TM 10-8465-236-10, *Operators Manual for Modular Lightweight Load-Carrying Equipment (MOLLE) II*, 20 June 2013.

TM 38-250/AFJMAN 24-204/NAVSUP PUB 505/DLAI 4145.3, DCMAD1, CH 3.4, *Preparing Hazardous Materials for Military Air Shipments*, 13 July 2017.

WEBSITES

Web sites are linked and active as of 30 May 2018.

Army Quartermaster Corps: www.quartermaster.army.mil/adfsd.

Department of the Navy Issuances: <https://doni.documentservices.dla.mil/default.aspx>

Most Joint publications and Department of Defense forms are available online at:
<http://www.jcs.mil/Doctrine/>.

Most U.S. Army doctrinal publications and regulations are available at the Army Publishing Directorate:
<https://armypubs.army.mil/>.

Most U.S. Navy safety publications and regulations are available at the Naval Safety Center:
<http://www.public.navy.mil/navsafecen/pages/index.aspx>.

Most U.S. Air Force doctrinal publications and regulations are available at Air Force E-Publishing:
<http://www.e-publishing.af.mil/>.

Most U.S. Marine Corps publications and regulations are available at U.S. Marine Corps Publications:
<http://www.marines.mil/News/Publications/>.

Military Standards available online: <http://www.everyspec.com/MIL-STD/>.

Naval Safety Center: www.safetycenter.navy.mil/ashore/tactical/parachuting/reporting.htm.

U.S. Army Combat Readiness: <https://safety.army.mil/>.

PRESCRIBED FORMS

This section contains no entries.

REFERENCED FORMS

Unless otherwise indicated, DA forms are available on the Army Publishing Directorate (APD) website at: <http://armypubs.army.mil/>. DD forms are available on the Executive Services Directorate (ESD) website: <http://www.esd.whs.mil/Directives/forms/>.

AF Form 4304, Drop Zone/Landing Zone Control Log. Available at http://static.e-publishing.af.mil/production/1/af_a3/form/af4304/af4304.pdf.

AF IMT Form 3823, Drop Zone Survey. Available at http://static.e-publishing.af.mil/production/1/af_a3/form/af3823/af3823.pdf

DA Form 1306, *Statement of Jump and Loading Manifest*.

DA Form 1307, *Individual Jump Record*.

DA Form 2028, *Recommended Changes to Publications and Blank Forms*.

DA Form 3912, *Army Parachute Log Record*. Available through normal supply channels.

DA Form 4137, *Evidence/Property Custody Document*.

DD Form 1348, *DOD Single Line Item Requisition System Document (Manual)*.

DD Form 1574, *Serviceable Tag – Materiel*. Available through normal supply channels.

DD Form 1748-2, *Airdrop Malfunction Report (Personnel-Cargo)*. Available through normal supply channels.

DD Form 2977, *Deliberate Risk Assessment Worksheet*.

This page intentionally left blank.

Index

Entries are by paragraph number.

A

A-21 cargo bag assembly. 14-11
A-7A airdrop cargo sling assembly. 14-5
advanced combat helmet. 12-6
assembly. 12-8
back. 9-31
front. 9-150, 9-21
rear. 9-161
ADZSO
requirements. 7-13
Airborne commander. 7-1
airdrop operation personnel. 9-1
boat detail. 20-31
door bundle procedures. 10-89
lowering M1950 weapon's case. 12-93
marshalling area control officer briefing. 8-6
MC-6 video. 8-58
risk assessment. 15-8
tree recovery detail. 20-32
water DZ. 25-3
wire obstacles. D-13, D-11
airfield and runway safety. 11-4
AIRPAC. 12-104
attached to jumper. 12-110
JMPI sequence. 9-146
tandem load rigging. 12-109
technical inspection. 13-16, 9-147
AKB. 12-23, 8-5
equipment recovery. 8-66, 8-37, 4-56
inspection. 9-45
storing USLMs. 10-96
ALICE pack, 8-3, 12-51, 9-130, 9-61, 8-6
attaching to parachute harness. 12-55
definition. 9-42
ALICE pack without a frame rigging procedures. 12-57

alternate door exit procedures. 5-1
anemometer. 22-21
DIC-3. 20-28
Turbometer. 20-29
aviator kit bag
how to fold. 12-23

B

blown canopy section. 6-15
boat detail. 20-31
broken control lines. 6-18
broken suspension lines. 6-16
buddy system
attaching equipment. 9-105
definition. 9-14
donning parachutes. 2-46

C

C-130 mass drop operations. 16-2'
C-130/C-17
option one exiting procedures. 5-2
option two exiting procedures. 5-10
C-130/J-30 in-flight rigging operations. 16-6
C-130E/H/J in-flight rigging operations. 16-5
C-130J mass drop operations. 16-3
C-130J-30 operations. 116-15
C-17A Globemaster III. 16-36
C-212. 19-48
C-23B/B+ Sherpa. 19-22
C-27J
option one exiting procedures. 5-6
option two exiting procedures. 5-15
C-27J fixed-wing aircraft. 16-50
C-7A. 19-8

canopy release assemblies. 9-38, 9-23, 4-51, 3-37, 3-34, 2-39, 1-6
activation and methods. 4-54
T-11 and MC-6 parachutes. 4-53
center panel strike. F-5
CH/HH-3. 18-10
CH-47 Chinook. 17-27
CH-53 Sea Stallion. 18-1
chinstrap assembly. 12-11
collision. F-1
container loads. 17-6
controlled movement technique. 4-21
corner crossover inversion. 6-12

D

DACO, 9-1, 7-1
initial coordination. 11-1
jump refusal. E-8, 8-20
responsibilities. 11-3
runway safety. 11-4
update briefing. 9-2
with ALCE. 11-2
delayed canopy opening. 6-17
distribution of the load. 12-3
door bundle procedures. 10-89
door bundle procedures.
method one. 10-91
method two. 10-92
door bundles
rigging procedures. 14-1
drop zones. Z, 20-9
DZ
risk assessment decision matrix. D-24
DZSO. 7-1
additional duties. 20-34
command boat. 25-16
duties. 20-25
equipment requirements. 20-27

Entries are by paragraph number.

- local power coordination.
 - 20-7
 - malfunction duties. 23-12
 - personnel requirements. 20-23
 - refresher course. 7-12
 - required information. 20-24
 - requirements. 7-11
 - tree obstacles. D-19
 - water briefing. 25-13
 - water obstacles. D-4
 - water operations. D-5, 25-1
 - wire obstacles. D-14
- DZST. 20-1
- malfunction officer. 7-1
 - mission briefing checklist. 20-38
 - responsibilities. 20-35
- DZSTL. 20-35, 7-1
- basic equipment. 20-39
 - determining drop altitude. 20-1
 - malfunction duties. 23-12
 - personnel prerequisites. 7-2
 - post mission requirements. 22-27
 - requirements. 7-14
 - tree obstacles. D-19
 - water obstacles. D-4
 - water operations. D-5
 - wire obstacles. D-14
- E**
- ejector spring. 2-24
 - entanglement. F-4, F-3
- F**
- front-mount container release mechanism. 12-107
- H**
- high-elevation jumping. 15-9
 - hook-pile tape lowering line. 12-43
 - hung slider. 6-13
 - hydration jump packs. 12-67
- I**
- improved outer tactical vest. 12-29
 - improved swing landing trainer. 4-7
 - detail personnel. 4-10
 - instructor duties. 4-11
 - safety considerations. 4-12
 - inspection
 - ACH. 9-21
 - aircraft. 9-6
 - AIRPAC. 9-146
- AKB. 9-45
 - ALICE pack. 9-130, 9-61, 9-42
 - canopy release assemblies. 9-23
 - combat equipment. 9-181
 - combat equipment (MAWC). 9-39, 9-38
 - exposed weapon. 9-195
 - fixed-wing aircraft. 9-7
 - JM team. 9-14
 - jump refusal. 8-20
 - leg straps. 9-143, 9-29, 9-28
 - M1950 weapon's case. 9-87
 - M1950 weapon's case. 9-41
 - MAWC rigged for a tandem load. 9-108
 - MAWC rigged for tandem load. 9-75
 - MOLLE rucksack. 9-115, 9-48, 9-40
 - parachute. 9-13
 - post-hang. 9-104
 - riser assemblies and pack trays. 9-32
 - safety kits. 8-5
 - T-11 reserve parachute. 2-37
 - UPRB. 9-44
 - USLM. 9-30
- instructor PLF critiques. 4-3
- J**
- J51 Warhammer. 12-66
- JM
- C-130 checklist. 16-20
 - currency and transferability. C-2
 - door safety check. 10-105, 10-73, 10-24
 - duties. 10-4
 - ground marking release system. 10-49
 - jump commands. 10-38, 10-17
 - jump platform. 10-25
 - jump refusal. 10-51
 - outside safety check. 10-109, 10-77, 10-28
 - time warnings. 10-9
 - hand signals. 10-80
 - towed jumper procedures. 10-63
 - unsafe conditions. 10-113
- JM team. 10-1, 9-6, 9-3, 8-9
- aircraft inspection. 9-7
 - C-17A checklist. 16-49
 - C-27J checklist. 16-55
 - door bundle procedures
- method one. 10-91
 - method two. 10-92
 - emergency procedures. E-11
 - general duties. 10-3
 - incidents on aircraft or DZ. 10-95
 - jumping duties. 10-116, 10-83, 10-44
 - mock door training. E-3
 - parachute issue tasks. 9-10
 - T-11 and MC-6 parachute inspection. 9-14
 - towed jumper procedures. 10-55
- jump commands. 16-19
- jump configuration. 9-197
- jumpable packs. 12-106
- K**
- key personnel. 7-1
 - prerequisites. 7-2
 - rotary-wing aircraft. 7-6
- L**
- lateral drift apparatus. 4-5
 - life preservers. 12-111
 - B-7 LPU. 25-23, 12-118
 - LPU 10/P. 25-30, 12-115
 - TFSS-5326. 25-35, 12-112
 - UDT vest. 25-26
- loadmaster
- aircraft inspection. 9-6
 - fire during flight. 8-27
 - jump commands. 10-23
 - retrieving USLMs. 10-96
 - time warnings. 10-32
 - hand signals. 10-80
 - towed jumper procedures. 10-63, 10-55
- M**
- M1950 weapon's case. 12-87
 - M50 joint service general purpose mask. 12-25
 - M7 and M9 aid bags. 12-61
 - malfunction reports. 23-25
 - U.S. Army and U.S. Air Force. 23-26
 - U.S. Navy and U.S. Marine Corps. 23-27
 - mass exit procedure. 5-20
 - MC-130E/H/P/W. 16-32
 - MC-6 Personnel Parachute System, 2-1, 2-17
 - canopy manipulation. 3-66
 - canopy operating principles. 3-48

Entries are by paragraph number.

- emergency procedures. F-6
 - five points of performance. 3-39
 - harness. 2-48
 - jump altitudes. 15-2
 - key points. 3-78
 - load distribution. 12-3
 - main canopy. 2-17
 - obstacles and tree landings. 3-79
 - pack tray assembly. 2-12
 - parachute care. 2-39
 - points of performance. 24-7
 - prejump. E-40
 - riser assembly. 2-6
 - water landing procedures. 3-83, 3-82
 - with T-11 harness assembly. 2-2
 - with T-11 reserve parachute. 2-20
 - MC-7 Personnel Parachute System. 2-44
 - emergency procedures. F-6
 - jumpmaster personnel inspection. 9-149
 - prejump. E-63
 - reserve parachute. 9-156
 - seating configuration. 18-32
 - static line operations. 18-31
 - methods of recovery training. 4-50
 - mission briefing checklist. 20-38
 - M-MOLLE
 - medium rucksack. 12-60
 - MO. 7-1
 - DD Form 1748-2. 23-17
 - duties. 23-22
 - equipment. 23-10
 - prerequisites. 7-15
 - responsibilities. 23-12
 - U.S. Air Force. 23-6
 - U.S. Army. 23-1
 - U.S. Marine Corps. 23-8
 - U.S. Navy. 23-7
 - mock door. E-2, 4-13
 - basic phase. 4-15
 - HIT IT exercise. 4-19
 - terms. 4-20
 - modular Airborne weapon's case. 12-75
 - MOLLE
 - technical inspection. 9-47
 - MOLLE assault pack. 12-58
 - MOLLE rucksack. 9-48, 9-40
 - attach to parachute harness. 12-49
 - large rucksack rigging procedures. 12-48
 - mystery ranch rapid access trauma system. 12-63
- O**
- optic sights and lasers. 12-73
 - over the ramp operations. 16-13
- P**
- parachute landing fall. 8-40, 1-6
 - devices. 4-1
 - entanglements. 3-17
 - front PLF. 3-89, 3-35
 - rear PLF. 3-90, 3-36
 - side PLF. 3-88, 3-34
 - tree landings. 8-75
 - water drop zone landing. 25-20
 - water landings. 8-76
 - wire landings. 8-76
 - with weapons. 12-70
 - parachute malfunctions. 6-4
 - partial malfunctions. 6-11
 - total malfunctions. 6-7
 - parachute shakeout procedures. 2-41
 - main canopy. 2-41
 - reserve parachute. 2-42
 - wet or exposed to moisture. 2-43
 - personnel lowering device. 10-144
 - PJ. 8-1
 - assistant's briefing. 8-4
 - over the ramp operations. 10-62
 - pull drop method. 6-1
 - with T-11 reserve parachute. 6-1
- R**
- Ram Air Personnel Parachute Systems. 23-6
 - recovery boats. 25-11
 - red light. E-6
 - reserve extractor parachute. 2-22
 - rip cord. 10-142
 - rip cord assembly. 2-34
- S**
- safety belt
 - cargo floor fittings. 17-25
 - fastening. 17-19
 - installation. 17-12
 - safety clip. 4-55
 - safety investigations. 23-16
 - safety kit. 16-10
 - safety officer
 - 68-inch pilot parachute. 10-14
 - aircraft inspection. 9-6
 - C-212 checklist. 19-62
 - drop zone. 25-2, 7-10
 - equipment. 10-2
 - exiting procedures. 8-16
 - in-flight duties. 19-18, 18-8, 17-35, 10-96, 10-87, 10-71, 10-70, 10-7
 - inside C-130/C-17 aircraft duties. 5-3
 - inside C27J aircraft duties. 5-6
 - jump duties. 16-18, 10-19, 10-18
 - jump procedures. 17-31
 - jump refusals. E-7, 10-52, 8-19
 - jumper inspection. 10-102
 - lateral drift apparatus. 4-5
 - paratroop door check. 10-23
 - time warnings
 - hand signals. 10-80
 - towed jumper procedures. 10-53
 - safety straps. 17-57
 - safety swimmer
 - duties. 25-17
 - equipment. 25-6
 - water jumps. 25-9
 - side-mount container. 12-108
 - skis. 13-7
 - sleeve corner vent entanglement. 6-14
 - snowshoes. 13-4
 - Soldier Plate Carrier System. 12-37
 - static line
 - exstension. 9-17
 - storage. 9-10
 - stealing air. 3-18
 - surface wind. 22-20
 - suspended harness apparatus. 4-28
 - personnel and equipment. 4-31
 - sequence of commands. 4-32

Entries are by paragraph number.

T

T-11 Personnel Parachute System. 2-1
 donning the reserve parachute. 2-49
 emergency procedures. F-1
 entanglement procedures. 3-17
 five points of performance. 3-1
 harness. 2-48
 harness assembly. 2-2
 load distribution. 12-4
 main canopy. 2-14, 2-13
 main pack tray. 2-12
 parachute care. 2-39
 prejump. E-18
 reserve canopy. 2-26
 reserve pack tray. 2-32
 reserve parachute. 8-42, 2-20
 reserve parachute activation. 8-71
 reserve parachute characteristics. 2-28
 reserve parachute control. 8-69
 reserve parachute inserts. 2-36
 reserve riser assembly. 2-30
 riser assembly. 2-5
 tree landing procedures. 3-25
 universal static line modified. 2-7

 water landing procedures. 3-29, 3-28
 tactical assault panel. 12-35
 thirty-four foot mock tower. 4-33
 advanced phase. 4-46
 basic phase. 4-35
 personnel and equipment. 4-38
 safety. 4-15
 towed jumper. E-9
 aircraft commander. 10-61
 JM team. 10-55
 procedure modifications. 10-66
 procedures. 8-21, 6-9
 rotary-wing aircraft procedures. 17-8
 training. E-73
 tree
 climbing down. 3-26
 landing. 8-54, 3-25
 checklist. D-25
 obstacles. D-5
 recovery detail. D-22, 20-32
 two-foot high platform. 4-4
 types of airdrops. 20-4

U

UH-1. 17-36
UH-1N/Y. 18-44
UH-60A. 17-9
UH-72A. 17-53
universal parachutist recovery bag

 how to fold. 12-21
 universal static line control. 8-14
 modified
 inspection. 9-30
 snap hook. 2-10
 with curved pin. 2-7
 unplanned aircraft exit. 10-127
 UPRB. 12-20, 8-5
 equipment recovery. 8-66, 8-37, 4-56

V

V-22 Osprey. 18-18

W

water
 drop zone. 25-1
 hazard. D-2
 boat detail. D-7
 risk conditions. D-3
 landing. 8-77, 8-56, 3-81, 3-27
 checklist. D-25
 with life preserver. 3-29
 without life preserver. 3-28
 obstacle. 12-111
 wind drift. 21-9
wire
 around snap hook. 17-56
 landing. 8-11, 8-76, 3-30
 checklist. D-25
 obstacles. D-10
 radio switch. 17-37

TC 3-21.220
24 October 2018

By Order of the Secretary of the Army:

MARK A. MILLEY
General, United States Army
Chief of Staff

Official:

A handwritten signature in black ink, appearing to read 'Mark F. Averill', written in a cursive style.

MARK F. AVERILL
Acting Administrative Assistant
to the Secretary of the Army
1828801

DISTRIBUTION:

Active Army, Army National Guard, and United States Army Reserve: To be distributed in accordance with the initial distribution number (IDN) 116055, requirements for TC 3-21.220.

This page intentionally left blank.

